Appendix A

Notice of Preparation and Responses to the NOP

Planning Division
214 South C Street
Oxnard, CA. 93030
(805) 385-7858
(805) 385-7417 Fax

NOTICE OF PREPARATION OF AN ENVIRONMENTAL IMPACT REPORT FOR THE TEAL CLUB SPECIFIC PLAN PROJECT

The Oxnard Planning Division will be the Lead Agency and will prepare an environmental impact report (EIR) for the proposed Teal Club Specific Plan Project. We need to know the views of your agency as to the scope and content of the environmental information which is germane to your agency's statutory responsibilities in connection with the proposed project. Your agency will need to use the EIR prepared by our agency when considering your permit requirements or other approval for the project. You are receiving this notice in accordance with CEQA Guidelines and Section 3.6(c) of City Council Resolution No. 9133.

The project description, location, and the potential environmental effects are discussed below. An Initial Study has not been prepared, as all of the items on the City's environmental checklist will be studied in the EIR.

The Notice of Preparation/Initial Study comment period begins on **May 18, 2012** and ends on **July 2, 2012**. Due to the time limits mandated by State Law, your response must be sent at the earliest possible date but not later than 30 days after receipt of this notice. Please send your comments as soon as possible. Send your response to Brian Foote, AICP, Associate Planner, at the address above or by email (Brian.Foote@ci.oxnard.ca.us), or call (805) 385-7858 for further information. We will need the name for a contact person in your agency.

Project Title: Teal Club Specific Plan

Project Location: The project area is located within an unincorporated area of Ventura County adjacent to the City of Oxnard, and within the City of Oxnard's Sphere of Influence and City Urban Restriction Boundary (CURB) lines. The proposed Teal Club Specific Plan Area comprises approximately 174.3 acres in seven contiguous assessor's parcels generally bounded by Doris Avenue on the north, Patterson Road on the west, Teal Club Road on the south and Ventura Road on the east. The project area as a whole also includes nine parcels totaling 11.42 acres on the south side of Teal Club Road, north and west of Little Farms Road and bisected by Mallard Way, thus totaling approximately 186 acres (the 174.3-acre Specific Plan parcels plus the 11.42-acre additional annexation parcels).

Project Applicant: Development Planning Services Inc., 211 Village Commons Blvd., Suite 15, Camarillo, CA 93012. The contact is Dennis Hardgrave, Project Manager, (805) 484-8303, designated agent for property owner Borchard Teal Club Ranch.

Project Description: The proposed project would involve annexation of the approximately 186-acre project area to the City of Oxnard, and adoption of a specific plan including a range of land uses for the 174.3-acre Teal Club Specific Plan Area. The current Ventura County General Plan land use and zoning

designations for the project area are Agricultural and Agricultural Exclusive. The proposed Teal Club Specific Plan designates residential, retail commercial, business/research park, parks and public facilities uses, and is therefore potentially consistent with the Oxnard 2030 General Plan Map. A central focus of this development will be in the provision of balanced community with jobs, school, recreation, shopping, and affordable and market-rate housing. The 2030 General Plan land use map designates the project site for an Urban Village, thereby encouraging neo-traditional town planning with a focus on sustainability and transit-oriented development.

The proposed Specific Plan would allow for the following primary land uses, which would be constructed in two phases:

- Up to 990 residential units in a variety of densities and product types on approximately 91 acres
- Up to 132,000 square feet of business park development on approximately 10 acres
- Up to 60,000 square feet of retail commercial uses on approximately 6 acres
- Approximately 8 acres for a school site
- Potential development of an approximately 14,000 square-foot Y.M.C.A. facility
- Approximately 21 acres of community park space and 4 acres of pocket parks and greenbelts
- A City fire station on approximately one acre

The conceptual Specific Plan land use and phasing maps are attached to this Notice of Preparation. The proposed project will require review by other agencies including the Ventura County Airport Land Use Commission, California Division of Aeronautics, California Department of Education, and the Ventura County Local Agency Formation Commission.

The eight parcels south of Teal Club Road are designated for Airport Compatible land uses by the Oxnard 2030 General Plan land use map. Upon annexation, these nine parcels are proposed to be in the Light Manufacturing (M-1) zoning district. The potential development analyzed in the EIR will also consider potential buildout of these parcels under the proposed M-1 zoning.

Topics Identified for Study in this EIR. The City has determined that an environmental impact report will be prepared evaluating the following potentially significant impacts:

- *Aesthetics*
- *Agriculture and Forest Resources*
- *Air Quality*
- *Biological Resources*
- *Geology/Soils*
- *Greenhouse Gas Emissions*
- *Hazards & Hazardous Materials*
- *Hydrology/Water Quality*
- *Land Use/Planning*
- *Noise*
- *Population/Housing*
- *Public Services*
- *Transportation/Traffic*
- *Utilities/Service Systems*

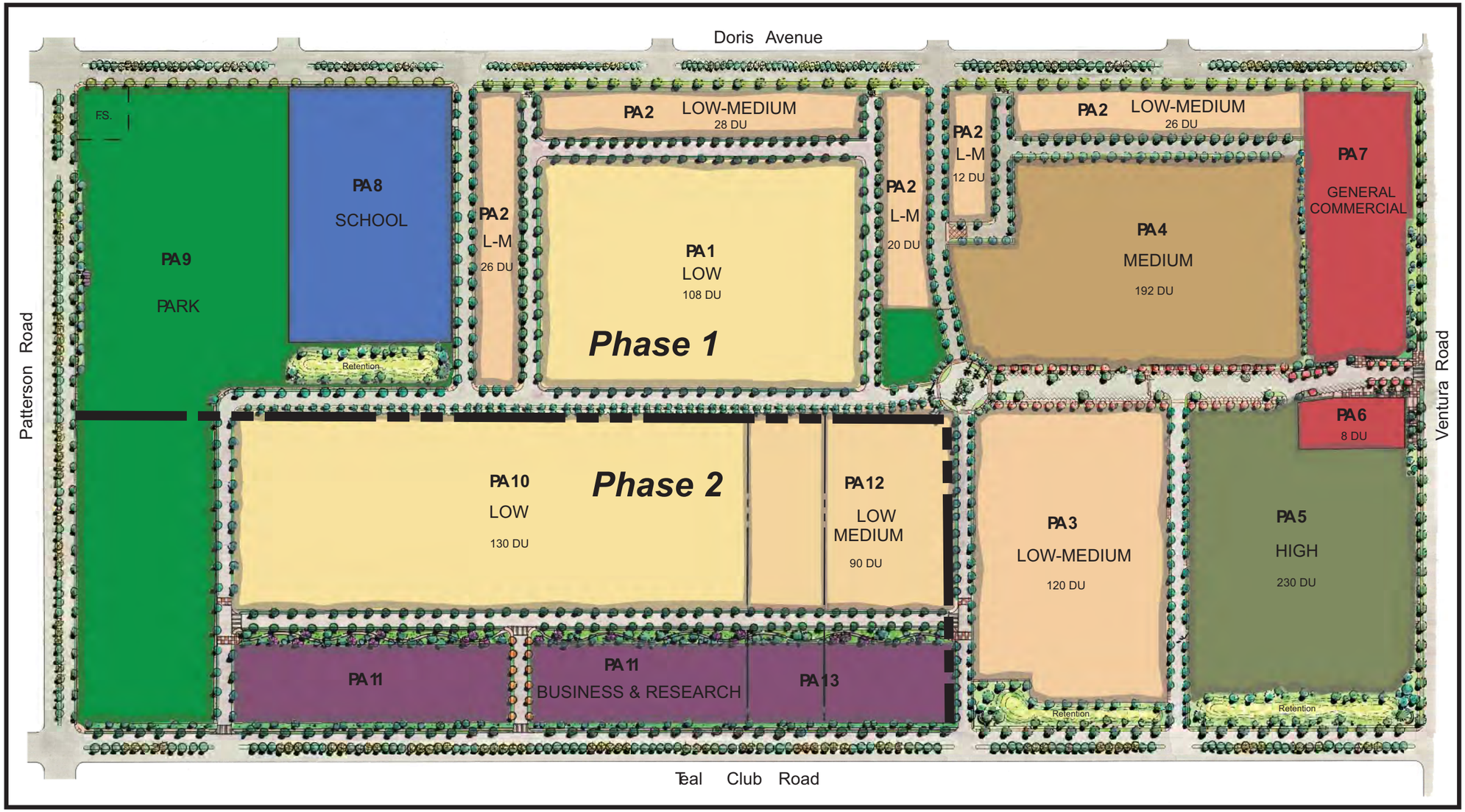
Based on the City's preliminary evaluation of the project, impacts related to Cultural Resources, Mineral Resources and Recreation are anticipated to be less than significant; these topics will therefore be addressed in an Effects Found Not to be Significant section contained in the EIR.

Scoping Meeting. The City of Oxnard, in its role as Lead Agency, will hold a public scoping meeting to provide an opportunity for the public and representatives of public agencies to address the scope

of the EIR. The Scoping Meeting for the Environmental Impact Report for the project is scheduled for June 4, 2012, beginning at 6:00 p.m., in the City of Oxnard Community Room, located at 300 West Third Street, First Floor (exterior doors at the southwest corner of Third Street & South B Street).

Susan L. Martin, AICP
Planning Manager

cc: Applicant
EIR Distribution List



Low 3 -7 DU/AC

Low Medium 8 -12 DU/AC

Medium 13 -18 DU/AC

High 19 -30 DU/AC

Park

School

General Commercial

Business and Research Park

PA__ Planning Area Designation

Teal Club Specific Plan

Planning Area / Phasing Map

City of Oxnard, California

Development Planning Services, Inc. April 2011

DEPARTMENT OF TRANSPORTATION
DIVISION OF AERONAUTICS – M.S.#40
1120 N STREET
P. O. BOX 942873
SACRAMENTO, CA 94273-0001
PHONE (916) 654-4959
FAX (916) 653-9531
TTY 711

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CITY OF OXNARD

May 22, 2012

Mr. Brian Foote
City of Oxnard Planning Division
214 South C Street
Oxnard, CA 93030

Dear Mr. Foote:

Re: Notice of Preparation for the Teal Club Specific Plan; SCH# 2005081112

The California Department of Transportation (Caltrans), Division of Aeronautics (Division), reviewed the document referenced above with respect to airport-related noise and safety impacts and regional aviation land use planning issues pursuant to the California Environmental Quality Act (CEQA). The Division has technical expertise in the areas of airport operations, safety, noise and airport land use compatibility. We are a funding agency for airport projects and we have permit authority for public-use and special-use airports and heliports.

The proposed specific plan includes a variety of residential uses, a business park and retail, a fire station, school site, and community park space on 186 acres located adjacent to and just north of Oxnard Airport. A YMCA facility is also part of the plan. Oxnard Airport is an active airport with over 150 based-aircraft and approximately 55,000 annual operations. The project site will be subject to aircraft overflights as well as airport-related noise and safety impacts.

CEQA, Public Resources Code Section 21096, requires the California Airport Land Use Planning Handbook (Handbook) be utilized as a resource in the preparation of environmental documents for projects within airport land use compatibility plan boundaries or if such a plan has not been adopted, within two nautical miles of an airport. The Handbook is a resource that should be applied to all public use airports and is available on-line at:
http://www.dot.ca.gov/hq/planning/aeronaut/documents/AirportLandUsePlanningHandbook.pdf

Due to its proximity to the airport, the project site will be subject to aircraft overflights and subsequent aircraft-related noise impacts. Since communities vary greatly in size and character from urban to rural, the level of noise deemed acceptable in one community is not necessarily the same for another community. Portions of the project site are located within the 60 decibel (dB) Community Noise Equivalent Level (CNEL) contour for the Oxnard Airport as shown in the Ventura County Airport Land Use Compatibility Plan (ALUCP). A thorough airport-related noise analysis must be included in the Draft Environmental Impact Report.

Public Utilities Code, Section 21659 prohibits structural hazards on or near airports. In accordance with Federal Aviation Regulation (FAR) Part 77 "Objects Affecting Navigable Airspace" a Notice of Proposed Construction or Alteration (Form 7460-1) may be required by the Federal Aviation Administration (FAA). Form 7460-1 is available on-line at https://oeaaa.faa.gov/oeaaa/external/portal.jsp and should be submitted electronically to the FAA.

The location and type of trees, and their mature height, is also a potentially significant concern. Trees should be selected carefully so they do not become a hazard to aircraft around the airport. Selection of a species of tree that does not grow taller than the buildings is strongly recommended, so the maturing trees do not become penetrations to the FAR Part 77 imaginary surfaces and potential hazards to aircraft operating to/from the airport. For further information, please refer to the FAA website at http://www.faa.gov.

Business and Professions Code Section 11010 and Civil Code Sections 1102.6, 1103.4, and 1353 address buyer notification requirements for lands around airports and are available on-line at http://www.leginfo.ca.gov/calaw.html. Any person who intends to offer land for sale or lease within an airport influence area is required to disclose that fact to the person buying the property.

Education Code Section 17215 requires a school site investigation by the Division prior to acquisition of land for a proposed school site located within two miles of an airport runway. Our recommendations are submitted to the State Department of Education for use in determining acceptability of the site. This should be a consideration prior to designating residential uses in the vicinity of an airport. The Division's school site evaluation criteria is available on-line at: http://www.dot.ca.gov/hq/planning/aeronaut/evaluations.html

Protecting people and property on the ground from the potential consequences of near-airport aircraft accidents is a fundamental land use compatibility-planning objective. While the chance of an aircraft injuring someone on the ground is historically quite low, an aircraft accident is a high consequence event. To protect people and property on the ground from the risks of near-airport aircraft accidents, some form of restrictions on land use are essential. The two principal methods for reducing the risk of injury and property damage on the ground are to limit the number of persons in an area and to limit the area covered by occupied structures. The potential severity of an off-airport aircraft accident is highly dependent upon the nature of the land use at the accident site. Airport-related noise, safety and land use concerns should be thoroughly addressed in the Draft Environmental Impact Report.

The proposal should be submitted to the Ventura County Airport Land Use Commission (ALUC) for a consistency determination. It should also be coordinated with Oxnard Airport staff to ensure that the proposal will be compatible with future as well as existing airport operations.

The protection of airports from incompatible land use encroachment is vital to California's economic future. Oxnard Airport is an economic asset that should be protected through effective airport land use compatibility planning and awareness. Although the need for compatible and safe land uses near airports in California is both a local and a State issue, airport staff, airport land use commissions and airport land use compatibility plans are key to protecting an airport and the people residing and working in the vicinity of an airport. Consideration given to the issue of compatible land uses in the vicinity of an airport should help to relieve future conflicts between airports and their neighbors.

These comments reflect the areas of concern to the Division with respect to airport-related noise and safety impacts and regional airport land use planning issues. We advise you to contact our

Caltrans District 7 Office concerning surface transportation issues.

Thank you for the opportunity to review and comment on this proposal. If you have any questions, please call me at (916) 654-6223.

Sincerely,

PHILIP CRIMMINS
Aviation Environmental Specialist

c: State Clearinghouse, Oxnard Airport, Ventura County ALUC

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Cabrillo Neighborhood Council

www.cabrilloneighborhood.net
Chairman: R. Stephen Cripps
(805) 824-4704
E-mail: chair@cabrilloneighborhood.net

June 4, 2012

City of Oxnard
Planning Division
214 South C Street
Oxnard, CA 93030

Re: Environmental Impact Report for The Teal Club Specific Plan Project

The information listed below represents the primary concerns and the related environmental impact on the Cabrillo Neighborhood of the above referenced project, as outlined in your Notice of Preparation of an Environmental Impact Report for the Teal Club Specific Plan Project. This information has been prepared by the Executive Board of the Cabrillo Neighborhood Council and is being presesnted on behalf of all residents living within the Cabrillo Neighborhood.

It is our opinion that the approval of the Proposed Teal Club Specific Plan as submitted will have a tremendous negative impact on the Cabrillo Neighborhood, and the information presented below should be given serious consideration in the preparation of the Environmental Impact Report for this project.

The following is a list of potentially significant impacts related to aesthetics, air qualilty, land use, noise and traffic that would have a negative inmpact on the Cabrillo Neighborhood and should be considered in the preparation of the environmental impact report:

1. The development of 990 residential units, 132,000 square feet of business park development, 60,000 square feet of retail commercial use, a new school site and the potential development of a Y.M.C.A. will result in a dramatic increase in traffic volume on Doris Avenue, Patterson Road, Teal Club Drive and the interior streets within the Cabrillo Neighborhood. This will yield:
    a. Increase in noise pollution.
    b. Increase in air pollution.
    c. Increase in traffic flow within Cabrillo (particularly during commute and school "drop-off" hours) causing potential safety hazards to pedestrians and children walking to and from school.
    d. Additional errosion to roadways within Cabrillo which can result in damage to vehicles and increased costs to the City of Oxnard for road maintenance and renewal.
2. In order to support the design of this project, we believe it will be necessary to widen Doris Avenue to four traffic lanes. We anticipate the installation of two traffic signals. One at the corner of Patterson Road and Doris Avenue and one at one of the entrances to the project on Doris Avenue.
    a. When these traffic lights are combined with the existing commute traffic, the additional commute traffic created by the project and school "drop-off" traffic, a situation will be created where drivers incur increased wait time due to red lights. This additional idle time for the vehicles will create

a greater use of gasoline, greater greenhouse gas emissions, an increase in air pollution and a significant decrease in our air quality.

b. The appearance of the traffic signals and congested traffic will have a significant negative impact on the visual aesthetics of this portion of our neighborhood.

3. The project area comprises approximately 186 acres of what is currently agriculatural property. The watershed for this property will be lost. The rain that currently falls onto this property will no longer be added to the watershed. Instead, the rain will drain directly into the sewers or directly into the ocean. In many communities, it has been shown that this is a major source of coastal water pollution that has long-term and far reaching affects on the local marine life.
4. It does not appear that the success rate for new residential housing developments in the City of Oxnard is supportive of a new development in the Teal Club area. This can be seen in the Seabridge, Wagon Wheel and River Park Developments. Construction has either ceased or has never begun, long after the property development was approved by the city. If this trend continues, the development of 990 residential units could result in an abandoned project, leaving either undeveloped or partially developed units. The end result would be an unsightly area, a wasteful use of prime agricultural land and a very poor land use/planning decision.
5. The proposed project includes approximately 60,000 square feet of retail and commercial space, using 6 acres of land. At the present time there is vacant retail space in the Gold Coast Center (at the corner of 2nd street and Ventura Road) and the Fremont Center (at the corner of Doris Avenue and Ventura Road). These centers are directly opposite the proposed development and there have been vacancies in these centers for over a year. The development of additional retail space in this area would only have a negative impact on the owners of the currently unoccupied property and may result in the newly constructed property sitting empty and unused. Again, we feel that this would be a poor land use of the Teal Club property.

We have addressed the environmental impacts that we consider to be the most significant and those that we believe will have the greatest negative impact on our neighborhood. We presume that the Planning Division will evaluate the other items noted in the "Topics Identified for Study in this EIR" in your notice with the same vigor and interest as if the items affected you personally. Overall, we feel that the Teal Club Specific Plan and the proposed project identified in your notice will result in poor land usage and create such negative environmental impacts on the surrounding areas, that the EIR should propose that this Plan be rejected.

Thank you for your time and consideration in this matter.

R. Stephen Cripps, Chairman

Martin L. Remmen, Member-at-Large

Sandra Weltz, Vice-Chairman

Mike Turek, Member-at-Large

Pam Mortensen, Secretary

Claudia LaCabe, Member-at-Large

Darlene Rose, Treasurer

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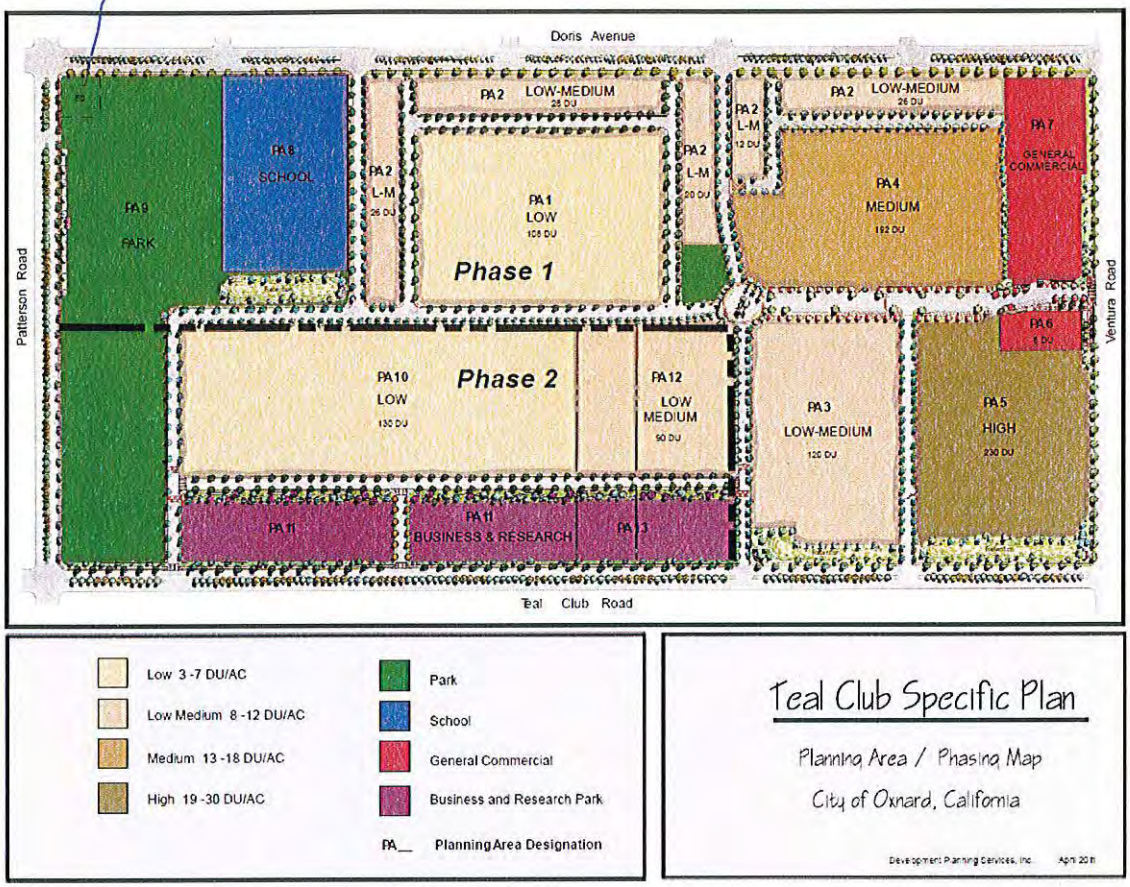
Fire Station



Please provide your comments on the scope of the environmental review below:

(1) FIRE STATION IS REDUNDANT & UNNESSESARY
(2) NEED TO KNOW WHO DEVELOPERS WILL BE IN ORDER TO OBTAIN RECORDS OF SUCCESS/FAILURE RESULTS IN OTHER DEVELOPMENTS.
(3) DEVELOPMENTAL HISTORY RECORDING. * PROPERTY VALUES, CRIME RATE RATIOS (BEFORE & AFTER) TRAFFIC IMPACT, TAX RAMIFICATIONS, MORE —
(4) FLOOD ISSUES!
(5) HONEST EXAMINATION OF POTENTIAL FOR LOW INCOME HOUSING.

Please continue on the back of this sheet or attach additional sheets if necessary

Please also provide your name and address if you would like to receive additional information on this project as the City's review progresses.

Name: MICHAEL SHAW

Address: 2200 IVANHOE AVE
OXNARD CA. 93030

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From: "Todd McNamee" <Todd.McNamee@ventura.org>
To: <kathleen.mallory@ci.oxnard.ca.us>, "Matthew Winegar" <matt.winegar@ci.oxnard.ca.us>
Date: 2/21/2008 4:04:38 PM
Subject: Comments Regarding Teal Club Specific Plan

Dear Kathleen and Matt,

I will not be attending tonight's study session on the Teal Club Specific Plan, but wish to have the following comments included in the record. The attached letter addressed the DEIR back in July 2007.

The site lies within the traffic pattern zone for the Oxnard Airport and will be subject to overflight be fixed wing and helicopter traffic. The housing element is conditionally compatible when viewed against the Airport Comprehensive Land Use Plan (copies of pertinent tables attached).

Conditions include structural coverage of site not to exceed 25%.
The developer be required to grant the County of Ventura an avigation easement over the parcel.
Fair disclosure of an airport influence area be provided to home buyers.
Insulation of homes to mitigate noise from the overflying aircraft.
We strongly oppose the inclusion of a school at this site as it is incompatible per the ACLUP.

Thank you for the opportunity to comment.

Todd McNamee
Director of Airports
County of Ventura
805-388-4200

CC: "Chris hastert" <Chris.hastert@ventura.org>, "Erin Powers" <Erin.Powers@ventura.org>, "Jorge Rubio" <Jorge.Rubio@ventura.org>

county of ventura
DEPARTMENT OF AIRPORTS
www.ventura.org/airports

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555 Airport Way ◆ Camarillo, CA 93010 ◆ (805) 388-4274 ◆ Fax: (805) 388-4366

July 16, 2007

Ms. Kathleen Mallory
Planning and Environmental Services
City of Oxnard
305 West Third St.
Oxnard, CA 93030

Re: Notice of Preparation of a Draft Environmental Impact Report For the Teal Club Specific Plan Project

Dear Ms. Mallory:

The Department of Airports has reviewed the above referenced document and offers the following comments and concerns. As you are aware, the project site is located underneath the traffic pattern zone and in close proximity to the Oxnard Airport. Therefore, the draft EIR should address all airport-related concerns as follows:

1. An analysis of risk/hazards presented by fixed wing and helicopter operations.

   The site lies within and beneath the airport traffic pattern zone. Fixed wing operations occur over the site, and there are also helicopter operations over the site through special letter of agreement between an on-airport helicopter operator and the Oxnard federal control tower. The potential exposure to risk from these operations should be identified, as well as the site's proposed development in relation to any aircraft hazard/protected zones.

2. Analysis of noise exposure.

   The site is subject to aircraft noise by normal aircraft operations including over-flights, departure noise, and other operations on the airport. Noise exposure should be examined, and there should be identification of *any* mitigation measures that might be available to lessen noise impacts.

3. Land Use Compatibility.

   The document should include an analysis of the proposed development within the guidelines of the Airport Comprehensive Land Use Plan to identify any incompatible uses and development restrictions.

4. Inclusion of Elementary School.

The Notice of Preparation references the consideration of an elementary school at a site within the project. Risk/hazards and noise compatibility issues related to a school site in this location should be addressed. The Ventura County Airport Land Use Commission, the Ventura County Aviation Advisory Commission and the Oxnard Airport Authority are all on record as strongly objecting to the placement of a school at this site.

In addition, the Draft EIR should provide mitigation measures that address these concerns, such as the provision of avigation easements, full disclosure to home buyers, sound attenuation features, etc.

Thank you for the opportunity to comment, and please contact me at 388-4200 if you have any questions.

Sincerely,

TODD L. MCNAMEE, AAE
Director of Airports

c Oxnard Airport Authority
Aviation Advisory Commission
Chuck Anthony, Ventura County Planning Department
Kerry Forsythe, Ventura County Transportation Commission

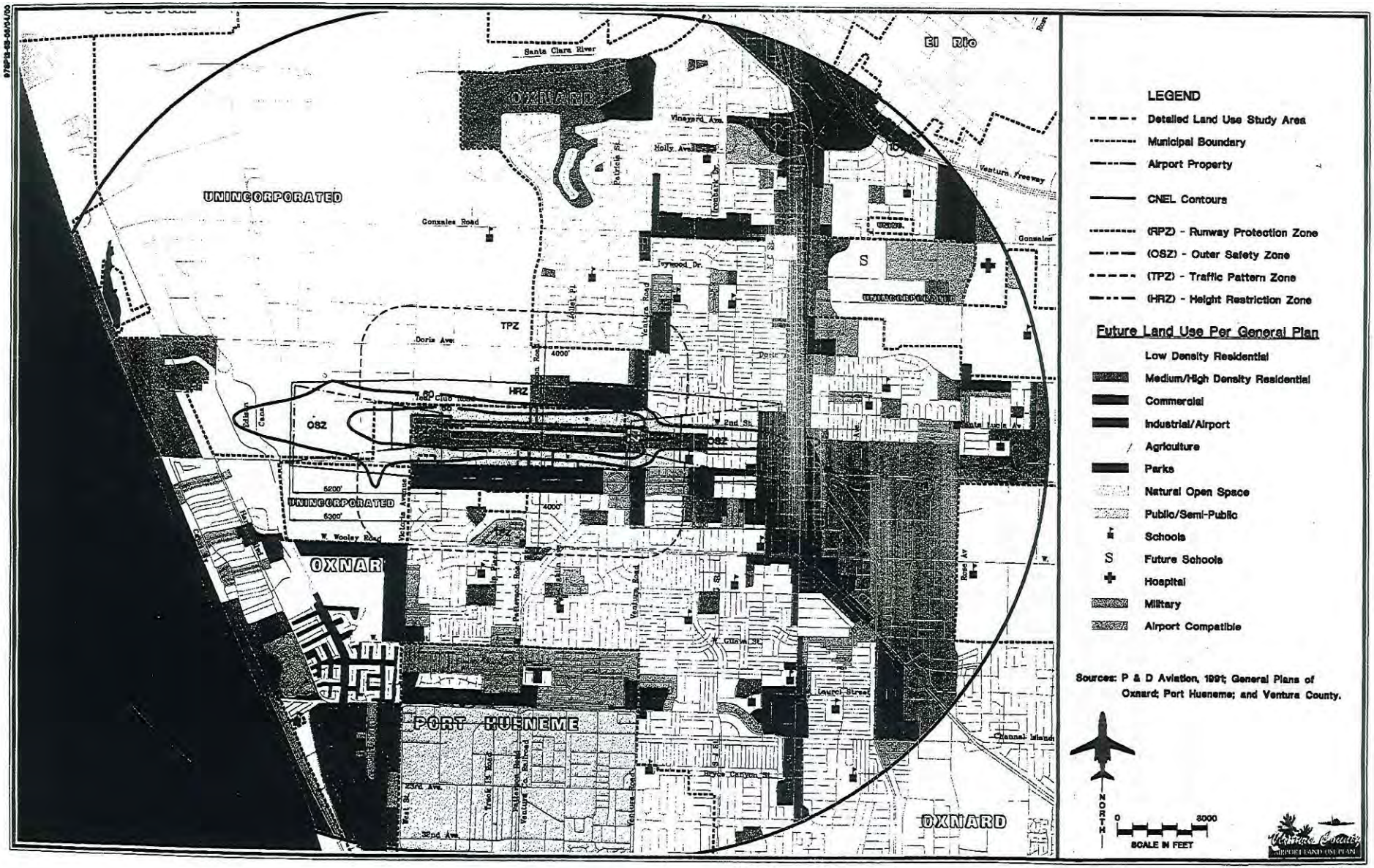

Exhibit 6B
1991 AIRPORT COMPREHENSIVE LAND USE PLAN
FOR OXNARD AIRPORT

TABLE 6B (Continued)
Adopted Land Use Compatibility Standards in Safety Zones for Civilian Airports

NOTES

A = Acceptable land use.
C = Land use is conditionally acceptable upon meeting required criteria (see footnotes below).
U = Unacceptable land use.

[a] Maximum structural coverage must be no more than 25 percent. "Structural coverage" is defined as the percent of building footprint area to total land area, including streets and greenbelts.

[b] The placing of structures or buildings in the Runway Protection Zone is unacceptable. Above ground utility lines and parking are allowed only if approved by the Federal Aviation Administration (FAA) as not constituting a hazard to air navigation.

[c] Maximum structural coverage must not exceed 50 percent. "Structural coverage" is defined as the percent of building footprint area to total land area, including streets and greenbelts. Where development is proposed immediately adjacent to the airport property, structures should be located as far as practical from the runway.

[d] Clubhouse is unacceptable in this zone.

[e] An avigation easement is recommended and a fair disclosure agreement and covenant shall be recorded by the owner and developer of the property.

The adopted safety standards at NAS Point Mugu are shown in **Table 6C**. The standards in the CZ, the APZ-1, and the APZ-2 are the same as in the current CLUP. The standards in the TPZ zone are the same as in the civilian Extended TPZ zone. As was done in the civilian table, the land use classification system has been changed to add transportation, communication, and utilities to the industrial category.

TABLE 6B
Adopted Land Use Compatibility Standards in Safety Zones for Civilian Airports

Land Use	Runway Protection Zone	Outer Safety Zone	Traffic Pattern Zone	Extended Traffic Pattern Zone
Residential				
Single Family	U	U	C [a, e]	A [e]
Multi-Family	U	U	C [a, e]	A [e]
Mobile Home Parks	U	U	C [a, e]	A [e]
Public/Institutional				
Hospitals/Convalescent Homes	U	U	U	A [e]
Schools	U	U	U	A [e]
Churches/Synagogues	U	U	U	A [e]
Auditoriums/Theaters	U	U	U	A [e]
Commercial				
Hotels and Motels	U	U	C [c, e]	A [e]
Offices and Business/Professional	U	C [a, e]	C [c, e]	A
Services	U	C [a, e]	C [c, e]	A
Wholesale	U	C [a, e]	C [c, e]	A
Retail				
Industrial, Transportation, Communication, and Utilities				
Manufacturing - General/Heavy	U	C [a, e]	C [c, e]	A
Light Industrial	U	C [a, e]	C [c, e]	A
Research and Development	U	C [a, e]	C [c, e]	A
Business Parks/Corporate Offices	U	C [a, e]	C [c, e]	A
Transportation Terminals	U	U	A	A
Communication/Utilities	C [b]	A	A	A
Automobile Parking	C [b]	A	A	A
Recreation/Open Space				
Outdoor Sports Arenas	U	U	U	A
Outdoor Amphitheaters	U	U	U	A
Parks	U	C [a]	A	A
Outdoor Amusement	U	C [a, e]	A	A
Resorts and Camps	U	C [a, e]	A [e]	A [e]
Golf Courses and Water Recreation	C [d]	A	A	A
Agriculture	A	A	A	A

DEPARTMENT OF TRANSPORTATION
DISTRICT 7, REGIONAL PLANNING
IGR/CEQA BRANCH
100 MAIN STREET, MS # 16
LOS ANGELES, CA 90012-3606
PHONE: (213) 897-9140
FAX: (213) 897-1337

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June 6, 2012

Mr. Brian Foote
City of Oxnard Planning division
214 South C Street
Oxnard, CA 93030

IGR/CEQA No. 120546AL-NOP
Teal Club Specific Plan
Vic. VEN-101, PM 22.73, VEN-01, PM 18.44
SCH # 2012051080

Dear Mr. Foote:

Thank you for including the California Department of Transportation (Caltrans) in the environmental review process for the above referenced project. The proposed project would involve annexation of the approximately 186-acre project area to the City of Oxnard, and adoption of a specific plan for the 174.3-acre Teal Club Specific Plan Area. The proposed Specific Plan would allow for up to 990 residential units in a variety of densities, business park, retail commercial, school, Y.M.C.A facility, community park space, City fire station, and light manufacturing development.

The project may have a regional traffic impact. To assist in evaluating the impacts of this project on State transportation facilities, a traffic study should be prepared prior to preparing the Draft Environmental Impact Report (DEIR). Please refer the project's traffic consultant to the Caltrans traffic study guide Website:

http://www.dot.ca.gov/hq/tpp/offices/ocp/igr_ceqa_files/tisguide.pdf

Listed below are some elements of what is generally expected in the traffic study:

1. Presentations of assumptions and methods used to develop trip generation, trip distribution, choice of travel mode, and assignments of trips to I-101, and all on/off ramps at Rose Ave., Vineyard Ave., Pacific Coast Highway (SR-01), and Victoria Ave. and intersections on SR-01 at Vineyard Ave., at Gonzales Rd., at W. 2nd St., at 3rd St., at 5th St., and at Woodley Rd. The Caltrans has concerns about queuing of vehicles using off-ramps that will back into the mainline through lanes. It is recommended that the City determine whether project-related plus cumulative traffic is expected to cause long queues on the on and off-ramps. Queuing Analysis should be prepared for all off-ramps. Analysis to be conducted using Highway Capacity Methodology (HCM). Caltrans staff would like to meet with the traffic consultant to confirm study locations on the State facilities before preparing the Environmental Impact Report (EIR).

2. Consistency of project travel modeling with other regional and local modeling forecasts and with travel data. Caltrans may use indices to verify the results and any differences or inconsistencies must be thoroughly explained.

3. Analysis of ADT, AM and PM peak-hour volumes for both the existing and future conditions in the affected area. Utilization of transit lines and vehicles, and of all facilities, should be realistically estimated. Future conditions should include build-out of all projects and any plan-horizon years. If a model is being used to generate traffic, a Select Zone Analysis should be included.

4. Inclusion of all appropriate traffic volumes. Analysis should include existing traffic, traffic generated by the project, cumulative traffic generated from all specific approved developments in the area, and traffic growth other than from the project and developments.

5. Discussion of mitigation measures appropriate to alleviate anticipated traffic impacts. These mitigation discussions should include, but not be limited to, the following:

    - Description of Transportation Infrastructure Improvements
    - Financial Costs, Funding Sources and Financing
    - Sequence and Scheduling Considerations
    - Implementation Responsibilities, Controls, and Monitoring

    Any mitigation involving transit or Transportation Demand Management (TDM) should be justified and the results conservatively estimated. Improvements involving dedication of land or physical construction may be favorably considered.

6. Caltrans may accept fair share contributions toward pre-established or future improvements on the State Highway System. Please use the following ratio when estimating project equitable share responsibility: additional traffic volume due to project implementation is divided by the total increase in the traffic volume (see Appendix "B" of the Guide).

    Please note that for purposes of determining project share of costs, the number of trips from the project on each traveling segment or element is estimated in the context of forecasted traffic volumes, which include build-out of all approved and not yet approved projects and other sources of growth. Analytical methods such as select-zone travel forecast modeling might be used.

    Please be reminded that as the responsible agency under CEQA, Caltrans has authority to determine the required freeway analysis for this project and is responsible for obtaining measures that will off-set project vehicle trip generation that worsens State Highway facilities. CEQA allows Caltrans to develop criteria for evaluating impacts on the facilities that it manages. In addition, the County CMP standards states that Caltrans should be consulted for the analysis of State facilities. State Routes mentioned in item #1 should be analyzed, preferably using methods suggested in Caltrans Traffic Impact Study Guide. To help determine the appropriate scope, we request that a select zone model run is performed. Caltrans welcomes the opportunity to provide consultation regarding the preferred scope and methods of analysis.

Caltrans looks forward to reviewing the traffic study and expect to receive a copy from the State Clearinghouse when the DEIR is completed. To expedite the review process or receive early feedback from Caltrans staff, please feel free to send a copy of the DEIR directly to the District 7 office.

As discussed in a telephone conversation on May 29, 2012 between Alan Lin, Project Coordinator, and City Engineer, Mr. Jason Samonte, Caltrans would like to extend an invitation to meet with the City and the traffic consultant early in the process to discuss potential traffic impacts to the State facilities and possible mitigation measures prior to the preparation of the EIR.

If you have any questions, please feel free to contact me at (213) 897-9140 or Alan Lin the project coordinator at (213) 897-8391 and refer to IGR/CEQA No. 120546AL.

Sincerely,

DIANNA WATSON
IGR/CEQA Branch Chief

cc: Scott Morgan, State Clearinghouse

RESOURCE MANAGEMENT AGENCY

county of ventura

Planning Division
Kimberly L. Prillhart
Director

June 19, 2012

Brian Foote, Associate Planner
Planning Division
City of Oxnard
214 South C Street
Oxnard, CA 93030

E-mail: brian.foote@ci.oxnard.ca.us

Subject: Comments on the Teal Club Specific Plan

Dear Mr. Foote:

Thank you for the opportunity to review and comment on the subject document. Attached are the comments that we have received resulting from intra-county review of the subject document. Additional comments may have been sent directly to you by other County agencies.

Your proposed responses to these comments should be sent directly to the commenter, with a copy to Laura Hocking, Ventura County Planning Division, L#1740, 800 S. Victoria Avenue, Ventura, CA 93009.

If you have any questions regarding any of the comments, please contact the appropriate respondent. Overall questions may be directed to Laura Hocking at (805) 654-2443.

Sincerely,

Tricia Maier, Manager
Planning Programs Section

Attachments

County RMA Reference Number 12-016

county of ventura
DEPARTMENT OF AIRPORTS
www.ventura.org/airports

555 Airport Way ◆ Camarillo, CA 93010 ◆ (805) 388-4274 ◆ Fax: (805) 388-4366

June 4, 2012

Brian Foote
City of Oxnard Planning Division
214 South C Street
Oxnard, CA 93030

Re: Notice of Preparation of an Environmental Impact Report for the Teal Club Specific Plan Project

Dear Mr. Foote,

Thank you for the opportunity to provide comment as you work to prepare an Environmental Impact Report (EIR) for the above referenced project. Our Department has commented on several occasions on the Teal Club Specific Plan going back to 2002. Comments for the above referenced Notice of Preparation (NOP) are as follows:

Hazards & Hazardous Materials
The site lies directly below the landing pattern for aircraft approaching the Oxnard Airport from the northwest. This accounts for approximately one third of the landings at the airport. It is recommended that an Aircraft Hazard Analysis be conducted for this site due to its location relative to the Oxnard Airport.

Further, the Ventura County Comprehensive Airport Land Use Plan (ACLUP) provides conditions for developments within the traffic pattern zone (TPZ) of the airport.

- Structural coverage of residential development be limited to 25%.
- Structural coverage of commercial/retail development be limited to 50%.
- An avigation easement be granted the County of Ventura.
- School sites are considered an unacceptable land use within the TPZ.

Hydrology/Water Quality
The site is located just north of the Oxnard Airport and the natural flow of water is from the northeast to the southwest. Please study any potential impacts of this water flow pertaining to the Oxnard Airport.

Land Use/Planning
The site lies within the sphere of influence of the Oxnard Airport and within the TPZ. The (ACLUP) provides conditions for developments within the traffic pattern zone (TPZ) of the airport.

- Structural coverage of residential development be limited to 25%.
- Structural coverage of commercial/retail development be limited to 50%.
- An avigation easement be granted the County of Ventura.
- School sites are considered an unacceptable land use within the TPZ.

Noise
As already mentioned, the site is located very close to the Oxnard Airport and within the traffic pattern zone. While it does lie outside of the 65 CNEL contour of the airport, the site will experience a great deal of overflight. The single event noise levels should be studied as may cause a concern for future residents.

Transportation/Traffic
The site lies is bordered by Teal Club Road which has two way traffic, single lanes each way, with ditches on either side of the road. Please study the impact on this road and any proposed changes to accommodate the additional traffic and address safety issues.

Utilities/Service Systems
As previously mentioned, the site lies along Teal Club Road. The City waterline does not run for the length of Teal Club Road. Please study the impact of any planned improvements that may provide City water to the west of the existing City water system.

Due to scheduling conflicts, staff is not available to attend the meeting this evening, and please accept this letter as my comments. Thank you again for the opportunity to comment on this NOP. I can be reached at 805-388-4200 should you have any other questions.

Sincerely,

TODD L. McNAMEE, AAE
Director of Airports

VENTURA COUNTY
AIR POLLUTION CONTROL DISTRICT
Memorandum

TO: Laura Hocking, Planning DATE: June 11, 2012

FROM: Alicia Stratton

SUBJECT: Request for Review of Notice of Preparation for a Draft Environmental Impact Report for the Teal Club Specific Plan Project, City of Oxnard (Reference No. 12-016, formerly 07-047)

Air Pollution Control District staff has reviewed the subject project, which is a proposal for a specific plan for 175 acres of land that will include a range of single-family and multi-family residential uses (1,150 residential dwelling units total). The specific plan will also include a fire station, an elementary school with an adjoining park, a park/retention basin and provision for retail space. The project location is bounded by Doris Avenue on the north, Patterson Road on the west, Teal Club Road on the south and Ventura Road on the east.

District staff recommends that the air quality section of the draft environmental impact report be prepared in accordance with the 2003 *Ventura County Air Quality Assessment Guidelines* (2003 Guidelines). A copy of the 2003 Guidelines can be accessed from the downloadable materials section of the APCD website at www.vcapcd.org.

Specifically, the air quality assessment should consider reactive organic compound and nitrogen oxide emissions from all project-related motor vehicles and construction equipment. Additionally, the air quality assessment should consider potential impacts from fugitive dust, including PM10, that will be generated by construction and site preparation activities. Further, project consistency with the Air Quality Management Plan should be analyzed.

If project-related air quality impacts are deemed significant, appropriate mitigation measures should be identified and included in the environmental impact report.

If you have any questions, please call me at (805) 645-1426.

RESOURCE MANAGEMENT AGENCY
county of ventura

Environmental Health Division
William C. Stratton
Director

June 13, 2012

RECEIVED
JUN 15 2012
PLANNING DIVISION
CITY OF OXNARD

Brian Foote
City of Oxnard
Planning Division
214 South C Street
Oxnard, CA 93030

TEAL CLUB SPECIFIC PLAN PROJECT

Environmental Health Division (EHD) staff reviewed the information submitted for the subject document and comments that EHD records indicate there are Leaking Underground Fuel Tank (LUFT) cases located in or adjacent to portions of the proposed project. The cases are identified in EHD records as: #87067 F.A. Borchard & Sons at 1618 Doris Avenue, #95076 Proodos Properties Inc. at 2200 Teal Club Road, and #87033 Ven Oaks Plumbing at 131 Mallard Way. Although the sites were closed as LUFT cases, further review of the cases may be necessary to determine if the site meets the requirements for residential use. Please contact Erin O'Connell at 805/662-6511 for more information on the LUFT cases.

If you have any questions regarding this correspondence please contact me at 805/654-2811.

Melinda Talent

Melinda Talent
Landuse Section
Environmental Health Division

c: Erin O'Connell

DC:G:\Admin\Techserv Folder\Finaled Ltrs\Land Use\LUFT Oxnard Teal Club 6 13 12.Doc

MEMORANDUM
Planning Division

County of Ventura • Resource Management Agency • Planning Division
800 South Victoria Avenue • Ventura, CA 93009
Ph 805-654-2488 • Fax 805-654-2509 • www.ventura.org/rma/planning

DATE: **June 18, 2012**

TO: **Laura Hocking, RMA Planning Technician**

FROM: **Kari Finley, Senior Planner**

SUBJECT: **RMA Ref. # 12-016 NOP for Teal Club Specific Plan, City of Oxnard**

Laura – Our comments are included in this memo. Please forward to the appropriate City staff. Thank you.

Project Description

The proposed project would involve annexation of the approximately 186-acre project area to the City of Oxnard, and adoption of a specific plan including a range of land uses for the 174.3-acre Teal Club Specific Plan Area. The current Ventura County General Plan land use and zoning designations for the project area are Agricultural and Agricultural Exclusive.

The proposed Teal Club Specific Plan designates residential, retail commercial, business/research park, parks and public facilities uses, and is therefore potentially consistent with the Oxnard 2030 General Plan Map. A central focus of this development will be in the provision of balanced community with jobs, school, recreation, shopping, and affordable and market-rate housing. The 2030 General Plan land use map designates the project site for an Urban Village, thereby encouraging neo-traditional town planning with a focus on sustainability and transit-oriented development.

The proposed Specific Plan would allow for the following primary land uses, which would be constructed in two phases:

- Up to 990 residential units in a variety of densities and product types on approximately 91 acres
- Up to 132,000 square feet of business park development on approximately 10 acres
- Up to 60,000 square feet of retail commercial uses on approximately 6 acres
- Approximately 8 acres for a school site
- Potential development of an approximately 14,000 square-foot Y.M.C.A. facility
- Approximately 21 acres of community park space and 4 acres of pocket parks and greenbelts
- A City fire station on approximately one acre

Topics Identified for Study in this EIR

The City has determined that an environmental impact report will be prepared evaluating the following potentially significant impacts:

- *Aesthetics*
- *Agriculture and Forest Resources*
- *Air Quality*
- *Biological Resources*
- *Geology/Soils*
- *Greenhouse Gas Emissions*
- *Hazards & Hazardous Materials*
- *Hydrology/Water Quality*
- *Land Use/Planning*
- *Noise*
- *Population/Housing*
- *Public Services*
- *Transportation/Traffic*
- *Utilities/Service Systems*

Based on the City's preliminary evaluation of the project, impacts related to Cultural Resources, Mineral Resources and Recreation are anticipated to be less than significant; these topics will therefore be addressed in an Effects Found Not to be Significant section contained in the EIR.

County Planning Division Comments to City of Oxnard

Thank you for providing the opportunity to comment on the City's Notice of Preparation of a Draft EIR for the subject project. The County's Planning Division concurs that a comprehensive environmental impact report should be prepared. More specifically, the County Planning Division requests that analysis of the potential impacts of the proposed Specific Plan as they relate to following issues be included in the Draft EIR:

- Conversion of land that is currently in agricultural production to urban uses;
- Safety and noise impacts due to locating residential development and a school adjacent to the airport;
- Inefficient land use (more than 50% of residential development is planned as low-density). Eventually, Oxnard will be forced to absorb more agricultural land as it expands and this Specific Plan provides an opportunity to encourage more high density residential development.
- Poorly located park with respect to residential use (next to agricultural, away from medium to high-density residential).

Please include us in the distribution for review of the Draft EIR when it becomes available.

COUNTY OF VENTURA
RESOURCE MANAGEMENT AGENCY
PLANNING DIVISION

M E M O R A N D U M

DATE: June 19, 2012

TO: Laura Hocking, County Planning Division

FROM: Nicole Doner, Cultural Heritage Board staff

SUBJECT: Notice of Preparation for a Draft EIR for the Teal Club Specific Plan Project (Reference No. 12-016, formerly 07-047)

The Cultural Heritage Board (CHB) staff recommends that a Historic Resources Survey of the subject property be performed as part of the Draft EIR to determine whether a previously unrecognized significant historical resource exists. The survey should identify and document all buildings, structures, and objects at least fifty years of age within the survey boundaries and determined their significance at the National and State Register level and at the local level. If the site is determined historically significant, an Architectural Historian should develop a full mitigation plan for the CHB's review prior to any future development or map proposals.

If you have any questions, please give me a call at 805-654-5042 or contact me at nicole.doner@ventura.org.

C: Brian Foote, City of Oxnard Planning Department

PUBLIC WORKS AGENCY
TRANSPORTATION DEPARTMENT
Traffic, Advance Planning & Permits Division
MEMORANDUM

DATE: June 12, 2012

TO: RMA – Planning Division
Attention: Laura Hocking

FROM: Behnam Emami, Engineering Manager II

SUBJECT: **REVIEW OF DOCUMENT 12-016 (07-047)** Notice of Preparation (NOP) of Environmental Impact Report (EIR)
Teal Club Specific Plan Project
Notice that City of Oxnard plans to prepare EIR for development of 174.3-acre area bounded by Patterson Road, Doris Avenue, Ventura Road, and Teal Club Road and 11.42-acre area south of Teal Club Road (city).
Lead Agency: **City of Oxnard**

Pursuant to your request, the Public Works Agency - Transportation Department has reviewed the NOP of an EIR for the Teal Club Specific Plan Project.

The proposed project involves (1) the annexation of approximately 186 acres of land currently designated Agriculture in the County General Plan (GP) and zoned Agriculture Exclusive and (2) the adoption of the Teal Club Specific Plan consistent with the Oxnard 2030 GP. An Initial Study and EIR are required. The project area is located between Patterson Road, Doris Avenue, Ventura Road, and Teal Club Road (174.3 acres) with a small area south of Teal Club Road and north of the Oxnard Airport (11.42 acres). The two-phase development would include the following land uses: 990 residential units (91 acres); 132,000 SF business park (10 acres); 60,000 SF retail/commercial space (10 acres); school (6 acres); 14,000 SF YMCA; community park (21 acres); smaller parks and open spaces (4 acres total); and fire station (1 acre). The smaller 11.42-acre area would be zoned for airport compatible land uses such as Light Manufacturing.

We offer the following comments which are similar to those provided in Response Memorandums dated July 13, 2007, and September 8, 2005, for RMA Project No.'s 07-047 and 05-058, respectively, for the Teal Club Specific Plan:

1. The Traffic Study for the EIR should address the site-specific and cumulative traffic impacts the project may have on the County Regional Road Network and local public roads at full build-out. Of particular interest are County roads and intersections generally west of and within three miles from the proposed project including the intersection of Gonzales Road and Harbor Boulevard.

2. The cumulative impact of this project, when considered with the cumulative impact of all other approved (or anticipated) projects in the County, will be potentially significant. To

address the cumulative adverse impacts of traffic on the County's Regional Road Network, the appropriate Traffic Impact Mitigation Fees (TIMF) should be paid to the County as the development occurs. With payment of the TIMF, the level of service and safety of the existing roads would remain consistent with the County's GP.

3. LAFCO guidelines under Section 3.2.1 state that cities shall annex entire roadway sections and complete intersections adjacent to the territory proposed to be annexed. The EIR should require conditions for annexing County roadways adjacent to this development, namely: Doris Avenue north of the development and Patterson Road west of the development. Teal Club Road south of the development and Ventura Road east of the development are in the city's jurisdiction.

4. Please send us the Draft EIR when it becomes available for our review and comment.

Our review is limited to the impacts this project may have on the County's Regional Road Network.

Please contact me at 654-2087 if you have questions.

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VENTURA COUNTY WATERSHED PROTECTION DISTRICT
PLANNING AND REGULATORY DIVISION
800 South Victoria Avenue, Ventura, California 93009
Tom Wolfington, Permit Manager – (805) 654-2061

MEMORANDUM

DATE: June 14, 2012

TO: Laura Hocking, RMA/ Planning Technician

FROM: Tom Wolfington, P.E., Permit Manager JW

SUBJECT: RMA 12-016, Teal Club Specific Plan
Notice of Preparation of an Environmental Impact Report & Initial Study
Unincorporated Ventura County and within the City of Oxnard's Sphere of Influence & City Urban Restriction Boundary
South of Doris Avenue, West of Ventura Road, North of Club Teal Road, and East of Patterson Road
West Fifth Street Drain Watershed: Zone 2

Pursuant to your request, this office has reviewed the Notice of Preparation of the Environmental Impact Report (EIR) and the Initial Study for the Teal Club Specific Plan project.

PROJECT DESCRIPTION

The project consists of the establishment of a Specific Plan for 186-acres as a whole within the unincorporated Ventura County and within the City of Oxnard's Sphere of Influence and City Urban Restriction Boundary. The proposed project would involve the annexation of the 186 acre project area to the City of Oxnard followed by the adoption of the Teal Club Specific Plan. The proposed Teal Club Specific Plan Area comprises 174.3 acres on seven contiguous parcels located north of Teal Club Road. The project as a whole also includes an additional nine parcels totaling 11.42 acres on the south side of Teal Club Road. A variety of land uses are being proposed including up to 900 residential units on 91 acres; up to 132,000sf of business park on 10 acres; up to 60,000sf of retail commercial uses on 6 acres; an 8 acre school site; 14,000 sf YMCA facility; 25 acres of parkland; and a City fire station on one acre.

WATERSHED PROTECTION DISTRICT PROJECT COMMENTS:

The City of Oxnard's Notice of Preparation of an Environmental Impact Report for the Teal Club Specific Plan project did not include a land use and phasing map of the proposed Light Manufacturing (M-1) airport-compatible land uses intended by the City's 2030 General Plan, upon annexation, specifically for the nine parcels (11.42 acres) located south of Teal Road. These lands have been included in the Project Description and as such, should be addressed accordingly in the EIR.

According to the USGS map, the Teal Club Specific Plan Area drains southwesterly towards the corner of Teal Club Road and Patterson Road and then to the West Fifth Street Drain which is approximately 1,000 feet southwesterly from the proposed Plan Area boundary. The City of Oxnard Master Plan of Drainage (October 2003) shows a similar pattern. The West Fifth Street Drain is a Ventura County Watershed Protection District jurisdictional red line channel and may potentially be impacted for capacity as a result of development within the Plan Area. As such, the "Hydrology and Water Quality" impact section of the Environmental Impact Report should address how any increase in stormwater quantity due to an increase in impervious area will be mitigated. The District criteria for mitigating any increase in impervious area is that the peak flow after development shall not exceed the peak flow under existing conditions for any frequency of event.

Although the proposed Teal Club Specific Plan planning area and phasing map prepared by Development Planning Services Inc., dated April 2012, did not indicate a direct drainage connection to the West Fifth Street Drain, the EIR should include a statement that any activity in, on, over, under, or across any Ventura County Watershed Protection District jurisdictional red line channel will require a permit from the District.

END OF TEXT

There is one house estimated to be built in 1938. The EIR should include an evaluation of the house as a potential historic resource.
Nicole

Nicole Doner, Senior Planner
800 South Victoria Avenue, L#1740
Ventura, CA 93009
805-654-5042
nicole.doner@ventura.org

There is one house estimated to be built in 1938. The EIR should include an evaluation of the house as a potential historic resource.
Nicole

Nicole Doner, Senior Planner
800 South Victoria Avenue, L#1740
Ventura, CA 93009
805-654-5042
nicole.doner@ventura.org

As a City of Oxnard resident for the past 71 years and 22 Years at the Summerfield/ Cabrillo neighborhood. I oppose any type of development at this site. The Planning Division needs to address all the vacant housing available in the City. Improve the Infrastructure Streets, Parks, Youth Recreation and Senior Services. Doris Avenue between Ventura Road to Patterson Road is a DISASTER as is Patterson Road between Doris Avenue and Gonzales Road. It looks like the City is waiting for Developer $$$$$ on this project to repair the mentioned streets. What about the interior streets of this project? Will they be narrow as other developments (River Park/ Via Carmel) ? Will this be a gated Community with a park without public facilities Benches, Tables, BBQ, Restrooms and Playgrounds. Firehouse needs at least 1.75 acres to be functional. In closing most City Employees and Residents can not Fathom the QUALITY OF LIFE We as YOUNG CHILDREN, Men and Women in the City Of Oxnard ENJOYED. What Quality? Downtown is a Joke!!!

Sincerely,

Anthony M. Gonzales
2640 Norite Place
Oxnard, Ca 93030
805-988-4462
mgonzalesime@aol.com

We are residents of Lions Gate tract and have multiple reasons to oppose the specific plan:

The number of residential units included - The Riverpark development was slated for 2800 +/- residential units - it has to date never been completed and is almost a ghost town - having ONE commercial unit filled. The wagon wheel project that calls for Multiple dense residential units has taken years just to raze some of the existing buildings and hasn't even started rebuilding.

There is Oxnard high school and a grade school on Gonzales Road almost across the street from each other. We were told that the schools would have no adverse effect on the traffic on Doris Ave and Patterson Rd. - come visit about 7:30 AM on a weekday. Sometimes you almost need a traffic signal to get out of our tract. Adding another school will DEFINITELY create traffic concerns - as should the airport, as small planes fly over our tract to approach the airport. Not that many years ago, a plane clipped the top of a residence on Ivanhoe Ave.

Fremont Shopping Center is across Ventura Rd and opposite there is a small commercial center on Doris. This has created problems with traffic going in and out affecting the Ventura Rd./ Doris Ave. intersection. Fremont Shopping Center is not 100 percent occupied and it has been so for several years. Permitting more commercial shopping means MORE traffic and the traffic flow - which at 2PM is backed up all the way from Ventura Rd. to Fifth St.

Doris Ave. is presently paved THROUGH THE FIELDS! Not enough foresight to pave Doris from Patterson Rd. to Ventura Rd. It is at best somewhat better than a cowpath. This was used as a detour for a period of time during Riverpark construction and there has been no city concern for the street since.

These are a few of our objections to the plan as presented to us. Thank you for allowing our input.

Laurel Kurihara
2110 Ivanhoe Ave.

Lois Montijo
2121 Ivanhoe Ave.

STATE OF CALIFORNIA

Edmund G. Brown, Jr., Governor

NATIVE AMERICAN HERITAGE COMMISSION
915 CAPITOL MALL, ROOM 364
SACRAMENTO, CA 95814
(916) 653-6251
Fax (916) 657-5390
Web Site www.nahc.ca.gov
ds_nahc@pacbell.net

RECEIVED

MAY 29 2012

PLANNING DIVISION
CITY OF OXNARD

May 21, 2012

Mr. Brian Foote, AICP, Associate Planner
City of Oxnard Planning Division
214 South "C" Street
Oxnard, CA 93030

Re: SCH#2005081112; CEQA Notice of Preparation (NOP); draft Environmental Impact Report (DEIR) for the **"Teal Club Specific Plan EIR Project;"** located in the City of Oxnard; Ventura County, California.

Dear Mr. Foote:

The Native American Heritage Commission (NAHC), the State of California 'Trustee Agency' for the protection and preservation of Native American cultural resources pursuant to California Public Resources Code §21070 and affirmed by the Third Appellate Court in the case of EPIC v. Johnson (1985: 170 Cal App. 3rd 604).

This letter includes state and federal statutes relating to Native American historic properties of religious and cultural significance to American Indian tribes and interested Native American individuals as 'consulting parties' under both state and federal law. State law also addresses the freedom of Native American Religious Expression in Public Resources Code §5097.9. This project is subject to California Government Code Section 65352.3, *et seq. (SB 18)*

The California Environmental Quality Act (CEQA – CA Public Resources Code 21000-21177, amendments effective 3/18/2010) requires that any project that causes a substantial adverse change in the significance of an historical resource, that includes archaeological resources, is a 'significant effect' requiring the preparation of an Environmental Impact Report (EIR) per the CEQA Guidelines defines a significant impact on the environment as 'a substantial, or potentially substantial, adverse change in any of physical conditions within an area affected by the proposed project, including ...objects of historic or aesthetic significance." In order to comply with this provision, the lead agency is required to assess whether the project will have an adverse impact on these resources within the 'area of potential effect (APE), and if so, to mitigate that effect. The NAHC did conduct a Sacred Lands File (SLF) search within the 'area of potential effect (APE) and Native American cultural resources were not identified.

The NAHC "Sacred Sites,' as defined by the Native American Heritage Commission and the California Legislature in California Public Resources Code §§5097.94(a) and 5097.96. Items in the NAHC Sacred Lands Inventory are confidential and exempt from the Public Records Act pursuant to California Government Code §6254 (r).

Early consultation with Native American tribes in your area is the best way to avoid unanticipated discoveries of cultural resources or burial sites once a project is underway. Culturally affiliated tribes and individuals may have knowledge of the religious and cultural significance of the historic properties in the project area (e.g. APE). We strongly urge that you

make contact with the list of Native American Contacts on the attached list of Native American contacts, to see if your proposed project might impact Native American cultural resources and to obtain their recommendations concerning the proposed project. Pursuant to CA Public Resources Code § 5097.95, the NAHC requests cooperation from other public agencies in order that the Native American consulting parties be provided pertinent project information. Consultation with Native American communities is also a matter of environmental justice as defined by California Government Code §65040.12(e). Pursuant to CA Public Resources Code §5097.95, the NAHC requests that pertinent project information be provided consulting tribal parties. The NAHC recommends *avoidance* as defined by CEQA Guidelines §15370(a) to pursuing a project that would damage or destroy Native American cultural resources and Section 2183.2 that requires documentation, data recovery of cultural resources.

Furthermore, the NAHC if the proposed project is under the jurisdiction of the statutes and regulations of the National Environmental Policy Act (e.g. NEPA; 42 U.S.C. 4321-43351). Consultation with tribes and interested Native American consulting parties, on the NAHC list, should be conducted in compliance with the requirements of federal NEPA and Section 106 and 4(f) of federal NHPA (16 U.S.C. 470 *et seq*), 36 CFR Part 800.3 (f) (2) & .5, the President's Council on Environmental Quality (CSQ, 42 U.S.C 4371 *et seq.* and NAGPRA (25 U.S.C. 3001-3013) as appropriate. The 1992 *Secretary of the Interiors Standards for the Treatment of Historic Properties* were revised so that they could be applied to all historic resource types included in the National Register of Historic Places and including cultural landscapes. Also, federal Executive Orders Nos. 11593 (preservation of cultural environment), 13175 (coordination & consultation) and 13007 (Sacred Sites) are helpful, supportive guides for Section 106 consultation. The aforementioned Secretary of the Interior's *Standards* include recommendations for all 'lead agencies' to consider the historic context of proposed projects and to "research" the cultural landscape that might include the 'area of potential effect.'

Confidentiality of "historic properties of religious and cultural significance" should also be considered as protected by California Government Code §6254(r) and may also be protected under Section 304 of he NHPA or at the Secretary of the Interior discretion if not eligible for listing on the National Register of Historic Places. The Secretary may also be advised by the federal Indian Religious Freedom Act (cf. 42 U.S.C., 1996) in issuing a decision on whether or not to disclose items of religious and/or cultural significance identified in or near the APEs and possibility threatened by proposed project activity.

Furthermore, Public Resources Code Section 5097.98, California Government Code §27491 and Health & Safety Code Section 7050.5 provide for provisions for inadvertent discovery of human remains mandate the processes to be followed in the event of a discovery of human remains in a project location other than a 'dedicated cemetery'.

To be effective, consultation on specific projects must be the result of an ongoing relationship between Native American tribes and lead agencies, project proponents and their contractors, in the opinion of the NAHC. Regarding tribal consultation, a relationship built around regular meetings and informal involvement with local tribes will lead to more qualitative consultation tribal input on specific projects.

Finally, when Native American cultural sites and/or Native American burial sites are prevalent within the project site, the NAHC recommends 'avoidance' of the site as referenced by CEQA Guidelines Section 15370(a).

If you have any questions about this response to your request, please do not hesitate to contact me at (916) 653-6251.

Sincerely,

Dave Singleton
Program Analyst

Cc: State Clearinghouse

Attachment: Native American Contact List

Native American Contacts
Ventura County
May 21, 2012

Beverly Salazar Folkes
1931 Shadybrook Drive
Thousand Oaks, CA 91362
folkes@msn.com
805 492-7255
(805) 558-1154 - cell
Chumash
Tataviam
Ferrnandeño

San Luis Obispo County Chumash Council
Chief Mark Steven Vigil
1030 Ritchie Road
Grover Beach CA 93433
(805) 481-2461
(805) 474-4729 - Fax
Chumash

Santa Ynez Band of Mission Indians
Vincent Armenta, Chairperson
P.O. Box 517
Santa Ynez , CA 93460
varmenta@santaynezchumash.
(805) 688-7997
(805) 686-9578 Fax
Chumash

Owl Clan
Qun-tan Shup
48825 Sapaque Road
Bradley , CA 93426
mupaka@gmail.com
(805) 472-9536 phone/fax
(805) 835-2382 - CELL
Chumash

Barbareno/Ventureno Band of Mission Indians
Julie Lynn Tumamait-Stennslie, Chairwoman
365 North Poli Ave
Ojai , CA 93023
jtumamait@sbcglobal.net
(805) 646-6214
Chumash

Stephen William Miller
189 Cartagena
Camarillo , CA 93010
(805) 484-2439
Chumash

Patrick Tumamait
992 El Camino Corto
Ojai , CA 93023
(805) 640-0481
(805) 216-1253 Cell
Chumash

Santa Ynez Tribal Elders Council
Adelina Alva-Padilla, Chair Woman
P.O. Box 365
Santa Ynez , CA 93460
elders@santaynezchumash.org
(805) 688-8446
(805) 693-1768 FAX
Chumash

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This list is applicable for contacting local Native Americans with regard to cultural resources for the proposed 2005081112; cEQA Notice of Preparation 9NOP); draft Environmental Impact Report (DEIR) for the Teal Club Specific Plan Project; located in the City of Oxnard; Ventura County, california.

Native American Contacts
Ventura County
May 21, 2012

Randy Guzman - Folkes
6471 Cornell Circle
Moorpark , CA 93021
ndnRandy@yahoo.com
(805) 905-1675 - cell

Chumash
Fernandeño
Tataviam
Shoshone Paiute
Yaqui

Carol A. Pulido
165 Mountainview Street
Oak View , CA 93022
805-649-2743 (Home)

Chumash

Coastal Band of the Chumash Nation
Toni Cordero, Chairwoman
P.O. Box 4464
Santa Barbara CA 93140
cordero44@charter.net
805-964-3447

Chumash

Melissa M. Parra-Hernandez
119 North Balsam Street
Oxnard , CA 93030
envyy36@yahoo.com
805-983-7964
(805) 248-8463 cell

Chumash

Charles S. Parra
P.O. Box 6612
Oxnard , CA 93031
(805) 340-3134 (Cell)
(805) 488-0481 (Home)

Chumash

Frank Arredondo
PO Box 161
Santa Barbara Ca 93102
ksen_sku_mu@yahoo.com
805-617-6884
ksen_sku_mu@yahoo.com

Chumash

Santa Ynez Band of Mission Indians
Tribal Administrator
P.O. Box 517
Santa Ynez , CA 93460
info@santaynezchumash.
(805) 688-7997
(805) 686-9578 Fax

Chumash

Santa Ynez Tribal Elders Council
Freddie Romero, Cultural Preservation Consint
P.O. Box 365
Santa Ynez , CA 93460
freddyromero1959@yahoo.
805-688-7997, Ext 37

Chumash

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Native American Contacts
Ventura County
May 21, 2012

Barbareno/Ventureno Band of Mission Indians
Kathleen Pappo
2762 Vista Mesa Drive Chumash
Rancho Pales Verdes CA 90275
310-831-5295

Barbareno/Ventureno Band of Mission Indians
Raudel Joe Banuelos, Jr.
331 Mira Flores Court Chumash
Camarillo , CA 93012
805-987-5314

This list is current only as of the date of this document.

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Appendix B

California Agricultural Land Evaluation and Site Assessment (LESA) Model Worksheet

California Agricultural Land Evaluation and Site Assessment Model (LESA) Model Worksheet of the Proposed PTeal Club Specific Plan

							Storie Index			Project Size Score				
Soil Map Unit Symbol	Soil Map Unit Name	Acres	Proportion	Capability Grouping LCC	LCC Rating	LCC Score	Index Rating	Index Score	Soil Grade	LCC Class I-II	LCC Class III	LCC Class IV-VIII	Meets Gov Cod 56064 Prime Ag Land Definition	Prime Farmland on State Important Farmland Map
Cd	Camarillo Loam	174	1.0	IIw-2	80	80	75	75	2	174				
	Total	**174**				**80**		**75**		174	0	0	Yes	Yes
	Total meeting Gov Code Prime Ag Definition	**174**							**Scores**	100				

Proposed Project Site Assessment Worksheet 2 - Water Resources Availability

Project Portion	Water Source	Proportion of Project Area	Water Availability Score	Weighted Availability Score
1	Irrigated	1.00	100	100
	Threshold Percentage of Project's Zone of Influence in Agricultural Use		Surrounding Agricultural Land Score	
		Actual		
	<19	19.0	0	
	Threshold Percentage of Project's Zone of Influence Defined as Protected		Surrounding Protected Resource Land Score	
		Actual		
	<20	0	0	

California Agriculture Land Evaluation and Assessment Model

As described above, the LESA model rates the relative quality of land resources, based on specific measurable features. The LESA model is comprised of six weighted factors:

- Two Land Evaluation (LE) factors are based on measures of soil resource quality, and
- Four Site Assessment (SA) factors based on the amounts of agricultural land, water availability, surrounding agricultural lands, and the presence of surrounding protected-resource lands.

The analysis considers site-specific information soils, crop production, and other factors to determine the actual production capabilities of land currently used for agricultural purposes that would be converted to urban uses with the proposed project.

Land Evaluation Factors

Each of the LE factors is rated on a 100-point scale and weighted relative to one another to generate a single numeric potential-significance threshold score, with 100 points as the maximum attainable score.

The Soil Survey, San Bernardino County, California, Mojave River Area, was used to determine soil mapping units for the property, as well as the:

- USDA Land Capability Classification (LCC), which rates soil limitations and risk of agricultural damage to soils from outside factors such as change in soil chemistry from the use of herbicides, Class I provides the lowest risk and Class VIII the highest risk for agricultural production and
- Storie Index, which rates the relative degree of soil suitability for intensive agriculture.

Multiplying the proportion of each of the soils on the site by the LESA point rating scale generates a single project site score for each LE factor.

Site Assessment Factors

The project size rating segregates acreage figure for groupings of LCC classes and points are assigned for each of the groupings on a 100-point scale. The model requires use of the highest value from among the groupings; since the groupings attained a score of 100, the score of 100 was entered into the model.

The water resources availability rating is based on drought and non-drought restrictions on water supply for the site. Since the site is irrigated, and dry-land production is feasible, it received a value of 100, which was entered into the model.

A Zone of Influence (ZOI) was identified and used to determine the final two SA factors; surrounding agricultural land rating and surrounding protected resource land rating. The ZOI includes all parcels within 0.5 miles of the property. The agricultural land rating score is based on the percentage of the ZOI currently producing agricultural crops (19 percent), and the surrounding protected resource land rating is based on the percentage of the ZOI lands with long-term restrictions compatible with or supportive of agricultural land uses, including Williamson Act Lands (approximately 0 percent). Each of these values is assigned points based on area and the points appear in the spreadsheet.

Appendix C

Air Quality and Greenhouse Gas Modeling Results

Oxnard Teal Club Phase 1

Ventura County, Winter

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
General Office Building	60.00	1000sqft	8.78	60,000.00	0
City Park	6.50	Acre	6.50	283,140.00	0
Apartments Low Rise	263.00	Dwelling Unit	15.14	263,000.00	1044
Apartments Mid Rise	240.00	Dwelling Unit	10.57	240,000.00	953
Single Family Housing	220.00	Dwelling Unit	27.53	396,000.00	873

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.6	**Precipitation Freq (Days)**	31
Climate Zone	8			**Operational Year**	2030
Utility Company	Southern California Edison				
CO2 Intensity (lb/MWhr)	337.71	**CH4 Intensity (lb/MWhr)**	0.014	**N2O Intensity (lb/MWhr)**	0.003

1.3 User Entered Comments & Non-Default Data

Project Characteristics - Based on 2030 projections for SCE 60% renewable with CPUC 2011 SCE factor for 2009. 337.71; 0.014; 0.003

Land Use - Per Project Description 8/2019. General office building is commercial/mixed use/village commercial

Construction Phase - AC extended to overlap with construction by half, 2021-2023

Off-road Equipment -

Off-road Equipment -

Off-road Equipment -

Off-road Equipment -

Off-road Equipment -

Off-road Equipment -

Trips and VMT - Haul 4 miles east to Del Norte Regional Recycling and Transfer

Grading - 100,000 cy soil import to raise central portion of the property by 5 feet for sewer line cover

Architectural Coating - Per VCAPCD Rule 74.2 AC. 50 interior, 100 exterior

Vehicle Trips - Trip Rates from Stantec Traffic Study 3/26/2019.

Vehicle Emission Factors -

Vehicle Emission Factors -

Vehicle Emission Factors -

Woodstoves - No fireplaces or woodstoves

Area Coating - Per VCAPCD Rule 74.2

Energy Use - 7% decrease in electricity factor for residential and 30% decrease for commercial per 2019 CalGreen standards

Water And Wastewater -

Solid Waste - 25% waste reduction due to AB 341, Athens Services compliant

Construction Off-road Equipment Mitigation - Per Ventura County Air Quality Assessment Guidelines

Mobile Land Use Mitigation -

Area Mitigation - Per VCAPCD Rule 74.2 AC

Energy Mitigation - Per residential low-rise solar PV requirement (2019 California Energy Code Section 150.1(b)14)

Water Mitigation - 20% water reduction indoor and water efficient fixtures per CalGreen Building Standards Update 2016, Recycled water used for all landscaping

Waste Mitigation -

Fleet Mix -

Table Name	Column Name	Default Value	New Value
tblArchitecturalCoating	EF_Nonresidential_Exterior	250.00	100.00
tblArchitecturalCoating	EF_Nonresidential_Interior	250.00	50.00
tblArchitecturalCoating	EF_Parking	250.00	100.00

tblArchitecturalCoating	EF_Residential_Interior	75.00	50.00
tblAreaCoating	Area_EF_Nonresidential_Exterior	250	100
tblAreaCoating	Area_EF_Nonresidential_Interior	250	50
tblAreaCoating	Area_EF_Parking	250	100
tblAreaCoating	Area_EF_Residential_Interior	75	50
tblAreaMitigation	UseLowVOCPaintParkingCheck	False	True
tblConstructionPhase	NumDays	75.00	335.00
tblConstructionPhase	NumDays	1,110.00	630.00
tblConstructionPhase	NumDays	70.00	50.00
tblConstructionPhase	NumDays	110.00	20.00
tblConstructionPhase	NumDays	75.00	40.00
tblConstructionPhase	NumDays	40.00	20.00
tblEnergyUse	T24E	177.01	164.62
tblEnergyUse	T24E	179.76	167.18
tblEnergyUse	T24E	4.71	3.30
tblEnergyUse	T24E	253.73	235.97
tblFireplaces	NumberNoFireplace	263.00	0.00
tblFireplaces	NumberNoFireplace	240.00	0.00
tblFireplaces	NumberNoFireplace	220.00	0.00
tblGrading	AcresOfGrading	50.00	275.00
tblGrading	MaterialImported	0.00	100,000.00
tblLandUse	GreenSpaceAllowEdit	1.00	0.00
tblLandUse	LotAcreage	1.38	8.78
tblLandUse	LotAcreage	16.44	15.14
tblLandUse	LotAcreage	6.32	10.57
tblLandUse	LotAcreage	71.43	27.53
tblLandUse	Population	805.00	1,044.00

tblLandUse	Population	734.00	953.00
tblLandUse	Population	673.00	873.00
tblProjectCharacteristics	CH4IntensityFactor	0.029	0.014
tblProjectCharacteristics	CO2IntensityFactor	702.44	337.71
tblProjectCharacteristics	N2OIntensityFactor	0.006	0.003
tblSolidWaste	SolidWasteGenerationRate	120.98	90.73
tblSolidWaste	SolidWasteGenerationRate	110.40	82.80
tblSolidWaste	SolidWasteGenerationRate	0.56	0.42
tblSolidWaste	SolidWasteGenerationRate	55.80	41.85
tblSolidWaste	SolidWasteGenerationRate	357.93	268.45
tblTripsAndVMT	HaulingTripLength	20.00	4.00
tblVehicleTrips	ST_TR	9.91	9.44
tblVehicleTrips	SU_TR	8.62	9.44
tblVehicleTrips	WD_TR	6.59	7.32
tblVehicleTrips	WD_TR	6.65	7.32
tblVehicleTrips	WD_TR	1.89	20.00
tblVehicleTrips	WD_TR	11.03	120.00
tblVehicleTrips	WD_TR	9.52	9.44

2.0 Emissions Summary

2.1 Overall Construction (Maximum Daily Emission)

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2021	8.6494	202.2115	70.0043	0.5223	32.3595	2.6201	34.9796	9.9699	2.4338	11.8517	0.0000	56,452.3929	56,452.3929	6.8737	0.0000	56,624.2346
2022	31.7514	30.6082	37.6939	0.1122	6.6152	0.9623	7.5775	1.7751	0.9100	2.6850	0.0000	11,309.2651	11,309.2651	1.0364	0.0000	11,335.1757
2023	31.3653	26.2364	35.9547	0.1096	6.6153	0.8208	7.4360	1.7751	0.7759	2.5510	0.0000	11,043.5525	11,043.5525	0.9870	0.0000	11,068.2264
Maximum	**31.7514**	**202.2115**	**70.0043**	**0.5223**	**32.3595**	**2.6201**	**34.9796**	**9.9699**	**2.4338**	**11.8517**	**0.0000**	**56,452.3929**	**56,452.3929**	**6.8737**	**0.0000**	**56,624.2346**

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2021	8.6494	202.2115	70.0043	0.5223	20.6409	2.6201	23.2610	5.2708	2.4338	7.7046	0.0000	56,452.3928	56,452.3928	6.8737	0.0000	56,624.2346
2022	31.7514	30.6082	37.6939	0.1122	6.6152	0.9623	7.5775	1.7751	0.9100	2.6850	0.0000	11,309.2651	11,309.2651	1.0364	0.0000	11,335.1757
2023	31.3653	26.2364	35.9547	0.1096	6.6153	0.8208	7.4360	1.7751	0.7759	2.5510	0.0000	11,043.5525	11,043.5525	0.9870	0.0000	11,068.2264
Maximum	**31.7514**	**202.2115**	**70.0043**	**0.5223**	**20.6409**	**2.6201**	**23.2610**	**5.2708**	**2.4338**	**7.7046**	**0.0000**	**56,452.3928**	**56,452.3928**	**6.8737**	**0.0000**	**56,624.2346**

Oxnard Teal Club Phase 1 - Ventura County, Winter

	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	25.70	0.00	23.44	34.76	0.00	24.27	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	lb/day										lb/day					
Area	30.8330	0.6859	59.4975	3.1500e-003		0.3308	0.3308		0.3308	0.3308	0.0000	107.4179	107.4179	0.1024	0.0000	109.9770
Energy	0.3641	3.1204	1.3889	0.0199		0.2516	0.2516		0.2516	0.2516		3,972.2297	3,972.2297	0.0761	0.0728	3,995.8347
Mobile	10.6877	44.4008	133.3981	0.5776	70.7400	0.3841	71.1241	18.8863	0.3562	19.2425		58,891.2513	58,891.2513	2.1057		58,943.8935
Total	**41.8848**	**48.2071**	**194.2845**	**0.6006**	**70.7400**	**0.9665**	**71.7065**	**18.8863**	**0.9386**	**19.8249**	**0.0000**	**62,970.8989**	**62,970.8989**	**2.2842**	**0.0728**	**63,049.7052**

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	lb/day										lb/day					
Area	30.8330	0.6859	59.4975	3.1500e-003		0.3308	0.3308		0.3308	0.3308	0.0000	107.4179	107.4179	0.1024	0.0000	109.9770
Energy	0.3641	3.1204	1.3889	0.0199		0.2516	0.2516		0.2516	0.2516		3,972.2297	3,972.2297	0.0761	0.0728	3,995.8347
Mobile	9.9136	40.5094	111.8740	0.4610	55.6035	0.3142	55.9177	14.8452	0.2913	15.1365		47,018.7388	47,018.7388	1.7446		47,062.3530
Total	**41.1107**	**44.3157**	**172.7604**	**0.4840**	**55.6035**	**0.8966**	**56.5001**	**14.8452**	**0.8737**	**15.7188**	**0.0000**	**51,098.3864**	**51,098.3864**	**1.9231**	**0.0728**	**51,168.1647**

	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	**1.85**	**8.07**	**11.08**	**19.41**	**21.40**	**7.23**	**21.21**	**21.40**	**6.91**	**20.71**	**0.00**	**18.85**	**18.85**	**15.81**	**0.00**	**18.84**

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	1/1/2021	3/11/2021	5	50	
2	Site Preparation	Site Preparation	3/12/2021	4/8/2021	5	20	
3	Grading	Grading	4/9/2021	5/6/2021	5	20	
4	Building Construction	Building Construction	5/7/2021	10/5/2023	5	630	
5	Architectural Coating	Architectural Coating	9/18/2022	12/29/2023	5	335	
6	Paving	Paving	10/6/2023	11/30/2023	5	40	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 275

Acres of Paving: 0

Residential Indoor: 1,820,475; Residential Outdoor: 606,825; Non-Residential Indoor: 514,710; Non-Residential Outdoor: 171,570; Striped Parking Area: 0 (Architectural Coating – sqft)

OffRoad Equipment

Oxnard Teal Club Phase 1 - Ventura County, Winter

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Demolition	Concrete/Industrial Saws	1	8.00	81	0.73
Demolition	Excavators	3	8.00	158	0.38
Demolition	Rubber Tired Dozers	2	8.00	247	0.40
Site Preparation	Rubber Tired Dozers	3	8.00	247	0.40
Site Preparation	Tractors/Loaders/Backhoes	4	8.00	97	0.37
Grading	Excavators	2	8.00	158	0.38
Grading	Graders	1	8.00	187	0.41
Grading	Rubber Tired Dozers	1	8.00	247	0.40
Grading	Scrapers	2	8.00	367	0.48
Grading	Tractors/Loaders/Backhoes	2	8.00	97	0.37
Building Construction	Cranes	1	7.00	231	0.29
Building Construction	Forklifts	3	8.00	89	0.20
Building Construction	Generator Sets	1	8.00	84	0.74
Building Construction	Tractors/Loaders/Backhoes	3	7.00	97	0.37
Building Construction	Welders	1	8.00	46	0.45
Paving	Pavers	2	8.00	130	0.42
Paving	Paving Equipment	2	8.00	132	0.36
Paving	Rollers	2	8.00	80	0.38
Architectural Coating	Air Compressors	1	6.00	78	0.48

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Demolition	6	15.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Site Preparation	7	18.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Grading	8	20.00	0.00	12,500.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction	9	579.00	134.00	0.00	10.80	7.30	4.00	LD_Mix	HDT_Mix	HHDT
Paving	6	15.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Architectural Coating	1	116.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Use Soil Stabilizer

Water Exposed Area

3.2 Demolition - 2021

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	3.1651	31.4407	21.5650	0.0388		1.5513	1.5513		1.4411	1.4411		3,747.9449	3,747.9449	1.0549		3,774.3174
Total	**3.1651**	**31.4407**	**21.5650**	**0.0388**		**1.5513**	**1.5513**		**1.4411**	**1.4411**		**3,747.9449**	**3,747.9449**	**1.0549**		**3,774.3174**

3.2 Demolition - 2021

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	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
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
Worker	0.0583	0.0348	0.3731	1.1000e-003	0.1232	8.5000e-004	0.1241	0.0327	7.9000e-004	0.0335		109.9022	109.9022	2.7900e-003		109.9721
Total	**0.0583**	**0.0348**	**0.3731**	**1.1000e-003**	**0.1232**	**8.5000e-004**	**0.1241**	**0.0327**	**7.9000e-004**	**0.0335**		**109.9022**	**109.9022**	**2.7900e-003**		**109.9721**

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	lb/day										lb/day					
Off-Road	3.1651	31.4407	21.5650	0.0388		1.5513	1.5513		1.4411	1.4411	0.0000	3,747.9449	3,747.9449	1.0549		3,774.3174
Total	**3.1651**	**31.4407**	**21.5650**	**0.0388**		**1.5513**	**1.5513**		**1.4411**	**1.4411**	**0.0000**	**3,747.9449**	**3,747.9449**	**1.0549**		**3,774.3174**

3.2 Demolition - 2021

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	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
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
Worker	0.0583	0.0348	0.3731	1.1000e-003	0.1232	8.5000e-004	0.1241	0.0327	7.9000e-004	0.0335		109.9022	109.9022	2.7900e-003		109.9721
Total	**0.0583**	**0.0348**	**0.3731**	**1.1000e-003**	**0.1232**	**8.5000e-004**	**0.1241**	**0.0327**	**7.9000e-004**	**0.0335**		**109.9022**	**109.9022**	**2.7900e-003**		**109.9721**

3.3 Site Preparation - 2021

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					18.0663	0.0000	18.0663	9.9307	0.0000	9.9307			0.0000			0.0000
Off-Road	3.8882	40.4971	21.1543	0.0380		2.0445	2.0445		1.8809	1.8809		3,685.6569	3,685.6569	1.1920		3,715.4573
Total	**3.8882**	**40.4971**	**21.1543**	**0.0380**	**18.0663**	**2.0445**	**20.1107**	**9.9307**	**1.8809**	**11.8116**		**3,685.6569**	**3,685.6569**	**1.1920**		**3,715.4573**

3.3 Site Preparation - 2021

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	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
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
Worker	0.0699	0.0417	0.4478	1.3200e-003	0.1479	1.0200e-003	0.1489	0.0392	9.4000e-004	0.0402		131.8827	131.8827	3.3500e-003		131.9665
Total	**0.0699**	**0.0417**	**0.4478**	**1.3200e-003**	**0.1479**	**1.0200e-003**	**0.1489**	**0.0392**	**9.4000e-004**	**0.0402**		**131.8827**	**131.8827**	**3.3500e-003**		**131.9665**

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	lb/day										lb/day					
Fugitive Dust					8.1298	0.0000	8.1298	4.4688	0.0000	4.4688			0.0000			0.0000
Off-Road	3.8882	40.4971	21.1543	0.0380		2.0445	2.0445		1.8809	1.8809	0.0000	3,685.6569	3,685.6569	1.1920		3,715.4573
Total	**3.8882**	**40.4971**	**21.1543**	**0.0380**	**8.1298**	**2.0445**	**10.1743**	**4.4688**	**1.8809**	**6.3497**	**0.0000**	**3,685.6569**	**3,685.6569**	**1.1920**		**3,715.4573**

3.3 Site Preparation - 2021

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	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
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
Worker	0.0699	0.0417	0.4478	1.3200e-003	0.1479	1.0200e-003	0.1489	0.0392	9.4000e-004	0.0402		131.8827	131.8827	3.3500e-003		131.9665
Total	**0.0699**	**0.0417**	**0.4478**	**1.3200e-003**	**0.1479**	**1.0200e-003**	**0.1489**	**0.0392**	**9.4000e-004**	**0.0402**		**131.8827**	**131.8827**	**3.3500e-003**		**131.9665**

3.4 Grading - 2021

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					21.3066	0.0000	21.3066	4.9911	0.0000	4.9911			0.0000			0.0000
Off-Road	4.1912	46.3998	30.8785	0.0620		1.9853	1.9853		1.8265	1.8265		6,007.0434	6,007.0434	1.9428		6,055.6134
Total	**4.1912**	**46.3998**	**30.8785**	**0.0620**	**21.3066**	**1.9853**	**23.2919**	**4.9911**	**1.8265**	**6.8176**		**6,007.0434**	**6,007.0434**	**1.9428**		**6,055.6134**

3.4 Grading - 2021

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	lb/day										lb/day					
Hauling	4.3805	155.7653	38.6283	0.4589	10.8886	0.6336	11.5223	2.9813	0.6062	3.5875		50,298.8131	50,298.8131	4.9271		50,421.9917
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
Worker	0.0777	0.0464	0.4975	1.4700e-003	0.1643	1.1400e-003	0.1654	0.0436	1.0500e-003	0.0446		146.5363	146.5363	3.7300e-003		146.6294
Total	**4.4582**	**155.8116**	**39.1258**	**0.4603**	**11.0529**	**0.6348**	**11.6877**	**3.0248**	**0.6073**	**3.6321**		**50,445.3494**	**50,445.3494**	**4.9309**		**50,568.6212**

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	lb/day										lb/day					
Fugitive Dust					9.5880	0.0000	9.5880	2.2460	0.0000	2.2460			0.0000			0.0000
Off-Road	4.1912	46.3998	30.8785	0.0620		1.9853	1.9853		1.8265	1.8265	0.0000	6,007.0434	6,007.0434	1.9428		6,055.6134
Total	**4.1912**	**46.3998**	**30.8785**	**0.0620**	**9.5880**	**1.9853**	**11.5733**	**2.2460**	**1.8265**	**4.0725**	**0.0000**	**6,007.0434**	**6,007.0434**	**1.9428**		**6,055.6134**

3.4 Grading - 2021

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	lb/day										lb/day					
Hauling	4.3805	155.7653	38.6283	0.4589	10.8886	0.6336	11.5223	2.9813	0.6062	3.5875		50,298.8131	50,298.8131	4.9271		50,421.9917
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
Worker	0.0777	0.0464	0.4975	1.4700e-003	0.1643	1.1400e-003	0.1654	0.0436	1.0500e-003	0.0446		146.5363	146.5363	3.7300e-003		146.6294
Total	**4.4582**	**155.8116**	**39.1258**	**0.4603**	**11.0529**	**0.6348**	**11.6877**	**3.0248**	**0.6073**	**3.6321**		**50,445.3494**	**50,445.3494**	**4.9309**		**50,568.6212**

3.5 Building Construction - 2021

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.9009	17.4321	16.5752	0.0269		0.9586	0.9586		0.9013	0.9013		2,553.3639	2,553.3639	0.6160		2,568.7643
Total	**1.9009**	**17.4321**	**16.5752**	**0.0269**		**0.9586**	**0.9586**		**0.9013**	**0.9013**		**2,553.3639**	**2,553.3639**	**0.6160**		**2,568.7643**

3.5 Building Construction - 2021

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	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.4002	12.9058	3.7464	0.0335	0.9059	0.0380	0.9439	0.2607	0.0364	0.2970		3,602.2348	3,602.2348	0.3007		3,609.7530
Worker	2.2497	1.3418	14.4027	0.0426	4.7564	0.0330	4.7893	1.2616	0.0304	1.2920		4,242.2258	4,242.2258	0.1079		4,244.9220
Total	**2.6499**	**14.2477**	**18.1491**	**0.0761**	**5.6622**	**0.0710**	**5.7332**	**1.5223**	**0.0667**	**1.5890**		**7,844.4606**	**7,844.4606**	**0.4086**		**7,854.6750**

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	lb/day										lb/day					
Off-Road	1.9009	17.4321	16.5752	0.0269		0.9586	0.9586		0.9013	0.9013	0.0000	2,553.3639	2,553.3639	0.6160		2,568.7643
Total	**1.9009**	**17.4321**	**16.5752**	**0.0269**		**0.9586**	**0.9586**		**0.9013**	**0.9013**	**0.0000**	**2,553.3639**	**2,553.3639**	**0.6160**		**2,568.7643**

3.5 Building Construction - 2021

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	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.4002	12.9058	3.7464	0.0335	0.9059	0.0380	0.9439	0.2607	0.0364	0.2970		3,602.2348	3,602.2348	0.3007		3,609.7530
Worker	2.2497	1.3418	14.4027	0.0426	4.7564	0.0330	4.7893	1.2616	0.0304	1.2920		4,242.2258	4,242.2258	0.1079		4,244.9220
Total	**2.6499**	**14.2477**	**18.1491**	**0.0761**	**5.6622**	**0.0710**	**5.7332**	**1.5223**	**0.0667**	**1.5890**		**7,844.4606**	**7,844.4606**	**0.4086**		**7,854.6750**

3.5 Building Construction - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.7062	15.6156	16.3634	0.0269		0.8090	0.8090		0.7612	0.7612		2,554.3336	2,554.3336	0.6120		2,569.6322
Total	**1.7062**	**15.6156**	**16.3634**	**0.0269**		**0.8090**	**0.8090**		**0.7612**	**0.7612**		**2,554.3336**	**2,554.3336**	**0.6120**		**2,569.6322**

3.5 Building Construction - 2022

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	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.3723	12.1307	3.5524	0.0331	0.9059	0.0330	0.9389	0.2607	0.0315	0.2923		3,568.4213	3,568.4213	0.2893		3,575.6535
Worker	2.1194	1.2109	13.3000	0.0410	4.7564	0.0322	4.7885	1.2616	0.0296	1.2912		4,086.3755	4,086.3755	0.0974		4,088.8095
Total	**2.4917**	**13.3415**	**16.8524**	**0.0741**	**5.6623**	**0.0651**	**5.7274**	**1.5223**	**0.0612**	**1.5835**		**7,654.7969**	**7,654.7969**	**0.3867**		**7,664.4630**

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	lb/day										lb/day					
Off-Road	1.7062	15.6156	16.3634	0.0269		0.8090	0.8090		0.7612	0.7612	0.0000	2,554.3336	2,554.3336	0.6120		2,569.6322
Total	**1.7062**	**15.6156**	**16.3634**	**0.0269**		**0.8090**	**0.8090**		**0.7612**	**0.7612**	**0.0000**	**2,554.3336**	**2,554.3336**	**0.6120**		**2,569.6322**

3.5 Building Construction - 2022

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	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.3723	12.1307	3.5524	0.0331	0.9059	0.0330	0.9389	0.2607	0.0315	0.2923		3,568.4213	3,568.4213	0.2893		3,575.6535
Worker	2.1194	1.2109	13.3000	0.0410	4.7564	0.0322	4.7885	1.2616	0.0296	1.2912		4,086.3755	4,086.3755	0.0974		4,088.8095
Total	**2.4917**	**13.3415**	**16.8524**	**0.0741**	**5.6623**	**0.0651**	**5.7274**	**1.5223**	**0.0612**	**1.5835**		**7,654.7969**	**7,654.7969**	**0.3867**		**7,664.4630**

3.5 Building Construction - 2023

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.5728	14.3849	16.2440	0.0269		0.6997	0.6997		0.6584	0.6584		2,555.2099	2,555.2099	0.6079		2,570.4061
Total	**1.5728**	**14.3849**	**16.2440**	**0.0269**		**0.6997**	**0.6997**		**0.6584**	**0.6584**		**2,555.2099**	**2,555.2099**	**0.6079**		**2,570.4061**

3.5 Building Construction - 2023

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	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.2765	9.2358	3.1859	0.0323	0.9060	0.0125	0.9185	0.2607	0.0120	0.2727		3,489.6465	3,489.6465	0.2571		3,496.0750
Worker	1.9995	1.0936	12.2579	0.0394	4.7564	0.0314	4.7878	1.2616	0.0289	1.2905		3,929.9088	3,929.9088	0.0876		3,932.0984
Total	**2.2760**	**10.3294**	**15.4437**	**0.0718**	**5.6624**	**0.0439**	**5.7063**	**1.5223**	**0.0409**	**1.5632**		**7,419.5553**	**7,419.5553**	**0.3447**		**7,428.1734**

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	lb/day										lb/day					
Off-Road	1.5728	14.3849	16.2440	0.0269		0.6997	0.6997		0.6584	0.6584	0.0000	2,555.2099	2,555.2099	0.6079		2,570.4061
Total	**1.5728**	**14.3849**	**16.2440**	**0.0269**		**0.6997**	**0.6997**		**0.6584**	**0.6584**	**0.0000**	**2,555.2099**	**2,555.2099**	**0.6079**		**2,570.4061**

3.5 Building Construction - 2023

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	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.2765	9.2358	3.1859	0.0323	0.9060	0.0125	0.9185	0.2607	0.0120	0.2727		3,489.6465	3,489.6465	0.2571		3,496.0750
Worker	1.9995	1.0936	12.2579	0.0394	4.7564	0.0314	4.7878	1.2616	0.0289	1.2905		3,929.9088	3,929.9088	0.0876		3,932.0984
Total	**2.2760**	**10.3294**	**15.4437**	**0.0718**	**5.6624**	**0.0439**	**5.7063**	**1.5223**	**0.0409**	**1.5632**		**7,419.5553**	**7,419.5553**	**0.3447**		**7,428.1734**

3.6 Architectural Coating - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Archit. Coating	26.9243					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.2045	1.4085	1.8136	2.9700e-003		0.0817	0.0817		0.0817	0.0817		281.4481	281.4481	0.0183		281.9062
Total	**27.1289**	**1.4085**	**1.8136**	**2.9700e-003**		**0.0817**	**0.0817**		**0.0817**	**0.0817**		**281.4481**	**281.4481**	**0.0183**		**281.9062**

3.6 Architectural Coating - 2022

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	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
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
Worker	0.4246	0.2426	2.6646	8.2100e-003	0.9529	6.4400e-003	0.9594	0.2528	5.9300e-003	0.2587		818.6866	818.6866	0.0195		819.1743
Total	**0.4246**	**0.2426**	**2.6646**	**8.2100e-003**	**0.9529**	**6.4400e-003**	**0.9594**	**0.2528**	**5.9300e-003**	**0.2587**		**818.6866**	**818.6866**	**0.0195**		**819.1743**

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	lb/day										lb/day					
Archit. Coating	26.9243					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.2045	1.4085	1.8136	2.9700e-003		0.0817	0.0817		0.0817	0.0817	0.0000	281.4481	281.4481	0.0183		281.9062
Total	**27.1289**	**1.4085**	**1.8136**	**2.9700e-003**		**0.0817**	**0.0817**		**0.0817**	**0.0817**	**0.0000**	**281.4481**	**281.4481**	**0.0183**		**281.9062**

3.6 Architectural Coating - 2022

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	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
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
Worker	0.4246	0.2426	2.6646	8.2100e-003	0.9529	6.4400e-003	0.9594	0.2528	5.9300e-003	0.2587		818.6866	818.6866	0.0195		819.1743
Total	**0.4246**	**0.2426**	**2.6646**	**8.2100e-003**	**0.9529**	**6.4400e-003**	**0.9594**	**0.2528**	**5.9300e-003**	**0.2587**		**818.6866**	**818.6866**	**0.0195**		**819.1743**

3.6 Architectural Coating - 2023

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Archit. Coating	26.9243					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.1917	1.3030	1.8111	2.9700e-003		0.0708	0.0708		0.0708	0.0708		281.4481	281.4481	0.0168		281.8690
Total	**27.1160**	**1.3030**	**1.8111**	**2.9700e-003**		**0.0708**	**0.0708**		**0.0708**	**0.0708**		**281.4481**	**281.4481**	**0.0168**		**281.8690**

3.6 Architectural Coating - 2023

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	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
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
Worker	0.4006	0.2191	2.4558	7.9000e-003	0.9529	6.2900e-003	0.9592	0.2528	5.7900e-003	0.2586		787.3392	787.3392	0.0176		787.7779
Total	**0.4006**	**0.2191**	**2.4558**	**7.9000e-003**	**0.9529**	**6.2900e-003**	**0.9592**	**0.2528**	**5.7900e-003**	**0.2586**		**787.3392**	**787.3392**	**0.0176**		**787.7779**

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	lb/day										lb/day					
Archit. Coating	26.9243					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.1917	1.3030	1.8111	2.9700e-003		0.0708	0.0708		0.0708	0.0708	0.0000	281.4481	281.4481	0.0168		281.8690
Total	**27.1160**	**1.3030**	**1.8111**	**2.9700e-003**		**0.0708**	**0.0708**		**0.0708**	**0.0708**	**0.0000**	**281.4481**	**281.4481**	**0.0168**		**281.8690**

3.6 Architectural Coating - 2023

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	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
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
Worker	0.4006	0.2191	2.4558	7.9000e-003	0.9529	6.2900e-003	0.9592	0.2528	5.7900e-003	0.2586		787.3392	787.3392	0.0176		787.7779
Total	**0.4006**	**0.2191**	**2.4558**	**7.9000e-003**	**0.9529**	**6.2900e-003**	**0.9592**	**0.2528**	**5.7900e-003**	**0.2586**		**787.3392**	**787.3392**	**0.0176**		**787.7779**

3.7 Paving - 2023

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.0327	10.1917	14.5842	0.0228		0.5102	0.5102		0.4694	0.4694		2,207.5841	2,207.5841	0.7140		2,225.4336
Paving	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**1.0327**	**10.1917**	**14.5842**	**0.0228**		**0.5102**	**0.5102**		**0.4694**	**0.4694**		**2,207.5841**	**2,207.5841**	**0.7140**		**2,225.4336**

3.7 Paving - 2023

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	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
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
Worker	0.0518	0.0283	0.3176	1.0200e-003	0.1232	8.1000e-004	0.1240	0.0327	7.5000e-004	0.0334		101.8111	101.8111	2.2700e-003		101.8678
Total	**0.0518**	**0.0283**	**0.3176**	**1.0200e-003**	**0.1232**	**8.1000e-004**	**0.1240**	**0.0327**	**7.5000e-004**	**0.0334**		**101.8111**	**101.8111**	**2.2700e-003**		**101.8678**

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	lb/day										lb/day					
Off-Road	1.0327	10.1917	14.5842	0.0228		0.5102	0.5102		0.4694	0.4694	0.0000	2,207.5841	2,207.5841	0.7140		2,225.4336
Paving	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**1.0327**	**10.1917**	**14.5842**	**0.0228**		**0.5102**	**0.5102**		**0.4694**	**0.4694**	**0.0000**	**2,207.5841**	**2,207.5841**	**0.7140**		**2,225.4336**

3.7 Paving - 2023

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	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
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
Worker	0.0518	0.0283	0.3176	1.0200e-003	0.1232	8.1000e-004	0.1240	0.0327	7.5000e-004	0.0334		101.8111	101.8111	2.2700e-003		101.8678
Total	**0.0518**	**0.0283**	**0.3176**	**1.0200e-003**	**0.1232**	**8.1000e-004**	**0.1240**	**0.0327**	**7.5000e-004**	**0.0334**		**101.8111**	**101.8111**	**2.2700e-003**		**101.8678**

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

Increase Density

Increase Transit Accessibility

Integrate Below Market Rate Housing

Improve Pedestrian Network

	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	lb/day										lb/day					
Mitigated	9.9136	40.5094	111.8740	0.4610	55.6035	0.3142	55.9177	14.8452	0.2913	15.1365		47,018.7388	47,018.7388	1.7446		47,062.3530
Unmitigated	10.6877	44.4008	133.3981	0.5776	70.7400	0.3841	71.1241	18.8863	0.3562	19.2425		58,891.2513	58,891.2513	2.1057		58,943.8935

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Apartments Low Rise	1,925.16	1,883.08	1596.41	5,172,981	4,066,099
Apartments Mid Rise	1,756.80	1,533.60	1406.40	4,627,752	3,637,534
City Park	130.00	147.88	108.81	276,520	217,352
General Office Building	7,200.00	147.60	63.00	12,362,055	9,716,899
Single Family Housing	2,076.80	2,076.80	2076.80	5,738,349	4,510,493
Total	13,088.76	5,788.96	5,251.42	28,177,657	22,148,377

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 Low Rise	10.80	7.30	7.50	32.90	18.00	49.10	86	11	3
Apartments Mid Rise	10.80	7.30	7.50	32.90	18.00	49.10	86	11	3
City Park	9.50	7.30	7.30	33.00	48.00	19.00	66	28	6
General Office Building	9.50	7.30	7.30	33.00	48.00	19.00	77	19	4
Single Family Housing	10.80	7.30	7.50	32.90	18.00	49.10	86	11	3

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
Apartments Low Rise	0.611155	0.038739	0.187677	0.096955	0.013383	0.005563	0.020646	0.018593	0.001209	0.001094	0.003654	0.000418	0.000914
Apartments Mid Rise	0.611155	0.038739	0.187677	0.096955	0.013383	0.005563	0.020646	0.018593	0.001209	0.001094	0.003654	0.000418	0.000914
City Park	0.611155	0.038739	0.187677	0.096955	0.013383	0.005563	0.020646	0.018593	0.001209	0.001094	0.003654	0.000418	0.000914
General Office Building	0.611155	0.038739	0.187677	0.096955	0.013383	0.005563	0.020646	0.018593	0.001209	0.001094	0.003654	0.000418	0.000914
Single Family Housing	0.611155	0.038739	0.187677	0.096955	0.013383	0.005563	0.020646	0.018593	0.001209	0.001094	0.003654	0.000418	0.000914

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

Kilowatt Hours of Renewable Electricity Generated

	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	lb/day										lb/day					
NaturalGas Mitigated	0.3641	3.1204	1.3889	0.0199		0.2516	0.2516		0.2516	0.2516		3,972.2297	3,972.2297	0.0761	0.0728	3,995.8347
NaturalGas Unmitigated	0.3641	3.1204	1.3889	0.0199		0.2516	0.2516		0.2516	0.2516		3,972.2297	3,972.2297	0.0761	0.0728	3,995.8347

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	lb/day										lb/day					
Apartments Low Rise	9193.9	0.0992	0.8473	0.3605	5.4100e-003		0.0685	0.0685		0.0685	0.0685		1,081.6349	1,081.6349	0.0207	0.0198	1,088.0625
Apartments Mid Rise	7513.95	0.0810	0.6925	0.2947	4.4200e-003		0.0560	0.0560		0.0560	0.0560		883.9937	883.9937	0.0169	0.0162	889.2468
City Park	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
General Office Building	1502.47	0.0162	0.1473	0.1237	8.8000e-004		0.0112	0.0112		0.0112	0.0112		176.7607	176.7607	3.3900e-003	3.2400e-003	177.8111
Single Family Housing	15553.6	0.1677	1.4334	0.6100	9.1500e-003		0.1159	0.1159		0.1159	0.1159		1,829.8405	1,829.8405	0.0351	0.0336	1,840.7143
Total		**0.3641**	**3.1204**	**1.3889**	**0.0199**		**0.2516**	**0.2516**		**0.2516**	**0.2516**		**3,972.2298**	**3,972.2298**	**0.0761**	**0.0728**	**3,995.8347**

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	lb/day										lb/day					
Apartments Low Rise	9.1939	0.0992	0.8473	0.3605	5.4100e-003		0.0685	0.0685		0.0685	0.0685		1,081.6349	1,081.6349	0.0207	0.0198	1,088.0625
Apartments Mid Rise	7.51395	0.0810	0.6925	0.2947	4.4200e-003		0.0560	0.0560		0.0560	0.0560		883.9937	883.9937	0.0169	0.0162	889.2468
City Park	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
General Office Building	1.50247	0.0162	0.1473	0.1237	8.8000e-004		0.0112	0.0112		0.0112	0.0112		176.7607	176.7607	3.3900e-003	3.2400e-003	177.8111
Single Family Housing	15.5536	0.1677	1.4334	0.6100	9.1500e-003		0.1159	0.1159		0.1159	0.1159		1,829.8405	1,829.8405	0.0351	0.0336	1,840.7143
Total		**0.3641**	**3.1204**	**1.3889**	**0.0199**		**0.2516**	**0.2516**		**0.2516**	**0.2516**		**3,972.2298**	**3,972.2298**	**0.0761**	**0.0728**	**3,995.8347**

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

No Hearths Installed

	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	lb/day										lb/day					
Mitigated	30.8330	0.6859	59.4975	3.1500e-003		0.3308	0.3308		0.3308	0.3308	0.0000	107.4179	107.4179	0.1024	0.0000	109.9770
Unmitigated	30.8330	0.6859	59.4975	3.1500e-003		0.3308	0.3308		0.3308	0.3308	0.0000	107.4179	107.4179	0.1024	0.0000	109.9770

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	lb/day										lb/day					
Architectural Coating	2.4711					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	26.5818					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Hearth	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	1.7800	0.6859	59.4975	3.1500e-003		0.3308	0.3308		0.3308	0.3308		107.4179	107.4179	0.1024		109.9770
Total	**30.8330**	**0.6859**	**59.4975**	**3.1500e-003**		**0.3308**	**0.3308**		**0.3308**	**0.3308**	**0.0000**	**107.4179**	**107.4179**	**0.1024**	**0.0000**	**109.9770**

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	lb/day										lb/day					
Architectural Coating	2.4711					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	26.5818					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Hearth	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	1.7800	0.6859	59.4975	3.1500e-003		0.3308	0.3308		0.3308	0.3308		107.4179	107.4179	0.1024		109.9770
Total	**30.8330**	**0.6859**	**59.4975**	**3.1500e-003**		**0.3308**	**0.3308**		**0.3308**	**0.3308**	**0.0000**	**107.4179**	**107.4179**	**0.1024**	**0.0000**	**109.9770**

7.0 Water Detail

7.1 Mitigation Measures Water

Apply Water Conservation Strategy

Use Reclaimed Water

Install Low Flow Bathroom Faucet

Install Low Flow Kitchen Faucet

Install Low Flow Toilet

Install Low Flow Shower

8.0 Waste Detail

8.1 Mitigation Measures Waste

9.0 Operational Offroad

Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type

10.0 Stationary Equipment

Fire Pumps and Emergency Generators

Equipment Type	Number	Hours/Day	Hours/Year	Horse Power	Load Factor	Fuel Type

Boilers

Equipment Type	Number	Heat Input/Day	Heat Input/Year	Boiler Rating	Fuel Type

User Defined Equipment

Equipment Type	Number

11.0 Vegetation

Oxnard Teal Club Phase 2

Ventura County, Winter

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Office Park	132.00	1000sqft	9.11	132,000.00	0
City Park	10.88	Acre	10.88	473,932.80	0
Apartments Low Rise	267.00	Dwelling Unit	20.07	267,000.00	1060

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.6	**Precipitation Freq (Days)**	31
Climate Zone	8			**Operational Year**	2030
Utility Company	Southern California Edison				
CO2 Intensity (lb/MWhr)	337.71	**CH4 Intensity (lb/MWhr)**	0.014	**N2O Intensity (lb/MWhr)**	0.003

1.3 User Entered Comments & Non-Default Data

Oxnard Teal Club Phase 2 - Ventura County, Winter

Project Characteristics - Based on 2030 projections for SCE 60% renewable with CPUC 2011 SCE factor for 2009. 337.71; 0.014; 0.003

Land Use - Based on PD Table 2-4 8/2019.

