APPENDIX A

Notice of Preparation and Scoping Report

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Department of Conservation and Development

30 Muir Road
Martinez, CA 94553

Phone: 1-855-323-2626

Contra Costa County

Catherine Kutsuris
Director

Aruna Bhat
Deputy Director

Jason Crapo
Deputy Director

John Kopchik
Deputy Director

FILED
MAR 19 2014
J.E. CANCIAMILLA COUNTY CLERK
CONTRA COSTA COUNTY
BY _____ DEPUTY

March 19, 2014

NOTICE OF PREPARATION & NOTICE OF SCOPING MEETING FOR AN ENVIRONMENTAL IMPACT REPORT SARANAP VILLAGE MIXED-USE PROJECT

TO: RESPONSIBLE AND TRUSTEE AGENCIES, AND OTHERWISE INTERESTED AGENCIES, ORGANIZATIONS, AND INDIVIDUALS

The Contra Costa County Department of Conservation and Development (DCD) has received applications for a **General Plan Amendment, Rezone, Major Subdivision, and Final Development Plan (County File Numbers GP13-0003, RZ13-3224, SD13-9359, and DP13-3035, respectively)** for the Saranap Village Mixed-Use Project. The DCD is the lead agency for preparation of the environmental impact report (EIR) for this project and is issuing this Notice of Preparation pursuant to Section 15082 of the California Environmental Quality Act (CEQA) Guidelines.

PROJECT DESCRIPTION

The project applicant proposes the following:

- Redevelopment of a portion of Boulevard Way in Contra Costa County into a mixed-use village with residential uses and neighborhood-serving restaurants, services, and shops. This would be accomplished by replacing outdated buildings (majority constructed in the 1960s) with four buildings (designated Sites A, B, B1, and C) containing a total of 235 multi-family units; up to approximately 30,000 square feet of street-level retail and restaurant uses; approximately 14,200 square feet of boutique, community-oriented fitness club; private amenities for use by the project's residents; and off-street structured parking. The buildings would vary in size and each would reflect a different architectural style. The largest building, located on Site A, would contain approximately 315,500 square feet, including its garage. Building heights would vary to accommodate topographic changes across the project site, with Site A ranging in height from approximately 68 to 80 feet, Site B ranging from approximately 65 to 78 feet, Site B1 ranging from approximately 46 to 56 feet, and Site C ranging from approximately 55 to 58 feet.

- Improvements to the Boulevard Way and Saranap Avenue rights-of-way including reducing Boulevard Way from four lanes to two along the project frontage up to the intersection with Flora Avenue and installing a roundabout, a traffic circle, angled and parallel on-street parking, traffic calming elements, streetscape amenities, sidewalks, crosswalks, street lighting, landscaping, and utilities.

PROJECT LOCATION

The project site is located in the unincorporated Saranap area of Contra Costa County between the cities of Walnut Creek and Lafayette, less than one quarter mile west of the Walnut Creek city limits and just south of State Highway 24. The project site consists of approximately 4.6 acres clustered around the intersection of Boulevard Way and Saranap Avenue, extending along the north and south sides of Boulevard Way and along the east side of Saranap Avenue. Properties within the project area are addressed as 1285, 1298, 1299, 1300, 1310, and 1326 Boulevard Way, and 1176 and 1180 Saranap Avenue.

Assessor's parcel numbers: 185-370-012, 185-370-018, 185-370-010, 184-010-035, 185-370-033, 184-010-046, 184-480-001, 184-480-002, 184-480-013, and 184-480-014.

ANTICIPATED IMPACTS

Pursuant to CEQA Guidelines Section 15060(d), the DCD will not prepare an Initial Study prior to commencing work on the EIR. We anticipate that the project may result in potentially significant impacts in the following CEQA topic areas: Aesthetics; Air Quality; Biological Resources; Cultural Resources; Geology and Soils; Greenhouse Gas Emissions; Hazards and Hazardous Materials; Hydrology and Water Quality; Land Use and Planning; Noise; Population and Housing; Public Services; Recreation; Transportation/Traffic; Utilities and Service Systems; and Mandatory Findings of Significance.

PUBLIC COMMENTS

All responsible and trustee agencies, as well as interested agencies, organizations, and individuals are invited to submit comments addressing environmental concerns related to the proposed project.

Written responses to this Notice of Preparation must be received at the following address by 5:00 p.m. on Friday, April 18, 2014:

Department of Conservation and Development
Community Development Division
30 Muir Road
Martinez, California 94553
Attention: William Nelson

The County File Numbers stated above should be included in all correspondence.

SCOPING MEETING

A scoping meeting will be held on **Monday, April 7, 2014, at 3:30 p.m.** in the offices of the Department of Conservation and Development, 30 Muir Road, Martinez, California. At this meeting anyone may submit oral or written comments pertaining to environmental concerns related to the proposed project.

SUPPORTING DOCUMENTS

The development applications and supporting documents are available for review at the offices of the Department of Conservation and Development, Community Development Division. If you wish to obtain a copy of any documents related to this project, please contact me at (925) 674-7791 or william.nelson@dcd.cccounty.us.

Sincerely,

William R. Nelson
Principal Planner
Contra Costa County
Department of Conservation and Development

Attachments: Location Map
Existing Land Uses Map
Project Sub-areas
Site and Landscaping Plan
Building Elevations

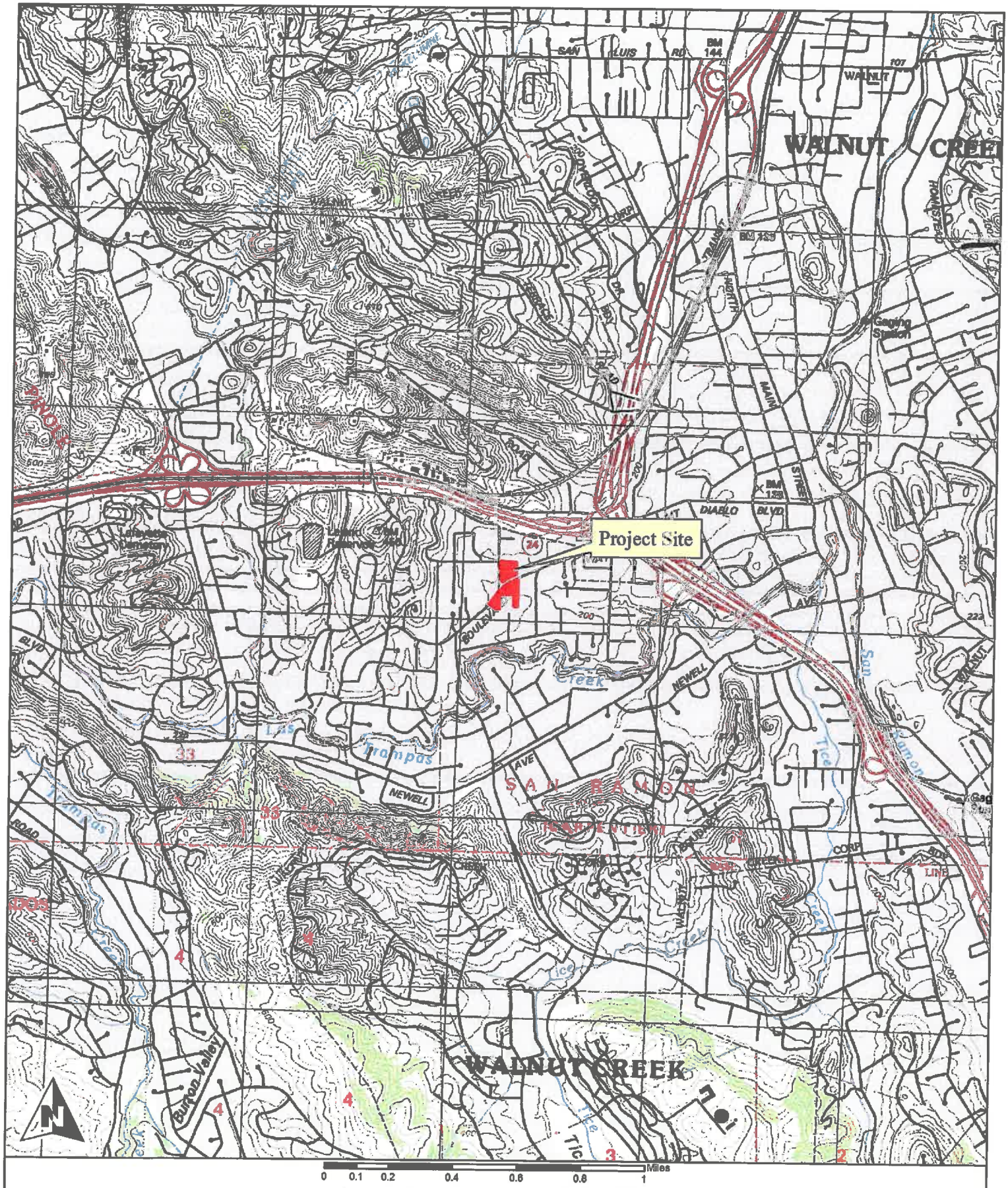
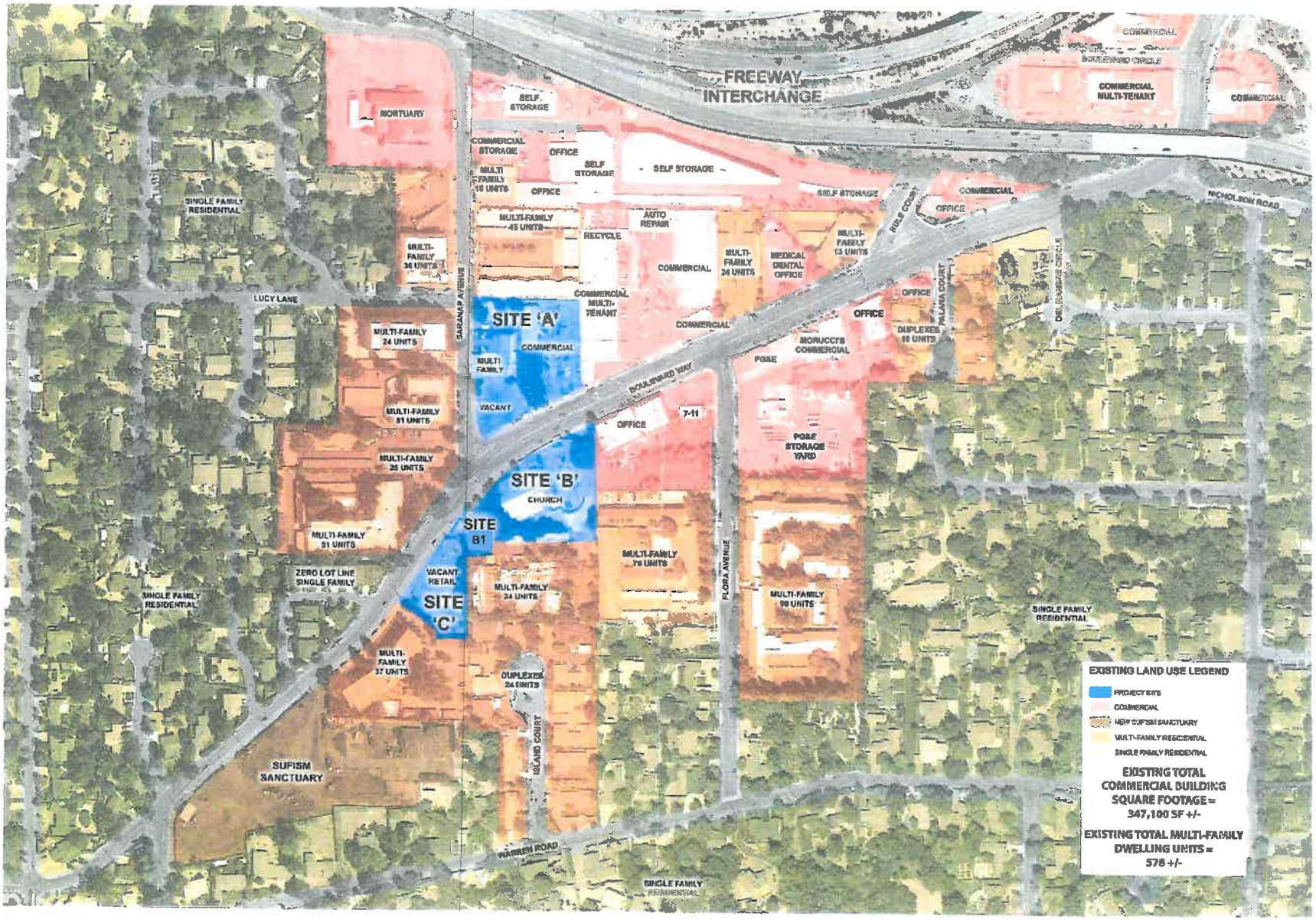
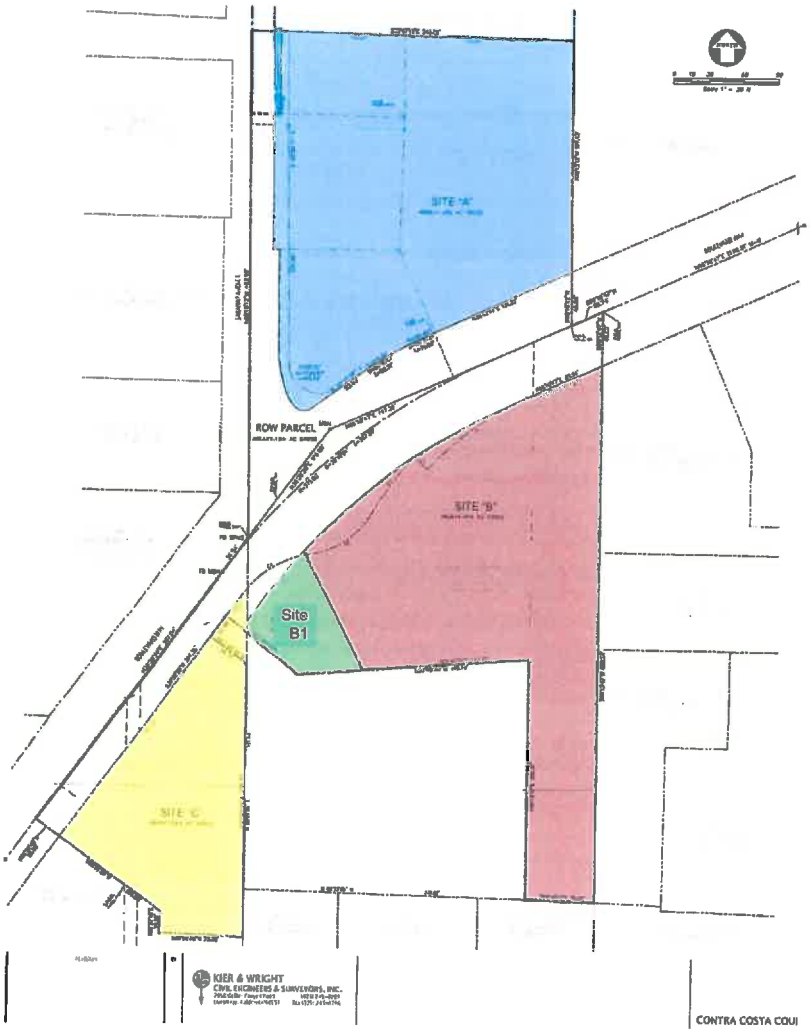


Figure 2. Saranap Village Project Site
Location Map
Contra Costa County, California

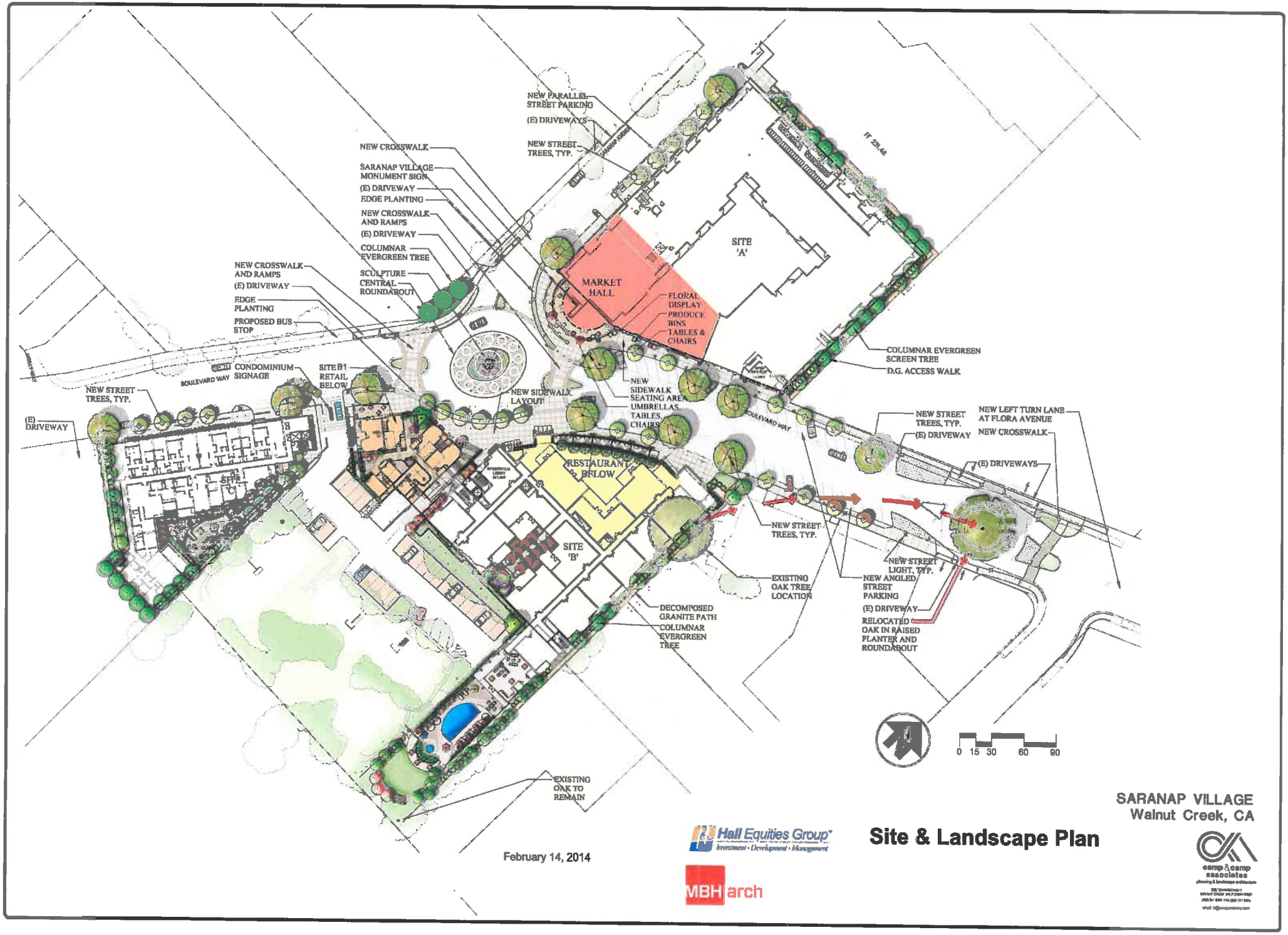
Land Grant
7.5-Minute Walnut Creek quadrangle
Topography Source: http://gis.ca.gov
Map Preparation Date: September 24, 2013



EXISTING LAND USES



Saranap Village
Project Sub-Areas



February 14, 2014

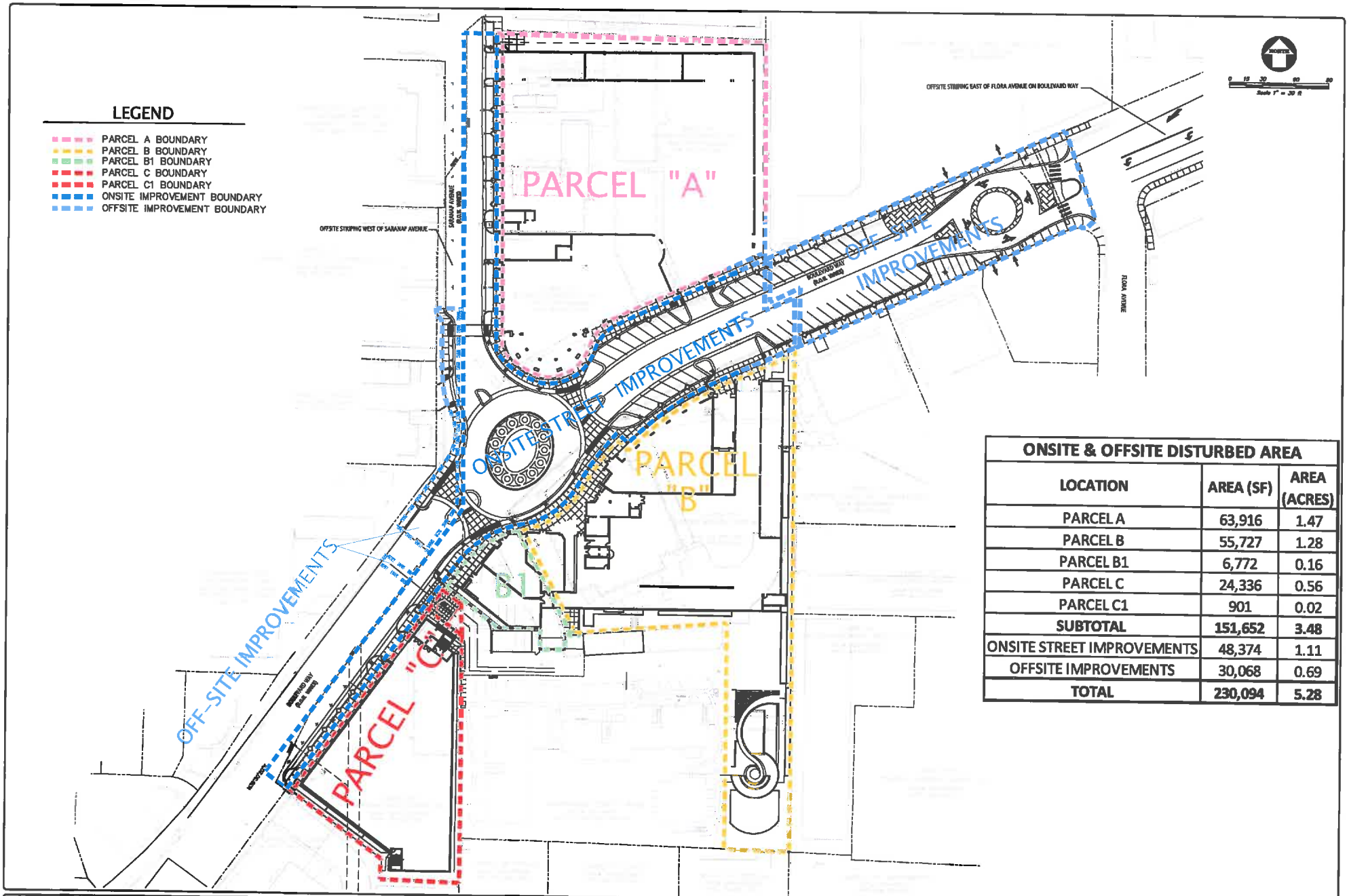
Hall Equities Group
Investment · Development · Management

MBH arch

Site & Landscape Plan

SARANAP VILLAGE
Walnut Creek, CA

camp & camp associates



ONSITE & OFFSITE DISTURBED AREA

LOCATION	AREA (SF)	AREA (ACRES)
PARCEL A	63,916	1.47
PARCEL B	55,727	1.28
PARCEL B1	6,772	0.16
PARCEL C	24,336	0.56
PARCEL C1	901	0.02
SUBTOTAL	**151,652**	**3.48**
ONSITE STREET IMPROVEMENTS	48,374	1.11
OFFSITE IMPROVEMENTS	30,068	0.69
TOTAL	**230,094**	**5.28**

NO.	REVISION	BY	NO.	REVISION	BY
△			△		
△			△		
△			△		
△			△		
△			△		

KIER & WRIGHT
CIVIL ENGINEERS & SURVEYORS, INC.
2850 Collier Canyon Road
Livermore, California 94551
(925) 245-8788
Fax (925) 245-8798

DISTURBED AREA EXHIBIT

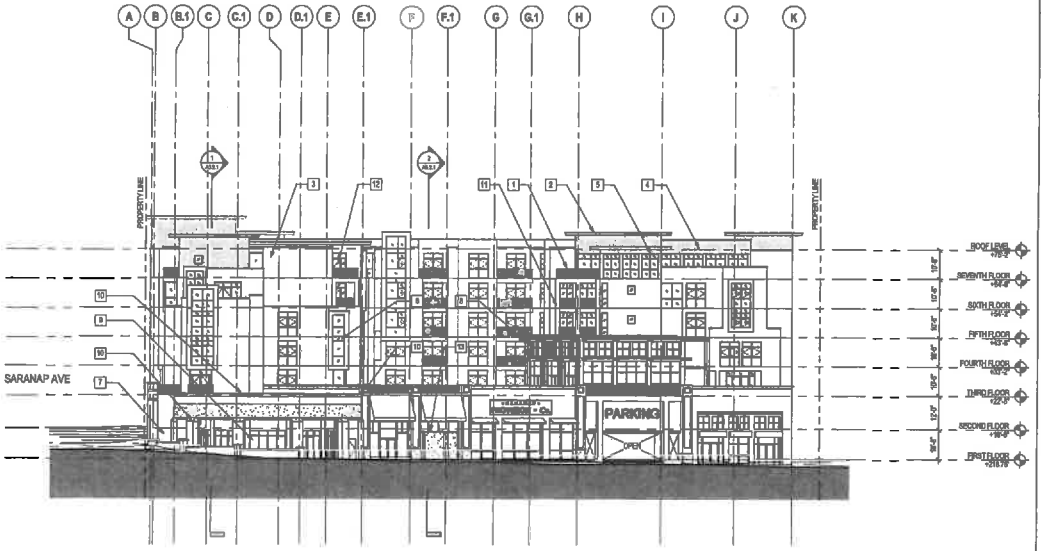
BOULEVARD WAY AND SARANAP AVENUE

HALL EQUITIES

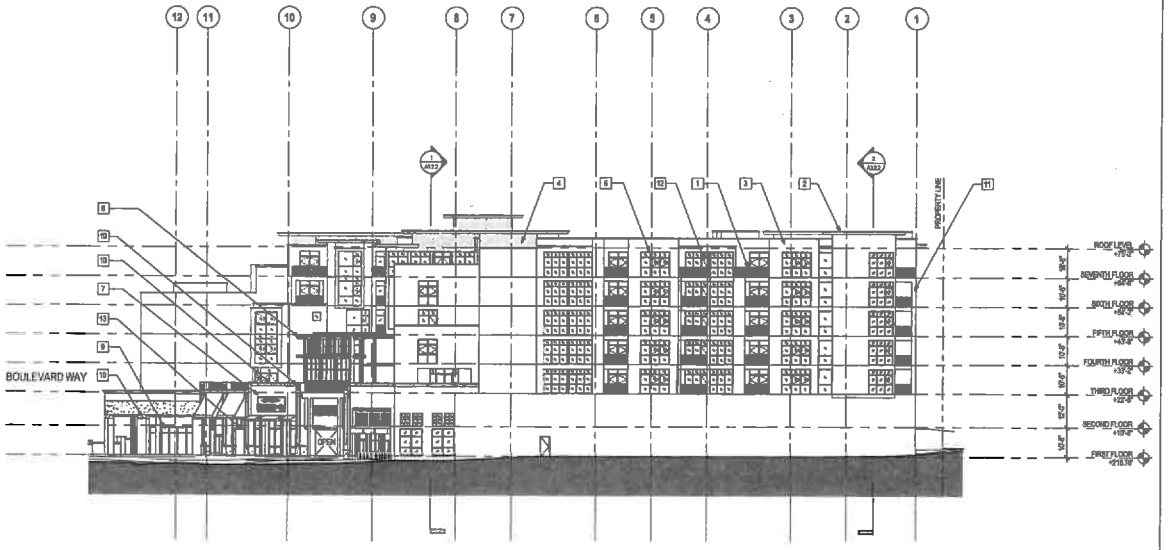
CONTRA COSTA COUNTY CALIFORNIA

DATE	FEBRUARY, 2014
SCALE	1" = 30'
DESIGNER	TC
JOB NO.	A12549-2
SHEET	1
OF	1 SHEETS

Z:\2012\A12549-2\survey\A12549-2 TM.dwg 1/13/2014 11:28:12 AM PST



SOUTH ELEVATION | 1



EAST ELEVATION | 2

NOTES

1. PAINTED METAL RAIL
2. SHEET METAL COPING
3. PAINTED CEMENT PLASTER, SMOOTH SAND FINISH
4. STAINED BOARD AND BATTEN SIDING
5. ALUMINUM AND GLASS WINDOW SYSTEM
6. TRANSLUCENT GLASS SPANDREL PANEL
7. THIN BRICK VENEER, NORMAN BOND, SANDED FINISH
8. STAINED WOOD BRISE SOLEIL
9. ALUMINUM AND GLASS STOREFRONT SYSTEM
10. PRECAST ARCHITECTURAL CONCRETE COPING, FRIEZE, BASE AND PLAQUE
11. STAINED WOOD CLADDING
12. ALUMINUM AND GLASS DOORS
13. ALUMINUM AND GLASS SEGMENTED OVERHEAD DOOR

MBH
1970 Harrison Square Loop
Alameda, CA 94501
Tel 510 522 0512
Fax 510 522 1012

NOT FOR CONSTRUCTION

KEY PLAN

SARANAP VILLAGE

PARCEL A

SARANAP VILLAGE
WALNUT CREEK, CA

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No.	Date	Issue
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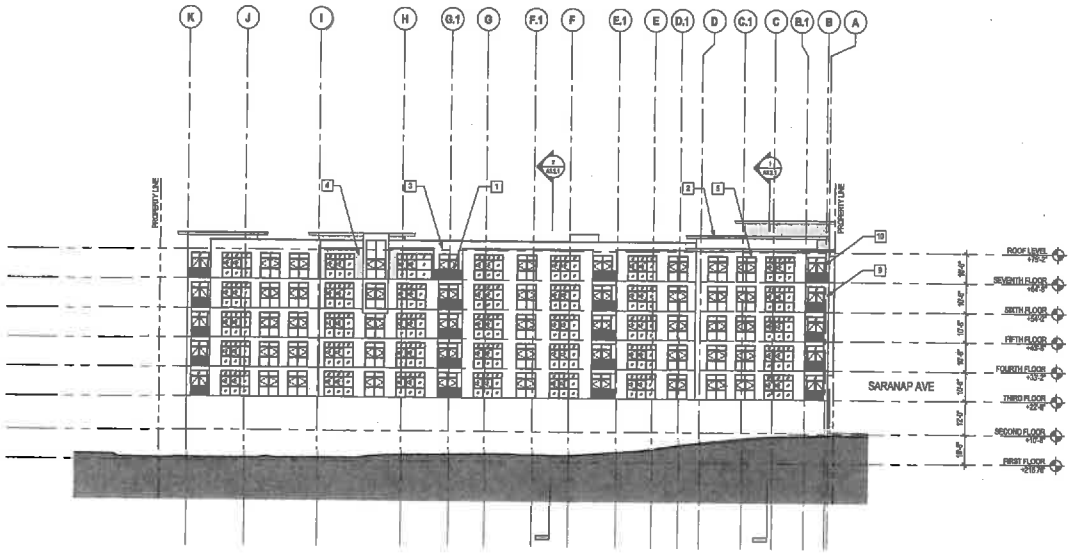
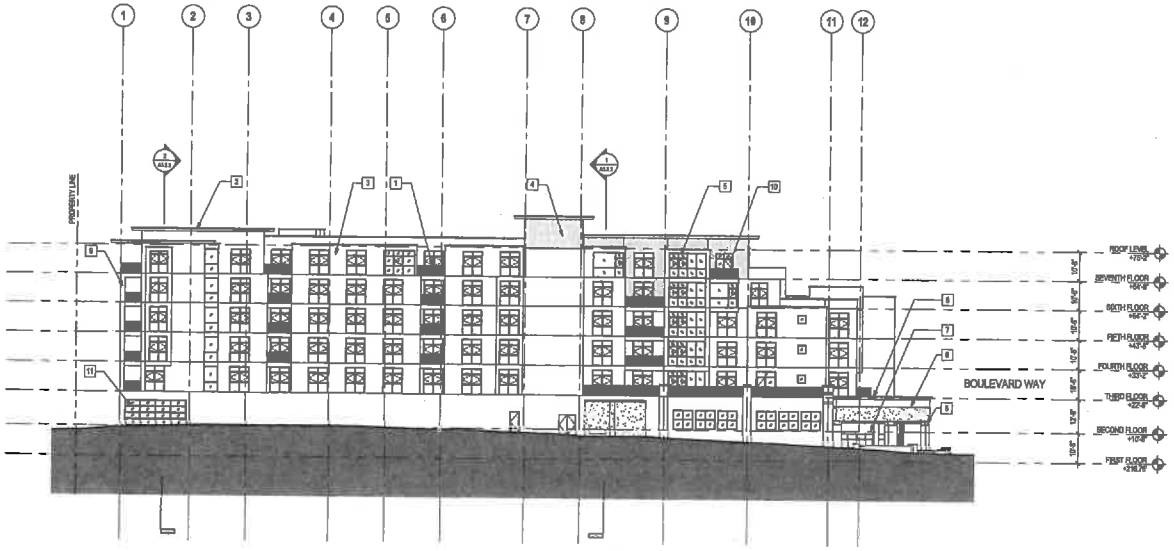
Scale: 1/16" = 1'-0"
Drawing Title: EXTERIOR ELEVATIONS
Drawing No.: A3.1.1



NORTH ELEVATION | 1



WEST ELEVATION | 2

NOTES

1. PAINTED METAL RAIL
2. SHEET METAL COPING
3. PAINTED CEMENT PLASTER, SMOOTH SAND FINISH
4. STAINED BOARD AND BATTEN SIDING
5. ALUMINUM AND GLASS WINDOW SYSTEM
6. THIN BRICK VENEER, NORMAN BOND, SANDED FINISH
7. ALUMINUM AND GLASS STOREFRONT SYSTEM
8. PRECAST ARCHITECTURAL CONCRETE COPING, FRIEZE, BASE AND PLAQUE
9. STAINED WOOD CLADDING
10. ALUMINUM AND GLASS DOORS
11. ALUMINUM AND GLASS SEGMENTED OVERHEAD DOOR

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2470 Mariner Square Loop
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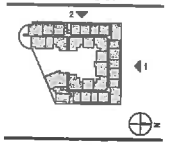
KEY PLAN



SARANAP VILLAGE

PARCEL A

SARANAP VILLAGE
WALNUT CREEK, CA

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No	Date	Issue
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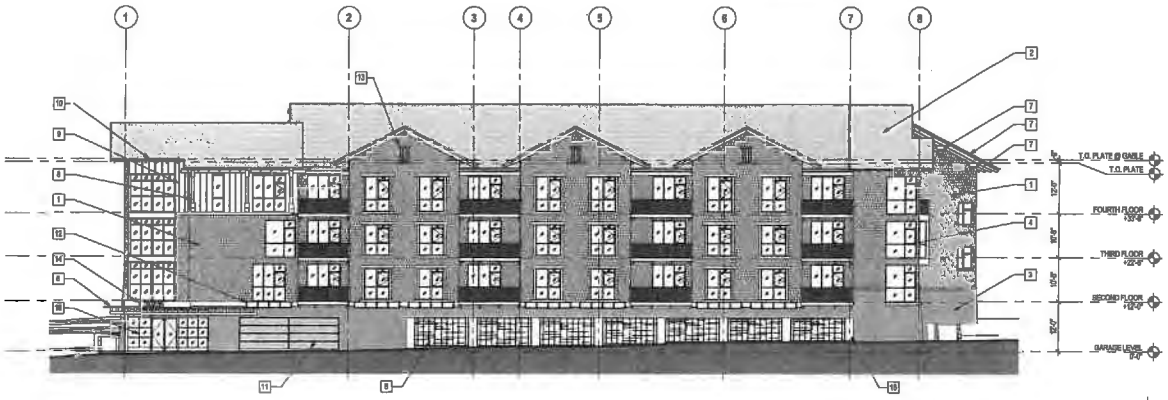
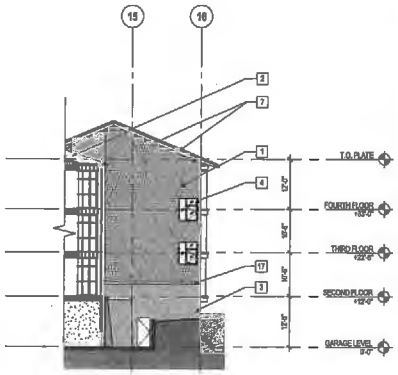
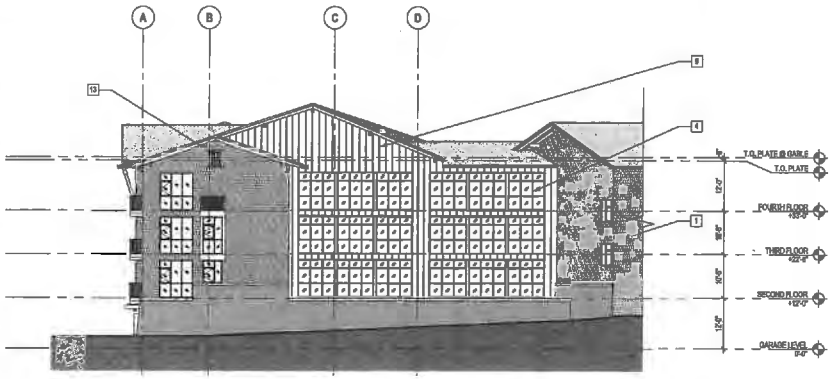
Drawing No.: A3.1.2



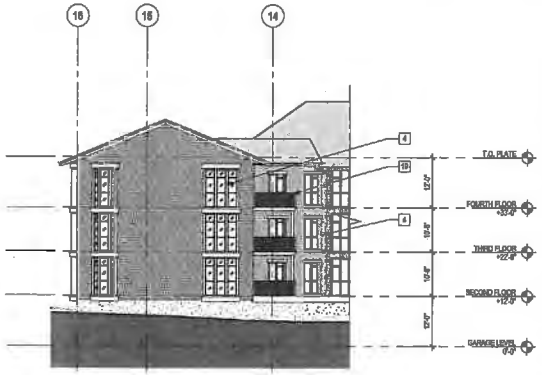
NORTHWEST ELEVATION | 1



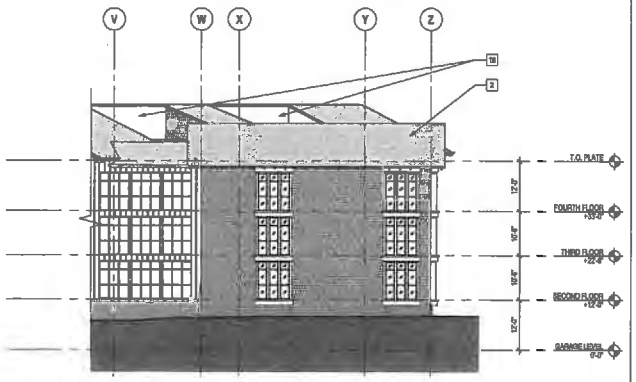
WEST ELEVATION | 3



SOUTHWEST ELEVATION | 2



EAST ELEVATION | 5



SOUTH ELEVATION | 4

SHEET NOTES

1. STAINED WESTERN RED CEDAR SHINGLES
2. ARCHITECTURAL COMPOSITION SHINGLE ROOF
3. STONE VENEER AT BATTERED BASE
4. ALUMINUM AND GLASS WINDOW SYSTEM
5. PAINTED DECORATIVE METAL GRILLE AT GARAGE OPENINGS
6. STAINED WOOD TRELLIS
7. STAINED WOOD OUTRIGGERS, RAFTER TAILS, FASCIA BOARDS, AND RAKE BOARDS
8. PAINTED WOOD KICKERS WITH PAINTED METAL BRACKETS
9. PAINTED BOARD AND BATTEN SIDING
10. PAINTED HALF-ROUND METAL GUTTER
11. SIDING METAL GARAGE DOOR WITH GLASS LITES
12. PAINTED WOOD PLANTER BOX
13. PAINTED WOOD VENT
14. PR-MOUNTED ILLUMINATED ADDRESS NUMERALS
15. ALUMINUM AND GLASS DOORS
16. CAST-IN-PLACE CONCRETE PIERS
17. STONE WATERTABLE
18. MECHANICAL WELL
19. PAINTED WOOD RAIL

MBH
3478 Buskirk Square Loop
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Fax 510 865 1833

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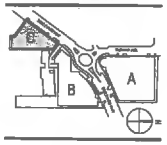
KEY PLAN



SARANAP VILLAGE

PARCEL C

SARANAP VILLAGE
WALNUT CREEK, CA

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No.	Date	Issue
	17 JAN 14	SCHEMATIC DESIGN

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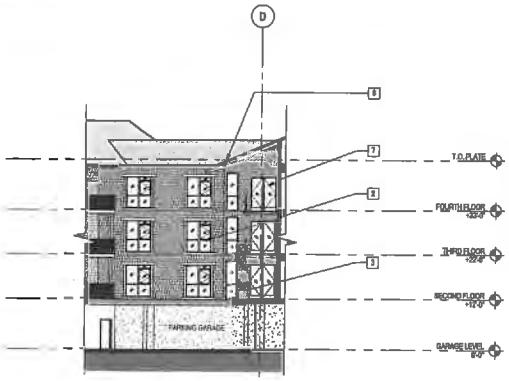
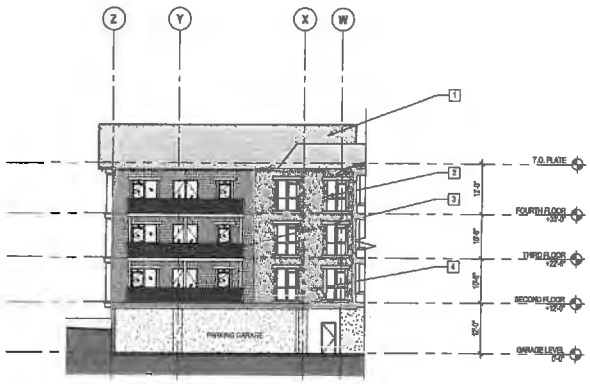
Drawing Title: EXTERIOR ELEVATIONS

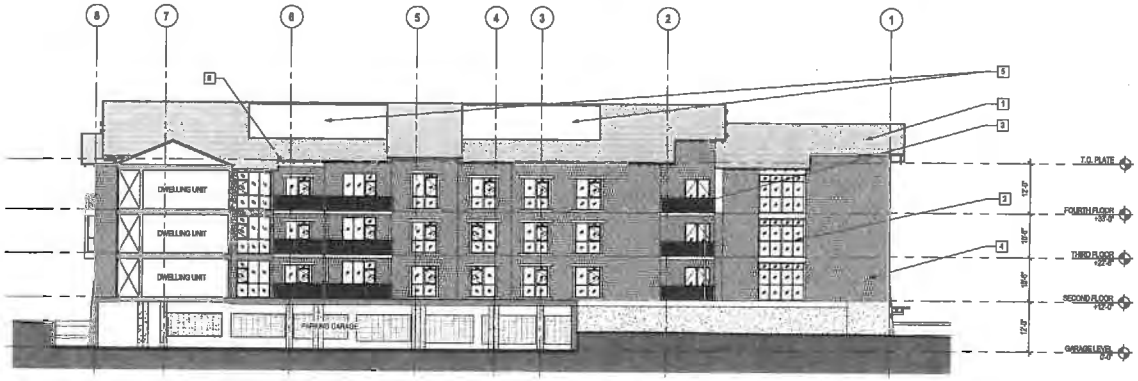
Drawing No.: A3.1.1



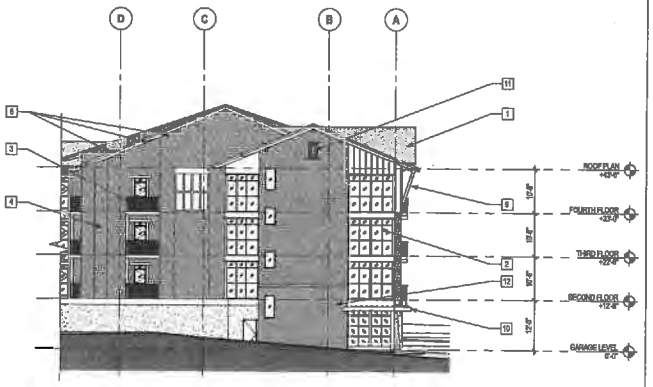
NORTHEAST COURTYARD ELEVATION | 2



NORTH COURTYARD ELEVATION | 1



SOUTHEAST COURTYARD ELEVATION | 3



NORTHEAST ELEVATION | 4

NOTES

1. ARCHITECTURAL COMPOSITION SHINGLE ROOF
2. ALUMINUM AND GLASS WINDOW SYSTEM
3. PAINTED WOOD RAIL
4. STAINED WESTERN RED CEDAR SHINGLES
5. MECHANICAL WELL
6. STAINED WOOD OUTRIGGERS, RAFTER TAILS, FASCIA BOARDS, AND RAKE BOARDS
7. ALUMINUM AND GLASS DOORS
8. PAINTED HALF-ROUND METAL GUTTER
9. PAINTED WOOD KICKERS WITH PAINTED METAL BRACKETS
10. STAINED WOOD TRELLIS
11. PAINTED WOOD VENT
12. STONE VENEER AT BATTERED BASE

MBH
2000 Harbor Square Loop
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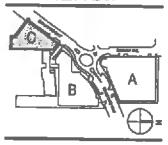
KEY PLAN



SARANAP VILLAGE

PARCEL C

SARANAP VILLAGE
WALNUT CREEK, CA

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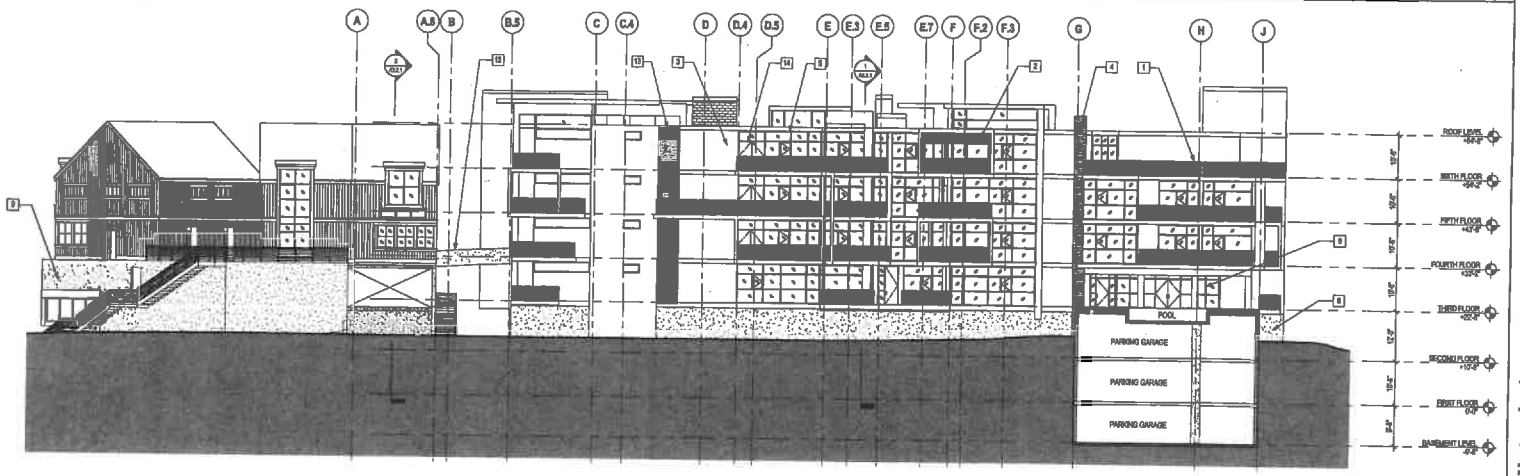
No.	Date	Item
	17 JAN 14	SCHEMATIC DESIGN

Project: 13005
Scale: 3/32" = 1'-0"
Drawing Title: EXTERIOR ELEVATIONS

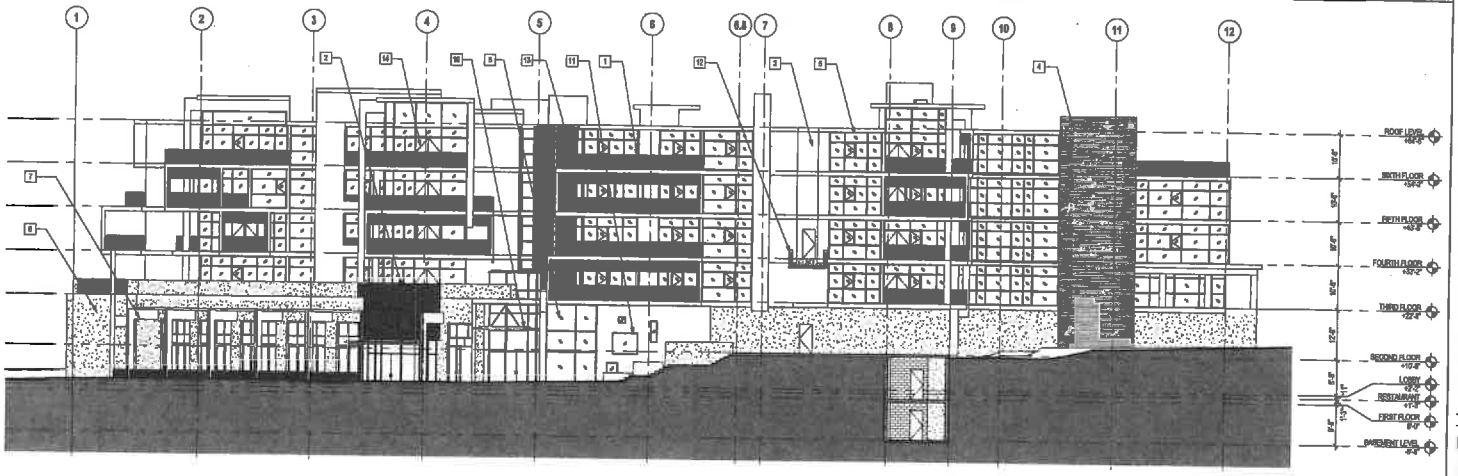
A3.1.2

NOTES

1. METAL AND STAINED WOOD RAIL
2. METAL AND STAINED WOOD RAIL AND SCRIM ASSEMBLY
3. RESYSTA RAIN SCREEN PANELS
4. FLAT LOCK SEAM COPPER CLADDING
5. ALUMINUM AND GLASS WINDOW SYSTEM
6. ALUMINUM AND GLASS STOREFRONT SYSTEM
7. PAINTED METAL FRAMES
8. PAINTED CEMENT PLASTER, STEEL TROWEL FINISH
9. BOARD FORMED CONCRETE
10. PAINTED METAL AND GLASS CANOPY
11. RECESSED ARTISAN GLASS WINDOW IN ALUMINUM FRAME
12. CONCRETE BRIDGE WITH CEMENTITIOUS OVERLAY
13. OPERABLE PAINTED METAL SCRIM
14. ALUMINUM AND GLASS DOORS



SOUTH ELEVATION | 1



WEST ELEVATION | 2

MBH
2471 Rainier Square Loop
Alameda, CA 94501
Tel 510 865 8000
Fax 510 865 8110

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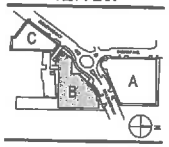
KEY PLAN



SARANAP VILLAGE

PARCEL B

SARANAP VILLAGE
WALNUT CREEK, CA

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No.	Date	Item
	17 JAN 14	SCHEMATIC DESIGN

Project: 46806

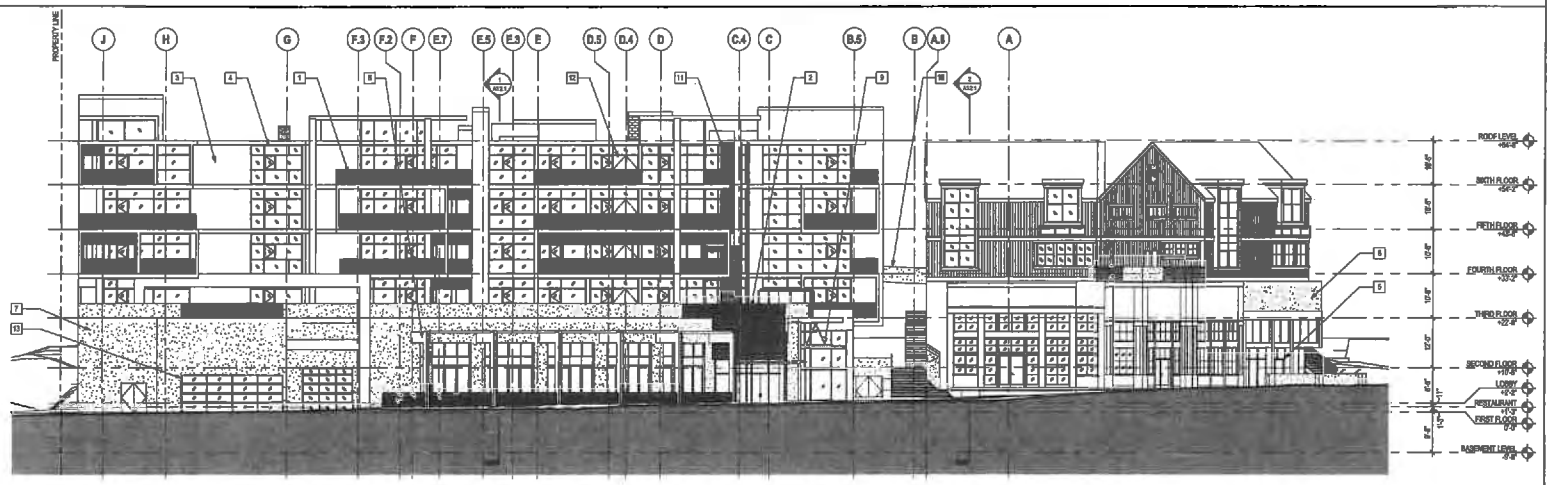
Scale: 3/32" = 1'-0"

Drawing Title: EXTERIOR ELEVATIONS

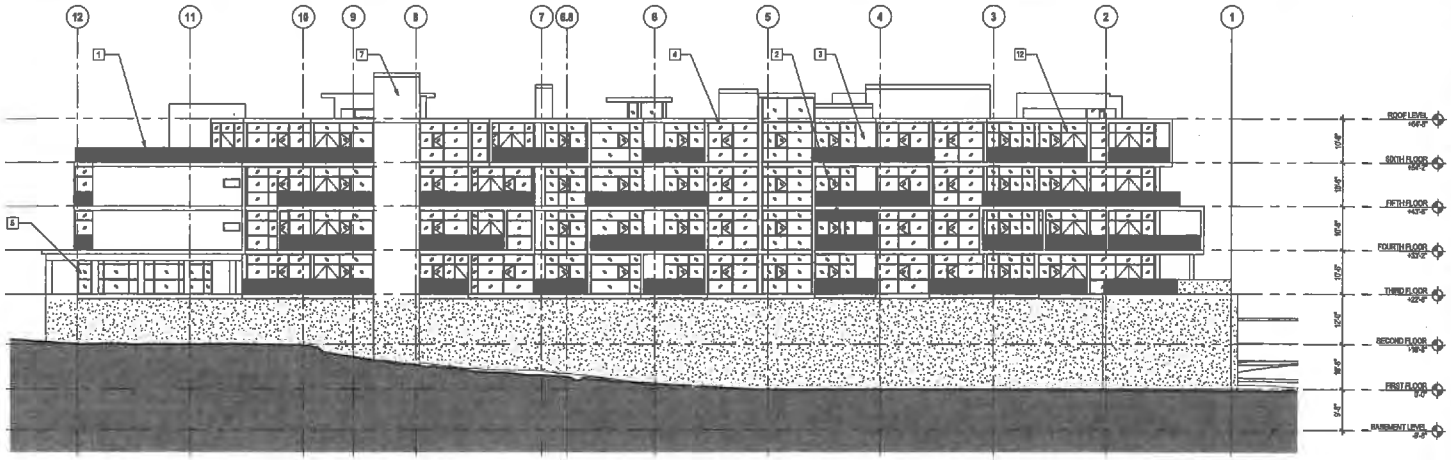
Drawing No.: A3.1.1

NOTES

1. METAL AND STAINED WOOD RAIL
2. METAL AND STAINED WOOD RAIL AND SCRIM ASSEMBLY
3. RESYSTA RAIN SCREEN PANELS
4. ALUMINUM AND GLASS WINDOW SYSTEM
5. ALUMINUM AND GLASS STOREFRONT SYSTEM
6. PAINTED METAL FRAMES
7. PAINTED CEMENT PLASTER, STEEL TROWEL FINISH
8. BOARD FORMED CONCRETE
9. PAINTED METAL AND GLASS CANOPY
10. CONCRETE BRIDGE WITH CEMENTITIOUS OVERLAY
11. OPERABLE PAINTED METAL SCRIM
12. ALUMINUM AND GLASS DOORS
13. ALUMINUM AND GLASS SEGMENTED OVERHEAD DOOR



NORTH ELEVATION | 1

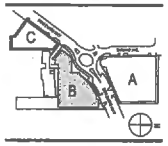


EAST ELEVATION | 2

MBH
2071 Bancroft Square Loop
Clovis, CA 93611
Tel 559 686 8003
Fax 559 686 1216

NOT FOR CONSTRUCTION

KEY PLAN



SARANAP VILLAGE

PARCEL B

SARANAP VILLAGE
WALNUT CREEK, CA

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No	Date	Issue
	17 JAN 14	SCHEMATIC DESIGN

Project 48606

Scale 3/32" = 1'-0"

Drawing Title EXTERIOR ELEVATIONS

Drawing No A3.1.2

STATE OF CALIFORNIA—CALIFORNIA STATE TRANSPORTATION AGENCY EDMUND G. BROWN Jr., Governor

DEPARTMENT OF TRANSPORTATION
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PHONE (510) 286-6053
FAX (510) 286-5559
TTY 771

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April 9, 2014

CCVAR020
SCH# 2014032060

Mr. William Nelson
Contra Costa County
30 Muir Road
Martinez, CA 94553

Dear Mr. Nelson:

Saranap Village Mixed Use Project – Notice of Preparation

Thank you for including the California Department of Transportation (Caltrans) in the environmental review process for the project referenced above. We have reviewed the environmental document and have the following comments to offer.

Lead Agency
As the lead agency, Contra Costa County (County) 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.

Traffic Impact Study (TIS)
One of Caltrans' ongoing responsibilities is to collaborate with local agencies to avoid, eliminate, or reduce to insignificance potential adverse impacts by local development on State highways. 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 a starting point for collaboration between the lead agency and Caltrans in determining when a TIS is needed. The appropriate level-of-service (LOS) is determined by the particulars of a project, the prevailing highway conditions, and the forecasted traffic. The environmental document should include an analysis of the impacts of the proposed project on all State highway facilities in the project's area.

Please ensure your analysis includes the Interstate (I-) 680 and State Route (24) corridors, I-680 Olympic Boulevard north bound and south bound off ramps, SR 24 east bound off ramp and west bound on ramp, and the interchange of SR 24 and Pleasant Hill Road.

The TIS Guide is available at the following website address:
http://dot.ca.gov/hq/tpp/offices/ocp/igr_ceqa_files/tisguide.pdf.

The TIS should include:

1. Vicinity map, regional location map, and a site plan clearly showing project access in relation to nearby State roadways. Ingress and egress for all project components should be clearly identified. The State right-of-way (ROW) should be clearly identified. The maps should also include project driveways, local roads and intersections, parking, and transit facilities.

2. Project-related trip generation, distribution, and assignment. The assumptions and methodologies used to develop this information should be detailed in the study, and should be supported with appropriate documentation.

3. Average Daily Traffic, AM and PM peak hour volumes and LOS on all roadways where potentially significant impacts may occur, including crossroads and controlled intersections for existing, existing plus project, cumulative and cumulative plus project scenarios. Calculation of cumulative traffic volumes should consider all traffic-generating developments, both existing and future, that would affect study area roadways and intersections. The analysis should clearly identify the project's contribution to area traffic and any degradation to existing and cumulative LOS. Caltrans' LOS threshold, which is the transition between LOS C and D, and is explained in detail in the TIS Guide, should be applied to all State facilities.

4. Schematic illustration of traffic conditions including the project site and study area roadways, trip distribution percentages and volumes as well as intersection geometrics (i.e., lane configurations) for the scenarios described above.

5. The project site building potential as identified in the General Plan. The project's consistency with both the Circulation Element of the General Plan and the Congestion Management Agency's Congestion Management Plan should be evaluated.

6. Identification of mitigation for any roadway mainline section or intersection with insufficient capacity to maintain an acceptable LOS with the addition of project-related and/or cumulative traffic. As noted above, the project's fair share contribution, financing, scheduling, implementation responsibilities and lead agency monitoring should also be fully discussed for all proposed mitigation measures.

We look forward to reviewing the TIS, including Technical Appendices, and environmental document for this project. Please send two copies to the address at the top of this letterhead, marked ATTN: Keith Wayne, Mail Stop #10D.

Traffic Impact Fees

To ensure the State Highway System (SHS) improvements necessary from the increase demand be funded, we recommend the County work with the TRANSPAC committee, the Contra Costa Transportation Authority (CCTA) and Caltrans to help mitigate regional impacts resulting from the proposed project. In addition to and mitigation projects or programs, please identify traffic impact fees to be used for plan mitigation. Development plans should require traffic impact fees based on projected traffic and / or based on associated cost estimates for bicycle, pedestrian, or public transportation facilities necessitated by development. Scheduling and costs associated with planned improvements on the State ROW should be listed, in addition to identifying viable funding sources correlated to the pace of improvements for roadway improvements, if any.

Vehicle Trip Reduction
Caltrans encourages you 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 vehicle miles traveled 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 SHS. These policies could include lower parking ratios, car-sharing programs, bicycle parking and showers for employees, and providing transit passes to residents and employees, 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.

Encroachment Permit
Please be advised that any work or traffic control that encroaches onto the State ROW requires an encroachment permit that is issued by Caltrans. To apply, a completed encroachment permit application, environmental documentation, and five (5) sets of plans clearly indicating State ROW must be submitted to the address below. David Salladay, District Office Chief, Office of Permits, California Department of Transportation, District 4, P.O. Box 23660, Oakland, CA 94623-0660. Traffic-related mitigation measures should be incorporated into the construction plans prior to the encroachment permit process. See this website for more information:
http://www.dot.ca.gov/hq/traffops/developserv/permits.

Should you have any questions regarding this letter, please contact Keith Wayne of my staff by telephone at (510) 286-5737, or by email at Keith_Wayne@dot.ca.gov.

Sincerely,

ERIK ALM, AICP
District Branch Chief
Local Development – Intergovernmental Review

c: Scott Morgan, State Clearinghouse

City Council

Don Tatzin, Mayor
Brandt Andersson, Vice Mayor
Mike Anderson, Council Member
Mark Mitchell, Council Member
Traci Reilly, Council Member

April 14, 2014

Department of Conservation and Development
Community Development Division
30 Muir Road
Martinez, CA 94553
Attn: William Nelson

VIA EMAIL

RE: **Saranap Village Mixed-Use Project**

Dear Mr. Nelson,

Thank you for providing the City of Lafayette with an opportunity to respond to the Notice of Preparation for an Environmental Impact Report for the proposed Saranap Village Mixed-Use Project. The City Council has reviewed the provided documents and has identified the following critical issues to be analyzed and addressed in the Draft Environmental Impact Report:

Aesthetics

1. Analyze the off-site visibility from the City's Viewing Evaluation Sites.
2. Analyze the off-site visibility from State Route 24, a designated scenic highway.
3. Install story poles to demonstrate the height of the proposed buildings. Please provide the City with a minimum of 72-hour notice, prior to erecting the story poles.

Population & Housing

4. Assess the potential displacement of existing development, including residents and employees.

Transportation / Traffic

5. Include the following locations as study intersections:
    - Saranap Avenue and El Curtola Boulevard
    - Old Tunnel Road and Leland Drive
    - Old Tunnel Road and Linda Vista Lane
    - Old Tunnel Road and Windsor Drive
    - Old Tunnel Road, State Route 24 Eastbound Off-Ramp, and Pleasant Hill Road
    - Pleasant Hill Road, Mount Diablo Boulevard, and State Route 24 Eastbound On-Ramp
    - Pleasant Hill Road, Mount Diablo Boulevard, and State Route 24 Westbound On-Ramp
    - State Route 24 Westbound On-Ramp (located outside of Lafayette)
    - Pleasant Hill Road and Condit Road
    - Pleasant Hill Road and Olympic Boulevard
    - Sunset loop and Meek Place

    - Meek Place and Leland Drive
    - Camino Diablo and El Curtola Boulevard
    - Camino Diablo and Stanley Boulevard
    - Stanley Boulevard, Deer Hill Road, and Pleasant Hill Road
6. Evaluate the potential for impacts and possible mitigations for project-generated traffic and cut-through traffic associated with the proposed project on local residential and arterial streets. The analysis should include projected increased volumes, potential for increase in prevailing speed profile, impacts on driveways and side streets, impacts on pedestrian and bicycle safety due to a lack of existing sidewalks and bikeways in the neighborhood.
7. Incorporate appropriate considerations for a bike route, based on the traffic lane re-configurations on Boulevard Way. The City of Lafayette's Bikeways Master Plan includes a planned bike route connecting to Boulevard Way.
8. Analyze the project for consistency with the recommendations of the Corridor Study of Olympic Boulevard / Reliez Station Road, between east of Pleasant Hill Road and Glenside Drive North. The primary focus of said study is traffic control operations and the intersection of Pleasant Hill Road and Olympic Boulevard and impacts on side street access and safety.
9. Consider an evaluation of the on-going Lafayette-Moraga Trail to Ironhorse Trail Connector Study. To the extent feasible, the EIR analysis should be consistent with the recommendations of this study.
10. Identify location, quantity and type of bicycle parking facility and assess its ability to meet the future demands of residents, employees, and visitors.
11. Review the existing and proposed on-street parking capacity and assess its ability to meet the demands of the proposed project and existing/proposed development within the vicinity.
12. Evaluate the actual and affected width of sidewalks and walkways. Determine if there are existing sidewalk deficiencies.
13. Analyze the upstream and downstream impacts of narrowing Boulevard Way.
14. Analyze whether alternative forms of transportation may be provided, such as the free bus service to downtown Walnut Creek. Clearly identify whether or not the existing eastbound County Connection bus service will be maintained.
15. Evaluate project impacts on access and parking capacity at the Lafayette and Walnut Creek BART Stations.
16. Evaluate project impacts on parking facilities within the vicinity of the project, such as the Meher School (White Pony).
17. Evaluate project impacts on the existing or planned level of transit service.
18. Review freight loading and service impacts during construction activities and post-project completion.

Recreation

19. Assess the potential impacts on parkland in the surrounding communities, due to a lack of existing parks within ½-mile of the project site.

Public Services

20. Study the potential impacts on emergency services, such as police, fire, or medical response times, specifically in light of the recent closure of one of the three Lafayette fire stations by the Contra Costa County Fire Protection District.

Cumulative Impacts

21. Assess all potential impacts in light of existing pending development within the vicinity, including, but not limited to, the following projects:
    - Marquis Townhomes, 23 units located at 1 - 23 Shreve Lane (Formerly 3201 Mt. Diablo Boulevard) – Under Construction
    - O'Brien Homes (Formerly the Terraces of Lafayette), 45 single-family residential units maximum, located at corner of Deer Hill Road and Pleasant Hill Road - Pending Application
    - Sufism Reoriented Sanctuary, located in unincorporated Contra Costa County – Approved Project
22. Review the proposed phasing and consider the consolidation of phases to limit the potential construction impacts.

Alternative Project

23. Study an alternative project that: (a) complies with the existing height and density requirements that are outlined in the existing General Plan and Zoning Ordinance, (b) maintains or enhances the existing level of service for all potentially impacted public roads, (c) retains or enhances bicycle circulation and parking, (d) provides a minimum of 20-percent open space, and (e) incorporates sustainability elements, such as obtaining a LEED certification for the development.

Please ensure that all future public notifications regarding this application are consistent with the Contra Costa Transportation Authority's Lamorinda Action Plan's Review Process for General Plan Amendments and projects.

Additionally, the City of Lafayette also requests to receive one hard copy and one digital copy of all plans, supplemental reports, and environmental documents that are submitted or prepared as part of this or similar applications, when they become available.

Thank you, once again, for providing the City with an opportunity to offer our comments on the Saranap Village Mixed-use Project. If you have any questions about the issues outlined in this letter, please contact Associate Planner Michael P. Cass at (925) 299-3219 or MCass@lovelafayette.org or Transportation Planner Leah Greenblat at (925) 299-3229 or LGreenblat@lovelafayette.org.

Sincerely,

Don Tatzin, Mayor
City of Lafayette

Matthew Rodriquez
Secretary for
Environmental Protection

Department of Toxic Substances Control

Deborah O. Raphael, Director
700 Heinz Avenue
Berkeley, California 94710-2721

Edmund G. Brown Jr.
Governor

April 8, 2014

RECEIVED
CONTRA COSTA COUNTY
APR 10 2014
Dept of Conservation & Development

Mr. William Nelson
Department of Conservation and Development
Community Development Division
30 Muir Road
Martinez, California 94553

Dear Mr. Nelson:

Thank you for the opportunity to comment on the Notice of Preparation (NOP) (County File Numbers GP13-0003, RZ13-3224, SD13-9359, and DP13-3035), for the Saranap Village Mixed-Use Project draft Environmental Impact Report (EIR), unincorporated Saranap area of Contra Costa County, California. As you may be aware, the California Department of Toxic Substances Control (DTSC) oversees the cleanup of sites where hazardous substances have been released pursuant to the California Health and Safety Code, Division 20, Chapter 6.8.

The Notice of Preparation indicates that there is a proposed change in land use. Please be aware that properties that were once agricultural, commercial, or industrial could potentially be contaminated with hazardous substances from past activities. DTSC recommends that you include a more detailed description of the past uses of the properties in the EIR to determine whether hazardous materials may have been released. DTSC recommends a Phase I assessment to be conducted on the site area. Based on the historical assessment, we strongly recommend that sampling be conducted to determine whether hazardous substances are present at levels which would need to be addressed as part of any development. If hazardous substances have been released, they will need to be addressed as part of this project. The remediation activities would then need to be addressed in the California Environmental Quality Act (CEQA) compliance document.

For example, if the remediation activities include the need for soil excavation, the CEQA document should include: (1) an assessment of air impacts and health impacts associated with the excavation activities; (2) identification of any applicable local standards which may be exceeded by the excavation activities, including dust levels and noise; (3) transportation impacts from the removal or remedial activities; and (4) risk of upset should be there an accident at the Site.

Printed on Recycled Paper

Please contact Katharine Hilf at (510) 540-3817, if you have any questions.

Sincerely,

Katharine Hilf

Katharine Hilf, Environmental Scientist
Brownfields and Environmental Restoration Program
Berkeley Office

RECEIVED
CONTRA COSTA COUNTY
APR 15 2014
Dept of Conservation & Development

April 14, 2014

Department of Conservation and Development
Community Development Division
30 Muir Road
Martinez, CA 94553
Attn: William Nelson

RE: Saranap Village Mixed-Use Project

Dear Mr. Nelson

As a Saranap resident this project is very troubling to my family and our neighbors. The County General Plan dictates that buildings should not exceed 35 feet in Saranap and yet this project is proposing heights of up to 80 feet. The high density will impact surrounding roads and set a terrible precedent for small, residential communities like ours. This type of development is only suited for transit hubs.

We are already suffering from the impacts of the large Suffism Reoriented development and adding 235 multi-family units and 30,000 square feet of street-level retail and restaurant use and 14,200 square feet for a community-oriented fitness club is too much.

Lastly, we want to point out that five of the six parcels for this proposed project are owned by Suffism Reoriented which means they have a vested interest in seeing this project go forward. This appears to be a conflict of interest and County staff and officials should consider all correspondence from Suffism Reoriented members as prejudicial or lump them together as a single comment from one group who stands to gain from high-density development of their property.

Please keep us apprised of all meetings and correspondence that relate to this proposed development.

Sincerely,

Jennifer Russell

Jennifer Russell
178 Kendall Rd.
Walnut Creek, CA 94595

APPENDIX B

Air Quality Technical Reports

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Hall Saranap
Air Quality Technical Report
Boulevard Way & Saranap Avenue
Walnut Creek, California

Prepared for:
Hall Equities Group
Walnut Creek, California

Prepared by:
ENVIRON International Corporation
San Francisco, California

Date:
April 17, 2014

Project Number:
03-34227A

ENVIRON

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Acronyms and Abbreviations

ADT	Average Daily Trip
ASF	Age Sensitivity Factor
BAAQMD	Bay Area Air Quality Management District
CalEEMod®	California Emissions Estimator Model
Cal/EPA	California Environmental Protection Agency
Caltrans	California Department of Transportation
CAP	Criteria Air Pollutant
CEHTP	California Environmental Health Tracking Program
CEQA	California Environmental Quality Act
CO	Carbon Monoxide
CPF	Cancer Potency Factor
CRAF	Cancer Risk Adjustment Factor
cREL	Chronic Reference Exposure Level
DPF	Diesel Particulate Filter
DPM	Diesel Particulate Matter
FIRE	Factor Information Retrieval Software
EMFAC	California Air Resource's Board Emissions Factor Model
HI	Hazard Index
HQ	Hazard Quotient
HPMS	Highway Performance Monitoring System
HRA	Health Risk Analysis
IARC	International Agency for Research on Cancer
ISC3	Industrial Source Complex Model
MEISR	Maximally Exposed Individual Sensitive Receptor
NED	National Elevation Dataset
NO_x	Nitrogen Oxides
OEHHA	Office of Environmental Health Hazard Assessment
$PM_{2.5}$	Fine Particulate Matter Less than 2.5 Micrometers in Aerodynamic Diameter
PM_{10}	Respirable Particulate Matter Less than 10 Micrometers in Aerodynamic Diameter
ROG	Reactive Organic Gases
TAC	Toxic Air Contaminant

TIA	Traffic Impact Analysis
TSD	Technical Support Document
USEPA	United States Environmental Protection Agency
USGS	United States Geological Survey
VDECS	Verified Diesel Emissions Control Strategies
WHO	World Health Organization
χ/Q	"Chi Over Q", Also Known As A Dispersion Factor

Units

g	Gram	m^3	Cubic meters
hp	Horsepower	mg	Milligram
hr	Hour	mg/kg-day	Milligrams per kilogram per day
kg	Kilogram	µg	Microgram
kW	Kilowatt	$\mu g/m^3$	Micrograms per cubic meter
L	Liter	s	Second
lb	Pound	TPY	Tons per year
m	Meter	yr	Year

1 Introduction

At the request of the Hall Equities Group (Hall), ENVIRON International Corporation (ENVIRON) has prepared a technical report evaluating air quality impacts and health risks associated with the proposed construction of the mixed-use Saranap Village development located at Boulevard Way and Saranap Avenue in Walnut Creek, California ("Project"). ENVIRON followed recent California Environmental Quality Act (CEQA) Guidelines released by the Bay Area Air Quality Management District (BAAQMD or District) in May 2012 (BAAQMD 2012a). The May 2012 CEQA Air Quality Guidelines do not prescribe specific significance thresholds. In this assessment as a conservative measure while litigation is pending, ENVIRON has compared the results against the prior thresholds presented in the May 2011 CEQA Guidelines; referred to herein as the 2011 CEQA significance thresholds.[1] The analyses described in this report were performed to support the Project's CEQA documentation.

1.1 Project Understanding

The proposed Project would be located around the intersection of Boulevard Way and Saranap Avenue, and would extend along the north and south sides of Boulevard Way, and along the east side of Saranap Avenue. It would lie approximately one quarter of a mile west of the Walnut Creek city limits, and just south of Highway 24. Surrounding existing uses generally include a mixture of multifamily, commercial, retail, services, offices, auto repair, mini-mart, utility operations/storage yard, self-storage uses, funeral home, and other commercial uses.

The project site is comprised of 4 areas, clustered around the intersection of Boulevard Way and Saranap Avenue, totaling approximately 4.6 acres, and includes the public rights of way along the project frontages. Of that amount, approximately 3.5 acres is occupied by Sites A, B, B1, and C. Off-site improvements would extend east along Boulevard Way to its intersection with Flora Avenue. The total area that would be disturbed by mass grading or trenching, including the offsite improvement areas, is 5.28 acres. **Figure 1** shows the Project Boundary and area of proposed street improvements.

The proposed Project will demolish the existing buildings and develop mixed-use buildings and associated parking structures and lots. The Project will predominantly be used for residential and retail land uses, but also includes a restaurant and coffee shop as well as a pool for building occupants. **Table 1** shows the Proposed Land Uses by Parcel for the Project.

1.2 Objective and Methodology

The BAAQMD 2011 CEQA Guidelines contain recommended thresholds for criteria air pollutants (CAP) emissions, and thresholds for risks and hazards associated with toxic air contaminant (TAC) emissions from an individual project undergoing environmental review pursuant to CEQA. In addition to the evaluation of an individual project, the CEQA Guidelines recommend a cumulative evaluation of a project in addition to other air emissions sources within a "zone of influence" surrounding the project. The BAAQMD CEQA Guidelines recommends

[1] The Court of Appeal's decision was appealed to the California Supreme Court, which granted limited review, and the matter is currently pending there.

analyses on carbon monoxide (CO) localized impact, and odor impact from the Project. Because the proposed Project is not anticipated to be a source of significant odors, no analysis of odor impact has been conducted.

The following areas are included in this technical report: construction CAPs, operational CAPs, construction health risks, operational health risks, cumulative impacts to off-site and on-site sensitive receptors (including potential impacts from other off-site stationary sources and mobile sources), and CO localized impacts.

This technical report evaluates regional emissions of criteria pollutants and precursors from construction and operation of the Project and evaluates these emissions against the BAAQMD's May 2011 significance thresholds for emissions.

This Health Risk Analysis (HRA) evaluates the estimated cancer risk, noncancer chronic hazard index (HI), and $PM_{2.5}$ (particulate matter less than 2.5 microns in aerodynamic diameter) concentrations associated with construction and operation of the Project. The cumulative analysis estimates excess lifetime cancer risks, noncancer HIs, and $PM_{2.5}$ concentrations that are attributable to other mobile and stationary sources within the "zone of influence" in addition to contribution from the Project.

This screening-level HRA evaluated potential sensitive receptor locations where "an actual person may be located for a given period of time and may include:

- Residential dwellings, including apartments, houses, condominiums;
- Schools, colleges, and universities;
- Daycares;
- Hospitals; and
- Senior-care facilities" (BAAQMD 2012a).

To meet these objectives, this HRA was conducted consistent with the following guidance:

- Air Toxics Hot Spots Program Risk Assessment Guidelines (California Environmental Protection Agency [Cal/EPA] 2003),
- May 2011 BAAQMD CEQA Guidelines (BAAQMD 2011a),
- BAAQMD Recommended Methods for Screening and Modeling Local Risks and Hazards (BAAQMD 2012a),

The results of the health risk analyses are compared with the BAAQMD 2011 CEQA significance thresholds for single source (i.e. Project-specific) and cumulative impacts[2] as follows:

---

[2] This report addresses project and cumulative impacts using the language of the BAAQMD guidance and thresholds. BAAQMD's use of these terms encompasses traditional CEQA impacts (impacts of the Project on the environment,

Single Source:

- An excess lifetime cancer risk level of more than 10 in one million;
- A noncancer chronic HI greater than 1.0; and
- An incremental increase in the annual average $PM_{2.5}$ of greater than 0.3 micrograms per cubic meter ($\mu g/m^3$).

Cumulative Impacts:

- An excess lifetime cancer risk level of more than 100 in one million;
- A chronic noncancer HI greater than 10.0; and
- An incremental increase in the annual average $PM_{2.5}$ of greater than 0.8 $\mu g/m^3$.

1.3 Report Organization

This technical report is divided into nine sections as follows:

Section 1.0 – Introduction: describes the purpose and scope of this technical report, the objectives and methodology used in this technical report and outlines the report organization.

Section 2.0 – Emission Estimates: describes the methods used to estimate the emissions of CAPs and TACs from the Project;

Section 3.0 – Estimated Air Concentrations: discusses the air dispersion modeling, the selection of the dispersion models, the data used in the dispersion models (e.g., terrain, meteorology, source characterization), and the screening-level identification of residential and sensitive locations evaluated in this technical report.

Section 4.0 – Risk Characterization Methods: provides an overview of the methodology for conducting the HRA.

Section 5.0 – Proposed Mitigation Measure: discusses a mitigation measure requiring the Project to achieve a Performance Standard, which can be achieved with use of CARB-certified Level 3 Verified Diesel Emissions Control Strategies (VDECS) filters on certain equipment, and notes that alternative measures, including Tier 4 protections on a different mix of equipment, alternative fuels, MERV filters, and construction phasing might also achieve the Performance Standard.

Section 6.0 – Results for Project Analysis: presents the average daily and maximum annual CAP emissions, estimated excess lifetime cancer risks, chronic noncancer HIs, and $PM_{2.5}$ concentrations for the Project, and compares them to BAAQMD significance thresholds.

---

the contribution of Project impacts to cumulative impacts of the Project and past, present and future projects combined), as well as impacts of the existing and projected future environments on the Project.

Section 7.0 – Results for Cumulative Analysis: summarizes the approach used in the screening cumulative analysis and presents the estimated cumulative excess lifetime cancer risks, chronic noncancer HIs, and $PM_{2.5}$ concentrations for the Project and compares them to BAAQMD 2011 CEQA significance thresholds.

Section 8.0 - Localized CO Impacts from Motor Vehicle Traffic: summarizes the approach used in the CO screening analysis, and the corresponding conclusions.

Section 9.0 – Uncertainties: identifies and describes the uncertainties associated with the risk estimates and discusses how these uncertainties may affect the risk assessment conclusions.

Section 10.0 – References: includes a listing of all references cited in this report.

2 Emission Estimates

As a conservative measure, this analysis evaluates Project impacts only, and does not subtract out existing uses. Information regarding emissions of existing uses was not readily available, thus this analysis does not net out existing emissions from Project emissions. Accordingly, this analysis takes a conservative approach of assuming that baseline emissions at the Project site are zero. The methodology used to calculate emissions from the proposed Project is presented in **Table 2**, and summarized in each of the following sections.

2.1 Calculation Methodologies for Construction Emissions

Emissions from on-site construction and off-site street improvement-related equipment exhaust were estimated using the equipment inventory, equipment specifications and construction phase scheduling, provided and approved by Hall Equities Group. Consistent with the approach for estimating operational CAP emissions discussed below, the average daily reactive organic gas (ROG) and nitrogen oxide (NOx) emissions from construction activities[3] were estimated using California Emissions Estimator Model (CalEEMod®), which has been accepted for use in CEQA analyses by BAAQMD. The PM_{10} and $PM_{2.5}$ exhaust emissions were calculated by using an ENVIRON-developed database that allows analysis of each piece of equipment separately, based on CalEEMod emission factors. Emissions from on-site construction-related equipment exhaust (annual diesel particulate matter (DPM) and $PM_{2.5}$ emissions) were estimated using information on equipment inventory, equipment specifications and construction phase scheduling, generated using CalEEMod®, and refined and approved by Hall Equities Group to reflect the Project's projected construction activities. Emission estimates for street improvements were calculated as an average concentration over the time improvements will be occurring (3 months). **Table 3** shows the refined construction schedule based on data provided by the Hall Equities Group. For all pollutants, construction equipment emissions were calculated as the product of the equipment emission factor, load factor, horsepower, and period of usage. Furthermore, ENVIRON assumes the Project will restrict idling to 2 minutes for all diesel powered construction equipment.

Construction emission calculation methodologies were consistent with the BAAQMD CEQA Guidelines (BAAQMD 2012a). **Table 4a** shows emissions for the uncontrolled scenario, which are calculated using Tier 3 off-road emission standards on all construction equipment.[4] **Table 4b** shows emissions for the controlled scenario. The controlled scenario assumes that Tier 4 controls, in the form of Level 3 diesel particulate filters (DPF), will be installed on select equipment. For the purposes of the controlled scenario analysis, which is to show that obtaining cancer risks under the Performance Standard (BAAQMD CEQA thresholds) are attainable, ENVIRON assumes the skiploaders, loaders, forklift, and air compressor will have Level 3 DPFs installed for both the CalEEMod® and database emission calculations.

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[3] CalEEMod® criteria pollutant construction emissions include on-site and off-site vehicle activity as well as non-mobile emissions such as those from architectural coatings.

[4] CARB. Tier 3 Off-Road Emission Standards. Available online: http://www.arb.ca.gov/msprog/ordiesel/documents/Off-Road_Diesel_Stds.xls. Accessed: March 2014.

2.2 Calculation Methodologies for Operational Emissions

Three types of sources will generate CAP emissions at the proposed Project, including area sources, natural gas-fired emergency generators, and Project-generated traffic. The emissions calculation methodologies of these sources are discussed below. Project Operational emissions are summarized in **Tables 5** and **6**.

2.2.1 Area Sources

ENVIRON assumes that all direct area source emissions are based on CalEEMod® defaults for the building type (mid-rise apartment, supermarket, restaurant, and coffee shop). ENVIRON used CalEEMod® defaults based on building square footage and operational year to calculate equipment activity and emissions (**Table 1**). Hall Equities Group's area source emissions are dominated by consumer goods and architectural coatings. These sources include cleaning supplies, kitchen aerosols, and interior/exterior paint. Area source emissions also include landscaping equipment.

2.2.2 Emergency Generators

The proposed Project includes three new natural gas emergency generators, one next to each proposed building. CAP emissions were calculated according to the interim Tier 2 emissions standards for each engine (100 Kilowatt [KW] in size) using the methodology from **Table 5**.

2.2.3 Project Traffic

Project-generated traffic contributing to the operational CAP emissions includes commercial and residential trips. As shown in **Table 6**, average daily trip counts were based on the Traffic Impact Analysis (TIA) report provided by the Project transportation engineer.[5] Average Trip Length and Daily/Annual VMT were estimated by CalEEMod® (Contra Costa County defaults by land use, which represent average trip length throughout the county for each land use) and Economic and Planning Systems, Inc. (location-specific survey data) for the Project traffic impact analysis. Note the Project Trips do not include a subtraction of Existing Trips. This is in line with the Project Impact analysis for all sources.

The CalEEMod® default trip lengths were used to model trips to and from home for the residents of the proposed project. The commercial trip lengths for consumers of the proposed project were adjusted from defaults based on a trade area analysis provided by Economic and Planning Systems, Inc.[6]

2.3 Calculation Methodologies for Cumulative TAC Emissions

Consistent with the BAAQMD CEQA guidelines, cumulative impacts to off-site sensitive receptors were evaluated by summing potential impacts from other off-site stationary sources and mobile sources within the "zone of influence" in addition to the impacts from the Project. The BAAQMD screening tools were used for these sources as described in sections below. Emissions were not calculated separately for these sources.

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[5] Omni-Means. Traffic Impact Analysis for the Proposed Saranap Village Project. February 28, 2014.
[6] Data received from Ashleigh Kanat, Economic and Planning Systems, Inc. March 31, 2014.

3 Estimated Air Concentrations

To evaluate air toxics, BAAQMD recommends that the project applicant evaluate health risks and hazards (including $PM_{2.5}$ concentrations) imposed by a project upon the surrounding community. This health risk and hazards analysis must be conducted both on a project-specific basis as well as a cumulative basis. Consistent with BAAQMD CEQA Guidelines, this analysis encompassed a "zone of influence" extending 1,000 feet from the proposed Project site. The methodologies used to evaluate concentrations for the Project and cumulative HRA were based on the most recent BAAQMD Protocol (BAAQMD 2012a).

3.1 Project Sources

The Industrial Source Complex (ISC3) dispersion model was used to evaluate ambient air concentrations of DPM and $PM_{2.5}$ from the Project sources. ISC3 is approved and recommended by BAAQMD for CEQA air quality analysis.[7]

This task includes evaluating construction emissions and estimating air concentrations based on those emissions. ENVIRON derived estimates of construction emissions using default assumptions about construction activity generated using CalEEMod®, as discussed above. For construction emissions, potential receptors evaluated included off-site sensitive receptors. To estimate ambient air concentrations of DPM and $PM_{2.5}$ from diesel exhaust from on-site construction activity, ENVIRON used the most recent version of the ISC3 dispersion model.[8] The estimated annual concentration of $PM_{2.5}$ at the point of maximum impact (conservatively greater than or equal to impact at maximum off-site sensitive receptor) was compared with the BAAQMD 2011 CEQA significance threshold for $PM_{2.5}$ from a single source.

3.1.1 Project Modeling

For each receptor location, the model generated air concentrations (or air dispersion factors as unit emissions were modeled) that result from emissions from multiple sources.

Air dispersion models such as ISC3 require a variety of inputs such as source parameters, meteorological parameters, topography information, and receptor parameters. When site-specific information is unknown, ENVIRON used default parameter sets that are designed to produce conservative (i.e., overestimates of) air concentrations. The Project boundary is shown in **Figure 1**.

Meteorological data: Air dispersion modeling applications require the use of meteorological data that ideally are spatially and temporally representative of conditions in the immediate vicinity of the site under consideration. For this technical report, year 2001-2005 meteorological data from BAAQMD's Concord site, the closest BAAQMD site to the Project, was used.

Terrain considerations: Elevation and land use data were imported from the National Elevation Dataset (NED) maintained by the United States Geological Survey (USGS, 2014). An important

[7] Email from Jim Cordova, BAAQMD, January 9, 2014.
[8] USEPA. Alternative Models. Available online: http://www.epa.gov/scram001/dispersion_alt.htm [Accessed February 2014].

consideration in an air dispersion modeling analysis is the selection of rural or urban dispersion coefficients. Due to the residential/suburban areas surrounding the Project site, ENVIRON used rural dispersion coefficients which are more conservative.

Emissions: Emitting activities were modeled to reflect the potential range of hours of construction, up to a 10-hour day. The noise report notes project will comply with grading noise ordinance, which generally limits construction to 7:30 a.m. and 5:30pm. Emissions were modeled using the χ/Q ("chi over q") method, such that the source has a unit emission rate (i.e., 1 gram per second [g/s]), and the model estimates dispersion factors (with units of [ug/m^3]/[g/s]).

For annual average ambient air concentrations, the estimated annual average dispersion factors were multiplied by the annual average emission rates. The model was set up to assume the aforementioned 7 am to 5 pm distribution of emissions during all construction days. Construction emissions are assumed to be evenly distributed throughout the Project site, and are represented by volume sources spaces 20 meters apart for the on-site construction model and 5 meters apart for the off-site street improvements. Modeling parameters for the volume sources are shown in **Table 7**. The modeled emission rates, for which the calculation methodology was discussed in Section 2.1, are shown in **Table 8a** (uncontrolled scenario) and **Table 8b** (controlled scenario).

Receptors: In order to evaluate health impacts to off-site receptors, ENVIRON identified nearby sensitive receptor populations and included those discrete receptors in the model. Furthermore, to identify possible residential receptors, ENVIRON modeled a grid out to 1,000 feet (10m resolution) and 1,000 meters (20m resolution). Modeled receptors are shown in **Figure 2**. The modeled receptors cover both the possible sensitive receptors within 1,000 feet of the Project, as well as the off-site residential receptors. Receptors were modeled at 1.8 meters of height. As discussed previously, average dispersion factors were estimated for each receptor location.

3.2 Roadway Sources for Cumulative Analysis

BAAQMD's screening tables for Contra Costa County surface streets (BAAQMD 2011b) and BAAQMD's Highway Screening Analysis Tool (BAAQMD 2011c) were used to estimate $PM_{2.5}$ for off-site sensitive receptors located adjacent to the major roadways identified above with greater than 10,000 vehicles per day.

In accordance with BAAQMD Guidance, cumulative impacts were evaluated at the maximally exposed individual sensitive receptor (MEISR) for the incremental cancer risk/chronic HI identified for the Project (BAAQMD 2012a).

3.3 Stationary Sources for Cumulative Analysis

Based on a search of the most recent BAAQMD stationary source database (BAAQMD 2012b), there is one stationary source within 1,000 feet of the Project. To evaluate the contribution to risk, hazards and $PM_{2.5}$ from this source, the screening data provided by the BAAQMD was added to the contribution from the vehicle emissions at the MEISR, as discussed in the following sections. ENVIRON relied on the BAAQMD database and information provided by BAAQMD only without additional refined modeling of this source.

4 Risk Characterization Methods

The following sections discuss in detail the various components required to conduct the HRA.

4.1 Project Sources Evaluated

As discussed in Section 1.2, ENVIRON evaluated cancer risk, chronic HIs, and $PM_{2.5}$ concentrations for Project construction (1.6 years; or approximately 19 months) as well as street improvements that are occurring concurrently with construction (0.25 years; or approximately 3 months). As mentioned in Section 2.1, the emissions for street improvements were averaged over their three-month duration. This approach was taken to be consistent with the exposure duration used in the calculation of cancer risk; this three-month average was also used to conservatively estimate non-cancer impacts in place of the lower annualized average. Note that impacts from the operational scenario were not evaluated because TAC emissions will be minimal due to the use of natural-gas fired generators, which emit only negligible levels of TACs.

4.2 Exposure Assessment

Potentially Exposed Populations: This evaluation conservatively evaluated the off-site adult and child resident receptor populations for the construction scenario.

As the residential exposure assumptions are more conservative than those for other sensitive receptor types, a conservative approach of considering all sensitive receptors as residential receptors was used in this HRA. Similarly, because the exposure assumptions for a resident child are the most conservative residential assumptions, the analysis was conducted for resident children as a conservative approach. The receptors grid extends from the Project boundary to a 1000 foot buffer with 20 m spacing and is shown in **Figure 2**.

Exposure Parameters: The exposure parameters used to estimate excess lifetime cancer risks for the resident child population for the construction scenario were obtained using risk assessment guidelines from BAAQMD (BAAQMD 2010), unless otherwise noted, and are presented in **Table 9**. **Table 9** presents exposure parameters for both project construction and street improvements. As discussed previously, the exposure duration varies between the two evaluations while other exposure parameters are the same.

Calculation of Intake: The dose estimated for each exposure pathway is a function of the concentration of a chemical and the intake of that chemical. The intake factor for inhalation, IF_{inh}, can be calculated as follows:

$$IF_{inh} = \frac{DBR * ET * EF * ED * CF}{AT}$$

Where:

IF_{inh}	=	Intake Factor for Inhalation (m^3/kg-day)
DBR	=	Daily Breathing Rate (L/kg-day)
ET	=	Exposure Time (hours/24 hours)

EF	=	Exposure Frequency (days/year)
ED	=	Exposure Duration (years)
AT	=	Averaging Time (days)
CF	=	Conversion Factor, 0.001 (m^3/L)

The chemical intake or dose is estimated by multiplying the inhalation intake factor, IF_{inh}, by the chemical concentration in air, C_i. When coupled with the chemical concentration, this calculation is mathematically equivalent to the dose algorithm given in the Office of Environmental Health Hazard Assessment (OEHHA) Hot Spots guidance (Cal/EPA 2003).

4.3 Toxicity Assessment

The toxicity assessment characterizes the relationship between the magnitude of exposure and the nature and magnitude of adverse health effects that may result from such exposure. For purposes of calculating exposure criteria to be used in risk assessments, adverse health effects are classified into two broad categories – cancer and non-cancer endpoints. Toxicity values used to estimate the likelihood of adverse effects occurring in humans at different exposure levels are identified as part of the toxicity assessment component of a risk assessment.

Toxicity values for DPM are summarized in **Table 10**.

4.4 Cancer Risk Adjustment Factors

The estimated excess lifetime cancer risks for a resident child was adjusted using the age sensitivity factors (ASFs) recommended in the Cal/EPA OEHHA Technical Support Document (TSD) (Cal/EPA 2009) and the cancer risk adjustment factors (CRAFs) recommended by BAAQMD (BAAQMD 2010). This approach accounts for an "anticipated special sensitivity to carcinogens" of infants and children. Cancer risk estimates are weighted by a factor of 10 for exposures that occur from the third trimester of pregnancy to two years of age and by a factor of three for exposures that occur from two years through 15 years of age. No weighting factor (i.e., an ASF of one, which is equivalent to no adjustment) is applied to ages 16 to 70 years. **Table 11** shows the CRAF used for resident children for a construction period lasting approximately 19 months. Because street improvements occur within the timeframe of the construction period and are of a shorter duration, the CRAF is the same for both evaluations.

4.5 Risk Characterization

4.5.1 Estimation of Cancer Risks

Excess lifetime cancer risks are estimated as the upper-bound incremental probability that an individual will develop cancer over a lifetime as a direct result of exposure to potential carcinogens. The estimated risk is expressed as a unitless probability. The cancer risk attributed to a chemical is calculated by multiplying the chemical intake or dose at the human exchange boundaries (e.g., lungs) by the chemical-specific cancer potency factor (CPF).

The equation used to calculate the potential excess lifetime cancer risk for the inhalation pathway is as follows:

$$Risk_{inh} = C_i \times CF \times IF_{inh} \times CPF \times CRAF$$

Where:

$Risk_{inh}$	=	Cancer Risk; the incremental probability of an individual developing cancer as a result of inhalation exposure to a particular potential carcinogen (unit-less)
C_i	=	Annual Average Air Concentration for $Chemical_i$ (µg/m^3)
CF	=	Conversion Factor (mg/µg)
IF_{inh}	=	Intake Factor for Inhalation (m^3/kg-day)
CPF_i	=	Cancer Potency Factor for $Chemical_i$ (mg chemical/kg body weight-day)$^{-1}$
CRAF	=	Cancer Risk Adjustment Factor (unitless)

The excess lifetime cancer risk is estimated for both project construction and street improvements; those results are then summed to calculate the total excess lifetime cancer risk for each receptor due to both the emissions associated with construction of the Project and those associated with street improvements.

4.5.2 Estimation of Chronic Noncancer Hazard Quotients/Indices

Chronic HI

The potential for exposure to result in adverse chronic noncancer effects is evaluated by comparing the estimated annual average air concentration (which is equivalent to the average daily air concentration) to the noncancer chronic reference exposure level (cREL) for each chemical. When calculated for a single chemical, the comparison yields a ratio termed a hazard quotient (HQ). To evaluate the potential for adverse chronic noncancer health effects from simultaneous exposure to multiple chemicals, the HQs for all chemicals are summed, yielding a HI. DPM is the only pollutant evaluated for chronic non-cancer hazard in this HRA; therefore the HQ for DPM is the same as the overall HI.

$$HQ_i = C_i / cREL_i$$

$$HI = \sum HQ_i$$

Where:

HQ_i	=	Chronic hazard quotient for $chemical_i$
HI	=	Hazard index
C_i	=	Annual average concentration of $chemical_i$ (µg/m^3)
$cREL_i$	=	Chronic noncancer reference exposure level for $chemical_i$ (µg/m^3)

The chronic HI is estimated for both project construction and street improvements; those results are then summed to calculate the total chronic HI for each receptor due to both the emissions associated with construction of the Project and those associated with street improvements.

5 Mitigation Measure

The analysis of the uncontrolled scenario demonstrates that the unmitigated Project will have potentially significant health risk impacts. Mitigation should be imposed requiring the Project to achieve a Performance Standard consisting of the BAAQMD health risk thresholds stated above. The use of CARB-certified Level 3 VDECS filters on certain equipment, and 2 minute idling restrictions on all diesel powered construction equipment, achieves this performance standard, as demonstrated in the controlled scenario.

Other potential means of achieving the Performance Standard are listed below. If the applicant determines to employ an alternative means of achieving the Performance Standard, it should be required to demonstrate, to the satisfaction of the County, that the alternative measures achieve the Performance Standard.

5.1 Tier 4 Protections On Different Equipment

Tier 4 equipment or CARB-certified Level 3 VDECS, such as a DPF, installed on Tier 3 equipment can be used on equipment other than the engines identified above to achieve significant reductions in DPM emissions from construction equipment. Level 3 DPFs remove at least 85% of diesel particulate matter. DPF installation can also result in co-benefits for other CAPs, such as NO_x and ROG.[9]

5.2 Reduced Idling

According to BAAQMD CEQA 2011 CEQA Guidelines, one mitigation measure that will reduce emissions is Construction Mitigation Measure # 9, which specifies: "minimizing the idling time of diesel powered construction equipment to two minutes."[10] According to BAAQMD CEQA 2011 Guidelines, implementation of Measure # 9 will result in a 20 percent reduction for NO_x and a 45 percent reduction of PM_{10} and $PM_{2.5}$ emissions. As discussed in Section 2.1, ENVIRON assumes Saranap will impose a 2 minute idling limit on all construction equipment as a way to achieve the desired Performance Standard.