Construction Phase - Ph II completed 2024-2025 per PD 8/2019. AC extended to overlap with half of construction phase.

Trips and VMT - Landfill located 4 miles east at Del Norte Regional Recycling and Transfer

Demolition - No demolition

Grading - No export/import

Architectural Coating - Per VCAPCD Rule 74.2

Vehicle Trips - Trip Rates from Stantec Traffic Study 3/26/2019.

Woodstoves - No fireplaces or woodstoves

Area Coating - Per VCAPCD Rule 74.2

Energy Use - 7% decrease in electricity factor for residential and 30% decrease for commercial per 2019 CalGreen standards

Solid Waste - 25% waste reduction beyond AB 939 due to AB 341, Athens Services compliant

Area Mitigation - Per VCAPCD Rule 74.2 AC. 50 interior, 100 exterior

Energy Mitigation - Per residential low-rise solar PV requirement (2019 California Energy Code Section 150.1(b)14)

Water Mitigation - 20% water reduction indoor and water efficient fixtures per CalGreen Building Standards Update 2016, Recycled water used for all landscaping

Table Name	Column Name	Default Value	New Value
tblArchitecturalCoating	EF_Nonresidential_Exterior	250.00	100.00
tblArchitecturalCoating	EF_Nonresidential_Interior	250.00	50.00
tblArchitecturalCoating	EF_Parking	250.00	100.00
tblArchitecturalCoating	EF_Residential_Interior	75.00	50.00
tblAreaCoating	Area_EF_Nonresidential_Exterior	250	100
tblAreaCoating	Area_EF_Nonresidential_Interior	250	50
tblAreaCoating	Area_EF_Parking	250	100
tblAreaCoating	Area_EF_Residential_Interior	75	50
tblAreaMitigation	UseLowVOCPaintParkingCheck	False	True
tblConstructionPhase	NumDays	55.00	250.00

tblConstructionPhase	NumDays	740.00	430.00
tblConstructionPhase	NumDays	50.00	25.00
tblConstructionPhase	NumDays	75.00	15.00
tblConstructionPhase	NumDays	55.00	33.00
tblConstructionPhase	NumDays	30.00	15.00
tblEnergyUse	T24E	177.01	164.62
tblEnergyUse	T24E	5.39	3.77
tblLandUse	LotAcreage	3.03	9.11
tblLandUse	LotAcreage	16.69	20.07
tblLandUse	Population	817.00	1,060.00
tblProjectCharacteristics	CH4IntensityFactor	0.029	0.014
tblProjectCharacteristics	CO2IntensityFactor	702.44	337.71
tblProjectCharacteristics	N2OIntensityFactor	0.006	0.003
tblSolidWaste	SolidWasteGenerationRate	122.82	92.11
tblSolidWaste	SolidWasteGenerationRate	0.94	0.71
tblSolidWaste	SolidWasteGenerationRate	122.76	92.07
tblTripsAndVMT	HaulingTripLength	20.00	4.00
tblVehicleTrips	ST_TR	1.64	0.00
tblVehicleTrips	SU_TR	0.76	0.00
tblVehicleTrips	WD_TR	6.59	7.32
tblVehicleTrips	WD_TR	1.89	20.00
tblVehicleTrips	WD_TR	11.42	10.00

2.0 Emissions Summary

2.1 Overall Construction (Maximum Daily Emission)

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2024	5.0127	48.1108	38.6922	0.0861	18.3374	2.1913	20.5286	10.0026	2.0248	12.0274	0.0000	8,714.6485	8,714.6485	2.2458	0.0000	8,737.2778
2025	14.8205	23.0184	30.2996	0.0932	5.1455	0.6177	5.7632	1.3843	0.5838	1.9681	0.0000	9,408.2717	9,408.2717	0.9185	0.0000	9,431.2348
Maximum	**14.8205**	**48.1108**	**38.6922**	**0.0932**	**18.3374**	**2.1913**	**20.5286**	**10.0026**	**2.0248**	**12.0274**	**0.0000**	**9,408.2717**	**9,408.2717**	**2.2458**	**0.0000**	**9,431.2348**

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2024	5.0127	48.1108	38.6922	0.0861	18.3374	2.1913	20.5286	10.0026	2.0248	12.0274	0.0000	8,714.6485	8,714.6485	2.2458	0.0000	8,737.2778
2025	14.8205	23.0184	30.2996	0.0932	5.1455	0.6177	5.7632	1.3843	0.5838	1.9681	0.0000	9,408.2717	9,408.2717	0.9185	0.0000	9,431.2348
Maximum	**14.8205**	**48.1108**	**38.6922**	**0.0932**	**18.3374**	**2.1913**	**20.5286**	**10.0026**	**2.0248**	**12.0274**	**0.0000**	**9,408.2717**	**9,408.2717**	**2.2458**	**0.0000**	**9,431.2348**

	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	lb/day										lb/day					
Area	10.0032	0.2534	21.9841	1.1600e-003		0.1222	0.1222		0.1222	0.1222	0.0000	39.6947	39.6947	0.0379	0.0000	40.6415
Energy	0.1450	1.2633	0.7047	7.9100e-003		0.1002	0.1002		0.1002	0.1002		1,581.8374	1,581.8374	0.0303	0.0290	1,591.2375
Mobile	2.8993	12.0687	36.6066	0.1593	19.5437	0.1057	19.6494	5.2178	0.0980	5.3158		16,244.4487	16,244.4487	0.5786		16,258.9134
Total	**13.0475**	**13.5854**	**59.2954**	**0.1684**	**19.5437**	**0.3281**	**19.8718**	**5.2178**	**0.3204**	**5.5382**	**0.0000**	**17,865.9808**	**17,865.9808**	**0.6468**	**0.0290**	**17,890.7924**

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	lb/day										lb/day					
Area	10.0032	0.2534	21.9841	1.1600e-003		0.1222	0.1222		0.1222	0.1222	0.0000	39.6947	39.6947	0.0379	0.0000	40.6415
Energy	0.1450	1.2633	0.7047	7.9100e-003		0.1002	0.1002		0.1002	0.1002		1,581.8374	1,581.8374	0.0303	0.0290	1,591.2375
Mobile	2.8993	12.0687	36.6066	0.1593	19.5437	0.1057	19.6494	5.2178	0.0980	5.3158		16,244.4487	16,244.4487	0.5786		16,258.9134
Total	**13.0475**	**13.5854**	**59.2954**	**0.1684**	**19.5437**	**0.3281**	**19.8718**	**5.2178**	**0.3204**	**5.5382**	**0.0000**	**17,865.9808**	**17,865.9808**	**0.6468**	**0.0290**	**17,890.7924**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Demolition	Demolition	1/1/2024	2/2/2024	5	25	
2	Site Preparation	Site Preparation	2/2/2024	2/22/2024	5	15	
3	Grading	Grading	2/23/2024	3/14/2024	5	15	
4	Building Construction	Building Construction	3/16/2024	11/7/2025	5	430	
5	Architectural Coating	Architectural Coating	1/15/2025	12/30/2025	5	250	
6	Paving	Paving	11/8/2025	12/24/2025	5	33	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 37.5

Acres of Paving: 0

Residential Indoor: 540,675; Residential Outdoor: 180,225; Non-Residential Indoor: 198,000; Non-Residential Outdoor: 66,000; Striped Parking Area: 0 (Architectural Coating – sqft)

OffRoad Equipment

Oxnard Teal Club Phase 2 - Ventura County, Winter

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Demolition	Concrete/Industrial Saws	1	8.00	81	0.73
Demolition	Excavators	3	8.00	158	0.38
Demolition	Rubber Tired Dozers	2	8.00	247	0.40
Site Preparation	Rubber Tired Dozers	3	8.00	247	0.40
Site Preparation	Tractors/Loaders/Backhoes	4	8.00	97	0.37
Grading	Excavators	2	8.00	158	0.38
Grading	Graders	1	8.00	187	0.41
Grading	Rubber Tired Dozers	1	8.00	247	0.40
Grading	Scrapers	2	8.00	367	0.48
Grading	Tractors/Loaders/Backhoes	2	8.00	97	0.37
Building Construction	Cranes	1	7.00	231	0.29
Building Construction	Forklifts	3	8.00	89	0.20
Building Construction	Generator Sets	1	8.00	84	0.74
Building Construction	Tractors/Loaders/Backhoes	3	7.00	97	0.37
Building Construction	Welders	1	8.00	46	0.45
Paving	Pavers	2	8.00	130	0.42
Paving	Paving Equipment	2	8.00	132	0.36
Paving	Rollers	2	8.00	80	0.38
Architectural Coating	Air Compressors	1	6.00	78	0.48

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Demolition	6	15.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Site Preparation	7	18.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Grading	8	20.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction	9	434.00	128.00	0.00	10.80	7.30	4.00	LD_Mix	HDT_Mix	HHDT
Paving	6	15.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Architectural Coating	1	87.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

3.2 Demolition - 2024

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	lb/day										lb/day					
Off-Road	2.2437	20.8781	19.7073	0.0388		0.9602	0.9602		0.8922	0.8922		3,747.4228	3,747.4228	1.0485		3,773.6345
Total	**2.2437**	**20.8781**	**19.7073**	**0.0388**		**0.9602**	**0.9602**		**0.8922**	**0.8922**		**3,747.4228**	**3,747.4228**	**1.0485**		**3,773.6345**

3.2 Demolition - 2024

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	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
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
Worker	0.0491	0.0257	0.2951	9.8000e-004	0.1232	8.0000e-004	0.1240	0.0327	7.4000e-004	0.0334		98.2079	98.2079	2.0700e-003		98.2595
Total	**0.0491**	**0.0257**	**0.2951**	**9.8000e-004**	**0.1232**	**8.0000e-004**	**0.1240**	**0.0327**	**7.4000e-004**	**0.0334**		**98.2079**	**98.2079**	**2.0700e-003**		**98.2595**

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	lb/day										lb/day					
Off-Road	2.2437	20.8781	19.7073	0.0388		0.9602	0.9602		0.8922	0.8922	0.0000	3,747.4228	3,747.4228	1.0485		3,773.6345
Total	**2.2437**	**20.8781**	**19.7073**	**0.0388**		**0.9602**	**0.9602**		**0.8922**	**0.8922**	**0.0000**	**3,747.4228**	**3,747.4228**	**1.0485**		**3,773.6345**

3.2 Demolition - 2024

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	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
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
Worker	0.0491	0.0257	0.2951	9.8000e-004	0.1232	8.0000e-004	0.1240	0.0327	7.4000e-004	0.0334		98.2079	98.2079	2.0700e-003		98.2595
Total	**0.0491**	**0.0257**	**0.2951**	**9.8000e-004**	**0.1232**	**8.0000e-004**	**0.1240**	**0.0327**	**7.4000e-004**	**0.0334**		**98.2079**	**98.2079**	**2.0700e-003**		**98.2595**

3.3 Site Preparation - 2024

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	lb/day										lb/day					
Fugitive Dust					18.0663	0.0000	18.0663	9.9307	0.0000	9.9307			0.0000			0.0000
Off-Road	2.6609	27.1760	18.3356	0.0381		1.2294	1.2294		1.1310	1.1310		3,688.0100	3,688.0100	1.1928		3,717.8294
Total	**2.6609**	**27.1760**	**18.3356**	**0.0381**	**18.0663**	**1.2294**	**19.2956**	**9.9307**	**1.1310**	**11.0617**		**3,688.0100**	**3,688.0100**	**1.1928**		**3,717.8294**

3.3 Site Preparation - 2024

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	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
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
Worker	0.0589	0.0309	0.3541	1.1800e-003	0.1479	9.6000e-004	0.1488	0.0392	8.9000e-004	0.0401		117.8494	117.8494	2.4800e-003		117.9114
Total	**0.0589**	**0.0309**	**0.3541**	**1.1800e-003**	**0.1479**	**9.6000e-004**	**0.1488**	**0.0392**	**8.9000e-004**	**0.0401**		**117.8494**	**117.8494**	**2.4800e-003**		**117.9114**

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	lb/day										lb/day					
Fugitive Dust					18.0663	0.0000	18.0663	9.9307	0.0000	9.9307			0.0000			0.0000
Off-Road	2.6609	27.1760	18.3356	0.0381		1.2294	1.2294		1.1310	1.1310	0.0000	3,688.0100	3,688.0100	1.1928		3,717.8294
Total	**2.6609**	**27.1760**	**18.3356**	**0.0381**	**18.0663**	**1.2294**	**19.2956**	**9.9307**	**1.1310**	**11.0617**	**0.0000**	**3,688.0100**	**3,688.0100**	**1.1928**		**3,717.8294**

3.3 Site Preparation - 2024

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	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
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
Worker	0.0589	0.0309	0.3541	1.1800e-003	0.1479	9.6000e-004	0.1488	0.0392	8.9000e-004	0.0401		117.8494	117.8494	2.4800e-003		117.9114
Total	**0.0589**	**0.0309**	**0.3541**	**1.1800e-003**	**0.1479**	**9.6000e-004**	**0.1488**	**0.0392**	**8.9000e-004**	**0.0401**		**117.8494**	**117.8494**	**2.4800e-003**		**117.9114**

3.4 Grading - 2024

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	lb/day										lb/day					
Fugitive Dust					8.6733	0.0000	8.6733	3.5965	0.0000	3.5965			0.0000			0.0000
Off-Road	3.2181	32.3770	27.7228	0.0621		1.3354	1.3354		1.2286	1.2286		6,009.7487	6,009.7487	1.9437		6,058.3405
Total	**3.2181**	**32.3770**	**27.7228**	**0.0621**	**8.6733**	**1.3354**	**10.0087**	**3.5965**	**1.2286**	**4.8251**		**6,009.7487**	**6,009.7487**	**1.9437**		**6,058.3405**

3.4 Grading - 2024

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	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
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
Worker	0.0655	0.0343	0.3935	1.3100e-003	0.1643	1.0700e-003	0.1654	0.0436	9.8000e-004	0.0446		130.9438	130.9438	2.7600e-003		131.0127
Total	**0.0655**	**0.0343**	**0.3935**	**1.3100e-003**	**0.1643**	**1.0700e-003**	**0.1654**	**0.0436**	**9.8000e-004**	**0.0446**		**130.9438**	**130.9438**	**2.7600e-003**		**131.0127**

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	lb/day										lb/day					
Fugitive Dust					8.6733	0.0000	8.6733	3.5965	0.0000	3.5965			0.0000			0.0000
Off-Road	3.2181	32.3770	27.7228	0.0621		1.3354	1.3354		1.2286	1.2286	0.0000	6,009.7487	6,009.7487	1.9437		6,058.3405
Total	**3.2181**	**32.3770**	**27.7228**	**0.0621**	**8.6733**	**1.3354**	**10.0087**	**3.5965**	**1.2286**	**4.8251**	**0.0000**	**6,009.7487**	**6,009.7487**	**1.9437**		**6,058.3405**

3.4 Grading - 2024

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	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
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
Worker	0.0655	0.0343	0.3935	1.3100e-003	0.1643	1.0700e-003	0.1654	0.0436	9.8000e-004	0.0446		130.9438	130.9438	2.7600e-003		131.0127
Total	**0.0655**	**0.0343**	**0.3935**	**1.3100e-003**	**0.1643**	**1.0700e-003**	**0.1654**	**0.0436**	**9.8000e-004**	**0.0446**		**130.9438**	**130.9438**	**2.7600e-003**		**131.0127**

3.5 Building Construction - 2024

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	lb/day										lb/day					
Off-Road	1.4716	13.4438	16.1668	0.0270		0.6133	0.6133		0.5769	0.5769		2,555.6989	2,555.6989	0.6044		2,570.8077
Total	**1.4716**	**13.4438**	**16.1668**	**0.0270**		**0.6133**	**0.6133**		**0.5769**	**0.5769**		**2,555.6989**	**2,555.6989**	**0.6044**		**2,570.8077**

3.5 Building Construction - 2024

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	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.2553	8.7228	2.9619	0.0307	0.8655	0.0117	0.8772	0.2491	0.0111	0.2602		3,317.4692	3,317.4692	0.2410		3,323.4950
Worker	1.4208	0.7446	8.5378	0.0285	3.5652	0.0232	3.5884	0.9457	0.0214	0.9670		2,841.4804	2,841.4804	0.0598		2,842.9751
Total	**1.6761**	**9.4674**	**11.4997**	**0.0592**	**4.4307**	**0.0349**	**4.4656**	**1.1947**	**0.0325**	**1.2272**		**6,158.9496**	**6,158.9496**	**0.3008**		**6,166.4701**

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	lb/day										lb/day					
Off-Road	1.4716	13.4438	16.1668	0.0270		0.6133	0.6133		0.5769	0.5769	0.0000	2,555.6989	2,555.6989	0.6044		2,570.8077
Total	**1.4716**	**13.4438**	**16.1668**	**0.0270**		**0.6133**	**0.6133**		**0.5769**	**0.5769**	**0.0000**	**2,555.6989**	**2,555.6989**	**0.6044**		**2,570.8077**

3.5 Building Construction - 2024

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	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.2553	8.7228	2.9619	0.0307	0.8655	0.0117	0.8772	0.2491	0.0111	0.2602		3,317.4692	3,317.4692	0.2410		3,323.4950
Worker	1.4208	0.7446	8.5378	0.0285	3.5652	0.0232	3.5884	0.9457	0.0214	0.9670		2,841.4804	2,841.4804	0.0598		2,842.9751
Total	**1.6761**	**9.4674**	**11.4997**	**0.0592**	**4.4307**	**0.0349**	**4.4656**	**1.1947**	**0.0325**	**1.2272**		**6,158.9496**	**6,158.9496**	**0.3008**		**6,166.4701**

3.5 Building Construction - 2025

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	lb/day										lb/day					
Off-Road	1.3674	12.4697	16.0847	0.0270		0.5276	0.5276		0.4963	0.4963		2,556.4744	2,556.4744	0.6010		2,571.4981
Total	**1.3674**	**12.4697**	**16.0847**	**0.0270**		**0.5276**	**0.5276**		**0.4963**	**0.4963**		**2,556.4744**	**2,556.4744**	**0.6010**		**2,571.4981**

3.5 Building Construction - 2025

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	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.2467	8.5877	2.9000	0.0305	0.8656	0.0113	0.8769	0.2491	0.0108	0.2599		3,297.1788	3,297.1788	0.2370		3,303.1028
Worker	1.3520	0.6794	7.9185	0.0273	3.5652	0.0228	3.5880	0.9457	0.0210	0.9666		2,726.5950	2,726.5950	0.0544		2,727.9542
Total	**1.5987**	**9.2671**	**10.8185**	**0.0578**	**4.4308**	**0.0341**	**4.4649**	**1.1948**	**0.0318**	**1.2266**		**6,023.7738**	**6,023.7738**	**0.2913**		**6,031.0569**

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	lb/day										lb/day					
Off-Road	1.3674	12.4697	16.0847	0.0270		0.5276	0.5276		0.4963	0.4963	0.0000	2,556.4744	2,556.4744	0.6010		2,571.4981
Total	**1.3674**	**12.4697**	**16.0847**	**0.0270**		**0.5276**	**0.5276**		**0.4963**	**0.4963**	**0.0000**	**2,556.4744**	**2,556.4744**	**0.6010**		**2,571.4981**

3.5 Building Construction - 2025

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	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.2467	8.5877	2.9000	0.0305	0.8656	0.0113	0.8769	0.2491	0.0108	0.2599		3,297.1788	3,297.1788	0.2370		3,303.1028
Worker	1.3520	0.6794	7.9185	0.0273	3.5652	0.0228	3.5880	0.9457	0.0210	0.9666		2,726.5950	2,726.5950	0.0544		2,727.9542
Total	**1.5987**	**9.2671**	**10.8185**	**0.0578**	**4.4308**	**0.0341**	**4.4649**	**1.1948**	**0.0318**	**1.2266**		**6,023.7738**	**6,023.7738**	**0.2913**		**6,031.0569**

3.6 Architectural Coating - 2025

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	lb/day										lb/day					
Archit. Coating	11.4125					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.1709	1.1455	1.8091	2.9700e-003		0.0515	0.0515		0.0515	0.0515		281.4481	281.4481	0.0154		281.8319
Total	**11.5834**	**1.1455**	**1.8091**	**2.9700e-003**		**0.0515**	**0.0515**		**0.0515**	**0.0515**		**281.4481**	**281.4481**	**0.0154**		**281.8319**

3.6 Architectural Coating - 2025

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	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
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
Worker	0.2710	0.1362	1.5873	5.4800e-003	0.7147	4.5700e-003	0.7193	0.1896	4.2000e-003	0.1938		546.5755	546.5755	0.0109		546.8480
Total	**0.2710**	**0.1362**	**1.5873**	**5.4800e-003**	**0.7147**	**4.5700e-003**	**0.7193**	**0.1896**	**4.2000e-003**	**0.1938**		**546.5755**	**546.5755**	**0.0109**		**546.8480**

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	lb/day										lb/day					
Archit. Coating	11.4125					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.1709	1.1455	1.8091	2.9700e-003		0.0515	0.0515		0.0515	0.0515	0.0000	281.4481	281.4481	0.0154		281.8319
Total	**11.5834**	**1.1455**	**1.8091**	**2.9700e-003**		**0.0515**	**0.0515**		**0.0515**	**0.0515**	**0.0000**	**281.4481**	**281.4481**	**0.0154**		**281.8319**

3.6 Architectural Coating - 2025

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	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
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
Worker	0.2710	0.1362	1.5873	5.4800e-003	0.7147	4.5700e-003	0.7193	0.1896	4.2000e-003	0.1938		546.5755	546.5755	0.0109		546.8480
Total	**0.2710**	**0.1362**	**1.5873**	**5.4800e-003**	**0.7147**	**4.5700e-003**	**0.7193**	**0.1896**	**4.2000e-003**	**0.1938**		**546.5755**	**546.5755**	**0.0109**		**546.8480**

3.7 Paving - 2025

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	lb/day										lb/day					
Off-Road	0.9152	8.5816	14.5780	0.0228		0.4185	0.4185		0.3850	0.3850		2,206.7452	2,206.7452	0.7137		2,224.5878
Paving	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**0.9152**	**8.5816**	**14.5780**	**0.0228**		**0.4185**	**0.4185**		**0.3850**	**0.3850**		**2,206.7452**	**2,206.7452**	**0.7137**		**2,224.5878**

3.7 Paving - 2025

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	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
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
Worker	0.0467	0.0235	0.2737	9.4000e-004	0.1232	7.9000e-004	0.1240	0.0327	7.2000e-004	0.0334		94.2372	94.2372	1.8800e-003		94.2841
Total	**0.0467**	**0.0235**	**0.2737**	**9.4000e-004**	**0.1232**	**7.9000e-004**	**0.1240**	**0.0327**	**7.2000e-004**	**0.0334**		**94.2372**	**94.2372**	**1.8800e-003**		**94.2841**

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	lb/day										lb/day					
Off-Road	0.9152	8.5816	14.5780	0.0228		0.4185	0.4185		0.3850	0.3850	0.0000	2,206.7452	2,206.7452	0.7137		2,224.5878
Paving	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**0.9152**	**8.5816**	**14.5780**	**0.0228**		**0.4185**	**0.4185**		**0.3850**	**0.3850**	**0.0000**	**2,206.7452**	**2,206.7452**	**0.7137**		**2,224.5878**

3.7 Paving - 2025

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	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
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
Worker	0.0467	0.0235	0.2737	9.4000e-004	0.1232	7.9000e-004	0.1240	0.0327	7.2000e-004	0.0334		94.2372	94.2372	1.8800e-003		94.2841
Total	**0.0467**	**0.0235**	**0.2737**	**9.4000e-004**	**0.1232**	**7.9000e-004**	**0.1240**	**0.0327**	**7.2000e-004**	**0.0334**		**94.2372**	**94.2372**	**1.8800e-003**		**94.2841**

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	lb/day										lb/day					
Mitigated	2.8993	12.0687	36.6066	0.1593	19.5437	0.1057	19.6494	5.2178	0.0980	5.3158		16,244.4487	16,244.4487	0.5786		16,258.9134
Unmitigated	2.8993	12.0687	36.6066	0.1593	19.5437	0.1057	19.6494	5.2178	0.0980	5.3158		16,244.4487	16,244.4487	0.5786		16,258.9134

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Apartments Low Rise	1,954.44	1,911.72	1620.69	5,251,658	5,251,658
City Park	217.60	247.52	182.13	462,852	462,852
Office Park	1,320.00	0.00	0.00	2,363,033	2,363,033
Total	3,492.04	2,159.24	1,802.82	8,077,543	8,077,543

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 Low Rise	10.80	7.30	7.50	32.90	18.00	49.10	86	11	3
City Park	9.50	7.30	7.30	33.00	48.00	19.00	66	28	6
Office Park	9.50	7.30	7.30	33.00	48.00	19.00	82	15	3

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
Apartments Low Rise	0.611155	0.038739	0.187677	0.096955	0.013383	0.005563	0.020646	0.018593	0.001209	0.001094	0.003654	0.000418	0.000914
City Park	0.611155	0.038739	0.187677	0.096955	0.013383	0.005563	0.020646	0.018593	0.001209	0.001094	0.003654	0.000418	0.000914
Office Park	0.611155	0.038739	0.187677	0.096955	0.013383	0.005563	0.020646	0.018593	0.001209	0.001094	0.003654	0.000418	0.000914

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

Kilowatt Hours of Renewable Electricity Generated

	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	lb/day										lb/day					
NaturalGas Mitigated	0.1450	1.2633	0.7047	7.9100e-003		0.1002	0.1002		0.1002	0.1002		1,581.8374	1,581.8374	0.0303	0.0290	1,591.2375
NaturalGas Unmitigated	0.1450	1.2633	0.7047	7.9100e-003		0.1002	0.1002		0.1002	0.1002		1,581.8374	1,581.8374	0.0303	0.0290	1,591.2375

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	lb/day										lb/day					
Apartments Low Rise	9333.73	0.1007	0.8602	0.3660	5.4900e-003		0.0696	0.0696		0.0696	0.0696		1,098.0856	1,098.0856	0.0211	0.0201	1,104.6110
City Park	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
Office Park	4111.89	0.0443	0.4031	0.3386	2.4200e-003		0.0306	0.0306		0.0306	0.0306		483.7518	483.7518	9.2700e-003	8.8700e-003	486.6265
Total		**0.1450**	**1.2633**	**0.7047**	**7.9100e-003**		**0.1002**	**0.1002**		**0.1002**	**0.1002**		**1,581.8374**	**1,581.8374**	**0.0303**	**0.0290**	**1,591.2375**

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	lb/day										lb/day					
Apartments Low Rise	9.33373	0.1007	0.8602	0.3660	5.4900e-003		0.0696	0.0696		0.0696	0.0696		1,098.0856	1,098.0856	0.0211	0.0201	1,104.6110
City Park	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
Office Park	4.11189	0.0443	0.4031	0.3386	2.4200e-003		0.0306	0.0306		0.0306	0.0306		483.7518	483.7518	9.2700e-003	8.8700e-003	486.6265
Total		**0.1450**	**1.2633**	**0.7047**	**7.9100e-003**		**0.1002**	**0.1002**		**0.1002**	**0.1002**		**1,581.8374**	**1,581.8374**	**0.0303**	**0.0290**	**1,591.2375**

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

No Hearths Installed

	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	lb/day										lb/day					
Mitigated	10.0032	0.2534	21.9841	1.1600e-003		0.1222	0.1222		0.1222	0.1222	0.0000	39.6947	39.6947	0.0379	0.0000	40.6415
Unmitigated	10.0032	0.2534	21.9841	1.1600e-003		0.1222	0.1222		0.1222	0.1222	0.0000	39.6947	39.6947	0.0379	0.0000	40.6415

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	lb/day										lb/day					
Architectural Coating	0.7817					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	8.5630					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Hearth	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	0.6585	0.2534	21.9841	1.1600e-003		0.1222	0.1222		0.1222	0.1222		39.6947	39.6947	0.0379		40.6415
Total	**10.0032**	**0.2534**	**21.9841**	**1.1600e-003**		**0.1222**	**0.1222**		**0.1222**	**0.1222**	**0.0000**	**39.6947**	**39.6947**	**0.0379**	**0.0000**	**40.6415**

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	lb/day										lb/day					
Architectural Coating	0.7817					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	8.5630					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Hearth	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	0.6585	0.2534	21.9841	1.1600e-003		0.1222	0.1222		0.1222	0.1222		39.6947	39.6947	0.0379		40.6415
Total	**10.0032**	**0.2534**	**21.9841**	**1.1600e-003**		**0.1222**	**0.1222**		**0.1222**	**0.1222**	**0.0000**	**39.6947**	**39.6947**	**0.0379**	**0.0000**	**40.6415**

7.0 Water Detail

7.1 Mitigation Measures Water

Apply Water Conservation Strategy

Use Reclaimed Water

8.0 Waste Detail

8.1 Mitigation Measures Waste

9.0 Operational Offroad

Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type

10.0 Stationary Equipment

Fire Pumps and Emergency Generators

Equipment Type	Number	Hours/Day	Hours/Year	Horse Power	Load Factor	Fuel Type

Boilers

Equipment Type	Number	Heat Input/Day	Heat Input/Year	Boiler Rating	Fuel Type

User Defined Equipment

Equipment Type	Number

11.0 Vegetation

Oxnard Teal Club Annexation

Ventura County, Winter

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Manufacturing	173.80	1000sqft	5.70	173,804.00	0
Unrefrigerated Warehouse-No Rail	173.80	1000sqft	5.70	173,804.00	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.6	**Precipitation Freq (Days)**	31
Climate Zone	8			**Operational Year**	2030
Utility Company	Southern California Edison				
CO2 Intensity (lb/MWhr)	337.71	**CH4 Intensity (lb/MWhr)**	0.014	**N2O Intensity (lb/MWhr)**	0.003

1.3 User Entered Comments & Non-Default Data

Oxnard Teal Club Annexation - Ventura County, Winter

Project Characteristics - Based on 2030 projections for SCE 60% renewable with CPUC 2011 SCE factor for 2009. 337.71; 0.014; 0.003

Land Use - Based on PD Table 2-4 8/2019, half each of 11.4 acres.

Construction Phase - Annex phase 2025+ per PD 8/2019. AC extended to overlap with half of construction phase.

Trips and VMT - Landfill located 4 miles east at Del Norte Regional Recycling and Transfer

Demolition - No demolition

Grading - No overall export/import

Architectural Coating - Per VCAPCD Rule 74.2

Vehicle Trips -

Woodstoves - No fireplaces or woodstoves

Area Coating - Per VCAPCD Rule 74.2

Energy Use - 7% decrease in electricity factor for residential and 30% decrease for commercial per 2019 CalGreen standards

Water And Wastewater -

Solid Waste - 25% waste reduction beyond AB 939 due to AB 341, Athens Services compliant

Area Mitigation - Per VCAPCD Rule 74.2 AC. 50 interior, 100 exterior

Energy Mitigation -

Water Mitigation - 20% water reduction indoor and water efficient fixtures per CalGreen Building Standards Update 2016, Recycled water used for all landscaping

Table Name	Column Name	Default Value	New Value
tblArchitecturalCoating	EF_Nonresidential_Exterior	250.00	100.00
tblArchitecturalCoating	EF_Nonresidential_Interior	250.00	50.00
tblArchitecturalCoating	EF_Parking	250.00	100.00
tblArchitecturalCoating	EF_Residential_Interior	75.00	50.00
tblAreaCoating	Area_EF_Nonresidential_Exterior	250	100
tblAreaCoating	Area_EF_Nonresidential_Interior	250	50
tblAreaCoating	Area_EF_Parking	250	100
tblAreaCoating	Area_EF_Residential_Interior	75	50
tblAreaMitigation	UseLowVOCPaintParkingCheck	False	True
tblEnergyUse	T24E	1.63	1.14
tblEnergyUse	T24E	0.59	0.41
tblGrading	AcresOfGrading	75.00	50.00
tblLandUse	LandUseSquareFeet	173,800.00	173,804.00
tblLandUse	LandUseSquareFeet	173,800.00	173,804.00
tblLandUse	LotAcreage	3.99	5.70
tblLandUse	LotAcreage	3.99	5.70
tblProjectCharacteristics	CH4IntensityFactor	0.029	0.014
tblProjectCharacteristics	CO2IntensityFactor	702.44	337.71
tblProjectCharacteristics	N2OIntensityFactor	0.006	0.003
tblSolidWaste	SolidWasteGenerationRate	215.51	161.63
tblSolidWaste	SolidWasteGenerationRate	163.37	122.53
tblTripsAndVMT	HaulingTripLength	20.00	4.00

2.0 Emissions Summary

2.1 Overall Construction (Maximum Daily Emission)

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2025	2.9635	27.9742	26.6960	0.0633	18.2141	1.1319	19.3019	9.9699	1.0414	10.9706	0.0000	6,133.9310	6,133.9310	1.9457	0.0000	6,182.5736
2026	100.9548	16.4454	19.8397	0.0493	1.5848	0.5399	2.1247	0.4291	0.5078	0.9368	0.0000	4,900.0554	4,900.0554	0.7215	0.0000	4,918.0924
Maximum	**100.9548**	**27.9742**	**26.6960**	**0.0633**	**18.2141**	**1.1319**	**19.3019**	**9.9699**	**1.0414**	**10.9706**	**0.0000**	**6,133.9310**	**6,133.9310**	**1.9457**	**0.0000**	**6,182.5736**

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2025	2.9635	27.9742	26.6960	0.0633	18.2141	1.1319	19.3019	9.9699	1.0414	10.9706	0.0000	6,133.9310	6,133.9310	1.9457	0.0000	6,182.5736
2026	100.9548	16.4454	19.8397	0.0493	1.5848	0.5399	2.1247	0.4291	0.5078	0.9368	0.0000	4,900.0554	4,900.0554	0.7215	0.0000	4,918.0924
Maximum	**100.9548**	**27.9742**	**26.6960**	**0.0633**	**18.2141**	**1.1319**	**19.3019**	**9.9699**	**1.0414**	**10.9706**	**0.0000**	**6,133.9310**	**6,133.9310**	**1.9457**	**0.0000**	**6,182.5736**

	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	lb/day										lb/day					
Area	7.9938	3.2000e-004	0.0353	0.0000		1.3000e-004	1.3000e-004		1.3000e-004	1.3000e-004		0.0761	0.0761	2.0000e-004		0.0810
Energy	0.1275	1.1592	0.9737	6.9500e-003		0.0881	0.0881		0.0881	0.0881		1,390.9922	1,390.9922	0.0267	0.0255	1,399.2582
Mobile	0.8176	3.4299	10.7892	0.0479	5.9048	0.0315	5.9362	1.5765	0.0292	1.6056		4,879.8392	4,879.8392	0.1714		4,884.1232
Total	**8.9389**	**4.5894**	**11.7982**	**0.0548**	**5.9048**	**0.1197**	**6.0244**	**1.5765**	**0.1174**	**1.6939**		**6,270.9075**	**6,270.9075**	**0.1982**	**0.0255**	**6,283.4624**

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	lb/day										lb/day					
Area	7.9938	3.2000e-004	0.0353	0.0000		1.3000e-004	1.3000e-004		1.3000e-004	1.3000e-004		0.0761	0.0761	2.0000e-004		0.0810
Energy	0.1275	1.1592	0.9737	6.9500e-003		0.0881	0.0881		0.0881	0.0881		1,390.9922	1,390.9922	0.0267	0.0255	1,399.2582
Mobile	0.8176	3.4299	10.7892	0.0479	5.9048	0.0315	5.9362	1.5765	0.0292	1.6056		4,879.8392	4,879.8392	0.1714		4,884.1232
Total	**8.9389**	**4.5894**	**11.7982**	**0.0548**	**5.9048**	**0.1197**	**6.0244**	**1.5765**	**0.1174**	**1.6939**		**6,270.9075**	**6,270.9075**	**0.1982**	**0.0255**	**6,283.4624**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Demolition	Demolition	1/1/2025	1/28/2025	5	20	
2	Site Preparation	Site Preparation	1/29/2025	2/11/2025	5	10	
3	Grading	Grading	2/12/2025	3/25/2025	5	30	
4	Building Construction	Building Construction	3/26/2025	5/19/2026	5	300	
5	Paving	Paving	5/20/2026	6/16/2026	5	20	
6	Architectural Coating	Architectural Coating	6/17/2026	7/14/2026	5	20	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 50

Acres of Paving: 0

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 521,412; Non-Residential Outdoor: 173,804; Striped Parking Area: 0 (Architectural Coating – sqft)

OffRoad Equipment

Oxnard Teal Club Annexation - Ventura County, Winter

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Demolition	Concrete/Industrial Saws	1	8.00	81	0.73
Demolition	Excavators	3	8.00	158	0.38
Demolition	Rubber Tired Dozers	2	8.00	247	0.40
Site Preparation	Rubber Tired Dozers	3	8.00	247	0.40
Site Preparation	Tractors/Loaders/Backhoes	4	8.00	97	0.37
Grading	Excavators	2	8.00	158	0.38
Grading	Graders	1	8.00	187	0.41
Grading	Rubber Tired Dozers	1	8.00	247	0.40
Grading	Scrapers	2	8.00	367	0.48
Grading	Tractors/Loaders/Backhoes	2	8.00	97	0.37
Building Construction	Cranes	1	7.00	231	0.29
Building Construction	Forklifts	3	8.00	89	0.20
Building Construction	Generator Sets	1	8.00	84	0.74
Building Construction	Tractors/Loaders/Backhoes	3	7.00	97	0.37
Building Construction	Welders	1	8.00	46	0.45
Architectural Coating	Air Compressors	1	6.00	78	0.48
Paving	Pavers	2	8.00	130	0.42
Paving	Paving Equipment	2	8.00	132	0.36
Paving	Rollers	2	8.00	80	0.38

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	15.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Site Preparation	7	18.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Grading	8	20.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction	9	146.00	57.00	0.00	10.80	7.30	4.00	LD_Mix	HDT_Mix	HHDT
Architectural Coating	1	29.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Paving	6	15.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

3.2 Demolition - 2025

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	lb/day										lb/day					
Off-Road	2.0926	19.1966	19.4184	0.0388		0.8528	0.8528		0.7920	0.7920		3,747.5996	3,747.5996	1.0464		3,773.7606
Total	**2.0926**	**19.1966**	**19.4184**	**0.0388**		**0.8528**	**0.8528**		**0.7920**	**0.7920**		**3,747.5996**	**3,747.5996**	**1.0464**		**3,773.7606**

3.2 Demolition - 2025

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	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
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
Worker	0.0467	0.0235	0.2737	9.4000e-004	0.1232	7.9000e-004	0.1240	0.0327	7.2000e-004	0.0334		94.2372	94.2372	1.8800e-003		94.2841
Total	**0.0467**	**0.0235**	**0.2737**	**9.4000e-004**	**0.1232**	**7.9000e-004**	**0.1240**	**0.0327**	**7.2000e-004**	**0.0334**		**94.2372**	**94.2372**	**1.8800e-003**		**94.2841**

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	lb/day										lb/day					
Off-Road	2.0926	19.1966	19.4184	0.0388		0.8528	0.8528		0.7920	0.7920	0.0000	3,747.5996	3,747.5996	1.0464		3,773.7606
Total	**2.0926**	**19.1966**	**19.4184**	**0.0388**		**0.8528**	**0.8528**		**0.7920**	**0.7920**	**0.0000**	**3,747.5996**	**3,747.5996**	**1.0464**		**3,773.7606**

3.2 Demolition - 2025

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	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
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
Worker	0.0467	0.0235	0.2737	9.4000e-004	0.1232	7.9000e-004	0.1240	0.0327	7.2000e-004	0.0334		94.2372	94.2372	1.8800e-003		94.2841
Total	**0.0467**	**0.0235**	**0.2737**	**9.4000e-004**	**0.1232**	**7.9000e-004**	**0.1240**	**0.0327**	**7.2000e-004**	**0.0334**		**94.2372**	**94.2372**	**1.8800e-003**		**94.2841**

3.3 Site Preparation - 2025

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	lb/day										lb/day					
Fugitive Dust					18.0663	0.0000	18.0663	9.9307	0.0000	9.9307			0.0000			0.0000
Off-Road	2.4727	25.2339	17.9118	0.0381		1.0868	1.0868		0.9999	0.9999		3,689.1037	3,689.1037	1.1931		3,718.9320
Total	**2.4727**	**25.2339**	**17.9118**	**0.0381**	**18.0663**	**1.0868**	**19.1531**	**9.9307**	**0.9999**	**10.9305**		**3,689.1037**	**3,689.1037**	**1.1931**		**3,718.9320**

3.3 Site Preparation - 2025

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	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
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
Worker	0.0561	0.0282	0.3284	1.1300e-003	0.1479	9.4000e-004	0.1488	0.0392	8.7000e-004	0.0401		113.0846	113.0846	2.2500e-003		113.1410
Total	**0.0561**	**0.0282**	**0.3284**	**1.1300e-003**	**0.1479**	**9.4000e-004**	**0.1488**	**0.0392**	**8.7000e-004**	**0.0401**		**113.0846**	**113.0846**	**2.2500e-003**		**113.1410**

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	lb/day										lb/day					
Fugitive Dust					18.0663	0.0000	18.0663	9.9307	0.0000	9.9307			0.0000			0.0000
Off-Road	2.4727	25.2339	17.9118	0.0381		1.0868	1.0868		0.9999	0.9999	0.0000	3,689.1037	3,689.1037	1.1931		3,718.9320
Total	**2.4727**	**25.2339**	**17.9118**	**0.0381**	**18.0663**	**1.0868**	**19.1531**	**9.9307**	**0.9999**	**10.9305**	**0.0000**	**3,689.1037**	**3,689.1037**	**1.1931**		**3,718.9320**

3.3 Site Preparation - 2025

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	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
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
Worker	0.0561	0.0282	0.3284	1.1300e-003	0.1479	9.4000e-004	0.1488	0.0392	8.7000e-004	0.0401		113.0846	113.0846	2.2500e-003		113.1410
Total	**0.0561**	**0.0282**	**0.3284**	**1.1300e-003**	**0.1479**	**9.4000e-004**	**0.1488**	**0.0392**	**8.7000e-004**	**0.0401**		**113.0846**	**113.0846**	**2.2500e-003**		**113.1410**

3.4 Grading - 2025

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	lb/day										lb/day					
Fugitive Dust					7.7896	0.0000	7.7896	3.5011	0.0000	3.5011			0.0000			0.0000
Off-Road	2.9012	27.9429	26.3311	0.0621		1.1309	1.1309		1.0404	1.0404		6,008.2814	6,008.2814	1.9432		6,056.8614
Total	**2.9012**	**27.9429**	**26.3311**	**0.0621**	**7.7896**	**1.1309**	**8.9205**	**3.5011**	**1.0404**	**4.5415**		**6,008.2814**	**6,008.2814**	**1.9432**		**6,056.8614**

3.4 Grading - 2025

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	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
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
Worker	0.0623	0.0313	0.3649	1.2600e-003	0.1643	1.0500e-003	0.1654	0.0436	9.7000e-004	0.0446		125.6495	125.6495	2.5100e-003		125.7122
Total	**0.0623**	**0.0313**	**0.3649**	**1.2600e-003**	**0.1643**	**1.0500e-003**	**0.1654**	**0.0436**	**9.7000e-004**	**0.0446**		**125.6495**	**125.6495**	**2.5100e-003**		**125.7122**

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	lb/day										lb/day					
Fugitive Dust					7.7896	0.0000	7.7896	3.5011	0.0000	3.5011			0.0000			0.0000
Off-Road	2.9012	27.9429	26.3311	0.0621		1.1309	1.1309		1.0404	1.0404	0.0000	6,008.2814	6,008.2814	1.9432		6,056.8614
Total	**2.9012**	**27.9429**	**26.3311**	**0.0621**	**7.7896**	**1.1309**	**8.9205**	**3.5011**	**1.0404**	**4.5415**	**0.0000**	**6,008.2814**	**6,008.2814**	**1.9432**		**6,056.8614**

3.4 Grading - 2025

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	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
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
Worker	0.0623	0.0313	0.3649	1.2600e-003	0.1643	1.0500e-003	0.1654	0.0436	9.7000e-004	0.0446		125.6495	125.6495	2.5100e-003		125.7122
Total	**0.0623**	**0.0313**	**0.3649**	**1.2600e-003**	**0.1643**	**1.0500e-003**	**0.1654**	**0.0436**	**9.7000e-004**	**0.0446**		**125.6495**	**125.6495**	**2.5100e-003**		**125.7122**

3.5 Building Construction - 2025

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	lb/day										lb/day					
Off-Road	1.3674	12.4697	16.0847	0.0270		0.5276	0.5276		0.4963	0.4963		2,556.4744	2,556.4744	0.6010		2,571.4981
Total	**1.3674**	**12.4697**	**16.0847**	**0.0270**		**0.5276**	**0.5276**		**0.4963**	**0.4963**		**2,556.4744**	**2,556.4744**	**0.6010**		**2,571.4981**

3.5 Building Construction - 2025

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	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.1099	3.8242	1.2914	0.0136	0.3855	5.0400e-003	0.3905	0.1109	4.8200e-003	0.1158		1,468.2749	1,468.2749	0.1055		1,470.9129
Worker	0.4548	0.2286	2.6638	9.2000e-003	1.1994	7.6600e-003	1.2070	0.3181	7.0500e-003	0.3252		917.2416	917.2416	0.0183		917.6989
Total	**0.5647**	**4.0527**	**3.9552**	**0.0228**	**1.5848**	**0.0127**	**1.5975**	**0.4291**	**0.0119**	**0.4409**		**2,385.5166**	**2,385.5166**	**0.1238**		**2,388.6118**

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	lb/day										lb/day					
Off-Road	1.3674	12.4697	16.0847	0.0270		0.5276	0.5276		0.4963	0.4963	0.0000	2,556.4744	2,556.4744	0.6010		2,571.4981
Total	**1.3674**	**12.4697**	**16.0847**	**0.0270**		**0.5276**	**0.5276**		**0.4963**	**0.4963**	**0.0000**	**2,556.4744**	**2,556.4744**	**0.6010**		**2,571.4981**

3.5 Building Construction - 2025

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	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.1099	3.8242	1.2914	0.0136	0.3855	5.0400e-003	0.3905	0.1109	4.8200e-003	0.1158		1,468.2749	1,468.2749	0.1055		1,470.9129
Worker	0.4548	0.2286	2.6638	9.2000e-003	1.1994	7.6600e-003	1.2070	0.3181	7.0500e-003	0.3252		917.2416	917.2416	0.0183		917.6989
Total	**0.5647**	**4.0527**	**3.9552**	**0.0228**	**1.5848**	**0.0127**	**1.5975**	**0.4291**	**0.0119**	**0.4409**		**2,385.5166**	**2,385.5166**	**0.1238**		**2,388.6118**

3.5 Building Construction - 2026

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	lb/day										lb/day					
Off-Road	1.3674	12.4697	16.0847	0.0270		0.5276	0.5276		0.4963	0.4963		2,556.4744	2,556.4744	0.6010		2,571.4981
Total	**1.3674**	**12.4697**	**16.0847**	**0.0270**		**0.5276**	**0.5276**		**0.4963**	**0.4963**		**2,556.4744**	**2,556.4744**	**0.6010**		**2,571.4981**

3.5 Building Construction - 2026

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	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.1064	3.7659	1.2712	0.0135	0.3855	4.9000e-003	0.3904	0.1109	4.6800e-003	0.1156		1,459.8485	1,459.8485	0.1038		1,462.4441
Worker	0.4345	0.2098	2.4838	8.8600e-003	1.1994	7.4200e-003	1.2068	0.3181	6.8200e-003	0.3250		883.7325	883.7325	0.0167		884.1502
Total	**0.5409**	**3.9757**	**3.7550**	**0.0223**	**1.5848**	**0.0123**	**1.5972**	**0.4291**	**0.0115**	**0.4406**		**2,343.5810**	**2,343.5810**	**0.1205**		**2,346.5944**

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	lb/day										lb/day					
Off-Road	1.3674	12.4697	16.0847	0.0270		0.5276	0.5276		0.4963	0.4963	0.0000	2,556.4744	2,556.4744	0.6010		2,571.4981
Total	**1.3674**	**12.4697**	**16.0847**	**0.0270**		**0.5276**	**0.5276**		**0.4963**	**0.4963**	**0.0000**	**2,556.4744**	**2,556.4744**	**0.6010**		**2,571.4981**

3.5 Building Construction - 2026

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	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.1064	3.7659	1.2712	0.0135	0.3855	4.9000e-003	0.3904	0.1109	4.6800e-003	0.1156		1,459.8485	1,459.8485	0.1038		1,462.4441
Worker	0.4345	0.2098	2.4838	8.8600e-003	1.1994	7.4200e-003	1.2068	0.3181	6.8200e-003	0.3250		883.7325	883.7325	0.0167		884.1502
Total	**0.5409**	**3.9757**	**3.7550**	**0.0223**	**1.5848**	**0.0123**	**1.5972**	**0.4291**	**0.0115**	**0.4406**		**2,343.5810**	**2,343.5810**	**0.1205**		**2,346.5944**

3.6 Paving - 2026

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	lb/day										lb/day					
Off-Road	0.9152	8.5816	14.5780	0.0228		0.4185	0.4185		0.3850	0.3850		2,206.7452	2,206.7452	0.7137		2,224.5878
Paving	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**0.9152**	**8.5816**	**14.5780**	**0.0228**		**0.4185**	**0.4185**		**0.3850**	**0.3850**		**2,206.7452**	**2,206.7452**	**0.7137**		**2,224.5878**

3.6 Paving - 2026

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	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
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
Worker	0.0446	0.0216	0.2552	9.1000e-004	0.1232	7.6000e-004	0.1240	0.0327	7.0000e-004	0.0334		90.7944	90.7944	1.7200e-003		90.8374
Total	**0.0446**	**0.0216**	**0.2552**	**9.1000e-004**	**0.1232**	**7.6000e-004**	**0.1240**	**0.0327**	**7.0000e-004**	**0.0334**		**90.7944**	**90.7944**	**1.7200e-003**		**90.8374**

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	lb/day										lb/day					
Off-Road	0.9152	8.5816	14.5780	0.0228		0.4185	0.4185		0.3850	0.3850	0.0000	2,206.7452	2,206.7452	0.7137		2,224.5878
Paving	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**0.9152**	**8.5816**	**14.5780**	**0.0228**		**0.4185**	**0.4185**		**0.3850**	**0.3850**	**0.0000**	**2,206.7452**	**2,206.7452**	**0.7137**		**2,224.5878**

3.6 Paving - 2026

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	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
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
Worker	0.0446	0.0216	0.2552	9.1000e-004	0.1232	7.6000e-004	0.1240	0.0327	7.0000e-004	0.0334		90.7944	90.7944	1.7200e-003		90.8374
Total	**0.0446**	**0.0216**	**0.2552**	**9.1000e-004**	**0.1232**	**7.6000e-004**	**0.1240**	**0.0327**	**7.0000e-004**	**0.0334**		**90.7944**	**90.7944**	**1.7200e-003**		**90.8374**

3.7 Architectural Coating - 2026

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	lb/day										lb/day					
Archit. Coating	100.6977					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.1709	1.1455	1.8091	2.9700e-003		0.0515	0.0515		0.0515	0.0515		281.4481	281.4481	0.0154		281.8319
Total	**100.8686**	**1.1455**	**1.8091**	**2.9700e-003**		**0.0515**	**0.0515**		**0.0515**	**0.0515**		**281.4481**	**281.4481**	**0.0154**		**281.8319**

3.7 Architectural Coating - 2026

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	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
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
Worker	0.0863	0.0417	0.4934	1.7600e-003	0.2382	1.4700e-003	0.2397	0.0632	1.3600e-003	0.0645		175.5359	175.5359	3.3200e-003		175.6189
Total	**0.0863**	**0.0417**	**0.4934**	**1.7600e-003**	**0.2382**	**1.4700e-003**	**0.2397**	**0.0632**	**1.3600e-003**	**0.0645**		**175.5359**	**175.5359**	**3.3200e-003**		**175.6189**

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	lb/day										lb/day					
Archit. Coating	100.6977					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.1709	1.1455	1.8091	2.9700e-003		0.0515	0.0515		0.0515	0.0515	0.0000	281.4481	281.4481	0.0154		281.8319
Total	**100.8686**	**1.1455**	**1.8091**	**2.9700e-003**		**0.0515**	**0.0515**		**0.0515**	**0.0515**	**0.0000**	**281.4481**	**281.4481**	**0.0154**		**281.8319**

3.7 Architectural Coating - 2026

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	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
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
Worker	0.0863	0.0417	0.4934	1.7600e-003	0.2382	1.4700e-003	0.2397	0.0632	1.3600e-003	0.0645		175.5359	175.5359	3.3200e-003		175.6189
Total	**0.0863**	**0.0417**	**0.4934**	**1.7600e-003**	**0.2382**	**1.4700e-003**	**0.2397**	**0.0632**	**1.3600e-003**	**0.0645**		**175.5359**	**175.5359**	**3.3200e-003**		**175.6189**

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	lb/day										lb/day					
Mitigated	0.8176	3.4299	10.7892	0.0479	5.9048	0.0315	5.9362	1.5765	0.0292	1.6056		4,879.8392	4,879.8392	0.1714		4,884.1232
Unmitigated	0.8176	3.4299	10.7892	0.0479	5.9048	0.0315	5.9362	1.5765	0.0292	1.6056		4,879.8392	4,879.8392	0.1714		4,884.1232

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Manufacturing	663.92	258.96	107.76	1,537,455	1,537,455
Unrefrigerated Warehouse-No Rail	291.98	291.98	291.98	852,451	852,451
Total	955.90	550.95	399.74	2,389,906	2,389,906

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
Manufacturing	9.50	7.30	7.30	59.00	28.00	13.00	92	5	3
Unrefrigerated Warehouse-No	9.50	7.30	7.30	59.00	0.00	41.00	92	5	3

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
Manufacturing	0.611155	0.038739	0.187677	0.096955	0.013383	0.005563	0.020646	0.018593	0.001209	0.001094	0.003654	0.000418	0.000914
Unrefrigerated Warehouse-No Rail	0.611155	0.038739	0.187677	0.096955	0.013383	0.005563	0.020646	0.018593	0.001209	0.001094	0.003654	0.000418	0.000914

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
NaturalGas Mitigated	0.1275	1.1592	0.9737	6.9500e-003		0.0881	0.0881		0.0881	0.0881		1,390.9922	1,390.9922	0.0267	0.0255	1,399.2582
NaturalGas Unmitigated	0.1275	1.1592	0.9737	6.9500e-003		0.0881	0.0881		0.0881	0.0881		1,390.9922	1,390.9922	0.0267	0.0255	1,399.2582

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	lb/day										lb/day					
Manufacturing	9952.06	0.1073	0.9757	0.8196	5.8500e-003		0.0742	0.0742		0.0742	0.0742		1,170.8311	1,170.8311	0.0224	0.0215	1,177.7888
Unrefrigerated Warehouse-No Rail	1871.37	0.0202	0.1835	0.1541	1.1000e-003		0.0139	0.0139		0.0139	0.0139		220.1611	220.1611	4.2200e-003	4.0400e-003	221.4694
Total		**0.1275**	**1.1592**	**0.9737**	**6.9500e-003**		**0.0881**	**0.0881**		**0.0881**	**0.0881**		**1,390.9922**	**1,390.9922**	**0.0267**	**0.0255**	**1,399.2582**

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	lb/day										lb/day					
Manufacturing	9.95206	0.1073	0.9757	0.8196	5.8500e-003		0.0742	0.0742		0.0742	0.0742		1,170.8311	1,170.8311	0.0224	0.0215	1,177.7888
Unrefrigerated Warehouse-No Rail	1.87137	0.0202	0.1835	0.1541	1.1000e-003		0.0139	0.0139		0.0139	0.0139		220.1611	220.1611	4.2200e-003	4.0400e-003	221.4694
Total		**0.1275**	**1.1592**	**0.9737**	**6.9500e-003**		**0.0881**	**0.0881**		**0.0881**	**0.0881**		**1,390.9922**	**1,390.9922**	**0.0267**	**0.0255**	**1,399.2582**

6.0 Area Detail

6.1 Mitigation Measures Area

Oxnard Teal Club Annexation - Ventura County, Winter

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

No Hearths Installed

	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	lb/day										lb/day					
Mitigated	7.9938	3.2000e-004	0.0353	0.0000		1.3000e-004	1.3000e-004		1.3000e-004	1.3000e-004		0.0761	0.0761	2.0000e-004		0.0810
Unmitigated	7.9938	3.2000e-004	0.0353	0.0000		1.3000e-004	1.3000e-004		1.3000e-004	1.3000e-004		0.0761	0.0761	2.0000e-004		0.0810

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	lb/day										lb/day					
Architectural Coating	0.5518					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	7.4388					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Landscaping	3.2300e-003	3.2000e-004	0.0353	0.0000		1.3000e-004	1.3000e-004		1.3000e-004	1.3000e-004		0.0761	0.0761	2.0000e-004		0.0810
Total	**7.9938**	**3.2000e-004**	**0.0353**	**0.0000**		**1.3000e-004**	**1.3000e-004**		**1.3000e-004**	**1.3000e-004**		**0.0761**	**0.0761**	**2.0000e-004**		**0.0810**

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	lb/day										lb/day					
Architectural Coating	0.5518					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	7.4388					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Landscaping	3.2300e-003	3.2000e-004	0.0353	0.0000		1.3000e-004	1.3000e-004		1.3000e-004	1.3000e-004		0.0761	0.0761	2.0000e-004		0.0810
Total	**7.9938**	**3.2000e-004**	**0.0353**	**0.0000**		**1.3000e-004**	**1.3000e-004**		**1.3000e-004**	**1.3000e-004**		**0.0761**	**0.0761**	**2.0000e-004**		**0.0810**

7.0 Water Detail

7.1 Mitigation Measures Water

Apply Water Conservation Strategy

Use Reclaimed Water

8.0 Waste Detail

8.1 Mitigation Measures Waste

9.0 Operational Offroad

Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type

10.0 Stationary Equipment

Fire Pumps and Emergency Generators

Equipment Type	Number	Hours/Day	Hours/Year	Horse Power	Load Factor	Fuel Type

Boilers

Equipment Type	Number	Heat Input/Day	Heat Input/Year	Boiler Rating	Fuel Type

User Defined Equipment

Equipment Type	Number

11.0 Vegetation

Oxnard Teal Club Phase 1

Ventura County, Annual

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
General Office Building	60.00	1000sqft	8.78	60,000.00	0
City Park	6.50	Acre	6.50	283,140.00	0
Apartments Low Rise	263.00	Dwelling Unit	15.14	263,000.00	1044
Apartments Mid Rise	240.00	Dwelling Unit	10.57	240,000.00	953
Single Family Housing	220.00	Dwelling Unit	27.53	396,000.00	873

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.6	**Precipitation Freq (Days)**	31
Climate Zone	8			**Operational Year**	2030
Utility Company	Southern California Edison				
CO2 Intensity (lb/MWhr)	337.71	**CH4 Intensity (lb/MWhr)**	0.014	**N2O Intensity (lb/MWhr)**	0.003

1.3 User Entered Comments & Non-Default Data

Project Characteristics - Based on 2030 projections for SCE 60% renewable with CPUC 2011 SCE factor for 2009. 337.71; 0.014; 0.003

Land Use - Per Project Description 8/2019. General office building is commercial/mixed use/village commercial

Construction Phase - AC extended to overlap with construction by half, 2021-2023

Off-road Equipment -

Off-road Equipment -

Off-road Equipment -

Off-road Equipment -

Off-road Equipment -

Off-road Equipment -

Trips and VMT - Haul 4 miles east to Del Norte Regional Recycling and Transfer

Grading - No import/export

Architectural Coating - Per VCAPCD Rule 74.2 AC. 50 interior, 100 exterior

Vehicle Trips - Trip Rates from Stantec Traffic Study 3/26/2019.

Vehicle Emission Factors -

Vehicle Emission Factors -

Vehicle Emission Factors -

Woodstoves - No fireplaces or woodstoves

Area Coating - Per VCAPCD Rule 74.2

Energy Use - 7% decrease in electricity factor for residential and 30% decrease for commercial per 2019 CalGreen standards

Water And Wastewater -

Solid Waste - 25% waste reduction due to AB 341, Athens Services compliant

Construction Off-road Equipment Mitigation - Per Ventura County Air Quality Assessment Guidelines

Mobile Land Use Mitigation -

Area Mitigation - Per VCAPCD Rule 74.2 AC

Energy Mitigation - Per residential low-rise solar PV requirement (2019 California Energy Code Section 150.1(b)14)

Water Mitigation - 20% water reduction indoor and water efficient fixtures per CalGreen Building Standards Update 2016, Recycled water used for all landscaping

Waste Mitigation -

Fleet Mix -

Table Name	Column Name	Default Value	New Value
tblArchitecturalCoating	EF_Nonresidential_Exterior	250.00	100.00
tblArchitecturalCoating	EF_Nonresidential_Interior	250.00	50.00
tblArchitecturalCoating	EF_Parking	250.00	100.00

tblArchitecturalCoating	EF_Residential_Interior	75.00	50.00
tblAreaCoating	Area_EF_Nonresidential_Exterior	250	100
tblAreaCoating	Area_EF_Nonresidential_Interior	250	50
tblAreaCoating	Area_EF_Parking	250	100
tblAreaCoating	Area_EF_Residential_Interior	75	50
tblAreaMitigation	UseLowVOCPaintParkingCheck	False	True
tblConstructionPhase	NumDays	70.00	50.00
tblConstructionPhase	NumDays	40.00	20.00
tblConstructionPhase	NumDays	110.00	20.00
tblConstructionPhase	NumDays	1,110.00	630.00
tblConstructionPhase	NumDays	75.00	335.00
tblConstructionPhase	NumDays	75.00	40.00
tblConstructionPhase	PhaseEndDate	4/8/2021	3/11/2021
tblConstructionPhase	PhaseEndDate	6/3/2021	4/8/2021
tblConstructionPhase	PhaseEndDate	11/4/2021	5/6/2021
tblConstructionPhase	PhaseEndDate	2/5/2026	10/5/2023
tblConstructionPhase	PhaseEndDate	9/3/2026	12/29/2023
tblConstructionPhase	PhaseEndDate	5/21/2026	11/30/2023
tblConstructionPhase	PhaseStartDate	4/9/2021	3/12/2021
tblConstructionPhase	PhaseStartDate	6/4/2021	4/9/2021
tblConstructionPhase	PhaseStartDate	11/5/2021	5/7/2021
tblConstructionPhase	PhaseStartDate	5/22/2026	9/18/2022
tblConstructionPhase	PhaseStartDate	2/6/2026	10/6/2023
tblEnergyUse	T24E	177.01	164.62
tblEnergyUse	T24E	179.76	167.18
tblEnergyUse	T24E	4.71	3.30
tblEnergyUse	T24E	253.73	235.97

tblFireplaces	NumberNoFireplace	263.00	0.00
tblFireplaces	NumberNoFireplace	240.00	0.00
tblFireplaces	NumberNoFireplace	220.00	0.00
tblGrading	AcresOfGrading	50.00	275.00
tblLandUse	GreenSpaceAllowEdit	1.00	0.00
tblLandUse	LotAcreage	1.38	8.78
tblLandUse	LotAcreage	16.44	15.14
tblLandUse	LotAcreage	6.32	10.57
tblLandUse	LotAcreage	71.43	27.53
tblLandUse	Population	805.00	1,044.00
tblLandUse	Population	734.00	953.00
tblLandUse	Population	673.00	873.00
tblOffRoadEquipment	PhaseName	Paving	Architectural Coating
tblOffRoadEquipment	PhaseName	Paving	Architectural Coating
tblOffRoadEquipment	PhaseName	Paving	Architectural Coating
tblOnRoadDust	PhaseName	Paving	Architectural Coating
tblProjectCharacteristics	CH4IntensityFactor	0.029	0.014
tblProjectCharacteristics	CO2IntensityFactor	702.44	337.71
tblProjectCharacteristics	N2OIntensityFactor	0.006	0.003
tblSolidWaste	SolidWasteGenerationRate	120.98	90.74
tblSolidWaste	SolidWasteGenerationRate	110.40	82.80
tblSolidWaste	SolidWasteGenerationRate	0.56	0.42
tblSolidWaste	SolidWasteGenerationRate	55.80	41.85
tblSolidWaste	SolidWasteGenerationRate	357.93	268.45
tblTripsAndVMT	HaulingTripLength	20.00	4.00
tblTripsAndVMT	PhaseName	Paving	Architectural Coating
tblVehicleTrips	ST_TR	9.91	9.44

tblVehicleTrips	SU_TR	8.62	9.44
tblVehicleTrips	WD_TR	6.59	7.32
tblVehicleTrips	WD_TR	6.65	7.32
tblVehicleTrips	WD_TR	1.89	20.00
tblVehicleTrips	WD_TR	11.03	120.00
tblVehicleTrips	WD_TR	9.52	9.44

2.0 Emissions Summary

2.1 Overall Construction

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2021	0.5293	4.3754	4.0155	0.0109	0.8682	0.1671	1.0353	0.2778	0.1558	0.4336	0.0000	991.2359	991.2359	0.1312	0.0000	994.5159
2022	1.5882	4.2590	5.0011	0.0146	0.7968	0.1381	0.9350	0.2136	0.1297	0.3433	0.0000	1,330.4845	1,330.4845	0.1424	0.0000	1,334.0435
2023	4.0711	3.9914	5.6157	0.0144	0.8096	0.1504	0.9600	0.2147	0.1406	0.3553	0.0000	1,307.1581	1,307.1581	0.1739	0.0000	1,311.5054
Maximum	**4.0711**	**4.3754**	**5.6157**	**0.0146**	**0.8682**	**0.1671**	**1.0353**	**0.2778**	**0.1558**	**0.4336**	**0.0000**	**1,330.4845**	**1,330.4845**	**0.1739**	**0.0000**	**1,334.0435**

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2021	0.5293	4.3754	4.0155	0.0109	0.6555	0.1671	0.8226	0.1963	0.1558	0.3521	0.0000	991.2354	991.2354	0.1312	0.0000	994.5155
2022	1.5882	4.2590	5.0011	0.0146	0.7968	0.1381	0.9350	0.2136	0.1297	0.3433	0.0000	1,330.4841	1,330.4841	0.1424	0.0000	1,334.0430
2023	4.0711	3.9914	5.6157	0.0144	0.8096	0.1504	0.9600	0.2147	0.1406	0.3553	0.0000	1,307.1575	1,307.1575	0.1739	0.0000	1,311.5048
Maximum	**4.0711**	**4.3754**	**5.6157**	**0.0146**	**0.8096**	**0.1671**	**0.9600**	**0.2147**	**0.1558**	**0.3553**	**0.0000**	**1,330.4841**	**1,330.4841**	**0.1739**	**0.0000**	**1,334.0430**

Oxnard Teal Club Phase 1 - Ventura County, Annual

	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**	**8.59**	**0.00**	**7.26**	**11.54**	**0.00**	**7.20**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

Quarter	Start Date	End Date	Maximum Unmitigated ROG + NOX (tons/quarter)	Maximum Mitigated ROG + NOX (tons/quarter)
1	**1-1-2021**	**3-31-2021**	1.1853	1.1853
2	**4-1-2021**	**6-30-2021**	1.3366	1.3366
3	**7-1-2021**	**9-30-2021**	1.1751	1.1751
4	**10-1-2021**	**12-31-2021**	1.1904	1.1904
5	**1-1-2022**	**3-31-2022**	1.0657	1.0657
6	**4-1-2022**	**6-30-2022**	1.0638	1.0638
7	**7-1-2022**	**9-30-2022**	1.2678	1.2678
8	**10-1-2022**	**12-31-2022**	2.4536	2.4536
9	**1-1-2023**	**3-31-2023**	2.2148	2.2148
10	**4-1-2023**	**6-30-2023**	2.2245	2.2245
11	**7-1-2023**	**9-30-2023**	2.2489	2.2489
		Highest	2.4536	2.4536

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	5.4624	0.0617	5.3548	2.8000e-004		0.0298	0.0298		0.0298	0.0298	0.0000	8.7703	8.7703	8.3600e-003	0.0000	8.9793
Energy	0.0665	0.5695	0.2535	3.6200e-003		0.0459	0.0459		0.0459	0.0459	0.0000	1,355.6545	1,355.6545	0.0415	0.0183	1,362.1338
Mobile	1.6178	6.7649	20.0120	0.0892	10.6529	0.0586	10.7115	2.8484	0.0544	2.9028	0.0000	8,252.4699	8,252.4699	0.2886	0.0000	8,259.6847
Waste						0.0000	0.0000		0.0000	0.0000	98.2989	0.0000	98.2989	5.8093	0.0000	243.5313
Water						0.0000	0.0000		0.0000	0.0000	18.3279	190.0729	208.4008	1.8903	0.0461	269.4079
Total	**7.1466**	**7.3961**	**25.6203**	**0.0931**	**10.6529**	**0.1343**	**10.7872**	**2.8484**	**0.1301**	**2.9785**	**116.6268**	**9,806.9676**	**9,923.5944**	**8.0381**	**0.0644**	**10,143.7369**

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	5.4624	0.0617	5.3548	2.8000e-004		0.0298	0.0298		0.0298	0.0298	0.0000	8.7703	8.7703	8.3600e-003	0.0000	8.9793
Energy	0.0665	0.5695	0.2535	3.6200e-003		0.0459	0.0459		0.0459	0.0459	0.0000	1,050.6709	1,050.6709	0.0289	0.0156	1,056.0267
Mobile	1.4994	6.1737	16.6942	0.0712	8.3735	0.0479	8.4214	2.2389	0.0444	2.2834	0.0000	6,591.9837	6,591.9837	0.2383	0.0000	6,597.9417
Waste						0.0000	0.0000		0.0000	0.0000	98.2989	0.0000	98.2989	5.8093	0.0000	243.5313
Water						0.0000	0.0000		0.0000	0.0000	14.6623	167.0273	181.6896	1.5129	0.0370	230.5504
Total	**7.0282**	**6.8049**	**22.3025**	**0.0751**	**8.3735**	**0.1236**	**8.4971**	**2.2389**	**0.1201**	**2.3590**	**112.9612**	**7,818.4522**	**7,931.4134**	**7.5978**	**0.0526**	**8,137.0294**

	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	**1.66**	**7.99**	**12.95**	**19.30**	**21.40**	**7.97**	**21.23**	**21.40**	**7.64**	**20.80**	**3.14**	**20.28**	**20.08**	**5.48**	**18.34**	**19.78**

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	1/1/2021	3/11/2021	5	50	
2	Site Preparation	Site Preparation	3/12/2021	4/8/2021	5	20	
3	Grading	Grading	4/9/2021	5/6/2021	5	20	
4	Building Construction	Building Construction	5/7/2021	10/5/2023	5	630	
5	Paving	Paving	10/6/2023	11/30/2023	5	40	
6	Architectural Coating	Architectural Coating	9/18/2022	12/29/2023	5	335	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 275

Acres of Paving: 0

Residential Indoor: 1,820,475; Residential Outdoor: 606,825; Non-Residential Indoor: 514,710; Non-Residential Outdoor: 171,570; Striped Parking Area: 0 (Architectural Coating – sqft)

OffRoad Equipment

Oxnard Teal Club Phase 1 - Ventura County, Annual

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Demolition	Concrete/Industrial Saws	1	8.00	81	0.73
Demolition	Excavators	3	8.00	158	0.38
Demolition	Rubber Tired Dozers	2	8.00	247	0.40
Site Preparation	Rubber Tired Dozers	3	8.00	247	0.40
Site Preparation	Tractors/Loaders/Backhoes	4	8.00	97	0.37
Grading	Excavators	2	8.00	158	0.38
Grading	Graders	1	8.00	187	0.41
Grading	Rubber Tired Dozers	1	8.00	247	0.40
Grading	Scrapers	2	8.00	367	0.48
Grading	Tractors/Loaders/Backhoes	2	8.00	97	0.37
Building Construction	Cranes	1	7.00	231	0.29
Building Construction	Forklifts	3	8.00	89	0.20
Building Construction	Generator Sets	1	8.00	84	0.74
Building Construction	Tractors/Loaders/Backhoes	3	7.00	97	0.37
Building Construction	Welders	1	8.00	46	0.45
Architectural Coating	Pavers	2	8.00	130	0.42
Architectural Coating	Paving Equipment	2	8.00	132	0.36
Architectural Coating	Rollers	2	8.00	80	0.38
Architectural Coating	Air Compressors	1	6.00	78	0.48

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Demolition	6	15.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Site Preparation	7	18.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Grading	8	20.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction	9	579.00	134.00	0.00	10.80	7.30	4.00	LD_Mix	HDT_Mix	HHDT
Architectural Coating	6	15.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Architectural Coating	1	116.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Use Soil Stabilizer

Water Exposed Area

3.2 Demolition - 2021

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0791	0.7860	0.5391	9.7000e-004		0.0388	0.0388		0.0360	0.0360	0.0000	85.0020	85.0020	0.0239	0.0000	85.6001
Total	**0.0791**	**0.7860**	**0.5391**	**9.7000e-004**		**0.0388**	**0.0388**		**0.0360**	**0.0360**	**0.0000**	**85.0020**	**85.0020**	**0.0239**	**0.0000**	**85.6001**

3.2 Demolition - 2021

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.3000e-003	8.4000e-004	9.2400e-003	3.0000e-005	3.0200e-003	2.0000e-005	3.0500e-003	8.0000e-004	2.0000e-005	8.2000e-004	0.0000	2.5128	2.5128	6.0000e-005	0.0000	2.5143
Total	**1.3000e-003**	**8.4000e-004**	**9.2400e-003**	**3.0000e-005**	**3.0200e-003**	**2.0000e-005**	**3.0500e-003**	**8.0000e-004**	**2.0000e-005**	**8.2000e-004**	**0.0000**	**2.5128**	**2.5128**	**6.0000e-005**	**0.0000**	**2.5143**

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	0.0791	0.7860	0.5391	9.7000e-004		0.0388	0.0388		0.0360	0.0360	0.0000	85.0019	85.0019	0.0239	0.0000	85.6000
Total	**0.0791**	**0.7860**	**0.5391**	**9.7000e-004**		**0.0388**	**0.0388**		**0.0360**	**0.0360**	**0.0000**	**85.0019**	**85.0019**	**0.0239**	**0.0000**	**85.6000**

3.2 Demolition - 2021

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.3000e-003	8.4000e-004	9.2400e-003	3.0000e-005	3.0200e-003	2.0000e-005	3.0500e-003	8.0000e-004	2.0000e-005	8.2000e-004	0.0000	2.5128	2.5128	6.0000e-005	0.0000	2.5143
Total	**1.3000e-003**	**8.4000e-004**	**9.2400e-003**	**3.0000e-005**	**3.0200e-003**	**2.0000e-005**	**3.0500e-003**	**8.0000e-004**	**2.0000e-005**	**8.2000e-004**	**0.0000**	**2.5128**	**2.5128**	**6.0000e-005**	**0.0000**	**2.5143**

3.3 Site Preparation - 2021

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.1807	0.0000	0.1807	0.0993	0.0000	0.0993	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0389	0.4050	0.2115	3.8000e-004		0.0204	0.0204		0.0188	0.0188	0.0000	33.4357	33.4357	0.0108	0.0000	33.7061
Total	**0.0389**	**0.4050**	**0.2115**	**3.8000e-004**	**0.1807**	**0.0204**	**0.2011**	**0.0993**	**0.0188**	**0.1181**	**0.0000**	**33.4357**	**33.4357**	**0.0108**	**0.0000**	**33.7061**

3.3 Site Preparation - 2021

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	6.2000e-004	4.0000e-004	4.4300e-003	1.0000e-005	1.4500e-003	1.0000e-005	1.4600e-003	3.9000e-004	1.0000e-005	3.9000e-004	0.0000	1.2061	1.2061	3.0000e-005	0.0000	1.2069
Total	**6.2000e-004**	**4.0000e-004**	**4.4300e-003**	**1.0000e-005**	**1.4500e-003**	**1.0000e-005**	**1.4600e-003**	**3.9000e-004**	**1.0000e-005**	**3.9000e-004**	**0.0000**	**1.2061**	**1.2061**	**3.0000e-005**	**0.0000**	**1.2069**

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					0.0813	0.0000	0.0813	0.0447	0.0000	0.0447	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0389	0.4050	0.2115	3.8000e-004		0.0204	0.0204		0.0188	0.0188	0.0000	33.4357	33.4357	0.0108	0.0000	33.7060
Total	**0.0389**	**0.4050**	**0.2115**	**3.8000e-004**	**0.0813**	**0.0204**	**0.1017**	**0.0447**	**0.0188**	**0.0635**	**0.0000**	**33.4357**	**33.4357**	**0.0108**	**0.0000**	**33.7060**

3.3 Site Preparation - 2021

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	6.2000e-004	4.0000e-004	4.4300e-003	1.0000e-005	1.4500e-003	1.0000e-005	1.4600e-003	3.9000e-004	1.0000e-005	3.9000e-004	0.0000	1.2061	1.2061	3.0000e-005	0.0000	1.2069
Total	**6.2000e-004**	**4.0000e-004**	**4.4300e-003**	**1.0000e-005**	**1.4500e-003**	**1.0000e-005**	**1.4600e-003**	**3.9000e-004**	**1.0000e-005**	**3.9000e-004**	**0.0000**	**1.2061**	**1.2061**	**3.0000e-005**	**0.0000**	**1.2069**

3.4 Grading - 2021

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.2060	0.0000	0.2060	0.0489	0.0000	0.0489	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0419	0.4640	0.3088	6.2000e-004		0.0199	0.0199		0.0183	0.0183	0.0000	54.4950	54.4950	0.0176	0.0000	54.9356
Total	**0.0419**	**0.4640**	**0.3088**	**6.2000e-004**	**0.2060**	**0.0199**	**0.2259**	**0.0489**	**0.0183**	**0.0671**	**0.0000**	**54.4950**	**54.4950**	**0.0176**	**0.0000**	**54.9356**

3.4 Grading - 2021

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	6.9000e-004	4.5000e-004	4.9300e-003	1.0000e-005	1.6100e-003	1.0000e-005	1.6200e-003	4.3000e-004	1.0000e-005	4.4000e-004	0.0000	1.3401	1.3401	3.0000e-005	0.0000	1.3410
Total	**6.9000e-004**	**4.5000e-004**	**4.9300e-003**	**1.0000e-005**	**1.6100e-003**	**1.0000e-005**	**1.6200e-003**	**4.3000e-004**	**1.0000e-005**	**4.4000e-004**	**0.0000**	**1.3401**	**1.3401**	**3.0000e-005**	**0.0000**	**1.3410**

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					0.0927	0.0000	0.0927	0.0220	0.0000	0.0220	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0419	0.4640	0.3088	6.2000e-004		0.0199	0.0199		0.0183	0.0183	0.0000	54.4949	54.4949	0.0176	0.0000	54.9355
Total	**0.0419**	**0.4640**	**0.3088**	**6.2000e-004**	**0.0927**	**0.0199**	**0.1126**	**0.0220**	**0.0183**	**0.0403**	**0.0000**	**54.4949**	**54.4949**	**0.0176**	**0.0000**	**54.9355**

3.4 Grading - 2021

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	6.9000e-004	4.5000e-004	4.9300e-003	1.0000e-005	1.6100e-003	1.0000e-005	1.6200e-003	4.3000e-004	1.0000e-005	4.4000e-004	0.0000	1.3401	1.3401	3.0000e-005	0.0000	1.3410
Total	**6.9000e-004**	**4.5000e-004**	**4.9300e-003**	**1.0000e-005**	**1.6100e-003**	**1.0000e-005**	**1.6200e-003**	**4.3000e-004**	**1.0000e-005**	**4.4000e-004**	**0.0000**	**1.3401**	**1.3401**	**3.0000e-005**	**0.0000**	**1.3410**

3.5 Building Construction - 2021

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.1625	1.4904	1.4172	2.3000e-003		0.0820	0.0820		0.0771	0.0771	0.0000	198.0499	198.0499	0.0478	0.0000	199.2444
Total	**0.1625**	**1.4904**	**1.4172**	**2.3000e-003**		**0.0820**	**0.0820**		**0.0771**	**0.0771**	**0.0000**	**198.0499**	**198.0499**	**0.0478**	**0.0000**	**199.2444**

3.5 Building Construction - 2021

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0330	1.1174	0.3008	2.9000e-003	0.0763	3.1500e-003	0.0794	0.0220	3.0100e-003	0.0250	0.0000	283.4813	283.4813	0.0225	0.0000	284.0447
Worker	0.1712	0.1109	1.2194	3.6700e-003	0.3992	2.8200e-003	0.4020	0.1060	2.6000e-003	0.1086	0.0000	331.7130	331.7130	8.3900e-003	0.0000	331.9229
Total	**0.2043**	**1.2283**	**1.5202**	**6.5700e-003**	**0.4754**	**5.9700e-003**	**0.4814**	**0.1280**	**5.6100e-003**	**0.1336**	**0.0000**	**615.1943**	**615.1943**	**0.0309**	**0.0000**	**615.9676**

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	0.1625	1.4904	1.4172	2.3000e-003		0.0820	0.0820		0.0771	0.0771	0.0000	198.0496	198.0496	0.0478	0.0000	199.2442
Total	**0.1625**	**1.4904**	**1.4172**	**2.3000e-003**		**0.0820**	**0.0820**		**0.0771**	**0.0771**	**0.0000**	**198.0496**	**198.0496**	**0.0478**	**0.0000**	**199.2442**

3.5 Building Construction - 2021

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0330	1.1174	0.3008	2.9000e-003	0.0763	3.1500e-003	0.0794	0.0220	3.0100e-003	0.0250	0.0000	283.4813	283.4813	0.0225	0.0000	284.0447
Worker	0.1712	0.1109	1.2194	3.6700e-003	0.3992	2.8200e-003	0.4020	0.1060	2.6000e-003	0.1086	0.0000	331.7130	331.7130	8.3900e-003	0.0000	331.9229
Total	**0.2043**	**1.2283**	**1.5202**	**6.5700e-003**	**0.4754**	**5.9700e-003**	**0.4814**	**0.1280**	**5.6100e-003**	**0.1336**	**0.0000**	**615.1943**	**615.1943**	**0.0309**	**0.0000**	**615.9676**

3.5 Building Construction - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.2218	2.0300	2.1272	3.5000e-003		0.1052	0.1052		0.0990	0.0990	0.0000	301.2428	301.2428	0.0722	0.0000	303.0471
Total	**0.2218**	**2.0300**	**2.1272**	**3.5000e-003**		**0.1052**	**0.1052**		**0.0990**	**0.0990**	**0.0000**	**301.2428**	**301.2428**	**0.0722**	**0.0000**	**303.0471**

3.5 Building Construction - 2022

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0467	1.5969	0.4337	4.3700e-003	0.1160	4.1400e-003	0.1201	0.0335	3.9600e-003	0.0374	0.0000	427.0286	427.0286	0.0330	0.0000	427.8534
Worker	0.2450	0.1521	1.7135	5.3700e-003	0.6069	4.1800e-003	0.6111	0.1612	3.8500e-003	0.1651	0.0000	485.8275	485.8275	0.0115	0.0000	486.1158
Total	**0.2917**	**1.7490**	**2.1472**	**9.7400e-003**	**0.7229**	**8.3200e-003**	**0.7312**	**0.1947**	**7.8100e-003**	**0.2025**	**0.0000**	**912.8561**	**912.8561**	**0.0445**	**0.0000**	**913.9692**

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	0.2218	2.0300	2.1272	3.5000e-003		0.1052	0.1052		0.0990	0.0990	0.0000	301.2425	301.2425	0.0722	0.0000	303.0467
Total	**0.2218**	**2.0300**	**2.1272**	**3.5000e-003**		**0.1052**	**0.1052**		**0.0990**	**0.0990**	**0.0000**	**301.2425**	**301.2425**	**0.0722**	**0.0000**	**303.0467**

3.5 Building Construction - 2022

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0467	1.5969	0.4337	4.3700e-003	0.1160	4.1400e-003	0.1201	0.0335	3.9600e-003	0.0374	0.0000	427.0286	427.0286	0.0330	0.0000	427.8534
Worker	0.2450	0.1521	1.7135	5.3700e-003	0.6069	4.1800e-003	0.6111	0.1612	3.8500e-003	0.1651	0.0000	485.8275	485.8275	0.0115	0.0000	486.1158
Total	**0.2917**	**1.7490**	**2.1472**	**9.7400e-003**	**0.7229**	**8.3200e-003**	**0.7312**	**0.1947**	**7.8100e-003**	**0.2025**	**0.0000**	**912.8561**	**912.8561**	**0.0445**	**0.0000**	**913.9692**

3.5 Building Construction - 2023

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.1565	1.4313	1.6163	2.6800e-003		0.0696	0.0696		0.0655	0.0655	0.0000	230.6457	230.6457	0.0549	0.0000	232.0174
Total	**0.1565**	**1.4313**	**1.6163**	**2.6800e-003**		**0.0696**	**0.0696**		**0.0655**	**0.0655**	**0.0000**	**230.6457**	**230.6457**	**0.0549**	**0.0000**	**232.0174**

3.5 Building Construction - 2023

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0265	0.9295	0.3006	3.2600e-003	0.0888	1.2000e-003	0.0900	0.0256	1.1500e-003	0.0268	0.0000	319.6552	319.6552	0.0225	0.0000	320.2187
Worker	0.1766	0.1052	1.2099	3.9500e-003	0.4645	3.1200e-003	0.4677	0.1234	2.8800e-003	0.1263	0.0000	357.6054	357.6054	7.9500e-003	0.0000	357.8041
Total	**0.2031**	**1.0347**	**1.5104**	**7.2100e-003**	**0.5533**	**4.3200e-003**	**0.5576**	**0.1490**	**4.0300e-003**	**0.1530**	**0.0000**	**677.2606**	**677.2606**	**0.0305**	**0.0000**	**678.0228**

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	0.1565	1.4313	1.6163	2.6800e-003		0.0696	0.0696		0.0655	0.0655	0.0000	230.6455	230.6455	0.0549	0.0000	232.0171
Total	**0.1565**	**1.4313**	**1.6163**	**2.6800e-003**		**0.0696**	**0.0696**		**0.0655**	**0.0655**	**0.0000**	**230.6455**	**230.6455**	**0.0549**	**0.0000**	**232.0171**

3.5 Building Construction - 2023

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0265	0.9295	0.3006	3.2600e-003	0.0888	1.2000e-003	0.0900	0.0256	1.1500e-003	0.0268	0.0000	319.6552	319.6552	0.0225	0.0000	320.2187
Worker	0.1766	0.1052	1.2099	3.9500e-003	0.4645	3.1200e-003	0.4677	0.1234	2.8800e-003	0.1263	0.0000	357.6054	357.6054	7.9500e-003	0.0000	357.8041
Total	**0.2031**	**1.0347**	**1.5104**	**7.2100e-003**	**0.5533**	**4.3200e-003**	**0.5576**	**0.1490**	**4.0300e-003**	**0.1530**	**0.0000**	**677.2606**	**677.2606**	**0.0305**	**0.0000**	**678.0228**

3.6 Paving - 2023

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Paving	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**					**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

3.6 Paving - 2023

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					
Paving	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**					**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

3.7 Architectural Coating - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	1.0097					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0490	0.4700	0.6148	9.7000e-004		0.0244	0.0244		0.0227	0.0227	0.0000	84.6780	84.6780	0.0249	0.0000	85.3009
Total	**1.0587**	**0.4700**	**0.6148**	**9.7000e-004**		**0.0244**	**0.0244**		**0.0227**	**0.0227**	**0.0000**	**84.6780**	**84.6780**	**0.0249**	**0.0000**	**85.3009**

3.7 Architectural Coating - 2022

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0160	9.9300e-003	0.1118	3.5000e-004	0.0739	2.7000e-004	0.0742	0.0190	2.5000e-004	0.0192	0.0000	31.7076	31.7076	7.5000e-004	0.0000	31.7264
Total	**0.0160**	**9.9300e-003**	**0.1118**	**3.5000e-004**	**0.0739**	**2.7000e-004**	**0.0742**	**0.0190**	**2.5000e-004**	**0.0192**	**0.0000**	**31.7076**	**31.7076**	**7.5000e-004**	**0.0000**	**31.7264**

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	1.0097					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0490	0.4700	0.6148	9.7000e-004		0.0244	0.0244		0.0227	0.0227	0.0000	84.6779	84.6779	0.0249	0.0000	85.3008
Total	**1.0587**	**0.4700**	**0.6148**	**9.7000e-004**		**0.0244**	**0.0244**		**0.0227**	**0.0227**	**0.0000**	**84.6779**	**84.6779**	**0.0249**	**0.0000**	**85.3008**

3.7 Architectural Coating - 2022

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0160	9.9300e-003	0.1118	3.5000e-004	0.0739	2.7000e-004	0.0742	0.0190	2.5000e-004	0.0192	0.0000	31.7076	31.7076	7.5000e-004	0.0000	31.7264
Total	**0.0160**	**9.9300e-003**	**0.1118**	**3.5000e-004**	**0.0739**	**2.7000e-004**	**0.0742**	**0.0190**	**2.5000e-004**	**0.0192**	**0.0000**	**31.7076**	**31.7076**	**7.5000e-004**	**0.0000**	**31.7264**

3.7 Architectural Coating - 2023

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	3.5002					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.1592	1.4943	2.1314	3.3500e-003		0.0755	0.0755		0.0702	0.0702	0.0000	293.5416	293.5416	0.0862	0.0000	295.6963
Total	**3.6593**	**1.4943**	**2.1314**	**3.3500e-003**		**0.0755**	**0.0755**		**0.0702**	**0.0702**	**0.0000**	**293.5416**	**293.5416**	**0.0862**	**0.0000**	**295.6963**

3.7 Architectural Coating - 2023

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0522	0.0311	0.3576	1.1700e-003	0.2563	9.2000e-004	0.2572	0.0657	8.5000e-004	0.0665	0.0000	105.7102	105.7102	2.3500e-003	0.0000	105.7690
Total	**0.0522**	**0.0311**	**0.3576**	**1.1700e-003**	**0.2563**	**9.2000e-004**	**0.2572**	**0.0657**	**8.5000e-004**	**0.0665**	**0.0000**	**105.7102**	**105.7102**	**2.3500e-003**	**0.0000**	**105.7690**

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	3.5002					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.1592	1.4943	2.1314	3.3500e-003		0.0755	0.0755		0.0702	0.0702	0.0000	293.5412	293.5412	0.0862	0.0000	295.6959
Total	**3.6593**	**1.4943**	**2.1314**	**3.3500e-003**		**0.0755**	**0.0755**		**0.0702**	**0.0702**	**0.0000**	**293.5412**	**293.5412**	**0.0862**	**0.0000**	**295.6959**

3.7 Architectural Coating - 2023

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0522	0.0311	0.3576	1.1700e-003	0.2563	9.2000e-004	0.2572	0.0657	8.5000e-004	0.0665	0.0000	105.7102	105.7102	2.3500e-003	0.0000	105.7690
Total	**0.0522**	**0.0311**	**0.3576**	**1.1700e-003**	**0.2563**	**9.2000e-004**	**0.2572**	**0.0657**	**8.5000e-004**	**0.0665**	**0.0000**	**105.7102**	**105.7102**	**2.3500e-003**	**0.0000**	**105.7690**

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

Increase Density

Increase Transit Accessibility

Integrate Below Market Rate Housing

Improve Pedestrian Network

	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	1.4994	6.1737	16.6942	0.0712	8.3735	0.0479	8.4214	2.2389	0.0444	2.2834	0.0000	6,591.9837	6,591.9837	0.2383	0.0000	6,597.9417
Unmitigated	1.6178	6.7649	20.0120	0.0892	10.6529	0.0586	10.7115	2.8484	0.0544	2.9028	0.0000	8,252.4699	8,252.4699	0.2886	0.0000	8,259.6847

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Apartments Low Rise	1,925.16	1,883.08	1596.41	5,172,981	4,066,099
Apartments Mid Rise	1,756.80	1,533.60	1406.40	4,627,752	3,637,534
City Park	130.00	147.88	108.81	276,520	217,352
General Office Building	7,200.00	147.60	63.00	12,362,055	9,716,899
Single Family Housing	2,076.80	2,076.80	2076.80	5,738,349	4,510,493
Total	13,088.76	5,788.96	5,251.42	28,177,657	22,148,377

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 Low Rise	10.80	7.30	7.50	32.90	18.00	49.10	86	11	3
Apartments Mid Rise	10.80	7.30	7.50	32.90	18.00	49.10	86	11	3
City Park	9.50	7.30	7.30	33.00	48.00	19.00	66	28	6
General Office Building	9.50	7.30	7.30	33.00	48.00	19.00	77	19	4
Single Family Housing	10.80	7.30	7.50	32.90	18.00	49.10	86	11	3

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
Apartments Low Rise	0.611155	0.038739	0.187677	0.096955	0.013383	0.005563	0.020646	0.018593	0.001209	0.001094	0.003654	0.000418	0.000914
Apartments Mid Rise	0.611155	0.038739	0.187677	0.096955	0.013383	0.005563	0.020646	0.018593	0.001209	0.001094	0.003654	0.000418	0.000914
City Park	0.611155	0.038739	0.187677	0.096955	0.013383	0.005563	0.020646	0.018593	0.001209	0.001094	0.003654	0.000418	0.000914
General Office Building	0.611155	0.038739	0.187677	0.096955	0.013383	0.005563	0.020646	0.018593	0.001209	0.001094	0.003654	0.000418	0.000914
Single Family Housing	0.611155	0.038739	0.187677	0.096955	0.013383	0.005563	0.020646	0.018593	0.001209	0.001094	0.003654	0.000418	0.000914

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

Kilowatt Hours of Renewable Electricity Generated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Electricity Mitigated						0.0000	0.0000		0.0000	0.0000	0.0000	393.0237	393.0237	0.0163	3.4900e-003	394.4714
Electricity Unmitigated						0.0000	0.0000		0.0000	0.0000	0.0000	698.0073	698.0073	0.0289	6.2000e-003	700.5785
NaturalGas Mitigated	0.0665	0.5695	0.2535	3.6200e-003		0.0459	0.0459		0.0459	0.0459	0.0000	657.6472	657.6472	0.0126	0.0121	661.5553
NaturalGas Unmitigated	0.0665	0.5695	0.2535	3.6200e-003		0.0459	0.0459		0.0459	0.0459	0.0000	657.6472	657.6472	0.0126	0.0121	661.5553

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 Low Rise	3.35577e+006	0.0181	0.1546	0.0658	9.9000e-004		0.0125	0.0125		0.0125	0.0125	0.0000	179.0768	179.0768	3.4300e-003	3.2800e-003	180.1410
Apartments Mid Rise	2.74259e+006	0.0148	0.1264	0.0538	8.1000e-004		0.0102	0.0102		0.0102	0.0102	0.0000	146.3551	146.3551	2.8100e-003	2.6800e-003	147.2248
City Park	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
General Office Building	548400	2.9600e-003	0.0269	0.0226	1.6000e-004		2.0400e-003	2.0400e-003		2.0400e-003	2.0400e-003	0.0000	29.2647	29.2647	5.6000e-004	5.4000e-004	29.4386
Single Family Housing	5.67708e+006	0.0306	0.2616	0.1113	1.6700e-003		0.0212	0.0212		0.0212	0.0212	0.0000	302.9506	302.9506	5.8100e-003	5.5500e-003	304.7509
Total		**0.0665**	**0.5695**	**0.2535**	**3.6300e-003**		**0.0459**	**0.0459**		**0.0459**	**0.0459**	**0.0000**	**657.6472**	**657.6472**	**0.0126**	**0.0121**	**661.5553**

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 Low Rise	3.35577e+006	0.0181	0.1546	0.0658	9.9000e-004		0.0125	0.0125		0.0125	0.0125	0.0000	179.0768	179.0768	3.4300e-003	3.2800e-003	180.1410
Apartments Mid Rise	2.74259e+006	0.0148	0.1264	0.0538	8.1000e-004		0.0102	0.0102		0.0102	0.0102	0.0000	146.3551	146.3551	2.8100e-003	2.6800e-003	147.2248
City Park	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
General Office Building	548400	2.9600e-003	0.0269	0.0226	1.6000e-004		2.0400e-003	2.0400e-003		2.0400e-003	2.0400e-003	0.0000	29.2647	29.2647	5.6000e-004	5.4000e-004	29.4386
Single Family Housing	5.67708e+006	0.0306	0.2616	0.1113	1.6700e-003		0.0212	0.0212		0.0212	0.0212	0.0000	302.9506	302.9506	5.8100e-003	5.5500e-003	304.7509
Total		**0.0665**	**0.5695**	**0.2535**	**3.6300e-003**		**0.0459**	**0.0459**		**0.0459**	**0.0459**	**0.0000**	**657.6472**	**657.6472**	**0.0126**	**0.0121**	**661.5553**

5.3 Energy by Land Use - Electricity

Unmitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
Apartments Low Rise	1.09086e+006	167.1002	6.9300e-003	1.4800e-003	167.7157
Apartments Mid Rise	951052	145.6847	6.0400e-003	1.2900e-003	146.2214
City Park	0	0.0000	0.0000	0.0000	0.0000
General Office Building	754620	115.5947	4.7900e-003	1.0300e-003	116.0205
Single Family Housing	1.76017e+006	269.6278	0.0112	2.4000e-003	270.6210
Total		**698.0073**	**0.0289**	**6.2000e-003**	**700.5785**

5.3 Energy by Land Use - Electricity

Mitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
Apartments Low Rise	692659	106.1034	4.4000e-003	9.4000e-004	106.4943
Apartments Mid Rise	552856	84.6880	3.5100e-003	7.5000e-004	84.9999
City Park	-398196	-60.9967	-0.0025	-0.0005	-61.2214
General Office Building	356424	54.5980	2.2600e-003	4.9000e-004	54.7991
Single Family Housing	1.36198e+006	208.6310	8.6500e-003	1.8500e-003	209.3996
Total		**393.0237**	**0.0163**	**3.4900e-003**	**394.4714**

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

No Hearths Installed

	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	5.4624	0.0617	5.3548	2.8000e-004		0.0298	0.0298		0.0298	0.0298	0.0000	8.7703	8.7703	8.3600e-003	0.0000	8.9793
Unmitigated	5.4624	0.0617	5.3548	2.8000e-004		0.0298	0.0298		0.0298	0.0298	0.0000	8.7703	8.7703	8.3600e-003	0.0000	8.9793

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	0.4510					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	4.8512					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Hearth	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	0.1602	0.0617	5.3548	2.8000e-004		0.0298	0.0298		0.0298	0.0298	0.0000	8.7703	8.7703	8.3600e-003	0.0000	8.9793
Total	**5.4624**	**0.0617**	**5.3548**	**2.8000e-004**		**0.0298**	**0.0298**		**0.0298**	**0.0298**	**0.0000**	**8.7703**	**8.7703**	**8.3600e-003**	**0.0000**	**8.9793**

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	0.4510					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	4.8512					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Hearth	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	0.1602	0.0617	5.3548	2.8000e-004		0.0298	0.0298		0.0298	0.0298	0.0000	8.7703	8.7703	8.3600e-003	0.0000	8.9793
Total	**5.4624**	**0.0617**	**5.3548**	**2.8000e-004**		**0.0298**	**0.0298**		**0.0298**	**0.0298**	**0.0000**	**8.7703**	**8.7703**	**8.3600e-003**	**0.0000**	**8.9793**

7.0 Water Detail

7.1 Mitigation Measures Water

Apply Water Conservation Strategy

Use Reclaimed Water

Install Low Flow Bathroom Faucet

Install Low Flow Kitchen Faucet

Install Low Flow Toilet

Install Low Flow Shower

	Total CO2	CH4	N2O	CO2e
Category	MT/yr			
Mitigated	181.6896	1.5129	0.0370	230.5504
Unmitigated	208.4008	1.8903	0.0461	269.4079

7.2 Water by Land Use

Unmitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
Apartments Low Rise	17.1355 / 10.8028	57.9995	0.5605	0.0137	76.0810
Apartments Mid Rise	15.637 / 9.85809	52.9273	0.5115	0.0125	69.4276
City Park	0 / 7.74463	13.1803	5.5000e-004	1.2000e-004	13.2288
General Office Building	10.664 / 6.53602	35.7770	0.3488	8.4900e-003	47.0285
Single Family Housing	14.3339 / 9.03658	48.5167	0.4689	0.0114	63.6419
Total		**208.4008**	**1.8903**	**0.0461**	**269.4079**

7.2 Water by Land Use

Mitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
Apartments Low Rise	13.7084 / 10.8028	50.0766	0.4486	0.0110	64.5554
Apartments Mid Rise	12.5096 / 9.85809	45.6973	0.4094	0.0100	58.9098
City Park	0 / 7.74463	13.1803	5.5000e-004	1.2000e-004	13.2288
General Office Building	8.53122 / 6.53602	30.8462	0.2792	6.8100e-003	39.8557
Single Family Housing	11.4671 / 9.03658	41.8892	0.3752	9.1600e-003	54.0007
Total		**181.6896**	**1.5129**	**0.0370**	**230.5504**

8.0 Waste Detail

8.1 Mitigation Measures Waste

Category/Year

	Total CO2	CH4	N2O	CO2e
	MT/yr			
Mitigated	98.2989	5.8093	0.0000	243.5313
Unmitigated	98.2989	5.8093	0.0000	243.5313

8.2 Waste by Land Use

Unmitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
Apartments Low Rise	90.735	18.4184	1.0885	0.0000	45.6308
Apartments Mid Rise	82.8	16.8077	0.9933	0.0000	41.6403
City Park	0.42	0.0853	5.0400e-003	0.0000	0.2112
General Office Building	41.85	8.4952	0.5021	0.0000	21.0464
Single Family Housing	268.447	54.4924	3.2204	0.0000	135.0027
Total		**98.2989**	**5.8093**	**0.0000**	**243.5313**

8.2 Waste by Land Use

Mitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
Apartments Low Rise	90.735	18.4184	1.0885	0.0000	45.6308
Apartments Mid Rise	82.8	16.8077	0.9933	0.0000	41.6403
City Park	0.42	0.0853	5.0400e-003	0.0000	0.2112
General Office Building	41.85	8.4952	0.5021	0.0000	21.0464
Single Family Housing	268.447	54.4924	3.2204	0.0000	135.0027
Total		**98.2989**	**5.8093**	**0.0000**	**243.5313**

9.0 Operational Offroad

Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type

10.0 Stationary Equipment

Fire Pumps and Emergency Generators

Equipment Type	Number	Hours/Day	Hours/Year	Horse Power	Load Factor	Fuel Type

Boilers

Equipment Type	Number	Heat Input/Day	Heat Input/Year	Boiler Rating	Fuel Type

User Defined Equipment

Equipment Type	Number

11.0 Vegetation

Oxnard Teal Club Phase 2

Ventura County, Annual

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Office Park	132.00	1000sqft	9.11	132,000.00	0
City Park	10.88	Acre	10.88	473,932.80	0
Apartments Low Rise	267.00	Dwelling Unit	20.07	267,000.00	1060

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.6	**Precipitation Freq (Days)**	31
Climate Zone	8			**Operational Year**	2030
Utility Company	Southern California Edison				
CO2 Intensity (lb/MWhr)	337.71	**CH4 Intensity (lb/MWhr)**	0.014	**N2O Intensity (lb/MWhr)**	0.003

1.3 User Entered Comments & Non-Default Data

Oxnard Teal Club Phase 2 - Ventura County, Annual

Project Characteristics - Based on 2030 projections for SCE 60% renewable with CPUC 2011 SCE factor for 2009. 337.71; 0.014; 0.003

Land Use - Based on PD Table 2-4 8/2019.

Construction Phase - Ph II completed 2024-2025 per PD 8/2019. AC extended to overlap with half of construction phase.

Trips and VMT - Landfill located 4 miles east at Del Norte Regional Recycling and Transfer

Demolition - No demolition

Grading - No export/import

Architectural Coating - Per VCAPCD Rule 74.2

Vehicle Trips - Trip Rates from Stantec Traffic Study 3/26/2019.

Woodstoves - No fireplaces or woodstoves

Area Coating - Per VCAPCD Rule 74.2

Energy Use - 7% decrease in electricity factor for residential and 30% decrease for commercial per 2019 CalGreen standards

Solid Waste - 25% waste reduction beyond AB 939 due to AB 341, Athens Services compliant

Area Mitigation - Per VCAPCD Rule 74.2 AC. 50 interior, 100 exterior

Energy Mitigation - Per residential low-rise solar PV requirement (2019 California Energy Code Section 150.1(b)14)

Water Mitigation - 20% water reduction indoor and water efficient fixtures per CalGreen Building Standards Update 2016, Recycled water used for all landscaping

Table Name	Column Name	Default Value	New Value
tblArchitecturalCoating	EF_Nonresidential_Exterior	250.00	100.00
tblArchitecturalCoating	EF_Nonresidential_Interior	250.00	50.00
tblArchitecturalCoating	EF_Parking	250.00	100.00
tblArchitecturalCoating	EF_Residential_Interior	75.00	50.00
tblAreaCoating	Area_EF_Nonresidential_Exterior	250	100
tblAreaCoating	Area_EF_Nonresidential_Interior	250	50
tblAreaCoating	Area_EF_Parking	250	100
tblAreaCoating	Area_EF_Residential_Interior	75	50
tblAreaMitigation	UseLowVOCPaintParkingCheck	False	True
tblConstructionPhase	NumDays	50.00	25.00

tblConstructionPhase	NumDays	30.00	15.00
tblConstructionPhase	NumDays	75.00	15.00
tblConstructionPhase	NumDays	740.00	430.00
tblConstructionPhase	NumDays	55.00	250.00
tblConstructionPhase	NumDays	55.00	33.00
tblConstructionPhase	PhaseEndDate	3/8/2024	2/2/2024
tblConstructionPhase	PhaseEndDate	4/19/2024	2/22/2024
tblConstructionPhase	PhaseEndDate	8/2/2024	3/14/2024
tblConstructionPhase	PhaseEndDate	6/4/2027	11/7/2025
tblConstructionPhase	PhaseEndDate	11/5/2027	12/30/2025
tblConstructionPhase	PhaseEndDate	8/20/2027	12/24/2025
tblConstructionPhase	PhaseStartDate	3/9/2024	2/2/2024
tblConstructionPhase	PhaseStartDate	4/20/2024	2/23/2024
tblConstructionPhase	PhaseStartDate	8/3/2024	3/16/2024
tblConstructionPhase	PhaseStartDate	8/21/2027	1/15/2025
tblConstructionPhase	PhaseStartDate	6/5/2027	11/8/2025
tblEnergyUse	T24E	177.01	164.62
tblEnergyUse	T24E	5.39	3.77
tblLandUse	LotAcreage	3.03	9.11
tblLandUse	LotAcreage	16.69	20.07
tblLandUse	Population	817.00	1,060.00
tblProjectCharacteristics	CH4IntensityFactor	0.029	0.014
tblProjectCharacteristics	CO2IntensityFactor	702.44	337.71
tblProjectCharacteristics	N2OIntensityFactor	0.006	0.003
tblSolidWaste	SolidWasteGenerationRate	122.82	92.11
tblSolidWaste	SolidWasteGenerationRate	0.94	0.71
tblSolidWaste	SolidWasteGenerationRate	122.76	92.07

tblTripsAndVMT	HaulingTripLength	20.00	4.00
tblVehicleTrips	ST_TR	1.64	0.00
tblVehicleTrips	SU_TR	0.76	0.00
tblVehicleTrips	WD_TR	6.59	7.32
tblVehicleTrips	WD_TR	1.89	20.00
tblVehicleTrips	WD_TR	11.42	10.00

2.0 Emissions Summary

2.1 Overall Construction

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2024	0.3816	3.0873	3.4424	0.0103	0.6548	0.0983	0.7531	0.2241	0.0919	0.3160	0.0000	936.2875	936.2875	0.1177	0.0000	939.2296
2025	1.8060	2.7334	3.6455	0.0110	0.5749	0.0765	0.6514	0.1549	0.0722	0.2271	0.0000	1,003.8438	1,003.8438	0.1034	0.0000	1,006.4275
Maximum	**1.8060**	**3.0873**	**3.6455**	**0.0110**	**0.6548**	**0.0983**	**0.7531**	**0.2241**	**0.0919**	**0.3160**	**0.0000**	**1,003.8438**	**1,003.8438**	**0.1177**	**0.0000**	**1,006.4275**

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2024	0.3816	3.0873	3.4424	0.0103	0.6548	0.0983	0.7531	0.2241	0.0919	0.3160	0.0000	936.2870	936.2870	0.1177	0.0000	939.2291
2025	1.8060	2.7334	3.6455	0.0110	0.5749	0.0765	0.6514	0.1549	0.0722	0.2271	0.0000	1,003.8434	1,003.8434	0.1034	0.0000	1,006.4271
Maximum	**1.8060**	**3.0873**	**3.6455**	**0.0110**	**0.6548**	**0.0983**	**0.7531**	**0.2241**	**0.0919**	**0.3160**	**0.0000**	**1,003.8434**	**1,003.8434**	**0.1177**	**0.0000**	**1,006.4271**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

Quarter	Start Date	End Date	Maximum Unmitigated ROG + NOX (tons/quarter)	Maximum Mitigated ROG + NOX (tons/quarter)
1	1-1-2024	3-31-2024	0.9145	0.9145
2	4-1-2024	6-30-2024	0.8387	0.8387
3	7-1-2024	9-30-2024	0.8479	0.8479
4	10-1-2024	12-31-2024	0.8562	0.8562
5	1-1-2025	3-31-2025	1.1506	1.1506
6	4-1-2025	6-30-2025	1.2203	1.2203
7	7-1-2025	9-30-2025	1.2337	1.2337
		Highest	1.2337	1.2337

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	1.7647	0.0228	1.9786	1.0000e-004		0.0110	0.0110		0.0110	0.0110	0.0000	3.2409	3.2409	3.0900e-003	0.0000	3.3182
Energy	0.0265	0.2306	0.1286	1.4400e-003		0.0183	0.0183		0.0183	0.0183	0.0000	709.9635	709.9635	0.0236	8.7800e-003	713.1703
Mobile	0.4568	1.9130	5.7071	0.0255	3.0538	0.0168	3.0706	0.8165	0.0155	0.8321	0.0000	2,362.4551	2,362.4551	0.0824	0.0000	2,364.5145
Waste						0.0000	0.0000		0.0000	0.0000	37.5310	0.0000	37.5310	2.2180	0.0000	92.9815
Water						0.0000	0.0000		0.0000	0.0000	12.9620	146.6907	159.6527	1.3374	0.0327	202.8440
Total	**2.2479**	**2.1663**	**7.8143**	**0.0271**	**3.0538**	**0.0460**	**3.0998**	**0.8165**	**0.0448**	**0.8614**	**50.4930**	**3,222.3502**	**3,272.8433**	**3.6645**	**0.0415**	**3,376.8285**

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	1.7647	0.0228	1.9786	1.0000e-004		0.0110	0.0110		0.0110	0.0110	0.0000	3.2409	3.2409	3.0900e-003	0.0000	3.3182
Energy	0.0265	0.2306	0.1286	1.4400e-003		0.0183	0.0183		0.0183	0.0183	0.0000	557.9636	557.9636	0.0173	7.4300e-003	560.6105
Mobile	0.4568	1.9130	5.7071	0.0255	3.0538	0.0168	3.0706	0.8165	0.0155	0.8321	0.0000	2,362.4551	2,362.4551	0.0824	0.0000	2,364.5145
Waste						0.0000	0.0000		0.0000	0.0000	37.5310	0.0000	37.5310	2.2180	0.0000	92.9815
Water						0.0000	0.0000		0.0000	0.0000	10.3696	130.3921	140.7617	1.0705	0.0263	175.3627
Total	**2.2479**	**2.1663**	**7.8143**	**0.0271**	**3.0538**	**0.0460**	**3.0998**	**0.8165**	**0.0448**	**0.8614**	**47.9006**	**3,054.0517**	**3,101.9523**	**3.3913**	**0.0337**	**3,196.7874**

	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**	**5.13**	**5.22**	**5.22**	**7.46**	**18.74**	**5.33**

3.0 Construction Detail

Construction Phase

Oxnard Teal Club Phase 2 - Ventura County, Annual

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Demolition	Demolition	1/1/2024	2/2/2024	5	25	
2	Site Preparation	Site Preparation	2/2/2024	2/22/2024	5	15	
3	Grading	Grading	2/23/2024	3/14/2024	5	15	
4	Building Construction	Building Construction	3/16/2024	11/7/2025	5	430	
5	Paving	Paving	11/8/2025	12/24/2025	5	33	
6	Architectural Coating	Architectural Coating	1/15/2025	12/30/2025	5	250	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 37.5

Acres of Paving: 0

Residential Indoor: 540,675; Residential Outdoor: 180,225; Non-Residential Indoor: 198,000; Non-Residential Outdoor: 66,000; Striped Parking Area: 0 (Architectural Coating – sqft)

OffRoad Equipment

Oxnard Teal Club Phase 2 - Ventura County, Annual

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Demolition	Concrete/Industrial Saws	1	8.00	81	0.73
Demolition	Excavators	3	8.00	158	0.38
Demolition	Rubber Tired Dozers	2	8.00	247	0.40
Site Preparation	Rubber Tired Dozers	3	8.00	247	0.40
Site Preparation	Tractors/Loaders/Backhoes	4	8.00	97	0.37
Grading	Excavators	2	8.00	158	0.38
Grading	Graders	1	8.00	187	0.41
Grading	Rubber Tired Dozers	1	8.00	247	0.40
Grading	Scrapers	2	8.00	367	0.48
Grading	Tractors/Loaders/Backhoes	2	8.00	97	0.37
Building Construction	Cranes	1	7.00	231	0.29
Building Construction	Forklifts	3	8.00	89	0.20
Building Construction	Generator Sets	1	8.00	84	0.74
Building Construction	Tractors/Loaders/Backhoes	3	7.00	97	0.37
Building Construction	Welders	1	8.00	46	0.45
Paving	Pavers	2	8.00	130	0.42
Paving	Paving Equipment	2	8.00	132	0.36
Paving	Rollers	2	8.00	80	0.38
Architectural Coating	Air Compressors	1	6.00	78	0.48

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Demolition	6	15.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Site Preparation	7	18.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Grading	8	20.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction	9	434.00	128.00	0.00	10.80	7.30	4.00	LD_Mix	HDT_Mix	HHDT
Paving	6	15.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Architectural Coating	1	87.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

3.2 Demolition - 2024

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	0.0281	0.2610	0.2463	4.9000e-004		0.0120	0.0120		0.0112	0.0112	0.0000	42.4951	42.4951	0.0119	0.0000	42.7923
Total	**0.0281**	**0.2610**	**0.2463**	**4.9000e-004**		**0.0120**	**0.0120**		**0.0112**	**0.0112**	**0.0000**	**42.4951**	**42.4951**	**0.0119**	**0.0000**	**42.7923**

3.2 Demolition - 2024

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	5.4000e-004	3.1000e-004	3.6600e-003	1.0000e-005	1.5100e-003	1.0000e-005	1.5200e-003	4.0000e-004	1.0000e-005	4.1000e-004	0.0000	1.1227	1.1227	2.0000e-005	0.0000	1.1233
Total	**5.4000e-004**	**3.1000e-004**	**3.6600e-003**	**1.0000e-005**	**1.5100e-003**	**1.0000e-005**	**1.5200e-003**	**4.0000e-004**	**1.0000e-005**	**4.1000e-004**	**0.0000**	**1.1227**	**1.1227**	**2.0000e-005**	**0.0000**	**1.1233**

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	0.0281	0.2610	0.2463	4.9000e-004		0.0120	0.0120		0.0112	0.0112	0.0000	42.4950	42.4950	0.0119	0.0000	42.7922
Total	**0.0281**	**0.2610**	**0.2463**	**4.9000e-004**		**0.0120**	**0.0120**		**0.0112**	**0.0112**	**0.0000**	**42.4950**	**42.4950**	**0.0119**	**0.0000**	**42.7922**

3.2 Demolition - 2024

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	5.4000e-004	3.1000e-004	3.6600e-003	1.0000e-005	1.5100e-003	1.0000e-005	1.5200e-003	4.0000e-004	1.0000e-005	4.1000e-004	0.0000	1.1227	1.1227	2.0000e-005	0.0000	1.1233
Total	**5.4000e-004**	**3.1000e-004**	**3.6600e-003**	**1.0000e-005**	**1.5100e-003**	**1.0000e-005**	**1.5200e-003**	**4.0000e-004**	**1.0000e-005**	**4.1000e-004**	**0.0000**	**1.1227**	**1.1227**	**2.0000e-005**	**0.0000**	**1.1233**

3.3 Site Preparation - 2024

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					0.1355	0.0000	0.1355	0.0745	0.0000	0.0745	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0200	0.2038	0.1375	2.9000e-004		9.2200e-003	9.2200e-003		8.4800e-003	8.4800e-003	0.0000	25.0928	25.0928	8.1200e-003	0.0000	25.2957
Total	**0.0200**	**0.2038**	**0.1375**	**2.9000e-004**	**0.1355**	**9.2200e-003**	**0.1447**	**0.0745**	**8.4800e-003**	**0.0830**	**0.0000**	**25.0928**	**25.0928**	**8.1200e-003**	**0.0000**	**25.2957**

3.3 Site Preparation - 2024

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	3.9000e-004	2.2000e-004	2.6400e-003	1.0000e-005	1.0900e-003	1.0000e-005	1.1000e-003	2.9000e-004	1.0000e-005	3.0000e-004	0.0000	0.8083	0.8083	2.0000e-005	0.0000	0.8088
Total	**3.9000e-004**	**2.2000e-004**	**2.6400e-003**	**1.0000e-005**	**1.0900e-003**	**1.0000e-005**	**1.1000e-003**	**2.9000e-004**	**1.0000e-005**	**3.0000e-004**	**0.0000**	**0.8083**	**0.8083**	**2.0000e-005**	**0.0000**	**0.8088**

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					0.1355	0.0000	0.1355	0.0745	0.0000	0.0745	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0200	0.2038	0.1375	2.9000e-004		9.2200e-003	9.2200e-003		8.4800e-003	8.4800e-003	0.0000	25.0928	25.0928	8.1200e-003	0.0000	25.2957
Total	**0.0200**	**0.2038**	**0.1375**	**2.9000e-004**	**0.1355**	**9.2200e-003**	**0.1447**	**0.0745**	**8.4800e-003**	**0.0830**	**0.0000**	**25.0928**	**25.0928**	**8.1200e-003**	**0.0000**	**25.2957**

3.3 Site Preparation - 2024

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	3.9000e-004	2.2000e-004	2.6400e-003	1.0000e-005	1.0900e-003	1.0000e-005	1.1000e-003	2.9000e-004	1.0000e-005	3.0000e-004	0.0000	0.8083	0.8083	2.0000e-005	0.0000	0.8088
Total	**3.9000e-004**	**2.2000e-004**	**2.6400e-003**	**1.0000e-005**	**1.0900e-003**	**1.0000e-005**	**1.1000e-003**	**2.9000e-004**	**1.0000e-005**	**3.0000e-004**	**0.0000**	**0.8083**	**0.8083**	**2.0000e-005**	**0.0000**	**0.8088**

3.4 Grading - 2024

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					0.0651	0.0000	0.0651	0.0270	0.0000	0.0270	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0241	0.2428	0.2079	4.7000e-004		0.0100	0.0100		9.2100e-003	9.2100e-003	0.0000	40.8896	40.8896	0.0132	0.0000	41.2203
Total	**0.0241**	**0.2428**	**0.2079**	**4.7000e-004**	**0.0651**	**0.0100**	**0.0751**	**0.0270**	**9.2100e-003**	**0.0362**	**0.0000**	**40.8896**	**40.8896**	**0.0132**	**0.0000**	**41.2203**

3.4 Grading - 2024

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	4.4000e-004	2.5000e-004	2.9300e-003	1.0000e-005	1.2100e-003	1.0000e-005	1.2200e-003	3.2000e-004	1.0000e-005	3.3000e-004	0.0000	0.8982	0.8982	2.0000e-005	0.0000	0.8986
Total	**4.4000e-004**	**2.5000e-004**	**2.9300e-003**	**1.0000e-005**	**1.2100e-003**	**1.0000e-005**	**1.2200e-003**	**3.2000e-004**	**1.0000e-005**	**3.3000e-004**	**0.0000**	**0.8982**	**0.8982**	**2.0000e-005**	**0.0000**	**0.8986**

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					0.0651	0.0000	0.0651	0.0270	0.0000	0.0270	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0241	0.2428	0.2079	4.7000e-004		0.0100	0.0100		9.2100e-003	9.2100e-003	0.0000	40.8896	40.8896	0.0132	0.0000	41.2202
Total	**0.0241**	**0.2428**	**0.2079**	**4.7000e-004**	**0.0651**	**0.0100**	**0.0751**	**0.0270**	**9.2100e-003**	**0.0362**	**0.0000**	**40.8896**	**40.8896**	**0.0132**	**0.0000**	**41.2202**

3.4 Grading - 2024

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	4.4000e-004	2.5000e-004	2.9300e-003	1.0000e-005	1.2100e-003	1.0000e-005	1.2200e-003	3.2000e-004	1.0000e-005	3.3000e-004	0.0000	0.8982	0.8982	2.0000e-005	0.0000	0.8986
Total	**4.4000e-004**	**2.5000e-004**	**2.9300e-003**	**1.0000e-005**	**1.2100e-003**	**1.0000e-005**	**1.2200e-003**	**3.2000e-004**	**1.0000e-005**	**3.3000e-004**	**0.0000**	**0.8982**	**0.8982**	**2.0000e-005**	**0.0000**	**0.8986**

3.5 Building Construction - 2024

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	0.1523	1.3914	1.6733	2.7900e-003		0.0635	0.0635		0.0597	0.0597	0.0000	239.9638	239.9638	0.0567	0.0000	241.3824
Total	**0.1523**	**1.3914**	**1.6733**	**2.7900e-003**		**0.0635**	**0.0635**		**0.0597**	**0.0597**	**0.0000**	**239.9638**	**239.9638**	**0.0567**	**0.0000**	**241.3824**

3.5 Building Construction - 2024

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0255	0.9130	0.2909	3.2200e-003	0.0882	1.1700e-003	0.0894	0.0255	1.1200e-003	0.0266	0.0000	316.0574	316.0574	0.0220	0.0000	316.6074
Worker	0.1303	0.0745	0.8772	2.9700e-003	0.3622	2.4000e-003	0.3646	0.0962	2.2100e-003	0.0984	0.0000	268.9596	268.9596	5.6500e-003	0.0000	269.1008
Total	**0.1558**	**0.9875**	**1.1681**	**6.1900e-003**	**0.4504**	**3.5700e-003**	**0.4540**	**0.1217**	**3.3300e-003**	**0.1250**	**0.0000**	**585.0170**	**585.0170**	**0.0277**	**0.0000**	**585.7082**

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	0.1523	1.3914	1.6733	2.7900e-003		0.0635	0.0635		0.0597	0.0597	0.0000	239.9635	239.9635	0.0567	0.0000	241.3822
Total	**0.1523**	**1.3914**	**1.6733**	**2.7900e-003**		**0.0635**	**0.0635**		**0.0597**	**0.0597**	**0.0000**	**239.9635**	**239.9635**	**0.0567**	**0.0000**	**241.3822**

3.5 Building Construction - 2024

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0255	0.9130	0.2909	3.2200e-003	0.0882	1.1700e-003	0.0894	0.0255	1.1200e-003	0.0266	0.0000	316.0574	316.0574	0.0220	0.0000	316.6074
Worker	0.1303	0.0745	0.8772	2.9700e-003	0.3622	2.4000e-003	0.3646	0.0962	2.2100e-003	0.0984	0.0000	268.9596	268.9596	5.6500e-003	0.0000	269.1008
Total	**0.1558**	**0.9875**	**1.1681**	**6.1900e-003**	**0.4504**	**3.5700e-003**	**0.4540**	**0.1217**	**3.3300e-003**	**0.1250**	**0.0000**	**585.0170**	**585.0170**	**0.0277**	**0.0000**	**585.7082**

3.5 Building Construction - 2025

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	0.1525	1.3904	1.7934	3.0100e-003		0.0588	0.0588		0.0553	0.0553	0.0000	258.5902	258.5902	0.0608	0.0000	260.1099
Total	**0.1525**	**1.3904**	**1.7934**	**3.0100e-003**		**0.0588**	**0.0588**		**0.0553**	**0.0553**	**0.0000**	**258.5902**	**258.5902**	**0.0608**	**0.0000**	**260.1099**

3.5 Building Construction - 2025

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0266	0.9682	0.3071	3.4500e-003	0.0951	1.2300e-003	0.0963	0.0274	1.1700e-003	0.0286	0.0000	338.3691	338.3691	0.0233	0.0000	338.9522
Worker	0.1333	0.0732	0.8768	3.0700e-003	0.3902	2.5400e-003	0.3927	0.1036	2.3400e-003	0.1060	0.0000	278.0323	278.0323	5.5400e-003	0.0000	278.1708
Total	**0.1599**	**1.0414**	**1.1839**	**6.5200e-003**	**0.4852**	**3.7700e-003**	**0.4890**	**0.1311**	**3.5100e-003**	**0.1346**	**0.0000**	**616.4014**	**616.4014**	**0.0289**	**0.0000**	**617.1230**

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	0.1525	1.3904	1.7934	3.0100e-003		0.0588	0.0588		0.0553	0.0553	0.0000	258.5899	258.5899	0.0608	0.0000	260.1096
Total	**0.1525**	**1.3904**	**1.7934**	**3.0100e-003**		**0.0588**	**0.0588**		**0.0553**	**0.0553**	**0.0000**	**258.5899**	**258.5899**	**0.0608**	**0.0000**	**260.1096**

3.5 Building Construction - 2025

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0266	0.9682	0.3071	3.4500e-003	0.0951	1.2300e-003	0.0963	0.0274	1.1700e-003	0.0286	0.0000	338.3691	338.3691	0.0233	0.0000	338.9522
Worker	0.1333	0.0732	0.8768	3.0700e-003	0.3902	2.5400e-003	0.3927	0.1036	2.3400e-003	0.1060	0.0000	278.0323	278.0323	5.5400e-003	0.0000	278.1708
Total	**0.1599**	**1.0414**	**1.1839**	**6.5200e-003**	**0.4852**	**3.7700e-003**	**0.4890**	**0.1311**	**3.5100e-003**	**0.1346**	**0.0000**	**616.4014**	**616.4014**	**0.0289**	**0.0000**	**617.1230**

3.6 Paving - 2025

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	0.0151	0.1416	0.2405	3.8000e-004		6.9100e-003	6.9100e-003		6.3500e-003	6.3500e-003	0.0000	33.0318	33.0318	0.0107	0.0000	33.2989
Paving	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0151**	**0.1416**	**0.2405**	**3.8000e-004**		**6.9100e-003**	**6.9100e-003**		**6.3500e-003**	**6.3500e-003**	**0.0000**	**33.0318**	**33.0318**	**0.0107**	**0.0000**	**33.2989**

3.6 Paving - 2025

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	6.8000e-004	3.7000e-004	4.4800e-003	2.0000e-005	2.0000e-003	1.0000e-005	2.0100e-003	5.3000e-004	1.0000e-005	5.4000e-004	0.0000	1.4220	1.4220	3.0000e-005	0.0000	1.4227
Total	**6.8000e-004**	**3.7000e-004**	**4.4800e-003**	**2.0000e-005**	**2.0000e-003**	**1.0000e-005**	**2.0100e-003**	**5.3000e-004**	**1.0000e-005**	**5.4000e-004**	**0.0000**	**1.4220**	**1.4220**	**3.0000e-005**	**0.0000**	**1.4227**

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	0.0151	0.1416	0.2405	3.8000e-004		6.9100e-003	6.9100e-003		6.3500e-003	6.3500e-003	0.0000	33.0317	33.0317	0.0107	0.0000	33.2988
Paving	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0151**	**0.1416**	**0.2405**	**3.8000e-004**		**6.9100e-003**	**6.9100e-003**		**6.3500e-003**	**6.3500e-003**	**0.0000**	**33.0317**	**33.0317**	**0.0107**	**0.0000**	**33.2988**

3.6 Paving - 2025

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	6.8000e-004	3.7000e-004	4.4800e-003	2.0000e-005	2.0000e-003	1.0000e-005	2.0100e-003	5.3000e-004	1.0000e-005	5.4000e-004	0.0000	1.4220	1.4220	3.0000e-005	0.0000	1.4227
Total	**6.8000e-004**	**3.7000e-004**	**4.4800e-003**	**2.0000e-005**	**2.0000e-003**	**1.0000e-005**	**2.0100e-003**	**5.3000e-004**	**1.0000e-005**	**5.4000e-004**	**0.0000**	**1.4220**	**1.4220**	**3.0000e-005**	**0.0000**	**1.4227**

3.7 Architectural Coating - 2025

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	1.4266					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0214	0.1432	0.2261	3.7000e-004		6.4400e-003	6.4400e-003		6.4400e-003	6.4400e-003	0.0000	31.9157	31.9157	1.7400e-003	0.0000	31.9592
Total	**1.4479**	**0.1432**	**0.2261**	**3.7000e-004**		**6.4400e-003**	**6.4400e-003**		**6.4400e-003**	**6.4400e-003**	**0.0000**	**31.9157**	**31.9157**	**1.7400e-003**	**0.0000**	**31.9592**

3.7 Architectural Coating - 2025

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0300	0.0165	0.1971	6.9000e-004	0.0877	5.7000e-004	0.0883	0.0233	5.3000e-004	0.0238	0.0000	62.4827	62.4827	1.2400e-003	0.0000	62.5138
Total	**0.0300**	**0.0165**	**0.1971**	**6.9000e-004**	**0.0877**	**5.7000e-004**	**0.0883**	**0.0233**	**5.3000e-004**	**0.0238**	**0.0000**	**62.4827**	**62.4827**	**1.2400e-003**	**0.0000**	**62.5138**

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	1.4266					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0214	0.1432	0.2261	3.7000e-004		6.4400e-003	6.4400e-003		6.4400e-003	6.4400e-003	0.0000	31.9156	31.9156	1.7400e-003	0.0000	31.9592
Total	**1.4479**	**0.1432**	**0.2261**	**3.7000e-004**		**6.4400e-003**	**6.4400e-003**		**6.4400e-003**	**6.4400e-003**	**0.0000**	**31.9156**	**31.9156**	**1.7400e-003**	**0.0000**	**31.9592**

3.7 Architectural Coating - 2025

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0300	0.0165	0.1971	6.9000e-004	0.0877	5.7000e-004	0.0883	0.0233	5.3000e-004	0.0238	0.0000	62.4827	62.4827	1.2400e-003	0.0000	62.5138
Total	**0.0300**	**0.0165**	**0.1971**	**6.9000e-004**	**0.0877**	**5.7000e-004**	**0.0883**	**0.0233**	**5.3000e-004**	**0.0238**	**0.0000**	**62.4827**	**62.4827**	**1.2400e-003**	**0.0000**	**62.5138**

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	0.4568	1.9130	5.7071	0.0255	3.0538	0.0168	3.0706	0.8165	0.0155	0.8321	0.0000	2,362.4551	2,362.4551	0.0824	0.0000	2,364.5145
Unmitigated	0.4568	1.9130	5.7071	0.0255	3.0538	0.0168	3.0706	0.8165	0.0155	0.8321	0.0000	2,362.4551	2,362.4551	0.0824	0.0000	2,364.5145

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Apartments Low Rise	1,954.44	1,911.72	1620.69	5,251,658	5,251,658
City Park	217.60	247.52	182.13	462,852	462,852
Office Park	1,320.00	0.00	0.00	2,363,033	2,363,033
Total	3,492.04	2,159.24	1,802.82	8,077,543	8,077,543

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 Low Rise	10.80	7.30	7.50	32.90	18.00	49.10	86	11	3
City Park	9.50	7.30	7.30	33.00	48.00	19.00	66	28	6
Office Park	9.50	7.30	7.30	33.00	48.00	19.00	82	15	3

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
Apartments Low Rise	0.611155	0.038739	0.187677	0.096955	0.013383	0.005563	0.020646	0.018593	0.001209	0.001094	0.003654	0.000418	0.000914
City Park	0.611155	0.038739	0.187677	0.096955	0.013383	0.005563	0.020646	0.018593	0.001209	0.001094	0.003654	0.000418	0.000914
Office Park	0.611155	0.038739	0.187677	0.096955	0.013383	0.005563	0.020646	0.018593	0.001209	0.001094	0.003654	0.000418	0.000914

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

Kilowatt Hours of Renewable Electricity Generated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Electricity Mitigated						0.0000	0.0000		0.0000	0.0000	0.0000	296.0726	296.0726	0.0123	2.6300e-003	297.1633
Electricity Unmitigated						0.0000	0.0000		0.0000	0.0000	0.0000	448.0726	448.0726	0.0186	3.9800e-003	449.7231
NaturalGas Mitigated	0.0265	0.2306	0.1286	1.4400e-003		0.0183	0.0183		0.0183	0.0183	0.0000	261.8909	261.8909	5.0200e-003	4.8000e-003	263.4472
NaturalGas Unmitigated	0.0265	0.2306	0.1286	1.4400e-003		0.0183	0.0183		0.0183	0.0183	0.0000	261.8909	261.8909	5.0200e-003	4.8000e-003	263.4472

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 Low Rise	3.40681e+006	0.0184	0.1570	0.0668	1.0000e-003		0.0127	0.0127		0.0127	0.0127	0.0000	181.8004	181.8004	3.4800e-003	3.3300e-003	182.8807
City Park	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
Office Park	1.50084e+006	8.0900e-003	0.0736	0.0618	4.4000e-004		5.5900e-003	5.5900e-003		5.5900e-003	5.5900e-003	0.0000	80.0905	80.0905	1.5400e-003	1.4700e-003	80.5665
Total		**0.0265**	**0.2306**	**0.1286**	**1.4400e-003**		**0.0183**	**0.0183**		**0.0183**	**0.0183**	**0.0000**	**261.8909**	**261.8909**	**5.0200e-003**	**4.8000e-003**	**263.4472**

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 Low Rise	3.40681e+006	0.0184	0.1570	0.0668	1.0000e-003		0.0127	0.0127		0.0127	0.0127	0.0000	181.8004	181.8004	3.4800e-003	3.3300e-003	182.8807
City Park	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
Office Park	1.50084e+006	8.0900e-003	0.0736	0.0618	4.4000e-004		5.5900e-003	5.5900e-003		5.5900e-003	5.5900e-003	0.0000	80.0905	80.0905	1.5400e-003	1.4700e-003	80.5665
Total		**0.0265**	**0.2306**	**0.1286**	**1.4400e-003**		**0.0183**	**0.0183**		**0.0183**	**0.0183**	**0.0000**	**261.8909**	**261.8909**	**5.0200e-003**	**4.8000e-003**	**263.4472**

5.3 Energy by Land Use - Electricity

Unmitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
Apartments Low Rise	1.10745e+006	169.6416	7.0300e-003	1.5100e-003	170.2665
City Park	0	0.0000	0.0000	0.0000	0.0000
Office Park	1.81764e+006	278.4310	0.0115	2.4700e-003	279.4566
Total		**448.0726**	**0.0186**	**3.9800e-003**	**449.7231**

Mitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
Apartments Low Rise	776687	118.9750	4.9300e-003	1.0600e-003	119.4132
City Park	-330760	-50.6667	-0.0021	-0.0005	-50.8533
Office Park	1.48688e+006	227.7643	9.4400e-003	2.0200e-003	228.6033
Total		**296.0726**	**0.0123**	**2.6300e-003**	**297.1633**

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

No Hearths Installed

	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	1.7647	0.0228	1.9786	1.0000e-004		0.0110	0.0110		0.0110	0.0110	0.0000	3.2409	3.2409	3.0900e-003	0.0000	3.3182
Unmitigated	1.7647	0.0228	1.9786	1.0000e-004		0.0110	0.0110		0.0110	0.0110	0.0000	3.2409	3.2409	3.0900e-003	0.0000	3.3182

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	0.1427					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	1.5628					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Hearth	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	0.0593	0.0228	1.9786	1.0000e-004		0.0110	0.0110		0.0110	0.0110	0.0000	3.2409	3.2409	3.0900e-003	0.0000	3.3182
Total	**1.7647**	**0.0228**	**1.9786**	**1.0000e-004**		**0.0110**	**0.0110**		**0.0110**	**0.0110**	**0.0000**	**3.2409**	**3.2409**	**3.0900e-003**	**0.0000**	**3.3182**

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	0.1427					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	1.5628					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Hearth	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	0.0593	0.0228	1.9786	1.0000e-004		0.0110	0.0110		0.0110	0.0110	0.0000	3.2409	3.2409	3.0900e-003	0.0000	3.3182
Total	**1.7647**	**0.0228**	**1.9786**	**1.0000e-004**		**0.0110**	**0.0110**		**0.0110**	**0.0110**	**0.0000**	**3.2409**	**3.2409**	**3.0900e-003**	**0.0000**	**3.3182**

7.0 Water Detail

7.1 Mitigation Measures Water

Apply Water Conservation Strategy

Use Reclaimed Water

	Total CO2	CH4	N2O	CO2e
Category	MT/yr			
Mitigated	140.7617	1.0705	0.0263	175.3627
Unmitigated	159.6527	1.3374	0.0327	202.8440

7.2 Water by Land Use

Unmitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
Apartments Low Rise	17.3961 / 10.9671	58.8817	0.5691	0.0139	77.2382
City Park	0 / 12.9633	22.0618	9.1000e-004	2.0000e-004	22.1430
Office Park	23.4609 / 14.3792	78.7093	0.7674	0.0187	103.4628
Total		**159.6527**	**1.3374**	**0.0327**	**202.8440**

7.2 Water by Land Use

Mitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
Apartments Low Rise	13.9169 / 10.9671	50.8382	0.4554	0.0111	65.5372
City Park	0 / 12.9633	22.0618	9.1000e-004	2.0000e-004	22.1430
Office Park	18.7687 / 14.3792	67.8617	0.6141	0.0150	87.6826
Total		**140.7617**	**1.0705**	**0.0263**	**175.3627**

8.0 Waste Detail

8.1 Mitigation Measures Waste

Category/Year

	Total CO2	CH4	N2O	CO2e
	MT/yr			
Mitigated	37.5310	2.2180	0.0000	92.9815
Unmitigated	37.5310	2.2180	0.0000	92.9815

8.2 Waste by Land Use

Unmitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
Apartments Low Rise	92.11	18.6975	1.1050	0.0000	46.3223
City Park	0.71	0.1441	8.5200e-003	0.0000	0.3571
Office Park	92.07	18.6894	1.1045	0.0000	46.3021
Total		**37.5310**	**2.2180**	**0.0000**	**92.9815**

8.2 Waste by Land Use

Mitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
Apartments Low Rise	92.11	18.6975	1.1050	0.0000	46.3223
City Park	0.71	0.1441	8.5200e-003	0.0000	0.3571
Office Park	92.07	18.6894	1.1045	0.0000	46.3021
Total		**37.5310**	**2.2180**	**0.0000**	**92.9815**

9.0 Operational Offroad

Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type

10.0 Stationary Equipment

Fire Pumps and Emergency Generators

Equipment Type	Number	Hours/Day	Hours/Year	Horse Power	Load Factor	Fuel Type

Boilers

Equipment Type	Number	Heat Input/Day	Heat Input/Year	Boiler Rating	Fuel Type

User Defined Equipment

Equipment Type	Number

11.0 Vegetation

Oxnard Teal Club Annexation

Ventura County, Annual

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Manufacturing	173.80	1000sqft	5.70	173,804.00	0
Unrefrigerated Warehouse-No Rail	173.80	1000sqft	5.70	173,804.00	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.6	**Precipitation Freq (Days)**	31
Climate Zone	8			**Operational Year**	2030
Utility Company	Southern California Edison				
CO2 Intensity (lb/MWhr)	337.71	**CH4 Intensity (lb/MWhr)**	0.014	**N2O Intensity (lb/MWhr)**	0.003

1.3 User Entered Comments & Non-Default Data

Oxnard Teal Club Annexation - Ventura County, Annual

Project Characteristics - Based on 2030 projections for SCE 60% renewable with CPUC 2011 SCE factor for 2009. 337.71; 0.014; 0.003

Land Use - Based on PD Table 2-4 8/2019, half each of 11.4 acres.

Construction Phase - Annex phase 2025+ per PD 8/2019. AC extended to overlap with half of construction phase.

Trips and VMT - Landfill located 4 miles east at Del Norte Regional Recycling and Transfer

Demolition - No demolition

Grading - No overall export/import

Architectural Coating - Per VCAPCD Rule 74.2

Vehicle Trips -

Woodstoves - No fireplaces or woodstoves

Area Coating - Per VCAPCD Rule 74.2

Energy Use - 7% decrease in electricity factor for residential and 30% decrease for commercial per 2019 CalGreen standards

Water And Wastewater -

Solid Waste - 25% waste reduction beyond AB 939 due to AB 341, Athens Services compliant

Area Mitigation - Per VCAPCD Rule 74.2 AC. 50 interior, 100 exterior

Energy Mitigation -

Water Mitigation - 20% water reduction indoor and water efficient fixtures per CalGreen Building Standards Update 2016, Recycled water used for all landscaping

Table Name	Column Name	Default Value	New Value
tblArchitecturalCoating	EF_Nonresidential_Exterior	250.00	100.00
tblArchitecturalCoating	EF_Nonresidential_Interior	250.00	50.00
tblArchitecturalCoating	EF_Parking	250.00	100.00
tblArchitecturalCoating	EF_Residential_Interior	75.00	50.00
tblAreaCoating	Area_EF_Nonresidential_Exterior	250	100
tblAreaCoating	Area_EF_Nonresidential_Interior	250	50
tblAreaCoating	Area_EF_Parking	250	100
tblAreaCoating	Area_EF_Residential_Interior	75	50
tblAreaMitigation	UseLowVOCPaintParkingCheck	False	True
tblEnergyUse	T24E	1.63	1.14
tblEnergyUse	T24E	0.59	0.41
tblGrading	AcresOfGrading	75.00	50.00
tblLandUse	LandUseSquareFeet	173,800.00	173,804.00
tblLandUse	LandUseSquareFeet	173,800.00	173,804.00
tblLandUse	LotAcreage	3.99	5.70
tblLandUse	LotAcreage	3.99	5.70
tblProjectCharacteristics	CH4IntensityFactor	0.029	0.014
tblProjectCharacteristics	CO2IntensityFactor	702.44	337.71
tblProjectCharacteristics	N2OIntensityFactor	0.006	0.003
tblSolidWaste	SolidWasteGenerationRate	215.51	161.63
tblSolidWaste	SolidWasteGenerationRate	163.37	122.53
tblTripsAndVMT	HaulingTripLength	20.00	4.00

2.0 Emissions Summary

2.1 Overall Construction

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2025	0.2668	2.4021	2.6941	6.5700e-003	0.3680	0.0852	0.4532	0.1458	0.0796	0.2254	0.0000	588.7911	588.7911	0.1072	0.0000	591.4721
2026	1.1108	0.9136	1.1495	2.7400e-003	0.0806	0.0314	0.1121	0.0218	0.0295	0.0514	0.0000	246.3178	246.3178	0.0389	0.0000	247.2914
Maximum	**1.1108**	**2.4021**	**2.6941**	**6.5700e-003**	**0.3680**	**0.0852**	**0.4532**	**0.1458**	**0.0796**	**0.2254**	**0.0000**	**588.7911**	**588.7911**	**0.1072**	**0.0000**	**591.4721**

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2025	0.2668	2.4021	2.6941	6.5700e-003	0.3680	0.0852	0.4532	0.1458	0.0796	0.2254	0.0000	588.7906	588.7906	0.1072	0.0000	591.4717
2026	1.1108	0.9136	1.1495	2.7400e-003	0.0806	0.0314	0.1121	0.0218	0.0295	0.0514	0.0000	246.3176	246.3176	0.0389	0.0000	247.2912
Maximum	**1.1108**	**2.4021**	**2.6941**	**6.5700e-003**	**0.3680**	**0.0852**	**0.4532**	**0.1458**	**0.0796**	**0.2254**	**0.0000**	**588.7906**	**588.7906**	**0.1072**	**0.0000**	**591.4717**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

Quarter	Start Date	End Date	Maximum Unmitigated ROG + NOX (tons/quarter)	Maximum Mitigated ROG + NOX (tons/quarter)
1	1-1-2025	3-31-2025	0.8562	0.8562
2	4-1-2025	6-30-2025	0.5973	0.5973
3	7-1-2025	9-30-2025	0.6039	0.6039
4	10-1-2025	12-31-2025	0.6064	0.6064
5	1-1-2026	3-31-2026	0.5899	0.5899
6	4-1-2026	6-30-2026	0.9261	0.9261
7	7-1-2026	9-30-2026	0.5106	0.5106
		Highest	0.9261	0.9261

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	1.4586	3.0000e-005	3.1800e-003	0.0000		1.0000e-005	1.0000e-005		1.0000e-005	1.0000e-005	0.0000	6.2100e-003	6.2100e-003	2.0000e-005	0.0000	6.6100e-003
Energy	0.0233	0.2116	0.1777	1.2700e-003		0.0161	0.0161		0.0161	0.0161	0.0000	548.1821	548.1821	0.0176	7.0500e-003	550.7216
Mobile	0.1267	0.5342	1.6527	7.5200e-003	0.9035	4.8900e-003	0.9084	0.2416	4.5300e-003	0.2461	0.0000	695.0675	695.0675	0.0240	0.0000	695.6661
Waste						0.0000	0.0000		0.0000	0.0000	57.6819	0.0000	57.6819	3.4089	0.0000	142.9045
Water						0.0000	0.0000		0.0000	0.0000	25.5017	160.3303	185.8319	2.6259	0.0633	270.3344
Total	**1.6085**	**0.7458**	**1.8336**	**8.7900e-003**	**0.9035**	**0.0210**	**0.9245**	**0.2416**	**0.0206**	**0.2622**	**83.1836**	**1,403.5860**	**1,486.7696**	**6.0764**	**0.0703**	**1,659.6332**

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	1.4586	3.0000e-005	3.1800e-003	0.0000		1.0000e-005	1.0000e-005		1.0000e-005	1.0000e-005	0.0000	6.2100e-003	6.2100e-003	2.0000e-005	0.0000	6.6100e-003
Energy	0.0233	0.2116	0.1777	1.2700e-003		0.0161	0.0161		0.0161	0.0161	0.0000	548.1821	548.1821	0.0176	7.0500e-003	550.7216
Mobile	0.1267	0.5342	1.6527	7.5200e-003	0.9035	4.8900e-003	0.9084	0.2416	4.5300e-003	0.2461	0.0000	695.0675	695.0675	0.0240	0.0000	695.6661
Waste						0.0000	0.0000		0.0000	0.0000	57.6819	0.0000	57.6819	3.4089	0.0000	142.9045
Water						0.0000	0.0000		0.0000	0.0000	20.4013	128.2642	148.6655	2.1007	0.0506	216.2675
Total	**1.6085**	**0.7458**	**1.8336**	**8.7900e-003**	**0.9035**	**0.0210**	**0.9245**	**0.2416**	**0.0206**	**0.2622**	**78.0832**	**1,371.5200**	**1,449.6032**	**5.5512**	**0.0577**	**1,605.5663**

	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**	**6.13**	**2.28**	**2.50**	**8.64**	**17.99**	**3.26**

3.0 Construction Detail

Construction Phase

Oxnard Teal Club Annexation - Ventura County, Annual

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Demolition	Demolition	1/1/2025	1/28/2025	5	20	
2	Site Preparation	Site Preparation	1/29/2025	2/11/2025	5	10	
3	Grading	Grading	2/12/2025	3/25/2025	5	30	
4	Building Construction	Building Construction	3/26/2025	5/19/2026	5	300	
5	Architectural Coating	Architectural Coating	6/17/2026	7/14/2026	5	20	
6	Paving	Paving	5/20/2026	6/16/2026	5	20	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 50

Acres of Paving: 0

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 521,412; Non-Residential Outdoor: 173,804; Striped Parking Area: 0 (Architectural Coating – sqft)

OffRoad Equipment

Oxnard Teal Club Annexation - Ventura County, Annual

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Demolition	Concrete/Industrial Saws	1	8.00	81	0.73
Demolition	Excavators	3	8.00	158	0.38
Demolition	Rubber Tired Dozers	2	8.00	247	0.40
Site Preparation	Rubber Tired Dozers	3	8.00	247	0.40
Site Preparation	Tractors/Loaders/Backhoes	4	8.00	97	0.37
Grading	Excavators	2	8.00	158	0.38
Grading	Graders	1	8.00	187	0.41
Grading	Rubber Tired Dozers	1	8.00	247	0.40
Grading	Scrapers	2	8.00	367	0.48
Grading	Tractors/Loaders/Backhoes	2	8.00	97	0.37
Building Construction	Cranes	1	7.00	231	0.29
Building Construction	Forklifts	3	8.00	89	0.20
Building Construction	Generator Sets	1	8.00	84	0.74
Building Construction	Tractors/Loaders/Backhoes	3	7.00	97	0.37
Building Construction	Welders	1	8.00	46	0.45
Architectural Coating	Air Compressors	1	6.00	78	0.48
Paving	Pavers	2	8.00	130	0.42
Paving	Paving Equipment	2	8.00	132	0.36
Paving	Rollers	2	8.00	80	0.38

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	15.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Site Preparation	7	18.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Grading	8	20.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction	9	146.00	57.00	0.00	10.80	7.30	4.00	LD_Mix	HDT_Mix	HHDT
Architectural Coating	1	29.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Paving	6	15.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

3.2 Demolition - 2025

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	0.0209	0.1920	0.1942	3.9000e-004		8.5300e-003	8.5300e-003		7.9200e-003	7.9200e-003	0.0000	33.9977	33.9977	9.4900e-003	0.0000	34.2350
Total	**0.0209**	**0.1920**	**0.1942**	**3.9000e-004**		**8.5300e-003**	**8.5300e-003**		**7.9200e-003**	**7.9200e-003**	**0.0000**	**33.9977**	**33.9977**	**9.4900e-003**	**0.0000**	**34.2350**

3.2 Demolition - 2025

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	4.1000e-004	2.3000e-004	2.7200e-003	1.0000e-005	1.2100e-003	1.0000e-005	1.2200e-003	3.2000e-004	1.0000e-005	3.3000e-004	0.0000	0.8618	0.8618	2.0000e-005	0.0000	0.8623
Total	**4.1000e-004**	**2.3000e-004**	**2.7200e-003**	**1.0000e-005**	**1.2100e-003**	**1.0000e-005**	**1.2200e-003**	**3.2000e-004**	**1.0000e-005**	**3.3000e-004**	**0.0000**	**0.8618**	**0.8618**	**2.0000e-005**	**0.0000**	**0.8623**

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	0.0209	0.1920	0.1942	3.9000e-004		8.5300e-003	8.5300e-003		7.9200e-003	7.9200e-003	0.0000	33.9976	33.9976	9.4900e-003	0.0000	34.2349
Total	**0.0209**	**0.1920**	**0.1942**	**3.9000e-004**		**8.5300e-003**	**8.5300e-003**		**7.9200e-003**	**7.9200e-003**	**0.0000**	**33.9976**	**33.9976**	**9.4900e-003**	**0.0000**	**34.2349**

3.2 Demolition - 2025

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	4.1000e-004	2.3000e-004	2.7200e-003	1.0000e-005	1.2100e-003	1.0000e-005	1.2200e-003	3.2000e-004	1.0000e-005	3.3000e-004	0.0000	0.8618	0.8618	2.0000e-005	0.0000	0.8623
Total	**4.1000e-004**	**2.3000e-004**	**2.7200e-003**	**1.0000e-005**	**1.2100e-003**	**1.0000e-005**	**1.2200e-003**	**3.2000e-004**	**1.0000e-005**	**3.3000e-004**	**0.0000**	**0.8618**	**0.8618**	**2.0000e-005**	**0.0000**	**0.8623**

3.3 Site Preparation - 2025

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					0.0903	0.0000	0.0903	0.0497	0.0000	0.0497	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0124	0.1262	0.0896	1.9000e-004		5.4300e-003	5.4300e-003		5.0000e-003	5.0000e-003	0.0000	16.7335	16.7335	5.4100e-003	0.0000	16.8688
Total	**0.0124**	**0.1262**	**0.0896**	**1.9000e-004**	**0.0903**	**5.4300e-003**	**0.0958**	**0.0497**	**5.0000e-003**	**0.0547**	**0.0000**	**16.7335**	**16.7335**	**5.4100e-003**	**0.0000**	**16.8688**

3.3 Site Preparation - 2025

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	2.5000e-004	1.4000e-004	1.6300e-003	1.0000e-005	7.3000e-004	0.0000	7.3000e-004	1.9000e-004	0.0000	2.0000e-004	0.0000	0.5171	0.5171	1.0000e-005	0.0000	0.5174
Total	**2.5000e-004**	**1.4000e-004**	**1.6300e-003**	**1.0000e-005**	**7.3000e-004**	**0.0000**	**7.3000e-004**	**1.9000e-004**	**0.0000**	**2.0000e-004**	**0.0000**	**0.5171**	**0.5171**	**1.0000e-005**	**0.0000**	**0.5174**

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					0.0903	0.0000	0.0903	0.0497	0.0000	0.0497	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0124	0.1262	0.0896	1.9000e-004		5.4300e-003	5.4300e-003		5.0000e-003	5.0000e-003	0.0000	16.7335	16.7335	5.4100e-003	0.0000	16.8688
Total	**0.0124**	**0.1262**	**0.0896**	**1.9000e-004**	**0.0903**	**5.4300e-003**	**0.0958**	**0.0497**	**5.0000e-003**	**0.0547**	**0.0000**	**16.7335**	**16.7335**	**5.4100e-003**	**0.0000**	**16.8688**

3.3 Site Preparation - 2025

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	2.5000e-004	1.4000e-004	1.6300e-003	1.0000e-005	7.3000e-004	0.0000	7.3000e-004	1.9000e-004	0.0000	2.0000e-004	0.0000	0.5171	0.5171	1.0000e-005	0.0000	0.5174
Total	**2.5000e-004**	**1.4000e-004**	**1.6300e-003**	**1.0000e-005**	**7.3000e-004**	**0.0000**	**7.3000e-004**	**1.9000e-004**	**0.0000**	**2.0000e-004**	**0.0000**	**0.5171**	**0.5171**	**1.0000e-005**	**0.0000**	**0.5174**

3.4 Grading - 2025

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					0.1168	0.0000	0.1168	0.0525	0.0000	0.0525	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0435	0.4191	0.3950	9.3000e-004		0.0170	0.0170		0.0156	0.0156	0.0000	81.7593	81.7593	0.0264	0.0000	82.4204
Total	**0.0435**	**0.4191**	**0.3950**	**9.3000e-004**	**0.1168**	**0.0170**	**0.1338**	**0.0525**	**0.0156**	**0.0681**	**0.0000**	**81.7593**	**81.7593**	**0.0264**	**0.0000**	**82.4204**

3.4 Grading - 2025

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	8.3000e-004	4.5000e-004	5.4400e-003	2.0000e-005	2.4200e-003	2.0000e-005	2.4300e-003	6.4000e-004	1.0000e-005	6.6000e-004	0.0000	1.7237	1.7237	3.0000e-005	0.0000	1.7245
Total	**8.3000e-004**	**4.5000e-004**	**5.4400e-003**	**2.0000e-005**	**2.4200e-003**	**2.0000e-005**	**2.4300e-003**	**6.4000e-004**	**1.0000e-005**	**6.6000e-004**	**0.0000**	**1.7237**	**1.7237**	**3.0000e-005**	**0.0000**	**1.7245**

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					0.1168	0.0000	0.1168	0.0525	0.0000	0.0525	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0435	0.4191	0.3950	9.3000e-004		0.0170	0.0170		0.0156	0.0156	0.0000	81.7592	81.7592	0.0264	0.0000	82.4203
Total	**0.0435**	**0.4191**	**0.3950**	**9.3000e-004**	**0.1168**	**0.0170**	**0.1338**	**0.0525**	**0.0156**	**0.0681**	**0.0000**	**81.7592**	**81.7592**	**0.0264**	**0.0000**	**82.4203**

3.4 Grading - 2025

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	8.3000e-004	4.5000e-004	5.4400e-003	2.0000e-005	2.4200e-003	2.0000e-005	2.4300e-003	6.4000e-004	1.0000e-005	6.6000e-004	0.0000	1.7237	1.7237	3.0000e-005	0.0000	1.7245
Total	**8.3000e-004**	**4.5000e-004**	**5.4400e-003**	**2.0000e-005**	**2.4200e-003**	**2.0000e-005**	**2.4300e-003**	**6.4000e-004**	**1.0000e-005**	**6.6000e-004**	**0.0000**	**1.7237**	**1.7237**	**3.0000e-005**	**0.0000**	**1.7245**

3.5 Building Construction - 2025

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	0.1374	1.2532	1.6165	2.7100e-003		0.0530	0.0530		0.0499	0.0499	0.0000	233.0791	233.0791	0.0548	0.0000	234.4488
Total	**0.1374**	**1.2532**	**1.6165**	**2.7100e-003**		**0.0530**	**0.0530**		**0.0499**	**0.0499**	**0.0000**	**233.0791**	**233.0791**	**0.0548**	**0.0000**	**234.4488**

3.5 Building Construction - 2025

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0107	0.3886	0.1232	1.3800e-003	0.0382	4.9000e-004	0.0386	0.0110	4.7000e-004	0.0115	0.0000	135.8147	135.8147	9.3600e-003	0.0000	136.0488
Worker	0.0404	0.0222	0.2659	9.3000e-004	0.1183	7.7000e-004	0.1191	0.0314	7.1000e-004	0.0321	0.0000	84.3043	84.3043	1.6800e-003	0.0000	84.3463
Total	**0.0511**	**0.4108**	**0.3891**	**2.3100e-003**	**0.1565**	**1.2600e-003**	**0.1577**	**0.0424**	**1.1800e-003**	**0.0436**	**0.0000**	**220.1190**	**220.1190**	**0.0110**	**0.0000**	**220.3950**

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	0.1374	1.2532	1.6165	2.7100e-003		0.0530	0.0530		0.0499	0.0499	0.0000	233.0788	233.0788	0.0548	0.0000	234.4485
Total	**0.1374**	**1.2532**	**1.6165**	**2.7100e-003**		**0.0530**	**0.0530**		**0.0499**	**0.0499**	**0.0000**	**233.0788**	**233.0788**	**0.0548**	**0.0000**	**234.4485**

3.5 Building Construction - 2025

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0107	0.3886	0.1232	1.3800e-003	0.0382	4.9000e-004	0.0386	0.0110	4.7000e-004	0.0115	0.0000	135.8147	135.8147	9.3600e-003	0.0000	136.0488
Worker	0.0404	0.0222	0.2659	9.3000e-004	0.1183	7.7000e-004	0.1191	0.0314	7.1000e-004	0.0321	0.0000	84.3043	84.3043	1.6800e-003	0.0000	84.3463
Total	**0.0511**	**0.4108**	**0.3891**	**2.3100e-003**	**0.1565**	**1.2600e-003**	**0.1577**	**0.0424**	**1.1800e-003**	**0.0436**	**0.0000**	**220.1190**	**220.1190**	**0.0110**	**0.0000**	**220.3950**

3.5 Building Construction - 2026

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	0.0677	0.6173	0.7962	1.3300e-003		0.0261	0.0261		0.0246	0.0246	0.0000	114.8001	114.8001	0.0270	0.0000	115.4748
Total	**0.0677**	**0.6173**	**0.7962**	**1.3300e-003**		**0.0261**	**0.0261**		**0.0246**	**0.0246**	**0.0000**	**114.8001**	**114.8001**	**0.0270**	**0.0000**	**115.4748**

3.5 Building Construction - 2026

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	5.0900e-003	0.1885	0.0598	6.8000e-004	0.0188	2.4000e-004	0.0190	5.4200e-003	2.3000e-004	5.6500e-003	0.0000	66.5034	66.5034	4.5400e-003	0.0000	66.6170
Worker	0.0190	0.0100	0.1222	4.4000e-004	0.0583	3.7000e-004	0.0586	0.0155	3.4000e-004	0.0158	0.0000	40.0060	40.0060	7.6000e-004	0.0000	40.0249
Total	**0.0241**	**0.1985**	**0.1820**	**1.1200e-003**	**0.0771**	**6.1000e-004**	**0.0777**	**0.0209**	**5.7000e-004**	**0.0215**	**0.0000**	**106.5094**	**106.5094**	**5.3000e-003**	**0.0000**	**106.6419**

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	0.0677	0.6173	0.7962	1.3300e-003		0.0261	0.0261		0.0246	0.0246	0.0000	114.8000	114.8000	0.0270	0.0000	115.4746
Total	**0.0677**	**0.6173**	**0.7962**	**1.3300e-003**		**0.0261**	**0.0261**		**0.0246**	**0.0246**	**0.0000**	**114.8000**	**114.8000**	**0.0270**	**0.0000**	**115.4746**

3.5 Building Construction - 2026

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	5.0900e-003	0.1885	0.0598	6.8000e-004	0.0188	2.4000e-004	0.0190	5.4200e-003	2.3000e-004	5.6500e-003	0.0000	66.5034	66.5034	4.5400e-003	0.0000	66.6170
Worker	0.0190	0.0100	0.1222	4.4000e-004	0.0583	3.7000e-004	0.0586	0.0155	3.4000e-004	0.0158	0.0000	40.0060	40.0060	7.6000e-004	0.0000	40.0249
Total	**0.0241**	**0.1985**	**0.1820**	**1.1200e-003**	**0.0771**	**6.1000e-004**	**0.0777**	**0.0209**	**5.7000e-004**	**0.0215**	**0.0000**	**106.5094**	**106.5094**	**5.3000e-003**	**0.0000**	**106.6419**

3.6 Architectural Coating - 2026

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	1.0070					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	1.7100e-003	0.0115	0.0181	3.0000e-005		5.2000e-004	5.2000e-004		5.2000e-004	5.2000e-004	0.0000	2.5533	2.5533	1.4000e-004	0.0000	2.5567
Total	**1.0087**	**0.0115**	**0.0181**	**3.0000e-005**		**5.2000e-004**	**5.2000e-004**		**5.2000e-004**	**5.2000e-004**	**0.0000**	**2.5533**	**2.5533**	**1.4000e-004**	**0.0000**	**2.5567**

3.6 Architectural Coating - 2026

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	7.6000e-004	4.0000e-004	4.9000e-003	2.0000e-005	2.3400e-003	1.0000e-005	2.3500e-003	6.2000e-004	1.0000e-005	6.3000e-004	0.0000	1.6053	1.6053	3.0000e-005	0.0000	1.6061
Total	**7.6000e-004**	**4.0000e-004**	**4.9000e-003**	**2.0000e-005**	**2.3400e-003**	**1.0000e-005**	**2.3500e-003**	**6.2000e-004**	**1.0000e-005**	**6.3000e-004**	**0.0000**	**1.6053**	**1.6053**	**3.0000e-005**	**0.0000**	**1.6061**

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	1.0070					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	1.7100e-003	0.0115	0.0181	3.0000e-005		5.2000e-004	5.2000e-004		5.2000e-004	5.2000e-004	0.0000	2.5533	2.5533	1.4000e-004	0.0000	2.5567
Total	**1.0087**	**0.0115**	**0.0181**	**3.0000e-005**		**5.2000e-004**	**5.2000e-004**		**5.2000e-004**	**5.2000e-004**	**0.0000**	**2.5533**	**2.5533**	**1.4000e-004**	**0.0000**	**2.5567**

3.6 Architectural Coating - 2026

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	7.6000e-004	4.0000e-004	4.9000e-003	2.0000e-005	2.3400e-003	1.0000e-005	2.3500e-003	6.2000e-004	1.0000e-005	6.3000e-004	0.0000	1.6053	1.6053	3.0000e-005	0.0000	1.6061
Total	**7.6000e-004**	**4.0000e-004**	**4.9000e-003**	**2.0000e-005**	**2.3400e-003**	**1.0000e-005**	**2.3500e-003**	**6.2000e-004**	**1.0000e-005**	**6.3000e-004**	**0.0000**	**1.6053**	**1.6053**	**3.0000e-005**	**0.0000**	**1.6061**

3.7 Paving - 2026

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	9.1500e-003	0.0858	0.1458	2.3000e-004		4.1900e-003	4.1900e-003		3.8500e-003	3.8500e-003	0.0000	20.0193	20.0193	6.4700e-003	0.0000	20.1811
Paving	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**9.1500e-003**	**0.0858**	**0.1458**	**2.3000e-004**		**4.1900e-003**	**4.1900e-003**		**3.8500e-003**	**3.8500e-003**	**0.0000**	**20.0193**	**20.0193**	**6.4700e-003**	**0.0000**	**20.1811**

3.7 Paving - 2026

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	3.9000e-004	2.1000e-004	2.5400e-003	1.0000e-005	1.2100e-003	1.0000e-005	1.2200e-003	3.2000e-004	1.0000e-005	3.3000e-004	0.0000	0.8303	0.8303	2.0000e-005	0.0000	0.8307
Total	**3.9000e-004**	**2.1000e-004**	**2.5400e-003**	**1.0000e-005**	**1.2100e-003**	**1.0000e-005**	**1.2200e-003**	**3.2000e-004**	**1.0000e-005**	**3.3000e-004**	**0.0000**	**0.8303**	**0.8303**	**2.0000e-005**	**0.0000**	**0.8307**

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	9.1500e-003	0.0858	0.1458	2.3000e-004		4.1900e-003	4.1900e-003		3.8500e-003	3.8500e-003	0.0000	20.0192	20.0192	6.4700e-003	0.0000	20.1811
Paving	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**9.1500e-003**	**0.0858**	**0.1458**	**2.3000e-004**		**4.1900e-003**	**4.1900e-003**		**3.8500e-003**	**3.8500e-003**	**0.0000**	**20.0192**	**20.0192**	**6.4700e-003**	**0.0000**	**20.1811**

3.7 Paving - 2026

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	3.9000e-004	2.1000e-004	2.5400e-003	1.0000e-005	1.2100e-003	1.0000e-005	1.2200e-003	3.2000e-004	1.0000e-005	3.3000e-004	0.0000	0.8303	0.8303	2.0000e-005	0.0000	0.8307
Total	**3.9000e-004**	**2.1000e-004**	**2.5400e-003**	**1.0000e-005**	**1.2100e-003**	**1.0000e-005**	**1.2200e-003**	**3.2000e-004**	**1.0000e-005**	**3.3000e-004**	**0.0000**	**0.8303**	**0.8303**	**2.0000e-005**	**0.0000**	**0.8307**

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	0.1267	0.5342	1.6527	7.5200e-003	0.9035	4.8900e-003	0.9084	0.2416	4.5300e-003	0.2461	0.0000	695.0675	695.0675	0.0240	0.0000	695.6661
Unmitigated	0.1267	0.5342	1.6527	7.5200e-003	0.9035	4.8900e-003	0.9084	0.2416	4.5300e-003	0.2461	0.0000	695.0675	695.0675	0.0240	0.0000	695.6661

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Manufacturing	663.92	258.96	107.76	1,537,455	1,537,455
Unrefrigerated Warehouse-No Rail	291.98	291.98	291.98	852,451	852,451
Total	955.90	550.95	399.74	2,389,906	2,389,906

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
Manufacturing	9.50	7.30	7.30	59.00	28.00	13.00	92	5	3
Unrefrigerated Warehouse-No	9.50	7.30	7.30	59.00	0.00	41.00	92	5	3

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
Manufacturing	0.611155	0.038739	0.187677	0.096955	0.013383	0.005563	0.020646	0.018593	0.001209	0.001094	0.003654	0.000418	0.000914
Unrefrigerated Warehouse-No Rail	0.611155	0.038739	0.187677	0.096955	0.013383	0.005563	0.020646	0.018593	0.001209	0.001094	0.003654	0.000418	0.000914

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Electricity Mitigated						0.0000	0.0000		0.0000	0.0000	0.0000	317.8877	317.8877	0.0132	2.8200e-003	319.0587
Electricity Unmitigated						0.0000	0.0000		0.0000	0.0000	0.0000	317.8877	317.8877	0.0132	2.8200e-003	319.0587
NaturalGas Mitigated	0.0233	0.2116	0.1777	1.2700e-003		0.0161	0.0161		0.0161	0.0161	0.0000	230.2944	230.2944	4.4100e-003	4.2200e-003	231.6629
NaturalGas Unmitigated	0.0233	0.2116	0.1777	1.2700e-003		0.0161	0.0161		0.0161	0.0161	0.0000	230.2944	230.2944	4.4100e-003	4.2200e-003	231.6629

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					
Manufacturing	3.6325e+006	0.0196	0.1781	0.1496	1.0700e-003		0.0135	0.0135		0.0135	0.0135	0.0000	193.8442	193.8442	3.7200e-003	3.5500e-003	194.9961
Unrefrigerated Warehouse-No Rail	683050	3.6800e-003	0.0335	0.0281	2.0000e-004		2.5400e-003	2.5400e-003		2.5400e-003	2.5400e-003	0.0000	36.4501	36.4501	7.0000e-004	6.7000e-004	36.6667
Total		**0.0233**	**0.2115**	**0.1777**	**1.2700e-003**		**0.0161**	**0.0161**		**0.0161**	**0.0161**	**0.0000**	**230.2944**	**230.2944**	**4.4200e-003**	**4.2200e-003**	**231.6629**

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					
Manufacturing	3.6325e+006	0.0196	0.1781	0.1496	1.0700e-003		0.0135	0.0135		0.0135	0.0135	0.0000	193.8442	193.8442	3.7200e-003	3.5500e-003	194.9961
Unrefrigerated Warehouse-No Rail	683050	3.6800e-003	0.0335	0.0281	2.0000e-004		2.5400e-003	2.5400e-003		2.5400e-003	2.5400e-003	0.0000	36.4501	36.4501	7.0000e-004	6.7000e-004	36.6667
Total		**0.0233**	**0.2115**	**0.1777**	**1.2700e-003**		**0.0161**	**0.0161**		**0.0161**	**0.0161**	**0.0000**	**230.2944**	**230.2944**	**4.4200e-003**	**4.2200e-003**	**231.6629**

5.3 Energy by Land Use - Electricity

Unmitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
Manufacturing	1.38348e+006	211.9252	8.7900e-003	1.8800e-003	212.7058
Unrefrigerated Warehouse-No Rail	691740	105.9626	4.3900e-003	9.4000e-004	106.3529
Total		**317.8877**	**0.0132**	**2.8200e-003**	**319.0587**

Mitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
Manufacturing	1.38348e+006	211.9252	8.7900e-003	1.8800e-003	212.7058
Unrefrigerated Warehouse-No Rail	691740	105.9626	4.3900e-003	9.4000e-004	106.3529
Total		**317.8877**	**0.0132**	**2.8200e-003**	**319.0587**

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

No Hearths Installed

	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	1.4586	3.0000e-005	3.1800e-003	0.0000		1.0000e-005	1.0000e-005		1.0000e-005	1.0000e-005	0.0000	6.2100e-003	6.2100e-003	2.0000e-005	0.0000	6.6100e-003
Unmitigated	1.4586	3.0000e-005	3.1800e-003	0.0000		1.0000e-005	1.0000e-005		1.0000e-005	1.0000e-005	0.0000	6.2100e-003	6.2100e-003	2.0000e-005	0.0000	6.6100e-003

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	0.1007					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	1.3576					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	2.9000e-004	3.0000e-005	3.1800e-003	0.0000		1.0000e-005	1.0000e-005		1.0000e-005	1.0000e-005	0.0000	6.2100e-003	6.2100e-003	2.0000e-005	0.0000	6.6100e-003
Total	**1.4586**	**3.0000e-005**	**3.1800e-003**	**0.0000**		**1.0000e-005**	**1.0000e-005**		**1.0000e-005**	**1.0000e-005**	**0.0000**	**6.2100e-003**	**6.2100e-003**	**2.0000e-005**	**0.0000**	**6.6100e-003**

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	0.1007					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	1.3576					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	2.9000e-004	3.0000e-005	3.1800e-003	0.0000		1.0000e-005	1.0000e-005		1.0000e-005	1.0000e-005	0.0000	6.2100e-003	6.2100e-003	2.0000e-005	0.0000	6.6100e-003
Total	**1.4586**	**3.0000e-005**	**3.1800e-003**	**0.0000**		**1.0000e-005**	**1.0000e-005**		**1.0000e-005**	**1.0000e-005**	**0.0000**	**6.2100e-003**	**6.2100e-003**	**2.0000e-005**	**0.0000**	**6.6100e-003**

7.0 Water Detail

7.1 Mitigation Measures Water

Apply Water Conservation Strategy

Use Reclaimed Water

	Total CO2	CH4	N2O	CO2e
Category	MT/yr			
Mitigated	148.6655	2.1007	0.0506	216.2675
Unmitigated	185.8319	2.6259	0.0633	270.3344

7.2 Water by Land Use

Unmitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
Manufacturing	40.1912 / 0	92.9160	1.3130	0.0316	135.1672
Unrefrigerated Warehouse-No Rail	40.1912 / 0	92.9160	1.3130	0.0316	135.1672
Total		**185.8319**	**2.6259**	**0.0633**	**270.3344**

Mitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
Manufacturing	32.153 / 0	74.3328	1.0504	0.0253	108.1338
Unrefrigerated Warehouse-No Rail	32.153 / 0	74.3328	1.0504	0.0253	108.1338
Total		**148.6655**	**2.1007**	**0.0506**	**216.2675**

8.0 Waste Detail

8.1 Mitigation Measures Waste

Category/Year

	Total CO2	CH4	N2O	CO2e
	MT/yr			
Mitigated	57.6819	3.4089	0.0000	142.9045
Unmitigated	57.6819	3.4089	0.0000	142.9045

8.2 Waste by Land Use

Unmitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
Manufacturing	161.63	32.8094	1.9390	0.0000	81.2840
Unrefrigerated Warehouse-No Rail	122.53	24.8725	1.4699	0.0000	61.6205
Total		**57.6819**	**3.4089**	**0.0000**	**142.9045**

8.2 Waste by Land Use

Mitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
Manufacturing	161.63	32.8094	1.9390	0.0000	81.2840
Unrefrigerated Warehouse-No Rail	122.53	24.8725	1.4699	0.0000	61.6205
Total		**57.6819**	**3.4089**	**0.0000**	**142.9045**

9.0 Operational Offroad

Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type

10.0 Stationary Equipment

Fire Pumps and Emergency Generators

Equipment Type	Number	Hours/Day	Hours/Year	Horse Power	Load Factor	Fuel Type

Boilers

Equipment Type	Number	Heat Input/Day	Heat Input/Year	Boiler Rating	Fuel Type

User Defined Equipment

Equipment Type	Number

11.0 Vegetation

Oxnard Teal Club Reduced Intensity Phase 1

Ventura County, Winter

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
General Office Building	50.00	1000sqft	8.78	50,000.00	0
City Park	6.50	Acre	6.50	283,140.00	0
Apartments Low Rise	263.00	Dwelling Unit	15.14	263,000.00	1044
Apartments Mid Rise	240.00	Dwelling Unit	10.57	240,000.00	953
Single Family Housing	220.00	Dwelling Unit	27.53	396,000.00	873

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.6	**Precipitation Freq (Days)**	31
Climate Zone	8			**Operational Year**	2030
Utility Company	Southern California Edison				
CO2 Intensity (lb/MWhr)	337.71	**CH4 Intensity (lb/MWhr)**	0.014	**N2O Intensity (lb/MWhr)**	0.003

1.3 User Entered Comments & Non-Default Data

Project Characteristics - Based on 2030 projections for SCE 60% renewable with CPUC 2011 SCE factor for 2009. 337.71; 0.014; 0.003

Land Use - Per Project Description 8/2019 and Teal Club Specific Plan Alternative with 10,000 ft less commercial in PA-7. Pop based on DOF 2019, 3.97 people/unit. General office building is commercial/mixed use/village commercial

Construction Phase - AC extended to overlap with construction by half, 2021-2023

Off-road Equipment -

Off-road Equipment -

Off-road Equipment -
Off-road Equipment -

Off-road Equipment -

Off-road Equipment -

Trips and VMT - Haul 4 miles east to Del Norte Regional Recycling and Transfer

Grading - No import/export

Architectural Coating - Per VCAPCD Rule 74.2 AC. 50 interior, 100 exterior

Vehicle Trips - Trip Rates from Stantec Traffic Study 3/26/2019.