5.3 Alternative Fuels

Construction equipment emissions can be mitigated through the use of alternative fuel. Biodiesel/biofuel and hybrid electrification are alternative fuel options for construction equipment.[11] Biodiesel can reduce DPM emissions by up to 10 percent.[12] Hybrid electrification is the use of two different sources of energy to power equipment, such as diesel fuel and electricity. The use of hybrid electrification can reduce diesel fuel usage by 25 percent.[13]

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[9] CARB. Verified Diesel Control Technologies. Available online: http://www.arb.ca.gov/diesel/verdev/vt/cvt.htm. Accessed: March 2014.

[10] BAAQMD. CEQA Air Quality Guidelines. May 2011. Table 8-2.

[11] USEPA. *Cleaner Diesels: Low Cost Ways to Reduce Emissions from Construction Equipment.* http://www.epa.gov/sectors/pdf/emission_0307.pdf [Accessed March 2014].

[12] Ibid.

[13] https://www.johndeereemissionshub.com/2013/04/25/hybrid-electrification-provides-a-productive-and-even-more-efficient-emissions-solution/ [Accessed March 2014].

5.4 MERV Filters

In their CEQA guidelines, the BAAQMD outlines potential mitigation measures for reducing emissions and exposure to sensitive receptors, including:

> "Install and maintain air filtration systems of fresh air supply either on an individual unit-by-unit basis, with individual air intake and exhaust ducts ventilating each unit separately, or through a centralized building ventilation system. The ventilation system should be certified to achieve a performance effectiveness, for example, to remove at least 85% of ambient $PM_{2.5}$ concentrations from indoor areas. Air intakes should be located away from emission sources areas, such as major roadways."

This recommendation is based on the work of Fisk et al. (2002), who conducted a study of the performance and costs of particulate air filtration technologies and determined that ASHRAE Dust Spot 85% (identified as having a minimum efficiency reporting value rating of 13 [MERV-13]) filters provided an 80% or greater reduction of outdoor fine particulate matter (such as DPM) if the ventilation systems is operated with one air exchange per hour of outside air and four air exchanges per hour of recirculated air. The removal efficiency increased up to 95% with use of a high efficiency particulate air (HEPA) filter.

Installing filters and adjusting the ventilation system in such a way to meet the parameters specified by Fisk et al. (i.e., with one air exchange per hour of outside air and four air exchanges per hour of recirculated air), may provide an 80% or greater reduction in indoor air concentrations of $PM_{2.5}$ and compounds which contribute to the excess cancer risk (such as DPM).

5.5 Construction Phasing

As discussed in Section 4.4, cancer risk calculations are adjusted to account for exposure of infants and children, who are assumed to be particularly sensitive to carcinogens. By conducting construction in phases and extending construction duration, the levels of air concentrations to which infants and children are exposed to at the most sensitive age (i.e. from the third trimester through two years) will be decreased and may decrease the estimated lifetime cancer risk associated with those exposures. This impact may be minimal unless construction phasing significantly extends the total project duration.

6 Results for Project Analysis

In this Section, the Project results are compared to the BAAQMD thresholds for a single source.

6.1 Criteria Air Pollutants and Precursors

6.1.1 Construction CAPs

The BAAQMD 2011 CEQA significance thresholds for construction-related CAPs and precursors are:

- Average daily Reactive Organic Gases (ROG), $PM_{2.5}$, and Nitrogen Oxides (NO_x) emissions greater than 54 lb/day;
- Average daily Respirable Particulate Matter Less than 10 Micrometers in Aerodynamic Diameter (PM_{10}) emissions greater than 82 lb/day;

Table 12a shows the total CAP emissions associated with the Project construction for the uncontrolled scenario. The average daily incremental ROG (21 lb/day), NO_x (30 lb/day), PM_{10} (0.58 lb/day), and $PM_{2.5}$ (0.58 lb/day) emissions associated with the Project operation are all below the BAAQMD 2011 CEQA significance thresholds.

Table 12b shows the total CAP emissions associated with the Project construction for the controlled scenario. The average daily incremental ROG (21 lb/day), NO_x (30 lb/day), PM_{10} (0.40 lb/day), and $PM_{2.5}$ (0.40 lb/day) emissions associated with the Project operation are all below the BAAQMD 2011 CEQA significance thresholds.

6.1.2 Operation CAPs

The BAAQMD 2011 CEQA significance thresholds for operation-related CAPs and precursors are:

- Average daily ROG, $PM_{2.5}$, and NO_x emissions greater than 54 lb/day;
- Average daily PM_{10} emissions greater than 82 lb/day;
- Maximum annual ROG, $PM_{2.5}$, and NO_x emissions greater than 10 tons/year (tpy); and,
- Maximum annual PM_{10} emissions greater than 15 tpy.

Table 13 shows the total CAP emissions associated with the Project operation. The average daily incremental ROG (36 lb/day), NO_x (25 lb/day), PM_{10} (13 lb/day), and $PM_{2.5}$ (4.3 lb/day) emissions associated with the Project operation are below the BAAQMD CEQA thresholds. The maximum annual ROG (6.6 tpy), NO_x (4.5 tpy), PM_{10} (2.4 tpy), and $PM_{2.5}$ (0.79 tpy) emissions associated with the Project operation are also below the BAAQMD 2011 CEQA significance thresholds. As discussed previously, this analysis does not net out existing emissions from Project emissions. Instead, this analysis takes a conservative approach of assuming that baseline emissions at the Project site are zero

6.2 Risk and Hazards

6.2.1 Construction Risk and Hazards

Table 14a shows the total estimated excess lifetime cancer risk, chronic noncancer HI, and $PM_{2.5}$ concentration at the MEISR during Project construction and street improvements for the uncontrolled construction scenario. The estimated cancer risk and $PM_{2.5}$ concentration due to Project construction exceed the respective BAAQMD 2011 CEQA significance thresholds. Accordingly, mitigation as proposed in section 5.1 above is appropriate. The chronic HI due to Project construction is below the BAAQMD 2011 CEQA significance threshold. **Figure 3a** shows the location of the lifetime excess cancer risk MEISR, the chronic HI MEISR, and (conservatively) the $PM_{2.5}$ Concentration PMI for the uncontrolled scenario.

Table 14b shows the total estimated excess lifetime cancer risk, chronic noncancer HI, and $PM_{2.5}$ concentration at the MEISR during Project construction and street improvements for the controlled construction scenario. The estimated cancer risk, chronic HI, and $PM_{2.5}$ concentration due to Project construction are below the respective BAAQMD 2011 CEQA significance thresholds. **Figure 3b** shows the location of the lifetime excess cancer risk MEISR, the chronic HI MEISR, and (conservatively) the $PM_{2.5}$ Concentration PMI for the controlled scenario. This controlled scenario demonstrates that a Performance Standard of meeting the BAAQMD 2011 CEQA significance threshold can be achieved in practice.

7 Results for Cumulative Analysis

7.1 Cumulative Risk and Hazards

7.1.1 Methodology

The cumulative analysis is conducted at the MEISR identified for the Project; results at that location are compared to the BAAQMD 2011 CEQA significance thresholds for cumulative impacts:

- An excess lifetime cancer risk level of more than 100 in one million;
- A chronic noncancer HI greater than 10; and
- An incremental increase in the annual average $PM_{2.5}$ of greater than 0.8 $\mu g/m^3$.

The incremental cancer risk, chronic HI, and $PM_{2.5}$ MEISR for Project construction was identified as a residential location within 1,000 feet of the Project; emissions from all identified sources within 1,000 feet of the Project boundary were evaluated at this single location and added to the results from the Project's single source evaluation, summarized in Section 5.3.

Stationary Sources: For stationary sources, the BAAQMD Risk Analysis Tool was used to identify stationary sources within 1,000 feet of the Project, as discussed in previous sections. The results of the stationary source screening are presented in **Table 15**.

Major Roadways: Impacts from traffic on major roadways within 1,000 feet of the Project were evaluated using the BAAQMD screening methodology for surface streets and highways, as discussed in previous sections. The results of the roadway screening are presented in **Table 16**.

7.1.2 Results

Table 17a shows a summary of the estimated excess lifetime cancer risks, chronic noncancer HIs, and $PM_{2.5}$ concentrations for each of the source types listed above evaluated at the Project's respective off-site MEISRs for the uncontrolled construction scenario. As discussed in Section 4.1, there will be no measured operational health impacts to off-site receptors. The estimated cumulative cancer risk is 45 in one million, which is below the BAAQMD 2011 CEQA significance threshold of 100 in one million. The estimated chronic noncancer HI is 0.51, which is below the BAAQMD 2011 CEQA significance threshold of 10. The estimated $PM_{2.5}$ concentration is 0.67 $\mu g/m^3$, which is below the BAAQMD 2011 CEQA significance threshold of greater than 0.8 $\mu g/m^3$.

Table 17b shows a summary of the estimated excess lifetime cancer risks, chronic noncancer HIs, and $PM_{2.5}$ concentrations for each of the source types listed above evaluated at the Project's respective off-site MEISR including the controlled construction scenario. As discussed in Section 4.1, there will be negligible operational impacts to off-site receptors. The estimated cumulative cancer risk is 37 in one million, which is below the BAAQMD 2011 CEQA significance threshold of 100 in one million. The estimated chronic noncancer HI is 0.49, which is below the BAAQMD 2011 CEQA significance threshold of 10. The estimated $PM_{2.5}$ concentration is 0.57 $\mu g/m^3$, which is below the BAAQMD 2011 CEQA significance threshold of 0.8 $\mu g/m^3$.

Since the Project will utilize natural gas generators only, as discussed in Section 4.1, the cumulative results at the on-site operational MEISR are due to impacts from off-site stationary sources and roadways only. The results presented in **Tables 15** and **16** represent the cumulative impacts at the on-site MEISR. The estimated cumulative off-site excess cancer risk is 28 in one million, the estimated chronic noncancer HI is 0.45, and the estimated $PM_{2.5}$ concentration is 0.32 $\mu g/m^3$; thus all on-site MEISR results are below the BAAQMD 2011 CEQA significance thresholds outlined above.

8 Localized CO Impacts from Motor Vehicle Traffic

According to the BAAQMD's screening criteria for CO (BAAQMD 2011a), projects are considered less than significant if:

1. The project is consistent with an applicable congestion management program established by the county's congestion management agency for designated roads or highways, regional transportation plan, and local congestion management agency plans.
2. The project traffic would not increase traffic volumes at affected intersections to more than 44,000 vehicles per hour.
3. The project traffic would not increase traffic volumes at affected intersections to more than 24,000 vehicles per hour where vertical and/or horizontal mixing is substantially limited (e.g., tunnel, parking garage, bridge underpass, natural or urban street canyon, below-grade roadway).

In order to calculate the traffic volumes at affected intersections, average daily traffic (ADT) and peak hour traffic volumes for roadways within 1,000 feet of the Project were obtained from data reported by California Environmental Health Tracking Program (CEHTP)[14] for surface streets and California Department of Transportation (Caltrans, 2012)[15] for Highway 24. Based on ENVIRON's evaluation of Average Daily Trips and Peak Traffic Volume (vehicles/hour) at key intersections, the Project traffic will not increase traffic volumes at affected intersections to more than 44,000 vehicles per hour. In order to be conservative, the highway network at the north edge of the 1000 foot Project buffer is considered as an intersection. The maximum traffic is at the intersection (Highway 24 plus Camino Diablo) and has an estimated 18,250 existing plus project maximum vehicles/hour.

This Project is consistent with the applicable congestion management program established by the county's congestion management agency, and no vertical and/or horizontal mixing is substantially limited (e.g., tunnel, parking garage, bridge underpass, natural or urban street canyon, below-grade roadway) at the affected interactions. Therefore, the Project will meet all the criteria at key intersections near the Project site and is less than significant for CO.

[14] California Environmental Health Tracking Program (CEHTP) traffic spatial linkage web service. Available online at: http://www.ehib.org/traffic_tool.jsp

[15] California Department of Transportation (Caltrans). Available online at: http://traffic-counts.dot.ca.gov/

9 Uncertainties

In accordance with risk assessment guidance, ENVIRON has evaluated the uncertainties associated with this technical report, including emissions estimation, air dispersion modeling, and risk estimation. This HRA was performed using the best data and methodologies available at the time, notwithstanding the fact that there are the uncertainties outlined below.

Estimation of Emissions: There are uncertainties associated with the estimation of emissions from operation of the Project. Where project-specific data, such as emission factors, are not available, default assumptions in AP-42, CalEEMod®, California Air Resource's Board Emissions Factor Model (EMFAC2011), and USEPA Factor Information Retrieval (FIRE) database were used.

Estimation of Exposure Concentrations: There is also uncertainty associated with the estimated exposure concentrations. The limitations of the air dispersion model provide a source of uncertainty in the estimation of exposure concentrations. According to USEPA, errors due to the limitation of the algorithms implemented in the air dispersion model in the highest estimated concentrations of +/- 10 percent to 40 percent are typical (USEPA 2005).

Source Representation: The source parameters used to model emission sources add uncertainty. For all emission sources, ENVIRON used source parameters which were source-specific, recommended as defaults, or expected to produce more conservative results. Discrepancies might exist in actual emissions characteristics of a source and its representation in the model; exposure concentrations used in this assessment represent approximate exposure concentrations.

Exposure Assumptions: For the risk and hazards calculations as well as the cumulative impact HRA, numerous assumptions must be made in order to estimate human exposure to chemicals. These assumptions include parameters such as breathing rates, exposure time and frequency, exposure duration, and human activity patterns. While a mean value derived from scientifically defensible studies is the best estimate of central tendency, most of the exposure variables used in this HRA are high-end estimates. For example, it is assumed that off-site residential receptor exposure to emissions due to Project construction and street improvement activities occurs over the entire construction duration and exposure to the cumulative emissions sources occur 24 hours per day for 350 days per year, a highly conservative assumption since most residents do not remain in their homes for this period of time. The combination of several high-end estimates used as exposure parameters may substantially overestimate chemical intake. The excess lifetime cancer risks calculated in this assessment are therefore likely to be higher than may be required to be protective of public health.

Toxicity Assessment: The Cal/EPA CPF for DPM was used to estimate cancer risks associated with exposure to DPM from construction equipment and off-site stationary sources. However, the CPF derived by Cal/EPA for DPM is highly uncertain in both the estimation of response and dose. In the past, due to inadequate animal test data and epidemiology data on diesel exhaust, the International Agency for Research on Cancer (IARC), a branch of the World Health Organization (WHO), had classified DPM as Probably Carcinogenic to Humans (Group 2); the USEPA had also concluded that the existing data did not provide an adequate basis for

quantitative risk assessment (USEPA 2002). However, based on two recent scientific studies (Attfield et al. 2012 and Silverman et al. 2012), IARC recently re-classified DPM as Carcinogenic to Humans to Group 1 (IARC 2012), which means that the agency has determined that there is "sufficient evidence of carcinogenicity" of a substance in humans and represents the strongest weight-of-evidence rating in IARC's carcinogen classification scheme. This determination by the IARC may provide additional impetus for the USEPA to identify a quantitative dose-response relationship between exposure to DPM and cancer.

Risk Calculations: The USEPA notes that the conservative assumptions used in a risk assessment are intended to assure that the estimated risks do not underestimate the actual risks posed by a site and that the estimated risks do not necessarily represent actual risks experienced by populations at or near a site (USEPA 1989).

The estimated risks in this HRA are based primarily on a series of conservative assumptions related to predicted environmental concentrations, exposure, and chemical toxicity. The use of conservative assumptions tends to produce upper-bound estimates of risk. Although it is difficult to quantify the uncertainties associated with all the assumptions made in this risk assessment, the use of conservative assumptions is likely to result in substantial overestimates of exposure, and hence, risk. BAAQMD acknowledges this uncertainty by stating: "the methods used [to estimate risk] are conservative, meaning that the real risks from the source may be lower than the calculations, but it is unlikely that they will be higher" (BAAQMD 2011d).

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Tables

Table 1
Conceptual Layout of Proposed Maximum Development
Hall Saranap
Walnut Creek, California

Parcel	Proposed Land Use	CalEEMod Land Use Type and Subtype	Proposed Size	Unit
A	Residential - Apartments	Apartments - Mid Rise	143	dwelling units
	Retail - Grocery Store	Supermarket	15,236	square feet
	Bank	Strip Mall[1]	690	square feet
	Swimming Pool	Recreational Swimming Pool	1,676	square feet
	Fitness Center	Health Club	14,173	square feet
	Parking garage	Enclosed Parking with Elevator	391	parking spaces
B	Residential - Apartments	Apartments - Mid Rise	62	dwelling units
	Swimming Pool	Recreational Swimming Pool	711	square feet
	Bar Lounge	High Turnover (Sit Down Restaurant)	2,222	square feet
	Restaurant	High Turnover (Sit Down Restaurant)	5,589	square feet
	Parking garage	Enclosed Parking with Elevator	242	parking spaces[2]
B1	Residential - Apartments	Apartments - Mid Rise	6	dwelling units
	Coffee Shop	Fast Food w/o Drive Through	2,135	square feet
	Retail	Strip Mall[1]	3,496	square feet
	Parking garage	Enclosed Parking with Elevator	13	parking spaces
C	Residential - Apartments	Apartments - Mid Rise	24	dwelling units
	Parking garage	Enclosed Parking with Elevator	48	parking spaces
O	Onsite Surface Streets	Parking lot[1]	1.11	acres
	Offsite Surface Streets	Parking lot[1]	0.69	acres

Notes:

[1]This is the best CalEEMod land-use type fit.

[2]The Project proposes a minimum of 225 parking spaces in garage B, up to the maximum number needed to meet standard County parking requirements. The applicant has indicated that preliminary plans have identified locations for 17 additional parking spots within the Building B footprint. This report accordingly studies the potential for 242 parking spaces.

Table 2
Emissions Calculations Methodology
Hall Saranap
Walnut Creek, California

Type	Source	Methodology and Formula	Reference
Construction Equipment	Off-Road Equipment[1]	$Ec = \Sigma(EFc * HP * LF * Hr * C)$	ARB/USEPA Engine Standards USEPA NONROAD
Operational On-Road Mobile Sources[2]	Running Exhaust, Brake Wear, Tire Wear, and Running Losses	$E_R = \Sigma(EF_R * VMT * C)$, where VMT = Trip Length * Trip Number	EMFAC2011
	Starting Exhaust and Evaporative ROG	$E_S = \Sigma(EF_S * \text{Trip Number} * C)$	EMFAC2011
	Idling Exhaust	$E_I = \Sigma(EF_I * \text{Trip Number})$	EMFAC2011
Operation	Generators and Fire Pumps[3]	$E = EF * HP * Hr$	ARB/USEPA Off-Road Engine Standards

Notes:

1. Ec: off-road equipment exhaust emissions (lb).
   EFc: emission factor (g/hp-hr). CalEEMod 2013.2.2. default emission factors used.
   HP: equipment horsepower. OFFROAD2011.
   LF: equipment load factor. OFFROAD2011.
   Hr: equipment hours. The detailed equipment hours by construction phase will be presented in Appendix A.
   C: unit conversion factor.

2. Operational on-road mobile VMT is based on data from the Project sponsor and fleet mix based on CalEEMod defaults.

   E_R: emissions for running exhaust, brake wear, tire wear and running losses (lb).
   EF_R: emission factor (g/mile). From EMFAC2011. VMT: vehicle miles traveled C: unit conversion factor.

   E_s: vehicle starting exhaust and evaporative ROG emissions (lb).
   EF_s: vehicle starting or evaporative ROG emission factor (g/trip). From EMFAC2011. EMFAC reports emission rates in g/vehicle/day, vehicle population and trips in trips/day. The emission factor is calculated as the product of emission rates and vehicle population, divided by the daily trips. C: unit conversion factor.

   E_I: vehicle idling emissions (lb).
   Idling emissions were not calculated for operational on-road mobile sources to be consistent with CRRP-HRA methodology. EF_I: vehicle idling emission factor (g/hr-trip). From EMFAC2011. T_I:

Table 2 (continued)
Emissions Calculations Methodology
Hall Saranap
Walnut Creek, California

3. E: generator engine emissions
   EF: compression-ignition (diesel) engine emission factor. ARB/USEPA engine PM standard based on engine tier will be used.
   HP: generator horsepower.
   Hr: generator hours. Assume 50 hours of operation annually as a conservative assumption, as required by BAAQMD permitting requirements. The Air Toxics Control Measure (ACTM) for Stationary Toxic Compression Ignition Engines (Section 93115, Title 17, California Code of Regulations (CCR) limits maintenance and testing for non-emergency use to 50 hours for engines that emit less than 0.15 grams per break horsepower-hour (g/bhp/hr).

Abbreviations:
ARB: California Air Resources Board
BAAQMD: Bay Area Air Quality Management District
CalEEMod: CALifornia Emissions Estimator MODel
EF: Emission Factor
EP: Environmental Planning
g: gram
HP: Horsepower
lb: pound
LF: Load Factor
mi: mile
USEPA: United States Environmental Protection Agency

References:
ARB/USEPA. Table 1: ARB and USEPA Off-Road Compression-Ignition (Diesel) Engine Standards. http://www.arb.ca.gov/msprog/ordiesel/documents/Off-Road_Diesel_Stds.xls
ARB. 2011b. Off-Road Diesel Equipment 2011 Inventory Model (OFFROAD2011). Available online at: http://www.arb.ca.gov/msei/categories.htm#offroad_motor_vehicles.
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Table 3
CalEEMod Construction Schedule and Equipment List
Hall Saranap
Walnut Creek, California

Demolition Schedule				
Phase	**Start Date**	**End Date**	**Number of Days per Week**	**Total Construction Days**
Demolition	Site A - April 2015	Apr-15	5	15
	Site B - May 2015	May-15	5	15
	Site C - June 2015	Jul-15	5	10

Demolition Quantities	
Site	**Existing Building Area (Square Feet)**
A	30,726
B	12,918
C	5,325

Construction Schedule				
Phase	**Start Date**	**End Date**	**Number of Days per Week**	**Total Construction Days**
Site Preparation	N/A	N/A	5	N/A
Grading	Site A - April 2015	May-15	5	10
	Site B - May 2015	May-15	5	10
	Site C - June 2015	Jun-15	5	3
Building Construction	Site A - April 2015	Nov-16	5	380
	Site B - May 2015	Apr-16	5	220
	Site C - July 2015	Apr-16	5	180
Off Site Street Improvements	Apr-15	Jun-15	5	65
Architectural Coating	Site A - October 2015	Nov-16	5	271
	Site B - November 2015	Sep-16	5	221
	Site C - December 2015	Apr-16	5	85

Table 3 (continued)
CalEEMod Construction Schedule and Equipment List
Hall Saranap
Walnut Creek, California

Equipment List					
Phase	**Equipment**	**Quantity**	**Usage Hours per Day**	**Horsepower**	**Load Factor**
Demolition	Concrete/Industrial Saws	1	8	81	0.73
	Excavators	1	8	268	0.85
	Rubber Tired Dozers	2	8	255	0.40
Grading	Excavators	1	8	268	0.85
	Rubber Tired Dozers	1	8	255	0.40
	Water Truck	1	8	300	0.35
	Tractors/Loaders/Backhoes	1	8	265	0.70
	Skiploader	1	8	95	0.50
Building Construction	Cranes	1	2	226	0.29
	Forklifts	1	8	89	0.20
	Tractors/Loaders/Backhoes	1	7	265	0.70
	Skiploader	2	7	95	0.50
	Welders	1	8	46	0.45
Off Site Street Improvements	Pavers	1	8	125	0.42
	Paving Equipment	2	8	130	0.36
	Rollers	2	8	80	0.38
	Skiploader	1	8	95	0.50
Architectural Coating	Air Compressors	1	6	78	0.48

Soil Transported for Construction			
Soil Quantity for Construction	Imported	[cubic yards/day]	NA
	Exported	[cubic yards/day]	2,500

Hauling Trips						
Phase Name	**Worker Trip Number (trips/day)**	**Vendor Trip Number (trips/day)**	**Hauling Trip Number (total trips)**	**Worker Trip Length (miles/trip)**	**Vendor Trip Length (miles/trip)**	**Hauling Trip Length (miles/trip)**
Demolition	15	0	60	12.4	7.3	20
Site Preparation	18	0	10	12.4	7.3	20
Grading	20	0	5400	12.4	7.3	20
Building Construction	324	48	1400	12.4	7.3	20
Off Site Street Improvements	15	0	35	12.4	7.3	20
Architectural Coating	65	0	50	12.4	7.3	20

Notes:
This equipment list is based on CalEEMod default values.

Abbreviations:
CalEEMod: CALifornia Emissions Estimator MODel

References:
CalEEMod Version 2013.2.2 Available Online at: http://www.caleemod.com

Table 4a
Construction Criteria Air Pollutant Emissions (Uncontrolled Scenario)
Hall Saranap
Walnut Creek, California

	Construction Emissions[1]			
	ROG	NO_x	PM_{10} (exhaust only)	$PM_{2.5}$ (exhaust only)
Total Construction Emissions (ton)	4.0	5.7	0.11	0.11
Average Daily Emissions[2] (lbs/day)	**21**	**30**	**0.58**	**0.58**
BAAQMD Average Daily Threshold [lbs/day]	54	54	82	54
Exceeds daily thresholds? [Y/N]	N	N	N	N

Notes:
1. Emissions include those due to off-road construction equipment, on-road sources associated with construction (hauling, vendor, and worker trips), paving, and architechtural coatings. ROG and NO_x emissions were calculated in CalEEMod version 2013.2.2. PM_{10} off-road construction emissions calculated using Off-road Tier standards, assuming all Tier 3 emissions. PM_{10} on-road emissions calculated using CalEEMod. $PM_{2.5}$ conservatively assumed to be equal to PM_{10}.
2. Emissions averaged over the estimated 380 days of active construction.

Abbreviations:
CalEEMod: California Emissions Estimator Model
NO_x: Nitrogen Oxides
PM: Particulate Matter
ROG: Reactive Organic Gases
ton: short ton

Reference:
CalEEMod Version 2013.2.2, available online at: http://www.caleemod.com
Tier standards available online at: http://www.arb.ca.gov/msprog/ordiesel/documents/Off-Road_Diesel_Stds.xls

Table 4b
Construction Criteria Air Pollutant Emissions (Controlled Scenario)
Hall Saranap
Walnut Creek, California

	Construction Emissions[1]			
	ROG	NO_x	PM_{10} (exhaust only)	$PM_{2.5}$ (exhaust only)
Total Construction Emissions (ton)	4.0	5.7	0.08	0.08
Average Daily Emissions[2] (lbs/day)	**21**	**30**	**0.40**	**0.40**
BAAQMD Average Daily Threshold [lbs/day]	54	54	82	54
Exceeds daily thresholds? [Y/N]	N	N	N	N

Notes:
1. Emissions include those due to off-road construction equipment, on-road sources associated with construction (hauling, vendor, and worker trips), paving, and architechtural coatings. ROG and NO_x emissions were calculated in CalEEMod version 2013.2.2. PM_{10} off-road construction emissions calculated using Off-road Tier standards. All equipment is assumed to be Tier 3, and loaders, skiploaders, the forklift, and the air compressor are assumed to have Level 3 diesel particulate filters. PM_{10} on-road emissions calculated using CalEEMod. $PM_{2.5}$ conservatively assumed to be equal to PM_{10}.
2. Emissions averaged over the estimated 380 days of active construction.

Abbreviations:
CalEEMod: California Emissions Estimator Model
NO_x: Nitrogen Oxides
PM: Particulate Matter
ROG: Reactive Organic Gases
ton: short ton

Reference:
CalEEMod Version 2013.2.2, available online at: http://www.caleemod.com
Tier standards available online at: http://www.arb.ca.gov/msprog/ordiesel/documents/Off-Road_Diesel_Stds.xls

Table 5
Summary of Project Operational Criteria Air Pollutant Emissions - Emergency Engines
Hall Saranap
Walnut Creek, California

Generators	Size (kW)	Fuel Type	Operation[1] (hrs/yr)	Maximum Fuel Flow[2] (m^3/hr)	Emission Factors[3] (g/HP-hr)				Emission Factors[4] (lb/MMBtu)	Emission Rate (tpy)			
					NMHC	NMHC + NOx	NOx	CO	PM	NMHC	NOx	CO	PM
Site A	100	NG	50	39.9	1.00	--	2.0	4.0	1.94E-02	0.007	0.015	0.030	6.87E-04
Site B/B1	100	NG	50	39.9	1.00	--	2.0	4.0	1.94E-02	0.007	0.015	0.030	6.87E-04
Site C	80	NG	50	39.9	--	10.00	--	387	1.94E-02	0.003	0.059	1.7	6.87E-04
									Total	**0.018**	**0.089**	**1.8**	**2.1E-03**

Notes:

1. Non-emergency operation of all generators conservatively assumed to be 50 hours per year, the maximum allowable.
2. The maximum fuel flow was determined by product specification sheets for 100 HP natural gas generators. The maximum value was chosen from five randomly chosen specification sheets. The values for the 80 HP engine at Site C are conservatively assumed to be equal to the 100 HP engines. Natural gas is assumed to have an energy density of 1020 Btu/ft^3 as per AP-42 (1995).
3. Emission factors are conservatively based on emission standards for natural gas emergency generators according to 40 CFR Part 60, Subpart JJJJ of the NSPS.
4. AP-42 (1995) emission factors for 4-stroke natural gas-fired reciprocating engines are used (maximum of lean-burn and rich-burn), available at http://www.epa.gov/ttnchie1/ap42/ch03/final/c03s02.pdf

Table 5 (continued)
Summary of Project Operational Criteria Air Pollutant Emissions - Emergency Engines
Hall Saranap
Walnut Creek, California

Abbreviations:
AP-42: Air Pollution Emission Factors
CARB: California Air Resources Board
g: gram
HP: horsepower
hr: hour
kW: kilowatt
NG: natural gas
NMHC: non-methane hydrocarbons
NOx: nitrogen oxides
PM: particulate matter
tpy: tons per year
USEPA: U. S. Environmental Protection Agency

References:
AP-42, 1995. Compilation of Air Pollutant Emission Factors, Fifth edition. http://www.epa.gov/ttnchie1/ap42/
CARB. 2004. *Policy: CARB Emission Factors for CI Diesel Engines - Percent HC in Relation to NMHC + NOx.*
CARB. 2012. Regulation for the Mandatory Reporting of Greenhouse Gas Emissions. http://www.arb.ca.gov/cc/reporting/ghg-rep/regulation/mrr-regulation.htm
eCFR. (Table 1 in on-line documentation available at http://www.ecfr.gov/cgi-bin/retrieveECFR?gp=&SID=5cad118045b921585dbef4079dc88e3a&r=SUBPART&n=40y7.0.1.1.1.98#40:7.0.1.1.1.98.266.20.64). The combined emission factor for NMHC+NOx is used as an emission factor for NMHC and NOx assuming a conservative breakdown of 5% and 100%, respectively (guidance from CARB, 2004 suggests 5% and 95%, respectively).

Table 6
Summary of Project Operational Criteria Air Pollutant Emissions - Traffic
Hall Saranap
Walnut Creek, California

Description[1]	Pollutant	Trips and VMT		Emissions[3]	
		Average Daily Trips[1] (one-way trips)	Annual VMT[2] (vehicle-miles)	Average Daily Emissions (lb/day)	Maximum Annual Emissions (tpy)
Project Traffic	ROG	5,298	5,731,370	16	2.9
	NOx			23	4.2
	PM_{10}			12	2.2
	$PM_{2.5}$			3	0.6

Notes:
1. Number of vehicle trips provided by the Project Traffic Engineer
2. The VMT data in this table is based on the following percentage breakdown by trip type for residential and commercial land uses. Percentage of trips varies for commercial land uses by land use type. The commercial trip lengths for consumers and employees of the proposed project were adjusted based on analysis provided by Economic and Planning Systems, Inc.

Home -- work: Default 12.4 miles (26% of trips)
Home -- shop: Default 4.3 miles (29% of trips)
Home -- other: Default 5.4 miles (45% of trips)
Commercial -- customer: 1.38 miles (Average 65% of trips), from Economic and Planning Systems, Inc.
Commercial -- worker: Default 9.5 miles (Average 16% of trips)
Commercial -- non-worker: Default 7.3 miles (19% of trips)

3. Emissions were estimated using CalEEMod 2013.2.2

Abbreviations:
ARB: California Air Resources Board
lb: pound
NOx: oxides of nitrogen
PM: Particulate Matter
ROG: reactive organic compounds
tpy: tons per year
VMT: vehicle miles traveled
yr: year

Reference:
CalEEMod Version 2013.2.2 Available Online at: http://www.caleemod.com.
EPS, Analysis of Average Trip Length for the Saranap Village Mixed Use Project; EPS # 141021. March 31, 2014.

Table 7
Modeling Parameters for Construction
Hall Saranap
Walnut Creek, California

Period	Area	Source	Source Type[1]	Source Dimension (m)	Number of Sources	Release Height[2] (m)	Initial Vertical Dimension[3] (m)	Initial Lateral Dimension[3] (m)
Construction	Proposed Project	Construction Equipment	Volume	Project Area	40	5	1.4	4.7
Construction	Street Improvements	Construction Equipment	Volume	Project Area	287	5	1.4	1.2

Notes:
1. Due to lack of specific instructions on modeling of construction emissions from BAAQMD, ENVIRON used methodology from the CRRP-HRA (BAAQMD 2012) when setting up the model. According to the CRRP-HRA methodology, construction sources were modeled as volume sources.
2. According to the CRRP-HRA methodology, release height of the modeled volume sources representing construction equipment was set to 5 meters
3. According to USEPA ISC3 User's Guide Volume II, initial lateral dimension of single volume sources is length of side divided by 4.3. For a volume source, the initial lateral dimension is the length of the side divided by 4.3.

Abbreviations:
BAAQMD: Bay Area Air Quality Management District
g: gram
ISC: Industrial Source Complex Model
m: meter
SCAQMD: South Coast Air Quality Management District
STI: Sonoma Technology, Inc.
USEPA: United States Environmental Protection Agency

References:
BAAQMD. 2012. *The San Francisco Community Risk Reduction Plan: Technical Support Documentation, V9.*
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STI. 2011. *Default modeling parameters for stationary sources*. April. Provided by San Francisco Department of Planning, Environmental Planning.
USEPA. 1995. User's Guide for the Industrial Source Complex (ISC3) Dispersion Models. Volume II - Description of Model Algorithms. September. Available at http://www.epa.gov/scram001/userg/regmod/isc3v2.pdf

Table 8a
Construction Emissions for HRA Modeling (Uncontrolled Scenario)
Hall Saranap
Walnut Creek, California

Years	Annual DPM Emissions from Construction[1,2,3]		Annual $PM_{2.5}$ Emissions from Construction[1,3,4]	
	Proposed Project (g/s)	Street Improvements (g/s)	Proposed Project (g/s)	Street Improvements (g/s)
2015-2016	0.00093	0.0023	0.00093	0.0023

Notes:
1. Emission rate is calculated by taking total emissions, dividing by construction period, and converting to g/s. However, construction model takes into account temporal variations of emissions (day-time construction only).
2. DPM emissions of off-road equipment are assumed equivalent to the PM_{10} emissions.
3. Emissions include exhaust emissions for off-road construction equipment. On-road emissions associated with construction trips such as hauling, vendor, and worker trips are assumed to be negligible and are not included.
4. $PM_{2.5}$ conservatively assumed to be equal to PM_{10}

Abbreviation:
DPM: Diesel Particulate Matter
g: gram
HRA: Health Risk Assessment
PM: Particulate Matter
s: second

Table 8b
Construction Emissions for HRA Modeling (Controlled Scenario)
Hall Saranap
Walnut Creek, California

Years	Annual DPM Emissions from Construction[1,2,3,4]		Annual $PM_{2.5}$ Emissions from Construction[1,3,4,5]	
	Proposed Project (g/s)	Street Improvements (g/s)	Proposed Project (g/s)	Street Improvements (g/s)
2015-2016	0.00039	0.0019	0.00039	0.0019

Notes:
1. Emission rate is calculated by taking total emissions, dividing by construction period, and converting to g/s. However, construction model takes into account temporal variations of emissions (day-time construction only).
2. DPM emissions of off-road equipment are assumed equivalent to the PM_{10} emissions.
3. Emissions include exhaust emissions for off-road construction equipment. On-road emissions associated with construction trips such as hauling, vendor, and worker trips are assumed to be negligible and are not included.
4. Assumes Level 3 diesel particulate filters, that reduce PM emissions by 85%, are used on some pieces or construction equipment. Information on DPF can be found online at http://www.arb.ca.gov/diesel/verdev/vt/cvt.htm
5. $PM_{2.5}$ conservatively assumed to be equal to PM_{10}

Abbreviation:
DPM: Diesel Particulate Matter
g: gram
HRA: Health Risk Assessment
PM: Particulate Matter
s: second
DPF: Diesel Particulate Filter

Table 9
Exposure Parameters for Construction
Hall Saranap
Walnut Creek, California

Exposure Parameter	Units	Resident Child	
		Proposed Project	Street Improvements
Daily Breathing Rate (DBR) [1]	(L/kg-day)	581	581
Exposure Time (ET) [2]	(hours/24 hours)	24	24
Exposure Frequency (EF) [3]	(days/year)	350	350
Exposure Duration (ED) [4]	(years)	1.6	0.25
Averaging Time (AT)	(days)	25550	25550
Intake Factor, Inhalation (IF_{inh})	(m^3/kg-day)	0.013	0.0020

Equation used:

IF_{inh} = DBR * ET * EF * ED * CF / AT

CF: 0.001 (m^3/L)

Notes:

1. Daily breathing rates reflect default breathing rates for child and adult residents from BAAQMD 2010.
2. Exposure times reflect default exposure times for residents from BAAQMD 2010.
3. Exposure frequencies reflect default exposure frequencies for residents from BAAQMD 2010.
4. Construction exposure duration reflects the actual project construction schedule of 580 days and the actual street improvements schedule of 91 days.

Abbreviations:

BAAQMD: Bay Area Air Quality Management District
kg: kilogram
L: liter
m^3: cubic meters

Reference:

Bay Area Air Quality Management District (BAAQMD). 2010. *BAAQMD Air Toxics NSR Program Health Risk Screening Analysis (HRSA) Guidelines.* January.

Table 10
Toxicity Values
Hall Saranap
Walnut Creek, California

Source	Chemical	Cancer Potency Factor $(mg/kg\text{-}day)^{-1}$	Chronic Reference Exposure Level $(\mu g/m^3)$
Construction	Diesel PM	1.1	5

Note:
All toxicity values from Cal/EPA (2013).

Abbreviations:
$(mg/kg\text{-}day)^{-1}$: per milligram per kilogram-day
$\mu g/m^3$: micrograms per cubic meter
ARB: Air Resources Board
Cal/EPA: California Environmental Protection Agency
OEHHA: Office of Environmental Health Hazard Assessment
PM: Particulate Matter

Reference:
California Environmental Protection Agency (Cal/EPA). 2013. OEHHA/ARB Consolidated Table of Approved Risk Assessment Health Values. August. http://www.arb.ca.gov/toxics/healthval/contable.pdf

Table 11
Cancer Risk Adjustment Factors for Construction
Hall Saranap
Walnut Creek, California

Receptor	Time Period	Cancer Risk Adjustment Factor (CRAF)[1]
Resident Child[2]	Construction[3]	10

Notes:
1. Based on BAAQMD 2010.
2. A resident child is assumed to be exposed from the third trimester of pregnancy to age 1.3 years (a period of 580 days, the total duration of construction).
3. Street improvements occur within the timeframe of the proposed project construction period; therefore, the CRAF applies to both project construction and street improvements.

Abbreviation:
BAAQMD: Bay Area Air Quality Management District

Reference:
Bay Area Air Quality Management District (BAAQMD). 2010. *BAAQMD Air Toxics NSR Program Health Risk Screening Analysis (HRSA) Guidelines.* January.

Table 12a
Summary of Construction Criteria Air Pollutant Emissions - All Sources (Uncontrolled Scenario)
Hall Saranap
Walnut Creek, California

	Construction Emissions[1] [ton]			
	ROG	NO_x	PM_{10} (exhaust only)	$PM_{2.5}$ (exhaust only)
Total Construction Emissions [ton]	4.0	5.7	0.11	0.11
Average Daily Emissions[2] [lbs/day]	**21**	**30**	**0.58**	**0.58**
BAAQMD Average Daily Threshold [lbs/day]	54	54	82	54
Exceeds daily thresholds? [Y/N]	N	N	N	N

Notes:
1. Emissions include those due to off-road construction equipment, on-road sources associated with construction (hauling, vendor, and worker trips), paving, and architechtural coatings. ROG and NO_x emissions were calculated in CalEEMod version 2013.2.2. PM_{10} off-road construction emissions calculated using Off-road Tier standards, assuming all Tier 3 emissions. PM_{10} on-road emissions calculated using CalEEMod. $PM_{2.5}$ conservatively assumed to be equal to PM_{10}.
2. Emissions averaged over the estimated 380 days of active construction.

Abbreviations:
CalEEMod: California Emissions Estimator Model
lbs: pounds
NO_x: Nitrogen Oxides
PM: Particulate Matter
ROG: Reactive Organic Gases
ton: short ton

Reference:
CalEEMod Version 2013.2.2 Available online at: http://www.caleemod.com
Tier standards available online at: http://www.arb.ca.gov/msprog/ordiesel/documents/Off-Road_Diesel_Stds.xls
BAAQMD Average Daily Thresholds from BAAQMD CEQA Guidlines, May 2011

Table 12b
Summary of Construction Criteria Air Pollutant Emissions - All Sources (Controlled Scenario)
Hall Saranap
Walnut Creek, California

	Construction Emissions[1] [ton]			
	ROG	NO_x	PM_{10} (exhaust only)	$PM_{2.5}$ (exhaust only)
Total Construction Emissions [ton]	4.0	5.7	0.08	0.08
Average Daily Emissions[2] [lbs/day]	**21**	**30**	**0.40**	**0.40**
BAAQMD Average Daily Threshold [lbs/day]	54	54	82	54
Exceeds daily thresholds? [Y/N]	N	N	N	N

Notes:
1. Emissions include those due to off-road construction equipment, on-road sources associated with construction (hauling, vendor, and worker trips), paving, and architechtural coatings. ROG and NO_x emissions were calculated in CalEEMod version 2013.2.2. PM_{10} off-road construction emissions calculated using Off-road Tier standards. All equipment is assumed to be Tier 3, and loaders, skiploaders, the forklift, and the air compressor are assumed to have Level 3 diesel particulate filters. PM_{10} on-road emissions calculated using CalEEMod. $PM_{2.5}$ conservatively assumed to be equal to PM_{10}.
2. Emissions averaged over the estimated 380 days of active construction.

Abbreviations:
CalEEMod: California Emissions Estimator Model
lbs: pounds
NO_x: Nitrogen Oxides
PM: Particulate Matter
ROG: Reactive Organic Gases
ton: short ton

Reference:
CalEEMod Version 2013.2.2 Available online at: http://www.caleemod.com
Tier standards available online at: http://www.arb.ca.gov/msprog/ordiesel/documents/Off-Road_Diesel_Stds.xls

Table 13
Summary of Operational Criteria Air Pollutant Emissions - All Sources
Hall Saranap
Walnut Creek, California

Source	Average Daily Emissions (lb/day)				Maximum Annual Emissions (tpy)			
	ROG	NOx	PM_{10}	$PM_{2.5}$	ROG	NOx	PM_{10}	$PM_{2.5}$
Area[1]	20	0.18	0.89	0.88	3.6	0.03	0.16	0.16
Energy[1]	0.12	1.0	0.08	0.08	0.02	0.19	0.01	0.01
Mobile[2]	16	23	12	3.4	2.9	4.2	2.2	0.61
Generators[3]	0.10	0.49	1.1E-02	1.1E-02	0.02	0.09	2.1E-03	2.1E-03
Total	**36**	**25**	**13**	**4.3**	**6.6**	**4.5**	**2.4**	**0.79**
Operational Threshold	54	54	82	54	10	10	15	10
Above Threshold?	No	No	No	No	No	No	No	No

Notes:
1. Emissions estimated using CalEEMod version 2013.2.2
2. See Table 6 for detailed calculations.
3. See Table 5 for detailed calculations, $PM_{2.5}$ conservatively assumed to be equal to PM_{10}. Lb/day calculation based on assumption of generator operation 365 days/year.

Abbreviation:
CalEEMod: California Emissions Estimator Model
lb: pound
NOx: nitrogen oxide compounds ($NO + NO_2$)
PM = particulate matter
ROG: reactive organic gas
tpy: tons per year

Reference:
CalEEMod Version 2013.2.2 Available Online at: http://www.caleemod.com

Table 14a
Modeled Excess Lifetime Cancer Risk, Chronic HI, and $PM_{2.5}$ Concentration - Off-Site MEISR (Uncontrolled Scenario)
Hall Saranap
Walnut Creek, California

Source	UTMx (m)	UTMy (m)	Proposed Project	Street Improvements	Total[3]	BAAQMD Individual Source Significance Threshold
Lifetime Excess Cancer Risk[1] (in a million)	581100	4194300	13	3.8	17	**10**
Chronic HI[2]	581080	4194380	0.011	0.047	0.058	**1**
$PM_{2.5}$ Concentration ($\mu g/m^3$)	581180	4194440	0.091	0.26	0.35	**0.3**

Equations used:

$Risk_{inh} = \Sigma Risk_{inh,i} = \Sigma C_i \times MAF \times CF \times IF_{inh} \times CPF_i \times CRAF$

Where:

$Risk_{inh}$: Cancer Risk, as a result of inhalation exposure to Project emissions (unitless)

$Risk_{inh,i}$: Cancer Risk for Chemical i

C_i: Modeled Annual Average Concentration in air for Chemical i ($\mu g/m^3$)

MAF : Modeling Adjustment Factor

CF: Conversion Factor (mg/µg)

IF_{inh}: Intake Factor for Inhalation (m^3/kg-day)

CPF_i: Cancer Potency Factor for Chemical i (mg chemical/kg body weight-day)

CRAF: Cancer Risk Adjustment Factor

Chronic $HI_{inh} = \Sigma$Chronic $HQ_{inh,i} = \Sigma C_i/cREL_i$

Where:

Chronic HI_{inh}: Chronic hazard index, as a result of inhalation exposure to Project emissions (unitless)

Chronic $HQ_{inh,i}$: Chronic hazard quotient for Chemical i

C_i: Modeled Annual Average Concentration in air for Chemical i ($\mu g/m^3$)

$cREL_i$: Chronic reference exposure level for chemical i ($\mu g/m^3$)

Table 14a (continued)
Modeled Excess Lifetime Cancer Risk, Chronic HI, and $PM_{2.5}$ Concentration - Off-Site MEISR (Uncontrolled Scenario)
Hall Saranap
Walnut Creek, California

Notes:

1. Excess lifetime cancer risks are estimated as the upper-bound incremental probability that an individual will develop cancer over a lifetime as a direct result of exposure to potential carcinogens. The estimated risk is expressed as a unitless probability. The cancer risks attributed to the uncontrolled emissions associated with construction of the Project and street improvements were calculated based on the modeled annual average air concentrations, the intake factors for resident children presented in Table 9, the CPF presented in Table 10, and the CRAF for a resident child presented in Table 11. These risks correspond to umitigated construction emissions and are not necessarily reflective of actual construction impacts.

2. The potential for exposure to result in adverse chronic noncancer effects is evaluated by comparing the estimated annual average air concentration (which is equivalent to the average daily air concentration) to the noncancer chronic REL for each chemical. When calculated for a single chemical, the comparison yields a ratio termed a hazard quotient. To evaluate the potential for adverse chronic noncancer health effects from simultaneous exposure to multiple chemicals, the hazard quotients for all chemicals are summed, yielding a hazard index. The chronic hazard indices attributed to the uncontrolled emissions associated with construction of the Project and street improvements were calculated based on the modeled annual average DPM concentration presented in Table 4 and the chronic REL presented in Table 10.

3. The results presented are the results at the location of the maximum combined total impact due to uncontrolled project construction and street improvements. The maximum result for project construction or street improvements individually may be at a different location. The results for cancer risk and chronic HI represent the MEISR; the results for $PM_{2.5}$ represent the point of maximum impact (PMI).

Abbreviations:

m: meter
$\mu g/m^3$: micrograms per cubic meter
MEISR = Maximally exposed individual sensitive receptor
$PM_{2.5}$: Particulate matter 2.5 microns or less
PMI = Point of maximum impact
UTM: Universal Transverse Mercator

Table 14b
Modeled Excess Lifetime Cancer Risk, Chronic HI, and $PM_{2.5}$ Concentration - Off-Site MEISR (Controlled Scenario)
Hall Saranap
Walnut Creek, California

Source	UTMx (m)	UTMy (m)	Proposed Project	Street Improvements	Total[3]	BAAQMD Individual Source Significance Threshold
Lifetime Excess Cancer Risk[1] (in a million)	581100	4194300	5.5	3.1	8.7	**10**
Chronic HI[2]	581080	4194380	0.0046	0.038	0.043	**1**
$PM_{2.5}$ Concentration ($\mu g/m^3$)	581180	4194440	0.038	0.21	0.25	**0.3**

Equations used:

$Risk_{inh} = \Sigma Risk_{inh,i} = \Sigma C_i \times MAF \times CF \times IF_{inh} \times CPF_i \times CRAF$

Where:

$Risk_{inh}$: Cancer Risk, as a result of inhalation exposure to Project emissions (unitless)

$Risk_{inh,i}$: Cancer Risk for Chemical i

C_i: Modeled Annual Average Concentration in air for Chemical i ($\mu g/m^3$)

MAF : Modeling Adjustment Factor

CF: Conversion Factor (mg/µg)

IF_{inh}: Intake Factor for Inhalation (m^3/kg-day)

CPF_i: Cancer Potency Factor for Chemical i (mg chemical/kg body weight-day)

CRAF: Cancer Risk Adjustment Factor

$\text{Chronic } HI_{inh} = \Sigma \text{Chronic } HQ_{inh,i} = \Sigma C_i/cREL_i$

Where:

Chronic HI_{inh}: Chronic hazard index, as a result of inhalation exposure to Project emissions (unitless)

Chronic $HQ_{inh,i}$: Chronic hazard quotient for Chemical i

C_i: Modeled Annual Average Concentration in air for Chemical i ($\mu g/m^3$)

$cREL_i$: Chronic reference exposure level for chemical i ($\mu g/m^3$)

Table 14b (continued)
Modeled Excess Lifetime Cancer Risk, Chronic HI, and $PM_{2.5}$ Concentration - Off-Site MEISR (Controlled Scenario)
Hall Saranap
Walnut Creek, California

Notes:

1. Excess lifetime cancer risks are estimated as the upper-bound incremental probability that an individual will develop cancer over a lifetime as a direct result of exposure to potential carcinogens. The estimated risk is expressed as a unitless probability. The cancer risks attributed to the controlled emissions associated with construction of the Project and street improvements were calculated based on the modeled annual average air concentrations, the intake factors for resident children presented in Table 9, the CPF presented in Table 10, and the CRAF for a resident child presented in Table 11.

2. The potential for exposure to result in adverse chronic noncancer effects is evaluated by comparing the estimated annual average air concentration (which is equivalent to the average daily air concentration) to the noncancer chronic REL for each chemical. When calculated for a single chemical, the comparison yields a ratio termed a hazard quotient. To evaluate the potential for adverse chronic noncancer health effects from simultaneous exposure to multiple chemicals, the hazard quotients for all chemicals are summed, yielding a hazard index. The chronic hazard indices attributed to the controlled emissions associated with construction of the Project and street improvements were calculated based on the modeled annual average DPM concentration presented in Table 4 and the chronic REL presented in Table 10.

3. The results presented are the results at the location of the maximum combined total impact due to uncontrolled project construction and street improvements. The maximum result for project construction or street improvements individually may be at a different location. The results for cancer risk and chronic HI represent the MEISR; the results for $PM_{2.5}$ represent the point of maximum impact (PMI).

Abbreviations:

m: meter
$\mu g/m^3$: micrograms per cubic meter
MEISR = Maximally exposed individual sensitive receptor
$PM_{2.5}$: Particulate matter 2.5 microns or less
PMI = Point of maximum impact
UTM: Universal Transverse Mercator

Table 15
Stationary Off-Site Sources
Hall Saranap
Walnut Creek, California

Facility Name	Street Address	Distance from Site[1] (feet)	Cancer Risk (in a million)	Chronic Hazard Index	$PM_{2.5}$ ($\mu g/m^3$)	Notes
Hull's Walnut Creek Chapel	1139 Saranap Avenue	390	10	0.44	0.036	2

Notes:
1. The shortest distances between the Project boundary and the stationary source is reported. The distance was measured using ArcMap.
2. Stationary source screening values were obtained from the BAAQMD Stationary Source Screening Analysis Tool for Contra Costa County (BAAQMD 2012).

Abbreviations:
$\mu g/m^3$: microgram per cubic meter
BAAQMD: Bay Area Air Quality Management District
CEQA: California Environmental Quality Act
$PM_{2.5}$: Particulate matter 2.5 microns or less

Reference:
BAAQMD. 2012. Stationary Source Screening Analysis Tool. Available online at: http://baaqmd.gov/Divisions/Planning-and-Research/CEQA-GUIDELINES/Tools-and-Methodology.aspx.

Table 16
Traffic Off-Site Sources
Hall Saranap
Walnut Creek, California

Roadway Type	Roadway	Approximate Distance from Site[1] (feet)	Average Daily Traffic (ADT) (vehicles/day)	Direction	Interpolated Lifetime Excess Cancer Risk[2] (in a million)	Interpolated Chronic Hazard Index[2]	Interpolated $PM_{2.5}$ Concentration[2] ($\mu g/m^3$)	Notes
Surface Street	Boulevard Way	10	10,100	N-S	2.4	--	0.087	3,4
Highway Ramp	EB 24 Off To Ignacio Way (NB 680)	580	12,600	E-W	0.46	--	0.010	4,5
	EB 24 Off To SB 680/Walnut Creek	480	32,000	E-W	0.96	--	0.035	4,5
	Segment EB 24 Off To Walnut Creek	534	10,200	E-W	0.41	--	0.010	4,5
	WB On 24 From NB 680/Mount Diablo	740	28,500	E-W	0.60	--	0.019	4,5
	Segment WB 24 On From Mount Diablo	800	10,900	E-W	0.35	--	0.0032	4,5
Highway	WB 24	735	183,000	E-W	13	0.012	0.12	6,7
				Total	**18**	**0.012**	**0.29**	

Notes:

1. The shortest distance between the Project boundary and the nearest travel lane of each roadway is shown.
2. Distance and ADT-interpolated estimates were completed according to BAAQMD recommendations (BAAQMD 2012).
3. Average daily traffic data (ADT) on surface streets was based on volumes presented by the California Environmental health Tracking Program (CEHTP 2004).
4. Screening values for surface streets and highway ramps were obtained from BAAQMD Roadway Screening Analysis Tables (BAAQMD 2011a).
5. ADT on highway ramps was based on volumes presented by the California Department of Transportation (CDOT 2012a).
6. ADT on Highway 24 was based on volume presented by the California Department of Transportation (CDOT 2012b).
7. Screening values were obtained from the BAAQMD Highway Screening Analysis Tool for Contra Costa County (BAAQMD 2011b) based on a receptor height of 6 feet.

Table 16 (continued)
Traffic Off-Site Sources
Hall Saranap
Walnut Creek, California

Abbreviations:

-- = Not available
$\mu g/m^3$: microgram per cubic meter
$PM_{2.5}$: Particulate matter 2.5 microns or less
ADT: Average daily traffic
ARB: California Air Resources Board
BAAQMD: Bay Area Air Quality Management District
CDOT: California Department of Transportation
CEHTP: California Environmental Health Tracking Program
EB: East-bound
NB: North-bound
SB: South-bound
WB: West-bound

References:

BAAQMD. 2011a. Roadway Screening Analysis Tables. Accessed January 2014. Available at: http://www.baaqmd.gov/~/media/Files/Planning%20and%20Research/CEQA/County%20Surface%20Street%20Screening%20Tables%20Dec%202011.ashx?la=en

BAAQMD. 2011b. Highway Screening Analysis Tool. Accessed January 2014. Available at: http://baaqmd.gov/Divisions/Planning-and-Research/CEQA-GUIDELINES/Tools-and-Methodology.aspx.

BAAQMD. 2012.CEQA Air Quality Guidelines. May.

CDOT. 2012a. Ramp Volumes on California State Freeways. Accessed January 2014. Available at: http://traffic-counts.dot.ca.gov/

CDOT. 2012b. Traffic Volumes (Annual Average Daily Traffic (AADT)) for all vehicles on California State Highways. Accessed January 2014. Available at: http://traffic-counts.dot.ca.gov/

CEHTP. 2004. Traffic Volume Linkage Tool. Accessed January 2014. Accessed January 2014. Available at http://www.ehib.org/page.jsp?page_key=136.

Table 17a
Cumulative Excess Lifetime Cancer Risk, Chronic HI, and $PM_{2.5}$ Concentration - Off-Site MEISR
(Uncontrolled Scenario)
Hall Saranap
Walnut Creek, California

Source	Risks or Hazards		
	Cancer Risk (in a million)	Chronic Hazard Index	$PM_{2.5}$ ($\mu g/m^3$)
Uncontrolled Construction[1]	17	0.058	0.35
Off-site Stationary Sources[2]	10	0.44	0.036
Off-site Traffic[3]	18	0.012	0.29
Cumulative Total	**45**	**0.51**	**0.67**
BAAQMD Cumulative Threshold	**100**	**10**	**0.8**
Exceeds BAAQMD Threshold? [Y/N]	**N**	**N**	**N**

Notes:
1. Total of project construction and street improvements as presented in Table 14a.
2. As presented in Table 15.
3. Total as presented in Table 16.

Abbreviations:
$\mu g/m^3$: microgram per cubic meter
$PM_{2.5}$: Particulate matter 2.5 microns or less

Table 17b
Cumulative Excess Lifetime Cancer Risk, Chronic HI, and $PM_{2.5}$ Concentration - Off-Site MEISR
(Controlled Scenario)
Hall Saranap
Walnut Creek, California

Source	Risks or Hazards		
	Cancer Risk (in a million)	Chronic Hazard Index	$PM_{2.5}$ ($\mu g/m^3$)
Controlled Construction[1]	8.7	0.043	0.25
Off-site Stationary Sources[2]	10	0.44	0.036
Off-site Traffic[3]	18	0.012	0.29
Cumulative Total	**37**	**0.49**	**0.57**
BAAQMD Cumulative Threshold	**100**	**10**	**0.8**
Exceeds BAAQMD Threshold? [Y/N]	**N**	**N**	**N**

Notes:
1. Total of project construction and street improvements as presented in Table 14b.
2. As presented in Table 15.
3. Total as presented in Table 16.

Abbreviations:
$\mu g/m^3$: microgram per cubic meter
$PM_{2.5}$: Particulate matter 2.5 microns or less

Figures

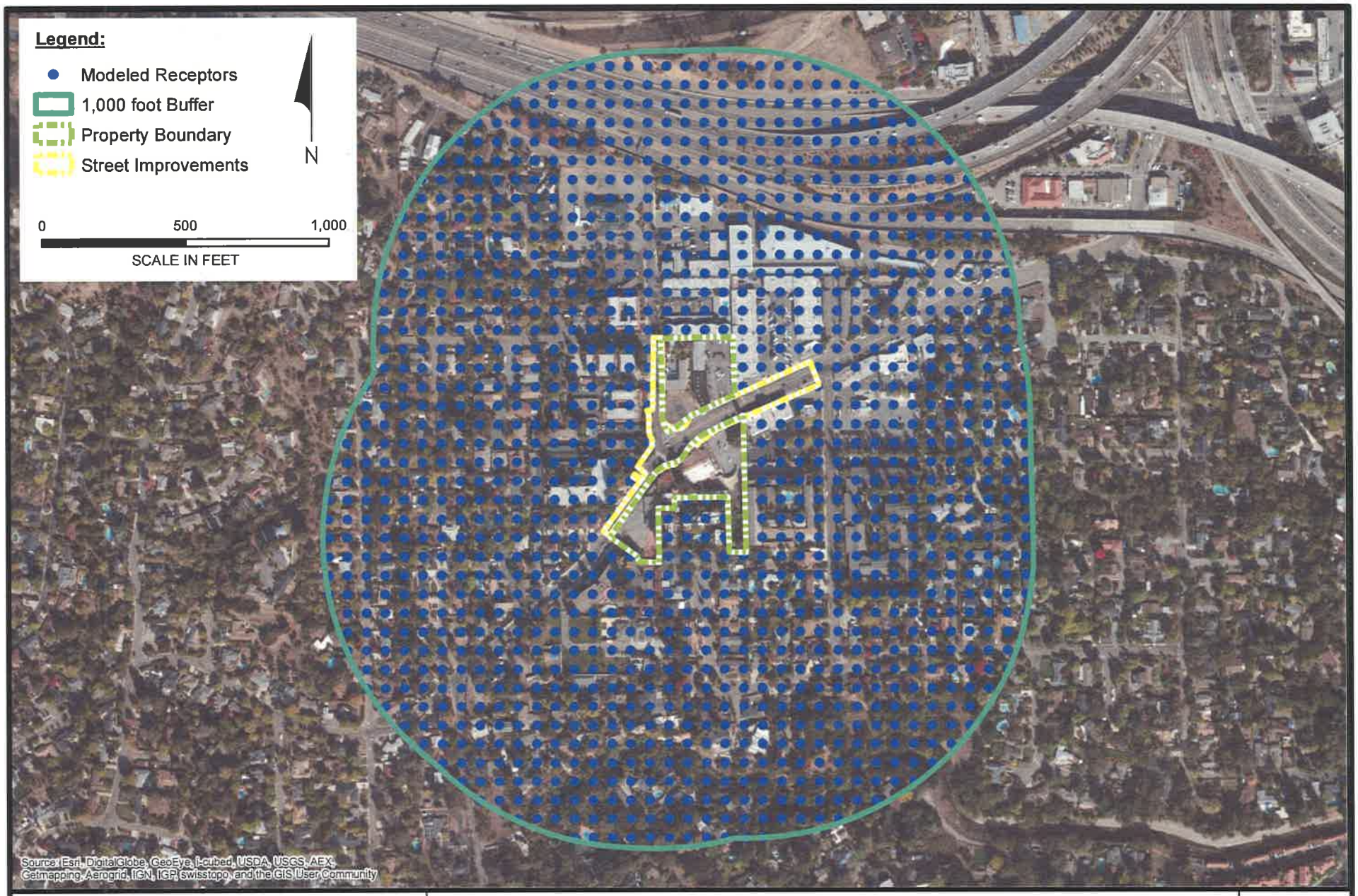
ENVIRON

Property Boundary
Hall Saranap
Walnut Creek, California

Figure
1

Drafter: JMR | Date: 4/1/2014 | Contract Number: 03-34227A | Approved: | Revised:

Path: U:\Hall Saranap\GIS\Hall Saranap Project Boundary 2.mxd



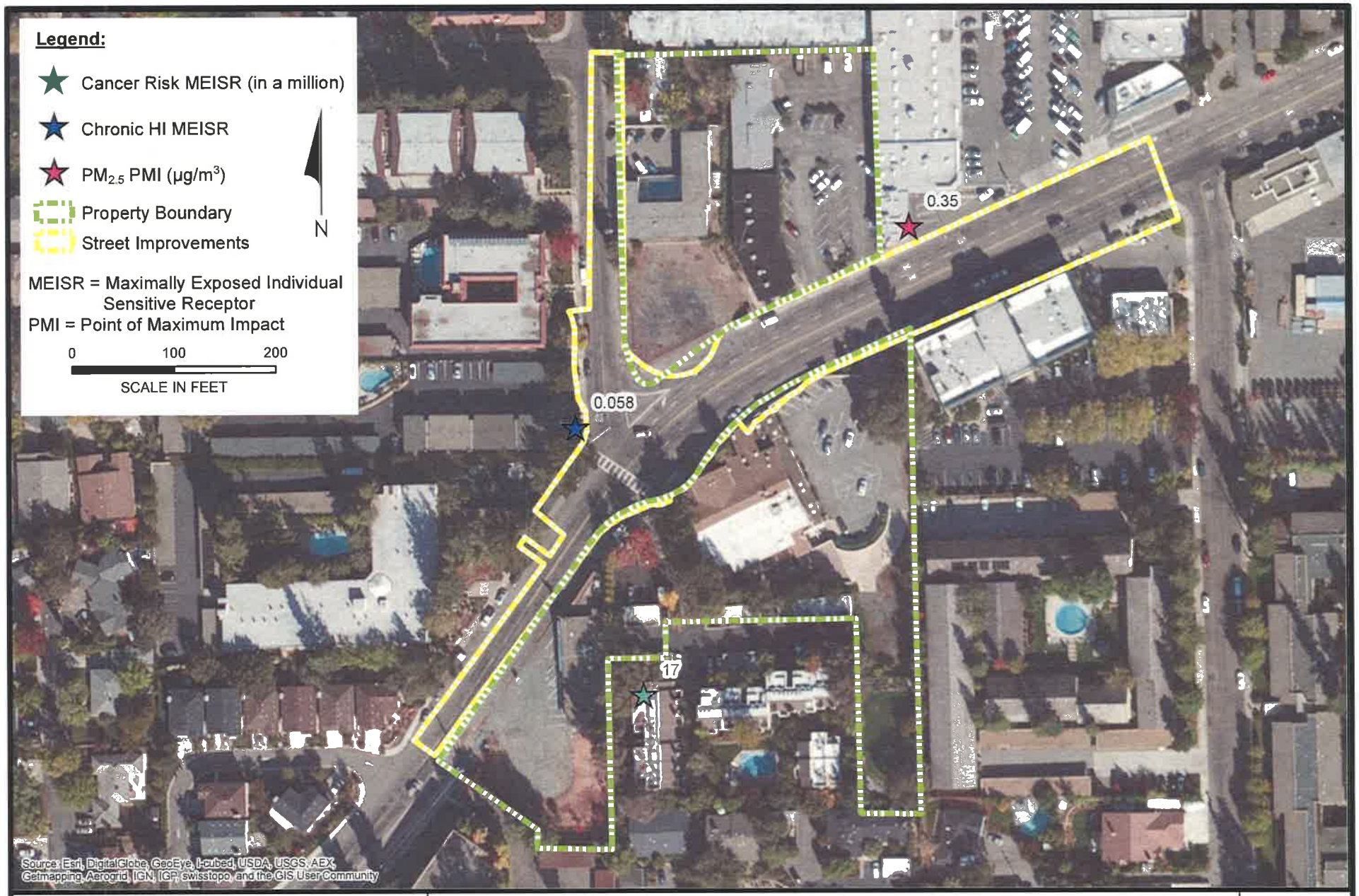
ENVIRON

Modeling Extent
Hall Saranap
Walnut Creek, California

Figure
2

Drafter: JMR | Date: 4/2/2014 | Contract Number: 03-34227A | Approved: | Revised:

Path: U:\Hall Saranap\GIS\Hall Saranap Receptor Grid.mxd



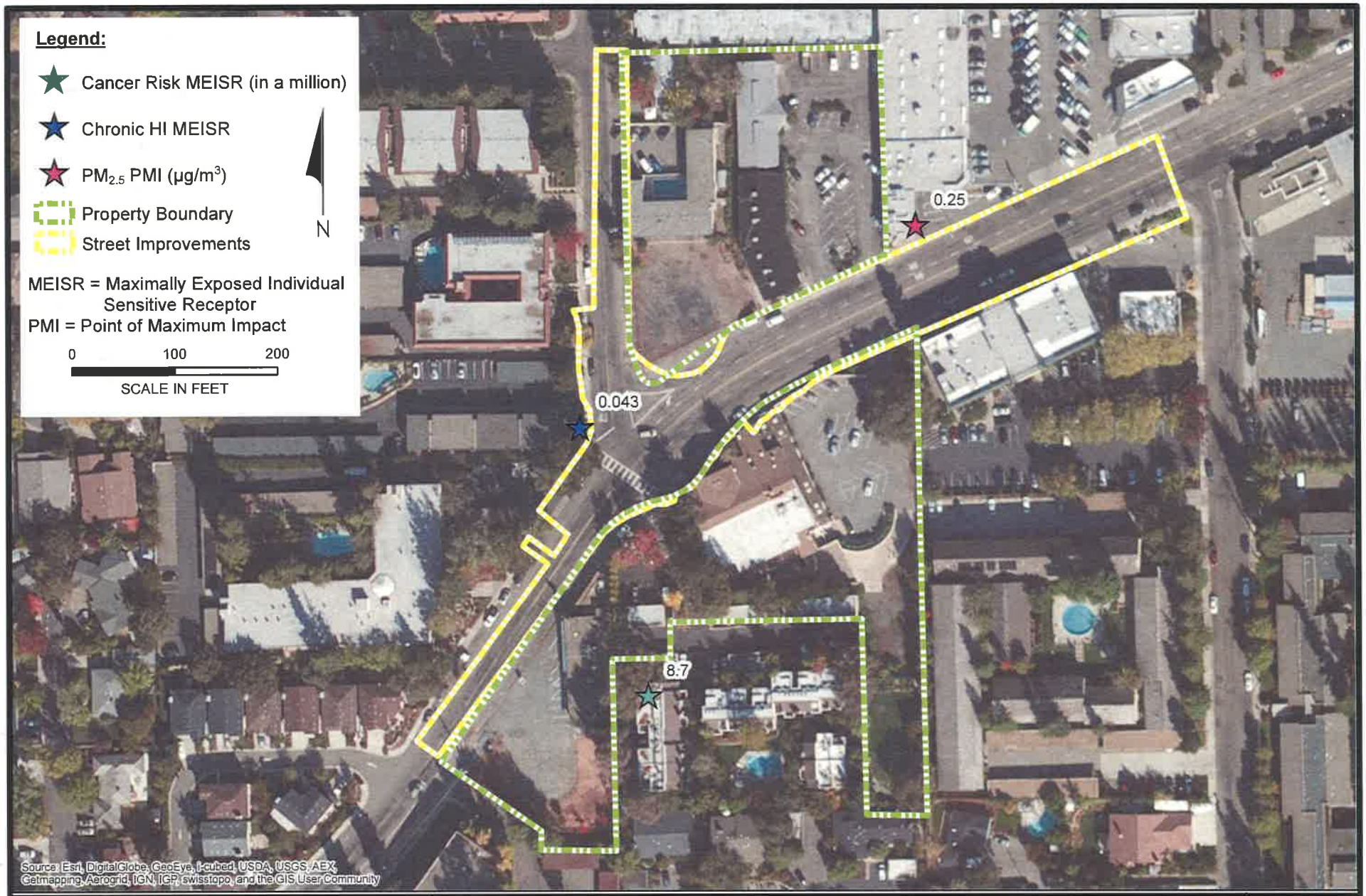
ENVIRON

Location of MEISR and PMI – Uncontrolled Scenario
Hall Saranap
Walnut Creek, California

Figure
3a

Drafter: JMR | Date: 4/3/2014 | Contract Number: 03-34227A | Approved: | Revised:

Path: U:\Hall Saranap\GIS\Hall Saranap MEISR Uncontrolled.mxd



ENVIRON

Location of MEISR and PMI – Controlled Scenario
Hall Saranap
Walnut Creek, California

Figure
3b

Drafter: JMR | Date: 4/3/2014 | Contract Number: 03-34227A | Approved: | Revised:

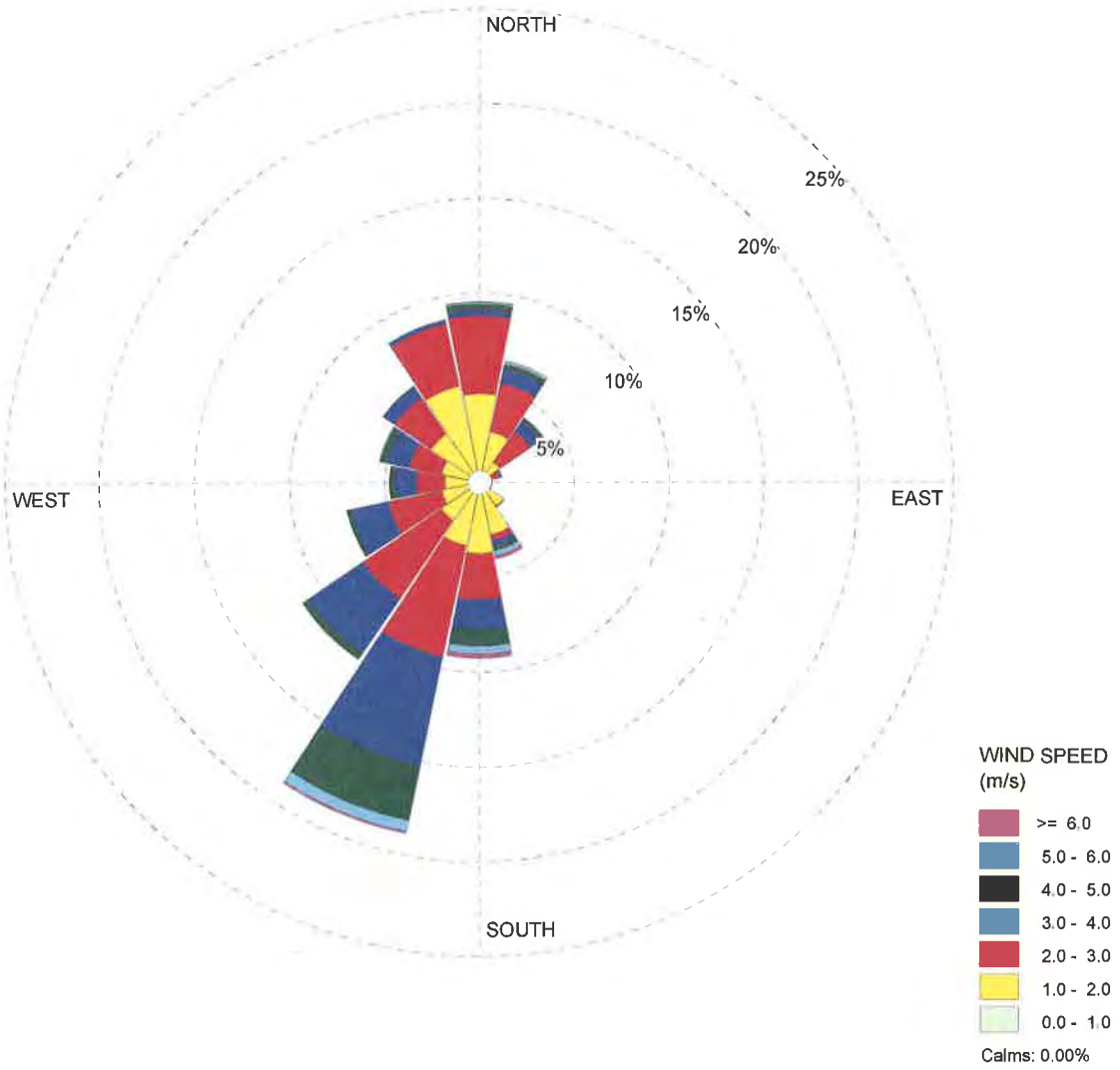
Path: U:\Hall Saranap\GIS\Hall Saranap MEISR Controlled.mxd

WIND ROSE PLOT:

Hall Saranap - 5 year Wind Rose
2001-2005 Station #2903 - Concord, CA

DISPLAY:

Wind Speed
Direction (blowing from)



COMMENTS:	DATA PERIOD:	COMPANY NAME: ENVIRON	
	Start Date: 1/1/2001 - 07:00 **End Date: 12/31/2005 - 17:00**	MODELER:	Figure **4**
	CALM WINDS: **0.00%**	TOTAL COUNT: **20086 hrs.**	
	AVG. WIND SPEED: **2.42 m/s**	DATE: **4/2/2014**	PROJECT NO.: 03-34227A

WRPLOT View - Lakes Environmental Software

Appendices

Appendix A: CalEEMod Output Files

Saranap Village - Traffic (Adjusted Trip Length-3)

Contra Costa County, Annual

Overall Operational Emissions

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	3.6084	0.0332	2.8205	9.9000e-004		0.1616	0.1616		0.1615	0.1615	15.4110	27.7185	43.1295	0.0316	1.2800e-003	44.1914
Energy	0.0215	0.1908	0.1286	1.1700e-003		0.0149	0.0149		0.0149	0.0149	0.0000	953.8848	953.8848	0.0497	0.0133	959.0648
Mobile	2.9169	4.1968	22.8779	0.0315	2.1329	0.0464	2.1793	0.5712	0.0426	0.6138	0.0000	2,487.6773	2,487.6773	0.1258	0.0000	2,490.3181
Waste						0.0000	0.0000		0.0000	0.0000	83.2913	0.0000	83.2913	4.9224	0.0000	186.6611
Water						0.0000	0.0000		0.0000	0.0000	6.8199	32.8469	39.6668	0.7025	0.0170	59.6761
Total	**6.5468**	**4.4208**	**25.8270**	**0.0336**	**2.1329**	**0.2228**	**2.3557**	**0.5712**	**0.2190**	**0.7902**	**105.5221**	**3,502.1274**	**3,607.6496**	**5.8319**	**0.0316**	**3,739.9115**

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	3.6084	0.0332	2.8205	9.9000e-004		0.1616	0.1616		0.1615	0.1615	15.4110	27.7185	43.1295	0.0316	1.2800e-003	44.1914
Energy	0.0215	0.1908	0.1286	1.1700e-003		0.0149	0.0149		0.0149	0.0149	0.0000	953.8848	953.8848	0.0497	0.0133	959.0648
Mobile	2.9169	4.1968	22.8779	0.0315	2.1329	0.0464	2.1793	0.5712	0.0426	0.6138	0.0000	2,487.6773	2,487.6773	0.1258	0.0000	2,490.3181
Waste						0.0000	0.0000		0.0000	0.0000	83.2913	0.0000	83.2913	4.9224	0.0000	186.6611
Water						0.0000	0.0000		0.0000	0.0000	6.8199	32.8469	39.6668	0.7024	0.0169	59.6653
Total	**6.5468**	**4.4208**	**25.8270**	**0.0336**	**2.1329**	**0.2228**	**2.3557**	**0.5712**	**0.2190**	**0.7902**	**105.5221**	**3,502.1274**	**3,607.6496**	**5.8318**	**0.0316**	**3,739.9007**

Energy Emissions by Fuel Type

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
NaturalGas Mitigated	0.0215	0.1908	0.1286	1.1700e-003		0.0149	0.0149		0.0149	0.0149	0.0000	213.0002	213.0002	4.0800e-003	3.9100e-003	214.2965
NaturalGas Unmitigated	0.0215	0.1908	0.1286	1.1700e-003		0.0149	0.0149		0.0149	0.0149	0.0000	213.0002	213.0002	4.0800e-003	3.9100e-003	214.2965
Electricity Mitigated						0.0000	0.0000		0.0000	0.0000	0.0000	740.8846	740.8846	0.0456	9.4400e-003	744.7683
Electricity Unmitigated						0.0000	0.0000		0.0000	0.0000	0.0000	740.8846	740.8846	0.0456	9.4400e-003	744.7683

Area Emissions by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	0.3354					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	2.4876					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Hearth	0.7291	0.0124	1.0443	9.0000e-004		0.1520	0.1520		0.1520	0.1520	15.4110	24.8550	40.2660	0.0287	1.2800e-003	41.2661
Landscaping	0.0564	0.0208	1.7762	9.0000e-005		9.5700e-003	9.5700e-003		9.5700e-003	9.5700e-003	0.0000	2.8635	2.8635	2.9400e-003	0.0000	2.9253
Total	**3.6084**	**0.0332**	**2.8205**	**9.9000e-004**		**0.1616**	**0.1616**		**0.1615**	**0.1615**	**15.4110**	**27.7185**	**43.1295**	**0.0316**	**1.2800e-003**	**44.1914**

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	0.3354					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	2.4876					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Hearth	0.7291	0.0124	1.0443	9.0000e-004		0.1520	0.1520		0.1520	0.1520	15.4110	24.8550	40.2660	0.0287	1.2800e-003	41.2661
Landscaping	0.0564	0.0208	1.7762	9.0000e-005		9.5700e-003	9.5700e-003		9.5700e-003	9.5700e-003	0.0000	2.8635	2.8635	2.9400e-003	0.0000	2.9253
Total	**3.6084**	**0.0332**	**2.8205**	**9.9000e-004**		**0.1616**	**0.1616**		**0.1615**	**0.1615**	**15.4110**	**27.7185**	**43.1295**	**0.0316**	**1.2800e-003**	**44.1914**

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Overall Unmitigated Construction Emissions

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2015	1.4604	6.518	6.241	0.0114	0.4702	0.2808	0.751	0.142	0.2605	0.4025	0	1,011.81	1,011.81	0.1455	0	1,014.87
2016	3.1584	3.5581	4.6623	8.81E-03	0.4063	0.1712	0.5775	0.1087	0.1603	0.269	0	739.1167	739.1167	0.0969	0	741.1523
Total	**4.6188**	**10.0761**	**10.9033**	**0.0202**	**0.8765**	**0.4519**	**1.3285**	**0.2506**	**0.4208**	**0.6714**	**0**	**1,750.93**	**1,750.93**	**0.2425**	**0**	**1,756.02**

Construction Emission

Demolition - 2015 Emissions

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.0241	0.0000	0.0241	3.6500e-003	0.0000	3.6500e-003	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0838	0.9336	0.6209	8.70E-04		0.043	0.043		0.0402	0.0402	0	81.8104	81.8104	0.0224	0	82.2801
Total	**0.0838**	**0.9336**	**0.6209**	**8.70E-04**	**0.0241**	**0.043**	**0.0671**	**3.65E-03**	**0.0402**	**0.0438**	**0**	**81.8104**	**81.8104**	**0.0224**	**0**	**82.2801**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	8.0000e-004	0.0104	8.1500e-003	2.0000e-005	5.1000e-004	1.6000e-004	6.6000e-004	1.4000e-004	1.4000e-004	2.8000e-004	0.0000	2.0812	2.0812	2.0000e-005	0.0000	2.0815
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.2600e-003	1.8500e-003	0.0181	3.0000e-005	2.7300e-003	2.0000e-005	2.7500e-003	7.3000e-004	2.0000e-005	7.5000e-004	0.0000	2.5540	2.5540	1.5000e-004	0.0000	2.5571
Total	**2.06E-03**	**0.0123**	**0.0263**	**5.00E-05**	**3.24E-03**	**1.80E-04**	**3.41E-03**	**8.70E-04**	**1.60E-04**	**1.03E-03**	**0**	**4.6351**	**4.6351**	**1.70E-04**	**0**	**4.6387**

Grading - 2015 Emissions

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.0759	0.0000	0.0759	0.0390	0.0000	0.0390	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0495	0.6238	0.3461	6.60E-04		0.0257	0.0257		0.0236	0.0236	0	63.061	63.061	0.0188	0	63.4564
Total	**0.0495**	**0.6238**	**0.3461**	**6.60E-04**	**0.0759**	**0.0257**	**0.1016**	**0.039**	**0.0236**	**0.0626**	**0**	**63.061**	**63.061**	**0.0188**	**0**	**63.4564**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0719	0.9399	0.7339	2.03E-03	0.0456	0.014	0.0596	0.0125	0.0128	0.0254	0	187.3047	187.3047	1.58E-03	0	187.3379
Vendor	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Worker	9.70E-04	1.42E-03	0.0139	2.00E-05	2.09E-03	2.00E-05	2.11E-03	5.60E-04	2.00E-05	5.70E-04	0	1.9581	1.9581	1.10E-04	0	1.9605
Total	**0.0729**	**0.9413**	**0.7478**	**2.05E-03**	**0.0477**	**0.014**	**0.0617**	**0.0131**	**0.0129**	**0.0259**	**0**	**189.2628**	**189.2628**	**1.69E-03**	**0**	**189.2983**

Paving - 2015 Emissions

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0761	0.7992	0.4974	7.10E-04		0.0492	0.0492		0.0453	0.0453	0	67.7994	67.7994	0.0202	0	68.2245
Paving	2.36E-03					0	0		0	0	0	0	0	0	0	0
Total	**0.0784**	**0.7992**	**0.4974**	**7.10E-04**		**0.0492**	**0.0492**		**0.0453**	**0.0453**	**0**	**67.7994**	**67.7994**	**0.0202**	**0**	**68.2245**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	4.70E-04	6.09E-03	4.76E-03	1.00E-05	3.00E-04	9.00E-05	3.90E-04	8.00E-05	8.00E-05	1.60E-04	0	1.214	1.214	1.00E-05	0	1.2142

Vendor	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Worker	2.05E-03	3.01E-03	0.0295	5.00E-05	4.44E-03	4.00E-05	4.48E-03	1.18E-03	4.00E-05	1.22E-03	0	4.1502	4.1502	2.40E-04	0	4.1553
Total	**2.52E-03**	**9.10E-03**	**0.0342**	**6.00E-05**	**4.74E-03**	**1.30E-04**	**4.87E-03**	**1.26E-03**	**1.20E-04**	**1.38E-03**	**0**	**5.3642**	**5.3642**	**2.50E-04**	**0**	**5.3696**

Building Construction - 2015 Emissions

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.2447	2.3354	1.3274	2.35E-03		0.1303	0.1303		0.121	0.121	0	218.7209	218.7209	0.0648	0	220.0826
Total	**0.2447**	**2.3354**	**1.3274**	**2.35E-03**		**0.1303**	**0.1303**		**0.121**	**0.121**	**0**	**218.7209**	**218.7209**	**0.0648**	**0**	**220.0826**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	8.64E-03	0.1129	0.0881	2.40E-04	0.0103	1.68E-03	0.0119	2.68E-03	1.54E-03	4.22E-03	0	22.4912	22.4912	1.90E-04	0	22.4952
Vendor	0.0601	0.4863	0.6576	1.01E-03	0.0272	7.81E-03	0.035	7.79E-03	7.18E-03	0.015	0	92.1114	92.1114	8.20E-04	0	92.1287
Worker	0.1202	0.176	1.7244	3.08E-03	0.2596	2.24E-03	0.2618	0.069	2.05E-03	0.0711	0	242.7306	242.7306	0.0142	0	243.0294
Total	**0.1889**	**0.7752**	**2.4702**	**4.33E-03**	**0.2971**	**0.0117**	**0.3088**	**0.0795**	**0.0108**	**0.0903**	**0**	**357.3331**	**357.3331**	**0.0152**	**0**	**357.6532**

Building Construction - 2016 Emissions

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.2622	2.4753	1.4974	2.72E-03		0.1385	0.1385		0.1286	0.1286	0	250.6591	250.6591	0.0745	0	252.2231
Total	**0.2622**	**2.4753**	**1.4974**	**2.72E-03**		**0.1385**	**0.1385**		**0.1286**	**0.1286**	**0**	**250.6591**	**250.6591**	**0.0745**	**0**	**252.2231**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	8.70E-03	0.1127	0.0939	2.80E-04	0.0105	1.46E-03	0.0119	2.75E-03	1.34E-03	4.10E-03	0	25.7601	25.7601	1.90E-04	0	25.7641

Vendor	0.0614	0.4904	0.7047	1.16E-03	0.0315	7.24E-03	0.0388	9.03E-03	6.65E-03	0.0157	0	105.518	105.518	8.40E-04	0	105.5357
Worker	0.1245	0.1829	1.7865	3.57E-03	0.3009	2.45E-03	0.3033	0.08	2.25E-03	0.0823	0	271.7231	271.7231	0.0151	0	272.0392
Total	**0.1946**	**0.786**	**2.5851**	**5.01E-03**	**0.3429**	**0.0112**	**0.3541**	**0.0918**	**0.0102**	**0.1021**	**0**	**403.0012**	**403.0012**	**0.0161**	**0**	**403.339**

Architectural Coating - 2015 Emissions

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	0.7177					0	0		0	0	0	0	0	0	0	0
Off-Road	0.0118	0.0745	0.0552	9.00E-05		6.41E-03	6.41E-03		6.41E-03	6.41E-03	0	7.4044	7.4044	9.60E-04	0	7.4247
Total	**0.7295**	**0.0745**	**0.0552**	**9.00E-05**		**6.41E-03**	**6.41E-03**		**6.41E-03**	**6.41E-03**	**0**	**7.4044**	**7.4044**	**9.60E-04**	**0**	**7.4247**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	1.40E-04	1.86E-03	1.45E-03	0	3.40E-04	3.00E-05	3.70E-04	9.00E-05	3.00E-05	1.10E-04	0	0.3712	0.3712	0	0	0.3712
Vendor	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Worker	7.94E-03	0.0116	0.114	2.00E-04	0.0172	1.50E-04	0.0173	4.56E-03	1.40E-04	4.70E-03	0	16.0475	16.0475	9.40E-04	0	16.0673
Total	**8.08E-03**	**0.0135**	**0.1155**	**2.00E-04**	**0.0175**	**1.80E-04**	**0.0177**	**4.65E-03**	**1.70E-04**	**4.81E-03**	**0**	**16.4187**	**16.4187**	**9.40E-04**	**0**	**16.4385**

Architectural Coating - 2016 Emissions

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	2.6358					0	0		0	0	0	0	0	0	0	0
Off-Road	0.0392	0.2526	0.2006	3.20E-04		0.0209	0.0209		0.0209	0.0209	0	27.1922	27.1922	3.21E-03	0	27.2595
Total	**2.675**	**0.2526**	**0.2006**	**3.20E-04**		**0.0209**	**0.0209**		**0.0209**	**0.0209**	**0**	**27.1922**	**27.1922**	**3.21E-03**	**0**	**27.2595**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e

Category	tons/yr										MT/yr					
Hauling	4.50E-04	5.89E-03	4.91E-03	1.00E-05	4.00E-04	8.00E-05	4.80E-04	1.10E-04	7.00E-05	1.80E-04	0	1.347	1.347	1.00E-05	0	1.3472
Vendor	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Worker	0.0261	0.0383	0.3742	7.50E-04	0.063	5.10E-04	0.0635	0.0168	4.70E-04	0.0172	0	56.9173	56.9173	3.15E-03	0	56.9835
Total	**0.0265**	**0.0442**	**0.3791**	**7.60E-04**	**0.0634**	**5.90E-04**	**0.064**	**0.0169**	**5.40E-04**	**0.0174**	**0**	**58.2643**	**58.2643**	**3.16E-03**	**0**	**58.3307**

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Overall Mitigated Construction Emissions

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2015	1.0823	2.9934	6.1392	0.0114	0.4702	0.0826	0.5529	0.142	0.0805	0.2225	0	1,011.81	1,011.81	0.1455	0	1,014.87
2016	2.9028	1.2078	4.7029	8.81E-03	0.4063	0.029	0.4353	0.1087	0.028	0.1367	0	739.1163	739.1163	0.0969	0	741.152
Total	**3.9852**	**4.2012**	**10.8421**	**0.0202**	**0.8765**	**0.1116**	**0.9882**	**0.2506**	**0.1085**	**0.3592**	**0**	**1,750.93**	**1,750.93**	**0.2425**	**0**	**1,756.02**

Demolition - 2015 Emissions

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.0241	0	0.0241	3.65E-03	0	3.65E-03	0	0	0	0	0	0
Off-Road	0.0208	0.4105	0.4732	8.70E-04		0.0174	0.0174		0.0174	0.0174	0	81.8103	81.8103	0.0224	0	82.28
Total	**0.0208**	**0.4105**	**0.4732**	**8.70E-04**	**0.0241**	**0.0174**	**0.0415**	**3.65E-03**	**0.0174**	**0.0211**	**0**	**81.8103**	**81.8103**	**0.0224**	**0**	**82.28**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	8.00E-04	0.0104	8.15E-03	2.00E-05	5.10E-04	1.60E-04	6.60E-04	1.40E-04	1.40E-04	2.80E-04	0	2.0812	2.0812	2.00E-05	0	2.0815
Vendor	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Worker	1.26E-03	1.85E-03	0.0181	3.00E-05	2.73E-03	2.00E-05	2.75E-03	7.30E-04	2.00E-05	7.50E-04	0	2.554	2.554	1.50E-04	0	2.5571
Total	**2.06E-03**	**0.0123**	**0.0263**	**5.00E-05**	**3.24E-03**	**1.80E-04**	**3.41E-03**	**8.70E-04**	**1.60E-04**	**1.03E-03**	**0**	**4.6351**	**4.6351**	**1.70E-04**	**0**	**4.6387**

Grading - 2015 Emissions

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e

Category	tons/yr										MT/yr					
Fugitive Dust					0.0759	0	0.0759	0.039	0	0.039	0	0	0	0	0	0
Off-Road	0.0134	0.2169	0.3477	6.60E-04		8.14E-03	8.14E-03		8.14E-03	8.14E-03	0	63.0609	63.0609	0.0188	0	63.4563
Total	**0.0134**	**0.2169**	**0.3477**	**6.60E-04**	**0.0759**	**8.14E-03**	**0.084**	**0.039**	**8.14E-03**	**0.0471**	**0**	**63.0609**	**63.0609**	**0.0188**	**0**	**63.4563**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0719	0.9399	0.7339	2.03E-03	0.0456	0.014	0.0596	0.0125	0.0128	0.0254	0	187.3047	187.3047	1.58E-03	0	187.3379
Vendor	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Worker	9.70E-04	1.42E-03	0.0139	2.00E-05	2.09E-03	2.00E-05	2.11E-03	5.60E-04	2.00E-05	5.70E-04	0	1.9581	1.9581	1.10E-04	0	1.9605
Total	**0.0729**	**0.9413**	**0.7478**	**2.05E-03**	**0.0477**	**0.014**	**0.0617**	**0.0131**	**0.0129**	**0.0259**	**0**	**189.2628**	**189.2628**	**1.69E-03**	**0**	**189.2983**

Paving - 2015 Emissions

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0159	0.2969	0.5395	7.10E-04		0.0163	0.0163		0.0163	0.0163	0	67.7993	67.7993	0.0202	0	68.2244
Paving	2.36E-03					0	0		0	0	0	0	0	0	0	0
Total	**0.0182**	**0.2969**	**0.5395**	**7.10E-04**		**0.0163**	**0.0163**		**0.0163**	**0.0163**	**0**	**67.7993**	**67.7993**	**0.0202**	**0**	**68.2244**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	4.70E-04	6.09E-03	4.76E-03	1.00E-05	3.00E-04	9.00E-05	3.90E-04	8.00E-05	8.00E-05	1.60E-04	0	1.214	1.214	1.00E-05	0	1.2142
Vendor	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Worker	2.05E-03	3.01E-03	0.0295	5.00E-05	4.44E-03	4.00E-05	4.48E-03	1.18E-03	4.00E-05	1.22E-03	0	4.1502	4.1502	2.40E-04	0	4.1553
Total	**2.52E-03**	**9.10E-03**	**0.0342**	**6.00E-05**	**4.74E-03**	**1.30E-04**	**4.87E-03**	**1.26E-03**	**1.20E-04**	**1.38E-03**	**0**	**5.3642**	**5.3642**	**2.50E-04**	**0**	**5.3696**

Building Construction - 2015 Emissions

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0369	0.314	1.3316	2.35E-03		0.0145	0.0145		0.0145	0.0145	0	218.7207	218.7207	0.0648	0	220.0823
Total	**0.0369**	**0.314**	**1.3316**	**2.35E-03**		**0.0145**	**0.0145**		**0.0145**	**0.0145**	**0**	**218.7207**	**218.7207**	**0.0648**	**0**	**220.0823**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	8.64E-03	0.1129	0.0881	2.40E-04	0.0103	1.68E-03	0.0119	2.68E-03	1.54E-03	4.22E-03	0	22.4912	22.4912	1.90E-04	0	22.4952
Vendor	0.0601	0.4863	0.6576	1.01E-03	0.0272	7.81E-03	0.035	7.79E-03	7.18E-03	0.015	0	92.1114	92.1114	8.20E-04	0	92.1287
Worker	0.1202	0.176	1.7244	3.08E-03	0.2596	2.24E-03	0.2618	0.069	2.05E-03	0.0711	0	242.7306	242.7306	0.0142	0	243.0294
Total	**0.1889**	**0.7752**	**2.4702**	**4.33E-03**	**0.2971**	**0.0117**	**0.3088**	**0.0795**	**0.0108**	**0.0903**	**0**	**357.3331**	**357.3331**	**0.0152**	**0**	**357.6532**

Building Construction - 2016 Emissions

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0428	0.3639	1.5435	2.72E-03		0.0168	0.0168		0.0168	0.0168	0	250.6588	250.6588	0.0745	0	252.2228
Total	**0.0428**	**0.3639**	**1.5435**	**2.72E-03**		**0.0168**	**0.0168**		**0.0168**	**0.0168**	**0**	**250.6588**	**250.6588**	**0.0745**	**0**	**252.2228**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	8.70E-03	0.1127	0.0939	2.80E-04	0.0105	1.46E-03	0.0119	2.75E-03	1.34E-03	4.10E-03	0	25.7601	25.7601	1.90E-04	0	25.7641
Vendor	0.0614	0.4904	0.7047	1.16E-03	0.0315	7.24E-03	0.0388	9.03E-03	6.65E-03	0.0157	0	105.518	105.518	8.40E-04	0	105.5357
Worker	0.1245	0.1829	1.7865	3.57E-03	0.3009	2.45E-03	0.3033	0.08	2.25E-03	0.0823	0	271.7231	271.7231	0.0151	0	272.0392
Total	**0.1946**	**0.786**	**2.5851**	**5.01E-03**	**0.3429**	**0.0112**	**0.3541**	**0.0918**	**0.0102**	**0.1021**	**0**	**403.0012**	**403.0012**	**0.0161**	**0**	**403.339**

Architectural Coating - 2015 Emissions

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	0.7177					0	0		0	0	0	0	0	0	0	0
Off-Road	8.60E-04	3.73E-03	0.0531	9.00E-05		1.10E-04	1.10E-04		1.10E-04	1.10E-04	0	7.4044	7.4044	9.60E-04	0	7.4247
Total	**0.7186**	**3.73E-03**	**0.0531**	**9.00E-05**		**1.10E-04**	**1.10E-04**		**1.10E-04**	**1.10E-04**	**0**	**7.4044**	**7.4044**	**9.60E-04**	**0**	**7.4247**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	1.40E-04	1.86E-03	1.45E-03	0	3.40E-04	3.00E-05	3.70E-04	9.00E-05	3.00E-05	1.10E-04	0	0.3712	0.3712	0	0	0.3712
Vendor	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Worker	7.94E-03	0.0116	0.114	2.00E-04	0.0172	1.50E-04	0.0173	4.56E-03	1.40E-04	4.70E-03	0	16.0475	16.0475	9.40E-04	0	16.0673
Total	**8.08E-03**	**0.0135**	**0.1155**	**2.00E-04**	**0.0175**	**1.80E-04**	**0.0177**	**4.65E-03**	**1.70E-04**	**4.81E-03**	**0**	**16.4187**	**16.4187**	**9.40E-04**	**0**	**16.4385**

Architectural Coating - 2016 Emissions

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	2.6358					0	0		0	0	0	0	0	0	0	0
Off-Road	3.16E-03	0.0137	0.1952	3.20E-04		4.20E-04	4.20E-04		4.20E-04	4.20E-04	0	27.1921	27.1921	3.21E-03	0	27.2594
Total	**2.639**	**0.0137**	**0.1952**	**3.20E-04**		**4.20E-04**	**4.20E-04**		**4.20E-04**	**4.20E-04**	**0**	**27.1921**	**27.1921**	**3.21E-03**	**0**	**27.2594**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	4.50E-04	5.89E-03	4.91E-03	1.00E-05	4.00E-04	8.00E-05	4.80E-04	1.10E-04	7.00E-05	1.80E-04	0	1.347	1.347	1.00E-05	0	1.3472
Vendor	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Worker	0.0261	0.0383	0.3742	7.50E-04	0.063	5.10E-04	0.0635	0.0168	4.70E-04	0.0172	0	56.9173	56.9173	3.15E-03	0	56.9835
Total	**0.0265**	**0.0442**	**0.3791**	**7.60E-04**	**0.0634**	**5.90E-04**	**0.064**	**0.0169**	**5.40E-04**	**0.0174**	**0**	**58.2643**	**58.2643**	**3.16E-03**	**0**	**58.3307**

Appendix B: ISC Modeling Files (electronic files available by request)

ENVIRON

May 14, 2014

MEMORANDUM

To: Michael Smith, Hall Equities Group

From: Michael Keinath, Principal, ENVIRON
Megan Neiderhiser, Manager, ENVIRON

Re: Hall Saranap Alternatives – Air Quality Impact Analysis

At the request of the Hall Equities Group (Hall), ENVIRON International Corporation (ENVIRON) has prepared a technical memorandum evaluating air quality impacts and health risks associated with Project Alternatives to construction and operation of the proposed mixed-use Saranap Village development located at Boulevard Way and Saranap Avenue in Walnut Creek, California ("Project"). This memorandum serves as an addendum to the Air Quality Technical Report; full methodology and references are provided in the April 17, 2014 Air Quality Technical Report.