Vehicle Emission Factors -

Vehicle Emission Factors -

Vehicle Emission Factors -

Woodstoves - No fireplaces or woodstoves

Area Coating - Per VCAPCD Rule 74.2

Energy Use - 7% decrease in electricity factor for residential and 30% decrease for commercial per 2019 CalGreen standards

Water And Wastewater -

Solid Waste - 25% waste reduction due to AB 341, Athens Services compliant

Construction Off-road Equipment Mitigation - Per Ventura County Air Quality Assessment Guidelines

Mobile Land Use Mitigation -

Area Mitigation - Per VCAPCD Rule 74.2 AC

Energy Mitigation - Per residential low-rise solar PV requirement (2019 California Energy Code Section 150.1(b)14)

Water Mitigation - 20% water reduction indoor and water efficient fixtures per CalGreen Building Standards Update 2016, Recycled water used for all landscaping

Waste Mitigation -

Fleet Mix -

Table Name	Column Name	Default Value	New Value
tblArchitecturalCoating	EF_Nonresidential_Exterior	250.00	100.00
tblArchitecturalCoating	EF_Nonresidential_Interior	250.00	50.00

tblArchitecturalCoating	EF_Parking	250.00	100.00
tblArchitecturalCoating	EF_Residential_Interior	75.00	50.00
tblAreaCoating	Area_EF_Nonresidential_Exterior	250	100
tblAreaCoating	Area_EF_Nonresidential_Interior	250	50
tblAreaCoating	Area_EF_Parking	250	100
tblAreaCoating	Area_EF_Residential_Interior	75	50
tblAreaCoating	Area_Nonresidential_Exterior	166570	171570
tblAreaCoating	Area_Nonresidential_Interior	499710	514710
tblAreaMitigation	UseLowVOCPaintParkingCheck	False	True
tblConstructionPhase	NumDays	70.00	50.00
tblConstructionPhase	NumDays	40.00	20.00
tblConstructionPhase	NumDays	110.00	20.00
tblConstructionPhase	NumDays	1,110.00	630.00
tblConstructionPhase	NumDays	75.00	40.00
tblConstructionPhase	NumDays	75.00	335.00
tblEnergyUse	T24E	177.01	164.62
tblEnergyUse	T24E	179.76	167.18
tblEnergyUse	T24E	4.71	3.30
tblEnergyUse	T24E	253.73	235.97
tblLandUse	GreenSpaceAllowEdit	1.00	0.00
tblLandUse	LotAcreage	1.15	8.78
tblLandUse	LotAcreage	16.44	15.14
tblLandUse	LotAcreage	6.32	10.57
tblLandUse	LotAcreage	71.43	27.53
tblLandUse	Population	805.00	1,044.00
tblLandUse	Population	734.00	953.00
tblLandUse	Population	673.00	873.00

tblProjectCharacteristics	CH4IntensityFactor	0.029	0.014
tblProjectCharacteristics	CO2IntensityFactor	702.44	337.71
tblProjectCharacteristics	N2OIntensityFactor	0.006	0.003
tblSolidWaste	SolidWasteGenerationRate	120.98	90.73
tblSolidWaste	SolidWasteGenerationRate	110.40	82.80
tblSolidWaste	SolidWasteGenerationRate	0.56	0.42
tblSolidWaste	SolidWasteGenerationRate	46.50	41.85
tblSolidWaste	SolidWasteGenerationRate	357.93	268.45
tblTripsAndVMT	HaulingTripLength	20.00	4.00
tblVehicleTrips	ST_TR	9.91	9.44
tblVehicleTrips	SU_TR	8.62	9.44
tblVehicleTrips	WD_TR	6.59	7.32
tblVehicleTrips	WD_TR	6.65	7.32
tblVehicleTrips	WD_TR	1.89	20.00
tblVehicleTrips	WD_TR	11.03	120.00
tblVehicleTrips	WD_TR	9.52	9.44

2.0 Emissions Summary

2.1 Overall Construction (Maximum Daily Emission)

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2021	4.5332	46.4462	34.5938	0.1023	47.8677	2.0455	49.8541	19.9006	1.8819	21.7824	0.0000	10,322.0793	10,322.0793	1.9465	0.0000	10,347.5679
2022	31.5583	30.4188	37.5490	0.1115	6.5688	0.9616	7.5304	1.7625	0.9093	2.6717	0.0000	11,227.7745	11,227.7745	1.0314	0.0000	11,253.5603
2023	31.1745	26.0910	35.8224	0.1088	6.5689	0.8204	7.3892	1.7625	0.7755	2.5380	0.0000	10,964.3186	10,964.3186	0.9825	0.0000	10,988.8814
Maximum	**31.5583**	**46.4462**	**37.5490**	**0.1115**	**47.8677**	**2.0455**	**49.8541**	**19.9006**	**1.8819**	**21.7824**	**0.0000**	**11,227.7745**	**11,227.7745**	**1.9465**	**0.0000**	**11,253.5603**

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2021	4.5332	46.4462	34.5938	0.1023	21.6308	2.0455	23.6173	8.9768	1.8819	10.8587	0.0000	10,322.0793	10,322.0793	1.9465	0.0000	10,347.5679
2022	31.5583	30.4188	37.5490	0.1115	6.5688	0.9616	7.5304	1.7625	0.9093	2.6717	0.0000	11,227.7745	11,227.7745	1.0314	0.0000	11,253.5603
2023	31.1745	26.0910	35.8224	0.1088	6.5689	0.8204	7.3892	1.7625	0.7755	2.5380	0.0000	10,964.3186	10,964.3186	0.9825	0.0000	10,988.8814
Maximum	**31.5583**	**46.4462**	**37.5490**	**0.1115**	**21.6308**	**2.0455**	**23.6173**	**8.9768**	**1.8819**	**10.8587**	**0.0000**	**11,227.7745**	**11,227.7745**	**1.9465**	**0.0000**	**11,253.5603**

Oxnard Teal Club Reduced Intensity Phase 1 - Ventura County, Winter

	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**	**43.01**	**0.00**	**40.51**	**46.63**	**0.00**	**40.47**	**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	lb/day										lb/day					
Area	30.6189	0.6859	59.4965	3.1500e-003		0.3308	0.3308		0.3308	0.3308	0.0000	107.4157	107.4157	0.1024	0.0000	109.9747
Energy	0.3614	3.0959	1.3683	0.0197		0.2497	0.2497		0.2497	0.2497		3,942.7696	3,942.7696	0.0756	0.0723	3,966.1995
Mobile	9.7301	40.4408	121.7664	0.5279	64.6724	0.3508	65.0232	17.2664	0.3253	17.5917		53,820.2969	53,820.2969	1.9227		53,868.3634
Total	**40.7104**	**44.2225**	**182.6312**	**0.5507**	**64.6724**	**0.9313**	**65.6038**	**17.2664**	**0.9058**	**18.1722**	**0.0000**	**57,870.4822**	**57,870.4822**	**2.1006**	**0.0723**	**57,944.5376**

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	lb/day										lb/day					
Area	30.6189	0.6859	59.4965	3.1500e-003		0.3308	0.3308		0.3308	0.3308	0.0000	107.4157	107.4157	0.1024	0.0000	109.9747
Energy	0.3614	3.0959	1.3683	0.0197		0.2497	0.2497		0.2497	0.2497		3,942.7696	3,942.7696	0.0756	0.0723	3,966.1995
Mobile	9.0224	36.8832	102.0885	0.4213	50.8342	0.2869	51.1212	13.5718	0.2660	13.8379		42,966.1210	42,966.1210	1.5925		43,005.9338
Total	**40.0027**	**40.6649**	**162.9533**	**0.4442**	**50.8342**	**0.8674**	**51.7017**	**13.5718**	**0.8465**	**14.4184**	**0.0000**	**47,016.3063**	**47,016.3063**	**1.7704**	**0.0723**	**47,082.1080**

	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	**1.74**	**8.04**	**10.77**	**19.35**	**21.40**	**6.86**	**21.19**	**21.40**	**6.55**	**20.66**	**0.00**	**18.76**	**18.76**	**15.72**	**0.00**	**18.75**

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	1/1/2021	3/11/2021	5	50	
2	Site Preparation	Site Preparation	3/12/2021	4/8/2021	5	20	
3	Grading	Grading	4/9/2021	5/6/2021	5	20	
4	Building Construction	Building Construction	5/7/2021	10/5/2023	5	630	
5	Paving	Paving	10/6/2023	11/30/2023	5	40	
6	Architectural Coating	Architectural Coating	9/18/2022	12/29/2023	5	335	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 275

Acres of Paving: 0

Residential Indoor: 1,820,475; Residential Outdoor: 606,825; Non-Residential Indoor: 499,710; Non-Residential Outdoor: 166,570; Striped Parking Area: 0 (Architectural Coating – sqft)

OffRoad Equipment

Oxnard Teal Club Reduced Intensity Phase 1 - Ventura County, Winter

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Demolition	Concrete/Industrial Saws	1	8.00	81	0.73
Demolition	Excavators	3	8.00	158	0.38
Demolition	Rubber Tired Dozers	2	8.00	247	0.40
Site Preparation	Rubber Tired Dozers	3	8.00	247	0.40
Site Preparation	Tractors/Loaders/Backhoes	4	8.00	97	0.37
Grading	Excavators	2	8.00	158	0.38
Grading	Graders	1	8.00	187	0.41
Grading	Rubber Tired Dozers	1	8.00	247	0.40
Grading	Scrapers	2	8.00	367	0.48
Grading	Tractors/Loaders/Backhoes	2	8.00	97	0.37
Building Construction	Cranes	1	7.00	231	0.29
Building Construction	Forklifts	3	8.00	89	0.20
Building Construction	Generator Sets	1	8.00	84	0.74
Building Construction	Tractors/Loaders/Backhoes	3	7.00	97	0.37
Building Construction	Welders	1	8.00	46	0.45
Paving	Pavers	2	8.00	130	0.42
Paving	Paving Equipment	2	8.00	132	0.36
Paving	Rollers	2	8.00	80	0.38
Architectural Coating	Air Compressors	1	6.00	78	0.48

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Demolition	6	15.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Site Preparation	7	18.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Grading	8	20.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction	9	576.00	132.00	0.00	10.80	7.30	4.00	LD_Mix	HDT_Mix	HHDT
Paving	6	15.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Architectural Coating	1	115.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Use Soil Stabilizer

Water Exposed Area

3.2 Demolition - 2021

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	3.1651	31.4407	21.5650	0.0388		1.5513	1.5513		1.4411	1.4411		3,747.9449	3,747.9449	1.0549		3,774.3174
Total	**3.1651**	**31.4407**	**21.5650**	**0.0388**		**1.5513**	**1.5513**		**1.4411**	**1.4411**		**3,747.9449**	**3,747.9449**	**1.0549**		**3,774.3174**

3.2 Demolition - 2021

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	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
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
Worker	0.0583	0.0348	0.3731	1.1000e-003	0.1232	8.5000e-004	0.1241	0.0327	7.9000e-004	0.0335		109.9022	109.9022	2.7900e-003		109.9721
Total	**0.0583**	**0.0348**	**0.3731**	**1.1000e-003**	**0.1232**	**8.5000e-004**	**0.1241**	**0.0327**	**7.9000e-004**	**0.0335**		**109.9022**	**109.9022**	**2.7900e-003**		**109.9721**

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	lb/day										lb/day					
Off-Road	3.1651	31.4407	21.5650	0.0388		1.5513	1.5513		1.4411	1.4411	0.0000	3,747.9449	3,747.9449	1.0549		3,774.3174
Total	**3.1651**	**31.4407**	**21.5650**	**0.0388**		**1.5513**	**1.5513**		**1.4411**	**1.4411**	**0.0000**	**3,747.9449**	**3,747.9449**	**1.0549**		**3,774.3174**

3.2 Demolition - 2021

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	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
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
Worker	0.0583	0.0348	0.3731	1.1000e-003	0.1232	8.5000e-004	0.1241	0.0327	7.9000e-004	0.0335		109.9022	109.9022	2.7900e-003		109.9721
Total	**0.0583**	**0.0348**	**0.3731**	**1.1000e-003**	**0.1232**	**8.5000e-004**	**0.1241**	**0.0327**	**7.9000e-004**	**0.0335**		**109.9022**	**109.9022**	**2.7900e-003**		**109.9721**

3.3 Site Preparation - 2021

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					36.1325	0.0000	36.1325	19.8614	0.0000	19.8614			0.0000			0.0000
Off-Road	3.8882	40.4971	21.1543	0.0380		2.0445	2.0445		1.8809	1.8809		3,685.6569	3,685.6569	1.1920		3,715.4573
Total	**3.8882**	**40.4971**	**21.1543**	**0.0380**	**36.1325**	**2.0445**	**38.1770**	**19.8614**	**1.8809**	**21.7423**		**3,685.6569**	**3,685.6569**	**1.1920**		**3,715.4573**

3.3 Site Preparation - 2021

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	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
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
Worker	0.0699	0.0417	0.4478	1.3200e-003	0.1479	1.0200e-003	0.1489	0.0392	9.4000e-004	0.0402		131.8827	131.8827	3.3500e-003		131.9665
Total	**0.0699**	**0.0417**	**0.4478**	**1.3200e-003**	**0.1479**	**1.0200e-003**	**0.1489**	**0.0392**	**9.4000e-004**	**0.0402**		**131.8827**	**131.8827**	**3.3500e-003**		**131.9665**

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	lb/day										lb/day					
Fugitive Dust					16.2596	0.0000	16.2596	8.9376	0.0000	8.9376			0.0000			0.0000
Off-Road	3.8882	40.4971	21.1543	0.0380		2.0445	2.0445		1.8809	1.8809	0.0000	3,685.6569	3,685.6569	1.1920		3,715.4573
Total	**3.8882**	**40.4971**	**21.1543**	**0.0380**	**16.2596**	**2.0445**	**18.3041**	**8.9376**	**1.8809**	**10.8185**	**0.0000**	**3,685.6569**	**3,685.6569**	**1.1920**		**3,715.4573**

3.3 Site Preparation - 2021

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	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
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
Worker	0.0699	0.0417	0.4478	1.3200e-003	0.1479	1.0200e-003	0.1489	0.0392	9.4000e-004	0.0402		131.8827	131.8827	3.3500e-003		131.9665
Total	**0.0699**	**0.0417**	**0.4478**	**1.3200e-003**	**0.1479**	**1.0200e-003**	**0.1489**	**0.0392**	**9.4000e-004**	**0.0402**		**131.8827**	**131.8827**	**3.3500e-003**		**131.9665**

3.4 Grading - 2021

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					47.7034	0.0000	47.7034	19.7808	0.0000	19.7808			0.0000			0.0000
Off-Road	4.1912	46.3998	30.8785	0.0620		1.9853	1.9853		1.8265	1.8265		6,007.0434	6,007.0434	1.9428		6,055.6134
Total	**4.1912**	**46.3998**	**30.8785**	**0.0620**	**47.7034**	**1.9853**	**49.6887**	**19.7808**	**1.8265**	**21.6073**		**6,007.0434**	**6,007.0434**	**1.9428**		**6,055.6134**

3.4 Grading - 2021

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	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
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
Worker	0.0777	0.0464	0.4975	1.4700e-003	0.1643	1.1400e-003	0.1654	0.0436	1.0500e-003	0.0446		146.5363	146.5363	3.7300e-003		146.6294
Total	**0.0777**	**0.0464**	**0.4975**	**1.4700e-003**	**0.1643**	**1.1400e-003**	**0.1654**	**0.0436**	**1.0500e-003**	**0.0446**		**146.5363**	**146.5363**	**3.7300e-003**		**146.6294**

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	lb/day										lb/day					
Fugitive Dust					21.4665	0.0000	21.4665	8.9013	0.0000	8.9013			0.0000			0.0000
Off-Road	4.1912	46.3998	30.8785	0.0620		1.9853	1.9853		1.8265	1.8265	0.0000	6,007.0434	6,007.0434	1.9428		6,055.6134
Total	**4.1912**	**46.3998**	**30.8785**	**0.0620**	**21.4665**	**1.9853**	**23.4519**	**8.9013**	**1.8265**	**10.7279**	**0.0000**	**6,007.0434**	**6,007.0434**	**1.9428**		**6,055.6134**

3.4 Grading - 2021

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	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
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
Worker	0.0777	0.0464	0.4975	1.4700e-003	0.1643	1.1400e-003	0.1654	0.0436	1.0500e-003	0.0446		146.5363	146.5363	3.7300e-003		146.6294
Total	**0.0777**	**0.0464**	**0.4975**	**1.4700e-003**	**0.1643**	**1.1400e-003**	**0.1654**	**0.0436**	**1.0500e-003**	**0.0446**		**146.5363**	**146.5363**	**3.7300e-003**		**146.6294**

3.5 Building Construction - 2021

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.9009	17.4321	16.5752	0.0269		0.9586	0.9586		0.9013	0.9013		2,553.3639	2,553.3639	0.6160		2,568.7643
Total	**1.9009**	**17.4321**	**16.5752**	**0.0269**		**0.9586**	**0.9586**		**0.9013**	**0.9013**		**2,553.3639**	**2,553.3639**	**0.6160**		**2,568.7643**

3.5 Building Construction - 2021

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	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.3942	12.7132	3.6905	0.0330	0.8923	0.0375	0.9298	0.2568	0.0358	0.2926		3,548.4701	3,548.4701	0.2962		3,555.8761
Worker	2.2380	1.3349	14.3281	0.0424	4.7317	0.0328	4.7645	1.2551	0.0302	1.2853		4,220.2453	4,220.2453	0.1073		4,222.9275
Total	**2.6322**	**14.0481**	**18.0186**	**0.0754**	**5.6240**	**0.0702**	**5.6943**	**1.5119**	**0.0660**	**1.5779**		**7,768.7154**	**7,768.7154**	**0.4035**		**7,778.8036**

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	lb/day										lb/day					
Off-Road	1.9009	17.4321	16.5752	0.0269		0.9586	0.9586		0.9013	0.9013	0.0000	2,553.3639	2,553.3639	0.6160		2,568.7643
Total	**1.9009**	**17.4321**	**16.5752**	**0.0269**		**0.9586**	**0.9586**		**0.9013**	**0.9013**	**0.0000**	**2,553.3639**	**2,553.3639**	**0.6160**		**2,568.7643**

3.5 Building Construction - 2021

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	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.3942	12.7132	3.6905	0.0330	0.8923	0.0375	0.9298	0.2568	0.0358	0.2926		3,548.4701	3,548.4701	0.2962		3,555.8761
Worker	2.2380	1.3349	14.3281	0.0424	4.7317	0.0328	4.7645	1.2551	0.0302	1.2853		4,220.2453	4,220.2453	0.1073		4,222.9275
Total	**2.6322**	**14.0481**	**18.0186**	**0.0754**	**5.6240**	**0.0702**	**5.6943**	**1.5119**	**0.0660**	**1.5779**		**7,768.7154**	**7,768.7154**	**0.4035**		**7,778.8036**

3.5 Building Construction - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.7062	15.6156	16.3634	0.0269		0.8090	0.8090		0.7612	0.7612		2,554.3336	2,554.3336	0.6120		2,569.6322
Total	**1.7062**	**15.6156**	**16.3634**	**0.0269**		**0.8090**	**0.8090**		**0.7612**	**0.7612**		**2,554.3336**	**2,554.3336**	**0.6120**		**2,569.6322**

3.5 Building Construction - 2022

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	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.3667	11.9496	3.4993	0.0326	0.8924	0.0325	0.9249	0.2568	0.0311	0.2879		3,515.1613	3,515.1613	0.2850		3,522.2855
Worker	2.1085	1.2046	13.2311	0.0408	4.7317	0.0320	4.7637	1.2551	0.0295	1.2845		4,065.2026	4,065.2026	0.0969		4,067.6240
Total	**2.4752**	**13.1542**	**16.7304**	**0.0734**	**5.6241**	**0.0645**	**5.6886**	**1.5119**	**0.0605**	**1.5724**		**7,580.3639**	**7,580.3639**	**0.3818**		**7,589.9095**

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	lb/day										lb/day					
Off-Road	1.7062	15.6156	16.3634	0.0269		0.8090	0.8090		0.7612	0.7612	0.0000	2,554.3336	2,554.3336	0.6120		2,569.6322
Total	**1.7062**	**15.6156**	**16.3634**	**0.0269**		**0.8090**	**0.8090**		**0.7612**	**0.7612**	**0.0000**	**2,554.3336**	**2,554.3336**	**0.6120**		**2,569.6322**

3.5 Building Construction - 2022

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	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.3667	11.9496	3.4993	0.0326	0.8924	0.0325	0.9249	0.2568	0.0311	0.2879		3,515.1613	3,515.1613	0.2850		3,522.2855
Worker	2.1085	1.2046	13.2311	0.0408	4.7317	0.0320	4.7637	1.2551	0.0295	1.2845		4,065.2026	4,065.2026	0.0969		4,067.6240
Total	**2.4752**	**13.1542**	**16.7304**	**0.0734**	**5.6241**	**0.0645**	**5.6886**	**1.5119**	**0.0605**	**1.5724**		**7,580.3639**	**7,580.3639**	**0.3818**		**7,589.9095**

3.5 Building Construction - 2023

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.5728	14.3849	16.2440	0.0269		0.6997	0.6997		0.6584	0.6584		2,555.2099	2,555.2099	0.6079		2,570.4061
Total	**1.5728**	**14.3849**	**16.2440**	**0.0269**		**0.6997**	**0.6997**		**0.6584**	**0.6584**		**2,555.2099**	**2,555.2099**	**0.6079**		**2,570.4061**

3.5 Building Construction - 2023

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	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.2724	9.0980	3.1383	0.0319	0.8925	0.0123	0.9048	0.2568	0.0118	0.2686		3,437.5622	3,437.5622	0.2533		3,443.8948
Worker	1.9891	1.0879	12.1943	0.0392	4.7317	0.0312	4.7629	1.2551	0.0288	1.2838		3,909.5465	3,909.5465	0.0871		3,911.7248
Total	**2.2615**	**10.1859**	**15.3327**	**0.0711**	**5.6242**	**0.0436**	**5.6678**	**1.5119**	**0.0405**	**1.5525**		**7,347.1088**	**7,347.1088**	**0.3404**		**7,355.6196**

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	lb/day										lb/day					
Off-Road	1.5728	14.3849	16.2440	0.0269		0.6997	0.6997		0.6584	0.6584	0.0000	2,555.2099	2,555.2099	0.6079		2,570.4061
Total	**1.5728**	**14.3849**	**16.2440**	**0.0269**		**0.6997**	**0.6997**		**0.6584**	**0.6584**	**0.0000**	**2,555.2099**	**2,555.2099**	**0.6079**		**2,570.4061**

3.5 Building Construction - 2023

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	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.2724	9.0980	3.1383	0.0319	0.8925	0.0123	0.9048	0.2568	0.0118	0.2686		3,437.5622	3,437.5622	0.2533		3,443.8948
Worker	1.9891	1.0879	12.1943	0.0392	4.7317	0.0312	4.7629	1.2551	0.0288	1.2838		3,909.5465	3,909.5465	0.0871		3,911.7248
Total	**2.2615**	**10.1859**	**15.3327**	**0.0711**	**5.6242**	**0.0436**	**5.6678**	**1.5119**	**0.0405**	**1.5525**		**7,347.1088**	**7,347.1088**	**0.3404**		**7,355.6196**

3.6 Paving - 2023

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.0327	10.1917	14.5842	0.0228		0.5102	0.5102		0.4694	0.4694		2,207.5841	2,207.5841	0.7140		2,225.4336
Paving	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**1.0327**	**10.1917**	**14.5842**	**0.0228**		**0.5102**	**0.5102**		**0.4694**	**0.4694**		**2,207.5841**	**2,207.5841**	**0.7140**		**2,225.4336**

3.6 Paving - 2023

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	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
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
Worker	0.0518	0.0283	0.3176	1.0200e-003	0.1232	8.1000e-004	0.1240	0.0327	7.5000e-004	0.0334		101.8111	101.8111	2.2700e-003		101.8678
Total	**0.0518**	**0.0283**	**0.3176**	**1.0200e-003**	**0.1232**	**8.1000e-004**	**0.1240**	**0.0327**	**7.5000e-004**	**0.0334**		**101.8111**	**101.8111**	**2.2700e-003**		**101.8678**

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	lb/day										lb/day					
Off-Road	1.0327	10.1917	14.5842	0.0228		0.5102	0.5102		0.4694	0.4694	0.0000	2,207.5841	2,207.5841	0.7140		2,225.4336
Paving	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**1.0327**	**10.1917**	**14.5842**	**0.0228**		**0.5102**	**0.5102**		**0.4694**	**0.4694**	**0.0000**	**2,207.5841**	**2,207.5841**	**0.7140**		**2,225.4336**

3.6 Paving - 2023

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	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
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
Worker	0.0518	0.0283	0.3176	1.0200e-003	0.1232	8.1000e-004	0.1240	0.0327	7.5000e-004	0.0334		101.8111	101.8111	2.2700e-003		101.8678
Total	**0.0518**	**0.0283**	**0.3176**	**1.0200e-003**	**0.1232**	**8.1000e-004**	**0.1240**	**0.0327**	**7.5000e-004**	**0.0334**		**101.8111**	**101.8111**	**2.2700e-003**		**101.8678**

3.7 Architectural Coating - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Archit. Coating	26.7514					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.2045	1.4085	1.8136	2.9700e-003		0.0817	0.0817		0.0817	0.0817		281.4481	281.4481	0.0183		281.9062
Total	**26.9559**	**1.4085**	**1.8136**	**2.9700e-003**		**0.0817**	**0.0817**		**0.0817**	**0.0817**		**281.4481**	**281.4481**	**0.0183**		**281.9062**

3.7 Architectural Coating - 2022

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	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
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
Worker	0.4210	0.2405	2.6416	8.1400e-003	0.9447	6.3800e-003	0.9511	0.2506	5.8800e-003	0.2565		811.6290	811.6290	0.0193		812.1124
Total	**0.4210**	**0.2405**	**2.6416**	**8.1400e-003**	**0.9447**	**6.3800e-003**	**0.9511**	**0.2506**	**5.8800e-003**	**0.2565**		**811.6290**	**811.6290**	**0.0193**		**812.1124**

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	lb/day										lb/day					
Archit. Coating	26.7514					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.2045	1.4085	1.8136	2.9700e-003		0.0817	0.0817		0.0817	0.0817	0.0000	281.4481	281.4481	0.0183		281.9062
Total	**26.9559**	**1.4085**	**1.8136**	**2.9700e-003**		**0.0817**	**0.0817**		**0.0817**	**0.0817**	**0.0000**	**281.4481**	**281.4481**	**0.0183**		**281.9062**

3.7 Architectural Coating - 2022

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	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
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
Worker	0.4210	0.2405	2.6416	8.1400e-003	0.9447	6.3800e-003	0.9511	0.2506	5.8800e-003	0.2565		811.6290	811.6290	0.0193		812.1124
Total	**0.4210**	**0.2405**	**2.6416**	**8.1400e-003**	**0.9447**	**6.3800e-003**	**0.9511**	**0.2506**	**5.8800e-003**	**0.2565**		**811.6290**	**811.6290**	**0.0193**		**812.1124**

3.7 Architectural Coating - 2023

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Archit. Coating	26.7514					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.1917	1.3030	1.8111	2.9700e-003		0.0708	0.0708		0.0708	0.0708		281.4481	281.4481	0.0168		281.8690
Total	**26.9431**	**1.3030**	**1.8111**	**2.9700e-003**		**0.0708**	**0.0708**		**0.0708**	**0.0708**		**281.4481**	**281.4481**	**0.0168**		**281.8690**

3.7 Architectural Coating - 2023

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	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
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
Worker	0.3971	0.2172	2.4346	7.8300e-003	0.9447	6.2400e-003	0.9509	0.2506	5.7400e-003	0.2563		780.5518	780.5518	0.0174		780.9867
Total	**0.3971**	**0.2172**	**2.4346**	**7.8300e-003**	**0.9447**	**6.2400e-003**	**0.9509**	**0.2506**	**5.7400e-003**	**0.2563**		**780.5518**	**780.5518**	**0.0174**		**780.9867**

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	lb/day										lb/day					
Archit. Coating	26.7514					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.1917	1.3030	1.8111	2.9700e-003		0.0708	0.0708		0.0708	0.0708	0.0000	281.4481	281.4481	0.0168		281.8690
Total	**26.9431**	**1.3030**	**1.8111**	**2.9700e-003**		**0.0708**	**0.0708**		**0.0708**	**0.0708**	**0.0000**	**281.4481**	**281.4481**	**0.0168**		**281.8690**

3.7 Architectural Coating - 2023

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	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
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
Worker	0.3971	0.2172	2.4346	7.8300e-003	0.9447	6.2400e-003	0.9509	0.2506	5.7400e-003	0.2563		780.5518	780.5518	0.0174		780.9867
Total	**0.3971**	**0.2172**	**2.4346**	**7.8300e-003**	**0.9447**	**6.2400e-003**	**0.9509**	**0.2506**	**5.7400e-003**	**0.2563**		**780.5518**	**780.5518**	**0.0174**		**780.9867**

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

Increase Density

Increase Transit Accessibility

Integrate Below Market Rate Housing

Improve Pedestrian Network

	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	lb/day										lb/day					
Mitigated	9.0224	36.8832	102.0885	0.4213	50.8342	0.2869	51.1212	13.5718	0.2660	13.8379		42,966.1210	42,966.1210	1.5925		43,005.9338
Unmitigated	9.7301	40.4408	121.7664	0.5279	64.6724	0.3508	65.0232	17.2664	0.3253	17.5917		53,820.2969	53,820.2969	1.9227		53,868.3634

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Apartments Low Rise	1,925.16	1,883.08	1596.41	5,172,981	4,066,099
Apartments Mid Rise	1,756.80	1,533.60	1406.40	4,627,752	3,637,534
City Park	130.00	147.88	108.81	276,520	217,352
General Office Building	6,000.00	123.00	52.50	10,301,712	8,097,416
Single Family Housing	2,076.80	2,076.80	2076.80	5,738,349	4,510,493
Total	11,888.76	5,764.36	5,240.92	26,117,314	20,528,894

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 Low Rise	10.80	7.30	7.50	32.90	18.00	49.10	86	11	3
Apartments Mid Rise	10.80	7.30	7.50	32.90	18.00	49.10	86	11	3
City Park	9.50	7.30	7.30	33.00	48.00	19.00	66	28	6
General Office Building	9.50	7.30	7.30	33.00	48.00	19.00	77	19	4
Single Family Housing	10.80	7.30	7.50	32.90	18.00	49.10	86	11	3

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
Apartments Low Rise	0.611155	0.038739	0.187677	0.096955	0.013383	0.005563	0.020646	0.018593	0.001209	0.001094	0.003654	0.000418	0.000914
Apartments Mid Rise	0.611155	0.038739	0.187677	0.096955	0.013383	0.005563	0.020646	0.018593	0.001209	0.001094	0.003654	0.000418	0.000914
City Park	0.611155	0.038739	0.187677	0.096955	0.013383	0.005563	0.020646	0.018593	0.001209	0.001094	0.003654	0.000418	0.000914
General Office Building	0.611155	0.038739	0.187677	0.096955	0.013383	0.005563	0.020646	0.018593	0.001209	0.001094	0.003654	0.000418	0.000914
Single Family Housing	0.611155	0.038739	0.187677	0.096955	0.013383	0.005563	0.020646	0.018593	0.001209	0.001094	0.003654	0.000418	0.000914

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

Kilowatt Hours of Renewable Electricity Generated

	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	lb/day										lb/day					
NaturalGas Mitigated	0.3614	3.0959	1.3683	0.0197		0.2497	0.2497		0.2497	0.2497		3,942.7696	3,942.7696	0.0756	0.0723	3,966.1995
NaturalGas Unmitigated	0.3614	3.0959	1.3683	0.0197		0.2497	0.2497		0.2497	0.2497		3,942.7696	3,942.7696	0.0756	0.0723	3,966.1995

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	lb/day										lb/day					
Apartments Low Rise	9193.9	0.0992	0.8473	0.3605	5.4100e-003		0.0685	0.0685		0.0685	0.0685		1,081.6349	1,081.6349	0.0207	0.0198	1,088.0625
Apartments Mid Rise	7513.95	0.0810	0.6925	0.2947	4.4200e-003		0.0560	0.0560		0.0560	0.0560		883.9937	883.9937	0.0169	0.0162	889.2468
City Park	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
General Office Building	1252.05	0.0135	0.1228	0.1031	7.4000e-004		9.3300e-003	9.3300e-003		9.3300e-003	9.3300e-003		147.3006	147.3006	2.8200e-003	2.7000e-003	148.1759
Single Family Housing	15553.6	0.1677	1.4334	0.6100	9.1500e-003		0.1159	0.1159		0.1159	0.1159		1,829.8405	1,829.8405	0.0351	0.0336	1,840.7143
Total		**0.3614**	**3.0959**	**1.3683**	**0.0197**		**0.2497**	**0.2497**		**0.2497**	**0.2497**		**3,942.7696**	**3,942.7696**	**0.0756**	**0.0723**	**3,966.1995**

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	lb/day										lb/day					
Apartments Low Rise	9.1939	0.0992	0.8473	0.3605	5.4100e-003		0.0685	0.0685		0.0685	0.0685		1,081.6349	1,081.6349	0.0207	0.0198	1,088.0625
Apartments Mid Rise	7.51395	0.0810	0.6925	0.2947	4.4200e-003		0.0560	0.0560		0.0560	0.0560		883.9937	883.9937	0.0169	0.0162	889.2468
City Park	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
General Office Building	1.25205	0.0135	0.1228	0.1031	7.4000e-004		9.3300e-003	9.3300e-003		9.3300e-003	9.3300e-003		147.3006	147.3006	2.8200e-003	2.7000e-003	148.1759
Single Family Housing	15.5536	0.1677	1.4334	0.6100	9.1500e-003		0.1159	0.1159		0.1159	0.1159		1,829.8405	1,829.8405	0.0351	0.0336	1,840.7143
Total		**0.3614**	**3.0959**	**1.3683**	**0.0197**		**0.2497**	**0.2497**		**0.2497**	**0.2497**		**3,942.7696**	**3,942.7696**	**0.0756**	**0.0723**	**3,966.1995**

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

No Hearths Installed

	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	lb/day										lb/day					
Mitigated	30.6189	0.6859	59.4965	3.1500e-003		0.3308	0.3308		0.3308	0.3308	0.0000	107.4157	107.4157	0.1024	0.0000	109.9747
Unmitigated	30.6189	0.6859	59.4965	3.1500e-003		0.3308	0.3308		0.3308	0.3308	0.0000	107.4157	107.4157	0.1024	0.0000	109.9747

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	lb/day										lb/day					
Architectural Coating	2.4711					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	26.3678					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Hearth	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	1.7799	0.6859	59.4965	3.1500e-003		0.3308	0.3308		0.3308	0.3308		107.4157	107.4157	0.1024		109.9747
Total	**30.6189**	**0.6859**	**59.4965**	**3.1500e-003**		**0.3308**	**0.3308**		**0.3308**	**0.3308**	**0.0000**	**107.4157**	**107.4157**	**0.1024**	**0.0000**	**109.9747**

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	lb/day										lb/day					
Architectural Coating	2.4711					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	26.3678					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Hearth	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	1.7799	0.6859	59.4965	3.1500e-003		0.3308	0.3308		0.3308	0.3308		107.4157	107.4157	0.1024		109.9747
Total	**30.6189**	**0.6859**	**59.4965**	**3.1500e-003**		**0.3308**	**0.3308**		**0.3308**	**0.3308**	**0.0000**	**107.4157**	**107.4157**	**0.1024**	**0.0000**	**109.9747**

7.0 Water Detail

7.1 Mitigation Measures Water

Apply Water Conservation Strategy

Use Reclaimed Water

Install Low Flow Bathroom Faucet

Install Low Flow Kitchen Faucet

Install Low Flow Toilet

Install Low Flow Shower

8.0 Waste Detail

8.1 Mitigation Measures Waste

9.0 Operational Offroad

Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type

10.0 Stationary Equipment

Fire Pumps and Emergency Generators

Equipment Type	Number	Hours/Day	Hours/Year	Horse Power	Load Factor	Fuel Type

Boilers

Equipment Type	Number	Heat Input/Day	Heat Input/Year	Boiler Rating	Fuel Type

User Defined Equipment

Equipment Type	Number

11.0 Vegetation

Oxnard Teal Club Reduced Intensity Alternative Phase 2

Ventura County, Winter

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
City Park	10.88	Acre	10.88	473,932.80	0
Apartments Low Rise	100.00	Dwelling Unit	8.35	100,000.00	397
Single Family Housing	167.00	Dwelling Unit	23.94	300,600.00	663

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.6	**Precipitation Freq (Days)**	31
Climate Zone	8			**Operational Year**	2030
Utility Company	Southern California Edison				
CO2 Intensity (lb/MWhr)	337.71	**CH4 Intensity (lb/MWhr)**	0.014	**N2O Intensity (lb/MWhr)**	0.003

1.3 User Entered Comments & Non-Default Data

Oxnard Teal Club Reduced Intensity Alternative Phase 2 - Ventura County, Winter

Project Characteristics - Based on 2030 projections for SCE 60% renewable with CPUC 2011 SCE factor for 2009. 337.71; 0.014; 0.003

Land Use - Based on PD 8/2019 and Reduced Intensity Specific Plan Alternative. Pop based on CDF 2019 3.97 people/household.

Construction Phase - Ph II completed 2024-2025 per PD 8/2019. AC extended to overlap with half of construction phase.

Trips and VMT - Landfill located 4 miles east at Del Norte Regional Recycling and Transfer

Demolition - No demolition

Grading - No export/import

Architectural Coating - Per VCAPCD Rule 74.2

Vehicle Trips - Trip Rates from Stantec Traffic Study 3/26/2019.

Woodstoves - No fireplaces or woodstoves

Area Coating - Per VCAPCD Rule 74.2

Energy Use - 7% decrease in electricity factor for residential and 30% decrease for commercial per 2019 CalGreen standards

Water And Wastewater -

Solid Waste - 25% waste reduction beyond AB 939 due to AB 341, Athens Services compliant

Area Mitigation - Per VCAPCD Rule 74.2 AC. 50 interior, 100 exterior

Energy Mitigation - Per residential low-rise solar PV requirement (2019 California Energy Code Section 150.1(b)14)

Water Mitigation - 20% water reduction indoor and water efficient fixtures per CalGreen Building Standards Update 2016, Recycled water used for all landscaping

Fleet Mix -

Table Name	Column Name	Default Value	New Value
tblArchitecturalCoating	EF_Nonresidential_Exterior	250.00	100.00
tblArchitecturalCoating	EF_Nonresidential_Interior	250.00	50.00
tblArchitecturalCoating	EF_Parking	250.00	100.00
tblArchitecturalCoating	EF_Residential_Interior	75.00	50.00
tblAreaCoating	Area_Residential_Exterior	270405	180225
tblAreaCoating	Area_Residential_Interior	811215	540675
tblAreaMitigation	UseLowVOCPaintParkingCheck	False	True
tblConstructionPhase	NumDays	50.00	25.00

tblConstructionPhase	NumDays	30.00	15.00
tblConstructionPhase	NumDays	75.00	15.00
tblConstructionPhase	NumDays	740.00	430.00
tblConstructionPhase	NumDays	55.00	250.00
tblConstructionPhase	NumDays	55.00	33.00
tblConstructionPhase	PhaseEndDate	11/4/2019	2/2/2024
tblConstructionPhase	PhaseEndDate	12/16/2019	2/23/2024
tblConstructionPhase	PhaseEndDate	3/30/2020	3/15/2024
tblConstructionPhase	PhaseEndDate	1/30/2023	11/6/2025
tblConstructionPhase	PhaseEndDate	4/17/2023	12/30/2025
tblConstructionPhase	PhaseEndDate	7/3/2023	12/24/2025
tblConstructionPhase	PhaseStartDate	8/27/2019	1/1/2024
tblConstructionPhase	PhaseStartDate	11/5/2019	2/3/2024
tblConstructionPhase	PhaseStartDate	12/17/2019	2/24/2024
tblConstructionPhase	PhaseStartDate	3/31/2020	3/15/2024
tblConstructionPhase	PhaseStartDate	1/31/2023	1/15/2025
tblConstructionPhase	PhaseStartDate	4/18/2023	11/8/2025
tblEnergyUse	T24E	177.01	164.62
tblEnergyUse	T24E	253.73	235.97
tblGrading	AcresOfGrading	187.50	37.50
tblLandUse	LotAcreage	6.25	8.35
tblLandUse	LotAcreage	54.22	23.94
tblLandUse	Population	306.00	397.00
tblLandUse	Population	511.00	663.00
tblProjectCharacteristics	CH4IntensityFactor	0.029	0.014
tblProjectCharacteristics	CO2IntensityFactor	702.44	337.71
tblProjectCharacteristics	N2OIntensityFactor	0.006	0.003

tblSolidWaste	SolidWasteGenerationRate	46.00	92.11
tblSolidWaste	SolidWasteGenerationRate	0.94	0.71
tblSolidWaste	SolidWasteGenerationRate	271.83	79.64
tblTripsAndVMT	WorkerTripNumber	331.00	391.00
tblTripsAndVMT	WorkerTripNumber	66.00	78.00
tblTripsAndVMT	WorkerTripNumber	66.00	15.00
tblVehicleTrips	WD_TR	6.59	7.32
tblVehicleTrips	WD_TR	1.89	20.00
tblVehicleTrips	WD_TR	9.52	9.44

2.0 Emissions Summary

2.1 Overall Construction (Maximum Daily Emission)

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2024	6.2467	53.7494	54.4278	0.1414	36.8547	1.9803	38.8350	19.9006	1.8349	21.0325	0.0000	14,003.6218	14,003.6218	2.8043	0.0000	14,073.7280
2025	96.3248	20.1934	25.6201	0.0768	3.9288	0.5575	4.4863	1.0583	0.5241	1.5824	0.0000	7,743.3990	7,743.3990	0.8462	0.0000	7,764.5531
Maximum	**96.3248**	**53.7494**	**54.4278**	**0.1414**	**36.8547**	**1.9803**	**38.8350**	**19.9006**	**1.8349**	**21.0325**	**0.0000**	**14,003.6218**	**14,003.6218**	**2.8043**	**0.0000**	**14,073.7280**

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2024	6.2467	53.7494	54.4278	0.1414	36.8547	1.9803	38.8350	19.9006	1.8349	21.0325	0.0000	14,003.6218	14,003.6218	2.8043	0.0000	14,073.7280
2025	96.3248	20.1934	25.6201	0.0768	3.9288	0.5575	4.4863	1.0583	0.5241	1.5824	0.0000	7,743.3990	7,743.3990	0.8462	0.0000	7,764.5531
Maximum	**96.3248**	**53.7494**	**54.4278**	**0.1414**	**36.8547**	**1.9803**	**38.8350**	**19.9006**	**1.8349**	**21.0325**	**0.0000**	**14,003.6218**	**14,003.6218**	**2.8043**	**0.0000**	**14,073.7280**

	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	lb/day										lb/day					
Area	9.9983	0.2533	21.9707	1.1600e-003		0.1222	0.1222		0.1222	0.1222	0.0000	39.6659	39.6659	0.0378	0.0000	40.6107
Energy	0.1650	1.4102	0.6001	9.0000e-003		0.1140	0.1140		0.1140	0.1140		1,800.2833	1,800.2833	0.0345	0.0330	1,810.9815
Mobile	2.1919	9.1442	28.0275	0.1227	15.0727	0.0811	15.1538	4.0241	0.0753	4.0994		12,506.9595	12,506.9595	0.4436		12,518.0499
Total	**12.3552**	**10.8077**	**50.5983**	**0.1328**	**15.0727**	**0.3173**	**15.3900**	**4.0241**	**0.3114**	**4.3356**	**0.0000**	**14,346.9087**	**14,346.9087**	**0.5159**	**0.0330**	**14,369.6422**

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	lb/day										lb/day					
Area	9.9983	0.2533	21.9707	1.1600e-003		0.1222	0.1222		0.1222	0.1222	0.0000	39.6659	39.6659	0.0378	0.0000	40.6107
Energy	0.1650	1.4102	0.6001	9.0000e-003		0.1140	0.1140		0.1140	0.1140		1,800.2833	1,800.2833	0.0345	0.0330	1,810.9815
Mobile	2.1919	9.1442	28.0275	0.1227	15.0727	0.0811	15.1538	4.0241	0.0753	4.0994		12,506.9595	12,506.9595	0.4436		12,518.0499
Total	**12.3552**	**10.8077**	**50.5983**	**0.1328**	**15.0727**	**0.3173**	**15.3900**	**4.0241**	**0.3114**	**4.3356**	**0.0000**	**14,346.9087**	**14,346.9087**	**0.5159**	**0.0330**	**14,369.6422**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Demolition	Demolition	1/1/2024	2/2/2024	5	25	
2	Site Preparation	Site Preparation	2/3/2024	2/23/2024	5	15	
3	Grading	Grading	2/24/2024	3/15/2024	5	15	
4	Building Construction	Building Construction	3/15/2024	11/6/2025	5	430	
5	Paving	Paving	1/15/2025	12/30/2025	5	250	
6	Architectural Coating	Architectural Coating	11/8/2025	12/24/2025	5	33	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 37.5

Acres of Paving: 0

Residential Indoor: 811,215; Residential Outdoor: 270,405; Non-Residential Indoor: 0; Non-Residential Outdoor: 0; Striped Parking Area: 0 (Architectural Coating – sqft)

OffRoad Equipment

Oxnard Teal Club Reduced Intensity Alternative Phase 2 - Ventura County, Winter

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Demolition	Concrete/Industrial Saws	1	8.00	81	0.73
Demolition	Excavators	3	8.00	158	0.38
Demolition	Rubber Tired Dozers	2	8.00	247	0.40
Site Preparation	Rubber Tired Dozers	3	8.00	247	0.40
Site Preparation	Tractors/Loaders/Backhoes	4	8.00	97	0.37
Grading	Excavators	2	8.00	158	0.38
Grading	Graders	1	8.00	187	0.41
Grading	Rubber Tired Dozers	1	8.00	247	0.40
Grading	Scrapers	2	8.00	367	0.48
Grading	Tractors/Loaders/Backhoes	2	8.00	97	0.37
Building Construction	Cranes	1	7.00	231	0.29
Building Construction	Forklifts	3	8.00	89	0.20
Building Construction	Generator Sets	1	8.00	84	0.74
Building Construction	Tractors/Loaders/Backhoes	3	7.00	97	0.37
Building Construction	Welders	1	8.00	46	0.45
Architectural Coating	Air Compressors	1	6.00	78	0.48
Architectural Coating	Pavers	2	8.00	130	0.42
Architectural Coating	Paving Equipment	2	8.00	132	0.36
Architectural Coating	Rollers	2	8.00	80	0.38

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	15.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Site Preparation	7	18.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Grading	8	20.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction	9	391.00	106.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Architectural Coating	7	78.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Architectural Coating	7	15.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Paving			0.00	0.00	10.80	7.30				

3.1 Mitigation Measures Construction

3.2 Demolition - 2024

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	lb/day										lb/day					
Off-Road	2.2437	20.8781	19.7073	0.0388		0.9602	0.9602		0.8922	0.8922		3,747.4228	3,747.4228	1.0485		3,773.6345
Total	**2.2437**	**20.8781**	**19.7073**	**0.0388**		**0.9602**	**0.9602**		**0.8922**	**0.8922**		**3,747.4228**	**3,747.4228**	**1.0485**		**3,773.6345**

3.2 Demolition - 2024

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	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
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
Worker	0.0491	0.0257	0.2951	9.8000e-004	0.1232	8.0000e-004	0.1240	0.0327	7.4000e-004	0.0334		98.2079	98.2079	2.0700e-003		98.2595
Total	**0.0491**	**0.0257**	**0.2951**	**9.8000e-004**	**0.1232**	**8.0000e-004**	**0.1240**	**0.0327**	**7.4000e-004**	**0.0334**		**98.2079**	**98.2079**	**2.0700e-003**		**98.2595**

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	lb/day										lb/day					
Off-Road	2.2437	20.8781	19.7073	0.0388		0.9602	0.9602		0.8922	0.8922	0.0000	3,747.4228	3,747.4228	1.0485		3,773.6345
Total	**2.2437**	**20.8781**	**19.7073**	**0.0388**		**0.9602**	**0.9602**		**0.8922**	**0.8922**	**0.0000**	**3,747.4228**	**3,747.4228**	**1.0485**		**3,773.6345**

3.2 Demolition - 2024

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	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
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
Worker	0.0491	0.0257	0.2951	9.8000e-004	0.1232	8.0000e-004	0.1240	0.0327	7.4000e-004	0.0334		98.2079	98.2079	2.0700e-003		98.2595
Total	**0.0491**	**0.0257**	**0.2951**	**9.8000e-004**	**0.1232**	**8.0000e-004**	**0.1240**	**0.0327**	**7.4000e-004**	**0.0334**		**98.2079**	**98.2079**	**2.0700e-003**		**98.2595**

3.3 Site Preparation - 2024

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	lb/day										lb/day					
Fugitive Dust					36.1325	0.0000	36.1325	19.8614	0.0000	19.8614			0.0000			0.0000
Off-Road	2.6609	27.1760	18.3356	0.0381		1.2294	1.2294		1.1310	1.1310		3,688.0100	3,688.0100	1.1928		3,717.8294
Total	**2.6609**	**27.1760**	**18.3356**	**0.0381**	**36.1325**	**1.2294**	**37.3619**	**19.8614**	**1.1310**	**20.9924**		**3,688.0100**	**3,688.0100**	**1.1928**		**3,717.8294**

3.3 Site Preparation - 2024

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	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
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
Worker	0.0589	0.0309	0.3541	1.1800e-003	0.1479	9.6000e-004	0.1488	0.0392	8.9000e-004	0.0401		117.8494	117.8494	2.4800e-003		117.9114
Total	**0.0589**	**0.0309**	**0.3541**	**1.1800e-003**	**0.1479**	**9.6000e-004**	**0.1488**	**0.0392**	**8.9000e-004**	**0.0401**		**117.8494**	**117.8494**	**2.4800e-003**		**117.9114**

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	lb/day										lb/day					
Fugitive Dust					36.1325	0.0000	36.1325	19.8614	0.0000	19.8614			0.0000			0.0000
Off-Road	2.6609	27.1760	18.3356	0.0381		1.2294	1.2294		1.1310	1.1310	0.0000	3,688.0100	3,688.0100	1.1928		3,717.8294
Total	**2.6609**	**27.1760**	**18.3356**	**0.0381**	**36.1325**	**1.2294**	**37.3619**	**19.8614**	**1.1310**	**20.9924**	**0.0000**	**3,688.0100**	**3,688.0100**	**1.1928**		**3,717.8294**

3.3 Site Preparation - 2024

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	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
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
Worker	0.0589	0.0309	0.3541	1.1800e-003	0.1479	9.6000e-004	0.1488	0.0392	8.9000e-004	0.0401		117.8494	117.8494	2.4800e-003		117.9114
Total	**0.0589**	**0.0309**	**0.3541**	**1.1800e-003**	**0.1479**	**9.6000e-004**	**0.1488**	**0.0392**	**8.9000e-004**	**0.0401**		**117.8494**	**117.8494**	**2.4800e-003**		**117.9114**

3.4 Grading - 2024

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	lb/day										lb/day					
Fugitive Dust					32.7617	0.0000	32.7617	16.8374	0.0000	16.8374			0.0000			0.0000
Off-Road	3.2181	32.3770	27.7228	0.0621		1.3354	1.3354		1.2286	1.2286		6,009.7487	6,009.7487	1.9437		6,058.3405
Total	**3.2181**	**32.3770**	**27.7228**	**0.0621**	**32.7617**	**1.3354**	**34.0971**	**16.8374**	**1.2286**	**18.0660**		**6,009.7487**	**6,009.7487**	**1.9437**		**6,058.3405**

3.4 Grading - 2024

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	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
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
Worker	0.0655	0.0343	0.3935	1.3100e-003	0.1643	1.0700e-003	0.1654	0.0436	9.8000e-004	0.0446		130.9438	130.9438	2.7600e-003		131.0127
Total	**0.0655**	**0.0343**	**0.3935**	**1.3100e-003**	**0.1643**	**1.0700e-003**	**0.1654**	**0.0436**	**9.8000e-004**	**0.0446**		**130.9438**	**130.9438**	**2.7600e-003**		**131.0127**

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	lb/day										lb/day					
Fugitive Dust					32.7617	0.0000	32.7617	16.8374	0.0000	16.8374			0.0000			0.0000
Off-Road	3.2181	32.3770	27.7228	0.0621		1.3354	1.3354		1.2286	1.2286	0.0000	6,009.7487	6,009.7487	1.9437		6,058.3405
Total	**3.2181**	**32.3770**	**27.7228**	**0.0621**	**32.7617**	**1.3354**	**34.0971**	**16.8374**	**1.2286**	**18.0660**	**0.0000**	**6,009.7487**	**6,009.7487**	**1.9437**		**6,058.3405**

3.4 Grading - 2024

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	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
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
Worker	0.0655	0.0343	0.3935	1.3100e-003	0.1643	1.0700e-003	0.1654	0.0436	9.8000e-004	0.0446		130.9438	130.9438	2.7600e-003		131.0127
Total	**0.0655**	**0.0343**	**0.3935**	**1.3100e-003**	**0.1643**	**1.0700e-003**	**0.1654**	**0.0436**	**9.8000e-004**	**0.0446**		**130.9438**	**130.9438**	**2.7600e-003**		**131.0127**

3.5 Building Construction - 2024

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	lb/day										lb/day					
Off-Road	1.4716	13.4438	16.1668	0.0270		0.6133	0.6133		0.5769	0.5769		2,555.6989	2,555.6989	0.6044		2,570.8077
Total	**1.4716**	**13.4438**	**16.1668**	**0.0270**		**0.6133**	**0.6133**		**0.5769**	**0.5769**		**2,555.6989**	**2,555.6989**	**0.6044**		**2,570.8077**

3.5 Building Construction - 2024

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	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.2114	7.2235	2.4528	0.0254	0.7168	9.6500e-003	0.7264	0.2063	9.2300e-003	0.2155		2,747.2792	2,747.2792	0.1996		2,752.2693
Worker	1.2800	0.6708	7.6919	0.0257	3.2120	0.0209	3.2329	0.8520	0.0192	0.8712		2,559.9512	2,559.9512	0.0539		2,561.2978
Total	**1.4915**	**7.8944**	**10.1447**	**0.0511**	**3.9287**	**0.0305**	**3.9593**	**1.0582**	**0.0285**	**1.0867**		**5,307.2304**	**5,307.2304**	**0.2535**		**5,313.5672**

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	lb/day										lb/day					
Off-Road	1.4716	13.4438	16.1668	0.0270		0.6133	0.6133		0.5769	0.5769	0.0000	2,555.6989	2,555.6989	0.6044		2,570.8077
Total	**1.4716**	**13.4438**	**16.1668**	**0.0270**		**0.6133**	**0.6133**		**0.5769**	**0.5769**	**0.0000**	**2,555.6989**	**2,555.6989**	**0.6044**		**2,570.8077**

3.5 Building Construction - 2024

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	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.2114	7.2235	2.4528	0.0254	0.7168	9.6500e-003	0.7264	0.2063	9.2300e-003	0.2155		2,747.2792	2,747.2792	0.1996		2,752.2693
Worker	1.2800	0.6708	7.6919	0.0257	3.2120	0.0209	3.2329	0.8520	0.0192	0.8712		2,559.9512	2,559.9512	0.0539		2,561.2978
Total	**1.4915**	**7.8944**	**10.1447**	**0.0511**	**3.9287**	**0.0305**	**3.9593**	**1.0582**	**0.0285**	**1.0867**		**5,307.2304**	**5,307.2304**	**0.2535**		**5,313.5672**

3.5 Building Construction - 2025

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	lb/day										lb/day					
Off-Road	1.3674	12.4697	16.0847	0.0270		0.5276	0.5276		0.4963	0.4963		2,556.4744	2,556.4744	0.6010		2,571.4981
Total	**1.3674**	**12.4697**	**16.0847**	**0.0270**		**0.5276**	**0.5276**		**0.4963**	**0.4963**		**2,556.4744**	**2,556.4744**	**0.6010**		**2,571.4981**

3.5 Building Construction - 2025

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	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.2043	7.1117	2.4016	0.0252	0.7168	9.3800e-003	0.7262	0.2063	8.9700e-003	0.2153		2,730.4762	2,730.4762	0.1962		2,735.3820
Worker	1.2180	0.6121	7.1339	0.0246	3.2120	0.0205	3.2325	0.8520	0.0189	0.8709		2,456.4485	2,456.4485	0.0490		2,457.6730
Total	**1.4223**	**7.7237**	**9.5355**	**0.0499**	**3.9288**	**0.0299**	**3.9587**	**1.0583**	**0.0279**	**1.0861**		**5,186.9247**	**5,186.9247**	**0.2452**		**5,193.0550**

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	lb/day										lb/day					
Off-Road	1.3674	12.4697	16.0847	0.0270		0.5276	0.5276		0.4963	0.4963	0.0000	2,556.4744	2,556.4744	0.6010		2,571.4981
Total	**1.3674**	**12.4697**	**16.0847**	**0.0270**		**0.5276**	**0.5276**		**0.4963**	**0.4963**	**0.0000**	**2,556.4744**	**2,556.4744**	**0.6010**		**2,571.4981**

3.5 Building Construction - 2025

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	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.2043	7.1117	2.4016	0.0252	0.7168	9.3800e-003	0.7262	0.2063	8.9700e-003	0.2153		2,730.4762	2,730.4762	0.1962		2,735.3820
Worker	1.2180	0.6121	7.1339	0.0246	3.2120	0.0205	3.2325	0.8520	0.0189	0.8709		2,456.4485	2,456.4485	0.0490		2,457.6730
Total	**1.4223**	**7.7237**	**9.5355**	**0.0499**	**3.9288**	**0.0299**	**3.9587**	**1.0583**	**0.0279**	**1.0861**		**5,186.9247**	**5,186.9247**	**0.2452**		**5,193.0550**

3.6 Paving - 2025

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	lb/day										lb/day					
Paving	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**0.0000**					**0.0000**	**0.0000**		**0.0000**	**0.0000**			**0.0000**			**0.0000**

3.6 Paving - 2025

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	lb/day										lb/day					
Hauling					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000			0.0000			0.0000
Vendor					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000			0.0000			0.0000
Worker					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000			0.0000			0.0000
Total					**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**			**0.0000**			**0.0000**

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	lb/day										lb/day					
Paving	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**0.0000**					**0.0000**	**0.0000**		**0.0000**	**0.0000**			**0.0000**			**0.0000**

3.6 Paving - 2025

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	lb/day										lb/day					
Hauling					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000			0.0000			0.0000
Vendor					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000			0.0000			0.0000
Worker					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000			0.0000			0.0000
Total					**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**			**0.0000**			**0.0000**

3.7 Architectural Coating - 2025

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	lb/day										lb/day					
Archit. Coating	94.9490					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	1.0860	9.7271	16.3871	0.0258		0.4700	0.4700		0.4366	0.4366		2,488.1932	2,488.1932	0.7291		2,506.4197
Total	**96.0350**	**9.7271**	**16.3871**	**0.0258**		**0.4700**	**0.4700**		**0.4366**	**0.4366**		**2,488.1932**	**2,488.1932**	**0.7291**		**2,506.4197**

3.7 Architectural Coating - 2025

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	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
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
Worker	0.2897	0.1456	1.6968	5.8600e-003	1.4279	4.8800e-003	1.4328	0.3656	4.4900e-003	0.3701		584.2704	584.2704	0.0117		584.5616
Total	**0.2897**	**0.1456**	**1.6968**	**5.8600e-003**	**1.4279**	**4.8800e-003**	**1.4328**	**0.3656**	**4.4900e-003**	**0.3701**		**584.2704**	**584.2704**	**0.0117**		**584.5616**

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	lb/day										lb/day					
Archit. Coating	94.9490					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	1.0860	9.7271	16.3871	0.0258		0.4700	0.4700		0.4366	0.4366	0.0000	2,488.1932	2,488.1932	0.7291		2,506.4197
Total	**96.0350**	**9.7271**	**16.3871**	**0.0258**		**0.4700**	**0.4700**		**0.4366**	**0.4366**	**0.0000**	**2,488.1932**	**2,488.1932**	**0.7291**		**2,506.4197**

3.7 Architectural Coating - 2025

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	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
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
Worker	0.2897	0.1456	1.6968	5.8600e-003	1.4279	4.8800e-003	1.4328	0.3656	4.4900e-003	0.3701		584.2704	584.2704	0.0117		584.5616
Total	**0.2897**	**0.1456**	**1.6968**	**5.8600e-003**	**1.4279**	**4.8800e-003**	**1.4328**	**0.3656**	**4.4900e-003**	**0.3701**		**584.2704**	**584.2704**	**0.0117**		**584.5616**

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	lb/day										lb/day					
Mitigated	2.1919	9.1442	28.0275	0.1227	15.0727	0.0811	15.1538	4.0241	0.0753	4.0994		12,506.9595	12,506.9595	0.4436		12,518.0499
Unmitigated	2.1919	9.1442	28.0275	0.1227	15.0727	0.0811	15.1538	4.0241	0.0753	4.0994		12,506.9595	12,506.9595	0.4436		12,518.0499

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Apartments Low Rise	732.00	716.00	607.00	1,966,913	1,966,913
City Park	217.60	247.52	182.13	462,852	462,852
Single Family Housing	1,576.48	1,654.97	1439.54	4,332,857	4,332,857
Total	2,526.08	2,618.49	2,228.67	6,762,622	6,762,622

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 Low Rise	10.80	7.30	7.50	32.90	18.00	49.10	86	11	3
City Park	9.50	7.30	7.30	33.00	48.00	19.00	66	28	6
Single Family Housing	10.80	7.30	7.50	32.90	18.00	49.10	86	11	3

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
Apartments Low Rise	0.611155	0.038739	0.187677	0.096955	0.013383	0.005563	0.020646	0.018593	0.001209	0.001094	0.003654	0.000418	0.000914
City Park	0.611155	0.038739	0.187677	0.096955	0.013383	0.005563	0.020646	0.018593	0.001209	0.001094	0.003654	0.000418	0.000914
Single Family Housing	0.611155	0.038739	0.187677	0.096955	0.013383	0.005563	0.020646	0.018593	0.001209	0.001094	0.003654	0.000418	0.000914

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

Kilowatt Hours of Renewable Electricity Generated

	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	lb/day										lb/day					
NaturalGas Mitigated	0.1650	1.4102	0.6001	9.0000e-003		0.1140	0.1140		0.1140	0.1140		1,800.2833	1,800.2833	0.0345	0.0330	1,810.9815
NaturalGas Unmitigated	0.1650	1.4102	0.6001	9.0000e-003		0.1140	0.1140		0.1140	0.1140		1,800.2833	1,800.2833	0.0345	0.0330	1,810.9815

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	lb/day										lb/day					
Apartments Low Rise	3495.78	0.0377	0.3222	0.1371	2.0600e-003		0.0261	0.0261		0.0261	0.0261		411.2680	411.2680	7.8800e-003	7.5400e-003	413.7120
City Park	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
Single Family Housing	11806.6	0.1273	1.0881	0.4630	6.9500e-003		0.0880	0.0880		0.0880	0.0880		1,389.0153	1,389.0153	0.0266	0.0255	1,397.2695
Total		**0.1650**	**1.4102**	**0.6001**	**9.0100e-003**		**0.1140**	**0.1140**		**0.1140**	**0.1140**		**1,800.2833**	**1,800.2833**	**0.0345**	**0.0330**	**1,810.9815**

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	lb/day										lb/day					
Apartments Low Rise	3.49578	0.0377	0.3222	0.1371	2.0600e-003		0.0261	0.0261		0.0261	0.0261		411.2680	411.2680	7.8800e-003	7.5400e-003	413.7120
City Park	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
Single Family Housing	11.8066	0.1273	1.0881	0.4630	6.9500e-003		0.0880	0.0880		0.0880	0.0880		1,389.0153	1,389.0153	0.0266	0.0255	1,397.2695
Total		**0.1650**	**1.4102**	**0.6001**	**9.0100e-003**		**0.1140**	**0.1140**		**0.1140**	**0.1140**		**1,800.2833**	**1,800.2833**	**0.0345**	**0.0330**	**1,810.9815**

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

No Hearths Installed

	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	lb/day										lb/day					
Mitigated	9.9983	0.2533	21.9707	1.1600e-003		0.1222	0.1222		0.1222	0.1222	0.0000	39.6659	39.6659	0.0378	0.0000	40.6107
Unmitigated	9.9983	0.2533	21.9707	1.1600e-003		0.1222	0.1222		0.1222	0.1222	0.0000	39.6659	39.6659	0.0378	0.0000	40.6107

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	lb/day										lb/day					
Architectural Coating	0.7438					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	8.5973					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Hearth	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	0.6572	0.2533	21.9707	1.1600e-003		0.1222	0.1222		0.1222	0.1222		39.6659	39.6659	0.0378		40.6107
Total	**9.9983**	**0.2533**	**21.9707**	**1.1600e-003**		**0.1222**	**0.1222**		**0.1222**	**0.1222**	**0.0000**	**39.6659**	**39.6659**	**0.0378**	**0.0000**	**40.6107**

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	lb/day										lb/day					
Architectural Coating	0.7438					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	8.5973					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Hearth	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	0.6572	0.2533	21.9707	1.1600e-003		0.1222	0.1222		0.1222	0.1222		39.6659	39.6659	0.0378		40.6107
Total	**9.9983**	**0.2533**	**21.9707**	**1.1600e-003**		**0.1222**	**0.1222**		**0.1222**	**0.1222**	**0.0000**	**39.6659**	**39.6659**	**0.0378**	**0.0000**	**40.6107**

7.0 Water Detail

7.1 Mitigation Measures Water

Apply Water Conservation Strategy

Use Reclaimed Water

8.0 Waste Detail

8.1 Mitigation Measures Waste

9.0 Operational Offroad

Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type

10.0 Stationary Equipment

Fire Pumps and Emergency Generators

Equipment Type	Number	Hours/Day	Hours/Year	Horse Power	Load Factor	Fuel Type

Boilers

Equipment Type	Number	Heat Input/Day	Heat Input/Year	Boiler Rating	Fuel Type

User Defined Equipment

Equipment Type	Number

11.0 Vegetation

Oxnard Teal Club Reduced Intensity Phase 1

Ventura County, Annual

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
General Office Building	50.00	1000sqft	8.78	50,000.00	0
City Park	6.50	Acre	6.50	283,140.00	0
Apartments Low Rise	263.00	Dwelling Unit	15.14	263,000.00	1044
Apartments Mid Rise	240.00	Dwelling Unit	10.57	240,000.00	953
Single Family Housing	220.00	Dwelling Unit	27.53	396,000.00	873

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.6	**Precipitation Freq (Days)**	31
Climate Zone	8			**Operational Year**	2030
Utility Company	Southern California Edison				
CO2 Intensity (lb/MWhr)	337.71	**CH4 Intensity (lb/MWhr)**	0.014	**N2O Intensity (lb/MWhr)**	0.003

1.3 User Entered Comments & Non-Default Data

Project Characteristics - Based on 2030 projections for SCE 60% renewable with CPUC 2011 SCE factor for 2009. 337.71; 0.014; 0.003

Land Use - Per Project Description 8/2019 and Teal Club Specific Plan Alternative with 10,000 ft less commercial in PA-7. Pop based on DOF 2019, 3.97 people/unit. General office building is commercial/mixed use/village commercial

Construction Phase - AC extended to overlap with construction by half, 2021-2023

Off-road Equipment -

Off-road Equipment -

Off-road Equipment -
Off-road Equipment -

Off-road Equipment -

Off-road Equipment -

Trips and VMT - Haul 4 miles east to Del Norte Regional Recycling and Transfer

Grading - No import/export

Architectural Coating - Per VCAPCD Rule 74.2 AC. 50 interior, 100 exterior

Vehicle Trips - Trip Rates from Stantec Traffic Study 3/26/2019.

Vehicle Emission Factors -

Vehicle Emission Factors -

Vehicle Emission Factors -

Woodstoves - No fireplaces or woodstoves

Area Coating - Per VCAPCD Rule 74.2

Energy Use - 7% decrease in electricity factor for residential and 30% decrease for commercial per 2019 CalGreen standards

Water And Wastewater -

Solid Waste - 25% waste reduction due to AB 341, Athens Services compliant

Construction Off-road Equipment Mitigation - Per Ventura County Air Quality Assessment Guidelines

Mobile Land Use Mitigation -

Area Mitigation - Per VCAPCD Rule 74.2 AC

Energy Mitigation - Per residential low-rise solar PV requirement (2019 California Energy Code Section 150.1(b)14)

Water Mitigation - 20% water reduction indoor and water efficient fixtures per CalGreen Building Standards Update 2016, Recycled water used for all landscaping

Waste Mitigation -

Fleet Mix -

Table Name	Column Name	Default Value	New Value
tblArchitecturalCoating	EF_Nonresidential_Exterior	250.00	100.00
tblArchitecturalCoating	EF_Nonresidential_Interior	250.00	50.00

Oxnard Teal Club Reduced Intensity Phase 1 - Ventura County, Annual

tblArchitecturalCoating	EF_Parking	250.00	100.00
tblArchitecturalCoating	EF_Residential_Interior	75.00	50.00
tblAreaCoating	Area_EF_Nonresidential_Exterior	250	100
tblAreaCoating	Area_EF_Nonresidential_Interior	250	50
tblAreaCoating	Area_EF_Parking	250	100
tblAreaCoating	Area_EF_Residential_Interior	75	50
tblAreaCoating	Area_Nonresidential_Exterior	166570	171570
tblAreaCoating	Area_Nonresidential_Interior	499710	514710
tblAreaMitigation	UseLowVOCPaintParkingCheck	False	True
tblConstructionPhase	NumDays	70.00	50.00
tblConstructionPhase	NumDays	40.00	20.00
tblConstructionPhase	NumDays	110.00	20.00
tblConstructionPhase	NumDays	1,110.00	630.00
tblConstructionPhase	NumDays	75.00	40.00
tblConstructionPhase	NumDays	75.00	335.00
tblEnergyUse	T24E	177.01	164.62
tblEnergyUse	T24E	179.76	167.18
tblEnergyUse	T24E	4.71	3.30
tblEnergyUse	T24E	253.73	235.97
tblLandUse	GreenSpaceAllowEdit	1.00	0.00
tblLandUse	LotAcreage	1.15	8.78
tblLandUse	LotAcreage	16.44	15.14
tblLandUse	LotAcreage	6.32	10.57
tblLandUse	LotAcreage	71.43	27.53
tblLandUse	Population	805.00	1,044.00
tblLandUse	Population	734.00	953.00
tblLandUse	Population	673.00	873.00

tblProjectCharacteristics	CH4IntensityFactor	0.029	0.014
tblProjectCharacteristics	CO2IntensityFactor	702.44	337.71
tblProjectCharacteristics	N2OIntensityFactor	0.006	0.003
tblSolidWaste	SolidWasteGenerationRate	120.98	90.73
tblSolidWaste	SolidWasteGenerationRate	110.40	82.80
tblSolidWaste	SolidWasteGenerationRate	0.56	0.42
tblSolidWaste	SolidWasteGenerationRate	46.50	41.85
tblSolidWaste	SolidWasteGenerationRate	357.93	268.45
tblTripsAndVMT	HaulingTripLength	20.00	4.00
tblVehicleTrips	ST_TR	9.91	9.44
tblVehicleTrips	SU_TR	8.62	9.44
tblVehicleTrips	WD_TR	6.59	7.32
tblVehicleTrips	WD_TR	6.65	7.32
tblVehicleTrips	WD_TR	1.89	20.00
tblVehicleTrips	WD_TR	11.03	120.00
tblVehicleTrips	WD_TR	9.52	9.44

2.0 Emissions Summary

2.1 Overall Construction

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2021	0.5280	4.3582	4.0046	0.0108	1.3167	0.1670	1.4837	0.5252	0.1558	0.6809	0.0000	985.2861	985.2861	0.1308	0.0000	988.5566
2022	1.5364	3.8160	4.4253	0.0136	0.7528	0.1167	0.8695	0.2026	0.1100	0.3125	0.0000	1,242.6177	1,242.6177	0.1174	0.0000	1,245.5533
2023	3.9283	2.8526	3.9633	0.0117	0.6725	0.0942	0.7667	0.1806	0.0889	0.2695	0.0000	1,069.1898	1,069.1898	0.1020	0.0000	1,071.7403
Maximum	**3.9283**	**4.3582**	**4.4253**	**0.0136**	**1.3167**	**0.1670**	**1.4837**	**0.5252**	**0.1558**	**0.6809**	**0.0000**	**1,242.6177**	**1,242.6177**	**0.1308**	**0.0000**	**1,245.5533**

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2021	0.5279	4.3582	4.0046	0.0108	0.8556	0.1670	1.0226	0.3072	0.1558	0.4629	0.0000	985.2856	985.2856	0.1308	0.0000	988.5562
2022	1.5364	3.8160	4.4253	0.0136	0.7528	0.1167	0.8695	0.2026	0.1100	0.3125	0.0000	1,242.6173	1,242.6173	0.1174	0.0000	1,245.5529
2023	3.9283	2.8526	3.9633	0.0117	0.6725	0.0942	0.7667	0.1806	0.0889	0.2695	0.0000	1,069.1894	1,069.1894	0.1020	0.0000	1,071.7399
Maximum	**3.9283**	**4.3582**	**4.4253**	**0.0136**	**0.8556**	**0.1670**	**1.0226**	**0.3072**	**0.1558**	**0.4629**	**0.0000**	**1,242.6173**	**1,242.6173**	**0.1308**	**0.0000**	**1,245.5529**

Oxnard Teal Club Reduced Intensity Phase 1 - Ventura County, Annual

	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**	**16.82**	**0.00**	**14.78**	**24.00**	**0.00**	**17.26**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

Quarter	Start Date	End Date	Maximum Unmitigated ROG + NOX (tons/quarter)	Maximum Mitigated ROG + NOX (tons/quarter)
1	**1-1-2021**	**3-31-2021**	1.1853	1.1853
2	**4-1-2021**	**6-30-2021**	1.3323	1.3323
3	**7-1-2021**	**9-30-2021**	1.1680	1.1680
4	**10-1-2021**	**12-31-2021**	1.1833	1.1833
5	**1-1-2022**	**3-31-2022**	1.0591	1.0591
6	**4-1-2022**	**6-30-2022**	1.0572	1.0572
7	**7-1-2022**	**9-30-2022**	1.2032	1.2032
8	**10-1-2022**	**12-31-2022**	2.0364	2.0364
9	**1-1-2023**	**3-31-2023**	1.8407	1.8407
10	**4-1-2023**	**6-30-2023**	1.8466	1.8466
11	**7-1-2023**	**9-30-2023**	1.8669	1.8669
		Highest	2.0364	2.0364

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	5.4233	0.0617	5.3547	2.8000e-004		0.0298	0.0298		0.0298	0.0298	0.0000	8.7701	8.7701	8.3600e-003	0.0000	8.9791
Energy	0.0660	0.5650	0.2497	3.6000e-003		0.0456	0.0456		0.0456	0.0456	0.0000	1,331.5344	1,331.5344	0.0407	0.0180	1,337.9138
Mobile	1.4934	6.2471	18.5227	0.0827	9.8740	0.0543	9.9283	2.6401	0.0504	2.6905	0.0000	7,646.2031	7,646.2031	0.2672	0.0000	7,652.8826
Waste						0.0000	0.0000		0.0000	0.0000	98.2984	0.0000	98.2984	5.8093	0.0000	243.5301
Water						0.0000	0.0000		0.0000	0.0000	17.7640	184.6740	202.4380	1.8322	0.0447	261.5698
Total	**6.9826**	**6.8739**	**24.1271**	**0.0865**	**9.8740**	**0.1296**	**10.0036**	**2.6401**	**0.1257**	**2.7658**	**116.0624**	**9,171.1816**	**9,287.2440**	**7.9577**	**0.0627**	**9,504.8753**

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	5.4233	0.0617	5.3547	2.8000e-004		0.0298	0.0298		0.0298	0.0298	0.0000	8.7701	8.7701	8.3600e-003	0.0000	8.9791
Energy	0.0660	0.5650	0.2497	3.6000e-003		0.0456	0.0456		0.0456	0.0456	0.0000	1,026.5508	1,026.5508	0.0280	0.0153	1,031.8068
Mobile	1.3836	5.6991	15.4475	0.0660	7.7612	0.0444	7.8056	2.0752	0.0412	2.1164	0.0000	6,107.1312	6,107.1312	0.2206	0.0000	6,112.6458
Waste						0.0000	0.0000		0.0000	0.0000	98.2984	0.0000	98.2984	5.8093	0.0000	243.5301
Water						0.0000	0.0000		0.0000	0.0000	14.2112	162.3373	176.5485	1.4664	0.0359	223.9078
Total	**6.8729**	**6.3258**	**21.0519**	**0.0699**	**7.7612**	**0.1197**	**7.8809**	**2.0752**	**0.1165**	**2.1917**	**112.5096**	**7,304.7895**	**7,417.2991**	**7.5326**	**0.0512**	**7,620.8695**

	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	**1.57**	**7.97**	**12.75**	**19.25**	**21.40**	**7.65**	**21.22**	**21.40**	**7.33**	**20.76**	**3.06**	**20.35**	**20.13**	**5.34**	**18.37**	**19.82**

3.0 Construction Detail

Construction Phase

Oxnard Teal Club Reduced Intensity Phase 1 - Ventura County, Annual

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Demolition	Demolition	1/1/2021	3/11/2021	5	50	
2	Site Preparation	Site Preparation	3/12/2021	4/8/2021	5	20	
3	Grading	Grading	4/9/2021	5/6/2021	5	20	
4	Building Construction	Building Construction	5/7/2021	10/5/2023	5	630	
5	Paving	Paving	10/6/2023	11/30/2023	5	40	
6	Architectural Coating	Architectural Coating	9/18/2022	12/29/2023	5	335	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 275

Acres of Paving: 0

Residential Indoor: 1,820,475; Residential Outdoor: 606,825; Non-Residential Indoor: 499,710; Non-Residential Outdoor: 166,570; Striped Parking Area: 0 (Architectural Coating – sqft)

OffRoad Equipment

Oxnard Teal Club Reduced Intensity Phase 1 - Ventura County, Annual

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Demolition	Concrete/Industrial Saws	1	8.00	81	0.73
Demolition	Excavators	3	8.00	158	0.38
Demolition	Rubber Tired Dozers	2	8.00	247	0.40
Site Preparation	Rubber Tired Dozers	3	8.00	247	0.40
Site Preparation	Tractors/Loaders/Backhoes	4	8.00	97	0.37
Grading	Excavators	2	8.00	158	0.38
Grading	Graders	1	8.00	187	0.41
Grading	Rubber Tired Dozers	1	8.00	247	0.40
Grading	Scrapers	2	8.00	367	0.48
Grading	Tractors/Loaders/Backhoes	2	8.00	97	0.37
Building Construction	Cranes	1	7.00	231	0.29
Building Construction	Forklifts	3	8.00	89	0.20
Building Construction	Generator Sets	1	8.00	84	0.74
Building Construction	Tractors/Loaders/Backhoes	3	7.00	97	0.37
Building Construction	Welders	1	8.00	46	0.45
Paving	Pavers	2	8.00	130	0.42
Paving	Paving Equipment	2	8.00	132	0.36
Paving	Rollers	2	8.00	80	0.38
Architectural Coating	Air Compressors	1	6.00	78	0.48

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Demolition	6	15.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Site Preparation	7	18.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Grading	8	20.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction	9	576.00	132.00	0.00	10.80	7.30	4.00	LD_Mix	HDT_Mix	HHDT
Paving	6	15.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Architectural Coating	1	115.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Use Soil Stabilizer

Water Exposed Area

3.2 Demolition - 2021

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0791	0.7860	0.5391	9.7000e-004		0.0388	0.0388		0.0360	0.0360	0.0000	85.0020	85.0020	0.0239	0.0000	85.6001
Total	**0.0791**	**0.7860**	**0.5391**	**9.7000e-004**		**0.0388**	**0.0388**		**0.0360**	**0.0360**	**0.0000**	**85.0020**	**85.0020**	**0.0239**	**0.0000**	**85.6001**

3.2 Demolition - 2021

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.3000e-003	8.4000e-004	9.2400e-003	3.0000e-005	3.0200e-003	2.0000e-005	3.0500e-003	8.0000e-004	2.0000e-005	8.2000e-004	0.0000	2.5128	2.5128	6.0000e-005	0.0000	2.5143
Total	**1.3000e-003**	**8.4000e-004**	**9.2400e-003**	**3.0000e-005**	**3.0200e-003**	**2.0000e-005**	**3.0500e-003**	**8.0000e-004**	**2.0000e-005**	**8.2000e-004**	**0.0000**	**2.5128**	**2.5128**	**6.0000e-005**	**0.0000**	**2.5143**

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	0.0791	0.7860	0.5391	9.7000e-004		0.0388	0.0388		0.0360	0.0360	0.0000	85.0019	85.0019	0.0239	0.0000	85.6000
Total	**0.0791**	**0.7860**	**0.5391**	**9.7000e-004**		**0.0388**	**0.0388**		**0.0360**	**0.0360**	**0.0000**	**85.0019**	**85.0019**	**0.0239**	**0.0000**	**85.6000**

3.2 Demolition - 2021

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.3000e-003	8.4000e-004	9.2400e-003	3.0000e-005	3.0200e-003	2.0000e-005	3.0500e-003	8.0000e-004	2.0000e-005	8.2000e-004	0.0000	2.5128	2.5128	6.0000e-005	0.0000	2.5143
Total	**1.3000e-003**	**8.4000e-004**	**9.2400e-003**	**3.0000e-005**	**3.0200e-003**	**2.0000e-005**	**3.0500e-003**	**8.0000e-004**	**2.0000e-005**	**8.2000e-004**	**0.0000**	**2.5128**	**2.5128**	**6.0000e-005**	**0.0000**	**2.5143**

3.3 Site Preparation - 2021

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.3613	0.0000	0.3613	0.1986	0.0000	0.1986	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0389	0.4050	0.2115	3.8000e-004		0.0204	0.0204		0.0188	0.0188	0.0000	33.4357	33.4357	0.0108	0.0000	33.7061
Total	**0.0389**	**0.4050**	**0.2115**	**3.8000e-004**	**0.3613**	**0.0204**	**0.3818**	**0.1986**	**0.0188**	**0.2174**	**0.0000**	**33.4357**	**33.4357**	**0.0108**	**0.0000**	**33.7061**

3.3 Site Preparation - 2021

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	6.2000e-004	4.0000e-004	4.4300e-003	1.0000e-005	1.4500e-003	1.0000e-005	1.4600e-003	3.9000e-004	1.0000e-005	3.9000e-004	0.0000	1.2061	1.2061	3.0000e-005	0.0000	1.2069
Total	**6.2000e-004**	**4.0000e-004**	**4.4300e-003**	**1.0000e-005**	**1.4500e-003**	**1.0000e-005**	**1.4600e-003**	**3.9000e-004**	**1.0000e-005**	**3.9000e-004**	**0.0000**	**1.2061**	**1.2061**	**3.0000e-005**	**0.0000**	**1.2069**

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					0.1626	0.0000	0.1626	0.0894	0.0000	0.0894	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0389	0.4050	0.2115	3.8000e-004		0.0204	0.0204		0.0188	0.0188	0.0000	33.4357	33.4357	0.0108	0.0000	33.7060
Total	**0.0389**	**0.4050**	**0.2115**	**3.8000e-004**	**0.1626**	**0.0204**	**0.1830**	**0.0894**	**0.0188**	**0.1082**	**0.0000**	**33.4357**	**33.4357**	**0.0108**	**0.0000**	**33.7060**

3.3 Site Preparation - 2021

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	6.2000e-004	4.0000e-004	4.4300e-003	1.0000e-005	1.4500e-003	1.0000e-005	1.4600e-003	3.9000e-004	1.0000e-005	3.9000e-004	0.0000	1.2061	1.2061	3.0000e-005	0.0000	1.2069
Total	**6.2000e-004**	**4.0000e-004**	**4.4300e-003**	**1.0000e-005**	**1.4500e-003**	**1.0000e-005**	**1.4600e-003**	**3.9000e-004**	**1.0000e-005**	**3.9000e-004**	**0.0000**	**1.2061**	**1.2061**	**3.0000e-005**	**0.0000**	**1.2069**

3.4 Grading - 2021

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.4770	0.0000	0.4770	0.1978	0.0000	0.1978	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0419	0.4640	0.3088	6.2000e-004		0.0199	0.0199		0.0183	0.0183	0.0000	54.4950	54.4950	0.0176	0.0000	54.9356
Total	**0.0419**	**0.4640**	**0.3088**	**6.2000e-004**	**0.4770**	**0.0199**	**0.4969**	**0.1978**	**0.0183**	**0.2161**	**0.0000**	**54.4950**	**54.4950**	**0.0176**	**0.0000**	**54.9356**

3.4 Grading - 2021

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	6.9000e-004	4.5000e-004	4.9300e-003	1.0000e-005	1.6100e-003	1.0000e-005	1.6200e-003	4.3000e-004	1.0000e-005	4.4000e-004	0.0000	1.3401	1.3401	3.0000e-005	0.0000	1.3410
Total	**6.9000e-004**	**4.5000e-004**	**4.9300e-003**	**1.0000e-005**	**1.6100e-003**	**1.0000e-005**	**1.6200e-003**	**4.3000e-004**	**1.0000e-005**	**4.4000e-004**	**0.0000**	**1.3401**	**1.3401**	**3.0000e-005**	**0.0000**	**1.3410**

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					0.2147	0.0000	0.2147	0.0890	0.0000	0.0890	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0419	0.4640	0.3088	6.2000e-004		0.0199	0.0199		0.0183	0.0183	0.0000	54.4949	54.4949	0.0176	0.0000	54.9355
Total	**0.0419**	**0.4640**	**0.3088**	**6.2000e-004**	**0.2147**	**0.0199**	**0.2345**	**0.0890**	**0.0183**	**0.1073**	**0.0000**	**54.4949**	**54.4949**	**0.0176**	**0.0000**	**54.9355**

3.4 Grading - 2021

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	6.9000e-004	4.5000e-004	4.9300e-003	1.0000e-005	1.6100e-003	1.0000e-005	1.6200e-003	4.3000e-004	1.0000e-005	4.4000e-004	0.0000	1.3401	1.3401	3.0000e-005	0.0000	1.3410
Total	**6.9000e-004**	**4.5000e-004**	**4.9300e-003**	**1.0000e-005**	**1.6100e-003**	**1.0000e-005**	**1.6200e-003**	**4.3000e-004**	**1.0000e-005**	**4.4000e-004**	**0.0000**	**1.3401**	**1.3401**	**3.0000e-005**	**0.0000**	**1.3410**

3.5 Building Construction - 2021

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.1625	1.4904	1.4172	2.3000e-003		0.0820	0.0820		0.0771	0.0771	0.0000	198.0499	198.0499	0.0478	0.0000	199.2444
Total	**0.1625**	**1.4904**	**1.4172**	**2.3000e-003**		**0.0820**	**0.0820**		**0.0771**	**0.0771**	**0.0000**	**198.0499**	**198.0499**	**0.0478**	**0.0000**	**199.2444**

3.5 Building Construction - 2021

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0325	1.1008	0.2963	2.8600e-003	0.0751	3.1000e-003	0.0782	0.0217	2.9700e-003	0.0246	0.0000	279.2503	279.2503	0.0222	0.0000	279.8052
Worker	0.1704	0.1103	1.2131	3.6500e-003	0.3971	2.8000e-003	0.3999	0.1055	2.5800e-003	0.1081	0.0000	329.9943	329.9943	8.3500e-003	0.0000	330.2031
Total	**0.2029**	**1.2110**	**1.5094**	**6.5100e-003**	**0.4722**	**5.9000e-003**	**0.4781**	**0.1272**	**5.5500e-003**	**0.1327**	**0.0000**	**609.2445**	**609.2445**	**0.0306**	**0.0000**	**610.0083**

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	0.1625	1.4904	1.4172	2.3000e-003		0.0820	0.0820		0.0771	0.0771	0.0000	198.0496	198.0496	0.0478	0.0000	199.2442
Total	**0.1625**	**1.4904**	**1.4172**	**2.3000e-003**		**0.0820**	**0.0820**		**0.0771**	**0.0771**	**0.0000**	**198.0496**	**198.0496**	**0.0478**	**0.0000**	**199.2442**

3.5 Building Construction - 2021

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0325	1.1008	0.2963	2.8600e-003	0.0751	3.1000e-003	0.0782	0.0217	2.9700e-003	0.0246	0.0000	279.2503	279.2503	0.0222	0.0000	279.8052
Worker	0.1704	0.1103	1.2131	3.6500e-003	0.3971	2.8000e-003	0.3999	0.1055	2.5800e-003	0.1081	0.0000	329.9943	329.9943	8.3500e-003	0.0000	330.2031
Total	**0.2029**	**1.2110**	**1.5094**	**6.5100e-003**	**0.4722**	**5.9000e-003**	**0.4781**	**0.1272**	**5.5500e-003**	**0.1327**	**0.0000**	**609.2445**	**609.2445**	**0.0306**	**0.0000**	**610.0083**

3.5 Building Construction - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.2218	2.0300	2.1272	3.5000e-003		0.1052	0.1052		0.0990	0.0990	0.0000	301.2428	301.2428	0.0722	0.0000	303.0471
Total	**0.2218**	**2.0300**	**2.1272**	**3.5000e-003**		**0.1052**	**0.1052**		**0.0990**	**0.0990**	**0.0000**	**301.2428**	**301.2428**	**0.0722**	**0.0000**	**303.0471**

3.5 Building Construction - 2022

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0460	1.5731	0.4273	4.3000e-003	0.1143	4.0800e-003	0.1183	0.0330	3.9100e-003	0.0369	0.0000	420.6550	420.6550	0.0325	0.0000	421.4675
Worker	0.2437	0.1513	1.7046	5.3500e-003	0.6038	4.1600e-003	0.6079	0.1604	3.8300e-003	0.1642	0.0000	483.3103	483.3103	0.0115	0.0000	483.5971
Total	**0.2897**	**1.7244**	**2.1319**	**9.6500e-003**	**0.7180**	**8.2400e-003**	**0.7263**	**0.1933**	**7.7400e-003**	**0.2011**	**0.0000**	**903.9653**	**903.9653**	**0.0440**	**0.0000**	**905.0646**

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	0.2218	2.0300	2.1272	3.5000e-003		0.1052	0.1052		0.0990	0.0990	0.0000	301.2425	301.2425	0.0722	0.0000	303.0467
Total	**0.2218**	**2.0300**	**2.1272**	**3.5000e-003**		**0.1052**	**0.1052**		**0.0990**	**0.0990**	**0.0000**	**301.2425**	**301.2425**	**0.0722**	**0.0000**	**303.0467**

3.5 Building Construction - 2022

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0460	1.5731	0.4273	4.3000e-003	0.1143	4.0800e-003	0.1183	0.0330	3.9100e-003	0.0369	0.0000	420.6550	420.6550	0.0325	0.0000	421.4675
Worker	0.2437	0.1513	1.7046	5.3500e-003	0.6038	4.1600e-003	0.6079	0.1604	3.8300e-003	0.1642	0.0000	483.3103	483.3103	0.0115	0.0000	483.5971
Total	**0.2897**	**1.7244**	**2.1319**	**9.6500e-003**	**0.7180**	**8.2400e-003**	**0.7263**	**0.1933**	**7.7400e-003**	**0.2011**	**0.0000**	**903.9653**	**903.9653**	**0.0440**	**0.0000**	**905.0646**

3.5 Building Construction - 2023

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.1565	1.4313	1.6163	2.6800e-003		0.0696	0.0696		0.0655	0.0655	0.0000	230.6457	230.6457	0.0549	0.0000	232.0174
Total	**0.1565**	**1.4313**	**1.6163**	**2.6800e-003**		**0.0696**	**0.0696**		**0.0655**	**0.0655**	**0.0000**	**230.6457**	**230.6457**	**0.0549**	**0.0000**	**232.0174**

3.5 Building Construction - 2023

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0261	0.9156	0.2961	3.2100e-003	0.0875	1.1800e-003	0.0886	0.0252	1.1300e-003	0.0264	0.0000	314.8843	314.8843	0.0222	0.0000	315.4393
Worker	0.1757	0.1046	1.2036	3.9300e-003	0.4621	3.1100e-003	0.4652	0.1228	2.8600e-003	0.1256	0.0000	355.7525	355.7525	7.9100e-003	0.0000	355.9502
Total	**0.2018**	**1.0203**	**1.4997**	**7.1400e-003**	**0.5496**	**4.2900e-003**	**0.5539**	**0.1480**	**3.9900e-003**	**0.1520**	**0.0000**	**670.6368**	**670.6368**	**0.0301**	**0.0000**	**671.3895**

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	0.1565	1.4313	1.6163	2.6800e-003		0.0696	0.0696		0.0655	0.0655	0.0000	230.6455	230.6455	0.0549	0.0000	232.0171
Total	**0.1565**	**1.4313**	**1.6163**	**2.6800e-003**		**0.0696**	**0.0696**		**0.0655**	**0.0655**	**0.0000**	**230.6455**	**230.6455**	**0.0549**	**0.0000**	**232.0171**

3.5 Building Construction - 2023

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0261	0.9156	0.2961	3.2100e-003	0.0875	1.1800e-003	0.0886	0.0252	1.1300e-003	0.0264	0.0000	314.8843	314.8843	0.0222	0.0000	315.4393
Worker	0.1757	0.1046	1.2036	3.9300e-003	0.4621	3.1100e-003	0.4652	0.1228	2.8600e-003	0.1256	0.0000	355.7525	355.7525	7.9100e-003	0.0000	355.9502
Total	**0.2018**	**1.0203**	**1.4997**	**7.1400e-003**	**0.5496**	**4.2900e-003**	**0.5539**	**0.1480**	**3.9900e-003**	**0.1520**	**0.0000**	**670.6368**	**670.6368**	**0.0301**	**0.0000**	**671.3895**

3.6 Paving - 2023

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0207	0.2038	0.2917	4.6000e-004		0.0102	0.0102		9.3900e-003	9.3900e-003	0.0000	40.0537	40.0537	0.0130	0.0000	40.3776
Paving	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0207**	**0.2038**	**0.2917**	**4.6000e-004**		**0.0102**	**0.0102**		**9.3900e-003**	**9.3900e-003**	**0.0000**	**40.0537**	**40.0537**	**0.0130**	**0.0000**	**40.3776**

3.6 Paving - 2023

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	9.2000e-004	5.5000e-004	6.3000e-003	2.0000e-005	2.4200e-003	2.0000e-005	2.4400e-003	6.4000e-004	1.0000e-005	6.6000e-004	0.0000	1.8622	1.8622	4.0000e-005	0.0000	1.8632
Total	**9.2000e-004**	**5.5000e-004**	**6.3000e-003**	**2.0000e-005**	**2.4200e-003**	**2.0000e-005**	**2.4400e-003**	**6.4000e-004**	**1.0000e-005**	**6.6000e-004**	**0.0000**	**1.8622**	**1.8622**	**4.0000e-005**	**0.0000**	**1.8632**

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	0.0207	0.2038	0.2917	4.6000e-004		0.0102	0.0102		9.3900e-003	9.3900e-003	0.0000	40.0537	40.0537	0.0130	0.0000	40.3775
Paving	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0207**	**0.2038**	**0.2917**	**4.6000e-004**		**0.0102**	**0.0102**		**9.3900e-003**	**9.3900e-003**	**0.0000**	**40.0537**	**40.0537**	**0.0130**	**0.0000**	**40.3775**

3.6 Paving - 2023

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	9.2000e-004	5.5000e-004	6.3000e-003	2.0000e-005	2.4200e-003	2.0000e-005	2.4400e-003	6.4000e-004	1.0000e-005	6.6000e-004	0.0000	1.8622	1.8622	4.0000e-005	0.0000	1.8632
Total	**9.2000e-004**	**5.5000e-004**	**6.3000e-003**	**2.0000e-005**	**2.4200e-003**	**2.0000e-005**	**2.4400e-003**	**6.4000e-004**	**1.0000e-005**	**6.6000e-004**	**0.0000**	**1.8622**	**1.8622**	**4.0000e-005**	**0.0000**	**1.8632**

3.7 Architectural Coating - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	1.0032					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	7.6700e-003	0.0528	0.0680	1.1000e-004		3.0600e-003	3.0600e-003		3.0600e-003	3.0600e-003	0.0000	9.5747	9.5747	6.2000e-004	0.0000	9.5903
Total	**1.0109**	**0.0528**	**0.0680**	**1.1000e-004**		**3.0600e-003**	**3.0600e-003**		**3.0600e-003**	**3.0600e-003**	**0.0000**	**9.5747**	**9.5747**	**6.2000e-004**	**0.0000**	**9.5903**

3.7 Architectural Coating - 2022

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0140	8.7200e-003	0.0982	3.1000e-004	0.0348	2.4000e-004	0.0350	9.2400e-003	2.2000e-004	9.4600e-003	0.0000	27.8349	27.8349	6.6000e-004	0.0000	27.8514
Total	**0.0140**	**8.7200e-003**	**0.0982**	**3.1000e-004**	**0.0348**	**2.4000e-004**	**0.0350**	**9.2400e-003**	**2.2000e-004**	**9.4600e-003**	**0.0000**	**27.8349**	**27.8349**	**6.6000e-004**	**0.0000**	**27.8514**

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	1.0032					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	7.6700e-003	0.0528	0.0680	1.1000e-004		3.0600e-003	3.0600e-003		3.0600e-003	3.0600e-003	0.0000	9.5747	9.5747	6.2000e-004	0.0000	9.5903
Total	**1.0109**	**0.0528**	**0.0680**	**1.1000e-004**		**3.0600e-003**	**3.0600e-003**		**3.0600e-003**	**3.0600e-003**	**0.0000**	**9.5747**	**9.5747**	**6.2000e-004**	**0.0000**	**9.5903**

3.7 Architectural Coating - 2022

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0140	8.7200e-003	0.0982	3.1000e-004	0.0348	2.4000e-004	0.0350	9.2400e-003	2.2000e-004	9.4600e-003	0.0000	27.8349	27.8349	6.6000e-004	0.0000	27.8514
Total	**0.0140**	**8.7200e-003**	**0.0982**	**3.1000e-004**	**0.0348**	**2.4000e-004**	**0.0350**	**9.2400e-003**	**2.2000e-004**	**9.4600e-003**	**0.0000**	**27.8349**	**27.8349**	**6.6000e-004**	**0.0000**	**27.8514**

3.7 Architectural Coating - 2023

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	3.4777					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0249	0.1694	0.2355	3.9000e-004		9.2100e-003	9.2100e-003		9.2100e-003	9.2100e-003	0.0000	33.1923	33.1923	1.9900e-003	0.0000	33.2419
Total	**3.5026**	**0.1694**	**0.2355**	**3.9000e-004**		**9.2100e-003**	**9.2100e-003**		**9.2100e-003**	**9.2100e-003**	**0.0000**	**33.1923**	**33.1923**	**1.9900e-003**	**0.0000**	**33.2419**

3.7 Architectural Coating - 2023

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0458	0.0273	0.3140	1.0300e-003	0.1205	8.1000e-004	0.1214	0.0320	7.5000e-004	0.0328	0.0000	92.7991	92.7991	2.0600e-003	0.0000	92.8506
Total	**0.0458**	**0.0273**	**0.3140**	**1.0300e-003**	**0.1205**	**8.1000e-004**	**0.1214**	**0.0320**	**7.5000e-004**	**0.0328**	**0.0000**	**92.7991**	**92.7991**	**2.0600e-003**	**0.0000**	**92.8506**

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	3.4777					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0249	0.1694	0.2354	3.9000e-004		9.2100e-003	9.2100e-003		9.2100e-003	9.2100e-003	0.0000	33.1923	33.1923	1.9900e-003	0.0000	33.2419
Total	**3.5026**	**0.1694**	**0.2354**	**3.9000e-004**		**9.2100e-003**	**9.2100e-003**		**9.2100e-003**	**9.2100e-003**	**0.0000**	**33.1923**	**33.1923**	**1.9900e-003**	**0.0000**	**33.2419**

3.7 Architectural Coating - 2023

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0458	0.0273	0.3140	1.0300e-003	0.1205	8.1000e-004	0.1214	0.0320	7.5000e-004	0.0328	0.0000	92.7991	92.7991	2.0600e-003	0.0000	92.8506
Total	**0.0458**	**0.0273**	**0.3140**	**1.0300e-003**	**0.1205**	**8.1000e-004**	**0.1214**	**0.0320**	**7.5000e-004**	**0.0328**	**0.0000**	**92.7991**	**92.7991**	**2.0600e-003**	**0.0000**	**92.8506**

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

Increase Density

Increase Transit Accessibility

Integrate Below Market Rate Housing

Improve Pedestrian Network

	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	1.3836	5.6991	15.4475	0.0660	7.7612	0.0444	7.8056	2.0752	0.0412	2.1164	0.0000	6,107.1312	6,107.1312	0.2206	0.0000	6,112.6458
Unmitigated	1.4934	6.2471	18.5227	0.0827	9.8740	0.0543	9.9283	2.6401	0.0504	2.6905	0.0000	7,646.2031	7,646.2031	0.2672	0.0000	7,652.8826

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Apartments Low Rise	1,925.16	1,883.08	1596.41	5,172,981	4,066,099
Apartments Mid Rise	1,756.80	1,533.60	1406.40	4,627,752	3,637,534
City Park	130.00	147.88	108.81	276,520	217,352
General Office Building	6,000.00	123.00	52.50	10,301,712	8,097,416
Single Family Housing	2,076.80	2,076.80	2076.80	5,738,349	4,510,493
Total	11,888.76	5,764.36	5,240.92	26,117,314	20,528,894

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 Low Rise	10.80	7.30	7.50	32.90	18.00	49.10	86	11	3
Apartments Mid Rise	10.80	7.30	7.50	32.90	18.00	49.10	86	11	3
City Park	9.50	7.30	7.30	33.00	48.00	19.00	66	28	6
General Office Building	9.50	7.30	7.30	33.00	48.00	19.00	77	19	4
Single Family Housing	10.80	7.30	7.50	32.90	18.00	49.10	86	11	3

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
Apartments Low Rise	0.611155	0.038739	0.187677	0.096955	0.013383	0.005563	0.020646	0.018593	0.001209	0.001094	0.003654	0.000418	0.000914
Apartments Mid Rise	0.611155	0.038739	0.187677	0.096955	0.013383	0.005563	0.020646	0.018593	0.001209	0.001094	0.003654	0.000418	0.000914
City Park	0.611155	0.038739	0.187677	0.096955	0.013383	0.005563	0.020646	0.018593	0.001209	0.001094	0.003654	0.000418	0.000914
General Office Building	0.611155	0.038739	0.187677	0.096955	0.013383	0.005563	0.020646	0.018593	0.001209	0.001094	0.003654	0.000418	0.000914
Single Family Housing	0.611155	0.038739	0.187677	0.096955	0.013383	0.005563	0.020646	0.018593	0.001209	0.001094	0.003654	0.000418	0.000914

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

Kilowatt Hours of Renewable Electricity Generated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Electricity Mitigated						0.0000	0.0000		0.0000	0.0000	0.0000	373.7811	373.7811	0.0155	3.3200e-003	375.1579
Electricity Unmitigated						0.0000	0.0000		0.0000	0.0000	0.0000	678.7647	678.7647	0.0281	6.0300e-003	681.2650
NaturalGas Mitigated	0.0660	0.5650	0.2497	3.6000e-003		0.0456	0.0456		0.0456	0.0456	0.0000	652.7697	652.7697	0.0125	0.0120	656.6488
NaturalGas Unmitigated	0.0660	0.5650	0.2497	3.6000e-003		0.0456	0.0456		0.0456	0.0456	0.0000	652.7697	652.7697	0.0125	0.0120	656.6488

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 Low Rise	3.35577e+006	0.0181	0.1546	0.0658	9.9000e-004		0.0125	0.0125		0.0125	0.0125	0.0000	179.0768	179.0768	3.4300e-003	3.2800e-003	180.1410
Apartments Mid Rise	2.74259e+006	0.0148	0.1264	0.0538	8.1000e-004		0.0102	0.0102		0.0102	0.0102	0.0000	146.3551	146.3551	2.8100e-003	2.6800e-003	147.2248
City Park	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
General Office Building	457000	2.4600e-003	0.0224	0.0188	1.3000e-004		1.7000e-003	1.7000e-003		1.7000e-003	1.7000e-003	0.0000	24.3873	24.3873	4.7000e-004	4.5000e-004	24.5322
Single Family Housing	5.67708e+006	0.0306	0.2616	0.1113	1.6700e-003		0.0212	0.0212		0.0212	0.0212	0.0000	302.9506	302.9506	5.8100e-003	5.5500e-003	304.7509
Total		**0.0660**	**0.5650**	**0.2497**	**3.6000e-003**		**0.0456**	**0.0456**		**0.0456**	**0.0456**	**0.0000**	**652.7697**	**652.7697**	**0.0125**	**0.0120**	**656.6488**

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 Low Rise	3.35577e+006	0.0181	0.1546	0.0658	9.9000e-004		0.0125	0.0125		0.0125	0.0125	0.0000	179.0768	179.0768	3.4300e-003	3.2800e-003	180.1410
Apartments Mid Rise	2.74259e+006	0.0148	0.1264	0.0538	8.1000e-004		0.0102	0.0102		0.0102	0.0102	0.0000	146.3551	146.3551	2.8100e-003	2.6800e-003	147.2248
City Park	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
General Office Building	457000	2.4600e-003	0.0224	0.0188	1.3000e-004		1.7000e-003	1.7000e-003		1.7000e-003	1.7000e-003	0.0000	24.3873	24.3873	4.7000e-004	4.5000e-004	24.5322
Single Family Housing	5.67708e+006	0.0306	0.2616	0.1113	1.6700e-003		0.0212	0.0212		0.0212	0.0212	0.0000	302.9506	302.9506	5.8100e-003	5.5500e-003	304.7509
Total		**0.0660**	**0.5650**	**0.2497**	**3.6000e-003**		**0.0456**	**0.0456**		**0.0456**	**0.0456**	**0.0000**	**652.7697**	**652.7697**	**0.0125**	**0.0120**	**656.6488**

5.3 Energy by Land Use - Electricity

Unmitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
Apartments Low Rise	1.09086e+006	167.1002	6.9300e-003	1.4800e-003	167.7157
Apartments Mid Rise	951053	145.6848	6.0400e-003	1.2900e-003	146.2215
City Park	0	0.0000	0.0000	0.0000	0.0000
General Office Building	629000	96.3519	3.9900e-003	8.6000e-004	96.7068
Single Family Housing	1.76017e+006	269.6278	0.0112	2.4000e-003	270.6210
Total		**678.7647**	**0.0281**	**6.0300e-003**	**681.2650**

5.3 Energy by Land Use - Electricity

Mitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
Apartments Low Rise	692660	106.1035	4.4000e-003	9.4000e-004	106.4943
Apartments Mid Rise	552857	84.6881	3.5100e-003	7.5000e-004	85.0001
City Park	-398196	-60.9967	-0.0025	-0.0005	-61.2214
General Office Building	230804	35.3552	1.4700e-003	3.1000e-004	35.4854
Single Family Housing	1.36198e+006	208.6311	8.6500e-003	1.8500e-003	209.3996
Total		**373.7811**	**0.0155**	**3.3100e-003**	**375.1579**

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

No Hearths Installed

	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	5.4233	0.0617	5.3547	2.8000e-004		0.0298	0.0298		0.0298	0.0298	0.0000	8.7701	8.7701	8.3600e-003	0.0000	8.9791
Unmitigated	5.4233	0.0617	5.3547	2.8000e-004		0.0298	0.0298		0.0298	0.0298	0.0000	8.7701	8.7701	8.3600e-003	0.0000	8.9791

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	0.4510					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	4.8121					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Hearth	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	0.1602	0.0617	5.3547	2.8000e-004		0.0298	0.0298		0.0298	0.0298	0.0000	8.7701	8.7701	8.3600e-003	0.0000	8.9791
Total	**5.4233**	**0.0617**	**5.3547**	**2.8000e-004**		**0.0298**	**0.0298**		**0.0298**	**0.0298**	**0.0000**	**8.7701**	**8.7701**	**8.3600e-003**	**0.0000**	**8.9791**

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	0.4510					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	4.8121					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Hearth	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	0.1602	0.0617	5.3547	2.8000e-004		0.0298	0.0298		0.0298	0.0298	0.0000	8.7701	8.7701	8.3600e-003	0.0000	8.9791
Total	**5.4233**	**0.0617**	**5.3547**	**2.8000e-004**		**0.0298**	**0.0298**		**0.0298**	**0.0298**	**0.0000**	**8.7701**	**8.7701**	**8.3600e-003**	**0.0000**	**8.9791**

7.0 Water Detail

7.1 Mitigation Measures Water

Apply Water Conservation Strategy

Use Reclaimed Water

Install Low Flow Bathroom Faucet

Install Low Flow Kitchen Faucet

Install Low Flow Toilet

Install Low Flow Shower

	Total CO2	CH4	N2O	CO2e
Category	MT/yr			
Mitigated	176.5485	1.4664	0.0359	223.9078
Unmitigated	202.4380	1.8322	0.0447	261.5698

7.2 Water by Land Use

Unmitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
Apartments Low Rise	17.1355 / 10.8028	57.9995	0.5605	0.0137	76.0810
Apartments Mid Rise	15.637 / 9.85809	52.9273	0.5115	0.0125	69.4276
City Park	0 / 7.74463	13.1803	5.5000e-004	1.2000e-004	13.2288
General Office Building	8.88669 / 5.44668	29.8141	0.2907	7.0800e-003	39.1905
Single Family Housing	14.3339 / 9.03658	48.5167	0.4689	0.0114	63.6419
Total		**202.4380**	**1.8322**	**0.0447**	**261.5698**

7.2 Water by Land Use

Mitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
Apartments Low Rise	13.7084 / 10.8028	50.0766	0.4486	0.0110	64.5554
Apartments Mid Rise	12.5096 / 9.85809	45.6973	0.4094	0.0100	58.9098
City Park	0 / 7.74463	13.1803	5.5000e-004	1.2000e-004	13.2288
General Office Building	7.10935 / 5.44668	25.7052	0.2326	5.6800e-003	33.2131
Single Family Housing	11.4671 / 9.03658	41.8892	0.3752	9.1600e-003	54.0007
Total		**176.5485**	**1.4664**	**0.0359**	**223.9078**

8.0 Waste Detail

8.1 Mitigation Measures Waste

Category/Year

	Total CO2	CH4	N2O	CO2e
	MT/yr			
Mitigated	98.2984	5.8093	0.0000	243.5301
Unmitigated	98.2984	5.8093	0.0000	243.5301

8.2 Waste by Land Use

Unmitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
Apartments Low Rise	90.73	18.4174	1.0884	0.0000	45.6283
Apartments Mid Rise	82.8	16.8077	0.9933	0.0000	41.6403
City Park	0.42	0.0853	5.0400e-003	0.0000	0.2112
General Office Building	41.85	8.4952	0.5021	0.0000	21.0464
Single Family Housing	268.45	54.4929	3.2204	0.0000	135.0039
Total		**98.2984**	**5.8093**	**0.0000**	**243.5301**

8.2 Waste by Land Use

Mitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
Apartments Low Rise	90.73	18.4174	1.0884	0.0000	45.6283
Apartments Mid Rise	82.8	16.8077	0.9933	0.0000	41.6403
City Park	0.42	0.0853	5.0400e-003	0.0000	0.2112
General Office Building	41.85	8.4952	0.5021	0.0000	21.0464
Single Family Housing	268.45	54.4929	3.2204	0.0000	135.0039
Total		**98.2984**	**5.8093**	**0.0000**	**243.5301**

9.0 Operational Offroad

Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type

10.0 Stationary Equipment

Fire Pumps and Emergency Generators

Equipment Type	Number	Hours/Day	Hours/Year	Horse Power	Load Factor	Fuel Type

Boilers

Equipment Type	Number	Heat Input/Day	Heat Input/Year	Boiler Rating	Fuel Type

User Defined Equipment

Equipment Type	Number

11.0 Vegetation

Oxnard Teal Club Reduced Intensity Alternative Phase 2

Ventura County, Annual

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
City Park	10.88	Acre	10.88	473,932.80	0
Apartments Low Rise	100.00	Dwelling Unit	8.35	100,000.00	397
Single Family Housing	167.00	Dwelling Unit	23.94	300,600.00	663

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.6	**Precipitation Freq (Days)**	31
Climate Zone	8			**Operational Year**	2030
Utility Company	Southern California Edison				
CO2 Intensity (lb/MWhr)	337.71	**CH4 Intensity (lb/MWhr)**	0.014	**N2O Intensity (lb/MWhr)**	0.003

1.3 User Entered Comments & Non-Default Data

Oxnard Teal Club Reduced Intensity Alternative Phase 2 - Ventura County, Annual

Project Characteristics - Based on 2030 projections for SCE 60% renewable with CPUC 2011 SCE factor for 2009. 337.71; 0.014; 0.003

Land Use - Based on PD 8/2019 and Reduced Intensity Specific Plan Alternative. Pop based on CDF 2019 3.97 people/household.

Construction Phase - Ph II completed 2024-2025 per PD 8/2019. AC extended to overlap with half of construction phase.

Trips and VMT - Landfill located 4 miles east at Del Norte Regional Recycling and Transfer

Demolition - No demolition

Grading - No export/import

Architectural Coating - Per VCAPCD Rule 74.2

Vehicle Trips - Trip Rates from Stantec Traffic Study 3/26/2019.

Woodstoves - No fireplaces or woodstoves

Area Coating - Per VCAPCD Rule 74.2

Energy Use - 7% decrease in electricity factor for residential and 30% decrease for commercial per 2019 CalGreen standards

Water And Wastewater -

Solid Waste - 25% waste reduction beyond AB 939 due to AB 341, Athens Services compliant

Area Mitigation - Per VCAPCD Rule 74.2 AC. 50 interior, 100 exterior

Energy Mitigation - Per residential low-rise solar PV requirement (2019 California Energy Code Section 150.1(b)14)

Water Mitigation - 20% water reduction indoor and water efficient fixtures per CalGreen Building Standards Update 2016, Recycled water used for all landscaping

Fleet Mix -

Table Name	Column Name	Default Value	New Value
tblArchitecturalCoating	EF_Nonresidential_Exterior	250.00	100.00
tblArchitecturalCoating	EF_Nonresidential_Interior	250.00	50.00
tblArchitecturalCoating	EF_Parking	250.00	100.00
tblArchitecturalCoating	EF_Residential_Interior	75.00	50.00
tblAreaCoating	Area_Residential_Exterior	270405	180225
tblAreaCoating	Area_Residential_Interior	811215	540675
tblAreaMitigation	UseLowVOCPaintParkingCheck	False	True
tblConstructionPhase	NumDays	50.00	25.00

Oxnard Teal Club Reduced Intensity Alternative Phase 2 - Ventura County, Annual

tblConstructionPhase	NumDays	30.00	15.00
tblConstructionPhase	NumDays	75.00	15.00
tblConstructionPhase	NumDays	740.00	430.00
tblConstructionPhase	NumDays	55.00	250.00
tblConstructionPhase	NumDays	55.00	33.00
tblConstructionPhase	PhaseEndDate	11/4/2019	2/2/2024
tblConstructionPhase	PhaseEndDate	12/16/2019	2/23/2024
tblConstructionPhase	PhaseEndDate	3/30/2020	3/15/2024
tblConstructionPhase	PhaseEndDate	1/30/2023	11/6/2025
tblConstructionPhase	PhaseEndDate	4/17/2023	12/30/2025
tblConstructionPhase	PhaseEndDate	7/3/2023	12/24/2025
tblConstructionPhase	PhaseStartDate	8/27/2019	1/1/2024
tblConstructionPhase	PhaseStartDate	11/5/2019	2/3/2024
tblConstructionPhase	PhaseStartDate	12/17/2019	2/24/2024
tblConstructionPhase	PhaseStartDate	3/31/2020	3/15/2024
tblConstructionPhase	PhaseStartDate	1/31/2023	1/15/2025
tblConstructionPhase	PhaseStartDate	4/18/2023	11/8/2025
tblEnergyUse	T24E	177.01	164.62
tblEnergyUse	T24E	253.73	235.97
tblGrading	AcresOfGrading	187.50	37.50
tblLandUse	LotAcreage	6.25	8.35
tblLandUse	LotAcreage	54.22	23.94
tblLandUse	Population	306.00	397.00
tblLandUse	Population	511.00	663.00
tblProjectCharacteristics	CH4IntensityFactor	0.029	0.014
tblProjectCharacteristics	CO2IntensityFactor	702.44	337.71
tblProjectCharacteristics	N2OIntensityFactor	0.006	0.003

tblSolidWaste	SolidWasteGenerationRate	46.00	92.11
tblSolidWaste	SolidWasteGenerationRate	0.94	0.71
tblSolidWaste	SolidWasteGenerationRate	271.83	79.64
tblTripsAndVMT	WorkerTripNumber	331.00	391.00
tblTripsAndVMT	WorkerTripNumber	66.00	78.00
tblTripsAndVMT	WorkerTripNumber	66.00	15.00
tblVehicleTrips	WD_TR	6.59	7.32
tblVehicleTrips	WD_TR	1.89	20.00
tblVehicleTrips	WD_TR	9.52	9.44

2.0 Emissions Summary

2.1 Overall Construction

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2024	0.3657	2.9337	3.3185	9.4400e-003	0.9218	0.0982	1.0200	0.3845	0.0918	0.4763	0.0000	858.9113	858.9113	0.1137	0.0000	861.7545
2025	1.8820	2.4108	3.1231	9.1100e-003	0.4514	0.0697	0.5211	0.1215	0.0654	0.1869	0.0000	831.8092	831.8092	0.0958	0.0000	834.2042
Maximum	**1.8820**	**2.9337**	**3.3185**	**9.4400e-003**	**0.9218**	**0.0982**	**1.0200**	**0.3845**	**0.0918**	**0.4763**	**0.0000**	**858.9113**	**858.9113**	**0.1137**	**0.0000**	**861.7545**

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2024	0.3657	2.9337	3.3185	9.4400e-003	0.9218	0.0982	1.0200	0.3845	0.0918	0.4763	0.0000	858.9109	858.9109	0.1137	0.0000	861.7541
2025	1.8820	2.4108	3.1231	9.1100e-003	0.4514	0.0697	0.5211	0.1215	0.0654	0.1869	0.0000	831.8088	831.8088	0.0958	0.0000	834.2038
Maximum	**1.8820**	**2.9337**	**3.3185**	**9.4400e-003**	**0.9218**	**0.0982**	**1.0200**	**0.3845**	**0.0918**	**0.4763**	**0.0000**	**858.9109**	**858.9109**	**0.1137**	**0.0000**	**861.7541**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

Quarter	Start Date	End Date	Maximum Unmitigated ROG + NOX (tons/quarter)	Maximum Mitigated ROG + NOX (tons/quarter)
18	11-27-2023	2-26-2024	0.5361	0.5361
19	2-27-2024	5-26-2024	0.8584	0.8584
20	5-27-2024	8-26-2024	0.7909	0.7909
21	8-27-2024	11-26-2024	0.7956	0.7956
22	11-27-2024	2-26-2025	0.7716	0.7716
23	2-27-2025	5-26-2025	0.7262	0.7262
24	5-27-2025	8-26-2025	0.7481	0.7481
25	8-27-2025	9-30-2025	0.2846	0.2846
		Highest	0.8584	0.8584

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	1.7639	0.0228	1.9774	1.0000e-004		0.0110	0.0110		0.0110	0.0110	0.0000	3.2386	3.2386	3.0900e-003	0.0000	3.3157
Energy	0.0301	0.2574	0.1095	1.6400e-003		0.0208	0.0208		0.0208	0.0208	0.0000	566.2653	566.2653	0.0168	7.8500e-003	569.0245
Mobile	0.3761	1.5776	4.7511	0.0214	2.5567	0.0140	2.5707	0.6836	0.0130	0.6966	0.0000	1,974.9336	1,974.9336	0.0687	0.0000	1,976.6497
Waste						0.0000	0.0000		0.0000	0.0000	35.0078	0.0000	35.0078	2.0689	0.0000	86.7304
Water						0.0000	0.0000		0.0000	0.0000	5.5190	75.4244	80.9434	0.5700	0.0141	99.3812
Total	**2.1701**	**1.8578**	**6.8380**	**0.0231**	**2.5567**	**0.0458**	**2.6025**	**0.6836**	**0.0448**	**0.7284**	**40.5268**	**2,619.8619**	**2,660.3887**	**2.7275**	**0.0219**	**2,735.1015**

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	1.7639	0.0228	1.9774	1.0000e-004		0.0110	0.0110		0.0110	0.0110	0.0000	3.2386	3.2386	3.0900e-003	0.0000	3.3157
Energy	0.0301	0.2574	0.1095	1.6400e-003		0.0208	0.0208		0.0208	0.0208	0.0000	387.4921	387.4921	9.4200e-003	6.2600e-003	389.5927
Mobile	0.3761	1.5776	4.7511	0.0214	2.5567	0.0140	2.5707	0.6836	0.0130	0.6966	0.0000	1,974.9336	1,974.9336	0.0687	0.0000	1,976.6497
Waste						0.0000	0.0000		0.0000	0.0000	35.0078	0.0000	35.0078	2.0689	0.0000	86.7304
Water						0.0000	0.0000		0.0000	0.0000	4.4152	68.4848	72.9000	0.4563	0.0113	87.6802
Total	**2.1701**	**1.8578**	**6.8380**	**0.0231**	**2.5567**	**0.0458**	**2.6025**	**0.6836**	**0.0448**	**0.7284**	**39.4230**	**2,434.1490**	**2,473.5721**	**2.6064**	**0.0176**	**2,543.9688**

	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**	**2.72**	**7.09**	**7.02**	**4.44**	**19.73**	**6.99**

3.0 Construction Detail

Construction Phase

Oxnard Teal Club Reduced Intensity Alternative Phase 2 - Ventura County, Annual

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Demolition	Demolition	1/1/2024	2/2/2024	5	25	
2	Site Preparation	Site Preparation	2/3/2024	2/23/2024	5	15	
3	Grading	Grading	2/24/2024	3/15/2024	5	15	
4	Building Construction	Building Construction	3/15/2024	11/6/2025	5	430	
5	Paving	Paving	1/15/2025	12/30/2025	5	250	
6	Architectural Coating	Architectural Coating	11/8/2025	12/24/2025	5	33	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 37.5

Acres of Paving: 0

Residential Indoor: 811,215; Residential Outdoor: 270,405; Non-Residential Indoor: 0; Non-Residential Outdoor: 0; Striped Parking Area: 0 (Architectural Coating – sqft)

OffRoad Equipment

Oxnard Teal Club Reduced Intensity Alternative Phase 2 - Ventura County, Annual

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Demolition	Concrete/Industrial Saws	1	8.00	81	0.73
Demolition	Excavators	3	8.00	158	0.38
Demolition	Rubber Tired Dozers	2	8.00	247	0.40
Site Preparation	Rubber Tired Dozers	3	8.00	247	0.40
Site Preparation	Tractors/Loaders/Backhoes	4	8.00	97	0.37
Grading	Excavators	2	8.00	158	0.38
Grading	Graders	1	8.00	187	0.41
Grading	Rubber Tired Dozers	1	8.00	247	0.40
Grading	Scrapers	2	8.00	367	0.48
Grading	Tractors/Loaders/Backhoes	2	8.00	97	0.37
Building Construction	Cranes	1	7.00	231	0.29
Building Construction	Forklifts	3	8.00	89	0.20
Building Construction	Generator Sets	1	8.00	84	0.74
Building Construction	Tractors/Loaders/Backhoes	3	7.00	97	0.37
Building Construction	Welders	1	8.00	46	0.45
Architectural Coating	Air Compressors	1	6.00	78	0.48
Architectural Coating	Pavers	2	8.00	130	0.42
Architectural Coating	Paving Equipment	2	8.00	132	0.36
Architectural Coating	Rollers	2	8.00	80	0.38

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	15.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Site Preparation	7	18.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Grading	8	20.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction	9	391.00	106.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Architectural Coating	7	78.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Architectural Coating	7	15.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Paving			0.00	0.00	10.80	7.30				

3.1 Mitigation Measures Construction

3.2 Demolition - 2024

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	0.0281	0.2610	0.2463	4.9000e-004		0.0120	0.0120		0.0112	0.0112	0.0000	42.4951	42.4951	0.0119	0.0000	42.7923
Total	**0.0281**	**0.2610**	**0.2463**	**4.9000e-004**		**0.0120**	**0.0120**		**0.0112**	**0.0112**	**0.0000**	**42.4951**	**42.4951**	**0.0119**	**0.0000**	**42.7923**

3.2 Demolition - 2024

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	5.4000e-004	3.1000e-004	3.6600e-003	1.0000e-005	1.5100e-003	1.0000e-005	1.5200e-003	4.0000e-004	1.0000e-005	4.1000e-004	0.0000	1.1227	1.1227	2.0000e-005	0.0000	1.1233
Total	**5.4000e-004**	**3.1000e-004**	**3.6600e-003**	**1.0000e-005**	**1.5100e-003**	**1.0000e-005**	**1.5200e-003**	**4.0000e-004**	**1.0000e-005**	**4.1000e-004**	**0.0000**	**1.1227**	**1.1227**	**2.0000e-005**	**0.0000**	**1.1233**

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	0.0281	0.2610	0.2463	4.9000e-004		0.0120	0.0120		0.0112	0.0112	0.0000	42.4950	42.4950	0.0119	0.0000	42.7922
Total	**0.0281**	**0.2610**	**0.2463**	**4.9000e-004**		**0.0120**	**0.0120**		**0.0112**	**0.0112**	**0.0000**	**42.4950**	**42.4950**	**0.0119**	**0.0000**	**42.7922**

3.2 Demolition - 2024

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	5.4000e-004	3.1000e-004	3.6600e-003	1.0000e-005	1.5100e-003	1.0000e-005	1.5200e-003	4.0000e-004	1.0000e-005	4.1000e-004	0.0000	1.1227	1.1227	2.0000e-005	0.0000	1.1233
Total	**5.4000e-004**	**3.1000e-004**	**3.6600e-003**	**1.0000e-005**	**1.5100e-003**	**1.0000e-005**	**1.5200e-003**	**4.0000e-004**	**1.0000e-005**	**4.1000e-004**	**0.0000**	**1.1227**	**1.1227**	**2.0000e-005**	**0.0000**	**1.1233**

3.3 Site Preparation - 2024

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					0.2710	0.0000	0.2710	0.1490	0.0000	0.1490	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0200	0.2038	0.1375	2.9000e-004		9.2200e-003	9.2200e-003		8.4800e-003	8.4800e-003	0.0000	25.0928	25.0928	8.1200e-003	0.0000	25.2957
Total	**0.0200**	**0.2038**	**0.1375**	**2.9000e-004**	**0.2710**	**9.2200e-003**	**0.2802**	**0.1490**	**8.4800e-003**	**0.1574**	**0.0000**	**25.0928**	**25.0928**	**8.1200e-003**	**0.0000**	**25.2957**

3.3 Site Preparation - 2024

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	3.9000e-004	2.2000e-004	2.6400e-003	1.0000e-005	1.0900e-003	1.0000e-005	1.1000e-003	2.9000e-004	1.0000e-005	3.0000e-004	0.0000	0.8083	0.8083	2.0000e-005	0.0000	0.8088
Total	**3.9000e-004**	**2.2000e-004**	**2.6400e-003**	**1.0000e-005**	**1.0900e-003**	**1.0000e-005**	**1.1000e-003**	**2.9000e-004**	**1.0000e-005**	**3.0000e-004**	**0.0000**	**0.8083**	**0.8083**	**2.0000e-005**	**0.0000**	**0.8088**

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					0.2710	0.0000	0.2710	0.1490	0.0000	0.1490	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0200	0.2038	0.1375	2.9000e-004		9.2200e-003	9.2200e-003		8.4800e-003	8.4800e-003	0.0000	25.0928	25.0928	8.1200e-003	0.0000	25.2957
Total	**0.0200**	**0.2038**	**0.1375**	**2.9000e-004**	**0.2710**	**9.2200e-003**	**0.2802**	**0.1490**	**8.4800e-003**	**0.1574**	**0.0000**	**25.0928**	**25.0928**	**8.1200e-003**	**0.0000**	**25.2957**

3.3 Site Preparation - 2024

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	3.9000e-004	2.2000e-004	2.6400e-003	1.0000e-005	1.0900e-003	1.0000e-005	1.1000e-003	2.9000e-004	1.0000e-005	3.0000e-004	0.0000	0.8083	0.8083	2.0000e-005	0.0000	0.8088
Total	**3.9000e-004**	**2.2000e-004**	**2.6400e-003**	**1.0000e-005**	**1.0900e-003**	**1.0000e-005**	**1.1000e-003**	**2.9000e-004**	**1.0000e-005**	**3.0000e-004**	**0.0000**	**0.8083**	**0.8083**	**2.0000e-005**	**0.0000**	**0.8088**

3.4 Grading - 2024

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					0.2457	0.0000	0.2457	0.1263	0.0000	0.1263	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0241	0.2428	0.2079	4.7000e-004		0.0100	0.0100		9.2100e-003	9.2100e-003	0.0000	40.8896	40.8896	0.0132	0.0000	41.2203
Total	**0.0241**	**0.2428**	**0.2079**	**4.7000e-004**	**0.2457**	**0.0100**	**0.2557**	**0.1263**	**9.2100e-003**	**0.1355**	**0.0000**	**40.8896**	**40.8896**	**0.0132**	**0.0000**	**41.2203**

3.4 Grading - 2024

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	4.4000e-004	2.5000e-004	2.9300e-003	1.0000e-005	1.2100e-003	1.0000e-005	1.2200e-003	3.2000e-004	1.0000e-005	3.3000e-004	0.0000	0.8982	0.8982	2.0000e-005	0.0000	0.8986
Total	**4.4000e-004**	**2.5000e-004**	**2.9300e-003**	**1.0000e-005**	**1.2100e-003**	**1.0000e-005**	**1.2200e-003**	**3.2000e-004**	**1.0000e-005**	**3.3000e-004**	**0.0000**	**0.8982**	**0.8982**	**2.0000e-005**	**0.0000**	**0.8986**

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					0.2457	0.0000	0.2457	0.1263	0.0000	0.1263	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0241	0.2428	0.2079	4.7000e-004		0.0100	0.0100		9.2100e-003	9.2100e-003	0.0000	40.8896	40.8896	0.0132	0.0000	41.2202
Total	**0.0241**	**0.2428**	**0.2079**	**4.7000e-004**	**0.2457**	**0.0100**	**0.2557**	**0.1263**	**9.2100e-003**	**0.1355**	**0.0000**	**40.8896**	**40.8896**	**0.0132**	**0.0000**	**41.2202**

3.4 Grading - 2024

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	4.4000e-004	2.5000e-004	2.9300e-003	1.0000e-005	1.2100e-003	1.0000e-005	1.2200e-003	3.2000e-004	1.0000e-005	3.3000e-004	0.0000	0.8982	0.8982	2.0000e-005	0.0000	0.8986
Total	**4.4000e-004**	**2.5000e-004**	**2.9300e-003**	**1.0000e-005**	**1.2100e-003**	**1.0000e-005**	**1.2200e-003**	**3.2000e-004**	**1.0000e-005**	**3.3000e-004**	**0.0000**	**0.8982**	**0.8982**	**2.0000e-005**	**0.0000**	**0.8986**

3.5 Building Construction - 2024

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	0.1530	1.3982	1.6814	2.8000e-003		0.0638	0.0638		0.0600	0.0600	0.0000	241.1231	241.1231	0.0570	0.0000	242.5485
Total	**0.1530**	**1.3982**	**1.6814**	**2.8000e-003**		**0.0638**	**0.0638**		**0.0600**	**0.0600**	**0.0000**	**241.1231**	**241.1231**	**0.0570**	**0.0000**	**242.5485**

3.5 Building Construction - 2024

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0212	0.7597	0.2421	2.6800e-003	0.0734	9.7000e-004	0.0744	0.0212	9.3000e-004	0.0221	0.0000	262.9994	262.9994	0.0183	0.0000	263.4571
Worker	0.1179	0.0674	0.7941	2.6900e-003	0.3279	2.1700e-003	0.3301	0.0871	2.0000e-003	0.0891	0.0000	243.4821	243.4821	5.1100e-003	0.0000	243.6100
Total	**0.1392**	**0.8272**	**1.0362**	**5.3700e-003**	**0.4013**	**3.1400e-003**	**0.4044**	**0.1083**	**2.9300e-003**	**0.1112**	**0.0000**	**506.4815**	**506.4815**	**0.0234**	**0.0000**	**507.0671**

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	0.1530	1.3982	1.6814	2.8000e-003		0.0638	0.0638		0.0600	0.0600	0.0000	241.1228	241.1228	0.0570	0.0000	242.5483
Total	**0.1530**	**1.3982**	**1.6814**	**2.8000e-003**		**0.0638**	**0.0638**		**0.0600**	**0.0600**	**0.0000**	**241.1228**	**241.1228**	**0.0570**	**0.0000**	**242.5483**

3.5 Building Construction - 2024

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0212	0.7597	0.2421	2.6800e-003	0.0734	9.7000e-004	0.0744	0.0212	9.3000e-004	0.0221	0.0000	262.9994	262.9994	0.0183	0.0000	263.4571
Worker	0.1179	0.0674	0.7941	2.6900e-003	0.3279	2.1700e-003	0.3301	0.0871	2.0000e-003	0.0891	0.0000	243.4821	243.4821	5.1100e-003	0.0000	243.6100
Total	**0.1392**	**0.8272**	**1.0362**	**5.3700e-003**	**0.4013**	**3.1400e-003**	**0.4044**	**0.1083**	**2.9300e-003**	**0.1112**	**0.0000**	**506.4815**	**506.4815**	**0.0234**	**0.0000**	**507.0671**

3.5 Building Construction - 2025

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	0.1518	1.3841	1.7854	2.9900e-003		0.0586	0.0586		0.0551	0.0551	0.0000	257.4306	257.4306	0.0605	0.0000	258.9434
Total	**0.1518**	**1.3841**	**1.7854**	**2.9900e-003**		**0.0586**	**0.0586**		**0.0551**	**0.0551**	**0.0000**	**257.4306**	**257.4306**	**0.0605**	**0.0000**	**258.9434**

3.5 Building Construction - 2025

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0219	0.7982	0.2531	2.8400e-003	0.0784	1.0100e-003	0.0794	0.0226	9.7000e-004	0.0236	0.0000	278.9553	278.9553	0.0192	0.0000	279.4361
Worker	0.1196	0.0657	0.7864	2.7600e-003	0.3500	2.2800e-003	0.3522	0.0930	2.1000e-003	0.0951	0.0000	249.3621	249.3621	4.9700e-003	0.0000	249.4863
Total	**0.1415**	**0.8639**	**1.0395**	**5.6000e-003**	**0.4283**	**3.2900e-003**	**0.4316**	**0.1156**	**3.0700e-003**	**0.1186**	**0.0000**	**528.3174**	**528.3174**	**0.0242**	**0.0000**	**528.9224**

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	0.1518	1.3841	1.7854	2.9900e-003		0.0586	0.0586		0.0551	0.0551	0.0000	257.4303	257.4303	0.0605	0.0000	258.9431
Total	**0.1518**	**1.3841**	**1.7854**	**2.9900e-003**		**0.0586**	**0.0586**		**0.0551**	**0.0551**	**0.0000**	**257.4303**	**257.4303**	**0.0605**	**0.0000**	**258.9431**

3.5 Building Construction - 2025

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0219	0.7982	0.2531	2.8400e-003	0.0784	1.0100e-003	0.0794	0.0226	9.7000e-004	0.0236	0.0000	278.9553	278.9553	0.0192	0.0000	279.4361
Worker	0.1196	0.0657	0.7864	2.7600e-003	0.3500	2.2800e-003	0.3522	0.0930	2.1000e-003	0.0951	0.0000	249.3621	249.3621	4.9700e-003	0.0000	249.4863
Total	**0.1415**	**0.8639**	**1.0395**	**5.6000e-003**	**0.4283**	**3.2900e-003**	**0.4316**	**0.1156**	**3.0700e-003**	**0.1186**	**0.0000**	**528.3174**	**528.3174**	**0.0242**	**0.0000**	**528.9224**

3.6 Paving - 2025

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					
Paving	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**					**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

3.6 Paving - 2025

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
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
Worker					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total					**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

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					
Paving	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**					**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

3.6 Paving - 2025

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
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
Worker					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total					**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

3.7 Architectural Coating - 2025

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	1.5667					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0179	0.1605	0.2704	4.3000e-004		7.7600e-003	7.7600e-003		7.2000e-003	7.2000e-003	0.0000	37.2446	37.2446	0.0109	0.0000	37.5175
Total	**1.5846**	**0.1605**	**0.2704**	**4.3000e-004**		**7.7600e-003**	**7.7600e-003**		**7.2000e-003**	**7.2000e-003**	**0.0000**	**37.2446**	**37.2446**	**0.0109**	**0.0000**	**37.5175**

3.7 Architectural Coating - 2025

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	4.2300e-003	2.3200e-003	0.0278	1.0000e-004	0.0231	8.0000e-005	0.0232	5.9200e-003	7.0000e-005	5.9900e-003	0.0000	8.8165	8.8165	1.8000e-004	0.0000	8.8209
Total	**4.2300e-003**	**2.3200e-003**	**0.0278**	**1.0000e-004**	**0.0231**	**8.0000e-005**	**0.0232**	**5.9200e-003**	**7.0000e-005**	**5.9900e-003**	**0.0000**	**8.8165**	**8.8165**	**1.8000e-004**	**0.0000**	**8.8209**

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	1.5667					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0179	0.1605	0.2704	4.3000e-004		7.7600e-003	7.7600e-003		7.2000e-003	7.2000e-003	0.0000	37.2446	37.2446	0.0109	0.0000	37.5174
Total	**1.5846**	**0.1605**	**0.2704**	**4.3000e-004**		**7.7600e-003**	**7.7600e-003**		**7.2000e-003**	**7.2000e-003**	**0.0000**	**37.2446**	**37.2446**	**0.0109**	**0.0000**	**37.5174**

3.7 Architectural Coating - 2025

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	4.2300e-003	2.3200e-003	0.0278	1.0000e-004	0.0231	8.0000e-005	0.0232	5.9200e-003	7.0000e-005	5.9900e-003	0.0000	8.8165	8.8165	1.8000e-004	0.0000	8.8209
Total	**4.2300e-003**	**2.3200e-003**	**0.0278**	**1.0000e-004**	**0.0231**	**8.0000e-005**	**0.0232**	**5.9200e-003**	**7.0000e-005**	**5.9900e-003**	**0.0000**	**8.8165**	**8.8165**	**1.8000e-004**	**0.0000**	**8.8209**

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	0.3761	1.5776	4.7511	0.0214	2.5567	0.0140	2.5707	0.6836	0.0130	0.6966	0.0000	1,974.9336	1,974.9336	0.0687	0.0000	1,976.6497
Unmitigated	0.3761	1.5776	4.7511	0.0214	2.5567	0.0140	2.5707	0.6836	0.0130	0.6966	0.0000	1,974.9336	1,974.9336	0.0687	0.0000	1,976.6497

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Apartments Low Rise	732.00	716.00	607.00	1,966,913	1,966,913
City Park	217.60	247.52	182.13	462,852	462,852
Single Family Housing	1,576.48	1,654.97	1439.54	4,332,857	4,332,857
Total	2,526.08	2,618.49	2,228.67	6,762,622	6,762,622

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 Low Rise	10.80	7.30	7.50	32.90	18.00	49.10	86	11	3
City Park	9.50	7.30	7.30	33.00	48.00	19.00	66	28	6
Single Family Housing	10.80	7.30	7.50	32.90	18.00	49.10	86	11	3

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
Apartments Low Rise	0.611155	0.038739	0.187677	0.096955	0.013383	0.005563	0.020646	0.018593	0.001209	0.001094	0.003654	0.000418	0.000914
City Park	0.611155	0.038739	0.187677	0.096955	0.013383	0.005563	0.020646	0.018593	0.001209	0.001094	0.003654	0.000418	0.000914
Single Family Housing	0.611155	0.038739	0.187677	0.096955	0.013383	0.005563	0.020646	0.018593	0.001209	0.001094	0.003654	0.000418	0.000914

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

Kilowatt Hours of Renewable Electricity Generated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Electricity Mitigated						0.0000	0.0000		0.0000	0.0000	0.0000	89.4350	89.4350	3.7100e-003	7.9000e-004	89.7644
Electricity Unmitigated						0.0000	0.0000		0.0000	0.0000	0.0000	268.2082	268.2082	0.0111	2.3800e-003	269.1962
NaturalGas Mitigated	0.0301	0.2574	0.1095	1.6400e-003		0.0208	0.0208		0.0208	0.0208	0.0000	298.0571	298.0571	5.7100e-003	5.4600e-003	299.8283
NaturalGas Unmitigated	0.0301	0.2574	0.1095	1.6400e-003		0.0208	0.0208		0.0208	0.0208	0.0000	298.0571	298.0571	5.7100e-003	5.4600e-003	299.8283

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 Low Rise	1.27596e+006	6.8800e-003	0.0588	0.0250	3.8000e-004		4.7500e-003	4.7500e-003		4.7500e-003	4.7500e-003	0.0000	68.0900	68.0900	1.3100e-003	1.2500e-003	68.4947
City Park	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
Single Family Housing	4.30942e+006	0.0232	0.1986	0.0845	1.2700e-003		0.0161	0.0161		0.0161	0.0161	0.0000	229.9671	229.9671	4.4100e-003	4.2200e-003	231.3336
Total		**0.0301**	**0.2574**	**0.1095**	**1.6500e-003**		**0.0208**	**0.0208**		**0.0208**	**0.0208**	**0.0000**	**298.0571**	**298.0571**	**5.7200e-003**	**5.4700e-003**	**299.8283**

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 Low Rise	1.27596e+006	6.8800e-003	0.0588	0.0250	3.8000e-004		4.7500e-003	4.7500e-003		4.7500e-003	4.7500e-003	0.0000	68.0900	68.0900	1.3100e-003	1.2500e-003	68.4947
City Park	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
Single Family Housing	4.30942e+006	0.0232	0.1986	0.0845	1.2700e-003		0.0161	0.0161		0.0161	0.0161	0.0000	229.9671	229.9671	4.4100e-003	4.2200e-003	231.3336
Total		**0.0301**	**0.2574**	**0.1095**	**1.6500e-003**		**0.0208**	**0.0208**		**0.0208**	**0.0208**	**0.0000**	**298.0571**	**298.0571**	**5.7200e-003**	**5.4700e-003**	**299.8283**

5.3 Energy by Land Use - Electricity

Unmitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
Apartments Low Rise	414774	63.5362	2.6300e-003	5.6000e-004	63.7702
City Park	0	0.0000	0.0000	0.0000	0.0000
Single Family Housing	1.33613e+006	204.6720	8.4800e-003	1.8200e-003	205.4260
Total		**268.2082**	**0.0111**	**2.3800e-003**	**269.1962**

Mitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
Apartments Low Rise	25754.3	3.9451	1.6000e-004	4.0000e-005	3.9597
City Park	-389020	-59.5911	-0.0025	-0.0005	-59.8106
Single Family Housing	947111	145.0809	6.0100e-003	1.2900e-003	145.6154
Total		**89.4350**	**3.7000e-003**	**8.0000e-004**	**89.7644**

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

No Hearths Installed

	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	1.7639	0.0228	1.9774	1.0000e-004		0.0110	0.0110		0.0110	0.0110	0.0000	3.2386	3.2386	3.0900e-003	0.0000	3.3157
Unmitigated	1.7639	0.0228	1.9774	1.0000e-004		0.0110	0.0110		0.0110	0.0110	0.0000	3.2386	3.2386	3.0900e-003	0.0000	3.3157

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	0.1357					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	1.5690					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Hearth	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	0.0592	0.0228	1.9774	1.0000e-004		0.0110	0.0110		0.0110	0.0110	0.0000	3.2386	3.2386	3.0900e-003	0.0000	3.3157
Total	**1.7639**	**0.0228**	**1.9774**	**1.0000e-004**		**0.0110**	**0.0110**		**0.0110**	**0.0110**	**0.0000**	**3.2386**	**3.2386**	**3.0900e-003**	**0.0000**	**3.3157**

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	0.1357					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	1.5690					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Hearth	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	0.0592	0.0228	1.9774	1.0000e-004		0.0110	0.0110		0.0110	0.0110	0.0000	3.2386	3.2386	3.0900e-003	0.0000	3.3157
Total	**1.7639**	**0.0228**	**1.9774**	**1.0000e-004**		**0.0110**	**0.0110**		**0.0110**	**0.0110**	**0.0000**	**3.2386**	**3.2386**	**3.0900e-003**	**0.0000**	**3.3157**

7.0 Water Detail

7.1 Mitigation Measures Water

Apply Water Conservation Strategy

Use Reclaimed Water

	Total CO2	CH4	N2O	CO2e
Category	MT/yr			
Mitigated	72.9000	0.4563	0.0113	87.6802
Unmitigated	80.9434	0.5700	0.0141	99.3812

7.2 Water by Land Use

Unmitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
Apartments Low Rise	6.5154 / 4.10754	22.0531	0.2131	5.1900e-003	28.9282
City Park	0 / 12.9633	22.0618	9.1000e-004	2.0000e-004	22.1430
Single Family Housing	10.8807 / 6.85959	36.8286	0.3559	8.6700e-003	48.3100
Total		**80.9434**	**0.5700**	**0.0141**	**99.3812**

7.2 Water by Land Use

Mitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
Apartments Low Rise	5.21232 / 4.10754	19.0405	0.1706	4.1600e-003	24.5458
City Park	0 / 12.9633	22.0618	9.1000e-004	2.0000e-004	22.1430
Single Family Housing	8.70458 / 6.85959	31.7977	0.2848	6.9600e-003	40.9914
Total		**72.9000**	**0.4563**	**0.0113**	**87.6802**

8.0 Waste Detail

8.1 Mitigation Measures Waste

Category/Year

	Total CO2	CH4	N2O	CO2e
	MT/yr			
Mitigated	35.0078	2.0689	0.0000	86.7304
Unmitigated	35.0078	2.0689	0.0000	86.7304

8.2 Waste by Land Use

Unmitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
Apartments Low Rise	92.11	18.6975	1.1050	0.0000	46.3223
City Park	0.71	0.1441	8.5200e-003	0.0000	0.3571
Single Family Housing	79.64	16.1662	0.9554	0.0000	40.0511
Total		**35.0078**	**2.0689**	**0.0000**	**86.7304**

8.2 Waste by Land Use

Mitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
Apartments Low Rise	92.11	18.6975	1.1050	0.0000	46.3223
City Park	0.71	0.1441	8.5200e-003	0.0000	0.3571
Single Family Housing	79.64	16.1662	0.9554	0.0000	40.0511
Total		**35.0078**	**2.0689**	**0.0000**	**86.7304**

9.0 Operational Offroad

Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type

10.0 Stationary Equipment

Fire Pumps and Emergency Generators

Equipment Type	Number	Hours/Day	Hours/Year	Horse Power	Load Factor	Fuel Type

Boilers

Equipment Type	Number	Heat Input/Day	Heat Input/Year	Boiler Rating	Fuel Type

User Defined Equipment

Equipment Type	Number

11.0 Vegetation

Appendix D

Geological Investigation

GEOLABS-WESTLAKE VILLAGE
Foundation and Soils Engineering, Geology
31119 Via Colinas, Suite 502 • Westlake Village, CA 91362
Voice: (818) 889-2562 (805) 495-2197
Fax: (818) 889-2995 (805) 379-2603
a dba of
R & R Services
Corporation

February 4, 2004
W.O. 8925

Suncal Companies
21900 Burbank Boulevard, Suite 114
Woodland Hills, California 91367

Attention: Mr. Michael Walline

SUBJECT: Due Diligence Investigation of Borchard Property (bounded on North by Doris Ave, East by Ventura Road, South by Teal Club Road, West by Patterson Road), City of Oxnard, California

Mr. Walline:

In accordance with your request, our firm has undertaken a preliminary study of the geotechnical conditions at the subject property. Our purpose was to evaluate the geotechnical feasibility of developing the site for residential use. We have performed a preliminary assessment of the distribution and engineering characteristics of the earth materials that occur at the site so that we might assess their impact upon the proposed development of the property.

The scope of work for this project included the following tasks:

- mapping of the site and its immediate vicinity,
- logging and sampling of two exploratory borings excavated with a truck-mounted rotary mud auger rig;
- logging of two Cone Penetrometer Test (CPT) soundings,
- selected laboratory testing of the retrieved samples,
- review of previous work which was judged both pertinent to our purpose and readily available to our office,
- soil engineering analysis of the assembled data,
- preparation of this report.

Field data and the approximate locations of exploratory excavations are shown on the enclosed Plot Map (Plate 2). Descriptions of the materials encountered in the exploratory

excavations are provided on the enclosed logs (Plates B.1 to B.2, and CPT1 to CPT2). Pertinent laboratory test results are also provided herein. Our findings are presented in the following sections, followed by a discussion of these findings and geotechnical recommendations.

SITE DESCRIPTION

The 118-acre site is an L-shaped property bounded on the north by Doris Avenue, east by Ventura Road, south by Teal Club Road, west by North Patterson Road. The site is accessed by dirt roads on the perimeter of the property. Open drainage ditches skirt these access roads. Residential and agricultural buildings exist near the southwest corner of Ventura Road and Doris Avenue.

The site is generally level, and is currently used for growing celery. Topographic relief in the region is to the southwest. Agricultural property in this area of Oxnard typically has rows of drainage tiles in the subgrade to facilitate drainage. These tiles likely transfer the irrigation water laterally offsite. The tiles may have open ends that allow offsite water to access the site through the drains.

EARTH MATERIALS

The earth materials encountered at the site consist of alluvial fan deposits to the maximum depths explored. The upper two to three feet have been disturbed by agricultural operations. These soils are typically sandy silt and silty sand in a loose condition. Below this upper zone are silt mixtures of clayey silt and silty clay transitioning to predominantly clay by the depth of seven feet. Below seven feet the clay has thin layers of silty clay/clayey silt. These fine-grained materials are medium stiff to very stiff. Silty sand to clean sand was encountered at a depth of 30 feet in CPT1 and 20 feet in CPT2. This sand is approximately 20 feet thick in these soundings and very dense. Below the sand is a thin clay layer approximately two feet thick which is very stiff to hard, underlain by more very dense silty sand/sandy silt.

GROUNDWATER

Groundwater was encountered in our explorations at a depth of approximately eight to ten feet. High historical groundwater is noted at being this same depth range (CGS, SHZR 052). Groundwater and wet soils may impact grading and utility construction at the site.

FAULTING AND SEISMICITY

The subject site contains no known active or potentially active faults, nor is it within an Alquist-Priolo Fault Rupture Hazard Zone. Therefore, the potential for ground rupture is considered very low. However, the property is situated within the seismically active Southern California region and ground shaking is likely to occur due to earthquakes caused by movement along nearby faults.

One method of seismic design is to utilize the Static Force procedure (structures less than five stories) presented in the Uniform Building Code (UBC), which can be used to estimate base shear/on-site acceleration based upon site location, occupancy classifications, and the planned structural system. For the 1997 UBC this site has a Seismic Zone Factor, Z of 0.4 (Tbl 16-I), the Soil Profile Type is considered S_D (Tbl 16-J. The local controlling fault is considered the Oak Ridge (Onshore) Fault and the Seismic Source Type is considered B (Tbl 16-U). The Near Source Factors are estimated as N_a of 1.3 and N_v of 1.6 (Tbl 16-S & 16-T).

Another method of seismic design is to assess the potential on-site ground acceleration based upon a site's proximity to specific, known faults. This relies upon prediction of a maximum earthquake for each fault considered, relationships that characterize the diminution of ground response with distance from the causative event, and relationships that assess impact of site-characteristics upon ground response. One commonly used method of estimating possible on-site accelerations is the probabilistic seismic hazard analysis method. Probabilistic information is

discussed below. Analyses summaries are attached in the Seismicity Appendix, Appendix A.

Probabilistic Seismic Hazard Analyses

We have employed the "Simple Prescribed Parameter Value" Method (SPPV) for estimating the peak ground acceleration (PGA) for a 10 percent exceedance probability for an exposure period of 50 years (UBC Design-Basis Earthquake, 475 year return period). As discussed in CGS Seismic Hazard Evaluation Reports, the attenuation relationships of Boore et.al. (1997), Campbell (1997), Sadigh et.al. (1997), and Youngs et.al. (1997) were utilized to generate PGA maps. We have reproduced Figures from Seismic Hazard Evaluation Report 052 (for the Oxnard 7.5 Minute Quadrangles) in Appendix A to illustrate the project location with respect to SPPV PGA values for alluvium conditions. As seen, a peak ground acceleration of 0.62g is estimated for a UBC design-level event. A design earthquake magnitude of M_w=6.9 is the predominant earthquake, per Figure 3.4 of Seismic Hazard Zone Report 052. Figure 3.5 of SHZR 052 indicates the PGA magnitude-weighted to an M_w=7.5 earthquake is estimated as 0.48g (this is referred to as "liquefaction opportunity").

Seismic Discussion

The methodology in the Uniform Building Code has been to protect and preserve life and limb. Building designs using previous UBC codes (pre-1997) has apparently been successful in that regard. With the acceptance of the 1997 UBC, the seismic design of structures has generally become more conservative. On that basis, we recommend minimum structural design be in compliance with the seismic design provisions of the UBC. Though still not performance based, this most recent Building Code will enhance performance over designs based on previous codes.

Design per the UBC (and hence adoption of the philosophy that life and limb need be

protected) is commensurate with the local building ordinance. Being that higher standards of design (i.e. that intend to minimize property damage in the case of a much less likely event) have not been adopted by the governing agency (which is responsible for setting such standards), use of a higher acceleration (than provided by the UBC) is discretionary.

LABORATORY TESTING

Undisturbed and bulk samples of soil and rock materials encountered at the site were collected during the course of our fieldwork. Selected laboratory tests completed on the retrieved samples are described below:

Moisture-Density

The field moisture content and dry unit weight were determined for each undisturbed sample. Dry unit weight is expressed in pounds per cubic foot and the moisture content represents a percentage of the dry unit weight. This test data is presented in the attached boring logs.

Consolidation Test

Settlement predictions of the soil's behavior under load are made on the basis of consolidation tests. A one-inch high sample is loaded in a geometric progression and the resulting deformation is recorded at selected time intervals. Porous stones are placed in contact with the sample (top and bottom) to permit addition and release of pore fluid. The sample is inundated at a selected load during the progression. Selected samples had data recorded at timed intervals for specific loads to obtain data for time-rate evaluations. Results are plotted on the enclosed Consolidation-Pressure Curves (Plates C1.025 to C2.10).

Particle Size Analysis

The distribution of various particle sizes in selected representative samples was determined

using both mechanical sieves and hydrometer tests. The percentage and distribution of particles larger than a #200 sieve (0.075 mm) are determined using mechanical processes. Particle distributions for fine-grained soils are determined using hydrometer methods. The particle distribution is presented as the relative percentages of sand, silt and clay particles in each sample tested. The results are presented on the attached boring logs and illustrated on Plate PS.1.

HYDROCONSOLIDATION POTENTIAL

Hydroconsolidation is a condition where dry or moist soils undergo settlement upon being wetted. In many cases no additional surcharge load is necessary to trigger the hydroconsolidation.

The subsurface materials at the site are wet due to the shallow groundwater. None of the samples tested experienced significant consolidation upon inundation. Based on our data, we consider the alluvial materials to have a low potential for hydroconsolidation.

LIQUEFACTION POTENTIAL

Liquefaction is a condition where the soil undergoes continued **deformation** at a constant low residual stress due to the build-up of high porewater pressures. The possibility of liquefaction occurring at a given site is dependent upon the occurrence of a significant earthquake in the vicinity; sufficient groundwater to cause high pore pressures; and on the grain size, relative density, and confining pressures of the soil at the site.

The site is located within a State designated Liquefaction Hazard Study Zone. Therefore, as part of investigation we have performed this preliminary analyses of the liquefaction potential on the site. We have performed 2 CPT soundings and 1 deep boring to obtain subsurface data. Based upon our subsurface information, groundwater is present on the site within the upper fifty feet of the soil profile. Only thin zones of coarse-grained soils were encountered in a medium-dense state.

Therefore, only thin zones of material have a potential to liquefy. This is illustrated in our exhibits in Appendix B.

To address the possible impacts of liquefaction, the practice of geotechnical engineering currently has available methods of approximating the potential liquefaction-induced settlement, lateral spreading, and the possibility of surface manifestations.

Liquefaction-Induced Settlement Potential

The potential for liquefaction-induced settlement has been evaluated using the procedures proposed by Tokimatsu and Seed (1987). Our analysis indicates the potential settlement due to a design-level earthquake would be on the order of 1/4 inch or less. Recommended design settlement values are discussed subsequent to the Foundation Systems section of this report.

Liquefaction-Induced Surface Manifestations and Lateral Spreading

The zones of liquefiable material are thin and at sufficient depths that surface manifestations from liquefaction of these zones are not anticipated to adversely impact planned structures. These liquefiable materials also have sufficient relative density that lateral spreading is considered unlikely during a Design Level earthquake.

DISCUSSION AND RECOMMENDATIONS

Data from our field exploration, reference reports, laboratory testing, and engineering analyses, coupled with the inferred conditions about our exploratory excavations, are the basis for the following discussion. Preliminary geotechnical recommendations, based upon the presently available data, are presented for your consideration. These recommendations are based on limited data for due diligence purposes. Supplemental subsurface investigation will be necessary during development of the tentative tract map to more thoroughly evaluate the materials within the site.

The proposed development of the property as a residential development is considered feasible from a geotechnical perspective. The near surface alluvial soils appear loose to medium dense and are disturbed. These materials are not considered suitable to support structures or engineered fill. We recommend that areas with disturbed materials and areas to support structures be improved by over excavating the unsuitable materials and replacing them with engineered fill. Based on our subsurface information, this over excavation should remove all existing artificial fill and at least the upper three to four feet of the existing soil profile. Shallow groundwater conditions may require stabilization of the removal bottoms prior to constructing fills. Dewatering may be necessary. Additional investigation should be performed to better define the geotechnical recommendations for grading.

Engineered fill - Compaction Standard

The on-site materials are suitable for use as engineered fill. All roots, organic matter, and other deleterious material should be hand-picked from the soils prior to their use as engineered fill. These materials should be moistened and/or air-dried to near optimum moisture content and compacted to at least 90% of their maximum density as determined using the Modified Proctor Test (ASTM D 1557-00).

Grading - Engineered Fills

The following preliminary recommendations pertain to the placement of, and preparation for, engineered fills. These recommendations and values are preliminary for estimation purposes only. They are recommendations that are typical for development within this area based on our experiences with similar sites in the local area. Supplemental investigation is necessary to develop design recommendations.;

1. The on-site soils are suitable for use as structural fill. Any import materials that are to be

used as structural fill should be approved by this office prior to placement.

2. Shrinkage refers to the lesser volume of fill that results from a given volume of excavation. The shrinkage of the alluvial materials is anticipated to be between 15% and 20%.

3. Subsidence includes the general lowering of the ground due to in-place compaction by construction equipment. Subsidence is anticipated to range from 3.0 to 4.0 tenths of a foot in the alluvial areas.

4. All vegetation, trash debris or other deleterious material should be stripped from the area to be graded. Soils bearing sparse grasses may be thoroughly mixed with at least ten parts clean soil and incorporated into the engineered fill. Other materials should be wasted from the site.

5. Compressible soils that lie within the areas to receive engineered fill should be removed to relatively incompressible material, moisture conditioned, and replaced as properly compacted fill. Portions of the compressible materials that are sufficiently thin may be scarified, watered or air dried to approximately the material's optimum moisture content, and compacted in-place. A combination of removal and recompaction in-place may be used, providing the recommended compaction is obtained throughout the recommended depth interval. Based upon the materials exposed in our exploratory excavations, we anticipate the removals to extend to depths of three to four feet. Final removal bottoms must be field verified by a representative of the geotechnical consultant.

Wet conditions are likely in the removal bottoms. In some cases disking and drying the materials in place or mixing with dried materials may be adequate to sufficiently dry back the materials at the removal bottom in order to support the planned fills. In some cases, other methods such as lime-treating the bottoms or placing rock with geo-fabric into the removal bottoms may be necessary for stabilization.

Drain tiles used during the farming operation may be present within the site. These drains should be located and removed or destroyed in place under the observation of the geotechnical consultant.

6. Exposed surfaces should be scarified, moistened or air dried as appropriate, and compacted to the appropriate percentage of the material's maximum dry density prior to placement of fill (see COMPACTION STANDARD section).

7. We recommend a uniform blanket of compacted fill be created for support of structural footings in the alluvial area. This would be performed with the deep removals, if that option were chosen. If other ground improvement methods are utilized, then the modified ground should be capped with a fill cap that extends at least three feet below the base of proposed footings and five feet beyond their perimeter. Special consideration should be paid to locations where property lines or existing improvements (buildings, retaining walls, fences, power poles, etc.) interfere with the creation of the desired fill cap. Such conditions should be brought to the attention of this office so that the specific site conditions may be evaluated and recommendations provided. Depending upon the circumstances, special excavating techniques may be employed (i.e. slot cutting), alternative foundation designs may be used (i.e. grade beams supported by pad footings or piles), or the compaction standard may be increased.

8. Areas that are to be paved should be scarified to at least 12 inches below the existing or rough grade (whichever is deeper), brought to near the material's optimum moisture content, and compacted to the appropriate relative compaction (see COMPACTION STANDARD section).

9. Fill materials should be placed in thin lifts, watered to near the material's optimum moisture content, and compacted to the appropriate relative compaction prior to placing the next lift.

10. The compaction standard applies to the face of fill slopes. This may be achieved by overfilling the constructed slope and trimming to a compacted finished surface, rolling the slope face with a sheepsfoot, or any method that achieves the desired product.

11. All grading should comply with the grading specifications and requirements of the local governing agency.

Dewatering

The groundwater in our explorations rose to near the ground surface. The clayey nature of the soils will reduce the effectiveness of a well-point dewatering system. Sumps and pumps constructed during grading may be the most effective method of dewatering. Stabilization of the removal bottoms may be necessary before constructing fills.

Grading - Temporary Excavations

Temporary excavations (such as backcuts for retaining wall excavations) may be considered stable if cut vertical, providing they are restricted to a maximum of 5 feet in height, are provided with permanent support as soon as possible, and they are protected from erosion and saturation. Portions of temporary excavations in excess of 5 feet high should be laid down to 1:1 unless specific alternative treatments are evaluated and found acceptable.

Foundation Systems

Foundation systems may consist of either conventional shallow foundations with slabs-on-grade, or post-tensioned foundations. The following sections provide recommendations for both systems. Typical allowable bearing capacity for conventional foundations is on the order of 1500 pounds per square foot. Foundation design criteria are based, in part, upon the expansive properties of the materials anticipated to be present near the finished pad grade. Our preliminary information

indicates these materials are in the very low to low expansion index range. Laboratory testing to verify the expansive properties of the near-pad-grade materials should be performed at the completion of rough grading.

Post-Tension Foundations

Different methods are used to account for the potential effects of expansive soils. UBC Standard 18-III, 2001 outlines one method, the Post-Tensioned Institute (PTI) Method that relies upon increased stiffening of post-tension slabs to resist significant soil stresses due to variations caused by climatic conditions. Another method of mitigation, The California Slab Method (Spanability Method) consists of utilizing deepened footings and pre-swelling of the foundation soils. The former attempts to minimize slab deflection in the face of soil movement; the latter attempts to retard soil movement. Recommendations for both Post-Tension design methods will be provided upon further investigation.

Typically, allowable bearing capacity for post-tensioned foundations may be taken as 1000 PSF at pad grade and 1500 PSF at twelve inches embedment and with a minimum width of twelve inches. This may be increased by one-third for short duration loading, such as by wind or seismic forces. Care should be exercised to see that all spoils from the slab subgrade are removed or property compacted.

Corrosion Potential

Soil samples from this area of Oxnard typically indicate a potential for corrosion. This is primarily believed to be a result of the past use of agricultural chemicals and fertilizers. Soils typically contain low to moderate levels of soluble sulfates and low resistivity. During the investigation for the tentative tract map, supplemental testing for corrosion potential should be

performed. Near the completion of grading additional testing should be performed to verify the corrosion potential of the soils.

TABLE 19-A-4 REQUIREMENTS FOR CONCRETE EXPOSED TO SULFATE-CONTAINING SOLUTIONS

SULFATE EXPO-SURE	WATER-SOLUBLE SULFATE (SO_4) IN SOIL, Percentage by Weight	SULFATE (SO_4) IN WATER, ppm	CEMENT TYPE	Maximum Water-Cementitious Materials Ratio, by Weight, Normal-Weight Aggregate Concrete[1]	Minimum f'c Normal Weight and Light-weight Aggregate Concrete, psi[1]
					x 0.00689 for MPa
Negligible	0.00 - 0.10	0 - 150	--	--	--
Moderate[2]	0.10 - 0.20	150 - 1,500	II, IP(MS), IS(MS)	0.50	4,000
Severe	0.20 - 2.00	1,500 - 10,000	V	0.45	4,500
Very severe	Over 2.00	Over 10,000	V plus pozzolan[3]	0.45	4,500

1 A lower water-cementitious materials ratio or higher strength may be required for low permeability or for protection against corrosion of embedded items or freezing and thawing (Table 19-A-2).
2 Seawater
3 Pozzolan that has been determined by test or service record to improve sulfate resistance when used in concrete containing Type V cement.

Drainage

Positive drainage should be established to carry pad waters away from structures and foundations, and to prevent uncontrolled or sheet flow over manufactured slopes. We recommend as steep a gradient as practical be established around the structures, to the street or other non-erosive drainage devices. Fine-grade fills placed to create pad drainage should be compacted in order to retard infiltration of surface water.

Preserving proper surface drainage is also important. Planters, decorative walls, plants, trees or accumulations of organic matter should not be allowed to retard surface drainage. Area drains and roof gutters (if present) should be kept free of obstruction. Roof gutters (if present) and/or condensation lines from air conditioners should outlet to a non-erodible device, i.e., walkways,

patios, driveways, drain lines or splash blocks that direct the water away from the structure. Swales and/or area drains should outlet to the street or acceptable non-erodible device. Positive drainage along the backs of retaining walls should be maintained. Any other measures that will facilitate positive surface drainage should be employed.

Utility Trench Backfill

Backfill for utility trench excavations should be compacted to at least 90% relative compaction. Where installed in sloping areas, the backfill should be properly keyed and benched.

CONSTRUCTION MONITORING

Finalized grading plans and foundation plans should be submitted to this office. The project Civil Engineer should incorporate the removal recommendations into the grading plans. Additional recommendations may be provided at that time of our review, if such are considered warranted.

Placement of all fill and backfill should be monitored by representatives of this office. This includes our observation of prepared bottoms prior to filling. All excavated slopes, both temporary and permanent, should be observed by a representative of this office. Supplemental recommendations may prove warranted based upon the materials exposed in the actual excavations.

Foundation excavations should be observed by representatives of this office to see if the recommended penetration of proper supporting strata has been achieved. Such observations should be made prior to placing concrete, steel or forms. This office should be notified at least 24 hours prior to placing concrete.

CLOSURE

This geotechnical report has been prepared in accordance with generally accepted engineering practices at this time and location. No other warranties, either express or implied, are made as to the

professional advice provided under the terms of our agreement and included in this report.

Thank you for this opportunity to be of service. Please do not hesitate to call if you have any questions regarding this report.

Respectfully submitted,
GEOLABS-WESTLAKE VILLAGE

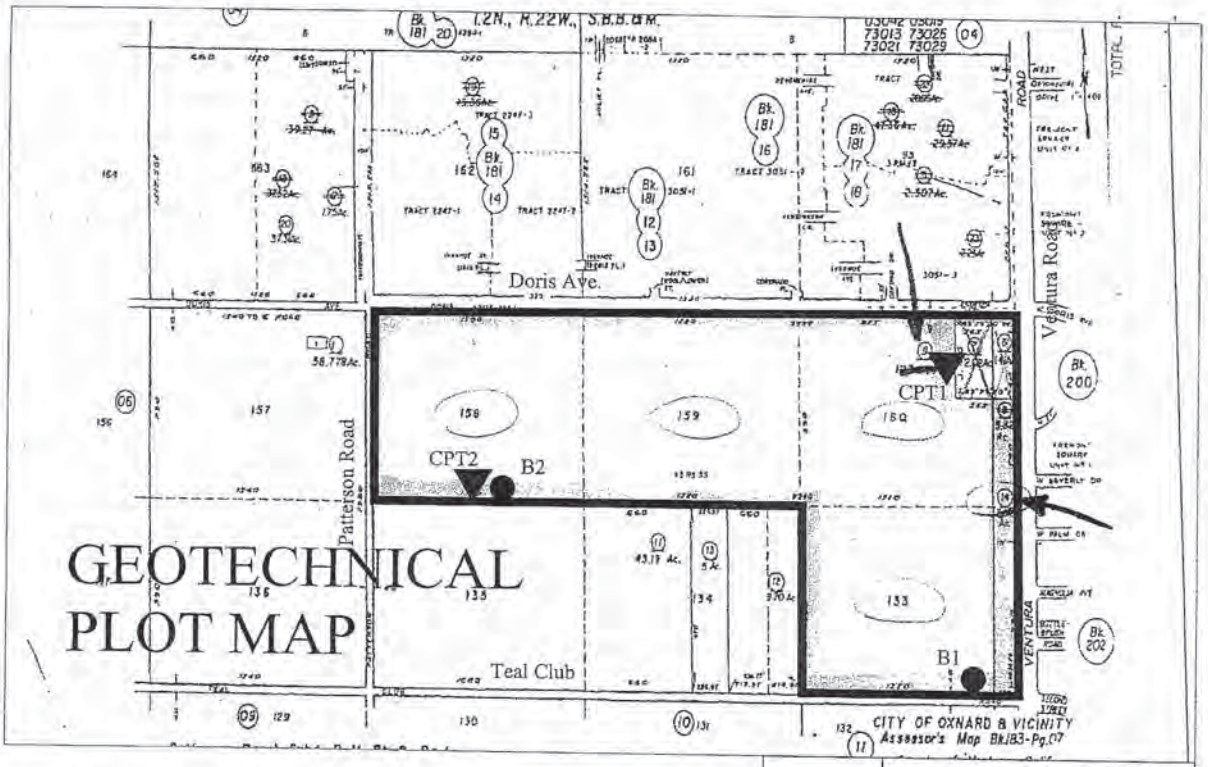
Lawrence K. Stark
R.C.E. 46240

Ronald Z. Shmerling
C.E.G. 1047
R.C.E. 35444

Enclosures:

Location Map	Plate 1
Plot Map	Plate 2
Boring Logs	Plates B1 to B2
CPT Sounding Logs	Plates CPT1 to CPT2
Consolidation Test Results	Plates C1.025 to C2.10
Particle Size Analyses	Plate PS.1
Seismicity Analyses	Appendix A
Seismic Settlement Analyses	Appendix B

XC: (6) Addressee



GEOTECHNICAL PLOT MAP

Geolabs – Westlake Village
GEOLOGY AND SOIL ENGINEERING

DATE 1/04 BY
SCALE NTS W.O. 8925

▼ Indicates Approx. CPT sounding location

● Indicates Approx. Boring location.

PLATE 2

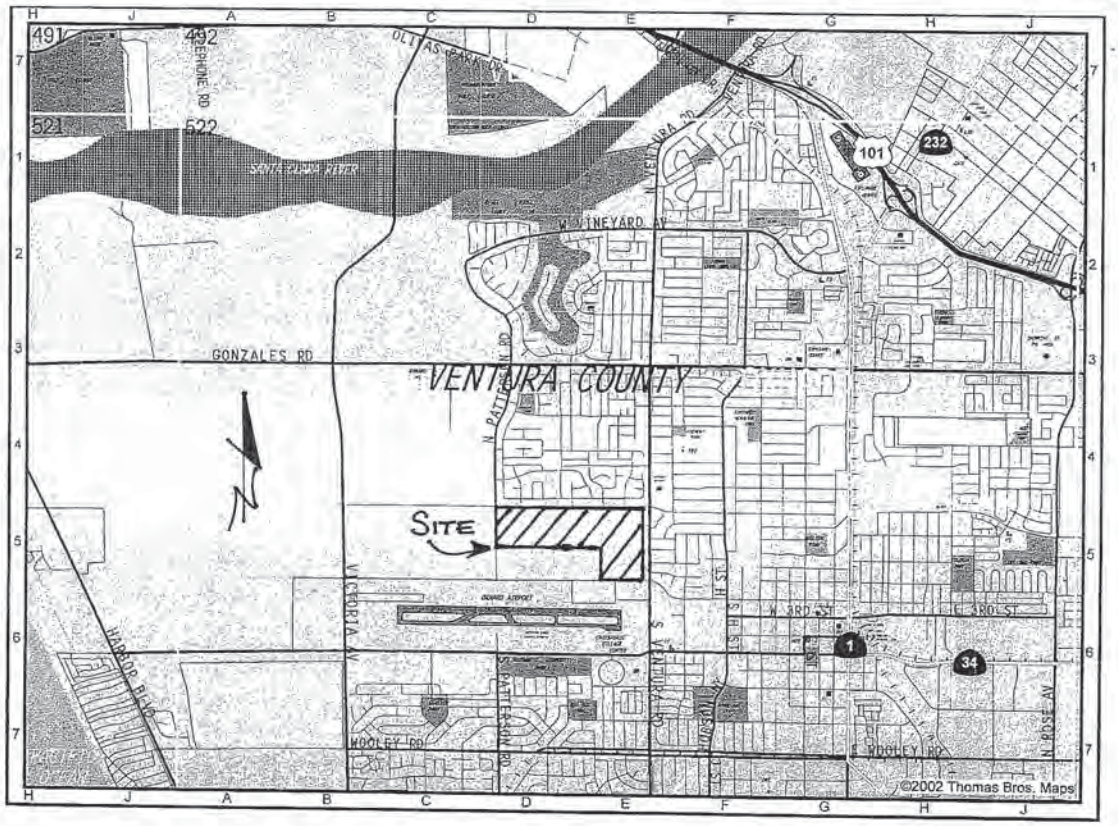


PLATE 1

SURFACE DATA

LOG OF BORING B1

CLIENT: Suncal	PROJECT: Borchard Property	W.O.: 8925
LOCATION: Oxnard	ELEVATION:	DATE: 1/19/04
RIG TYPE:	HAMMER WEIGHTS: 140 lbs.	DROP: 30"

	N	U	B	M	DD	DESCRIPTION	ATTITUDES
40							
45	9/16/30		S			Dark olive gray fine grained sandy clayey SILT, hard, saturated.	
50	50-3"	C		19.6	110.5	Dark olive gray silty medium to coarse grained SAND, very dense, saturated.	
55						Total Depth - 50' Groundwater at 10'	
60							
65							
70							
75							
80							
85							

ADDITIONAL COMMENTS: C = California Split Spoon Sampler
S = Standard Penetration Test
Blows per 6"

Geolabs-Westlake Village

PLATE B1.2

SURFACE DATA

LOG OF BORING B1

CLIENT: Suncal	PROJECT: Borchard Property	W.O.: 8925
LOCATION: Oxnard	ELEVATION:	DATE: 1/19/04
RIG TYPE:	HAMMER WEIGHTS: 140 lbs.	DROP: 30"

	N	U	B	M	DD	DESCRIPTION	ATTITUDES
0						Alluvium:	
	3/4/5	C		29.5	91.4	@2.5' - Brown clayey SILT, occasional roots, medium stiff, wet.	
5	3/3/4	C		32.8	91.5	Olive brown silty CLAY, medium stiff, wet.	
10	3/4/5		S			Contact with yellow brown silty fine to medium grained SAND, loose, saturated.	
	5/6/7	C		27.2	94.6	@12.5' - Yellow olive brown fine grained sandy SILT over dark brown fine grained sandy SILT, medium stiff, saturated.	
15	1/1/3		S			Olive gray fine grained sandy clayey SILT, soft, saturated.	
20	5/6/9	C		23.5	104.0	Blue gray to dark olive gray silty CLAY, medium stiff, saturated.	
25	3/3/4		S			Blue gray to dark olive gray silty CLAY, medium stiff, saturated.	
30	10/15/23	C		27.7	96.8	@29.5' - Grades to blue gray to dark olive gray fine grained sandy SILT, hard, saturated.	
35	15/30/35		S			Dark olive gray silty medium to coarse grained SAND, very dense, saturated.	
40	55-6"	C		19.2	111.7	Olive gray gravelly medium to coarse grained SAND, very dense, saturated.	
45							

ADDITIONAL COMMENTS: C = California Split Spoon Sampler
S = Standard Penetration Test
Blows per 6"

Geolabs-Westlake Village

PLATE B1.1

SURFACE DATA

LOG OF BORING B2

CLIENT: Suncal	PROJECT: Borchard Property	W.O.: 8925
LOCATION: Oxnard	ELEVATION:	DATE: 1/19/04
RIG TYPE:	HAMMER WEIGHTS: 140 lbs	DROP: 30"

	N	U	B	M	DD	DESCRIPTION	ATTITUDES
40							
45	18/17/6		S			Olive gray slightly silty medium to coarse grianed SAND, medium dense, saturated.	
50	49/50-4"	C		16.0	115.4	Olive gray slightly silty medium to coarse grained SAND, very dense, saturated.	
55						Total Depth - 50' Groundwater at 10-15'	
60							
65							
70							
75							
80							
85							

ADDITIONAL COMMENTS: C = California Split Spoon Sampler
S = Standard Penetration Test
Blows per 6"

SURFACE DATA

LOG OF BORING B2

CLIENT: Suncal	PROJECT: Borchard Property	W.O.: 8925
LOCATION: Oxnard	ELEVATION:	DATE: 1/19/04
RIG TYPE:	HAMMER WEIGHTS: 140 bs.	DROP: 30"

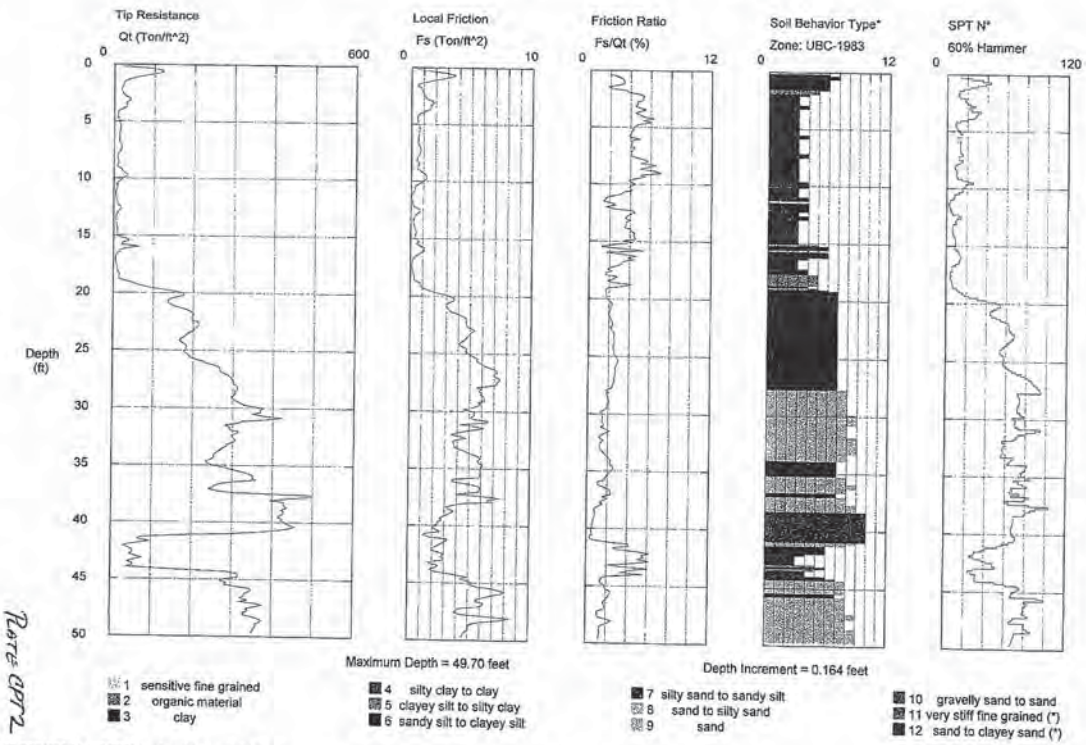
	N	U	B	M	DD	DESCRIPTION	ATTITUDES
0						Alluvium:	
	3/4/5		S			@2.5' - Yellow brown clayey SILT, soft to medium stiff, moist, white specks.	
5	5/5/6	C		22.7	100.4	Yellow light brown fine grained sandy SILT, soft to medium stiff, moist.	
	2/3/4		S			@7.5' - Yellow light brown fine grained sandy SILT, soft to medium stiff, moist, mottled orange.	
10	5/5/4	C		35.0	90.9	Olive brown fine grained sandy SILT, soft to medium stiff, moist, nodules of charcoal (black, angular).	
15	2/33		S			Light olive brown medium grained sandy CLAY, soft, saturated, thin orange stringers, oxidized, loose.	
20	5/6/12	C		20.9	104.2	Olive brown clayey fine grained sandy SILT, stiff, saturated.	
25	18/18/19		S			Blue gray clayey medium to coarse grained SAND over yellow brown medium to coarse grained SAND, dense, saturated.	
30	35/50-5"	C		20.0	108.4	Yellow brown slightly silty medium to coarse grained SAND, very dense, saturated.	
35	28/30/33		S			Yellow brown slightly silty medium to coarse grained SAND with gravelly sand in tip, very dense, saturated.	
40	45/50-4"	C		19.6	108.9	Yellow brown slightly silty medium to coarse grained SAND with gravel, very dense, saturated.	
45							

ADDITIONAL COMMENTS: C = California Split Spoon Sampler
S = Standard Penetration Test
Blows per 6"

Geolabs Westlake Village

Operator: Vic & Mike
Sounding: cpt-02
Cone Used: DSG0409

CPT Date/Time: 1/9/2004 1:46:5
Location: Borchard Propert
Job Number: 8925



Maximum Depth = 49.70 feet

Depth Increment = 0.164 feet

1 sensitive fine grained
2 organic material
3 clay
4 silty clay to clay
5 clayey silt to silty clay
6 sandy silt to clayey silt
7 silty sand to sandy silt
8 sand to silty sand
9 sand
10 gravelly sand to sand
11 very stiff fine grained (*)
12 sand to clayey sand (*)

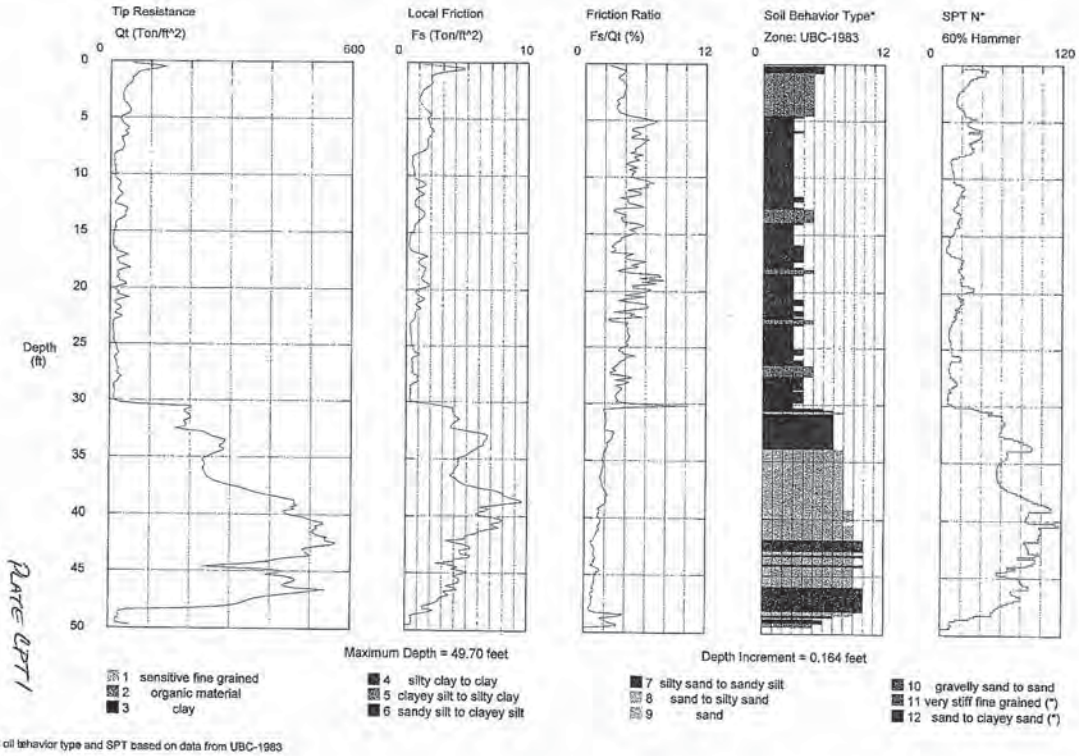
*S oil behavior type and SPT based on data from UBC-1983

PLATE CPT2

Geolabs Westlake Village

Operator: Vic & Mike
Sounding: cpt-01
Cone Used: DSG0409

CPT Date/Time: 1/9/2004 12:33:
Location: Borchard Propert
Job Number: 8925



Maximum Depth = 49.70 feet

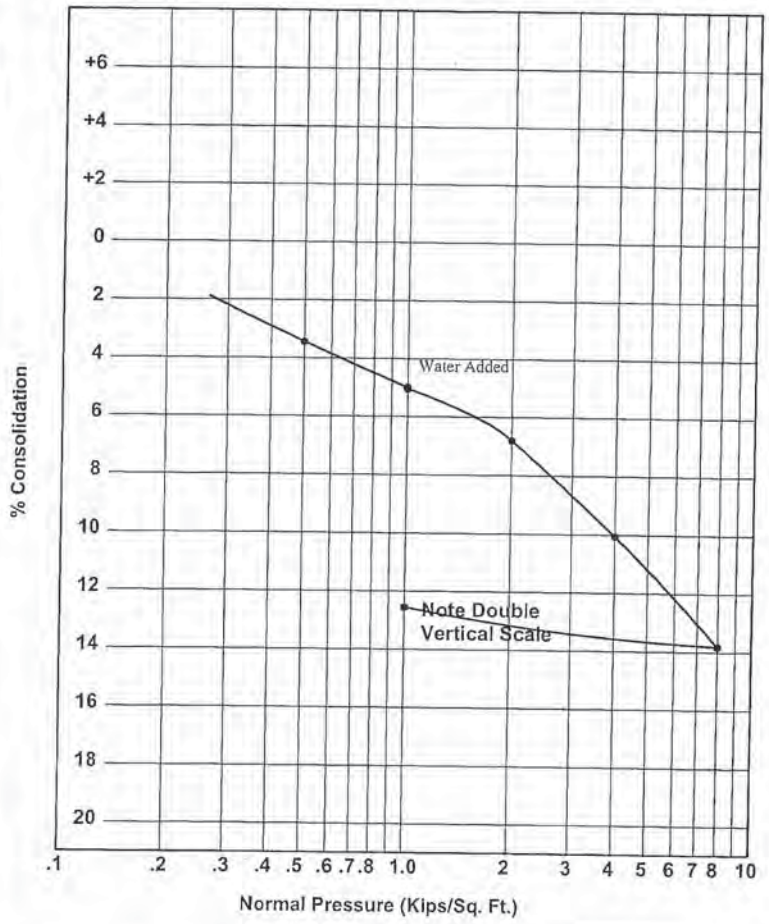
Depth Increment = 0.164 feet

1 sensitive fine grained
2 organic material
3 clay
4 silty clay to clay
5 clayey silt to silty clay
6 sandy silt to clayey silt
7 silty sand to sandy silt
8 sand to silty sand
9 sand
10 gravelly sand to sand
11 very stiff fine grained (*)
12 sand to clayey sand (*)

*S oil behavior type and SPT based on data from UBC-1983

PLATE CPT1

CONSOLIDATION - PRESSURE CURVE



Project	Borchard Property, Oxnard
Location	B1
Depth	5 ft
Material	Alluvium

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GEOLOGY AND SOIL ENGINEERING

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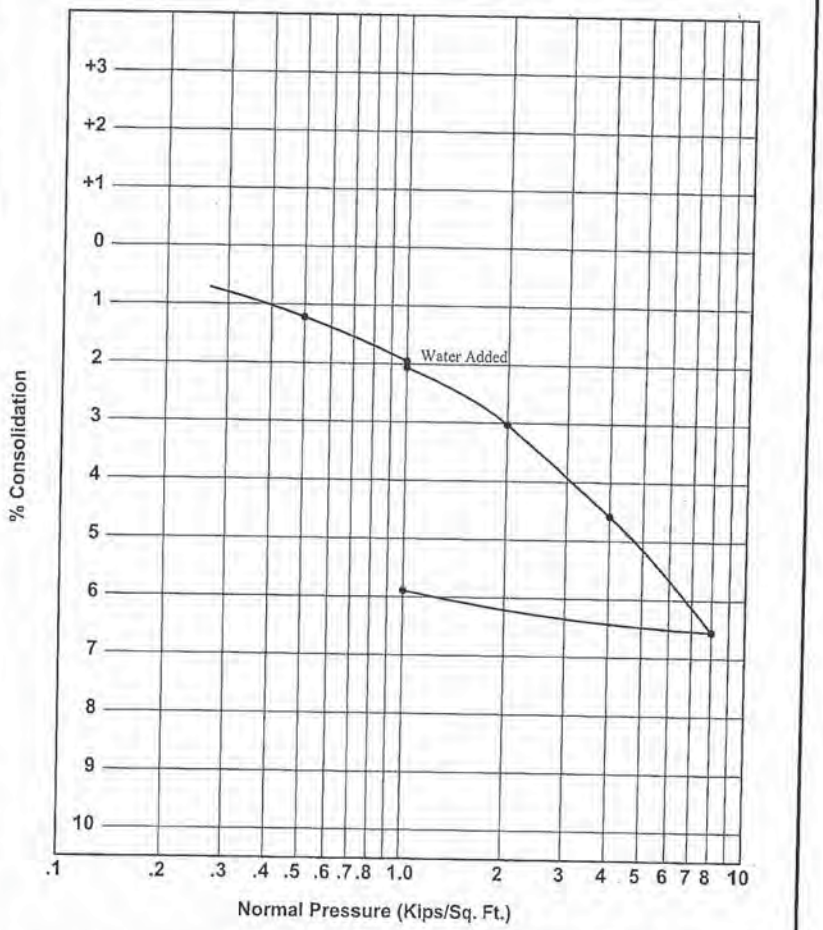
SCALE W.O. 8925

PLATE C1.05

CONSOLIDATION - PRESSURE CURVE



Project	Borchard Property, Oxnard
Location	B1
Depth	2.5 ft
Material	Alluvium

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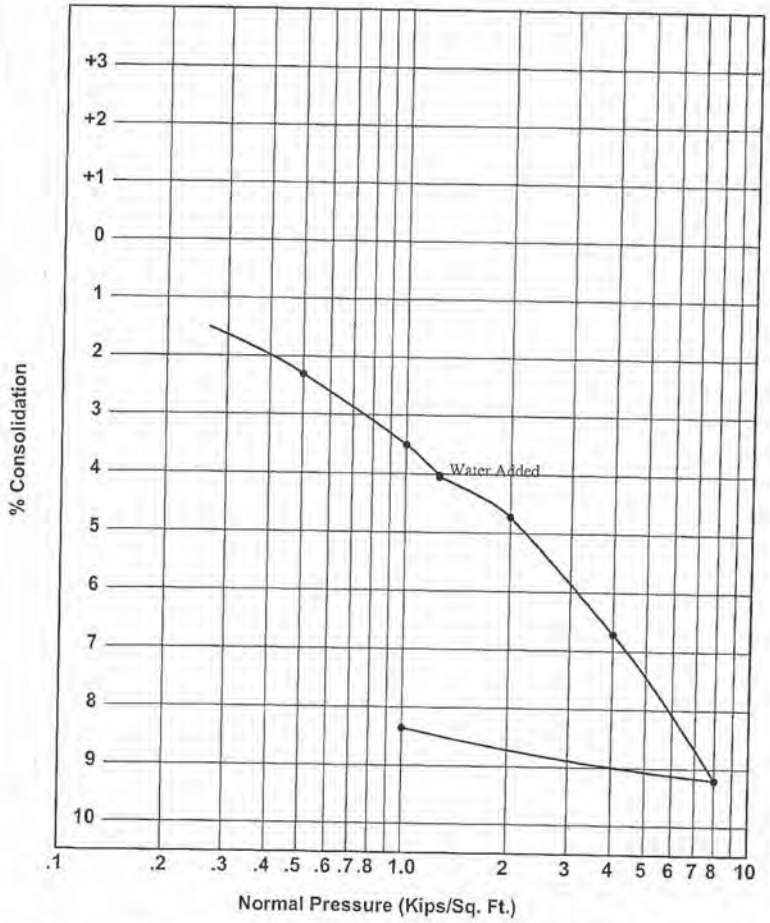
PLATE C1.025

CONSOLIDATION - PRESSURE CURVE



Project	Borchard Property, Oxnard
Location	B1
Depth	12.5 ft
Material	Alluvium

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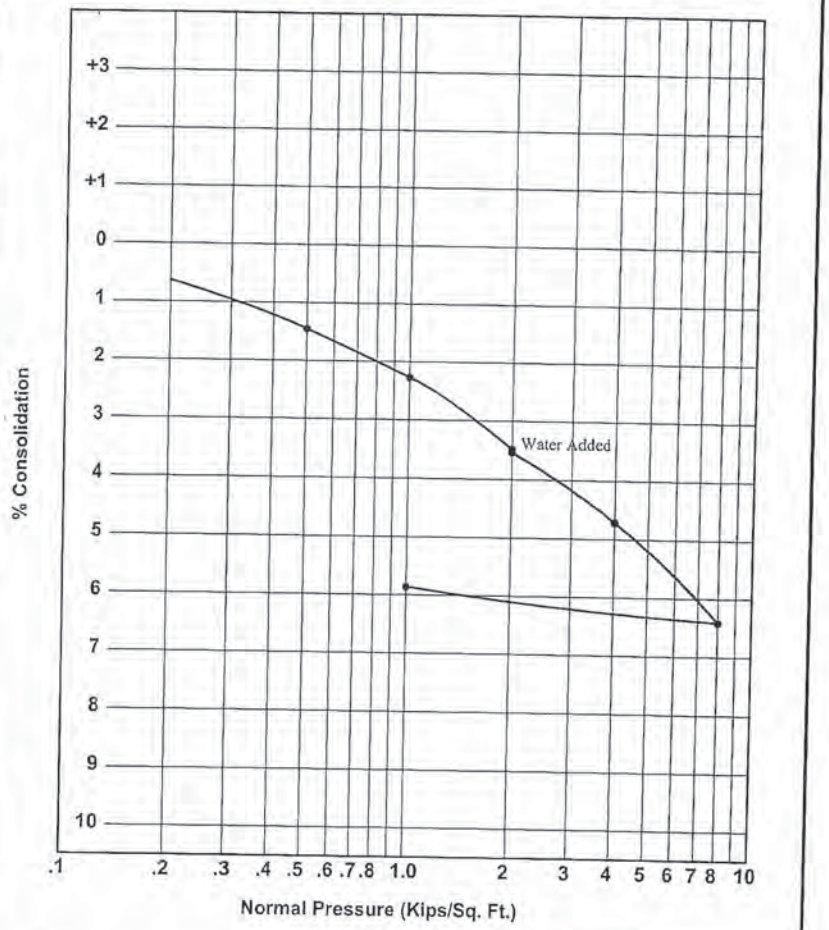
SCALE W.O. 8925

PLATE C1.125

CONSOLIDATION - PRESSURE CURVE



Project	Borchard Property, Oxnard
Location	B1
Depth	20 ft
Material	Alluvium

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DATE 01/04 BY LKS
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PLATE C1.20

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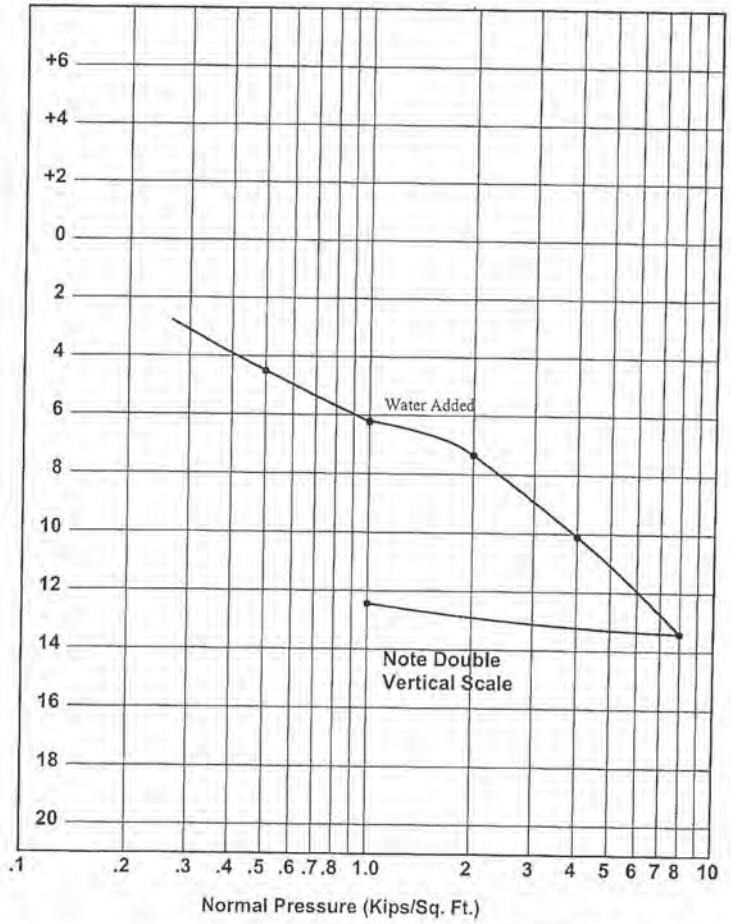
CONSOLIDATION - PRESSURE CURVE



Project	Borchard Property, Oxnard
Location	B2
Depth	10 ft
Material	Alluvium

Geolabs - Westlake Village
GEOLOGY AND SOIL ENGINEERING

DATE 01/04 BY LKS
SCALE W.O. 8925

PLATE C2.10

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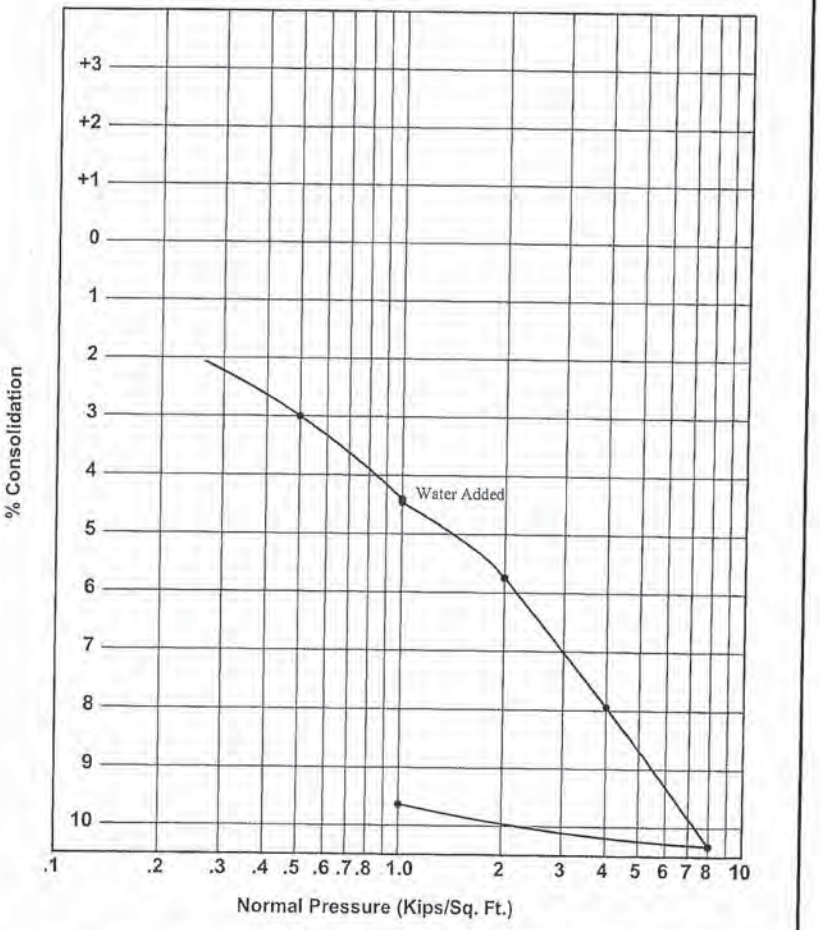
CONSOLIDATION - PRESSURE CURVE



Project	Borchard Property, Oxnard
Location	B2
Depth	5 ft
Material	Alluvium

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GEOLOGY AND SOIL ENGINEERING

DATE 01/04 BY LKS
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PLATE C2.05

APPENDIX A

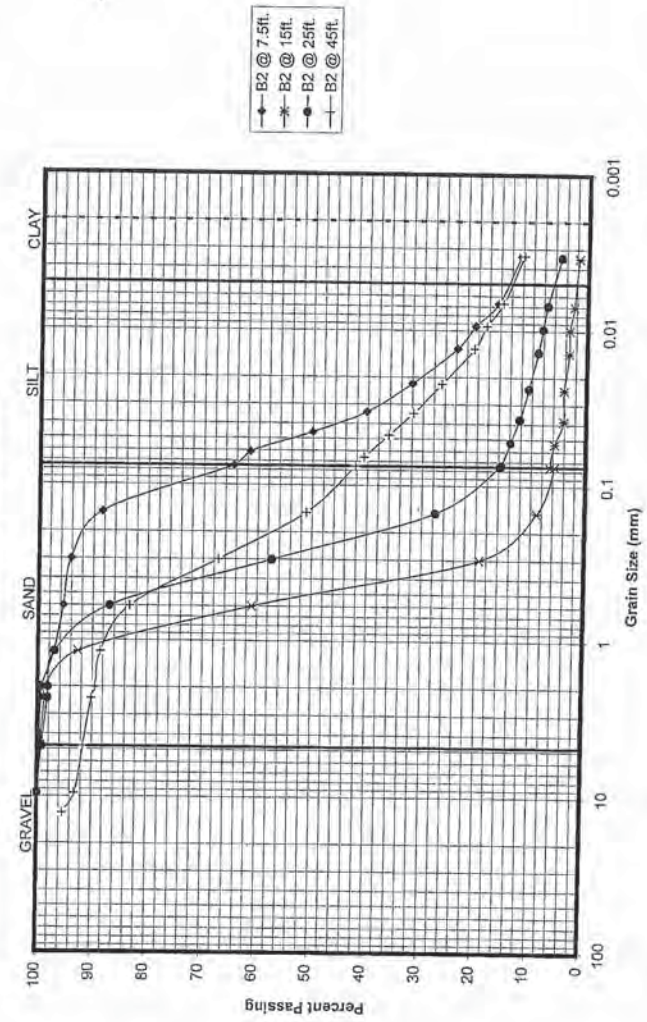
SEISMICITY ANALYSES

GEOLABS - WESTLAKE VILLAGE

W.O. 8925

Suncal Companies

PARTICLE SIZE ANALYSIS



GEOLABS-WESTLAKE VILLAGE

PLATE PS.1

SUMMARY OF FAULT PARAMETERS

Page 2

ABBREVIATED FAULT NAME	APPROX. DISTANCE (km)	SOURCE TYPE (A,B,C)	MAX. MAG. (Mw)	SLIP RATE (mm/yr)	FAULT TYPE (SS,DS,BT)
OAKLOCK (East)	161.7	A	7.3	7.00	SS
WINCHESTER	171.7	B	7.2	1.00	SS
LEVAMOOD-LOCHHART-OLD WOMAN SPRGS	173.9	B	7.3	0.60	SS
NORTH FRONTAL FAULT ZONE (West)	176.9	B	7.0	1.00	DS
RELENDALE - S. LOCKHARDT	181.2	B	7.1	0.60	SS
ELSINORE-TEMECULA	181.5	B	6.8	5.00	SS
SAN JACINTO-SAN JACINTO VALLEY	181.6	B	6.9	12.00	SS
So. SIERRA NEVADA	183.7	B	7.1	0.10	DS
GRAVEL HILLS - HARPER LAKE	198.6	B	6.9	0.60	SS
ROSE CANYON	202.4	B	6.9	1.50	SS
LITTLE LAKE	211.2	B	6.7	0.70	SS
BEACHWATER	214.9	B	6.9	0.60	SS
SAN JACINTO-ANZA	216.5	A	7.2	12.00	SS
NORTH FRONTAL FAULT ZONE (East)	220.1	B	6.7	0.50	DS
ELSINORE-JULIAN	221.3	A	7.1	5.00	SS
LANDERS	226.2	B	7.3	0.60	SS
CALICO - HIDALGO	227.2	B	7.1	0.60	SS
PINTO MOUNTAIN	228.5	B	7.0	2.50	SS
JOHNSON VALLEY (Northern)	233.6	B	6.7	0.60	SS
SAN ANDREAS (Creeping)	235.7	B	5.0	34.00	SS
TANK CANYON	238.9	B	6.8	1.00	DS
OWENS VALLEY	247.4	B	7.6	1.50	SS
EMERSON So. - COPPER MTN.	247.5	B	6.9	0.60	SS
BURNT MTN.	257.3	B	6.8	0.60	SS
PANAMINT VALLEY	257.3	B	7.2	2.50	SS
EUREKA PEAK	258.3	B	6.5	0.60	SS
PISGAH-BULLION MTN.-MESQUITE LK	258.8	B	7.1	0.60	SS
SAN JACINTO-COYOTE CREEK	261.2	B	6.8	4.00	SS
OWL LAKE	264.8	B	6.5	2.00	SS
EARTHQUAKE VALLEY	266.4	B	6.5	2.00	SS
INDEPENDENCE	274.9	B	6.8	0.20	DS
ELSINORE-COYOTE MOUNTAIN	295.2	B	6.8	4.00	SS
DEATH VALLEY (South)	297.5	B	6.9	4.00	SS
SAN JACINTO - BORREGO	298.2	B	6.6	4.00	SS
HUNTER MTN. - SALINE VALLEY	299.9	B	7.0	2.50	SS
DEATH VALLEY (Graben)	301.5	B	6.9	4.00	DS
BIRCH CREEK	318.2	B	6.5	0.70	DS
PALO COLORADO - SUR	320.2	B	7.0	3.00	SS
MONTEREY BAY - TULARCITOS	321.8	B	7.1	0.50	DS
ORTIGALITA	324.2	B	6.9	1.00	SS
CALAVERAS (So.of Calaveras Fau)	324.7	B	6.2	15.00	SS
WHITE MOUNTAINS	329.6	B	7.1	1.00	DS
SUPERSTITION MTN. (San Jacinto)	330.3	B	6.6	5.00	SS
ELMORE RANCH	334.3	B	6.6	1.00	SS
BRAWLEY SEISMIC ZONE	335.2	B	6.6	25.00	SS
SUPERSTITION HILLS (San Jacinto)	336.5	B	6.6	4.00	SS

SUMMARY OF FAULT PARAMETERS

Page 3

ABBREVIATED FAULT NAME	APPROX. DISTANCE (km)	SOURCE TYPE (A,B,C)	MAX. MAG. (Mw)	SLIP RATE (mm/yr)	FAULT TYPE (SS,DS,BT)
DEATH VALLEY (Northern)	336.6	A	7.2	5.00	SS
QUIEN SABE	339.0	B	6.5	1.00	SS
ROUND VALLEY (E. of S.N.Mtns.)	342.6	B	6.8	1.00	DS
ELSINORE-LAGUNA SALADA	346.8	B	7.0	3.50	SS
DEEP SPRINGS	352.4	B	6.6	0.80	DS
SAVANTE-VERGELES	355.1	B	6.8	0.10	SS
FISH SLOUGH	357.4	B	6.6	0.20	DS
SAN ANDREAS (1906)	360.1	A	7.9	24.00	SS
SARGENT	361.3	B	6.8	3.00	SS
IMPERIAL	363.4	A	7.0	20.00	SS
MILTON CREEK	364.6	B	6.7	2.50	DS
DEATH VALLEY (N. of Cucamonga)	373.5	A	7.0	5.00	SS
HARTLEY SPRINGS	382.3	B	6.6	0.50	DS
SAN GREGORIO	386.2	A	7.3	5.00	SS
MONTE VISTA - SHANNON	410.2	B	6.5	0.40	DS
HAYWARD (SE Extension)	412.4	B	6.5	3.00	SS
MONO LAKE	414.7	B	6.6	2.50	DS
GREENVILLE	415.6	B	6.9	7.00	SS
HAYWARD (Total Length)	432.7	A	7.1	9.00	SS
CALAVERAS (No.of Calaveras Fau)	432.7	B	6.8	6.00	SS
ROBINSON CREEK	442.9	B	6.5	0.50	DS
ANTELOPE VALLEY	479.2	B	6.7	0.80	DS
CONCORD - GREEN VALLEY	482.5	B	6.9	6.00	SS
GENOA	499.3	B	6.9	1.00	DS
RODGERS CREEK	519.3	A	7.0	9.00	SS
WEST NAPA	521.7	B	6.5	1.00	SS
POINT REYES	533.3	B	6.8	0.30	DS
HUNTING CREEK - BERRYESSA	548.8	A	6.9	6.00	SS
MAACAMA (South)	582.5	A	6.9	9.00	SS
COLLAYOMI	600.8	B	6.5	0.60	SS
BARTLETT SPRINGS	607.2	A	7.1	6.00	SS
MAACAMA (Central)	629.4	A	7.1	9.00	SS
MAACAMA (North)	683.6	A	7.1	9.00	SS
ROUND VALLEY (N. S.F.Bay)	693.3	B	6.8	6.00	SS
BATTLE CREEK	735.4	B	6.5	0.50	DS
LAKE MOUNTAIN	751.1	B	6.7	6.00	SS
GARBERVILLE-BRICELAND	766.2	B	6.9	9.00	SS
MENDOCINO FAULT ZONE	819.5	A	7.4	35.00	DS
LITTLE SALMON (Onshore)	830.2	A	7.0	5.00	DS
CASCADIA SUBDUCTION ZONE	831.3	A	8.3	35.00	DS
MAD RIVER	835.3	B	7.1	0.70	DS
McKINLEYVILLE	845.3	B	7.0	0.60	DS
PICKLE HILL	846.8	B	6.9	0.60	DS
TRINIDAD	847.4	B	7.3	3.50	DS
TABLE BLUFF	850.9	B	7.0	0.60	DS
LITTLE SALMON (Offshore)	863.6	B	7.1	1.00	DS
BIG LAGOON - BALD MTN.FLT.ZONE	884.5	B	7.3	0.50	DS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*********************
*                   *
*    U B C S E I S  *
*                   *
*   Version 1.03    *
*                   *
*********************
```

COMPUTATION OF 1997
UNIFORM BUILDING CODE
SEISMIC DESIGN PARAMETERS

JOB NUMBER: 8925 DATE: 01-20-2004

JOB NAME: Borchard Prop.

FAULT-DATA-FILE NAME: CDMGUBCH.DAT

SITE COORDINATES:
SITE LATITUDE: 34.2056
SITE LONGITUDE: 119.2006

UBC SEISMIC ZONE: 0.4

UBC SOIL PROFILE TYPE: SD

NEAREST TYPE A FAULT:
NAME: SAN ANDREAS - 1857 Rupture
DISTANCE: 71.9 km

NEARSST TYPE B FAULT:
NAME: OAK RIDGE (Onshore)
DISTANCE: 1.4 km

NEAREST TYPE C FAULT:
NAME:
DISTANCE: 99999.0 km

SELECTED UBC SEISMIC COEFFICIENTS:
Na: 1.3
Nv: 1.6
Ca: 0.57
Cv: 1.02
Ts: 0.716
To: 0.143

```
**************************************************************
* CAUTION: The digitized data points used to model faults are *
*          limited in number and have been digitized from small-*
*          scale maps (e.g., 1:750,000 scale). Consequently,   *
*          the estimated fault-site-distances may be in error by*
*          several kilometers. Therefore, it is important that *
*          the distances be carefully checked for accuracy and *
*          adjusted as needed, before they are used in design. *
**************************************************************
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SUMMARY OF FAULT PARAMETERS

Page 1

ABBREVIATED FAULT NAME	APPROX. DISTANCE (km)	SOURCE TYPE (A,B,C)	MAX. MAG. (Mw)	SLIP RATE (mm/yr)	FAULT TYPE (SS,DS,BT)
OAK RIDGE (Onshore)	1.4	B	6.9	4.00	DS
SEMI-SANTA ROSA	8.2	B	6.7	1.00	DS
VENTURA - PITAS POINT	9.8	B	6.8	1.00	DS
ANACAPA-DUME	14.8	B	7.3	3.00	DS
RED MOUNTAIN	19.3	B	6.8	2.00	DS
M.RIDGE-ARROYO PARIDA-SANTA ANA	26.2	B	6.7	0.40	DS
SAN CAYETANO	27.3	B	6.8	6.00	DS
MALIBU COAST	28.7	B	6.7	0.30	DS
SANTA YNEZ (East)	34.2	B	7.0	2.00	SS
SANTA CRUZ ISLAND	37.6	B	6.8	1.00	DS
SANTA SUSANA	42.4	B	6.6	5.00	DS
SOLIDR	46.3	B	6.5	5.00	DS
SANTA YNEZ (West)	50.4	B	6.9	2.00	SS
SANTA MONICA	51.3	B	6.6	1.00	DS
BIG PINE	53.6	B	6.7	0.90	SS
SAN GABRIEL	59.9	B	7.0	1.00	SS
PALOS VERDES	64.7	B	7.1	3.00	SS
SIERRA MADRE (San Fernando)	67.2	B	6.7	2.00	DS
SANTA ROSA ISLAND	68.0	B	6.9	1.90	DS
PLEITO THRUST	71.4	B	6.8	2.00	DS
SAN ANDREAS - 1857 Rupture	71.9	A	7.8	34.00	SS
HOLLYWOOD	72.0	B	6.5	1.00	DS
VENTUCO	72.0	B	6.7	0.50	DS
OAKLOCK (West)	74.3	A	7.3	4.00	SS
NEWPORT-INGLEWOOD (L.A.Basin)	76.9	B	6.9	1.00	DS
SIERRA MADRE (Central)	83.5	B	7.0	3.00	DS
RAYMOND	83.9	B	6.5	0.50	DS
LOS ALAMOS-W. BASELINE	92.5	B	6.9	6.30	DS
WHITE WOLF	93.1	B	7.2	2.00	DS
CLAMSHELL-SAWPIT	105.0	B	6.5	0.50	DS
LIONS HEAD	108.7	B	6.6	0.02	DS
ELSINORE-WHITTIER	111.5	B	6.8	2.50	SS
SAN LUIS RANGE (S. Margin)	119.3	B	7.0	0.20	DS
SAN JOSE	121.2	B	6.5	0.50	DS
SAN JUAN	125.9	B	7.0	1.00	SS
CASMALIA (Orcutt Frontal Fault)	127.5	B	6.5	0.25	DS
CUCAMONGA	130.1	A	7.0	5.00	DS
CHINO-CENTRAL AVE. (Elsinore)	131.8	B	6.7	1.00	DS
NEWPORT-INGLEWOOD (Offshore)	136.6	B	6.9	1.30	SS
ELSINORE-GLEN IVY	149.8	B	6.8	5.00	SS
LOS OSOS	149.3	B	6.9	0.50	DS
SAN ANDREAS - Southern	154.4	A	7.4	24.00	SS
HOSGRI	155.4	B	7.3	2.50	SS
SAN JACINTO-SAN BERNARDINO	155.7	B	6.7	12.00	SS
CORONADO BANK	156.7	B	7.4	3.00	SS
CLEGHORN	160.1	B	6.5	3.00	SS

OXNARD 7.5 MINUTE QUADRANGLE AND PORTIONS OF ADJACENT QUADRANGLES

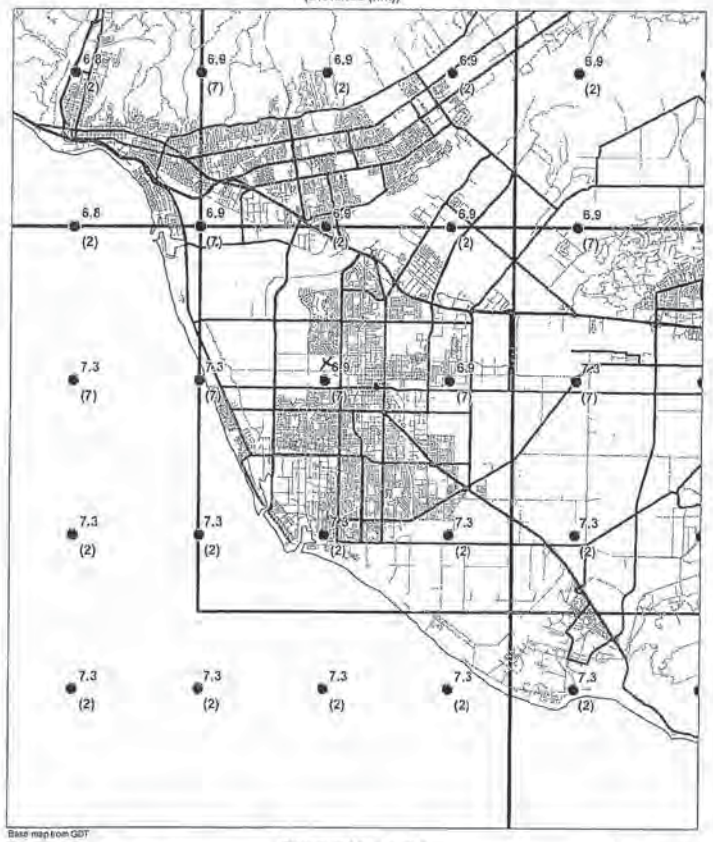
10% EXCEEDANCE IN 50 YEARS PEAK GROUND ACCELERATION

1998

PREDOMINANT EARTHQUAKE

Magnitude (Mw)

(Distance (km))



Department of Conservation
California Geological Survey

Figure 3.4

OXNARD 7.5 MINUTE QUADRANGLE AND PORTIONS OF ADJACENT QUADRANGLES

10% EXCEEDANCE IN 50 YEARS PEAK GROUND ACCELERATION (g)

1998

ALLUVIUM CONDITIONS

Department of Conservation
California Geological Survey

Figure 3.3

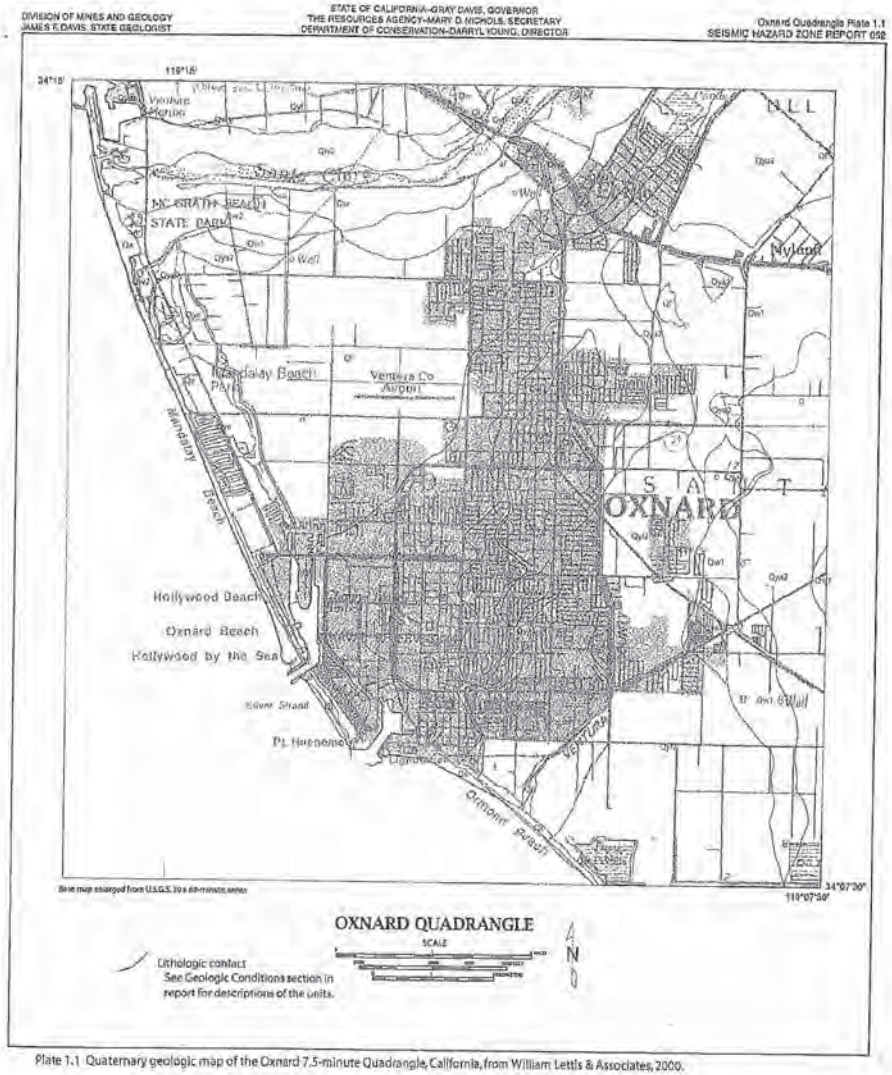


Plate 1.1 Quaternary geologic map of the Oxnard 7.5-minute Quadrangle, California, from William Lettis & Associates, 2000.