Project Understanding

Saranap Village includes four proposed Alternatives to the Project. These Project Alternatives and their associated Air Quality (AQ) impacts are discussed in this memorandum.

- Alternative 1 is the No Project/No Build alternative. This alternative assumes that the existing site remains as it is; the impacts of the Project would not occur.
- Alternative 2 is the No Project/Rehabilitation option. Alternative 2 assumes the existing buildings and related facilities remain on site, but are rehabilitated to attract higher rent. Alternative 2 assumes no grading or construction; only operational emissions would occur.
- Alternative 3 is the Reduced Project option. This alternative proposes a reduced size and reduced development footprint compared to the Project. This alternative includes construction, but no street improvements.
- Alternative 4 is the General Plan Buildout alternative. This alternative includes a mix of residential and commercial uses plus associated parking, with a reduced number of residential units in comparison to the Project. This alternative includes construction but does not include streetscape improvements.

Table 1 shows the Proposed Land Uses by Parcel for Alternative 2. **Table 2** shows the Proposed Land Uses by Parcel for Alternative 3. **Table 3** shows the Proposed Land Uses by Parcel for Alternative 4. There is no proposed change in land use associated with Alternative 1.

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Objective and Methodology

The Bay Area Air Quality Management District (BAAQMD) 2011 California Environmental Quality Act (CEQA) Guidelines[1] contain recommended thresholds for criteria air pollutants (CAP) emissions, and thresholds for risks and hazards associated with toxic air contaminant (TAC) emissions from an individual project undergoing environmental review pursuant to CEQA. In addition to the evaluation of an individual project, the CEQA Guidelines recommend a cumulative evaluation of a project in addition to other air emissions sources within a "zone of influence" surrounding the project site.

The following areas are included in this technical report: construction CAPs, operational CAPs, construction health risks, operational health risks, and cumulative impacts to off-site and on-site sensitive receptors (including potential impacts from other off-site stationary sources and mobile sources). The full methodology for this analysis (including uncertainties and CO Impact Analysis) is laid out in the Saranap Air Quality Technical Report.[2]

Results for Project Alternatives Analysis

In this Section, the Project Alternatives results are compared to the BAAQMD thresholds for a single source. As discussed in the Air Quality Technical Report, this analysis does not net out existing emissions. Instead, this analysis takes a conservative approach of assuming that baseline emissions at the Project site are zero.

Criteria Air Pollutants and Precursors

Construction and Operation CAPs

The BAAQMD 2011 CEQA significance thresholds for construction-related CAPs and precursors are:

- Average daily Reactive Organic Gases (ROG), $PM_{2.5}$, and Nitrogen Oxides (NO_x) emissions greater than 54 lb/day;
- Average daily Respirable Particulate Matter Less than 10 Micrometers in Aerodynamic Diameter (PM_{10}) emissions greater than 82 lb/day;

The BAAQMD 2011 CEQA significance thresholds for operation-related CAPs and precursors are:

- Average daily ROG, $PM_{2.5}$, and NO_x emissions greater than 54 lb/day;
- Average daily PM_{10} emissions greater than 82 lb/day;
- Maximum annual ROG, $PM_{2.5}$, and NO_x emissions greater than 10 tons/year (tpy); and,
- Maximum annual PM_{10} emissions greater than 15 tpy.

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[1] BAAQMD. 2011a. California Environmental Quality Act Air Quality Guidelines. May. Available online at: http://www.baaqmd.gov/~/media/Files/Planning%20and%20Research/CEQA/BAAQMD%20CEQA%20Guidelines_May%202011_5_3_11.ashx. Accessed February 2014.

[2] ENVIRON, Saranap Air Quality Technical Report, April 17, 2014.

Alternative 2: There are no construction emissions associated with Alternative 2. **Table 4** shows the total CAP emissions associated with the Alternative 2 operation. The average daily incremental ROG (6.3 lb/day), NO_x (7.0 lb/day), PM_{10} (3.6 lb/day), and $PM_{2.5}$ (1.0 lb/day) emissions associated with Alternative 2 operation are below the BAAQMD CEQA thresholds. The maximum annual ROG (1.2 tpy), NO_x (1.3 tpy), PM_{10} (0.65 tpy), and $PM_{2.5}$ (0.19 tpy) emissions associated with the Alternative 2 operation are also below the BAAQMD 2011 CEQA significance thresholds. Note the air quality impacts associated with Alternative 2 are less than those from the Project for every pollutant and averaging time.

Alternative 3: **Table 5a** shows the total CAP emissions associated with Alternative 3 construction. The average daily incremental ROG (13 lb/day), NO_x (27 lb/day), PM_{10} (0.43 lb/day), and $PM_{2.5}$ (0.43 lb/day) emissions associated with Alternative 3 construction are all below the BAAQMD 2011 CEQA significance thresholds. **Table 5b** shows the total CAP emissions associated with the Alternative 3 operation. The average daily incremental ROG (20 lb/day), NO_x (16 lb/day), PM_{10} (7.0 lb/day), and $PM_{2.5}$ (2.2 lb/day) emissions associated with Alternative 3 operation are below the BAAQMD CEQA thresholds. The maximum annual ROG (3.6 tpy), NO_x (2.8 tpy), PM_{10} (1.3 tpy), and $PM_{2.5}$ (0.40 tpy) emissions associated with the Alternative 3 operation are also below the BAAQMD 2011 CEQA significance thresholds. Note the air quality impacts associated with Alternative 3 are less than those from the Project for every pollutant and averaging time.

Alternative 4: **Table 6a** shows the total CAP emissions associated with Alternative 4 construction. The average daily incremental ROG (11 lb/day), NO_x (26 lb/day), PM_{10} (0.41 lb/day), and $PM_{2.5}$ (0.41 lb/day) emissions associated with the Project construction are all below the BAAQMD 2011 CEQA significance thresholds. **Table 6b** shows the total CAP emissions associated with the Alternative 4 operation. The average daily incremental ROG (29 lb/day), NO_x (43 lb/day), PM_{10} (20 lb/day), and $PM_{2.5}$ (5.8 lb/day) emissions associated with Alternative 4 operation are below the BAAQMD CEQA thresholds. The maximum annual ROG (5.3 tpy), NO_x (7.8 tpy), PM_{10} (3.7 tpy), and $PM_{2.5}$ (1.1 tpy) emissions associated with the Alternative 4 operation are also below the BAAQMD 2011 CEQA significance thresholds. Note the air quality impacts associated with Alternative 4 are less than those from the Project for every pollutant and averaging time.

Risk and Hazards

The Alternative risk and hazard analysis is conducted at the MEISR identified for the Project Alternatives; results at that location are compared to the BAAQMD 2011 CEQA significance thresholds for Individual Project impacts:

- An excess lifetime cancer risk level of more than 10 in one million;
- A chronic noncancer HI greater than 1.0; and
- An incremental increase in the annual average $PM_{2.5}$ of greater than 0.3 $\mu g/m^3$.

All risks from the Project Alternatives are associated with construction.

Construction Risk and Hazards

Alternative 2: Note there is no planned construction activity associated with Alternative 2 and thus no associated risks nor hazards.

Alternative 3: **Table 7** shows the total estimated excess lifetime cancer risk and chronic noncancer HI at the Maximally Exposed Individual Sensitive Receptor (MEISR), and $PM_{2.5}$ concentration at the point of maximum impact (PMI) during construction for Alternative 3. The estimated cancer risks, chronic HIs, and $PM_{2.5}$ concentrations due to Alternative 3 are less than their respective BAAQMD 2011 CEQA significance thresholds.

Alternative 4: **Table 7** also shows the total estimated excess lifetime cancer risk and chronic noncancer HI at the Maximally Exposed Individual Sensitive Receptor (MEISR), and $PM_{2.5}$ concentration at the point of maximum impact (PMI) during construction for Alternative 4. The estimated cancer risks, chronic HIs, and $PM_{2.5}$ concentrations due to Alternative 4 are less than their respective BAAQMD 2011 CEQA significance thresholds.

This analysis demonstrates that a Performance Standard of meeting the BAAQMD 2011 CEQA significance threshold can be achieved in practice.

Results for Cumulative Analysis

Cumulative Risk and Hazards

The cumulative analysis is conducted at the MEISR identified for the Project Alternatives; results at that location are compared to the BAAQMD 2011 CEQA significance thresholds for cumulative impacts:

- An excess lifetime cancer risk level of more than 100 in one million;
- A chronic noncancer HI greater than 10; and
- An incremental increase in the annual average $PM_{2.5}$ of greater than 0.8 $\mu g/m^3$.

The incremental cancer risk, chronic HI, and $PM_{2.5}$ MEISR for Project construction was identified as a residential location within 1,000 feet of the Project; emissions from all identified sources within 1,000 feet of the Project boundary were evaluated at this single location and added to the results from the Project's single source evaluation.

Stationary Sources: For stationary sources, the BAAQMD Risk Analysis Tool[3] was used to identify stationary sources within 1,000 feet of the Project, as discussed in the Air Quality Technical Report.

[3] BAAQMD. 2012b. Stationary Source Screening Analysis Tool. Santa Clara County. May. Available online at: http://www.baaqmd.gov/Divisions/Planning-and-Research/CEQA-GUIDELINES/Tools-and-Methodology.aspx. Accessed February 2014.

Major Roadways: Impacts from traffic on major roadways within 1,000 feet of the Project site were evaluated using the BAAQMD screening methodology for surface streets and highways, as discussed in the Air Quality Technical Report.

Results

Alternative 2: Note cumulative risks and hazards are not evaluated for Alternative 2 since there are no associated risks or hazards from this Alternative. However, the cumulative risks from non-project sources (off-site stationary sources and off-site traffic) would be equal to those presented for Alternative 3 and Alternative 4, as presented in **Table 8**.

Alternative 3: **Table 8** shows a summary of the estimated excess lifetime cancer risks, chronic noncancer HIs, and $PM_{2.5}$ concentrations for each of the source types listed above evaluated at the Project's offsite MEISR for the Alternative 3 construction scenario. As discussed in Section 4.1 of the Air Quality Technical Report, there will be no measured operational health impacts to off-site receptors. The estimated cumulative cancer risk under Alternative 3 is 37 in one million, which is below the BAAQMD 2011 CEQA significance threshold of 100 in one million. The estimated cumulative chronic noncancer HI under Alternative 3 is 0.47, which is below the BAAQMD 2011 CEQA significance threshold of 10. The estimated cumulative $PM_{2.5}$ concentration is 0.44 $\mu g/m^3$ under Alternative 3, which is below the BAAQMD 2011 CEQA significance threshold of greater than 0.8 $\mu g/m^3$.

Alternative 3: **Table 8** shows a summary of the estimated excess lifetime cancer risks, chronic noncancer HIs, and $PM_{2.5}$ concentrations for each of the source types listed above evaluated at the Project's offsite MEISR for the Alternative 3 construction scenario. As discussed in Section 4.1 of the Air Quality Technical Report, there will be no measured operational health impacts to off-site receptors. The estimated cumulative cancer risk under Alternative 3 is 37 in one million, which is below the BAAQMD 2011 CEQA significance threshold of 100 in one million. The estimated cumulative chronic noncancer HI under Alternative 3 is 0.47, which is below the BAAQMD 2011 CEQA significance threshold of 10. The estimated cumulative $PM_{2.5}$ concentration is 0.44 $\mu g/m^3$ under Alternative 3, which is below the BAAQMD 2011 CEQA significance threshold of greater than 0.8 $\mu g/m^3$.

Since the Project Alternatives will utilize natural gas generators only, the cumulative results at the on-site operational MEISR are due to impacts from off-site stationary sources and roadways only. Thus, ENVIRON conservatively presents the cumulative results at the off-site MEISR only, which includes impacts from Alternative 3.

Alternative 4: **Table 8** shows a summary of the estimated excess lifetime cancer risks, chronic noncancer HIs, and $PM_{2.5}$ concentrations for each of the source types listed above evaluated at the Project's offsite MEISR for the Alternative 4 construction scenario. As discussed in Section 4.1 of the Air Quality Technical Report, there will be no measured operational health impacts to off-site receptors. The estimated cumulative cancer risk under Alternative 4 is 37 in one million, which is below the BAAQMD 2011 CEQA significance threshold of 100 in one million. The estimated cumulative chronic noncancer HI under Alternative 4 is 0.47, which is below the BAAQMD 2011 CEQA significance threshold of 10. The estimated cumulative $PM_{2.5}$

concentration is 0.43 $\mu g/m^3$ under Alternative 4, which is below the BAAQMD 2011 CEQA significance threshold of greater than 0.8 $\mu g/m^3$.

Since the Project Alternatives will utilize natural gas generators only, the cumulative results at the on-site operational MEISR are due to impacts from off-site stationary sources and roadways only. Thus, ENVIRON conservatively presents the cumulative results at the off-site MEISR only, which includes impacts from Alternative 4.

Tables

Table 1
Conceptual Layout of Alternative 2
Hall Saranap
Walnut Creek, California

Parcel	Proposed Land Use	CalEEMod Land Use Type and Subtype	Proposed Size	Unit
A	Commercial	General Offices	11,795	square feet
	Commercial	General Offices	8,375	square feet
	Residential - Apartments	Apartments - Mid Rise	24	dwelling units
	Residential	Single Family Homes	1	dwelling units
B	Commercial	General Offices	12,272	square feet
C	Retail	Strip Mall	5,059	square feet

Table 2
Conceptual Layout of Alternative 3
Hall Saranap
Walnut Creek, California

Parcel	Proposed Land Use	CalEEMod Land Use Type and Subtype	Proposed Size	Unit
A	Parking Garage	Enclosed Parking with Elevator	39	parking spaces
B	Residential - Apartments	Apartments - Mid Rise	62	dwelling units
	Swimming Pool	Recreational Swimming Pool	711	square feet
	Parking Garage	Enclosed Parking with Elevator	242	parking spaces
B1	Residential - Apartments	Apartments - Mid Rise	6	dwelling units
	Parking Garage	Enclosed Parking with Elevator	13	parking spaces
C	Residential - Apartments	Apartments - Mid Rise	24	dwelling units
	Parking Garage	Enclosed Parking with Elevator	48	parking spaces
Commercial - Retail	78% Commercial-Retail Project Uses	Commercial-Retail Project Uses[1]	22,842	square feet

Note:

1. The Commercial-Retail Land Uses will be analzed as 78% of each of the individual retail uses of the Project, based on the change in square footage for this Alternative.

Table 3
Conceptual Layout of Alternative 4
Hall Saranap
Walnut Creek, California

Parcel	Proposed Land Use	CalEEMod Land Use Type and Subtype	Proposed Size	Unit
All	Residential - Apartments	Apartments - Mid Rise	24	dwelling units
	Parking Garage	Enclosed Parking with Elevator	277	parking spaces
	Retail	Strip Mall	83,000	square feet

Table 4
Summary of Operational Criteria Air Pollutant Emissions - Alternative 2
Hall Saranap
Walnut Creek, California

Source	Average Daily Emissions (lb/day)				Maximum Annual Emissions (tpy)			
	ROG	NOx	PM_{10}	$PM_{2.5}$	ROG	NOx	PM_{10}	$PM_{2.5}$
Area[1]	1.7	0.01	0.03	0.03	0.32	0.003	0.006	0.006
Energy[1]	0.03	0.25	0.02	0.02	0.005	0.05	0.004	0.004
Mobile[1]	4.6	6.7	3.5	0.99	0.83	1.2	0.64	0.18
Total	**6.3**	**7.0**	**3.6**	**1.0**	**1.2**	**1.3**	**0.65**	**0.19**
Operational Threshold	54	54	82	54	10	10	15	10
Above Threshold?	No	No	No	No	No	No	No	No

Notes:
1. Emissions estimated using CalEEMod version 2013.2.2

Abbreviation:
CalEEMod: California Emissions Estimator Model
lb: pound
NOx: nitrogen oxide compounds ($NO + NO_2$)
PM = particulate matter
ROG: reactive organic gas
tpy: tons per year

Reference:
CalEEMod Version 2013.2.2 Available Online at: http://www.caleemod.com

Table 5a
Construction Criteria Air Pollutant Emissions - Alternative 3 (Uncontrolled)
Hall Saranap
Walnut Creek, California

	Construction Emissions[1,2]			
	ROG	**NO_x**	**PM_{10} (exhaust only)**	**$PM_{2.5}$ (exhaust only)**
Total Construction Emissions (ton)	1.7	3.5	0.06	0.06
Average Daily Emissions[3] (lbs/day)	**13**	**27**	**0.43**	**0.43**
BAAQMD Average Daily Threshold [lbs/day]	54	54	82	54
Exceeds daily thresholds? [Y/N]	N	N	N	N

Notes:
1. Emissions include those due to off-road construction equipment, on-road sources associated with construction (hauling, vendor, and worker trips), paving, and architectural coatings. ROG and NO_x emissions were calculated in CalEEMod version 2013.2.2. PM_{10} off-road construction emissions calculated using Off-road Tier standards, assuming all Tier 3 emissions. PM_{10} on-road emissions calculated using CalEEMod. $PM_{2.5}$ conservatively assumed to be equal to PM_{10}.
2. Hall Equities Group provided construction equipment usage and on-road trips (hauling, vendor, and worker) that were scaled from Project usage and trips (shown in Table 3 of the Air Quality Technical Report) using gross leasable area.
3. Emissions averaged over the estimated 260 days of active construction.

Abbreviations:
CalEEMod: California Emissions Estimator Model
NO_x: Nitrogen Oxides
PM: Particulate Matter
ROG: Reactive Organic Gases
ton: short ton

Reference:
CalEEMod Version 2013.2.2, available online at: http://www.caleemod.com
Tier standards available online at: http://www.arb.ca.gov/msprog/ordiesel/documents/Off-Road_Diesel_Stds.xls

Table 5b
Summary of Operational Criteria Air Pollutant Emissions - Alternative 3
Hall Saranap
Walnut Creek, California

Source	Average Daily Emissions (lb/day)				Maximum Annual Emissions (tpy)			
	ROG	NOx	PM_{10}	$PM_{2.5}$	ROG	NOx	PM_{10}	$PM_{2.5}$
Area[1]	7.5	0.06	0.26	0.26	1.4	0.01	0.05	0.05
Energy[1]	0.07	0.6	0.05	0.05	0.01	0.1	0.008	0.008
Mobile[1]	12	14	6.7	1.9	2.2	2.6	1.2	0.34
Generators[2]	0.10	0.49	1.1E-02	1.1E-02	0.02	0.09	2.1E-03	2.1E-03
Total	**20**	**16**	**7.0**	**2.2**	**3.6**	**2.8**	**1.3**	**0.40**
Operational Threshold	54	54	82	54	10	10	15	10
Above Threshold?	No	No	No	No	No	No	No	No

Notes:
1. Emissions estimated using CalEEMod version 2013.2.2
2. See Table 5 of the Air Quality Technical Report for detailed calculations. $PM_{2.5}$ conservatively assumed to be equal to PM_{10}. Lb/day calculation based on assumption of generator operation 365 days/year.

Abbreviation:
CalEEMod: California Emissions Estimator Model
lb: pound
NOx: nitrogen oxide compounds ($NO + NO_2$)
PM = particulate matter
ROG: reactive organic gas
tpy: tons per year

Reference:
CalEEMod Version 2013.2.2 Available Online at: http://www.caleemod.com

Table 6a
Construction Criteria Air Pollutant Emissions - Alternative 4 (Uncontrolled)
Hall Saranap
Walnut Creek, California

	Construction Emissions[1,2]			
	ROG	**NO_x**	**PM_{10} (exhaust only)**	**$PM_{2.5}$ (exhaust only)**
Total Construction Emissions (ton)	1.5	3.4	0.05	0.05
Average Daily Emissions[3] (lbs/day)	**11**	**26**	**0.41**	**0.41**
BAAQMD Average Daily Threshold [lbs/day]	54	54	82	54
Exceeds daily thresholds? [Y/N]	N	N	N	N

Notes:
1. Emissions include those due to off-road construction equipment, on-road sources associated with construction (hauling, vendor, and worker trips), paving, and architectural coatings. ROG and NO_x emissions were calculated in CalEEMod version 2013.2.2. PM_{10} off-road construction emissions calculated using Off-road Tier standards, assuming all Tier 3 emissions. PM_{10} on-road emissions calculated using CalEEMod. $PM_{2.5}$ conservatively assumed to be equal to PM_{10}.
2. Hall Equities Group provided construction equipment usage and on-road trips (hauling, vendor, and worker) that were scaled from Project usage and trips (shown in Table 3 of the Air Quality Technical Report) using gross leasable area.
3. Emissions averaged over the estimated 260 days of active construction.

Abbreviations:
CalEEMod: California Emissions Estimator Model
NO_x: Nitrogen Oxides
PM: Particulate Matter
ROG: Reactive Organic Gases
ton: short ton

Reference:
CalEEMod Version 2013.2.2, available online at: http://www.caleemod.com
Tier standards available online at: http://www.arb.ca.gov/msprog/ordiesel/documents/Off-Road_Diesel_Stds.xls

Table 6b
Summary of Operational Criteria Air Pollutant Emissions - Alternative 4
Hall Saranap
Walnut Creek, California

Source	Average Daily Emissions (lb/day)				Maximum Annual Emissions (tpy)			
	ROG	NOx	PM_{10}	$PM_{2.5}$	ROG	NOx	PM_{10}	$PM_{2.5}$
Area[1]	5.4	0.01	0.03	0.03	0.99	0.002	0.005	0.005
Energy[1]	0.01	0.12	0.009	0.009	0.003	0.02	0.002	0.002
Mobile[1]	24	42	20	5.7	4.3	7.7	3.7	1.0
Generators[2]	0.10	0.49	0.01	0.01	0.02	0.09	2.1E-03	2.1E-03
Total	**29**	**43**	**20**	**5.8**	**5.3**	**7.8**	**3.7**	**1.1**
Operational Threshold	54	54	82	54	10	10	15	10
Above Threshold?	No	No	No	No	No	No	No	No

Notes:
1. Emissions estimated using CalEEMod version 2013.2.2
2. See Table 5 of the Air Quality Technical Report for detailed calculations. $PM_{2.5}$ conservatively assumed to be equal to PM_{10}. Lb/day calculation based on assumption of generator operation 365 days/year.

Abbreviation:
CalEEMod: California Emissions Estimator Model
lb: pound
NOx: nitrogen oxide compounds ($NO + NO_2$)
PM = particulate matter
ROG: reactive organic gas
tpy: tons per year

Reference:
CalEEMod Version 2013.2.2 Available Online at: http://www.caleemod.com

Table 7
Modeled Excess Lifetime Cancer Risk, Chronic HI, and $PM_{2.5}$ Concentration - Off-Site MEISR
(Alternatives 3 and 4 - Construction)
Hall Saranap
Walnut Creek, California

Source	UTMx (m)	UTMy (m)	Alternative 3	Alternative 4	BAAQMD Individual Source Significance Threshold
Lifetime Excess Cancer Risk[1] (in a million)	581100	4194300	8.6	8.5	**10**
Chronic HI[2]	581100	4194300	0.020	0.019	**1.0**
$PM_{2.5}$ Concentration ($\mu g/m^3$)	581160	4194320	0.11	0.11	**0.3**

Equations used:

IF_{inh} = DBR * ET * EF * ED * CF / AT = 0.0080

Where:

DBR: Daily Breathing Rate, 581 (L/kg-day)
ET: Exposure Time, 24 (hours/24 hours)
EF: Exposure Frequency, 350 (days/year)
ED: Exposure Duration, 1 (years)
CF: 0.001 (m^3/L)
AT: Averaging Time, 25550 (days)
IF_{inh}: Intake Factor, Inhalation (m^3/kg-day)

Table 7
Modeled Excess Lifetime Cancer Risk, Chronic HI, and $PM_{2.5}$ Concentration - Off-Site MEISR
(Alternatives 3 and 4 - Construction)
Hall Saranap
Walnut Creek, California
(continued)

Equations used:

$Risk_{inh} = \Sigma Risk_{inh,i} = \Sigma C_i \times MAF \times CF \times IF_{inh} \times CPF_i \times CRAF$

Where:

$Risk_{inh}$: Cancer Risk, as a result of inhalation exposure to Project emissions (unitless)

$Risk_{inh,i}$: Cancer Risk for Chemical i

C_i: Modeled Annual Average Concentration in air for Chemical i ($\mu g/m^3$)

MAF : Modeling Adjustment Factor

CF: Conversion Factor (mg/µg)

IF_{inh}: Intake Factor for Inhalation (m^3/kg-day)

CPF_i: Cancer Potency Factor for Chemical i (mg chemical/kg body weight-day)

CRAF: Cancer Risk Adjustment Factor (10)

$\text{Chronic } HI_{inh} = \Sigma \text{Chronic } HQ_{inh,i} = \Sigma C_i/cREL_i$

Where:

Chronic HI_{inh}: Chronic hazard index, as a result of inhalation exposure to Project emissions (unitless)

Chronic $HQ_{inh,i}$: Chronic hazard quotient for Chemical i

C_i: Modeled Annual Average Concentration in air for Chemical i ($\mu g/m^3$)

$cREL_i$: Chronic reference exposure level for chemical i ($\mu g/m^3$)

Table 7
Modeled Excess Lifetime Cancer Risk, Chronic HI, and $PM_{2.5}$ Concentration - Off-Site MEISR
(Alternatives 3 and 4 - Construction)
Hall Saranap
Walnut Creek, California
(continued)

Notes:

1. Excess lifetime cancer risks are estimated as the upper-bound incremental probability that an individual will develop cancer over a lifetime as a direct result of exposure to potential carcinogens. The estimated risk is expressed as a unitless probability. The cancer risks attributed to the controlled emissions associated with construction of Alternatives 3 and 4 were calculated based on the modeled annual average air concentrations based on emissions presented in Tables 5a and 6a, the intake factors as outlined above, and the CPF presented in Table 10 and the CRAF for a resident child presented in Table 11 of the Air Quality Technical Report.

2. The potential for exposure to result in adverse chronic noncancer effects is evaluated by comparing the estimated annual average air concentration (which is equivalent to the average daily air concentration) to the noncancer chronic REL for each chemical. When calculated for a single chemical, the comparison yields a ratio termed a hazard quotient. To evaluate the potential for adverse chronic noncancer health effects from simultaneous exposure to multiple chemicals, the hazard quotients for all chemicals are summed, yielding a hazard index. The chronic hazard indices attributed to the controlled emissions associated with construction of Alternatives 3 and 4 were calculated based on the modeled annual average DPM concentration calculated from emissions presented in Tables 5a and 6a and the chronic REL presented in Table 10 of the Air Quality Technical Report.

3. The results for cancer risk and chronic HI represent the MEISR; the results for $PM_{2.5}$ represent the point of maximum impact (PMI).

Abbreviations:

m: meter
$\mu g/m^3$: micrograms per cubic meter
MEISR = Maximally exposed individual sensitive receptor
$PM_{2.5}$: Particulate matter 2.5 microns or less
PMI = Point of maximum impact
UTM: Universal Transverse Mercator

Table 8
Cumulative Excess Lifetime Cancer Risk, Chronic HI, and $PM_{2.5}$ Concentration - Off-Site MEISR (Alternatives 3 and 4)
Hall Saranap
Walnut Creek, California

Source	Risks or Hazards					
	Cancer Risk (in a million)		Chronic Hazard Index		$PM_{2.5}$ ($\mu g/m^3$)	
	Alternative 3	Alternative 4	Alternative 3	Alternative 4	Alternative 3	Alternative 4
Construction (Uncontrolled)[1]	8.6	8.5	0.020	0.019	0.11	0.11
Off-site Stationary Sources[2]	10		0.44		0.036	
Off-site Traffic[3]	18		0.012		0.29	
Cumulative Total	**37**	**37**	**0.47**	**0.47**	**0.44**	**0.43**
BAAQMD Cumulative Threshold	**100**		**10**		**0.8**	
Exceeds BAAQMD Threshold? [Y/N]	**N**	**N**	**N**	**N**	**N**	**N**

Notes:
1. Project construction for Alteratives 3 and 4 as presented in Table 7.
2. Total as presented in Table 15 of the Air Quality Technical Report.
3. Total as presented in Table 16 of the Air Quality Technical Report.

Abbreviations:
$\mu g/m^3$: microgram per cubic meter
$PM_{2.5}$: Particulate matter 2.5 microns or less

APPENDIX C

Special-status Species and Biology Technical Reports

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APPENDIX
Special-status Species

LIST OF SPECIAL-STATUS SPECIES RECORDED IN THE SARANAP VILLAGE PROJECT VICINITY

Common Name ***Scientific Name***	**Listing Status USFWS/ CDFW/CRPR**	**General Habitat**	**Potential to Occur in or Near the Project Site**[a]
Birds			
Cooper's hawk (*Accipiter cooperii*)	CDFW §3503.5	Forests, woodlands, and fields. Will also inhabit trees in suburban areas in parks and neighborhoods. Typically nests in riparian growths of deciduous trees and live oak woodlands. Becoming more common as an urban breeder.	**Moderate.** Common raptor. Could potentially be present because it is known to use trees in parks and neighborhoods, and there are numerous local detections in the greater project area (eBird, 2014). However, on site habitat is unlikely to support nesting birds.
Tricolored blackbird (*Agelaius tricolor*)	--/CSC/--	Nests in freshwater marshes with dense stands of cattails or bulrushes, occasionally in willows, thistles, mustard, blackberry brambles, and dense shrubs and grains. Requires open water.	**Unlikely.** No suitable habitat on project site or in immediate vicinity.
Golden eagle (*Aquila chrysaetos*)	CDFW §3503.5 FP	Rolling foothills, mountainous areas, canyonlands, riverside cliffs and bluffs. Tend to avoid developed areas.	**Unlikely.** No suitable habitat on project site or in immediate vicinity.
Great blue heron (*Ardea herodias*)	--/*/--	Shallow estuaries and fresh and saline emergent wetlands.	**Unlikely.** No suitable habitat on project site or in immediate vicinity.
Burrowing owl (*Athene cunicularia*)	--/CSC/--	Annual grasslands with low-growing vegetation. Requires small mammal burrows for nesting.	**Unlikely.** No suitable habitat on project site. Could potentially use some of the patches of grassland in the vicinity, however presence of mammal burrows is unclear.
Cackling goose (*Branta hutchinsii leucopareia*)	FD/--/--	Lakes and island prairies.	**Unlikely.** No suitable habitat on project site or in immediate vicinity.
Red-tailed hawk (*Buteo jamaicensis*)	CDFW §3503.5	Desert, scrublands, grasslands, roadsides, fields and pastures. Commonly found at field edges and perched on fences, poles, and trees. Inhabits almost any open habitat, including grassland and urbanized areas.	**Moderate**. Common raptor. May be seen flying overhead or perched in pine, oak, coast redwood, and cedar trees in Site B, and oak trees of Site A. Numerous local detections in the greater project area suggest a moderate potential to occur. On site habitat has potential to support nesting birds.
Red-shouldered hawk (*Buteo lineatus*)	CDFW §3503.5	Riparian and oak woodlands. Also found in eucalyptus groves and sometimes developed/ suburban areas with mosaic of buildings and woodlands. Forages along edges of marshes and grasslands; nests in mature trees in a variety of habitats.	**Moderate**. Common raptor. May be seen flying overhead or perched in pine, oak, coast redwood, and cedar trees in Site B, and oak trees of Site A. Numerous local detections in the greater project area suggest a moderate potential to occur. On site habitat has potential to support nesting birds.
Ferruginous hawk (*Buteo regalis*)	CDFW §3503.5 WL	Open areas particularly prairies, plains, and badlands. Nests in trees near streams or steep slopes.	**Unlikely.** No suitable habitat on project site. Open areas of grassland exist in the project vicinity. However local detections do not exist in the project vicinity (eBird, 2014). On site and adjacent habitat is highly unlikely to support nesting birds.
Swainson's hawk (*Buteo swainsoni*)	CDFW §3503.5	Prairie, grassland, agricultural areas. Nest in trees near agricultural fields or stands of trees along streams.	**Unlikely.** No suitable habitat on project site or in vicinity. Open areas of grassland exist in the project vicinity. However local detections do not exist in the project vicinity (eBird, 2014). On site and adjacent habitat is unlikely to support nesting birds. Could potentially nest in mature trees along nearby Las Trampas Creek.

LIST OF SPECIAL-STATUS SPECIES RECORDED IN THE SARANAP VILLAGE PROJECT VICINITY

Common Name ***Scientific Name***	**Listing Status USFWS/ CDFW/CRPR**	**General Habitat**	**Potential to Occur in or Near the Project Site**[a]
Birds (cont.)			
Northern harrier (*Circus cyaneus)*	CDFW §3503.5	Nests in salt or freshwater wetlands, forages over wetlands, annual grasslands.	**Low.** No suitable habitat present on project site or in immediate vicinity. This species has been observed in the greater project area (eBird, 2014), and it could be found in patches of grassland habitat in the project vicinity such as Acalanes Ridge Open Space.
White-tailed kite (*Elanus leucurus*)	CDFW §3503.5 FP	Foothills and valleys with oaks, rivers, and marshes; open woodland, desert grassland.	**Low.** No suitable habitat present on project site or in immediate vicinity. This species has been observed in the greater project area however (eBird, 2014), and it could be found in nearby patches of open woodland and grassland habitat.
California horned lark (*Eremophila alpestris actia*)	WL	Short grass prairie, mountain meadows, coastal plains.	**Unlikely.** Suitable habitat not present at project site or in vicinity.
Prairie falcon (*Falco mexicanus*)	CDFW §3503.5	Grasslands, deserts, and open areas. Nests in cliffs.	**Unlikely.** Suitable habitat not present at project site or in immediate vicinity. This species has been detected in the greater project area (eBird, 2014), and may utilize patches of grassland habitat in greater project area.
American peregrine falcon (*Falco peregrines anatum*)	CDFW §3503.5 FP	Wetlands, lakes, rivers, or other water bodies. Also utilizes human-made structures.	**Unlikely.** Specific habitat doesn't exist on site, but it could be present at nearby Las Trampas Creek to the south of the project site.
American kestrel (*Falco sparverius*)	CDFW §3503.5	Open areas such as meadows, grasslands, and open woodlands. Also utilize human modified habitat such as parks and fields. Primarily a cavity nester.	**Low**. Suitable habitat not present at project site. However, this species has been observed in the greater project area (eBird, 2014), and it could be found in nearby patches of open woodland, grassland, and human modified landscape.
Salt-marsh common yellowthroat (*Geothlypis trichas sinuosa)*	FSC/CSC/--	Inhabits tidal salt and brackish marshes in winter, but breeds in freshwater brackish marshes and riparian woodlands during spring to early summer.	**Unlikely.** No suitable habitat at project site or in project area.
Bald eagle (*Haliaeetus leucocephalus*)	FDL/CE/-- FP	Ocean shores, lakes, rivers. Nests in large old growth trees, typically within 1 mile of water	**Unlikely.** No suitable habitat present on site, but it has been documented in the greater project area (eBird, 2014).
California black rail (*Laterallus jamaicensis coturniculus)*	--/CT/--	Tidally influenced, heavily vegetated, high-elevation marshlands.	**Unlikely.** No suitable habitat at project site or in project area.
Alameda song sparrow (*Melospiza melodia pusillula)*	--/CSC/--	Salt marshes of eastern and south San Francisco Bay.	**Unlikely.** Suitable habitat not present at project site and species range is outside of project area.
Suison song sparrow (*Melospiza melodia maxillaris)*	--/CSC/--	Brackish-water marshes surrounding Suisun Bay.	**Unlikely.** Suitable habitat not present at project site and species range is outside of project area.
San Pablo song sparrow (*Melospiza melodia samuelis)*	--/CSC/--	Salt marshes of North San Francisco Bay and San Pablo Bay.	**Unlikely.** Suitable habitat not present at project site or in project area. Species range is outside of project area.
Osprey (*Pandion haliaetus*)	CDFW §3503.5WL	Water bodies such as reservoirs, lakes, rivers, ponds, estuaries.	**Unlikely.** Suitable habitat not present at project site or in immediate vicinity.

LIST OF SPECIAL-STATUS SPECIES RECORDED IN THE SARANAP VILLAGE PROJECT VICINITY

Common Name ***Scientific Name***	**Listing Status USFWS/ CDFW/CRPR**	**General Habitat**	**Potential to Occur in or Near the Project Site**[a]
Birds (cont.)			
California clapper rail (*Rallus longirostris obsoletus*)	FE/CE/--	Salt marsh wetlands along the San Francisco Bay.	**Unlikely.** Suitable habitat not present at project site or in immediate vicinity.
Amphibians			
California tiger salamander (*Ambystoma californiense*)	FT/CT/--	Vernal or temporary pools in annual grasslands, or open stages of woodlands. Typically adults use mammal burrows.	**Unlikely.** No suitable aquatic habitat present at project site or in vicinity.
Foothill yellow-legged frog (*Rana boylii*)	--/CSC/--	Small, permanent foothill streams >200 m elevation with rocky substrate, open and sunny banks; rivers; and other permanent water sources.	**Unlikely.** No suitable aquatic habitat present at project site or in vicinity.
California red-legged frog (*Rana draytonii*)	FT/ CSC/--	Streams, freshwater pools, and ponds with overhanging vegetation. Also found in woods adjacent to streams. Requires permanent or ephemeral water sources such as reservoirs and slow moving streams and needs pools of >0.5 m depth for breeding.	**Unlikely.** No suitable aquatic habitat present at project site or in vicinity.
Reptiles			
Western pond turtle *(Emys marmorata)*	--/CSC/--	Ponds, marshes, rivers, streams, and irrigation ditches with aquatic vegetation <6,000' in elevation. Require basking sites and upland habitat for egg laying (sandy banks and open, grassy fields)	**Unlikely.** No suitable aquatic habitat present at project site or in vicinity.
Alameda whipsnake (*Masticophis lateralis euryxanthus*)	FT/CT/--	Chaparral and scrub habitat, and will also occupy adjacent grasslands, oak savanna and woodland habitats.	**Unlikely.** No suitable habitat present at project site or in project vicinity.
Coast horned lizard (*Phrynosoma blainvillii*)	--/CSC/--	Patchy open areas with sandy soils and available ant food sources. Common in lowlands along sandy washes with low bushes.	**Unlikely.** No suitable aquatic habitat present at project site or in vicinity.
Mammals			
Townsend's big-eared bat (*Corynorhinus townsendii townsendii)*	--/CSC/--	Occurs in humid coastal regions of northern and central California. Roosts in limestone caves, lava tubes, mines, and buildings. Extremely sensitive to disturbance.	**Moderate.** Trees and buildings may provide roosting habitat. Preconstruction surveys necessary.
Pallid bat (*Antrozous pallidus*)	--/CSC/--	Roosts in caves, old buildings, and under bark. Forages in open lowland areas, and forms large maternity colonies in the spring. Very sensitive to human disturbance.	**Moderate.** Suitable habitat not present at project site or in immediate vicinity. Also unlikely to occur in project area due to sensitivity to disturbance.
Greater western mastiff bat (*Eumops perotis californicus)*	--/CSC/--	Inhabits open habitats including conifer and broad-leaved woodlands, coastal scrub, chaparral, and grassland. Roosts in crevices, high buildings, trees, and tunnels.	**Moderate.** Trees and buildings may provide roosting habitat. Preconstruction surveys necessary.
Berkeley kangaroo rat (*Dipodomys heermanni berkeleyensis*)	--/*/--	Open grassy hilltops and open spaces in chaparral and blue oak/digger pine woodlands.	**Unlikely.** Suitable habitat not present at project site.
Silver-haired bat (*Lasionycteris noctivagens*)	WBWG Medium	Coastal and montane forest. Roosts in hollow trees, and feeds over streams and ponds.	**Unlikely.** Suitable habitat not present at project site or in immediate vicinity. This species could utilize portions of nearby Las Trampas Creek for feeding.

LIST OF SPECIAL-STATUS SPECIES RECORDED IN THE SARANAP VILLAGE PROJECT VICINITY

Common Name ***Scientific Name***	**Listing Status USFWS/ CDFW/CRPR**	**General Habitat**	**Potential to Occur in or Near the Project Site**[a]
Mammals (cont.)			
Western red bat (*Lasiurus blossevillii*)	--/CSC/--	Roosts primarily in tree or shrub foliage, 2-40 feet above ground, from sea level up through mixed conifer forests. Prefers habitat edges and mosaics with trees that are protected from above and open below with open areas for foraging.	**Moderate**. Roosting habitat available in Monterey pine, valley oak, coast live oak, and coast redwood foliage at Site B; and coast live oak, valley oak, magnolia, and sweet gum foliage at Site A.
Hoary bat (*Lasiurus cinereus)*	WBWG Medium	Prefers open habitats or habitat mosaics, with access to trees for cover and open areas or habitat edges for foraging. Roosts in dense foliage of medium to large trees. Feeds primarily on moths; requires water.	**Moderate.** Roosting habitat available in Monterey pine, valley oak, coast live oak, and coast redwood foliage at Site B. However project area provides no foraging habitat, but this species could utilize portions of nearby Las Trampas Creek for feeding.
Yuma myotis (*Myotis yumanensis*)	--/*/--	Found in open forests and woodlands with sources of water over which to feed. Also utilizes buildings and bridges.	**Moderate.** Roosting habitat is available in tree/shrub foliage of Monterey pine, valley oak, coast live oak, and coast redwood foliage at Site B. However project area provides no foraging habitat, but this species could utilize portions of nearby Las Trampas Creek for feeding.
San Joaquin pocket mouse (*Perognathus inornatus inornatus*)	--/*/--	Grasslands and blue oak savannas. Relies on friable soils.	**Unlikely.** No suitable habitat present at project site or in vicinity.
Salt-marsh harvest mouse (*Reithrodontymys raviventris*)	FE/CE/--	Saline emergent wetlands of San Francisco Bay, usually in association with pickleweed.	**Unlikely.** No suitable habitat present at project site or in vicinity.
Alameda Island mole (*Scapanus latimanus parvus*)	--/CSC/--	Annual and perennial grasslands. Only known to occur on Alameda Island.	**Unlikely.** No suitable habitat at project site and species range occurs outside of project area.
Suison shrew (*Sorex ornatus sinuosus*)	--/CSC/--	Tidal marshes of north shores of San Pablo Bay and Suisun Bay.	**Unlikely.** No suitable habitat at project site and species range occurs outside of project area.
American badger *(*Taxidea taxus*)*	--/CSC/--	Open grasslands with loose, friable soils.	**Unlikely.** No suitable habitat in project area and species range occurs outside of project area.
San Joaquin kit fox (*Vulpes macrotis mutica*)	FE/CT/--	Undeveloped grasslands and agricultural land.	**Unlikely.** No suitable habitat present at project site or in vicinity.
Invertebrates			
San Bruno elfin butterfly (*Callophrys mossil bayensis*)	FE/--/--	Coastal, mountainous areas with grass. Found mainly around San Bruno Mountain.	**Unlikely.** Habitat not present at project site. Species' range does not include project site.
Monarch butterfly (*Danaus plexippus*)	--/*/--	Winter roosts located in wind-protected tree groves (eucalyptus, Monterey pine, cypress), with nectar and water sources nearby.	**Unlikely.** No suitable habitat present at project site or in vicinity.
Antioch efferian robberfly (*Efferia antiochi*)	--/*/--	Larvae develop in ground or in rotting wood.	**Unlikely.** Only known to occur in Antioch, Fresno, and Scout Island is San Joaquin River.
Bay checkerspot butterfly (*Euphydryas editha bayensis)*	FT/--/--	Native grasslands with serpentine soil.	**Unlikely.** No suitable habitat present at project site or in vicinity.
Bridge's coast range shoulderband (*Helminthoglypta nickliniana bridgesi*)	--/*/--	Open hillsides of Alameda and Contra Costa County.	**Unlikely.** No suitable habitat present at project site or in vicinity. Species' range does not include project site.

LIST OF SPECIAL-STATUS SPECIES RECORDED IN THE SARANAP VILLAGE PROJECT VICINITY

Common Name ***Scientific Name***	**Listing Status USFWS/ CDFW/CRPR**	**General Habitat**	**Potential to Occur in or Near the Project Site**[a]
Invertebrates (cont.)			
Lee's micro-blind harvestman (*Microcina leei*)	--/*/--	Xeric habitats in San Francisco Bay region. Found under rocks in open grasslands.	**Unlikely.** No suitable habitat present at project site or in vicinity.
Callippe silverspot butterfly (*Speyeria callippe callippe*)	FE/--/--	Found in native grasslands with *Viola peduculata* as larval food plant.	**Unlikely**. Species is only known from San Bruno Mountain, and project area is outside of this location.
California brackishwater snail (*Tyonia imitador*)	--/*/--	Coastal lagoons, estuaries, salt marshes	**Unlikely.** No suitable habitat present at project site or in vicinity.
Fish			
Sacramento perch (*Archoplites interruptus*)	--/CSC/--	Warm water. Aquatic vegetation required by young. Historically found in rivers and lakes of Central Valley.	**Unlikely.** No suitable habitat present at project site or in vicinity.
Tidewater goby (*Eucyclogobius newberryi*)	--/CSC/--	Warm water. Aquatic vegetation required by young. Historically found in rivers and lakes of Central Valley.	**Unlikely.** No suitable habitat present at project site or in vicinity.
Delta smelt (*Hypomesus transpacificus*)	FT/CE/--	Brackish-water channels and sloughs of the Sacramento – San Joaquin Delta.	**Unlikely**. Suitable habitat not present at project site or in project area.
Sacramento splittail (*Pogonichthys macroelepidotus*)	--/CSC/--	Slow-moving water, sloughs. Requires flooded vegetation for spawning and foraging for young. Endemic to lakes and Rivers of Central Valley, but also confined to the delta, Suisun Bay and associated marshes.	**Unlikely.** No suitable habitat present at project site or in vicinity. Species' range does not include project site.
Longfin smelt (*Spirinchus thaleichthys*)	FT/-- Critical Habitat	Drainages of central California coastal rivers.	**Unlikely.** No suitable habitat present at project site or in vicinity.
Plants			
Bent-flowered fiddleneck *Amsinckia lunaris*	FE/CE/1B.1	Sparsely vegetated, semi-stabilized coastal dunes and scrub.	**Unlikely.** No suitable habitat present at project site.
California androsace (*Androsace elongata* ssp. *acuta*)	--/--/4.2	Chaparral, cismontane woodland, coastal scrub, meadows and seeps, valley and foothill grassland.	**Unlikely.** No suitable habitat present at project site.
Slender silver moss (*Anomobryum julaceum*)	--/--/2B.2	Broadleafed upland forest, lower montane coniferous forest, North Coast coniferous forest	**Unlikely.** No suitable habitat present at project site.
Coast rockcress (*Arabis blepharophylla*)	--/--/4.3	Broadleafed upland forest, coastal bluff scrub, coastal prairie, coastal scrub	**Unlikely.** No suitable habitat present at project site.
Mt. Diablo manzanita (*Arctostaphylos auriculata)*	--/--/1.B.3	Chaparral, cismontane woodland.	**Unlikely.** No suitable habitat present at project site.
Contra Costa manzanita (*Arctostaphylos manzanita* ssp. *laevigata*)	–/–/1B.2	Rocky slopes in chaparral.	**Unlikely.** No suitable habitat present at project site.
Pallid manzanita (*Arctostaphylos pallida)*	FT/CE/1B.1	Forest, chaparral, cismontane woodland, and coastal scrub habitat in Alameda and Contra Costa Counties	**Unlikely.** No suitable habitat present at project site.
Alkali milk-vetch *Astragualus tener* var. *tener*	--/Rare/1B.1	Moist clay or ultramafic soil in chaparral, coastal prairie, meadows, seeps, and valley and foothill grassland.	**Unlikely.** No suitable habitat present at project site.
Heartscale (*Atriplex cordulata* var. *cordulata*)	–/–/1B.2	Chenopod scrub, meadows and seeps, valley and foothill grassland	**Unlikely.** No suitable habitat present at project site.

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Common Name ***Scientific Name***	**Listing Status USFWS/ CDFW/CRPR**	**General Habitat**	**Potential to Occur in or Near the Project Site**[a]
Plants (cont.)			
Crownscale (*Atriplex coronata* var. *coronata*)	--/--/4.2	Chenopod scrub, valley and foothill grassland, vernal pools	**Unlikely.** No suitable habitat present at project site.
San Joaquin spearscale (*Atriplex joaquinana*)	–/–/1B.2	Chenopod scrub, meadows and seeps, playas, valley and foothill grassland.	**Unlikely.** No suitable habitat present at project site.
Big-scale balsamroot (*Balsamorhiza macrolepis*)	–/–/1B.2	Chaparral, cismontane woodland, valley and foothill grassland	**Unlikely.** No suitable habitat present at project site.
Big tarplant (*Blepharizonia plumosa*)	–/–/1B.1	Valley and foothill grasslands, in clay to clay-loam soils.	**Unlikely.** No suitable habitat present at project site.
Brewer's Calandrinia (*Calandrinia breweri*)	--/--/4.2	Chaparral, coastal scrub	**Unlikely.** No suitable habitat present at project site.
Round-leaved filaree (*California macrophylla*)	–/–/1B.1	Cismontane woodland, valley and foothill grassland.	**Unlikely.** No suitable habitat present at project site.
Mt. Diablo fairy-lantern (*Calochortus pulchellus*)	–/–/1B.2	Chaparral, cismontane woodland, riparian woodland, valley and foothill grassland.	**Unlikely.** No suitable habitat present at project site.
Oakland star-tulip (*Calochortus umbellatus*)	--/--/4.2	Broadleafed upland forest, chaparral, cismontane woodland, lower montane coniferous forest, valley and foothill grassland	**Unlikely.** No suitable habitat present at project site.
Serpentine Collomia (*Collomia diversifolia*)	--/--/4.3	Chaparral and cismontane woodland with serpentine soils.	**Unlikely.** No suitable habitat present at project site.
Chaparral harebell (*Campanula exigua*)	–/–/1B.2	Chaparral.	**Unlikely.** No suitable habitat present at project site.
Johny-nip (*Castilleja ambigua* var. *ambigua*)	--/--/4.2	Coastal bluff scrub, coastal prairie, coastal scrub, marshes and swamps, valley and foothill grassland, vernal pools margins	**Unlikely.** No suitable habitat present at project site.
Congdon's tarplant (*Centromadia parryi* ssp. *congdonii*)	–/–/1B.1	Valley and foothill grassland.	**Unlikely.** No suitable habitat present at project site.
Point Reyes salty bird's-beak (*Chloropyron maritimum* ssp. *palustre*)	--/--/1B.2	Coastal salt marshes and swamps.	**Unlikely.** No suitable habitat present at project site.
Soft salty bird's-beak (*Chloropyron molle* ssp. *molle*)	FE/Rare/1B.2	Coastal salt marshes and swamps.	**Unlikely.** No suitable habitat present at project site.
Robust spineflower *(Chorizanthe robusta* var. *robusta)*	FE/–/1B.1	Coastal scrub and coastal dunes.	**Unlikely.** No suitable habitat present at project site.
Bolander's water-hemlock (*Circuta maculata* var. *bolanderi*)	--/--/2B.1	Fresh or brackishwater marshes.	**Unlikely.** No suitable habitat present at project site.
Franciscan thistle *(Cirsium andrewsii)*	–/–/1B.2	Coastal bluff scrub, dunes, prairie, and coastal scrub; sandy soils on terraces and slopes.	**Unlikely.** No suitable habitat present at project site.
Presidio clarkia *(Clarkia franciscana)*	–/–/1B.1	Coastal salt marshes and swamps.	**Unlikely.** No suitable habitat present at project site.
Santa Clara red ribbons (*Clarkia concinna* ssp. *automixa*)	--/--/4.3	Chaparral, cismontane woodland.	**Unlikely.** No suitable habitat present at project site.

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Common Name ***Scientific Name***	**Listing Status USFWS/ CDFW/CRPR**	**General Habitat**	**Potential to Occur in or Near the Project Site**[a]
Plants (cont.)			
Point Reyes bird's-beak (*Cordylanthus maritimus* ssp. *palustris)*	–/–/1B.2	Chaparral, coastal prairie, meadows, seeps, coastal salt marshes and swamps, and vernally mesic, often alkaline, valley and foothill grasslands.	**Unlikely.** No suitable habitat present at project site.
Mt. Diablo bird's-beak (*Cordylanthus nidularius)*	--/Rare/1B.1	Chaparral with serpentine soil.	**Unlikely.** No suitable habitat present at project site.
Hospital Canyon larkspur (*Delphinium californicum* ssp. *interius*)	–/–/1B.2	Chaparral, cismontane woodland, coastal scrub.	**Unlikely.** No suitable habitat present at project site.
Norris' beard moss (*Didymodon norrisii*)	--/--/2.B.2	Cismontane woodland, lower montane coniferous forest.	**Unlikely.** No suitable habitat present at project site.
Western leatherwood (*Dirca occidentalis*)	–/–/1B.2	Broadleafed upland forest, closed-cone coniferous forest, chaparral, cismontane woodland, North Coast coniferous forest, riparian forest, riparian woodland; mesic sites.	**Unlikely.** No suitable habitat present at project site.
Small spikerush (*Eleocharis parvula*)	--/--/4.3	Marshes and swamps.	**Unlikely.** No suitable habitat present at project site.
Lime Ridge Eriastrum (*Eriastrum ertterae*)	–/–/1B.1	Chaparral (alkaline)	**Unlikely.** No suitable habitat present at project site.
Tiburon buckwheat (*Eriogonum luteolum* var. *caninum)*	–/–/1B.1	Chaparral, cismontane woodland, coastal prairie, valley and foothill grassland. Serpentinite, sandy to gravelly soil.	**Unlikely.** No suitable habitat present at project site.
Mt. Diablo buckwheat (*Eriogonum truncatum*)	–/–/1B.1	Chaparral, coastal scrub, valley and foothill grassland.	**Unlikely.** No suitable habitat present at project site.
Jepson's woolly sunflower (*Eriophyllum jepsonii*)	--/--/4.3	Chaparral, cismontane woodland, coastal scrub	**Unlikely.** No suitable habitat present at project site.
Contra Costa wallflower (*Erysimum capitatum* var. *angustatum*)	–/–/1B.1	Inland dunes.	**Unlikely.** No suitable habitat present at project site.
Fragrant fritillaria *Fritillaria liliacea*	–/–/1B.2	On rocky soils in broadleaf upland forest, cismontane woodland, coastal scrub, riparian woodland, and valley and foothill grassland.	**Unlikely.** No suitable habitat present at project site.
Diablo helianthella *Helianthella castanea*	–/–/1B.2	Coastal dunes.	**Unlikely.** No suitable habitat present at project site.
Brewer's western flax (*Hesperolinon breweri*)	–/–/1B.2	Chaparral, cismontane woodland, valley and foothill grassland.	**Unlikely.** No suitable habitat present at project site.
Loma Prieta hoita (*Hoita strobilina*)	–/–/1B.1	Chaparral, cismontane and riparian woodland.	**Unlikely.** No suitable habitat present at project site.
Santa Cruz tarplant (*Holocarpha macradenia*)	FT/CE/1B.1	Coastal prairie and scrub, valley and foothill grassland.	**Unlikely.** No suitable habitat present at project site.
Kellogg's horkelia *(Horkelia cuneata* ssp.*sericea)*	–/–/1A	Coastal salt marshes and alkaline meadows.	**Unlikely.** No suitable habitat present at project site.
Coast iris (*Iris longipetala*)	--/--/4.2	Coastal prairie, lower montane coniferous forest, meadows and seeps.	**Unlikely.** No suitable habitat present at project site.
Carquinez goldenbush (*Isocoma arguta*)	–/–/1B.1	Slopes of the Carquinez Straits in Solano and Contra Costa Counties.	**Unlikely.** No suitable habitat present at project site. Species' range does not include project site.
Southern California black walnut (*Juglans californica*)	--/--/4.2	Chaparral, cismontane woodland, coastal scrub.	**Unlikely.** No suitable habitat present at project site.

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Common Name ***Scientific Name***	**Listing Status USFWS/ CDFW/CRPR**	**General Habitat**	**Potential to Occur in or Near the Project Site**[a]
Plants (cont.)			
Northern California black walnut (*Juglans hindsii*)	–/–/1B.1	Riparian woodland and forest.	**Unlikely.** No suitable habitat present at project site.
Contra Costa goldfields (*Lasthenia conjugens*)	FE/--/1B.1	Moist grasslands, vernal pools.	**Unlikely.** No suitable habitat present at project site. Species' range does not include project site.
Delta tule pea (*Lathyrus jepsonii* var. jepsonii)	–/–/1B.2	Freshwater and brackishwater marshes.	**Unlikely.** No suitable habitat present at project site.
Bristly leptosiphon (*Leptosiphon acicularis*)	--/--/4.2	Chaparral, cismontane woodland, coastal prairie, valley and foothill grassland	**Unlikely.** No suitable habitat present at project site.
Mason's lilaeopsis (*Lilaeopsis masonii*)	–/–/1B.1	Freshwater and brackishwater marshes and swamps, riparian scrub.	**Unlikely.** No suitable habitat present at project site.
Delta mudwort (*Limosella australis*)	--/--/2B.1	Freshwater and brackishwater marshes and swamps. Usually found on mud banks of Delta riparian or marshy habitat associations.	**Unlikely.** No suitable habitat present at project site. Species' range does not include project site.
California linderiella (*Linderiella occidentalis*)	--/*/--	Seasonal pools in grasslands with alluvial soils.	**Unlikely.** No suitable habitat present at project site.
Showy golden madia (*Madia radiata*)	–/–/1B.1	Cismontane woodland, valley and foothill grassland.	**Unlikely.** No suitable habitat present at project site.
Hall's bush-mallow (*Malacothamnus hallii*)	–/–/1B.2	Chaparral and coastal scrub.	**Unlikely.** No suitable habitat present at project site.
Oregon meconella (*Meconella oregana*)	–/–/1B.1	Coastal prairie and coastal scrub.	**Unlikely.** No suitable habitat present at project site.
Mt. Diablo cottonweed (*Micropus amphibolus*)	--/--/3.2	Rocky areas in broadleafed upland forest, chaparral, cismontane woodland, and valley and foothill grassland.	**Unlikely.** No suitable habitat present at project site.
San Antonio Hills Monardella (*Monardella antonina* ssp. *antonina*)	--/--/3	Chaparral, cismontane woodland	**Unlikely.** No suitable habitat present at project site.
Woodland woollythreads (*Monolopia gracilens*)	–/–/1B.2	Chaparral, valley and foothill grasslands, cismontane woodland, broadleafed upland forest, north coast coniferous forest.	**Unlikely.** No suitable habitat present at project site.
Lime Ridge navarretia (*Navarretia gowenii*)	–/–/1B.1	Chaparral with calcium-carbonate rich soil.	**Unlikely.** No suitable habitat present at project site.
Shining navarretia (*Navarretia nigelliformis* ssp. *radians*)	–/–/1B.2	Cismontane woodland, valley and foothill grassland, vernal pools.	**Unlikely.** No suitable habitat present at project site.
Antioch Dunes evening-primrose (*Oenothera deltoides* ssp. *howellii*)	FE/CE/1B.1	River bluffs and sand dunes east of Antioch.	**Unlikely.** No suitable habitat present at project site. Species' range does not include project site.
Mt. Diablo phacelia (*Phacelia phacelioides*)	–/–/1B.2	Chaparral, cismontane woodland.	**Unlikely.** No suitable habitat present at project site.
San Francisco popcorn-flower *(Plagiobothrys diffusus)*	–/–/1B.2	Coastal prairie, and valley and foothill grasslands; occasionally on serpentine.	**Unlikely.** No suitable habitat present at project site.
Marin knotweed (*Polygonum marinense*)	--/--/3.1	Coastal salt and brackish water marshes.	**Unlikely.** No suitable habitat present at project site.

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Common Name ***Scientific Name***	**Listing Status USFWS/ CDFW/CRPR**	**General Habitat**	**Potential to Occur in or Near the Project Site**[a]
Plants (cont.)			
Lobb's aquatic buttercup (*Ranunculus lobbii*)	--/--/4.2	Mesic sites in cismontane woodland, North Coast coniferous forest, valley and foothill grassland, and vernal pools.	**Unlikely.** No suitable habitat present at project site.
Adobe sanicle (*Sanicula maritima*)	–/–/1B.1	Chaparral, coastal prairie, meadows and seeps, valley and foothill grassland.	**Unlikely.** No suitable habitat present at project site.
Rock sanicle (*Sanicula saxatilis*)	--/Rare/1B.2	Broadleafed upland forest, chaparral, valley and foothill grassland.	**Unlikely.** No suitable habitat present at project site.
Chaparral ragwort (*Senecio aphanactis*)	--/--/2B.2	Chaparral, cismontane woodland, coastal scrub.	**Unlikely.** No suitable habitat present at project site.
Most beautiful jewelflower (*Streptanthus albidus* ssp. *peramoenus*)	–/–/1B.2	Chaparral, valley and foothill grassland, cismontane woodland.	**Unlikely.** No suitable habitat present at project site.
Mt. Diablo jewelflower (*Streptanthus hispidus)*	--/--/1.B.3	Chaparral, valley and foothill grassland.	**Unlikely.** No suitable habitat present at project site.
Slender-leaved pondweed (*Stuckenia filiformis* ssp. *alpina*)	--/--/2B.2	Marshes and swamp.	**Unlikely.** No suitable habitat present at project site.
Suisun marsh aster (*Symphyotrichum lentum*)	–/–/1B.2	Brackish and freshwater marshes and swamps.	**Unlikely.** No suitable habitat present at project site.
Saline clover (*Trifolium hydrophilum*)	–/–/1B.2	Marsh and swamp, valley and foothill grassland, vernal pool, wetland.	**Unlikely.** No suitable habitat present at project site.
Coastal triquetrella *Triquetrella californica*	--/--/LS	Coastal dunes and clearings in dune scrub.	**Unlikely.** No suitable habitat present at project site.
Caper-fruited Tropidocarpum (*Tropidocarpum capparideum*)	–/–/1B.1	Valley and foothill grasslands with alkaline clay.	**Unlikely.** No suitable habitat present at project site.
Oval-leaved viburnum (*Viburnum ellipticum*)	--/--/2B.3	Chaparral, cismontane woodland, lower montane coniferous forest.	**Unlikely.** No suitable habitat present at project site.

[a] Potential to Occur Categories:
Unlikely = The project area and/or immediate vicinity do not support suitable habitat for a particular species. Project area is outside of the species known range. Species identified as unlikely to occur are not addressed further in the EIR.
Low Potential = The project area and/or immediate vicinity only provide limited habitat. In addition, the species' known range may be outside of the project area.
Moderate Potential = The project area and/or immediate vicinity provide suitable habitat.
High Potential = The project area and/or immediate vicinity provide ideal habitat conditions.

STATUS CODES:

FEDERAL: (U.S. Fish and Wildlife Service)
FT = Listed as Threatened (likely to become Endangered within the foreseeable future) by the Federal Government.
FSC = Federal Species of Concern
FC = Candidate for federal listing
FD= Delisted

STATE: (California Department of Fish and Wildlife [CDFW])
CT = Listed as Threatened by the State of California
CE= Listed as Endangered by the State of California
CSC = California Species of Special Concern
CFP= California Department of Fish and Wildlife designated "fully protected"

WL = Watch list
§3503.5 = Protection for nesting species of Falconiformes (hawks) and Strigiformes (owls)
* Special animal-listed on CDFG's Special Animal List

OTHER:

WBWG = Western Bat Working Group:
Low = Stable population
Medium = Need more information about the species, possible threats, and protective actions to implement.
High= Imperiled or at high risk of imperilment.

California Native Plant Society (CNPS) California Rare Plant Ranks (CRPR):
1A = Presumed extirpated in California; Rare or extinct in other parts of its range.
1B = Rare, threatened, or endangered throughout range; Most species in this rank are endemic to California.
2A = Extirpated in California, but common in other parts of its range.
2B = Rare, threatened, or endangered in California but common in other parts of its range.
3 = Need more information about species to assign it a ranking.
4 = Limited distribution and therefore warrants monitoring of status.
.1 = Seriously endangered in California
.2 = Fairly endangered in California
LS= Locally Significant Species

SOURCES: CDFW, 2014; CNPS, 2014; Cornell Lab of Ornithology-eBird, 2014; Essig Museum of Entomology, 2014; Shuford and Gardali, 2008; USFWS, 2014; Western Bat Working Group, 2014.

BIOLOGICAL RESOURCE ANALYSIS
SARANAP VILLAGE
UNINCORPORATED WALNUT CREEK
CONTRA COSTA COUNTY, CALIFORNIA

January 10, 2014

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Figure 1. Regional Map of the Saranap Village Project Site.

Figure 2. Saranap Village Project Site Location.

Figure 3. Aerial photograph of the Saranap Village Project Site.

Figure 4. Closest Known Records for Special-Status Species Within 5 Miles of the Saranap Village Project Site.

TABLES

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Table 1. Plant Species Observed on the Saranap Village Project Site.

Table 2. Wildlife Species Observed on the Saranap Village Project Site.

Table 3. Special-Status Plant Species Known to Occur in the Vicinity of the Saranap Village Project Site.

Table 4. Special-Status Animal Species Known to Occur in the Vicinity of the Saranap Village Project Site.

1. INTRODUCTION

Monk & Associates, Inc. (M&A) has prepared this biological resource analysis for the proposed Saranap Village development site (herein referred to as the project site) located in an unincorporated area of Walnut Creek, Contra Costa County, California (Figures 1 and 2). The purpose of our analysis is to provide a description of existing biological resources on the project site and to identify potentially significant impacts that could occur to sensitive biological resources from the construction of a proposed mixed-use, planned unit development.

Biological resources include common plant and animal species, and special-status plants and animals as designated by the U.S. Fish and Wildlife Service (the Service), California Department of Fish and Wildlife (the Department), National Marine Fisheries Service (NMFS), and other resource organizations including the California Native Plant Society. Biological resources also include waters of the United States and State, as regulated by the U.S. Army Corps of Engineers (Corps), California Regional Water Quality Control Board (RWQCB), and the Department. It is important to note that our analysis includes an assessment of the potential for impacts to regulated waters but does not provide the level of detail required for a formal delineation of "waters of the U.S." suitable for submittal to the Corps, the regulatory agency that defines waters of the U.S.

This biological resources analysis also provides mitigation measures for "potentially significant" and "significant" impacts that could occur to biological resources. Whenever possible, upon implementation, the prescribed mitigation measures would reduce impacts to levels considered less than significant pursuant to the California Environmental Quality Act (CEQA). Accordingly, this report is suitable for review and inclusion in any review being conducted by the Contra Costa County Department of Conservation and Development for the proposed project pursuant to the CEQA.

2. PROPERTY LOCATION AND SETTING

The project site is located in the Saranap area of Contra Costa County that separates Walnut Creek and Lafayette (Figures 1 and 2). It is located in an existing commercial/ residential area around the intersection of Boulevard Way and Saranap Avenue, and extends along the north and south sides of Boulevard Way, and along the east side of Saranap Avenue (Figure 3). It lies approximately one quarter of a mile west of the Walnut Creek city limits, and just south of Highway 24. The project site is in one of the oldest developed areas in Walnut Creek. It is likely that development of this area commenced prior to 1900; however, most high density uses and current buildings in the area date to the 1940s. Prior to the construction of Highway 24, Saranap Avenue and Boulevard Way were the primary roads into the City of Walnut Creek.

Surrounding existing uses generally include a mixture of multi-family and commercial/ retail services including offices, auto repair, a self-storage facility, a funeral home, and other commercial uses. The project is an urban infill project that has no connectivity to any open space or other naturalized habitats.

3. PROPOSED PROJECT

The project site consists of four developed parcels (Sites A – D) totaling 3.5 acres and contains several outdated buildings which would be redeveloped with four buildings of varying size containing 235 multi-family units and approximately 22,000 square feet of ground level retail and restaurant uses. The project also includes significant reconstruction and improvement of the Boulevard Way right-of-way where it passes through the project site and reconstruction of the parking area for an adjacent condominium complex.

4. ANALYSIS METHODS

Prior to preparing this biological resource analysis report, M&A researched the most recent version of the Department's Natural Diversity Database, RareFind 3.1 application (CNDDB 2013) for historic and recent records of special-status plant and animal species (that is, threatened, endangered, rare) known to occur in the region of the project site. M&A also searched the 2013 electronic version of the California Native Plant Society's (CNPS) *Inventory of Rare and Endangered Plants of California* (CNPS 2001) for records of special-status plants known in the region of the project site. All special-status species records were compiled in tables. M&A examined all known record locations for special-status species to determine if special-status species could occur on the project site or within an area of affect. M&A also reviewed the Arborist Report prepared by HortScience, Inc. (October 2013) for this project site and HortScience's Revised Arborist Report (January 2014).

M&A biologists Sarah Lynch and Christy Owens conducted a general survey of the project site on November 11, 2013 to record biological resources and to assess the likelihood of resource agency regulated areas on the project site. The survey involved searching the site and recording all landscaped trees, native and ornamental herbaceous and shrubby plants, and wildlife species observed. M&A cross-referenced the habitats found on the project site against the habitat requirements of local or regionally known special-status species to determine if the proposed project could directly or indirectly impact such species.

M&A's site evaluation included a cursory examination of the project site to determine if there could be areas within the project site that would be regulated as waters of the United States and/or State (the level of analyses was not sufficient for a preliminary wetlands investigation report suitable for submittal to the Corps; however, given the developed nature of the site, no additional investigation is warranted).

The results discussion below breaks down the project site into four separate sites: Site A, Site B, Site C, and Site D (see Figure 3). The results of our literature research and field reconnaissance are provided in the sections below.

5. RESULTS OF RESEARCH AND PROJECT SITE ANALYSES

5.1 Topography

Past development of the project site likely included land leveling to accommodate buildings. As such, the project site is relatively level with only minor changes in elevation. Elevations range from 216 feet above mean sea level (msl) to 228 feet msl at the highest point. Sites A and B have

the greatest changes in topography with Site A sloping down from the northern portion of the project site (elevation of 228 feet msl) to the southern portion of the site (216 feet msl). Site B makes a similar elevation change but transitions from south to north out to Boulevard Way. Sites C and D have less elevational change with only 6 feet and 4 feet of elevational change, respectively.

5.2 Hydrology

The project site is completely developed. No natural creeks or man-made water features (for example, ditches) are present on or immediately adjacent to the project site. Most surface runoff travels over paved parking lots down into the City of Walnut Creek storm drain system constructed into Boulevard Way. Some runoff travels to Saranap Avenue and into the storm drains installed along this road.

5.3 Plant Communities and Associated Wildlife Habitats

A complete list of plant species observed on the project site is presented in Table 1. Nomenclature used for plant names follows *The Jepson Manual* Second Edition (Baldwin 2012) and changes made to this manual as published on the Jepson Interchange Project website (http://ucjeps.berkeley.edu/interchange/index.html). Table 2 is a list of wildlife species observed on the project site. Nomenclature for wildlife follows the Department's *Complete list of amphibian, reptile, bird, and mammal species in California* (2011) and any changes made to species nomenclature as published in scientific journals since the publication of the Department's list. Below we discuss the one plant community found on the project site.

5.3.1 LANDSCAPING/ORNAMENTAL

This developed project site does not support any natural or native plant communities. Vegetation onsite is primarily landscape plantings. While some ruderal (weedy) herbaceous vegetation has developed in unpaved or graveled parking areas and around existing buildings, this vegetation is not dominant onsite nor is there a large enough area of ruderal vegetation for it to be considered a separate plant community. Vegetation observed onsite is listed in Table 1 and discussed below by individual site.

5.3.1.1 Site A

This site is located along Saranap Avenue. It has a small house, the 22-unit Sandpiper Apartment building, and a commercial building. There is also a vacant lot at the northeast corner of the intersection of Boulevard Way and Saranap Avenue where a former gas station was removed sometime in the past. Landscape vegetation associated with the single-family home and the apartment building consists of privet bushes (*Ligustrum* sp.), Siberian elm trees (*Ulmus pumila*), blackwood acacia (*Acacia melanoxylon*) trees, a sapling valley oak tree (*Quercus lobata*), pomegranate tree (*Punica granatum*), fig tree (*Ficus carina*), and a western catalpa tree (*Catalpa speciosa*).

5.3.1.2 Site B

Site B is located directly across from Site A along the south side of Boulevard Way. The existing uses on Site B consist of the Sufism Reoriented Sanctuary buildings, a paved parking lot, and an

undeveloped southern panhandle area. The southern panhandle is planted with lawn and a children's play structure is located there. A significant valley oak tree is located immediately east of this lawn area in Site B's southeastern corner (tree #55).

Site B's paved parking lot has an unpaved southeastern corner which is graveled. This graveled area receives irrigation water runoff from the adjacent (off site) property which has allowed ruderal, herbaceous plants, some of which are hydrophytic (wetland) species, to grow. Plants observed in this area included bur clover (*Medicago polymorpha*), lowland cudweed (*Gnaphalium palustre*), ammannia (*Ammannia* sp.), common purslane (*Portulaca oleracea*), annual blue grass (*Poa annua*), and willow herb (*Epilobium ciliatum*). While hydrophytic plant species are present here, this small area does not constitute a "water of the United States" or "water of the State" since all three wetland parameters (hydric soils, hydrology, and a prevalence of hydrophytic vegetation) are not present in this landscape over-water area. Ornamental vegetation in this area includes fire thorn (*Pyracantha* sp.), lemon tree (*Citrus limon*), lily of the Nile (*Agapanthus* sp.), and Algerian ivy (*Hedera canariensis*). Volunteer Himalayan blackberry bushes (*Rubus armeniacus*) are also present.

In the northeastern corner of the paved parking lot is 35-inch diameter at breast height (dbh) valley oak tree (#21). This tree is a "protected" tree under the Contra Costa County Tree Ordinance definitions (see the Tree Ordinance section below). The project proponent is proposing to transplant this tree to a special roundabout in Boulevard Way as part of the redevelopment project.

5.3.1.3 Site C

Site C is located along the south side of Boulevard Way and west of Site B. The existing uses on Site C include a concrete block building (previously a market/delicatessen), which has been vacant for several years. There is a multi-tenant commercial structure located along Boulevard Way frontage at the north comer of the site. The remainder of the site consists almost entirely of paved surface parking lot. This site has very little vegetation. One coast live oak tree (*Quercus agrifolia*) (tree #51) and one California black walnut (*Juglans hindsii*) (#52) are present along the eastern fence line. Several (7) small crape myrtle trees (*Lagerstroemia* sp.) (approximately 3 inches dbh) have been planted in the parking area.

5.3.1.4 Site D

Site D is located along Boulevard Way, between Sites B and C. It currently has paved parking and a driveway entrance that are used by the existing Boulevard Terrace Condominium residents and guests. This small site has three sweetgum (*Liquidamber* sp.) trees lining the driveway (trees #56-58) and one tulip poplar tree (*Liriodendron tulipifera*) (#59).

None of the four sites provide habitat for significant or sensitive plants or wildlife. Very little vegetation occurs on any of the sites so there are very few opportunities for wildlife foraging or nesting. Some fox squirrel (*Sciurus niger*) nests were observed in a few of the trees and it is expected that in addition to nesting fox squirrels, passerine birds (perching birds) could nest in the larger branched trees. Animals observed onsite included the fox squirrel, Anna's hummingbird (*Calypte anna*), western scrub jay (*Aphelocoma californica*), northern

mockingbird (*Mimus polyglottos*), European starling (*Sturnus vulgaris*), California towhee (*Pipilo crissalis*), and bushtit (*Psaltriparus minimus*).

6. SPECIAL-STATUS SPECIES DEFINITION

6.1 Definitions

For purposes of this analysis, special-status species are plants and animals that are legally protected under the California and Federal Endangered Species Acts (CESA and FESA, respectively) or other regulations, and species that are considered rare by the scientific community (for example, the CNPS). Special-status species are defined as:

- plants and animals that are listed or proposed for listing as threatened or endangered under the CESA (Fish and Game Code §2050 *et seq*.; 14 CCR §670.1 *et seq.*) or the FESA (50 CFR 17.12 for plants; 50 CFR 17.11 for animals; various notices in the Federal Register [FR] for proposed species);

- plants and animals that are candidates for possible future listing as threatened or endangered under the FESA (50 CFR 17; FR Vol. 64, No. 205, pages 57533-57547, October 25, 1999); and under the CESA (California Fish and Game Code §2068);

- plants and animals that meet the definition of endangered, rare, or threatened under the California Environmental Quality Act (CEQA) (14 CCR §15380) that may include species not found on either State or Federal Endangered Species lists;

- Plants occurring on Ranks 1A, 1B, 2A, 2B, 3, and 4 of CNPS' electronic *Inventory* (CNPS 2001). The California Department of Fish and Wildlife (the Department) recognizes that Ranks 1A, 1B, 2A and 2B of the CNPS inventory contain plants that, in the majority of cases, would qualify for State listing, and the Department requests their inclusion in EIRs. Plants occurring on CNPS Ranks 3 and 4 are "plants about which more information is necessary," and "plants of limited distribution," respectively (CNPS 2001). Such plants may be included as special-status species on a case by case basis due to local significance or recent biological information (more on CNPS Rank species below);

- migratory nongame birds of management concern listed by U.S. Fish and Wildlife Service (Migratory Nongame Birds of Management Concern in the United States: The list 1995; Office of Migratory Bird Management; Washington D.C.; Sept. 1995);

- animals that are designated as "species of special concern" by the Department (2013);

- Animal species that are "fully protected" in California (Fish and Game Codes 3511, 4700, 5050, and 5515).

In the paragraphs below we provide further definitions of legal status as they pertain to the special-status species discussed in this report or in the attached tables.

Federal Endangered or Threatened Species. A species listed as Endangered or Threatened under the FESA is protected from unauthorized "take" (that is, harass, harm, pursue, hunt, shoot, trap) of that species. If it is necessary to take a Federal listed Endangered or Threatened species as part of an otherwise lawful activity, it would be necessary to receive permission from the Service prior to initiating the take.

State Threatened Species. A species listed as Threatened under the state Endangered Species Act (§2050 of California Fish and Game Code) is protected from unauthorized "take" (that is, harass, pursue, hunt, shoot, trap) of that species. If it is necessary to "take" a state listed Threatened species as part of an otherwise lawful activity, it would be necessary to receive permission from the Department prior to initiating the "take."

California Species of Special Concern. These are species in which their California breeding populations are seriously declining and extirpation from all or a portion of their range is possible. This designation affords no legally mandated protection; however, pursuant to the CEQA Guidelines (14 CCR §15380), some species of special concern could be considered "rare." Pursuant to its rarity status, any unmitigated impacts to rare species could be considered a "significant effect on the environment" (§15382). Thus, species of special concern must be considered in any project that will, or is currently, undergoing CEQA review, and/or that must obtain an environmental permit(s) from a public agency.

CNPS Rank Species. The CNPS maintains an "Inventory" of special status plant species. This inventory has four lists of plants with varying rarity. These lists are: Rank 1, Rank 2, Rank 3, and Rank 4. Although plants on these lists have no formal legal protection (unless they are also state or federal listed species), the Department requests the inclusion of Rank 1 species in environmental documents. In addition, other state and local agencies may request the inclusion of species on other lists as well. The Rank 1 and 2 species are defined below:

- 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.

All of the plants constituting Rank 1B meet the definitions of Section 1901, Chapter 10 (Native Plant Protection Act) or Sections 2062 and 2067 (California Endangered Species Act) of the Fish and Game Code, and are eligible for state listing (CNPS 2001). Rank 2 species are rare in California, but more common elsewhere. Ranks 3 and 4 contain species about which there is some concern, and are review and watch lists, respectively.

Additionally, in 2006 CNPS updated their lists to include "threat code extensions" for each list. For example, Rank 1B species would now be categorized as Rank 1B.1, Rank 1B.2, or Rank 1B.3. These threat codes are defined as follows:

- .1 is considered "seriously endangered in California (over 80% of occurrences threatened/high degree and immediacy of threat)";
- .2 is "fairly endangered in California (20-80% of occurrences threatened)";

- .3 is "not very endangered in California (less than 20% of occurrences threatened or no current threats known)."

Under the CEQA review process only CNPS Rank 1 and 2 species are considered since these are the only CNPS species that meet CEQA's definition of "rare" or "endangered." Impacts to Rank 3 and 4 species are not regarded as significant pursuant to CEQA.

Fully Protected Birds. Fully protected birds, such as the white-tailed kite and golden eagle, are protected under California Fish and Game Code (§3511). Fully protected birds may not be "taken" or possessed (i.e., kept in captivity) at any time.

6.2 Potential Special-Status Plants on the Project Site

Figure 4 provides a graphical illustration of the closest known records for special-status species within 5 miles of the project site and helps readers visually understand the number of sensitive species that occur in the vicinity of the project site. The project site is an urban infill project site that supports no natural or naturalized habitats that could support rare plants. No special-status plants have been mapped on or adjacent the project site. Hence, no impacts to special-status plants are expected from the implementation of the proposed development project and no mitigation is warranted.

6.3 Potential Special-Status Animals on the Project Site

The project site is an urban infill project site that does not support natural or naturalized habitats that could support special-status animal species. While the ornamental and native trees onsite may provide habitat for nesting passerine birds, which are protected pursuant to the Migratory Bird Treaty Act and California Fish and Game Code (see discussion below), the nesting birds that would occur on the project site are common species typically found in urban settings. Additionally, the existing buildings on the project site and the larger trees provide roosting opportunities for bats. Prior to demolition of these existing buildings and/or tree removal they must be checked for special-status bat species. Those special-status bat species that have the possibility of occurring on the project site are discussed below.

6.3.1 PALLID BAT

The pallid bat (*Antrozous pallidus*) is a California "species of special concern." It has no federal status. The "species of special concern" status designation does not provide any special legally mandated protection for this bat species. However, this status designation likely meets the definition of "rare" pursuant to the California Environmental Quality Act (CEQA) (14 CCR §15380(2)(A)). As such, potential impacts to this bat species should be considered during any CEQA review. Any unmitigated impacts to this species would likely be regarded by the State resource agency (the Department) as a significant adverse impact pursuant to CEQA (§21068).

This bat is a locally common species of low elevations in California. It occurs throughout California except for the high Sierra Nevada from Shasta to Kern Counties, and the northwestern corner of the state from Del Norte and western Siskiyou counties to northern Mendocino County. It occurs in a wide variety of habitats. It is most common in open, dry habitats with rocky areas for roosting. Day roosts are in caves, crevices, mines, and occasionally in hollow trees and

buildings. Roost must protect bats from high temperatures. Night roosts may be in more open sites such as porches and open buildings. A social bat; roosts in groups of 20 or more. Although the buildings on the project site provide potential roosting habitat for bats, no bats were observed during the site survey. A survey should be conducted prior to building demolition. See the Impacts and Mitigations section for details.

6.3.2 TOWNSEND'S WESTERN BIG-EARED BAT

Townsend's western big-eared bat (*Corynorhinus townsendii townsendi*). This is a California "species of special concern." It has no special federal status. This bat is found throughout California in all but subalpine and alpine habitats. It requires caves, mines, tunnels, buildings, or other human-made structures for roosting and for maternity sites. Although the buildings on the project site provide potential roosting habitat for bats, no bats were observed during the site survey. A survey should be conducted prior to building demolition. See the Impacts and Mitigations section for details.

6.3.3 GREATER WESTERN MASTIFF BAT

Greater western mastiff-bat (*Eumops perotis californicus*) is a California "species of special concern." It has no special federal status. The greater western mastiff bat is the largest bat species in the United States. It typically uses crevices in cliffs, high buildings, large trees, and tunnels for roosting. Roosts are generally high above ground in order to allow for a clear vertical drop of at least 10 feet for flight. This bat forages most frequently in open areas, including chaparral, open woodlands, grasslands, meadows, and agricultural areas. This species does not hibernate and is intermittently active during the winter. Although the buildings and large trees on the project site provide potential roosting habitat for bats, no bats were observed during the site survey. A survey should be conducted prior to tree removal or building demolition. See the Impacts and Mitigations section for details.

7. REGULATORY FRAMEWORK FOR NATIVE WILDLIFE, FISH, AND PLANTS

This section provides a discussion of those laws and regulations that are in place to protect native wildlife, fish, and plants. Under each law we discuss their pertinence to the proposed development.

7.1 Federal Endangered Species Act

The Federal Endangered Species Act (FESA) forms the basis for the federal protection of threatened or endangered plants, insects, fish and wildlife. FESA contains four main elements, they are as follows:

Section 4 (16 USCA §1533): Species listing, Critical Habitat Designation, and Recovery Planning: outlines the procedure for listing endangered plants and wildlife.

Section 7 (§1536): Federal Consultation Requirement: imposes limits on the actions of federal agencies that might impact listed species.

Section 9 (§1538): Prohibition on Take: prohibits the "taking" of a listed species by anyone, including private individuals, and State and local agencies.

Section 10: Exceptions to the Take Prohibition: non-federal agencies can obtain an incidental take permit through approval of a Habitat Conservation Plan.

In the case of salt water fish and other marine organisms, the requirements of FESA are enforced by the National Marine Fisheries Service (NMFS). The Service enforces all other cases. Below, Sections 9, 7, and 10 of FESA are discussed since they are the sections most relevant to the proposed project.

Section 9 of FESA as amended, prohibits the "take" of any fish or wildlife species listed under FESA as endangered. Under Federal regulation, "take" of fish or wildlife species listed as threatened is also prohibited unless otherwise specifically authorized by regulation. "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 conduct." "Harm" includes not only the direct taking of a species itself, but the destruction or modification of the species' habitat resulting in the potential injury of the species. As such, "harm" is further defined 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). A December 2001 decision by the 9th Circuit Court of Appeals (Arizona Cattle Growers' Association, Jeff Menges, vs. the U.S. Fish and Wildlife Service and Bureau of Land Management, and the Southwest Center for Biological Diversity) ruled that the Service must show that a threatened or endangered species is present on a project site and that it would be taken by the project activities. According to this ruling, the Service can no longer require mitigation based on the probability that the species could use the site. Rather they must show that it is actually present.

Section 9 applies to any person, corporation, federal agency, or any local or State agency. If "take" of a listed species is necessary to complete an otherwise lawful activity, this triggers the need to obtain an incidental take permit either through a Section 7 Consultation as discussed further below (for federal actions or private actions that are permitted or funded by a federal agency), or requires preparation of a Habitat Conservation Plan (HCP) pursuant to Section 10 of FESA (for state and local agencies, or individuals, and projects without a federal "nexus").

Section 7(a)(2) of the Act requires that each federal agency consult with the Service to ensure that any action authorized, funded or carried out by such agency is not likely to jeopardize the continued existence of an endangered or threatened species or result in the destruction or adverse modification of critical habitat for listed species. Critical habitat designations mean: (1) specific areas within a geographic region currently occupied by a listed species, on which are found those physical or biological features that are essential to the conservation of a listed species and that may require special management considerations or protection; and (2) specific areas outside the geographical area occupied by a listed species that are determined essential for the conservation of the species.

The Section 7 consultation process only applies to actions taken by federal agencies that are considering authorizing discretionary projects. Section 7 is by and between the NMFS and/or the Service and the federal agency contemplating a discretionary approval (that is, the "federal nexus

agency," for example, the Corps or the Federal Highway Administration). Private parties, cities, counties, etc. (i.e., applicants) may participate in the Section 7 consultation *at the discretion of the federal agencies conducting the Section 7 consultation*. The Section 7 consultation process is triggered by a determination of the "action agency" – that is, the federal agency that is carrying out, funding, or approving a project - that the project "may affect" a listed species or critical habitat. If an action is likely to adversely affect a listed species or designated critical habitat, formal consultation between the nexus agency and the Service/NMFS is required. As part of the formal consultation, the Service/NMFS may resolve any issues informally with the nexus agency or may prepare a formal Biological Opinion assessing whether the proposed action would be likely to result in "jeopardy" to a listed species or if it could adversely modify designated critical habitat. If the Service/NMFS prepares a Biological Opinion it will contain either a "jeopardy" or "non-jeopardy" decision. If the Service/NMFS concludes that a proposed project would result in adverse modification of critical habitat or would jeopardize the continued existence of a federal listed species (that is, it will issue a jeopardy decision), the nexus federal agency would be most unlikely to authorize its discretionary permit. If the Service/NMFS prepares a "non-jeopardy" Biological Opinion, the nexus federal agency may authorize the discretionary permit making all conditions of the Biological Opinion conditions of its discretionary permit. A non-jeopardy Biological Opinion constitutes an "incidental take" permit that allows applicants to "take" federally listed species while otherwise carrying out legally sanctioned projects.

For non-federal entities, for example private parties, cities, counties that are considering a discretionary permit, Section 10 provides the mechanism for obtaining take authorization. Under Section 10 of FESA, the applicant for an "incidental take permit" is required to submit a "conservation plan" to Service or NMFS that specifies, among other things, the impacts that are likely to result from the taking, and the measures the permit applicant will undertake to minimize and mitigate such impacts, and the funding that will be available to implement those steps. Conservation plans under FESA have come to be known as "habitat conservation plans" or "HCPs" for short. The terms incidental take permit, Section 10 permit, and Section 10(a)(1)(B) permit are used interchangeably by Service. Section 10(a)(2)(B) of FESA provides statutory criteria that must be satisfied before an incidental take permit can be issued.

7.1.1 RESPONSIBLE AGENCY

FESA gives regulatory authority to the Service for federally listed terrestrial species and non-anadromous fish. The NMFS has regulatory authority over federally listed marine mammals and anadromous fish.

7.1.2 APPLICABILITY TO THE PROPOSED PROJECT

The project site is an urban infill project site that supports no natural or naturalized habitats that could support federally listed species. No impacts are expected to federally listed species and no mitigation for impacts to federally listed species is warranted. Similarly, no permit is required for the proposed project prepared pursuant to the FESA.

7.2 Federal Migratory Bird Treaty Act

The Migratory Bird Treaty Act of 1918 (16 U.S.C. §§ 703-712, July 3, 1918, as amended 1936, 1960, 1968, 1969, 1974, 1978, 1986 and 1989) makes it unlawful to "take" (kill, harm, harass,

shoot, etc.) any migratory bird listed in Title 50 of the Code of Federal Regulations, Section 10.13, including their nests, eggs, or young. Migratory birds include geese, ducks, shorebirds, raptors, songbirds, wading birds, seabirds, and passerine birds (such as warblers, flycatchers, swallows, etc.).

7.2.1 Applicability to Proposed Project

Common songbirds that could occur on the site would be protected pursuant to the Migratory Bird Treaty Act (Act). As long as there is no direct mortality of species protected pursuant to this Act caused by development of the project site, there would be no constraints to development of the site. To comply with the Act, all active nest sites would have to be avoided while such birds were nesting. Upon completion of nesting, the project could commence as otherwise planned. Please review specific requirements for avoidance of nest sites for potentially occurring nesting birds in the Impacts and Mitigations section below.

7.3 **State Endangered Species Act**

7.3.1 Section 2081 of the State Endangered Species Act

In 1984, the state legislated the California Endangered Species Act (CESA) (Fish and Game Code §2050). The basic policy of CESA is to conserve and enhance endangered species and their habitats. State agencies will not approve private or public projects under their jurisdiction that would impact threatened or endangered species if reasonable and prudent alternatives are available. Because CESA does not have a provision for "harm" (see discussion of FESA, above), the Department considerations pursuant to CESA are limited to those actions that would result in the direct take of a listed species.

If the Department determines that a proposed project could impact a State listed threatened or endangered species, the Department will provide recommendations for "reasonable and prudent" project alternatives. The CEQA lead agency can only approve a project if these alternatives are implemented, unless it finds that the project's benefits clearly outweigh the costs, reasonable mitigation measures are adopted, there has been no "irreversible or irretrievable" commitment of resources made in the interim, and the resulting project would not result in the extinction of the species. In addition, if there would be impacts to threatened or endangered species, the lead agency typically requires project applicants to demonstrate that they have acquired "incidental take" permits from the Department and/or Service (if it is a Federal listed species) prior to allowing/permitting impacts to such species.

If proposed projects would result in impacts to a State listed species, an "incidental take" permit pursuant to §2081 of the Fish and Game Code would be necessary (versus a Federal incidental take permit for Federal listed species). The Department will issue an incidental take permit only if:

1) The authorized take is incidental to an otherwise lawful activity;
2) the impacts of the authorized take are minimized and fully mitigated;
3) measures required to minimize and fully mitigate the impacts of the authorized take:
    a) are roughly proportional in extent to the impact of the taking on the species;
    b) maintain the project applicant’s objectives to the greatest extent possible; and,

c) capable of successful implementation; and,

4) adequate funding is provided to implement the required minimization and mitigation measures and to monitor compliance with, and the effectiveness of, the measures.

If an applicant is preparing a habitat conservation plan (HCP) as part of the federal 10(a) permit process, the HCP might be incorporated into the §2081 permit if it meets the substantive criteria of §2081(b). To ensure that an HCP meets the mitigation and monitoring standards in Section 2081(b), an applicant should involve the Department staff in development of the HCP. If a final Biological Opinion (federal action) has been issued for the project pursuant to Section 7 of the federal Endangered Species Act, it might also be incorporated into the §2081 permit if it meets the standards of §2081(b).

No §2081 permit may authorize the take of a species for which the Legislature has imposed strict prohibitions on all forms of "take." These species are listed in several statutes that identify "fully protected" species and "specified birds." *See* Fish and Game Code §§ 3505, 3511, 4700, 5050, 5515, and 5517. If a project is planned in an area where a "fully protected" species or a "specified bird" occurs, an applicant must design the project to avoid all take.

In September 1997, Assembly Bill 21 (Fish and Game Code §2080.1) was passed. This bill allows an applicant who has obtained a "non-jeopardy" federal Biological Opinion pursuant to Section 7, or who has received a federal 10(a) permit (federal incidental take permit), to submit the federal opinion or permit to the Department for a determination as to whether the federal document is "consistent" with CESA. If after 30 days the Department determines that the federal incidental take permit is consistent with state law, and that all state listed species under consideration have been considered in the federal Biological Opinion, then no further permit or consultation is required under CESA for the project. However, if the Department determines that the federal opinion or permit is not consistent with CESA, or that there are state listed species that were not considered in the federal Biological Opinion, then the applicant must apply for a state permit under Section 2081(b). The process provided in Fish and Game Code §2080.1 (Assembly Bill 21) may be of use when the incidental take would occur to species that are listed under both the federal and state endangered species acts. Assembly Bill 21 is of no use if an affected species is state-listed, but not federally listed.

State and federal incidental take permits are issued on a discretionary basis, and are typically only authorized if applicants are able to demonstrate that impacts to the listed species in question are unavoidable, and can be mitigated to an extent that the reviewing agency can conclude that the proposed impacts would not jeopardize the continued existence of the listed species under review. Typically, if there would be impacts to a listed species, mitigation that includes habitat avoidance, preservation, and creation of endangered species habitat is necessary to demonstrate that projects would not threaten the continued existence of a species. In addition, management endowment fees are usually collected as part of the agreement for the incidental take permit(s). The endowment is used to manage any lands set-aside to protect listed species, and for biological mitigation monitoring of these lands over (typically) a five-year period.

7.3.2 APPLICABILITY TO PROPOSED PROJECT

The project site is an urban infill project site that supports no natural or naturalized habitats that could support state listed species. Thus, no state listed plant or animal species would be expected to be impacted by the proposed project (Tables 3 and 4 respectively), and no mitigation for such impacts are warranted.

7.4 Applicable CEQA Regulations

Section 15380 of CEQA defines "endangered" species as those whose survival and reproduction in the wild are in immediate jeopardy from one or more causes, including loss of habitat, change in habitat, overexploitation, predation, competition, disease, or other factors. "Rare" species are defined by CEQA as those who are in such low numbers that they could become endangered if their environment worsens; or the species is likely to become endangered within the foreseeable future throughout all or a significant portion of its range and may be considered "threatened" as that term is used in the FESA. The CEQA Guidelines also state that a project will normally have a significant effect on the environment if it will "substantially affect a rare or endangered species of animal or plant or the habitat of the species." The significance of impacts to a species under CEQA, therefore, must be based on analyzing actual rarity and threat to that species despite its legal status or lack thereof.

7.4.1 APPLICABILITY TO PROPOSED PROJECT

This document addresses impacts to species that would be defined as endangered or rare pursuant to Section 15380 of the CEQA. This document is suitable for use by the CEQA lead agency (in this case Contra Costa County) for preparation of any CEQA review document prepared for the proposed project. This report has been prepared as a Biology Section that is suitable for incorporation into an initial study or higher levels of CEQA review including incorporation into the biology section of an Environmental Impact Report.

7.5 California Fish and Game Code §§ 3503, 3503.5, 3511, and 3513

California Fish and Game Code §§ 3503, 3503.5, 3511, and 3513 prohibit the "take, possession, or destruction of birds, their nests or eggs." Disturbance that causes nest abandonment and/or loss of reproductive effort (killing or abandonment of eggs or young) is considered "take." Such a take would also violate federal law protecting migratory birds (Migratory Bird Treaty Act).

7.5.1 APPLICABILITY TO THE PROPOSED PROJECT

Any active nests that were found during preconstruction surveys would have to be avoided by the project. Suitable non-disturbance buffers would have to be established around nest sites until the nesting cycle is complete. More specifics on survey and protective buffer requirements are provided below in the Impacts and Mitigations section.

7.6 Protected Amphibians

Under Title 14 of the California Code of Regulations (CCR 14, Division 1, Subdivision 1, Chapter 5, §41. Protected Amphibians), protected amphibians, such as the California tiger salamander may only be taken under special permit from California Department of Fish and Wildlife issued pursuant to Sections 650 and 670.7 of these regulations.

7.6.1 APPLICABILITY TO THE PROPOSED PROJECT

No protected or special-status amphibians were observed during the site survey nor are they likely to be found on or adjacent to the project site. As such, no significant adverse impacts are expected to occur to protected or special-status amphibians from implementation of the proposed project.

7.7 Contra Costa County Tree Ordinance

According to Contra Costa County Code's Chapter 816-6.6004 on "Protected trees," a protected tree is any one of the following:

"(1) On all properties within the unincorporated area of the county:

(A) Where the tree to be cut down, destroyed or trimmed by topping is adjacent to or part of a riparian, foothill woodland or oak savanna area, or part of a stand of four or more trees, measures twenty inches or larger in circumference (approximately 6.5 inches in diameter) as measured four and one-half feet from ground level, and is included in the following list of indigenous trees: *Acer macrophyllum* (big leaf maple), *Acer negundo* (box elder), *Aesculus californica* (California buckeye), *Alnus Rhombifolia* (white alder), *Arbutus menziesii* (madrone), *Heteromeles arbutifolia* (toyon), *Juglans hindsii* (California black walnut), *Juniperus californica* (California juniper), *Lithocarpus densiflora* (tanoak or tanbark oak), *Pinus attenuata* (knobcone pine), *Pinus sabiniana* (digger pine), *Platanus racemosa* (California sycamore), *Populus fremontii* (Fremont cottonwood), *Populus trichocarpa* (black cottonwood), *Quercus agrifolia* (California or coast live oak), *Quercus chrysolepis* (canyon live oak), *Quercus douglasii* (blue oak), *Quercus kelloggii* (California black oak), *Quercus lobata* (valley oak), *Quercus wislizenii* (interior live oak), *Salix lasiandra* (yellow willow), *Salix laevigata* (red willow), *Salix lasiolepis* (arroyo willow), *Sambucus callicarpa* (coast red elderberry), *Sequoia sempervirens* (coast redwood), *Umbellularia californica* (California bay or bay laurel);

(B) Any tree shown to be preserved on an approved tentative map, development or site plan or required to be retained as a condition of approval;

(C) Any tree required to be planted as a replacement for an unlawfully removed tree.

(2) On any of the properties specified in subsection (3) of this section:

(A) Any tree measuring twenty inches or larger in circumference (approximately six and one-half inches diameter), measured four and one-half feet from ground level including the oak trees listed above;

(B) Any multi-stemmed tree with the sum of the circumferences measuring forty inches or larger, measured four and one-half feet from ground level;

(C) And any significant grouping of trees, including groves of four or more trees.

(3) Specified properties referred to in subsection (2) of this section include:

(A) Any developed property within any commercial, professional office or industrial district;

(B) Any undeveloped property within any district;

(C) Any area designated on the general plan for recreational purposes or open space;

(D) Any area designated in the county general plan open space element as visually significant riparian or ridge line vegetation and where the tree is adjacent to or part of a riparian, foothill woodland or oak savanna area. (Ords. 94-59, 94-22)."

According to Chapter 816-6.8002 "Permit requirement": Any person proposing to trench, grade or fill within the dripline of any protected tree or cut down, destroy, trim by topping or remove any protected tree should apply to the department for a tree permit, not less than ten days prior to the proposed tree removal or tree alterations. Persons who would be eligible to apply for three or more individual tree permits under provisions of this chapter may apply for a collective tree permit for the site.