OXNARD 7.5 MINUTE QUADRANGLE AND PORTIONS OF ADJACENT QUADRANGLES

10% EXCEEDANCE IN 50 YEARS MAGNITUDE-WEIGHTED PSEUDO-PEAK ACCELERATION (g) FOR ALLUVIUM

2001

LIQUEFACTION OPPORTUNITY

Department of Conservation
California Geological Survey

Figure 3.9

APPENDIX B

LIQUEFACTION / SEISMIC SETTLEMENT ANALYSES

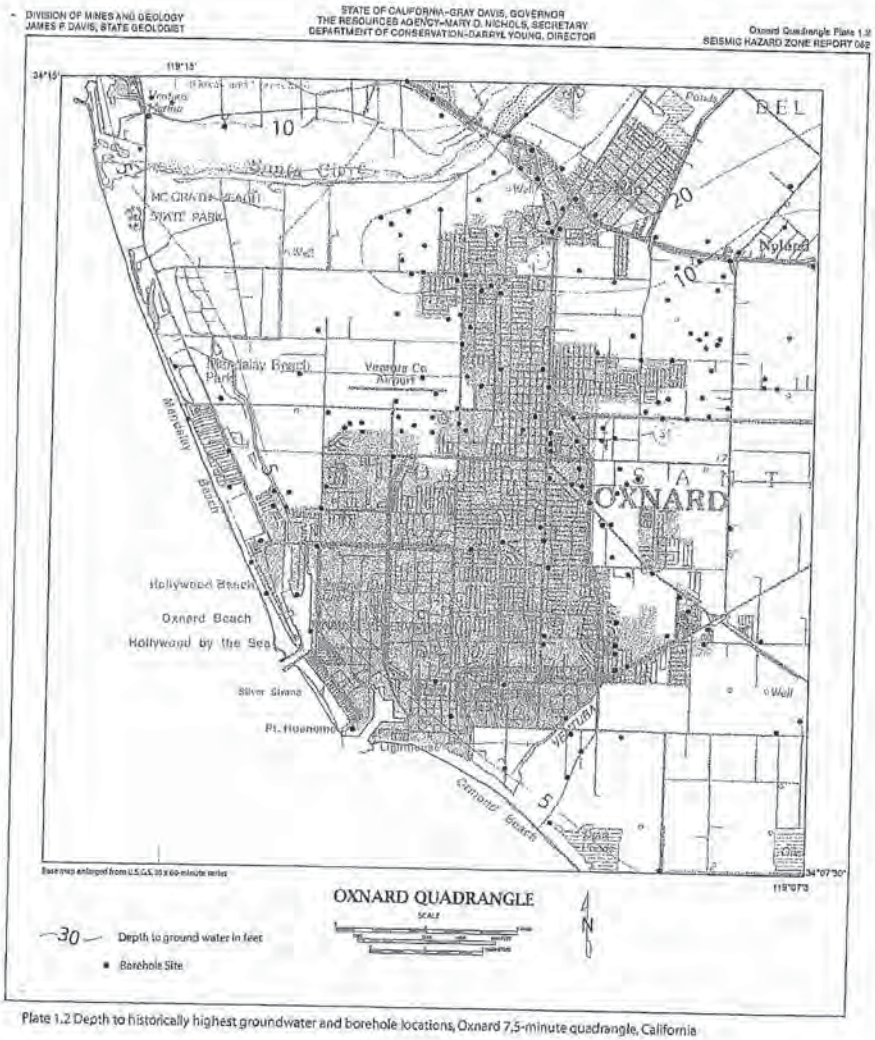


Plate 1.2 Depth to historically highest groundwater and borehole locations, Oxnard 7.5-minute quadrangle, California

Fines Content Correction: $(N_1)_{60cs} = \alpha + \beta(N_1)_{60}$

Where:

$\alpha = 0$	for	$FC \le 5\%$
$\alpha = e^{(1.76-(190/FC^2))}$	for	$5\% < FC < 35\%$
$\alpha = 5.0$	for	$FC \ge 35\%$
$\beta = 1.0$	for	$FC \le 5\%$
$\beta = [0.99 + (FC^{1.5}/1000)]$	for	$5\% < FC < 35\%$
$\beta = 1.2$	for	$FC \ge 35\%$

FC = Fines Content

Corrections to SPT N value: $(N_1)_{60} = N_{field} C_n C_e C_b C_r C_s$

Where: $C_n = 2.2/(1.2 + \sigma'_{vo}/P_a)$ for overburden normalization

Other Correction factors per Table 2 (Youd, 2001)

Liquefaction Safety Factor: $FS = (CRR_{7.5}/CSR)MSF$

Where: MSF is Magnitude Scaling Factor (Revised Idriss)

$MSF = 10^{2.24}/M_w^{2.56}$

CPT Analysis

The reduction of CPT data consisted of interpreting the soil behavior types encountered and assigning stratagraphic layers to the different soils. The depth ranges for the layers were assigned based upon material type differences such as grain size distribution and penetration resistance. Once soil layers were assigned to the sounding profile, thin sand layers were evaluated for the applicability of a correction for thin sand layers between soft clay layers. After applying a thin layer correction (if necessary), the profile data is normalized to approximately one atmosphere, evaluated, and material types and engineering characteristics are determined. The following correlations were used within these analyses.

Thin Layer Correction, K_H: $K_H = \frac{1}{4} \times [((\frac{H}{d_c})/17) - 1.77]^2 + 1.0$

Overburden Normalization: iterative procedure proposed by Robertson and Wride (1997).

$q_{c1N} = C_Q(q_c/P_a)$ where: $C_Q = (P_a/\sigma'_{vo})^n$ but not greater than 1.7

n varies from 0.5 to 1 by soil type.
this requires an iterative process

APPENDIX B
LIQUEFACTION AND SEISMIC SETTLEMENT ANALYSIS

This geotechnical investigation included analysis of the liquefaction potential and potential seismically induced settlement at the subject site. The liquefaction analysis addressed the alluvium below the shallow groundwater. The analysis of seismic settlement encompassed both saturated and unsaturated soils.

Field Investigation

These analyses used data retrieved from Standard Penetration Tests (SPT) in borings drilled using a hollow-stem auger and from the Cone Penetrometer Test (CPT) soundings. Samples were driven with a 140 lb. automatic safety hammer lifted 30 inches. The estimated efficiency of the hammer is approximately 90 percent. Drilling rod was used to allow the hammer to remain above the auger. The boring diameter was approximately 6 inches (outer diameter). The samplers consisted of both a SPT split spoon sampler and a lined Modified California split spoon sampler (2.375 inch i.d.). The borings for this investigation used water and drilling mud to prohibit soil from sluicing up the auger.

The CPT rig used during the field investigation was a 23-ton truck-mounted rig provided by Holguin, Fahan & Associates, Inc. The cone tip has a cross-sectional area of 10 square centimeters. The CPT is capable of obtaining tip pressure and side friction data at 2 inch (0.05 meter) intervals.

Data Analyses

The data obtained from the CPT and SPT tests were processed using the procedures proposed from the 1996 NCEER (Youd, 1997) and 1998 NCEER/NSF Workshops (Youd, 2001), and the SCEC implementation document (Martin, 1999). The analyses were performed using procedures programmed in the computer using Microsoft Visual Basic in conjunction with a Microsoft Excel spreadsheet.

SPT Analysis

The data from the SPT tests were processed according to the procedures proposed by NCEER, 2001. The field blowcounts were corrected for overburden, hammer energy, rod length, percent fines, and sampler liner. Tests performed using the lined California sampler (with 3 inch outer diameter and 2.37 inch inner diameter) were converted to SPT blowcounts using the procedures proposed by Lowe and Zaccheo (Fang, 1991). The cyclic resistance of the soils is compared to the cyclic stress ratio. Ratios less than 1.3 are considered to have a potential for liquefaction. The following correlations were used in these analyses.

Cyclic Stress Ratio, CSR: $CSR = 0.65(a_{max}/g)(\sigma_{vo}/\sigma'_{vo})r_d$

Stress Reduction Coeff, r_d:

$r_d = 1.0 - 0.00765z$	for	$z \le 9.15m$
$r_d = 1.174 - 0.0267z$	for	$9.15m < z \le 23m$

Cyclic Resistance Ratio, $CRR_{7.5}$: $CRR_{7.5} = \frac{1}{34-(N_1)_{60}} + \frac{(N_1)_{60}}{135} + \frac{50}{[10\times(N_1)_{60}+45]^2} - \frac{1}{200}$

for $:(N_1)_{60} < 30$

Relative Density	$D_r = -98 + 66\log_{10}\frac{q_c}{[\sigma'_{vo}]^{0.5}}$	Jamiolkowski et al (1985), Units of 10kPa
	$D_r = \frac{1}{2.41} * \ln[q_c/(157 * \sigma'^{0.55}_{vo})]$	Baldi et al (1986), Units of kPa
Undrained Shear Strength:	$S_u = \frac{q_c - \sigma_v}{N_K}$	Robertson & Campanella (1989), N_k=15
Effective Internal Friction:	$\phi' = \tan^{-1}[0.1 + 0.38\log\frac{q_c}{\sigma'_{vo}}]$	Roberston & Campanella (1983)
	$\phi' = 53.881 - 27.6034e^{(-0.0147N)}$	Peck et al., (1974) after Coyle (1985)
Overconsolidation Ratio:	programmed from chart	Schmertmann (1978)

The results of our analyses are presented on the attached graphs. Boring B2 was located adjacent to CPT 2 for verification of the noted correlations. The comparison between these data sources indicates the correlations are effective. The successful correlation of the boring and CPT data allows us to utilize the CPT data for our analyses throughout the site. The CPT data was relied upon because it is superior at defining the stratigraphy of the materials throughout the soil profile. Layers of materials in which the CSR exceeds the $CRR_{7.5}$ are considered liquefiable.

Liquefaction Induced Settlement

The analyses of the potential liquefaction induced settlement are performed using the same electronic spreadsheet used to perform the liquefaction analyses. The spreadsheet is programmed to perform the analyses proposed by Tokimatsu and Seed (1987).

For the settlement analyses, the normalized, fines corrected SPT blowcounts are compared to digitized files of chart data (SPT blowcounts vs. Volumetric strain for clean sands) provided in Tokimatsu and Seed. The fines correction to the SPT blowcounts consider a liquefied soil. Therefore, this fines correction produces smaller corrected blowcounts than the corrected blowcounts used to estimate the potential for triggering of liquefaction. This fines correction is based on the recommended procedures for implementation of Publication 117 (Martin and Lew, 1999). The spreadsheet estimates the percent volumetric strain for each layer assuming the lateral strain is minor so the volumetric strain is equivalent to settlement. The estimated settlement for each soil layer and a summation of all the soil layers below the design groundwater level are then reported.

Seismic Settlement of Dry Sands

For coarse-grained materials above the design groundwater level the potential for settlement related to ground shaking is analyzed using the methods proposed by Tokimatsu and Seed (1987). Like in the liquefaction-induced-settlement analyses, the SPT blowcounts and/or CPT derived SPT blowcounts are corrected to an equivalent blowcount for clean sand. Clayey soils with 15 percent clay or more, and soils with an Ic of 2.6 or greater are discarded from the analyses. The following equations are used in the analysis to enter into charts provided with the methodology.

SPT Blowcounts: R.S. Olsen (1997) (see attached graph)

Soil Behavior Index, Ic:

$$I_c = [(3.47 - \log Q)^2 + (1.22 + \log F)^2]^n$$

Soil Type: Soil Behavior Chart, Robertson & Wride (1997)

Where: $Q = [(q_c - \sigma_{vo})/P_a][(P_a/\sigma'_{vo})^n]$

And $F = [f_s/(q_c - \sigma_{vo})] \times 100\%$

Percent Fines: Robertson & Wride (1997)

Where: if $Ic < 2.6$ $FC(\%) = 0$

if $1.26 \le Ic \le 3.5$ $FC(\%) = 1.75Ic^{3.25} - 3.7$

if $Ic > 3.5$ $FC(\%) = 100$

Grain characteristic corr. factor, K_c:

$K_c = 1.0$ for $I_c \le 1.64$

$K_c = -0.403I_c^4 + 5.581I_c^3 - 21.63I_c^2 + 33.75I_c - 17.88$ for $I_c > 1.64$

Overburden corr. factor, K_σ: $K_\sigma = (\sigma'v')^{f-1}$ where: f ranges from 0.8 to 0.6 inversely to Dr

Equivalent Clean Sand Normalized Penetration Resistance:

$$(q_{c1N})_{cs} = K_c q_{c1N}$$

Cyclic Resistance Ratio, $CRR_{7.5}$:

$CRR_{7.5} = 0.833[(q_{c1N})_{cs}/1000] + 0.05$ for $(q_{c1N})_{cs} < 50$

$CRR_{7.5} = 93[(q_{c1N})_{cs}/1000]^3 + 0.08$ for $50 \le (q_{c1N})_{cs} < 160$

Cyclic Stress Ratio, CSR:

$$CSR = 0.65(a_{max}/g)(\sigma_{vo}/\sigma'_{vo})r_d$$

Magnitude Scaling Factor, MSF:

$MSF = 10^{2.24}/M_w^{2.56}$ Magnitude Scaling Factor (Revised Idriss)

Liquefaction Safety Factor: $FS = (CRR_{7.5}/CSR)MSF$

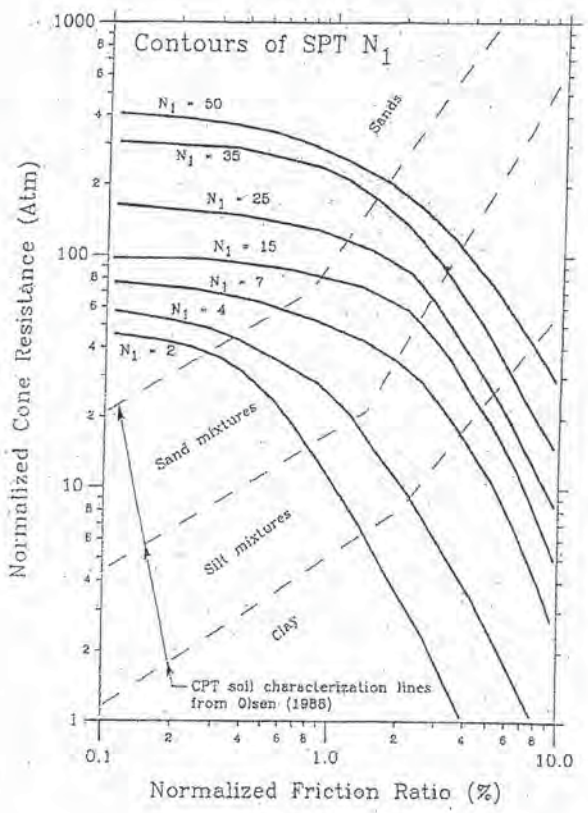


Figure 11 CPT estimation of SPT N_1 using both CPT measurements (Olsen 1994, 1988 1986, 1984).

Effective Shear Strain: $$\gamma_{eff} = \frac{\tau_{av}}{G_{max} \times \frac{G_{eff}}{G_{max}}}$$

Average Cyclic Shear Stress: $$\tau_{av} = 0.65 \bullet \frac{a_{max}}{g} \bullet \sigma_o \bullet r_d$$

Shear Modulus at Low Strain:

$$G_{max} = 1000 \bullet (K_2)_{max} \bullet (\sigma'_m)^{1/2} \text{ in psf units}$$

$$(K_2)_{max} \cong 20(N_1)^{1/3} \quad \text{(Ohta and Goto, 1976)}$$

Using the referenced methodology, the volumetric strain is estimated for each soil layer or layer portion above the design water level. This methodology is considered applicable to dry or moist sands (unsaturated). Again the lateral strains are considered insignificant so the volumetric strain is considered as settlement. The estimated settlement for each soil layer and a summation of all the soil layers above the groundwater level are then reported by incorporation into the attached settlement graphs.

Currently the practice of soils engineering lacks accurate means or knowledge to estimate the potential seismic settlement for fine-grained soils. The use of this methodology for soils with significant amounts of fine grain sizes is believed to be conservative. This methodology is used with the understanding of its limitations and for lack of better simplified means of estimating the potential for seismic settlement.

The estimate of potential differential settlement is typically taken to be half of the total seismic settlement (Martin and Lew, 1999).

Surface Manifestations

Consideration of the potential for surface manifestations used the procedure proposed by Ishihara, 1985. The potential is considered a function of the relative density (SPT blowcounts), depth and thickness of liquefiable material, and thickness of overlying non-liquefiable material. This analysis only considers liquefiable sands with SPT blowcounts of 10 or less. The likelihood of surface manifestations is considered low.

Liquefaction-Induced Lateral Spread

The potential for liquefaction-induced lateral spread was analyzed using the procedures proposed by Barlett and Youd (1995) as modified in 1999. The potential is considered a function of earthquake distance and magnitude, thickness and grain-size distribution in the liquefiable layers, and ground slope or nearness of an open face. It should be noted that this procedure was developed using a historical database of large displacement events. The database includes few points with movement magnitudes of small value, on the order that is of interest for engineering purposes. The procedure is also applicable only for earthquake sources greater than 10 kilometers from the subject site (though we have evaluated our data using smaller source distances). These two elements of the analyses are cause to suspect the output when faults are near source events and when the magnitude of movement is relatively small (a few meters). Therefore, for our purposes we have used this analyses as an indicator whether lateral-spread may be possible; however, the magnitudes of movement output from the analyses are considered suspect.

Considering the blow counts and estimated blow counts obtained during the investigation, the potential for lateral spreading during a design level earthquake are considered remote.

Stark, T.D., and Mesri, G. (1991), "Undrained Shear Strength of Liquefied Sands for Stability Analysis", ASCE, Journal of Geotechnical Engineering, Vol 118, No. 11, November.

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Liquefaction Analysis Using CPT Data

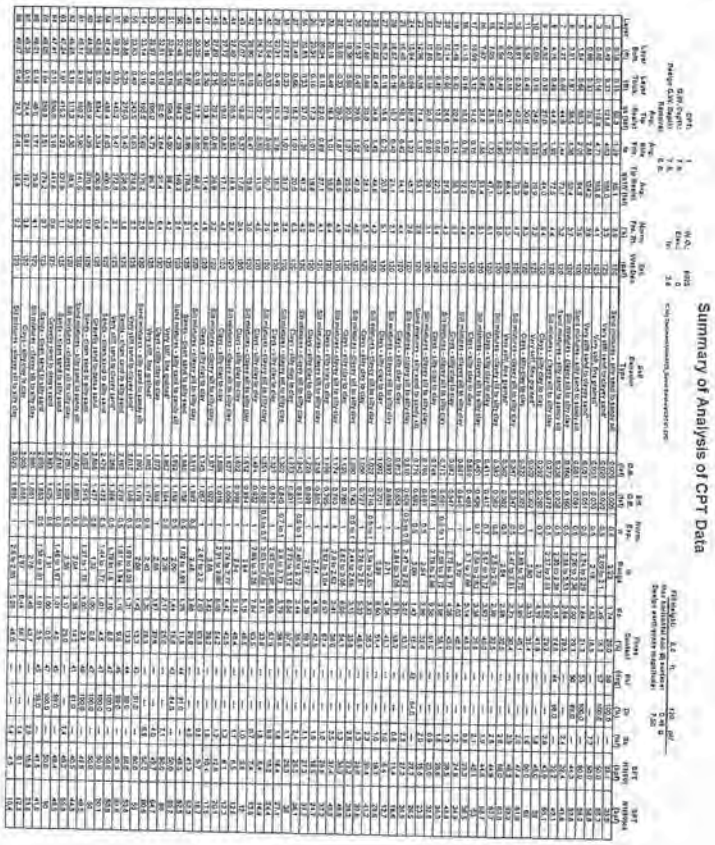
CPT: 1 W.O.: 8925
G.W. Depth: 7 ft Elev.: 0
Design G.W. Depth: 7 ft Ic: 2.6 C:\My Documents\Liquefy\PGE_Stored Sets\LiqCPT-01.CPO
Removal: 0 ft

Fill Height: 0.0 ft, 120 pcf
Max horizontal acc. @ surface: 0.48 g
Design earthquake magnitude: 7.30
Magnitude Scaling Factor: 1.00

Layer	Layer Bot. (ft)	Layer Thick. (ft)	Avg. Tip Resist qc (tsf)	Avg. Side Fric. fs	Avg. Tip Resist qc1N (tsf)	Norm. Fric. Rt. (%)	Eff. O.B. (tsf)	Soil Behavior Type	Avg. rd	Kc	Kσ	Avg. Fines Content (%)	Avg. Dr (%)	Avg. SPT N1(60)lq (bpf)	Min. CSR (M=7.5)	Avg. CSR	Min. Liq. FS	Avg. Strain (%)	Liq Settle. (in)
16	7.87	0.82	31.6	1.58	51.4	5.1	0.436	Silt mixtures - clayey silt to silty clay (4)	0.98	3.38	1	35.8	—	43.1	0.42	0.317	1.29	0.0	0
20	12.14	0.66	24.8	1.03	37.5	4.3	0.551	Silt mixtures - clayey silt to silty clay (4)	0.98	3.66	1	38.1	—	29.8	0.26	0.386	0.67	0.0	0
22	12.80	0.16	30.6	0.93	39.1	3.1	0.587	Silt mixtures - clayey silt to silty clay (4)	0.97	2.99	1	32.5	—	18.6	0.23	0.396	0.58	0.0	0
23	12.96	0.16	71.4	1.17	53.1	2.9	0.592	Sand mixtures - silty sand to sandy silt (5)	0.97	1.43	1	18.4	64	24.0	0.28	0.398	0.71	0.0	0
24	13.94	0.98	35.9	1.33	45.7	3.8	0.609	Silt mixtures - clayey silt to silty clay (4)	0.97	3.07	1	33.2	—	29.9	0.23	0.404	0.70	0.0	0
28	17.22	0.49	34.8	1.45	44.6	4.3	0.710	Silt mixtures - clayey silt to silty clay (4)	0.96	3.33	1	35.3	—	33.3	0.40	0.433	0.93	0.0	0
30	18.37	0.49	39.9	1.52	47.0	4.0	0.743	Silt mixtures - clayey silt to silty clay (4)	0.96	3.15	1	30.8	—	32.0	0.34	0.440	0.78	0.0	0
38	20.83	0.33	37.0	1.38	41.3	4.0	0.817	Silt mixtures - clayey silt to silty clay (4)	0.95	3.44	1	35.9	—	29.5	0.31	0.454	0.69	0.0	0
40	22.64	0.33	28.7	0.69	30.7	2.5	0.869	Silt mixtures - clayey silt to silty clay (4)	0.95	3.11	1	33.6	—	11.2	0.16	0.461	0.34	0.0	0
48	30.35	0.16	71.2	3.02	66.6	4.4	1.093	Silt mixtures - clayey silt to silty clay (4)	0.92	2.88	0.98	29.9	—	43.8	Infin	0.477	Infin	0.0	0
49	32.32	1.97	183.3	3.95	178.3	2.1	1.126	Sands - clean sand to silty sand (6)	0.91	1.25	0.96	11.9	91	50.5	Infin	0.477	Infin	0.0	0
50	32.48	0.16	164.2	4.29	148.2	2.6	1.159	Sand mixtures - silty sand to sandy silt (5)	0.91	1.44	0.94	15.6	84	51.3	Infin	0.477	Infin	0.0	0
51	32.64	0.16	108.5	4.50	98.4	4.2	1.164	Very stiff, fine grained* (9)	0.91	2.17	0.94	25.0	—	52.1	Infin	0.476	Infin	0.0	0
53	32.97	0.16	106.0	4.73	95.7	4.5	1.174	Very stiff, fine grained* (9)	0.90	2.30	0.97	26.3	—	52.2	Infin	0.476	Infin	0.0	0
54	33.14	0.16	195.5	5.62	176.2	2.9	1.179	Sand mixtures - silty sand to sandy silt (5)	0.90	1.42	0.97	15.3	91	51.3	Infin	0.476	Infin	0.0	0
55	33.63	0.49	243.5	6.63	218.6	2.7	1.189	Very stiff sand to clayey sand* (8)	0.90	1.31	0.93	13.2	99	51.1	Infin	0.476	Infin	0.0	0
56	35.88	5.25	276.6	9.40	235.6	1.9	1.279	Sands - clean sand to silty sand (6)	0.88	1.16	0.91	9.6	99	50.7	Infin	0.471	Infin	0.0	0
57	39.21	0.33	445.3	9.47	372.6	2.1	1.366	Very stiff sand to clayey sand* (8)	0.86	1.10	0.88	8.0	100	50.7	Infin	0.464	Infin	0.0	0
58	42.46	3.28	488.4	6.63	400.6	1.4	1.423	Sands - clean sand to silty sand (6)	0.84	1.01	0.87	4.5	100	50.4	Infin	0.458	Infin	0.0	0
59	42.65	0.16	534.7	3.34	430.6	0.6	1.477	Gravelly sand to dense sand (7)	0.83	1.00	0.86	0.6	100	50.1	Infin	0.452	Infin	0.0	0
60	44.95	2.30	465.9	4.29	370.8	0.9	1.515	Sands - clean sand to silty sand (6)	0.81	1.00	0.85	2.8	100	49.7	Infin	0.447	Infin	0.0	0
61	45.11	0.16	159.2	3.90	141.5	2.2	1.553	Sand mixtures - silty sand to sandy silt (5)	0.80	1.36	0.84	14.2	81	41.2	Infin	0.442	Infin	0.0	0
62	45.28	0.16	113.3	4.30	86.9	3.9	1.556	Silt mixtures - clayey silt to silty clay (4)	0.80	2.17	0.84	25.0	—	48.3	Infin	0.441	Infin	0.0	0
63	47.24	1.97	415.2	4.23	321.8	1.1	1.591	Sands - clean sand to silty sand (6)	0.79	1.01	0.84	4.0	99	49.8	Infin	0.436	Infin	0.0	0
64	47.41	0.16	526.0	3.16	411.6	0.6	1.595	Gravelly sand to dense sand (7)	0.78	1.00	0.82	0.5	100	50.1	Infin	0.432	Infin	0.0	0
65	49.05	1.64	359.8	2.51	274.2	0.7	1.653	Sands - clean sand to silty sand (6)	0.77	1.01	0.82	2.9	98	41.8	Infin	0.427	Infin	0.0	0

GEOLABS-WESTLAKE VILLAGE

Summary of Analysis of CPT Data



Evaluation of Soil Characteristics
Using CPT Data

CPT: 1
G.W. Depth: 7 ft. Elev.: 0
Design G.W. Depth: 7 ft.

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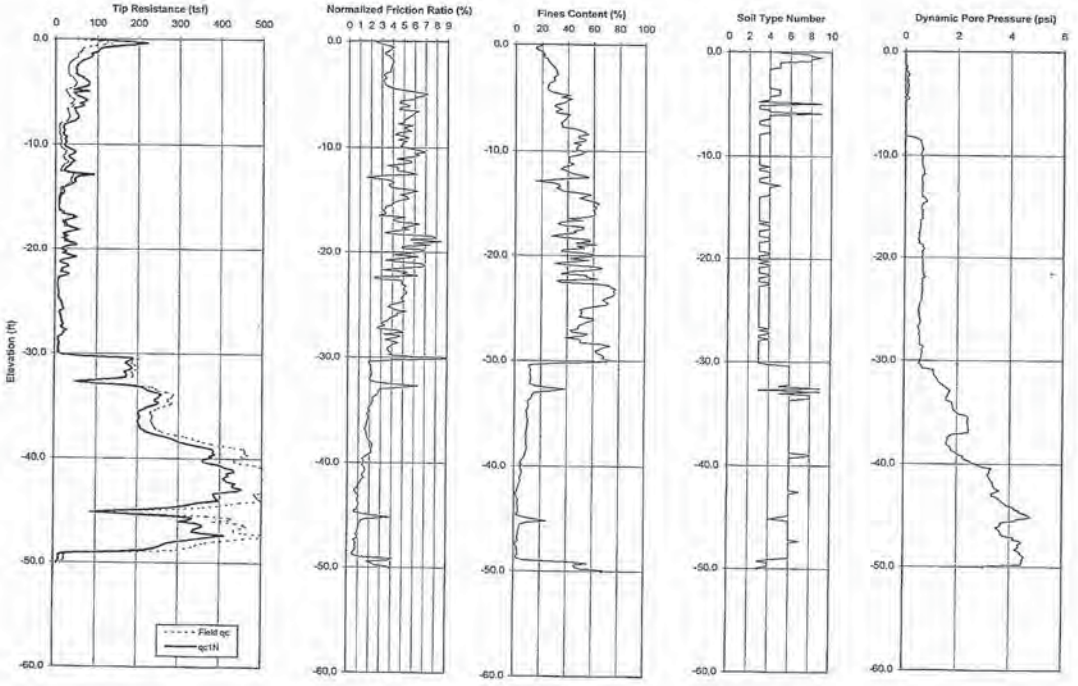

GEOLABS-WESTLAKE VILLAGE

"Dry" Sand Seismic Settlement Using CPT Data

CPT: 1 W.O.: 8925
G.W. Depth: 7 ft. Elev.: 0
Design G.W. Depth: 7 ft. Ic: 2.6
Removal: 0 ft.

Fill Height: 0.0 ft. 120 pcf
Max horizontal acc. @ surface: 0.48 g
Design earthquake magnitude: 7.50
Magnitude Scaling Factor: 1.00

0.005

Layer	Layer Bott. (ft)	Layer Thick. (ft)	Avg. Tip Resist qc (tsf)	Avg. Side Fric. fs	Avg. Tip Resist qc1N (tsf)	Norm. Fric. Rt. (%)	Eff. O.B. (tsf)	Soil Behavior Type	Avg. rd	Kc	Ko	Fines Content (%)	Avg. Dr (%)	Sat. N1(60)cs (bpf)	Cyclic Shear Stress Talv (psf)	Gmax (ksf)	γeff / (Geff/Gmax)	γeff	Vol. Strain (%)	"Dry" Settle. (in)
1	0.19	0.16	52.3	1.29	65.1	2.5	0.005	Sand mixtures - silty sand to sandy silt (5)	1.00	1.74	1	20.0	100	34.0	3.00	1.34E+02	2.50E-05	2.50E-05	2.63E-03	5.25E-05
2	0.49	0.33	121.6	4.03	199.0	3.3	0.020	Very stiff sand to clayey sand* (8)	1.00	1.45	1	11.7	100	55.3	13.00	3.18E+02	3.89E-05	5.22E-05	3.19E-03	1.25E-04
4	0.98	0.33	76.3	2.82	124.2	3.8	0.051	Very stiff sand to clayey sand* (8)	1.00	1.64	1	21.3	100	56.2	32.00	5.36E+02	5.91E-05	9.12E-05	5.56E-03	2.19E-04
5	1.64	0.66	56.3	2.05	94.9	3.5	0.091	Sand mixtures - silty sand to sandy silt (5)	1.00	2.00	1	23.1	96	52.8	50.00	6.67E+02	7.52E-05	1.32E-04	8.05E-03	6.34E-04
6	3.61	1.97	36.5	1.35	59.4	3.7	0.160	Silt mixtures - clayey silt to silty clay (4)	1.00	2.64	1	29.5	—	41.6	99.00	1.29E+03	7.60E-05	1.13E-04	8.49E-03	2.01E-03
7	4.27	0.66	44.9	1.44	73.1	3.2	0.236	Sand mixtures - silty sand to sandy silt (5)	0.99	2.16	1	24.8	66	40.1	148.00	1.09E+03	1.35E-04	3.37E-04	2.29E-02	1.81E-03
8	4.76	0.49	44.5	1.92	72.5	4.4	0.273	Silt mixtures - clayey silt to silty clay (4)	0.99	2.60	1	29.2	—	55.1	169.00	1.88E+03	9.99E-05	1.28E-04	7.76E-03	4.60E-04
12	5.91	0.33	43.2	2.01	70.3	4.7	0.347	Silt mixtures - clayey silt to silty clay (4)	0.99	2.73	1	30.4	—	58.2	214.00	2.16E+03	9.92E-05	1.39E-04	8.41E-03	3.31E-04
14	6.56	0.49	46.0	1.93	63.3	5.0	0.382	Silt mixtures - clayey silt to silty clay (4)	0.99	2.98	1	32.5	—	57.7	235.00	2.25E+03	1.04E-04	1.44E-04	8.78E-03	5.18E-04

GEOLABS-WESTLAKE VILLAGE

Evaluation of Liquefaction Resistance of Soils Using CPT Data

CPT: 1
G.W. Depth: 7 ft.
Design G.W. Depth: 7 ft.
Elev.: 0
Ic: 2.6 (Standard Value)
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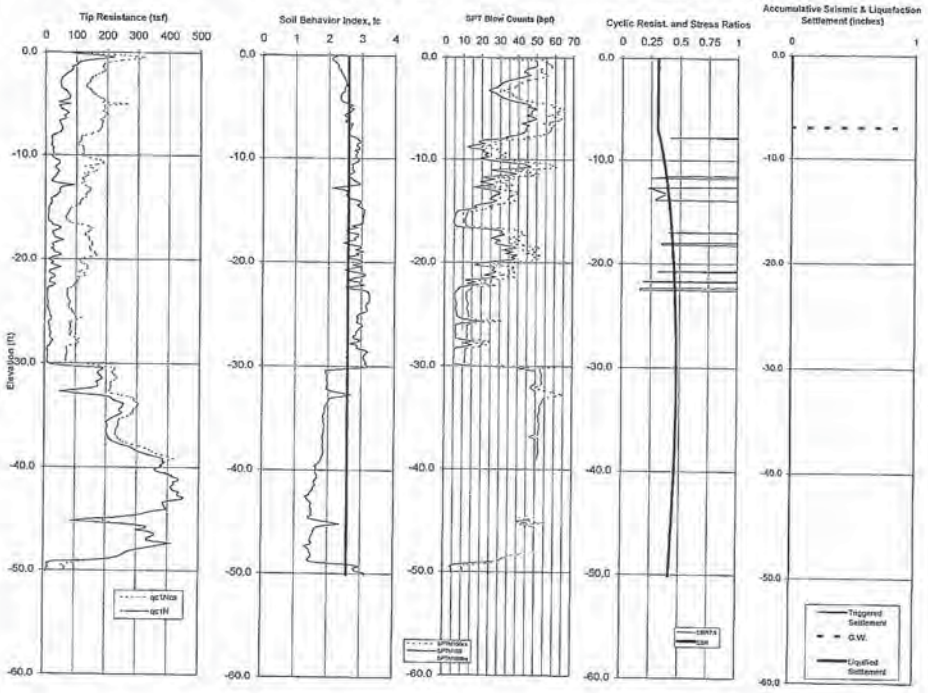
Fill Height: 0.0 ft. 120 pcf
Max horizontal acc. @ surface: 0.48 g
Design earthquake magnitude: 7.5
Removal: 0 ft



GEOLABS-WESTLAKE VILLAGE

*Exclude Settlement from layers thinner than 6 inches

CPT-Based Soil Behavior Type

CPT: 1
G.W. Depth: 7 ft
Ic: 2.6

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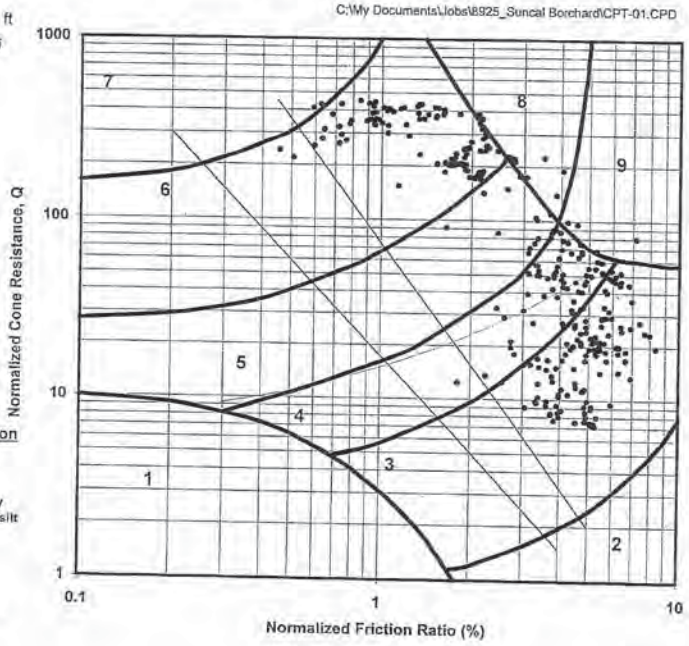
Soil Consistency Number
(Sand / Clay)
1 = very loose / very soft
2 = loose / soft
3 = medium dense / medium stiff
4 = dense / stiff
5 = very dense / very stiff
6 = — / hard



Soil Behavior Type Classification
1. Sensitive Fine Grained
2. Organic soils - peats
3. Clays - silty clay to clay
4. Silt mixtures - clayey silt to silty clay
5. Sand mixtures - silty sand to sandy silt
6. Sands - clean sand to silty sand
7. Gravelly sand to dense sand
8. Very stiff sand to clayey sand*
9. Very stiff, fine grained*

*Heavily overconsolidated or cemented

GEOLABS-WESTLAKE VILLAGE

Summary of Analysis of CPT Data

CPT: 1 | G.W. Depth: 7 ft | Design G.W. Depth: 7 ft | Removal: 0 ft | W.O.: 6925 | Elev.: 0 | Ixr: 2.6

Fill height: 0.0 ft | Max horizontal acc. at surface: 0.48 g | Design earthquake magnitude: 7.50

Layer	Layer Bott. (ft)	Layer Thick. (ft)	Avg. Tip Resist. qc (tsf)	Avg. Side Fric. fs	Avg. Tip Resist. qc1N (tsf)	Norm. Fric. R. (%)	Est. Wet Den. (pcf)	Soil Behavior Type	O.B. (tsf)	Eff. O.B. (tsf)	Norm. Exp. n	Ic Range	Ic	Fines Content (%)	Phi (deg)	Dr (%)	Su (tsf)	SPT N(60) (bpf)	SPT N1(60)cs (bpf)
1	0.16	0.16	72.5	2.44	28.6	3.0	120	Sand mixtures - silty sand to sandy silt	0.003	0.003	0.5	2.43	1.45	27.6	36	100.0	—	8.7	13.7
2	0.33	0.16	80.1	1.42	145.5	2.0	125	Sands - clean sand to silty sand	0.010	0.010	0.5	2.01	1.31	13.1	37	100.0	—	38.5	41.9
3	0.49	0.16	111.7	3.60	151.6	2.8	120	Sand mixtures - silty sand to sandy silt	0.025	0.025	0.5	2.01	1.32	15.3	36	100.0	—	50.0	53.6
4	0.82	0.33	118.8	3.46	160.3	3.1	120	Very stiff sand to clayey sand*	0.040	0.042	0.8	2.07 to 2.14	1.47	15.9	33	100.0	—	50.0	55.4
5	1.64	0.82	44.7	1.91	72.8	4.2	120	Sand mixtures - silty sand to sandy silt	0.075	0.075	0.8	2.27 to 2.44	2.01	23.8	30	84.0	—	27.1	30.5
6	1.97	0.33	22.6	0.94	36.7	3.8	120	Silt mixtures - clayey silt to silty clay	0.106	0.103	0.7	2.5 to 2.62	3.44	36.3	—	—	1.5	11.0	20.3
7	2.62	0.66	19.8	1.03	28.8	5.2	120	Clays - silty clay to clay	0.134	0.134	0.7	2.72 to 2.75	4.44	45.0	—	—	1.3	10.8	41.7
8	3.28	0.66	34.9	1.61	56.4	4.7	120	Silt mixtures - clayey silt to silty clay	0.174	0.176	0.5 to 0.8	2.49 to 2.62	3.07	32.2	—	—	2.3	30.4	51.3
9	3.44	0.16	26.5	1.57	46.4	5.5	120	Clays - silty clay to clay	0.209	0.209	0.7	2.67	3.78	38.7	—	—	1.9	40.1	54.1
10	3.77	0.33	31.4	1.48	53.1	4.6	120	Silt mixtures - clayey silt to silty clay	0.239	0.216	0.5	2.58 to 2.6	3.25	33.5	—	—	2.1	37.8	45.9
11	3.94	0.16	20.6	1.01	33.4	5.0	120	Clays - silty clay to clay	0.233	0.233	0.7	2.75	4.03	45.1	—	—	1.4	28.4	45.2
12	4.10	0.16	17.4	0.85	30.0	5.4	120	Silt mixtures - clayey silt to silty clay	0.242	0.242	1	2.65	3.54	37.1	—	—	0.9	41.0	54.9
13	4.59	0.49	8.5	0.60	31.0	6.0	120	Clays - silty clay to clay	0.262	0.262	1	2.75 to 2.84	4.65	46.5	—	—	0.6	36.2	47.3
14	4.92	0.33	12.1	0.58	47.1	4.7	120	Silt mixtures - clayey silt to silty clay	0.287	0.287	1	2.62 to 2.69	3.66	37.8	—	—	0.5	31.5	45.1
15	5.25	0.33	14.4	0.61	23.6	4.3	120	Clays - silty clay to clay	0.306	0.306	0.7	2.78 to 2.81	4.79	46.1	—	—	0.8	16.2	23.3
16	5.91	0.66	13.8	0.83	22.6	4.1	120	Silt mixtures - clayey silt to silty clay	0.336	0.336	0.7	2.78 to 2.77	4.42	43.6	—	—	1.0	15.4	28.4
17	6.07	0.16	13.2	0.60	32.2	5.0	120	Clays - silty clay to clay	0.360	0.360	1	2.74	4.29	42.8	—	—	0.9	32.5	40.4
18	7.55	1.48	15.8	0.64	37.2	4.3	120	Silt mixtures - clayey silt to silty clay	0.410	0.422	1	2.8 to 2.71	3.60	37.9	—	—	1.0	26.7	26.4
19	9.20	1.65	11.6	0.64	22.6	5.8	120	Clays - silty clay to clay	0.505	0.463	1	2.59 to 3.06	5.83	52.0	—	—	0.7	27.3	37.6
20	10.17	0.97	20.7	1.06	41.5	4.3	120	Silt mixtures - clayey silt to silty clay	0.597	0.551	0.5 to 1	2.58 to 2.85	3.43	38.7	—	—	1.7	28.1	39.8
21	11.32	1.16	7.1	0.72	12.4	3.2	120	Clays - silty clay to clay	0.846	0.529	1	2.87 to 3.02	4.32	50.2	—	—	0.4	5.9	13.1
22	11.48	0.16	5.1	0.07	8.0	1.6	120	Silt mixtures - clayey silt to silty clay	0.885	0.546	1	2.93	4.05	34.0	—	—	0.3	2.5	8.1
23	11.81	0.33	3.6	0.14	9.2	2.8	120	Clays - silty clay to clay	0.709	0.552	1	3 to 3.01	4.85	58.8	—	—	0.3	4.5	10.3
24	12.14	0.33	8.2	0.19	16.0	2.2	120	Silt mixtures - clayey silt to silty clay	0.770	0.565	1	2.74 to 2.81	4.50	44.3	—	—	0.6	4.8	10.8
25	12.47	0.33	13.7	0.59	27.8	4.6	120	Clays - silty clay to clay	0.729	0.574	1	2.78 to 2.8	5.14	48.2	—	—	0.9	17.1	25.5
26	12.80	0.33	15.7	0.64	27.3	4.0	120	Silt mixtures - clayey silt to silty clay	0.753	0.583	1	2.69 to 2.78	4.28	42.5	—	—	1.1	16.7	25.1
27	15.09	2.30	6.3	0.33	11.8	4.4	120	Clays - silty clay to clay	0.818	0.601	1	2.97 to 3.14	7.30	61.8	—	—	0.5	7.3	13.7
28	15.26	0.16	20.4	0.60	36.7	2.3	120	Silt mixtures - clayey silt to silty clay	0.812	0.657	0.5	2.48	3.67	33.6	—	—	2.0	9.6	15.8
29	15.42	0.16	35.8	0.47	47.9	1.2	120	Sand mixtures - silty sand to sandy silt	0.822	0.661	0.5	2.17	1.71	19.5	28	38.8	—	8.1	12.3
30	15.58	0.16	22.0	0.70	33.7	2.4	120	Silt mixtures - clayey silt to silty clay	0.831	0.666	1	2.52	3.45	38.3	—	—	1.6	14.6	22.6
31	15.75	0.16	30.6	1.10	29.3	5.6	120	Clays - silty clay to clay	0.841	0.671	1	2.81	4.85	49.5	—	—	1.3	26.9	42
32	15.91	0.16	92.3	1.09	75.6	1.7	120	Sand mixtures - silty sand to sandy silt	0.851	0.676	0.5	2.15	1.58	17.7	42	57.0	—	19.6	33
33	16.08	0.16	32.0	1.08	39.0	3.5	120	Silt mixtures - clayey silt to silty clay	0.861	0.680	0.5	2.19	3.23	34.6	—	—	2.1	19.2	25
34	17.35	1.48	8.8	0.30	10.9	3.7	120	Clays - silty clay to clay	1.015	0.704	1	2.84 to 3.15	7.45	62.5	—	—	0.5	7.1	13.5
35	17.68	0.33	10.2	0.17	12.8	1.8	120	Silt mixtures - clayey silt to silty clay	1.064	0.730	1	2.8 to 2.8	4.80	49.1	—	—	0.5	4.1	10
36	18.04	0.16	10.6	0.29	12.8	3.1	120	Clays - silty clay to clay	1.079	0.737	1	2.92	5.85	53.1	—	—	0.6	5.4	11.4
37	18.54	0.49	14.0	0.31	17.3	2.4	120	Silt mixtures - clayey silt to silty clay	1.090	0.746	1	2.67 to 2.8	4.38	42.2	—	—	0.9	5.6	11.5
38	18.70	0.16	14.0	0.59	17.7	4.6	120	Clays - silty clay to clay	1.118	0.756	1	2.72	5.24	53.5	—	—	0.9	11.2	19.4
39	18.86	0.16	23.8	0.93	29.5	3.7	120	Silt mixtures - clayey silt to silty clay	1.138	0.761	1	2.49	3.63	38.2	—	—	1.6	14.8	22.8
40	19.52	0.66	65.7	1.15	73.1	1.8	120	Sand mixtures - silty sand to sandy silt	1.165	0.777	0.5	2.07 to 2.24	1.88	19.0	40	53.0	—	17.9	22.4
41	20.18	0.66	189.3	2.89	174.0	1.9	125	Sands - clean sand to silty sand	1.183	0.760	0.5	1.43 to 1.98	1.72	17.4	44	80.8	—	43.9	45.4
42	21.00	0.83	144.1	2.22	155.2	2.2	120	Sand mixtures - silty sand to sandy silt	1.228	0.814	0.5	2 to 2.04	1.33	13.6	44	80.0	—	46.2	50.2
43	22.80	1.80	194.3	4.52	205.8	2.2	125	Sands - clean sand to silty sand	1.378	0.864	0.5	1.80 to 1.99	1.74	11.8	45	87.0	—	48.8	50.7
44	25.10	2.30	153.7	4.55	148.0	2.8	120	Sand mixtures - silty sand to sandy silt	1.444	0.918	0.5	1.98 to 2.07	1.33	13.8	44	94.0	—	50.0	54.1
45	25.75	0.65	191.8	5.57	192.5	2.9	125	Very stiff sand to clayey sand*	1.534	0.958	0.5	2.03 to 2.08	1.30	14.8	44	95.0	—	50.0	54.7
46	25.92	0.16	224.9	5.97	223.4	2.7	120	Sand mixtures - silty sand to sandy silt	1.559	0.972	0.5	1.96	1.29	12.7	45	100.0	—	50.0	53.6
47	27.72	1.80	274.6	7.57	268.7	2.8	125	Very stiff sand to clayey sand*	1.621	1.005	0.5	1.89 to 1.99	1.22	11.4	46	100.0	—	50.0	57.8
48	34.45	6.73	310.6	6.18	295.3	1.7	120	Sands - clean sand to silty sand	1.887	1.135	0.5	1.82 to 1.85	1.09	7.5	48	100.0	—	50.0	55.8
49	34.78	0.33	233.6	5.09	206.5	1.8	120	Sand mixtures - silty sand to sandy silt	2.107	1.240	0.5	2 to 2.01	1.30	13.0	44	97.0	—	50.0	53.7
50	39.78	5.00	353.1	4.69	307.8	1.4	125	Sands - clean sand to silty sand	2.276	1.320	0.5	1.35 to 1.87	1.03	5.8	46	100.0	—	50.0	50.3
51	40.25	0.49	442.8	2.19	364.9	0.6	125	Gravelly sand to dense sand	2.450	1.417	0.5	1.26 to 1.3	1.00	0.3	45	100.0	—	50.0	50
52	40.42	0.16	444.2	2.69	362.6	0.8	125	Sands - clean sand to silty sand	2.471	1.427	0.5	1.36	1.00	1.0	46	100.0	—	50.0	50
53	40.66	0.33	341.5	1.29	319.8	0.4	125	Gravelly sand to dense sand	2.488	1.435	0.5	1.33 to 1.34	1.00	3.0	46	100.0	—	47.7	43.7
54	41.01	0.16	300.1	1.84	244.5	0.6	125	Sands - clean sand to silty sand	2.501	1.443	0.5	1.48	1.00	2.8	44	100.0	—	34.7	34.7
55	41.17	0.16	150.3	3.31	128.5	2.2	120	Sand mixtures - silty sand to sandy silt	2.511	1.448	0.5	2.07	1.40	15.0	41	78.0	—	34.4	36.8
56	41.50	0.33	71.0	2.95	57.6	4.7	120	Silt mixtures - clayey silt to silty clay	2.526	1.455	0.5 to 1	2.5 to 2.61	3.07	30.2	—	—	4.8	34.5	43.3
57	41.67	0.16	67.4	2.51	78.8	2.7	120	Sand mixtures - silty sand to sandy silt	2.541	1.462	0.5	2.26	1.50	21.8	39	57.0	—	28.8	34.3
58	41.83	0.16	69.8	2.23	64.5	3.3	120	Silt mixtures - clayey silt to silty clay	2.551	1.467	0.5	2.45	2.51	28.3	—	—	4.6	27.8	38
59	42.81	0.98	45.4	2.54	28.9	5.7	120	Clays - silty clay to clay	2.595	1.483	1	2.74 to 2.95	5.15	48.3	—	—	2.8	32.4	44.1
60	42.98	0.16	61.8	1.93	38.4	4.9	120	Silt mixtures - clayey silt to silty clay	2.620	1.500	1	2.66	2.83	39.2	—	—	3.3	37.0	44.1
61	43.14	0.16	77.7	1.73	67.0	2.3	120	Sand mixtures - silty sand to sandy silt	2.630	1.504	0.5	2.30	1.90	22.8	37	47.3	—	18.1	23.9
62	43.31	0.16	53.4	1.64	34.8	3.5	120	Silt mixtures - clayey silt to silty clay	2.629	1.509	1	2.61	3.32	31.9	—	—	3.5	18.5	25.3
63	43.47	0.16	41.6	1.58	23.9	6.3	120	Clays - silty clay to clay	2.649	1.514	1	2.69	5.64	51.6	—	—	2.6	34.2	46.1
64	43.80	0.33	54.0	2.11	33.8	4.1	120	Silt mixtures - clayey silt to silty clay	2.664	1.521	1	2.84 to 2.89	3.77	38.8	—	—	3.4	22.5	31.7
65	43.96	0.16	36.3	2.13	23.3	6.0	120	Clays - silty clay to clay	2.679	1.528	1	2.80	5.20	57.0	—	—	2.4	26.5	39.3
66	44.13	0.16	189.0	3.23	125.7	2.1	120	Sand mixtures - silty sand to sandy silt	2.689	1.533	0.5	2.00	1.38	34.8	43	79.0	—	33.1	37
67	47.90	3.77	511.0	6.88	251.8	1.8	125	Sands - clean sand to silty sand	2.811	1.604	0.5	1.62 to 1.87	1.12	8.4	44	100.0	—	50.0	61.9
68	48.06	0.16	230.4	4.47	237.2	2.9	125	Very stiff sand to clayey sand*	2.835	1.655	0.5	1.95	1.24	11.7	44	100.0	—	50.0	62.9

Soil Characteristics and Engineering Characteristics Using CPT Data

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CPT: 1 | G.W. Depth: 7 ft. | Design G.W. Depth: 7 ft. | Elev.: 0

"Dry" Sand Seismic Settlement Using CPT Data

CPT: 2 W.O.: 8925
G.W. Depth: 7 ft. Elev.: 0
Design G.W. Depth: 7 ft. Ic: 2.6 C:\My Documents\Liq\8925_Summit Brochure\CPT-02.CPO
Removal: 0 ft.

Fill Height: 0.0 ft. 120 pcf
Max horizontal acc. @ surface: 0.48 g
Design earthquake magnitude: 7.50
Magnitude Scaling Factor: 1.00

Layer	Layer Bott. (ft)	Layer Thick. (ft)	Avg. Tip Resist qc (tsf)	Avg. Side Fric. fs	Avg. Tip Resist qc1N (tsf)	Norm. Fric. Rt. (%)	Eff. O.B. (tsf)	Soil Behavior Type	Avg. rd	Kc	Kσ	Fines Content (%)	Avg. Dr (%)	Spt N160cs (bpf)	Cyclic Shear Stress τav (psf)	Gmax (ksf)	γeff / (Geff/Gmax)	γelf	Vol. Strain (%)	"Dry" Settle. (in)
1	0.16	0.16	22.5	0.44	38.6	2.0	0.005	Sand mixtures - silty sand to sandy silt (5)	1.00	2.45	1	27.8	100	13.7	3.09	1.00E+02	3.09E-05	3.91E-05	1.45E-02	2.85E-04
2	0.33	0.16	90.1	1.82	146.8	2.0	0.015	Sands - clean sand to silty sand (6)	1.00	1.31	1	13.1	100	41.9	9.00	2.52E+02	3.70E-05	4.91E-05	2.99E-03	5.90E-05
3	0.49	0.16	117.7	3.60	191.6	2.8	0.025	Sand mixtures - silty sand to sandy silt (5)	1.00	1.02	1	13.3	100	53.9	15.00	3.57E+02	4.38E-05	5.87E-05	3.70E-03	7.30E-05
4	0.82	0.33	110.8	3.46	180.3	3.1	0.040	Very stiff sand to clayey sand* (8)	1.00	1.47	1	15.9	100	55.4	25.00	4.61E+02	5.42E-05	8.08E-05	4.92E-03	1.94E-04
5	1.64	0.82	44.7	1.31	72.8	2.7	0.075	Sand mixtures - silty sand to sandy silt (5)	1.00	2.07	1	23.8	84	33.9	47.00	5.32E+02	8.95E-05	1.94E-04	4.08E-02	4.02E-03
8	3.28	0.66	34.9	1.61	56.8	4.7	0.175	Silt mixtures - clayey silt to silty clay (4)	0.99	3.07	1	33.2	—	51.3	89.00	1.14E+03	5.60E-05	8.01E-05	4.88E-03	3.85E-04
10	3.77	0.33	31.4	1.48	51.1	4.8	0.218	Silt mixtures - clayey silt to silty clay (4)	0.99	3.26	1	34.8	—	49.9	135.00	1.52E+03	5.33E-05	1.20E-04	7.32E-03	2.89E-04

Liquefaction Analysis Using CPT Data

CPT: 2 W.O.: 8925
G.W. Depth: 7 ft. Elev.: 0
Design G.W. Depth: 7 ft. Ic: 2.6 C:\My Documents\Liq\8925_Summit Brochure\CPT-02.CPO
Removal: 0 ft.

Fill Height: 0.0 ft. 120 pcf
Max horizontal acc. @ surface: 0.48 g
Design earthquake magnitude: 7.50
Magnitude Scaling Factor: 1.00

Layer	Layer Bott. (ft)	Layer Thick. (ft)	Avg. Tip Resist qc (tsf)	Avg. Side Fric. fs	Avg. Tip Resist qc1N (tsf)	Norm. Fric. Rt. (%)	Eff. O.B. (tsf)	Soil Behavior Type	Avg. rd	Kc	Kσ	Avg. Fines Content (%)	Avg. Dr (%)	Avg. SPT N1(60)lq (bpf)	Min. CRR (M=7.5)	Avg. CSR	Min. Liq. FS	Avg. Strain (%)	Liq. Settle. (in)
29	10.17	0.82	26.2	1.09	41.8	4.2	0.597	Silt mixtures - clayey silt to silty clay (4)	0.98	3.43	1	36.2	—	32.1	0.34	0.358	0.95	0.0	0
28	15.26	0.16	30.4	0.69	36.7	2.3	0.657	Silt mixtures - clayey silt to silty clay (4)	0.97	2.67	1	29.8	—	12.1	0.17	0.419	0.40	0.0	0
29	15.42	0.16	39.8	0.47	47.9	1.2	0.661	Sand mixtures - silty sand to sandy silt (5)	0.97	1.71	1	19.5	38	9.8	0.13	0.421	0.31	0.0	0
32	15.91	0.16	63.5	1.09	75.6	1.7	0.675	Sand mixtures - silty sand to sandy silt (5)	0.97	1.68	1	17.7	57	20.1	0.24	0.425	0.56	0.0	0
33	16.08	0.16	32.0	1.08	38.0	3.5	0.690	Silt mixtures - clayey silt to silty clay (4)	0.97	3.23	1	34.6	—	22.2	0.25	0.428	0.59	0.0	0
40	15.52	0.66	85.7	1.15	73.1	1.8	0.772	Sand mixtures - silty sand to sandy silt (5)	0.96	1.69	1	19.0	53	19.5	0.17	0.447	0.39	0.0	0
41	20.18	0.66	158.3	2.99	174.0	1.9	0.792	Sands - clean sand to silty sand (6)	0.96	1.23	1	11.4	90	44.8	Infin	0.450	Infin	0.0	0
42	21.00	0.82	144.1	3.22	156.3	2.2	0.814	Sand mixtures - silty sand to sandy silt (5)	0.96	1.33	1	13.6	86	47.4	Infin	0.453	Infin	0.0	0
43	22.60	1.80	184.3	4.22	205.6	2.2	0.854	Sands - clean sand to silty sand (6)	0.95	1.24	1	11.6	97	50.8	Infin	0.456	Infin	0.0	0
44	25.10	2.30	163.7	4.68	168.0	2.6	0.916	Sand mixtures - silty sand to sandy silt (5)	0.95	1.33	1	13.6	94	51.1	Infin	0.465	Infin	0.0	0
45	25.75	0.66	192.8	5.51	192.6	2.9	0.959	Very stiff sand to clayey sand* (8)	0.94	1.39	1	14.6	95	51.2	Infin	0.469	Infin	0.0	0
46	25.92	0.16	224.9	5.97	223.4	2.7	0.972	Sand mixtures - silty sand to sandy silt (5)	0.94	1.29	1	12.7	100	51.3	Infin	0.470	Infin	0.0	0
47	27.72	1.80	274.4	7.07	268.2	2.6	1.002	Very stiff sand to clayey sand* (8)	0.93	1.23	1	11.4	100	51.0	Infin	0.472	Infin	0.0	0
48	34.45	6.73	310.5	5.18	285.9	1.7	1.136	Sands - clean sand to silty sand (6)	0.91	1.09	0.95	7.5	100	50.7	Infin	0.474	Infin	0.0	0
49	34.78	0.33	235.5	6.09	206.6	2.6	1.246	Sand mixtures - silty sand to sandy silt (5)	0.89	1.30	0.93	13.0	97	51.1	Infin	0.474	Infin	0.0	0
50	39.86	5.09	363.1	4.69	307.5	1.4	1.330	Sands - clean sand to silty sand (6)	0.87	1.07	0.88	5.8	100	50.3	Infin	0.471	Infin	0.0	0
51	40.35	0.49	443.8	2.19	384.0	0.5	1.417	Gravelly sand to dense sand (7)	0.85	1.00	0.87	0.3	100	50.1	Infin	0.458	Infin	0.0	0
52	40.52	0.16	444.5	2.68	383.9	0.6	1.427	Sands - clean sand to silty sand (6)	0.85	1.00	0.87	1.9	100	50.1	Infin	0.457	Infin	0.0	0
53	40.85	0.33	391.5	1.39	319.8	0.4	1.435	Gravelly sand to dense sand (7)	0.84	1.00	0.87	0.0	100	43.7	Infin	0.456	Infin	0.0	0
54	41.01	0.16	300.1	1.84	244.5	0.6	1.443	Sands - clean sand to silty sand (6)	0.84	1.00	0.86	2.5	100	35.0	Infin	0.456	Infin	0.0	0
55	41.17	0.16	155.5	3.31	125.5	2.2	1.448	Sand mixtures - silty sand to sandy silt (5)	0.84	1.40	0.86	15.0	76	35.7	Infin	0.455	Infin	0.0	0
56	41.50	0.33	71.0	2.95	52.6	4.3	1.455	Silt mixtures - clayey silt to silty clay (4)	0.84	3.07	0.9	30.2	—	37.1	Infin	0.454	Infin	0.0	0
57	41.67	0.16	97.4	2.56	78.8	2.7	1.462	Sand mixtures - silty sand to sandy silt (5)	0.84	1.89	0.93	21.6	57	30.6	0.35	0.453	0.79	0.0	0
58	41.83	0.16	69.9	2.23	56.5	3.3	1.467	Silt mixtures - clayey silt to silty clay (4)	0.83	2.51	0.89	28.3	—	29.9	0.31	0.453	0.68	0.0	0
61	43.14	0.16	77.7	1.70	62.0	2.3	1.504	Sand mixtures - silty sand to sandy silt (5)	0.82	1.96	0.92	22.6	47	20.0	0.23	0.448	0.56	0.0	0
66	44.13	0.16	159.0	3.23	125.7	2.1	1.533	Sand mixtures - silty sand to sandy silt (5)	0.81	1.35	0.92	14.5	76	34.4	Infin	0.445	Infin	0.0	0
67	47.90	3.77	325.0	5.68	251.8	1.8	1.564	Sands - clean sand to silty sand (6)	0.79	1.12	0.83	8.4	100	50.7	Infin	0.436	Infin	0.0	0
68	48.05	0.16	330.4	8.47	251.3	2.6	1.696	Very stiff sand to clayey sand* (8)	0.77	1.24	0.82	11.7	100	51.0	Infin	0.427	Infin	0.0	0

CPT-Based Soil Behavior Type

CPT: 2
G.W. Depth: 7 ft
Ic: 2.6

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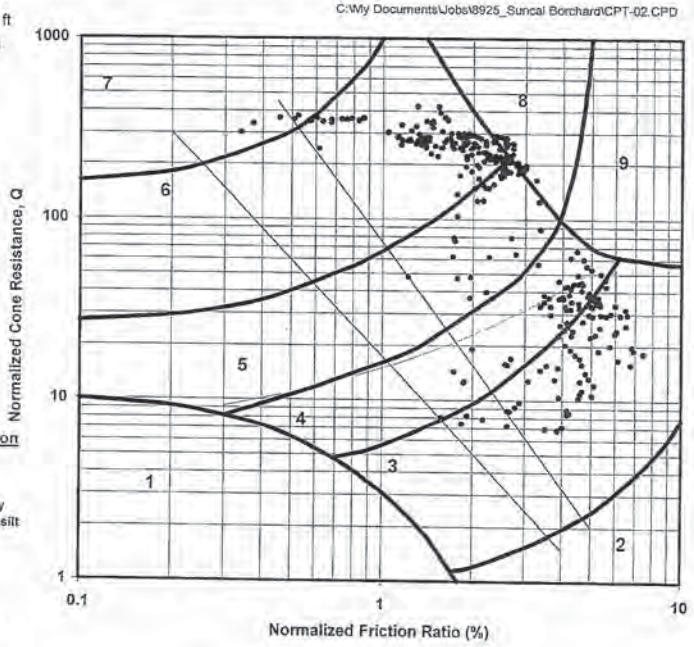
Soil Consistency Number
(Sand / Clay)
1 = very loose / very soft
2 = loose / soft
3 = medium dense / medium stiff
4 = dense / stiff
5 = very dense / very stiff
6 = — / hard



Soil Behavior Type Classification
1. Sensitive Fine Grained
2. Organic soils - peats
3. Clays - silty clay to clay
4. Silt mixtures - clayey silt to silty clay
5. Sand mixtures - silty sand to sandy silt
6. Sands - clean sand to silty sand
7. Gravelly sand to dense sand
8. Very stiff sand to clayey sand*
9. Very stiff, fine grained*

*Heavily overconsolidated or cemented

Evaluation of Soil Characteristics Using CPT Data

CPT: 2
G.W. Depth: 7 ft.
Design G.W. Depth: 7 ft.
Elev.: 0

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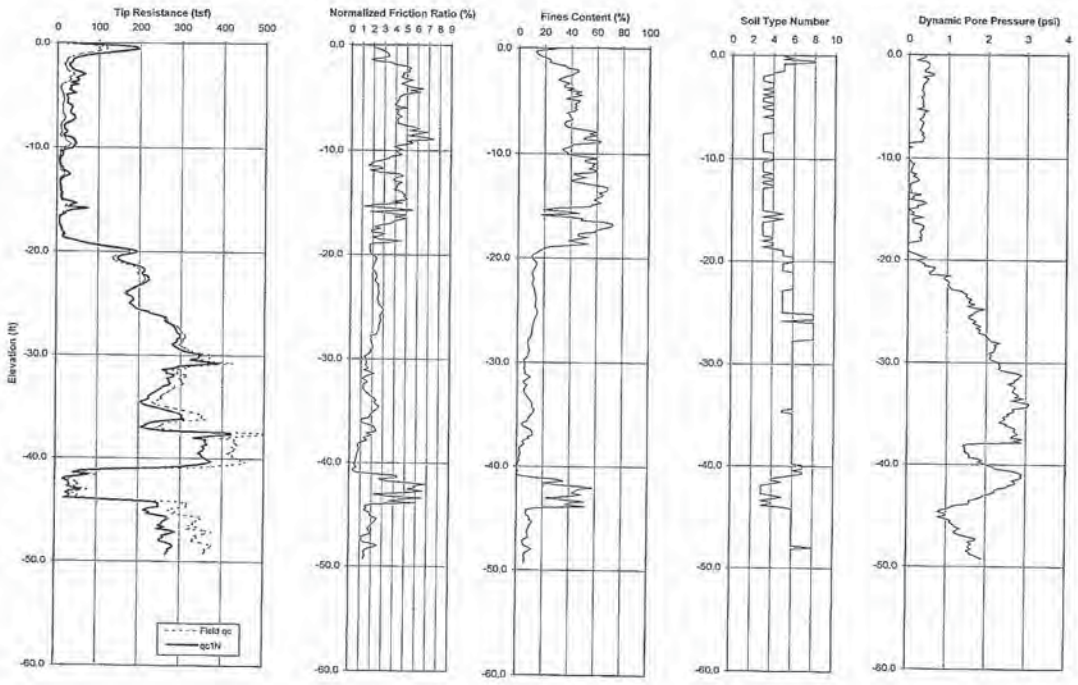

Soil Characteristics and Engineering Characteristics
Using CPT Data

CPT: 2
G.W. Depth: 7 ft.
Design G.W. Depth: 7 ft.
Elev.: 0
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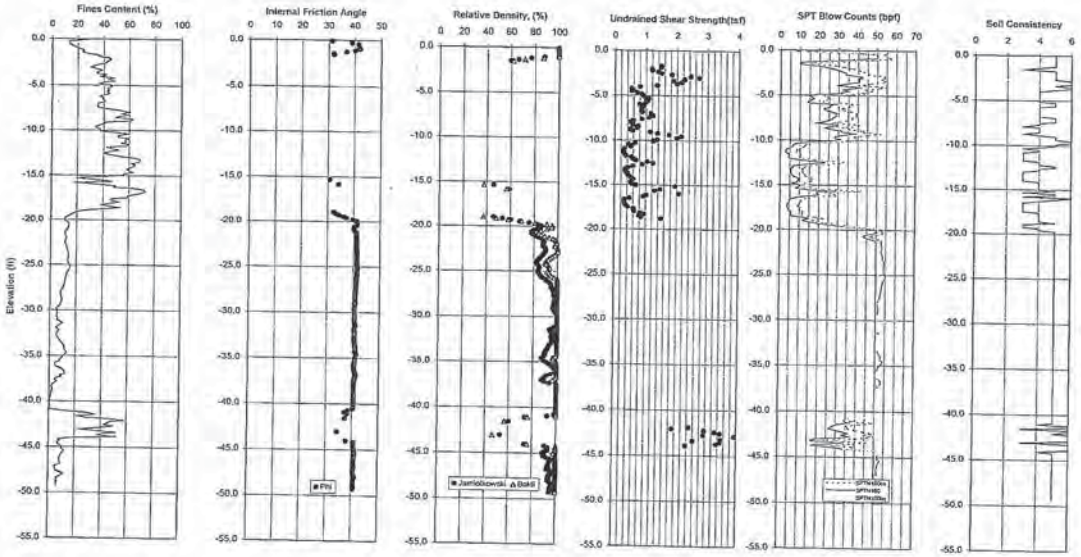
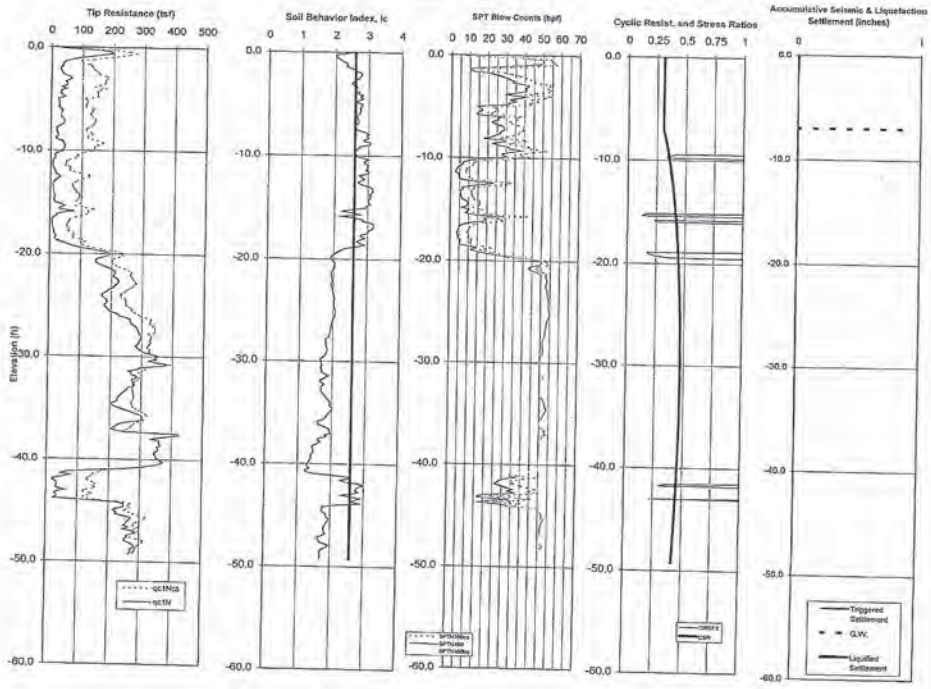


GEOLABS-WESTLAKE VILLAGE

Evaluation of Liquefaction Resistance of Soils
Using CPT Data

CPT: 2
G.W. Depth: 7 ft.
Design G.W. Depth: 7 ft.
Elev.: 0
Ic: 2.6 (Standard Value)
C:\My Documents\Jobs\8925_Suncal Borchard\CPT-02.CPD
Fill Height: 0.0 ft. 120 pcf
Max horizontal acc. @ surface: 0.45 g
Design earthquake magnitude: 7.5
Removal: 0 ft



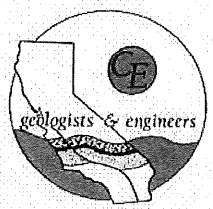
GEOLABS-WESTLAKE VILLAGE

*Exclude Settlement from layers thinner than 6 inches

Appendix E

Phase I Environmental Site Assessment (ESA)

California



Environmental

PRELIMINARY ENVIRONMENTAL SITE ASSESSMENT - PHASE I UPDATE
Approximately 115 Acres
Agricultural Land
1618 Doris Avenue and Surrounding Property
South of Doris Avenue
West of North Ventura Road and North of Teal Club Road
Oxnard, California 93030

FOR

SUNCAL COMPANIES
21900 Burbank Boulevard, Suite 114
Woodland Hills, California 91367

Attention: Ms. Ky Spangler

CE Job No. EV104-2536 July 2007

1161 Calle Suerte, Suite G, Camarillo, CA 93012 (805) 445-7117 (805) 445-8599 (fax) Lic. #A732377

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EXECUTIVE SUMMARY

An Environmental Site Assessment - Phase I Update was performed for the subject property consisting of approximately 115 acres located at 1618 Doris Avenue, Oxnard, California. The property is bound by Dons Avenue to the north, Patterson road to the west, Teal Club Road to the south, and Ventura Road to the east. The scope of work for the Phase I meets ASTM E 1527-05 *Standard Practice for Preliminary Site Assessments*. The purpose of the Phase I report was to provide information regarding the potential for hazardous material impacts to the soil and groundwater beneath the subject property. Such threats or material threats are identified in this report as recognized environmental conditions (REC). The extent of this evaluation in conjunction with owner/client supplied data is intended to satisfy the requirements of all appropriate inquiry into the previous ownership and uses of the property. The scope of the work included a site reconnaissance, research of land use records and other sources for preliminary indications of hazardous material use, storage, or disposal at the property and/or on contiguous parcels.

The subject property has historically been used for agricultural purposes. The agricultural use of the property has been ongoing for at least 60 years. A maintenance/storage area exists near the northeast corner of the property. This area contains several wood sheds and larger barns for storage and maintenance of farm equipment. Irrigation pipe, ploughs and other equipment are stored in this area. An aboveground diesel fuel storage tank (approximately 5,000-gallons) was also located in this area. The surrounding area has historically been used for agricultural purposes. The transition to residential development from agricultural use has occurred over the past 30 years.

The subject property is listed as a facility that generated and stored hazardous materials on the HIST UST and UST standard environmental record sources researched for this report. The subject property was also identified as a leaking underground storage tank site on the CORTESE and LUST databases where gasoline impacts to soil and groundwater were recognized. The remedial response at the site included excavation and removal of gasoline impacted soil and groundwater monitoring. Five groundwater monitor wells were installed around the area of the gasoline fuel hydrocarbon release. Low to non-detect levels of gasoline hydrocarbons were detected in groundwater obtained from the wells. The wells were monitored intermittently from 1989 through 1995. A request for closure was made to the County of Ventura and the County required one more round of groundwater sampling which occurred in 1997. The 1997 groundwater sampling showed nondetect levels of gasoline fuel hydrocarbons in all wells. Based on this finding, the County of Ventura issued final case closure for the property on February 9, 1998.

Approximately eight groundwater production wells for irrigation have historically been present on the property. Five of the eight wells list Borchard (Borchard family owned and operated the subject property) as the owner of the well. Three additional wells are identified by different owners. It is recommended that the wells be located and surveyed. The wells should be abandoned, as necessary, according to the guidelines issued by the County of Ventura Department of Public Works. If possible, residential construction directly above the abandoned groundwater wells should be avoided.

EXECUTIVE SUMMARY
(continued)

The existing aboveground storage tank (approximately 5,000 gallons) is considered an unpermitted aboveground storage tank facility. It is recommended that the aboveground tank be abandoned by removal under permits issued by the County of Ventura. Minor diesel soil contamination was recognized in the area of the aboveground tank. The shallow impacts in soil should be excavated and removed offsite during redevelopment.

It is recommended that a pre-demolition asbestos and lead based paint survey be performed on the remaining sheds and buildings located at the northeast corner of the property. Buried transite water pipe (assumed to be asbestos containing) may be found onsite during future grading activities. Transite pipe excavated during future grading work should be abandoned and disposed of as non friable asbestos containing waste.

Residual levels of chlorinated pesticides were found in soil beneath the property. The residual levels of pesticides were typically restricted to the upper 1 foot to 1 ½ feet below the ground surface. The most common pesticide found in soil beneath the property was toxaphene, which is ubiquitous on almost all agricultural properties within the Oxnard Plain. Toxaphene, along with DDT and its breakdown products were found to depths of up to 10 feet in the area of the underground storage tank removal and remediation work located at the northeast corner of the property. It is suspected that the residual pesticide contamination found at depth in this location is related to backfilling of the underground storage tank excavation with onsite soil.

The geotechnical engineer is recommending removal and recompaction of the upper agricultural disturbed soil for support of foundations for future single family residential construction. Future commercial construction is also contemplated. It is recommended that the USEPA *Preliminary Remediation Goals - Residential Sites* (PGRr) be utilized to set appropriate residual levels for the organochlorine pesticide contamination found. Performance of the geotechnical grading along with importation of approximately 500,000 cubic yards of clean fill will likely reduce the residual pesticide to levels below the recommended PRGr. Monitoring of the residual levels of pesticides should be confirmed both during and following completion of the grading activities. A portion of the subject property may be developed as a school site. Preparation of a Cal EPA-DTSC Compliant Preliminary Endangerment Assessment Report would be required for that portion of the property.

No data failure was encountered in the preparation of this report. Review of recorded land title records, including environmental liens, was included in this report. Environmental liens were not found on file for the subject property address.

This assessment has revealed no evidence of additional recognized environmental conditions in connection with the subject property. Additional site assessment research and/or subsurface assessment activities are not recommended.

INTRODUCTION

The following report presents the findings of the Environmental Site Assessment - Phase I Update performed for the subject property consisting of approximately 115 acres located at 1618 Doris Avenue, Oxnard, California. The scope of the Phase I study meets ASTM E 1527-05 *Standard Practice for Environmental Site Assessments* and included research of available land use records and other sources for preliminary indications of hazardous material use, storage or disposal at the property. The findings of this study are intended to provide information to the client regarding potential hazardous material impacts to the soil and groundwater beneath the site.

The scope of the investigation was performed in general accordance with ASTM Standard Practice for Environmental Site Assessments – Phase I, Environmental Site Assessment Process ASTM E 1527-05. The steps outlined in this practice are intended to permit a user (client) to satisfy one of the requirements to qualify for the innocent land owner, contiguous property owner, or bona fide purchaser limitations on CERCLA liability. Specifically, this report along with certain obligations of the client, constitutes All Appropriate Inquiry (AAI) into the previous ownership and uses of the property consistent with the standard of care as practiced in this area by environmental professionals. A main component of the assessment is to identify recognized environmental conditions as they may affect the subject property. As defined by ASTM E 1527-05, a recognized environmental condition (REC) means *"the presence or likely presence of any hazardous substances or petroleum products on a property under conditions that indicate an existing release, past release, or a material threat of a release of any hazardous substances or petroleum products into structures on the property or into the ground, groundwater, or surface water of the property."*

An important component of complying with the ASTM E 1527-05 Standard is information to be obtained or in the possession of the client and/or seller of the property. Such information includes obtaining and review of a recent title report, any specialized information regarding the site or surrounding area which may give rise to identification of a recognized environmental condition, and/or reasons given by the seller should the purchase price be significantly lower than what would be reasonably expected for a property of similar size and value. Often a real estate appraiser is commissioned to evaluate the purchase or sale price of a property. Such an appraisal is outside the scope of this Phase I Assessment report.

The independent conclusions represent California Environmental's professional judgment based on the conditions that existed and the information and data available during the course of study. Factual information regarding operations, conditions, and test data provided by the client, the owner or their representatives have been assumed to be correct and complete. This report includes **GENERAL FINDINGS** and **CONCLUSIONS AND RECOMMENDATIONS**, which together with the remainder of this report are subject to the **NOTICE** at the end of the report.

The scope of work included:

- A walkover of the site.
- Review of building and grading permits on file for the City of Oxnard.
- Review of underground storage tank files and industrial waste records maintained by the County of Ventura.
- Review of historical USGS topographic maps.
- Research of historical Sanborn Fire Insurance Maps maintained by EDR Company.
- Contact with the Ventura County Environmental Health Department to review their files.

- Contact with the Ventura County Air Pollution Control District (APCD) to review their files.
- Review of Oil Field Maps and oil well records maintained by the State of California Division of Oil, Gas, and Geothermal Resources.
- Review of Regional Landfill Maps.
- Review of the following lists and maps of suspect or known contaminated sites:
  - California Regional Water Quality Control Board, (RWQCB) - *Computer Case Listing of Reported Underground Tank Leaks*, covering Ventura County.
  - California Governor's Office of Planning and Research - *Hazardous Waste and Substance Sites - Cortese List and Contaminated Wells List, which includes the Bond Expenditure Plan* (BEP) sites.
  - California Environmental Protection Agency, Department of Toxic Substances Control - *CalSites List.*
  - California Department of Health Services, *Hazardous Waste Information System* (HWIS) and Tanner Report.
  - California Integrated Waste Management Board, *Solid Waste Information System* - (SWIS) List.
  - State Water Resources Control Board, *Solid Waste Assessment Test Program* (SWAT).
  - State Water Resources Control Board, *Hazardous Substance Storage Container Database* (UST).
  - U.S. Environmental Protection Agency Superfund Program - *National Priorities List* (NPL).
  - U.S. Environmental Protection Agency - *Comprehensive Environmental Response, Compensation, and Liability Information System* (CERCLIS).
  - U.S. Environmental Protection Agency, *Toxic Release Inventory System* (TRIS).
  - U.S. Environmental Protection Agency, *Resource Conservation and Recovery Information, System Treatment, Storage and Disposal Facilities*, (RCRIS-TSDF).
  - U.S. Environmental Protection Agency, *Resource Conservation and Recovery Information System, Large Quantity Generators*, (RCRIS-LQG).
  - U.S. Environmental Protection Agency, Resource *Conservation and Recovery Information System, Small Quantity Generators*, (RCRIS-SQG).

- U.S. Environmental Protection Agency - *Superfund Amendment and Reauthorization Act, Title III*, (SARA Title III).
- U.S. Environmental Protection Agency, *Emergency Response Notification System* (ERNS).
- U.S. Environmental Protection Agency, *Facility Index System* (FINDS).
- U.S. Environmental Protection Agency, *Civil Enforcement Docket* (DOCKET).

- A review of government records databases of suspect or known contaminated sites was performed by EDR Company. The results of the search are summarized in this report. The report is enclosed in **APPENDIX IV**.
- Preparation of this report.

SITE DESCRIPTION

LOCATION AND LEGAL DESCRIPTION

The subject property is located between Patterson Road and Ventura Road on the south side of Doris Avenue, in the City of Oxnard, Ventura County, California, see **VICINITY MAP**. The current street address associated with the property is 1618 Doris Avenue.

The legal description of the property is as follows: *Rancho El Rio de Santa Clara O'La Colonia T2N, R22W; APN 183-007-009 and -014.*

SITE RECONNAISSANCE

The site conditions were observed during a reconnaissance conducted by Mr. Christopher Rude of California Environmental on July 19, 2007. An Environmental Field Reconnaissance Questionnaire was completed during the site reconnaissance. An Environmental Field Interview Questionnaire was forwarded to Ms. Ky Spangler of Suncal Properties. The Environmental Field Questionnaires are

included in **APPENDIX I.** The features described below are shown on the enclosed **PLOT PLAN.** Photographs of the subject property are included as **PLATES 1-2.**

Description of Property

The subject property consists of approximately 115 acres of agricultural land. The property primarily consists of tilled agricultural land. A maintenance/storage area exists near the northeast corner of the property. This area contains several wood sheds and larger barns for storage and maintenance of farm equipment. Irrigation pipe, ploughs and other equipment are stored in this area. An aboveground diesel fuel storage tank (approximately 5,000-gallons) was also located in this area. Access the property is via the adjacent streets.

Adjacent Properties

The subject property is bound to the north by a single family residence (1558 West Doris Avenue) and Doris Avenue, with residential housing tract beyond; Patterson Road to the west, with agricultural land beyond; row crops, a residence, and Teal Club Road to the south; and Ventura Avenue to the east, with residential and commercial property beyond.

Topography and Drainage

The subject property is nearly level. The regional topographic slope of the land is to the southwest towards the Pacific Ocean. Drainage on the property is controlled by a series of unlined drainage ditches which shunt agricultural and rainwater discharge into drainage channels located adjacent Patterson and Teal Club Roads. No evidence of surface drains or catch basins was observed on the property at the time of the site reconnaissance.

Past Uses of the Property

No evidence of the past use, treatment, storage, disposal or generation of hazardous substances (other than fuels) was observed during the site reconnaissance. Agricultural pesticides associated with crop production have been used on the property.

Use of Hazardous Substances

No evidence of hazardous substance use was observed on the subject property at the time of the site reconnaissance.

Storage Tanks

An aboveground diesel fuel storage tank is present in the maintenance area at the northeast corner of the property. This facility appears to be an unpermitted, unregulated fuel tank without the required spill containment and overfill protection. No other evidence of existing underground storage tanks, clarifiers, sumps, or grease interceptors was observed on the subject property during the site reconnaissance.

Containers of Hazardous or Unidentified Substances

No evidence of containers of hazardous or unidentified substances was observed on the subject property at the time of the site reconnaissance.

Solid Waste Disposal

One trash bin was observed near the farm structures. The trash bin contained nonhazardous debris at the time of the site reconnaissance. No evidence of onsite disposal or landfill of solid waste material was observed on the subject property at the time of the site reconnaissance.

Poly-Chlorinated Biphenyl's (PCBs)

Various pole mounted and pad mounted electrical transformers are present adjacent to or on the subject property. No evidence of leakage or spillage of hydraulic oils was evidence from these facilities during the site walkover. The transformers are maintained and serviced by Southern California Edison.

Heating/Cooling Equipment

Heating and cooling equipment was not observed at the time of the site reconnaissance.

Asbestos Containing Building Materials (ACM)

Sampling of suspect asbestos containing material (ACM) was not included in the scope of work for this study. No evidence of suspect asbestos containing materials was observed during the site walkover. Asbestos may be present in various building components located on the buildings in the maintenance area. Buried transite water lines, which contain asbestos, may also be present on the property. It is recommended that a pre-demolition asbestos survey be performed on the subject buildings prior to their demolition.

Wastewater Disposal Systems

No evidence of wastewater treatment or disposal systems was observed on the subject property during the site reconnaissance.

Radon

Radon hazard assessment was not included in the scope of this study. However, the EDR research report indicates the levels of radon at 31 sites located within Ventura County were below one picoCurie per Liter (pCi/L). This concentration is well below the Federal Action level of four pCi/L.

Lead

Sampling of suspect lead in paint was not included in the scope of work for this project. Lead content in paint was significantly reduced in 1977. The paint coatings on the structures located within the maintenance area were in fair to good condition. A lead in construction materials survey should be performed prior to demolition of the buildings.

Wells

Several historic and existing groundwater production wells for irrigation are present on the property. The County of Ventura Department of Public Works was contacted for information regarding these existing and historic irrigation wells located on the subject property. Information provided by the County of Ventura indicates that up to eights wells have historically been present on the property. The approximate locations of the wells are shown on the attached **PLOT PLAN**. A well inventory is presented below on **TABLE I**. The groundwater well information previously obtained from the County of Ventura is attached in **APPENDIX III**.

Five shallow (34 feet deep) groundwater monitoring wells were installed on the property in 1987. The wells were installed as part of a subsurface assessment and monitoring program associated with an underground fuel storage release. The leak occurred beneath the maintenance area and was discovered

during the underground tank abandonment work. On January 21, 1998, Fluor Daniel GTI prepared a *Report of Groundwater Monitor Well Abandonment.* The report indicates that approximately 34 feet of 4 inch diameter PVC casing was removed from each well. The well bore was then drilled out and pressure grouted with cement bentonite slurry. The wells were abandoned under permit and observation by the County of Ventura Department of Public Works.

TABLE I
Irrigation Well Inventory

State Well I.D.	Listed Owner	Depth	Status
2N/22W-33**N1**	Borchard	250	Drilled 1949. Abandoned 11/81. Sealed 6-135 ft.
2N/22W-33**N2**	Borchard	213	Unknown.
2N/22W-33**N3**	Borchard	100?	Unknown.
2N/22W-33**N4**	Borchard	305	Drilled 1969 (Active).
2N/22W-33**N5**	Borchard	295	Drilled 1982 (Active).
1N/22W-5**B1**	Laubacker	208	Unknown.
1N/22W-4**D1**	Kawaguchi	--	Unknown. Active in 1981.
1N/22W-4**D2**	Kohara	--	Unknown. Active in 1981.

Odor

No evidence of strong, pungent or noxious odors was noted on the subject property at the time of the site reconnaissance.

Stressed Vegetation

No evidence of stressed vegetation was observed on the subject property at the time of the site reconnaissance.

Staining or Residue

No evidence of staining or residue was observed on the subject property at the time of the site reconnaissance.

Pits, Ponds, or Lagoons

No evidence of pits, ponds, and/or lagoons was observed on the subject property at the time of the site reconnaissance.

Potable Water Supply

Water is supplied to the subject property via onsite irrigation wells.

Sewage Disposal System

The subject property is not connected to the public sewage disposal system or a septic system.

Other Conditions of Concern

No other conditions of environmental concern regarding potential sources for soil and groundwater contamination were observed on the subject property at the time of the site reconnaissance.

SITE DRIVE-BY

The area surrounding the subject property consists primarily of residential and agricultural property. Residential development borders the property to the north and east. A small commercial center is located adjacent to the northeast portion of the property. There are no service stations located on adjacent properties. A list of selected environmental risk sites identified within a one-quarter mile

radius of the subject property is included in the **STANDARD ENVIRONMENTAL RECORDS SOURCES** section of this report.

PREVIOUS WORK

Geolabs Westlake Village prepared a geotechnical study for the subject property, dated March 2004. The geotechnical study included excavation of borings to evaluate the soil conditions beneath the property for construction of a future residential subdivision. The report concluded the property was suitable for the proposed development and that slabs and foundations should be supported on new compacted fill.

California Environmental has performed a *Preliminary Environmental Site Assessment - Phase I* for the property located at 1618 Doris Avenue and Surrounding Property, South of Doris Avenue, West of North Ventura Road and North of Teal Club Road, Oxnard, California, dated June 2004. The Phase I Environmental Site Assessment research identified a historic recognized environmental condition and other environmental concerns associated with the property. Leaking underground tanks on the property were the subject of regulatory enforcement. The soil in the area of the fuel release was excavated and groundwater monitoring occurred from 1988 through 1997. In 1998, the County of Ventura issued a *no further action* status for the property indicating that remedial action was complete. The other environmental concern identified was the long term use of the property for agricultural production. It was suspected that residual levels of organochlorine pesticides in soil may be present on the property. California Environmental implemented subsurface assessment on the property in the form of soil and groundwater sampling. Soil and groundwater samples were obtained from the area of the underground

tank release on the eastern portion of the property. Shallow soil samples were also obtained throughout the balance of the property beneath agricultural production areas. The soil and groundwater samples were analyzed for organochlorine pesticides, fuel hydrocarbons, volatile organic compounds, and heavy metals.

Residual levels of chlorinated pesticides were found in soil beneath the property. The residual levels of pesticides were typically restricted to the upper 1 foot to 1 ½ feet below the ground surface. The most common pesticide found across the property was toxaphene, which is ubiquitous on almost all agricultural properties within the Oxnard Plain. Toxaphene, along with DDT and its breakdown products were found to depths of up to 10 feet in the area of the underground storage tank removal and remediation work located at the northeast corner of the property. It is suspected that the residual pesticide contamination found at depth in this location is related to backfilling of the underground storage tank excavation with onsite soil.

The geotechnical engineer is recommending removal and recompaction of the upper agricultural disturbed soil for support of foundations for future single family residential construction. Future commercial construction is also contemplated. It is recommended that the Cal EPA CHHSL's, dated January 2005 be utilized to set appropriate residual levels for the organochlorine pesticide contamination found. Performance of the geotechnical grading along with importation of approximately 500,000 cubic yards of clean fill will likely reduce the residual pesticide to levels below the recommended PRGr. Monitoring of the residual levels of pesticides should be confirmed both during and following completion of the grading activities.

West Coast Environmental (WCE) prepared an *Evaluation of Residual Pesticide Concentrations, 115 Acre Parcel on Teal Club Road, Oxnard, California*, dated March 17, 2004. The proposed project site may include residential construction, parks, open space, and a possible dedication of an approximate ten acre school site to the Oxnard Union School District. WCE reviewed the California Environmental laboratory data identifying toxaphene and chlordane in concentrations that exceeded Preliminary Remediation Goals (PRGr) for residential soils. Concentrations of chlordane, DDT, DDE, DDD were also found to exceed Total Threshold Limit Concentrations (TTLC) for the toxicity characteristic of hazardous waste in soil. Toxaphene levels exceeded the PRGr at depths of at least one foot below ground surface (bgs) and generally decreased to nondetect by 2.5 feet bgs. DDT, DDE, and DDD were less uniformly distributed and were detected at combined concentrations that exceed the TTLC at only one sampling location. DDT, DDE, and DDD were not detected above their respective PRGr. The concentrations generally decreased to nondetect by 2.5 feet bgs. Arsenic was also found above the PRGr to be uniformly distributed within the upper one foot below ground surface. Toxaphene, DDT, DDE, and DDD were also found at depths of approximately ten feet bgs in the excavation backfill of the former underground storage tanks. The detections were probably from using onsite soil rather than imported fill to backfill the excavation.

Remedial grading of the property to create a uniform cap for the proposed construction was recommended by the soils engineer. The grading would include the removal and replacement of soil to approximately four feet bgs and the import of about 500,000 cubic yards of soil. WCE performed a risk assessment to evaluate the cumulative risks of residual concentrations of toxaphene, DDT, DDE, DDD, and arsenic. The cumulative baseline carcinogenic risk for toxaphene, DDT, DDE, and arsenic did not exceed the target risk set by the program. A portion of the subject property may be developed as a

school site. Preparation of a Cal EPA Compliant Preliminary Endangerment Report would be required for that portion of the property.

HYDROGEOLOGY

The subject property is located in the western portion of the Transverse Ranges Geomorphic Province within the Ventura Basin Coastal Plain. The property lies several miles to the east of the Pacific Ocean. The property overlies the Oxnard Plain Pressure Groundwater Basin which consists of two main groundwater aquifer systems. These systems include upper aquifers and lower aquifers. Overlying the two main groundwater production aquifers is a semi-perched zone which contains appreciable amounts of clayey and silty material with low transmissivities. Beneath the semi-perched zone is the upper groundwater production zone consisting of the Oxnard and Mugu aquifers. The deep productive groundwater resource underlies the upper zone and consists of the Hueneme and Fox Canyon aquifers. The base of the freshwater bearing zones (Fox Canyon) extend to a depth of approximately 1,800 feet below the ground surface.

Logs for the groundwater production wells located on the property indicate the onsite irrigation wells penetrate primarily into the underlying Oxnard Aquifer. The Oxnard Aquifer is delineated from the upper semi-perched zone by a laterally extensive clay layer which extends onsite from depths of about 95-135 feet below the ground surface. Water levels within the semi-perched zone above the Oxnard Aquifer occur in sandy lenses between the low permeability silts and clays. Historically, water onsite has been encountered at depths of 5, 45 and 80 feet below the ground surface in the semi-perched zone. Groundwater monitoring wells placed beneath the northeast portion of the property during the late

1980's and monitored through 1997 contained water levels which typically ranged from 8 ½ to 10 ½ feet below the ground surface. The groundwater wells were abandoned in 1998. The groundwater flow direction was calculated to be westerly to southwesterly within the shallow zone.

SITE UTILIZATION HISTORY

BUILDING PERMIT RESEARCH

The County of Ventura Division of Building and Safety was contacted for purpose of researching building permits and certificates of occupancies for the subject property. The building permit information found for the subject property address 1618 Doris Avenue is summarized below on **TABLE II**. Copies of the permits are included in **APPENDIX III**.

TABLE II
Building Permits

Date	Permit No.	Owner	Purpose and Description
11/2/88	--	Borchard, Raznick & Sons	Electrical. Change old existing service to new 100 amp.
5/6/03	C03-000708	FA Borchard and Sons, Frances Joan Henson	Agricultural. Demo two structures (barn and wood tower).

UNDERGROUND STORAGE TANK PERMIT RESEARCH

The County of Ventura Environmental Health Division and State of California Geotracker database were contacted to obtain information on underground tanks records or industrial waste files maintained for the subject property. The County of Ventura maintains a UST file for the subject property and that file was obtained and reviewed. Information in the Ventura County file for the subject property indicate that gasoline fuel hydrocarbons were detected in soil during tank removal work which occurred in 1987.

The remedial response at the site included excavation and removal of gasoline impacted soil and groundwater monitoring. Five groundwater monitor wells were installed around the area of the gasoline fuel hydrocarbon release to soil. Low to non-detect levels of gasoline hydrocarbons were detected in groundwater obtained from the wells. The wells were monitored intermittently from 1989 through 1995. A request for closure was made to the County of Ventura and the County required one more round of groundwater sampling which occurred in 1997. The 1997 groundwater sampling showed nondetect levels of gasoline fuel hydrocarbons in all wells. Based on this finding, the County of Ventura issued final case closure for the property on February 9, 1998. The location of the removed underground tanks, the former groundwater monitor wells, and the approximate extent of the remedial excavation are shown on the attached **PLOT PLAN DETAIL**.

VENTURA COUNTY AIR POLLUTION CONTROL DISTRICT (APCD) FILE REVIEW

An inquiry letter was sent to the Ventura County Air Pollution Control District (APCD) for any information they may have regarding soil, water or air contamination at the subject property. The Ventura County APCD does not maintain a file for the subject property address.

HISTORICAL AERIAL PHOTOGRAPH RESEARCH

Historical aerial photographs were reviewed as part of this study. The photographs are part of the aerial photograph collections maintained by EDR Company. The photographs are summarized below in **TABLE III**.

TABLE III
Historical Aerial Photographs

Date	Description
1945	The subject property is developed agricultural land and five farm structures near the northeast corner. Agricultural land surrounds the subject site on all sides. Property is bound to the north by a residence, orchards and Doris Avenue; to the south by agricultural land; to the west by Patterson Road, with agricultural land beyond; and to the east by Ventura Road with agricultural land beyond.
1959	Subject and adjacent properties remain as previously described with the exception of residential development located beyond Ventura Road to the east.
1964	Subject and adjacent properties remain as previously described in the 1959 aerial photograph.
1977	Subject and adjacent properties remain as previously described in the 1964 aerial photograph.
1989	The subject property is developed agricultural land and five farm structures near the northeast corner. Property is bound to the north by a residence, orchards and Doris Avenue; to the south by agricultural land and Teal Club Road; to the west by Patterson Road, with agricultural land beyond; and to the east by Ventura Road with a residential tract beyond.
1994	The subject property is developed agricultural land and five farm structures near the northeast corner. Property is bound to the north by a residence, orchards and Doris Avenue; to the south by agricultural land and Teal Club Road; to the west by Patterson Road, with agricultural land beyond; and to the east by Ventura Road with a residential tract beyond.

HISTORICAL TOPOGRAPHIC MAP RESEARCH

Historical USGS topographic maps were provided by EDR Company. Maps covering the subject property from four time periods were obtained and reviewed. The map descriptions are summarized below in **TABLE IV.** Copies of select historical topographic maps are attached in the **ILLUSTRATIONS** section of this report.

TABLE IV
Historical Topographic Maps

Date	Quadrangle	Description
1904	Hueneme	Subject and adjacent properties are undeveloped.
1949	Oxnard	Subject property is developed with three structures. Property is bound to the north by a residence, orchards and Doris Avenue; to the south by several structures and Teal Club Road; to the west by Patterson Road, with undeveloped land beyond; and to the east by Ventura Road with a residential tract beyond. Two irrigation wells are located onsite.
1951	Oxnard	Subject and adjacent properties remain as previously described in the 1949 topographic map.
1967	Oxnard	Subject property is developed with four structures. Property is bound to the north by a residence, orchards and Doris Avenue; to the south by several structures and Teal Club Road; to the west by Patterson Road, with undeveloped land beyond; and to the east by Ventura Road with a residential tract beyond.

HISTORICAL FIRE INSURANCE MAPS

The EDR Company was contacted to review historical fire insurance maps for the subject property. There is no Sanborn historical fire insurance map coverage for the subject property.

NEARBY CONTAMINATED SITES

LANDFILLS

The Solid Waste Information Systems (SWIS), and the Waste Management Unit Database (WMUD) were reviewed to identify landfills and transfer stations located near the property. There were no landfills identified within a 2,000-foot radius of the subject property.

OIL FIELD MAPS/METHANE ZONES

Oil field maps published by the State of California, Division of Oil, Gas and Geothermal Resources (DOGGR) were researched to determine if oil production occurred on or near the subject property. Division of Oil and Gas Map No. 213 indicates that the western portion of the subject property is located on the eastern edge of the West Montalvo Oil Field. The closest oil well to the subject property is an abandoned well located approximately 2,250 feet west of Patterson Road. That well (Laubacher No. 1) is an abandoned oil well. The closest abandoned dry hole to the subject property is well Richfield-Doheny-Oxnard Airport which was drilled to a depth of 14,454 feet in 1956. That abandoned dry hole is located approximately 400 feet south of the southerly property line and 800 feet east of Patterson Road. These offsite wells are not expected to have an adverse impact on the subject property. The subject property is not located within a recognized methane hazard zone.

STANDARD ENVIRONMENTAL RECORD SOURCES

In addition to the above records, agency database lists were reviewed for known or suspected contaminated sites and for sites which store, generate or use hazardous materials near the subject property. The subject property is listed as a facility that generated and stored hazardous materials on the HIST UST and UST standard environmental record sources researched for this report. The property is also listed as a site that had a reportable release of fuel on the LUST and Cortese databases. The release of fuel is discussed in the **PREVIOUS WORKS** section of this report. The nearest listed contaminated site to the subject property is the closed Mobil Oil Service Station located at 600 Ventura Road. Mobil Oil had a release of gasoline in September 1988. Impacted soil was excavated and disposed offsite. The Regional Water Quality Control Board issued case closure in September 2001. Nearby risk sites and listed contaminated sites are tabulated below on **TABLE V**.

TABLE V
Standard Environmental Record Sources

Name	Address	Distance from Subject Property	Source(s)
F.A. Borchard & Sons	1618 Doris Avenue	Subject Property	LUST (case closed) Cortese HIST UST UST
Mobil Oil SS # 18-H4N	600 Ventura Road	1200 ft. NNE	LUST (case closed) Cortese
Gisler & Gaskins Service	550 N Ventura Road	1305 ft. NNE	HIST UST
Fremont Cleaners	690 Ventura	1420 ft. NNE	SLIC
Ven Oaks Plumbing	131 Mallard Way	1545 ft. SSW	HAZNET LUST (case closed) Cortese UST HIST UST
Tomra Pacific Inc/ Albertsons #6217	920 N Ventura Road	2335 ft. N	SWRCY
Proodos Properties Inc	2200 Teal Club Road	2430 ft. WSW	LUST (case closed) Cortese
California Recycling Services Corporation	440 S. Ventura Road	2630 ft. S	SWRCY

Note: A search of public information databases may omit some nearby contaminated sites due to missing or inaccurate information in the public record.

The orphan site summary in the EDR database report lists small quantity generators (i.e. auto repair and medical offices) of hazardous waste. The properties are located greater than 500 feet from the subject site and are not expected to have an impact on the subject property.

GENERAL FINDINGS

During the research phase of this study, the following information was obtained:

- There was no Sanborn Fire Insurance Map coverage for the subject property
- Historical aerial photograph research indicates that the subject property has been used for agricultural purposes since the early 1940s.
- Building permit research found permits for demolition of two structures, a barn, and a wood tower and an electrical upgrade permit for the subject property address.
- Underground tank records are maintained for the property at the County of Ventura Environmental Health Division. The records indicate that two underground fuel tanks were removed from the maintenance area of the property during 1987. Excavation and removal of gasoline contaminated soil occurred along with groundwater monitoring. The County of Ventura issued a no further action for the property on February 9, 1998 relative to clean up of the gasoline impacted soil.
- There are no records maintained for the property at the Ventura County Air Pollution Control District.
- There are no landfills or transfer stations located within 2,000-foot radius of the subject property.
- There are no oil wells located within a 2,000-foot radius of the subject property.
- The subject property is listed on the CORTESE, LUST, UST and Historic UST databases.
- The nearest listed contaminated site is the former Mobil Oil station at 600 Ventura Road. That site had a release of gasoline to groundwater. Remediation is complete and the case has been closed.
- The depth to first groundwater beneath the subject property is 5-10 feet bgs.
- The regional direction of groundwater flow in the shallow zone is towards the west/southwest.

During the site reconnaissance, the following observations were made:

- The subject property is developed and used as agricultural property.
- A maintenance/storage area exists near the northeast corner of the property.
- The subject property is nearly level. The regional topographic slope of the land is to the southwest.
- Drainage on the property is controlled by a series of unlined drainage ditches which shunt agricultural and rainwater discharge into drainage channels located adjacent Patterson and Teal Club Roads.
- No evidence of hazardous substance use was observed on the subject property.
- An aboveground diesel fuel storage tank is present in the maintenance area at the northeast corner of the property.
- No evidence of containers of hazardous or unidentified substances was observed on the subject property.
- One trash bin was observed near the farm structures.
- No evidence of wastewater treatment or disposal systems was observed on the subject property.
- Several historic and existing groundwater production wells for irrigation are present on the property.
- Five shallow (34 feet deep) groundwater monitoring wells were installed on the property in 1987. The wells were installed as part of a subsurface assessment and monitoring program associated with an underground fuel storage release.
- The wells were abandoned under permit and observation by the County of Ventura Department of Public Works.
- No evidence of strong, pungent or noxious odors was noted on the subject property reconnaissance.
- No evidence of stressed vegetation was observed on the subject property.
- No evidence of staining or residue was observed on the subject property.
- No evidence of pits, ponds, and/or lagoons was observed on the subject property.
- Water is supplied to the subject property via onsite irrigation wells.
- The subject property is not connected to the public sewage disposal system or a septic system.

CONCLUSIONS AND RECOMMENDATIONS

The subject property has historically been used for agricultural purposes. The agricultural use of the property has been ongoing for at least 60 years. A maintenance/storage area exists near the northeast corner of the property. This area contains several wood sheds and larger barns for storage and maintenance of farm equipment, and a single family residence. An aboveground diesel fuel storage tank (approximately 5,000-gallons) was also located in this area. The surrounding area has historically been used for agricultural purposes. The transition to residential development from agricultural use has occurred over the past 30 years.

The subject property is listed as a facility that generated and stored hazardous materials on the HIST UST and UST standard environmental record sources researched for this report. The subject property was also identified as a leaking underground storage tank site on the CORTESE and LUST databases where gasoline impacts to soil and groundwater were recognized. The remedial response at the site included excavation and removal of gasoline impacted soil and groundwater monitoring. Five groundwater monitor wells were installed around the area of the gasoline fuel hydrocarbon release to soil. Low to non-detect levels of gasoline hydrocarbons were detected in groundwater obtained from the wells. The wells were monitored intermittently from 1989 through 1995. The 1997 groundwater sampling showed nondetect levels of gasoline fuel hydrocarbons in all wells. Based on this finding, the County of Ventura issued final case closure for the property on February 9, 1998.

Approximately eight groundwater production wells for irrigation have historically been present on the property. Five of the eight wells list Borchard (Borchard family owned and operated the subject property) as the owner of the well. Three additional wells are identified by different owners. It is

recommended that the wells be located and surveyed. The wells should be abandoned, as necessary, according to the guidelines issued by the County of Ventura Department of Public Works. If possible, residential construction directly above the abandoned groundwater wells should be avoided.

The existing aboveground storage tank (approximately 5,000 gallons) is considered an unpermitted aboveground storage tank facility. It is recommended that the aboveground tank be abandoned by removal under permits issued by the County of Ventura. Minor diesel soil contamination was recognized in the area of the aboveground tank. The shallow impacts in soil should be excavated and removed offsite during redevelopment.

It is recommended that a pre-demolition asbestos and lead based paint survey be performed on the remaining sheds and buildings located at the northeast corner of the property. Buried transite water pipe (assumed to be asbestos containing) may be found onsite during future grading activities. Transite pipe excavated during future grading work should be abandoned and disposed of as non friable asbestos containing waste.

Residual levels of chlorinated pesticides were found in soil beneath the property. The residual levels of pesticides were typically restricted to the upper 1 foot to 1 ½ feet below the ground surface. The most common pesticide found across the property was toxaphene, which is ubiquitous on almost all agricultural properties within the Oxnard Plain. Toxaphene, along with DDT and its breakdown products were found to depths of up to 10 feet in the area of the underground storage tank removal and remediation work located at the northeast corner of the property. It is suspected that the residual

pesticide contamination found at depth in this location is related to backfilling of the underground storage tank excavation with onsite soil.

The geotechnical engineer is recommending removal and recompaction of the upper agricultural disturbed soil for support of foundations for future single family residential construction. Future commercial construction is also contemplated. It is recommended that the Cal EPA CHHSL's, dated January 2005 be utilized to set appropriate residual levels for the organochlorine pesticide contamination found. Performance of the geotechnical grading along with importation of approximately 500,000 cubic yards of clean fill will likely reduce the residual pesticide to levels below action levels. Monitoring of the residual levels of pesticides should be confirmed both during and following completion of the grading activities. A portion of the subject property may be developed as a school site. Preparation of a Cal EPA Compliant Preliminary Endangerment Report may be required for that portion of the property.

The nearest listed contaminated site to the subject property is the closed Mobil Oil Service Station located at 600 Ventura Road. Mobil Oil had a release of gasoline in September 1988. Impacted soil was excavated and disposed offsite. The Regional Water Quality Control Board issued case closure in September 2001. No impact to the subject property from this offsite property is anticipated.

No data failure was encountered in the preparation of this report. Review of recorded land title records, including environmental liens, was included in this report. Environmental liens were not found on file for the subject property address.

California Environmental has performed an Environmental Site Assessment - Phase I in conformance with the scope and limitations of ASTM 1527-05 for the property consisting of approximately 115 acres located at 1618 Doris Avenue, Oxnard, California. This assessment has revealed no additional evidence of recognized environmental conditions in connection with the subject property. Additional site assessment research and/or subsurface assessment activities are not recommended for the subject property.

This report is subject to the following **NOTICE:**

NOTICE

All properties are subject to some element of environmental risk and the risk cannot be eliminated. Industrial and commercial properties developed prior to modern environmental laws are especially risk prone to environmental hazards which include, but are not limited to, wastes which may be toxic, ignitable, corrosive or reactive. The potential for these environmental hazards to impact the use of the property can be reduced by the identification and mitigation of the hazards prior to development or redevelopment of the property. Due to the difficulty in locating underground wastes, in some cases it is not always possible to ascertain that hazardous wastes are present on the property prior to development.

A Phase I environmental site assessment does not utilize subsurface exploration to check for the presence of hazardous wastes on the property. The experience of the assessor, along with the research of available reports, aerial photographs and land use records are used to evaluate the potential for hazardous wastes to occur on the site. Based on the information gained from the historical research, subsurface exploration may be recommended to check for the presence of hazardous wastes. Preexisting environmental problems such as the presence of hazardous wastes in the soil or groundwater, can be concealed by grading activities and site improvements. If such wastes are present these wastes cannot be observed.

The undersigned, Charles I. Buckley declares that, to the best of my professional knowledge and belief, I meet the definition of Environmental Professional as defined in Section 312.10 of 40 CFR 312 and I have the specific education, training, and experience necessary to exercise professional judgment to develop opinions and conclusions regarding conditions indicative of releases or threatened releases on, at, in, or to a property, sufficient to meet the objectives and performance factors in §312.20.

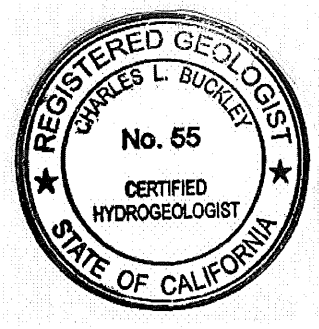
This report was prepared with the skill and competence as commonly used by environmental professionals in this area. No warranty, expressed or implied, of any kind is made or intended in connection with this report, or by the fact you are being furnished this report, or by any other oral or written statement.

Should you have any questions or desire any additional information, please contact the undersigned.

Respectfully submitted,

Charles I. Buckley
Certified Hydrogeologist No. 55

Christopher E. Rude
Environmental Scientist



REFERENCES AND QUALIFICATIONS

1. Ventura County Department of Public Works, Groundwater Well Information, March 2004.

2. Ventura County Environmental Health Division, File Review, July 2007.

3. VCAPCD, File Review, July 2007.

4. EDR Aerial Photograph Collection, *Photograph Research*, March 2004.

5. EDR-Radius Map with Geocheck, Inquiry No. 1972943.1s, July 2007.

6. State of California, Division of Oil, Gas and Geothermal Resource Map No. 213.

7. GeoLabs, *Geotechnical Engineering Report*, March 2004.

8. State of California, Department of Water Resources, *Ventura County Cooperative Groundwater Investigation*, July 1975.

9. California Environmental, Phase I Environmental Site Assessment, dated June 2004.

10. West Coast Environmental and Engineering, *Evaluation of Residual Pesticide Concentrations, 115 Acre Parcel on Teal Club Road, Oxnard, California*, dated March 17, 2004.

11. Cal EPA, California Human Health Screening Levels, dated January 2005.

CHARLES I. BUCKLEY, JR.
1161 Calle Suerte, Suite G
Camarillo, CA 93012

Bus. Tele: (805) 445-7117

E-Mail: cbuckley@calenviro.com

EDUCATION:

- **Masters** Work in Hydrogeology
  California State University, Los Angeles, 1980-1988
- **Bachelor of Science**, Geology (Engineering Geology)
  University of California, Los Angeles, 1978

REGISTRATIONS AND APPOINTMENTS:

- State of California, Dept. of Conservation, Former Member, State Mining and Geology Board (Appointed by Gov. Pete Wilson and State Senate confirmed to 4 year term, 1997-2001)
- State of California, Certified Hydrogeologist, No. 55
- State of California, Registered Geologist No. 4035
- State of California, Certified Engineering Geologist No. 1250
- State of California, Registered Environmental Assessor No. 837
- State of California, Registered Environmental Assessor II No. 20116

PROFESSIONAL EXPERIENCE:

Jan 88-Present CALIFORNIA ENVIRONMENTAL
CEO - Principal Hydrogeologist

Founded California Environmental in January of 1988. Clients include Fortune 500 Corporations, County Government, Municipal Agencies, Financial Institutions, Land Developers, and Consultants. Principal Investigator for groundwater supply and groundwater contamination investigations. Project leader for groundwater remediation at a State of California Superfund Site. Principal hydrogeologist for design and implementation of a groundwater monitoring network for an existing Sanitary Landfill. Lead investigator to delineate structure of a California Groundwater Basin; Pioneered use of a cost effective soil/gas vapor technique used to track groundwater plumes. Conducted over 2000 Phase I Environmental Investigations in California. These investigations included the use and interpretation of historic topographic maps, Sanborn Insurance Maps, aerial photography, and other historic data sources. Successfully completed remedial clean-up on 500+ sites in southern California; including impacts associated with fuels, PCBs, metals, asbestos and chlorinated solvents. Expert consultant for environmental impairment of soil and groundwater: Port of Los Angeles, L.A. County Counsel, L.A. City Recreation and Parks and private attorneys.

CHARLES I. BUCKLEY, JR.
1161 Calle Suerte, Suite G
Camarillo, CA 93012

PROFESSIONAL EXPERIENCE: (continued)

Mar 84-Dec 87 KOVACS-BYER AND ASSOCIATES
Manager Environmental Services Group

Spearheaded the development into the groundwater and environmental segments of consulting market. Ascended from project geologist status to manager of Environmental Services Group. Responsible for all aspects of project management including; organization and staffing, developing technical requirements needed to complete projects, client and agency liaison.

Provided technical leadership for groundwater testing including design and analysis of aquifer pump tests. Lead Geotechnical Investigator for remedial repair of complex landslide terrains. Prepared Seismic Analysis for critical facilities. Recommended specialized drainage systems for abatement of groundwater problems. Project Consultant for award winning projects on which severe geotechnical problems were overcome.

Mar 80-Mar 84 GEOTECHNICAL SERVICES GROUP; BUREAU OF ENGINEERING;
CITY OF LOS ANGELES
Assistant Engineering Geologist

Performed geologic mapping in hillside areas of the City of Los Angeles. Reviewed Geotechnical Reports submitted to the City of Los Angeles for private development. Directed landslide investigations. Prepared Expert Opinion documents regarding groundwater and geologic issues for the City Engineer and City Attorney. Conducted field monitoring of known landslides within the City of Los Angeles.

Aug 79-Mar 80 UNITED STATES GEOLOGICAL SURVEY
Field Assistant

Assisted in geological mapping for a uranium resource development project sponsored by the Department of Energy and the United States Geological Survey.

CHARLES I. BUCKLEY, JR.
1161 Calle Suerte, Suite G
Camarillo, CA 93012

CONTINUING EDUCATION:

- "Advanced Data Analysis Techniques for Evaluating and Quantifying Natural Attenuation for Remediation of Contaminated Sites", NGWA Short Course, March 2007.
- "Technical Guidance for Indoor Air Vapor Intrusion", Severn Trent Laboratory, San Pedro, CA, February 22, 2005.
- "Low Cost Remediation Techniques", AGSE, San Francisco, CA 2002.
- "Remediation of MtBE", AGSE, Anaheim, CA 2002.
- "Assessment and Management of MtBE Impacted Sites", San Francisco, January 1999.
- "Workshop on MtBE Water Issues", Los Angeles, June 1997.
- "Management Action Programs Seminar", Newport Beach, November 1996.
- "ACWA - Groundwater Workshop", Monterey, June 1995.
- "SeSoil Modeling Workshop" GSC, San Francisco, CA, October 1994
- "Groundwater Monitoring and Remediation", Short Course AEG, October 1992
- "Microbial Processes in Biodegradation", AGSE, Albuquerque NM, February, 1991
- "Introduction to Groundwater Geochemistry", National Water Well Association, San Francisco, CA, September, 1988.
- "Fate and Transport of Contaminants in the Subsurface", United States Environmental Protection Agency, San Francisco, CA, December, 1987.
- "How to Monitor and Sample the Vadose Zone"
  National Water Well Association, San Diego, CA, April, 1987.
- "Treatment Technology for Contaminated Groundwater" UCLA Fall, 1986.
- "Groundwater Contamination Detection, Monitoring and Cleanup", UCLA, April, 1986.
- "Introduction to Groundwater Modeling", National Water Well Association, Fullerton, CA 1985.

ORAL PRESENTATIONS AND SEMINARS:

- "Overview of Environmental Regulations, State and Federal Laws" Guest Lecturer, University of Southern California, 1991.
- "Environmental Risks and Underground Tank Leaks, Commercial Property Inspection"
  California Real Estate Inspectors Association, Santa Monica, CA., May, 1988.

CHARLES I. BUCKLEY, JR.
1161 Calle Suerte, Suite G
Camarillo, CA 93012

- "Modified Technique for Soil/Gas Surveys to Detect Groundwater Contamination". Association of Engineering Geologists, Southern California Section meeting. December, 1987.
- "Historic Aerial Photographic Evidence of Landslide Development, Potrero Canyon, CA." Association of Engineering Geologists Annual Meeting, San Francisco, CA., October, 1986.
- "Environmental Issues and Careers", Guest Lecturer, USC Department of Geology, Spring 1992.

PROFESSIONAL PAPERS:

- "Geology, Landslides and Slope Stabilization.
  Potrero Canyon Park, Pacific Palisades, CA."
  Association of Engineering Geologists Guidebook,
  June 20, 1987.
- "Red Rose Landslide Stabilization, 3358-3400
  Red Rose Drive, CA.
  with Hollingsworth, R.A.; Association of Engineering Geologists Guidebook.
  June 20, 1987.
- "Residential Development and Landsliding, Castellammare Mesa area, Los Angeles, CA."
  Association of Engineering Geologists Guidebook.
  June 2, 1984.

AFFILIATIONS:

Association of Engineering Geologists.
Association of Groundwater Scientists and Engineers.
California Groundwater Association.
Hazardous Waste Association of California.
Hydrology Section-American Geophysical Union.
National Water Well Association

CHRISTOPHER E. RUDE
1161 Calle Suerte, Suite G
Camarillo, CA 93012

Bus. Tele: (805) 445-7117
email: chrisrude@earthlink.net
ceworks@calenviro.com

EDUCATION:

- **Bachelor of Arts**
  Environmental Studies and Planning - Hazardous Materials Management
  Sonoma State University 1989-1992

CONTINUED EDUCATION:

- Course work in Certificate of Hazardous Materials Management Program, University of California, Santa Barbara.
- Seminar on National Pollutant Discharge Elimination Systems,
  Law Offices of Burke, Williams & Sorensen LLP, Riverside, California

PROFESSIONAL EXPERIENCE:

1997 - Present CALIFORNIA ENVIRONMENTAL
Environmental Scientist

1992 - 1996 MSE ENVIRONMENTAL
Environmental Specialist

Performed and provided project management for numerous Phase I Environmental Site Assessments on properties ranging from light industrial to large parcels of undeveloped land. Preparation of reports included site reconnaissance, review of historical documentation, interaction with property owners/tenants, and recommendations regarding recognized environmental conditions. Clients include redevelopment agencies, lenders, developers, and property owners. Also inspected and sampled properties for asbestos containing material, radon, and lead found in paint and/or drinking water.

Performed and provided project management on numerous Phase II Subsurface Site Assessments on properties involving chlorinated solvents, heavy metal, and/or fuel hydrocarbon impacts to soil or groundwater. Assessment activities included geophysical surveys, sampling of soil, soil vapor, or groundwater using Geoprobe, hollow stem auger or dual percussion drill rigs. Assessments also included monitoring for vapor intrusion and fixed gases such as methane.

Performed and provided hazardous waste management for small and large quantity generators, local municipalities and state agencies. Services ranged form the decontamination/decommissioning of industrial buildings to providing segregation and packaging of various hazardous and extremely hazardous materials.

1161 Calle Suerte, Suite G
Camarillo, CA 93012

Performed and provided project management for numerous nation-wide (30 states) Agricultural Chemical and Household Hazardous Waste Collection Events. Responsibilities included: preparing paperwork, pre-event profiling, hazcatting, segregation and manifesting of hazardous wastes, and providing final documentation to the regulatory agencies.

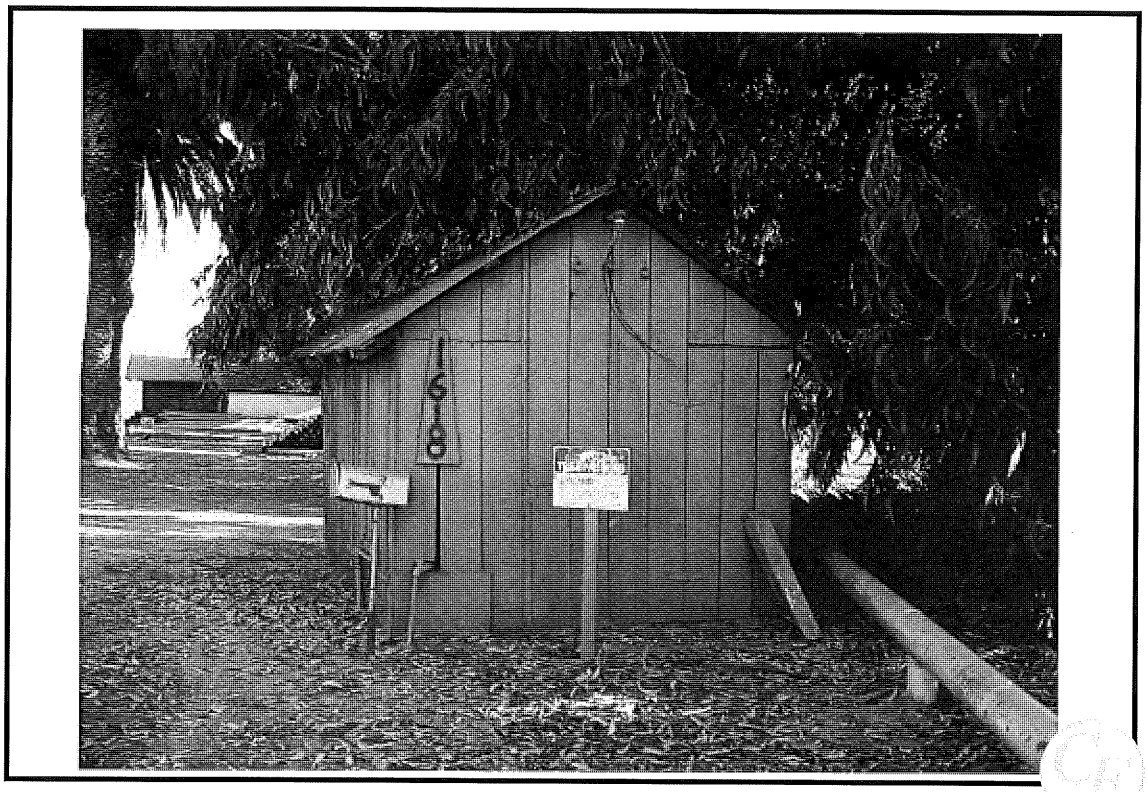
Provided project management, logistical preparation and coordination associated with the State of Pennsylvania, Department of Agricultural's ChemSweep Program. The ChemSweep program which began in 1993 provided a means for farmers to dispose of unwanted, suspended, or cancelled pesticide products. The program included both individual farm pick-ups and county wide agricultural chemical collections throughout the state. The three years of project management included assisting approximately 1,500 farmers in disposing of 238 tons of outdated and banned pesticides. The hazardous waste was containerized for shipment to an EPA approved incinerator.

CERTIFICATIONS:

- OSHA Standard 29 CFR 1910.20 Hazardous Waste-Operations & Emergency Response
- Field Operations for Emergency Response
- DOT HM 126 F, Handling & Transportation of Hazardous Materials
- America Red Cross-CPR and First Aid Certification
- Disaster Service Worker, Community Emergency Response Team

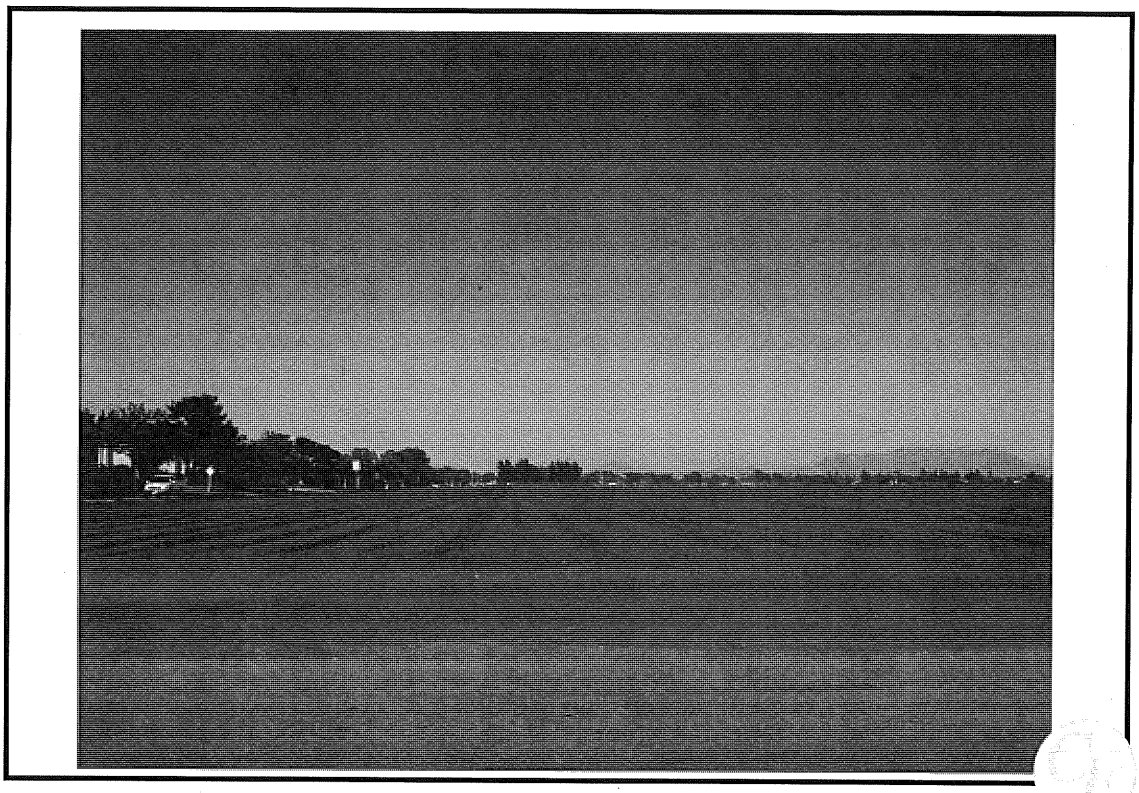
ILLUSTRATIONS

Site Photographs – Plates 1 & 2
Vicinity Map
Plot Plan
Plot Plan Detail
Soil Sampling Plot Plan

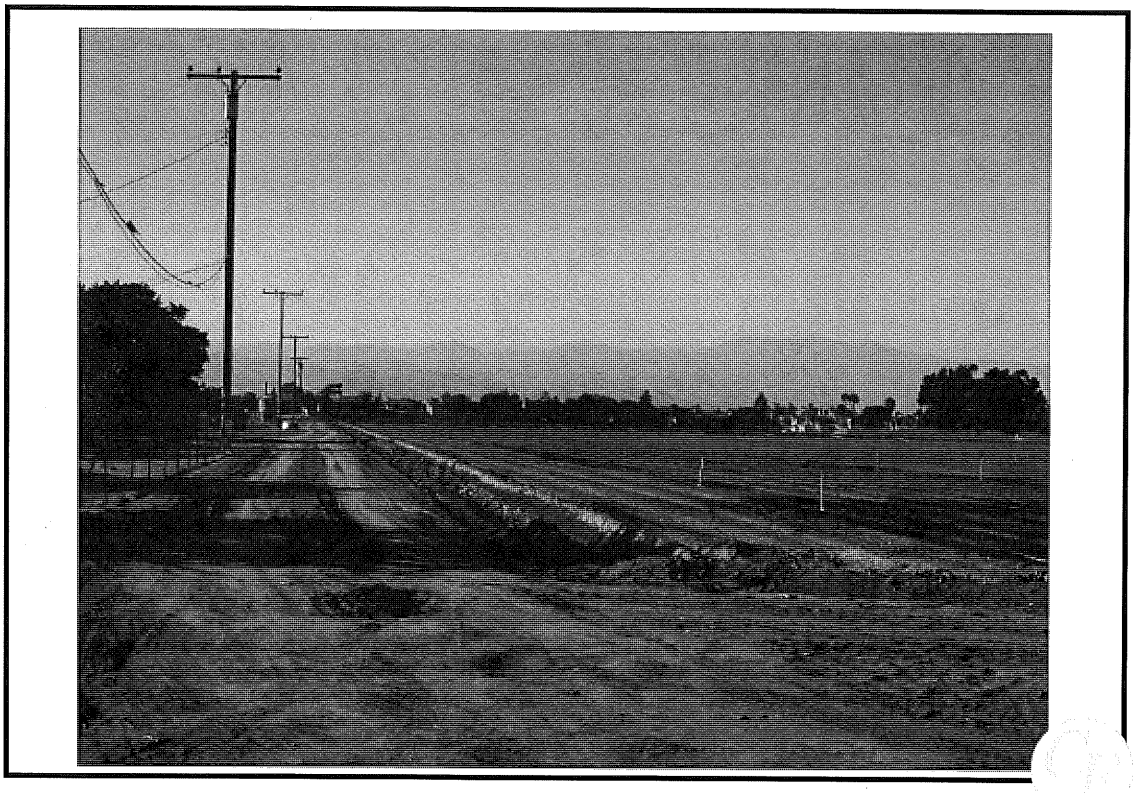


View of farm structure looking south from Doris Avenue.
1618 Doris Avenue and Surrounding Property, Oxnard, California

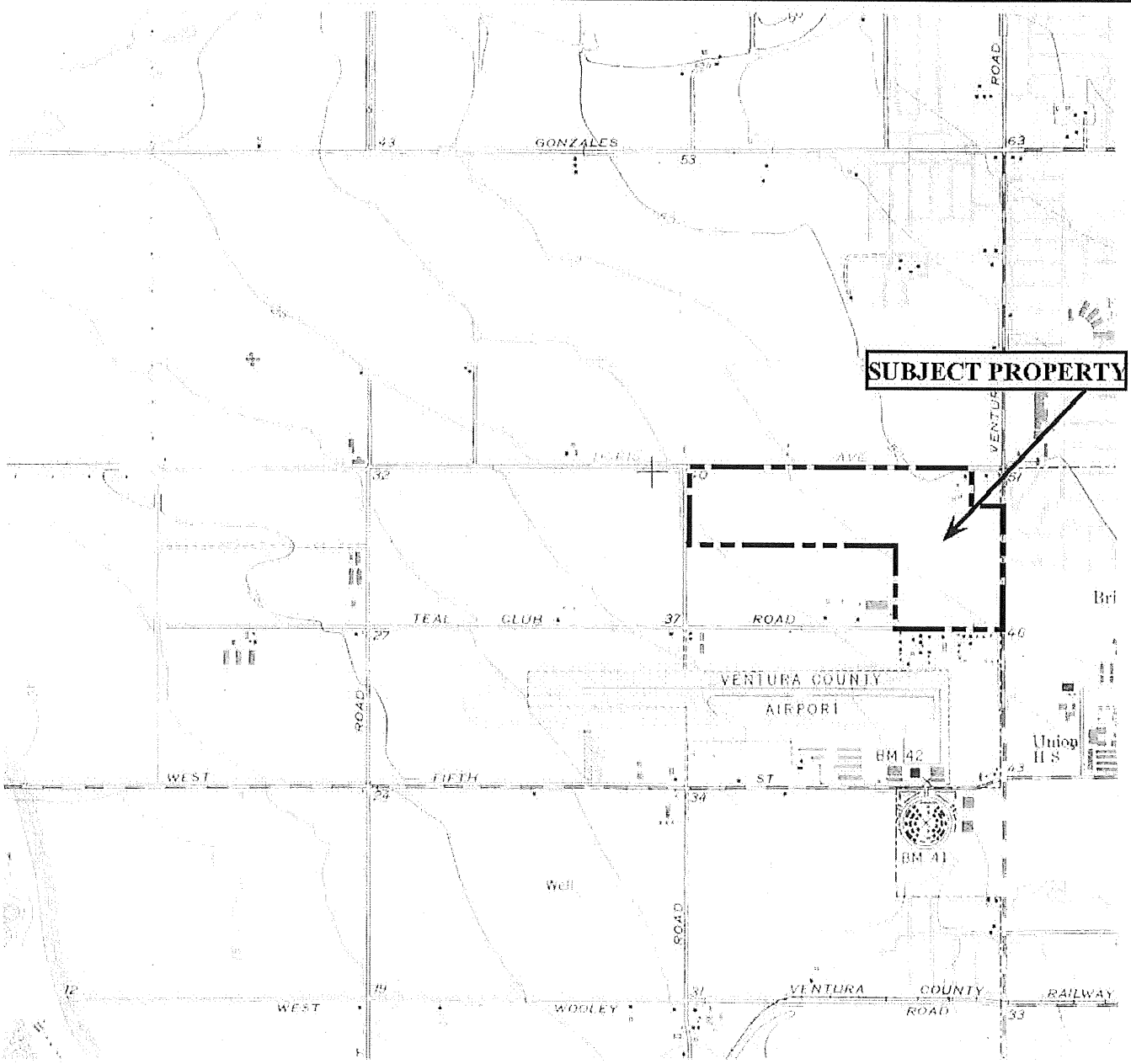
View of equipment and farm structure.
1618 Doris Avenue and Surrounding Property, Oxnard, California



View of subject property from Patterson Road looking east.
1618 Doris Avenue and Surrounding Property, Oxnard, California



View of subject property from Teal Club Road looking north.
1618 Doris Avenue and Surrounding Property, Oxnard, California



REFERENCES: USGS Oxnard Quadrangle, 1949, Revised 1967

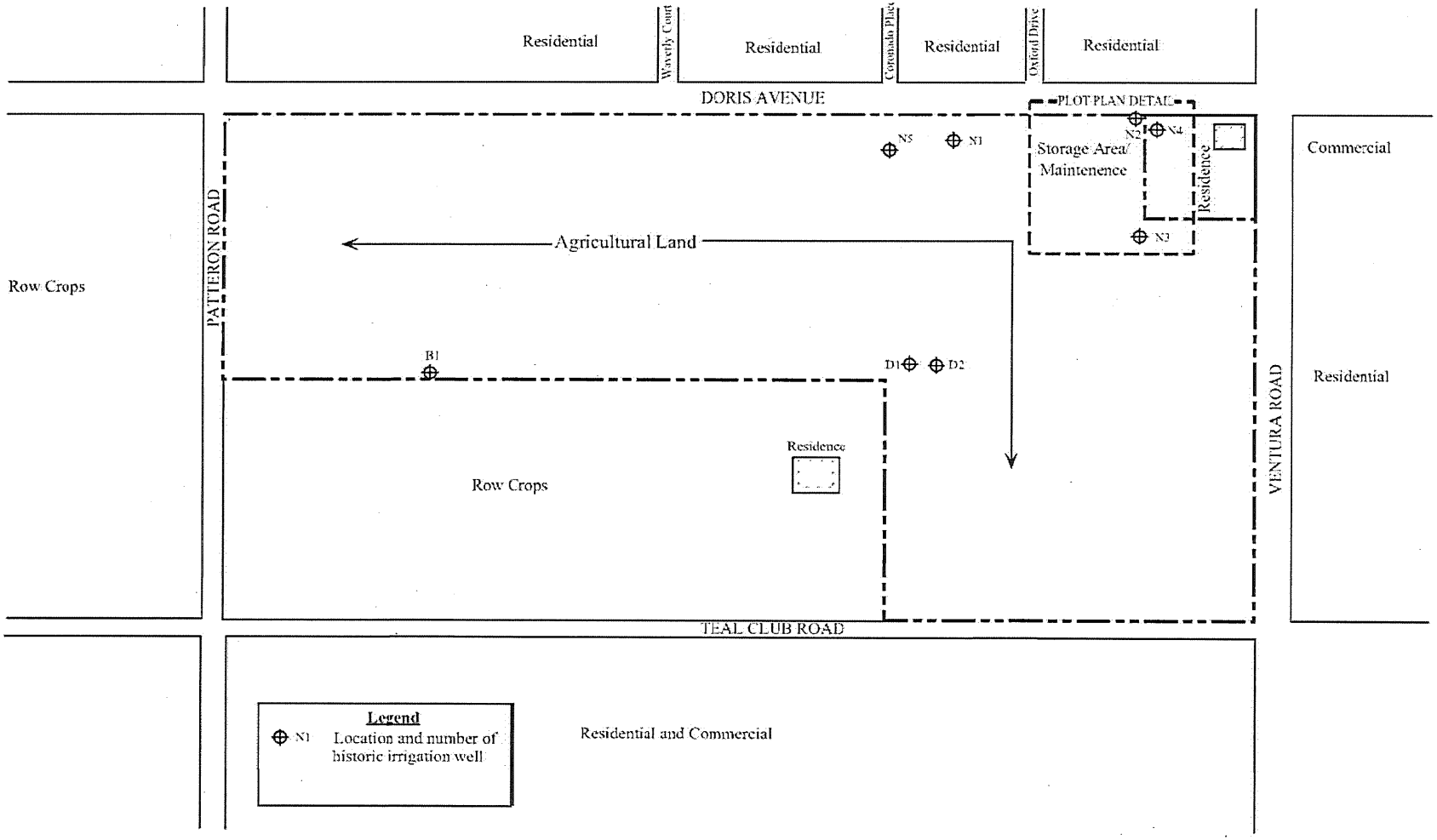
VICINITY MAP

1618 Doris Avenue
Oxnard, California

Drawn By:	CGL	Job #	EV104-2536
Checked By:	CIB	Date:	JULY 2007

California Environmental

2536 vic map



PLOT PLAN

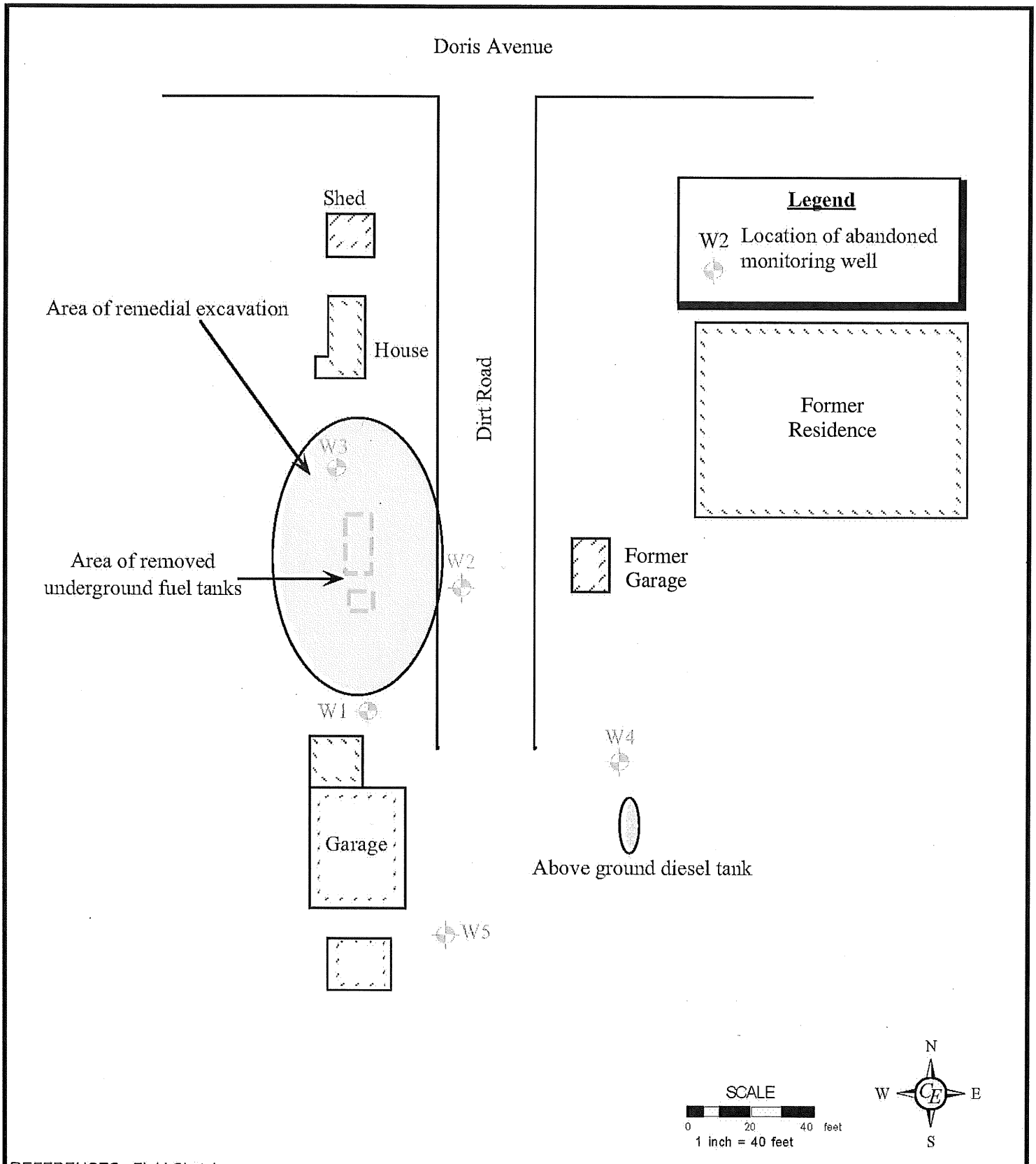
Scale
0 200 400 ft.
1 inch = 400 feet

N
W E
S

2536 Plot Plan

REFERENCE:FIELD SKETCH

CALIFORNIA ENVIRONMENTAL			
Client	SUNCAL COMPANIES	Job #	EV104-2536
Location	NWC OF TEAL CLUB RD & VENTURA RD.	By	CGL
Date:	JULY 2007	Checked By	CIB



REFERENCES: Field Sketch

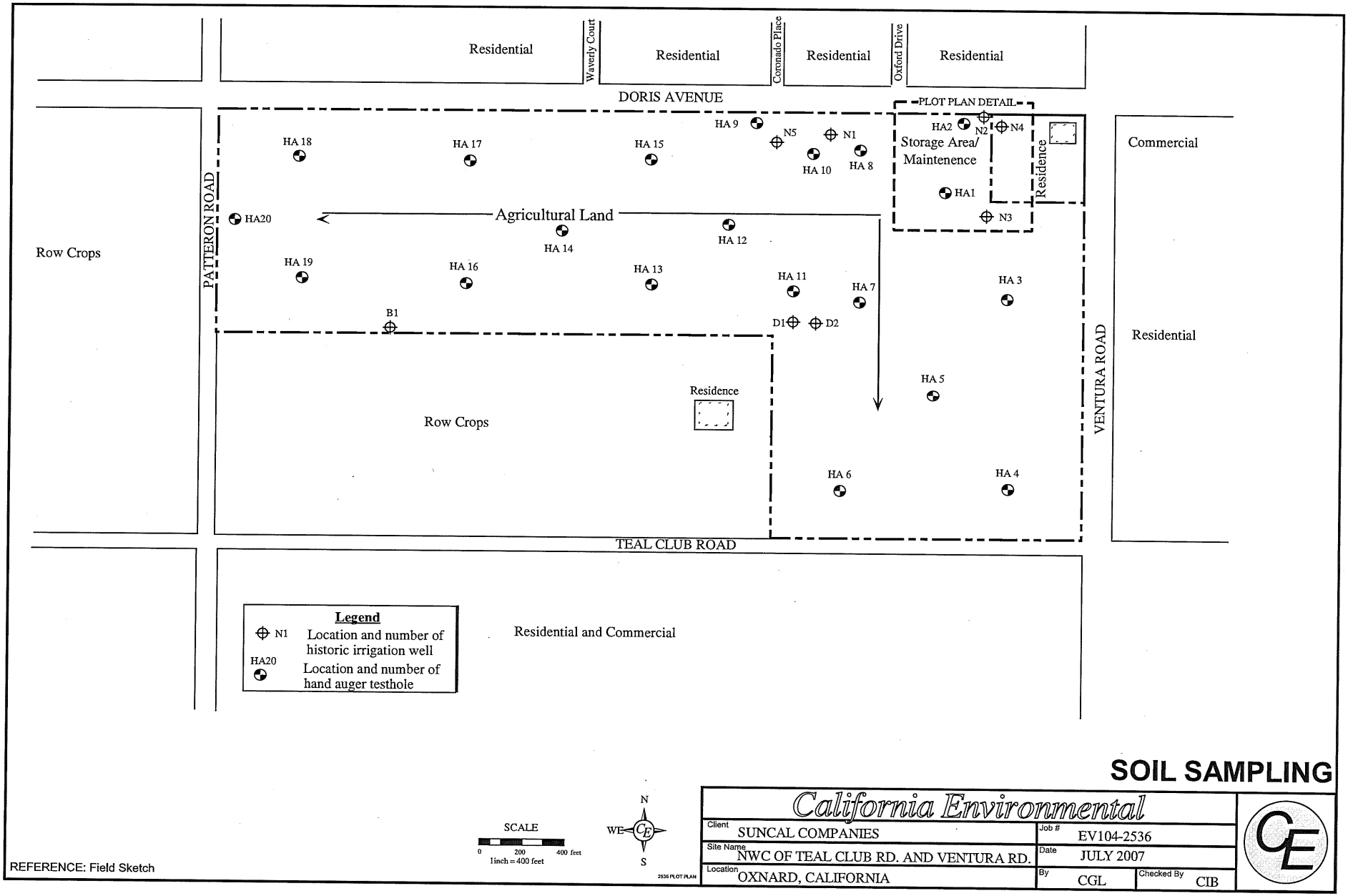
PLOT PLAN DETAIL

1618 Doris Avenue
Oxnard, California

Drawn By:	CGL	Job #	EV104-2536
Checked By:	CIB	Date:	JULY 2007

California Environmental

2536 plot plan detail



REFERENCE: Field Sketch

SOIL SAMPLING

California Environmental

Client	SUNCAL COMPANIES	Job #	EV104-2536
Site Name	NWC OF TEAL CLUB RD. AND VENTURA RD.	Date	JULY 2007
Location	OXNARD, CALIFORNIA	By	CGL
		Checked By	CIB

Technical appendices to this Phase I Environmental Site Assessment are on file at City of Oxnard Planning Division offices, located at 214 South C Street in Oxnard, by appointment during regular business hours.

Appendix F

Aircraft Hazard and Land Use Risk Assessment

AIRCRAFT HAZARD AND LAND USE RISK ASSESSMENT (REVISED)

for

Teal Club Specific Plan And Nearby Parcels

Oxnard, California

Prepared for:

Rincon Consultants, Inc.

180 North Ashwood Avenue

Ventura, CA 93003

Contact:

Abe Leider

Prepared to City of Oxnard Standards by:

Heliplanners, Inc.

31110 Avenida Del Reposo

Temecula, California 92591-1718

Contact:

Jeffrey W. Wright

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Introduction and Project Description

The Teal Club Specific Plan proposes multiple land uses on property proposed for incorporation into Oxnard's city limits. The proposed development lies within the Oxnard Airport Sphere of Influence as defined by the City of Oxnard and illustrated on Exhibit 1. Oxnard Zoning Ordinance 2132, Part 6, Section 36-5.13.0 (Airport Hazard Overlay Zone) subjects projects proposed within the Sphere of Influence to an assessment of potential risk from aviation activities. This study identifies pertinent airport land use compatibility standards and determines the extent to which the proposal complies with those standards, per city requirements.

Heliplanners was originally retained by Impact Sciences to prepare this Aircraft Hazard and Land Use Risk Assessment in 2007. We have recently been retained again by Rincon Associates to bring that previous study up to date incorporating more recent data pertaining to Oxnard Airport and changes in the Specific Plan area.

The Specific Plan area is shown on Exhibit 1. The property includes approximately 174.3 acres and is generally bounded on the north by Doris Avenue and by Teal Club Road on the south. Ventura Road borders the property on the east and Patterson Road on the west.

The project area also includes nine additional parcels totaling 11.42 acres on the southern side of Teal Club Road, north and west of Little Farms Road and bisected by Mallard Way. These parcels are also proposed to be annexed into the City's boundaries. These parcels are currently characterized by light industrial and residential uses and vacant land. Some of the residences may have been converted to office and/or shop uses. The City's Oxnard General Plan Land Use Map designates these nine parcels for airport compatible land uses. Once they are incorporated within city boundaries, they are proposed to be included in the Light Manufacturing (M-1) zoning district.

In addition to residences, the Specific Plan area would include a business park, commercial development, a fire station, an elementary school, and parks and greenbelts. Structures associated with these uses have not been identified and are therefore covered in this report only in general terms. The main 174.3 acres would be broken down approximately as follows:

- Up to 990 residential units in a variety of densities and product types on approximately 91 acres
- Up to 132,000 square feet of business park development on approximately 10 acres
- Up to 60,000 square feet of retail commercial uses on approximately 6 acres
- Approximately 8 acres for a school site
- Potential development of an approximately 14,000 square-foot YMCA facility
- Approximately 21 acres of community park space and 4 acres of pocket parks and greenbelts
- A City fire station on approximately one acre

The maximum height of any structures (including non-residential) is not expected to exceed 40 feet above grade.

Agencies

A number of agencies have either regulatory authority or provide guidelines regarding land uses near airports:

- At the federal level, the Federal Aviation Administration (FAA) controls air traffic in the vicinity of certain "controlled airports." Oxnard is a controlled airport by virtue of its FAA-run air traffic control tower. The FAA also publishes various "advisory circulars" that address airport planning and design issues. In general, compliance with these circulars is required for airports that accept federal funding under the Airport Improvement Program. Oxnard Airport has been the recipient of federal grants for planning and construction projects. The FAA also reviews projects proposed on or near airports for compliance with airspace obstruction-clearance criteria published in 14 CFR, Part 77, *Safe, Efficient Use, and Preservation of the Navigable Airspace*, of the Federal Aviation Regulations (FARs).

- At the state level, Caltrans' Division of Aeronautics (DOA) is charged with granting permits for construction of airports and heliports in California. Toward that effort, DOA ensures that such facilities meet its design standards prior to licensing and continues to meet them during annual inspections. Oxnard Airport holds an Airport Permit issued by DOA.

- The County of Ventura owns Oxnard Airport and the Ventura County Department of Airports manages it for the County. The Oxnard Airport Authority, which includes elected representatives of the City of Oxnard and the County of Ventura, sets airport policy.

- The Ventura County Transportation Commission (VCTC) acts as the Airport Land Use Commission (ALUC) for Ventura County per state law. The Commission is charged with reviewing land use proposals within certain planning boundaries. The goal is to promote compatibility between airport operations and nearby land uses. Those boundaries are defined in the Commission's Airports *Comprehensive Land Use Plan* (CLUP) Update for Ventura County (P&D Aviation, November 1991). That report was updated and adopted July 7, 2000 (*Airport Comprehensive Land Use Plan Update for Ventura County*, Coffman and Associates). The 2000 CLUP made virtually no change to the findings of the 1991 CLUP when it comes to Oxnard Airport. This is primarily because at the time when the 2000 CLUP was being prepared, the *Oxnard Airport Master Plan* had not been adopted. Consequently, the preparers did not update noise and activity levels that were contained in the 1991 CLUP. Therefore, we reference the 1991 CLUP in this document except where the discussion specifically indicates a reference to the 2000 CLUP.

Influence of Airport Operations and Traffic Patterns

Oxnard Airport is owned and operated by the County of Ventura and administered by the County's Aviation Department. The Airport has one runway. Its western and eastern ends are designated Runway 7 and Runway 25, indicating magnetic bearings of approximately 070 and 250 degrees, respectively. Runway numbers represent approximate magnetic headings. The paved area is 5,953 feet long and 100 feet wide. Each end of the runway is served by electronic instrument approach aids and by published instrument approach procedures. Runway 7 has a "nonprecision approach", which provides pilots with horizontal guidance to the runway end. It is based on the Camarillo very high frequency omnirange (VOR) facility six miles east of the airport. Runway 25 is served by a "precision approach", providing both horizontal *and* vertical guidance. It is based on the airport's instrument landing system (ILS).

Aircraft safety and performance are enhanced by landing and taking off into the wind. Therefore, with prevailing winds from the ocean, Runway 25 is used the majority of the time. Runway 7 is used occasionally (about seven percent of all operations), particularly during calm wind conditions, and during

times when winds are blowing from the east. It may also be used on occasion when fog to the west precludes visual operations in that direction.

Runway 25 has a 1,377-foot displaced threshold. The threshold was displaced to provide landing aircraft with acceptable obstruction clearance over a church steeple east of the airport. Such clearance cannot be adequately provided to the physical runway end. The result is that pilots landing on Runway 25 must plan their approach to land beyond the displaced threshold bar painted on the runway. Aircraft using Runway 25 for westbound departures, however, may use the entire runway length for their takeoff roll. Aircraft either landing or departing eastbound along Runway 7 may use the entire pavement length.

Historical operations counts for Oxnard Airport for the past twenty-two years, as provided by the Ventura County Department of Airports, are presented in Table 1. These counts include all aircraft – general aviation, commuter, air taxi and military – using the airport. An operation normally indicates a landing *or* a takeoff. Therefore, a touch-and-go is normally counted as two operations – one landing and one takeoff.

Table 1
Oxnard Airport Historical Operations Counts

Year	Number of Operations
1990	152,236
1991	134,935
1992	132,978
1993	137,880
1994	95,424
1995	94,580
1996	110,415
1997	120,333
1998	99,612
1999	90,025
2000	88,277
2001	86,432
2002	88,750
2003	83,458
2004	90,542
2005	101,862
2006	86,213
2007	76,710
2008	84,158
2009	61,627
2010	55,323
2011	56,762

After remaining well above 100,000 annual operations throughout much of the early 1990s, the activity dropped down in the 80,000 range through 2000 and held relatively steady at between approximately 83,500 and 90,500 operations for the eight-year span from 1999 through 2006. The one exception was in 2005, when operations grew to 101,862. The County's Department of Airports undertook an airport master planning process in the mid 1990s that projected an activity level of 176,000 operations by 2015, the planning horizon for that study. However, the study was not adopted and those projections now appear to be overly optimistic. The County adopted an update to its master plan in February 2005. It projected total operations for 2015 at 103,600. Our original report assumed that future activity levels would not grow appreciably over the then-current levels. In fact, with rising fuel prices, recreational flying and flight training levels, we suggested that operations could decrease somewhat. This has been borne

out by the rather significant drop experienced during the 2009-2011 timeframe, likely due to the current recession brought on by the banking crisis and higher than normal unemployment—factors not foreseen during the master plan process. While activity may yet return to the 80,000 to 90,000 level, economic forecasts appear to indicate that recovery from the recession will be slow. Therefore, activity levels may stay in the 60,000 range for a while.

We have shown nominal aircraft flight paths in Exhibit 1 as they are depicted in the 1991 CLUP. They are shown as 1,000-foot wide bands over the ground rather than as defined centerlines. The actual track over the ground for a particular flight varies with the type of aircraft, its performance characteristics, piloting techniques, air traffic control instructions, other aircraft activity, weather conditions, etc. Since individual flights may vary from the depicted paths for any number of reasons, they should be viewed as averages rather than specific paths over the ground.

As shown on Exhibit 1, the project site lies approximately 750 to 1950 feet north of Runway 7-25 and inside (not under) its northern traffic pattern. Therefore, the site should be relatively free of direct overflights by fixed-wing aircraft. However, there may be occasional overflights by pilots who fly a relatively tight traffic pattern.

FAA's Oxnard Air Traffic Control Tower has also entered into agreements with local helicopter operators that establish specific helicopter arrival and departure routes for Oxnard Airport. One of the routes goes east and west between Teal Club Road and the runway. As with variations in the fixed-wing traffic patterns, helicopters using this flight path may vary somewhat in their distance from the runway. Therefore, helicopters could occasionally affect the project site to some extent although they should normally stay south of Teal Club Road.

Another route provides for helicopters to take off from the southern side of the runway; cross over the runway to a point at approximately Teal Club Road and Patterson Avenue; and then turn in a northeasterly direction to depart the area. This route would take helicopters directly over the project site. Utilization of this site depends on being able to fit helicopters crossing the runway into the flow of fixed wing traffic using the runway. This could be a factor for incoming helicopters using the route in reverse (approaching the airport from the northeast.) In such cases, helicopters may occasionally need to hold northeast of the runway (over or near the project site) for clearance from the tower to cross the runway and land on the southern side.

Other routes generally follow the Fifth Street corridor east and west of the airport. Since Fifth Street is south of the airport, away from the project, it should not significantly affect the project site.

There are other helicopter routes. However, procedures have been established so that those going northbound primarily use the Victoria Road alignment at the western end of the airport to enter and leave the area. This normally keeps them from overflying the project area.

There do not appear to be any historical counts of helicopter flights that might help to distribute percentages of flights among the various flight paths described above. Therefore, in lieu of specific data, it is reasonable to assume that less than 25 percent of all helicopter flights using Oxnard Airport (those passing northeast/southwest over the site and those heading east/west along Teal Club Road) might affect the project site.

By agreement with the Oxnard Control Tower, all helicopter routes are to be flown at or below 500 feet above ground level to separate them from fixed-wing routes above.

The County of Ventura has requested via correspondence dated June 4, 2012 from Todd McNamee, Director of Airports, to Brian Foote, City of Oxnard Planning Division, that an avigation easement be granted to the County. Typically, an avigation easement indicates that property owner(s) acknowledge that their properties are in an area subject to frequent aircraft overflights and that such overflights may result in noise, exhaust emissions and vibrations.

FAR Part 77 Considerations

FAR Part 77 specifies a series of "imaginary surfaces" in the airspace surrounding runways and helicopter landing areas. These surfaces are designed to provide unobstructed maneuvering room for aircraft landing and taking off from an airport or heliport. The standards serve a two-fold purpose in minimizing hazards to aircraft as well as helping to prevent injury or damage to persons or property on the ground. Ideally, no object, either natural or man-made, should penetrate any imaginary surface. The surfaces are described below and depicted on Exhibit 1.

The "primary surface" serves as the basis for all other imaginary surfaces specified in Part 77. The primary surface is a 1,000-foot wide rectangle at runway elevation, extending 200 feet beyond each end of the runway pavement. The elevation of any point on the primary surface is equal to the elevation of the closest point on the runway. The elevation at the eastern runway end is 45 feet above mean sea level (MSL); the elevation at the western end is 34 feet MSL. Since the runway slopes down from east to west, the primary surface does likewise.

The "horizontal surface" is established at 150 feet above the official airport elevation of 45 feet MSL (high point of the runway). Therefore, the horizontal surface's elevation is 195 feet MSL.

"Approach surfaces" extend up and out from the primary surface ends (with different slopes at each end due to the different categories of instrument approaches available).

"Transitional surfaces" extend up and out from the primary and approach surface edges. They rise at a 7:1 slope (seven feet horizontal to one foot vertical) until reaching the horizontal surface at 195 feet MSL.

As shown on Exhibit 1, the project site underlies both the northern transitional surface and the horizontal surface. Therefore, these are the only imaginary surfaces of interest with respect to this project.

To accurately assess Part 77 impacts on proposed buildings, we must consider changes in ground elevation between the runway and the project site as well as the building heights themselves. Ground elevations at the proposed homes vary from 51.7 feet MSL in the northeastern portion to 37.5 feet in the southwestern portion. Therefore, the highest finish floor elevations would be approximately seven feet above the runway elevation. With an assumed 40-foot height, the maximum top elevation of homes would be about 47 feet above the highest point of the runway or approximately 92 feet MSL. Even the highest structures would underlie the horizontal surface at 195 feet MSL. Their tops would be at least 103 feet beneath the horizontal surface. Therefore, the horizontal surface is not considered to be a significant factor with respect to this project.

However, the southern part of the project area lies under the sloping 7:1 transitional surface. The most critical building parcels are those to the south, nearest Teal Club Road. We use these sites to estimate Part 77 clearance under the transitional surface. The nearest building site to the runway in the southwest part of the project parcel is the most critical. The runway elevation at this location is estimated at 40 feet MSL (precise runway survey information not immediately available). The transitional surface begins at the edge of the primary surface, which is 500 feet north of and parallel to the runway centerline. The nearest structure would likely be about 385 feet north of this point. The transitional surface at this location would probably be about 95 feet MSL (385 divided by 7, plus 40). The maximum ground elevation at this location is estimated to be less than 44 feet MSL. Therefore, the top elevation of a 40-foot high structure in the southwestern corner of the project can be expected to be at most 84 feet, about 11 feet beneath the transitional surface.

At 48 feet MSL, the finished grade in the southeastern corner of the project parcel would be less than three feet higher than the end of Runway 25. The nearest structure to this point would likely be about 250 feet from the edge of the approach surface. Therefore, the transitional surface at this location would

probably be above 90 feet MSL (250 divided by 7, plus 55). On this basis, the minimum clearance of a 40-foot high structure under the transitional surface would be about two feet. Therefore, within the accuracy currently available to us, it appears that none of the proposed structures would violate FAR part 77 criteria and so would not be considered "obstructions" under those criteria.

Other factors must be considered, however in addition to the major structures. For example, street lights, power lines, etc., depending upon their locations and heights, could be of concern. We do not currently have the data needed to analyze such items. However, we recommend that such items be designed to comply with Part 77 criteria. Designers can use Exhibit 1 as a general reference in doing so.

Trees can also violate Part 77 surfaces. Many common streetscape trees do not grow tall enough to be of concern. However, some varieties (certain palms, eucalypti, pines, etc.) can grow quite tall. Again, landscape information is not currently available for analysis. However, tree heights (at maturity rather than at initial planting) should be part of landscape planning. Again, landscape architects can use Exhibit 1 as a reference template to address this issue. The developer, in concert with city planners, can control the initial tree plantings in front yards and public areas. However, there is often less control over what individual homeowners may eventually plant on their own property. It is unreasonable to expect homeowners to be knowledgeable about FAR Part 77 criteria or to request an FAA study of potential trees' mature heights. Therefore, in order to minimize future FAR Part 77 obstructions, the City and developer should consider establishing codes, covenants and restrictions (CC&Rs) that limit the species or heights of trees that could later be installed by individual owners.

Regardless of what our own analysis indicates, FAR Part 77 requires that a project be submitted to the FAA for review if it would penetrate a "notice surface" based on a slope of 100 feet horizontal to 1 foot vertical from the nearest point of the nearest runway. The notice surface simply establishes a threshold for FAA study; it does not suggest that an object that might penetrate it would be an obstruction. The application, made via FAA's https://oeaaa.faa.gov/oeaaa/external/portal.jsp website, initiates an "obstruction evaluation" (OE) by FAA staff. The FAA's role in conducting an OE is solely to determine if a proposed structure might constitute an obstruction or, more seriously, a "hazard" to air navigation. Regardless of its findings, FAA cannot approve or prohibit construction; that responsibility lies with the local jurisdiction (City of Oxnard) in exercising its zoning powers. The runway elevation south of the project area varies from 45 feet MSL on the east to approximately 40 feet MSL on the west. In the east, a maximum structure top elevation of 40 feet above ground, or about 92 feet MSL, and an approximately 2,800-foot separation from the runway edge to the *most distant* structures, could penetrate the notice surface by around 10 feet. Because the nearest structures would be only about 750 feet from the runway edge, virtually all of them could penetrate the notice surface. The above analysis indicated that FAA would probably not identify the proposed structures as obstructions. However, because they could penetrate the notice surface, Part 77 does require that the developer submit the project to FAA for study. This can be done as a blanket application for the entire development rather than as individual applications for each building. Based on our own analysis and past experience working with FAA on many similar projects, we anticipate that FAA would find that the buildings would not constitute obstructions under Part 77 and that they would not constitute hazards to aviation.

Special note should be made of the added nine parcels south of Teal Club Road. These are closer to the airport and therefore more critical with respect to the 7:1 transitional surface. The surface would be lower over these parcels. In fact, this area's southern edge is contiguous with the airport property line and the primary surface, which corresponds with runway elevation. Therefore, at the southern edge of this narrow east-west strip, virtually any structure would constitute an "obstruction" under the criteria published in FAR Part 77. It must be clearly understood that, a structure's classification as an "obstruction" per Part 77 criteria does not mean that it would also be classified as a "hazard" to aviation. That determination can only be made by FAA during its obstruction evaluation process. Many structures are technically obstructions without being determined to be hazards. Typically in such cases, FAA may recommend that the structure be marked at night with red obstruction lights to alert pilots to its existence. Remember that FAA does not have the power to approve or prohibit construction of a structure. That power lies solely with the local community (City of Oxnard). However, FAA's recommendations should be taken into

consideration. Again, trees, light standards and power lines would be more critical on these parcels because of their closer proximity to the runway.

The proposed school site's southern boundary is *approximately* 2,000 feet north of the runway centerline and near the western end of the Specific Plan area. Assumed existing ground elevation at this location is *approximately* 41 feet (will vary somewhat over the site). It lies entirely beneath the horizontal surface (195 feet MSL). Therefore, building heights up to about 154 feet would be allowable on this particular parcel without violating FAR Part 77 airspace obstruction-clearance criteria. (See School Site section.)

Note that our FAR Part 77 analysis has been based on estimates of the distances of the planned structures from the runway centerline and estimates of building heights. Maps, grading information, etc. available at this early stage are not sufficient to provide precise analyses. Therefore, some indeterminate margin of error can be assumed in our estimates. We recommend that an accurate survey of existing and projected grades, building locations and heights, etc. be conducted prior to submitting FAA applications.

Airport Design Advisory Circular Considerations

In addition to FAR Part 77 standards, FAA has developed a series of airport planning criteria, published in Advisory Circular AC 150/5300-13, Airport Design. While several criteria affect placement of fixed or moveable objects near a runway, they apply primarily to construction near runway ends. None directly affect the subject property, which is approximately 750 feet north of the runway centerline.

CLUP Considerations

Several "safety zones" surrounding civilian airports in Ventura County are defined in the CLUP. These zones are generally established to provide a method of assessing the compatibility of various types of land uses with respect to aircraft operations. The document states "Land use and density criteria contained in these guidelines were developed to reduce the risk from an off-airport aircraft accident to an acceptable level" (page 18). The three classifications are the "inner safety zone", the "outer safety zone" and the "traffic pattern zone". The inner and outer safety zones lie beneath the approach surfaces shown on Exhibit 1 and do not affect the proposed development. The subject property lies entirely within the traffic pattern zone (TPZ), also depicted on Exhibit 1.

Much of the information in the CLUP is based on guidance provided by the Airport Land Use Planning Handbook, California Department of Transportation, Division of Aeronautics, July 1983. This document was replaced with a newer publication dated December 1993, again in 2002 and then again in 2011. We reviewed the 2002 edition of the Handbook to determine to what effect the revision would affect the subject property. Essentially, the new edition presents a compendium of different types of safety zones developed by various airport land use commissions (ALUCs) but does not suggest that they broadly be applied to all airports. It contains the statement that:

> "It must be emphasized that the safety zone shapes and sizes described here are merely presented to illustrate the concepts discussed. Although they may serve as a useful starting point for individual compatibility plan development, these particular safety zones are not intended to represent Caltrans' recommendations, guidelines or standards. Most compatibility plans do not now include all of the zones shown here, nor is it required for them to do so. Many ALUCs likely will find it appropriate to continue to use the safety zones they have already established."

And, in the 2011 edition:

> "This edition of the handbook does not change the safety zone guidance provided in the 2002 edition."

The intent is therefore that safety zones adopted by local airport land use commissions remain in effect unless the local ALUC should update its CLUP to revise its zone shapes and dimensions. Therefore, the safety zone definitions and dimensions contained in the current Ventura County CLUP are the ones relevant to this project.

The CLUP contains a listing of acceptable, conditionally acceptable and unacceptable land uses within each safety zone category. Single-family residential development is listed as conditionally acceptable within the TPZ provided that maximum structural coverage of the land is no greater than 25 percent. Although we cannot accurately sum the footprints of all proposed housing at this early stage, we made conservative estimates based on the maximum square footage and numbers of proposed units of each type in the product mix for the previously proposed project at this site. We estimated that the structural coverage for that project would have been less than 20 percent. Accordingly, the residential development would be expected to comply with this condition.

In addition to the specific land use compatibility criteria listed in the CLUP for each type of safety zone, it lists four types of land uses that are considered incompatible within all air safety zones. They are quoted below, verbatim from the CLUP:

- Any use which would direct a steady light or flashing light of red, white, green, or amber colors associated with airport operations toward an aircraft engaged in an initial straight climb following takeoff or toward an aircraft engaged in a straight final approach toward a landing at an airport, other than an FAA approved navigational signal light or visual approach slope indicator.

- Any use which would cause sunlight to be reflected toward an aircraft engaged in an initial straight climb following takeoff or toward an aircraft engaged in a straight final approach toward a landing at an airport.

- Any use which would generate smoke or which would attract large concentrations of birds, or which may otherwise affect safe air navigation within this area.

- Any use which would generate electrical interference that may be detrimental to the operation of aircraft and/or aircraft instrumentation.

We have no information that would indicate that the proposed development would be likely to produce any of these uses although there may be a slightly greater potential at the nine parcels south of Teal Club Road that would be designated as M-1 zoning. Developers should be made aware of these issues and efforts should be taken to ensure that none of these uses are included in development plans.

Based on the above factors, it appears that the proposed residential uses would be consistent with the guidelines contained in the CLUP. We anticipate that the Ventura County Transportation Commission, acting in its role as the Airport Land Use Commission for Ventura County would reach similar findings.

It is important to note that the CLUP classifies school sites as "unacceptable" within the TPZ (see School Site section).

Violations by Aircraft within the Oxnard Control Tower Air Traffic Area

The City's ordinance requires that this report include a list of airspace violations by aircraft under the authority of the Oxnard control tower for the six- to eighteen-month period preceding consideration by the Planning Commission. We have requested such information from FAA during the preparation of similar studies for past projects in the Oxnard Airport area. FAA has informed us that the information is not readily available, as the agency does not catalog violation records by airport or by air traffic area. We have stated this finding in past studies and City staff has not pursued it further. However, the following

section does catalog local aircraft accidents based on information provided by the Ventura County Aviation Department.

Aircraft Accident Risk - Airport Sphere of Influence

For a historical perspective of safety at Oxnard Airport, we have reviewed its accident history. Airports sometimes experience on-airport incidents (hard landings, gear-up landings, taxiing accidents, etc.). While these may damage aircraft or injure occupants, they do not affect off-airport land uses and are not considered significant in the context of this study. Consequently, we have not attempted to identify or record such incidents in this report.

During the past 33 years, there have been six significant accidents involving aircraft approaching or departing Oxnard Airport within its sphere of influence, an area of approximately 3.6 square miles.

1. In June 1979, an accident resulting from engine failure occurred on undeveloped land west of Victoria Avenue while the aircraft was approaching Runway 7. There were two fatalities and two serious injuries to its occupants. According to records of the National Transportation Safety Board (NTSB), the crash occurred between one and two miles west of the airport.

2. In June 1987, a Cessna 150 lost power during a night takeoff from Runway 25. It crashed into the Abex Corporation parking lot north of Fifth Avenue and adjacent to the airport. The accident resulted in minor injuries to the pilot and passenger, but there were no injuries to persons on the ground.

3. In August 1997, A Cessna 210 hit a home on Ivanhoe Avenue, approximately 3,000 feet north of the runway, just beyond the Sphere of Influence. It sheared off part of a chimney and some roof tiles. It then hit a light standard, tearing off one wing, before coming to rest in a bean field south of Doris Avenue, within the Sphere of Influence. The aircraft had lost power after departing Camarillo Airport. Its intended destination was Burbank. After losing power, the pilot was trying to reach Oxnard Airport for an emergency landing when the accident occurred. Of the three occupants on board, two were injured seriously. No one on the ground was hurt.

4. On April 22, 2001, a single engine Piper lost power, clipped the top of a eucalyptus tree and some power lines, and crashed in a celery field within the Sphere of Influence near the southwest corner of Fifth Street and Victoria Avenue shortly after departing Runway 25. The aircraft was demolished. No other structures were damaged. The pilot and his passenger sustained only minor injuries and declined treatment. No one on the ground was injured.

5. On May 26, 2006, a single engine Piper PA-28-151 impacted terrain and then struck a moving vehicle following a loss of engine power after an afternoon takeoff from Runway 25. The pilot attempted to turn back toward the airport to land on Runway 7. The airplane struck the vehicle, which was traveling southbound on Victoria Avenue about a quarter mile west of the airport. The pilot (sole occupant of the aircraft) was seriously injured. The two occupants of the vehicle received minor injuries. The accident occurred during visual meteorological conditions.

6. On August 7, 2008, a single engine Stewart S-51 (scaled down kit-built replica of a North American P-51 Mustang) crashed into the bus barn on the former Oxnard High School property after an engine failure during approach to Oxnard Airport's Runway 25. The crash site was about 7/10 of a mile east of the runway's displaced threshold. The aircraft was totaled and the sole occupant (pilot) was injured.

Two other accidents have occurred near but *outside* of the Sphere of Influence. We consider them to have been close enough to the airport to be of interest to decision makers in assessing the project's risk implications. We therefore include them in this discussion.

1. On November 19, 1995, a Beechcraft Bonanza crashed after apparently developing engine trouble while approaching Runway 7 in heavy fog. The aircraft came to rest approximately two and a half miles west of Oxnard Airport. The accident location appears to have been in the sand dunes west of Harbor Boulevard. The sole occupant died while undergoing surgery about three hours after the accident.

2. In 1981, an aircraft crashed about six miles east of the airport while on approach, resulting in one fatality to an aircraft occupant. This accident, attributed to improper instrument operations, occurred well outside of the sphere of influence but is included for this analysis.

Therefore, during the past 26 years, there have been eight significant accidents associated with Oxnard Airport, averaging about one every 3.9 years.

As with any other transportation mode, it is impossible to predict when or where a future accident might occur. An accident can obviously happen anywhere at any time and can endanger persons and property on the ground as well as occupants of the aircraft involved. To assess the probability of an accident occurring within the project area, we consulted research presented in California's Airport Land Use Planning Handbook (ALUP Handbook). It was prepared for Caltrans' Division of Aeronautics and published in January 2002. The Institute of Transportation Studies at the University of California, Berkeley, one of the participants in the ALUP Handbook effort, compiled data from 873 aircraft accident records (445 arrival accidents and 428 departure accidents) as inventoried by the NTSB. The database included accidents from 43 states for the ten-year period from 1983 through 1992, and addressed only "accidents," not "incidents." (The NTSB defines an accident as an occurrence where people on board or on the ground sustain serious or fatal injuries or where the aircraft incurs damage substantial enough that it is no longer considered airworthy). It included all general aviation airplanes but not helicopters or other aircraft types (ultralights, blimps, etc.). It also did not include commercial air carrier or military aircraft. The vast majority of operations at Oxnard fit within this profile. Therefore, we believe the study sufficiently representative from which to draw conclusions for this report.

According to figures contained in the 1991 CLUP, a three-year study period from 1986 to 1988 resulted in a national average of 0.36 off-airport accidents per 100,000 operations. At this rate, Oxnard should experience a probability of about 0.31 off-airport accidents per year at its current activity level of about 86,000 annual operations. This equates to one off-airport accident somewhere in the airport vicinity every 3.23 years. Projecting this to the ALUP study, it would take 2,820 years for all 873 accidents to occur at Oxnard. (The actual recent accident rate at Oxnard has been somewhat lower than this projection, at about one accident every 3.9 years.)

Aircraft Accident Risk - Project Vicinity

The above discussion addressed accident risk in the general vicinity of Oxnard Airport. In order to address accident risk in the immediate vicinity of the subject property, a much smaller "target," we again consult the ALUP study. Of the 873 accidents included in that study's database, nine arrival accidents and 17 departure accidents would have occurred within or adjacent to the project boundaries if they had occurred at Oxnard. This is based on an analysis of arrivals and departures along Runway 25 (see Exhibits F-1 and F-2 – exhibit numbers from Appendix F of the ALUP study) since the vast majority of operations occur on this runway rather than Runway 7. This represents 26 (2.98 percent) of the 873 accidents in the national database. Therefore, the probability of an accident at or near the project site can be seen as 2.98 percent of the probability of an accident somewhere in the airport vicinity. Multiplying Oxnard's projected rate of 0.31 off-airport accidents per year by 0.0298, we obtain a

probability of 0.0092 accidents per year, or about one accident every 109 years within or near the project boundaries.

Note that the proposed school site represents approximately five percent of the overall Specific Plan development area. Therefore, without going into extreme detail, it can logically be assumed that the school site represents a much smaller "target" for an aircraft in distress. The probability of an accident on the school site would be appropriately lower—a probability of an accident on or near the school site about every 2,000 years.

We must exercise caution in placing undue emphasis on these probability figures. A certain amount of randomness should be assigned to actual accident locations. Therefore, while other accidents in the database may have occurred outside the project boundaries, they should not be completely disregarded. Any specific accident can happen within or near the project boundaries at any time. Should an aircraft strike an occupied structure, the result could be tragic.

As with all modes of transportation, aviation carries some degree of risk. The above discussion attempted to quantify that risk with respect to the proposed Teal Club Specific Plan project. We leave it to local decision-makers to determine if the projected probability of one accident every 109 years represents an acceptable level of risk for the Oxnard community.

Emergency Landing Areas

In the event of an in-flight emergency, a pilot may need to land an aircraft at other than a prepared runway. As long as adequate emergency landing areas exist, the potential for an aircraft impacting a building is minimized and the chance of surviving a forced landing is enhanced. Recent nearby development has gradually eliminated some of the land previously available for emergency use. The proposed project would add to the cumulative effect of diminishing land areas available for emergency landings.

While recent development has occurred near Oxnard Airport, there is still a large amount of land devoted to agricultural and greenbelt uses. In fact, the San Buenaventura-Oxnard Greenbelt Agreement specifies that much of the land west and north of the airport be designated for permanent agriculture and open space in accordance with a proposal made in the Open Space/Conservation Element of the Oxnard General Plan (City of Oxnard 1990). This land is depicted in Exhibit 2. These areas may yet be able to serve as emergency landing areas, depending upon the location and nature of an in-flight emergency.

School Site

The Specific Plan includes a proposed school site. Section 3570 of the California Code or Regulations, pursuant to the Education Code, requires Caltrans DOA to evaluate proposed school sites within two miles of a runway upon the request of local authorities "in order to promote the safety of pupils, comprehensive community planning, and a greater educational usefulness of schoolsites". Therefore, before acquiring title to the site, the Oxnard School District should apply to Caltrans DOA for its review in compliance with the Education Code.

The FAR Part 77 analysis showed that buildings on the proposed school site parcel could be as tall as (approximately) 154 feet above ground without penetrating the horizontal surface associated with Oxnard Airport. Obviously, school buildings would not be that tall, so from an obstruction-clearance standpoint, the site would be acceptable for school site development.

However, as stated above, the CLUP lists schools as "unacceptable" within the traffic pattern zone. This classification is from a land use perspective.

Conclusions

Decisions regarding development projects near airports should not be taken lightly as aircraft accidents can obviously have disastrous implications. Consequently, agencies at federal, state and local levels have developed various criteria to help guide local planning agencies in their decision-making. This report has attempted to objectively review existing airport land use compatibility standards with the goal of determining the degree to which the proposed project complies.

The County of Ventura Department of Airports has requested that an avigation easement be granted to the County. Such easements typically indicate that property owners are aware of frequent aircraft overflights that may result in noise, exhaust emissions and vibrations.

An analysis of imaginary surfaces defined in FAR Part 77 indicates that the proposed structures within the Specific Plan area would likely comply with all relevant criteria and would not be considered obstructions or hazards to aviation. However, many if not all of the structures must be submitted to the FAA for an obstruction evaluation prior to construction because they would penetrate the FAR Part 77-specified "notice surface", which represents a threshold level for FAA review. This can normally be done as a blanket application covering the entire proposed development as long as structural heights are known (or covered from a conservative "worst case" perspective). Particular attention should be given to locations and heights of light standards, power lines and tree (heights at maturity) once that information is available. Proactive measures can normally be taken to ensure that these items will not violate FAR Part 77 criteria.

It is likely that FAA might find manufacturing development in the nine parcels south of Teal Club Road to be "obstructions" under FAR Part 77 criteria. However, there is a much lower likelihood that FAA would find proposed structures to be "hazards" to aviation. FAA may recommend red obstruction lights to mark them for pilots at night.

The project area does not lie within the areas addressed by planning standards published by the FAA in its *Airport Design* advisory circular.

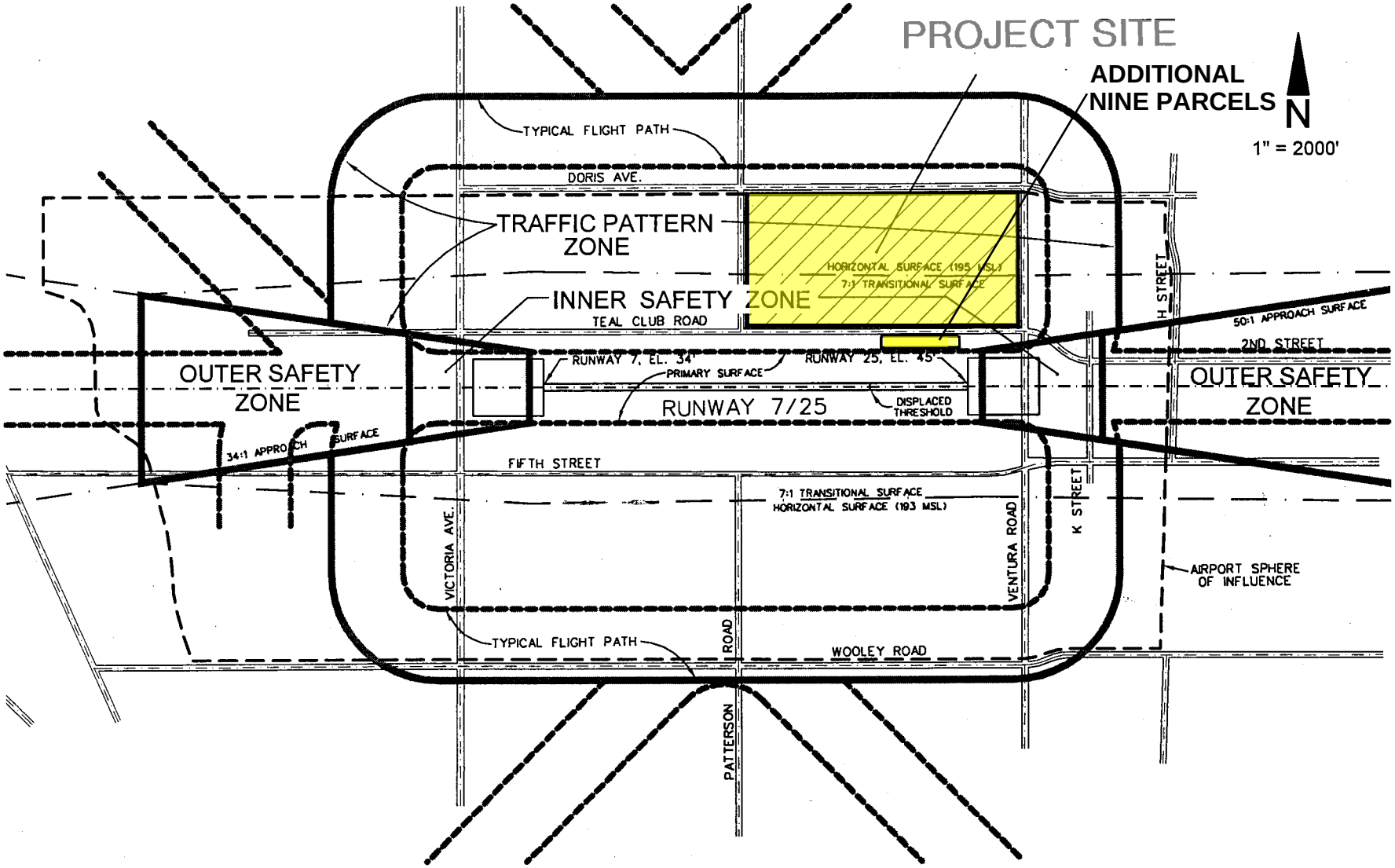
The project area lies within the traffic pattern zone defined by the CLUP and appears to be consistent with CLUP guidelines. However, the Ventura County Transportation Commission, acting as the Airport Land Use Commission for Ventura County has the responsibility of making an official finding of consistency or inconsistency.

The project will contribute to the cumulative effect of reduction in potential emergency landing areas surrounding Oxnard Airport. However, lands north and west of the airport are devoted to agricultural or open space uses within the San Buenaventura-Oxnard Greenbelt, which is protected from future development. Those lands would therefore remain available for emergency landings if needed. The proposed project would convert about 175 acres currently in agricultural use north of the airport to residential and other uses.

An aircraft accident can occur at any time and at any place within or near the project site. An accident could involve an aircraft taking off from or landing at Oxnard Airport or it could involve an aircraft enroute between two other airports, with no connection to Oxnard Airport. There is no way to completely guard against such occurrences. We can, however, assess the relative probability of an accident occurring within a specific area. One method of estimating aircraft accident potential within or immediately adjacent to the project area resulted in a probability of an occurrence every 109 years. However, there are no "standards" that specifically address this issue. Only local decision-makers can determine if this level of probability is acceptable to the Oxnard community.

The School District must submit the proposed school site to Caltrans Division of Aeronautics for review in accordance with Section 3570 of the California Code of Regulations before acquiring title to the property. The school site is acceptable from an airspace obstruction-clearance perspective but the CLUP deems

school sites to be "unacceptable" within the traffic pattern zone from a land use perspective. The accident probability is much lower for just the school site than for the overall Specific Plan development area.



Note: FAA Runway Protection Zone Boundary and CLUP Inner Safety Zone Boundary are identical.

Project: Teal Club Specific Plan And Nearby Parcels

Exhibit 1: Aviation Safety Criteria

Heliplanners www.heliplanners.com

Aviation Planning Consultants

31110 Avenida del Reposo
Temecula, California 92591-1718 USA
Phone: (951) 693-5090
Fax: (951) 693-5042

OXNARD / VENTURA GREENBELT AGREEMENT

EXHIBIT 2

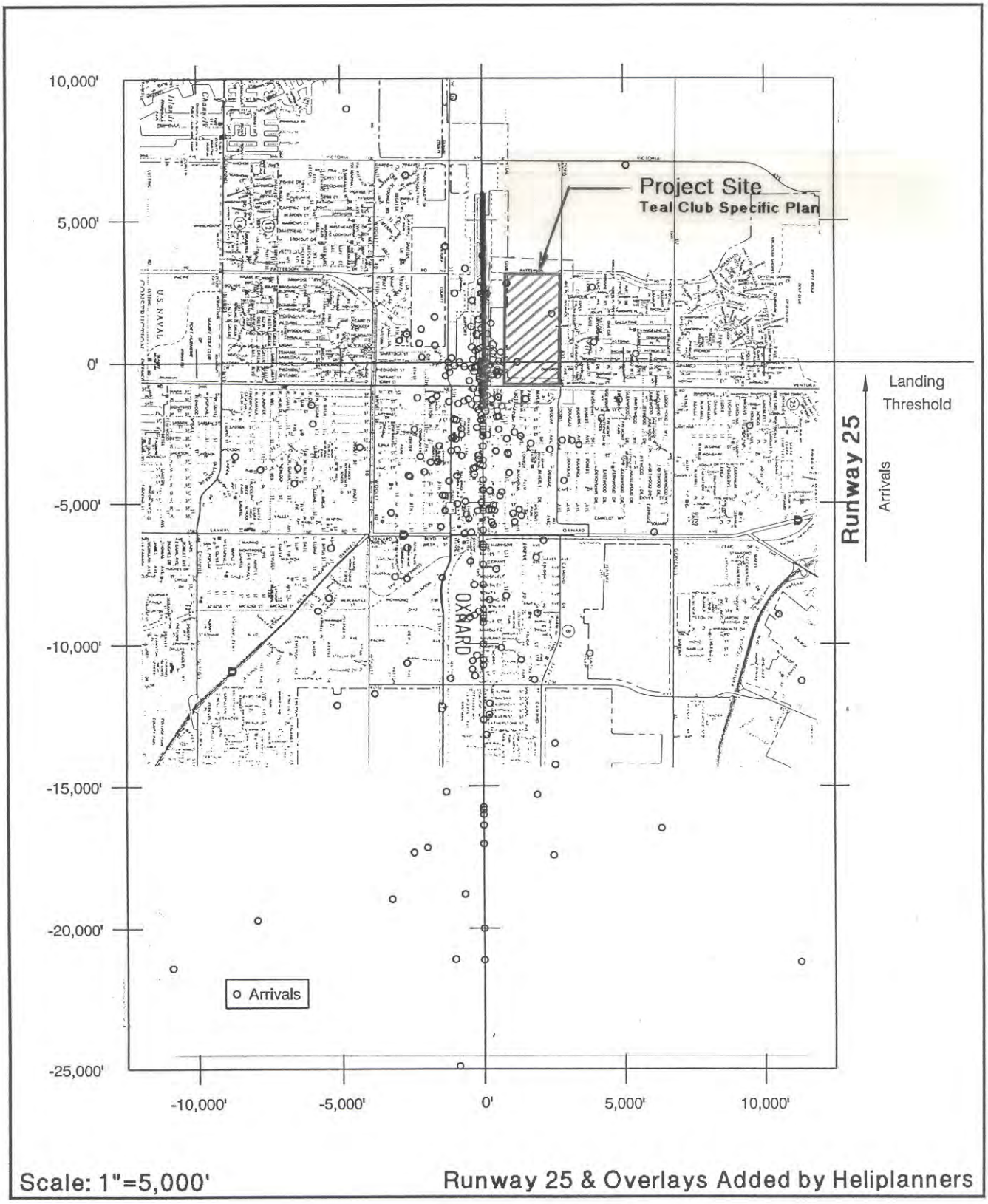


EXHIBIT F-1

Arrival Accidents

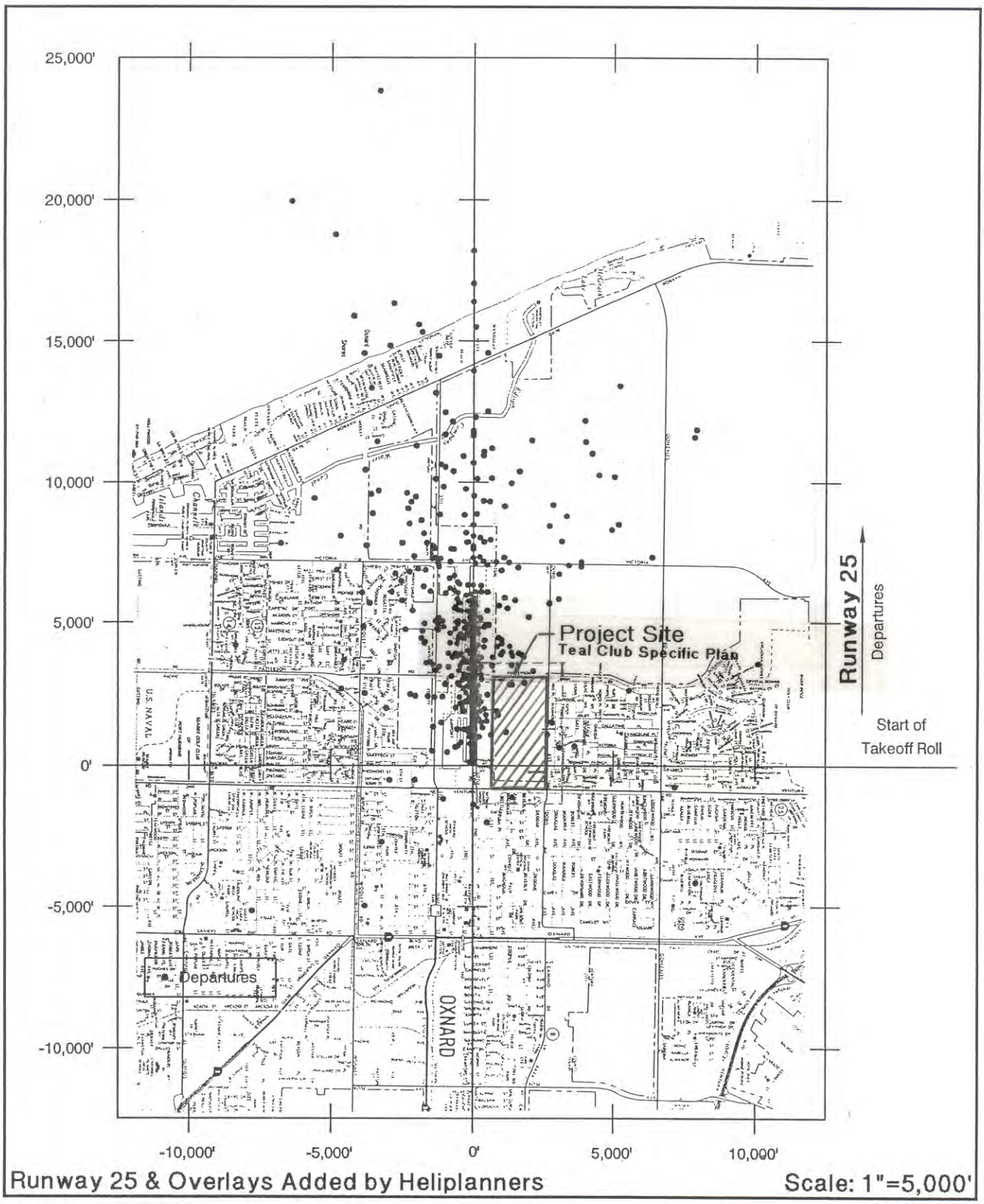


EXHIBIT F-2

Departure Accidents

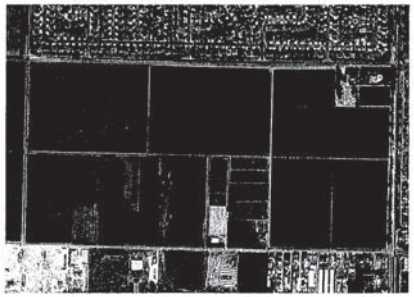
Appendix G

Preliminary Drainage Report

PRELIMINARY DRAINAGE REPORT

FOR

Teal Club Road Project
Oxnard, California



Prepared for:

Suncal Companies
25152 Springfield Court, Suite 300
Santa Clarita, Ca 91355

Prepared by:

RBF CONSULTING
5051 Verdugo Way, Suite 300
Camarillo, CA 93012

Contact Person:
Anna Grimes, P.E., Project Manager

JN 30-100646.001

October 22, 2007

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Appendix A – Drainage Calculations and Attachments
Appendix B – Site Investigation Photographs

LIST OF EXHIBITS

Exhibit A - Existing Conditions – Hydrology Map
Exhibit B – Proposed Conditions – Hydrology Map
Exhibit C – Vesting Tract Map

PURPOSE OF REPORT

The purpose of this report is to outline the existing drainage conditions of the site and present a description of the post-project drainage conditions, drainage impacts, and proposed drainage improvements. Significant on-site and off-site facilities, as applicable, are described and analyzed. Peak 10-year and 100-year stormwater runoff flow rates were calculated. An analysis and review of proposed storm drain facilities for compliance with local design criteria was performed.