7.7.1 Applicability to the Proposed Project

The project site is considered "undeveloped" because it is being redeveloped (County Code §816-6.4024); therefore, the trees on the project site that meet the size and species criteria above are considered "protected" under the County tree ordinance. According to HortScience's January 2014 report, the project site supports several protected trees. In accordance with the Tree Protection and Preservation Ordinance for Contra Costa County, a tree permit should be applied for not less than ten days prior to tree removal. Please see Impacts and Mitigation Section for greater details about tree impacts and mitigations.

8. REGULATORY REQUIREMENTS PERTAINING TO WATERS OF THE UNITED STATES AND STATE

This section presents an overview of the criteria used by the U.S. Army Corps of Engineers, the California Regional Water Quality Control Board, the State Water Resources Control Board, and the Department to determine those areas within a project site that would be subject to their regulation.

8.1 U.S. Army Corps of Engineers Jurisdiction and General Permitting

8.1.1 Section 404 of the Clean Water Act

Congress enacted the Clean Water Act "to restore and maintain the chemical, physical, and biological integrity of the Nation's waters" (33 U.S.C. §1251(a)). Pursuant to Section 404 of the Clean Water Act (33 U.S.C. 1344), the U.S. Army Corps of Engineers (Corps) regulates the disposal of dredged or fill material into "waters of the United States" (33 CFR Parts 328 through 330). This requires project applicants to obtain authorization from the Corps prior to discharging dredged or fill materials into any water of the United States.

In the Federal Register "waters of the United States" are defined as, "...all interstate waters including interstate wetlands...intrastate lakes, rivers, streams (including intermittent streams), wetlands, [and] natural ponds, the use, degradation or destruction of which could affect interstate or foreign commerce..." (33 CFR Section 328.3).

Limits of Corps' jurisdiction:

(a) Territorial Seas. The limit of jurisdiction in the territorial seas is measured from the baseline in a seaward direction a distance of three nautical miles. (See 33 CFR 329.12)

(b) Tidal Waters of the United States. The landward limits of jurisdiction in tidal waters:

(1) Extends to the high tide line, or
(2) When adjacent non-tidal waters of the United States are present, the jurisdiction extends to the limits identified in paragraph (c) of this section.

(c) Non-Tidal Waters of the United States. The limits of jurisdiction in non-tidal waters:
(1) In the absence of adjacent wetlands, the jurisdiction extends to the ordinary high water mark, or
(2) When adjacent wetlands are present, the jurisdiction extends beyond the ordinary high water mark to the limit of the adjacent wetlands.
(3) When the water of the United States consists only of wetlands the jurisdiction extends to the limit of the wetland.

Section 404 jurisdiction in "other waters" such as lakes, ponds, and streams, extends to the upward limit of the ordinary high water mark (OHWM) or the upward extent of any adjacent wetland. The OHWM on a non-tidal water is:

- the "line on shore established by the fluctuations of water and indicated by physical characteristics such as a clear natural line impressed on the bank; shelving; changes in the character of soil; destruction of terrestrial vegetation; the presence of litter or debris; or other appropriate means that consider the characteristics of the surrounding areas" (33 CFR Section 328.3[e]).

Wetlands are defined as: "...those areas that are inundated or saturated by surface or ground water at a frequency and duration to support a prevalence of vegetation adapted for life in saturated soil conditions" (33 CFR Section 328.8 [b]). Wetlands usually must possess hydrophytic vegetation (i.e., plants adapted to inundated or saturated conditions), wetland hydrology (e.g., topographic low areas, exposed water tables, stream channels), and hydric soils (i.e., soils that are periodically or permanently saturated, inundated or flooded) to be regulated by the Corps pursuant to Section 404 of the Clean Water Act.

8.1.1.1 Significant Nexus of Tributaries

On December 2, 2008, the Corps and the Environmental Protection Agency (EPA) issued joint guidance on implementing the U.S. Supreme Court decision in the consolidated cases *Rapanos v.*

United States and *Carabell v. United States* (herein referred to simply as "Rapanos") (Corps 2008b) which address the jurisdiction over waters of the United States under the Clean Water Act. In this joint guidance these agencies provide guidance on where they will assert jurisdiction over waters of the U.S.

The EPA and Corps will assert jurisdiction over the following waters:

- Traditional navigable waters
- Wetlands adjacent to traditional navigable waters
- Non-navigable tributaries of traditional navigable waters that are relatively permanent where the tributaries typically flow year-round or have continuous flow at least seasonally (for example, typically three months).
- Wetlands that directly abut such tributaries.

The agencies generally will not assert jurisdiction over the following features:

- Swales or erosional features (e.g., gullies, small washes characterized by low volume, infrequent, or short duration flow); and
- Ditches (including roadside ditches) excavated wholly in and draining only uplands and that do not carry a relatively permanent flow of water.

The agencies will apply the significant nexus standard as follows:

- A significant nexus analysis will assess the flow characteristics and functions of the tributary itself and the functions performed by all wetlands adjacent to the tributary to determine if they significantly affect the chemical, physical and biological integrity of downstream traditional navigable waters; and

- Significant nexus includes consideration of hydrologic and ecologic factors.

8.1.1.2 Isolated Areas Excluded from Section 404 Jurisdiction

In addition to areas that may be exempt from Section 404 jurisdiction, some isolated wetlands and waters may also be considered outside of Corps jurisdiction as a result of the Supreme Court's decision in Solid Waste Agency of Northern Cook County (SWANCC) v. United States Army Corps of Engineers (531 U.S. 159 [2001]). Isolated wetlands and waters are those areas that do not have a surface or groundwater connection to, and are not adjacent to a navigable "Waters of the U.S.," and do not otherwise exhibit an interstate commerce connection.

8.1.1.3 Permitting Corps Jurisdictional Areas

To remain in compliance with Section 404 of the Clean Water Act, project proponents and property owners (applicants) are required to be permitted by the Corps prior to discharging or otherwise impacting waters of the United States. In many cases, the Corps must visit a proposed project area (to conduct a "jurisdictional determination") to confirm the extent of area falling under their jurisdiction prior to authorizing any permit for that project area. Typically, at the time the jurisdictional determination is conducted, applicants (or their representative) will discuss the appropriate permit application that would be filed with the Corps for permitting the proposed impact(s) to "waters of the United States."

Pursuant to Section 404 of the Clean Water Act, the Corps normally provides two alternatives for permitting impacts to the type of "waters of the United States" found in the project area. The first alternative would be to use Nationwide Permit(s) (NWP). The second alternative is to apply to the Corps for an Individual Permit (33 CFR Section 235.5(2)(b)).

8.1.2 Applicability to the Proposed Project

The project site does not support any likely waters of the United States. Thus, a Clean Water Act Section 404 permit/ authorization from the Corps for impacts to waters of the U.S. should not be necessary for this project.

8.2 State Water Resources Control Board (SWRCB) / California Regional Water Quality Control Board (RWQCB)

8.2.1 Section 401 of the Clean Water Act

The SWRCB and RWQCB regulate activities in "waters of the State" (which includes wetlands) through Section 401 of the Clean Water Act. While the Corps administers a permitting program that authorizes impacts to waters of the United States, including wetlands and other waters, any Corps permit authorized for a proposed project would be inoperative unless it is a NWP that has been certified for use in California by the SWRCB, <u>or</u> if the RWQCB has issued a project specific certification or waiver of water quality. Certification of NWPs requires a finding by the SWRCB that the activities permitted by the NWP will not violate water quality standards individually or cumulatively over the term of the permit (the term is typically for five years). Certification must be consistent with the requirements of the federal Clean Water Act, the California Environmental Quality Act, the California Endangered Species Act, and the SWRCB's mandate to protect beneficial uses of waters of the State. Any denied (i.e., not certified) NWPs, and all Individual Corps permits, would require a project specific RWQCB certification of water quality.

Additionally, if a proposed project would impact waters of the State, including wetlands, the project applicant must demonstrate that the project is unable to avoid these adverse impacts, or water quality certification will most likely be denied. Section 401 Certification may also be denied based on significant adverse impacts to waters of the United States/State, including wetlands. The RWQCB has also adopted the Corps' policy that there should be "no net loss" of wetlands. Thus, prior to certifying water quality, the RWQCB will impose avoidance mitigation requirements on project proponents that impact waters of the State.

8.2.2 Applicability to the Proposed Project

The project site does not support any likely waters of the State. Therefore, a Clean Water Act Section 401 permit/authorization from the RWQCB for impacts to waters of the State should not be necessary for this project.

8.2.3 Porter-Cologne Water Quality Control Act

The Porter-Cologne Water Quality Control Act, Water Code § 13260, requires that "any person discharging waste, or proposing to discharge waste, that could affect the <u>waters of the State</u> to file a report of discharge" with the RWQCB through an application for waste discharge (Water Code Section 13260(a)(1). The term "waters of the State" is defined as any surface water or

groundwater, including saline waters, within the boundaries of the State (Water Code § 13050(e)). It should be noted that pursuant to the Porter-Cologne Water Quality Control Act, the RWQCB also regulates "isolated wetlands," or those wetlands considered to be outside of the Corps' jurisdiction pursuant to the SWANCC decision (see Corps Section above).

The RWQCB generally considers filling in waters of the State to constitute "pollution." Pollution is defined as an alteration of the quality of the waters of the state by waste that unreasonably affects its beneficial uses (Water Code §13050(1)). The RWQCB litmus test for determining if a project should be regulated pursuant to the Porter-Cologne Water Quality Control Act is if the action could result in any "threat" to water quality.

The RWQCB requires complete pre- and post-development Best Management Practices Plan (BMPs) of any portion of the project site that is developed. This means that a water quality treatment plan for the pre- and post-developed project site must be prepared and implemented. Preconstruction requirements must be consistent with the requirements of the National Pollutant Discharge Elimination System (NPDES). That is, a *Stormwater Pollution Prevention Plan* (SWPPP) must be developed prior to the time that a site is graded (see NPDES section below). In addition, a post construction BMPs plan, or a Stormwater Management Plan (SWMP) must be developed and incorporated into any site development plan.

8.2.4 Applicability to Proposed Project

The project site is currently developed; this is a redevelopment project. All stormwater runoff currently flows into the County's existing storm drain system. It is expected that project redevelopment will utilize the existing storm drain system; however, pre-treatment of stormwater in accordance with Provision C.3 (discussed in the section below) prior to release into the County stormdrain system will be necessary. Additionally, during project construction it is important for the project proponent to have the components of a SWPPP and a SWMP in place; these documents are typically prepared by the project civil engineer prior to grading permit approval. Please see the sections below for further discussion on site disturbance (grading) and storm water management.

8.2.5 National Pollutant Discharge Elimination System (NPDES)

In 1972 the Clean Water Act was amended to state that the discharge of pollutants to waters of the United States from any point source is unlawful unless the discharge is in compliance with an NPDES permit. The 1987 amendments to the Clean Water Act added Section 402(p) which establishes a framework for regulating municipal and industrial stormwater discharges under the NPDES Program.

While federal regulations allow two permitting options for stormwater discharges (individual permits and General Permits), the SWRCB has elected to adopt only one statewide General Permit at this time that will apply to all stormwater discharges associated with construction activity, except from those on Tribal Lands, in the Lake Tahoe Hydrologic Unit, and those performed by the California Department of Transportation (CalTrans). The General Permit requires all dischargers where construction activity disturbs <u>greater than one acre of land or</u> <u>those sites less than one acre that</u> are part of a common plan of development or sale that disturbs more than one acre of land surface to:

1. Develop and implement a Storm Water Pollution Prevention Plan (SWPPP) which specifies Best Management Practices (BMPs) that will prevent all construction pollutants from contacting stormwater with the intent of keeping all products of erosion from moving off site into receiving waters.

2. Eliminate or reduce non-stormwater discharges to storm sewer systems and other waters of the nation.

3. Perform inspections of all BMPs.

This General Permit is implemented and enforced by the nine California Regional Water Quality Control Boards (RWQCBs).

Types of Construction Activity Covered by the General Permit

Construction activity subject to this General Permit includes clearing, grading, and disturbances to the ground such as stockpiling, or excavation that results in soil disturbances of at least one acre or more of total land area. Construction activity that results in soil disturbances to a smaller area would still be subject to this General Permit if the construction activity is part of a larger common plan of development that encompasses greater than one acre of soil disturbance, or if there is significant water quality impairment resulting from the activity. Construction activity does not include routine maintenance to maintain original line and grade, hydraulic capacity, or original purpose of the facility, nor does it include emergency construction activities required to protect public health and safety. Project proponents (landowners) should confirm with the local RWQCB whether or not a particular routine maintenance activity is subject to this General Permit.

8.2.6 2009 Changes to the NPDES Program and Use of the General Permit

[This section excerpted in part from Morrison Foerster Legal Updates and News September 2009, by Robert L. Falk and Corinne Fratini]. The California State Water Resources Control Board ("State Water Board") has adopted a new National Pollutant Discharge Elimination System General Permit for Storm Water Discharges Associated with Construction and Land Disturbance Activities ("Construction General Permit"). The new Construction General Permit which was issued pursuant to the federal Clean Water Act and is enforceable through citizens' suits, represents a dramatic shift in the State Water Board's approach to regulating new and redevelopment sites, imposing new affirmative duties and fixed standards on builders and developers. Changes to use of the General Permit became effective on July 1, 2010.

The new Construction General Permit does not completely carry forward the former qualitative and self-selected compliance approach based on preparation of a SWPPP. Instead, developers and construction contractors must implement specific BMPs, achieve quantitatively-defined (i.e., numeric) pollutant-specific discharge standards, and conduct much more rigorous monitoring based on the project's projected risk level.

The State Water Board's new quantitative standards take a two-tiered approach, depending on the risk level associated with the site in question. Exceedance of a benchmark Numeric Action Level ("NAL") measured in terms of pH and turbidity (a measure related to both the amount of sediment in and the velocity of site runoff) triggers an additional obligation to implement additional BMPs and corrective action to improve SWPPP performance. For medium- and high-risk sites, failure to meet more stringent numeric standards for pH and turbidity, known as Numeric Effluent Limitations ("NELs"), will also automatically result in a permit violation and be directly enforceable in administrative or, in the case of a citizens' group taking up the cause, judicial forums. New minimum BMPs include Active Treatment Systems, which may be necessary where traditional erosion and sediment controls do not effectively control accelerated erosion; where site constraints inhibit the ability to construct a correctly-sized sediment basin; where clay and/or highly erosive soils are present; or where the site has very steep or long slope lengths.

In addition, the new Construction General Permit includes several "post-construction" requirements. These requirements entail that site designs provide no net increase in overall site runoff and match pre-project hydrology by maintaining runoff volume and drainage concentrations. To achieve the required results where impervious surfaces such as roofs and paved surfaces are being increased, developers must implement non-structural off-setting BMPs, such as landform grading, site design BMPs, and distributed structural BMPs (bioretention cells, rain gardens, and rain cisterns). This "runoff reduction" approach is essentially a State Water Board-imposed regulatory requirement to implement Low Impact Development ("LID") design features. Volume that cannot be addressed using non-structural BMPs must be captured in structural BMPs that are approved by the Regional Water Board.

Finally, the new Construction General Permit requires electronic filing of all Permit Registration Documents, NOIs, SWPPPs, annual reports, Notices of Termination, and NAL/NEL Exceedance Reports. This information will be readily available to the Water Boards and citizen enforcers who can then determine whether to initiate enforcement actions—actions which can result in significant penalties and legal fees.

8.2.7 Applicability to The Proposed Project

On September 2, 2009, the State Water Resources Control Board adopted Order No. 2009-0009-DWQ, which reissued the Construction General Permit (CGP) for projects disturbing one or more acres of land surface, or those sites less than one acre that are part of a common plan of development or sale that disturbs more than one acre of land surface. Effective July 1, 2010, the requirements of this order replaced and superseded State Water Board Orders No. 99-08-DWQ.

The proposed project will disturb greater than one acre. Thus, it is the responsibility of the applicant to obtain coverage under the General Permit prior to commencement of construction activities. As the process of receiving coverage under the General Permit became considerably more involved in July 2010, the project engineer should start this permitting loop with the RWQCB at least 6 months in advance of the commencement of the proposed project.

8.3 RWQCB Municipal Storm Water Permitting Program

The Municipal Storm Water Permitting Program regulates storm water discharges from municipal separate storm sewer systems (MS4s). MS4 permits were issued in two phases. Under Phase I, which started in 1990, the RWQCBs have adopted NPDES storm water permits for medium (serving between 100,000 and 250,000 people) and large (serving 250,000 or more people) municipalities. Most of these permits are issued to a group of co-permittees encompassing an entire metropolitan area. These permits are reissued as the permits expire.

As part of Phase II, the SWRCB adopted a General Permit for the Discharge of Storm Water from Small MS4s (WQ Order No. 2003-0005-DWQ) to provide permit coverage for smaller municipalities, including non-traditional Small MS4s, which are governmental facilities such as military bases, public campuses, and prison and hospital complexes.

The MS4 permits require the discharger to develop and implement a Storm Water Management Plan/Program (SWMP) with the goal of reducing the discharge of pollutants to the maximum extent practicable (MEP). MEP is the performance standard specified in Section 402(p) of the Clean Water Act. The management programs specify what best management practices (BMPs) will be used to address certain program areas. The program areas include public education and outreach; illicit discharge detection and elimination; construction and post-construction; and good housekeeping for municipal operations. In general, medium and large municipalities are required to conduct chemical monitoring, though small municipalities are not.

8.3.1 RWQCB Phase I Program Requirements

The C.3 NPDES requirements went into effect for any project (public or private) that is “deemed complete” by the City or County (Lead Agency) on or after February 15, 2005, and which will result in the creation or replacement (other than normal maintenance) of at least 10,000 square feet of impervious surface area (roofs, streets, patios, parking lots, etc.). Intended to reduce the introduction of urban pollutants into San Francisco Bay, creeks, streams, lakes, and other water bodies in the region, Provision C.3 requires the onsite treatment of stormwater prior to its discharge into downstream receiving waters. Note that these requirements are in addition to the existing NPDES requirements for erosion and sedimentation controls during project construction.

Projects subject to Provision C.3 must include the capture and onsite treatment of all stormwater from the site prior to its discharge, including rainwater falling on building rooftops. Project applicants are required to implement appropriate source control and site design measures and to design and implement stormwater treatment measures in order to reduce the discharge of stormwater pollutants to the *maximum extent practicable.* While the Clean Water Act does not define “maximum extent practicable,” the Stormwater Quality Management Plans required as a condition of the municipal NPDES permits identify control measures (known as Best Management Plans, or BMPs) and, where applicable, performance standards, to establish the level of effort required to satisfy the maximum extent practicable criterion. It is ultimately up to the professional judgment of the reviewing municipal staff in the individual jurisdictions to determine whether a project’s proposed stormwater controls will satisfy the maximum extent practicable criterion. However, there are numeric criteria used to ensure that treatment BMPs

have been adequately sized to accommodate and treat a site's stormwater. The C.3 requirements are quite extensive, and their complete explanation is not provided here. However, the following are minimums that should be understood and adhered to:

- The applicant must provide a detailed and realistic site design *and impervious surface area calculations*. This site design *and calculations* will be used by the Lead Agency (County) to determine/*verify* the amount of impervious surface area that is being created or replaced. It should include all proposed buildings, roads, walkways, parking lots, landscape areas, etc., that are being created or redeveloped. If large (greater than 10,000 square feet) lots are being created an effort will need to be made to determine the total impervious surface area that could be created on that parcel. For example if only a portion of the lot is shown as a "building envelope" then the lead agency will need to consider that a driveway will have to be constructed to access the envelope and that the envelope will then be developed as shown. If the C.3 thresholds are met (creation/redevelopment of 10,000 square feet of impervious surface area), a Stormwater Control Plan (SWCP) (if required by the Lead Agency, or whatever steps for compliance with Provision C.3 are required locally) must accompany the application.

- If a SWCP is required by the Lead Agency for the project it must be stamped by a Licensed Civil Engineer, Architect, or Landscape Architect.

Incorporating the C.3 requirements into the early phases of new project planning will speed the approval process (by reducing or eliminating the need for redesign of the site plan once it gets to the municipal review process), improve the integration of treatment into site landscaping, enhance the project's aesthetics, reduce the water quality impacts of the project, improve the natural absorption of urban pollutants into the environment, and reduce the amount of stormwater discharged from the site. If these requirements are not incorporated into the early stages of site design, a subsequent redesign of the site plan may be required in order to provide all of the required onsite water treatment, adding unnecessarily to project development costs.

8.3.2 Applicability to the Proposed Project

The Contra Costa County Flood Control and Water Conservation District, Contra Costa County and 16 incorporated cities in the County which include the City of Clayton, City of Concord, Town of Danville, City of El Cerrito, City of Hercules, City of Lafayette, City of Martinez, Town of Moraga, City of Orinda, City of Pinole, City of Pittsburg, City of Pleasant Hill, City of Richmond, City of San Pablo, City of San Ramon, and the City of Walnut Creek (hereinafter Dischargers) have joined to form the *Contra Costa Clean Water Program* (hereinafter the Program), and have submitted an NPDES permit application package dated June 30, 1998, for re-issuance of waste discharge requirements under the National Pollutant Discharge Elimination System (NPDES) to implement "A Stormwater Management Plan for the Contra Costa Clean Water Program" dated June 30, 1998 (hereinafter the Plan) to discharge stormwater runoff from storm drains and watercourses that its members own and/or operate.

Each Discharger in the Program (in this case Contra Costa County) is individually responsible for adopting and enforcing the C3 ordinances, implementing assigned BMPs to prevent or reduce pollutants in stormwater, and providing funds for capital, operation, and maintenance expenditures necessary to implement such BMPs for the storm drain system that it owns and/or operates. Assigned BMPs to be implemented by each Discharger are listed as Performance Standards in the Plan. Enforcement actions concerning this Order will, whenever necessary, be pursued only against the individual Discharger(s) responsible for specific violations of this Order. It is the Regional Board's intent that this Order shall ensure attainment of applicable water quality objectives and protection of beneficial uses of receiving waters. This Order, therefore, includes requirements to the effect that discharges shall not cause or contribute to violations of water quality objectives nor shall they cause certain conditions to occur which create a condition of nuisance or water quality impairment in receiving waters. Accordingly, the Regional Board is requiring that these requirements be addressed through the implementation of BMPs to reduce pollutants in stormwater as provided in Provisions C.1 through C.14 of this Order.

In Contra Costa County, for private development projects, the Community Development Department, Current Planning Division is responsible for determining if the C.3 thresholds are met, and if so, that a complete Stormwater Control Plan (based on a checklist) is submitted. The more technical checking of the Stormwater Control Plan is typically completed by the Public Works Department, Engineering Services Division. Thus, it can be expected that the Public Works Department, Engineering Services Division, will review and approve a "preliminary" Stormwater Control Plan prior to the time that the Department of Conservation and Development will deem the project application complete.

8.4 California Department of Fish and Wildlife Protections

8.4.1 Section 1602 of California Fish and Game Code

Pursuant to Section 1602 of the California Fish and Game Code, California Department of Fish and Wildlife (the Department) regulates activities that divert, obstruct, or alter stream flow, or substantially modify the bed, channel, or bank of a stream which the Department typically considers to include its riparian vegetation. Any proposed activity in a natural stream channel that would substantially adversely affect an existing fish and/or wildlife resource, would require entering into a Streambed Alteration Agreement (SBAA) with the Department prior to commencing with work in the stream. However, prior to authorizing such permits, the Department typically reviews an analysis of the expected biological impacts, any proposed mitigation plans that would be implemented to offset biological impacts and engineering and erosion control plans.

8.4.2 Applicability to Proposed Project

There are no streams or drainages on or adjacent to the project site that would be regulated by the Department pursuant to Section 1602 of the Fish and Game Code. Hence, a SBAA with the Department would not be necessary for this project.

9. CALIFORNIA ENVIRONMENTAL QUALITY ACT (CEQA) REGULATIONS

A CEQA lead agency must determine if a proposed activity constitutes a project requiring further review pursuant to the CEQA. Pursuant to CEQA, a lead agency would have to determine if there could be significant adverse impacts to the environment from a proposed project. Typically, if within the city limits, the city would be the CEQA lead agency. If a discretionary permit (i.e., conditional use permit) would be required for a project (e.g. an occupancy permit must be issued), the lead agency typically must determine if there could be significant environmental impacts. This is usually accomplished by an "Initial Study." If there could be significant environmental impacts, the lead agency must determine an appropriate level of environmental review prior to approving and/or otherwise permitting the impacts. In some cases, there are "Categorical Exemptions" that apply to the proposed activity; thus the activity is exempt from CEQA. The Categorical Exemptions are provided in CEQA. There are also Statutory Exemptions in CEQA that must be investigated for any proposed project. If the project is not exempt from CEQA, the lowest level of review typically reserved for projects with no significant effects on the environment would be for the lead agency to prepare a "Negative Declaration." If a proposed project would have only minimal impacts that can be mitigated to a level of no significance pursuant to the CEQA, then a "Mitigated Negative Declaration" is typically prepared by the lead agency. Finally those projects that may have significant effects on the environment, or that have impacts that can't be mitigated to a level considered less than significant pursuant to the CEQA, typically must be reviewed via an Environmental Impact Report (EIR). All CEQA review documents are subject to public circulation, and comment periods.

Section 15380 of CEQA defines "endangered" species as those whose survival and reproduction in the wild are in immediate jeopardy from one or more causes, including loss of habitat, change in habitat, overexploitation, predation, competition, disease, or other factors. "Rare" species are defined by CEQA as those who are in such low numbers that they could become endangered if their environment worsens; or the species is likely to become endangered within the foreseeable future throughout all or a significant portion of its range and may be considered "threatened" as that term is used in FESA. The CEQA Guidelines also state that a project will normally have a significant effect on the environment if it will "substantially affect a rare or endangered species of animal or plant or the habitat of the species." The significance of impacts to a species under CEQA, therefore, must be based on analyzing actual rarity and threat of extinction to that species despite its legal status or lack thereof.

9.1.1 Applicability to the Proposed Project

This report has been prepared as a Biology Section that is suitable for incorporation into the biology section of a CEQA review document such as a Mitigated Negative Declaration or Negative Declaration. This document addresses potential impacts to species that would be defined as endangered or rare pursuant to Section 15380 of the CEQA. This report has been prepared as a Biology Section that is suitable for incorporation by the CEQA lead agency (in this case Contra Costa County) into an initial study or higher levels of CEQA review including incorporation into the biology section of an Environmental Impact Report.

10. IMPACTS ANALYSIS

In this section we discuss potential impacts to sensitive biological resources including nesting passerine birds, roosting bats, and protected trees. We follow each impact with a mitigation prescription that when implemented would reduce impacts to the greatest extent possible. This impact analysis is based on a project overview (description) prepared by the project applicant and provided to M&A.

10.1 Significance Criteria

A significant impact is determined using CEQA and CEQA Guidelines. Pursuant to CEQA §21068, a significant effect on the environment means a substantial, or potentially substantial, adverse change in the environment. Pursuant to CEQA Guideline §15382, a significant effect on the environment is further defined as a substantial, or potentially substantial, adverse change in any of the physical conditions within the area affected by the project including land, air, water, minerals, flora, fauna, ambient noise, and objects of historical or aesthetic significance. Other Federal, State, and local agencies' considerations and regulations are also used in the evaluation of significance of proposed actions.

Direct and indirect adverse impacts to biological resources are classified as "significant," "potentially significant," or "less than significant." Biological resources are broken down into four categories: vegetation, wildlife, threatened and endangered species, and regulated "waters of the United States" and/or stream channels.

10.1.1 THRESHOLDS OF SIGNIFICANCE

10.1.1.1 Plants, Wildlife, Waters

In accordance with Appendix G (Environmental Checklist Form) of the CEQA Guidelines, implementing the project would have a significant biological impact if it would:

- Have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Wildlife or U.S. Fish and Wildlife Service.

- Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations or by the California Department of Fish and Wildlife or US Fish and Wildlife Service.

- Have a substantial adverse effect on federally protected "wetlands" as defined by Section 404 of the Clean Water Act (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means.

- Interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites.

- Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance.

- Conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan.

10.1.1.2 Waters of the United States and State.

Pursuant to Section 404 of the Clean Water Act (33 U.S.C. 1344), the U.S. Army Corps of Engineers (Corps) regulates the discharge of dredged or fill material into waters of the United States, which includes wetlands, as discussed in the bulleted item above, and also includes "other waters" (stream channels, rivers) (33 CFR Parts 328 through 330). Substantial impacts to Corps regulated areas on a project site would be considered a significant adverse impact. Similarly, pursuant to Section 401 of the Clean Water Act, and to the Porter-Cologne Water Quality Control Act, the RWQCB regulates impacts to waters of the state. Thus, substantial impacts to RWQCB regulated areas on a project site would also be considered a significant adverse impact.

10.1.1.3 Stream Channels

Pursuant to Section 1602 of the California Fish and Game Code, the Department regulates activities that divert, obstruct, or alter stream flow, or substantially modify the bed, channel, or bank of a stream which the Department typically considers to include riparian vegetation. Any proposed activity that would result in substantial modifications to a natural stream channel would be considered a significant adverse impact.

11. IMPACT ASSESSMENT AND PROPOSED MITIGATION

11.1 Impact BIO-1. Development of the Project Would Have a Significant Adverse Impact on Trees (Significant).

The project site supports 27 Protected trees. Based on the Arborist's assessment of the conceptual site plans it was determined that 23 Protected trees would need to be removed. Protected valley oak #21 will be transplanted to another location within a special roundabout in Boulevard Way. Additionally, Protected trees #65 (valley oak tree), #69 (red ironbark eucalyptus) and #72 (Aleppo pine) will require disturbance underneath the trees' dripline (that is, underneath the tree canopy). Removal of any Protected tree requires approval from Contra Costa County. Removal of Protected trees in Contra Costa County without County approval is a significant adverse impact pursuant to CEQA. Encroaching on the dripline of a Protected tree in the County requires an encroachment permit (HortScience 2013); encroaching on the dripline without this permit is a significant adverse impact pursuant to CEQA. The project proposes to obtain all required County approvals prior to impacting any protected trees. Thus, there would be no conflict with any local policies or ordinances protecting trees. However, to ensure that the impacts to trees deemed worth protecting under the local tree ordinance are reduced to a level considered less than significant, the following measures are recommended.

11.2 Mitigation Measure BIO-1 – Trees

Implementation of the following mitigation would ensure that impacts to Protected trees are less than significant.

As stated in the impact above, Protected trees #65, #69 and #72 will require a dripline encroachment permit. Pruning of off-site trees #66-73 preserved around Site C may be required to provide construction clearance. Pruning of off-site trees must be done with the property owner's permission. Valley oak #21 is proposed to be transplanted from its current location to the median at the east end of boulevard way, and thus will not be significantly impacted. Mitigation for impacts to these trees is addressed in a separate report prepared by Hort Science.

To offset impacts resulting from the removal of any Protected tree that has a "high" or "moderate" rating for suitability for preservation, replacement trees that are California native species should be planted. Hence, valley oaks, coast live oaks, black walnuts, and/or California buckeye trees should be planted. Mitigation numbers will be based on a 2:1 replacement ratio for the trees removed. In addition, any tree that is injured during grading or construction (for example, some of its roots are accidentally cut) will be compensated for by planting replacement trees at a 1:1 ratio. Replacement trees should be California native species, and will be no larger than fifteen gallon size (to ensure that healthy, smaller specimens are planted). The trees' health should be monitored annually for five years by a qualified biologist or arborist. Annual monitoring reports should be submitted to the Contra Costa County Department of Conservation and Development.

A tree preservation and management plan should be prepared for the project and submitted to the County Department of Conservation and Development prior to the time a building permit is issued. Preparation of this plan and subsequent planting and monitoring should be a condition of project approval and should be tied to a security bond posted by the developer. A bond or suitable security prepared for the benefit of Contra Costa County or a cash deposit should be submitted to Contra Costa County by the applicant covering the costs of mitigation trees (and required irrigation) that are to be installed to compensate for impacts (Contra Costa County now typically only accepts a cash deposit). The amount to be held by Contra Costa County should be determined by a qualified landscape company or landscape architect. The cash or security bond to ensure the health of retained trees should be held for 24 months (according to article 816-6.1204). The cash or security bond to ensure compliance with the tree replacement program should be released upon receipt of a report from a qualified arborist or botanist that all planted trees at the end of the five-year monitoring period are healthy and established.

The planting plan should include a planting detail that specifies where all replacement trees would be planted. The methods used to plant trees should also be specified. Adequate measures should be established to minimize predation of planted trees by rodents including, but not limited to, pocket gophers and/or California ground squirrels.

All planted trees should be provided with a temporary irrigation system that would be maintained over a minimum three-year establishment period. The irrigation system should be placed on

electric timers so that trees are automatically watered during the dry months of the establishment period. At the end of a suitable establishment period, the irrigation system would be removed.

At the end of a five-year monitoring period, at least 75 percent of planted trees should be in good health. If the numbers of planted trees falls below a 75 percent survival rate, additional trees should be planted to bring the total number of planted trees up to 100 percent of the original number of replacement trees. Irrigation and follow-up monitoring should be established over an additional three year period after any replanting occurs. Any follow-up monitoring will be reported annually to Contra Costa County Department of Conservation and Development.

This mitigation measure would reduce impacts to trees to a level considered less than significant.

11.3 Impact BIO-2. Development of the Project Would Have a Significant Adverse Impact on Nesting Passerine Birds (Significant).

Nesting passerine (perching) birds could be impacted by the proposed project. Passerine birds and their active nests are protected under California Fish and Game Code (Sections 3503, 3503.5), and the Federal Migratory Bird Treaty Act. Impacts to nesting birds, their eggs, and/or young caused by implementation of the proposed project would be regarded as significant. These impacts could be mitigated to levels considered less than significant pursuant to CEQA.

11.4 Mitigation Measure BIO-2. Nesting Passerine Birds

A nesting survey should be conducted on the project site and within a zone of influence around the project site. The zone of influence includes those areas off the project site where birds could be disturbed by earth-moving vibrations or noise. Accordingly, the nesting survey(s) must cover the project site and an area around the project site boundary. If project site disturbance associated with the project would commence between March 1 and September 1st, the nesting surveys should be completed 15 days prior to commencing with the work. If common (that is, not special-status) birds, for example, California towhee, western scrub jay, or acorn woodpeckers are identified nesting on or adjacent to the project site, a non-disturbance buffer of 75 feet should be established or as otherwise prescribed by a qualified ornithologist. The buffer should be demarcated with painted orange lath or via the installation of orange construction fencing. Disturbance within the buffer should be postponed until it is determined by a qualified ornithologist that the young have fledged and have attained sufficient flight skills to leave the area or that the nesting cycle has otherwise completed.

Typically, most passerine birds in the region of the project site are expected to complete nesting by August 1st. However, many species can complete nesting by the end of June or in early to mid-July. Regardless, nesting buffers should be maintained until August 1st unless a qualified ornithologist determines that young have fledged and are independent of their nests at an earlier date. If buffers are removed prior to August 1st, the qualified biologist conducting the nesting surveys should prepare a report that provides details about the nesting outcome and the removal of buffers. This report should be submitted to the Contra Costa County Department of Conservation and Development prior to the time that nest protection buffers are removed if the date is before August 1st.

This mitigation measure would reduce impacts to nesting common bird species to a level considered less than significant.

11.5 Impact BIO-3. Bats – Building and Tree Removal and Site Development May Have a Potentially Significant Impact on Townsend's Western Big Eared Bat, Greater Western Mastiff Bat and Pallid Bat (PS)

The existing buildings and trees onsite may provide roosting and maternity habitat for the pallid bat, Townsend's western big eared bat, and greater western mastiff bat. These bat species are designated by the State as "species of special concern." In accordance with the CEQA Guidelines (Section 15380) which protects "rare" and "endangered" species as defined by CEQA (species of special concern meet this CEQA definition), impacts to these bat species would be considered a potentially significant adverse impact. This impact could be mitigated to a less than significant level.

11.6 Mitigation Measure BIO-3. Bats

In order to avoid impacts to roosting special-status bats, a biologist shall survey trees and buildings 15 days prior to commencing with any removal or demolition. All bat surveys shall be conducted by a biologist with known experience surveying for bats. If no special-status bats are found during the surveys, then there would be no further regard for these bat species.

If special-status bat species are found on the project site a determination shall be if there are young bats present. If young are found roosting in any tree or building, impacts to the tree or building shall be avoided until the young have reached independence. A non-disturbance buffer fenced with orange construction fencing shall also be established around the maternity site. The size of the buffer zone shall be determined by a qualified bat biologist at the time of the surveys. If adults are found roosting in a tree or building on the project site but no maternal sites are found, then the adult bats can be flushed or a one-way eviction door can be placed over the tree cavity (or building access opening) prior to the time the tree or building in question would be removed or disturbed. No other mitigation compensation would be required.

This mitigation measure would reduce the project's impact to special-status bats to a level considered less than significant.

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Figure 1. Saranap Village Project Site
Regional Map
Contra Costa County, California

County: Contra Costa
Map Preparation Date: September 24, 2013

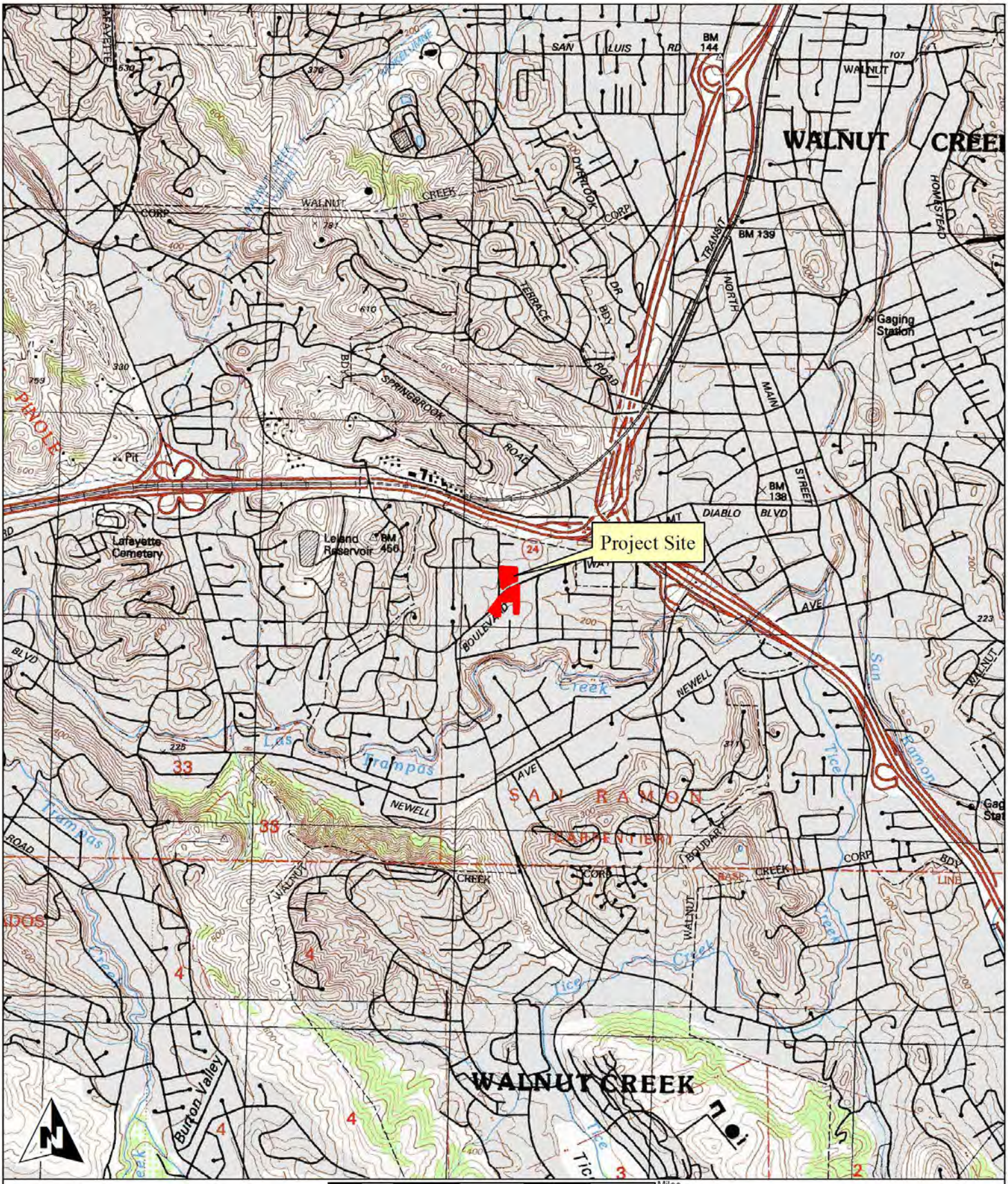

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Figure 2. Saranap Village Project Site
Location Map
Contra Costa County, California

Land Grant
7.5-Minute Walnut Creek quadrangle
Topography Source: http://gis.ca.gov
Map Preparation Date: September 24, 2013

0 25 50 100 150 200 250 Feet

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Figure 3. Aerial Photograph of the Saranap Village Project Site
Contra Costa County, California

Aerial Photograph Source: ESRI
Map Preparation Date: September 24, 2013

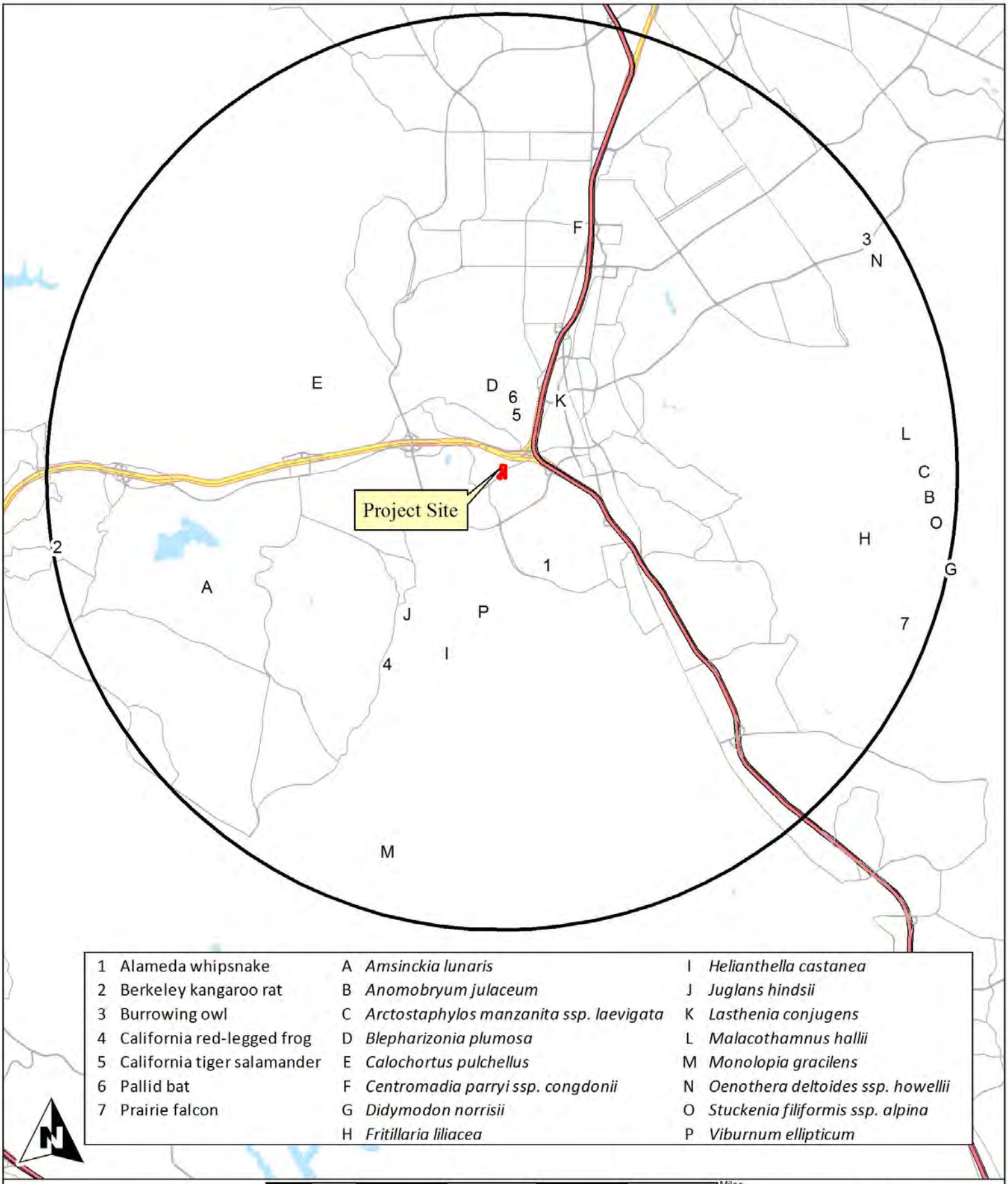

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Figure 4. Closest Known Special-Status Species within 5 Miles of the Saranap Village Project Site

Map Preparation Date: November 11, 2013
5-Mile Radius
Source: CDFW, California Natural Diversity Data Base, 2013

Table 1

Plants Observed at Saranap Village on November 11, 2013

Gymnosperms	
Cupressaceae	
Sequoia sempervirens	Redwood
Pinaceae	
**Cedrus deodara*	Deodar cedar
Pinus radiata	Monterey pine
Angiosperms - Dicots	
Araliaceae	
**Hedera canariensis*	Algerian ivy
Asteraceae	
**Cirsium arvense*	Canada thistle
Gnaphalium palustre	Western marsh cudweed
**Senecio vulgaris*	Common groundsel
Berberidaceae	
**Berberis sp.*	Mahonia
Bignoniaceae	
**Catalpa speciosa*	Catalpa
Convolvulaceae	
**Ipomoea purpurea*	Common morning-glory
Euphorbiaceae	
Euphorbia spathulata	Spatulate spurge
Fabaceae	
**Acacia melanoxylon*	Blackwood acacia
**Medicago polymorpha*	California burclover
Fagaceae	
Quercus agrifolia var. agrifolia	Coast live oak
Quercus lobata	Valley oak
Hamamelidaceae	
**Liquidambar styraciflua*	Liquidambar
Lythraceae	
Ammannia coccinea	Valley redstem
**Lagerstroemia indica*	Crape-myrtle
**Punica granatum*	Pomegranate
Malvaceae	
**Malva parviflora*	Cheeseweed
Moraceae	
**Ficus carica*	Fig

* Indicates a non-native species

Table 1

Plants Observed at Saranap Village on November 11, 2013

Myrsinaceae	
**Anagalis arvensis*	Scarlet pimpernel
Myrtaceae	
**Eucalyptus sideroxylon*	Red iron bark
Oleaceae	
**Ligustrum sp.*	Privet
Onagraceae	
Epilobium brachycarpum	Summer cottonweed
Epilobium ciliatum	Hairy willow-herb
Polygonaceae	
**Polygonum aviculare*	Common knowntweed
Portulacaceae	
**Portulaca oleracea*	Common purslane
Rosaceae	
Prunus sp.	Prunus
**Pyracantha sp.*	Pyracantha
**Rosa sp.*	Wild rose
**Rubus armeniacus*	Himalayan blackberry
Rutaceae	
**Citrus limon*	Lemon
Ulmaceae	
**Ulmus pumila*	Dwarf Asiatic elm
Angiosperms -Monocots	
Amaryllidaceae	
**Agapanthus orientalis*	Lilly-of-the-Nile
Poaceae	
Bromus carinatus var. carinatus	California brome
**Digitaria ischaemum*	Smooth crabgrass
**Poa annua*	Annual bluegrass

* Indicates a non-native species

Table 2
Animals Observed at Saranap Village on November 11, 2013

Birds	
Anna's hummingbird	*Calypte anna*
Northern flicker	*Colaptes auratus*
Western scrub jay	*Aphelocoma californica*
Bushtit	*Psaltriparus minimus*
Northern mockingbird	*Mimus polyglottos*

Mammals	
Fox squirrel	*Sciurus niger*
Columbian black-tailed deer	*Odocoileus hemionus columbianus*

Table 3

Special-Status Plant Species Known to Occur within 5 Miles of the Hall Equities Saranap Village Project Site

Family Taxon Common Name	Status*	Flowering Period	Habitat	Area Locations	Probability on Project Site
Adoxaceae					
Viburnum ellipticum Western viburnum	Fed: - State: - CNPS: Rank 2B.3	May-July	Chaparral; cismontane woodland; lower montane coniferous forest.	Closest record for this species located 1.5 miles South of the project site (Occurrence No. 28).	No habitat, site is completely paved/ developed. No impacts to special-status plants expected.
Asteraceae					
Blepharizonia plumosa Big tarplant	Fed: - State: - CNPS: Rank 1B.1	July-October	Valley and foothill grassland.	Closest record for this species located 0.8 miles North of the project site (Occurrence No. 12).	No habitat, site is completely paved/ developed. No impacts to special-status plants expected.
Centromadia parryi congdonii Congdon's tarplant	Fed: - State: - CNPS: Rank 1B.2	May-November	Valley and foothill grassland (alkaline).	Closest record for this species located 2.5 miles North of the project site (Occurrence No. 2).	No habitat, site is completely paved/ developed. No impacts to special-status plants expected.
Helianthella castanaea Diablo helianthella	Fed: - State: - CNPS: Rank 1B.2	March-June	Broadleafed upland forest; chaparral; cismontane woodland; coastal scrub; riparian woodland; valley and foothill grassland.	Closest record for this species located 2.0 miles South of the project site (Occurrence No. 98).	No habitat, site is completely paved/ developed. No impacts to special-status plants expected.
Lasthenia conjugens Contra Costa goldfields	Fed: FE State: - CNPS: Rank 1B.1	March-June	Valley and foothill grassland (mesic); vernal pools.	Closest record for this species located 0.8 miles North of the project site (Occurrence No. 10).	No habitat, site is completely paved/ developed. No impacts to special-status plants expected.
Micropus amphibolus Mount Diablo cottonweed	Fed: - State: - CNPS: Rank 3.2	March-May	Broad-leaf upland forest; cismontane woodland; valley and foothill grassland.	On CNPS nine-quad search.	No habitat, site is completely paved/ developed. No impacts to special-status plants expected.

Table 3

Special-Status Plant Species Known to Occur within 5 Miles of the Hall Equities Saranap Village Project Site

Family Taxon Common Name	Status*	Flowering Period	Habitat	Area Locations	Probability on Project Site
Monolopia gracilens Small-flowered monolopia	Fed: State: CNPS: Rank 1B.2	March-July	Coniferous and broadleafed upland forest openings, chaparral openings, and serpentine valley and foothill grassland. Elevation 100-1200 m.	Closest record for this species located 4.2 miles South of the project site (Occurrence No. 45).	No habitat, site is completely paved/ developed. No impacts to special-status plants expected.
Boraginaceae					
Amsinckia lunaris Bent-flowered fiddleneck	Fed: - State: - CNPS: Rank 1B.2	March-June	Cismontane woodland, Valley and foothill grassland	Closest record for this species located 3.5 miles West of the project site (Occurrence No. 11).	No habitat, site is completely paved/ developed. No impacts to special-status plants expected.
Bryaceae					
Anomobryum julaceum Slender silver-moss	Fed: - State: - CNPS: Rank 2	October-November	Broad-leaved upland forest, lower montane coniferous forest, North Coast coniferous forest (damp soil, rock outcrops, roadcuts).	Closest record for this species located 4.5 miles East of the project site (Occurrence No. 7).	No habitat, site is completely paved/ developed. No impacts to special-status plants expected.
Chenopodiaceae					
Extriplex joaquinana San Joaquin spearscale	Fed: - State: - CNPS: Rank 1B.2	April-October	Chenopod scrub; meadows; valley and foothill grassland; [alkaline].	On CNPS nine-quad search.	No habitat, site is completely paved/ developed. No impacts to special-status plants expected.
Ericaceae					
Arctostaphylos manzanita laevigata Contra Costa manzanita	Fed: - State: - CNPS: Rank 1B.2	January-February	Chaparral (rocky),	Closest record for this species located 4.5 miles East of the project site (Occurrence No. 7).	No habitat, site is completely paved/ developed. No impacts to special-status plants expected.

Table 3

Special-Status Plant Species Known to Occur within 5 Miles of the Hall Equities Saranap Village Project Site

Family Taxon Common Name	Status*	Flowering Period	Habitat	Area Locations	Probability on Project Site
Fabaceae					
Lathyrus jepsonii jepsonii Delta tule pea	Fed: - State: - CNPS: Rank 1B.2	May-September	Marshes and swamps (freshwater and brackish).	On CNPS nine-quad search.	No habitat, site is completely paved/ developed. No impacts to special-status plants expected.
Juglandaceae					
Juglans hindsii Northern California black walnut	Fed: - State: - CNPS: Rank 1B.1	April-May	Riparian forest; riparian woodland.	Closest record for this species located 1.9 miles South West of the project site (Occurrence No. 2).	No habitat, site is completely paved/ developed. No impacts to special-status plants expected.
Liliaceae					
Calochortus pulchellus Mt. Diablo fairy lantern	Fed: - State: - CNPS: Rank 1B.2	April-June	Chaparral; cismontane woodland; valley and foothill grassland.	Closest record for this species located 2.3 miles North West of the project site (Occurrence No. 22).	No habitat, site is completely paved/ developed. No impacts to special-status plants expected.
Fritillaria liliacea Fragrant fritillary	Fed: - State: - CNPS: Rank 1B.2	February-April	Coastal prairie; coastal scrub; valley and foothill grassland; [often serpentinite].	Closest record for this species located 4.1 miles East of the project site (Occurrence No. 74).	No habitat, site is completely paved/ developed. No impacts to special-status plants expected.
Malvaceae					
Malacothamnus hallii Hall's bush mallow	Fed: - State: - CNPS: Rank 1B.2	May-September	Chaparral.	Closest record for this species located 4.0 miles East of the project site (Occurrence No. 21).	No habitat, site is completely paved/ developed. No impacts to special-status plants expected.

Table 3

Special-Status Plant Species Known to Occur within 5 Miles of the Hall Equities Saranap Village Project Site

Family Taxon Common Name	Status*	Flowering Period	Habitat	Area Locations	Probability on Project Site
Onagraceae					
Oenothera deltoides howellii Antioch dunes evening-primrose	Fed: FE State: CE CNPS: Rank 1B.1	March-September	Interior dunes.	Closest record for this species located 4.8 miles North East of the project site (Occurrence No. 11).	No habitat, site is completely paved/ developed. No impacts to special-status plants expected.
Polemoniaceae					
Navarretia gowenii Lime Ridge navarretia	Fed: - State: - CNPS: Rank 1B.1	May-June	Chaparral.	On CNPS nine-quad search.	No habitat, site is completely paved/ developed. No impacts to special-status plants expected.

***Status**

Federal:
FE - Federal Endangered
FT - Federal Threatened
FPE - Federal Proposed Endangered
FPT - Federal Proposed Threatened
FC - Federal Candidate

State:
CE - California Endangered
CT - California Threatened
CR - California Rare
CC - California Candidate
CSC - California Species of Special Concern

CNPS:
Rank 1A - Presumed extinct in California
Rank 1B - Plants rare, threatened, or endangered in California and elsewhere
Rank 1B.1 - Seriously endangered in California (over 80% occurrences threatened/ high degree and immediacy of threat)
Rank 1B.2 - Fairly endangered in California (20-80% occurrences threatened)
Rank 1B.3 - Not very endangered in California (<20% of occurrences threatened or no current threats known)

CNPS Continued:
Rank 2 - Plants rare, threatened, or endangered in California, but more common elsewhere
Rank 2A - Extirpated in California, common elsewhere
Rank 2B.1 - Seriously endangered in California, but more common elsewhere
Rank 2B.2 - Fairly endangered in California, but more common elsewhere
Rank 2B.3 - Not very endangered in California, but more common elsewhere
Rank 3 - Plants about which we need more information (Review List)
Rank 3.1 - Plants about which we need more information (Review List) Seriously endangered in California
Rank 3.2 - Plants about which we need more information (Review List) Fairly endangered in California
Rank 4 - Plants of limited distribution - a watch list

Table 4

Special-Status Animals Known Within 5 Miles of the Saranap Village Project Site

Species	*Status	Habitat	Closest Locations	Probability on Project Site
Amphibians				
California tiger salamander *Ambystoma californiense*	Fed: FT State: CT Other:	In Sonoma Co. is listed as Endangered by USFWS. Found in grassland habitats of the valleys and foothills. Requires burrows for aestivation and standing water until late spring (May) for larvae to metamorphose.	Closest known record is a 1938 record in "Walnut Creek" (CNDDB Occurrence No. 582).	None. Project site is developed, existing residential and commerical. No natural habitats onsite. No impacts to special-status wildlife expected.
California red-legged frog *Rana draytonii*	Fed: FT State: CSC Other:	Occurs in lowlands and foothills in deeper pools and streams, usually with emergent wetland vegetation. Requires 11-20 weeks of permanent water for larval development.	Closest known record is 2.4 miles southwest of the project site in Las Trampas Creek (1994 record) (CNDDB Occurrence No. 120).	None. Project site is developed, existing residential and commerical. No natural habitats onsite. No creeks or ponds. No impacts to special-status wildlife expected.
Reptiles				
Alameda whipsnake *Masticophis lateralis euryxanthus*	Fed: FT State: CT Other:	Coastal scrub and chaparral habitats of Contra Costa and Alameda Counties. Prefers south-facing slopes with a mosaic of shrubs, trees, and grassland.	2006 record for this snake 1.1 mile south of the project site (CNDDB Occurrence No. 46).	None. Project site is developed, existing residential and commerical. No natural habitats onsite. No impacts to special-status wildlife expected.
Birds				
Prairie falcon *Falco mexicanus*	Fed: - State: WL Other:	Inhabits dry, open terrain. Nests on cliffs and forages over wide areas.	Closest known record is approximately 4.7 miles to the southeast (Occurrence No. 470).	None. Project site is developed, existing residential and commerical. No natural habitats onsite. No impacts to special-status wildlife expected.
Western burrowing owl *Athene cunicularia hypugaea*	Fed: -- State: CSC Other:	Found in open, dry annual or perennial grasslands, deserts and scrublands characterized by low-growing vegetation. Subterranean nester, dependent upon burrowing mammals, most notably, the California ground squirrel.	Closest known occurrence is 4.7 miles northeast of the project site (Occurrence No. 472).	None. Project site is developed, existing residential and commerical. No natural habitats onsite. No impacts to special-status wildlife expected.

Table 4

Special-Status Animals Known Within 5 Miles of the Saranap Village Project Site

Species	*Status	Habitat	Closest Locations	Probability on Project Site
Mammals				
Townsend's big-eared bat *Corynorhinus townsendii townsendii*	Fed: -- State: CSC Other:	Occurs in humid coastal regions of northern and central California. Roosts in limestone caves, lava tubes, mines, and buildings. Extremely sensitive to disturbance.	No known records within 5 miles of the project site.	Moderate. Trees and buildings may provide roosting habitat. Preconstruction surveys necessary. See text.
Pallid bat *Antrozous pallidus*	Fed: - State: CSC Other:	Occurs in deserts, grasslands, shrublands, woodlands, and forests. Most common in dry habitats with rocky areas for roosting. Roosts in caves, crevices, mines, and occasionally hollow trees. Night roosts in open areas such as porches and open buildings.	Closest known record is a 1907 record approximately 0.8-mile to the north (Occurrence No. 146).	Moderate. Trees and buildings may provide roosting habitat. Preconstruction surveys necessary. See text.
Greater western mastiff bat *Eumops perotis californicus*	Fed: -- State: CSC Other:	Inhabits open habitats including conifer and broad-leaved woodlands, coastal scrub, chaparral, and grassland. Roosts in crevices, high buildings, trees, and tunnels.	No known records within 5 miles of the project site.	Moderate. Trees and buildings may provide roosting habitat. Preconstruction surveys necessary. See text.
Berkeley kangaroo rat *Dipodomys heermanni berkeleyensis*	Fed: -- State: - Other:	Inhabits open, grassy hilltops and open spaces in chaparral and blue oak woodlands. Needs fine, deep, well-drained soil for burrowing.	1927 record at "Orinda Lake" 4.9 miles west of the project site (CNDDB Occurrence No. 6).	None. Project site is developed, existing residential and commerical. No natural habitats onsite. No impacts to special-status wildlife expected.

Table 4

Special-Status Animals Known Within 5 Miles of the Saranap Village Project Site

Species	*Status	Habitat	Closest Locations	Probability on Project Site

***Status**

Federal:
FE - Federal Endangered
FT - Federal Threatened
FPE - Federal Proposed Endangered
FPT - Federal Proposed Threatened
FC - Federal Candidate
FPD - Federally Proposed for delisting

State:
CE - California Endangered
CT - California Threatened
CR - California Rare
CC - California Candidate
CSC - California Species of Special Concern
WL - Watch List. Not protected persuant to CEQA

*Other:
Most birds have protection under the Migratory Bird Treaty Act. Raptors and their nests are protected by provisions of the California Fish and Game Code. A few species, such as the monarch butterfly and "California Fully Protected Animals," may be protected by policies of the California Department of Fish and Game.

REVISED ARBORIST REPORT

Saranap Village

Contra Costa County, CA

PREPARED FOR
Hall Equities Group
1855 Olympic Blvd., Suite 250
Walnut Creek, CA 94596

PREPARED BY
HortScience, Inc.
325 Ray Street
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January 2014

Executive Summary
Revised Arborist Report
Saranap Village, Contra Costa County

This report includes the following information:

- A survey of all trees 6" in diameter and larger within and immediately adjacent to the proposed project area.
- An assessment of the impacts of constructing the proposed project on the trees.
- Identification of trees requiring removal and those that can be preserved.
- The appraise value of all trees included in the assessment.
- Tree preservation guidelines.

Results of the assessment:

- Seventy-three (73) trees were assessed, including eight (8) off-site trees with portions of their crowns extending onto the development sites.
- The site was highly diverse, with 21 of the 24 species represented by exotic landscape trees.
- The most frequently encountered species were coast live oak and valley oak, with 10 and nine (9) trees, respectively.
- Tree condition across the three sites was good (39 trees or 53% of the population). Thirty (30) trees were in fair condition (41%) and four (4) trees were in poor (6%). Table 1 (page 4) provides a summary of condition by species.
- Contra Costa County defines certain indigenous species measuring 6.5" or larger in diameter as *Protected*. Twenty-four (24) trees qualified as *Protected*.
- Eight (8) trees were of highly suitable for preservation, 48 were of moderate suitability for preservation and 17 were of low suitability for preservation (Table 2, page 6).

Assessment of Impacts:

- The October 2012 ***Tree Assessment*** was the reference point for tree condition and quality. Potential impacts from construction were evaluated using the Conceptual Roadway and Conceptual Ground level Plans prepared by MBH Architects, Inc. (dated Oct., 2013).
- Based on the Conceptual Plans, 63 trees would require removal, all of which would fall within the development envelope for the three sites (Table 3, page 8). Of the 63 trees identified for removal, 23 qualified as *Protected* trees.
- Nine (9) trees can be preserved under the current design, including the eight (8) off-site trees and valley oak #65.
- Valley oak #21 is proposed for transplanting.
- *Protected* trees #21 and 65 will require a dripline encroachment permit.
- Pruning of off-site trees #66-73 preserved around Site C may be required to provide construction clearance.
- The appraised value of the nine (9) trees recommended for preservation and valley oak #21 (identified for transplanting) was $74,000 (Table 4, page 10).
- The appraised value of the 62 trees recommended for removal was $103,650 (Table 5, page 10).

Revised Arborist Report
Saranap Village, Contra Costa Co.

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Attachments

Tree Assessment Form

Tree Assessment Maps (Site A, B, C and D)

Introduction and Overview

Hall Equities Group has proposed to redevelop four sites clustered aroundthe intersection of Boulevard Wy. and Saranap Ave., in the Saranap district of Contra Costa County. The four properties, (Sites A, B, C and D), currently contain a mix of multi-family residential, commercial, church sanctuary and office buildings, parking lots and associated landscaping. HortScience, Inc. was asked to prepare an **Arborist Report** for the sites for review by Contra Costa County.

This report provides the following information:

- A survey of trees within and immediately adjacent to the proposed project area.
- An assessment of the impacts of constructing the proposed project on the trees.
- Recommendations for tree preservation and removal.
- The appraise value of all surveyed trees using the techniques described in the Guide for Plant Appraisal, 9th edition (International Society of Arboriculture).
- Guidelines for tree preservation during the design, construction and maintenance phases.

Survey Methods

Trees were surveyed in October 2012. All trees 6" or greater in diameters, within the project area or with portions of their crowns extending into the project area, were included (per Contra Costa County ordinance #816-6). The survey procedure consisted of the following steps:

1. Identifying the tree as to species;
2. Tagging each tree with an identifying number and recording its location on a map;
3. Measuring the trunk diameter at a point 54" above grade;
4. Evaluating the health and structural condition using a scale of 1–5:
   - ***5*** - A healthy, vigorous tree, reasonably free of signs and symptoms of disease, with good structure and form typical of the species.
   - ***4*** - Tree with slight decline in vigor, small amount of twig dieback, minor structural defects that could be corrected.
   - ***3*** - Tree with moderate vigor, moderate twig and small branch dieback, thinning of crown, poor leaf color, moderate structural defects that might be mitigated with regular care.
   - ***2*** - Tree in decline, epicormic growth, extensive dieback of medium to large branches, significant structural defects that cannot be abated.
   - ***1*** - Tree in severe decline, dieback of scaffold branches and/or trunk; most of foliage from epicormics; extensive structural defects that cannot be abated.
5. Rating the suitability for preservation as "high", "moderate" or "low". Suitability for preservation considers the health, age and structural condition of the tree species, and its potential to remain an asset to the site for years to come.
   - ***High***: Trees with good health and structural stability that have the potential for longevity at the site.
   - ***Moderate***: Trees with somewhat declining health and/or structural defects than can be abated with treatment. The tree will require more intense management and monitoring, and may have a shorter life span than those in 'high' category.
   - ***Low***: Trees in poor health or with significant structural defects that cannot be mitigated. Tree is expected to continue to decline, regardless of treatment. The species or individual tree may have characteristics that are undesirable for landscapes, and generally are unsuited for use areas.

Description of Trees

Seventy-three (73) trees were assessed, representing 24 species (Table 1, page 4). Eight (8) off-site trees with portions of their crowns extending onto the development sites, specifically Sites B and C, were included (#66-73). Descriptions of each tree are found in the ***Tree Assessment Form*** and locations are plotted on the ***Tree Assessment Map*** (see Attachments).

The project comprises four distinct sites. Site 'A' included four parcels, which contained an empty lot, two office complexes, a 24-unit apartment complex, associated parking lots, and a single-family residence. Site 'B' included two parcels, containing a two-story Sufi religious center, a parking lot, a partially undeveloped 'panhandle' lot containing lawn and landscaping. Site 'C' included two parcels, containing a one-story, mixed office-retail building in the northwest corner and associated parking. Site 'D' included an existing driveway and parking lot for the existing Boulevard Terrace condominium units.

Overall, the site was highly diverse, with 21 of the 24 species represented by exotic landscape trees. However, the most frequently encountered species were coast live oak and valley oak, with 10 and nine (9) trees (14% and 12% of the population), respectively. Coast live oaks were young to semi-mature, with diameters between 6" and 17", while valley oaks were young to mature, with diameters between 5" and 35". Both species had performed well, with seven (7) trees each in good condition and the remainder (3 coast live oaks and 2 valley oaks) in fair condition.

Average tree condition for the three sites was good, with 39 trees or 53% of the population in that category. Thirty (30) trees were in fair condition (41%) and four (4) trees were in poor (6%). Table 1 (page 4) provides a summary of condition by species.

For all properties within Contra Costa County, *Protected* trees include certain indigenous species measuring 6.5" or larger in diameter (20" or larger in circumference). By this definition, 24 trees qualified as *Protected*. Trenching, grading or filling within the dripline of a *Protected* tree, or removal of a *Protected* tree, requires a permit issued by the Contra Costa County Community Development Department. *Protected* and *Heritage* trees are identified in the ***Tree Assessment Form*** (see attachments).

A brief description of the tree resource on each site follows:

Site A

- A total of 19 on-site trees from 11 species were surveyed. Fourteen (14) of the trees were concentrated around the single-family residence at 1176 Saranap Ave.

- Fourteen (14) of the trees were planted exotics and five (5) were indigenous. The five (5) indigenous trees all qualified as *Protected* trees and included young coast live oaks, valley oaks and a Calif. black walnut.

- Trees in the front yard of the single-family residence (#5-10) tended to be larger diameter and in fair condition, some having been pruned or topped for the overhead utility lines. Trees in the backyard of the single-family residence (12-17) were generally younger, with smaller diameters, but in good condition.

Site B/Site D

- A total of 41 on-site trees and three (3) off-site trees from 15 species were assessed. Twenty-three (23) of these had been planted on the slopes south and west of the Sufi center, and another nine (9) along the eastern property line.

- Three (3) trees were growing along the eastern property line of the 'panhandle', including a plum, an apple and a valley oak.

- The three (3) off-site trees (#66-68) were located just east and west of the undeveloped portion of the property. The two to the west (#66 and 67) were mature red-ironbark eucalyptus, extending 20-25' east over the existing fence. Off-site tree #68 was a young valley oak extending 8' west over the fence.

- Twenty-two (22) of the trees were planted exotics and 22 were indigenous. Sixteen (16) of the indigenous trees qualified as *Protected*. *Protected* trees included three (3) young coast live oaks and seven (7) young coast redwoods (6-13" in diameter), one (1) semi-mature coast live oak and one (1) semi-mature coast redwood (both 17" in diameter), and four (4) semi-mature valley oaks (17-22" in diameter).

- Condition of the Site B trees was good (24 trees) to fair (14 trees). In general, young coast live oaks and coast redwoods were in good condition, despite being planted in tight groupings on the slopes surrounding the Sufi center. Monterey pines were in fair condition and leaned east over the Sufi center building.

- The largest diameter and most prominent tree on the site was valley oak #21, located in the northeast corner of Site B. The tree measured 35" in diameter and was one of the two *Protected* trees present on Site B. It was in good condition, with a full, spreading crown (Photo 1). This tree is proposed for relocation to the median planter within Boulevard Way, just west of Flora Avenue.

Photo 1: Valley oak #21 was the largest and most prominent tree on the three sites, measuring 35" in diameter. Located in the northeast corner of Site B, it was in good condition, with a full, spreading crown.

Site C

- Five (5) on-site and five (5) off-site trees were surveyed, representing 6 species. The five on-site trees and three (3) of the off-site trees were growing along the eastern property line, with the remaining two (2) off-site trees located in the southwest corner.

- On-site trees included a semi-mature coast live oak (#51), a young Calif. black walnut (#52) and three (3) young callery pears. The coast live oak was in good condition, the Calif. black walnut was in poor and the callery pears were all in fair.

- Coast live oak #51 and Calif. black walnut #52 qualified as *Protected*.

Table 1. Tree condition and frequency of occurrence.
Saranap Village, Contra Costa Co.

Common Name	**Scientific Name**	**Condition Rating**			**No. of trees**
		Poor (1-2)	Fair (3)	Good (4-5)	
Blackwood acacia	*Acacia melanoxylon*	1	-	2	3
Albizzia	*Albizia julibrissin*	-	-	1	1
European birch	*Betula pendula*	-	-	1	1
Western catalpa	*Catalpa speciosa*	-	-	1	1
Deodar cedar	*Cedrus deodara*	-	-	1	1
Carrob	*Ceratonia siliqua*	-	1	-	1
Red ironbark	*Eucalyptus sideroxylon*	-	2	2	4
Calif. black walnut	*Juglans hindsii*	1	1	-	2
Crape myrtle	*Lagerstroemia indica*	-	-	1	1
Sweetgum	*Liquidambar styraciflua*	-	5	3	8
Tulip poplar	*Liriodendron tulipifera*	-	-	1	1
Southern magnolia	*Magnolia grandiflora*	-	1	1	2
Apple	*Malus domestica*	-	-	1	1
Mayten	*Maytenus boaria*	1	-	-	1
Aleppo pine	*Pinus halepensis*	-	1	-	1
Monterey pine	*Pinus radiata*	-	4	1	5
Purple-leaf plum	*Prunus cerasifera* 'Atropurpurea'	1	1	-	2
Plum	*Prunus domestica*	-	-	1	1
Callery pear	*Pyrus calleryana*	-	4	-	4
Coast live oak	*Quercus agrifolia*	-	3	7	10
Valley oak	*Quercus lobata*	-	2	7	9
Coast redwood	*Sequoia sempervirens*	-	-	8	8
Siberian elm	*Ulmus pumila*	-	4	-	4
Xylosma	*Xylosma congestum*	-	1	-	1
Total		**4**	**30**	**39**	**73**
		6%	41%	53%	100%

Suitability for Preservation

Before evaluating the impacts that will occur during development, it is important to consider the quality of the tree resource itself, and the potential for individual trees to function well over an extended length of time. Trees that are preserved on development sites must be carefully selected to make sure that they may survive development impacts, adapt to a new environment and perform well in the landscape.

Our goal is to identify trees that have the potential for long-term health, structural stability and longevity. For trees growing in open fields, away from areas where people and property are present, structural defects and/or poor health presents a low risk of damage or injury if they fail. However, we must be concerned about safety in use areas. Therefore, where development encroaches into existing plantings, we must consider their structural stability as well as their potential to grow and thrive in a new environment. Where development will not occur, the normal life cycles of decline, structural failure and death should be allowed to continue.

Evaluation of suitability for preservation considers several factors:

- **Tree health**
  Healthy, vigorous trees are better able to tolerate impacts such as root injury, demolition of existing structures, changes in soil grade and moisture, and soil compaction than are non-vigorous trees.

- **Structural integrity**
  Trees with significant amounts of wood decay and other structural defects that cannot be corrected are likely to fail. Such trees should not be preserved in areas where damage to people or property is likely.

- **Species response**
  There is a wide variation in the response of individual species to construction impacts and changes in the environment. In our experience, for example, Calif. black walnut and mature Monterey pines are sensitive to construction impacts, while coast live oak and coast redwood are tolerant of site disturbance.

- **Tree age and longevity**
  Old trees, while having significant emotional and aesthetic appeal, have limited physiological capacity to adjust to an altered environment. Young trees are better able to generate new tissue and respond to change.

- **Invasiveness**
  Species which spread across a site and displace desired vegetation are not always appropriate for retention. This is particularly true when indigenous species are displaced. The California Invasive Plant Inventory Database (http://www.cal-ipc.org/paf/) lists species identified as being invasive. Walnut Creek is part of the Central West Floristic Province. The only species identified as invasive present at the Saranap site was purple-leaf plum.

Each tree was rated for suitability for preservation based upon its age, health, structural condition and ability to safely coexist within a development environment. Table 2, following page, provides a summary of suitability ratings. Suitability ratings for individual trees are provided in the ***Tree Survey Forms*** (see Attachments).

We consider trees with good suitability for preservation to be the best candidates for preservation. We do not recommend retention of trees with low suitability for preservation in areas where people or property will be present. Retention of trees with moderate suitability for preservation depends upon the intensity of proposed site changes.

Table 2: Tree Suitability for Preservation
Saranap Village, Contra Costa Co.

High	These are trees with good health and structural stability that have the potential for longevity at the site. Eight (8) trees were of highly suitable for preservation including four (4) valley oaks, one (1) coast live oak, one (1) Southern magnolia, one (1) Monterey pine, and one (1) crape myrtle.
Moderate	Trees in this category have fair health and/or structural defects that may be abated with treatment. Trees in this category require more intense management and monitoring, and may have shorter life-spans than those in the “high” category. Forty-eight (48) trees were of moderate suitability for preservation, including eight (8) coast live oaks, eight (8) coast redwoods, six (6) sweetgums, five (5) valley oaks, four (4) callery pears, three (3) red ironbarks, two (2) blackwood acacias, and one (1) each of Western catalpa, tulip poplar, Siberian elm, purple-leaf plum, plum, European birch, deodar cedar, carrob, Calif. black walnut, apple, Aleppo pine and albizzia.
Low	Trees in this category are in poor health or have significant defects in structure that cannot be abated with treatment. These trees can be expected to decline regardless of management. The species or individual tree may possess either characteristics that are undesirable in landscape settings or be unsuited for use areas. Seventeen (17) trees were of low suitability for preservation, including four (4) Monterey pines, three (3) Siberian elms, two (2) sweetgums, (1) each of xylosma, mayten, Southern magnolia, coast live oak, red ironbark, blackwood acacia, purple-leaf plum, and Calif. black walnut.

Evaluation of Impacts

Appropriate tree retention develops a practical match between the location and intensity of construction activities and the quality and health of trees. The October 2012 ***Tree Assessment*** was the reference point for tree condition and quality. Potential impacts from construction were evaluated using the Conceptual Roadway and Conceptual Ground level Plans prepared by MBH Architects, Inc. (dated Oct., 2013).

The plans were conceptual in nature and did not include grading, drainage, utilities, or accurate trunk locations.

Following is a brief description of the proposed changes:

- The plan would construct approximately 234 multi-family residential units across the 4 sites
- Retail and restaurant space is proposed along the ground floors of Sites A, B and D, along Boulevard Way.
- Boulevard Way and Saranap Ave. would be improved, with a new round-about proposed where the two streets meet.
- On-street parking would be added on both sides of Boulevard Way east of Saranap Ave., along the east side of Boulevard Way west of Saranap Ave., and along the east side of Saranap Avenue.
- New driveways would be installed along Boulevard Way for all four sites, with a new loading dock/driveway proposed on Saranap Ave. for Site A.
- The landscaped/lawn portion of the 'panhandle' would be partially redeveloped. The northern part would include a below-grade parking structure with a combined podium deck and at grade project amenities such as a pool, club house and landscaping.
- Valley oak #21 is proposed to be transplanted from its current location to the median at the east end of Boulevard Way.

Using the proposed plan, potential impacts from construction were estimated for each tree. The dense nature of in-fill projects often requires building lot line to lot line, leaving little room for tree preservation.

Based on my assessment of the Conceptual Plans, 63 trees require removal, all of which would fall within the development envelope for the three sites (Table 3, following page). Of the 63 trees identified for removal, 16 were of poor suitability for preservation and 23 qualified as *Protected*. Removal of any *Protected* tree requires approval from Contra Costa County.

Valley oak #21 is proposed for transplanting and the remaining nine (9) trees can be preserved under the current design, including the eight (8) off-site trees and valley oak #65 (at the south end of the 'panhandle'). Valley oaks #21 and 65 qualified as *Protected* and will require a dripline encroachment permit.

Pruning of off-site trees #66-73 preserved around Site C may be required to provide construction clearance. Pruning of off-site trees must be done with the property owner's permission.

Table 3. Tree Impacts.
Saranap Village, Contra Costa Co.

Tree No.	Common Name	Trunk Diameter	Protected?	Action
1	Blackwood acacia	10,7,5	No	Remove, within develop.
2	Blackwood acacia	16	No	Remove, within develop.
3	Blackwood acacia	7	No	Remove, within develop.
4	Siberian elm	20	No	Remove, within develop.
5	Sweetgum	20	No	Remove, within develop.
6	Southern magnolia	8	No	Remove, within develop.
7	Valley oak	7	*Protected*	Remove, within develop.
8	Siberian elm	7,7	No	Remove, within develop.
9	Siberian elm	6	No	Remove, within develop.
10	Siberian elm	17,12	No	Remove, within develop.
11	Sweetgum	6	No	Remove, within develop.
12	Western catalpa	15	No	Remove, within develop.
13	Coast live oak	7,7,5	*Protected*	Remove, within develop.
14	Valley oak	5,5,5,5,5,5,3	*Protected*	Remove, within develop.
15	Valley oak	5,5	*Protected*	Remove, within develop.
16	Calif. black walnut	8,7,7,7	*Protected*	Remove, within develop.
17	Crape myrtle	6,5,5	No	Remove, within develop.
18	Purple-leaf plum	7	No	Remove, within develop.
19	Xylosma	7,7	No	Remove, within develop.
20	Southern magnolia	6	No	Remove, within develop.
21	Valley oak	35	*Protected*	***Transplant***
22	Coast live oak	13	*Protected*	Remove, within develop.
23	Coast live oak	7	*Protected*	Remove, within develop.
24	Coast live oak	6	No	Remove, within develop.
25	Coast live oak	11,4	*Protected*	Remove, within develop.
26	Carrob	12,7,3,3	No	Remove, within develop.
27	Coast live oak	17	*Protected*	Remove, within develop.
28	Coast live oak	8	*Protected*	Remove, within develop.
29	Coast live oak	9	*Protected*	Remove, within develop.
30	Coast live oak	6,6	*Protected*	Remove, within develop.
31	Coast redwood	7	*Protected*	Remove, within develop.
32	Coast redwood	7	*Protected*	Remove, within develop.
33	Coast redwood	6	No	Remove, within develop.
34	Valley oak	17,11	*Protected*	Remove, within develop.
35	Coast redwood	6	No	Remove, within develop.
36	Coast redwood	7	*Protected*	Remove, within develop.
37	Coast redwood	9	*Protected*	Remove, within develop.
38	Coast redwood	6	No	Remove, within develop.
39	Coast redwood	18	*Protected*	Remove, within develop.
40	Deodar cedar	14	No	Remove, within develop.
41	Valley oak	22	*Protected*	Remove, within develop.
42	Albizzia	6	No	Remove, within develop.
43	Monterey pine	22	No	Remove, within develop.
44	Valley oak	19	*Protected*	Remove, within develop.
45	Monterey pine	21	No	Remove, within develop.
46	Monterey pine	19	No	Remove, within develop.

(**Continued, following page**)

Table 3. Tree Impacts, continued.
Saranap Village, Contra Costa Co.

Tree No.	Common Name	Trunk Diameter	Protected?	Action
47	Monterey pine	24	No	Remove, within develop.
48	Monterey pine	15	No	Remove, within develop.
49	Mayten	10	No	Remove, within develop.
50	European birch	14	No	Remove, within develop.
51	Coast live oak	17	*Protected*	Remove, within develop.
52	Calif. black walnut	12	*Protected*	Remove, within develop.
53	Sweetgum	6	No	Remove, within develop.
54	Sweetgum	6	No	Remove, within develop.
55	Sweetgum	10	No	Remove, within develop.
56	Sweetgum	13	No	Remove, within develop.
57	Sweetgum	6	No	Remove, within develop.
58	Sweetgum	8	No	Remove, within develop.
59	Tulip poplar	10	No	Remove, within develop.
60	Callery pear	9	No	Remove, within develop.
61	Callery pear	8	No	Remove, within develop.
62	Callery pear	7	No	Remove, within develop.
63	Plum	10,8,7,5	No	Remove, within develop.
64	Apple	13	No	Remove, within develop.
65	Valley oak	18,17	*Protected*	**Preserve**, ‘panhandle’ tree
66	Red ironbark	22	No	**Preserve**, off-site.
67	Red ironbark	20	No	**Preserve**, off-site.
68	Valley oak	6	No	**Preserve**, off-site.
69	Red ironbark	28	No	**Preserve**, off-site.
70	Red ironbark	17,16	No	**Preserve**, off-site.
71	Callery pear	7	No	**Preserve**, off-site.
72	Aleppo pine	25	No	**Preserve**, off-site.
73	Purple-leaf plum	7	No	**Preserve**, off-site.

Appraisal of Value

As part of the submittal requirements, Contra Costa County requires that the value of all of the surveyed trees be established prior to development. To accomplish this, I employed the standard methods found in ***Guide for Plant Appraisal***, 9th edition (published in 2000 by the International Society of Arboriculture, Savoy IL). In addition, I referred to ***Species Classification and Group Assignment*** (1992), a publication of the Western Chapter of the International Society of Arboriculture. These two documents outline the methods employed in tree appraisal.

The value of landscape trees is based upon four factors: size, species, condition and location. Size is measured as trunk diameter at 54" above grade. The species factor considers the adaptability and appropriateness of the plant in the inland valley of the East Bay Area. The ***Species Classification and Group Assignment*** lists recommended species ratings and evaluations. Condition reflects the health and structural integrity of the individual, as documented in my October 2012 assessment. The location factor considers the site, placement and contribution of the tree in its surrounding landscape.

The appraised value of the nine (9) trees recommended for preservation and valley oak #21 (identified for transplanting) was $74,000 (Table 4).

The appraised value of the 62 trees recommended for removal was $103,650 (Table 5).

Table 4. Appraised value of trees identified for preservation
Saranap Village, Contra Costa Co.

Tree No.	Common Name	Size (in.)	Appraised Value ($)
21	Valley oak	35	37,450
65	Valley oak	18,17	11,650
66	Red ironbark	22	4,650
67	Red ironbark	20	2,750
68	Valley oak	6	1,250
69	Red ironbark	28	6,000
70	Red ironbark	17,16	2,850
71	Callery pear	7	650
72	Aleppo pine	25	6,350
73	Purple-leaf plum	7	400
Total			**74,000**

Table 5. Appraised value of trees identified for removal.
Saranap Village, Contra Costa Co.

Tree No.	Common Name	Size (in.)	Appraised Value ($)
1	Blackwood acacia	10,7,5	800
2	Blackwood acacia	16	650
3	Blackwood acacia	7	300
4	Siberian elm	20	1,350
5	Sweetgum	20	5,500
6	Southern magnolia	8	550
7	Valley oak	7	1,250
8	Siberian elm	7,7	250
9	Siberian elm	6	100
10	Siberian elm	17,12	1,100
11	Sweetgum	6	650
12	Western catalpa	15	2,600
13	Coast live oak	7,7,5	1,300
14	Valley oak	5,5,5,5,5,5,3	2,300
15	Valley oak	5,5	1,000
16	Calif. black walnut	8,7,7,7	1,400
17	Crape myrtle	6,5,5	1,400
18	Purple-leaf plum	7	100
19	Xylosma	7,7	800
20	Southern magnolia	6	600
22	Coast live oak	13	2,950

(**Continued, following page**)

Table 5. Appraised value of trees identified for removal, continued
Saranap Village, Contra Costa Co.

Tree *No.*	Common Name	Size *(in.)*	Appraised *Value ($)*
23	Coast live oak	7	650
24	Coast live oak	6	700
25	Coast live oak	11,4	2,250
26	Carrob	12,7,3,3	1,500
27	Coast live oak	17	4,300
28	Coast live oak	8	700
29	Coast live oak	9	1,250
30	Coast live oak	6,6	600
31	Coast redwood	7	500
32	Coast redwood	7	500
33	Coast redwood	6	400
34	Valley oak	17,11	8,750
35	Coast redwood	6	400
36	Coast redwood	7	500
37	Coast redwood	9	800
38	Coast redwood	6	400
39	Coast redwood	18	3,000
40	Deodar cedar	14	2,600
41	Valley oak	22	8,600
42	Albizzia	6	400
43	Monterey pine	22	1,900
44	Valley oak	19	6,450
45	Monterey pine	21	1,250
46	Monterey pine	19	1,000
47	Monterey pine	24	1,600
48	Monterey pine	15	650
49	Mayten	10	800
50	European birch	14	1,000
51	Coast live oak	17	4,950
52	Calif. black walnut	12	2,300
53	Sweetgum	6	450
54	Sweetgum	6	450
55	Sweetgum	10	1,700
56	Sweetgum	13	2,850
57	Sweetgum	6	450
58	Sweetgum	8	800
59	Tulip poplar	10	1,200
60	Callery pear	9	1,100
61	Callery pear	8	850
62	Callery pear	7	650
63	Plum	10,8,7,5	1,700
64	Apple	13	3,800
Total			**103,650**

Tree Preservation Guidelines

The goal of tree preservation is not merely tree survival during development but maintenance of tree health and beauty for many years. Trees retained on sites that are either subject to extensive injury during construction or are inadequately maintained become a liability rather than an asset. The response of individual trees will depend on the amount of excavation and grading, the care with which demolition is undertaken, and the construction methods.

The following recommendations will help reduce impacts to trees from development and maintain and improve their health and vitality through the clearing, grading and construction phases.

Design recommendations

1. Any plan affecting trees should be reviewed by the Consulting Arborist with regard to tree impacts. These include, but are not limited to, improvement plans, utility and drainage plans, grading plans, landscape and irrigation plans and demolition plans.

2. ***Tree Preservation Guidelines*** prepared by the Consulting Arborist should be included on all plans.

3. A **TREE PROTECTION ZONE** shall be established around each tree. For design purposes the **TPZ** shall be defined at 15' from the trunk in all directions for tree #69 and at the property line for the remaining trees. No grading, excavation, construction or storage of materials shall occur within that zone.

4. No underground services including utilities, sub-drains, water or sewer shall be placed in the **TREE PROTECTION ZONE**. To minimize impacts to trees, locate underground services to provide as much room as possible from trees identified for preservation.

5. Any herbicides placed under paving materials must be safe for use around trees and labeled for that use.

6. Irrigation systems must be designed to avoid trenching within the **TREE PROTECTION ZONE**.

7. Do not apply lime to soil for stabilization within 50' of trees to be preserved. Lime is toxic to tree roots.

Pre-construction treatments and recommendations

1. The construction superintendent shall meet with the Consulting Arborist before beginning work to discuss work procedures and tree protection.

2. Fence all trees to be retained to completely enclose the **TREE PROTECTION ZONE** prior to demolition, grubbing or grading. Fences shall be chain link or equivalent as approved by the County. Fences are to remain until all grading and construction is completed.

3. Installation of the bench and stepping stones within the dripline of tree #69 will require **temporarily** moving the Tree Protection Fencing. All work within the dripline of tree #69 shall be monitored by the Consulting arborist.

4. Prune trees to be preserved to provide adequate clearance and correct any existing defects in structure. Pruning may be required for off-site trees #66-73. Pruning of any off-site trees must be done with the property owner's permission. All pruning shall be completed by a Certified Arborist or Tree Worker and adhere to the latest edition of the ANSI Z133 and A300 standards as well as the *Best Management Practices -- Tree Pruning* published by the International Society of Arboriculture.

Recommendations for tree protection during construction

1. No grading, construction, demolition or other work shall occur within the **TREE PROTECTION ZONE**. Any modifications must be approved and monitored by the Consulting Arborist.

2. Any root pruning required for construction purposes shall receive the prior approval of, and be supervised by, the Consulting Arborist.

3. If injury should occur to any tree during construction, it should be evaluated as soon as possible by the Consulting Arborist so that appropriate treatments can be applied.

4. No excess soil, chemicals, debris, equipment or other materials shall be dumped or stored within the **TREE PROTECTION ZONE**.

5. Any additional tree pruning needed for clearance during construction must be performed by a Certified Arborist and not by construction personnel.

Maintenance of impacted trees

Trees preserved at the Saranap Village site may experience a physical environment different from that pre-development. As a result, tree health and structural stability should be monitored. Occasional pruning, fertilization, mulch, pest management, replanting and irrigation may be required.

HortScience, Inc.

John Leffingwell
Board Certified Master Arborist WE-3966B
Registered Consulting Arborist #442

Attached: ***Tree Assessment Form***

Tree Assessment Maps (Site A, B, C and D)

Tree Assessment

Saranap Village
Contra Costa County, California
October 2012

TREE No.	SPECIES	SIZE DIAMETER (in inches)	PROTECTED?	CONDITION 1=POOR 5=EXCELLENT	SUITABILITY FOR PRESERVATION	COMMENTS
1	Blackwood acacia	10,7,5	No	4	Moderate	Multiple attachments at base; narrow attachment.
2	Blackwood acacia	16	No	2	Low	Topped at 10'; leans S.; extensive trunk decay.
3	Blackwood acacia	7	No	4	Moderate	Upright form; lateral S. with weak attachment.
4	Siberian elm	20	No	3	Moderate	Upright form; multiple attachments at 20';
5	Sweetgum	20	No	3	Moderate	Multiple attachments at 7'; multiple tipping
6	Southern magnolia	8	No	3	Low	Topped at 10'; poor form and structure.
7	Valley oak	7	*Protected*	4	Moderate	Crowded and leaning W.; beneath overhead utilities.
8	Siberian elm	7,7	No	3	Low	Topped for overhead utilities.
9	Siberian elm	6	No	3	Low	Topped for overhead utilities.
10	Siberian elm	17,12	No	3	Low	Topped for overhead utilities; northern stem
11	Sweetgum	6	No	4	Moderate	Upright form; growing in tight spot between houses.
12	Western catalpa	15	No	4	Moderate	Multiple attachments at 6'; branch wound
13	Coast live oak	7,7,5	*Protected*	4	Moderate	Multiple attachments at base; asymmetric crown; close to house.
14	Valley oak	5,5,5,5,5,5,3	*Protected*	4	High	Multiple attachments at base; stump sprout;
15	Valley oak	5,5	*Protected*	4	Moderate	Codominant trunks at base; narrow attachment with seam.
16	Calif. black walnut	8,7,7,7	*Protected*	3	Moderate	Multiple attachments at base; stump sprout; growing against shed.
17	Crape myrtle	6,5,5	No	4	High	Multiple attachments at 3'; crowded.
18	Purple-leaf plum	7	No	1	Low	Declining; half dead.
19	Xylosma	7,7	No	3	Low	Leans S.; large shrub.
20	Southern magnolia	6	No	5	High	Good young tree.

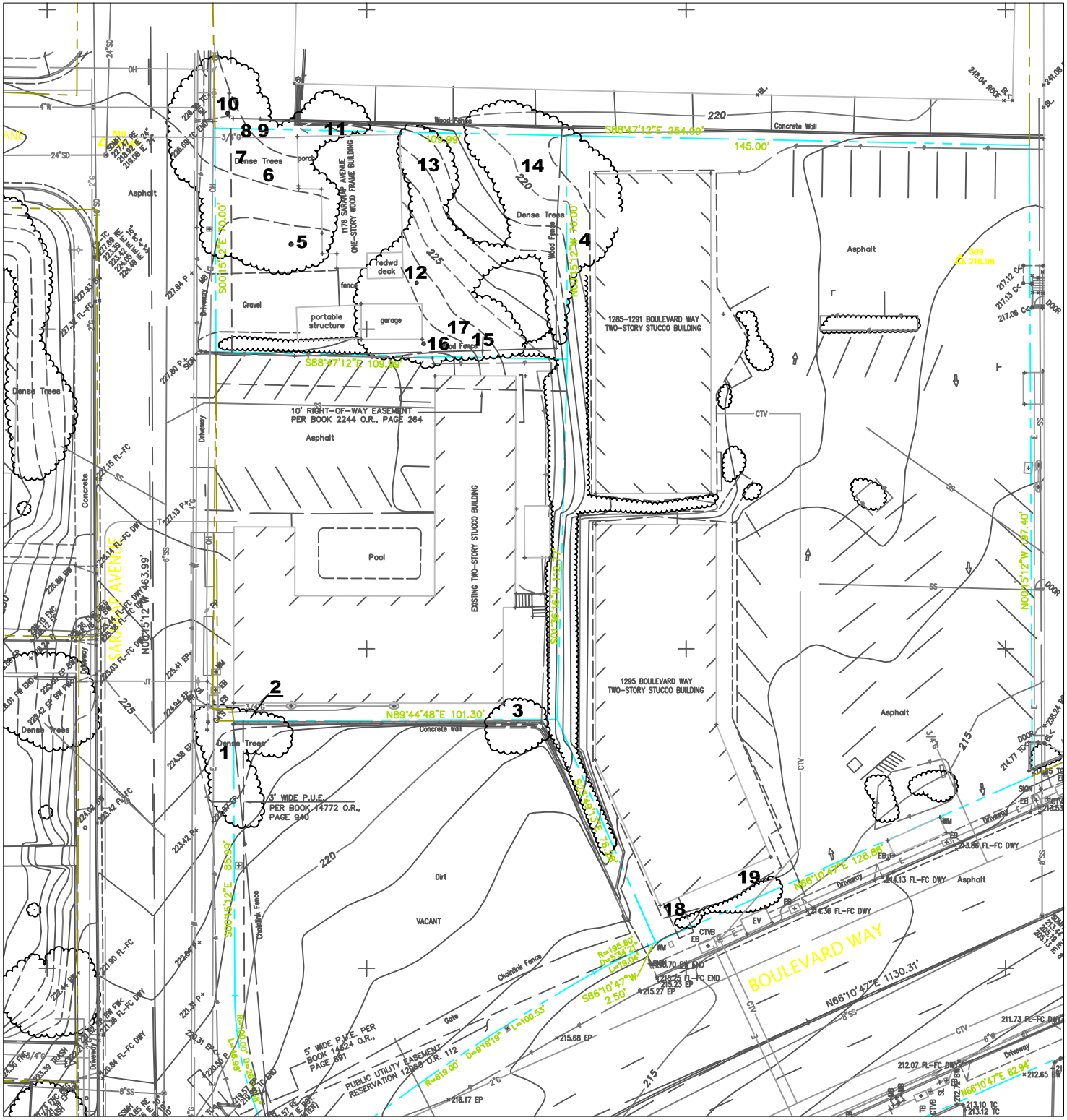
Tree Assessment

Saranap Village
Contra Costa County, California
October 2012

TREE No.	SPECIES	SIZE DIAMETER (in inches)	PROTECTED?	CONDITION 1=POOR 5=EXCELLENT	SUITABILITY FOR PRESERVATION	COMMENTS
21	Valley oak	35	*Protected*	4	High	Multiple attachment at 12'; spreading form; lateral S.; twig dieback.
22	Coast live oak	13	*Protected*	4	Moderate	Multiple attachment at 4'; one sided W.
23	Coast live oak	7	*Protected*	3	Moderate	Codominant trunks at 6'; weak attachment; leans W.
24	Coast live oak	6	No	4	Moderate	Upright form; small lateral W.
25	Coast live oak	11,4	*Protected*	4	Moderate	Codominant trunks at base; leans W.
26	Carrob	12,7,3,3	No	3	Moderate	Multiple attachments at base; growing against building; one sided N.
27	Coast live oak	17	*Protected*	4	Moderate	Multiple attachments at 6'; trunk and branch wounds.
28	Coast live oak	8	*Protected*	3	Moderate	Upright form; top growing over building.
29	Coast live oak	9	*Protected*	4	Moderate	Upright form; growing close building.
30	Coast live oak	6,6	*Protected*	3	Low	Suppressed form; poor form and structure.
31	Coast redwood	7	*Protected*	4	Moderate	Good young tree; suppressed.
32	Coast redwood	7	*Protected*	4	Moderate	Good young tree; suppressed.
33	Coast redwood	6	No	4	Moderate	Good young tree; suppressed.
34	Valley oak	17,11	*Protected*	4	Moderate	Codominant trunks at 2'; trunk growing against wooden stairs; twig dieback.
35	Coast redwood	6	No	4	Moderate	Good young tree; suppressed.
36	Coast redwood	7	*Protected*	4	Moderate	Good young tree; suppressed.
37	Coast redwood	9	*Protected*	4	Moderate	Good young tree; suppressed.
38	Coast redwood	6	No	4	Moderate	Good young tree; suppressed.
39	Coast redwood	18	*Protected*	4	Moderate	Trunk wound E; good form; thinning crown.
40	Deodar cedar	14	No	4	Moderate	Crowded; one sided S. over building.
41	Valley oak	22	*Protected*	3	Moderate	Codominant trunks at 10'; narrow attachments with seams; twig dieback.
42	Albizzia	6	No	4	Moderate	Understory tree; basal wound.

TREE No.	SPECIES	SIZE DIAMETER (in inches)	PROTECTED?	CONDITION 1=POOR 5=EXCELLENT	SUITABILITY FOR PRESERVATION	COMMENTS
43	Monterey pine	22	No	4	High	Upright form; small lateral E.
44	Valley oak	19	*Protected*	3	Moderate	Codominant trunks at 10'; asymmetric crown; twig and branch dieback.
45	Monterey pine	21	No	3	Low	Leans E.; poor structure.
46	Monterey pine	19	No	3	Low	Leans E.; small crown; dieback.
47	Monterey pine	24	No	3	Low	Leans E.; poor structure.
48	Monterey pine	15	No	3	Low	Leans E.; small crown.
49	Mayten	10	No	2	Low	No tag, inaccessible; half dead.
50	European birch	14	No	4	Moderate	No tag, inaccessible; upright form; twig and branch dieback.
51	Coast live oak	17	*Protected*	4	High	Codominant trunks at 10'; crown bowed NW.
52	Calif. black walnut	12	*Protected*	2	Low	Suppressed; leans W.; small crown.
53	Sweetgum	6	No	3	Moderate	Crowded; narrow crown.
54	Sweetgum	6	No	3	Low	Crowded; lost top; poor structure.
55	Sweetgum	10	No	4	Moderate	Multiple attachments at 8'; included bark.
56	Sweetgum	13	No	4	Moderate	Codominant trunks at 10'; dead top; included bark.
57	Sweetgum	6	No	3	Moderate	Crowded; narrow crown.
58	Sweetgum	8	No	3	Low	Low lateral S.; central leader dead.
59	Tulip poplar	10	No	4	Moderate	Codominant trunks at 15'; upright form; fair structure.
60	Callery pear	9	No	3	Moderate	Multiple attachments at 7'; close to building; one sided E.
61	Callery pear	8	No	3	Moderate	Multiple attachments at 7'; close to building; narrow crown.
62	Callery pear	7	No	3	Moderate	Multiple attachments at 7'; close to building; narrow crown.

TREE No.	SPECIES	SIZE DIAMETER (in inches)	PROTECTED?	CONDITION 1=POOR 5=EXCELLENT	SUITABILITY FOR PRESERVATION	COMMENTS
63	Plum	10,8,7,5	No	4	Moderate	Multiple attachments at 1'; spreading form.
64	Apple	13	No	4	Moderate	Codominant trunks at 5'; topped.
65	Valley oak	18,17	*Protected*	4	High	Codominant trunks at 3'; one sided N.
66	Red ironbark	22	No	4	Moderate	Off-site, no tag; codominant trunks at 10'; 10" lateral extends 25' E. over fence
67	Red ironbark	20	No	3	Moderate	Off-site, no tag; fair structure; extends 20' E. over fence.
68	Valley oak	6	No	5	High	Off-site, no tag; good young tree; extends 8' W. over fence
69	Red ironbark	28	No	4	Moderate	Off-site, no tag; multiple attachments at 15'; extends 20' W. over fence
70	Red ironbark	17,16	No	3	Low	Off-site, no tag; topped at 25'; deadwood; extends 15' W. over fence.
71	Callery pear	7	No	3	Moderate	Off-site, no tag; dieback; extends 10' W. over fence.
72	Aleppo pine	25	No	3	Moderate	Off-site, no tag; twisted trunk; extends 18' E. over fence.
73	Purple-leaf plum	7	No	3	Moderate	Off-site group of 5 trees, no tag; some with dieback; extend 5-10' over fence.



Tree Assessment Map

Saranap Village
Site A
1176 Saranap Ave.
1285 & 1295 Boulevard Way
Contra Costa County, CA

Prepared for:
Hall Equities
Walnut Creek, CA

October 2012

No Scale

Notes:
Kier & Wright
Livermore, CA

Numbered tree locations are approximate.

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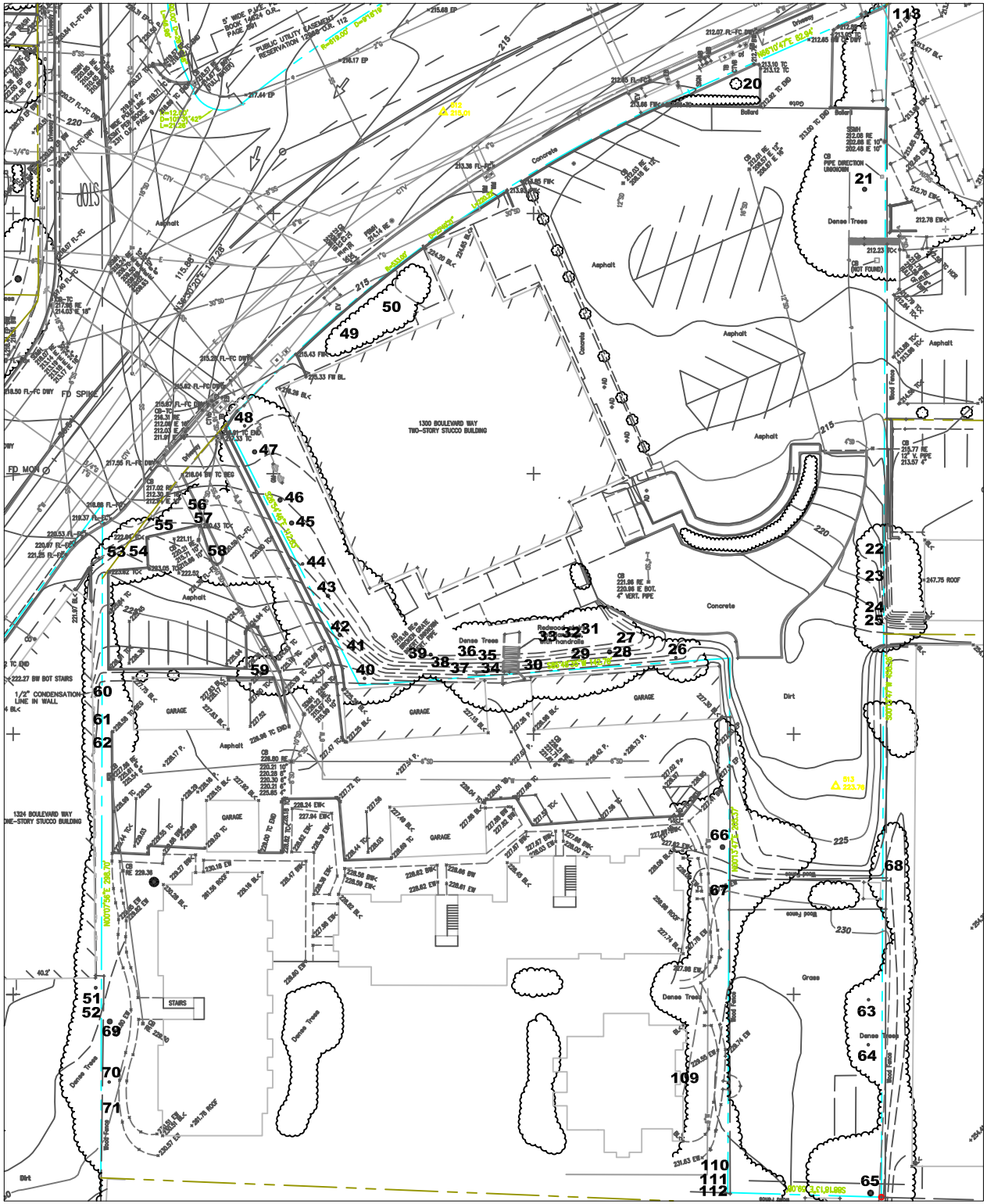

Tree Assessment Map

Saranap Village
Sites B and D
1300 Boulevard Way
Contra Costa County, CA

Prepared for:
Hall Equities
Walnut Creek, CA

October 2012

No Scale

Notes:
Kier & Wright
Livermore, CA

Numbered tree locations are approximate.

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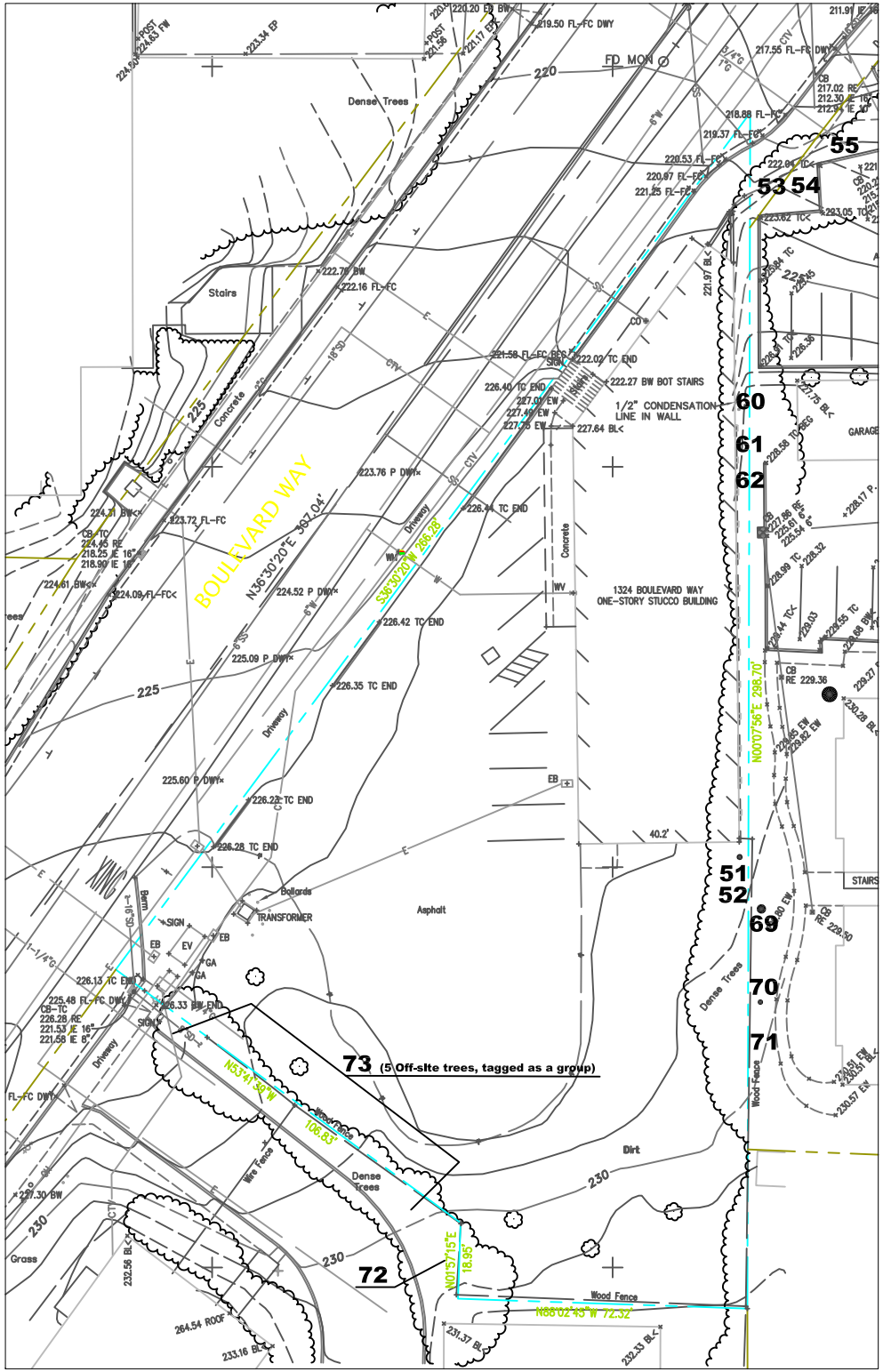

Tree Assessment Map

Saranap Village
Site C
1326 Boulevard Way
Contra Costa County, CA

Prepared for:
Hall Equities
Walnut Creek, CA

October 2012

No Scale

Notes:
Kier & Wright
Livermore, CA

Numbered tree locations are approximate.

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MONK & ASSOCIATES
Environmental Consultants

April 25, 2014

Hall Equities Group
1855 Olympic Blvd., Suite 300
Walnut Creek, CA 94596

Attention: Mr. Michael L. Smith

RE: Biological Services: Alternatives Analysis
Saranap Village Project, Contra Costa County, California
(3.56 Acres) - APNs: 185-370-010, 012, 018, 033; 184-010-035; 046, 184-450-025

Dear Mr. Smith:

On January 10, 2014, Monk & Associates, Inc. (M&A) prepared a Biological Resources Analysis for the Saranap Village Project located at the intersection of Boulevard Way and Saranap Avenue in an unincorporated portion of Walnut Creek, Contra Costa County, California. This proposed project would redevelop four sites located at this intersection. The Hall Equities Group has since asked M&A to assess four project alternatives and the impacts these alternatives may have on Biological Resources. Below we provide a brief summary of each project alternative and our analysis of each project alternative's impact on Biological Resources.

Alternative 1: No Project/No Build; the site would stay in its current condition.

This alternative assumes that the existing site remains as it is and no improvements are made. The impacts of the Project would not occur. Under this proposed alternative there would be no impacts to Biological Resources.

Alternative 2: No Project/Rehabilitation of Properties and Landscaping Only.

This alternative assumes that the existing buildings and related facilities remain on site but that they are rehabilitated to attract higher rents. No grading would be involved and the amount of hardscape would not change from existing. Only interior remodeling and façade improvements would occur. Tenants would be more typical of the uses to which the buildings are already suited. Exterior landscaping would be improved, but new areas would not be landscaped.

<u>Potential Impact on Nesting Birds</u>

Under this proposed alternative there could be impacts to nesting birds depending on the time of year the building rehabilitation work would be completed. Hence, Impact BIO-2: Development of the Project Would Have a Significant Adverse Impact on Nesting Passerine Birds (Significant), as discussed in the proposed Project's January 10, 2014 Biological Resources Analysis would be relevant to this project alternative. Mitigation as discussed in Mitigation Measure BIO-2 would be necessary to offset this proposed alternative's impact on nesting birds.

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This mitigation measure as stated in M&A's January 10, 2014 Biological Resources Analysis is reiterated below.

Mitigation Measure BIO-2. Nesting Passerine Birds

A nesting survey should be conducted on the project site and within a zone of influence around the project site. The zone of influence includes those areas off the project site where birds could be disturbed by earth-moving vibrations or noise. Accordingly, the nesting survey(s) must cover the project site and an area around the project site boundary. If project site disturbance associated with the project would commence between March 1 and September 1st, the nesting surveys should be completed 15 days prior to commencing with the work. If common (that is, not special-status) birds, for example, California towhee, western scrub jay, or acorn woodpeckers are identified nesting on or adjacent to the project site, a non-disturbance buffer of 75 feet should be established or as otherwise prescribed by a qualified ornithologist. The buffer should be demarcated with painted orange lath or via the installation of orange construction fencing. Disturbance within the buffer should be postponed until it is determined by a qualified ornithologist that the young have fledged and have attained sufficient flight skills to leave the area or that the nesting cycle has otherwise completed.

Typically, most passerine birds in the region of the project site are expected to complete nesting by August 1st. However, many species can complete nesting by the end of June or in early to mid-July. Regardless, nesting buffers should be maintained until August 1st unless a qualified ornithologist determines that young have fledged and are independent of their nests at an earlier date. If buffers are removed prior to August 1st, the qualified biologist conducting the nesting surveys should prepare a report that provides details about the nesting outcome and the removal of buffers. This report should be submitted to the Contra Costa County Department of Conservation and Development prior to the time that nest protection buffers are removed if the date is before August 1st. This mitigation measure would reduce impacts to nesting common bird species to a level considered less than significant.

<u>Potential Impact on Protected Trees</u>

Under Alternative 2 no trees would be removed; however, it is unclear if root trimming or branch cutting would be necessary. If protected trees, as defined by Contra Costa County, will have their roots trimmed or branches cut under this alternative then the portion of Mitigation Measure BIO-1 as stated in the January 10, 2014 Biological Resources Analysis, that deals with pruning and root trimming would be necessary. That mitigation measure is reiterated here.

Excerpt of Mitigation Measure BIO-1: "….. any tree that is injured during grading or construction (for example, some of its roots are accidentally cut) will be compensated for by planting replacement trees at a 1:1 ratio. Replacement trees should be California native species, and will be no larger than fifteen gallon size (to ensure that healthy, smaller specimens are planted). The trees' health should be monitored annually for five years by a qualified biologist or arborist. Annual monitoring reports should be submitted to the Contra Costa County Department of Conservation and Development.

A tree preservation and management plan should be prepared for the project and submitted to the County Department of Conservation and Development prior to the time a building permit is issued. Preparation of this plan and subsequent planting and monitoring should be a condition of project approval and should be tied to a security bond posted by the developer. A bond or suitable security prepared for the benefit of Contra Costa County or a cash deposit should be submitted to Contra Costa County by the applicant covering the costs of mitigation trees (and required irrigation) that are to be installed to compensate for impacts (Contra Costa County now typically only accepts a cash deposit). The amount to be held by Contra Costa County should be determined by a qualified landscape company or landscape architect. The cash or security bond to ensure the health of retained trees should be held for 24 months (according to article 816-6.1204). The cash or security bond to ensure compliance with the tree replacement program should be released upon receipt of a report from a qualified arborist or botanist that all planted trees at the end of the five-year monitoring period are healthy and established.

The planting plan should include a planting detail that specifies where all replacement trees would be planted. The methods used to plant trees should also be specified. Adequate measures should be established to minimize predation of planted trees by rodents including, but not limited to, pocket gophers and/or California ground squirrels.

All planted trees should be provided with a temporary irrigation system that would be maintained over a minimum three-year establishment period. The irrigation system should be placed on electric timers so that trees are automatically watered during the dry months of the establishment period. At the end of a suitable establishment period, the irrigation system would be removed.

At the end of a five-year monitoring period, at least 75 percent of planted trees should be in good health. If the numbers of planted trees falls below a 75 percent survival rate, additional trees should be planted to bring the total number of planted trees up to 100 percent of the original number of replacement trees. Irrigation and follow-up monitoring should be established over an additional three year period after any replanting occurs. Any follow-up monitoring will be reported annually to Contra Costa County Department of Conservation and Development. This mitigation measure would reduce impacts to trees to a level considered less than significant."

Alternative 3: Reduced Project.

This alternative proposes a reduced size and a reduced development footprint compared to the Project. Only Sites B, B1, C and the southwest corner of Site A would be developed. There would be 92 multi-family units and a reduced amount of retail uses similar to the uses proposed by the Project. On Sites B, B1, C and the southwest corner of Site A, the grading and building footprint would be similar to that proposed by the Project.

The only change to site B under this alternative that would affect biological resources would be that the large valley oak tree (#21) would no longer be relocated to somewhere else onsite but would be removed entirely from the project site. This project alternative could impact trees, bats, and nesting passerine birds. Mitigation Measures 1, 2, and 3, as discussed in the January 10, 2014 Biological Resources Analysis, and as slightly modified below for tree impacts under this proposed alternative, would be necessary. These mitigation measures are stated below.

1.1 Mitigation Measure BIO-1 – Trees

Implementation of the following mitigation would ensure that impacts to Protected Trees are less than significant.

Impacts to Protected Trees will require a dripline encroachment permit from Contra Costa County. Pruning of off-site trees #66-73 preserved around Site C may be required to provide construction clearance. Pruning of off-site trees must be done with the property owner's permission. Removal of Protected Trees will require the mitigation stated below.

To offset impacts resulting from the removal of any Protected Tree that has a "high" or "moderate" rating for suitability for preservation (according to the Arborist's report), replacement trees that are California native species should be planted. Hence, valley oaks, coast live oaks, black walnuts, and/or California buckeye trees should be planted. Mitigation numbers will be based on a 2:1 replacement ratio for the trees removed. In addition, any tree that is injured during grading or construction (for example, some of its roots are accidentally cut) will be compensated for by planting replacement trees at a 1:1 ratio. Replacement trees should be California native species, and will be no larger than fifteen gallon size (to ensure that healthy, smaller specimens are planted). The trees' health should be monitored annually for five years by a qualified biologist or arborist. Annual monitoring reports should be submitted to the Contra Costa County Department of Conservation and Development.

A tree preservation and management plan should be prepared for the project and submitted to the County Department of Conservation and Development prior to the time a building permit is issued. Preparation of this plan and subsequent planting and monitoring should be a condition of project approval and should be tied to a security bond posted by the developer. A bond or suitable security prepared for the benefit of Contra Costa County or a cash deposit should be submitted to Contra Costa County by the applicant covering the costs of mitigation trees (and required irrigation) that are to be installed to compensate for impacts (Contra Costa County now typically only accepts a cash deposit). The amount to be held by Contra Costa County should be determined by a qualified landscape company or landscape architect. The cash or security bond to ensure the health of retained trees should be held for 24 months (according to article 816-6.1204). The cash or security bond to ensure compliance with the tree replacement program should be released upon receipt of a report from a qualified arborist or botanist that all planted trees at the end of the five-year monitoring period are healthy and established.

The planting plan should include a planting detail that specifies where all replacement trees would be planted. The methods used to plant trees should also be specified. Adequate measures should be established to minimize predation of planted trees by rodents including, but not limited to, pocket gophers and/or California ground squirrels.

All planted trees should be provided with a temporary irrigation system that would be maintained over a minimum three-year establishment period. The irrigation system should be placed on electric timers so that trees are automatically watered during the dry months of the establishment period. At the end of a suitable establishment period, the irrigation system would be removed.

At the end of a five-year monitoring period, at least 75 percent of planted trees should be in good health. If the numbers of planted trees falls below a 75 percent survival rate, additional trees should be planted to bring the total number of planted trees up to 100 percent of the original number of replacement trees. Irrigation and follow-up monitoring should be established over an additional three year period after any replanting occurs. Any follow-up monitoring will be reported annually to Contra Costa County Department of Conservation and Development.

This mitigation measure would reduce impacts to trees to a level considered less than significant.

1.2 Mitigation Measure BIO-2. Nesting Passerine Birds

A nesting survey should be conducted on the project site and within a zone of influence around the project site. The zone of influence includes those areas off the project site where birds could be disturbed by earth-moving vibrations or noise. Accordingly, the nesting survey(s) must cover the project site and an area around the project site boundary. If project site disturbance associated with the project would commence between March 1 and September 1st, the nesting surveys should be completed 15 days prior to commencing with the work. If common (that is, not special-status) birds, for example, California towhee, western scrub jay, or acorn woodpeckers are identified nesting on or adjacent to the project site, a non-disturbance buffer of 75 feet should be established or as otherwise prescribed by a qualified ornithologist. The buffer should be demarcated with painted orange lath or via the installation of orange construction fencing. Disturbance within the buffer should be postponed until it is determined by a qualified ornithologist that the young have fledged and have attained sufficient flight skills to leave the area or that the nesting cycle has otherwise completed.

Typically, most passerine birds in the region of the project site are expected to complete nesting by August 1st. However, many species can complete nesting by the end of June or in early to mid-July. Regardless, nesting buffers should be maintained until August 1st unless a qualified ornithologist determines that young have fledged and are independent of their nests at an earlier date. If buffers are removed prior to August 1st, the qualified biologist conducting the nesting surveys should prepare a report that provides details about the nesting outcome and the removal of buffers. This report should be submitted to the Contra Costa County Department of Conservation and Development prior to the time that nest protection buffers are removed if the date is before August 1st.

This mitigation measure would reduce impacts to nesting common bird species to a level considered less than significant.

1.3 Mitigation Measure BIO-3. Bats

In order to avoid impacts to roosting special-status bats, a biologist shall survey trees and buildings 15 days prior to commencing with any removal or demolition. All bat surveys shall be conducted by a biologist with known experience surveying for bats. If no special-status bats are found during the surveys, then there would be no further regard for these bat species.

If special-status bat species are found on the project site a determination shall be if there are young bats present. If young are found roosting in any tree or building, impacts to the tree or

building shall be avoided until the young have reached independence. A non-disturbance buffer fenced with orange construction fencing shall also be established around the maternity site. The size of the buffer zone shall be determined by a qualified bat biologist at the time of the surveys. If adults are found roosting in a tree or building on the project site but no maternal sites are found, then the adult bats can be flushed or a one-way eviction door can be placed over the tree cavity (or building access opening) prior to the time the tree or building in question would be removed or disturbed. No other mitigation compensation would be required.

This mitigation measure would reduce the project's impact to special-status bats to a level considered less than significant.

Alternative 4: General Plan Buildout. The project site would be developed to the maximum intensity allowed by the General Plan. The grading and hardscape footprints on Sites A, B, B1 and C would be similar to those of the Project. The main difference between this alternative and the proposed Project, biologically speaking, is that under this alternative the large valley oak tree (#21) would no longer be relocated to somewhere else onsite but would be removed entirely from the project site. This proposed alternative could impact Protected Trees, bats and nesting birds. Mitigation Measures 1, 2, and 3, as discussed above would be necessary for this proposed project alternative.

This concludes M&A's biological resource review of the proposed project alternatives. If you have any questions, please do not hesitate to contact me. Thank you.

Sincerely,

Sarah Lynch
Associate Biologist

MEMO

Date: **April 29, 2014**

To: **Michael Smith, Hall Equities Group**

From: **John Leffingwell**

Subject: **Alternative Analysis**
Saranap Village, Contra Costa County

The Hall Equities Group has proposed to redevelop four sites clustered around the intersection of Boulevard Wy. and Saranap Ave., in the Saranap district of Contra Costa County. HortScience, Inc. prepared an Arborist Report for the subject project, dated January 2014.

The Hall Equities Group asked that HortScience, Inc. provide estimates of the impacts to trees based on descriptions of four different alternatives. Following are brief descriptions of the primary impacts from the four project alternatives. In addition, Table 1 below and the attached spreadsheet (***Saranap Village Alternative Analysis***) summarize the primary impacts to trees (Removal, preservation or transplanting). Due to the preliminary nature of the plans, some impacts to trees, such as how much crown or root pruning would be required to rehabilitate buildings under Alternative 2 cannot be estimated (showing which individual trees will likely be.

Alternative 1 – No Project
In this alternative, all 73 trees assessed across the four sites would be preserved, including the 24 *Protected* trees as defined by Contra Costa County.

Alternative 2 – Rehab and Improved Landscape
In this alternative there will be no grading or building of new structures. Impacts to trees could vary from minor to significant, depending on the location, nature and level of rehabilitation work. Currently, no trees are anticipated to require removal, and all 73 trees would be preserved, including the 24 *Protected* trees.

Alternative 3 – Reduced Project
In this alternative, redevelopment will occur in Site B, B1 and C, but only the southwestern corner of Site A will be impacted. Alternative 3 would require the removal of 49 trees, including valley oak #21, which would not be transplanted. Twenty-four (24) trees can be preserved. Eighteen (18) *Protected* trees would be removed and six (6) could be preserved.

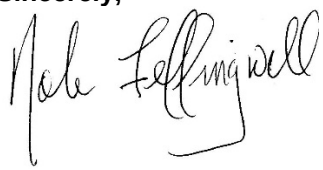
Alternative 4 – General Plan Build-Out
In this alternative, redevelopment will occur on a full scale and impacts will be as described in the January 2014 Arborist Report. Under Alternative 4, 64 trees would be removed and 9 trees preserved. Twenty-four (24) *Protected* trees would be removed, including valley oak #21, which would not be transplanted.

Table 1: Summary of Tree Impacts from Alternatives 1-4
Saranap Village, Contra Costa County

Primary Impacts	Alt. 1	Alt. 2	Alt. 3	Alt. 4
Remove (R)	0	0	49	63
Preserve (P)	73	73	24	9

Please contact me if you, the County or other consultants have any questions regarding my analysis.

Sincerely,



John Leffingwell
Board Certified Master Arborist WE-3966B
Registered Consulting Arborist #442

Attached: ***Saranap Village Alternative Analysis***

Alternative Analysis

Saranap Village
Contra Costa County, California
April 2014

TREE No.	Location	SPECIES	SIZE DIAMETER (in)	PROTECTED?	ALTERNATIVES 1	2	3	4
1	Site A	Blackwood acacia	10,7,5	No	P	P	R	R
2	Site A	Blackwood acacia	16	No	P	P	R	R
3	Site A	Blackwood acacia	7	No	P	P	R	R
4	Site A	Siberian elm	20	No	P	P	P	R
5	Site A	Sweetgum	20	No	P	P	P	R
6	Site A	Southern magnolia	8	No	P	P	P	R
7	Site A	Valley oak	7	*Protected*	P	P	P	R
8	Site A	Siberian elm	7,7	No	P	P	P	R
9	Site A	Siberian elm	6	No	P	P	P	R
10	Site A	Siberian elm	17,12	No	P	P	P	R
11	Site A	Sweetgum	6	No	P	P	P	R
12	Site A	Western catalpa	15	No	P	P	P	R
13	Site A	Coast live oak	7,7,5	*Protected*	P	P	P	R
14	Site A	Valley oak	5,5,5,5,5,5,3	*Protected*	P	P	P	R
15	Site A	Valley oak	5,5	*Protected*	P	P	P	R
16	Site A	Calif. black walnut	8,7,7,7	*Protected*	P	P	P	R
17	Site A	Crape myrtle	6,5,5	No	P	P	P	R
18	Site A	Purple-leaf plum	7	No	P	P	R	R
19	Site A	Xylosma	7,7	No	P	P	P	R
20	Site B	Southern magnolia	6	No	P	P	R	R
21	Site B	Valley oak	35	*Protected*	P	P	R	R
22	Site B	Coast live oak	13	*Protected*	P	P	R	R
23	Site B	Coast live oak	7	*Protected*	P	P	R	R
24	Site B	Coast live oak	6	No	P	P	R	R
25	Site B	Coast live oak	11,4	*Protected*	P	P	R	R
26	Site B	Carrob	12,7,3,3	No	P	P	R	R
27	Site B	Coast live oak	17	*Protected*	P	P	R	R

Alternative Analysis

Saranap Village
Contra Costa County, California
April 2014

TREE No.	Location	SPECIES	SIZE DIAMETER (in)	PROTECTED?	ALTERNATIVES 1	2	3	4
28	Site B	Coast live oak	8	*Protected*	P	P	R	R
29	Site B	Coast live oak	9	*Protected*	P	P	R	R
30	Site B	Coast live oak	6,6	*Protected*	P	P	R	R
31	Site B	Coast redwood	7	*Protected*	P	P	R	R
32	Site B	Coast redwood	7	*Protected*	P	P	R	R
33	Site B	Coast redwood	6	No	P	P	R	R
34	Site B	Valley oak	17,11	*Protected*	P	P	R	R
35	Site B	Coast redwood	6	No	P	P	R	R
36	Site B	Coast redwood	7	*Protected*	P	P	R	R
37	Site B	Coast redwood	9	*Protected*	P	P	R	R
38	Site B	Coast redwood	6	No	P	P	R	R
39	Site B	Coast redwood	18	*Protected*	P	P	R	R
40	Site B	Deodar cedar	14	No	P	P	R	R
41	Site B	Valley oak	22	*Protected*	P	P	R	R
42	Site B	Albizzia	6	No	P	P	R	R
43	Site B	Monterey pine	22	No	P	P	R	R
44	Site B	Valley oak	19	*Protected*	P	P	R	R
45	Site B	Monterey pine	21	No	P	P	R	R
46	Site B	Monterey pine	19	No	P	P	R	R
47	Site B	Monterey pine	24	No	P	P	R	R
48	Site B	Monterey pine	15	No	P	P	R	R
49	Site B	Mayten	10	No	P	P	R	R
50	Site B	European birch	14	No	P	P	R	R
51	Site C	Coast live oak	17	*Protected*	P	P	R	R
52	Site C	Calif. black walnut	12	*Protected*	P	P	R	R
53	Site B	Sweetgum	6	No	P	P	R	R
54	Site B	Sweetgum	6	No	P	P	R	R

Alternative Analysis

Saranap Village
Contra Costa County, California
April 2014

TREE No.	Location	SPECIES	SIZE DIAMETER (in)	PROTECTED?	ALTERNATIVES 1	2	3	4
55	Site B	Sweetgum	10	No	P	P	R	R
56	Site B	Sweetgum	13	No	P	P	R	R
57	Site B	Sweetgum	6	No	P	P	R	R
58	Site B	Sweetgum	8	No	P	P	R	R
59	Site B	Tulip poplar	10	No	P	P	R	R
60	Site C	Callery pear	9	No	P	P	R	R
61	Site C	Callery pear	8	No	P	P	R	R
62	Site C	Callery pear	7	No	P	P	R	R
63	Site B/Garden	Plum	10,8,7,5	No	P	P	R	R
64	Site B/Garden	Apple	13	No	P	P	R	R
65	Site B/Garden	Valley oak	18,17	*Protected*	P	P	P	P
66	OS B	Red ironbark	22	No	P	P	P	P
67	OS B	Red ironbark	20	No	P	P	P	P
68	OS B	Valley oak	6	No	P	P	P	P
69	OS C	Red ironbark	28	No	P	P	P	P
70	OS C	Red ironbark	17,16	No	P	P	P	P
71	OS C	Callery pear	7	No	P	P	P	P
72	OS C	Aleppo pine	25	No	P	P	P	P
73	OS C	Purple-leaf plum	7	No	P	P	P	P

MONK & ASSOCIATES
Environmental Consultants

June 4, 2014

Hall Equities Group
1855 Olympic Blvd., Suite 300
Walnut Creek, CA 94596

Attention: Mr. Michael L. Smith

RE: Modifications to Buffer Distances for Nesting Birds in CEQA Document
Saranap Village Project, Contra Costa County, California
APNs: 185-370-010, 012, 018, 033; 184-010-035; 046, 184-450-025

Dear Mr. Smith:

Monk & Associates, Inc. (M&A) is presenting modified nesting bird buffer language for you to present to the County for their consideration for incorporation into the CEQA Biology section for the above referenced project. The nesting buffer language presented below has been presented by M&A in many CEQA biology documents over the years and has always been well received by the resource agencies (the California Department of Fish and Wildlife and the U.S. Fish and Wildlife Service), and the commenting public.

A nesting buffer that is established to protect an active bird nest is a performance standard that ensures that activities that are incidental to the nesting birds (e.g., implementation of a development project) do not result in "take" of the nesting birds. Take would occur if any incidental activity resulted in parental nest abandonment or nest inattentiveness that caused unhatched eggs or nestlings to die. M&A's earlier report embodied standard nesting buffers for passerine birds (songbirds) of 75 feet and 300 feet for raptors (birds of prey). These nesting buffers were to be established upon discovery of any active nest and would be maintained through the nesting season until and unless otherwise modified by a qualified ornithologist. The size of the prescribed nest protection buffers are applicable to birds that could be found in the country or in urban settings. They are "standard buffers" that provide standard protections and are routinely accepted by the California Department of Fish and Wildlife. These standard buffers do not take into account that the size of protection buffers can be modified by qualified ornithologist that knows and understands avian behavior, and that can prescribe an effective nesting buffer that will protect the nesting birds from harm/take (the performance standard).

Some of the parameters that influence the size of effective nest protection buffers besides acclimation to high levels of human activity include: 1) physical sight lines between active nests and disturbance (e.g., a nest that occurs on the other side of a building is not likely to be disturbed by activities on the opposite side of the building); 2) the stage of the nesting cycle (i.e., birds laying eggs are far more prone to nest abandonment than birds feeding advanced age nestlings); and 3) the elevations of nests relative to the disturbance (i.e., construction disturbance

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above the active nest site elevation requires a larger protection buffer), etc. This information is used by ornithologists to establish effective nest protection buffers.

Since the Proposed Project is a redevelopment project that will occur in an already developed densely urbanized setting, it is expected that any birds of prey (raptors) and songbirds (passerines) that nest on or near the project site would be common species that are acclimated to high levels of noise and disturbance associated with urban living. In consideration that the project site is in a dense urban setting, raptors or passerines that choose to nest in the existing parking lots/apartment complex areas are expected to be tolerant of smaller non-disturbance buffers than the prescribed standard buffers. Thus, if during preconstruction nesting surveys a nesting passerine raptor or passerine is discovered nesting on or within a zone of influence of the project site, provided the qualified ornithologist ascertains ambient disturbance levels, considers proposed developer disturbance, and monitors the nesting bird's behavior, the buffer can be reduced from the standard buffer recommendations.

Without a qualified ornithologist setting the buffer sizes necessary to protect nesting birds, developers must use standard buffers and must maintain those buffers through the formal nesting season established by the Department of Fish and Wildlife, or from February 1st through August 31st. This will protect nesting birds from take even without ornithologist intervention. However, provided a qualified ornithologist establishes nest protection buffers, M&A believes that the size of the buffer and the duration that buffers are maintained can be modified from the standard recommendations.

M&A is requesting that Contra Costa County review and incorporate our revised mitigation measure Mitigation BIO-1 below. This mitigation measure fully addresses Fish and Game Codes that protect nesting birds and the Migratory Bird Treaty Act, which protects all migratory birds. It provides a performance standard that requires the establishment of protective nesting bird buffers and ensures that nest protection buffers will protect nesting birds from harm/take.

Mitigation Measure BIO-1: Pre-construction/Pre-disturbance Nesting Surveys. For any project construction related activities that will commence after a period of inactivity during the nesting season, which is between February 1 and August 31, the project applicant shall retain a qualified ornithologist to conduct pre-construction nesting bird surveys to ensure that project activities do not result in take of nesting birds. Surveys shall be conducted no more than ten days prior to the initiation of project activities. The nesting survey shall be conducted on the project site and within a zone of influence around the project site. The zone of influence includes those areas off the project site where nesting birds could be disturbed by earth-moving vibrations, construction related noise and/or activities. If active nests are discovered, action must be taken sufficient to meet a performance standard of preventing take of adult birds, their active nests, eggs or nestlings. The ability to meet this performance standard shall be judged by the qualified ornithologist in light of the nesting avian species' sensitivity to disturbance (which can vary among species); the level of noise or construction disturbance; line of sight between the nest and disturbance; ambient noise levels; and consideration of other topographical or artificial barriers.

If common (that is, not special-status) birds, for example, California towhee, western scrub jay, or acorn woodpeckers are identified nesting on or adjacent to the project site, a standard non-disturbance buffer of 75 feet shall be established. This nest protection buffer may be modified by a qualified ornithologist that analyzes the species, nest setting, location of the nest in the landscape, and that monitors the nesting bird's response to disturbance. If raptors (birds of prey) are found nesting on or adjacent to the project site, a non-disturbance buffer of 300 feet shall be established. This nest protection buffer may be modified by a qualified ornithologist that analyzes the nesting birds setting, location in the landscape, and that monitors the nesting bird's response to disturbance. Any modified nesting buffer shall be adequate to protect the nesting birds from take/harm caused by the proposed project. Nesting buffers shall be demarcated with painted orange lath or via the installation of orange construction fencing. Disturbance within the buffer shall be postponed until the end of the nesting season (August 31st) or until it is determined by a qualified ornithologist that the young have fledged and have attained sufficient flight skills to leave the area or that the nesting cycle has otherwise completed.

At the conclusion of any nesting survey, the ornithologist shall submit a report to the Contra Costa County Department of Conservation and Development Department documenting the results of the nesting bird survey and the measures taken to protect nesting birds. A separate report shall be submitted to the County prior to the time that any nest protection buffers are removed if the date is before August 1st.

This mitigation measure would reduce impacts to nesting common passerine bird species and raptors to a level less than significant pursuant to the CEQA.

Please do not hesitate to contact Geoff Monk or me if you have any questions.

Sincerely,

Sarah Lynch
Associate Biologist

APPENDIX D

Greenhouse Gas Technical Reports

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Hall Saranap Greenhouse Gas Technical Report

Boulevard Way & Saranap Avenue
Walnut Creek, California

Prepared for:
Hall Equities Group
Walnut Creek, California

Prepared by:
ENVIRON International Corporation
San Francisco, California

Date:
August 26, 2014

Project Number:
03-34227A

ENVIRON

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List of Appendices

Appendix A: CalEEMod Operational Output Files

Acronyms and Abbreviations

ARB	Air Resources Board
BAAQMD	Bay Area Air Quality Management District
CalEEMod	California Emissions Estimator Model
CAPCOA	California Air Pollution Control Officers Association
CCAR	California Climate Action Registry
CEQA	California Environmental Quality Act
CFR	Code of Federal Regulations
CH_4	Methane
CO_2	Carbon Dioxide
CO_2e	Carbon Dioxide Equivalent
ENVIRON	ENVIRON International Corporation
EMFAC	California Air Resource's Board Emissions Factor Model
HP	Horsepower
GHG	Greenhouse Gas
MT	Metric Ton
N_2O	Nitrous Oxide
NG	Natural Gas
USEPA	U. S. Environmental Protection Agency

Units

Btu	British Thermal Unit	m^3/kg-day	Milligrams per kilogram per day
g	Gram	mi	Mile
gal	Gallon	MMBtu	One million Btu
hp	Horsepower	MT	Metric tonnes
hr	Hour	TPY	Tons per year
kg	Kilogram	Yr	Year
kW	Kilowatt		

1 Introduction

At the request of the Hall Equities Group (Hall), ENVIRON International Corporation (ENVIRON) has prepared a technical report evaluating greenhouse gas (GHG) emissions associated with the proposed construction and operation of the mixed-use Saranap Village development located at Boulevard Way and Saranap Avenue in Walnut Creek, California ("Project"). ENVIRON followed California Environmental Quality Act (CEQA) Guidelines released by the Bay Area Air Quality Management District (BAAQMD or District) in May 2012 (BAAQMD 2012). The May 2012 CEQA Air Quality Guidelines do not prescribe specific significance thresholds. In this assessment, as a conservative measure, ENVIRON has compared the results to the prior thresholds presented in the May 2010 and 2011 Guidelines, referred to herein as the 2011 CEQA significance thresholds (BAAQMD 2011). On August 13, 2013, the California First District Court of Appeal reinstated the significance thresholds, including numeric GHG thresholds of significance, indicating that they were based upon substantial evidence.[1] The analyses described in this report were performed to support the Project's CEQA documentation.

1.1 Project Understanding

The proposed Project would be located around the intersection of Boulevard Way and Saranap Avenue, extending along the north and south sides of Boulevard Way and along the east side of Saranap Avenue. It would lie approximately one quarter of a mile west of the Walnut Creek city limits, and just south of Highway 24. Surrounding existing uses generally include a mixture of multifamily, commercial, retail, services, offices, auto repair, mini-mart, utility operations/storage yard, self-storage uses, funeral home, and other commercial uses.

The project site is comprised of four areas, clustered around the intersection of Boulevard Way and Saranap Avenue, totaling approximately 4.6 acres, and includes the public rights of way along the project frontages. Of that amount, approximately 3.5 acres is occupied by Sites A, B, B1, and C. Offsite and onsite street improvements would extend east along Boulevard Way to its intersection with Flora Avenue. The total area that would be disturbed by mass grading or trenching, including the offsite improvement areas, is 5.28 acres.

The proposed Project will demolish the existing buildings and develop mixed-use buildings and associated parking structures and lots. The Project will predominantly be used for residential and retail land uses, but also includes a restaurant and coffee shop as well as pools for health club members and building occupants. **Table 1** shows the Proposed Land Uses by Parcel for the Project.

1.2 Objective and Methodology

The BAAQMD 2011 CEQA Guidelines contain recommended thresholds for GHG emissions from an individual project undergoing environmental review pursuant to CEQA. Construction and operational GHGs are included in this technical report.

[1] The Court of Appeal's decision was appealed to the California Supreme Court, which granted limited review not related to the GHG thresholds discussed in this report

The evaluation compares Project-related GHG emissions to BAAQMD's 2011 CEQA thresholds of significance for operational GHG emissions: 1,100 MT of CO_2e/yr or 4.6 MT CO_2e/service population/yr. Stationary sources are considered separately, with a threshold of 10,000 MT of CO_2e/yr.

1.3 Report Organization

This technical report is divided into four sections as follows:

Section 1.0 – Introduction: describes the purpose and scope of this technical report, the objectives and methodology used in this technical report and outlines the report organization.

Section 2.0 – Emission Estimates: describes the methods used to estimate the emissions of GHGs from the Project;

Section 3.0 – Results for Project Analysis: presents the average daily and total annual GHG emissions and compares them to BAAQMD significance thresholds. Section 3 also includes a sub-section on Mitigation.

Section 4.0 – References: includes a listing of all references cited in this report.

2 Emission Estimates

As a conservative measure, this analysis evaluates Project impacts only, and does not subtract out existing uses. Information regarding emissions of existing uses was not readily available, thus this analysis does not net out existing emissions from Project emissions. Accordingly, this analysis takes a conservative approach of assuming that baseline emissions at the Project site are zero and thus there are zero emissions per existing service population. Furthermore, this analysis includes the Project service population in line with the Project emissions to analyze results. Actual net impacts from Project may be much lower than listed as existing buildings are old and not nearly as efficient as new buildings. The methodology used to calculate emissions from the proposed Project is presented and summarized in each of the following sub-sections.

2.1 Calculation Methodologies for Construction Emissions

Consistent with the approach for estimating operational GHG emissions, the total GHG emissions from construction activities[2] were estimated for each building using the California Emissions Estimator Model (CalEEMod™).[3] Emissions from on-site construction equipment were estimated using information on equipment inventory, equipment specifications and construction phase scheduling, generated using CalEEMod™ and refined and approved by Hall Equity Group. **Table 2** shows the proposed Construction Schedule for the Project (April 2015 to November 2016) based on phasing provided by the client. The CalEEMod™ construction equipment emissions were calculated as the product of the equipment emission factor, load factor, horsepower, and period of usage. Construction emission calculation methodologies were consistent with the BAAQMD CEQA Guidelines (BAAQMD 2012).

2.2 Calculation Methodologies for Operational Emissions

Sources of GHG emissions at the proposed Project include area sources, natural gas-fired emergency generators, Project-generated traffic, and other indirect emissions such as emissions associated with electricity generation and transportation, water and wastewater treatment, transportation, and solid waste disposal. The emissions calculation methodologies for each of these sources are discussed below.

2.2.1 Area Sources

ENVIRON assumes that all direct area source emissions are based on CalEEMod defaults for the building type (see **Table 1** for Land Use Types). ENVIRON used CalEEMod™ defaults based on building square footage and operational year to calculate equipment activity and emissions. Hall Saranap area source GHG emissions are dominated by landscaping equipment.

2.2.2 Emergency Generators

The proposed Project includes three new natural-gas fired emergency generators, one next to each proposed Site, as shown in **Table 3**. GHG emissions were calculated according to the AP-

[2] CalEEMod™ GHG construction emissions include construction equipment activity as well as non-mobile emissions such as those from architectural coatings.
[3] CalEEMod™ 2013.2.2. http://caleemod.com/

42 emissions standards for each engine (80 to 100kW in size) using the methodology from **Table 3**.

2.2.3 Project Traffic

Project-generated traffic that contributes to the operational GHG emissions includes commercial vehicles as well as employee trips. **Table 4** summarizes Proposed Daily Trip Generation, Average Trip Length, and Daily/Annual VMT, as estimated by Omni-Means CalEEMod, and Economic and Planning Systems, Inc. for the Project traffic impact analysis. Note the Project Trips do not include a subtraction of Existing Trips. This is in line with the Project Impact analysis for all sources, and Project service population.

The CalEEMod™ default trip lengths were used to model trips to and from home for the residents of the proposed project. The commercial trip lengths for consumers of the proposed project were adjusted based on analysis provided by Economic and Planning Systems, Inc.[4]

The CalEEMod™ carbon dioxide (CO_2), methane (CH_4), and nitrous oxide (N_2O) emission factors, based on the county-wide annual average emission factors obtained from EMFAC2011 for calendar year 2016, were used to estimate traffic emissions. Global Warming Potentials were obtained from California Climate Action Registry (CCAR 2008). ENVIRON also evaluated 2020 and 2025 Mobile emissions using emission factor adjustments to account for CARB's Advanced Clean Cars Program.[5]

2.2.4 Indirect Sources

In addition, other indirect emissions such as emissions associated with electricity generation and transportation, water and wastewater treatment, transportation, and solid waste disposal will contribute to GHG emissions. ENVIRON used CalEEMod™ defaults based on building square footage and operational year to calculate indirect GHG emissions. Energy demand was adjusted per the California Energy Commission's 2013 standards for the Building Energy Efficiency Program (Title 24).[6] Default CalEEMod™ energy usage was reduced by 25% for residential land use and 30% for non-residential land use. Project electricity emission factors were based on a three-year rolling average of most recently available third-party verified Pacific Gas & Electric (PG&E) emission factors (2009-2011), as reported to The Climate Registry. Projected Electricity Emission Factors for the year-by-year analysis were based on PG&E projections using the CPUC GHG Calculator.[7] In addition, ENVIRON evaluated projected

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[4] Data received from Ashleigh Kanat, Economic and Planning Systems, Inc. March 12, 2014.
[5] California Air Resources Board, Advanced Clean Cars Summary Available online: http://www.arb.ca.gov/msprog/clean_cars/acc%20summary-final.pdf. Accessed March 2014.
[6] California Energy Commission, Building Energy Efficiency Program. Available online: http://www.energy.ca.gov/title24/. Accessed March 2014.
[7] PG&E. Greenhouse Gas Emission Factors: Guidance for PG&E Customers. April 2013. Available online: http://www.pge.com/includes/docs/pdfs/shared/environment/calculator/pge_ghg_emission_factor_info_sheet.pdf. Accessed March 2014.

electricity emissions for 2020 and 2025 based on California Public Utility Commission's increased Renewable Portfolio Standards (RPS) of 33%.[8]

[8] California Public Utilities Commission. California Renewable Portfolio Standard (RPS). Available online: http://www.cpuc.ca.gov/PUC/energy/Renewables. Accessed March 2014.

3 Results for Project Analysis

In this Section, the Project results are compared to the BAAQMD thresholds.

3.1 Construction GHGs

Table 5 presents the total GHG emissions associated with Project construction. The total Construction GHG emissions are 1,756 MT CO_2e. There are no CEQA thresholds for comparison for construction emissions.

3.2 Operational GHGs

Table 6a presents the total GHG emissions associated with Project operation starting in 2016, and incorporating RPS standards to estimate 2020 and 2025 GHG emissions. As discussed previously, this analysis does not net out existing emissions from Project emissions. Instead, this analysis takes a conservative approach of assuming that baseline emissions at the Project site are zero and thus there are zero emissions per existing service population. Furthermore, this analysis includes the Project service population in line with the Project emissions to analyze results.

As discussed previously, the 2016 electricity emissions are conservatively based on the latest (2009-2011) electricity emission factors available from PG&E. The GHG emissions from the Project-generated traffic, energy (approximately 19% renewable energy as published by California Public Utilities Commission),[9] waste, and water result in emissions of 3,740 MT CO_2e/yr or 5.9 MT CO_2e/service population (SP)/yr. Both metrics exceed the BAAQMD 2011 CEQA significance thresholds of 1,100 MT CO_2e/yr and 4.6 MT CO_2e/SP/yr. As shown in **Table 6a**, the Saranap Project may require up to 816 MT CO_2e/year of additional GHG reductions to meet SP threshold assuming Project build-out in 2016.

Incorporating future emission standards has the potential to reduce project GHG emissions due to a greener energy supply and more efficient automobiles. **Table 6a** shows that, over time, Saranap will still be over the SP threshold for Project Operational GHG emissions, but the overage will decrease with time. The SP threshold is exceeded by 816, 575, and 351 MT CO_2e/yr in 2016, 2020 and 2025, respectively. **Table 6b** summarizes the projected 2016 to 2019 Project emissions, incorporating increased renewable energy as estimated by PG&E using the CPUC GHG calculator.[10,11] With the use of renewable resources in energy production the proposed project will exceed BAAQMD 2011 CEQA significance thresholds in 2016 by 650 MT CO_2e/yr. The SP threshold is exceeded by 615, 581, and 546 MT CO_2e/yr in 2017, 2018, and 2019, respectively. The GHG emissions from the project will continue to decrease over the future years.

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[9] California Renewables Portfolio Standard (RPS). Available online at: http://www.cpuc.ca.gov/PUC/energy/Renewables

[10] E3, GHG Calculator version 3c, worksheet tab "CO2 Allocations", cells AH35-AH44. Available online: www.ethree.com/documents/GHG%20update/GHG%20Calculator%20version%203c_Oct2010.zip. Accessed March 2014.

[11] PG&E. Greenhouse Gas Emission Factors: Guidance for PG&E Customers. April 2013. Available online at: http://www.pge.com/includes/docs/pdfs/shared/environment/calculator/pge_ghg_emission_factor_info_sheet.pdf

Table 6a shows the total stationary source GHG emissions are 14.7 MT CO_2e/year which are below the BAAQMD CEQA threshold of 10,000 MT per year of CO_2e for stationary sources

3.3 Potential Mitigation Measures

The Project should be required to mitigate its emissions during the initial years of operation to achieve a performance standard of 4.6 MT CO_2e/year/ service population. Several potential mitigation measures for Project-generated traffic GHG emissions were identified from a review of the California Air Pollution Control Officers Association (CAPCOA) guidance for GHG mitigation measures (CAPCOA 2010). These potential mitigation measures are summarized in **Table 7**. As noted in this table, the traffic mitigation measures fall into the several categories: neighborhood/site enhancements; parking policy/pricing; commute trip reduction programs; and transit system improvements.

A second potential approach is the installation of onsite solar photovoltaic systems. To meet the projected shortfall, we project that the amounts of solar energy ranging from 1.2 MW to 2.3 MW, as reflected in **Table 8**, would be required.[12] While this requires an initial capital investment, we understand that these systems typically have a payback period of approximately 10 years. The GHG reductions however, continue throughout the roughly 30 year lifespan of the system.

Another potential option would be the purchase of GHG emission offsets. The California Air Resources Board (ARB) holds quarterly allowance auctions as part of its Cap-and-Trade Program. The next ARB auction reserve price is $11.34 per MT CO_2e, and in previous auctions the final price has been very close to the reserve price.[13] Based on this pricing and the maximum required additional GHG reductions shown in **Table 6a**, the total offset cost (covering 2016 through 2019) would be approximately $37,000 or $9,250/year. Note, if project buildout is delayed until 2017, this may reduce the cost of energy offsets. Additionally, there are other types of GHG emissions credits available which cannot be used for Cap-and-Trade compliance; however, are still recognized to be of high quality. These credits typically cost in the range of $2-9 per MT. This translates to a total offset cost of approximately $6,500 to $29,400.

The Project should be required to purchase offsets sufficient to reduce impacts to 4.6 MT CO_2e/year/service population during the initial years, or incorporate other measures to achieve this performance standard, all as demonstrated annually to the satisfaction of the County.[14]

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[12] Our preliminary calculations resulted in a projection that 2.5 MW would be required. Due to a clerical decimal error, this was mistakenly reported as 250 MW in an earlier version of this report. We have since refined the projection, based upon the sources listed in Table 8.

[13] ARB Auction Notice for the California Cap-and-Trade Program Greenhouse Gas Allowance Auction on May 16, 2014. Available online at: http://www.arb.ca.gov/cc/capandtrade/auction/may-2014/auction_notice.pdf.

[14] Note residential service population based on the site's existing Multiple-Family Residential-Medium Density (MM) designation, following Contra Costa County General Plan Population Density Standards. Commercial service population is based on EIA defaults.

4 References

BAAQMD. 2011. California Environmental Quality Act Air Quality Guidelines. May. Available online at: http://www.baaqmd.gov/~/media/Files/Planning%20and%20Research/CEQA/BAAQMD%20CEQA%20Guidelines_May%202011_5_3_11.ashx. Accessed June 2013.

BAAQMD. 2012. Recommended Methods for Screening and Modeling Local Risks and Hazards. May.

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California Public Utilities Commission. 2014. California Renewable Portfolio Standard (RPS). Available online: http://www.cpuc.ca.gov/PUC/energy/Renewables. Accessed March 2014.

E3. 2010. GHG Calculator version 3c, worksheet tab "CO2 Allocations", cells AH35-AH44. Available online: www.ethree.com/documents/GHG%20update/GHG%20Calculator%20version%203c_Oct2010.zip. October.

Pacific Gas & Electric. 2013. PG&E Greenhouse Gas Emission Factors. Available online at: http://www.pge.com/includes/docs/pdfs/shared/environment/calculator/pge_ghg_emission_factor_info_sheet.pdf. April.

Tables

Table 1
Conceptual Layout of Proposed Maximum Development
Hall Saranap
Walnut Creek, California

Parcel	Proposed Land Use	CalEEMod Land Use Type and Subtype	Proposed Size	Unit
A	Residential - Apartments	Apartments - Mid Rise	143	dwelling units
	Retail - Grocery Store	Supermarket	15,236	square feet
	Bank	Strip Mall[1]	690	square feet
	Swimming Pool	Recreational Swimming Pool	1,676	square feet
	Fitness Center	Health Club	14,173	square feet
	Parking garage	Enclosed Parking with Elevator	391	parking spaces
B	Residential - Apartments	Apartments - Mid Rise	62	dwelling units
	Swimming Pool	Recreational Swimming Pool	711	square feet
	Bar Lounge	High Turnover (Sit Down Restaurant)	2,222	square feet
	Restaurant	High Turnover (Sit Down Restaurant)	5,589	square feet
	Parking garage	Enclosed Parking with Elevator	242	parking spaces[2]
B1	Residential - Apartments	Apartments - Mid Rise	6	dwelling units
	Coffee Shop	Fast Food w/o Drive Through	2,135	square feet
	Retail	Strip Mall[1]	3,496	square feet
	Parking garage	Enclosed Parking with Elevator	13	parking spaces
C	Residential - Apartments	Apartments - Mid Rise	24	dwelling units
	Parking garage	Enclosed Parking with Elevator	48	parking spaces
O	Onsite Surface Streets	Parking lot[1]	1.11	acres
	Offsite Surface Streets	Parking lot[1]	0.69	acres

Notes:

[1]This is the best CalEEMod land-use type fit.

[2]The Project proposes a minimum of 225 parking spaces in garage B, up to the maximum number needed to meet standard County parking requirements. The applicant has indicated that preliminary plans have identified locations for 17 additional parking spots within the Building B footprint. This report accordingly studies the potential for 242 parking spaces.

Table 2
Saranap Construction Schedule and Equipment List
Hall Saranap
Walnut Creek, California

Demolition Schedule				
Phase	**Start Date**	**End Date**	**Number of Days per Week**	**Total Construction Days**
Demolition	Site A - April 2015	Apr-15	5	15
	Site B - May 2015	May-15	5	15
	Site C - June 2015	Jul-15	5	10

Demolition Quantities	
Site	**Existing Building Area (Square Feet)**
A	30,726
B	12,918
C	5,325

Construction Schedule				
Phase	**Start Date**	**End Date**	**Number of Days per Week**	**Total Construction Days**
Site Preparation	N/A	N/A	5	N/A
Grading	Site A - April 2015	May-15	5	10
	Site B - May 2015	May-15	5	10
	Site C - June 2015	Jun-15	5	3
Building Construction	Site A - April 2015	Nov-16	5	380
	Site B - May 2015	Apr-16	5	220
	Site C - July 2015	Apr-16	5	180
Off Site Street Improvements	Apr-15	Jun-15	5	65
Architectural Coating	Site A - October 2015	Nov-16	5	271
	Site B - November 2015	Sep-16	5	221
	Site C - December 2015	Apr-16	5	85

Equipment List					
Phase	**Equipment**	**Quantity**	**Usage Hours per Day**	**Horsepower**	**Load Factor**
Demolition	Concrete/Industrial Saws	1	8	81	0.73
	Excavators	1	8	268	0.85
	Rubber Tired Dozers	2	8	255	0.40
Grading	Excavators	1	8	268	0.85
	Rubber Tired Dozers	1	8	255	0.40
	Water Truck	1	8	300	0.35
	Tractors/Loaders/Backhoes	1	8	265	0.70
	Skiploader	1	8	95	0.50
Building Construction	Cranes	1	2	226	0.29
	Forklifts	1	8	89	0.20
	Tractors/Loaders/Backhoes	1	7	265	0.70
	Skiploader	2	7	95	0.50
	Welders	1	8	46	0.45
Off Site Street Improvements	Pavers	1	8	125	0.42
	Paving Equipment	2	8	130	0.36
	Rollers	2	8	80	0.38
	Skiploader	1	8	95	0.50
Architectural Coating	Air Compressors	1	6	78	0.48

Table 2
Saranap Construction Schedule and Equipment List
Hall Saranap
Walnut Creek, California
(continued)

Soil Transported for Construction			
Soil Quantity for Construction	Imported	[cubic yards/day]	NA
	Exported	[cubic yards/day]	2,500

Hauling Trips						
Phase Name	**Worker Trip Number (trips/day)**	**Vendor Trip Number (trips/day)**	**Hauling Trip Number (total trips)**	**Worker Trip Length (miles/trip)**	**Vendor Trip Length (miles/trip)**	**Hauling Trip Length (miles/trip)**
Demolition	15	0	60	12.4	7.3	20
Site Preparation	18	0	10	12.4	7.3	20
Grading	20	0	5400	12.4	7.3	20
Building Construction	324	48	1400	12.4	7.3	20
Off Site Street Improvements	15	0	35	12.4	7.3	20
Architectural Coating	65	0	50	12.4	7.3	20

Notes:
This equipment list is based on CalEEMod default values.

Abbreviations:
CalEEMod: CALifornia Emissions Estimator MODel

References:
CalEEMod Version 2013.2.2 Available Online at: http://www caleemod.com

Table 3
Summary of Project Greenhouse Gas Emissions - Emergency Engines
Hall Saranap
Walnut Creek, California

Generators	Size (kW)	Fuel Type	Operation[1] (hrs/yr)	Maximum Fuel Flow[2] (m^3/hr)	Emission Factors[3] (lb/MMBtu)	Emission Rate (tpy)
					CO_2e[4]	CO_2e
Site A	100	NG	50	39.9	136	4.90
Site B/B1	100	NG	50	39.9	136	4.90
Site C	80	NG	50	39.9	136	4.90
					Total	**14.7**

Notes:

1. Non-emergency operation of generators conservatively assumed to be 50 hours per year, the maximum allowable.
2. The maximum fuel flow was determined by product specification sheets for 100 KW natural gas generators. The maximum value was chosen from five randomly chosen specification sheets. The values for the 80 KW engine at Site C are conservatively assumed to be equal to the 100 KW engines. Natural gas is assumed to have an energy density of 1026 Btu/ft^3.
3. AP-42 emission factors for 4-stroke natural gas-fired reciprocating engines are used (maximum of lean-burn and rich-burn), available at http://www.epa.gov/ttnchie1/ap42/ch03/final/c03s02.pdf
4. The CO_2e emission factor includes the carbon dixide emission factor plus the methane emission factor scaled by a global warming potential of 21 from Table A-1 in 40 CFR Part 98 (available at http://www.law.cornell.edu/cfr/text/40/part-98/subpart-A/appendix-TableA-1) in accordance with the CARB GHG Reporting Rule, 2012.

Abbreviations:

AP-42: Air Pollution Emission Factors
CARB: California Air Resources Board
CO_2e: carbon dioxide equivalents
g: gram
GHG: greenhouse gas
HP: horsepower
hr: hour
kW: kilowatt
NG: natural gas
tpy: tons per year
USEPA: U. S. Environmental Protection Agency

References:

AP-42, 1995. Compilation of Air Pollutant Emission Factors, Fifth edition. http://www.epa.gov/ttnchie1/ap42/
CARB. 2004. *Policy: CARB Emission Factors for CI Diesel Engines - Percent HC in Relation to NMHC + NOx.*
CARB. 2012. Regulation for the Mandatory Reporting of Greenhouse Gas Emissions. http://www.arb.ca.gov/cc/reporting/ghg-rep/regulation/mrr-regulation.htm

Table 4
Proposed Project Daily Trip Generation
Hall Saranap
Walnut Creek, California

Land Use	Land Use	Average Daily Trip Rate	Average Trip Length (miles)[2]	Daily VMT[1]	Annual VMT	% of Total VMT
Apartments Mid Rise	Parcel A	951	6.13	5,833	2,123,208	37%
Apartments Mid Rise	Parcel B	412	6.13	2,529	920,552	16%
Apartments Mid Rise	Parcel C	160	6.13	979	356,343	6%
Apartments Mid Rise	Parcel B1	40	6.13	245	89,086	2%
Enclosed Parking with Elevator		0	--	0	0	0%
Fast Food Restaurant w/o Drive Thru	Coffee Shop	1,065	1.59	1,699	618,424	11%
Health Club	Fitness Center	397	2.40	954	347,193	6%
High Turnover (Sit Down Restaurant)	Bar/Lounge	162	1.38	224	81,666	1%
High Turnover (Sit Down Restaurant)	Restaurant	408	1.38	565	205,636	4%
Parking Lot		0	--	0	0	0%
Recreational Swimming Pool		0	--	0	0	0%
Recreational Swimming Pool		0	--	0	0	0%
Strip Mall	Retail Shops	513	2.13	1,096	398,779	7%
Strip Mall	Bank	101	2.13	216	78,616	1%
Supermarket	Grocery Store	1,086	1.29	1,406	511,867	9%
Total		**5,298**		**15,746**	**5,731,370**	100%

Notes:

[1] The VMT data in this table is based on the following percentage breakdown by trip type for residential and commercial land uses. Percentage of trips varies for commercial land uses by land use type.

Home -- work: Default 12.4 miles (26% of trips)
Home -- shop: Default 4.3 miles (29% of trips)
Home -- other: Default 5.4 miles (45% of trips)
Commercial -- customer: 1.38 miles (Average 65% of trips), from Economic and Planning Systems, Inc.
Commercial -- worker: Default 9.5 miles (Average 16% of trips)
Commercial -- non-worker: Default 7.3 miles (19% of trips)

[2] Average trip length is a weighted average determined by land use type, and trip type

Average Primary Trip Length i =

(H-W miles x H-W Trip %) + (H-S miles x H-S Trip %) + (H-O miles x H-O Trip %)

Where

H-Wmiles = Home to Work trip length
H-Wtrip% = % of the total primary trips that are Home to Work trips
H-Smiles = Home to Shopping trip length
H-Strip% = % of the total primary trips that are Home to Shopping trips
H-Omiles = Home to Other trip length
H-Otrip% = % of the total primary trips that are Home to Other trips
i = land use type.

Average Overall Trip Length i =

(Link % primary x TripLengthAvg Primary) + (Link % Diverted x 0.25 x TripLengthAvg Primary) + (Link % Passby x 0.1mile)

Where

Link % = percentage of link types
Trip Length AvgPrimary = Average primary trip length for each trip type
i = land use type

Sources:

CalEEMod Version 2013.2.2 Appendix A Available Online at: http://www.caleemod.com
Economic and Planning Systems, Inc. March 2014.

ITE. 2008. Trip Generation 8th Edition. In September 2012, ITE published the 9th edition that updated some of the trip rates from the 8th edition. The updates are not yet incorporated into CalEEMod but the user has the ability to override the trip rate default.

Table 5
Summary of Project Construction Greenhouse Gas Emissions
Hall Saranap
Walnut Creek, California

Pollutant	Off-Road Mobile Emissions	Paving and Architectural Coatings Emissions	Onroad Mobile Emissions	Total Emissions[1]	Construction Threshold	Above Threshold?
	[MT]	[MT]	[MT]	[MT]	[MT]	
2015	441	0	573	1015	None	No
2016	279	0	462	741	None	No
Total GHG (CO_2e)	721	0	1035	1,756	None	No

Notes:
1. All emissions estimated using methodologies consistent with CalEEMod version 2013.2.2.

Abbreviations:
CO_2e: carbon dioxide equivalents
GHG: greenhouse gas
MT: metric tonnes

Sources:
CalEEMod Version 2013.2.2 Available Online at: http://www.caleemod.com

Table 6a
Summary of Project Operational Greenhouse Gas Emissions: All Sources
(Historical Electricity Emission Factors)
Hall Saranap
Walnut Creek, California

Source[1]	Units	2016 GHG Emissions (Project)	2020 GHG Emissions	2025 GHG Emissions
Non-Stationary Source GHG Emissions				
Area[2]	[MT CO_2e/yr]	44	44	44
Energy[2,6]		959	793	793
Mobile[2,7]		2,490	2,416	2,191
Waste[2]		187	187	187
Water[2]		60	60	60
Project Total		**3,740**	**3,499**	**3,275**
Service Population[3]	--	636	636	636
Project Total	**[MT CO_2e/SP/yr]**	**5.9**	**5.5**	**5.2**
BAAQMD Threshold[4]	**[MT CO_2e/SP/yr]**	**4.6**	**4.6**	**4.6**
Exceeds Threshold?	--	**Yes**	**Yes**	**Yes**
Additional GHG Reductions Required	**[MT CO_2e/yr]**	**816**	**575**	**351**
Emergency Generators Emissions				
Generator Testing[5]	[MT CO_2e/yr]	14.7	14.7	14.7
BAAQMD Threshold[4]	**[MT CO_2e/yr]**	**10,000**	**10,000**	**10,000**
Exceeds Threshold?	--	No	No	No

Notes:

1. Total operational emissions include yearly emissions from area, energy, mobile, waste, and water sources. It is assumed that carbon sequestration associated with vegetation change will be minimal and hence not included.
2. Emissions estimated using CalEEMod version 2013.2.2.
3. Service population is the number of residents and employees. Residents are determined using the population density for the site's existing Multiple-Family Residential-Medium Density designation (2.5 persons per dwelling unit). New employees at each building are determined using U.S. Energy Information Administration statistics, available at http://www.eia.gov/consumption/commercial/data/2003/pdf/b1-b46.pdf.
4. BAAQMD significance threshold outlined in the May 2011 BAAQMD CEQA Guidelines.
5. It is assumed that the project would have 3 emergency generators, which require maintenance for 50 hours/year, calculations shown in AQ Table 5.
6. Assumes increase of RPS from 19% (based on latest published RPS) to 33% in 2020 and 2025 per http://www.cpuc.ca.gov/PUC/energy/Renewables. Also includes energy demand adjustments per 2013 Title 24: http://www.energy.ca.gov/title24/. Energy emissions for 2016 based on average of 2009-2011 PG&E electricity emission factors from:
http://www.pge.com/includes/docs/pdfs/shared/environment/calculator/pge_ghg_emission_factor_info_sheet.pdf.
7. Incorporates GHG emission reductions from Advanced Clean Cars, per Table 2 of http://www.arb.ca.gov/msprog/clean_cars/acc%20summary-final.pdf, for years 2020 and 2025.

Table 6a
Summary of Project Operational Greenhouse Gas Emissions: All Sources
(Historical Electricity Emission Factors)
Hall Saranap
Walnut Creek, California
(continued)

Abbreviations:
ARB: Air Resources Board
AQ: Air Quality
BAAQMD: Bay Area Air Quality Management District
CalEEMod: California Emissions Estimator Model
CEQA: California Environmental Quality Act
CO_2e: carbon dioxide equivalents
GHG: greenhouse gases
hr: hour
MT: metric tonnes
PG&E: Pacific Gas and Electric
RPS: Renewables Portfolio Standard
SP: Service Population
yr: year

Sources:
ARB. 2013. Documentation of California's 2000-2010 GHG Inventory — Index. Available online at: http://www.arb.ca.gov/cc/inventory/doc/doc_index.php
ARB. Advanced Clean Cars Summary. Available online at: http://www.arb.ca.gov/msprog/clean_cars/acc%20summary-final.pdf
BAAQMD. 2011. CEQA Air Quality Guidelines. May.
California Emissions Estimator Model (CalEEMod) Version 2013.2.2. Available online at: http://caleemod.com/
California Renewables Portfolio Standard (RPS). Available online at: http://www.cpuc.ca.gov/PUC/energy/Renewables
PG&E Greenhouse Gas Emission Factors. Available online at: http://www.pge.com/includes/docs/pdfs/shared/environment/calculator/pge_ghg_emission_factor_info_sheet.pdf
California Energy Commission: Building Energy Efficiency Program - Title 24. Available online at: http://www.energy.ca.gov/title24/

Table 6b
Summary of Project Operational Greenhouse Gas Emissions: All Sources
(Projected Electricity Emission Factors)
Hall Saranap
Walnut Creek, California

Source[1]	Units	2016 GHG Emissions	2017 GHG Emissions	2018 GHG Emissions	2019 GHG Emissions
Non-Stationary Source GHG Emissions					
Area[2]	[MT CO_2e/yr]	44	44	44	44
Energy[2,6]		800	767	734	701
Mobile[2,7]		2,490	2,490	2,490	2,490
Waste[2]		187	187	187	187
Water[2]		53	51	50	48
Project Total		**3,574**	**3,539**	**3,505**	**3,470**
Service Population[3]	--	636	636	636	636
Project Total	**[MT CO_2e/SP/yr]**	**5.6**	**5.6**	**5.5**	**5.5**
BAAQMD Threshold[4]	**[MT CO_2e/SP/yr]**	**4.6**	**4.6**	**4.6**	**4.6**
Exceeds Threshold?	**--**	**Yes**	**Yes**	**Yes**	**Yes**
Additional GHG Reductions Required	**[MT CO_2e/yr]**	**650**	**615**	**581**	**546**
Emergency Generators Emissions					
Generator Testing[5]	[MT CO_2e/yr]	14.7	14.7	14.7	14.7
BAAQMD Threshold[4]	**[MT CO_2e/yr]**	**10,000**	**10,000**	**10,000**	**10,000**
Exceeds Threshold?	**--**	No	No	No	No

Notes:

1. Total operational emissions include yearly emissions from area, energy, mobile, waste, and water sources. It is assumed that carbon sequestration associated with vegetation change will be minimal and hence not included.
2. Emissions estimated using CalEEMod version 2013.2.2.
3. Service population is the number of residents and employees. Residents are determined using the population density for the site's existing Multiple-Family Residential-Medium Density designation (2.5 persons per dwelling unit). New employees at each building are determined using U.S. Energy Information Administration statistics, available at http://www.eia.gov/consumption/commercial/data/2003/pdf/b1-b46.pdf.
4. BAAQMD significance threshold outlined in the May 2011 BAAQMD CEQA Guidelines.
5. It is assumed that the project would have 3 emergency generators, which require maintenance for 50 hours/year, calculations shown in AQ Table 5.
6. Includes energy demand adjustments per 2013 Title 24: http://www.energy.ca.gov/title24/. Energy emissions for each year based on corresponding PG&E projected electricity emission factors from PG&E, which exceed current RPS: http://www.pge.com/includes/docs/pdfs/shared/environment/calculator/pge_ghg_emission_factor_info_sheet.pdf.
7. Incorporates GHG emission reductions from Advanced Clean Cars, per Table 2 of http://www.arb.ca.gov/msprog/clean_cars/acc%20summary-final.pdf, for years 2017, 2018, and 2019.

Table 6b
Summary of Project Operational Greenhouse Gas Emissions: All Sources
(Projected Electricity Emission Factors)
Hall Saranap
Walnut Creek, California
(continued)

Abbreviations:
ARB: Air Resources Board
AQ: Air Quality
BAAQMD: Bay Area Air Quality Management District
CalEEMod: California Emissions Estimator Model
CEQA: California Environmental Quality Act
CO_2e: carbon dioxide equivalents
GHG: greenhouse gases
hr: hour
MT: metric tonnes
PG&E: Pacific Gas and Electric
SP: Service Population
yr: year

Sources:
ARB. 2013. Documentation of California's 2000-2010 GHG Inventory — Index. Available online at: http://www.arb.ca.gov/cc/inventory/doc/doc_index.php
ARB. Advanced Clean Cars Summary. Available online at: http://www.arb.ca.gov/msprog/clean_cars/acc%20summary-final.pdf
BAAQMD. 2011. CEQA Air Quality Guidelines. May.
California Emissions Estimator Model (CalEEMod) Version 2013.2.2. Available online at: http://caleemod.com/
PG&E Greenhouse Gas Emission Factors. Available online at: http://www.pge.com/includes/docs/pdfs/shared/environment/calculator/pge_ghg_emission_factor_info_sheet.pdf
California Energy Commission: Building Energy Efficiency Program - Title 24. Available online at:

Table 7
Potential Mitigation Measures
Hall Saranap
Walnut Creek, California

Mitigation Category	Potential Mitigation Measure
Neighborhood/Site Enhancements	Provide Pedestrian Network Improvements
	Provide Traffic Calming Measures
	Implement a Neighborhood Electric Vehicle Network
	Incorporate Bike Lane Street Design (on-site)
	Provide Bike Parking in Non-Residential Projects
	Provide Electric Vehicle Parking
Parking Policy/Pricing	Limit Parking Supply
	Unbundle Parking Costs from Property Cost
	Implement Market Price Public Parking (On-Street)
Commute Trip Reduction Programs	Implement Commute Trip Reduction Program - Voluntary
	Implement Commute Trip Reduction Program – Required Implementation/Monitoring
	Provide Ride-Sharing Programs
	Implement Subsidized or Discounted Transit Program
	Provide End of Trip Facilities
	Encourage Telecommuting and Alternative Work Schedules
	Implement Commute Trip Reduction Marketing
	Implement Preferential Parking Permit Program
	Implement Car-Sharing Program
	Provide Employer-Sponsored Vanpool/Shuttle
	Implement Bike-Sharing Programs
	Price Workplace Parking
	Implement Employee Parking "Cash-Out"
Transit System Improvements	Provide a Bus Rapid Transit System
	Implement Transit Access Improvements
	Expand Transit Network
	Increase Transit Service Frequency/Speed
	Provide Local Shuttles

Reference:
CAPCOA Quantifying Greenhouse Gas Mitigation Measures August 2010. (http://www.capcoa.org/wp-content/uploads/2010/11/CAPCOA-Quantification-Report-9-14-Final.pdf)

Table 8
Propoposed PV System Production (2016, 2020, and 2025)
Hall Saranap
Walnut Creek, California

Operational Year	Required Annual PV GHG Reduction[1] (MT CO_2e/yr)	Required Annual On-Site Renewable Energy Generation[2,3] (MWh/yr)	Annual Project Electricity Consumption (MWh/yr)	Daily Hours of Operation[4] (hr/day)	Rated Total PV System Production[5] (MW)	Required Solar Area[6] (acres)
2016	650	3,868	3,468	4.6	2.3	6
2020	575	3,255	3,468	4.6	1.9	5
2025	351	1,987	3,468	4.6	1.2	3

Notes:

[1] Required annual GHG reductions based on Tables 6a and 6b.

[2] Required annual on-site renewable energy generation for 2016 calculated based on required annual PV GHG reduction and 2016 projected electricity emission factors from PG&E, which exceed current RPS: http://www.pge.com/includes/docs/pdfs/shared/environment/calculator/pge_ghg_emission_factor_info_sheet.pdf

[3] Required annual on-site renewable energy generation for 2020 and 2025 calculated based on required annual PV GHG reduction and projected 33% RPS in 2020 and 2025 per http://www.cpuc.ca.gov/PUC/energy/Renewables.

[4] Daily hours of operation were conservatively assumed to be 4.6 hours, which accounts for the efficiency of a solar system with a 30 degree roof slope and a south roof direction for the City of Walnut Creek.

[5] Calculated based on required annual renewable energy generation and daily hours of operation.

[6] Assuming 9 watts per square foot of solar panel area as per http://www.solar-estimate.org/?page=solar-calculations (viewed August 25, 2014)

Appendix A: CalEEMod Operational Output Files

Saranap Village - Traffic (Adjusted Trip Length-3)

Contra Costa County, Annual

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Enclosed Parking with Elevator	694.00	Space	0.00	277,600.00	0
Parking Lot	1.80	Acre	1.80	78,408.00	0
Fast Food Restaurant w/o Drive Thru	2.13	1000sqft	0.00	2,135.00	0
Health Club	14.17	1000sqft	0.00	14,173.00	0
High Turnover (Sit Down Restaurant)	2.22	1000sqft	0.00	2,222.00	0
High Turnover (Sit Down Restaurant)	5.59	1000sqft	0.00	5,589.00	0
Recreational Swimming Pool	1.68	1000sqft	0.00	1,676.00	0
Recreational Swimming Pool	0.71	1000sqft	0.00	711.00	0
Apartments Mid Rise	143.00	Dwelling Unit	1.47	143,000.00	358
Apartments Mid Rise	62.00	Dwelling Unit	1.28	62,000.00	155
Apartments Mid Rise	24.00	Dwelling Unit	0.58	24,000.00	60
Apartments Mid Rise	6.00	Dwelling Unit	0.16	6,000.00	15
Strip Mall	3.50	1000sqft	0.00	3,496.00	0
Strip Mall	0.69	1000sqft	0.00	690.00	0
Supermarket	15.24	1000sqft	0.00	15,236.00	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	58
Climate Zone	5			**Operational Year**	2016
Utility Company	Pacific Gas & Electric Company				

CO2 Intensity (lb/MWhr)	471	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Project Characteristics - Climate Zone for Zip Code 94595 (found on Google Maps) using Existing Land Uses map. PG&E assumed for this area. CO2 Intensity Factor assumes 2009-2011 average presented in the PGE CA Renewable Portfolio Standard.

Land Use - Consistent with emailed information from client and Project Description

Construction Phase - Construction is modeled in a separate CalEEMod

Off-road Equipment -

Off-road Equipment - Construction modeled separately in CalEEMod

Trips and VMT - Construction modeled separately

Demolition -

Grading - Consistent with client-provided data

Architectural Coating -

Vehicle Trips - Operaitonal emissions are calculated in a separate CalEEMod run. Trips/day from TIA (2/28/2014). Trips length per email (3/14/2014)

Area Coating -

Energy Use - CO2 Intensity Factor assumes 2009-2011 average presented in the PGE CA Renewable Portfolio Standard.

Area Mitigation -

Table Name	Column Name	Default Value	New Value
tblConstructionPhase	NumDays	20.00	0.00
tblEnergyUse	T24E	312.05	234.04
tblEnergyUse	T24E	3.92	2.74
tblEnergyUse	T24E	3.26	2.28
tblEnergyUse	T24E	1.48	1.04
tblEnergyUse	T24E	3.26	2.28
tblEnergyUse	T24E	2.74	1.92
tblEnergyUse	T24E	3.32	2.32
tblEnergyUse	T24NG	7,191.67	5,393.75

tblEnergyUse	T24NG	41.99	29.39
tblEnergyUse	T24NG	18.78	13.15
tblEnergyUse	T24NG	41.99	29.39
tblEnergyUse	T24NG	4.10	2.87
tblEnergyUse	T24NG	25.82	18.07
tblLandUse	LandUseSquareFeet	2,130.00	2,135.00
tblLandUse	LandUseSquareFeet	14,170.00	14,173.00
tblLandUse	LandUseSquareFeet	2,220.00	2,222.00
tblLandUse	LandUseSquareFeet	5,590.00	5,589.00
tblLandUse	LandUseSquareFeet	710.00	711.00
tblLandUse	LandUseSquareFeet	1,680.00	1,676.00
tblLandUse	LandUseSquareFeet	3,500.00	3,496.00
tblLandUse	LandUseSquareFeet	15,240.00	15,236.00
tblLandUse	LotAcreage	6.25	0.00
tblLandUse	LotAcreage	0.05	0.00
tblLandUse	LotAcreage	0.33	0.00
tblLandUse	LotAcreage	0.05	0.00
tblLandUse	LotAcreage	0.13	0.00
tblLandUse	LotAcreage	0.02	0.00
tblLandUse	LotAcreage	0.04	0.00
tblLandUse	LotAcreage	3.76	1.47
tblLandUse	LotAcreage	0.63	0.58
tblLandUse	LotAcreage	1.63	1.28
tblLandUse	LotAcreage	0.02	0.00
tblLandUse	LotAcreage	0.08	0.00
tblLandUse	LotAcreage	0.35	0.00
tblLandUse	Population	409.00	358.00
tblLandUse	Population	69.00	60.00

tblLandUse	Population	17.00	15.00
tblLandUse	Population	177.00	155.00
tblOffRoadEquipment	UsageHours	8.00	0.00
tblOffRoadEquipment	UsageHours	8.00	0.00
tblOffRoadEquipment	UsageHours	8.00	0.00
tblProjectCharacteristics	CO2IntensityFactor	641.35	471
tblProjectCharacteristics	OperationalYear	2014	2016
tblTripsAndVMT	WorkerTripNumber	15.00	0.00
tblVehicleTrips	CC_TL	7.30	1.38
tblVehicleTrips	CC_TL	7.30	1.38
tblVehicleTrips	CC_TL	7.30	1.38
tblVehicleTrips	CC_TL	7.30	1.38
tblVehicleTrips	CC_TL	7.30	1.38
tblVehicleTrips	CC_TL	7.30	1.38
tblVehicleTrips	CC_TL	7.30	1.38
tblVehicleTrips	CC_TL	7.30	1.38
tblVehicleTrips	ST_TR	7.16	6.65
tblVehicleTrips	ST_TR	696.00	500.23
tblVehicleTrips	ST_TR	20.87	28.01
tblVehicleTrips	ST_TR	158.37	72.97
tblVehicleTrips	ST_TR	20.87	0.00
tblVehicleTrips	ST_TR	42.04	146.68
tblVehicleTrips	ST_TR	177.59	71.28
tblVehicleTrips	SU_TR	6.07	6.65
tblVehicleTrips	SU_TR	500.00	500.23
tblVehicleTrips	SU_TR	26.73	28.01
tblVehicleTrips	SU_TR	131.84	72.97
tblVehicleTrips	SU_TR	26.73	0.00

tblVehicleTrips	SU_TR	20.43	146.68
tblVehicleTrips	SU_TR	166.44	71.28
tblVehicleTrips	WD_TR	6.59	6.65
tblVehicleTrips	WD_TR	716.00	500.23
tblVehicleTrips	WD_TR	32.93	28.01
tblVehicleTrips	WD_TR	127.15	72.97
tblVehicleTrips	WD_TR	32.93	0.00
tblVehicleTrips	WD_TR	44.32	146.68
tblVehicleTrips	WD_TR	102.24	71.28

2.0 Emissions Summary

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	3.6084	0.0332	2.8205	9.9000e-004		0.1616	0.1616		0.1615	0.1615	15.4110	27.7185	43.1295	0.0316	1.2800e-003	44.1914
Energy	0.0215	0.1908	0.1286	1.1700e-003		0.0149	0.0149		0.0149	0.0149	0.0000	953.8848	953.8848	0.0497	0.0133	959.0648
Mobile	2.9169	4.1968	22.8779	0.0315	2.1329	0.0464	2.1793	0.5712	0.0426	0.6138	0.0000	2,487.6773	2,487.6773	0.1258	0.0000	2,490.3181
Waste						0.0000	0.0000		0.0000	0.0000	83.2913	0.0000	83.2913	4.9224	0.0000	186.6611
Water						0.0000	0.0000		0.0000	0.0000	6.8199	32.8469	39.6668	0.7025	0.0170	59.6761
Total	**6.5468**	**4.4208**	**25.8270**	**0.0336**	**2.1329**	**0.2228**	**2.3557**	**0.5712**	**0.2190**	**0.7902**	**105.5221**	**3,502.1274**	**3,607.6496**	**5.8319**	**0.0316**	**3,739.9115**

2.2 Overall Operational

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	3.6084	0.0332	2.8205	9.9000e-004		0.1616	0.1616		0.1615	0.1615	15.4110	27.7185	43.1295	0.0316	1.2800e-003	44.1914
Energy	0.0215	0.1908	0.1286	1.1700e-003		0.0149	0.0149		0.0149	0.0149	0.0000	953.8848	953.8848	0.0497	0.0133	959.0648
Mobile	2.9169	4.1968	22.8779	0.0315	2.1329	0.0464	2.1793	0.5712	0.0426	0.6138	0.0000	2,487.6773	2,487.6773	0.1258	0.0000	2,490.3181
Waste						0.0000	0.0000		0.0000	0.0000	83.2913	0.0000	83.2913	4.9224	0.0000	186.6611
Water						0.0000	0.0000		0.0000	0.0000	6.8199	32.8469	39.6668	0.7024	0.0169	59.6653
Total	**6.5468**	**4.4208**	**25.8270**	**0.0336**	**2.1329**	**0.2228**	**2.3557**	**0.5712**	**0.2190**	**0.7902**	**105.5221**	**3,502.1274**	**3,607.6496**	**5.8318**	**0.0316**	**3,739.9007**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.09**	**0.00**

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Demolition	Demolition	1/1/2015	12/31/2014	5	0	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 0

Acres of Paving: 0

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 0; Non-Residential Outdoor: 0 (Architectural Coating – sqft)

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Demolition	Concrete/Industrial Saws	1	0.00	81	0.73
Demolition	Excavators	3	0.00	162	0.38
Demolition	Rubber Tired Dozers	2	0.00	255	0.40

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Demolition	6	0.00	0.00	0.00	12.40	7.30	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	2.9169	4.1968	22.8779	0.0315	2.1329	0.0464	2.1793	0.5712	0.0426	0.6138	0.0000	2,487.6773	2,487.6773	0.1258	0.0000	2,490.3181
Unmitigated	2.9169	4.1968	22.8779	0.0315	2.1329	0.0464	2.1793	0.5712	0.0426	0.6138	0.0000	2,487.6773	2,487.6773	0.1258	0.0000	2,490.3181

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Apartments Mid Rise	951.10	951.10	951.10	2,123,208	2,123,208
Apartments Mid Rise	412.37	412.37	412.37	920,552	920,552
Apartments Mid Rise	159.63	159.63	159.63	356,343	356,343
Apartments Mid Rise	39.91	39.91	39.91	89,086	89,086
Enclosed Parking with Elevator	0.00	0.00	0.00		
Fast Food Restaurant w/o Drive Thru	1,065.50	1,065.50	1065.50	618,424	618,424
Health Club	396.92	396.92	396.92	347,193	347,193
High Turnover (Sit Down Restaurant)	162.00	162.00	162.00	81,666	81,666
High Turnover (Sit Down Restaurant)	407.92	407.92	407.92	205,636	205,636
Parking Lot	0.00	0.00	0.00		
Recreational Swimming Pool	0.00	0.00	0.00		
Recreational Swimming Pool	0.00	0.00	0.00		
Strip Mall	513.38	513.38	513.38	398,779	398,779
Strip Mall	101.21	101.21	101.21	78,616	78,616
Supermarket	1,086.29	1,086.29	1086.29	511,867	511,867
Total	5,296.21	5,296.21	5,296.21	5,731,370	5,731,370

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
Apartments Mid Rise	12.40	4.30	5.40	26.10	29.10	44.80	86	11	3
Apartments Mid Rise	12.40	4.30	5.40	26.10	29.10	44.80	86	11	3
Apartments Mid Rise	12.40	4.30	5.40	26.10	29.10	44.80	86	11	3
Apartments Mid Rise	12.40	4.30	5.40	26.10	29.10	44.80	86	11	3
Enclosed Parking with Elevator	9.50	1.38	7.30	0.00	0.00	0.00	0	0	0
Fast Food Restaurant w/o Drive	9.50	1.38	7.30	1.50	79.50	19.00	51	37	12
Health Club	9.50	1.38	7.30	16.90	64.10	19.00	52	39	9
High Turnover (Sit Down	9.50	1.38	7.30	8.50	72.50	19.00	37	20	43
High Turnover (Sit Down	9.50	1.38	7.30	8.50	72.50	19.00	37	20	43
Parking Lot	9.50	1.38	7.30	0.00	0.00	0.00	0	0	0
Recreational Swimming Pool	9.50	1.38	7.30	33.00	48.00	19.00	52	39	9
Recreational Swimming Pool	9.50	1.38	7.30	33.00	48.00	19.00	52	39	9
Strip Mall	9.50	1.38	7.30	16.60	64.40	19.00	45	40	15
Strip Mall	9.50	1.38	7.30	16.60	64.40	19.00	45	40	15
Supermarket	9.50	1.38	7.30	6.50	74.50	19.00	34	30	36

LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
0.527627	0.065080	0.176461	0.145848	0.036424	0.004888	0.009671	0.020781	0.001221	0.001487	0.006359	0.002101	0.002052

5.0 Energy Detail

4.4 Fleet Mix

Historical Energy Use: N

5.1 Mitigation Measures Energy

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
NaturalGas Mitigated	0.0215	0.1908	0.1286	1.1700e-003		0.0149	0.0149		0.0149	0.0149	0.0000	213.0002	213.0002	4.0800e-003	3.9100e-003	214.2965
NaturalGas Unmitigated	0.0215	0.1908	0.1286	1.1700e-003		0.0149	0.0149		0.0149	0.0149	0.0000	213.0002	213.0002	4.0800e-003	3.9100e-003	214.2965
Electricity Mitigated						0.0000	0.0000		0.0000	0.0000	0.0000	740.8846	740.8846	0.0456	9.4400e-003	744.7683
Electricity Unmitigated						0.0000	0.0000		0.0000	0.0000	0.0000	740.8846	740.8846	0.0456	9.4400e-003	744.7683

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					
Apartments Mid Rise	1.00897e+006	5.4400e-003	0.0465	0.0198	3.0000e-004		3.7600e-003	3.7600e-003		3.7600e-003	3.7600e-003	0.0000	53.8426	53.8426	1.0300e-003	9.9000e-004	54.1703
Apartments Mid Rise	169338	9.1000e-004	7.8000e-003	3.3200e-003	5.0000e-005		6.3000e-004	6.3000e-004		6.3000e-004	6.3000e-004	0.0000	9.0365	9.0365	1.7000e-004	1.7000e-004	9.0915
Apartments Mid Rise	42334.5	2.3000e-004	1.9500e-003	8.3000e-004	1.0000e-005		1.6000e-004	1.6000e-004		1.6000e-004	1.6000e-004	0.0000	2.2591	2.2591	4.0000e-005	4.0000e-005	2.2729
Apartments Mid Rise	437457	2.3600e-003	0.0202	8.5800e-003	1.3000e-004		1.6300e-003	1.6300e-003		1.6300e-003	1.6300e-003	0.0000	23.3443	23.3443	4.5000e-004	4.3000e-004	23.4864
Enclosed Parking with Elevator	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Fast Food Restaurant w/o Drive Thru	336070	1.8100e-003	0.0165	0.0138	1.0000e-004		1.2500e-003	1.2500e-003		1.2500e-003	1.2500e-003	0.0000	17.9340	17.9340	3.4000e-004	3.3000e-004	18.0431
Health Club	284169	1.5300e-003	0.0139	0.0117	8.0000e-005		1.0600e-003	1.0600e-003		1.0600e-003	1.0600e-003	0.0000	15.1643	15.1643	2.9000e-004	2.8000e-004	15.2566
High Turnover (Sit Down Restaurant)	349765	1.8900e-003	0.0172	0.0144	1.0000e-004		1.3000e-003	1.3000e-003		1.3000e-003	1.3000e-003	0.0000	18.6648	18.6648	3.6000e-004	3.4000e-004	18.7784
High Turnover (Sit Down Restaurant)	879764	4.7400e-003	0.0431	0.0362	2.6000e-004		3.2800e-003	3.2800e-003		3.2800e-003	3.2800e-003	0.0000	46.9476	46.9476	9.0000e-004	8.6000e-004	47.2333
Parking Lot	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Recreational Swimming Pool	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Strip Mall	12480.7	7.0000e-005	6.1000e-004	5.1000e-004	0.0000		5.0000e-005	5.0000e-005		5.0000e-005	5.0000e-005	0.0000	0.6660	0.6660	1.0000e-005	1.0000e-005	0.6701
Strip Mall	2463.3	1.0000e-005	1.2000e-004	1.0000e-004	0.0000		1.0000e-005	1.0000e-005		1.0000e-005	1.0000e-005	0.0000	0.1315	0.1315	0.0000	0.0000	0.1323
Supermarket	468659	2.5300e-003	0.0230	0.0193	1.4000e-004		1.7500e-003	1.7500e-003		1.7500e-003	1.7500e-003	0.0000	25.0095	25.0095	4.8000e-004	4.6000e-004	25.1617
Total		**0.0215**	**0.1908**	**0.1286**	**1.1700e-003**		**0.0149**	**0.0149**		**0.0149**	**0.0149**	**0.0000**	**213.0002**	**213.0002**	**4.0700e-003**	**3.9100e-003**	**214.2965**

5.2 Energy by Land Use - NaturalGas

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					
Apartments Mid Rise	1.00897e+006	5.4400e-003	0.0465	0.0198	3.0000e-004		3.7600e-003	3.7600e-003		3.7600e-003	3.7600e-003	0.0000	53.8426	53.8426	1.0300e-003	9.9000e-004	54.1703
Apartments Mid Rise	169338	9.1000e-004	7.8000e-003	3.3200e-003	5.0000e-005		6.3000e-004	6.3000e-004		6.3000e-004	6.3000e-004	0.0000	9.0365	9.0365	1.7000e-004	1.7000e-004	9.0915
Apartments Mid Rise	42334.5	2.3000e-004	1.9500e-003	8.3000e-004	1.0000e-005		1.6000e-004	1.6000e-004		1.6000e-004	1.6000e-004	0.0000	2.2591	2.2591	4.0000e-005	4.0000e-005	2.2729
Apartments Mid Rise	437457	2.3600e-003	0.0202	8.5800e-003	1.3000e-004		1.6300e-003	1.6300e-003		1.6300e-003	1.6300e-003	0.0000	23.3443	23.3443	4.5000e-004	4.3000e-004	23.4864
Enclosed Parking with Elevator	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Fast Food Restaurant w/o Drive Thru	336070	1.8100e-003	0.0165	0.0138	1.0000e-004		1.2500e-003	1.2500e-003		1.2500e-003	1.2500e-003	0.0000	17.9340	17.9340	3.4000e-004	3.3000e-004	18.0431
Health Club	284169	1.5300e-003	0.0139	0.0117	8.0000e-005		1.0600e-003	1.0600e-003		1.0600e-003	1.0600e-003	0.0000	15.1643	15.1643	2.9000e-004	2.8000e-004	15.2566
High Turnover (Sit Down Restaurant)	349765	1.8900e-003	0.0172	0.0144	1.0000e-004		1.3000e-003	1.3000e-003		1.3000e-003	1.3000e-003	0.0000	18.6648	18.6648	3.6000e-004	3.4000e-004	18.7784
High Turnover (Sit Down Restaurant)	879764	4.7400e-003	0.0431	0.0362	2.6000e-004		3.2800e-003	3.2800e-003		3.2800e-003	3.2800e-003	0.0000	46.9476	46.9476	9.0000e-004	8.6000e-004	47.2333
Parking Lot	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Recreational Swimming Pool	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Strip Mall	12480.7	7.0000e-005	6.1000e-004	5.1000e-004	0.0000		5.0000e-005	5.0000e-005		5.0000e-005	5.0000e-005	0.0000	0.6660	0.6660	1.0000e-005	1.0000e-005	0.6701
Strip Mall	2463.3	1.0000e-005	1.2000e-004	1.0000e-004	0.0000		1.0000e-005	1.0000e-005		1.0000e-005	1.0000e-005	0.0000	0.1315	0.1315	0.0000	0.0000	0.1323
Supermarket	468659	2.5300e-003	0.0230	0.0193	1.4000e-004		1.7500e-003	1.7500e-003		1.7500e-003	1.7500e-003	0.0000	25.0095	25.0095	4.8000e-004	4.6000e-004	25.1617
Total		**0.0215**	**0.1908**	**0.1286**	**1.1700e-003**		**0.0149**	**0.0149**		**0.0149**	**0.0149**	**0.0000**	**213.0002**	**213.0002**	**4.0700e-003**	**3.9100e-003**	**214.2965**

5.3 Energy by Land Use - Electricity

Unmitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
Apartments Mid Rise	21224	4.5344	2.8000e-004	6.0000e-005	4.5581
Apartments Mid Rise	219315	46.8549	2.8800e-003	6.0000e-004	47.1005
Apartments Mid Rise	505840	108.0686	6.6500e-003	1.3800e-003	108.6351
Apartments Mid Rise	84896.2	18.1374	1.1200e-003	2.3000e-004	18.2325
Enclosed Parking with Elevator	1.54346e+006	329.7470	0.0203	4.2000e-003	331.4756
Fast Food Restaurant w/o Drive Thru	62470.1	13.3462	8.2000e-004	1.7000e-004	13.4162
Health Club	110975	23.7088	1.4600e-003	3.0000e-004	23.8331
High Turnover (Sit Down Restaurant)	163534	34.9378	2.1500e-003	4.5000e-004	35.1209
High Turnover (Sit Down Restaurant)	65015.7	13.8901	8.6000e-004	1.8000e-004	13.9629
Parking Lot	68999	14.7411	9.1000e-004	1.9000e-004	14.8184
Recreational Swimming Pool	0	0.0000	0.0000	0.0000	0.0000
Strip Mall	37721.8	8.0590	5.0000e-004	1.0000e-004	8.1012
Strip Mall	7445.1	1.5906	1.0000e-004	2.0000e-005	1.5989
Supermarket	576987	123.2687	7.5900e-003	1.5700e-003	123.9149
Total		**740.8846**	**0.0456**	**9.4500e-003**	**744.7683**

5.3 Energy by Land Use - Electricity

Mitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
Apartments Mid Rise	21224	4.5344	2.8000e-004	6.0000e-005	4.5581
Apartments Mid Rise	219315	46.8549	2.8800e-003	6.0000e-004	47.1005
Apartments Mid Rise	505840	108.0686	6.6500e-003	1.3800e-003	108.6351
Apartments Mid Rise	84896.2	18.1374	1.1200e-003	2.3000e-004	18.2325
Enclosed Parking with Elevator	1.54346e+006	329.7470	0.0203	4.2000e-003	331.4756
Fast Food Restaurant w/o Drive Thru	62470.1	13.3462	8.2000e-004	1.7000e-004	13.4162
Health Club	110975	23.7088	1.4600e-003	3.0000e-004	23.8331
High Turnover (Sit Down Restaurant)	163534	34.9378	2.1500e-003	4.5000e-004	35.1209
High Turnover (Sit Down Restaurant)	65015.7	13.8901	8.6000e-004	1.8000e-004	13.9629
Parking Lot	68999	14.7411	9.1000e-004	1.9000e-004	14.8184
Recreational Swimming Pool	0	0.0000	0.0000	0.0000	0.0000
Strip Mall	37721.8	8.0590	5.0000e-004	1.0000e-004	8.1012
Strip Mall	7445.1	1.5906	1.0000e-004	2.0000e-005	1.5989
Supermarket	576987	123.2687	7.5900e-003	1.5700e-003	123.9149
Total		**740.8846**	**0.0456**	**9.4500e-003**	**744.7683**

6.0 Area Detail

6.1 Mitigation Measures Area

Use Low VOC Paint - Residential Interior

Use Low VOC Paint - Residential Exterior

Use Low VOC Paint - Non-Residential Interior

Use Low VOC Paint - Non-Residential Exterior

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	3.6084	0.0332	2.8205	9.9000e-004		0.1616	0.1616		0.1615	0.1615	15.4110	27.7185	43.1295	0.0316	1.2800e-003	44.1914
Unmitigated	3.6084	0.0332	2.8205	9.9000e-004		0.1616	0.1616		0.1615	0.1615	15.4110	27.7185	43.1295	0.0316	1.2800e-003	44.1914

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	0.3354					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	2.4876					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Hearth	0.7291	0.0124	1.0443	9.0000e-004		0.1520	0.1520		0.1520	0.1520	15.4110	24.8550	40.2660	0.0287	1.2800e-003	41.2661
Landscaping	0.0564	0.0208	1.7762	9.0000e-005		9.5700e-003	9.5700e-003		9.5700e-003	9.5700e-003	0.0000	2.8635	2.8635	2.9400e-003	0.0000	2.9253
Total	**3.6084**	**0.0332**	**2.8205**	**9.9000e-004**		**0.1616**	**0.1616**		**0.1615**	**0.1615**	**15.4110**	**27.7185**	**43.1295**	**0.0316**	**1.2800e-003**	**44.1914**

6.2 Area by SubCategory

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	0.3354					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	2.4876					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Hearth	0.7291	0.0124	1.0443	9.0000e-004		0.1520	0.1520		0.1520	0.1520	15.4110	24.8550	40.2660	0.0287	1.2800e-003	41.2661
Landscaping	0.0564	0.0208	1.7762	9.0000e-005		9.5700e-003	9.5700e-003		9.5700e-003	9.5700e-003	0.0000	2.8635	2.8635	2.9400e-003	0.0000	2.9253
Total	**3.6084**	**0.0332**	**2.8205**	**9.9000e-004**		**0.1616**	**0.1616**		**0.1615**	**0.1615**	**15.4110**	**27.7185**	**43.1295**	**0.0316**	**1.2800e-003**	**44.1914**

7.0 Water Detail

7.1 Mitigation Measures Water

	Total CO2	CH4	N2O	CO2e
Category	MT/yr			
Unmitigated	39.6668	0.7025	0.0170	59.6761
Mitigated	39.6668	0.7024	0.0169	59.6653

7.2 Water by Land Use

Unmitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
Apartments Mid Rise	15.3112 / 9.65271	29.7753	0.5005	0.0121	44.0351
Enclosed Parking with Elevator	0 / 0	0.0000	0.0000	0.0000	0.0000
Fast Food Restaurant w/o Drive Thru	0.646527 / 0.0412677	0.9834	0.0211	5.1000e-004	1.5841
Health Club	0.838058 / 0.513649	1.6188	0.0274	6.6000e-004	2.3992
High Turnover (Sit Down Restaurant)	2.3706 / 0.151315	3.6057	0.0774	1.8600e-003	5.8082
Parking Lot	0 / 0	0.0000	0.0000	0.0000	0.0000
Recreational Swimming Pool	0.141352 / 0.0866352	0.2730	4.6200e-003	1.1000e-004	0.4047
Strip Mall	0.310364 / 0.190223	0.5995	0.0101	2.5000e-004	0.8885
Supermarket	1.87861 / 0.0581013	2.8111	0.0614	1.4700e-003	4.5563
Total		**39.6668**	**0.7025**	**0.0170**	**59.6762**

7.2 Water by Land Use

Mitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
Apartments Mid Rise	15.3112 / 9.65271	29.7753	0.5004	0.0121	44.0274
Enclosed Parking with Elevator	0 / 0	0.0000	0.0000	0.0000	0.0000
Fast Food Restaurant w/o Drive Thru	0.646527 / 0.0412677	0.9834	0.0211	5.1000e-004	1.5837
Health Club	0.838058 / 0.513649	1.6188	0.0274	6.6000e-004	2.3986
High Turnover (Sit Down Restaurant)	2.3706 / 0.151315	3.6057	0.0774	1.8600e-003	5.8070
Parking Lot	0 / 0	0.0000	0.0000	0.0000	0.0000
Recreational Swimming Pool	0.141352 / 0.0866352	0.2730	4.6200e-003	1.1000e-004	0.4046
Strip Mall	0.310364 / 0.190223	0.5995	0.0101	2.4000e-004	0.8884
Supermarket	1.87861 / 0.0581013	2.8111	0.0613	1.4700e-003	4.5554
Total		**39.6668**	**0.7024**	**0.0169**	**59.6653**

8.0 Waste Detail

8.1 Mitigation Measures Waste

Category/Year

	Total CO2	CH4	N2O	CO2e
	MT/yr			
Mitigated	83.2913	4.9224	0.0000	186.6611
Unmitigated	83.2913	4.9224	0.0000	186.6611

8.2 Waste by Land Use

Unmitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
Apartments Mid Rise	108.1	21.9433	1.2968	0.0000	49.1764
Enclosed Parking with Elevator	0	0.0000	0.0000	0.0000	0.0000
Fast Food Restaurant w/o Drive Thru	24.54	4.9814	0.2944	0.0000	11.1636
Health Club	80.77	16.3956	0.9690	0.0000	36.7436
High Turnover (Sit Down Restaurant)	92.94	18.8660	1.1150	0.0000	42.2799
Parking Lot	0	0.0000	0.0000	0.0000	0.0000
Recreational Swimming Pool	13.62	2.7647	0.1634	0.0000	6.1960
Strip Mall	4.4	0.8932	0.0528	0.0000	2.0016
Supermarket	85.95	17.4471	1.0311	0.0000	39.1000
Total		**83.2913**	**4.9224**	**0.0000**	**186.6611**

8.2 Waste by Land Use

Mitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
Apartments Mid Rise	108.1	21.9433	1.2968	0.0000	49.1764
Enclosed Parking with Elevator	0	0.0000	0.0000	0.0000	0.0000
Fast Food Restaurant w/o Drive Thru	24.54	4.9814	0.2944	0.0000	11.1636
Health Club	80.77	16.3956	0.9690	0.0000	36.7436
High Turnover (Sit Down Restaurant)	92.94	18.8660	1.1150	0.0000	42.2799
Parking Lot	0	0.0000	0.0000	0.0000	0.0000
Recreational Swimming Pool	13.62	2.7647	0.1634	0.0000	6.1960
Strip Mall	4.4	0.8932	0.0528	0.0000	2.0016
Supermarket	85.95	17.4471	1.0311	0.0000	39.1000
Total		**83.2913**	**4.9224**	**0.0000**	**186.6611**

9.0 Operational Offroad

Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type

10.0 Vegetation

MEMORANDUM

To: Cecily T. Barclay

From: Walter Kieser, Ashleigh Kanat and Ed Sullivan

Subject: Analysis of Average Trip Length for the Saranap Village Mixed-Use Project; EPS #141021

Date: March 31, 2014

The Economics of Land Use

Saranap Village is a proposed mixed-use project planned for an infill location at Boulevard Way and Saranap Avenue near Walnut Creek in unincorporated Contra Costa County. The commercial component of the project is proposed to include a small, upscale grocery store (15,236 square feet), a coffee shop, a bank, a bar, and some additional miscellaneous retail, comprising a total potential development of 29,368 square feet of Gross Leasable Area (GLA). The proposed projects also includes 235 residential units and a 14,173 square foot fitness club.

Economic & Planning Systems, Inc. (EPS) was asked to review Countywide average vehicle miles travelled data presented by Environ and evaluate the trade area dynamics of the proposed commercial uses to determine a more accurate estimate of the average trip length induced by the new commercial uses. Our preliminary findings were provided on March 12, 2014, and this memorandum represents our final conclusions.

Key Findings

1. The commercial component of the Saranap Village Project meets the International Council of Shopping Centers' definitional criteria of a "Convenience Center" in that the combined retail is less than 30,000 square feet in size and its tenants will "provide a narrow mix of goods and personal services to a very limited trade area." Typically, a "Convenience Center" requires a trade area of approximately 2,500 households, within approximately a 1.5-mile radius. In the case of Saranap Village, the density of existing housing[1] in the area means that the 2,500 household threshold is reached at a radius of approximately 0.644 miles.

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[1] Existing housing is based on estimates of households in the area as of 2013 and does not include the additional 235 dwelling units proposed for development.

2. However, because there are competing uses in the area (e.g., existing grocery stores, existing coffee shops, etc.), the trade area radius must be defined more conservatively (i.e., using a larger radius). EPS, therefore, assumed the trade area would be defined within a 1.5-mile radius, which in this location, includes approximately 12,920 households.

3. Segmenting the 1.5-mile radius trade area into four rings, with the first ring at 0.644 miles (consistent with the 2,500 household threshold rule of thumb) and the outer ring at 1.5 miles, EPS estimated the average trip length from a household to the Project Site for each of the four rings. Weighting these average trip lengths by the number of households in each ring, EPS estimates the average trip length to the Project site at about 1.38 miles.

Trade Area Analysis

EPS prepared a basic trade area analysis using readily available data for the specific retail uses planned as part of this project to understand the competitive supply and to estimate the average vehicle trip length.

The proposed Saranap Village Project's location and commercial (exclusive of the residential units and fitness club) components meet the International Council of Shopping Centers (ICSC) and other typically stated criteria for a 'Convenience Center' based on the following criteria:

1. Size: < 30,000 square feet Gross Leasable Area (GLA).

2. Situation: "A convenience center is among the smallest of the centers, whose tenants provide a narrow mix of goods and personal services to a very limited trade area."[2]

3. Trade Area: < 1.0 to 1.5-mile radius.

4. Threshold Customer Base: 2,000 to 2,500 households

The typical minimum trade area requirements for Convenience Center development are therefore 2,000 to 2,500 households within a 1- to 1.5-mile radius of the site. AGS demographic estimates of 2013 existing development indicate the 2,500-household threshold is met within 0.644 miles distance of the site (due to the infill location of this Project), or within approximately 3 minutes' drive time, under uncongested conditions.

EPS used readily available data and information including Google Maps, Walk Score® indices and listings, the U.S. Environmental Protection Agency Smart Location Database, and Applied Geographic Solutions' demographic data and the PCensus Analyst GIS tool to provide an indication of the competitive supply of the relevant retail uses within trade area thresholds of the Project. Because there are competing uses in the area (e.g., existing grocery stores, existing coffee shops), the trade area radius must be extended.

EPS assumed a 1.5-mile radius effective trade area or survey perimeter and split the trade area into four concentric rings around the Project site (see **Figure 1**). The first ring's periphery is established at 0.644 miles, the distance at which at least 2,500 households are located, and the

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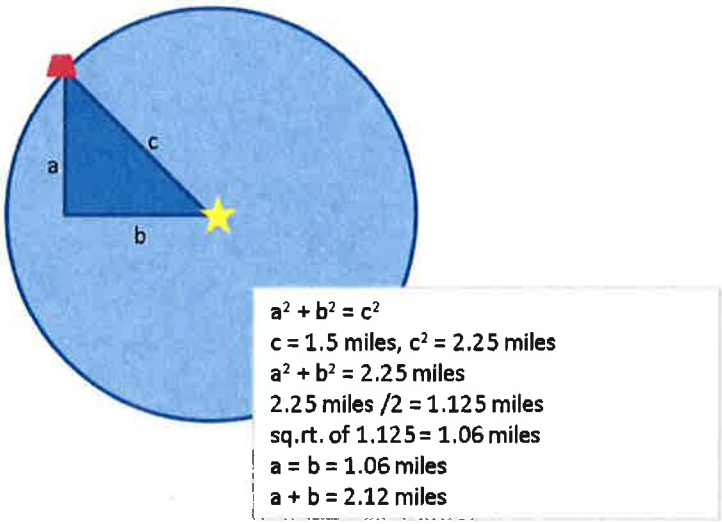
[2] Source: *U.S. Shopping-Center Classification and Characteristics*, International Council of Shopping Centers.

fourth ring is established at 1.5 miles. The second and third rings are set so that the number of households within each of the four rings is approximately consistent (Census block geographic limitations notwithstanding).

An approximate average trip length is calculated for each ring, using the steps shown in the diagram below. If a household on the outer edge of the 1.5-mile radius trade area were driving to the Project Site, it is unlikely due to the existing roadway network, that the driver could travel directly via route "c". Rather, in a near-worst case scenario, the driver might have to drive route "a" and then route "b," for a total of 2.12 miles, one way, from an origin located at the outer edge of the trade area.

The average trip length for each ring segment is calculated as the average of the one way trip length at the nearest distance to the Site and the furthest distance to the Site.

Figure 2: Sample Average Trip Length Calculation



EPS believes that a very high percentage of trips will originate from within the first ring, but cannot comment on the question of how many trips that might mean because a full trade area analysis has not been prepared. Accordingly, the weighting that is used to calculate the average trip length is by number of households rather than percentage of trip origins, which is a conservative approach.

As shown below on **Table 1**, the weighted average one-way trip length is estimated to be 1.38 miles, which is lower than the Countywide average trip length as reported by Environ.

Table 1
Estimated One-way Trip Length for Local Households (HH) to Proposed Project

Trade Area Ring	Nearest Direct Distance to Site (miles)	Furthest Direct Distance to Site (miles)	HH Located within Rings (approx. 2013 #)	Approx. % share of Trade Area	Approx. Avg. Trip Length to Site (miles, one-way)
1	0.075	0.644	2,636	20%	0.51
2	0.644	1.102	3,787	29%	1.23
3	1.102	1.273	3,122	24%	1.68
4	1.273	1.500	3,375	26%	1.96
Totals			**12,920**	**100%**	
Weighted Average					**1.38**

Source: Economic & Planning Systems, Inc.

It should also be noted that while the vicinity of the proposed Saranap development does not have the high residential density or frequency and variety of transit opportunities typically required for consideration as an "urban core" infill project, which would have qualified the Project for still further trip generation factor reductions, it does have sufficient density, variety of complementary uses, accessibility and transit service to attain a 51 'Somewhat Walkable' WalkScore™ rating,[3] indicating that in addition to the excellent vehicular accessibility of the site, it is also convenient to pedestrian and bicycle travelers for many purposes.

It should also be noted that trade areas for shopping centers typically account for 80 to 90 percent of the total clientele using those centers, that is, 10 to 20 percent of the customers can be expected to come from origins (homes, workplaces, etc.) outside of the core trade area perimeter. For destination retail sites such as large appliance and furniture stores, and in sparsely-developed suburban or rural contexts, such longer-distance trips can be anticipated to include a large percentage of trips with the retail site as the primary intended destination. However, for convenience centers such as the proposed development, and for infill development sites, most clientele coming from outside the core trade area can be anticipated to have other primary destinations and to be 'captured' or 'diverted' from existing passer-by or nearby traffic. This constitutes another consideration for estimating typical miles travelled to the proposed development at less than the Countywide averages for the component site uses.

For non-motorized travelers, State Route 24 and I-680 impede pedestrian and (to a lesser degree) bicycle route choices and accessibility. On the one hand, this makes the proposed Saranap development less accessible and attractive to pedestrians and bicycle riders located north and east of those roadways; conversely, these barriers to non-motorized travel reduce the relative accessibility and attraction of potentially competing establishments located north and east of the roadways to pedestrians and bicyclists within Saranap. As a majority of the existing population and households in the 1.5 mile trade area examined are located in its southern quadrants, below these roadways, while the majority of the existing retail establishments are

[3] http://www.walkscore.com/score/1300-saranap-ave-walnut-creek-ca-94595

located in its northern quadrants, above these roadways, further analysis of the likely pedestrian, bicycle and other non-auto travel to the proposed commercial uses may be worthwhile.

Fitness Club

The inclusion of a 14,173 square foot health club brings the project's total non-residential proposed development to 43,541 square feet, which exceeds the 30,000 square foot upper size limit typically included in the International Council of Shopping Centers' definitional criteria of a "Convenience Center." However, the project does not have attributes that would qualify it for the next largest standard category of shopping center – the Neighborhood Center – which describes projects that typically have a 40,000 square-foot anchor such as a supermarket and total of 70,000 square feet or more in total retail/service development.

In particular, the fitness club component is not proposed as an independent, stand-alone commercial enterprise, but as an amenity to the project's proposed new residents,[4] that will also be available to, but not entirely dependent upon, outside clientele. The fitness club facility is currently being proposed for the second story of Site A, which will include 143 residential units, and not as a ground-floor use.

According to International Health, Raquet & Sportsclub Association (IHRSA) standards[5], the maximum travel time for customers of typical stand-alone health club facilities in a suburban setting is 10 to 12 minutes. The primary trade area typically will be within an 8-minute travel time, and 80 to 90 percent of all clientele typically will be located within 10 minutes of the site. On average, fitness clubs can expect to have four times as many customers travelling 8-minutes or less than travel 8 to 12 minutes[6].

As noted above, the first ring of 2,500 households is located within approximately 0.644 miles, or about a 3-minute drive from the Project site. As travel times increase, the drive time regions centered on the Project site become progressively elongated along the major highways and relatively 'pinched' in areas served only by secondary streets, as illustrated in **Figure 1**. An eight-minute drive time (in the vicinity of Saranap and looking to the southwest of the major highways) would enclose a ring at approximately 1.6 miles from the Project Site, and a ten-minute drive time would enclose a ring at approximately 2.04 miles.

Given the general preference of most health club clientele for short travel times and a proposed health club specifically designed and located such that it is likely to be used primarily by project and nearby residents, the average trip length to the proposed club is likely to be less than the 1.38 miles estimated for the other non-residential uses. However, because a complete trade area analysis was not performed for the health club, and because the health club is proximate to the other uses, EPS suggests that the 1.38 average trip length can be applied to the health club as well.

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[4] Access to the fitness club by Project residents is currently anticipated to be subsidized or included in tenant and home-owner fees.

[5] IHRSA's Guide to the Health Club Industry for Lenders and Investors: 2nd Edition, 2004.

[6] An IHRSA Best Practice - Market Analysis in the Health Club Industry, 2006.

Using a 1.38-mile average trip length appears to be a conservative approach. As noted above, the Project Site is close to highways to the north and east, which create barriers for potential customers travelling by foot, transit or bicycle. There are 10 to 12 existing health/fitness facilities operating within approximately two miles of the site, but most of these are located north and east of the highways. It is therefore likely the proposed health club's effective trade area would be greater to the south and west of the highways, and would attract more residents and workers traveling within the Saranap area rather than from areas 2 or more miles away.

Figure 1
1.5 mile Saranap Project Trade Area
Divided into Rings

Notes: 20 to 30% of Trade Area Total HH (Approximately 12,920 in 2013) in each Ring

Source: AGS Demographic Estimates for 2013; EPS

ENVIRON

May 13, 2014

MEMORANDUM

To: Mr. Michael Smith. Hall Equities Group

From: Michael Keinath, Principal, ENVIRON
Megan Neiderhiser, Manager, ENVIRON

Re: Hall Saranap Alternatives – Greenhouse Gas Analysis

At the request of the Hall Equities Group (Hall), ENVIRON International Corporation (ENVIRON) has prepared a technical memorandum evaluating greenhouse gas (GHG) emissions associated with Project Alternatives to construction and operation of the proposed mixed-use Saranap Village development located at Boulevard Way and Saranap Avenue in Walnut Creek, California ("Project"). This memorandum serves as an addendum to the Greenhouse Gas Technical Report; full methodology and references are provided in the GHG Technical Report.

Project Understanding

Saranap Village includes four proposed Alternatives to the Project. These Project and their associated GHG impacts are discussed in this memorandum.

- Alternative 1 is the No Project/No Build alternative. This alternative assumes that the existing site remains as it is; the impacts of the Project would not occur.
- Alternative 2 is the No Project/Rehabilitation option. Alternative 2 assumes the existing buildings and related facilities remain on site, but are rehabilitated to attract higher rent. Alternative 2 assumes no grading or construction; only operational emissions would occur.
- Alternative 3 is the Reduced Project option. This alternative proposes a reduced size and reduced development footprint compared to the Project. This alternative includes construction, but no street improvements.
- Alternative 4 is the General Plan Buildout alternative. This alternative includes a mix of residential and commercial uses plus associated parking, with a reduced number of residential units in comparison to the Project. This alternative includes construction but does not include streetscape improvements.

Table 1 shows the Proposed Land Uses by Parcel for Alternative 2. **Table 2** shows the Proposed Land Uses by Parcel for Alternative 3. **Table 3** shows the Proposed Land Uses by Parcel for Alternative 4. There are no proposed land use changes associated with Alternative 1.

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Objective and Methodology

The Bay Area Air Quality Management District (BAAQMD) 2011 CEQA Guidelines[1] contain recommended thresholds for GHG emissions from an individual project undergoing environmental review pursuant to CEQA. Construction and operational GHGs are included in this technical memorandum. Full methodology is provided in the April 17, 2014 GHG Technical Report.

The evaluation compares Project-related GHG emissions for each Alternative to BAAQMD's 2011 CEQA thresholds of significance for operational GHG emissions: 1,100 MT of CO_2e/yr or 4.6 MT CO_2e/service population/yr. Stationary sources are considered separately, with a threshold of 10,000 MT of CO_2e/yr. As was done for the analysis of the Project, the analysis of Alternatives 2, 3 and 4 addresses all impacts of each alternative without any reduction for baseline uses. Accordingly, these analyses conservatively assume a zero baseline for emissions and for emissions per service population.

Results for Alternatives Analysis

Below, the Alternatives results are compared to the BAAQMD thresholds. As discussed in the GHG Technical Report, this analysis does not net out existing emissions from Project emissions. This analysis includes each Project Alternative service population in line with the Project Alternative emissions to analyze results.

Alternative 1

There are no GHG impacts associated with the No Project/No Build alternative.

Alternative 2

As discussed above, Alternative 2 is the No Project/Rehabilitation alternative. There are no construction emissions associated with this alternative; however there are operational GHG impacts including emissions from area sources (e.g. landscaping equipment), energy use, mobile sources (traffic), water, and waste. **Table 4** summarizes the Alternative 2 operational emissions for the proposed buildout year (2016).[2] **Table 4** also compares Alternative 2 operational emissions to the BAAQMD 2011 CEQA service population threshold (4.6 $MTCO_2e$/service population). Please note that the total operational GHG emissions from this Alternative are below the 1,100 MT CO_2e/yr threshold for Projects other than Stationary Sources.

Alternative 3

As discussed above, Alternative 3 is the Reduced Project alternative. This alternative proposes a reduced size and a reduced development footprint compared to the Project. There is reduced building construction and grading for Alternative 3 in comparison to the project. There are no streetscape improvements. Construction equipment usage estimates were provided by Hall Equities Group. Construction emissions were calculated by ENVIRON; however, the BAAQMD has not adopted threshold for comparison of construction emissions.

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[1] BAAQMD. 2011. California Environmental Quality Act Air Quality Guidelines. May. Available online at: http://www.baaqmd.gov/~/media/Files/Planning%20and%20Research/CEQA/BAAQMD%20CEQA%20Guidelines_May%202011_5_3_11.ashx. Accessed May 2014.

[2] The proposed buildout year (2016) represents the year of maximum GHG emissions from each Alternative.

In addition to the construction emissions, there are operational GHG impacts associated with Alternative 3, including emissions from area sources (e.g. landscaping equipment), energy use, mobile sources (traffic), water, and waste. **Table 5** summarizes the Alternative 3 construction emissions, as well as operational GHG emissions for the proposed buildout year (2016).[3] **Table 5** also compares Alternative 3 operational emissions to the BAAQMD 2011 CEQA service population threshold (4.6 $MTCO_2e$/service population). Furthermore, **Table 5** also shows the total stationary source (emergency generator) GHG emissions at 14.7 MT CO_2e/year which are below the BAAQMD CEQA threshold of 10,000 MT per year of CO_2e for stationary sources.

Alternative 4

As discussed above, Alternative 4 is the General Plan Buildout alternative. This alternative proposes the amount of development allowed under the current General Plan. There will be building construction and grading, but no associated streetscape improvements. Like the Project, this alternative proposes a mix of one, two, and three-bedroom residential units. The remainder of the privately-owned site is designated as Commercial.

Construction equipment usage estimates were provided by Hall Equities Group. Construction emissions were calculated by ENVIRON; however, the BAAQMD has not adopted threshold for comparison of construction emissions.

In addition to the construction emissions, there are operational GHG impacts associated with Alternative 4, including emissions from area sources (e.g. landscaping equipment), energy use, mobile sources (traffic), water, and waste. **Table 6** summarizes the Alternative 4 construction emissions, as well as operational GHG emissions for the proposed buildout year (2016).[4] **Table 6** also compares Alternative 4 operational emissions to the BAAQMD 2011 CEQA service population threshold (4.6 $MTCO_2e$/service population). Furthermore, **Table 6** also shows the total stationary source (emergency generator) GHG emissions at 14.7 MT CO_2e/year which are below the BAAQMD CEQA threshold of 10,000 MT per year of CO_2e for stationary sources.

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[3] Ibid.

[4] Ibid.

Attachment A

Tables

Table 1
Conceptual Layout of Proposed Alternative 2
Hall Saranap
Walnut Creek, California

Parcel	Proposed Land Use	CalEEMod Land Use Type and Subtype	Proposed Size	Unit
A	Commercial	General Offices	11,795	square feet
	Commercial	General Offices	8,375	square feet
	Residential - Apartments	Apartments - Mid Rise	24	dwelling units
	Residential	Single Family Homes	1	dwelling units
B	Commercial	General Offices	12,272	square feet
C	Retail	Strip Mall	5,059	square feet

Table 2
Conceptual Layout of Proposed Alternative 3
Hall Saranap
Walnut Creek, California

Parcel	Proposed Land Use	CalEEMod Land Use Type and Subtype	Proposed Size	Unit
A	Parking Garage	Enclosed Parking with Elevator	39	parking spaces
B	Residential - Apartments	Apartments - Mid Rise	62	dwelling units
	Swimming Pool	Recreational Swimming Pool	711	square feet
	Parking Garage	Enclosed Parking with Elevator	242	parking spaces
B1	Residential - Apartments	Apartments - Mid Rise	6	dwelling units
	Parking Garage	Enclosed Parking with Elevator	13	parking spaces
C	Residential - Apartments	Apartments - Mid Rise	24	dwelling units
	Parking Garage	Enclosed Parking with Elevator	48	parking spaces
Commercial - Retail	78% Commercial-Retail Project Uses	Commercial-Retail Project Uses[1]	22,842	square feet

Note:

1. The Commercial-Retail Land Uses will be analzed as 78% of each of the individual retail uses of the Project, based on the change in square footage for this Alternative

Table 3
Conceptual Layout of Proposed Alternative 4
Hall Saranap
Walnut Creek, California

Parcel	Proposed Land Use	CalEEMod Land Use Type and Subtype	Proposed Size	Unit
All	Residential - Apartments	Apartments - Mid Rise	24	dwelling units
	Parking Garage	Enclosed Parking with Elevator	277	parking spaces
	Retail	Strip Mall	83,000	square feet

Table 4
Summary of Alternative 2 Greenhouse Gas Emissions
Hall Saranap
Walnut Creek, California

Source[1]	Units	2016 GHG Emissions
Non-Stationary Source Operational GHG Emissions		
Area[2]	[MT CO_2e/yr]	1.6
Energy[2,6]		180.2
Mobile[2,7]		731.7
Waste[2]		21.7
Water[2]		22.3
Project Total		**958**
Service Population[3]	--	97
Project Total	**[MT CO_2e/SP/yr]**	**9.8**
BAAQMD Threshold[4]	**[MT CO_2e/SP/yr]**	**4.6**
Exceeds Threshold?	**--**	**Yes**
Additional GHG Reductions Required	**[MT CO_2e/yr]**	**509**

Notes:
1. Total operational emissions include yearly emissions from area, energy, mobile, waste, and water sources. It is assumed that carbon sequestration associated with vegetation change will be minimal and hence not included.
2. Emissions estimated using CalEEMod version 2013.2.2.
3. Service population is the number of residents and employees. Residents are determined using the population density for the site's existing Multiple-Family Residential-Medium Density designation (2.5 persons per dwelling unit). New employees at each building are determined using U.S. Energy Information Administration statistics, available at http://www.eia.gov/consumption/commercial/data/2003/pdf/b1-b46.pdf.
4. BAAQMD significance threshold outlined in the May 2011 BAAQMD CEQA Guidelines.

Table 4
Summary of Alternative 2 Greenhouse Gas Emissions
Hall Saranap
Walnut Creek, California
(continued)

Abbreviations:
ARB: Air Resources Board
AQ: Air Quality
BAAQMD: Bay Area Air Quality Management District
CalEEMod: California Emissions Estimator Model
CEQA: California Environmental Quality Act
CO_2e: carbon dioxide equivalents
GHG: greenhouse gases
hr: hour
MT: metric tonnes
PG&E: Pacific Gas and Electric
SP: Service Population
yr: year

Sources:
ARB. 2013. Documentation of California's 2000-2010 GHG Inventory — Index. Available online at: http://www.arb.ca.gov/cc/inventory/doc/doc_index.php
BAAQMD. 2011. CEQA Air Quality Guidelines. May.
California Emissions Estimator Model (CalEEMod) Version 2013.2.2. Available online at: http://caleemod.com/
PG&E Greenhouse Gas Emission Factors. Available online at: http://www.pge.com/includes/docs/pdfs/shared/environment/calculator/pge_ghg_emission_factor_info_sheet.pdf

Table 5
Summary of Alternative 3 Greenhouse Gas Emissions
Hall Saranap
Walnut Creek, California

Source	Units	GHG Emissions
Construction GHG Emissions		
Off-road Mobile	[MT CO_2e]	367
On-road Mobile		507
Project Total		**874**

Source[1]	Units	2016 GHG Emissions
Non-Stationary Source Operational GHG Emissions		
Area[2]	[MT CO_2e/yr]	13.3
Energy[2,6]		506
Mobile[2,7]		1,432
Waste[2]		94.7
Water[2]		27.3
Project Total		**2,073**
Service Population[3]	--	257
Project Total	**[MT CO_2e/SP/yr]**	**8.1**
BAAQMD Threshold[4]	**[MT CO_2e/SP/yr]**	**4.6**
Exceeds Threshold?	**--**	**Yes**
Additional GHG Reductions Required	**[MT CO_2e/yr]**	**892**
Emergency Generators Emissions		
Generator Testing[5]	[MT CO_2e/yr]	14.7
BAAQMD Threshold[4]	**[MT CO_2e/yr]**	**10,000**
Exceeds Threshold?	**--**	No

Notes:
1. Total operational emissions include yearly emissions from area, energy, mobile, waste, and water sources. It is assumed that carbon sequestration associated with vegetation change will be minimal and hence not included.
2. Emissions estimated using CalEEMod version 2013.2.2.
3. Service population is the number of residents and employees. Residents are determined using the population density for the site's existing Multiple-Family Residential-Medium Density designation (2.5 persons per dwelling unit). New employees at each building are determined using U.S. Energy Information Administration statistics, available at http://www.eia.gov/consumption/commercial/data/2003/pdf/b1-b46.pdf.
4. BAAQMD significance threshold outlined in the May 2011 BAAQMD CEQA Guidelines.
5. It is assumed that the project would have 3 emergency generators, which require maintenance for 50 hours/year, calculations shown in AQ Table 5.

Table 5
Summary of Alternative 3 Greenhouse Gas Emissions
Hall Saranap
Walnut Creek, California
(continued)

Abbreviations:
ARB: Air Resources Board
AQ: Air Quality
BAAQMD: Bay Area Air Quality Management District
CalEEMod: California Emissions Estimator Model
CEQA: California Environmental Quality Act
CO_2e: carbon dioxide equivalents
GHG: greenhouse gases
hr: hour
MT: metric tonnes
PG&E: Pacific Gas and Electric
SP: Service Population
yr: year

Sources:
ARB. 2013. Documentation of California's 2000-2010 GHG Inventory — Index. Available online at: http://www.arb.ca.gov/cc/inventory/doc/doc_index.php
BAAQMD. 2011. CEQA Air Quality Guidelines. May.
California Emissions Estimator Model (CalEEMod) Version 2013.2.2. Available online at: http://caleemod.com/
PG&E Greenhouse Gas Emission Factors. Available online at: http://www.pge.com/includes/docs/pdfs/shared/environment/calculator/pge_ghg_emission_factor_info_sheet.pdf

Table 6
Summary of Alternative 4 Greenhouse Gas Emissions
Hall Saranap
Walnut Creek, California

Source	Units	GHG Emissions
Construction GHG Emissions		
Off-road Mobile	[MT CO_2e]	364
On-road Mobile		356
Project Total		**721**

Source[1]	Units	2016 GHG Emissions
Non-Stationary Source Operational GHG Emissions		
Area[2]	[MT CO_2e/yr]	1.4
Energy[2,6]		368
Mobile[2,7]		4,308
Waste[2]		44.7
Water[2]		22.1
Project Total		**4,744**
Service Population[3]	--	127
Project Total	**[MT CO_2e/SP/yr]**	**37.5**
BAAQMD Threshold[4]	**[MT CO_2e/SP/yr]**	**4.6**
Exceeds Threshold?	--	**Yes**
Additional GHG Reductions Required	**[MT CO_2e/yr]**	**4,162**
Emergency Generators Emissions		
Generator Testing[5]	[MT CO_2e/yr]	14.7
BAAQMD Threshold[4]	**[MT CO_2e/yr]**	**10,000**
Exceeds Threshold?	--	No

Notes:

1. Total operational emissions include yearly emissions from area, energy, mobile, waste, and water sources. It is assumed that carbon sequestration associated with vegetation change will be minimal and hence not included.
2. Emissions estimated using CalEEMod version 2013.2.2.
3. Service population is the number of residents and employees. Residents are determined using the population density for the site's existing Multiple-Family Residential-Medium Density designation (2.5 persons per dwelling unit). New employees at each building are determined using U.S. Energy Information Administration statistics, available at http://www.eia.gov/consumption/commercial/data/2003/pdf/b1-b46.pdf.
4. BAAQMD significance threshold outlined in the May 2011 BAAQMD CEQA Guidelines.
5. It is assumed that the project would have 3 emergency generators, which require maintenance for 50 hours/year, calculations shown in AQ Table 5.

Table 6
Summary of Alternative 4 Greenhouse Gas Emissions
Hall Saranap
Walnut Creek, California
(continued)

Abbreviations:
ARB: Air Resources Board
AQ: Air Quality
BAAQMD: Bay Area Air Quality Management District
CalEEMod: California Emissions Estimator Model
CEQA: California Environmental Quality Act
CO_2e: carbon dioxide equivalents
GHG: greenhouse gases
hr: hour
MT: metric tonnes
PG&E: Pacific Gas and Electric
SP: Service Population
yr: year

Sources:
ARB. 2013. Documentation of California's 2000-2010 GHG Inventory — Index. Available online at: http://www.arb.ca.gov/cc/inventory/doc/doc_index.php
BAAQMD. 2011. CEQA Air Quality Guidelines. May.
California Emissions Estimator Model (CalEEMod) Version 2013.2.2. Available online at: http://caleemod.com/
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APPENDIX E

Hydrology Technical Reports

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HYDROLOGY AND HYDRAULICS REPORT

For

SARANAP VILLAGE

November 20,2014
February 13, 2014
March 12, 2014
May 6, 2014
Revised May 8, 2014

Saranap Village
Hall Equities Group
1855 Olympic Blvd, Walnut Creek, CA 94596

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Appendix 1----- Existing Hydrology Calculations
Appendix 2----- Proposed Hydrology Calculations
Appendix 3----- SWHM Analysis
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Figure 1----- Overall Existing Hydrology Plan
Figure 2----- Overall Proposed Hydrology Plan
Figure 3----- Hydrology Plan

Executive Summary

This document addresses the hydrology of the Saranap Village Project, located at the intersection of Boulevard Way and Saranap Avenue. This document consists of:

- This Executive Summary,
- A report documenting the analysis of stormflows using the Contra Costa County Rational Method,
- Appendices 1 and 2 containing the calculations for existing and proposed watershed hydrology using the Rational Method,
- Appendix 3 documenting the analysis of stormflows using the Contra County Small Watershed Hydrograph Method (SWHM), and
- Appendix 4 discussing the possibility of achieving a zero increase goal.

The Project Site is located near Walnut Creek, in the Saranap area of unincorporated Contra Costa County (Figure 1). The Project Site consists of privately owned Sites A, B (including B1), C and the public right of way along Boulevard Way and Saranap Avenue that fronts Sites A, B and C. Off-site improvements are also proposed along Boulevard Way and Saranap Avenue.

The Project includes 235 multi-family units and approximately 43,541 square feet (gross leasable area) of non-residential uses including neighborhood retail, grocery, restaurant, coffee shop, bank, bar, and fitness club uses. Roadway improvements will occur in Boulevard Way and Saranap Avenue, and will result in adding bulb outs, street parking and other landscaping features such as the proposed oak tree planter island. along Boulevard Way. Onsite development will occur within a total area of 4.59 acres. Onsite street improvements will occupy an area of 1.11 acres, while offsite improvements of 0.69 acres will take place. The design includes a demolition plan for existing structures and facilities. The Project will maintain existing pervious landscaped areas in key locations, add additional landscaping, and provide C.3 treatment throughout the Project Site.

The Project Site and the area of offsite improvements contribute flow to a tributary area of approximately 100 acres. Flows from that tributary area are collected in an existing 60" storm drain pipe in Flora Avenue, which drains to Las Trampas Creek approximately one half mile southeast of the Project Site. Appendix Figure 1, "Overall Existing Hydrology Plan" (Sheet C12.1), depicts the existing overall watershed area. Proposed adjustments to stormwater management facilities and the overall watershed tributary area are shown in Appendix Figure 2, "Overall Proposed Hydrology Plan" (Sheet C12.2). Appendix Figure 3, "Hydrology Plan" (Sheet C12.3), delineates the proposed Project Site and shows the proposed street modifications and changes to hydrology areas both on site and off site.

The Project will redevelop an area that is currently occupied by institutional, commercial and residential uses and paved parking areas. The Project will increase the amount of impervious surface by covering some currently undeveloped areas on the Project Site, but that increase will be partially offset by a decrease in impervious surface resulting from additional landscaping in bulb outs and roundabouts in the street area. The net increase in the amount of impervious area will be 28,283 gross square feet. The development will also slightly change drainage pipe routing, which will slightly increase time of concentration for the Project. The Project (including off-site improvements) will result in a negligible increase in peak drainage flow rates of 0.12 cubic feet per second (cfs) based on the Contra Costa County Rational Method. The calculations for existing and proposed watershed hydrology using the Rational Method can be found in Appendices 1 and 2.

As an alternative to this analysis, and at the County's request, we have also evaluated the proposed and existing flows using the Contra County Small Watershed Hydrograph Method (SWHM). We evaluated both proposed and existing conditions and volumes of runoff using this modified rational method. We used the rational method hydrology from our base study as the basis for the input data. See Appendix 3 for the details on this alternative analysis. The hydrographs show that the increase to storm water volume between existing and proposed conditions in the 24-hour, 10-year design storm will be 12,304 cubic feet (CF). This SWHM analysis concludes that the Project will result in a decrease in the peak flow rate of 0.2 cfs.

The drainage calculations in this report are based upon use of conservative runoff coefficients. A runoff coefficient represents the percentage of storm rainfall not absorbed into the ground. The coefficient takes into account: soil type, impervious area, compaction of soils, treatment planters and ground cover. Runoff not absorbed into the ground flows into a drainage conveyance system (storm drain pipes) or continues to sheet flow across the ground. This analysis is conservative also because the C3 facilities are not assumed to detain stormflows during the 10-year design storm. The C3 facilities will, however, further reduce stormflows during 2-year and lesser events, resulting in a benefit to the neighborhood. In addition, compliance with current C3 requirements will ensure that water quality is substantially improved over existing.

The purpose of this report is to identify the potential impacts to off-site drainage facilities and to Las Trampas Creek from the Project. There will be no substantial impacts from the Project as it will not significantly increase surface runoff from current conditions. The 0.12 cfs flow rate increase calculated using the Contra Costa County Rational Method, and the 0.5 cfs flow rate decrease and 12,300 CF volume increase calculated using the SWHM, are not projected to cause any significant impacts. These numbers are so small as to be imperceptible. The fact that one methodology produces a negligible increase in flow rate, while the other methodology produces a negligible decrease in flow rate demonstrates that the results are within the range of statistical insignificance. The differences between pre- and post-project

numbers are not large enough to cause any appreciable differences in the volume or velocity of flows in any storm drain facilities. All Project drainage originating on the site or from the off-site improvements will be conveyed to existing storm drainage facilities. The facilities have adequate capacity to convey this storm water to its point of discharge, which is the 60" SD within Flora Avenue. The Project will not significantly impact preexisting conditions downstream within the Las Trampas Creek, the drainage system, or the intermediary storm drain system within the watershed at Blade Court.

Hall Equities Group, the applicant, requested that we also investigate methods that could be used to eliminate any Project-related increase in either the flow rate (using the Contra Costa County Rational Method) or volume (using SWHM) during the 24-hour, 10-year design storm. Such measures are not necessary to reduce impacts because the Project will produce only a negligible increase in storm flows and peak period volume. However, as discussed in Appendix 4, it is possible to construct a stormwater detention vault within Building B that is approximately 10' deep x 65' x 20', to achieve this zero increase goal.

End of Executive Summary

ANALYSIS OF STORMFLOWS USING THE CONTRA COSTA COUNTY RATIONAL METHOD

Introduction

This report supersedes our previous reports, and addresses hydrology issues related to the Saranap Village Project. This report addresses all Project development onsite and offsite that would affect drainage.

The purpose of this report is to identify the potential impacts to off-site drainage facilities and to Las Trampas Creek from the Project. The Project Site is located in a watershed that is approximately 100 acres, which is far smaller than one square mile. Under County standards, drainage facilities in watersheds of less than one square mile must be hydraulically adequate for a 10-year design storm. This report accordingly addresses drainage during a 10-year design storm. A 10-year design storm has a statistical likelihood of occurring approximately once every ten years. The 10-year design storm lasts 24 hours.

The Project and Project Site

The Saranap Village Project (Project) Site proposes to redevelop an area located at the corner of Saranap Avenue and Boulevard Way in the unincorporated (Walnut Creek) area of Contra Costa County (See Appendix Figure 1). All existing structures and pavement on the privately-owned portions of the Project Site will be removed and replaced with new facilities. The Project includes up to 235 multi-family units, and up to 43,541 square feet of gross leasable area of retail, grocery, restaurant, coffee shop, bank, nightclub and health club uses. Proposed improvements also include underground, multi-level parking structures for residential and commercial use. The Project includes roadway and sidewalk improvements to Boulevard Way and Saranap Avenue. These roadway improvements include a narrowing of Boulevard Way along the length of the Project Site, and extending offsite to the intersection of Boulevard Way and Flora Avenue. Roundabouts, landscaped bulb-outs, an Oak Tree relocation planter island, angled street parking, and new crosswalks will be located within the new street design.

The Project Site includes privately-owned properties and the public rights of way that front those properties. The three privately-owned sites comprise approximately 3.5 acres combined, and are referred to in this report as Site A, Site B (which includes the area called Site B1 in other documents) and Site C. The Project Site also includes the public right of way along the frontage of Sites A, B and C. Offsite areas will also be disturbed, for additional improvements to Saranap Avenue and Boulevard Way.

Sites A, B and C are currently developed with multiple buildings, including an apartment building, commercial and office space, the Sufism Reoriented church facility, one

single family house and parking lots associated with these uses. Most of the existing site is impervious area that includes paved streets, roof areas, sidewalks, paved parking, driveways, patios, walkways, and compacted base rock or asphalt areas for parking. Accordingly, the increase the Project will cause in the amount of impervious area is small, especially in comparison to the overall watershed area. The change in pervious area is shown in Table 1.

TABLE 1 – PERVIOUS AND IMPERVIOUS SURFACE AREA

	Pre-Project Impervious Area	Post-Project Impervious Area	Difference
Site A	54,073 SF	60,078 SF	+ 6,005 SF
Site B (includes B1)	41,534 SF	58,200 SF	+ 16,665 SF
Site C	15,474 SF	23,266 SF	+ 7,792 SF
Boulevard Way and Saranap Blvd. improvements (includes onsite and offsite areas)	73,180 SF	71,000 SF	- 2,180 SF
Project Total	184,261 SF	212,544 SF	+ 28,283 SF

Designed landscape areas will minimize runoff through the use of C.3 storm water treatment planters. Runoff will be further reduced through landscaping proposed on building podium levels with C.3 treatment measures (including biotreatment planters) placed throughout the Project Site. Though the analysis does not assume that C3 facilities will act as detention facilities during the 10-year design storm, we note that these facilities will act as on-site detention to reduce rates of runoff during two-year and annual events. The planters will also fulfill storm water treatment requirements for Contra Costa County. The stormwater management facilities and water treatment planters are shown on the Storm Water Treatment Plans (sheets C11.1-C11.3 of the Civil Plan Submittal). Upgrading the stormwater quality treatment from the standards employed when the existing buildings were constructed in the 1960s to the C3 standards applicable currently will have a beneficial impact on water quality.

Design Goal to Avoid Significant Drainage Impacts

This Project is designed so drainage from the site will not substantially increase rates of storm flows into Las Trampas Creek, or cause storm flows to exceed the capacity of any off-site drainage facility. The rate of flow generated from the existing site compared to the rate of flow and volume of Las Trampas Creek is negligible. The receiving watershed area that drains to Las Trampas Creek is approximately 13,000 acres. The total Project Site consists 4.59 acres, or 0.035% of this receiving watershed. The tributary area that drains to the 60 inch pipe is

approximately 100 acres. The Project Site is only about 4.6% of this tributary area. The Project will increase flows by a negligible 0.12 cfs using the rational method.

These conclusions are based upon calculations with the use of recommended County runoff factors for development. The hydrology calculations utilized conservative factors; i.e. the County has a range of runoff factors to be used for undeveloped areas of the site, but for this study higher runoff values were used, resulting in more conservative flows for worst case scenarios, as explained in more detail below.

Section 1: Existing On-site Topography and Drainage Patterns

The Project Site and the offsite improvement areas drain into a single drainage area, which flows downstream into the Las Trampas Creek approximately one half mile southeast of the Project Site. The Project Site currently contributes drainage to a tributary watershed of approximately 100 acres that connects to an existing 60" storm drain pipe that drains to the Flora watershed. The existing drainage shed area was previously analyzed in the EIR the County certified for the New Sanctuary for Sufism Reoriented Project[1] and has been analyzed in this report in more detail. Sites A, B and C, plus the area of all streetscape improvements that will affect drainage represent approximately 4.6% of the approximate 100-acre tributary area.

The Project Site and the area of offsite improvements drain to an existing 30" storm drain pipe that crosses Site B as noted on Figure 1. This drainage combines with drainage from a 36" storm drain that extends north of the Project Site, and then flows to a 60" storm drain pipe near Flora Avenue. Approximately 76 acres (labeled Drainage Area "S" in Figure 1) drain into the 36" storm drain pipe. Existing flow from Drainage Area S is predominantly sheet flow and is currently discharged to along a ditch and curb and gutter on the south side of Boulevard Way before entering the 36" pipe. The flows from the 36" pipe represent approximately 78% of the flows that drain into the 60" storm drain pipe. The approximate time of concentration and flows from the 100-acre watershed were determined. Ultimately this area drains from the 60" RCP into a 48" SD across Blade Court and eventually into the Las Trampas Creek, which is a Contra Costa County Flood Control and Water Conservation District (FC Creek) maintained creek.

Upstream and west of the Project Site is a drainage area that was analyzed in the Sufism Reoriented New Sanctuary EIR, and that represents approximately 18% of the 100-acre tributary watershed. The drainage from this area currently flows overland to the south side of Boulevard Way and west of Saranap Avenue where it is picked up in roadside swales that

[1] The EIR is SCH 2010032038. The information relied upon here is contained in Appendix L, "Preliminary Drainage Report, Sanctuary for Sufism Reoriented," dated January 3, 2011 and prepared by Aliquot Associates, Inc.

empties into structure ST2 and ST5. Structures ST5 and ST2 drain to the 30" storm drain pipe mentioned above. Accordingly, the flows from this drainage area combine with the Saranap Village Project flows (see Figures 1-3).

The 100-acre watershed eventually drains into Las Trampas Creek approximately one half mile downstream from the Project Site. See hydraulic and hydrology study within the appendix of the approved Sufism Reoriented New Sanctuary EIR for the drainage path to the Las Trampas Creek. (New Sanctuary for Sufism Reoriented Project EIR, SCH 2010032038, Appendix L, Figure 3.) As noted, the watershed that drains to Las Trampas Creek is approximately 13,000 acres. The Project Site plus the area of offsite improvements, combined, is less than one-third of one percent of this Las Trampas Creek tributary area.

Before reaching Las Trampas Creek, the drainage course passes near Blade Court. The EIR recently certified by the County for the New Sanctuary for Sufism Reoriented Project notes that minor erosion was evident downstream of the Saranap Village Project near the Blade Court area. The County Public Works Department confirmed that some parts of this area have historically been subject to flooding. The Flood Control District indicated that the drainage improvement at Blade Court currently does not have sufficient capacity to carry 10-year storm runoff, and that there have been complaints about ponding and creek bank erosion in the area. However, as the County's EIR for the Sufism Reoriented Project reports, no structures are within 50 feet of the creek in this area and the erosion occurred in a woodsy overgrown area, so a threat to improvements does not exist in that area.

Section 2: Rational Method Runoff Coefficients

The offsite areas within the watershed are primarily residential and zoned R-10. The County standard for runoff coefficients for R-10 is 0.45-0.60. For drainage area "S" outside the Project Site, a C-value of 0.60 was chosen to produce a larger, and therefore more conservative, Q value. Portions of the overall tributary drainage areas, outside of the Project Site, are apartments and multifamily residential and commercial and retail businesses for which the County has a range for C values of 0.6-0.95. A typical C value of 0.75 or 0.85 was used for these areas, depending on open space areas. For the road areas directly related to the Project, a C value of 0.90 was used. For areas that were benefiting from bio filtration treatment, normal C values were used for the 10-year design storm analysis, though we note there will be a reduction in storm flows in 2 year and annual events because of the use of these treatment measures.

Pervious areas were analyzed according to the conservative end of the range of typical values used in the County for such areas, to account for the clay soils found in the area. Contra Costa County standards for open space specify C-values from 0.20 to 0.40. A coefficient of 0.40 was

used in the calculations for pre- and post-development open space areas. All other subtributary areas for the pre- and post-development conditions were assigned a C-values of 0.70 to 0.9, depending on the amount of proposed landscaping. Additional landscaping can reduce C factors through percolation and detention in soil, as well as reduction of impervious area.

Section 3: Effect of Project on Downstream Facilities Based On Contra Costa County Rational Method

There would be no substantial impacts from the Project as it would not significantly increase surface runoff from current conditions of the three sites (A, B and C) and affected streetscape areas. The installation of landscaping on the private sites, and roundabouts, landscaped bulb-outs, and an Oak Tree relocation planter island in the street areas will limit flows. Though no detention is assumed for C.3 measures in the analysis of the 10-year design storm, we note that C.3 treatment measures will act as on-site detention to reduce rates of runoff in 2 year and annual rain events. The Project is projected to increase the flow rate above existing pre-development levels by a negligible 0.12 cubic feet per second (cfs) for the 10 year storm event using the rational method to determine flow. This flow rate increase is so insignificant that it will not be perceptible. The flow increase is well within the range of statistical insignificance, and is not large enough to cause any appreciable differences in the volume or velocity of flows in any storm drain facilities through which it passes during peak flow periods. Accordingly, it will not exacerbate any downstream deficiencies in the area of Blade Court, and will not cause storm flows to exceed the capacity of that or any other off-site drainage facility.

The calculations of the HGL show sufficient freeboard for the pre and post-Project flows from structure ST6A to the confluence of the north and south lines at OUT node shown on the proposed (Appendix B).

Accordingly, the Project will have no adverse impact on this system and have no negative impacts on the downstream system.

Section 4: Summary of Analysis Based On Contra Costa County Rational Method

The Project will cause flow rates during a 10-year design storm to increase only by 0.12 cfs, which is a negligible amount. Accordingly, the Project will have no appreciable adverse impact on any downstream system, and will not exacerbate any existing deficiencies in the area of Blade Court. The Project will not cause an increase in flooding or erosion downstream.

These conclusions are based upon calculations using the recommended County runoff

factors for development. Calculations utilized conservative factors; i.e. the County has a range of runoff factors to be used for the undeveloped areas of the site, but this study uses higher runoff values resulting in the most conservative flows for worst case scenarios.

In addition, the Project's stormwater quality treatment measures will create a beneficial impact on water quality, and will reduce flows for 2 year events and smaller due to storage provided by the C.3 facilities.

Storm Frequency 10 years

Open & Closed System Calculations

Contra Costa County Method

Mean Annual Precipitation = 22.00 inches
Free Board Requirement = 1.25 feet
File = H:\A12549\Exkw~1
TLW_Hydr

Saranap

Project:Saranap
Design :Bilal
Date: 04-28-2014 Time: 05:44:03pm
Page 1 of 3 -- version 2.01f

Pt. #	Area Descr.	dA (Acres)	"C"	dCA	Sum A (Acres)	Sum dCA (Acres)	Time of Conc.	Inten. "n"	Q CiA (cfs)	#/=Dia/ SS Width (in./ft.)	Sf Sp	Length Dn (ft.)	Vel. (fps)	Sect Time (min)	Frict Loss (ft.)	HGL (ft.)	MTC HGL+ F.B.	Plan T.C. F.L.	Flow Cond. to Pt.
				Hydrology							Hydraulics								
ST7	G	4.02	0.60	2.41	4.02	2.41	11.0	2.14								229.77	231.02	233.69	Dn*
								0.015	5.17	1= 18.0	0.0032	58	2.9	0.3	0.19			229.19	
											0.0328	0.58	8.2	0.1					ST6A
ST6A	H2	0.95	0.60	0.57	4.97	2.98	11.1	2.13								228.04	229.29	231.37	Dn*
								0.015	6.36	1= 18.0	0.0049	392	3.6	1.8	1.91			227.37	
											0.0285	0.67	8.3	0.8					ST6B
ST6B	F	1.41	0.75	1.06	6.38	4.04	11.9	2.06								217.03	218.28	221.20	Dn*
								0.015	8.32	1= 18.0	0.0083	220	4.7	0.8	1.84			216.20	
											0.0240	0.83	8.3	0.4					ST2
ST4	D	0.55	0.75	0.41	0.55	0.41	7.0	2.69								217.16	218.41	223.42	Dn*
								0.015	1.11	1= 24.0	0.0000	141	0.4	6.7	0.00			216.92	
											0.0331	0.24	5.1	0.5					ST3
ST3	C	0.78	0.75	0.58	1.33	1.00	7.5	2.59								212.59	213.84	217.45	Dn*
								0.015	2.59	1= 24.0	0.0002	42	0.8	0.8	0.01			212.25	
											0.0440	0.34	7.3	0.1					ST2
ST2	B	2.77	0.75	2.08	10.48	7.11	12.3	2.03								211.19	212.44	215.03	Dn*
								0.015	14.41	1= 30.0	0.0016	113	2.9	0.6	0.19			210.40	
											0.0347	0.79	10.8	0.2					ST1
ST8	H1	1.83	0.68	1.24	1.83	1.24	7.5	2.59								222.04	223.29	226.28	Dn*
								0.015	3.23	1= 15.0	0.0033	325	2.6	2.1	1.08			221.53	
											0.0283	0.51	6.9	0.8					ST5
ST5	E	2.42	0.68	1.65	4.25	2.89	7.7	2.56								212.73	213.98	216.31	Dn*
								0.015	7.40	1= 18.0	0.0066	77	4.2	0.3	0.51			212.03	
											0.0343	0.70	9.2	0.1					ST1
ST1	A	0.57	0.85	0.48	15.30	10.49	12.6	2.00								208.01	209.26	211.61	Dn*
								0.015	20.99	1= 30.0	0.0035	206	4.3	0.8	0.72			206.47	
											0.0071	1.54	6.6	0.5					ST0
ST0	R	1.19	0.70	0.83	16.49	11.32	12.9	1.98								206.36	207.61	212.00	Dn*
								0.015	22.39	1= 30.0	0.0040	182	4.6	0.7	0.72			205.00	
											0.0119	1.36	8.2	0.4					BP17
BP14	S	76.00	0.75	57.00	76.00	57.00	39.5	1.13								210.03	211.28	214.73	DC
								0.015	64.43	1= 36.0	0.0124	20	9.1	0.0	0.25			206.98	
											0.0100	Does not apply							BP15
BP15	A2	1.31	0.85	1.11	77.31	58.11	39.5	1.13								208.53	209.78	213.63	Dn*
								0.015	65.69	1= 36.0	0.0129	65	9.3	0.1	0.84			206.78	
											0.0313	1.75	15.3	0.1					BP16
BP16	A3	0.35	0.85	0.30	77.66	58.41	39.6	1.13								207.12	208.37	212.14	Dn*
								0.015	65.94	1= 42.0	0.0057	203	6.9	0.5	1.16			204.84	
											0.0099	2.28	9.9	0.3					BP17

KIER & WRIGHT 2850 Collier Canyon Road Livermore California 94551 (925) 245-8788

Storm Frequency 10 years

Open & Closed System Calculations

Contra Costa County Method

Mean Annual Precipitation = 22.00 inches

Free Board Requirement = 1.25 feet

File = H:\A12549\Exkw~1

TLW_Hydr

Saranap

Project:Saranap

Design :Bilal

Date: 04-28-2014 Time: 05:44:03pm

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Pt. #	Area Descr. (Acres)	dA	"C"	dCA	Sum A (Acres)	Sum dCA (Acres)	Time of Conc.	Inten. "n"	Q CiA (cfs)	#/=Dia/ SS Width (in./ft.)	Sf Sp	Length Dn (ft.)	Vel. (fps)	Sect Time (min)	Frict Loss (ft.)	HGL (ft.)	MTC HGL+ F.B.	Plan T.C. F.L.	Flow Cond. to Pt.
	Hydrology										Hydraulics								
BP17		0.00	0.75	0.00	94.15	69.73	39.9	1.12								204.25	205.50	210.00	Dn*
								0.015	78.42	1=114.0	0.0000	114	1.1	1.7	0.00			202.84	
											0.0175	1.41	12.0	0.2					OUT

Beginning Water Surface = 202.58

KIER & WRIGHT 2850 Collier Canyon Road Livermore California 94551 (925) 245-8788

Storm Frequency 10 years

Open & Closed System Summary

Contra Costa County Method

Mean Annual Precipitation = 22.00 inches | Saranap | Project:Saranap

Free Board Requirement = 1.25 feet | Design :Bilal

File = H:\A12549\Exkw~1 | Date: 04-28-2014 Time: 05:44:03pm

TLW_Hydr | Hydrology | Hydraulics | Page 3 of 3 -- version 2.01f

Pt	Area	Q	Vel	F.L.	Dn	Dc	HGL	EGL	MTC	Plan TC	Flow	Net.
ST7	G	5.17	8.24	229.19	0.58	0.88	229.77	230.83	231.02	233.69	Dn*	ST6A
ST6A	H2	6.36	8.29	227.37	0.67	0.97	228.04	229.11	229.29	231.37	Dn*	ST6B
ST6B	F	8.32	8.30	216.20	0.83	1.12	217.03	218.10	218.28	221.20	Dn*	ST2
ST4	D	1.11	5.12	216.92	0.24	0.36	217.16	217.57	218.41	223.42	Dn*	ST3
ST3	C	2.59	7.31	212.25	0.34	0.56	212.59	213.42	213.84	217.45	Dn*	ST2
ST2	B	14.41	10.79	210.40	0.79	1.28	211.19	213.00	212.44	215.03	Dn*	ST1
ST8	H1	3.23	6.94	221.53	0.51	0.72	222.04	222.79	223.29	226.28	Dn*	ST5
ST5	E	7.40	9.22	212.03	0.70	1.05	212.73	214.05	213.98	216.31	Dn*	ST1
ST1	A	20.99	6.60	206.47	1.54	1.56	208.01	208.69	209.26	211.61	Dn*	ST0
ST0	R	22.39	8.18	205.00	1.36	1.61	206.36	207.40	207.61	212.00	Dn*	BP17
BP14	S	64.43	9.11	206.98	N/A	N/A	210.03	211.32	211.28	214.73	DC	BP15
BP15	A2	65.69	15.34	206.78	1.75	2.60	208.53	212.18	209.78	213.63	Dn*	BP16
BP16	A3	65.94	9.92	204.84	2.28	2.55	207.12	208.65	208.37	212.14	Dn*	BP17
BP17		78.42	11.96	202.84	1.41	2.08	204.25	206.47	205.50	210.00	Dn*	OUT

KIER & WRIGHT 2850 Collier Canyon Road Livermore California 94551 (925) 245-8788

Point	MTC	Plan TC	Diff.	Point	MTC	Plan TC	Diff.
ST7	231.02	233.69	2.67	ST6A	229.29	231.37	2.08
ST6B	218.28	221.20	2.92	ST4	218.41	223.42	5.01
ST3	213.84	217.45	3.61	ST2	212.44	215.03	2.59
ST8	223.29	226.28	2.99	ST5	213.98	216.31	2.33
ST1	209.26	211.61	2.35	ST0	207.61	212.00	4.39
BP14	211.28	214.73	3.45	BP15	209.78	213.63	3.85
BP16	208.37	212.14	3.77	BP17	205.50	210.00	4.50

Storm Frequency 10 years

Open & Closed System Calculations

Contra Costa County Method

Mean Annual Precipitation = 22.00 inches
Free Board Requirement = 1.25 feet
File = H:\A12549\Kw-Pr3
TLW_Hydr

Saranap

Project:Saranap
Design :Bilal
Date: 04-28-2014 Time: 05:44:42pm
Page 1 of 3 -- version 2.01f

Pt. #	Area Descr.	dA (Acres)	"C"	dCA	Sum A (Acres)	Sum dCA (Acres)	Time of Conc.	Inten. "n"	Q CiA (cfs)	#/=Dia/ SS Width (in./ft.)	Sf Sp	Length Dn (ft.)	Vel. (fps)	Sect Time (min)	Frict Loss (ft.)	HGL (ft.)	MTC HGL+ F.B.	Plan T.C. F.L.	Flow Cond. to Pt.
				Hydrology							Hydraulics								
ST7	G	4.02	0.60	2.41	4.02	2.41	11.0	2.14								229.89	231.14	233.69	Dn*
								0.015	5.17	1= 18.0	0.0032	58	2.9	0.3	0.19			229.19	
											0.0160	0.70	6.3	0.2					ST6A
ST6A	H2	0.95	0.60	0.57	4.97	2.98	10.0	2.25								228.98	230.23	231.37	Dn*
								0.015	6.70	1= 18.0	0.0054	286	3.8	1.3	1.55			228.26	
											0.0250	0.72	8.0	0.6					ST6B
ST6B	F	1.41	0.75	1.06	6.38	4.04	10.6	2.18								217.23	218.48	221.20	Dn*
								0.015	8.81	1= 21.0	0.0041	317	3.7	1.4	1.31			216.20	
											0.0096	1.03	6.0	0.9					ST2
ST4	D	0.55	0.75	0.41	0.55	0.41	7.0	2.69								217.22	218.47	223.42	Dn*
								0.015	1.11	1= 24.0	0.0000	141	0.4	6.7	0.00			216.92	
											0.0139	0.30	3.8	0.6					ST3
ST3	C	0.78	0.75	0.58	1.33	1.00	7.6	2.58								215.32	216.57	220.41	Dn*
								0.015	2.57	1= 24.0	0.0002	42	0.8	0.8	0.01			214.96	
											0.0350	0.36	6.8	0.1					ST2
PR7	PR7	0.22	0.85	0.19	0.22	0.19	10.0	2.25								215.62	216.87	219.28	Dn*
								0.015	0.42	1= 24.0	0.0000	110	0.1	13.7	0.00			215.45	
											0.0200	0.17	3.2	0.6					ST2
ST2	B	2.57	0.75	1.93	10.50	7.15	11.5	2.09								214.01	215.26	218.07	Dn*
								0.015	14.98	1= 30.0	0.0018	113	3.1	0.6	0.20			213.18	
											0.0320	0.83	10.6	0.2					ST1
ST8	H1	1.83	0.68	1.24	1.83	1.24	7.0	2.69								222.05	223.30	226.28	Dn*
								0.015	3.34	1= 15.0	0.0036	325	2.7	2.0	1.16			221.53	
											0.0283	0.52	7.0	0.8					ST5
ST5	E	0.74	0.75	0.56	2.57	1.80	7.8	2.54								212.56	213.81	216.31	Dn*
								0.015	4.58	1= 18.0	0.0025	77	2.6	0.5	0.19			212.03	
											0.0343	0.53	8.1	0.2					ST1
ST1	A	0.55	0.80	0.44	13.62	9.39	11.7	2.08								211.21	212.46	214.43	BW
								0.015	19.50	1= 27.0	0.0053	106	4.9	0.4	0.56			209.18	
											0.0116	Does not apply							PR4
PR4	PR4	0.81	0.85	0.69	14.43	10.08	12.1	2.04								210.65	211.90	215.31	BW
								0.015	20.58	1= 30.0	0.0034	124	4.2	0.5	0.42			207.95	
											0.0120	Does not apply							PR5
PR5	PR5	0.54	0.85	0.46	14.97	10.54	12.6	2.00								210.23	211.48	213.38	BW
								0.015	21.09	1= 30.0	0.0035	90	4.3	0.3	0.32			206.56	
											0.0120	Does not apply							PR6
E14	S	76.00	0.75	57.00	76.00	57.00	40.0	1.12								210.04	211.29	214.73	BW
								0.015	64.02	1= 40.3	0.0067	20	7.2	0.0	0.13			206.98	
											0.0350	Does not apply							PR6

KIER & WRIGHT 2850 Collier Canyon Road Livermore California 94551 (925) 245-8788

Storm Frequency 10 years

Open & Closed System Calculations

Contra Costa County Method

Mean Annual Precipitation = 22.00 inches — Saranap — Project:Saranap

Free Board Requirement = 1.25 feet — Design :Bilal

File = H:\A12549\Kw-Pr3 — Date: 04-28-2014 Time: 05:44:42pm

TLW_Hydr — Hydrology — Hydraulics — Page 2 of 3 -- version 2.01f

Pt. #	Area Descr. (Acres)	dA	"C"	dCA	Sum A (Acres)	Sum dCA (Acres)	Time of Conc.	Inten. "n"	Q CiA (cfs)	#/=Dia/ SS Width (in./ft.)	Sf Sp	Length Dn (ft.)	Vel. (fps)	Sect Time (min)	Frict Loss (ft.)	HGL (ft.)	MTC HGL+ F.B.	Plan T.C. F.L.	Flow Cond. to Pt.
E15	E15	0.43	0.85	0.37	0.43	0.37	10.0	2.25								209.92	211.17	213.14	BW
								0.015	0.82	1= 15.0	0.0002	30	0.7	0.7	0.01			206.18	
											0.0200	Does not apply							PR6
PR6	A3	0.00	0.90	0.00	91.40	67.90	40.0	1.12								209.91	211.16	212.58	BW
								0.015	76.27	1= 36.0	0.0174	25	10.8	0.0	0.44			205.48	
											0.0256	Does not apply							E16
E16	A3	1.09	0.90	0.98	92.49	68.88	40.0	1.12								209.47	210.72	212.14	DC
								0.015	77.37	1= 36.0	0.0179	203	10.9	0.3	3.64			204.84	
											0.0099	Does not apply							E17
PR1	PR1	0.33	0.75	0.25	0.33	0.25	10.0	2.25								220.49	221.74	228.80	Dn*
								0.015	0.56	1= 12.0	0.0003	226	0.7	5.3	0.07			220.21	
											0.0114	0.28	3.1	1.2					PR2
PR2	PR2	0.78	0.75	0.58	1.11	0.83	11.2	2.12								218.11	219.36	225.84	Dn*
								0.015	1.77	1= 12.0	0.0033	54	2.3	0.4	0.18			217.63	
											0.0150	0.48	4.7	0.2					PR3
PR3	PR3	0.28	0.85	0.24	1.39	1.07	11.4	2.10								217.27	218.52	225.57	Dn*
								0.015	2.25	1= 12.0	0.0053	115	2.9	0.7	0.61			216.82	
											0.0300	0.45	6.5	0.3					BP0
BP0	BP0	0.27	0.85	0.23	1.66	1.30	11.7	2.08								205.98	207.23	212.00	BW
								0.015	2.70	1= 12.0	0.0076	182	3.4	0.9	1.39			205.00	
											0.0119	Does not apply							E17
E17	E17	0.00	0.75	0.00	94.15	70.18	40.3	1.12								204.59	205.84	210.00	Dn*
								0.015	78.54	1= 60.0	0.0012	114	4.0	0.5	0.14			202.84	
											0.0175	1.75	12.8	0.1					OUT

Beginning Water Surface = 202.58

KIER & WRIGHT 2850 Collier Canyon Road Livermore California 94551 (925) 245-8788

Storm Frequency 10 years

Open & Closed System Summary

Contra Costa County Method

Mean Annual Precipitation = 22.00 inches

Free Board Requirement = 1.25 feet

File = H:\A12549\Kw-Pr3

TLW_Hydr

Saranap

Hydrology

Hydraulics

Project:Saranap

Design :Bilal

Date: 04-28-2014 Time: 05:44:42pm

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Pt	Area	Q	Vel	F.L.	Dn	Dc	HGL	EGL	MTC	Plan TC	Flow	Net.
ST7	G	5.17	6.34	229.19	0.70	0.88	229.89	230.51	231.14	233.69	Dn*	ST6A
ST6A	H2	6.70	8.00	228.26	0.72	1.00	228.98	229.97	230.23	231.37	Dn*	ST6B
ST6B	F	8.81	5.97	216.20	1.03	1.10	217.23	217.78	218.48	221.20	Dn*	ST2
ST4	D	1.11	3.81	216.92	0.30	0.36	217.22	217.44	218.47	223.42	Dn*	ST3
ST3	C	2.57	6.75	214.96	0.36	0.56	215.32	216.03	216.57	220.41	Dn*	ST2
PR7	PR7	0.42	3.21	215.45	0.17	0.22	215.62	215.78	216.87	219.28	Dn*	ST2
ST2	B	14.98	10.58	213.18	0.83	1.31	214.01	215.75	215.26	218.07	Dn*	ST1
ST8	H1	3.34	7.01	221.53	0.52	0.74	222.05	222.81	223.30	226.28	Dn*	ST5
ST5	E	4.58	8.13	212.03	0.53	0.82	212.56	213.59	213.81	216.31	Dn*	ST1
ST1	A	19.50	4.91	209.18	N/A	N/A	211.21	211.58	212.46	214.43	BW	PR4
PR4	PR4	20.58	4.19	207.95	N/A	N/A	210.65	210.92	211.90	215.31	BW	PR5
PR5	PR5	21.09	4.30	206.56	N/A	N/A	210.23	210.52	211.48	213.38	BW	PR6
E14	S	64.02	7.23	206.98	N/A	N/A	210.04	210.85	211.29	214.73	BW	PR6
E15	E15	0.82	0.67	206.18	N/A	N/A	209.92	209.93	211.17	213.14	BW	PR6
PR6	A3	76.27	10.79	205.48	N/A	N/A	209.91	211.72	211.16	212.58	BW	E16
E16	A3	77.37	10.95	204.84	N/A	N/A	209.47	211.33	210.72	212.14	DC	E17
PR1	PR1	0.56	3.13	220.21	0.28	0.31	220.49	220.64	221.74	228.80	Dn*	PR2
PR2	PR2	1.77	4.74	217.63	0.48	0.57	218.11	218.46	219.36	225.84	Dn*	PR3
PR3	PR3	2.25	6.51	216.82	0.45	0.64	217.27	217.93	218.52	225.57	Dn*	BP0
BP0	BP0	2.70	3.44	205.00	N/A	N/A	205.98	206.16	207.23	212.00	BW	E17
E17	E17	78.54	12.83	202.84	1.75	2.51	204.59	207.15	205.84	210.00	Dn*	OUT

KIER & WRIGHT 2850 Collier Canyon Road Livermore California 94551 (925) 245-8788

Point	MTC	Plan TC	Diff.
ST7.	231.14	233.69	2.55
ST6B	218.48	221.20	2.72
ST3	216.57	220.41	3.84
ST2	215.26	218.07	2.81
ST5	213.81	216.31	2.50
PR4	211.90	215.31	3.41
E14	211.29	214.73	3.44
PR6	211.16	212.58	1.42
PR1	221.74	228.80	7.06
PR3	218.52	225.57	7.05
E17	205.84	210.00	4.16

Point	MTC	Plan TC	Diff.
ST6A	230.23	231.37	1.14
ST4	218.47	223.42	4.95
PR7	216.87	219.28	2.41
ST8	223.30	226.28	2.98
ST1	212.46	214.43	1.97
PR5	211.48	213.38	1.90
E15	211.17	213.14	1.97
E16	210.72	212.14	1.42
PR2	219.36	225.84	6.48
BP0	207.23	212.00	4.77

Appendix 3
SWHM Analysis

The County requested an evaluation of proposed and existing flows using the Contra County Small Watershed Hydrograph Method (SWHM), for the purpose of evaluating flows and volume adjustments due to the Project. This Appendix 3 provides that alternative analysis. We used the rational method hydrology from our base study as the basis for the input data.

Attached are the results using this modified rational method. The resulting calculations vary slightly from the normal rational method and are based on the analysis provided in Appendices 1 and 2. The flow varies slightly from the rational method that it is derived from, as follows:

APPENDIX 3 TABLE Peak Flow Rate and Volume Comparison Of Rational Method and SWHM (24-hour, 10 yr. design storm)

	Peak Flows Rational Method	Peak Flows SWHM Method	Difference between Rational and SWHM
Flow Rate			
Existing Condition (cfs)	78.42 cfs	78.60 cfs	+/- 0.18 cfs
Post-Project Condition (cfs)	78.52 cfs	78.40 cfs	+/- 0.121 cfs
Difference between existing and post-project conditions	+ 0.12 cfs	- 0.20 cfs	0.30 cfs
Volume			
Existing Condition (cf)		1,010,190 CF	
Post-Project Condition(cf)		1,022,494 CF	
Difference between existing and post-project conditions (increase in volume)		+ 12,304 CF	

The hydrographs show that the increase to storm water volume between existing and proposed conditions during the 24-hour, 10-year design storm is 12,304 cubic feet (CF) for the entire Project, including off-site improvements. In this SWHM analysis, the peak flow rate is reduced post-project by 0.20 cfs. This reduction is due to the timing of rain events in the SWHM. As noted in the Executive Summary above, the 12,304 CF increase is so small as to be imperceptible. It is within the range of statistical insignificance and is not large enough to cause any appreciable differences in the volume or velocity of flows in any storm drain

facilities. It will not cause any significant, adverse impacts.

Appendix 4

Achieving Zero Increase in Post-Project Flow Rate and Peak Period Volume

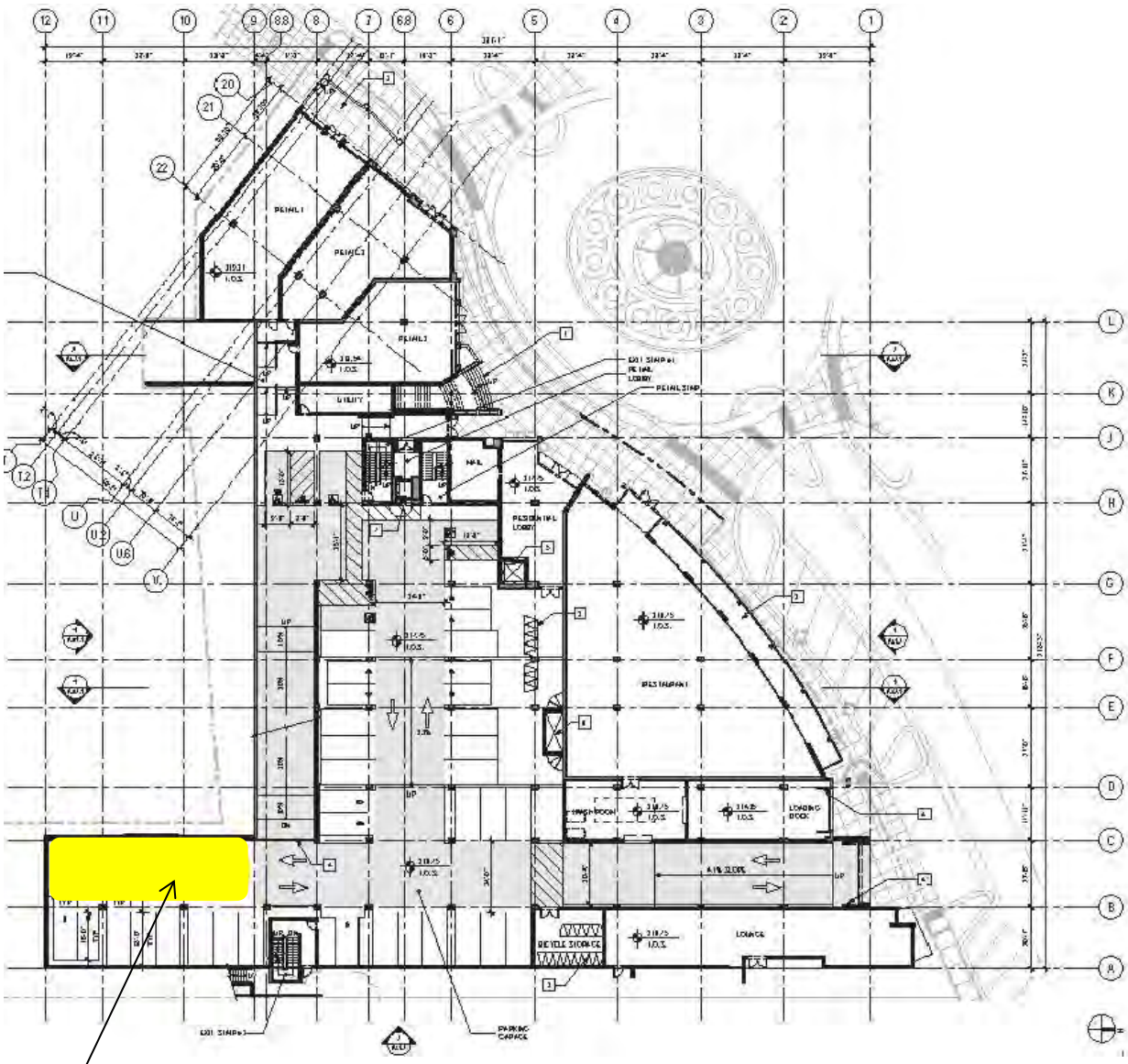
Hall Equities Group asked us to investigate whether facilities could be installed that would result in no increase in the flow rate or volume of stormwater leaving the Project Site during the 24-hour, 10-year design storm. This Appendix 4 responds to that request and presents a possible means of accomplishing this goal. We note that, because the Project will not cause any significant impacts and will produce only a negligible increase in flow rate in the 10-year design storm (as calculated using the Rational Method), these potential additional measures are not necessary to reduce impacts, but are studied solely for informational purposes.

The calculations and analysis reflected in the foregoing report and in Appendix 3 assume installation of all storm management facilities referenced in the Preliminary Stormwater Control Plans. If, in addition to those facilities, the Project installed a storm water detention vault that is approximately 10' deep x 65' x 20', the Project would accommodate storage capacity of 12,304 CF of stormwater. This is the volume of stormwater generated in a 24-hour, 10-year design storm that exceeds pre-project conditions, as explained in Appendix 3 above.

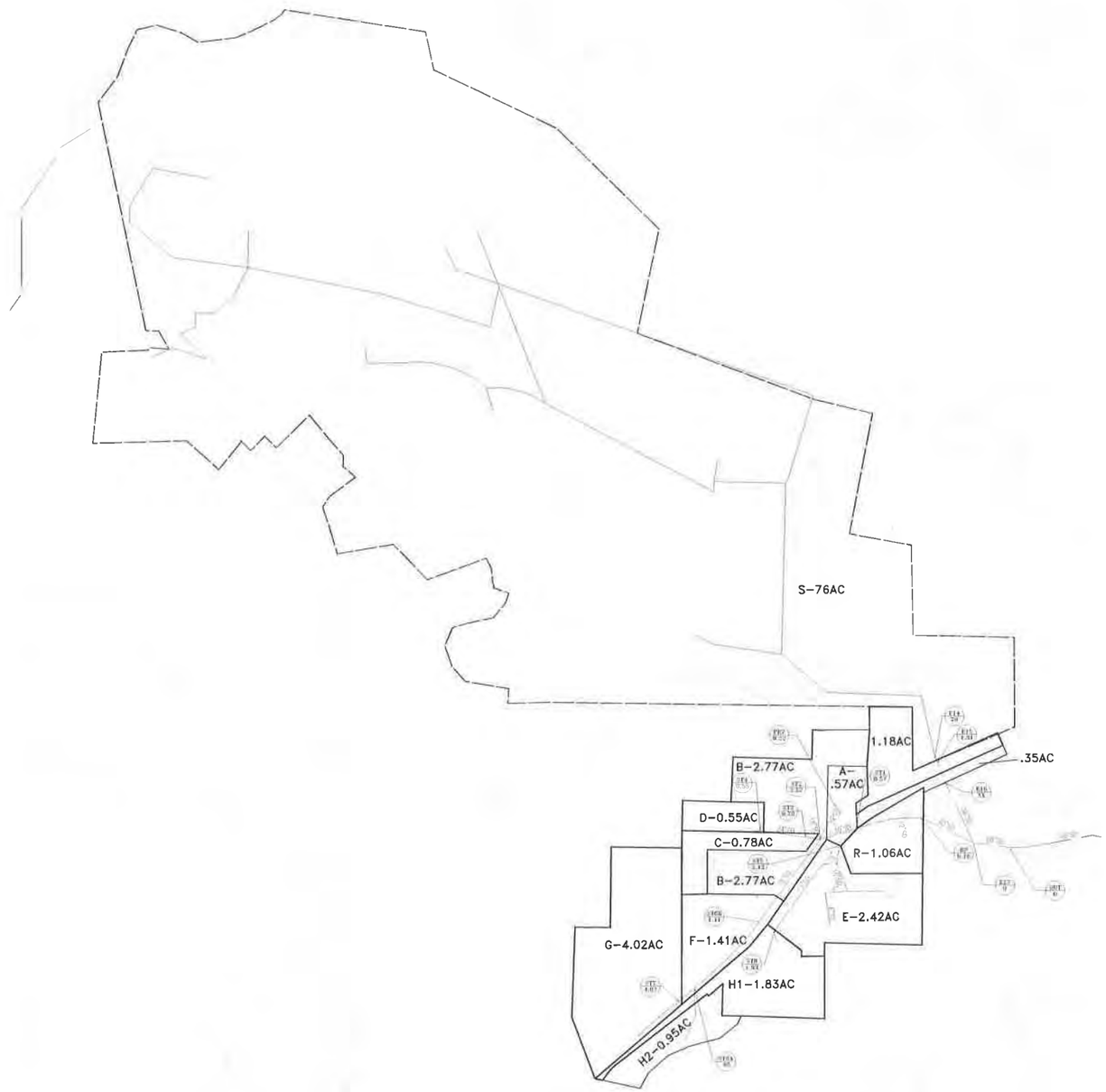
One potential location for this vault is under the 1st floor of Building B, in the general vicinity of the area noted in yellow in the figure below. A portion of the roof water could be diverted to this the detention structure and not released until after the peak flow period has passed. We calculated the volume of flow from approximately 0.91 acres of roof area for Building B for the entire 24 hour storm. The total volume for that area is 12,300 +/- CF.

By eliminating 12,304 CF of stormwater that would otherwise flow offsite during the 10-year storm peak flow period, and releasing this water after the peak flow period has passed through a properly-sized orifice, this proposal would result in an approximate 0.5 cfs decrease in stormflow rate below pre-project levels (calculated using the Contra Costa County Rational Method). If this vault were installed, the Project would, according to Rational Method calculations, reduce the flow rate to a level that is below the existing rate, providing a benefit to the neighborhood and improving existing conditions. The vault would also ensure there would be no increase from pre-project conditions in the volume of stormwater flowing from the Project Site during the 24-hour, 10-year storm event.

This Appendix presents one possible means of capturing the additional stormwater runoff generated by the Project. It does not describe the only possible additional detention facilities, and other facilities could be installed to achieve the zero increase goal.



Approximate Location of
Storm Water Detention Vault



NORTH

0 30 60 120 180

Scale 1" = 60 ft

LEGEND

- HYDROLOGY AREA
- OUTER HYDROLOGY AREA
- EXISTING STORM DRAIN
- 1 — NODE
- 11.1 — AREA

NO.	REVISION	BY	NO.	REVISION	BY
△			△		
△			△		
△			△		
△			△		
△			△		

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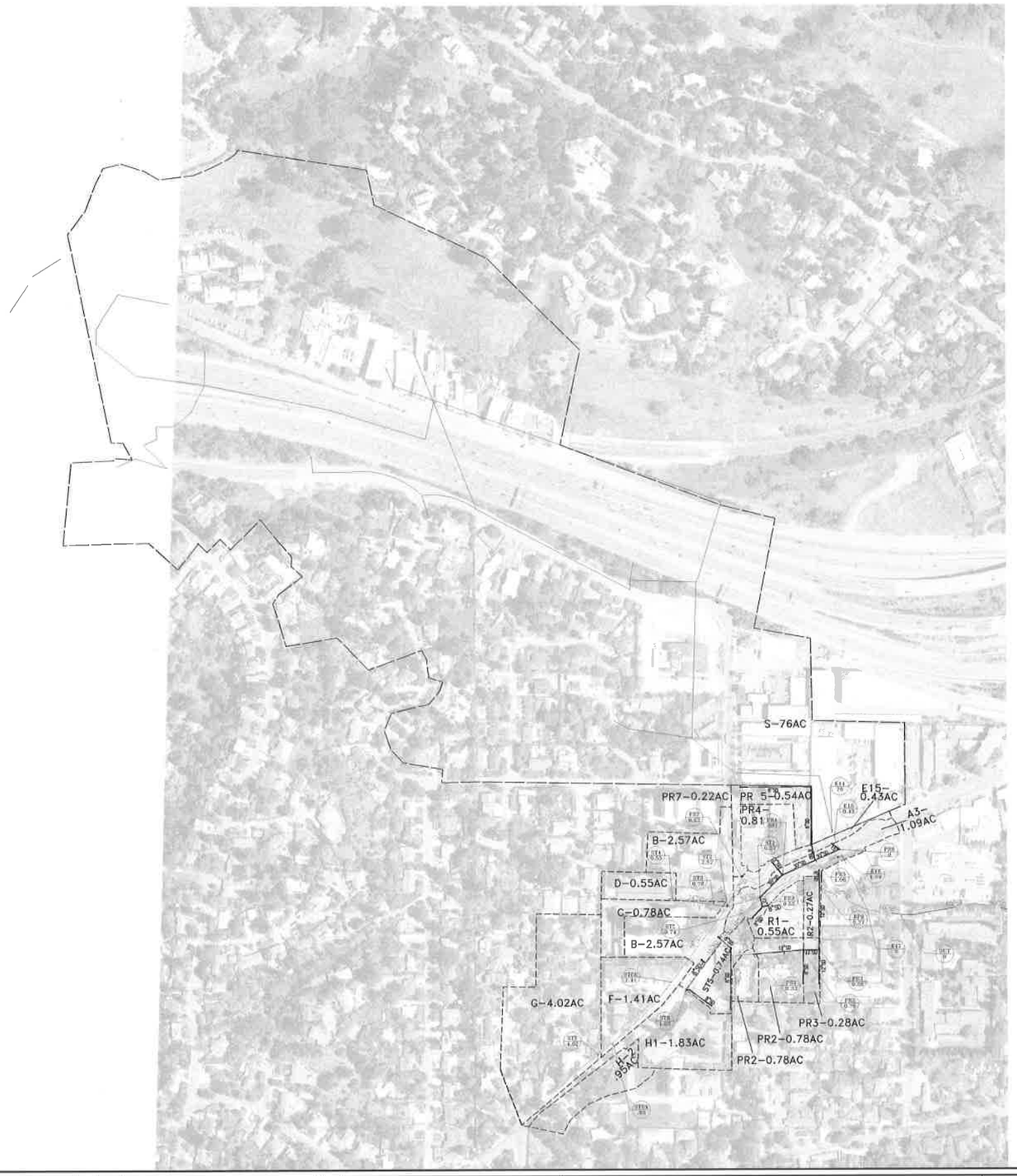
FIGURE 1 – OVERALL EXISTING HYDROLOGY PLAN
OF
BOULEVARD WAY AND SARANAP AVENUE
FOR
HALL EQUITIES

CONTRA COSTA COUNTY CALIFORNIA

DATE	MARCH, 2013
SCALE	1" = 150'
DESIGNER	TC
JOB NO.	A12549-2
SHEET	C12.1
OF	13 SHEETS



NORTH

0 30 60 120 180

Scale 1" = 60 ft

LEGEND

- - - - - - HYDROLOGY AREA

— — — — OUTER HYDROLOGY AREA

——— EXISTING STORM DRAIN

1 / 11.1 — NODE / AREA

NO.	REVISION	BY	NO.	REVISION	BY
△			△		
△			△		
△			△		
△			△		
△			△		

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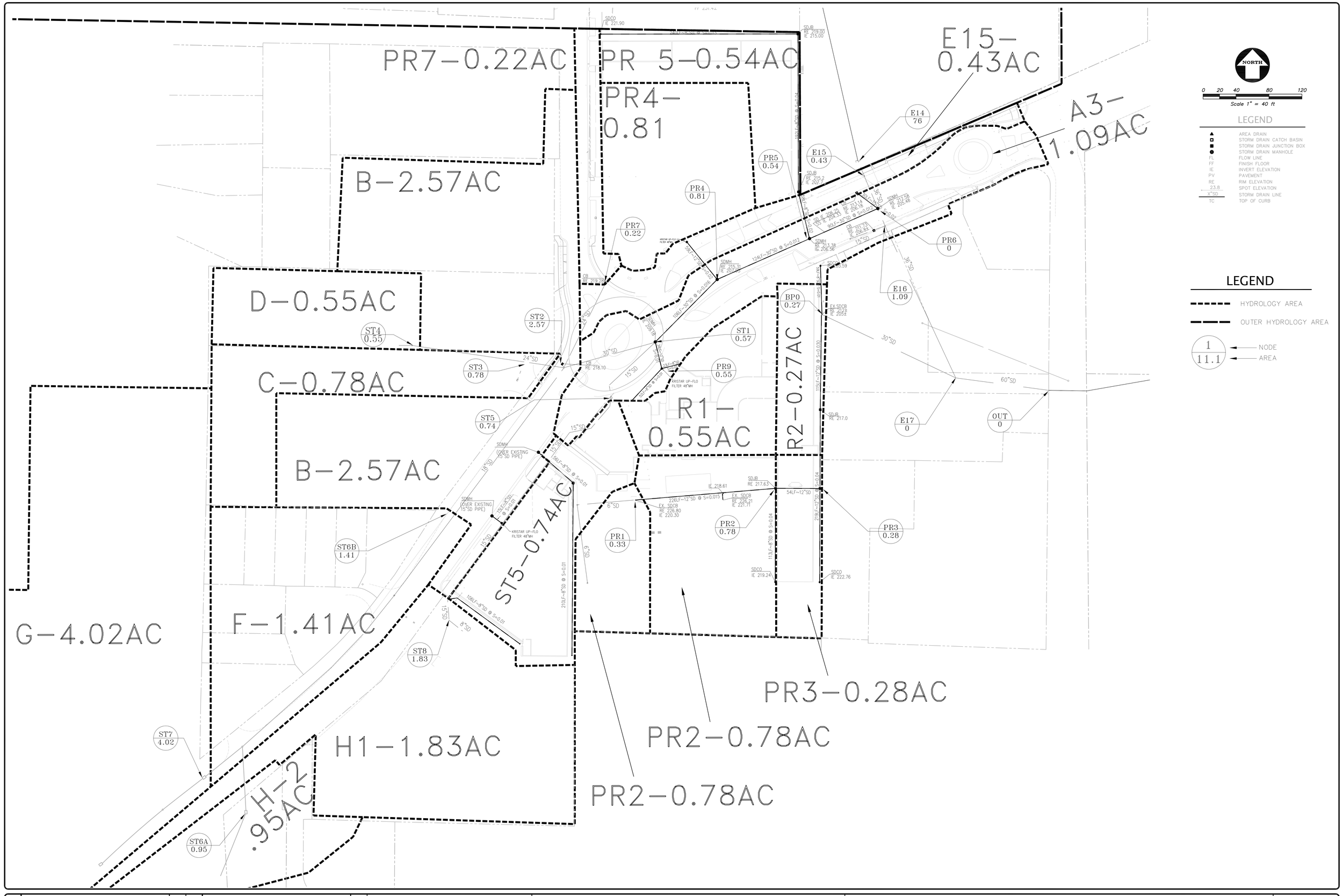
FIGURE 2 – OVERALL PROPOSSED HYDROLOGY PLAN
OF
BOULEVARD WAY AND SARANAP AVENUE
FOR
HALL EQUITIES

CONTRA COSTA COUNTY CALIFORNIA

DATE	MARCH, 2013
SCALE	1" = 150'
DESIGNER	TC
JOB NO.	A12549-2
SHEET	C12.2
OF	13 SHEETS



NO.	REVISION	BY	NO.	REVISION	BY
△			△		
△			△		
△			△		
△			△		
△			△		

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FIGURE 3 – HYDROLOGY PLAN
OF
BOULEVARD WAY AND SARANAP AVENUE
FOR
HALL EQUITIES

CONTRA COSTA COUNTY CALIFORNIA

DATE	MARCH, 2013
SCALE	1" = 40'
DESIGNER	TC
JOB NO.	A12549-2
SHEET	C12.3
OF	13 SHEETS

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This report addresses the hydrology and water quality impacts of the alternatives.

ALTERNATIVE 1: NO PROJECT/NO BUILD
This alternative assumes that the existing site remains as it is and no improvements are made. The impacts of the Project would not occur. The hydrology would remain the same as existing, and water would continue to enter the storm drain system as it does today.

ALTERNATIVE 2: NO PROJECT/REHABILITATION
This alternative assumes that the existing buildings and related facilities remain on site, but that they are rehabilitated. No grading would be involved and the amount of hardscape would not change from existing. Exterior landscaping would be improved. Boulevard Way and Saranap Avenue would remain in their existing configurations and conditions.

This alternative proposes no substantial changes in the amount of impervious surface. There is some potential for remodeled landscaping to increase the amount of impervious surface due to additional pathways or other amenities in what are now barren or weed-grown areas on site. However, the changes would not be substantial enough to make an appreciable difference in the amount of stormwater leaving the site during the 10-year design storm.
This alternative would not require C.3 improvements, and therefore would not improve water quality compared to existing.

ALTERNATIVE 3: REDUCED PROJECT
This alternative proposes a reduced s development footprint compared to the Project. The development footprint and minimal changes in the amount impervious surface would be similar to that of the Project on sites B, B1 and C. On Site A, the existing buildings and landscaping would remain, but the small, undeveloped southwest corner would be covered with a commercial building and parking. The street areas would remain essentially in their present condition, however curb and gutter upgrades, and sidewalk amenities, such as outdoor seating, would be provided.
The alternative would have impacts similar to those of the Project. The undeveloped corner of Site A would be developed with impervious surfaces, resulting in a similar increase on Site A in the amount of impervious surface as the Project. On Sites B, B1 and C, the development proposed by this Alternative is similar to that of the Project and would result in similar increases in the amount of impervious surfaces. However, this alternative would not change the amount of impervious surface in the street areas and thus would not experience the reduction in impervious street area the Project would experience. Accordingly, the increase in impervious area resulting from this Alternative 3 would be slightly greater than that of the Project, around 30,000 to 35,000 square feet. To meet the County's collect and convey requirements, this Alternative would need to incorporate detention facilities similar to those of the Project, resulting in no substantial increase in post-project flow rates.

This Alternative would be required to incorporate C3 treatment facilities on Sites B, B1, C, and the developed corner of Site A similar to the Project. However, the portion of Site A that is excluded from this Alternative would not be upgraded and therefore would not experience improved water quality treatment. The improvement in water quality under this Alternative would therefore not be as great as that of the Project.

ALTERNATIVE 4: GENERAL PLAN BUILDOUT ALTERNATIVE.
This alternative proposes the amount of development allowed under the current General Plan. Boulevard Way and Saranap Ave would remain as they are today, though curbs, gutters and sidewalks would be improved only along project frontages. The existing Boulevard Way and Saranap Ave road configurations would remain as they exist currently.

Because the site would be required to comply with current water quality standards, the improvements in water quality for this Alternative would be similar to that of the Project.

There would be a decrease in the amount of impervious surface compared to existing circumstances, resulting in a flow decrease of a negligible amount, which may be in the range of 0.2 to 0.3 CFS compared to existing conditions. Despite the increase in hardscape that would result from development of the currently undeveloped southwest corner of Site A and development of the currently undeveloped panhandle in Site B, there would be an overall decrease in impervious surface resulting from because the landscaping required for this use would be increased and not constructed as planter on a building structure. This would change the values of the C factors to a small degree, from 0.85 to 0.7, as used in the rational method. The impacts would be negligible, as there would be no appreciable difference in stormwater flow rates during the 10-year design storm compared to either existing circumstances or the Project. There would be no perceptible benefit to the downstream watershed.

PRELIMINARY STORMWATER CONTROL PLAN

For

SARANAP VILLAGE PARCEL A, B/B1, C, and Streets

July 23, 2014

Saranap Village
Hall Equities Group

1855 Olympic Blvd, Walnut Creek, CA 94596

SWCP Prepared by:
Kier & Wright Civil Engineers & Surveyors
2850 Collier Canyon Road
Livermore, CA 94551
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I. Executive Summary

The Stormwater Control Plans (SWCP) will address the provisions recommended for post construction stormwater control for Saranap Village in accordance with the C.3 stormwater guidebook from Contra Costa County. The SWCP was based on research and environmental planning for water quality, and will showcase the steps taken to design an effective and environmentally conscious SWCP for post construction stormwater controls.

Modifications to storm drainage will be very minimal during construction. Development will involve clearing and grubbing, use of heavy equipment, demolition of existing buildings, grinding of pavement & concrete, paving, grading and handling of a large variety of building materials. Stormwater runoff volumes may be affected during construction by demolition, grading, foundation construction, structural work, and building finish work.

The project is designed to treat stormwater runoff and will create negligible flow or volume to the existing drainage. The design will not exceed the capacity of off-site drainage facilities. Pervious surfaces will be used wherever feasible while replacing existing impervious surfaces to provide stormwater infiltration treatment. Stormwater runoff from the site will eventually drain downstream to the Las Trampas Creek more than a quarter mile away. This report will showcase the collective effort taken to design and implement an effective and environmentally conscious SWCP.

This revised report responds to comments from Public Works. In this report and in the accompanying hydrology report for this Project, no detention capacity is assumed in the C3 planters during the 10-year design storm. All stormwater control plans have been combined into this single report, which addresses street improvements as well. Table 1 for both Parcel B and Parcel C indicate that the "Applicable Special Project Categories" do apply for 75% and 50% of the sites, respectively, for non-LID treatment. Parcel A is evaluated 100% non-LID, even though planters will occupy a substantial portion of the site. Hydro-modification for the entire project will ultimately be accommodated by the use of the underground vault we proposed on Site B (See Hydrology And Hydraulics Report For Saranap Village, Kier & Wright, 5-8-14, Appendix 4) . Hydro modification during phasing of construction can also be accommodated by demolishing existing impervious surfaces and leaving sufficient pervious area in place where necessary as alternative.

Sites A, B, and C will each be improved with new ingress/ egress, public improvements, utility improvements, and new multi-story mixed use or residential building over partially underground parking.

I.A. Parcel A

The existing site consists of the Sandpiper Apartment complex, multi-tenant office buildings and an undeveloped area. The site is relatively level and has onsite parking lots at the apartment complex and office buildings. The existing impervious area is roughly 54,073ft^2. Mean annual precipitation for this area is 22.0 inches according to attached Figure 1 – Contra Costa County Isohyetal Map B-166.

The proposed area for Parcel A of Saranap Village will include additions and improvements on existing parcels in the unincorporated area of Contra Costa County adjacent to Walnut Creek. Improvements will occur at the north side of Boulevard Way east of Saranap Avenue. The project site consists of existing Assessor's Parcel Numbers: 185-370-018, 185-370-010,185-370-012, and 185-370-033. The total proposed site will include an area of 63,916 ft^2.

I.B. Parcel B (including B1)

The existing site consists of the Sanctuary for Sufism Church and an onsite parking lot. The site is relatively level with existing impervious area of roughly 41,534 ft^2. Mean annual precipitation for this area is 22.0 inches according to attached Figure 1 – Contra Costa County Isohyetal Map B-166.

The proposed area for Parcel B of Saranap Village will include additions and improvements on existing parcels in the unincorporated area of Contra Costa County adjacent to Walnut Creek. Improvements will occur at the south side of Boulevard Way east of Saranap Avenue. The project site consists of existing Assessor's Parcel Numbers: 185-370-018and 184-010-046. The total proposed site will include an area of 62,499 ft^2.

I.C. Parcel C

The existing site consists of an existing retail building and a paved parking lot. The site is relatively level with existing impervious area of roughly 15,474 ft^2. Mean annual precipitation for this area is 22.0 inches according to attached Figure 1 – Contra Costa County Isohyetal Map B-166.

The proposed area for Parcel C of Saranap Village is will include additions and improvements on existing parcels in unincorporated area of Contra Costa County adjacent to Walnut Creek. Improvements will take place in areas along the south edge of Boulevard Way extending from site B1 to the southwest corner of Site C. The project site consists of existing Accesor Parcel Number 184-450-025. The total proposed site will include an area of 25,237 ft^2.

I.C. Street Improvements

The existing off site streets Boulevard Way and Saranap Avenue are proposed to be revised by adding parking, landscape islands, and converting the existing street into a two lane road with roundabouts. The site slopes from the west to the east along Boulevard Way and slopes north to south along Saranap Avenue. Slopes range from 1% to 3%. The approximate existing impervious surface area is 73,180 square feet, which shall be reduced to 71,000 square feet after the landscape islands and roundabouts have been installed for a total reduction of impervious area of 2,180 square feet. Mean annual precipitation for this area is 22.0 inches according to attached Figure 1 – Contra Costa County Isohyetal Map B-166.

APPENDIX II.A

PRELIMINARY STORMWATER CONTROL PLAN

For

SARANAP VILLAGE PARCEL A

July 23, 2014

Saranap Village
Hall Equities Group
1855 Olympic Blvd, Walnut Creek, CA 94596

prepared by:

SWCP Prepared by:
Kier & Wright Civil Engineers & Surveyors
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Figure 1 Contra Costa County Isohyetal Map B-166
Figure 2 Stormwater Treatment Plan Parcel A Exhibit

Note: final SWCP will include landscape plans and soils report.

This Stormwater Quality Control Plan was prepared using the template dated February 15, 2012.

I. PROJECT DATA

Table 1. Project Data

Project Name/Number	Saranap Village Parcel A
Application Submittal Date	September, 2013
Project Location	Contra Costa County
Name of Developer	Hall Equities Group
Project Phase No.	N/A
Project Type and Description	New Residential Buildings and Associated Street Imp.
Project Watershed	Las Trampas Creek Watershed
Total Project Site Area	63,916 ft^2
Total Area of Land Disturbed	63,916 ft^2
Total New Impervious Surface Area	6,005 ft^2
Total Replaced Impervious Surface Area	54,073 ft^2
Total Pre-Project Impervious Surface Area	54,073 ft^2
Total Post-Project Impervious Surface Area	60,078 ft^2
50% Rule[*]	Does Apply
Project Density	4.50 FAR calculation
Applicable Special Project Categories	Special Project Exemption Category B, High Density
Percent LID and non-LID treatment	100% Non-LID for development (per Category B)
HMP Compliance [†]	Applicable

*50% rule applies if:
Total Replaced Impervious Surface Area > 0.5 x Pre-Project Impervious Surface Area

†HMP applies if:
(Total New Impervious Surface Area + Total Replaced Impervious Surface Area) ≥ 1 acre

II. SETTING

II.A. Project Location and Description

This Stormwater Control Plan (SWCP) will address the provisions recommended for post construction stormwater control for Saranap Village in accordance with the C.3 stormwater guidebook from Contra Costa County. The SWCP was based on research and environmental planning for water quality, and will showcase the steps taken to design an effective and environmentally conscious SWCP for post construction stormwater controls.

The proposed area for Parcel A of Saranap Village will include additions and improvements on existing parcels in the unincorporated area of Contra Costa County adjacent to Walnut Creek. Improvements will occur at the north side of Boulevard Way east of Saranap Avenue. The project site consists of existing Accesors Parcel Numbers: 185-370-018, 185-870-012, 185-370-010, and 185-370-033. The total proposed site will include an area of 63,916 ft^2. The site will include new ingress/egresses, public improvements, utility improvements and a new multi-story building over parking.

Modifications to storm drainage will be very minimal during construction. Development will involve clearing and grubbing, use of heavy equipment, demolition of existing buildings, grinding of pavement & concrete, paving, grading and handling of a large variety of building materials. Stormwater runoff volumes may be affected during construction by demolition, grading, foundation construction, structural work and building finish work.

The project is designed to treat stormwater runoff and will create negligible flow or volume to the existing drainage. The design will not exceed the capacity of off-site drainage facilities. Pervious surfaces will be used wherever feasible while replacing existing impervious surfaces to provide stormwater infiltration treatment. Stormwater runoff from the site will eventually drain downstream to the Las Trampas Creek more than a quarter mile away. This report will showcase the collective effort taken to design and implement an effective and environmentally conscious SWCP.

II.B. Existing Site Features and Conditions

The existing site consists of the Sandpiper Apartment complex, multi-tenant office buildings and an undeveloped area. The site is relatively level and has onsite parking lots at the apartment complex and office buildings. The existing impervious area is roughly 54,073ft^2. Mean annual precipitation for this area is 22.0 inches according to attached Figure 1 – Contra Costa County Isohyetal Map B-166.

II.C. Opportunities and Constraints for Stormwater Control

The primary challenge for stormwater treatment is the existence of impermeable soils (soil clay group D). Discharge of runoff by deep infiltration is not feasible due to the low permeability of the clay soils. Every effort has been made to use indirect filtration methods like Bio-Retention Flow Through Planters (FTP) for stormwater treatment. FTPs are used for treating building roofs, driveways, sidewalks and all proposed hardscape.

This project complies with the special requirements for treatment reduction credits according to the Contra Costa Stormwater C.3 Guidebook. The project proposes 147 Dwelling Units (DU) in 1.5 acres(97DU/Acre), which is greater than the 50 DU/Acre requirement, therefore qualifying the project for 50% treatment reduction. More importantly, the site qualifies for 100% treatment reduction as the floor to area ratio (FAR) is 4.50:1, which is greater than the 4:1 requirement. All treatment reductions were calculated according to LID Reductions Credits from Table 4-14 Non-LID Treatment Systems from Contra Costa Stormwater C.3 Guidebook.

The reductions allow for use of Box Type High Flowrate Biofilter Flow Through Planters and Vault Based High-Flowrate Media Filters. The vault based High Flowrate Media unit for stormwater shall be a Kristar "Up-Flo" Media Filter. The SWCP will detail the model and number of filters required for treatment. We intend to supplement the media filters with numerous FTPs in the design, even though the site qualifies for 100% treatment reduction. We intend to treat 64.8% of the impervious area with media filters, while the remaining 35.2% will be treated in properly designed FTPs. All roof areas are designed to drain to one or more of the perimeter FTPs. The SWCP delineates the specific Drainage Management Areas (DMA) for each FTP. These areas are coordinated with architectural and landscape plans.

Total existing impervious area on the site is roughly 54,073 ft^2 and the proposed project will add roughly 3,155 ft^2 of impervious surface. As stated in the Project Data Table K-1 of Contra Costa Clean Water Program for Stormwater C3 Guidebook, the 50% and 100% rules apply to our site. After construction, the site will continue to drain

downstream more than a quarter mile away to the Las Trampas Creek.

III. LOW IMPACT DEVELOPMENT DESIGN STRATEGIES

III.A. Optimization of Site Layout

Every effort has been made to limit the imperviousness of the project site. The existing site consists of a paved parking lot and buildings. The following site layout characteristics help reduce watershed impacts:

- The site design includes designing landscaped-based FTPs to collect runoff that would otherwise flow directly to the storm drain system. See section IV for additional descriptions.
- Landscape areas were added in additional impervious areas of the project. There is a minimal increase in impervious area from pre-project condition.
- The roof drains of the proposed building will discharge into a bio-retention FTPs and Kristar "Up-Flo" Media Filters located within the parcel boundary.

III.B. Use of Permeable Pavements

Conventional concrete and asphalt are used throughout the project site. Permeable pavements will be considered if their use can be deemed beneficial to the project and watershed. Areas designated for self-treatment will be called out on the SWQP.

III.C. Dispersal of Runoff to Pervious Areas

Runoff from the proposed improvements, wherever possible within good engineering practice, has been directed to pervious areas. To offset runoff to new areas that do not directly drain to pervious areas, existing pavement area runoff is proposed to be collected in FTPs. Refer to Figure 2 FTP for locations and size.

III.D. Feasibility Assessment of Harvesting and Use for Treatment and Flow-Control

III.D.1. Permeability of Site Soils

Though the actual saturated hydraulic permeability (Ksat) is unknown, given the high clay content of the soils and known data in nearby surrounding area, this project's Ksat is much less than 1.6 inches/hour. Typically high clay content is indicative of very low saturated hydraulic conductivity. Therefore stormwater treatment systems have been designed accordingly.

III.D.2. Potential Opportunities for Harvesting and Use

As most of the parcel is being occupied by a multi-story mixed used building, the opportunity to collect roof runoff and store that runoff is very limited. Although there is substantial roof area (44,624ft^2) the ability to gather, store and reuse is not feasible, due to the intricacies of the rooftop design and multi-level design. Besides the proposed building rooftop there are not much other opportunities for harvesting rainwater. The limited amount of at grade asphalt and sidewalk is split with a good percentage being within the public right of way. The remaining area is so limited that runoff volumes would be too small for any real reuse or benefit.

III.D.3. Harvesting and Use Feasibility Calculations

Table 2. Harvesting and Use Feasibility

A	*B*	*C*	*D*	*E*	*F*	*G*	*H*	*I*	*J*

Building or other Impervious Area Description	*Square feet of impervious surface*	*Site Area (Acres)*	*Uses and User Units*	*Toilet and Urinal Water Usage (gal/day)*	*Water Use per Are (gal/day/ acre)*	*Required demand (gal/day /acre).*	*Is Projected Use > Required Demand? (Column F > Column G?)*	*Can runoff be piped to an irrigated area 2.5x the impervious area (Column B)?*	*Is there any othe consistent, Reliable demanc for the quantity ir Column G?*
New BLDG & Site	57,228	1.31	Residential/ Mixed Use 97 Units Per Acre	273	1,520	4,100	No	No	No

III.E. Integrated Management Practices

The project proposes to use five treatment only bio-retention FTPs to meet the stormwater quality standards for the project.

IV. DOCUMENTATION OF DRAINAGE DESIGN

IV.A. Descriptions of each Drainage Management Area

IV.A.1. Table of Drainage Management Areas

Table 3. Drainage Management Areas

DMA Name	*Surface Type*	*Area (ft²)*
DMA-1	*Roof, landscaping, site hardscape*	*4,530*
DMA-2	*Roof, landscaping, site hardscape*	*4,640*
DMA-3	*Roof, landscaping, site hardscape*	*5,640*
DMA-4	*Roof, landscaping, site hardscape*	*4,070*
DMA-5	*Roof, landscaping, site hardscape*	*34,755*

IV.A.3. Drainage Management Area Descriptions

A summary of the treated impervious areas and method of treatment:

DMA-1, totaling 4,530 ft^2, will drain proposed rooftop area to a bio-retention treatment FTP. This FTP discharges to the proposed new storm drain system.

DMA-2, totaling 4,640 ft^2, will drain proposed rooftop area to a bio-retention treatment FTP. This FTP discharges to the proposed new storm drain system.

DMA-3, totaling 5,640 ft^2, will drain proposed rooftop area to a bio-retention treatment FTP. This FTP discharges to the proposed new storm drain system.

DMA-4, totaling 4,070 ft^2, will drain proposed rooftop area to a bio-retention treatment FTP. This FTP discharges to the proposed new storm drain system.

DMA-5, totaling 34,755 ft^2, will drain proposed rooftop area to a Kristar "Up-Flo" Media Filter which then discharges to the proposed new storm drain system.

IV.B. Tabulation and Sizing Calculations

IV.B.1. Information Summary for IMP Design

Table 5. IMP Design Summary

Total Project Area	62,102 ft^2
Mean Annual Precipitation	22.0 in
IMPs Designed For:	Treatment and Hydro modification

IV.B.2. Areas Draining to IMPs

Table 6a – 6c. IMP Sizing Calculations

DMA Name	*DMA Area (square feet)*	*Post-project surface type*	*DMA Runoff factor*	*DMA Area runoff factor*	*Soil Type:*	*IMP Name*			
					D	*IMP-1*			
1-PV	*4,530*	*Roof, landscaping*	*1.0*	*4,530*	*IMP Sizing factor*	*Rain Adjust-ment Factor*	*Minimum Area*	*Proposed Area*	
1-LS	*0*	*Landscape*	*0.1*	*0*					
			Total	**4,530**	**0.04**	**1.00**	181	283	**IMP Area**

DMA Name	DMA Area (square feet)	Post-project surface type	DMA Runoff factor	DMA Area runoff factor	Soil Type: D	IMP Name IMP-2			
2-PV	4,640	Roof, landscaping	1.0	4,640	IMP Sizing factor	Rain Adjustment Factor	Minimum Area	Proposed Area	
2-LS	0	Landscape	0.1	0					
				4,640	**0.04**	**1.00**	**185**	**249**	**IMP Area**
			Total						

DMA Name	DMA Area (square feet)	Post-project surface type	DMA Runoff factor	DMA Area runoff factor	Soil Type: D	IMP Name IMP-3			
3-PV	5,640	Roof, landscaping	1.0	5,640	IMP Sizing factor	Rain Adjustment Factor	Minimum Area	Proposed Area	
3-LS	0	Landscape	0.1	0					
				5,640	**0.04**	**1.00**	**225**	**320**	**IMP Area**
			Total						

					D	IMP-4			
4-PV	4,070	Roof, landscaping	1.0	4,070	IMP Sizing factor	Rain Adjustment Factor	Minimum Area	Proposed Area	
4-LS	0	Landscape	0.1	0					
				4,070	**0.04**	**1.00**	**163**	**300**	**IMP Area**

DMA-5, totaling 34,755 ft^2, will drain proposed rooftop area to a Kristar “Up-Flo” Media Filter which then discharges to the proposed new storm drain system.

V. SOURCE CONTROL MEASURES

V.A. Site activities and potential sources of pollutants

Since site activities will be of mixed use in nature and there will be an underground parking garage, transportation related emissions will not effect stormwater runoff. Activities such landscape maintenance, restaurant services, and residential & retail refuse disposal can be potential sources of pollutants.

V.B. Source Control Table

Table 7. Sources and Source Control Measures

Potential source of runoff pollutants	*Permanent source control BMPs*	*Operational source control BMPs*
Storm Drain Inlets	Mark all inlets with the words "No Dumping! Flows to River"	Maintain and periodically repaint or replace inlet markings and provide stormwater pollution prevention information to new site owners, lessors, o operators.
Landscape/Outdoor Pesticide Use	The timing and application methods of the irrigation system at the site have been designed so as to minimize the runoff of excess irrigation water into the stormwater conveyance system.	Maintain landscaping using minimum or no pesticides and provide IPM informatior to new owners, lessors, and operators.
Plazas, Sidewalks and Parking Garage	Sidewalks and other concrete areas drain to landscape areas where possible.	Sweeping plazas, sidewalks, and parking garage weekly.

V.C. Features, Materials, and Methods of Construction of Source Control BMPs

FTPs shall be per the C.3 Guidance Manual provided by Contra Costa Clean Water Program, 6th edition. Planters will feature 3 inch vertical distance from curb cut flow line to rim elevation of catch basins and provide for 6 inches of ponding. The FTP will contain 18 inches of Bio-retention soil mix per the C.3 Manual, and 12 inches of drain rock with an under drain. Construction of the planter must ensure the soil is not compacted as to negate the design infiltration rate of 5 in/hr.

VI. STORMWATER FACILITY MAINTENANCE

VI.A.1. Commitment to Execute any Necessary Agreements

Agree to provide any necessary easements or rights of entry to Contra Costa County for access and inspection of stormwater BMPs and to make provision of easements or rights of entry a condition of sale.

VI.A.2. Statement Accepting Responsibility for Operation and Maintenance until Responsibility is Transferred

The developers of Saranap Village agrees to operate and maintain the bio-retention planters until one of the following occurs: (1) Acceptance of maintenance responsibility by Contra Costa County, including the filing of all required easements and establishment of a special district or other permanent funding mechanism or (2) Recordation of Codes, Covenants, and Responsibilities or other agreement that runs with the land and requires future owners to provide and pay for maintenance of stormwater BMPs.

VI.A.3. Stormwater Facilities Operations and Maintenance Plan

The developers of Saranap Village will submit, with the application for building permits, a draft Stormwater Facilities Operation and Maintenance Plan including detailed maintenance requirements and a maintenance schedule.

VI.B. Summary of Maintenance Requirements for Each Stormwater Facility

Maintenance of BMPs is imperative for adequate stormwater treatment. Maintenance is as follows:

Bio-Retention Flow Through Planters: These areas remove stormwater pollutants through a combination of overland flow through vegetation, surface detention, and filtration through soil. Frequent inspection and maintenance is required until vegetation becomes established. Thereafter, routine maintenance requirements are considered minimal.

Typical routine maintenance consists of the following:

- ☐ Inspect soils and plantings. Remove weeds, prune vegetation and replenish mulch as needed. Clear any obstructions and remove accumulation of sediment.
- ☐ Inspect side slopes for evidence of instability or erosion and correct as necessary.
- ☐ Observe soil at the bottom of the ponding area for uniform percolation throughout. If portions of the area do not drain within 48 hours after the end of a storm, the soil should be tilled and replanted. Remove any debris or accumulation of sediment.
- ☐ Examine the vegetation to insure that it is healthy and dense enough to provide filtering and to protect soils from erosion. Confirm that irrigation is adequate and not excessive. Replace dead plants and remove invasive vegetation.

- ☐ Abate any potential vectors by filling in holes in the ground and around the ponding area. If mosquito larvae are present and persistent, contact the Contra Costa County Vector Control District for information and advice. Mosquito larvricides should be applied only when absolutely necessary and then only by a licensed professional.

Kristar "Up-Flo" Media Filter: The Up-Flo Filters remove a wide range of pollutants from stormwater runoff. Periodic removal of the captured pollutants and inspections are essential to the proper functioning of the Up-Flo Filters. Typical routine maintenance consists of the following:

- ☐ Maintenance activities include chamber inspections, filter replacement, floatable removal, oil removal, media pack replacement and drain down filter replacements. The filters should be checked for overall proper functioning annually (or more often if suggested by the manufacturer). A report of the inspection shall be submitted to the Contra Costa County.

VII. CONSTRUCTION PLAN C.3 CHECKLIST

Table 8. Construction Plan C.3 Checklist

Stormwater Control Plan Page #	*BMP Description*	*See Plan Sheet #s*
11	Bio-retention FTPs to treat stormwater runoff.	C11.1
11	Bio-retention FTPs for proposed building improvements	C11.1

VIII. CERTIFICATIONS

The selection, sizing, and preliminary design of stormwater treatment and other control measures in this plan meet the requirements of Regional Water Quality Control Board Order R2-2009-0074 and Order R2-2011-0083.FIGURE 1 Contra Costa County Isohyetal Map B-166

APPENDIX II.B

PRELIMINARY STORMWATER CONTROL PLAN

For

SARANAP VILLAGE PARCEL B/B1

July 23, 2014

Saranap Village
Hall Equities Group
1855 Olympic Blvd, Walnut Creek, CA 94596

SWCP Prepared by:
Kier & Wright Civil Engineers & Surveyors
2850 Collier Canyon Road
Livermore, CA 94551
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Attachments

Figure 1 Contra Costa County Isohyetal Map B 11
Figure 3 Stormwater Treatment Plan Parcel B Exhibit 12

Note: final SWCP will include landscape plans and soils report.

This Stormwater Control Plan was prepared using the template dated February 15, 2012.

I. PROJECT DATA

Table 1. Project Data

Project Name/Number	Saranap Village Parcels B/B1
Application Submittal Date	September, 2013
Project Location	Contra Costa County
Name of Developer	Hall Equities Group
Project Phase No.	N/A
Project Type and Description	New Residential Buildings and Associated Street Imp.
Project Watershed	Las Trampas Creek Watershed
Total Project Site Area	62,499 ft^2
Total Area of Land Disturbed	62,499 ft^2
Total New Impervious Surface Area	16,667 ft^2
Total Replaced Impervious Surface Area	41,533 ft^2
Total Pre-Project Impervious Surface Area	41,533 ft^2
Total Post-Project Impervious Surface Area	58,200 ft^2
50% Rule[*]	Does Apply
Project Density	3.15 FAR
Applicable Special Project Categories	Special Project Category B, High Density
Percent LID and non-LID treatment	75% Non-LID for development and 25% LID for development
HMP Compliance [†]	Applicable

*50% rule applies if:
Total Replaced Impervious Surface Area > 0.5 x Pre-Project Impervious Surface Area

†HMP applies if:
(Total New Impervious Surface Area + Total Replaced Impervious Surface Area) ≥ 1 acre

II. SETTING

II.A. Project Location and Description

This Stormwater Control Plan (SWCP) will address the provisions recommended for post construction stormwater control for Saranap Village in accordance with the C.3 stormwater guidebook from Contra Costa County. The SWCP was based on research and environmental planning for water quality, and will showcase the steps taken to design an effective and environmentally conscious SWCP for post construction stormwater controls.

The proposed area for Parcel B of Saranap Village will include additions and improvements on existing parcels in the unincorporated area of Contra Costa County adjacent to Walnut Creek. Improvements will occur at the south side of Boulevard Way south of Saranap Avenue. The project site consists of existing Assessor's Parcel Numbers: 184-010-035 and 184-010-046. The total proposed site will include an area of 62,499 ft^2. The site will include new ingress/egresses, public improvements, utility improvements and a new multi-story building over parking.

Modifications to storm drainage will be very minimal during construction. Development will involve clearing and grubbing, use of heavy equipment, demolition of existing buildings, grinding of pavement & concrete, paving, grading and handling of a large variety of building materials. Stormwater runoff volumes may be affected during construction by demolition, grading, foundation construction, structural work and building finish work.

The project is designed to treat storm water runoff and create negligible flow or volume to the existing drainage. The design will not exceed the capacity of off-site drainage facilities. Pervious surfaces will be used wherever feasible while replacing existing impervious surfaces to provide stormwater infiltration treatment. Stormwater runoff from the site will eventually drain downstream to the Las Trampas Creek more than a quarter mile away. This report will showcase the collective effort taken to design and implement an effective and environmentally conscious SWCP.

II.B. Existing Site Features and Conditions

The existing site consists of the Sanctuary for Sufism Church and an onsite parking lot. With a narrow undeveloped "panhandle" to the south. A paved driveway and parking area is located at the westerly edge of this site. The site is relatively level with existing impervious area of roughly 41,535 ft^2. Mean annual precipitation for this area is 22.0 inches according to attached Figure 1 – Contra Costa County Isohyetal Map B-166.

II.C. Opportunities and Constraints for Stormwater Control

The primary challenge for stormwater treatment is the existence of impermeable soils (soil clay group D). Discharge of runoff by deep infiltration is not feasible due to the low permeability of the clay soils. Every effort has been made to use indirect filtration methods like Bio-Retention Flow Through Planters (FTP) for stormwater treatment. FTPs are used for treating building roofs, driveways, sidewalks and all proposed hardscape.

This project complies with special requirements for treatment reduction credits according to the Contra Costa StormwaterC.3 Guidebook. The site qualifies for 75% treatment reduction since floor to area ratio (FAR) is 3.15:1, which is greater than the 3:1 requirement. Treatment reduction was calculated according to LID Reductions Credits from Table 4-14 Non-LID Treatment Systems from Contra Costa StormwaterC.3 Guidebook.

The reduction allows for use of Box Type High Flowrate Biofilter FTPs and Vault Based High-Flowrate Media Filters. The vault based High Flowrate Media unit for stormwater shall be a Kristar "Up-Flo" Media Filter. The SWCP will detail the model and number of filters required for treatment. We intend to supplement the media filters with numerous FTPs in the design, even though the site qualifies for a 75% treatment reduction.

We intend to treat only 25% of the impervious area with media filters, while the remaining 75% will be treated in properly designed FTPs and impervious surfaces wherever feasible. Every available roof area is designed to drain to one or more of the perimeter FTPs. The SWCP delineates the specific Drainage Management Areas (DMA) for each FTP. These areas are coordinated with architectural and landscape plans.

Total proposed impervious area for the project will be roughly 58,200 ft^2, including all hardscape and rooftop area. As stated in the Project Data Table K-1 of Contra Costa Clean Water Program for Stormwater C3 Guidebook, 75% rule applies to our site since the FAR ratio is greater than 4:1. After construction, the site eventually drains downstream to the Las Trampas Creek more than a quarter mile away.

III. LOW IMPACT DEVELOPMENT DESIGN STRATEGIES

III.A. Optimization of Site Layout

Every effort has been made to limit the imperviousness of the project site. The existing site consists of a paved parking lot and buildings. The following site layout characteristics help reduce watershed impacts:

- The site design includes designing landscaped-based FTPs to collect runoff that would otherwise flow directly to the storm drain system. See section IV for additional descriptions.
- Landscape areas were added in additional impervious areas of the project. There is a minimal increase in impervious area from pre-project condition.
- The roof drains of the proposed building will discharge into a bio-retention FTPs and Kristar "Up-Flo" Media Filters located within the parcel boundary.

III.B. Use of Permeable Pavements

Conventional concrete and asphalt are used throughout the project site. Permeable pavements will be considered if their use can be deemed beneficial to the project and watershed. Areas designated for self-treatment will be called out on the SWCP.

III.C. Dispersal of Runoff to Pervious Areas

Runoff from the proposed improvements, wherever possible within good engineering practice, has been directed to pervious areas. To offset runoff to new areas that do not directly drain to pervious areas, existing pavement area runoff is proposed to be collected in FTPs. Refer to Figure 3 FTP for locations and size.

III.D. Feasibility Assessment of Harvesting and Use for Treatment and Flow-Control

III.D.1. Permeability of Site Soils

Though the actual saturated hydraulic permeability (Ksat) is unknown, given the high clay content of the soils and known data in nearby surrounding area, this project's Ksat is much less than 1.6inches/hour. Typically high clay content is indicative of very low saturated hydraulic conductivity. Therefore stormwater treatment systems have been designed accordingly.

III.D.2. Potential Opportunities for Harvesting and Use

As most of the parcel is being occupied by a multi-story mixed used building, the opportunity to collect roof runoff and store that runoff is very limited. Although there is substantial roof area (37,100ft^2) the ability to gather, store and reuse is not feasible, due to the intricacies of the rooftop design and multi-level design. Besides the proposed building rooftop there are not much other opportunities for harvesting rainwater. The limited amount of at grade asphalt and sidewalk is split with a good percentage being within the public right of way. The remaining area is so limited that runoff volumes would be too small for any reuse or benefit.

III.D.3. Harvesting and Use Feasibility Calculations

Table 2. Harvesting and Use Feasibility

A	*B*	*C*	*D*	*E*	*F*	*G*	*H*	*I*	*J*
Building or other Impervious Area Description	*Square feet of impervious surface*	*Acres*	*Uses and User Units*	*Toilet and Urinal Water Usage (gal/day)*	*Water Use per Acre (gal/day/ acre)*	*Required demand (gal/day /acre).*	*Is Projected Use > Required Demand? (Column F > Column G?)*	*Can runoff be piped to an irrigated area 2.5x the impervious area (Column B)?*	*Is there any other consistent, reliable demand for the quantity in Column G?*
New BLDG & Site	58,200	1.33	Residential, Mixed use 41 Units per Acre.	273	1520	4100	No	No	No

III.E. Integrated Management Practices

The project proposes to use five treatment only FTPs to meet the stormwater quality standards for the improvements.

IV. DOCUMENTATION OF DRAINAGE DESIGN

IV.A. Descriptions of each Drainage Management Area

IV.A.1. Table of Drainage Management Areas

Table 3. Drainage Management Areas

DMA Name	*Surface Type*	*Area (ft^2)*
DMA-1	*Roof, landscaping, site hardscape*	*9,342*
DMA-2	*Roof, landscaping, site hardscape*	*7,810*
DMA-3	*Roof, landscaping, site hardscape*	*12,575*
DMA-4	*Roof, landscaping, site hardscape*	*3,445*
DMA-5	*Roof, landscaping, site hardscape*	*3,925*

Summary of the replaced and treated impervious areas is below:

IV.A.3. Drainage Management Area Descriptions

DMA-1, totaling 9,342ft^2, will drain proposed rooftop area to a bio-retention treatment FTP. This FTP discharges to the proposed new storm drain system.

DMA-2, totaling 7,810 ft^2, will drain proposed rooftop area to a Kristar "Up-Flo" Media Filter which then discharges to the proposed new storm drain system.

DMA-3, totaling 12,575 ft^2, will drain proposed rooftop area to a bio-retention treatment FTP. This FTP discharges to the proposed new storm drain system.

DMA-4, totaling 3,445 ft^2, will drain proposed rooftop area to a Kristar "Up-Flo" Media Filter which then discharges to the proposed new storm drain system.

DMA-5, totaling 3,445 ft^2, will drain proposed rooftop area to a bio-retention treatment FTP. This planter discharges to the proposed new storm drain system

IV.B. Tabulation and Sizing Calculations

IV.B.1. Information Summary for IMP Design

Table 5. IMP Design Summary

Total Project Area	62,455 ft^2
Mean Annual Precipitation	22.0 in
IMPs Designed For:	Treatment Only

IV.B.2. Areas Draining to IMPs

Table 6a – 6c. IMP Sizing Calculations

- Note: DMA's 2 & 5 will be treated thru the use of a Kristar "Up-Flo" Media Filter which will discharge to the proposed new storm drain system.

DMA Name	DMA Area (ft²)	Post-project surface type	DMA Runoff factor	DMA Area □ runoff factor	Soil Type: D	IMP Name IMP-1			
1-PV	9,342	Roof	1.0	9,342	IMP Sizing factor	Rain Adjust-ment Factor	Minimum Area	Proposed Area	
1-LS	0	Landscape	0.1	0					
			Total	**9,342**	**0.04**	**1.00**	**374**	**295**	**IMP Area**

DMA Name	DMA Area (ft²)	Post-project surface type	DM A Runoff factor	DMA Area □ runoff factor	Soil Type: D	IMP Name IMP-2			
3-PV	12,575	Concrete or ashpalt	1.0	12,575	IMP Sizing factor	Rain Adjust-ment Factor	Minimum Area	Proposed Area	
3-LS	0	Landscape	0.1	0					
				12,575	**0.04**	**1.00**	**500**	**500**	**IMP Area**
			Total						

DMA Name	DMA Area (ft²)	Post-project surface type	DMA Runoff factor	DMA Area □ runoff factor	Soil Type: D	IMP Nam IMP-3			
4-PV	3,445	Concrete or ashpalt	1.0	3,445	IMP Sizing factor	Rain Adjust-ment Factor	Minimum Area	Proposed Area	
4-LS	0	Landscape	0.1	0					
				3,445	**0.04**	**1.00**	**139**	**420**	**IMP Area**

V. SOURCE CONTROL MEASURES

V.A. Site activities and potential sources of pollutants

Since site activities will be of mixed use in nature and there will be an underground parking garage, transportation related emissions will not affect stormwater runoff. Activities such landscape maintenance, restaurant services, and residential & retail refuse disposal can be potential sources of pollutants.

V.B. Source Control Table

Table 7. Sources and Source Control Measures

Potential source of runoff pollutants	*Permanent source control BMPs*	*Operational source control BMPs*
Storm Drain Inlets	Mark all inlets with the words "No Dumping! Flows to River"	Maintain and periodically repaint or replace inlet markings and provide stormwater pollution prevention information to new site owners, lessors, or operators.
Landscape/Outdoor Pesticide Use	The timing and application methods of the irrigation system at the site have been designed so as to minimize the runoff of excess irrigation water into the stormwater conveyance system.	Maintain landscaping using minimum or no pesticides and provide IPM information to new owners, lessors, and operators.
Plazas, Sidewalks and Parking Garage	Sidewalks and other concrete areas drain to landscape areas where possible.	Sweeping plazas, sidewalks, and parking garage weekly.

V.C. Features, Materials, and Methods of Construction of Source Control BMPs

FTPs shall be per the C.3 Guidance Manual provided by Contra Costa Clean Water Program, 6th edition. Planters will feature 3 inch vertical distance from curb cut flow line to rim elevation of catch basins and provide for 6 inches of ponding. The FTP will contain 18 inches of Bio-retention soil mix per the C.3 Manual, and 12 inches of drain rock with an under drain. Construction of the planter must ensure the soil is not compacted as to negate the design infiltration rate of 5 in/hr.

VI. STORMWATER FACILITY MAINTENANCE

VI.A.1. Commitment to Execute any Necessary Agreements

Agree to provide any necessary easements or rights of entry to Contra Costa County for access and inspection of stormwater BMPs and to make provision of easements or rights of entry a condition of sale.

VI.A.2. Statement Accepting Responsibility for Operation and Maintenance until Responsibility is Transferred

The developers of Saranap Village agrees to operate and maintain the bio-retention FTPs until one of the following occurs: (1) Acceptance of maintenance responsibility by Contra Costa County, including the filing of all required easements and establishment of a special district or other permanent funding mechanism or (2) Recordation of Codes, Covenants, and Responsibilities or other agreement that runs with the land and requires future owners to provide and pay for maintenance of stormwater BMPs.

VI.A.3. Stormwater Facilities Operations and Maintenance Plan

The developers of Saranap Village will submit, with the application for building permits, a draft Stormwater Facilities Operation and Maintenance Plan including detailed maintenance requirements and a maintenance schedule.

VI.B. Summary of Maintenance Requirements for Each Stormwater Facility

Maintenance of BMPs is imperative for adequate stormwater treatment. Maintenance is as follows:

Bio-Retention Flow Through Planters: These areas remove stormwater pollutants through a combination of overland flow through vegetation, surface detention, and filtration through soil. Frequent inspection and maintenance is required until vegetation becomes established. Thereafter, routine maintenance requirements are considered minimal.

Typical routine maintenance consists of the following:

- ☐ Inspect soils and plantings. Remove weeds, prune vegetation and replenish mulch as needed. Clear any obstructions and remove accumulation of sediment.
- ☐ Inspect side slopes for evidence of instability or erosion and correct as necessary.
- ☐ Observe soil at the bottom of the ponding area for uniform percolation throughout. If portions of the area do not drain within 48 hours after the end of a storm, the soil should be tilled and replanted. Remove any debris or accumulation of sediment.
- ☐ Examine the vegetation to insure that it is healthy and dense enough to provide filtering and to protect soils from erosion. Confirm that irrigation is adequate and not excessive. Replace dead plants and remove invasive vegetation.

- ☐ Abate any potential vectors by filling in holes in the ground and around the ponding area. If mosquito larvae are present and persistent, contact the Contra Costa County Vector Control District for information and advice. Mosquito larvricides should be applied only when absolutely necessary and then only by a licensed professional.

Kristar "Up-Flo" Media Filter: The Up-Flo Filters remove a wide range of pollutants from stormwater runoff. Periodic removal of the captured pollutants and inspections are essential to the proper functioning of the Up-Flo Filters. Typical routine maintenance consists of the following:

- ☐ Maintenance activities include chamber inspections, filter replacement, floatable removal, oil removal, media pack replacement and drain down filter replacements. The filters should be checked for overall proper functioning annually (or more often if suggested by the manufacturer). A report of the inspection shall be submitted to the Contra Costa County.

VII. CONSTRUCTION PLAN C.3 CHECKLIST

Table 8. Construction Plan C.3 Checklist

Stormwater Control Plan Page #	*BMP Description*	*See Plan Sheet #s*
12	Bio-retention FTPs to treat storm water runoff.	C11.2
12	Bio-retention FTPs for proposed building improvements	C11.2

VIII. CERTIFICATIONS

The selection, sizing, and preliminary design of stormwater treatment and other control measures in this plan meet the requirements of Regional Water Quality Control Board Order R2-2009-0074 and Order R2-2011-0083.

APPENDIX II.C

PRELIMINARY STORMWATER CONTROL PLAN

For

SARANAP VILLAGE PARCEL C

July 23, 2014

Saranap Village
Hall Equities Group

1855 Olympic Blvd, Walnut Creek, CA 94596

prepared by:

SWCP Prepared by:

Kier & Wright Civil Engineers & Surveyors

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Attachments

Figure 1 Contra Costa County Isohyetal Map B 10
Figure 4 Storm Water Treatment Plan Parcel C Exhibit 11

Note: final SWCP will include landscape plans and soils report.

This Stormwater Control Plan was prepared using the template dated February 15, 2012.

I. PROJECT DATA

Table 1. Project Data

Project Name/Number	Saranap Village Parcel C
Application Submittal Date	September, 2013
Project Location	Contra Costa County
Name of Developer	Hall Equities Group
Project Phase No.	N/A
Project Type and Description	New Residential Buildings and Associated Street Imp.
Project Watershed	Las Trampas Creek Watershed
Total Project Site Area	25,237 ft^2
Total Area of Land Disturbed	25,237 ft^2
Total New Impervious Surface Area	7,792 ft^2
Total Replaced Impervious Surface Area	15,474 ft^2
Total Pre-Project Impervious Surface Area	15,474 ft^2
Total Post-Project Impervious Surface Area	23,266 ft^2
50% Rule[*]	Does Apply
Project Density	2.49 FAR calculation
Applicable Special Project Categories	Special Project Category B, High Density
Percent LID and non-LID treatment	50% Non-LID, 50% LID Treatment
HMP Compliance [†]	Applicable

*50% rule applies if:
Total Replaced Impervious Surface Area > 0.5 x Pre-Project Impervious Surface Area

†HMP applies if:
(Total New Impervious Surface Area + Total Replaced Impervious Surface Area) ≥ 1 acre

II. SETTING

II.A. Project Location and Description

This Stormwater Control Plan (SWCP) will address the provisions recommended for post construction stormwater control for Saranap Village in accordance with the C.3 stormwater guidebook from Contra Costa County. The SWCP was based on research and environmental planning for water quality, and will showcase the steps taken to design an effective and environmentally conscious SWCP for post construction stormwater controls.

The proposed area for Parcel C of Saranap Village is will include additions and improvements on existing parcels in unincorporated area of Contra Costa County adjacent to Walnut Creek. Improvements will take place in areas along the south edge of Boulevard Way located southwest of site B/B1. The project site consists of existing Accessor Parcel Number 184-450-025. The total proposed site will include an area of 25,237 ft^2. The site will include new ingress/egresses, public improvements, utility improvements and a new multi-story building over parking.

Modifications to storm drainage will be very minimal during construction. Development will involve clearing and grubbing, use of heavy equipment, demolition of existing buildings, grinding of pavement & concrete, paving, grading and handling of a large variety of building materials. Stormwater runoff volumes may be affected during construction by demolition, grading, foundation construction, structural work and building finish work.

The project is designed to treat stormwater runoff and create negligible flow or volume to the existing drainage. The design will not exceed the capacity of off-site drainage facilities. Pervious surfaces will be used wherever feasible while replacing existing impervious surfaces to provide stormwater infiltration treatment. Stormwater runoff from the site will eventually drain downstream to the Las Trampas Creek more than a half mile away. This report will showcase the collective effort taken to design and implement an effective and environmentally conscious SWCP.

II.B. Existing Site Features and Conditions

The existing site consists of an existing retail building and a paved parking lot. The site is relatively level with existing impervious area of roughly 15,474 ft^2. Mean annual precipitation for this area is 22.0 inches according to attached Figure 1 – Contra Costa County Isohyetal Map B-166.

II.C. Opportunities and Constraints for Stormwater Control

The primary challenge for stormwater treatment is the existence of impermeable soils (soil clay group D). Discharge of runoff by deep infiltration is not feasible due to the low permeability of the clay soils. Every effort has been made to use indirect filtration methods like Bio-Retention Flow Through Planters (FTP) for stormwater treatment. FTPs are used for treating building roofs, driveways, sidewalks and all proposed hardscape.

This project complies with special requirements for treatment reduction credits according to the Contra Costa StormwaterC.3 Guidebook. The site qualifies for 50% treatment reduction since floor to area ratio (FAR) is 2.49:1, which is greater than the 2:1 requirement. Treatment reduction was calculated according to LID Reductions Credits from Table 4-14 Non-LID Treatment Systems from Contra Costa StormwaterC.3 Guidebook.

The reduction allows for use of Box Type High Flowrate Biofilter FTPs and Vault Based High-Flowrate Media Filters. The vault based High Flowrate Media unit for stormwater shall be a Kristar “Up-Flo” Media Filter. The SWCP will detail the model and number of filters required for treatment. We intend to supplement the media filters with numerous FTPs in the design, even though the site qualifies for a 50% treatment reduction.

We intend to treat 50% of the impervious area with media filters, while the remaining 50% will be treated in properly designed FTPs and impervious surfaces wherever feasible. Every available roof area is designed to drain to one or more of the perimeter FTPs. The SWCP delineates the specific Drainage Management Areas (DMA) for each FTP. These areas are coordinated with architectural and landscape plans.

Total existing impervious area on the site is roughly 15,474 ft^2. As stated in the Project Data Table K-1 of Contra Costa Clean Water Program for Stormwater C3 Guidebook, 50% rule applies to our site since the FAR ratio is greater than 2:1. After construction, the site eventually drains downstream to the Las Trampas Creek more than a

half mile away.

III. LOW IMPACT DEVELOPMENT DESIGN STRATEGIES

III.A. Optimization of Site Layout

Every effort has been made to limit the imperviousness of the project site. The existing site consists of a paved parking lot and buildings. The following site layout characteristics help reduce watershed impacts:

- The site design includes designing landscaped-based FTPs to collect runoff that would otherwise flow directly to the storm drain system. See section IV for additional descriptions.
- Landscape areas were added in additional impervious areas of the project. There is a minimal increase in impervious area from pre-project condition.
- The roof drains of the proposed building will discharge into a bio-retention FTPs and Kristar "Up-Flo" Media Filters located within the parcel boundary.

III.B. Use of Permeable Pavements

Conventional concrete and asphalt are used throughout the project site. Permeable pavements will be considered if their use can be deemed beneficial to the project and watershed. Areas designated for self-treatment will be called out on the SWCP.

III.C. Dispersal of Runoff to Pervious Areas

Runoff from the proposed improvements, wherever possible within good engineering practice, has been directed to pervious areas. To offset runoff to new areas that do not directly drain to pervious areas, existing pavement area runoff is proposed to be collected in FTPs. Refer to Figure 4 FTP for locations and size.

III.D. Feasibility Assessment of Harvesting and Use for Treatment and Flow-Control

III.D.1. Permeability of Site Soils

Though the actual saturated hydraulic permeability (Ksat) is unknown, given the high clay content of the soils and known data in nearby surrounding area, this project's Ksat is much less than 1.6inches/hour. Typically high clay content is indicative of very low saturated hydraulic conductivity. Therefore stormwater treatment systems have been designed accordingly.

III.D.2. Potential Opportunities for Harvesting and Use

As most of the parcel is being occupied by a multi-story mixed used building, the opportunity to collect roof runoff and store that runoff is very limited. Although there is substantial roof area (20,725ft^2) the ability to gather, store and reuse is not feasible, due to the intricacies of the rooftop design and multi-level design. Besides the proposed building rooftop there are not much other opportunities for harvesting rainwater. The limited amount of at grade asphalt and sidewalk is split with a good percentage being within the public right of way. The remaining area is so limited that runoff volumes would be too small for any reuse or benefit.

III.D.2. Potential Opportunities for Harvesting and Use

As most of the parcel is being occupied by a multi-story mixed used building, the opportunity to collect roof runoff and store that runoff is very limited. Although there is substantial roof area (19,080 ft^2) the ability to gather, store and reuse is not feasible, due to the intricacies of the rooftop design and multi-level design. Besides the proposed building rooftop there are not much other opportunities for harvesting rainwater. The limited amount of at grade asphalt and sidewalk is split with a good percentage being within the public right of way. The remaining is so limited that runoff volumes would be too small for any reuse or benefits.

III.D.3. Harvesting and Use Feasibility Calculations

Table 2. Harvesting and Use Feasibility

A	*B*	*C*	*D*	*E*	*F*	*G*	*H*	*I*	*J*
Building or other Impervious Area Description	*Square Feet of impervious surface*	*Acres*	*Uses and User Units*	*Toilet and Urinal Water Usage (gal/day)*	*Water Use per Acre (gal/day/ acre)*	*Required demand (gal/day /acre).*	*Is Projected Use > Required Demand? (Column F > Column G?)*	*Can runoff be piped to an irrigated area 2.5x the impervious area (Column B)?*	*Is there any other consistent, reliable demand for the quantity in Column G?*
New BLDG & Site	25,237	0.56	Residential, Mixed use 41 Units per Acre	273	1520	4100	No	No	No

III.E. Integrated Management Practices

The project proposes to use five treatment only FTPs to meet the stormwater quality standards for the improvements.

IV. DOCUMENTATION OF DRAINAGE DESIGN

IV.A. Descriptions of each Drainage Management Area

IV.A.1. Table of Drainage Management Areas

Table 3. Drainage Management Areas

DMA Name	*Surface Type*	*Area (ft²)*
DMA-1	*Roof, landscaping, site hardscape*	*5,365*
DMA-2	*Roof, landscaping, site hardscape*	*4,215*
DMA-3	*Roof, landscaping, site hardscape*	*9,580*

A summary of the replaced and treated impervious areas:

IV.A.3. Drainage Management Area Descriptions

DMA-1, totaling 5,365 ft^2, will drain proposed rooftop area to a bio-retention treatment FTP. This FTP discharges to the proposed new storm drain system.

DMA-2, totaling 4,215 ft^2, will drain proposed rooftop area to a bio-retention treatment FTP. This FTP discharges to the proposed new storm drain system.

DMA-3, totaling 9,580 ft^2, will drain proposed rooftop area to a Kristar "Up-Flo" Media Filter which then discharges to the proposed new storm drain system.

IV.B. Tabulation and Sizing Calculations

IV.B.1. Information Summary for IMP Design

- Note: DMA-3, totaling 9,580 ft^2, will drain proposed rooftop area to a Kristar "Up-Flo" Media Filter which then discharges to the proposed new storm drain system

Table 5. IMP Design Summary

Total Project Area (ft^2)	25,237 SF
Mean Annual Precipitation	22.0 in
IMPs Designed For:	Treatment Only

IV.B.2. Areas Draining to IMPs

Table 6a – 6b. IMP Sizing Calculations

DMA Name	DMA Area (ft²)	Post-project surface type	DMA Runoff factor	DMA Area □ runoff factor	Soil Type: D	IMP Name: IMP-1			
1-PV	5,365	Concrete or ashpalt	1.0	5,365	IMP Sizing factor	Rain Adjust-ment Factor	Minimum Area or Volume	Proposed Area or Volume	
1-LS	0	Landscape	0.1	0					
			Total	**5,365**	**0.04**	**1.00**	**214**	**398**	**IMP Area**

DMA Name	DMA Area (ft²)	Post-project surface type	DM A Runoff factor	DMA Area □ runoff factor	Soil Type: D	IMP Name: IMP-2			
2-PV	4,215	Concrete or ashpalt	1.0	4,215	IMP Proposed Sizing Area or factor Volume	Rain Adjust-ment Factor	Minimum Area or Volume		
2-LS	0	Landscape	0.1	0					
				4,215	**0.04**	**1.00**	**169**	**297**	**IMP Area**

V. SOURCE CONTROL MEASURES

V.A. Site activities and potential sources of pollutants

Since site activities will be of mixed use in nature and there, transportation related emissions will not affect stormwater runoff. Activities such landscape maintenance, restaurant services, and residential & retail refuse disposal can be potential sources of pollutants.

V.B. Source Control Table

Table 7. Sources and Source Control Measures

Potential source of runoff pollutants	*Permanent source control BMPs*	*Operational source control BMPs*
Storm Drain Inlets	Mark all inlets with the words "No Dumping! Flows to River"	Maintain and periodically repaint or replace inlet markings and provide stormwater pollution prevention information to new site owners, lessors, or operators.
Landscape/Outdoor Pesticide Use	The timing and application methods of the irrigation system at the site have been designed so as to minimize the runoff of excess irrigation water into the stormwater conveyance system.	Maintain landscaping using minimum or no pesticides and provide IPM information to new owners, lessors, and operators.
Plazas, Sidewalks	Sidewalks and other concrete areas drain to landscape areas where possible.	Sweeping plazas and sidewalks weekly.

V.C. Features, Materials, and Methods of Construction of Source Control BMPs

FTPs shall be per the C.3 Guidance Manual provided by Contra Costa Clean Water Program, 6th edition. Planters will feature 3 inch vertical distance from curb cut flow line to rim elevation of catch basins and provide for 6 inches of ponding. The FTP will contain 18 inches of Bio-retention soil mix per the C.3 Manual, and 12 inches of drain rock with an under drain. Construction of the planter must ensure the soil is not compacted as to negate the design infiltration rate of 5 in/hr.

VI.A.1. Commitment to Execute any Necessary Agreements

Agree to provide any necessary easements or rights of entry to Contra Costa County for access and inspection of stormwater BMPs and to make provision of easements or rights of entry a condition of sale.

VI.A.2. Statement Accepting Responsibility for Operation and Maintenance until Responsibility is Transferred

The developers of Saranap Village agrees to operate and maintain the bio-retention FTPss until one of the following occurs: (1) Acceptance of maintenance responsibility by Contra Costa County, including the filing of all required easements and establishment of a special district or other permanent funding mechanism or (2) Recordation of Codes, Covenants, and Responsibilities or other agreement that runs with the land and requires future owners to provide and pay for maintenance of stormwater BMPs.

VI.A.3. Stormwater Facilities Operations and Maintenance Plan

The developers of Saranap Village will submit, with the application for building permits, a draft Stormwater Facilities Operation and Maintenance Plan including detailed maintenance requirements and a maintenance schedule.

VI.B. Summary of Maintenance Requirements for Each Stormwater Facility

Maintenance of BMPs is imperative for adequate stormwater treatment. Maintenance is as follows:

Bio-Retention Flow Through Planters: These areas remove stormwater pollutants through a combination of overland flow through vegetation, surface detention, and filtration through soil. Frequent inspection and maintenance is required until vegetation becomes established. Thereafter, routine maintenance requirements are considered minimal.

Typical routine maintenance consists of the following:

- ☐ Inspect soils and plantings. Remove weeds, prune vegetation and replenish mulch as needed. Clear any obstructions and remove accumulation of sediment.
- ☐ Inspect side slopes for evidence of instability or erosion and correct as necessary.
- ☐ Observe soil at the bottom of the ponding area for uniform percolation throughout. If portions of the area do not drain within 48 hours after the end of a storm, the soil should be tilled and replanted. Remove any debris or accumulation of sediment.
- ☐ Examine the vegetation to insure that it is healthy and dense enough to provide filtering and to protect soils from erosion. Confirm that irrigation is adequate and not excessive. Replace dead plants and remove invasive vegetation.
- ☐ Abate any potential vectors by filling in holes in the ground and around the ponding area. If mosquito larvae are present and persistent, contact the Contra Costa County Vector Control District for information and advice. Mosquito larvricides should be applied only when absolutely necessary and then only by a licensed professional.

Kristar "Up-Flo" Media Filter: The Up-Flo Filters remove a wide range of pollutants from stormwater runoff. Periodic removal of the captured pollutants and inspections are essential to the proper functioning of the Up-Flo Filters. Typical routine maintenance consists of the following:

- ☐ Maintenance activities include chamber inspections, filter replacement, floatable removal, oil removal, media pack replacement and drain down filter replacements. The filters should be checked for overall proper functioning annually (or more often if suggested by the manufacturer). A report of the inspection shall be submitted to the Contra Costa County.

VII. CONSTRUCTION PLAN C.3 CHECKLIST

Table 8. Construction Plan C.3 Checklist

Page #	*BMP Description*	*Stormwater Control Plan See Plan Sheet #s*
13	Bio-retention FTPs for proposed building improvements	C11.3
13	Bio-retention FTPs to treat storm water r	C11.3

VIII. CERTIFICATIONS

The selection, sizing, and preliminary design of stormwater treatment and other control measures in this plan meet the requirements of Regional Water Quality Control Board Order R2-2009-0074 and Order R2-2011-0083.

APPENDIX II.D

PRELIMINARY STORMWATER CONTROL PLAN

For

SARANAP VILLAGE STREET IMPROVEMENTS

July 23, 2014

Saranap Village
Hall Equities Group
1855 Olympic Blvd, Walnut Creek, CA 94596

prepared by:

SWCP Prepared by:
Kier & Wright Civil Engineers & Surveyors
2850 Collier Canyon Road
Livermore, CA 94551
Chuck McCallum, PE
925-245-8788

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Figure 1 Contra Costa County Isohyetal Map B
Figure 5 Storm Water Treatment Plan Streets Exhibit

Note: final SWCP will include landscape plans and soils report.

This Stormwater Control Plan was prepared using the template dated February 15, 2012.

I. PROJECT DATA

Table 1. Project Data

Project Name/Number	Street Improvements for Saranap Village
Application Submittal Date	September, 2013
Project Location	Contra Costa County
Name of Developer	Hall Equities Group
Project Phase No.	N/A
Project Type and Description	Street Improvements for Saranap Village
Project Watershed	Las Trampas Creek Watershed
Total Project Site Area	78,442 ft^2
Total Area of Pavement Rehabilitation	71,000 ft^2
Total Reduced Impervious Surface Area	-2,180 ft^2
Total Replaced Impervious Surface Area	71,000 ft^2
Total Pre-Project Impervious Surface Area	73,180 ft^2
Total Post-Project Impervious Surface Area	71,000 ft^2
50% Rule[*]	Does Apply
Project Density	N/A
Applicable Special Project Categories	Pavement Rehabilitation within Existing Footprint
Percent LID and non-LID treatment	No Treatment Pavement within Existing Footprint
HMP Compliance [†]	Reduction in Impervious Area- N/A

*50% rule applies if:
Total Replaced Impervious Surface Area > 0.5 x Pre-Project Impervious Surface Area

†HMP applies if:
(Total New Impervious Surface Area + Total Replaced Impervious Surface Area) ≥ 1 acre

II. SETTING

II.A. Project Location and Description

This Stormwater Control Plan (SWCP) will address the provisions recommended for post construction stormwater control for Saranap Village in accordance with the C.3 stormwater guidebook from Contra Costa County. The SWCP was based on research and environmental planning for water quality, and will showcase the steps taken to design an effective and environmentally conscious SWCP for post construction stormwater controls.

The proposed area for Saranap Village Street Improvements will include additional landscaping, some pavement complete replacement and some pavement repair or no disturbance below the existing base rock layer. Improvements will take place on Boulevard Way and Saranap Ave adjacent to Saranap Village. The project site consists of primarily existing street ROW with minor dedications and vacations. The total proposed site will include an area of 78,442 ft^2. The street project includes reduction to impervious area and pavement rehabilitation within the existing public right of way to the structural section. Additional landscape bulbs and islands and parking is being added within existing ROW.

The design will not exceed the capacity of off-site drainage facilities. Pervious surfaces will be used wherever feasible while replacing existing impervious surfaces to provide stormwater infiltration treatment. Stormwater runoff from the site will eventually drain downstream to the Las Trampas Creek more than a quarter mile away. This report will showcase the collective effort taken to design and implement an effective and environmentally conscious SWCP.

II.B. Existing Site Features and Conditions

The existing streets consist of primarily pavement and sidewalks with minimal landscaping. The site slopes to the east along Boulevard Way and south along Saranap Ave with existing impervious area of roughly 73,180 ft^2. Mean annual precipitation for this area is 22.0 inches according to attached Figure 1 – Contra Costa County Isohyetal Map B-166.

II.C. Opportunities and Constraints for Stormwater Control

The primary challenge for stormwater treatment is the existence of impermeable soils (soil clay group D). Discharge of runoff by deep infiltration is not feasible due to the low permeability of the clay soils.

This project complies with pavement rehabilitation within existing Right of Way according to the Contra Costa StormwaterC.3 Guidebook.

The impervious area is reduced by 2,180 SF through the use of bulbs, landscape planters and roundabouts.

Total proposed impervious area is roughly 71,000 ft^2. The landscape area increases from approximately 2100 SF 7,486 SF after construction within the public ROW. The site eventually drains downstream to the Las Trampas Creek more than a quarter mile away.

III. LOW IMPACT DEVELOPMENT DESIGN STRATEGIES

III.A. Optimization of Site Layout

Every effort has been made to limit the imperviousness of the project site by adding additional landscaping. The following site layout characteristics help reduce watershed impacts:

- Additional Landscape Planters along the Right of Way (ROW) where pavement currently exists
- Landscape bulbs and islands adjacent to new diagonal parking where pavement currently exists
- Roundabouts with Landscaping

III.B. Use of Permeable Pavements

Conventional concrete and asphalt are used throughout the project site. Permeable pavements will be considered if their use can be deemed beneficial to the project and watershed. Areas designated for self-treatment will be called out on the SWCP.

III.C. Dispersal of Runoff to Pervious Areas

Runoff from the proposed improvements, wherever possible within good engineering practice, is typically directed to pervious areas. Street pavement Rehabilitation projects within existing right of ways are not subject to this condition.

III.D. Feasibility Assessment of Harvesting and Use for Treatment and Flow-Control

III.D.1. Permeability of Site Soils

Though the actual saturated hydraulic permeability (Ksat) is unknown, given the high clay content of the soils and known data in nearby surrounding area, this project's Ksat is much less than 1.6inches/hour. Typically high clay content is indicative of very low saturated hydraulic conductivity.

III.D.2. Potential Opportunities for Harvesting and Use

The site is a street road rehabilitation project within existing right of way thus is not subject to this requirement.

IMP Name

IV. SOURCE CONTROL MEASURES

IV.A. Site activities and potential sources of pollutants

Since site activities will be of mixed use in nature and there, transportation related emissions will not affect stormwater runoff. Activities such landscape maintenance, restaurant services, and residential & retail refuse disposal can be potential sources of pollutants.

IV.B. Source Control Table

Table 2. Sources and Source Control Measures

Potential source of runoff pollutants	*Permanent source control BMPs*	*Operational source control BMPs*
Storm Drain Inlets	Mark all inlets with the words "No Dumping! Flows to River"	Maintain and periodically repaint or replace inlet markings and provide stormwater pollution prevention information to new site owners, lessors, or operators.
Landscape/Outdoor Pesticide Use	The timing and application methods of the irrigation system at the site have been designed so as to minimize the runoff of excess irrigation water into the stormwater conveyance system.	Maintain landscaping using minimum or no pesticides and provide IPM information to new owners, lessors, and operators.
Plazas, Sidewalks	Sidewalks and other concrete areas drain to landscape areas where possible.	Sweeping plazas and sidewalks weekly.

IV.C. Features, Materials, and Methods of Construction of Source Control BMPs

FTPs shall be per the C.3 Guidance Manual provided by Contra Costa Clean Water Program, 6th edition.

V. STORMWATER FACILITY MAINTENANCE

V.A.1. Commitment to Execute any Necessary Agreements

Agree to provide any necessary easements or rights of entry to Contra Costa County for access and inspection of stormwater BMPs and to make provision of easements or rights of entry a condition of sale.

V.A.2. Statement Accepting Responsibility for Operation and Maintenance until Responsibility is Transferred

The developers of Saranap Village agrees to operate and maintain the bio-retention FTP's until one of the following occurs: (1) Acceptance of maintenance responsibility by Contra Costa County, including the filing of all required easements and establishment of a special district or other permanent funding mechanism or (2) Recordation of Codes, Covenants, and Responsibilities or other agreement that runs with the land and requires future owners to provide and pay for maintenance of stormwater BMPs.

V.A.3. Stormwater Facilities Operations and Maintenance Plan

The developers of Saranap Village will submit, with the application for building permits, a draft Stormwater Facilities Operation and Maintenance Plan including detailed maintenance requirements and a maintenance schedule.

V.B. Summary of Maintenance Requirements for Each Stormwater Facility

Maintenance of BMPs is imperative for adequate stormwater treatment. Maintenance is as follows:

Typical routine maintenance consists of the following:

- Inspect soils and plantings. Remove weeds, prune vegetation and replenish mulch as needed.
    - Clear any obstructions and remove accumulation of sediment.
- Inspect side slopes for evidence of instability or erosion and correct as necessary.
- Abate any potential vectors by filling in holes in the ground and around the ponding area. If mosquito larvae are present and persistent, contact the Contra Costa County Vector Control District for information and advice. Mosquito larvricides should be applied only when absolutely necessary and then only by a licensed professional.

Routine sweeping of sidewalks and pavement areas per Contra Costa County Standards

Kristar "Up-Flo" Media Filter: The Up-Flo Filters remove a wide range of pollutants from stormwater runoff. Periodic removal of the captured pollutants and inspections are essential to the proper functioning of the Up-Flo Filters. Typical routine maintenance consists of the following:

- ☐ Maintenance activities include chamber inspections, filter replacement, floatable removal, oil removal, media pack replacement and drain down filter replacements. The filters should be checked for overall proper functioning annually (or more often if suggested by the manufacturer). A report of the inspection shall be submitted to the Contra Costa County.

VIII. CERTIFICATIONS

The selection, sizing, and preliminary design of stormwater treatment and other control measures in this plan meet the requirements of Regional Water Quality Control Board Order R2-2009-0074 and Order R2-2011-0083.

FIGURE 1 Contra Costa County Isohyetal Map B-166

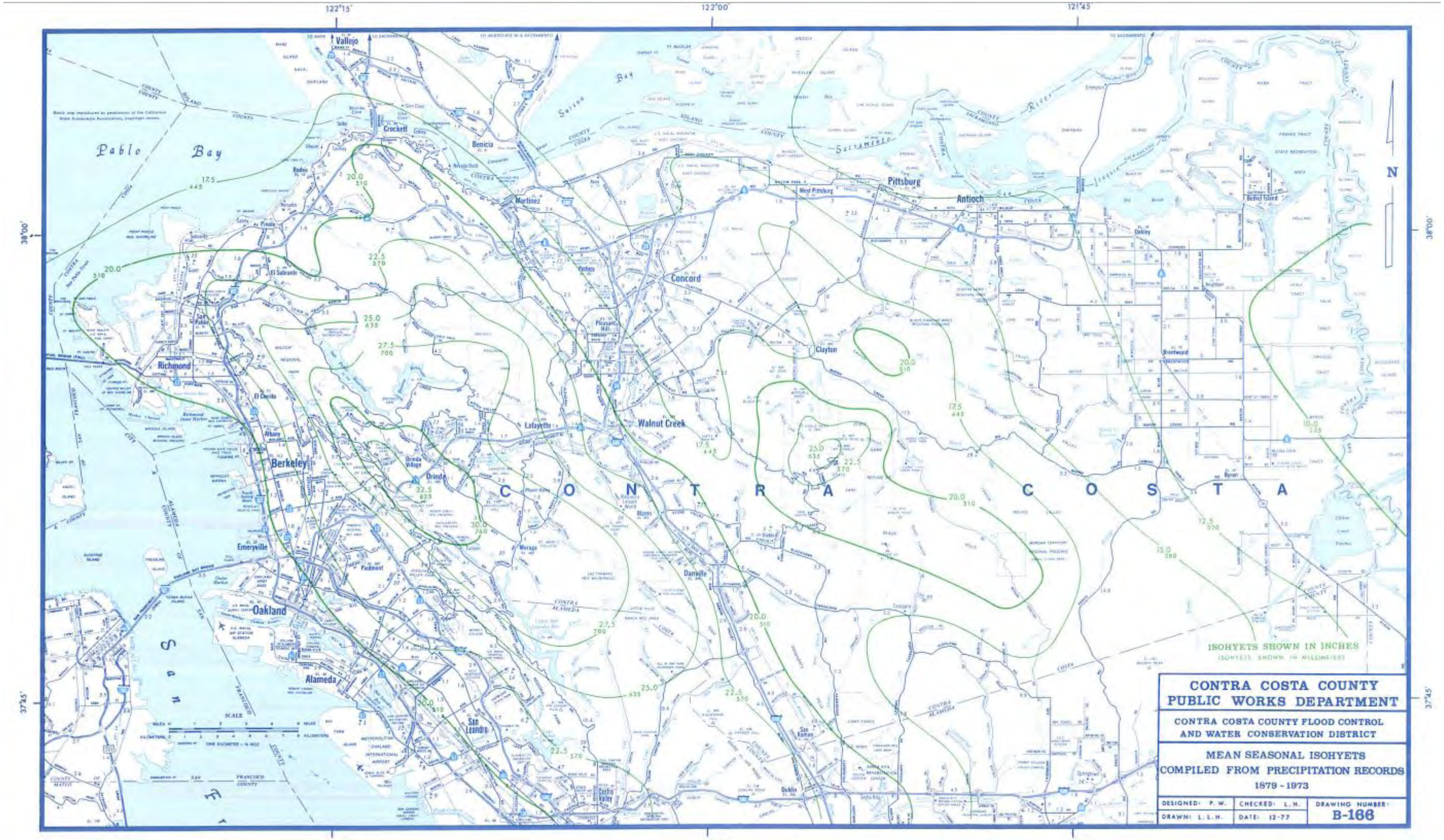
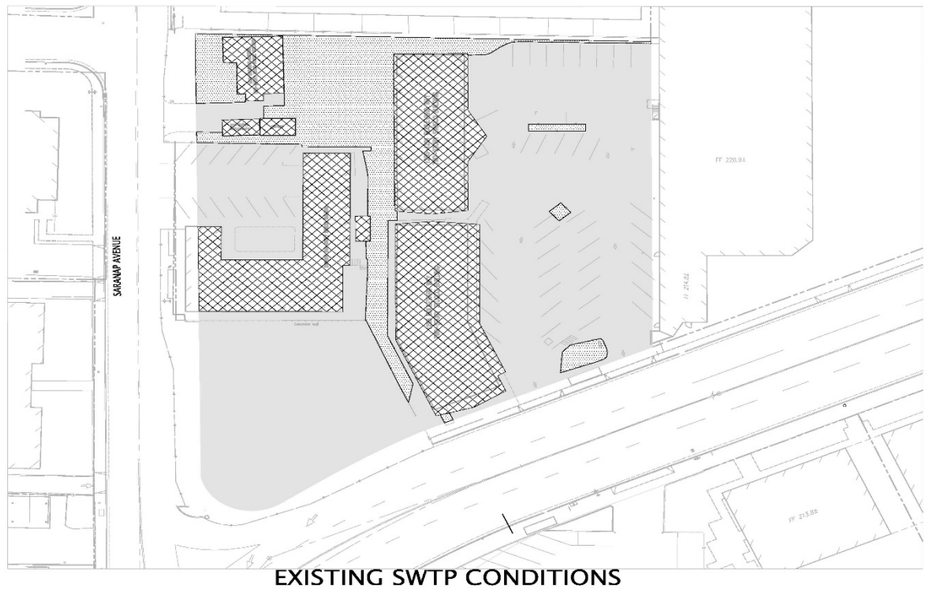


FIGURE 2 Stormwater Treatment Plan Parcel A

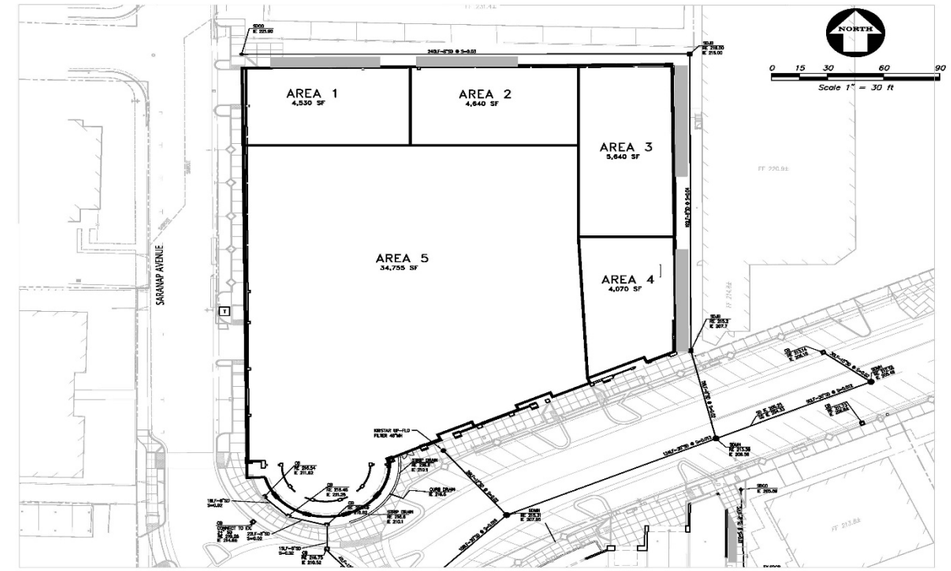


EXISTING SWTP CONDITIONS

DEVELOPMENT AREA 'A'

LEGEND EXISTING CONDITIONS

	AREA (SF)	% TOT. AREA
IMPERVIOUS PAVEMENT AREA	38,186	61%
IMPERVIOUS ROOFTOP AREA	15,887	25%
LANDSCAPE AREA	8,030	14%
TOTAL	62,103	100%

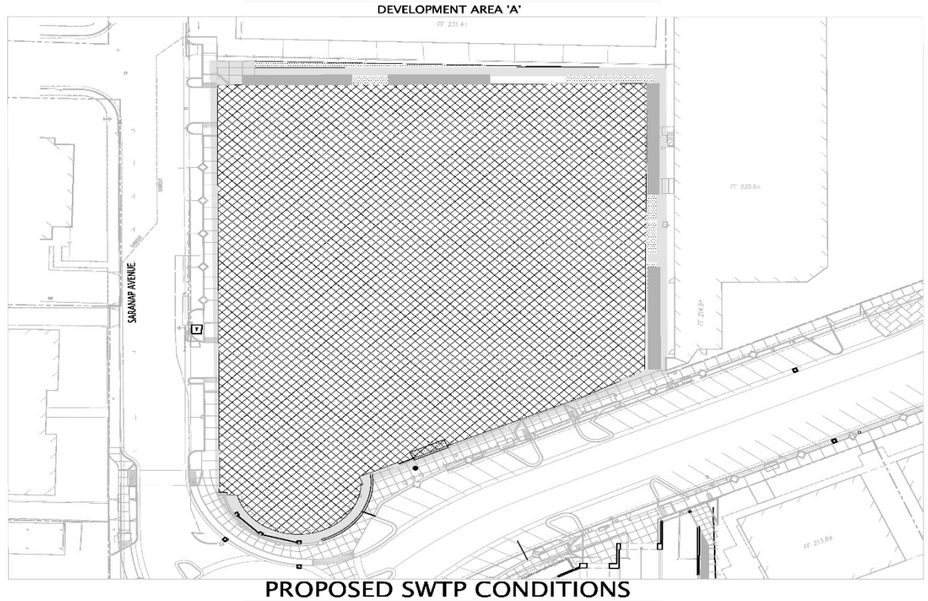


TREATMENT PLANTERS

DEVELOPMENT AREA 'A'

TREATMENT PLANTERS - Sub-Area BMP Summary							
AREA ID#	TRIBUTARY AREA (SF)	IMPERVIOUS AREA (SF)	PERVIOUS AREA (SF)	IMPERVIOUS AREA EQUIVALENT	BMP PROVIDED	BMP SIZE (SF)	SIZING FACTOR
1	4,530	0	4530	4,530	PLANTER	283	6.2%
2	4,640	0	4640	4,640	PLANTER	249	5.4%
3	5,640	0	5640	5,640	PLANTER	320	5.7%
4	4,070	0	4070	4,070	PLANTER	300	7.4%
5	36,066	0	36,066	36,066	MECHANICAL	0	0.0%

UNTREATED AREA = 8,940 SF
SELF TREATING AREA = 30 SF



PROPOSED SWTP CONDITIONS

DEVELOPMENT AREA 'A'

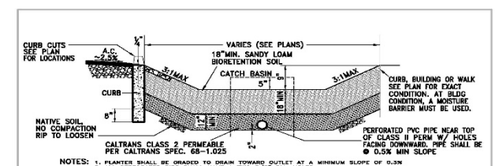
LEGEND PROPOSED CONDITIONS

	AREA (SF)	% TOT. AREA
TRIBUTARY AREA LIMITS		
PROPERTY AREA LIMITS		
IMPERVIOUS PAVEMENT DRAINING TO BIO-RETENTION AREA	2,850	5%
IMPERVIOUS ROOFTOP DRAINING TO BIO-RETENTION AREA	57,228	89%
LANDSCAPE AREA	2,686	4%
BIO-RETENTION AREA	1,152	2%
TOTAL	63,916	100%

F.A.R. CALCULATIONS FOR C.3 SPECIAL PROJECTS CATEGORIES ELIGIBLE FOR NON-LID TREATMENT

BUILDING	GROSS AREA
BASEMENT GARAGE	37,045 S.F.
FIRST FLOOR GARAGE	32,140 S.F.
SECOND FLOOR GARAGE	38,575 S.F.
BASEMENT	1,095 S.F.
FIRST FLOOR	14,815 S.F.
SECOND FLOOR	1,190 S.F.
THIRD FLOOR	34,560 S.F.
FOURTH FLOOR	32,775 S.F.
FIFTH FLOOR	32,990 S.F.
SIXTH FLOOR	31,845 S.F.
SEVENTH FLOOR	30,575 S.F.
TOTAL	287,605 S.F.
GROSS SITE AREA	63,916 S.F.
CALCULATED F.A.R.	4.63

NOTE: F.A.R. ALLOWS FOR CATEGORY B 100% EXEMPTION PER APPENDIX K IN CLEAN WATER ORDINANCE



NOTES:
1. PLANTER SHALL BE GRADED TO DRAIN TOWARD OUTLET AT A MINIMUM SLOPE OF 0.3%
2. ALL PERFORATED PIPE SHALL HAVE A MIN 3/8" DIA. HOLES
3. BIORETENTION SOIL SHALL BE PER APPENDIX B OF C.3 GUIDEBOOK
4. BIORETENTION SOIL SHALL ACHIEVE A LONG-TERM INFILTRATION RATE OF AT MIN. 5"/HR
5. CATCH BASIN SHALL BE 2-ACSS AND HAVE ATRIUM OR BEEHIVE GRATE (1/4" OPENINGS)
6. COBBLES SHALL BE PLACED AT ALL CURB CUTS AND DOWNSPOUT LOCATIONS.

STORM WATER TREATMENT PLANTER - TYPICAL SECTION

N. T. S.

RESUBMITTAL 2.23.14

NO.	REVISION	BY	NO.	REVISION	BY
△	NOVEMBER 8, 2013	TC	△		
△	JANUARY 17, 2014	TC	△		
△	FEBRUARY 23, 2014	TC	△		
△			△		
△			△		

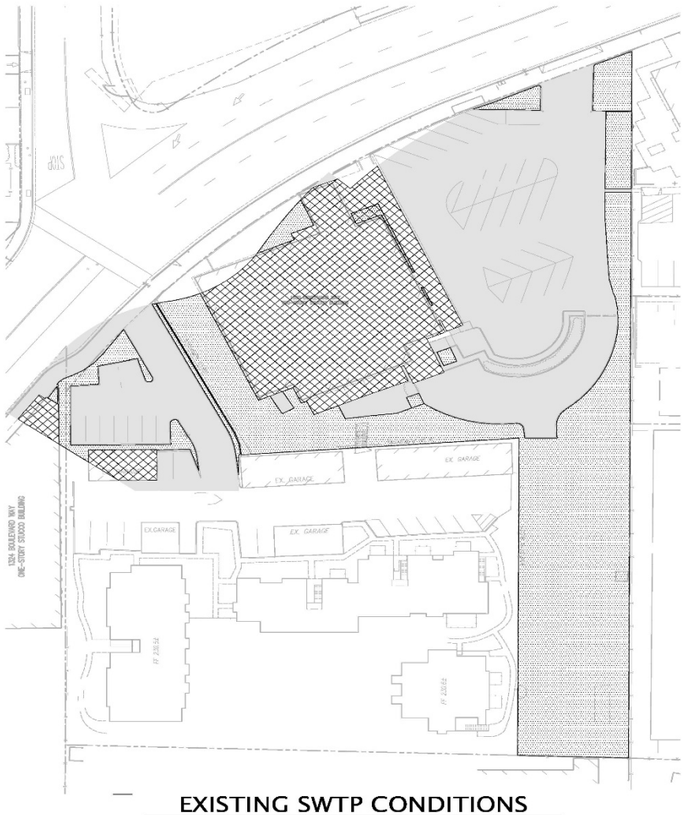
KIER & WRIGHT
CIVIL ENGINEERS & SURVEYORS, INC.
2850 Collier Canyon Road (925) 245-8788
Livermore, California 94551 Fax (925) 245-8796

STORM WATER TREATMENT PLAN
OF
BOULEVARD WAY AND SARANAP AVENUE
FOR
HALL EQUITIES

CONTRA COSTA COUNTY CALIFORNIA

DATE	MARCH, 2013
SCALE	1" = 30'
DESIGNER	TC
JOB NO.	A12549-2
SHEET	C11.1
OF	13 SHEETS

FIGURE 3 Stormwater TREATMENT PLAN PARCEL B

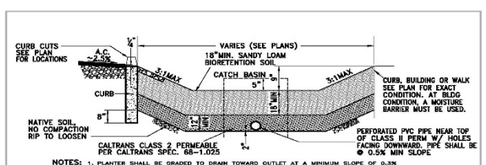


EXISTING SWTP CONDITIONS

DEVELOPMENT AREA 'B'

LEGEND EXISTING CONDITIONS

		AREA (SF)	% TOT. AREA
	TRIBUTARY AREA LIMITS		
	IMPERVIOUS PAVEMENT DRAINING TO BIO-RETENTION AREA	27,633	42%
	IMPERVIOUS ROOFTOP DRAINING TO BIO-RETENTION AREA	13,900	22%
	LANDSCAPE AREA	23,522	36%
	TOTAL	65,055	100%



NOTES:
1. PLANTER SHALL BE GRADED TO DRAIN TOWARD OUTLET AT A MINIMUM SLOPE OF 0.3%
2. ALL PERFORATED PIPE SHALL HAVE A TWO 5/8" DIA. HOLES
3. BIORETENTION SOIL SHALL BE PER CITY OF SAN JOSE SPECS.
4. BIORETENTION SOIL SHALL ACHIEVE A LONG-TERM INFILTRATION RATE OF AT MIN. 5"/HR
5. CATCH BASIN SHALL BE GRATE AND HAVE ATRIUM OR BEEHIVE GRATE (1/4" OPENINGS)
6. COBBLES SHALL BE PLACED AT ALL CURB CUTS AND DOWNSPOUT LOCATIONS.

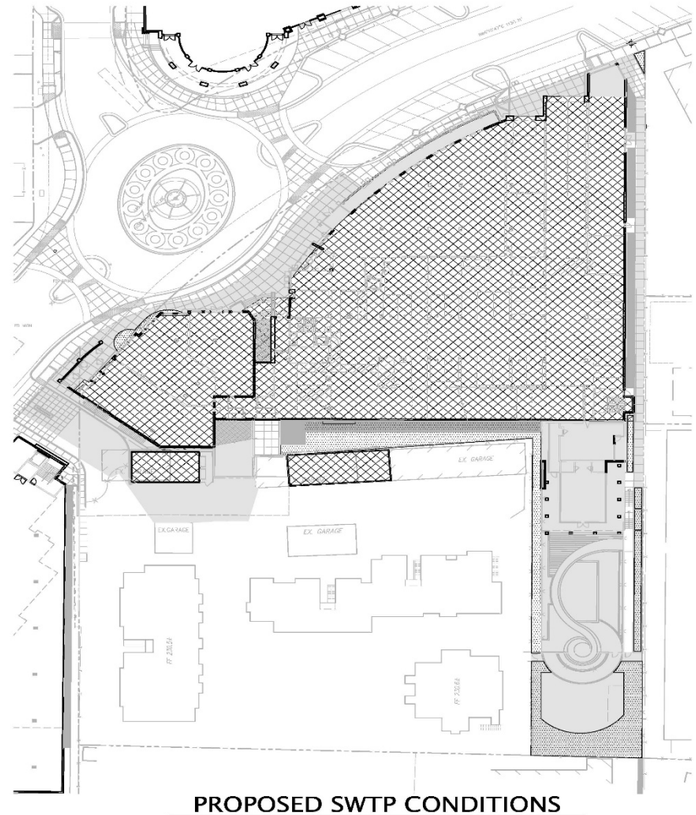
STORM WATER TREATMENT PLANTER - TYPICAL SECTION

N. T. S.

F.A.R. CALCULATIONS FOR C.3 SPECIAL PROJECTS CATEGORIES ELIGIBLE FOR NON-LID TREATMENT

BUILDING	GROSS AREA
BASEMENT GARAGE	36,035 S.F.
FIRST FLOOR GARAGE	30,920 S.F.
SECOND FLOOR GARAGE	27,545 S.F.
THIRD FLOOR GARAGE	5,305 S.F.
BASEMENT	2,165 S.F.
FIRST FLOOR	13,230 S.F.
SECOND FLOOR	2,180 S.F.
THIRD FLOOR	23,525 S.F.
FOURTH FLOOR	21,950 S.F.
FIFTH FLOOR	21,950 S.F.
SIXTH FLOOR	20,722 S.F.
TOTAL	65,055 S.F.
GROSS SITE AREA	205,527 S.F.
CALCULATED F.A.R.	3.15

NOTE: F.A.R. ALLOWS FOR CATEGORY B 75% EXEMPTION PER APPENDIX K IN CLEAN WATER ORDINANCE

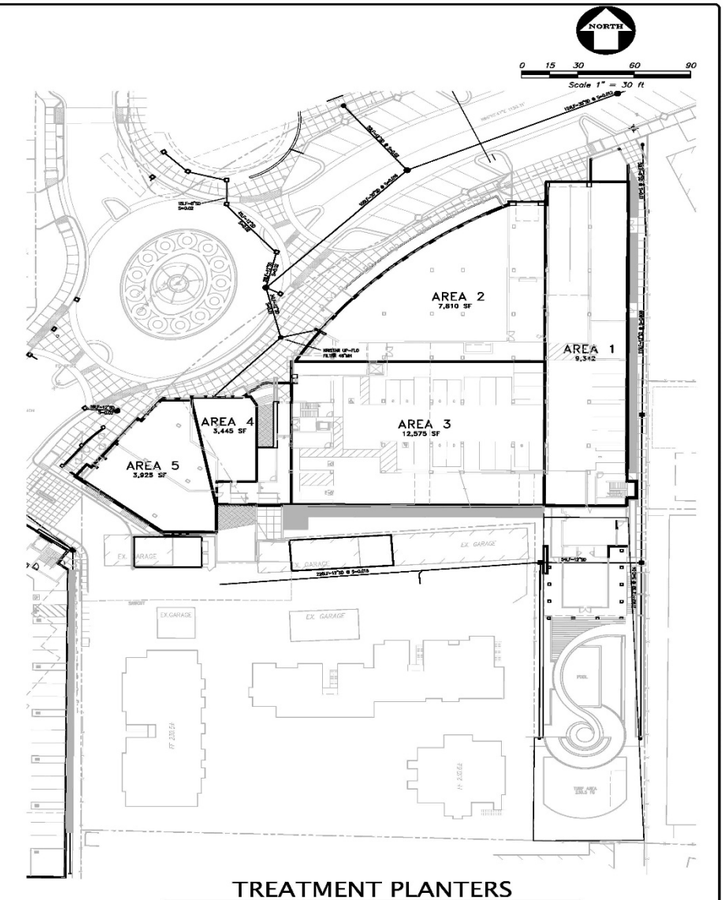


PROPOSED SWTP CONDITIONS

DEVELOPMENT AREA 'B'

LEGEND PROPOSED CONDITIONS

		AREA (SF)	% TOT. AREA
	TRIBUTARY AREA LIMITS		
	PROPERTY AREA LIMITS		
	IMPERVIOUS PAVEMENT	19,900	32%
	IMPERVIOUS ROOFTOP	38,300	61%
	LANDSCAPE AREA	2,822	5%
	BIO-RETENTION AREA	1,433	2%
	TOTAL	62,455	100%



TREATMENT PLANTERS

DEVELOPMENT AREA 'B'

TREATMENT PLANTERS - Sub Area BMP Summary

AREA ID#	TRIBUTARY AREA (SF)	IMPERVIOUS AREA (SF)	PERVIOUS AREA (SF)	IMPERVIOUS AREA EQUIVALENT (SF)	BMP PROVIDED	BMP SIZE (SF)	SIZING FACTOR
1	9342	9342	0	9342	PLANTER	450	4.8%
2	7810	7810	0	7810	MECHANICAL	0	0.0%
3	12575	12575	0	12575	PLANTER	805	6.4%
4	3445	3445	0	3445	PLANTER	178	5.2%
5	3925	3925	0	3925	MECHANICAL	0	0.0%

RESUBMITTAL 2.23.14

NO.	REVISION	BY	NO.	REVISION	BY
△	NOVEMBER 8, 2013	TC	△		
△	JANUARY 17, 2014	TC	△		
△	FEBRUARY 23, 2014	TC	△		
△			△		
△			△		

KIER & WRIGHT
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Livermore, California 94551 Fax (925) 245 8796

STORM WATER TREATMENT PLAN
OF
BOULEVARD WAY AND SARANAP AVENUE
FOR
HALL EQUITIES

CONTRA COSTA COUNTY CALIFORNIA

DATE	MARCH, 2013
SCALE	1" = 50'
DESIGNER	TC
JOB NO.	A12549-2
SHEET	C11.2
OF	13 SHEETS

FIGURE 4 Stormwater TREATMENT PLAN PARCEL C

EXISTING SWTP CONDITIONS

DEVELOPMENT AREA 'C'

PROPOSED SWTP CONDITIONS

DEVELOPMENT AREA 'C'

LEGEND EXISTING CONDITIONS

	AREA (SF)	% TOT. AREA
TRIBUTARY AREA LIMITS		
IMPERVIOUS PAVEMENT DRAINING TO BIO-RETENTION AREA	10,065	41%
IMPERVIOUS ROOFTOP DRAINING TO BIO-RETENTION AREA	5,409	22%
LANDSCAPE AREA	9,110	37%
TOTAL	24,584	100%

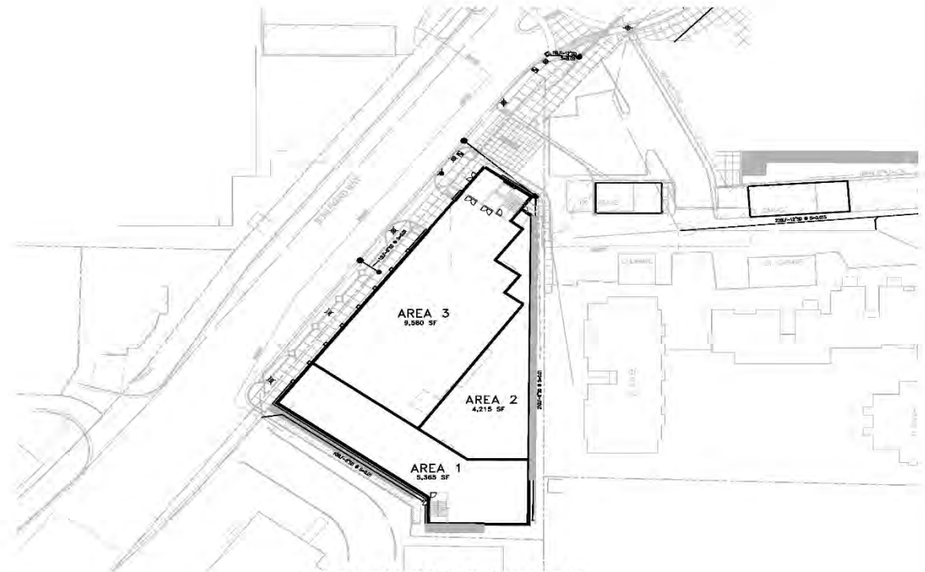
LEGEND PROPOSED CONDITIONS

	AREA (SF)	% TOT. AREA
TRIBUTARY AREA LIMITS		
IMPERVIOUS PAVEMENT DRAINING TO BIO-RETENTION AREA	4,186	14%
IMPERVIOUS ROOFTOP DRAINING TO BIO-RETENTION AREA	19,080	78%
LANDSCAPE AREA	1,276	5.0%
BIO-RETENTION AREA	695	3.0%
TOTAL	25,237	100%

F.A.R. CALCULATIONS FOR C.3 SPECIAL PROJECTS CATEGORIES ELIGIBLE FOR NON-LID TREATMENT

BUILDING	GROSS AREA
FIRST FLOOR GARAGE	17,775 S.F.
FIRST FLOOR	1,210 S.F.
SECOND FLOOR	14,116 S.F.
THIRD FLOOR	14,116 S.F.
FOURTH FLOOR	14,116 S.F.
TOTAL	61,333 S.F.
GROSS SITE AREA	25,237 S.F.
CALCULATED F.A.R.	2.49

NOTE: F.A.R. ALLOWS FOR CATEGORY B 50% EXEMPTION PER APPENDIX K IN CLEAN WATER ORDINANCE



TREATMENT PLANTERS

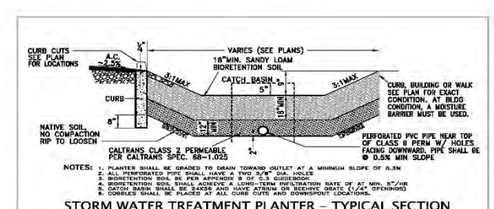
DEVELOPMENT AREA 'C'

TREATMENT PLANTERS - Sub-Area BMP Summary

AREA ID#	TRIBUTARY AREA (SF)	IMPERVIOUS AREA (SF)	PERVIOUS AREA (SF)	IMPERVIOUS AREA EQUIVALENT	BMP PROVIDED	BMP SIZE (SF)	SIZING FACTOR
1	5,365	5,365	0	5,365	PLANTER	398	7.4%
2	4,215	4,215	0	4,215	PLANTER	297	7.0%
3	9,580	9,580	0	9,580	MECHANICAL	0	0.0%

UNTREATED AREA = 2,632 SF

SELF-TREATING AREA = 3,446 SF



NOTES:
1. PLANTER SHALL BE GRADED TO DRAIN TOWARD OUTLET AT A MINIMUM SLOPE OF 0.3%
2. ALL PERFORATED PIPE SHALL HAVE A TWO 5/8" DIA. HOLES
3. BIORETENTION SOIL BE PER APPENDIX B OF C.3 GUIDEBOOK
4. SOIL MEDIA SHALL BE TESTED FOR INFILTRATION RATE OF AT MIN. 5"/HR
5. CATCH BASIN SHALL BE 1-WAY AND HAVE STRONG ON SECURE GRATE (1/4" OPENINGS)
6. COBBLES SHALL BE PLACED AT ALL CURB CUTS AND DOWNSPOUT LOCATIONS.

STORM WATER TREATMENT PLANTER - TYPICAL SECTION

N. T. S.

RESUBMITTAL 2.23.14

NO.	REVISION	BY	NO.	REVISION	BY
△	NOVEMBER 8, 2013	TC	△		
△	JANUARY 17, 2014	TC	△		
△	FEBRUARY 23, 2014	TC	△		
△			△		
△			△		

KIER & WRIGHT
CIVIL ENGINEERS & SURVEYORS, INC.
2850 Collier Canyon Road (925) 245-8788
Livermore, California 94551 Fax (925) 245-8796

STORM WATER TREATMENT PLAN
OF
BOULEVARD WAY AND SARANAP AVENUE
FOR
HALL EQUITIES

CONTRA COSTA COUNTY CALIFORNIA

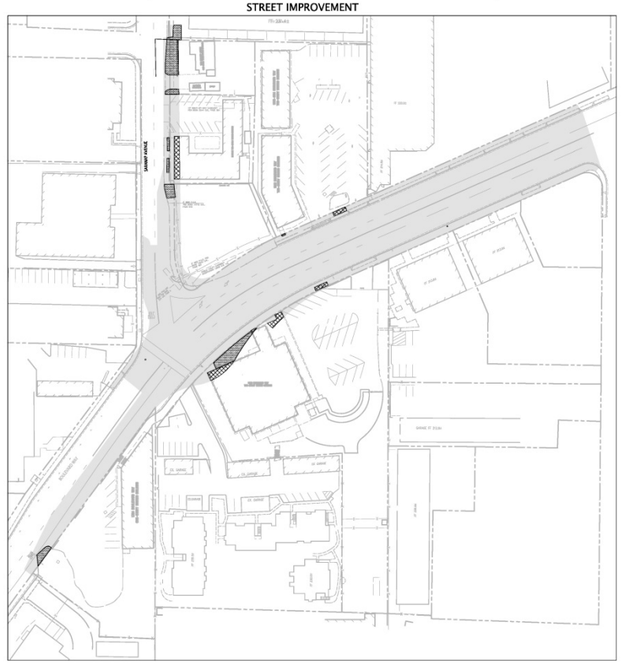
DATE	MARCH, 2013
SCALE	1" = 30'
DESIGNER	TC
JOB NO.	A12549-2
SHEET	C11.3
OF	13 SHEETS

NORTH

0 30 60 120 180
Scale 1" = 60 ft

EXISTING SWTP CONDITIONS

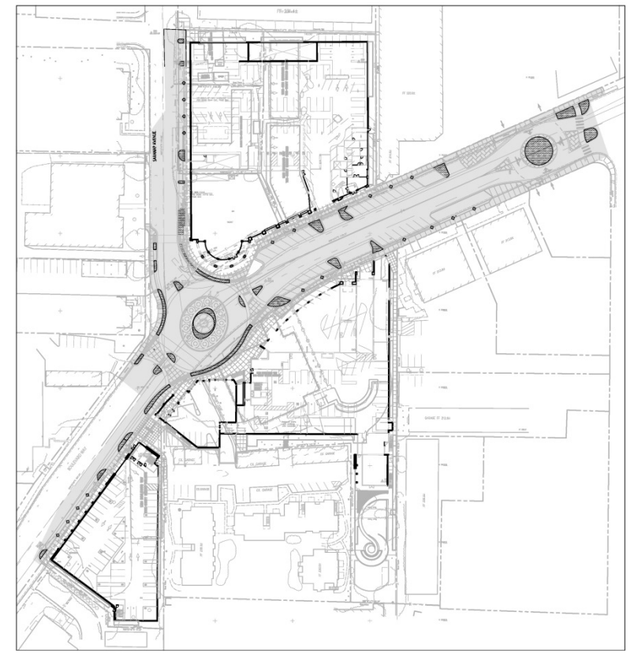
STREET IMPROVEMENT



LEGEND EXISTING CONDITIONS	AREA (SF)	% TOT. AREA
IMPERVIOUS PAVEMENT AREA	73,180	97%
LANDSCAPE AREA	2,100	3%
TOTAL	75,280	100%

PROPOSED SWTP CONDITIONS

STREET IMPROVEMENT



LEGEND PROPOSED CONDITIONS	AREA (SF)	% TOT. AREA
IMPERVIOUS PAVEMENT AREA	71,000	90.5%
LANDSCAPE AREA	7,442	9.5%
TOTAL	78,442	100%

Road section disturbance does not exceed 50% of the impervious area of the existing street. Street rehabilitation will include overlay and deep list to avoid disturbing below existing baserock.

RESUBMITTAL 2.23.14

NO.	REVISION	BY	NO.	REVISION	BY
△	NOVEMBER 8, 2013	TC	△		
△	JANUARY 17, 2014	TC	△		
△	FEBRUARY 23, 2014	TC	△		
△			△		
△			△		

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STORM WATER TREATMENT PLAN
OF
BOULEVARD WAY AND SARANAP AVENUE
FOR
HALL EQUITIES

CONTRA COSTA COUNTY CALIFORNIA

DATE	MARCH, 2013
SCALE	1" = 50'
DESIGNER	TC
JOB NO.	A12549-2
SHEET	C11.4
OF	13 SHEETS

Z:\2012\A12549-2\A12549-2 PG.dwg 4/30/2014 8:13:01 AM PST

Hall Equities Group™
Real Estate Investment · Development · Management

6/26/2014
Via email wlai@pw.cccounty.us and U.S. Mail
Warren Lai
Division Manager, Engineering Services
Contra Costa County
Public Works Department
255 Glacier Drive
Martinez, CA 94553-4825

Re: Saranap Village
Response to PW Memorandum Dated June 17, 2014

Dear Mr. Lai:

Set forth below are HEG's responses to the substantive issues raised in comments submitted by the Public Works Department in its memorandum dated June 17, 2014. I have collected all responses into this one package for ease of reference. Kier & Wright, Omni-Means, and Fehr and Peers have provided most of the technical information reflected in this letter. Our landscape architect, Camp & Camp, provided the information regarding the Oak tree and shadows.

As you know, HEG is not the author of, and does not control, the EIR. Most of your references to "the applicant" should instead be references to the persons preparing the EIR. We have provided below information relevant to the subject matter of each comment. I quote each comment verbatim to avoid any confusion.

Traffic and Circulation
4.16.2 Setting: Current Condition: Existing Roadway Network.

Comment 1: Local Roadways. Boulevard Way: Applicant shall verify the descriptions of Boulevard Way for the segment between Kinney Drive and Saranap Avenue: ADEIR indicated within the segment between Kinney Drive and Saranap Avenue, the roadway continues as a two-lane street with no curb, gutter, or sidewalks. There are curb, gutter, and sidewalks within this segment.

Response 1: We agree that the description should be accurate. We request that the County direct the EIR authors to respond appropriately.

Comment 2: Local Roadways. El Curtola Boulevard: Applicant shall verify the descriptions for El Curtola Boulevard. ADEIR indicated El Curtola Boulevard forms the east-west legs of the Saranap Avenue/El Curtola Boulevard/Old Tunnel Road intersection. El Curtola is a north-south road, thus, it forms the north-south legs of this intersection.

Response 2: We agree that the description should be accurate. We request that the County direct the EIR authors to respond appropriately.

Comment 3: Bicycle and Pedestrian Facilities: Applicant shall verify the descriptions for the segment of Boulevard Way between Saranap Avenue and Kinney Drive. ADEIR indicated between Saranap Avenue and Olympic Boulevard that there are essentially no pedestrian facilities on Boulevard Way. The segment between Saranap Avenue and Kinney Drive is within the segment between Saranap Avenue and Olympic Boulevard. There are pedestrian facilities between Saranap Avenue and Kinney Drive.

Response 3: We agree that the description should be accurate. We request that the County direct the EIR authors to respond appropriately.

4.16.5 Discussion of Impacts and Mitigation Measures

Comment 4: Table 4.16-6: The proposed square footages of the various categories do not match Table ES-1. Applicant shall clarify the correct quantity and adjust the affected sections of the ADEIR accordingly.

Response 4: We request that the County direct the EIR authors to reconcile any discrepancies appropriately. The correct GLA square feet numbers for the Project are reflected in Table 21 on page 54 of *Traffic Impact Analysis For the Proposed Saranap Village Project*, by Omni-Means, dated March 6, 2014.

Impact 4.16-2

Comment 5: Since diagonal parking is not generally permitted, Applicant shall analyze the sight distance required for westbound motorists and/or bicyclists exiting the traffic circle to the parking spaces.

Response 5: The safety and maneuverability of motorists and bicyclists was analyzed in the memorandum, *Response to Public Works Comments Regarding Saranap Village Memorandum* (Fehr & Peers, May 9, 2014) ("F&P 5/9/14 Memorandum"). Vehicles exiting the oak tree traffic circle would be traveling at 15 to 20 miles per hour (mph). (F&P 5/9/14 Memorandum, p. 2) Per Caltrans Highway Design Manual, the required stopping sight distance for 20 mph streets is 125 feet. As shown in Report TRA8, the proposed design exceeds the minimum sight distance. Therefore, vehicles will be able to stop if a car is backing out of a parking space.

Comment 6: The proposed traffic circle is in close proximity to the intersection of Boulevard Way and Flora Avenue. Applicant shall analyze the potential conflicts.

Response 6: Conflicts at the Boulevard Way/Flora Avenue intersection would be similar to existing conditions. Even though the Project will generate more trips through this intersection, the overall vehicle movements are not changing. Improvements over existing conditions include elimination of conflicts between westbound through movements and westbound left-turns onto Flora with the addition of a left-turn pocket. The planter island will also reduce eastbound vehicle speeds as they approach Flora

Avenue (F&P 5/9/14 Memorandum, p. 2), improving safety for vehicles g onto Boulevard Way.

Comment 7: Applicant shall analyze and consider reducing the diagonal parking angle to allow bicyclists to maneuver around a vehicle backing out of the diagonal space.

Response 7: The adjacent 16.7-foot wide travel lane will provide space for bicyclists to maneuver around a vehicle as it is backing out. (F&P 5/9/14 Memorandum, pp. 2-4) Placement of shared lane markings near the centerline will guide bicyclists away from the parked vehicles to improve sight distance of vehicles backing out of parking stalls. The proposed bulb-outs, traffic circle and roundabout improve conditions for bicyclists using Boulevard Way by reducing vehicle speeds. A reduction in vehicle speeds reduces the level of stress experienced by bicyclists, reduces the number of times a bicyclist is passed by a vehicle, and increases bicyclist safety. Shared lane markings would also be used to enhance accommodations for bicyclists.

Accordingly, altering the angle of the diagonal parking is not necessary to allow maneuvering. The diagonal parking meets standard parking dimensions, and reducing the angle would reduce the number of parking stalls available. We would have no objection to a measure requiring HEG to install shared lane markings at the approximate location identified in the F&P 5/9/14 Memorandum. Shared lane markings are consistent with the Class III bicycle route designation of Boulevard Way in the Contra Costa County Countywide Bike Plan.

Comment 8: To accommodate the traffic circle just west of Flora Avenue, it appears additional off-site improvements east of Flora Avenue will be needed, including, but not limited to, a transition from 2 lanes to 4 lanes, a westbound left-turn lane, etc. Driveway movements east of Flora Avenue will also be impacted and should be analyzed. Figure ES-2 does not include information on off-site work east of Flora Avenue.

Response 8: We included information relevant to the offsite work in our submittals to the County. The air quality and greenhouse gas consultant included the equipment needed to perform the offsite work in its calculations of impacts. Omni-Means and Fehr & Peers included these improvements in their traffic and safety analyses. We presented a map of "Onsite and Off-Site Areas," which delineates all areas that will be disturbed. On that map we indicated "Offsite Striping East of Flora Avenue on Boulevard Way" to note the work you mention. Additional details appear in the project submittals. Please see Sheet C2, *Boulevard Way Overall Development Area* (Kier & Wright 2/23/2014), Sheet C9, *Street Improvements* (Kier & Wright 2/23/2014, showing all the improvements transitions and lane markings for the traffic circle area), Sheet C5, *Preliminary Grading Plan* (Kier & Wright 2/23/2014), Sheet C8, *Preliminary Utility Plan* (Kier & Wright 2/23/2014), and Memorandum, *Response to Public Works Comments Regarding Saranap Village*, page 6 and figures 5-8 (noting that layout and location of the island provides the opportunity to implement a left-turn pocket from Boulevard Way onto Flora Avenue, eliminating an existing conflict) (Fehr & Peers 5/9/2014).

The proposed design does not alter access to the driveways east of Flora Avenue. Vehicles will be able to turn in and out of driveways along Boulevard Way to the same extent they can make those maneuvers today

Comment 9: Sight distance for motorists waiting to turn onto Boulevard Way from Flora Avenue should be analyzed.

Response 9: As noted in response to comment 5, vehicles exiting the oak tree traffic circle approaching Flora Avenue would be traveling at 15 to 20 miles per hour (mph). Per Caltrans Highway Design Manual, the required stopping sight distance for a 20 mph street is 125 feet. As shown in Report TRA8, the proposed design exceeds the minimum sight distance; therefore, a vehicle traveling eastbound on Boulevard Way would be able to stop if a vehicle on Flora Avenue pulls into the intersection. In addition to stopping sight distance, the Highway Design Manual provides recommended values for corner sight distance. Corner sight distance provides adequate time for a vehicle at an intersection to turn right or left onto the cross street without requiring through traffic on the cross street to radically alter their speed. Corner sight distance is based on the speed of the cross street. As shown in the Planter Island Sight Distance figure, vehicles turning from Flora Avenue onto Boulevard Way have a sight distance of 300 feet to the west. This exceeds the corner sight distance for 25 mph, and as described above, eastbound Boulevard Way traffic is expected to be traveling at 15 to 20 mph.

Comment 10: Applicant shall propose measures to ensure the large mature oak tree will not have stability issues after the relocation.

Response 10: The ground forces from the Valley Oak will be approximately 500,000 lbs. The resultant stability of the tree will be basically the same as it currently exists. The pruning strategy calls for the tree canopy to be further modified by removing any hazardous limbs and deadwood as identified by the Project Arborist. The final procedure involves the selective thinning within the canopy further reducing wind shear and allowing the free flow of air as also recommended by the Arborist.
The stability of the tree will not be affected by the trimming needed to maintain sight visibility for motorists and height clearance for trucks. (See response 13) We intend to secure the tree with guy wires for a minimum of three years to ensure its stability.
We agree that the pruning strategy, the selective thinning of the final procedure, and the guying of the tree for 3 years may be required as mitigation measures to ensure the health of the oak tree.

Comment 11: ADEIR indicated the layout for Saranap Avenue included bulb-out and parallel parking. It appears the east half of Saranap Avenue is significantly wider than the west half. Applicant shall verify the west half has sufficient room to accommodate the proposed facilities, including, but not limited to, a 12-foot lane.

Response 11: The existing right of way will allow for the minimum 12' lanes in both directions, bulbouts and parking as proposed.

Comment 12: Applicant shall analyze the sight distance for northbound Flora Avenue motorists turning onto Boulevard Way will not be compromised by the tree and the traffic circle.

Response 12: As noted in response to comment 5 and 9, vehicles exiting the roundabout approaching Flora Avenue would be traveling at 15 to 20 miles per hour (mph). Per

Caltrans Highway Design Manual, the required stopping sight distance for a 20 mph street is 125 feet. As shown in the Report TRA8, the proposed design exceeds the minimum sight distance; therefore, a vehicle traveling eastbound on Boulevard Way would be able to stop if a vehicle on Flora Avenue pulls into the intersection. In addition to stopping sight distance, the Highway Design Manual provides recommended values for corner sight distance. Corner sight distance provides adequate time for a vehicle at an intersection to turn right or left onto the cross street without requiring through traffic on the cross street to radically alter their speed. Corner sight distance is based on the speed of the cross street. As shown in Report TRA8, vehicles turning from Flora Avenue onto Boulevard Way have a sight distance of 300 feet to the east. This exceeds the corner sight distance for 25 mph, and as described above, eastbound Boulevard Way traffic is expected to be traveling at 15 to 20 mph.

Comment 13: Applicant to analyze the sight distance of a large tree for motorists at the traffic circle, including the effects of any shadows on the nearby crosswalk.

Response 13: The tree canopy will be kept 15 feet above the pavement, which is enough to accommodate fire trucks, emergency vehicles, buses, and commercial trucks passing under the tree, and will therefore not inhibit sight distance. See response to comment 10 regarding the stability of the tree after this trimming. Also, the tree circle will present a distinctive feature, very different from the scene motorists heading west on Boulevard Way will see before they reach this point. It will signal the beginning of Saranap Village, and thus alert people to the change in surroundings. By focusing attention in this way, the tree circle will make passage safer for drivers, pedestrians and bicyclists in Saranap Village.

We are submitting shadow renderings for that crosswalk. Please see Report TRA11, *Saranap Village Shadow Study.* It demonstrates that the shadow does not fall within the crosswalk area, allowing maximum visibility of pedestrian crossings.

We agree that a mitigation measure requiring that the tree canopy be kept 15 feet above the pavement may be imposed.

Comment 14: Applicant shall analyze the effects of a traffic circle in close proximity of the Flora Avenue/Boulevard Way intersection. The combined effect of both to the traffic circulation should be provided. It is typical not to have major` features in such close proximity.

Response 14: Vehicle turning movement counts were collected in June 2014 at the proposed planter island location and include the adjacent private driveways. (See Report TRA9, *Saranap Village: Analysis of Oak Tree Planter Island* (Fehr & Peers June 25, 2014)) Using these driveway counts and the forecasted 2030 plus project traffic volumes, operations of the traffic circle were analyzed using the 2010 Highway Capacity Manual methodology for roundabouts (see Report TRA9). As the results show, the planter island would operate at Level of Service A during both the AM and PM peak hours. Although the traffic circle and the intersection are located in close proximity to each other, this does not result in additional conflicts, as all of the driveways are existing. The analysis shows that the 95th percentile queue for the westbound approach to the traffic circle is 56 feet during the PM peak hour (two to three cars) and will not spill back across the Flora

Avenue intersection. Therefore, this won't impact the Boulevard Way/Flora Avenue intersection. Conversely, since Boulevard Way is not controlled at Flora Avenue, vehicle queues will not spill back into the traffic circle.

Comment 15: The intersection level of service results were based on Omni-Means' Traffic Impact Analysis. Applicant shall verify the lane configurations for intersections #1 and #4, as shown in Figure 3.

Response 15: This pertains to Omni-Means, *Traffic Impact Analysis for the Proposed Saranap Village Project, Contra Costa County*, March 6, 2014. Thank you for pointing out the graphical error in that the lane configuration diagrams. These were clerical errors in the graphics which did not affect the analysis; the analysis assumed the correct configurations. These graphical errors in Figure 3 have been corrected and a revised report is being submitted resubmitted. See report TRA3 (now dated June 23, 2014)
The lane configuration shown for intersections #1 (Boulevard Way/Olympic Boulevard/Tice Valley Boulevard) and intersection #4 (Boulevard Way/Saranap Avenue) in Figure 3 of the traffic impact analysis are not correct. For intersection #1, Figure 3 incorrectly shows the eastbound Olympic Boulevard approach having two (2) left-turn lanes, one (1) through lane, and one (1) right-turn. The correct lane geometries are one (1) left-turn lane, two (2) through-lanes, and one (1) right-turn lane. For intersection #4, Figure 3 incorrectly shows the eastbound Boulevard Way approach having one (1) shared through/left-turn lane and one (1) through-lane. The correct lane geometries are one (1) shared through/left-turn lane (eastbound). Because all intersection level-of-service (LOS) calculations conducted for intersections #1 and #4 were done using the correct lane geometries, no changes are needed to the analysis or the conclusions.

Comment 16: [Re Omni-Means Traffic Impact Analysis] Applicant shall clarify how intersection #3 was analyzed. Based on the Synchro printouts provided, it appeared the traffic from Garden Court was not factored in.

Response 16: As noted in the traffic impact analysis, intersection #3, at Kinney Drive/Garden Court/Boulevard Way, is non-standard for intersection control. Both Kinney Drive and Garden Court are stop-sign controlled at Boulevard Way. However, unlike a standard four-way intersection where minor streets oppose each other at the major street (Boulevard Way), Kinney Drive and Garden Court are adjacent to each other forming the eastbound (Kinney Drive) and southbound (Garden Court) approaches at Boulevard Way. Accepted Highway Capacity Manual (HCM) methodologies for calculating LOS at unsignalized intersections do not account for such a configuration and non-standard design/control. Therefore, all stop-sign controlled outbound (southbound) traffic from Garden Court was added to the stop-sign controlled (eastbound) traffic at Kinney Drive to provide an overall intersection LOS for stop-sign controlled movements. It is noted that peak hour traffic volumes in/out of Garden Court are very light (6 vehicles or less) during the peak hours.

Comment 17: [Re Omni-Means Traffic Impact Analysis] Applicant shall verify all input quantities from the report are consistent with the input data from Synchro, CCTA model, and roundabout analyses.

Response 17: All quantities used in the traffic impact analysis are consistent with Synchro-Simtraffic software, Contra Costa Transportation Authority (CCTA) model output, and modern roundabout analysis. Specifically, with respect to Synchro-Simtraffic software all intersection level-of-service (LOS) incorporates Highway Capacity Manual 2000 (HCM 2000) operations methodology. These "field level" intersection LOS calculations incorporate appropriate heavy vehicle adjustments factors, peak hour factors, and signal lost-time factors. A standard peak hour factor (PHF) of 0.92 is typically applied to all analysis scenarios in this study (PHF refers to traffic approach progression through the signal). Vehicle lane storage capacity, control, and vehicle queuing are also accounted for in the Synchro LOS calculations. With respect to CCTA transportation model output, all model plots for base model (2000) and future year (2030) were vetted through CCTA staff and represent the most recent model projections available for the project study area. In fact, it was noted (internally) that future year projections for Boulevard Way had remained unchanged from previous model output used for the approved Sufism Reoriented project located west of the proposed project site. Modern roundabout analysis has identified roundabout design criteria and performance based on policies and design standards documented in NCHRP Report 672 and the Caltrans Highway Design Manual. Intersection LOS for roundabout operation has been based on the SIDRA software program. This software program analyzes roundabout operation and LOS based on a "gap acceptance" model and is the current industry standard.

Comment 18: [Re Omni-Means Traffic Impact Analysis] Applicant shall clarify the method used to analyze the roundabout. Please provide information on how approach speed, approach angles, roundabout size, and other factors, were used to analyze the roundabout.

Response 18: As stated in Response #17, the roundabout analysis has identified roundabout design criteria and performance based on policies and design standards documented in NCHRP Report 672 and the Caltrans Highway Design Manual. Intersection LOS for roundabout operation has been based on the SIDRA software program. This software program analyzes roundabout operation and LOS based on a "gap acceptance" model and is the current industry standard.

Impact 4.16-4

Comment 19: It appears bus service can only be maintained if the bus stops are relocated. The proposed eastbound bus stop will be relocated by another project. However, ADEIR should indicate, if that project fails to do so, the Applicant will be responsible to relocate this bus stop and indicate the Applicant will have the ability to do so. As for the westbound bus stop, the ADEIR proposed a new location and does not indicate that the applicant will be able to relocate this bus stop. It appears existing on-street parking will be removed. Applicant shall clarify County Connection's position on relocating these bus stops.

Response 19: As you note, the eastbound bus stop will be relocated by another project, which is the Sufism Reoriented New Sanctuary project. That project is already under construction; there should be no concern about whether it will be undertaken. In the westbound direction, the Saranap Village Project relocate the bus stop to the far side of the Saranap Avenue/Boulevard Way intersection, which would potentially result in the

loss of one to two parking stalls. The applicant has discussed bus stop relocation with County Connection and will coordinate this relocation with them.

Impact 4.16-5

Comment 20: Applicant shall analyze truck turning movements at driveways within the development.

Response 20: Driveways will be designed to accommodate thirty foot long delivery trucks. Vehicle turning movements for the design vehicle are shown in Report TRA12, *Saranap Village: Truck Turns at Driveways* (Fehr & Peers 6/25/2014)

Comment 21: Applicant shall analyze and consider reducing the diagonal parking angle to allow bicyclists to maneuver around a vehicle backing out of the diagonal space.

Response 21: See response to comment 7.

Comment 22: The Countywide Bicycle and Pedestrian Plan identifies Boulevard Way as a proposed class III bike route. The ADEIR acknowledges the issue of bicycle safety as a result of the proposed diagonal parking, bulb-outs, traffic circle and roundabout; however, the mitigation measure only defers the solution to a future time. It would be best to resolve this issue during the DEIR preparation to assure that the solution would not trigger recirculation of the document. If there is discussion identifying a separate bicycle facility, or a Class I bike/trail facility, there could be substantial revisions to the project layout.

Response 22: See response to comment 7
Other comments

Comment 23: A mitigation measure should be added to the report to identify the construction impact and mitigation for road surface condition. A pre-project survey of construction haul routes should be conducted; thereafter, damaged or deteriorated pavement resulting from the project's truck traffic should be identified. The applicant would be required to mitigate the impact to road surface by restoring the pavement back to pre-project conditions.

Response 23: We agree. We suggest:

> Prior to issuance of a grading permit, the applicant shall undertake an inspection of Boulevard Way, from Olympic Boulevard to Mt. Diablo Boulevard. To the extent the applicant claims any damage is pre-existing, such damage shall be thoroughly documented by photographs and mapping, and reference markings or measurement points to assist in determining whether any damage or movement has occurred as a result of construction.
>
> Prior to issuance of a Certificate of Occupancy for any structure, the applicant shall conduct a similar survey. Applicant shall be responsible for repairing any damage

caused by the Project to the satisfaction of the Director of the Department of Public Works.

Comment 24: The applicant has replied to the concern of insufficient maintenance funding to care for landscaping, street furniture, parking meters, etc. Correspondence from Hall Equities, dated June 9, 2014, indicates that these features will be maintained by a private funding mechanism that will continue in perpetuity. This should be identified in the ADEIR as a mitigation measure as it relates to impact to local road maintenance funds.

Response 24: HEG will address funding issues in a separate submittal, and will demonstrate funding sufficient to support all maintenance items identified. However, an impact on a fund would be a financial impact, not a physical impact on the environment. Accordingly, the issue is not relevant to the EIR.

Comment 25: The County does not have design standards for roundabouts. The applicant should submit a preliminary layout of the roundabout at Saranap Avenue (and Flora Avenue if a circle is proposed at this location) along with a technical memo that provides analysis of the intersection at peak hours, as well as references to design standards from Caltrans, FHWA, etc., to provide a general indication that the roundabout(s) will operate as assumed in the ADEIR and will meet an engineering standard with the general footprint as proposed.

Response 25: *Main Roundabout*. As stated in Response #18, the roundabout analysis has identified roundabout design criteria and performance based on policies and design standards documented in NCHRP Report 672 and the Caltrans Highway Design Manual. Intersection LOS for roundabout operation has been based on the SIDRA software program. This software program analyzes roundabout operation and LOS based on a "gap acceptance" model and is the current industry standard.

The initial feasibility study performed for the proposed roundabout at the Saranap Avenue/Boulevard Way intersection was conducted in 2012. As part of this analysis, Omni-Means evaluated likely lane configurations, right-of-way needs, fastpath (vehicle travel), bus turning radius (consistent with County Connection), and California Legal 50 truck turns. (See Report TRA10, *Saranap Boulevard/Boulevard Way Initial Roundabout Assessment* (Omni-Means 2012)) In addition to initial roundabout feasibility and design, Omni-Means also performed intersection LOS calculations for the roundabout operations under all "with project" scenarios. (See Report TRA10) As calculated, the proposed roundabout would operate at LOS A under all existing, near-term, and cumulative "with project" scenarios. (See Report TRA10) This evaluation documents the conclusion that the preliminary design will operate acceptably.

HEG will be developing final engineering details on all aspects of the Project, including the roundabout, at the final design stage. We will of course be submitting those additional details to the Public Works department for its review at that time.

Oak Tree Traffic Circle. Truck turn templates were provided for the traffic circle in the F&P 5/9/14 Memorandum, showing that the traffic circle can accommodate various design vehicles and will function geometrically . As previously stated, driveway volumes

are minimal, as these serve small businesses and shopping center type uses. As shown in Report TRA9, the traffic circle will operate at Level of Service A.

Hydrology

4.9.2 Setting

Comment 26: Project Setting: Roadway Improvements - ADEIR does not contain discussion regarding system downstream of Las Trampas Creek.

Response 26: We agree that existing deficiencies in the Blade Court area should be included in baseline circumstances and constitute part of the environmental setting upon which the Project will operate. Existing deficiencies are not, of course, an impact of the Project and therefore are not otherwise relevant for CEQA purposes. The applicant has demonstrated that the Project will not exacerbate any existing deficiencies at Blade Court. See *Hydrology And Hydraulics Report For Saranap Village*, Kier & Wright, 5-8-14, Appendix 3 at p. 20. Accordingly, the Project will not have any significant impacts. We agree that the EIR should peer-review and reflect this analysis.

Comment 27: Regulatory Setting: State, Regional and Local Water Quality Regulations and Agencies: Title 9 Division 914 Contra Costa County Ordinance Code - ADEIR referenced the drainage requirements of Title 9, but no acknowledgement of the downstream inadequacies of the drainage facilities in the Blade Court/Blade Way area.

Response 27: See response to comment 26.

4.9.3 Significance Criteria

Comment 28: Item e) Not just new but existing runoff as well.

Response 28: Existing runoff is not an impact of the Project. Accordingly, the question stated in the CEQA Guidelines, Appendix G, is "would the project . . (e) create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff?" We request that the County instruct the EIR authors to use the question from the CEQA Guidelines.

Impact 4.9-2

Comment 29: Applicant shall verify that any dewatering would be permitted through East Bay Municipal Utility District.

Response 29: EBMUD is not involved in any dewatering. Please see the letter from Rockridge Geotechnical dated April 10, 2014, regarding "Site A and B – Groundwater Design Alternatives." It describes three options for addressing underground water during the operational phase of the project. If an agency with jurisdiction objected to one of these options, we would need to pursue one of the other options.
Option one is a fully waterproofed building with basement walls and building foundation designed for hydrostatic pressure . There would be no dewatering.

Option two is to dewater and discharge to the sewer system. We acknowledge that the Central Contra Costa Sanitary District would be involved in determining whether we could discharge to the sewer system.
Option three is to dewater and discharge to the storm drain. We acknowledge that the Regional Water Quality Control Board and Public Works would be involved in reviewing any discharge to the storm drain.

Impact 4.9-4 and Impact 4.9-5

Comment 30: The ADEIR indicated, "The design would not exceed the capacity of off-site drainage facilities..." Applicant shall clarify if the ADEIR is referring to Blade Court.

Response 30: See response to comment 26.
Preliminary Stormwater Control Plan
Section I: Executive Summary

Comment 31: The second sentence in the second paragraph indicated, "...the design will not exceed the capacity of off-site drainage facilities." As indicated in our February 20, 2014 memo, there are portions of the intermediary drainage system in the vicinity of Blade Court that have historically been subject to flooding. This issue has not been addressed.

Response 31: See response to comment 26.

Comment 32: It appears the second I.C. should be I.D.

Response 32: We request that the County instruct the EIR author to address any typographical errors appropriately.

Comment 33: Separating the project into four projects: The applicant should submit justifications to analyze this single project as four separate "projects." It appears some requirements would not apply to certain projects if analyzed separately. Page 5 of the Stormwater C.3 Guidebook indicates the following:

> When determining whether Provision C3 requirements apply, a ''project" should be defined consistent with CEQA definitions of ''project. " That is, the ''project" is the whole of an action which has potential for adding or replacing or resulting in addition or replacement of roofs, pavement, or other impervious surfaces and thereby resulting in increased flows and stormwater pollutant. "Whole of an action" means the project may not be segmented or piecemealed into small parts if the effect is to reduce the quantity of impervious area for any part to below the C3 threshold.

Response 33: As you note, the Guidance expressly states that a project "may not be segmented or piecemealed into small parts *if the effect is to reduce the quantity of impervious area for any part to below the C3 threshold.*" Our report does not reduce the quantity of impervious area for any parcel. We have included all impervious areas in our report, and the assessment of the four separate phases did not result in any decrease in

impervious area to adjust findings or requirements. All drainage and water quality impacts of the entire project, viewed as a whole, have been addressed.
You are apparently referring to the determination whether this project complies with the Category B exemption from certain C3 requirements. (RWQCB Order R2-2009-0074, Section C.3.e.ii(3), at page 34 of the order). Category B fits this project perfectly, since Category B encompasses projects that are to be built as part of the County's stated objective to preserve or enhance a pedestrian-oriented type of urban design, and which are located in a neighborhood business district or comparable pedestrian-oriented commercial district.
Assessing each phase of the Project separately for purposes of determining that each phase complies with the Category B Special Project Criteria acreage limitations is also appropriate here. The actual construction of the Project is planned so that it may be broken into four phases, and each private site is being designed to function and appear as a stand-alone project. We therefore need to make sure that each parcel has its own separate analysis. Assessing the project in four phases simply allows each development parcel and phased project to proceed separately and meet its individual C.3 requirements. Note that the additional mitigation measure we propose in response to comment 37 further assures that each site can proceed separately.

Parcel A

Comment 34: Table 1. This table stated this parcel is exempt from the "50% rule," yet the table clearly shows more than half of the impervious area is being reconstructed.

Response 34: This was a clerical error, which should have read that the parcel is "not" exempt from the 50% rule. We will submit a report with this typographical error corrected.

Comment 35: Parcel A. II. Setting: II.A. Project Location and Description. The second sentence in the last paragraph indicated "the design will not exceed the capacity of off-site drainage facilities." As indicated in our February 20, 2014 memo, there are portions of the intermediary drainage system in the vicinity of Blade Court that have historically been subject to flooding. This issue has not been addressed.

Response 35: See response to comment 26.

Comment 36: Parcel A. II. Setting: II.C. Opportunities and Constraints for Stormwater Control. Applicant shall supply the calculation for the 4.50:1 floor-to-area ratio calculation.

Response 36: The calculations are shown on Exhibits 11.1 to 11.3 for all three buildings. See table clearly showing FAR calculations. The floor areas were taken directly from architectural Sheets A0.2.1 for each building, which were submitted to the County as part of the review package. Garage areas were included in architectural floor areas for C.3 purposes because the placement of parking in a garage reduces overall site footprint.

Comment 37: Parcel A. II. Setting: II.C. Opportunities and Constraints for Stormwater Control. By itself, and using the skewed FAR numbers, this parcel would qualify for use of non-LID treatment measures. It would still be required to conform to the hydro-

modification requirements. The calculations do not address any of the hydro-modification volume/discharge criteria.

Response 37 We believe that the Category B exemption eliminates the need to address hydro-modification for the treatment structures. Hydro-modification for the entire project could be accommodated one of two ways. First, it could be accommodated by the use of detention sufficient to capture the increase in volume during the 24-hour, 10-year design storm and smaller C.3 storm. Second, it could be accommodated by demolishing existing impervious surfaces to ensure no increase in impervious surface area.
Though we believe hydro-modification is not necessary for treatment structures, we have no objection to imposition of a mitigation measure designed to ensure that hydro-modification is accommodated. We suggest the following:

> No construction shall be permitted anywhere on the Project site unless the applicant demonstrates, to the satisfaction of the Director of the Public Works Department, either of the following:
>
> (a) Upon completion of such construction, there will be sufficient detention capacity on the Project site to detain the incremental increase in stormflow volume that occurs during the 24-hour, 10-year design storm, which incremental increase is due to the increase in impervious surface above pre-project levels. This standard could be met with a detention vault with capacity for approximately 12,300 cubic feet of stormwater on Site B, through smaller detention vaults, tanks or other facilities on each Site, or through other means.
>
> (b) Upon completion of such construction, the total square footage of impervious surface area throughout the Project site will remain at or below pre-project levels

Comment 38: Parcel A. DMA-5, which is the exempt hydro-dynamic separator, discharges directly to the storm drain system without any hydro-modification treatment.

Response 38: See response to comment 37.

Parcel B

Comment 39: Parcel B. Table 1: This table stated this parcel is exempt from the "50% rule," yet the table clearly shows more than half of the impervious area is being reconstructed.

Response 39: This was a clerical error, which should have read that the parcel is "not" exempt from the 50% rule. We will submit a report with this typographical error corrected.

Comment 40: Parcel B. II. Setting: II.A. Project Location and Description. The second sentence in the last paragraph indicated "the design will not exceed the capacity of off-site drainage facilities." As indicated in our February 20, 2014 memo, there are portions of the intermediary drainage system in the vicinity of Blade Court that have historically been subject to flooding. This issue has not been addressed.

Response 40: See response to comment 26.

Comment 41: Parcel B. II. Setting: II.C. Opportunities and Constraints for Stormwater Control Applicant shall supply the calculation for the 4:1 floor-to-area ratio calculation. This does not match the floor-to-area ratio indicated in Table 1.

Response 41: See response to comment 36.

Comment 42: Parcel B. DMA-5: Applicant to verify the area and description.

Response 42: The area was verified to 3,952 square feet, and the description is correct. DMA-5 will be treated as part of the proposed Non-LID treatment.

Comment 43: Parcel B. Table 5. Hydro-modification is required.

Response 43: See response to comment 37.

Comment 44: Parcel B. DMA-2 and 5, which is the exempt hydro-dynamic separator, discharges directly to the storm drain system without any hydro-modification treatment.

Response 44: See response to comment 37.

Parcel C

Comment 45: Parcel C. Table 1. This table stated this parcel is exempt from the "50% rule," yet the table clearly shows more than half of the impervious area is being reconstructed. This parcel is exempt from hydro-modification. Table 1 should be corrected.

Response 45: This was a clerical error, which should have read that the parcel is "not" exempt from the 50% rule. We will submit a report with this typographical error corrected.

Comment 46: Parcel C. II. Setting: II.A. Project Location and Description. The second sentence in the last paragraph indicated "the design will not exceed the capacity of off-site drainage facilities." As indicated in our February 20, 2014 memo, there are portions of the intermediary drainage system in the vicinity of Blade Court that have historically been subject to flooding. This issue has not been addressed.

Response 46: See response to comment 26.

Street

Comment 47: Street. Table 1: This table stated this parcel is exempt from the "50% rule," yet the table clearly shows more than half of the impervious area is being reconstructed.

Response 47: This was a clerical error, which should have read that the parcel is "not" exempt from the 50% rule. We will submit a report with this typographical error corrected.

Comment 48: Street. The net reduction in impervious area will exempt from the hydro-modification requirement but not from treatment.

Response 48: The Project will accomplish Pavement and Sidewalk Replacement in accordance with Contra Water Clean Water Code Section 1014-4.004 (a) (3), which states:

> (a) The following developments are subject to the requirements of provision C.3 of the county's NPDES permits: . . .
>
> (3) Developments on previously developed sites that result in the addition or replacement of a combined total of one acre (forty-three thousand five hundred sixty square feet) or more of impervious surfaces. Excluded from this category are interior remodels and routine maintenance or repair. *Excluded routine maintenance or repair includes* roof or exterior surface replacement, pavement resurfacing, repaving and road pavement structural section rehabilitation within the existing footprint, and *any other reconstruction work within a public street or road right-of way where both sides of that right-of-way are developed.*

Pavement replacement, overlay and structural section rehabilitation for the Project are within the existing footprint of the right of way. The right of way, in both the pre- and post-project scenarios, is surrounded on both sides by developed property. Deepened AC sections will be used to minimize disturbance where needed.

-o0o-

Thank you for your consideration of this information.

Very truly yours,

Michael Smith, V. P. Forward Planning

cc: William Nelson, County Planning (w enclosures)
Mark D. Hall, CEO, Hall Equities Group
Cecily Barclay; Marie Cooper, Perkins Coie

Enclosures:

- Report TRA3: Traffic Impact Analysis For the Proposed Saranap Village Project (Omni-Means June 2, 2014) This version is the same report we submitted earlier, except that it corrects a clerical error in some of the graphics.
- Report TRA8: Oak Tree Planter Island Sight Distance Triangles (Fehr & Peers June 20, 2014)
- Report TRA9: Saranap Village: Analysis of Oak Tree Planter Island (Fehr & Peers June 25, 2014)
- Report TRA10: Saranap Boulevard/Boulevard Way Initial Roundabout Assessment (Omni-Means 2012)
- Report TRA11: Saranap Village Shadow Study (Camp & Camp) (2014-06-23)
- Report TRA12: Saranap Village: Truck Turns at Driveways (Fehr & Peers) (2014-06-25)
- Report HYD6: Stormwater Control Plan (Kier & Wright) (2014-05-14) This is the same report we submitted earlier, except that it corrects a clerical error and now states that each site is not subject to the 50% rule.

KIER & WRIGHT
Civil Engineers & Surveyors, Inc.

July 25, 2014

Mr. Michael Smith
Hall Equities Group
1855 Olympic Blvd.
Suite 250
Walnut Creek, CA 94596

RE: **Saranap Village Treatment, Detention and Capacity**

Dear Michael,

This letter provides the information requested by the Public Works Department at our recent meeting.

Additional Treatment and Detention Capacity.

Pursuant to our discussions with the Public Works Department, we will be constructing additional detention capacity on site. Our prior report noted the possibility of a vault on Site B that would detain an amount sufficient to ensure there is no increase in flow rate or volume of stormwater leaving the site during the 24-hour, 10-year design storm. To ensure that each site can be constructed independently of the others, we have also proposed separate vaults or other detention facilities on each site, designed to achieve the same standard.

We are also proposing additional stormwater treatment capacity to address Public Work's concerns. I have reviewed the proposed Project plans and determined that we can provide this additional treatment by adding additional bio filtration planters around the perimeter of the building and on the open roof areas for filtration.

All of this detention and treatment capacity would be constructed within the development footprint we have already proposed. This additional treatment and detention capacity would either substitute for the construction previously planned, or make slight adjustments to landscape plans. This work would not result in any material alterations to building designs, would not affect parts of the buildings visible from offsite locations, would not materially alter the extent or location of excavation the Project proposes, and would not materially change the amount and type of construction equipment we will need to develop the Project.

2850 Collier Canyon Rd · Livermore, California 94551 · (925) 245-8788 · FAX (925) 245-8796

KIER & WRIGHT
Civil Engineers & Surveyors, Inc.

Capacity of 48-Inch Pipe

I have analyzed the capacity of the 48" pipe near Blade Court, and observed and measured its slope. Water exits the 60" pipe that extends from just upstream of Flora Avenue to a point just upstream of this 48" pipe. It then passes through a drop box, a short open channel, and then into the 48" pipe. I observed the short channel upstream of the 48" pipe to have a depth of approximately 4'-6' and slope of approximately 1 %. The 48" pipe appears to accommodate a hydraulic slope greater than 1%. The capacity of the 48"SD will therefore exceed 115 cfs. Peak flows during a 10-year design storm at this location are projected to be around 100 cfs. This was determined using a conservative estimate of acreage of 120 acres and a conservative estimate of time of concentration of 40.3 mins, applying the Contra Costa County Small Watershed Hydrograph Method. Accordingly, the 48" pipe, combined with the observed depth and slope of the channel, is adequate to provide the required hydraulic sizing for upstream drainage if properly maintained for the 10-year storm runoff at Blade Court. Since the Saranap Village Project is not adding any peak flows, the pipe and channel will be continue to be adequate after the Project is constructed.

No Reports of Flooding In The Blade Court Area

I have conducted further investigation of possible reports of flooding in the Blade Court area. The Sufism Reoriented New Sanctuary EIR mentioned deficiencies in the drainage channel downstream from Blade Court, but did not identify any flooding concerns for that area. I have spoken with Vince D'Alo, the engineer who performed the hydrology analysis for that project. He reported that in his personal visits to backyards in the area, he observed only minimal erosion in that channel, but nothing that concerned him. He also reported that he saw no indication of flooding emanating from that channel. Also, while I have heard claims that the Public Works Department received complaints of flooding in that area, no one at the department can identify any flooding complaint relating to that channel.

Very Truly Yours,

[signature electronically authorized]

Chuck McCallum

2850 Collier Canyon Rd · Livermore, California 94551 · (925) 245-8788 · FAX (925) 245-8796

APPENDIX F

Noise Technical Reports

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Saranap Village

Contra Costa County, CA

Noise Impact Assessment

13 March 2014

Prepared for:

Michael Smith
Hall Equities Group
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Walnut Creek, CA 94596
Email: michaels@hallequitiesgroup.com

Prepared by:

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CSA Project Number: 14-0012

Charles M. Salter
ASSOCIATES INC.

INTRODUCTION

This report presents the results of our noise impact assessment for the Saranap Village project. It summarizes the policies and standards applicable to the project, noise data obtained from our on-site acoustical measurements, and our evaluation of potential noise impacts resulting from the project on existing land-uses. Those readers not familiar with the fundamental concepts of environmental noise may refer to Appendix A.

1.1 Project Description

The project consists of a mixture of commercial and multi-family residential uses as described in the Saranap Village Project Overview dated 14 February 2014. The site is bounded by local streets and adjacent residential and commercial land-uses. Currently, the project site includes residential and commercial uses and a place or worship. The project proposes the redevelopment of the site with the following:

- 235 multi-family residential units
- Approximately 44,000 square feet of street-level retail and restaurant uses including
  - Approximately 14,000 square feet of boutique community-oriented fitness club
  - Approximately 2,000 square foot bar/nightclub
- Four building areas

ACOUSTICAL CRITERIA

The State of California and Contra Costa County establish guidelines, regulations, and policies designed to limit noise exposure at noise sensitive land uses. State CEQA guidelines set forth criteria that are used to determine whether a project will have a significant impact on the existing environment. Appendix G of the State CEQA Guidelines, Contra Costa County Noise Element of the General Plan, and Contra Costa County Code present the following:

State CEQA Guidelines and Impact Criteria

The California Environmental Quality Act (CEQA) contains guidelines to evaluate the significance of noise attributable to a proposed project. This would include (but is not limited to) added traffic noise, mechanical equipment noise, and construction noise. CEQA asks the following applicable questions. Would the project:

1. Expose people to or generate noise levels in excess of standards established in the local general plan, noise ordinance, or applicable standards of other agencies;

2. Expose people to or generate excessive groundborne vibration or groundborne noise levels;

3. Result in a substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project;

4. Result in a substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project;

5. For projects within an area covered by an airport land use plan or within two miles of a public airport or public use airport when such an airport land use plan has not been adopted, or within the vicinity

of a private airstrip, expose people residing or working in the project area to excessive aircraft noise levels;

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

Since the project is not within two miles of a public airport or private airstrip, Impact Criteria 5 and 6 do not apply to this project. Regarding Impact Criterion 3, CEQA does not define the noise level increase that is considered substantial. Therefore, we offer the following criteria based published studies of human response to noise, local standards, and our experience.

- An increase in the day-night average noise level[1] (L_{dn}) of 3 dBA or greater at noise-sensitive receptors would be considered significant when projected noise levels would exceed those considered "normally acceptable" for the affected land use.
- An increase of 5 dBA or greater would be considered significant when projected noise levels would continue to meet those considered satisfactory for the affected land use.

Summary of Impacts

To evaluate whether the project will have a significant impact regarding the above items, the following impact criteria statements are evaluated:

Project-Specific Potential Impacts

Impact 1: Project-Generated Traffic Noise: Project generated traffic would not substantially increase traffic noise levels in the area. (Finding: less-than-significant impact)

Impact 2: Mechanical Noise. Operation of HVAC equipment for the proposed buildings could result in a significant permanent increase in ambient noise levels. (Finding: less-than-significant impact with mitigation)

Impact 3: Operational Noise. Noise generated from project-related activities and associated systems could result in a significant permanent increase in ambient noise levels at existing adjacent properties. (Finding: less-than-significant impact with mitigation)

Impact 4: Construction Noise. During construction, noise generated by equipment and activities on the site could substantially increase noise levels at neighboring land uses. (Finding: less-than-significant impact with mitigation)

Impact 5: Operational Groundborne Vibration. Operation of the project could expose persons to excessive groundborne vibration. (Finding: less-than-significant impact with mitigation)

Impact 6: Construction Groundborne Vibration. The construction of the project could expose persons to excessive groundborne vibration. (Finding: less-than-significant impact with mitigation)

---

[1] Day-Night Average Sound Level (DNL or L_{dn}) – A descriptor established by the U.S. Environmental Protection Agency to describe the average day-night level with a penalty applied to noise occurring during the nighttime hours (10 pm - 7 am) to account for the increased sensitivity of people during sleeping hours.

Since the project site is not located in the vicinity of a public or private airstrip, it would not be exposed to excessive noise levels from such sources. The closest airport is Buchanan Field Airport, which is far more than two miles away. Therefore, no airport noise impact is expected.

Contra Costa County – Noise Element of the General Plan

Chapter 11 of the Contra Costa County General Plan sets forth noise and land use compatibility standards for proposed land uses (Figure A below). Applicable noise goals, policies, and implementation measures of the Noise Element are as follows:

- Goal 11-B: To maintain appropriate noise conditions in all areas of the County.

- Goal 11-C: To ensure that new developments will be constructed so as to limit the effects of exterior noise on the residents.

- Policy 11-1: New projects shall be required to meet acceptable exterior noise level standards as established in the Noise and Land-Use Compatibility Guidelines contained in Figure [A]. These guidelines, along with the future noise levels shown in the future noise contour maps, should be used by the county as a guide for evaluating the compatibility of “noise-sensitive” projects in potentially noisy areas.

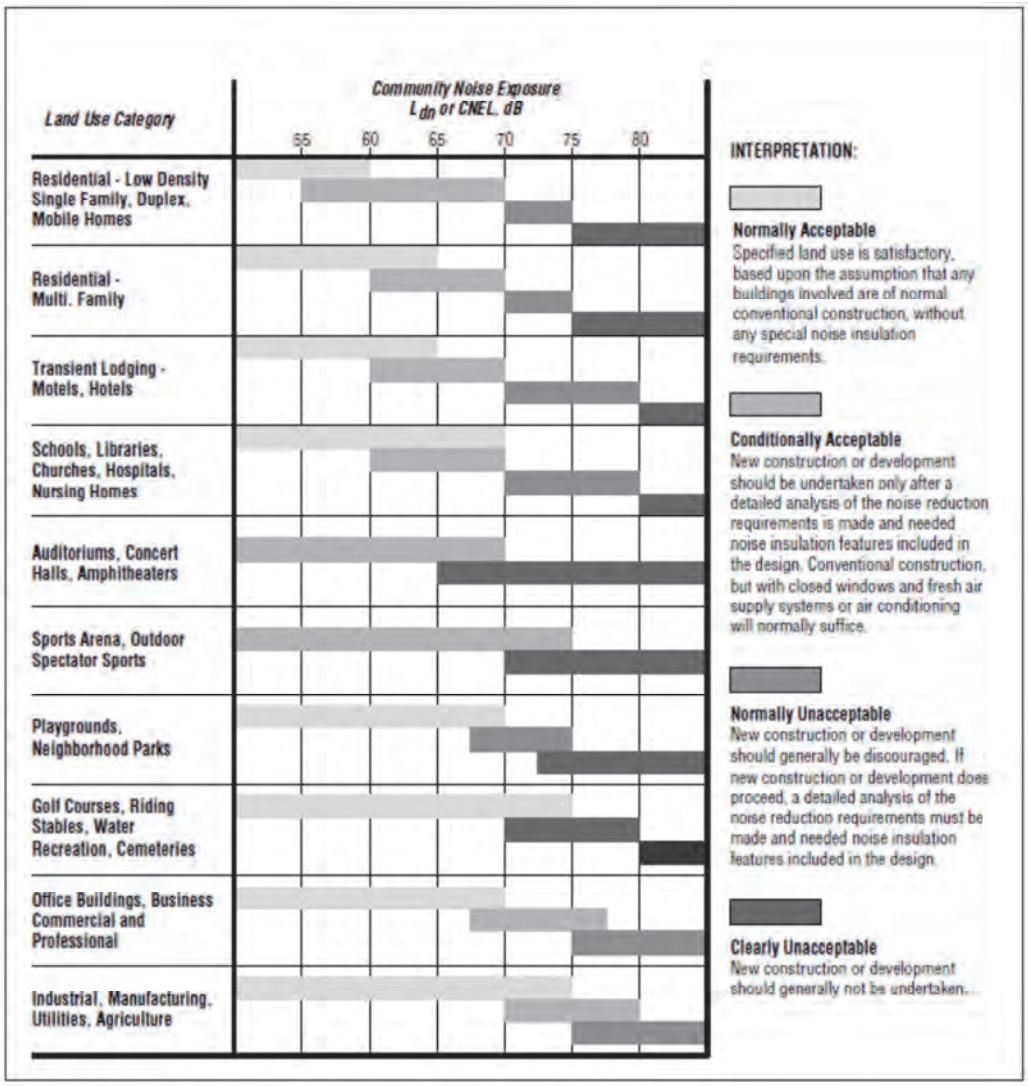
- Policy 11-2: The standard for outdoor noise levels in residential areas is a DNL of 60 dB. However, a DNL of 60 dB or less may not be achievable in all residential areas due to economic or aesthetic constraints. One example is small balconies associated with multi-family housing. In this case, second and third story balconies may be difficult to control to the goal. A common outdoor use area that meets the goal can be provided as an alternative.

- Policy 11-6: If an area is currently below the maximum “normally acceptable” noise level, an increase in noise up to the maximum should not be allowed necessarily.

- Policy 11-8: Construction activities shall be concentrated during the hours of the day that are not noise-sensitive for adjacent land uses and should be commissioned to occur during normal work hours to provide relative quiet during the more sensitive evening and early morning periods.

- Implementation Measure 11-b: Evaluate the noise impacts of a proposed project upon existing land-uses in terms of the applicable Federal, State, and local codes, and the potential for adverse community response, based on a significant increase in existing noise levels.

Figure A: Contra Costa County Land Use Compatibility for Community Noise Environments



Although the County does not provide specific guidance on appropriate thresholds for determining when a project will generate adverse community response, the Noise Element discusses how noise increases are perceived by people.

> *An important factor in assessing a person's subjective reaction is to compare the new noise environment to the existing noise environment. In general, the more a new noise level exceeds the prior existing level, the less acceptable it is. Therefore, a new noise source will be judged more annoying in a quiet area than it would be in a noisier location. Knowledge of the following relationships is helpful in understanding how changes in noise and noise exposure are perceived.*
>
> - *Except under special conditions, a change in sound level of 1 dB cannot be perceived;*
> - *Outside of the laboratory, a 3 dB change is considered a just-noticeable difference;*
> - *A change in level of at least 5 dB is required before any noticeable change in community response would be expected; and*
> - *A 10 dB change is subjectively heard as an approximate doubling in loudness and almost always causes an adverse community response.*

Contra Costa County Code

The County's Code does not contain quantitative standards for regulating noise from mechanical equipment. However, the General Plan mentions the existence of a California Model Community Noise Control Ordinance.

State Model Community Noise Control Ordinance

Because Contra Costa County does not have a quantitative noise ordinance for regulating noise from mechanical equipment or construction, the standards of the Model Community Noise Control Ordinance are provided in this report as reference goals. The Model Noise Ordinance was created by the State of California to provide guidance for communities to develop their own noise ordinances. It should be noted that the Model Noise Ordinance has not been adopted by Contra Costa County nor is it enforced by the State of California. It is considered a reasonably protective limit and is discussed in this report to provide guidance to the county in reviewing the potential noise impacts of the project.

The exterior noise level limits recommended by the Model Community Noise Control Ordinance are shown in Table 1 below and correspond to the median noise level (L_{50})[2]. These limits are not to be exceeded at the receiving land use for more than 30 minutes in an hour. The limits are to be adjusted based on the duration of the source, the level of the ambient noise, the character of the sound, and the location of the measurement (as described in the subject document).

Table 1: Model Community Noise Control Ordinance
Exterior Noise Limits

Receiving Land Use Category	Time Period	Noise Level (dBA)		
		Noise Zone Classification		
		Rural Suburban	Suburban	Urban
One & Two Family Residential	10 pm – 7 am	40	45	50
	7 am – 10 pm	50	55	60
Multiple Dwelling Residential Public Space	10 pm – 7 am	45	50	55
	7 am – 10 pm	50	55	60
Limited Commercial Some Multiple Dwellings	10 pm – 7 am	55		
	7 am – 10 pm	60		
Commercial	10 pm – 7 am	60		
	7 am – 10 pm	65		
Light Industrial	Anytime	70		
Heavy Industrial	Anytime	75		

In addition, the Model Community Noise Control Ordinance includes a noise limit of 80 dBA for short-term or intermittent construction activities adjacent to multi-family residential properties and 85 dBA at commercial properties. Though the Model Community Noise Control Ordinance has not been adopted into the County Code, this reference is provided as a project goal. It might not be feasible to reduce some activity or equipment noise to meet this standard (such as back-up alarms, which are required by State safety regulations).

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[2] L_{50} — The sound level in dBA that was equaled or exceeded fifty percent of the time.

EXISTING NOISE ENVIRONMENT

To quantify the existing noise environment at the project site, we conducted six continuous long-term (120-hour minimum, L1 through L6), and three short-term (15-minute, S1 through S3) noise measurements between 15 and 21 January 2014. The purpose of the measurements is to quantify the noise levels at the site. A summary of the acoustical measurements and locations is listed below in Table 2. The locations are depicted in the enclosed Figure 1.

Table 2: On-Site Measured Noise Levels

Monitor		Elevation (feet, above grade)	Measured Noise Level L_{dn}
L1	Along Saranap Avenue	12	63 to 67 dB
L2	Along north side of Boulevard Way near Site A	12	69 to 72 dB
L3	Along south side of Boulevard Way near Site B (near bus stop)	12	69 to 72 dB
L4	Near south end of Site B	12	63 to 66 dB
L5	Along south side of Boulevard Way near Site C	12	64 to 68 dB
L6	Near south end of Site C	12	58 to 61 dB
S1	At L4 location (higher elevation)	35	66 to 69 dB*
S2	At north end of Site A	5	57 to 60 dB*
S3	At L1 location (higher elevation)	35	62 to 66 dB*

* Note: Daily average noise levels at short-term monitor locations are estimated based on adjacent long-term monitor data.

NOISE IMPACTS AND MITIGATION MEASURES

This analysis evaluates the potential noise impacts of the project with relation to the significance criteria listed above.

Project Specific Impacts

Impact 1: Project-Generated Traffic Noise: Project generated traffic would not substantially increase traffic noise levels in the area.

The traffic report for the project, prepared by Omni-Means, dated 6 March 2014, projects additional traffic volumes on adjacent roadways that would be associated with the project. We evaluated the projected project traffic volumes relative to the existing traffic volumes. We calculated[3] that the project would result in up to a two decibel increase in traffic noise (L_{dn}) along Boulevard Way and Saranap Avenue in the vicinity of the project site. Further from the project site, the projected noise increase would be less. This is less than the significance threshold criteria of a three or five decibel increase. Therefore, there would be no significant noise impact from project-related traffic.

Mitigation 1: None required.

Significance: Less than significant impact.

Impact 2: Mechanical Noise. Operation of HVAC equipment for the proposed buildings could result in a significant permanent increase in ambient noise levels.

We understand that the building would be fully conditioned and that heating, ventilating, and air-conditioning units and other equipment (e.g., emergency generator) could be located in areas exposed to adjacent property lines. The noise levels of project equipment cannot yet be calculated since the equipment locations and model selection have not yet been determined.

Mitigation 2: On-site noise measurements indicate that the existing ambient noise levels at adjacent properties are between DNL 60 dB and DNL 72 dB, which varies by location and proximity to the roadways. To reduce the impact of mechanical equipment, it must be designed such that noise levels do not result in an increase by three decibels or more at adjacent properties. Specific equipment plans have not been developed, and it is possible that HVAC equipment could exceed the threshold. Project equipment that generates a noise level of DNL 60 dB at the property line is expected to increase ambient noise levels by up to three decibels. Therefore, project equipment that is expected to generate noise exceeding DNL 60 dB at adjacent properties is to be evaluated further. Additional measures are to be incorporated to reduce equipment noise to DNL 60 dB or quieter. Specific measures might include selecting quieter equipment models, strategic siting, equipment setback, noise barriers or enclosures, acoustical louvers, and equipment noise attenuators. A qualified acoustical professional should be involved during the design phase of the project to advise the design team regarding effective noise-reduction measures.

Significance after Mitigation: Less than significant. Mitigation measures outlined above, are expected to reduce equipment noise to avoid a significant permanent increase in the ambient noise level at adjacent properties.

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[3] Traffic noise level calculations were based on the Federal Highway Administration Highway Noise Prediction Model.

Impact 3: Operational Noise. Noise generated from project related activities could result in a significant permanent increase in ambient noise levels at existing adjacent properties.

The existing land-uses involves many activities similar to those anticipated from the project such vehicles parking on-site, voices, and site maintenance. These types of project-related operational noise are expected to generate noise similar to existing noise levels. From such activities, no significant noise impact is expected.

The bar/nightclub is proposed for the far northeast corner of the building on Site B, in a space within the parking garage. East of this location is an existing office building and its parking lot. To the north is Boulevard Way, with proposed street parking. Site A is across the street. Surrounding the bar/nightclub to the west and south is the project parking garage. Though design details are not yet available, activities related to a bar/nightclub (such as acoustic or amplified background music) have the potential to generate noise that could be emitted to neighboring properties. Specific noise levels from potential activities cannot yet be calculated as limited information is available. However, mitigation measures to address likely scenarios are provided below.

Outdoor use areas designed to accommodate larger occupancies have the potential to result in greater noise levels, depending on the subject activity. Sites A, B, and C each include outdoor use areas. The outdoor courtyard of Site A is enclosed on three sides by the upper residential structure of the building. This would provide significant acoustical shielding to neighboring residential properties to the north and west. Therefore, typical residential outdoor uses at the courtyard are not expected to generate noise levels that exceed the existing ambient levels measured on-site.

Sites B and C have outdoor use areas that are near adjacent residential properties. Site C has a smaller outdoor-use area and is not expected to accommodate larger gatherings. Site B includes a larger outdoor use area. Certain possible activities and related equipment at Site B have the potential to increase ambient noise levels in these areas. Specific noise levels from potential activities cannot yet be calculated as limited information on expected activities is available. However, mitigation measures to address likely scenarios are provided below.

Mitigation 3:

Mitigation 3a: If applicable, the bar/nightclub use is to comply with Chapter 82-38 Item 606.b which requires that alcoholic beverage sales commercial activity not aggravate existing problems in the neighborhood created by noise. Therefore, noise generated by the bar/nightclub is to be attenuated to a maximum outdoor noise level of L_{eq} 50 dBA at the nearest residences.

Mitigation 3b: If the outdoor-use areas at Site B are designed to host events that are typical of the surrounding residential uses, without amplified noise, then impacts would be less than significant. If Site B is designed to incorporate amplified noise or routinely accommodate gatherings larger than typical for the surrounding residential uses, then mitigation is to be incorporated to reduce noise. Periodic gathering noise is to be reduced such that it does not increase noise levels by three decibels or more than typical neighborhood gatherings. Permanent noise sources are to be reduced such that they do not increase baseline ambient noise by more than three decibels at neighboring properties. We expect this performance standard can be met by incorporating the following measures:

- Limit hours of operation and activities
- Construct permanent or provide temporary noise barriers could be provided to further reduce noise emitted to the adjacent properties.

- Fully enclose and attenuate pool pump equipment to be no louder than 50 dBA at neighboring property lines.
- Outdoor amplified sound systems, if provided, are to be limited to a noise level of L_{eq} 60 dBA during daytime hours, L_{eq} 50 dBA during evening hours, and not permitted during nighttime hours.

Mitigation 3c: For any events on the project site that are subject to the County's Temporary Events Ordinance (County Code, Chapter 82-44), such events are to be permitted only in compliance with this Code. In addition, the requirements of Chapter 82-44 would be applied in lieu of the performance standard of this mitigation measure.

Significance after Mitigation: Less than significant. Mitigation measures outlined above, are expected to reduce outdoor noise to avoid a significant increase in the ambient noise level at adjacent properties.

Impact 4: Construction Noise. During construction, noise generated by equipment and activities on the site could substantially increase noise levels at neighboring land uses.

Completion of construction activities would include use of heavy equipment for excavation, grading, erection, and other activities. Heavy trucks would travel to, from, and within the site hauling soil, equipment, and building materials. Smaller equipment, such as jack hammers, pneumatic tools, and saws could also be used throughout the demolition and construction phases.

Neighboring land-uses with direct line-of-sight to construction activities and construction traffic could be affected by construction noise. Potential construction noise impacts would vary with distance and shielding provided by existing buildings.

Based on the construction phases and equipment as shown in Table 3, noise levels generated are expected to be up to 90 dBA at a distance of 50-feet from the equipment. We understand that the project would not involve pile driving, rock blasting, or similar extreme noise-generating activities.

Table 3: Construction Noise Levels

Phase	Equipment	Noise Level (dBA at 50-feet)[4]
Demolition	Excavator, Water Truck, Dump Truck, Concrete saw/grinder	90
Shoring	Drill Rig, Backhoe, Air Compressor	80
Rough Grading/ Off Haul	Scraper, Compactor, Water Truck, Blade /Grader, Excavator, Dump Trucks	85
Utilities	Excavator, Rubber Tire Loader, Water Truck, Backhoe, Dump Truck	80
Concrete Garage Structure	Forklift, Compressor, Cement Mixer/Truck, Concrete Finisher, Concrete Boom Pump	85
Building Exterior	Gradall/Crane, Hand/PowerTools	85
Building Interior	Gradall, Metal Stud Saw (indoors), Paint Sprayer	80
Hardscape and Landscape	Backhoe, Compactor, Dump Truck, Cement Mixer/Truck, Bobcat	80

[4] Equipment noise levels are from Section 9 of the Federal Highway Administration Highway Traffic Noise Construction Noise Handbook (August 2006).

Some construction equipment is expected to generate intermittent noise levels up to 80 dBA to 90 dBA at a distance of 50-feet. Therefore, noise-generating activities over the construction period could cause a significant impact without implementation of reasonable measures to manage construction activities. Other than limits to hours of operation for grading activities, the County Code does not include specific standards to address construction noise. The County Noise Element Policy 11-8 supports the limitation of construction operations to “normal work hours of the day.”

Mitigation 4: To reduce potential noise impact from construction-related activities, they are to be conducted in accordance with the following:

- Construction shall be limited to the hours of 7:30 a.m. and 5:30 p.m. (in accordance with County Code Article 716-8.1004 which addresses grading activities).

- During construction, mufflers shall be provided for all heavy construction equipment and all stationary noise sources in accordance with the manufacturers’ recommendations.

- Limit unnecessary idling of internal combustion engines.

- Stationary noise sources and staging areas shall be located as far as is feasible from existing noise-sensitive receivers. Locating stationary noise sources near existing roadways away from adjacent properties is preferred. If located otherwise, stationary noise sources are to be enclosed or shielded from neighboring noise-sensitive properties with noise barriers to the extend feasible.

- Air compressors and pneumatic equipment should be equipped with mufflers, and impact tools should be equipped with shrouds or shields.

- A construction liaison shall be designated to ensure coordination between construction staff and neighbors to minimize disruptions due to construction noise. Neighboring property owners within 300 feet of construction activity shall be notified in writing of the contact information for the construction liaison.

- Neighboring property owners within 300 feet of construction activity shall be notified in writing of the construction schedule and at least 30 days prior to loud noise-generating activities. Notification is to include the nature and estimated duration of the activity.

- Prior to construction, a qualified acoustical professional is to review specific equipment and site locations that would be expected to generate noise levels above 80 dBA at adjacent residential properties and 85 dBA at adjacent commercial properties. The study would also determine additional mitigation measures, as feasible, to reduce noise levels by at least five decibels and below the aforementioned limits. Additional measures might include local barriers around specific construction equipment or property line barriers. The location, height, and extent of the barriers should be provided by the acoustical professional.

- A qualified acoustical professional should be retained as needed to address neighbor complaints as they occur. If complaints occur, noise measurements could be conducted to determine if construction noise levels at adjacent property lines are within the standards. Short-term or long-term construction

noise monitoring could also be utilized to diagnose complaints and determine if additional mitigation is required for certain phases of construction as needed.

Significance after Mitigation: Less than significant. Construction impacts are expected to be temporary and vary through various phases. Mitigation measures outlined above, are expected to reduce construction noise, to the extent feasible, to be less than significant.

Impact 5: Operational Groundborne Vibration. Operation of the project could expose persons to excessive groundborne vibration.

Equipment located on-grade near property lines has the potential to generate vibration at neighboring properties. The County regulations do not include specific criteria to address vibration.

Mitigation 5: Vibration-generating mechanical equipment is to be adequately vibration isolated per ASHRAE Guidelines to reduce ground-borne vibration levels at neighboring properties.

Significance after Mitigation: Less than significant. Equipment vibration is expected to be reduced to a less-than-significant level via vibration isolation.

Impact 6: Construction Groundborne Vibration. The construction of the project could expose persons to excessive groundborne vibration.

Construction activities would include demolition of an existing buildings, site preparation work, excavation, foundation work, and new building framing. Removal of the existing structures and pavement could at times generate vibration. Excavation for underground parking might also produce vibration. Depending on the foundation type, vibration could occur during the installation of piers or similar deep foundation structures. Site preparation such as vibratory compaction can also be a source of vibration.

For structural damage, the California Department of Transportation (Caltrans) uses a vibration limit of 0.5 in/sec, PPV for buildings structurally sound and designed to modern engineering standards, 0.2 in/sec, PPV for buildings that are found to be structurally sound but where structural damage is a major concern, and a conservative limit of 0.08 in/sec, PPV for ancient buildings or buildings that are documented to be structurally weakened.

Table 4 presents typical vibration levels that could be expected from construction equipment at distances of 25 and 50 feet. Project construction activities such as drilling, the use of jackhammers, rock drills and other high-power or vibratory tools, and rolling stock equipment (tracked vehicles, compactors, etc.) may generate substantial vibration in the immediate vicinity. Erection and finishing of the building structure is not anticipated to be a source of substantial vibration with the exception of sporadic events such as dropping of heavy objects, which should be avoided to the extent possible.

Since pile driving will not be part of the project, vibration due to construction is expected to be as shown in Table 3. Vibration levels would vary depending on soil conditions, construction methods, and equipment used.

Table 4: Example Construction Vibration Levels[5]

Equipment	PPV at 25 ft. (in/sec)	PPV at 50 ft. (in/sec)
Vibratory Roller	0.210	0.074
Hoe Ram	0.089	0.031
Large bulldozer	0.089	0.031
Caisson drilling	0.089	0.031
Loaded trucks	0.076	0.027
Jackhammer	0.035	0.012
Small bulldozer	0.003	0.001

Therefore, as indicated in Table 4 above, vibration levels would not be expected to exceed the limit of 0.50 in/sec, PPV for structurally sound buildings.

Mitigation 6: With suggested mitigation measures listed below, vibration can be reduced and would result in a less-than-significant impact.

- Use administrative controls such as notifying adjacent land uses of scheduled construction activities, and limiting construction activities with the highest potential to produce significant vibration to the least sensitive times of the day.

- Along property lines, equipment and methods that generate less groundborne vibration are to be used, to the extent feasible, such as saw-cutting and excavating pavement rather than using impact tools.

- If deep foundation elements are needed, low-vibration generating methods such as drilled piers rather than impact or vibratory installation methods near property lines are to be used to the extent feasible.

- Prior to construction, a qualified acoustical engineer shall review and monitor specific impact generating and heavy equipment and site locations that would be expected to generate vibration levels above 0.08 in/sec at adjacent property lines. The study would also determine additional mitigation measures, as feasible, to reduce vibration to a level that would not be expected to result in building damage.

Significance after Mitigation: Less than significant. Construction vibration is expected to be reduced to a less-than-significant level below the Caltrans vibration criteria for damage at structurally sound buildings.

* * *

[5] Transit Noise and Vibration Impact Assessment, United States Department of Transportation, Office of Planning and Environment, Federal Transit Administration, May 2006.

APPENDIX A

Fundamental Concepts of Environmental Noise

This section provides background information to aid in understanding the technical aspects of this report.

Three dimensions of environmental noise are important in determining subjective response. These are:

- The intensity or level of the sound
- The frequency spectrum of the sound
- The time-varying character of the sound

Airborne sound is a rapid fluctuation of air pressure above and below atmospheric pressure. Sound levels are usually measured and expressed in decibels (dB), with 0 dB corresponding roughly to the threshold of hearing.

The "frequency" of a sound refers to the number of complete pressure fluctuations per second in the sound. The unit of measurement is the cycle per second (cps) or hertz (Hz). Most of the sounds, which we hear in the environment, do not consist of a single frequency, but of a broad band of frequencies, differing in level. The name of the frequency and level content of a sound is its sound spectrum. A sound spectrum for engineering purposes is typically described in terms of octave bands, which separate the audible frequency range (for human beings, from about 20 to 20,000 Hz) into ten segments.

Many rating methods have been devised to permit comparisons of sounds having quite different spectra. Surprisingly, the simplest method correlates with human response practically as well as the more complex methods. This method consists of evaluating all of the frequencies of a sound in accordance with a weighting that progressively de-emphasizes the importance of frequency components below 1000 Hz and above 5000 Hz. This frequency weighting reflects the fact that human hearing is less sensitive at low frequencies and at extreme high frequencies relative to the mid-range.

The weighting system described above is called "A"-weighting, and the level so measured is called the "A-weighted sound level" or "A-weighted noise level." The unit of A-weighted sound level is sometimes abbreviated "dBA." In practice, the sound level is conveniently measured using a sound level meter that includes an electrical filter corresponding to the A-weighting characteristic. All U.S. and international standard sound level meters include such a filter. Typical sound levels found in the environment and in industry are shown in Figure A-1.

Although a single sound level value may adequately describe environmental noise at any instant in time, community noise levels vary continuously. Most environmental noise is a conglomeration of distant noise sources, which results in a relatively steady background noise having no identifiable source. These distant sources may include traffic, wind in trees, industrial activities, etc. and are relatively constant from moment to moment. As natural forces change or as human activity follows its daily cycle, the sound level may vary slowly from hour to hour. Superimposed on this slowly varying background is a succession of identifiable noisy events of brief duration. These may include nearby activities such as single vehicle pass-bys, aircraft flyovers, etc. which cause the environmental noise level to vary from instant to instant.

To describe the time-varying character of environmental noise, statistical noise descriptors were developed. "L10" is the A-weighted sound level equaled or exceeded during 10 percent of a stated time period. The L10 is considered a good measure of the maximum sound levels caused by discrete noise events. "L50" is the A-weighted sound level that is equaled or exceeded 50 percent of a stated time

period; it represents the median sound level. The "L90" is the A-weighted sound level equaled or exceeded during 90 percent of a stated time period and is used to describe the background noise.

As it is often cumbersome to quantify the noise environment with a set of statistical descriptors, a single number called the average sound level or "L_{eq}" is now widely used. The term "L_{eq}" originated from the concept of a so-called equivalent sound level which contains the same acoustical energy as a varying sound level during the same time period. In simple but accurate technical language, the L_{eq} is the average A-weighted sound level in a stated time period. The L_{eq} is particularly useful in describing the subjective change in an environment where the source of noise remains the same but there is change in the level of activity. Widening roads and/or increasing traffic are examples of this kind of situation.

In determining the daily measure of environmental noise, it is important to account for the different response of people to daytime and nighttime noise. During the nighttime, exterior background noise levels are generally lower than in the daytime; however, most household noise also decreases at night, thus exterior noise intrusions again become noticeable. Further, most people trying to sleep at night are more sensitive to noise. To account for human sensitivity to nighttime noise levels, a special descriptor was developed. The descriptor is called the L_{dn} (Day/Night Average Sound Level), which represents the 24-hour average sound level with a penalty for noise occurring at night. The L_{dn} computation divides the 24-hour day into two periods: daytime (7:00 am to 10:00 pm); and nighttime (10:00 pm to 7:00 am). The nighttime sound levels are assigned a 10 dB penalty prior to averaging with daytime hourly sound levels.

For highway noise environments, the average noise level during the peak hour traffic volume is approximately equal to the L_{dn}.

The effects of noise on people can be listed in three general categories:

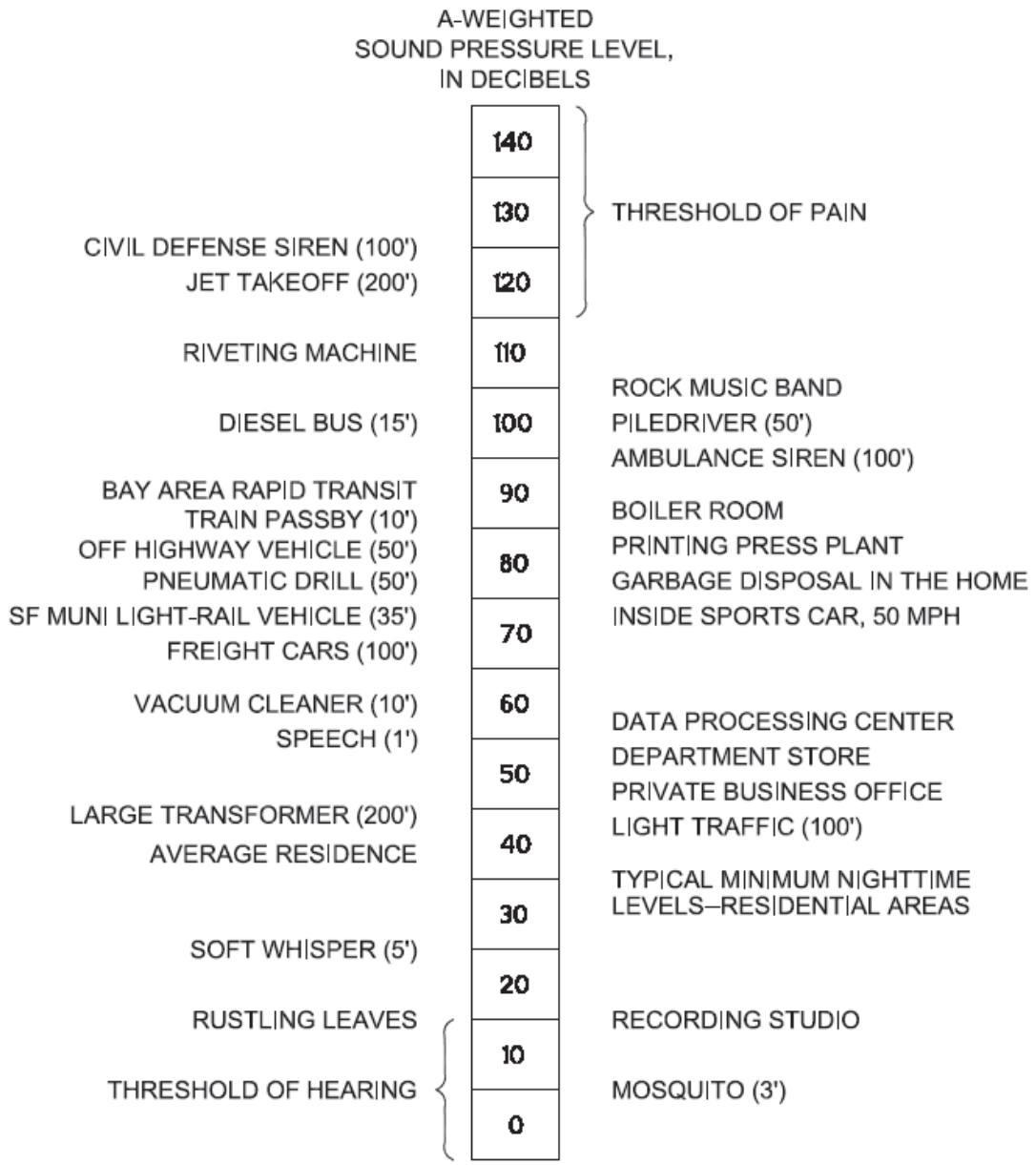
- Subjective effects of annoyance, nuisance, dissatisfaction
- Interference with activities such as speech, sleep, and learning
- Physiological effects such as startle, hearing loss

The sound levels associated with environmental noise usually produce effects only in the first two categories. Unfortunately, there has never been a completely predictable measure for the subjective effects of noise nor of the corresponding reactions of annoyance and dissatisfaction. This is primarily because of the wide variation in individual thresholds of annoyance and habituation to noise over time.

Thus, an important factor in assessing a person's subjective reaction is to compare the new noise environment to the existing noise environment. In general, the more a new noise exceeds the existing, the less acceptable the new noise will be judged.

With regard to increases in noise level, knowledge of the following relationships will be helpful in understanding the quantitative sections of this report:

Except in carefully controlled laboratory experiments, a change of only 1 dB in sound level cannot be perceived. Outside of the laboratory, a 3 dB change is considered a just-noticeable difference. A change in level of at least 5 dB is required before any noticeable change in community response would be expected. A 10 dB change is subjectively heard as approximately a doubling in loudness, and would almost certainly cause an adverse community response.



(100') = DISTANCE IN FEET BETWEEN SOURCE AND LISTENER

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TYPICAL SOUND LEVELS MEASURED IN THE ENVIRONMENT AND INDUSTRY

FIGURE A1

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SARANAP VILLAGE – CONTRA COSTA COUNTY NOISE MEASUREMENT LOCATIONS

FIGURE 1

CSA # 14–0012

BDP/JLD 02.18.14

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20 February 2014

Michael Smith
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Subject: **Saranap Village**
Preliminary Environmental Noise Study
CSA Project: 14-0012

Dear Michael:

As requested, we have conducted an environmental noise study for this project. The purpose of this study is to quantify the existing and future noise levels that would be received by the project. We compared the noise levels with applicable standards and are proposing measures to address compatibility. This letter summarizes the results of our study.

PROJECT CRITERIA

California Building Code

Historically, the California Building Code has (CBC) has required that the indoor noise level in habitable rooms not exceed DNL[1] 45 dB where the exterior noise level is greater than DNL 60 dB. Additionally, if windows must be closed to meet the interior standard, the building design must include a ventilation or air-conditioning system to provide a habitable interior environment.

Contra Costa County General Plan

The interior noise standard of the Contra Costa County Noise Element of the General Plan (Section 11.9, Policy 11-4) is DNL 45 dB.

Section 11.9, Policy 11-2 gives a standard exterior noise level for common outdoor-use areas of DNL 60 dB or less (excluding at small balconies, typical to multifamily housing projects). However, Policy 11-2 also stipulates that "DNL 60 dB or less may not be achievable in all residential areas due to economic or aesthetic constraints".

---

[1] Day-Night Average Sound Level (DNL) – A descriptor established by the U.S. Environmental Protection Agency to describe the average day-night level with a penalty applied to noise occurring during the nighttime hours (10 pm - 7 am) to account for the increased sensitivity of people during sleeping hours.

CALGreen

Section 5.507.4 of the 2010 CALGreen Code is applicable to the commercial spaces at the project. CALGreen requires the noise due to exterior sources (Leq-1Hr[2]) in occupied interior commercial spaces to not exceed 50 dBA.

NOISE ENVIRONMENT

Site Description

The project is located on three lots (Parcels A through C) near the corner of Boulevard Way and Saranap Avenue. The project comprises four building sites with residential units (up to five levels above podium) above street level commercial space. There are also common outdoor use areas. The primary noise source is traffic from Boulevard Way. Additonally, traffic from Saranap Avenue and Interstate 24 are secondary noise contributers.

Measurement Locations and Noise Levels

To quantify the existing noise environment, we conducted six continuous 120 hour long-term noise measurements and three short-term 10-minute measurements between 15 and 21 January 2014. See Figure 1 for measurement locations and measured noise levels.

The 15 November 2013 traffic impact analysis indicates that future traffic volumes will correspond to a 2 dB increase in DNL at Boulevard Way and Saranap Avenue. The California Department of Transportation (DOT) assumes a traffic volume increase of three-percent per year, which corresponds to a 1 dB increase in DNL over a ten-year period at Interstate 24. We have accounted for these increases in our calculations.

RECOMMENDATIONS

Interior Noise Levels

To meet the indoor noise criterion of DNL 45 dB, it will be necessary for some of the facades to be sound-rated. We calculated the window STC[3] ratings needed to meet the project criterion. For our calculations, we used the 17 January 2014 Schematic Design drawing floor plans and elevations. We assumed that bedrooms will be carpeted and all other rooms will have hard-surfaced flooring. We also assumed that exterior doors will have STC ratings up to 34. Additionally, our analysis is based on the following exterior wall assembly:

---

[2] Leq-1Hr – The equivalent steady-state A-weighted sound level that, in one hour, would contain the same acoustic energy as the time-varying sound level during an hour. This term is referred to in this report as the "hourly Leq" and is often used to describe the average sound level over the course of an hour.

[3] Sound Transmission Class (STC) – A single-number rating derived from the sound insulation properties of a partition. Numerically, STC represents the number of decibels of speech sound reduction from one side of the partition to the other. Increasing STC ratings correspond to improved airborne noise isolation.

- One layer interior gypsum board
- Stud framing with batt insulated cavities
- One layer of exterior sheathing
- Medium-weight exterior cladding

We calculated that the project noise criterion could be met by providing sound-rated windows as listed in Table 1.

Table 1: Recommended Window STC Ranges

Parcel	Recommended Window STC Range
A	28 to 39
B	Unrated to 38
C	Unrated to 34

Typically, where windows need to be closed to achieve an indoor DNL of 45 dB, an alternative method of supplying fresh air (e.g., mechanical ventilation) must be provided. This, at least applies to units where sound-rated windows are needed. This should be discussed with the project mechanical engineer.

The recommended STC ratings are for full window assemblies (glass and frame) rather than just the glass itself. Tested sound-rated assemblies should be used. For reference, typical construction-grade windows achieve STC 28. One-inch glazing assemblies (two 1/4-inch thick panes with a 1/2-inch airspace) commonly achieve an STC rating of 32. Where STC ratings above 32 are required, at least one pane would likely need to be laminated.

Exterior Noise Levels

We evaluated noise from sources exterior to the project. Our measurements and calculations indicate that levels at the common outdoor-use areas for Parcels B and C are generally expected to be at or below DNL 60 dB. Thus, these areas would meet the County's exterior noise level criterion. The noise levels in the third floor courtyard of Parcel A will vary between approximately DNL 70 dB at the south end of the courtyard to approximately DNL 60 dB at the north end of the courtyard. If economically and aesthetically feasible, noise levels could be reduced to meet the exterior noise standard by implementing a noise barrier along the courtyard parapet.

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We understand that the specifics of the project might change in the design process. Design changes could result in different window placements and sizes, which could affect the STC ratings. However, the exterior noise levels in the area are such that the County standard of DNL 45 dB in interior residential spaces can be achieved with sound-rated windows. A qualified acoustical professional should be involved during the final design phase of the project to review design changes and update the STC ratings as needed.

This concludes our preliminary environmental noise study for the Saranap Village project. If you have any questions, please give us a call.

Sincerely,

CHARLES M. SALTER ASSOCIATES, INC.

Benjamin Piper
Senior Consultant

Jeremy Decker, PE
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SARANAP VILLAGE – CONTRA COSTA COUNTY NOISE MEASUREMENT LOCATIONS AND MEASURED DNL

FIGURE 1

CSA # 14–0012

BDP/JLD 02.18.14

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7 March 2014

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Subject: **Saranap Village**
Interior Sound Transmission Code Requirements
CSA Project: 14-0012

Dear Mike:

We recently completed our environmental noise impact and noise intrusion studies for the Saranap Village project. Those reports (dated 20 February and 7 March 2014) address noise transfer across the project property lines, emitted and received. Since this is a mixed-use project with multi-family housing, we are providing this letter summarizing the Code-requirements regarding sound insulation between commercial and residential uses within the project.

CODE REQUIREMENTS

Building Code

The 2013 California Building Code (Title 24, Part 2, Section 1207) includes the following requirements regarding sound transmission through common interior walls, partitions, and floor-ceiling assemblies separating dwelling units and separating dwelling units and adjacent public and service areas.

- 1207.2 Airborne Sound: Subject walls and floor-ceiling assemblies shall have a minimum STC[1] rating of 50. Penetrations or openings in construction assemblies shall be sealed, lined, insulated, or otherwise treated to maintain the required ratings. This requirements does not apply to dwelling unit entrance doors, which shall be tight-fitting to the frame and sill.

- 1207.3 Structureborne (Impact) Sound: Subject floor-ceiling assemblies shall have a minimum IIC[2] rating of 50.

---

1 Sound Transmission Class (STC)--A single-number rating derived from the sound insulation properties of a partition. Numerically, STC represents the number of decibels of speech sound reduction from one side of the partition to the other

2 Impact Insulation Class (IIC)--A single-number rating that quantifies the property of a floor/ceiling construction to reduce footfall-generated noise. Increasing IIC values correspond to improved impact insulation.

CALGreen

The 2013 California Green Building Standards Code (Title 24, Part 11, Section 1207) includes the following requirement for non-residential building construction.

- 5.507.4.3 Interior sound transmission: Wall and floor-ceiling assemblies separating tenant spaces and tenant spaces from public spaces shall have a minimum STC rating of 40.

DISCUSSION

The demising assemblies of the project have not yet been selected. However, we expect these Code requirements can be met by providing isolated floor and ceiling assemblies and sound-rated wall construction. Acoustical treatment details can be developed for penetrations and recessed fixtures in sound-rated construction. If requested, we can provide additional assistance during the design phases of the project.

* * *

This concludes our current comments on the Saranap Village project. If you have any questions, please feel free to call.

Sincerely,

CHARLES M. SALTER ASSOCIATES

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Principal Consultant

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2 May 2014

Michael Smith
Hall Equities Group
1855 Olympic Boulevard, Suite 300
Walnut Creek, CA 94596
Email: michaels@hallequitiesgroup.com

Subject: **Saranap Village**
Project Alternatives – Environmental Noise Analysis
CSA Project: 14-0012

Dear Michael:

As requested, we have conducted a qualitative review of the project alternatives. These are compared to our main Project analysis. This letter summarizes our findings.

SUMMARY

Except for 'no project,' the alternatives would be expected to have similar noise and vibration impacts as the Project. Alternatives expected to have 'less-than-significant' impacts are also 'less-than-significant' for the Project. Alternatives expected to have impacts that are 'less-than-significant with mitigation' are also 'less-than-significant with mitigation' for the Project. Each alternative would be subject to the same performance standards as the Project and similar mitigation methods would be needed. These findings relate to the following:

- Impact #1: Traffic noise
- Impact #2: Mechanical noise
- Impact #3: Operational noise
- Impact #4: Construction noise
- Impact #5: Operational vibration
- Impact #6: Construction vibration
- Environmental noise intrusion
- Interior sound transmission

PROJECT POTENTIAL IMPACTS

For each potential noise impact determined for the Project, we are providing a discussion related to the proposed alternatives. These are derived from the analyses summarized in our reports listed below:

- 13 March 2014 report: Potential noise impacts from the project on the surrounding environment
- 20 February 2014: Potential noise impacts related to noise intrusion to interior spaces from the outdoor environment of the site (e.g., traffic noise)
- 7 March 2014 letter: Potential noise impacts related to interior sound transmission between residential and commercial spaces within the building

Impact 1:

Project-Generated Traffic Noise: Project generated traffic would not substantially increase traffic noise levels in the area. (Finding: less-than-significant impact for Project)

Based on the Alternatives Analysis traffic report (Omni-Means, 24 April 2014), we calculated approximate traffic noise level increases for each alternative[1]. These are compared to the projected noise increase for the Project (see Table 1). All project alternatives are also calculated to have less than significant traffic noise impacts.

Table 1: Project/Alternatives Traffic Noise Projection Summary

Alternate	Description	Projected Noise Increase
--	***Project***	***2 dB***
1	No Project	0 dB
2	No project/rehab. existing	1 dB
3	Reduced project	1 dB
4	General Plan build-out	2 dB

Except for 'no project,' the alternatives are found to have similar projected noise impact as the Project with respect to traffic noise (less than significant).

Impact 2:

Mechanical Noise. Operation of HVAC equipment for the proposed buildings could result in a significant permanent increase in ambient noise levels. (Finding: less-than-significant impact with mitigation for Project)

- Alternate #1, No Project: With no new mechanical equipment, no noise impact would be projected.
- Alternate #2, No Project/rehab. existing: Rehabilitation, new tenants, and interior remodeling might require the installation of new mechanical equipment which could have a significant impact. Mitigation would need to be incorporated to reduce equipment noise transmitted to adjacent properties. (Finding: less-than-significant impact with mitigation)
- Alternate #3, Reduced project: A reduced project would still involve new mechanical equipment, thus mitigation would be needed to reduce noise. (Finding: less-than-significant impact with mitigation)
- Alternate #4, General Plan build-out: Project development associated with the General Plan build-out scenario would also require the installation of new mechanical equipment which could have a

[1] Our calculations of alternative traffic noise level increases assume that the distribution of net future trips on local roadways for each alternative would be similar to the distribution of trips for the Project.

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significant impact. Mitigation would need to be incorporated to reduce equipment noise transmitted to adjacent properties. (Finding: less-than-significant impact with mitigation)

Except for 'no project,' the alternatives are found to have similar projected noise impact and mitigation requirements as the Project with respect to mechanical equipment noise.

Impact 3:

Operational Noise. Noise generated from project related activities and associated systems could result in a significant permanent increase in ambient noise levels at existing adjacent properties. (Finding: less-than-significant impact with mitigation for Project)

- Alternate #1, No Project: With no activities, no noise impact would be projected.
- Alternate #2, No Project/rehab. existing: Rehabilitation with new tenants could involve new activities that could have a significant impact. Mitigation would need to be incorporated to reduce activity noise transmitted to adjacent properties. (Finding: less-than-significant impact with mitigation)
- Alternate #3, Reduced project: A reduced project would still involve new activities at the remaining development sites, thus mitigation would be needed to reduce noise. (Finding: less-than-significant impact with mitigation)
- Alternate #4, General Plan build-out: Project development associated with the General Plan build-out scenario would also involve new activities which could have a significant impact. Mitigation would need to be incorporated to reduce activity noise transmitted to adjacent properties. (Finding: less-than-significant impact with mitigation)

Except for 'no project,' the alternatives are found to have similar projected noise impact and mitigation requirements as the Project with respect to operational noise.

Impact 4:

Construction Noise. During construction, noise generated by equipment and activities on the site could substantially increase noise levels at neighboring land uses. (Finding: less-than-significant impact with mitigation for Project)

- Alternate #1, No Project: With no construction, no noise impact would be projected.
- Alternate #2, No Project/rehab. existing: Rehabilitation and exterior building improvements could involve construction activities that could have a significant impact. Mitigation would need to be incorporated to reduce activity noise transmitted to adjacent properties. (Finding: less-than-significant impact with mitigation)
- Alternate #3, Reduced project: A reduced project would still involve construction at the remaining development sites, thus mitigation would be needed to reduce noise. (Finding: less-than-significant impact with mitigation)

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- Alternate #4, General Plan build-out: Project development associated with the General Plan build-out scenario would also involve construction activities which could have a significant impact. Mitigation would need to be incorporated to reduce construction noise transmitted to adjacent properties. (Finding: less-than-significant impact with mitigation)

Except for 'no project,' the alternatives are found to have similar projected noise impact and mitigation requirements as the Project with respect to construction noise.

Impact 5:

Operational Groundborne Vibration. Operation of the project could expose persons to excessive groundborne vibration. (Finding: less-than-significant impact with mitigation for Project)

- Alternate #1, No Project: With no new mechanical equipment, no vibration impact is projected.

- Alternate #2, No Project/rehab. existing: Rehabilitation, new tenants, and interior remodeling might require the installation of new mechanical equipment which could have a significant vibration impact. Mitigation would need to be incorporated to reduce equipment vibration at adjacent properties. (Finding: less-than-significant impact with mitigation)

- Alternate #3, Reduced project: A reduced project would still involve new mechanical equipment, thus mitigation would be needed to reduce vibration. (Finding: less-than-significant impact with mitigation)

- Alternate #4, General Plan build-out: Project development associated with the General Plan build-out scenario would also require the installation of new mechanical equipment which could have a significant impact. Mitigation would need to be incorporated to reduce equipment vibration at adjacent properties. (Finding: less-than-significant impact with mitigation)

Except for 'no project,' the alternatives are found to have similar projected impact and mitigation requirements as the Project with respect to operational vibration.

Impact 6:

Construction Groundborne Vibration. The construction of the project could expose persons to excessive groundborne vibration. (Finding: less-than-significant impact with mitigation for Project)

- Alternate #1, No Project: With no construction, no vibration impact would be projected.

- Alternate #2, No Project/rehab. existing: Rehabilitation, interior remodeling, and exterior facade improvements are not expected to involve site work or construction activities that generate significant vibration. However, if exterior landscaping improvements requires the removal of existing hard-scaping using impact devices (e.g., a jack-hammer), there is a potential for vibration impacts which would require mitigation (Finding: less-than-significant impact with mitigation)

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- Alternate #3, Reduced project: A reduced project would still involve construction at the remaining development sites, thus mitigation would be needed to reduce noise. (Finding: less-than-significant impact with mitigation)

- Alternate #4, General Plan build-out: Project development associated with the General Plan build-out scenario would also involve construction activities which could have a significant impact. Mitigation would need to be incorporated to reduce construction noise transmitted to adjacent properties. (Finding: less-than-significant impact with mitigation)

Except for 'no project,' the alternatives are found to have similar projected noise impact and mitigation requirements as the Project with respect to construction vibration.

Environmental Noise Intrusion:

Outdoor environmental noise intrusion to interior spaces would be subject to Building Code requirements and County General Plan policies as listed in our 20 February 2014 letter. We expect these project requirements can be met by providing acoustically insulated facades incorporating sound-rated window assemblies.

- Alternate #1, No Project: With no construction, noise intrusion is not an issue.

- Alternate #2, No Project/rehab. existing: Rehabilitation, interior remodeling, tenant turn-over, and facade improvements might require the construction to meet exterior noise intrusion requirements. Sound-rated construction would be needed to meet the performance requirements. (Finding: less-than-significant impact with mitigation)

- Alternate #3, Reduced project: A reduced project would still involve occupied spaces that would be exposed to environmental noise. Therefore, sound-rated construction would be needed to meet the performance requirements. (Finding: less-than-significant impact with mitigation)

- Alternate #4, General Plan build-out: Project development associated with the General Plan build-out scenario would also likely involve occupied spaces exposed to environmental noise. Therefore, sound-rated construction would be needed to meet the performance requirements. (Finding: less-than-significant impact with mitigation)

Except for 'no project,' the alternatives are found to have similar projected acoustical impact as the Project with respect to exposure to environmental noise intrusion to occupied spaces.

Interior Sound Transmission:

As a mixed-use project, sound transmission between interior spaces would be subject to Building Code requirements as listed in our 7 March 2014 letter. The demising assemblies of the Project have not yet been selected. However, we expect these Code requirements can be met by providing isolated floor and ceiling assemblies and sound-rated wall construction. Acoustical treatment details can be developed for penetrations and recessed fixtures in sound-rated construction.

- Alternate #1, No Project: With no construction, interior sound transmission is not an issue.

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- Alternate #2, No Project/rehab. existing: Rehabilitation, interior remodeling, and tenant turn-over might require new interior partitions which would be subject to sound-transmission requirements between commercial tenant spaces. Sound-rated construction would be needed to meet the Code requirements. (Finding: less-than-significant impact with mitigation)

- Alternate #3, Reduced project: A reduced project would still involve demising wall and floor-ceiling assemblies separating interior spaces (e.g., residences and commercial tenants). Therefore, sound-rated construction would be needed to meet Code requirements. (Finding: less-than-significant impact with mitigation)

- Alternate #4, General Plan build-out: Project development associated with the General Plan build-out scenario would also likely involve multi-tenant buildings. If so, sound-rated construction would be needed to meet Code requirements. (Finding: less-than-significant impact with mitigation)

Except for 'no project,' the alternatives are found to have similar projected acoustical impact as the Project with respect to sound transmission between residences and commercial spaces.

* * *

This concludes our comments on environmental noise for the alternatives to the Saranap Village Project. Should you have any questions, please call.

Sincerely,

CHARLES M. SALTER ASSOCIATES

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Principal Consultant

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16 July 2014

Michael Smith
Hall Equities Group
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Email: michaels@hallequitiesgroup.com

Subject: **Saranap Village**
Noise Impact – Additional Comments
CSA Project: 14-0012

Dear Michael:

Our 13 March 2014 noise impact study report for the Saranap Village project identifies Impact 3: Operational Noise. Two of the items discussed include the Site B outdoor use area, which includes a pool, and common activities (such as vehicles parking, voices, site maintenance). We understand that the County planner raised questions regarding these two items. As requested, we are providing this letter with additional comments.

OUTDOOR-USE/POOL AREA

Our noise impact assessment concluded that if a pool area is located at the southern edge of Site B, there could be a significant noise impact. The primary concern was the potential for amplified sound. This area may have a relatively low background noise because it is shielded from major roadway noise by the main building. In addition, it is located adjacent to multi-family residential receptors. Physical barriers would not adequately mitigate this potentially significant impact because they would only shield the ground level and not cover elevated floor of the nearby multi-family residences.

The potential for amplified noise exists at any single or multi-family residence in the area. However, the Project proposes a larger population and use-area and therefore could result in larger gatherings. Such gatherings could be addressed by the County Temporary Events Ordinance (Code Section 82-44). That Ordinance sets noise and hours limitations on amplified sound for larger events. We expect that compliance with the Ordinance would mitigate any acoustical impacts to a less than significant level. Therefore, compliance with that ordinance could be substituted for the performance standard mitigation measures proposed in our impact assessment.

COMMON OPERATIONAL ACTIVITIES

Our noise impact assessment states the following (page 9):

> *The existing land-uses involves many activities similar to those anticipated from the project such vehicles parking on-site, voices, and site maintenance. These types of project-related operational noise are expected to generate noise similar to existing noise levels. From such activities, no significant noise impact is expected.*

Other provisions in our assessment address construction noise, operational traffic noise, noise from outdoor use areas and noise from the bar/nightclub. Accordingly, those subjects are not encompassed within the quoted text above. That text refers only to the remaining incidental operational noises, which include people opening and closing car doors, talking, and similar noises resulting from people going about their day-to-day activities in the area. These noises are expected to be similar in kind to the noises generated by existing residential and commercial uses in the area. Though such activity noise might increase along Boulevard Way, such noise would not be expected to increase the ambient noise levels along the street. Such activity noise would be significantly reduced at the "rear" of the sites (and adjacent properties) due to acoustical shielding provided by the Project buildings. Incidentally, the buildings would also shield traffic noise to these adjacent properties as compared to existing conditions. In addition, we expect that vehicle noise in the parking garage, including car alarms, would be significantly reduced by the concrete garage walls. Therefore, we do not expect the aforementioned activity noise to significantly increase noise level at neighboring properties (thus, a less-than significant impact).

* * *

This concludes our comments on Saranap Village. Should you have any questions, please call.

Sincerely,

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July 22, 2014

TO: Via Email
William R. Nelson
Principal Planner
Contra Costa County
Department of Conservation and Development
Community Development Division
30 Muir Road
Martinez, CA 94553-1290

FROM: Marie A. Cooper

RE: **Noise And The Temporary Events Ordinance**
The Saranap Village Project
Client-Matter No. 87831-001

You have raised concerns about the pool area proposed on Site B of the Saranap Village Project. This memorandum addresses County laws and other factors that will limit noise emanating from use of that area.

I. Temporary Events Ordinance.

The Temporary Events Ordinance is codified in chapter 84-22 of the Contra Costa County Code. It sets forth requirements for (a) residentially-zoned property; (b) residences in other zones; and (c) a venue in any other zoning district. The Saranap Village Project proposes a rezoning to P-1, which is not a residential zone. Because the Site B pool area would be an amenity for the residential uses, and would be located within the residential area of the Project, this memorandum addresses the provisions of the Temporary Events Ordinance applicable to residences in non-residential zones.

A. Requirements.

1. A temporary event permit is required for events of 75 people or more. Since the pool is in a residential area, the 125-person threshold would not apply. 82-44.206(a)

2. A land use permit, instead of a temporary event permit, is required in the following circumstances:

   a. For four or more events a year

   b. For three or more events within a 45-day period

c. For an event with more than 300 people

d. When a temporary events permit issued to the applicant was revoked within the past 24 months. 82-44.416(a).

Such a land use permit would be processed in the same manner as other land use permits in the County.

B. Exemptions.

1. No permit is required for weddings, birthday parties, graduation parties, or other family events held at a private residence, provided that no more than four of these events are held within a twelve-month period. 82-44.404(d)

2. (The ordinance includes an exemption under which no permit is required for events of 200 or fewer persons, but only if: (a) specified sound levels are not exceeded; (b) on-site restrooms are provided; (c) dedicated parking is provided; (d) ten days' notice is given to all property occupants within 200 feet of the event; and (e) no more than three such events occur per year. 82-44.408(h) However, this exemption applies only at residentially-zoned property. *Id.* It therefore would not apply to the Saranap Village Project.)

C. Prohibitions.

1. No events fewer than seven days apart. 82-44.406(a)

2. No commercial events. 82-44.406(b)

D. Temporary Event Permit Limitations.

1. Noise levels, as measured at the exterior of any dwelling unit located on another residential property, shall not exceed certain specified levels, measured over certain specified time periods. 82-44.410(b)(1)

2. Amplified sound is prohibited after 8:00 p.m. Sundays through Thursdays and after 10:00 p.m. Fridays, Saturdays, and holidays. A temporary event permit shall not allow the use of amplified sound after these hours. 82-44.410(b)(2)

3. The permit is subject to such conditions as the County chooses to impose. 82-44.410(a)[1]

E. Enforcement.

1. An event may be monitored by law enforcement and code enforcement officials to determine compliance with the terms and conditions of the permit. 82-44.418(a)

2. A temporary event permit may be revoked for any violation of any term or condition that occurs at an event or for any other reason specified in Section 26-2.2022 of this code. 82-44.418(b)

NOTE: Section 26-2.2022 states as follows:

Variance, conditional use and special permits—
Modification, suspension and revocation.

A permit may be modified, suspended or revoked on any of the following grounds:

(a) The failure to comply with any term, limitation or condition of the permit;

(b) The property or portion thereof subject to the permit is used or maintained in violation of any requirement of this code;

(c) The use for which the permit was granted has been so exercised as to be detrimental to the public health or safety or as to constitute a nuisance;

(d) The permit was issued in whole or in part on the basis of a misrepresentation or omission of a material statement in the permit application or in the applicant's testimony at any public hearing on the permit;

[1] Conditions may be imposed related to: Alteration of the date, time, route or location of the event proposed on the application; accommodation of pedestrian or vehicular traffic; parking and shuttles; traffic control; provision of on-site restrooms; use of security; maximum occupancy (which may be based on the size of the venue, lot size, proximity of surrounding residences, density of the underlying zoning district, and the location and size of any buildings between the venue and surrounding properties); the number and type of structures ; animal protection ordinances and laws; use of garbage containers and cleanup; duration of time and hours; and time, place, and manner restrictions on the use of amplified sound. The use of amplified sound is prohibited in a residential district unless allowed as a condition of a temporary event permit. 82-44.410(a).

(e) A license required for the conduct of the business on the premises covered by the permit has been suspended or revoked;

(f) Any permittee, operator, or employee has been convicted of a violation of federal law or state law or county ordinance in connection with the operation of the permitted use.

3. The County may enforce this division by any remedy allowed under this ordinance code or any other remedy allowed by law. 82-44.418(c) (This includes nuisance enforcement.)

4. Subsequent temporary event permits may be denied if a permit is violated. 82-44.408(d)

5. Fines may be imposed. 82-44.408(d)(10)

6. Subsequent temporary event permits may be denied for failure to pay an outstanding fine owed for an event previously held at the venue or owed by the applicant for any event held at any location. 82-44.408(d)(10)

II. Social Host Ordinance.

There is also the Contra Costa County Social Host Ordinance. It states that one of its purposes is to control noise associated with juvenile events that include alcohol. Its pertinent provisions are quoted below:

54-3.008 Unlawful juvenile gatherings on private property.

(a) No person shall suffer, permit, allow, or host a gathering at his or her place of residence or other private property under his or her control where three or more persons under the age of twenty-one are present and where alcoholic beverages are in the possession of, or are being consumed by, any person under the age of twenty-one.

(b) A violation of this chapter is a misdemeanor, punishable by imprisonment in the county jail not exceeding six months, or by fine not exceeding one thousand dollars, or by both.

(c) This chapter does not apply to any gathering involving the use of alcoholic beverages that is protected by Article 1, Section 4 of the California Constitution[2].

III. Other Factors.

A. The Size Of The Saranap Village Project Has Already Been Addressed Legislatively.

The residential pool area addressed in this memorandum is proposed to be located next to other multifamily buildings that house the same uses as are proposed for Saranap Village's residential component. Beyond these multifamily buildings are single family homes which can also host pool and other loud parties. In this context, there are only two distinguishing features of the Saranap Village site compared to these surrounding properties.

First, Saranap Village would be in a non-residential zone and thus not entitled to take advantage of the exemption for gatherings of up to 200 people. The nearby properties, in contrast, are in residential zones and can take advantage of this exemption. This factor indicates the Saranap Village pool area will be of less concern than surrounding properties.

Second, the Saranap Village Project is larger than the surrounding buildings and homes, which raises a possibility of larger gatherings. However, the Temporary Events Ordinance addresses extra-large gatherings.

The County's Temporary Events Ordinance represents the County's legislative, policy determination as to what types of events are considered to be within the normal range of activities occurring at residences and what events are large enough to require special attention; what measures must be imposed to ensure such extra-large events do not create a level of disturbance considered unacceptable in this neighborhood; and how those measures should be enforced. The County should not negate its legislative determination by creating different rules for this one project, on an ad-hoc basis.

B. The Saranap Village Project Will Be Self-Policing.

The townhomes and apartments the Project proposes will be marketed to working professionals and retired people who are downsizing. These residents are likely to be self-policing and not allow loud, raucous parties. Building owners and/or management are not likely to allow activities that would drive potential tenants away to other locations. Common sense dictates that loud raucous parties are much less likely at this location than in a typical suburban neighborhood with single family homes, where teenage parties can and do get out of hand.

---

[2] Section 4 of Article 1 of the California Constitution states: "Free exercise and enjoyment of religion without discrimination or preference are guaranteed. This liberty of conscience does not excuse acts that are licentious or inconsistent with the peace or safety of the State. The Legislature shall make no law respecting an establishment of religion. [¶] A person is not incompetent to be a witness or juror because of his or her opinions on religious beliefs."

C. **Limitations on Pool Use.**

Other than the potential for large events that involve residents and guests from Sites other than Site B (which potential is addressed by the Temporary Events Ordinance), the pool area in Site B is factually no different than surrounding properties. The project overview we submitted states that Site B will house approximately 62 multi-family units, which is comparable to nearby multifamily buildings south and southeast of Site B, which also have pools. Accordingly, the incidence of noisy events will be comparable to that applicable to these nearby properties. Nonetheless, to limit noise and ensure that Project residents are aware of their obligations to be good neighbors, we propose a mitigation measure that requires installation of signs in the pool area which contain notices substantially similar to the following:

- Pool hours are from 7am to 11pm on weekends and holidays, and 7am to 10pm on other days. This pool area may be used only during pool hours.

- The Contra Costa County Code (Chapter 82-44) precludes events of 75 people or more without a Temporary Event Permit or a Land Use Permit.

- No amplified live music is allowed in this pool area absent a Temporary Event Permit or a Land Use Permit.