This report assumes direct drainage into the City of Oxnard storm drain system. Specifically excluded from this report is an analysis of the capacity of the existing offsite downstream storm drain system. This report has been prepared in accordance with the requirements of the City of Oxnard and Ventura County regulations based on the proposed grading and drainage improvement plans for the project site.

LOCATION

The project site is located on the north side of Teal Club Road between Ventura Road and Patterson Road in the city of Oxnard, California. The site is also on the west side of the city and just north of the Oxnard Airport. See Figure A below.

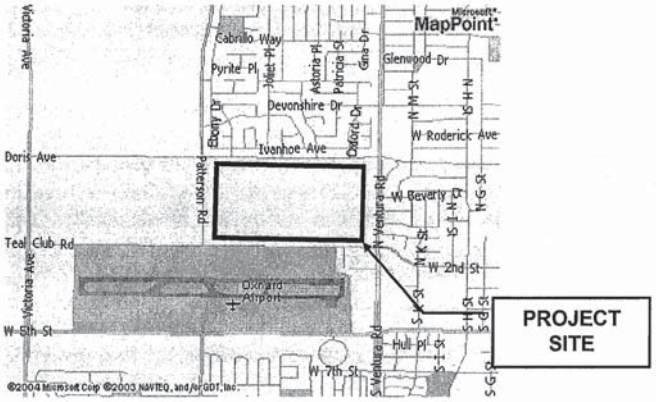


Figure A.

BACKGROUND

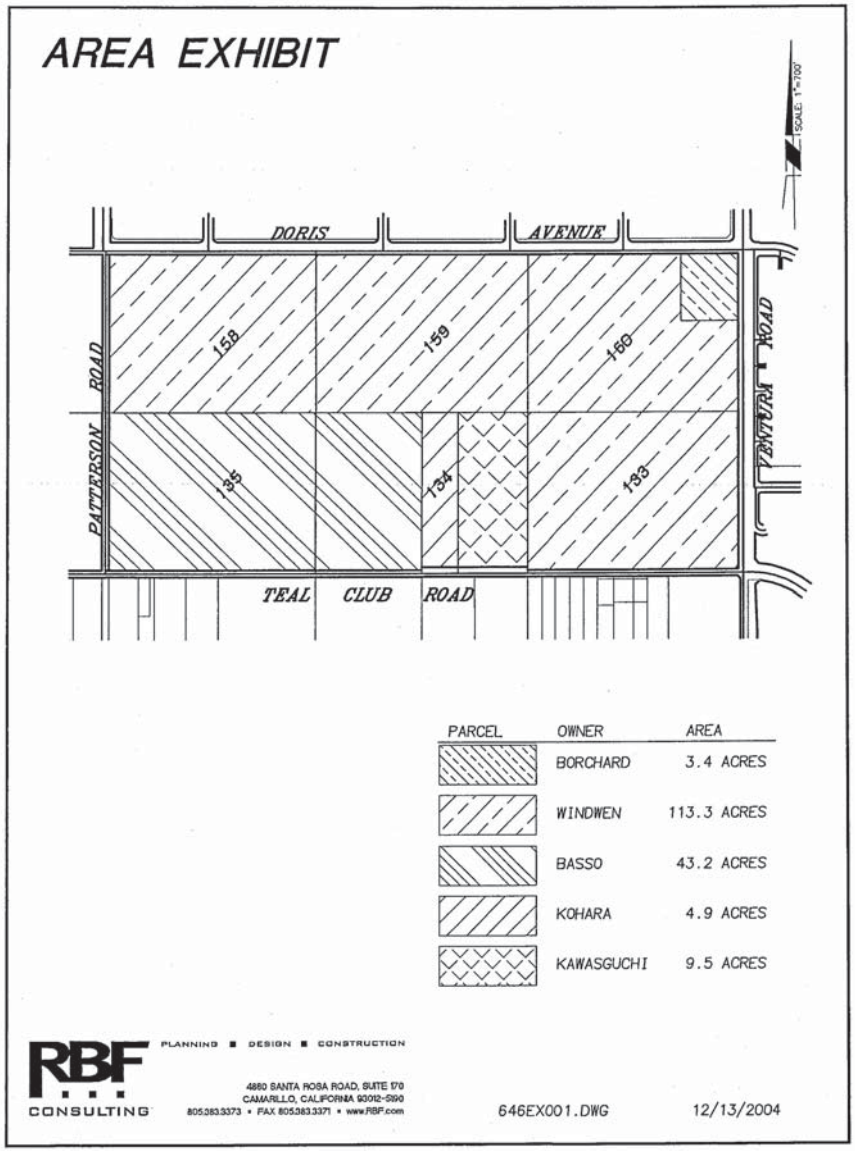
The property is planned for development per the Specific Plan, which covers an area of approximately 180 acres, for residential, commercial, school, and park uses. This report will cover only the proposed phase 1 condition of the specific plan, which covers approximately 113 acres. The major features of the proposed master development plan include mass grading of the existing agricultural fields for the construction of new residential housing, drainage improvements, utility services, access roads, open space, a fire station, a school, and a small retail commercial area.

Presently, the site consists primarily of agricultural row crop fields. Onsite there exists dirt and gravel access roads, drainage ditches, and various farm buildings, which support the onsite farming operations. There is also a small rural home and farm site in the northeast corner of the site.

The limits of the drainage study area are roughly defined by Doris Road on the north, Ventura Road on the east, Teal Club Road on the south, and Patterson Road on the west. The site is bound on the north and east by residential and commercial development. The site is bound on the south by the Oxnard Airport and on the west by agricultural fields.

Currently, the project developers do not own three parcels in the southwest corner referred to as Basso, Kohara, and Kawasguchi. See the Area Exhibit on the following page. It is assumed that these parcels will not be purchased for the development. Therefore, the drainage analysis does not include these areas for the proposed condition (Phase 1 of the Specific Plan).

Drainage from new development at the project site is subject to design guidelines of the Ventura County's Technical Guidance Manual for Stormwater Quality Control Measures as part of the Ventura Countywide Storm Water Quality Urban Impact Mitigation Management Plan (SQUIMP). Therefore, the proposed drainage improvements include extended detention basins, which will provide detention and act as treatment measures. A more detailed description of these treatment measures is included within the Appendix A.



METHOD OF ANALYSIS

The hydrologic analysis was based on research that included on-site investigations, review of available existing and proposed storm drain plans, and review of aerial and field surveyed topography. Detailed hydrology maps were prepared based on topography and project site plans in the existing and proposed conditions.

Watershed subarea boundaries were defined based on existing drainage patterns and proposed drainage system layouts. The tributary area of each subarea was calculated to the nearest hundredth of an acre. Points of flow concentration based on drainage patterns were identified. Site characteristics such as soil number, rainfall zone, and land use were identified.

The existing and proposed condition peak stormwater runoff flow from the 10-year and 100-yr storm event was calculated using the Ventura County Rational Software Program (VCRAT) and the modified rational method as outlined within the Ventura County Watershed Protection District Hydrology Manual, dated 1991, and updated 2006.

Hydraulic analysis of all drainage facilities began with a definition of drainage patterns and design flows based on the design criteria for those specific facilities. Next, the drainage facility's key dimensions and any hydraulic boundary conditions were identified. These results were then evaluated against design objectives and summarized.

The proposed extended detention basins were defined from examination of the design calculations and the Engineered Site Plan. Hydraulic analysis of the detention basins was performed using the Hydraflow Hydrographs 2004. The program calculates detention volumes based on storm flows tributary to the basin and the outflow based on the existing Q10 Peak Discharge.

FINDINGS

Existing Conditions

The existing site terrain is generally flat with a very gradual slope towards the southwest corner of the site. Runoff flow patterns are defined by the layout of the several separate farm fields and the general slope to the southwest. Drainage from the project site under the existing conditions surface flows along the plowed row crops to shallow above ground unlined drainage ditches. This drainage is conveyed under onsite unpaved access roads by small diameter culverts of various sizes and materials. The cumulative site drainage is directed toward a 24" arched corrugated metal pipe culvert under Patterson Road at the southwest corner of the site. This culvert outlets into an open unlined drainage ditch, which runs west to Victoria Avenue along the north side of Teal Club Road.

Proposed Conditions

Drainage improvement plans include streets with curb and gutter, area inlets, underground drainpipes and extended detention basins. See the attached Engineered Site Plan.

The onsite drainage patterns will be changed slightly by the proposed grading and drainage improvements. However, overall the site drainage discharge quantities and patterns will remain the same as the existing condition.

Time of concentration calculations were based on proposed drainage facilities, drainage patterns, and engineering experience. All of the site discharge will be routed to one of two detention basins and then conveyed to Victoria Avenue via the construction of the Master Planned storm drain in Teal Club Road between Victoria and Ventura Road. See Appendix A for the 2003 City of Oxnard Master Plan of Drainage.

Results of the proposed extended detention basins indicate that the facilities are designed to adequately detain the Storm Quality Design Volume (SQDV) and the runoff hydrograph from the 10-year and 100-year storm event. Peak discharges from the basins are controlled by three separate elements of the outlet control structure. A water quality restrictor plate orifice provides for a 40-hour draw down of the (SQDV). A second restrictor plate orifice and a spillway weir limit the larger outlet flows to match the existing 10-year conditions peak discharge from the site. These results are summarized in the following table.

HYDROLOGICAL CALCULATIONS

SUMMARY

Present Condition (Existing)								Future Condition (Proposed)							
Sub Name	Land Use	Area ac	Q10 cfs	Q50 cfs	Q100 cfs	Drains towards: South-West	North-East	Sub Name	Land Use	Area ac	Q10 cfs	Q50 cfs	Q100 cfs	Drains towards: Basin A	Basin B
ONSITE								ONSITE							
1A	Existing	4.11	2.00	4.00	5.52	Yes		A	Res	45.40	53.99	79.40	95.28	Yes	
2A	Existing	26.60	13.20	26.40	36.43	Yes		B	Res	68.00	101.41	149.13	178.95		Yes
3B	Existing	30.80	15.30	30.60	42.23	Yes									
5A	Existing	15.50	7.70	15.40	21.25	Yes									
6A	Existing	44.40	22.10	44.20	61.00	Yes									
7C	Existing	30.40	15.10	30.20	41.68	Yes									
8C	Existing	29.80	14.80	29.60	40.85	Yes									
Totals		181.61	90.20	180.40	248.95	Yes		Totals		113.40	155.40	228.53	274.23		

Notes: The Ventura County Public Works Agency hydrology multipliers were used to convert from the existing 10 year storm to all other frequencies and from the proposed 100 year strom for all other frequencies.

DETENSION REQUIREMENTS			
Sub Area Name	100-Yr Detention Acre-Ft	Treatment Detention Acre-Ft	Total Detention Requirments Acre-Ft
A	1.3	4.10	5.40
B	3.1	4.60	7.70

Notes: 100 year detention accounts for the release of the 10 year existing flows during the 100 year event.

CONCLUSIONS

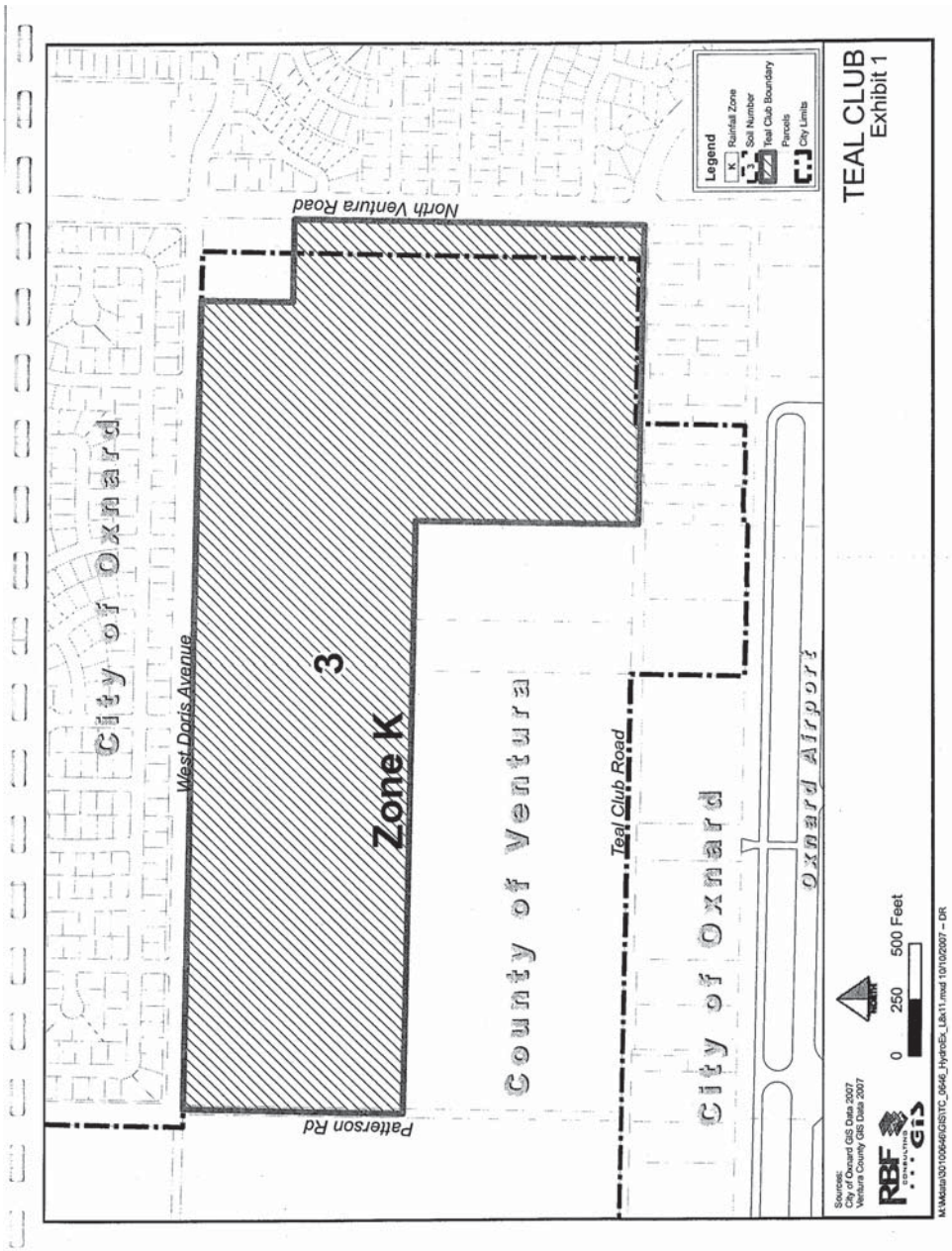
In the preliminary proposed development plans, storm water drainage will be routed to area inlets, then flow through an underground storm drain piped system into extended detention basins and ultimately outlet into existing drainage facilities. The site improvements will not substantially increase discharges or modify existing drainage patterns.

The proposed drainage improvements will provide conveyance for the peak runoff flow from the 10-year and 100-year storm event. These improvements will provide overland escape for the runoff from the 100-year storm event. Proposed condition discharges to offsite facilities will not exceed the 10-year existing event. These improvements have been designed in compliance with City of Oxnard and Ventura County Standards.

REFERENCES

- City of Oxnard Master Plan of Drainage, Department of Public Works, August 2004.
- Ventura County Watershed Protection District Hydrology Manual dated 1991.
- Ventura County Watershed Protection District Design Manual, dated 1968
- Technical Guidance Manual for Stormwater Quality Control Measures, VCWPD, July 2002.
- Ventura Countywide Storm Water Quality Urban Impact Mitigation Management Plan (SQUIMP), dated July 2000.

APPENDIX A
Drainage Calculations and Attachments



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VENTURA COUNTY PUBLIC WORKS AGENCY

HYDROLOGIC MULTIPLIERS
STORM DURATION, PRECIP. FREQ.
PEAK FLOW FREQ. DEV., UNDEV.

STORM DURATION

DURATION (HOURS)	1	3	6	9	12	18	24	36	48	72
MULTIPLIER	0.28	0.44	0.58	0.68	0.76	0.89	1.00	1.18	1.32	1.56

PRECIPITATION FREQUENCY

FREQUENCY OF OCCURRENCE (YEARS)	2	5	10	25	50	100
MULTIPLIER	0.43	0.61	0.73	0.88	1.00	1.11

PEAK FLOWS FROM DEVELOPED WATERSHEDS: $P_{FREQ} = Q_{FREQ}$

FREQUENCY OF OCCURRENCE (YEARS)	2	5	10	25	50	100
MULTIPLIER	0.16	0.45	0.68	0.83	1.00	1.20

PEAK FLOWS FROM UNDEVELOPED WATERSHEDS: Q_{FREQ}

FREQUENCY OF OCCURRENCE (YEARS)	2	5	10	25	50	100
MULTIPLIER	0.08	0.23	0.50	0.70	1.00	1.38

TABLE 2.1

VENTURA COUNTY PUBLIC WORKS AGENCY
RUNOFF CURVE NUMBERS
UNDEVELOPED, NATIVE VEGETATION
ANTECEDENT MOISTURE CONDITION II

LAND USE DESCRIPTION POOR: Less than 50% Cover FAIR: From 50% to 75% Cover GOOD: More Than 75% Cover		EFFECTIVE IMPERV %	AVERAGE IMPERV %	HYDROLOGIC SOIL GROUP						
				A		B		C		D
				7	6	5	4	3	2	1
GRASSLAND (ANNUAL GRASS)	POOR	0	0	46	54	61	63	68	72	76
GRASSLAND (ANNUAL GRASS)	FAIR	0	0	27	31	51	53	61	65	70
GRASSLAND (ANNUAL GRASS)	GOOD	0	0			43	45	56	60	64
OPEN BRUSH (SAGEBRUSH, FLATOP BUCKWHEAT)	POOR	0	0	37	43	56	58	66	70	75
OPEN BRUSH (SAGEBRUSH, FLATOP BUCKWHEAT)	FAIR	0	0	19	23	45	47	56	60	61
OPEN BRUSH (SAGEBRUSH, FLATOP BUCKWHEAT)	GOOD	0	0	4	4	35	37	48	50	56
BIG BRUSH (SCRUB OAK, MANZANITA, CEANOTHIS)	FAIR	0	0	13	15	41	43	51	55	59
BIG BRUSH (SCRUB OAK, MANZANITA, CEANOTHIS)	GOOD	0	0	2	2	30	32	44	46	51
CHAMISE (NARROW LEAF CHAPARRAL)	FAIR	0	0			52	54	62	66	75
CHAMISE (NARROW LEAF CHAPARRAL)	GOOD	0	0	12	14	45	47	56	60	64
OAK SAVANNA (SPARSE OAKS & ANNUAL GRASS)	POOR	0	0	40	46	57	59	68	72	-
OAK SAVANNA (SPARSE OAKS & ANNUAL GRASS)	FAIR	0	0	22	26	47	49	57	61	-
ORCHARD	POOR	0	0	45	53	58	60	64	68	71
WOODLAND	FAIR	0	0			36	38	44	46	-
PINON & JUNIPER	FAIR	0	0			44	46	54	58	62
[illegible]ST	FAIR	0	0	19	23	46	48	56	60	64

NOTE MODIFIED RATIONAL METHOD USES SOIL TYPES 1-7 AND EFFECTIVE IMPERVIOUS PERCENTAGE

TABLE 2.2
RUNOFF CURVE NUMBERS
URBAN LAND USE
ANTECEDENT MOISTURE CONDITION II

LAND USE DESCRIPTION	EFFECTIVE IMPERV %	AVERAGE IMPERV %	HYDROLOGIC SOIL GROUP						
			A		B		C		D
			7	6	5	4	3	2	1
OPEN SPACES, LAWNS, PARKS, GOLF COURSES, CEMETERIES, ETC. GRASS COVER ON 75% OR MORE			37	41	60	62	73	75	80
OPEN SPACES . . . ETC. GRASS COVER ON 50 % TO 75%			48	50	70	71	78	80	84
RESIDENTIAL 1 ACRE LOT	10	20	50	52	67	69	78	80	84
F ENTIAL 1/2 ACRE LOT	13	25	53	55	69	71	79	81	85
RESIDENTIAL 1/3 ACRE LOT	15	30	56	58	71	73	80	82	86
RESIDENTIAL 1/4 ACRE LOT	19	38	60	62	74	76	82	84	87
RESIDENTIAL 1/5 ACRE LOT	23	47	65	67	77	79	84	86	89
RESIDENTIAL 1/6 ACRE LOT	28	56	71	73	81	83	87	89	90
RESIDENTIAL 1/8 ACRE LOT	32	65	76	78	84	86	89	91	92
RESIDENTIAL - CONDOMINIUMS	37	69	78	80	86	88	89	92	93
INDUSTRIAL - UNPAVED YARDS ETC.	36	72	80	82	87	89	90	92	93
	40	79	84	86	89	91	92	94	94
COMMERCIAL & BUSINESS	50	85	88	90	91	93	93	95	95
INDUSTRIAL PARKS PAVED PARKING, ETC.	70	93	93	94	95	96	96	97	97
PARKING LOTS, ROOFS, [illegible] WAYS PAVED STREETS WITH CURBS & DRAINS	90	100	98	98	98	98	98	98	98

NOTE MODIFIED RATIONAL METHOD USES SOIL TYPES 1-7 AND EFFECTIVE IMPERVIOUS PERCENTAGE

Existing Hydrology Calculations

Time of Concentration
Ventura County Modified Rational Method
VCRAT Program Input and Output

DRAINAGE CALCULATIONS

FOR

TEAL CLUB ROAD PROJECT
OXNARD, CALIFORNIA

FOR

SUNCAL COMPANIES

REGISTERED PROFESSIONAL ENGINEER
PAUL E SPILLMAN
No 58249
EXP 6-30-06
CIVIL
STATE OF CALIFORNIA

BY

RBF CONSULTING

PAUL SPILLMAN, P.E.

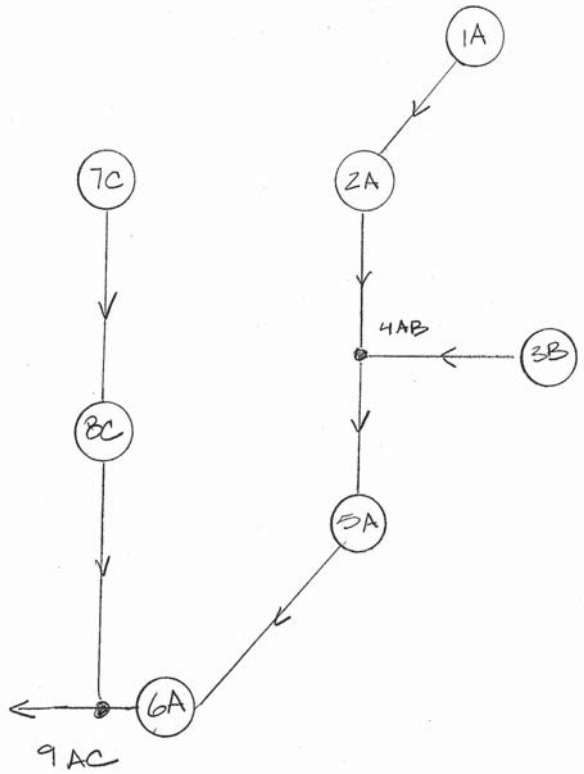
JN 30-100646.001

JANUARY 4, 2005
REVISED MARCH 22, 2005

JN30-100646.001 | TEAL CLUB ROAD | PAUL SPILLMAN 12/22/04

HYDROLOGY - VC RATIONAL - NODE DIAGRAM

EXISTING CONDITION



VC RATIONAL METHOD CALCULATIONS | TIME OF CONCENTRAION AND PEAK Q | Teal Club Road Project JN:30-100646.001 12/22/04 PES

Area: 1A

Given:

Area: 4.11 (ac)
Zone: K - ref. Plate B-7, VC Hydrology Manual
Soil: 3 - ref. Plate B-7, VC Hydrology Manual
Use: existing, agricultural, row crops
Storm: 10 year event

Assumed:

Tc = 13 (min)

Then:

I = 2.2 - ref. Plate D-8, VC Hydrology Manual
C = 0.72 - ref. Plate E-1, VC Hydrology Manual

Calculations:

Time of Concentration

Flow Desc.	Area Reach	A Length	Elevation(ft) Top	Bot.	Slope	C	I (in/hr)	Area (ac)	Q(cfs) top	bottom	Velocity(fps) Vt	Vb	Vave	Vwave	Time (min)
over	0 to 1	200	50.5	48.2	0.012	0.72	2.2	0.5	0	0.79				0.40	8.33
shallow	1 to 2	200	48.2	47.5	0.004	0.72	2.2	2	0.79	3.17	0.85	1.12	0.99	1.48	2.25
ditch	2 to 3	200	47.5	47.2	0.001	0.72	2.2	4.11	3.17	6.51	0.74	0.87	0.80	1.20	2.77
														Total	13.4

Peak Runoff Flow

Rational Formula **C x I x A = Q**

C	I (in/hr)	Area (ac)	Q (cfs)
0.72	2.2	4.11	6.51

Notes:

See Hydrology Map for drainage patterns.
Overland Flow Velocity ref. Plate F-1, VC Hydrology Manual
V.ditch = (7+8*(Q^0.352))*(S^0.5), ref. Plate IV-21, VC Hydrology Manual
Vwave = Vave*1.5, in channels and streets, ref. Plate IV-21, VC Hydrology Manual
Time - Travel Length / Velocity
Total - Calculated Time within 0.5 min of Time Assumed or less than 5 minute minimum.

Results:

Tc =	13	(min)	Time of Concentration
Q =	6.51	(cfs)	Peak Runoff Flow

Area: 2A

Given:

Area: 26.6 (ac)
Zone: K - ref. Plate B-7, VC Hydrology Manual
Soil: 3 - ref. Plate B-7, VC Hydrology Manual
Use: existing, agricultural, row crops
Storm: 10 year event

Assumed:

Tc = 22 (min)

Then:

I = 1.68 - ref. Plate D-8, VC Hydrology Manual
C = 0.67 - ref. Plate E-1, VC Hydrology Manual

Calculations:

Time of Concentration

Flow Desc.	Area Reach	A Length	Elevation(ft) Top	Bot.	Slope	C	I (in/hr)	Area (ac)	Q(cfs) top	bottom	Velocity(fps) Vt	Vb	Vave	Vwave	Time (min)
over	0 to 1	100	47.2	47	0.002	0.67	1.68	0.5	0	0.56				0.40	4.17
shallow	1 to 2	950	47	46	0.001	0.67	1.68	13	0.56	14.63	0.44	0.89	0.67	1.00	15.83
ditch	2 to 3	400	46	44.5	0.004	0.67	1.68	26.6	14.63	29.94	1.69	2.05	1.87	2.80	2.38
														Total	22.4

Peak Runoff Flow

Rational Formula **C x I x A = Q**

C	I (in/hr)	Area (ac)	Q (cfs)
0.67	1.68	26.6	29.94

Notes:

See Hydrology Map for drainage patterns.
Overland Flow Velocity ref. Plate F-1, VC Hydrology Manual
V.ditch = (7+8*(Q^0.352))*(S^0.5), ref. Plate IV-21, VC Hydrology Manual
Vwave = Vave*1.5, in channels and streets, ref. Plate IV-21, VC Hydrology Manual
Time - Travel Length / Velocity
Total - Calculated Time within 0.5 min of Time Assumed or less than 5 minute minimum.

Results:

Tc = 22 (min) Time of Concentration
Q = 29.94 (cfs) Peak Runoff Flow

Area: 3B

Given:

Area: 30.8 (ac)
Zone: K - ref. Plate B-7, VC Hydrology Manual
Soil: 3 - ref. Plate B-7, VC Hydrology Manual
Use: existing, agricultural, row crops
Storm: 10 year event

Assumed:

Tc = 29 (min)

Then:

I = 1.48 - ref. Plate D-8, VC Hydrology Manual
C = 0.645 - ref. Plate E-1, VC Hydrology Manual

Calculations:

Time of Concentration

Flow Desc.	Area Reach	A Length	Elevation(ft) Top	Bot.	Slope	C	I (in/hr)	Area (ac)	Q(cfs) top	bottom	Velocity(fps) Vt	Vb	Vave	Vwave	Time (min)
over	0 to 1	200	45.7	45.4	0.002	0.65	1.48	0.5	0	0.48				0.40	8.33
shallow	1 to 2	1000	45.4	44	0.001	0.65	1.48	10	0.48	9.55	0.49	0.92	0.71	1.06	15.68
ditch	2 to 3	900	44	39.8	0.005	0.65	1.48	30.8	9.55	29.40	1.69	2.27	1.98	2.97	5.05
														Total	29.1

Peak Runoff Flow

Rational Formula **C x I x A = Q**

C	I (in/hr)	Area (ac)	Q (cfs)
0.65	1.48	30.8	29.40

Notes:

See Hydrology Map for drainage patterns.
Overland Flow Velocity ref. Plate F-1, VC Hydrology Manual
V.ditch = (7+8*(Q^0.352))*(S^0.5), ref. Plate IV-21, VC Hydrology Manual
Vwave = Vave*1.5, in channels and streets, ref. Plate IV-21, VC Hydrology Manual
Time - Travel Length / Velocity
Total - Calculated Time within 0.5 min of Time Assumed or less than 5 minute minimum.

Results:

Tc = 29 (min) Time of Concentration
Q = 29.40 (cfs) Peak Runoff Flow

Area: 5A

Given:

Area: 15.5 (ac)
Zone: K - ref. Plate B-7, VC Hydrology Manual
Soil: 3 - ref. Plate B-7, VC Hydrology Manual
Use: existing, agricultural, row crops
Storm: 10 year event

Assumed:

Tc = 21 (min)

Then:

I = 1.73 - ref. Plate D-8, VC Hydrology Manual
C = 0.68 - ref. Plate E-1, VC Hydrology Manual

Calculations:

Time of Concentration

Flow Desc.	Area Reach	A Length	Elevation(ft) Top	Bot.	Slope	C	I (in/hr)	Area (ac)	Q(cfs) top	bottom	Velocity(fps) Vt	Vb	Vave	Vwave	Time (min)
over	0 to 1	200	44.8	44	0.004	0.68	1.73	0.5	0	0.59				0.40	8.33
shallow	1 to 2	700	44	39.1	0.007	0.68	1.73	5	0.59	5.88	1.14	1.83	1.49	2.23	5.23
ditch	2 to 3	650	39.1	38.1	0.002	0.68	1.73	15.5	5.88	18.23	0.86	1.15	1.00	1.50	7.20
														Total	20.8

Peak Runoff Flow

Rational Formula **C x I x A = Q**

C	I (in/hr)	Area (ac)	Q (cfs)
0.68	1.73	15.5	18.23

Notes:

See Hydrology Map for drainage patterns.
Overland Flow Velocity ref. Plate F-1, VC Hydrology Manual
V.ditch = (7+8*(Q^0.352))*(S^0.5), ref. Plate IV-21, VC Hydrology Manual
Vwave = Vave*1.5, in channels and streets, ref. Plate IV-21, VC Hydrology Manual
Time - Travel Length / Velocity
Total - Calculated Time within 0.5 min of Time Assumed or less than 5 minute minimum.

Results:

Tc = 21 (min) Time of Concentration
Q = 18.23 (cfs) Peak Runoff Flow

Area: 6A

Given:

Area: 44.4 (ac)
Zone: K - ref. Plate B-7, VC Hydrology Manual
Soil: 3 - ref. Plate B-7, VC Hydrology Manual
Use: existing, agricultural, row crops
Storm: 10 year event

Assumed:

Tc = 27 (min)

Then:

I = 1.53 - ref. Plate D-8, VC Hydrology Manual
C = 0.65 - ref. Plate E-1, VC Hydrology Manual

Calculations:

Time of Concentration

Flow Desc.	Area Reach	A Length	Elevation(ft) Top	Bot.	Slope	C	I (in/hr)	Area (ac)	Q(cfs) top	bottom	Velocity(fps) Vt	Vb	Vave	Vwave	Time (min)
over	0 to 1	200	42.5	41.7	0.004	0.65	1.53	0.5	0	0.50				0.40	8.33
shallow	1 to 2	700	41.7	37.8	0.006	0.65	1.53	15	0.50	14.92	0.99	2.07	1.53	2.29	5.09
ditch	2 to 3	1900	37.8	33.6	0.002	0.65	1.53	44.4	14.92	44.16	1.30	1.76	1.53	2.29	13.80
														Total	27.2

Peak Runoff Flow

Rational Formula **C x I x A = Q**

C	I (in/hr)	Area (ac)	Q (cfs)
0.65	1.53	44.4	44.16

Notes:

See Hydrology Map for drainage patterns.
Overland Flow Velocity ref. Plate F-1, VC Hydrology Manual
V.ditch = (7+8*(Q^0.352))*(S^0.5), ref. Plate IV-21, VC Hydrology Manual
Vwave = Vave*1.5, in channels and streets, ref. Plate IV-21, VC Hydrology Manual
Time - Travel Length / Velocity
Total - Calculated Time within 0.5 min of Time Assumed or less than 5 minute minimum.

Results:

Tc = 27 (min) Time of Concentration
Q = 44.16 (cfs) Peak Runoff Flow

Area: 7C

Given:

Area: 30.4 (ac)
Zone: K - ref. Plate B-7, VC Hydrology Manual
Soil: 3 - ref. Plate B-7, VC Hydrology Manual
Use: existing, agricultural, row crops
Storm: 10 year event

Assumed:

Tc = 29 (min)

Then:

I = 1.48 - ref. Plate D-8, VC Hydrology Manual
C = 0.645 - ref. Plate E-1, VC Hydrology Manual

Calculations:

Time of Concentration

Flow	Area	A	Elevation(ft)			C	I	Area	Q(cfs)		Velocity(fps)				Time
Desc.	Reach	Length	Top	Bot.	Slope		(in/hr)	(ac)	top	bottom	Vt	Vb	Vave	Vwave	(min)
over	0 to 1	200	47.9	47.2	0.003	0.65	1.48	0.5	0	0.48				0.40	8.33
shallow	1 to 2	1100	47.2	44.4	0.003	0.65	1.48	6	0.48	5.73	0.66	1.10	0.88	1.32	13.86
ditch	2 to 3	950	44.4	41.5	0.003	0.65	1.48	30.4	5.73	29.02	1.20	1.83	1.52	2.28	6.95
														Total	29.1

Peak Runoff Flow

Rational Formula **C x I x A = Q**

C	I (in/hr)	Area (ac)	Q (cfs)
0.65	1.48	30.4	29.02

Notes:

See Hydrology Map for drainage patterns.
Overland Flow Velocity ref. Plate F-1, VC Hydrology Manual
V.ditch = (7+8*(Q^0.352))*(S^0.5), ref. Plate IV-21, VC Hydrology Manual
Vwave = Vave*1.5, in channels and streets, ref. Plate IV-21, VC Hydrology Manual
Time - Travel Length / Velocity
Total - Calculated Time within 0.5 min of Time Assumed or less than 5 minute minimum.

Results:

Tc =	29	(min)	Time of Concentration
Q =	29.02	(cfs)	Peak Runoff Flow

Area: 8C

Given:

Area: 29.8 (ac)
Zone: K - ref. Plate B-7, VC Hydrology Manual
Soil: 3 - ref. Plate B-7, VC Hydrology Manual
Use: existing, agricultural, row crops
Storm: 10 year event

Assumed:

Tc = 29 (min)

Then:

I = 1.48 - ref. Plate D-8, VC Hydrology Manual
C = 0.645 - ref. Plate E-1, VC Hydrology Manual

Calculations:

Time of Concentration

Flow	Area	A	Elevation(ft)			C	I	Area	Q(cfs)		Velocity(fps)				Time
Desc.	Reach	Length	Top	Bot.	Slope		(in/hr)	(ac)	top	bottom	Vt	Vb	Vave	Vwave	(min)
over	0 to 1	200	44	43	0.005	0.65	1.48	0.5	0	0.48				0.40	8.33
shallow	1 to 2	1100	43	40	0.003	0.65	1.48	6	0.48	5.73	0.69	1.14	0.91	1.37	13.39
ditch	2 to 3	950	40	37.6	0.003	0.65	1.48	29.8	5.73	28.45	1.10	1.66	1.38	2.07	7.67
														Total	29.4

Peak Runoff Flow

Rational Formula **C x I x A = Q**

C	I (in/hr)	Area (ac)	Q (cfs)
0.65	1.48	29.8	28.45

Notes:

See Hydrology Map for drainage patterns.
Overland Flow Velocity ref. Plate F-1, VC Hydrology Manual
V.ditch = (7+8*(Q^0.352))*(S^0.5), ref. Plate IV-21, VC Hydrology Manual
Vwave = Vave*1.5, in channels and streets, ref. Plate IV-21, VC Hydrology Manual
Time - Travel Length / Velocity
Total - Calculated Time within 0.5 min of Time Assumed or less than 5 minute minimum.

Results:

Tc =	29	(min)	Time of Concentration
Q =	28.45	(cfs)	Peak Runoff Flow

VENTURA COUNTY

PUBLIC WORKS AGENCY

FLOOD CONTROL AND WATER RESOURCES DEPARTMENT

HYDROLOGY MANUAL

A. E. GOULET
DIRECTOR OF PUBLIC WORKS

G. J. NOWAK
DEPUTY DIRECTOR
FLOOD CONTROL AND WATER RESOURCES DEPARTMENT

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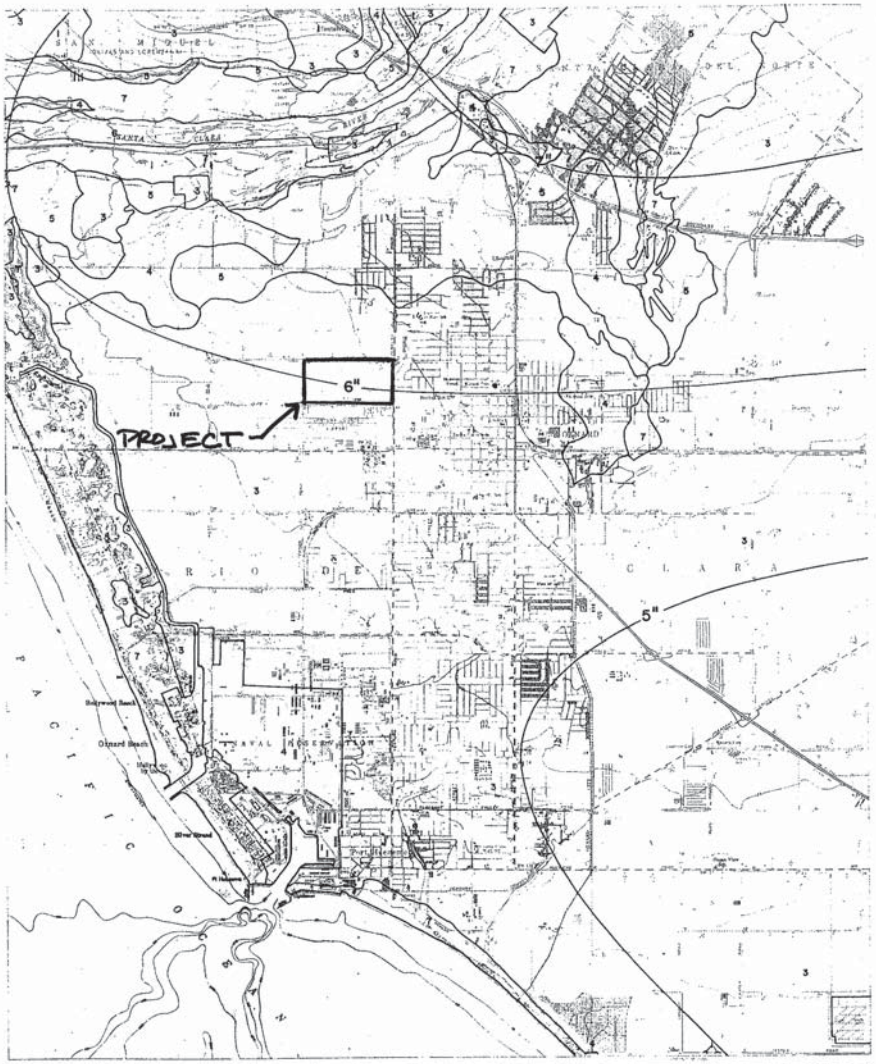


LEGEND

1000 0 1000 2000
SCALE IN FEET

5 SOIL NUMBER
SOIL TYPE BOUNDARY

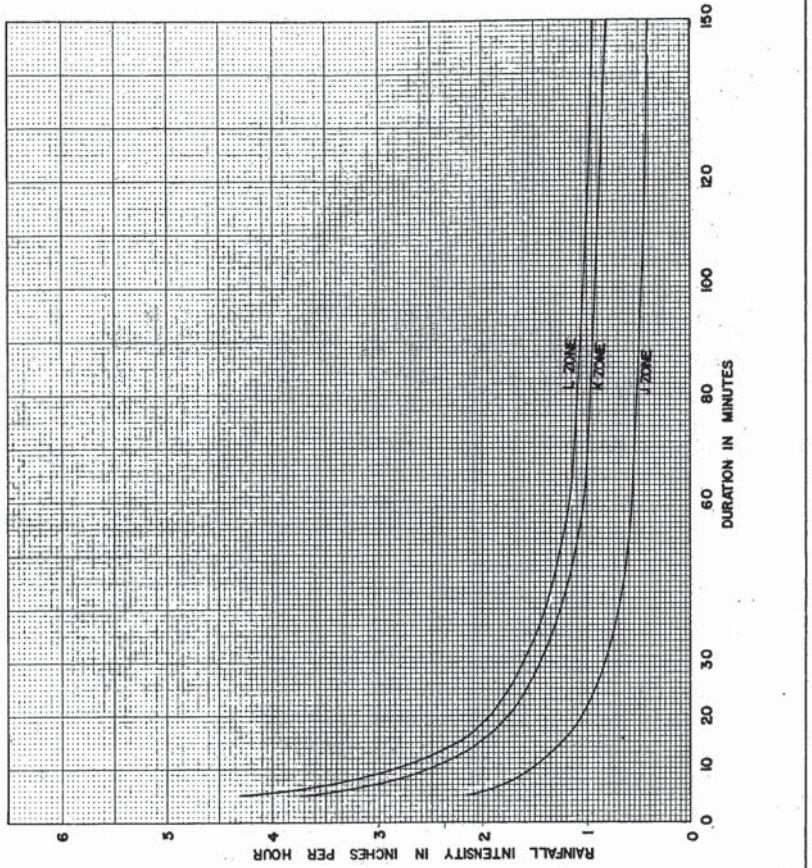
K RAINFALL ZONE
50-YEAR, 24-HOUR ISOHYET

HYDROLOGIC MAP OXNARD 1967

VENTURA COUNTY HYDROLOGY MANUAL

B

Plate B-7

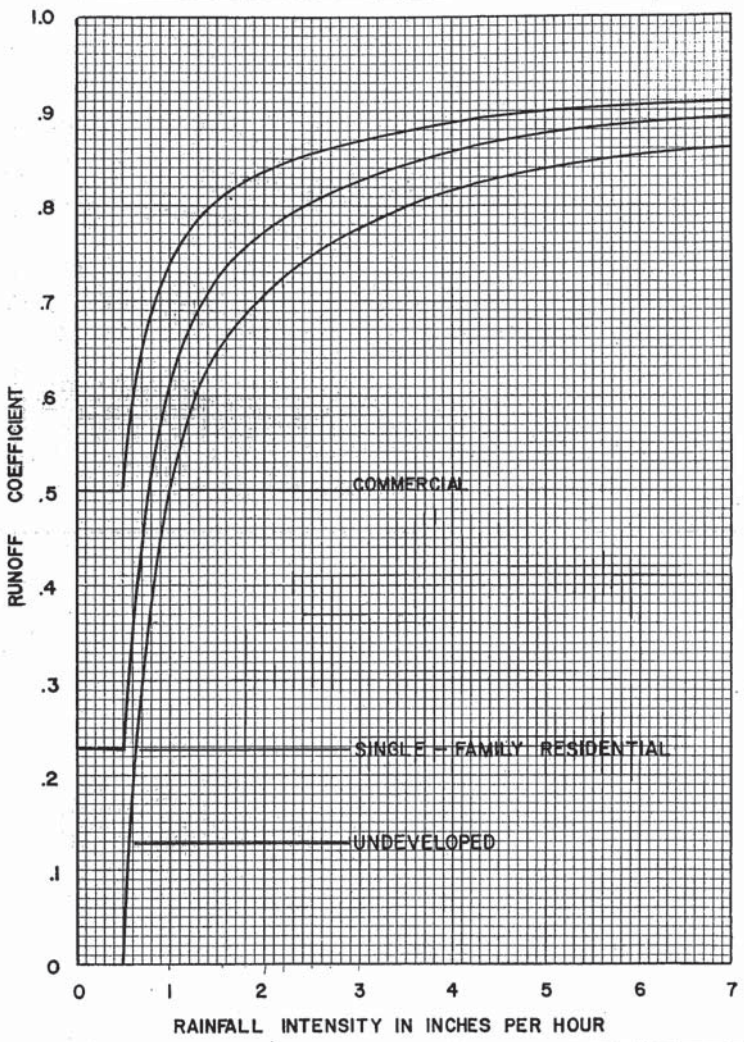


RAINFALL INTENSITY–DURATION CURVE
10-YEAR RECURRENCE INTERVAL

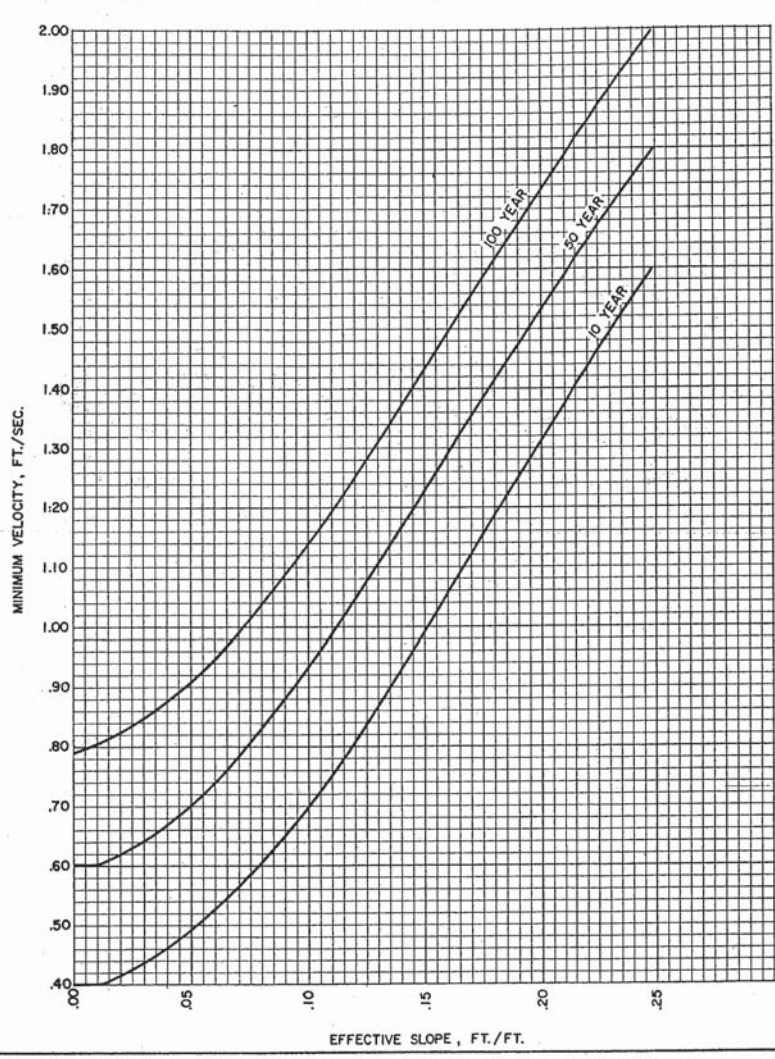
DURATION IN MINUTES

STORM TIME IN MONTHS	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
200	.07	.07	.07	.07	.07	.07	.07	.07	.07	.07	.07	.07	.07	.07	.07	.07	.07	.07	.07	.07	.07	.07	.07	.07	.07	.07
400	.10	.10	.10	.10	.10	.10	.10	.10	.10	.10	.10	.10	.10	.10	.10	.10	.10	.10	.10	.10	.10	.10	.10	.10	.10	.10
600	.15	.15	.15	.15	.15	.15	.15	.15	.15	.15	.15	.15	.15	.15	.15	.15	.15	.15	.15	.15	.15	.15	.15	.15	.15	.15
900	.28	.28	.28	.28	.28	.28	.28	.28	.28	.28	.28	.28	.28	.28	.28	.28	.28	.28	.28	.28	.28	.28	.28	.28	.28	.28
1000	.39	.39	.39	.39	.39	.39	.39	.39	.39	.39	.39	.39	.39	.39	.39	.39	.39	.39	.39	.39	.39	.39	.39	.39	.39	.39
1050	.43	.43	.43	.43	.43	.43	.43	.43	.43	.43	.43	.43	.43	.43	.43	.43	.43	.43	.43	.43	.43	.43	.43	.43	.43	.43
1100	.47	.47	.47	.47	.47	.47	.47	.47	.47	.47	.47	.47	.47	.47	.47	.47	.47	.47	.47	.47	.47	.47	.47	.47	.47	.47
1110	.59	.59	.59	.59	.59	.59	.58	.57	.57	.56	.55	.55	.54	.54	.54	.53	.53	.53	.52	.52	.52	.52	.52	.52	.51	.51
1120	.65	.65	.65	.65	.65	.65	.64	.64	.64	.63	.63	.63	.63	.62	.62	.62	.61	.61	.60	.60	.59	.59	.58	.58	.58	.57
1130	.66	.66	.66	.66	.66	.66	.66	.66	.66	.66	.66	.66	.66	.66	.66	.65	.65	.65	.65	.64	.64	.64	.64	.64	.64	.63
1131	.70	.69	.69	.68	.68	.68	.68	.67	.67	.67	.67	.67	.67	.67	.66	.66	.66	.66	.66	.65	.65	.65	.65	.65	.64	.64
1132	.73	.72	.71	.70	.70	.70	.69	.69	.69	.68	.68	.68	.68	.68	.68	.67	.67	.67	.67	.66	.66	.66	.66	.65	.65	.65
1133	.77	.75	.74	.73	.72	.71	.71	.70	.70	.70	.69	.69	.69	.69	.68	.68	.68	.68	.68	.68	.67	.67	.67	.66	.66	.66
1134	.80	.78	.76	.75	.74	.73	.72	.72	.72	.71	.71	.70	.70	.70	.70	.69	.69	.69	.69	.68	.68	.68	.68	.67	.67	.67
1135	.84	.81	.79	.77	.76	.75	.74	.74	.73	.72	.72	.72	.71	.71	.70	.70	.70	.70	.70	.69	.69	.69	.68	.68	.68	.68
1136	.86	.86	.83	.81	.79	.78	.77	.76	.75	.75	.74	.74	.73	.72	.72	.72	.71	.71	.71	.71	.70	.70	.70	.69	.69	.69
1137	.89	.88	.87	.85	.83	.81	.80	.78	.78	.77	.76	.75	.74	.74	.73	.73	.72	.72	.72	.72	.72	.71	.71	.71	.70	.70
1138	.91	.90	.89	.88	.86	.84	.82	.81	.80	.79	.78	.77	.77	.76	.75	.75	.74	.74	.74	.73	.73	.73	.72	.72	.72	.71
1139	.94	.92	.91	.90	.89	.87	.85	.84	.82	.81	.80	.79	.78	.78	.77	.76	.76	.75	.75	.74	.74	.74	.73	.73	.73	.72
1140	.96	.94	.92	.92	.91	.90	.88	.86	.84	.83	.82	.81	.80	.79	.79	.78	.77	.77	.76	.76	.75	.75	.75	.74	.74	.74
1141	.98	.99	.96	.95	.94	.93	.92	.90	.88	.86	.85	.84	.83	.82	.81	.80	.80	.79	.78	.78	.77	.77	.76	.76	.76	.75
1142	1.02	1.01	1.00	.99	.97	.96	.94	.94	.92	.90	.88	.87	.86	.84	.83	.83	.82	.81	.80	.80	.79	.79	.79	.78	.78	.77
1143	1.05	1.04	1.03	1.02	1.00	.98	.97	.96	.95	.93	.91	.90	.88	.87	.86	.85	.84	.83	.82	.82	.81	.80	.80	.79	.79	.78
1144	1.08	1.06	1.05	1.04	1.03	1.01	1.00	.98	.97	.96	.94	.92	.91	.90	.88	.87	.86	.85	.84	.84	.83	.82	.82	.81	.80	.80
1145	1.12	1.09	1.07	1.06	1.05	1.04	1.02	1.00	.99	.98	.97	.95	.94	.92	.91	.89	.88	.87	.86	.86	.85	.84	.83	.83	.82	.81
1146	1.14	1.14	1.11	1.10	1.08	1.07	1.06	1.04	1.02	1.01	1.00	.99	.97	.95	.94	.92	.91	.90	.89	.88	.87	.86	.86	.85	.84	.83
1147	1.17	1.16	1.16	1.13	1.11	1.10	1.08	1.08	1.06	1.04	1.03	1.02	1.01	.99	.97	.95	.94	.93	.92	.90	.90	.89	.88	.87	.86	.86
1148	1.31	1.28	1.28	1.24	1.21	1.18	1.16	1.14	1.13	1.11	1.09	1.08	1.06	1.05	1.03	1.01	.99	.98	.96	.95	.94	.93	.92	.91	.90	.89
1149	1.51	1.44	1.40	1.36	1.33	1.30	1.26	1.24	1.22	1.20	1.18	1.16	1.14	1.12	1.10	1.08	1.06	1.04	1.03	1.01	1.00	.98	.97	.96	.95	.94
1150	1.76	1.66	1.56	1.52	1.48	1.44	1.40	1.36	1.33	1.30	1.28	1.25	1.23	1.21	1.19	1.17	1.15	1.12	1.10	1.08	1.07	1.05	1.04	1.02	1.01	1.00
1151	2.35	2.17	2.02	1.91	1.82	1.75	1.69	1.63	1.58	1.53	1.50	1.46	1.43	1.39	1.36	1.34	1.31	1.28	1.26	1.23	1.21	1.19	1.17	1.15	1.13	1.12
1152	3.20	2.96	2.72	2.52	2.36	2.24	2.14	2.05	1.97	1.89	1.83	1.78	1.73	1.68	1.64	1.60	1.56	1.53	1.49	1.46	1.42	1.39	1.37	1.34	1.32	1.30
1153	3.72	3.40	3.09	2.88	2.67	2.52	2.39	2.28	2.19	2.10	2.03	1.96	1.90	1.85	1.80	1.75	1.71	1.67	1.63	1.59	1.55	1.52	1.49	1.46	1.43	1.40
1154	3.54	3.30	3.09	2.96	2.86	2.69	2.52	2.40	2.29	2.20	2.12	2.04	1.98	1.92	1.86	1.82	1.77	1.72	1.68	1.65	1.62	1.57	1.54	1.51	1.48	1.45
1155	3.44	3.10	2.96	2.81	2.66	2.50	2.38	2.27	2.18	2.11	2.04	1.97	1.91	1.86	1.81	1.77	1.73	1.68	1.65	1.62	1.58	1.55	1.52	1.48	1.46	1.43
1156	3.57	3.44	2.78	2.69	2.59	2.46	2.35	2.25	2.16	2.09	2.02	1.96	1.91	1.85	1.81	1.76	1.73	1.68	1.65	1.62	1.58	1.56	1.52	1.49	1.46	1.44
1157	3.54	2.28	3.55	2.34	2.49	2.42	2.31	2.22	2.14	2.07	2.00	1.95	1.90	1.85	1.80	1.76	1.72	1.68	1.65	1.62	1.58	1.56	1.53	1.50	1.47	1.44
1158	.92	1.42	2.07	2.34	2.35	2.32	2.26	2.19	2.12	2.05	1.98	1.93	1.88	1.84	1.79	1.75	1.71	1.68	1.65	1.62	1.58	1.56	1.53	1.50	1.48	1.45
1159	.85	.91	1.34	1.92	2.17	2.20	2.19	2.16	2.09	2.03	1.97	1.91	1.87	1.82	1.79	1.75	1.71	1.68	1.64	1.62	1.58	1.56	1.53	1.50	1.48	1.45
1160	.84	.85	.90	1.28	1.80	2.04	2.07	2.08	2.03	2.00	1.95	1.90	1.85	1.81	1.77	1.74	1.70	1.67	1.64	1.61	1.58	1.56	1.53	1.50	1.48	1.46
1161	.79	.80	.81	.86	1.20	1.68	1.91	1.95	1.96	1.93	1.90	1.86	1.82	1.78	1.74	1.71	1.68	1.65	1.62	1.59	1.57	1.54	1.52	1.50	1.47	1.45
1162	.73	.75	.76	.76	.83	1.13	1.58	1.80	1.84	1.86	1.86	1.82	1.79	1.75	1.72	1.68	1.66	1.63	1.60	1.58	1.55	1.53	1.51	1.48	1.46	1.44
1163	.68	.70	.72	.74	.76	.80	1.08	1.49	1.70	1.75	1.77	1.78	1.74	1.72	1.69	1.66	1.63	1.61	1.59	1.56	1.54	1.52	1.49	1.48	1.45	1.43
1164	.62	.66	.69	.70	.72	.74	.78	1.04	1.42	1.62	1.67	1.70	1.70	1.68	1.66	1.63	1.61	1.58	1.56	1.54	1.52	1.50	1.48	1.46	1.44	1.42
1165	.57	.62	.65	.67	.69	.70	.72	.76	1.00	1.36	1.55	1.60	1.63	1.64	1.62	1.60	1.58	1.56	1.54	1.52	1.51	1.48	1.47	1.45	1.43	1.42
1166	.57	.57	.61	.64	.66	.68	.69	.71	.73	.97	1.31	1.49	1.54	1.57	1.58	1.57	1.55	1.53	1.52	1.50	1.48	1.47	1.45	1.43	1.42	1.40
1167	.57	.57	.57	.60	.63	.65	.67	.68	.70	.74	.95	1.26	1.44	1.49	1.52	1.53	1.52	1.51	1.49	1.48	1.46	1.45	1.44	1.42	1.40	1.39
1168	.57	.57	.57	.57	.60	.62	.64	.66	.67	.69	.72	.92	1.22	1.39	1.44	1.47	1.49	1.48	1.47	1.45	1.44	1.43	1.42	1.41	1.39	1.38
1169	.57	.57	.57	.57	.57	.60	.62	.64	.65	.67	.68	.71	.90	1.18	1.34	1.40	1.43	1.45	1.44	1.43	1.42	1.41	1.40	1.39	1.38	1.36
1170	.57	.57	.57	.57	.57	.57	.60	.62	.63	.65	.66	.68	.71	.88	1.15	1.30	1.36	1.39	1.41	1.40	1.40	1.39	1.38	1.37	1.36	1.35
1171	.54	.55	.55	.55	.56	.56	.56	.58	.60	.62	.63	.65	.66	.69	.86	1.12	1.26	1.32	1.35	1.37	1.36	1.36	1.35	1.34	1.34	1.33
1172	.52	.53	.53	.54	.54	.54	.55	.55	.57	.59	.61	.62	.63	.65	.68	.84	1.08	1.23	1.28	1.31	1.33	1.33	1.33	1.32	1.31	1.30
1173	.49	.50	.51	.52	.53	.53	.53	.54	.54	.56	.56	.58	.60	.61	.62	.64	.67	.82	1.06	1.19	1.24	1.28	1.30	1.30	1.29	1.28
1174	.46	.48	.50	.50	.51	.52	.52	.53	.53	.53	.55	.57	.59	.60	.61	.63	.66	.80	1.03	1.16	1.21	1.24	1.26	1.26	1.26	1.26
1175	.44	.46	.48	.49	.50	.50	.51	.52	.52	.52	.53	.55	.56	.58	.59	.60	.62	.64	.79	1.00	1.13	1.18	1.21	1.24	1.24	1.24
1176	.44	.44	.46	.47	.48	.49	.50	.50	.51	.51	.52	.52	.54	.56	.57	.58	.60	.61	.64	.77	.98	1.10	1.15	1.19	1.21	1.21
1177	.44	.44	.44	.46	.47	.48	.49	.49	.50	.50	.51	.51	.52	.53	.55	.56	.58	.59	.60	.63	.76	.96	1.08	1.13	1.16	1.18
1178	.44	.44	.44	.44	.45	.46	.47	.48	.49	.50	.50	.50	.51	.51	.53	.54	.56	.57	.58	.60	.62	.75	.94	1.06	1.10	1.14
1179	.44	.44	.44	.44	.44	.45	.46	.47	.48	.48	.49	.50	.50	.50	.51	.52	.54	.55	.56	.58	.59	.61	.74	.92	1.04	1.08
1180	.44	.44	.44	.44	.44	.44	.45	.46	.47	.48	.48	.49	.49	.50	.50	.50	.52	.54	.55	.56	.57	.58	.61	.72	.91	1.02
1185	.41	.41	.42	.42	.42	.42	.42	.43	.43	.43	.43	.44	.44	.45	.46	.46	.47	.47	.48	.48	.48	.50	.51	.52	.53	.54
1190	.41	.41	.41	.41	.41	.41	.41	.41	.42	.42	.42	.42	.42	.42	.42	.42	.43	.44	.44	.45	.45	.46	.46	.46	.47	.47
1195	.39	.40	.40	.40	.40	.40	.40	.40	.40	.40	.40	.40	.41	.41	.41	.41	.42	.42	.42	.42	.42	.42	.43	.43	.44	.44
1200	.39	.39	.39	.39	.39	.39	.39	.40	.40	.40	.40	.40	.40	.40	.40	.40	.40	.40	.40	.41	.41	.41	.41	.41	.41	.41
1225	.30	.30	.30	.30	.30	.30	.30	.30	.30	.30	.30	.30	.31	.31	.32	.32	.32	.33	.33	.33	.34	.34	.34	.34	.34	.34
1250	.23	.23	.23	.23	.23	.23	.23	.23	.23	.23	.23	.23	.23	.23	.23	.23	.23	.24	.24	.24	.24	.24	.25	.25	.25	.25
1300	.20	.20	.20	.20	.20	.20	.20	.20	.20	.20	.20	.20	.20	.20	.20	.20	.20	.20	.20	.20	.20	.20	.20	.20	.20	.20
1400	.09	.09	.09	.09	.09	.09	.09	.09	.09	.09	.09	.09	.09	.09	.09	.09	.09	.09	.09	.09	.09	.09	.09	.09	.09	.09
1440	.06	.06	.06	.06	.06	.06	.06	.06	.06	.06	.06	.06	.06	.06	.06	.06	.06	.06	.06	.06	.06	.06	.06	.06	.06	.06

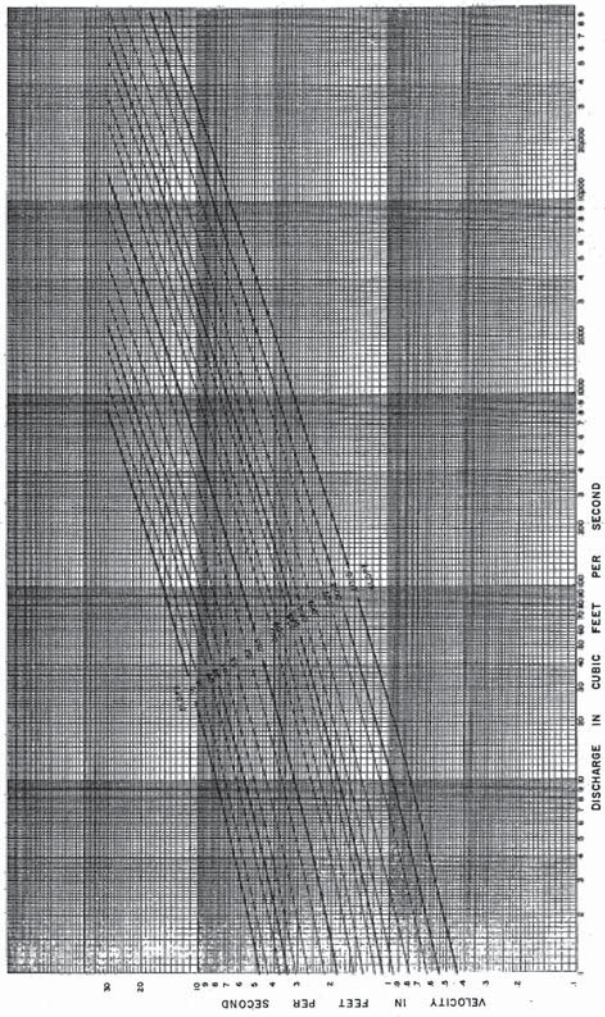
RAINFALL INTENSITY TABLE
10-YEAR FREQUENCY
K ZONE



RUNOFF COEFFICIENT CURVE
SOIL NUMBER 3



MINIMUM VELOCITY–
SLOPE RELATIONSHIPS
OVERLAND FLOW



VELOCITY — DISCHARGE
SLOPE RELATIONSHIPS
NATURAL VALLEY CHANNELS

F

EX. 10YR VCRAT OUTPUT

VENTURA COUNTY FLOOD CONTROL DISTRICT
MODIFIED RATIONAL METHOD HYDROLOGY / PC 1.0-994

EXISTING 10YR CONDITION — STORM DAY 4

LOCATION		SUBAREA AREA	SUBAREA Q	TOTAL AREA	TOTAL Q	CONV TYPE	CONV LNGTH	CONV SLOPE	CONV SIZE	CONV Z	CONTROL Q	SOIL NAME	TC	RAIN ZONE	PCT IMPV
646	1A	4.	6.	4.	6.	2	1300.	0.00200	0.00	0.00	0.	30	13	K10	0.00
646	2A	27.	30.	31.	31.	2	900.	0.00500	0.00	0.00	0.	30	22	K10	0.00
646	3B	31.	29.	31.	29.	2	10.	0.00200	0.00	0.00	0.	30	29	K10	0.00

CONFLUENCE Q'S

646 4A TA 1169 QA 29. QAB 55. QB 27. 646 4B TB 1160 QB 29. QBA 51. QA 21.
646 4AB TAB 1166 QAB 56. QA 28. QB 28.

LOCATION		SUBAREA AREA	SUBAREA Q	TOTAL AREA	TOTAL Q	CONV TYPE	CONV LNGTH	CONV SLOPE	CONV SIZE	CONV Z	CONTROL Q	SOIL NAME	TC	RAIN ZONE	PCT IMPV
646	4AB	31.	29.	62.	56.	2	650.	0.00200	0.00	0.00	0.	30	0	K10	0.00
646	5A	15.	17.	77.	62.	2	1900.	0.00200	0.00	0.00	0.	30	21	K10	0.00
646	6A	44.	44.	121.	46.	2	10.	0.00200	0.00	0.00	0.	30	27	K10	0.00
646	7C	30.	28.	30.	28.	2	1100.	0.00300	0.00	0.00	0.	30	29	K10	0.00
646	8C	30.	28.	60.	47.	2	900.	0.00400	0.00	0.00	0.	30	29	K10	0.00

CONFLUENCE Q'S

646 9A TA 1174 QA 46. QAC 89. QC 43. 646 9C TC 1180 QC 46. QCA 76. QA 31.
646 9AC TAC 1176 QAC 90. QA 45. QC 45.

LOCATION		SUBAREA AREA	SUBAREA Q	TOTAL AREA	TOTAL Q	CONV TYPE	CONV LNGTH	CONV SLOPE	CONV SIZE	CONV Z	CONTROL Q	SOIL NAME	TC	RAIN ZONE	PCT IMPV
646	9AC	60.	46.	181.	90.	2	40.	0.00200	0.00	0.00	0.	30	0	K10	0.00

MODIFIED RATIONAL METHOD HYDROLOGY / PC 1.0-994

LINE A AND B

HYDROGRAPH AT 646 4A STORM DAY 4 REDUCTION FACTOR = 1.000

TIME	Q	TIME	Q	TIME	Q	TIME	Q	TIME	Q
0	0.	100	1.	200	1.	300	1.	400	1.
500	1.	600	1.	700	1.	800	1.	900	1.
1000	1.	1050	1.	1100	1.	1110	1.	1120	3.
1130	6.	1131	6.	1132	7.	1133	7.	1134	8.
1135	8.	1136	9.	1137	9.	1138	10.	1139	10.
1140	11.	1141	11.	1142	12.	1143	13.	1144	14.
1145	15.	1146	16.	1147	17.	1148	18.	1149	20.
1150	22.	1151	26.	1152	32.	1153	36.	1154	38.
1155	39.	1156	41.	1157	43.	1158	46.	1159	49.
1160	51.	1161	52.	1162	54.	1163	54.	1164	55.
1165	56.	1166	56.	1167	56.	1168	55.	1169	55.
1170	54.	1171	54.	1172	53.	1173	52.	1174	51.
1175	50.	1176	48.	1177	46.	1178	43.	1179	39.
1180	34.	1181	26.	1182	20.	1183	17.	1184	15.
1185	13.	1186	11.	1187	10.	1188	9.	1189	8.
1190	8.	1191	7.	1192	7.	1193	6.	1194	6.
1195	6.	1196	5.	1197	5.	1198	5.	1199	5.
1200	4.	1201	4.	1202	4.	1203	4.	1204	4.
1205	4.	1206	3.	1207	3.	1208	3.	1209	3.
1210	3.	1211	3.	1212	3.	1213	3.	1214	3.
1215	3.	1216	2.	1217	2.	1218	2.	1219	2.
1220	2.	1221	2.	1222	2.	1223	2.	1224	2.
1225	2.	1226	2.	1227	2.	1228	2.	1229	2.
1230	2.	1231	2.	1232	2.	1233	2.	1234	2.
1235	2.	1236	2.	1237	2.	1238	2.	1239	2.
1240	1.	1241	1.	1242	1.	1243	1.	1244	1.
1245	1.	1246	1.	1247	1.	1248	1.	1249	1.
1250	1.	1251	1.	1252	1.	1253	1.	1254	1.
1255	1.	1256	1.	1257	1.	1258	1.	1259	1.
1260	1.	1261	1.	1262	1.	1263	1.	1264	1.
1265	1.	1266	1.	1267	1.	1268	1.	1269	1.
1270	1.	1271	1.	1272	1.	1273	1.	1274	1.
1275	1.	1276	1.	1277	1.	1278	1.	1279	1.
1280	1.	1281	1.	1282	1.	1283	1.	1284	1.
1285	1.	1286	1.	1287	1.	1288	1.	1289	1.
1290	1.	1291	1.	1292	1.	1293	1.	1294	1.
1295	1.	1296	1.	1297	1.	1298	1.	1299	1.
1300	1.	1310	1.	1320	1.	1330	1.	1340	1.
1350	1.	1360	1.	1370	1.	1380	1.	1390	1.
1400	1.	1420	1.	1440	1.	1460	1.	1500	1.

MODIFIED RATIONAL METHOD HYDROLOGY / PC 1.0-994

LINE A AND C

HYDROGRAPH AT 646 9A STORM DAY 4 REDUCTION FACTOR = 1.000

TIME	Q	TIME	Q	TIME	Q	TIME	Q	TIME	Q
0	0.	100	1.	200	1.	300	1.	400	1.
500	1.	600	1.	700	1.	800	1.	900	1.
1000	1.	1050	1.	1100	1.	1110	2.	1120	5.
1130	8.	1131	9.	1132	9.	1133	10.	1134	10.
1135	11.	1136	12.	1137	12.	1138	13.	1139	14.
1140	15.	1141	16.	1142	17.	1143	18.	1144	19.
1145	20.	1146	21.	1147	23.	1148	25.	1149	28.
1150	31.	1151	37.	1152	45.	1153	52.	1154	54.
1155	55.	1156	57.	1157	59.	1158	62.	1159	64.
1160	67.	1161	69.	1162	71.	1163	72.	1164	73.
1165	75.	1166	77.	1167	78.	1168	80.	1169	82.
1170	84.	1171	85.	1172	87.	1173	88.	1174	89.
1175	90.	1176	90.	1177	90.	1178	87.	1179	81.
1180	76.	1181	77.	1182	78.	1183	78.	1184	78.
1185	78.	1186	77.	1187	76.	1188	75.	1189	74.
1190	73.	1191	72.	1192	72.	1193	71.	1194	70.
1195	69.	1196	69.	1197	68.	1198	66.	1199	65.
1200	64.	1201	62.	1202	61.	1203	59.	1204	57.
1205	55.	1206	53.	1207	52.	1208	50.	1209	48.
1210	46.	1211	45.	1212	43.	1213	41.	1214	40.
1215	38.	1216	37.	1217	35.	1218	34.	1219	33.
1220	31.	1221	30.	1222	29.	1223	28.	1224	27.
1225	26.	1226	25.	1227	24.	1228	23.	1229	22.
1230	21.	1231	21.	1232	20.	1233	19.	1234	19.
1235	18.	1236	17.	1237	17.	1238	16.	1239	16.
1240	15.	1241	15.	1242	14.	1243	14.	1244	13.
1245	13.	1246	13.	1247	12.	1248	12.	1249	11.
1250	11.	1251	11.	1252	10.	1253	10.	1254	10.
1255	10.	1256	9.	1257	9.	1258	9.	1259	9.
1260	8.	1261	8.	1262	8.	1263	8.	1264	7.
1265	7.	1266	7.	1267	7.	1268	7.	1269	7.
1270	6.	1271	6.	1272	6.	1273	6.	1274	6.
1275	6.	1276	6.	1277	5.	1278	5.	1279	5.
1280	5.	1281	5.	1282	5.	1283	5.	1284	5.
1285	5.	1286	5.	1287	4.	1288	4.	1289	4.
1290	4.	1291	4.	1292	4.	1293	4.	1294	4.
1295	4.	1296	4.	1297	4.	1298	4.	1299	4.
1300	3.	1310	3.	1320	3.	1330	2.	1340	2.
1350	2.	1360	2.	1370	2.	1380	2.	1390	1.
1400	1.	1420	1.	1440	1.	1460	1.	1500	1.

EXA010HR.I

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005  0646    1A EXISTING 10YR CONDITION
005  0646    4ABLINE A AND B
005  0646    9ACLINE A AND C
999
999
006  0646    1A 0300  4.1113K102 13000002                    G1
006  0646    2A 0300  26.622K102  9000005
006  0646    3B 0300  30.829K102   100002
006  0646    4AB0300        K102  6500002                   11
006  0646    5A 0300  15.521K102 19000002
006  0646    6A 0300  44.427K102   100002
006  0646    7C 0300  30.429K102 11000003
006  0646    8C 0300  29.829K102  9000004
006  0646    9AC03000       K102   400002                11 2
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EX 100 YR VCRAT OUTPUT

VENTURA COUNTY FLOOD CONTROL DISTRICT
MODIFIED RATIONAL METHOD HYDROLOGY / PC 1.0-994

EXISTING 100YR CONDITION — STORM DAY 4

LOCATION	SUBAREA	SUBAREA AREA	SUBAREA Q	TOTAL AREA	TOTAL Q	CONV TYPE	CONV LNGTH	CONV SLOPE	CONV SIZE	CONV Z	CONTROL Q	SOIL NAME	TC	RAIN ZONE	PCT IMPV
646	1A	4.	11.	4.	11.	2	1300.	0.00200	0.00	0.00	0.	30	11	B98	0.00
646	2A	27.	53.	31.	55.	2	900.	0.00500	0.00	0.00	0.	30	18	B98	0.00
646	3B	31.	51.	31.	51.	2	10.	0.00200	0.00	0.00	0.	30	24	B98	0.00

CONFLUENCE Q'S

646 4A TA 1166 QA 51. QAB 97. QB 47. 646 4B TB 1157 QB 51. QBA 85. QA 33.
646 4AB TAB 1164 QAB 99. QA 50. QB 49.

LOCATION	SUBAREA	SUBAREA AREA	SUBAREA Q	TOTAL AREA	TOTAL Q	CONV TYPE	CONV LNGTH	CONV SLOPE	CONV SIZE	CONV Z	CONTROL Q	SOIL NAME	TC	RAIN ZONE	PCT IMPV
646	4AB	31.	51.	62.	99.	2	650.	0.00200	0.00	0.00	0.	30	0	B98	0.00
646	5A	15.	31.	77.	110.	2	1900.	0.00200	0.00	0.00	0.	30	17	B98	0.00
646	6A	44.	74.	121.	104.	2	10.	0.00200	0.00	0.00	0.	30	23	B98	0.00
646	7C	30.	50.	30.	50.	2	1100.	0.00300	0.00	0.00	0.	30	24	B98	0.00
646	8C	30.	50.	60.	85.	2	900.	0.00400	0.00	0.00	0.	30	24	B98	0.00

CONFLUENCE Q'S

646 9A TA 1171 QA 104. QAC 185. QC 81. 646 9C TC 1174 QC 83. QCA 183. QA 100.
646 9AC TAC 1171 QAC 185. QA 104. QC 81.

LOCATION	SUBAREA	SUBAREA AREA	SUBAREA Q	TOTAL AREA	TOTAL Q	CONV TYPE	CONV LNGTH	CONV SLOPE	CONV SIZE	CONV Z	CONTROL Q	SOIL NAME	TC	RAIN ZONE	PCT IMPV
646	9AC	60.	83.	181.	185.	2	40.	0.00200	0.00	0.00	0.	30	0	B98	0.00

MODIFIED RATIONAL METHOD HYDROLOGY / PC 1.0-994

LINE A AND B
HYDROGRAPH AT 646 4A STORM DAY 4 REDUCTION FACTOR = 1.000

TIME	Q	TIME	Q	TIME	Q	TIME	Q	TIME	Q
0	0.	100	1.	200	1.	300	1.	400	1.
500	1.	600	1.	700	1.	800	1.	900	1.
1000	2.	1050	6.	1100	9.	1110	12.	1120	15.
1130	20.	1131	21.	1132	21.	1133	22.	1134	23.
1135	24.	1136	24.	1137	25.	1138	26.	1139	27.
1140	28.	1141	30.	1142	31.	1143	32.	1144	34.
1145	36.	1146	37.	1147	39.	1148	41.	1149	46.
1150	52.	1151	53.	1152	62.	1153	70.	1154	73.
1155	77.	1156	80.	1157	85.	1158	89.	1159	92.
1160	95.	1161	97.	1162	98.	1163	98.	1164	99.
1165	98.	1166	97.	1167	96.	1168	95.	1169	93.
1170	90.	1171	87.	1172	83.	1173	76.	1174	69.
1175	64.	1176	52.	1177	41.	1178	37.	1179	32.
1180	30.	1181	27.	1182	25.	1183	23.	1184	21.
1185	20.	1186	19.	1187	18.	1188	17.	1189	16.
1190	15.	1191	14.	1192	14.	1193	13.	1194	12.
1195	12.	1196	11.	1197	11.	1198	11.	1199	10.
1200	10.	1201	10.	1202	9.	1203	9.	1204	9.
1205	8.	1206	8.	1207	8.	1208	8.	1209	7.
1210	7.	1211	7.	1212	6.	1213	6.	1214	6.
1215	6.	1216	5.	1217	5.	1218	5.	1219	5.
1220	4.	1221	4.	1222	4.	1223	4.	1224	4.
1225	3.	1226	3.	1227	3.	1228	3.	1229	3.
1230	3.	1231	3.	1232	3.	1233	3.	1234	3.
1235	2.	1236	2.	1237	2.	1238	2.	1239	2.
1240	2.	1241	2.	1242	2.	1243	2.	1244	2.
1245	2.	1246	2.	1247	2.	1248	2.	1249	2.
1250	2.	1251	2.	1252	2.	1253	2.	1254	2.
1255	2.	1256	2.	1257	1.	1258	1.	1259	1.
1260	1.	1261	1.	1262	1.	1263	1.	1264	1.
1265	1.	1266	1.	1267	1.	1268	1.	1269	1.
1270	1.	1271	1.	1272	1.	1273	1.	1274	1.
1275	1.	1276	1.	1277	1.	1278	1.	1279	1.
1280	1.	1281	1.	1282	1.	1283	1.	1284	1.
1285	1.	1286	1.	1287	1.	1288	1.	1289	1.
1290	1.	1291	1.	1292	1.	1293	1.	1294	1.
1295	1.	1296	1.	1297	1.	1298	1.	1299	1.
1300	1.	1310	1.	1320	1.	1330	1.	1340	1.
1350	1.	1360	1.	1370	1.	1380	1.	1390	1.
1400	1.	1420	1.	1440	1.	1460	1.	1500	1.

MODIFIED RATIONAL METHOD HYDROLOGY / PC 1.0-994

LINE A AND C

HYDROGRAPH AT 646 9A STORM DAY 4 REDUCTION FACTOR = 1.000

TIME	Q	TIME	Q	TIME	Q	TIME	Q	TIME	Q
0	0.	100	1.	200	1.	300	1.	400	1.
500	1.	600	1.	700	1.	800	1.	900	1.
1000	3.	1050	11.	1100	20.	1110	25.	1120	30.
1130	39.	1131	40.	1132	41.	1133	43.	1134	44.
1135	46.	1136	47.	1137	48.	1138	50.	1139	51.
1140	53.	1141	55.	1142	58.	1143	60.	1144	62.
1145	65.	1146	68.	1147	71.	1148	74.	1149	82.
1150	91.	1151	94.	1152	107.	1153	119.	1154	123.
1155	128.	1156	131.	1157	137.	1158	141.	1159	146.
1160	150.	1161	153.	1162	156.	1163	160.	1164	164.
1165	168.	1166	171.	1167	175.	1168	178.	1169	181.
1170	183.	1171	185.	1172	183.	1173	180.	1174	183.
1175	174.	1176	166.	1177	166.	1178	164.	1179	164.
1180	162.	1181	159.	1182	156.	1183	154.	1184	151.
1185	149.	1186	147.	1187	144.	1188	141.	1189	139.
1190	136.	1191	133.	1192	128.	1193	125.	1194	121.
1195	117.	1196	113.	1197	109.	1198	105.	1199	101.
1200	97.	1201	93.	1202	90.	1203	86.	1204	83.
1205	79.	1206	76.	1207	73.	1208	70.	1209	67.
1210	65.	1211	62.	1212	59.	1213	57.	1214	55.
1215	53.	1216	51.	1217	49.	1218	47.	1219	45.
1220	43.	1221	42.	1222	40.	1223	38.	1224	37.
1225	36.	1226	35.	1227	33.	1228	32.	1229	31.
1230	30.	1231	29.	1232	28.	1233	27.	1234	26.
1235	26.	1236	25.	1237	24.	1238	23.	1239	23.
1240	22.	1241	21.	1242	21.	1243	20.	1244	19.
1245	19.	1246	18.	1247	18.	1248	17.	1249	17.
1250	16.	1251	16.	1252	15.	1253	15.	1254	14.
1255	14.	1256	14.	1257	13.	1258	13.	1259	13.
1260	12.	1261	12.	1262	11.	1263	11.	1264	11.
1265	11.	1266	10.	1267	10.	1268	10.	1269	10.
1270	9.	1271	9.	1272	9.	1273	9.	1274	8.
1275	8.	1276	8.	1277	8.	1278	8.	1279	7.
1280	7.	1281	7.	1282	7.	1283	7.	1284	7.
1285	7.	1286	6.	1287	6.	1288	6.	1289	6.
1290	6.	1291	6.	1292	6.	1293	5.	1294	5.
1295	5.	1296	5.	1297	5.	1298	5.	1299	5.
1300	5.	1310	4.	1320	3.	1330	3.	1340	2.
1350	2.	1360	2.	1370	2.	1380	2.	1390	2.
1400	1.	1420	1.	1440	1.	1460	1.	1500	1.

EXA100HR.I

```
005  0646    1A EXISTING 100YR CONDITION
005  0646    4ABLINE A AND B
005  0646    9ACLINE A AND C
999
999
006  0646    1A 0300  4.1111B982 13000002                    G1
006  0646    2A 0300  26.618B982  9000005
006  0646    3B 0300  30.824B982   100002
006  0646    4AB0300        B982  6500002                 11
006  0646    5A 0300  15.517B982 19000002
006  0646    6A 0300  44.423B982   100002
006  0646    7C 0300  30.424B982 11000003
006  0646    8C 0300  29.824B982  9000004
006  0646    9AC03000       B982   400002                 11 2
```

ESTIMATED PEAK EX. 2YR Q

EX. 10YR VCRAT

VENTURA COUNTY FLOOD CONTROL DISTRICT
MODIFIED RATIONAL METHOD HYDROLOGY / PC 1.0-994

EXISTING 10YR CONDITION — STORM DAY 4

LOCATION	SUBAREA	AREA	Q	TOTAL AREA	TOTAL Q	CONV TYPE	CONV LNGTH	CONV SLOPE	CONV SIZE	CONV Z	CONTROL Q	SOIL NAME	TC	RAIN ZONE	PCT IMPV
646	1A	4.	6.	4.	6.	2	1300.	0.00200	0.00	0.00	0.	30	13	K10	0.00
646	2A	27.	30.	31.	31.	2	900.	0.00500	0.00	0.00	0.	30	22	K10	0.00
646	3B	31.	29.	31.	29.	2	10.	0.00200	0.00	0.00	0.	30	29	K10	0.00

CONFLUENCE Q'S

646 4A TA 1169 QA 29. QAB 55. QB 27. 646 4B TB 1160 QB 29. QBA 51. QA 21.
646 4AB TAB 1166 QAB 56. QA 28. QB 28.

LOCATION	SUBAREA	AREA	Q	TOTAL AREA	TOTAL Q	CONV TYPE	CONV LNGTH	CONV SLOPE	CONV SIZE	CONV Z	CONTROL Q	SOIL NAME	TC	RAIN ZONE	PCT IMPV
646	4AB	31.	29.	62.	56.	2	650.	0.00200	0.00	0.00	0.	30	0	K10	0.00
646	5A	15.	17.	77.	62.	2	1900.	0.00200	0.00	0.00	0.	30	21	K10	0.00
646	6A	44.	44.	121.	46.	2	10.	0.00200	0.00	0.00	0.	30	27	K10	0.00
646	7C	30.	28.	30.	28.	2	1100.	0.00300	0.00	0.00	0.	30	29	K10	0.00
646	8C	30.	28.	60.	47.	2	900.	0.00400	0.00	0.00	0.	30	29	K10	0.00

CONFLUENCE Q'S

646 9A TA 1174 QA 46. QAC 89. QC 43. 646 9C TC 1180 QC 46. QCA 76. QA 31.
646 9AC TAC 1176 QAC 90. QA 45. QC 45.

LOCATION	SUBAREA	AREA	Q	TOTAL AREA	TOTAL Q	CONV TYPE	CONV LNGTH	CONV SLOPE	CONV SIZE	CONV Z	CONTROL Q	SOIL NAME	TC	RAIN ZONE	PCT IMPV
646	9AC	60.	46.	181.	90.	2	40.	0.00200	0.00	0.00	0.	30	0	K10	0.00

Peak Q_{10-Ex} = 90 cfs

Peak $Q_{2YR-Ex} = \left(\frac{Q_{10}}{0.5} \times 0.08\right)$ per VCWPD Hydrologic Multipliers

Peak Q_{2YR} = 14 cfs (Existing Condition)

No Scale

VENTURA COUNTY PUBLIC WORKS AGENCY

HYDROLOGIC MULTIPLIERS
STORM DURATION, PRECIP. FREQ.
PEAK FLOW FREQ. DEV., UNDEV.

STORM DURATION

DURATION (HOURS)	1	3	6	9	12	18	24	36	48	72
MULTIPLIER	0.28	0.44	0.58	0.68	0.76	0.89	1.00	1.18	1.32	1.56

PRECIPITATION FREQUENCY

FREQUENCY OF OCCURRENCE (YEARS)	2	5	10	25	50	100
MULTIPLIER	0.43	0.61	0.73	0.88	1.00	1.11

PEAK FLOWS FROM DEVELOPED WATERSHEDS: $P_{FREQ} = Q_{FREQ}$

FREQUENCY OF OCCURRENCE (YEARS)	2	5	10	25	50	100
MULTIPLIER	0.16	0.45	0.68	0.83	1.00	1.20

PEAK FLOWS FROM UNDEVELOPED WATERSHEDS: Q_{FREQ}

FREQUENCY OF OCCURRENCE (YEARS)	2	5	10	25	50	100
MULTIPLIER	0.08	0.23	0.50	0.70	1.00	1.38

Proposed Hydrology Calculations

Time of Concentration
Ventura County Modified Rational Method


```
VENTURA COUNTY WATERSHED PROTECTION DISTRICT
TIME OF CONCENTRATION
TC Program Version: 1.0.2007.2
Project: 30-100646
Date: 12:00:00 AM
Engineer: SUHLES
Consultant: RBF CONSULTING
--------------------------------------------------------------------------------
Watershed Name: Watershed
--------------------------------------------------------------------------------
Sub-Area Name: A
Tc: 20.923 Minutes
DATA FOR SUB AREA 1
--------------------------------------------------------------------------------
SUB AREA TIME OF CONCENTRATION: 20.923 min. = 21 min.
--------------------------------------------------------------------------------
SUB AREA INPUT DATA
--------------------------------------------------------------------------------
Sub Area Name: A
Total Area (ac): 45.36
Flood Zone: 2
Rainfall Zone: K
Storm Frequency (years): 100
Development Type: Residential
Soil Type: 3.00
Percent Impervious: 60
SUB AREA OUTPUT
--------------------------------------------------------------------------------
Intensity (in/hr): 2.426
C Total: 0.866
Sum Q Segments (cfs): 95.28
Q Total (cfs): 95.28
Sum Percent Area (%): 100.0
Sum of Flow Path Travel Times (sec): 1,255.37
Time of Concentration (min): 20.923
--------------------------------------------------------------------------------
DATA FOR FLOW PATH 1
--------------------------------------------------------------------------------
Flow Path Name: 1
FLOW PATH TRAVEL TIME (min): 4.2135
Flow Type: Overland
Length (ft): 200
Top Elevation (ft): 53.2
Bottom Elevation (ft): 53
Contributing Area (acres): 1
Percent of Sub-Area (%): 2.2
Overland Type: Valley
Development Type: Residential
Map Slope: 0.0010
Effective Slope: 0.0010
Q for Flow Path (cfs): 2.10
Avg Velocity (ft/s): 0.79
Passed Scour Check: N/A
--------------------------------------------------------------------------------
DATA FOR FLOW PATH 2
--------------------------------------------------------------------------------
Flow Path Name: 2
FLOW PATH TRAVEL TIME (min): 0.6785
Flow Type: Natural Channel
Length (ft): 137
Top Elevation (ft): 53
Bottom Elevation (ft): 51
Contributing Area (acres): 0.79
Percent of Sub-Area (%): 1.7
Overland Type: Valley
Map Slope: 0.0146
Effective Slope: 0.0146
Q for Flow Path (cfs): 1.66
Q Top (cfs): 2.10
Q Bottom (cfs): 3.76
Velocity Top (ft/s): 2.10
Velocity Bottom (ft/s): 2.39
Avg Velocity (ft/s): 2.24
Wave Velocity (ft/s): 3.37
```

DATA FOR FLOW PATH 3

Flow Path Name: 3
FLOW PATH TRAVEL TIME (min): 5.5309
Flow Type: Street
Length (ft): 960
Top Elevation (ft): 51
Bottom Elevation (ft): 48
Contributing Area (acres): 11.41
Percent of Sub-Area (%): 25.2
Street Width (ft): 40
Curb Height (in): 6
Map Slope: 0.0031
Q for Flow Path (cfs): 23.97
Q Top (cfs): 3.76
Q Bottom (cfs): 27.73
Velocity Top (ft/s): 1.49
Velocity Bottom (ft/s): 2.37
Avg Velocity (ft/s): 1.93
Wave Velocity (ft/s): 2.89

DATA FOR FLOW PATH 4

Flow Path Name: 4
FLOW PATH TRAVEL TIME (min): 3.5105
Flow Type: Street
Length (ft): 960
Top Elevation (ft): 48
Bottom Elevation (ft): 43.5
Contributing Area (acres): 15.51
Percent of Sub-Area (%): 34.2
Street Width (ft): 40
Curb Height (in): 6
Map Slope: 0.0047
Q for Flow Path (cfs): 32.58
Q Top (cfs): 27.73
Q Bottom (cfs): 60.30
Velocity Top (ft/s): 2.77
Velocity Bottom (ft/s): 3.31
Avg Velocity (ft/s): 3.04
Wave Velocity (ft/s): 4.56

DATA FOR FLOW PATH 5

Flow Path Name: 5
FLOW PATH TRAVEL TIME (min): 4.9548
Flow Type: Street
Length (ft): 960
Top Elevation (ft): 43.5
Bottom Elevation (ft): 42.2
Contributing Area (acres): 12.86
Percent of Sub-Area (%): 28.4
Street Width (ft): 40
Curb Height (in): 6
Map Slope: 0.0014
Q for Flow Path (cfs): 27.01
Q Top (cfs): 60.30
Q Bottom (cfs): 87.32
Velocity Top (ft/s): 2.06
Velocity Bottom (ft/s): 2.25
Avg Velocity (ft/s): 2.15
Wave Velocity (ft/s): 3.23

DATA FOR FLOW PATH 6

Flow Path Name: 6
FLOW PATH TRAVEL TIME (min): 2.0346
Flow Type: Street
Length (ft): 500
Top Elevation (ft): 42.2
Bottom Elevation (ft): 41.1
Contributing Area (acres): 3.79
Percent of Sub-Area (%): 8.4

Street Width (ft): 40
Curb Height (in): 6
Map Slope: 0.0022
Q for Flow Path (cfs): 7.96
Q Top (cfs): 87.32
Q Bottom (cfs): 95.28
Velocity Top (ft/s): 2.70
Velocity Bottom (ft/s): 2.76
Avg Velocity (ft/s): 2.73
Wave Velocity (ft/s): 4.10

Project: 30-100646
Date: 12:00:00 AM
Engineer: SUHLES
Consultant: RBF CONSULTING

Sub-Area Name: B
Tc: 13.620 Minutes

DATA FOR SUB AREA 2

SUB AREA TIME OF CONCENTRATION: 13.620 min. = 14 min.

SUB AREA INPUT DATA

Sub Area Name: B
Total Area (ac): 68.04
Flood Zone: 2
Rainfall Zone: K
Storm Frequency (years): 100
Development Type: Undeveloped
Soil Type: 3.00
Percent Impervious: 60

SUB AREA OUTPUT

Intensity (in/hr): 2.987
C Total: 0.880
Sum Q Segments (cfs): 178.95
Q Total (cfs): 178.95
Sum Percent Area (%): 100.0
Sum of Flow Path Travel Times (sec): 817.19
Time of Concentration (min): 13.620

DATA FOR FLOW PATH 1

Flow Path Name: 1
FLOW PATH TRAVEL TIME (min): 4.1739
Flow Type: Overland
Length (ft): 200
Top Elevation (ft): 53
Bottom Elevation (ft): 51.5
Contributing Area (acres): 1.39
Percent of Sub-Area (%): 2.0
Overland Type: Valley
Development Type: Residential
Map Slope: 0.0075
Effective Slope: 0.0075
Q for Flow Path (cfs): 3.66
Avg Velocity (ft/s): 0.80
Passed Scour Check: N/A

DATA FOR FLOW PATH 2

Flow Path Name: 2
FLOW PATH TRAVEL TIME (min): 1.5121
Flow Type: Natural Channel
Length (ft): 300
Top Elevation (ft): 51.5
Bottom Elevation (ft): 49
Contributing Area (acres): 5.06
Percent of Sub-Area (%): 7.4
Overland Type: Valley
Map Slope: 0.0083
Effective Slope: 0.0083
Q for Flow Path (cfs): 13.31

Q Top (cfs): 3.66
Q Bottom (cfs): 16.96
Velocity Top (ft/s): 1.79
Velocity Bottom (ft/s): 2.62
Avg Velocity (ft/s): 2.20
Wave Velocity (ft/s): 3.31

DATA FOR FLOW PATH 3

Flow Path Name: 3
FLOW PATH TRAVEL TIME (min): 4.0026
Flow Type: Street
Length (ft): 640
Top Elevation (ft): 49
Bottom Elevation (ft): 48
Contributing Area (acres): 7.29
Percent of Sub-Area (%): 10.7
Street Width (ft): 40
Curb Height (in): 6
Map Slope: 0.0016
Q for Flow Path (cfs): 19.17
Q Top (cfs): 16.96
Q Bottom (cfs): 36.14
Velocity Top (ft/s): 1.62
Velocity Bottom (ft/s): 1.93
Avg Velocity (ft/s): 1.78
Wave Velocity (ft/s): 2.66

DATA FOR FLOW PATH 4

Flow Path Name: 4
FLOW PATH TRAVEL TIME (min): 3.3269
Flow Type: Street
Length (ft): 900
Top Elevation (ft): 48
Bottom Elevation (ft): 44.5
Contributing Area (acres): 15.92
Percent of Sub-Area (%): 23.4
Street Width (ft): 40
Curb Height (in): 6
Map Slope: 0.0039
Q for Flow Path (cfs): 41.87
Q Top (cfs): 36.14
Q Bottom (cfs): 78.01
Velocity Top (ft/s): 2.74
Velocity Bottom (ft/s): 3.27
Avg Velocity (ft/s): 3.01
Wave Velocity (ft/s): 4.51

DATA FOR FLOW PATH 5

Flow Path Name: 5
FLOW PATH TRAVEL TIME (min): 0.3201
Flow Type: Street
Length (ft): 200
Top Elevation (ft): 44.5
Bottom Elevation (ft): 40
Contributing Area (acres): 28.3
Percent of Sub-Area (%): 41.6
Street Width (ft): 40
Curb Height (in): 6
Map Slope: 0.0225
Q for Flow Path (cfs): 74.43
Q Top (cfs): 78.01
Q Bottom (cfs): 152.44
Velocity Top (ft/s): 6.40
Velocity Bottom (ft/s): 7.48
Avg Velocity (ft/s): 6.94
Wave Velocity (ft/s): 10.41

DATA FOR FLOW PATH 6

Flow Path Name: 6
FLOW PATH TRAVEL TIME (min): 0.2841

Flow Type: Natural Channel
Length (ft): 100
Top Elevation (ft): 40
Bottom Elevation (ft): 39.5
Contributing Area (acres): 10.08
Percent of Sub-Area (%): 14.8
Overland Type: Valley
Map Slope: 0.0050
Effective Slope: 0.0050
Q for Flow Path (cfs): 26.51
Q Top (cfs): 152.44
Q Bottom (cfs): 178.95
Velocity Top (ft/s): 3.81
Velocity Bottom (ft/s): 4.01
Avg Velocity (ft/s): 3.91
Wave Velocity (ft/s): 5.87

Proposed Extended Detention Basin Analysis

Design Calculations
Storm Water Quality Design Volume Calculation
Hydraflow Hydrographs Output

Hydrograph Summary Report – 100 YEAR DETENTION REQUIREMENTS

Hyd. No.	Hydrograph type (origin)	Peak flow (cfs)	Time interval (min)	Time to peak (min)	Volume (cuft)	Inflow hyd(s)	Maximum elevation (ft)	Maximum storage (cuft)	Hydrograph description
1	Manual	5.100	1	1153	36,047	----	------	------	Unit Hydrograph
2	Manual	95.28	1	1153	673,456	----	------	------	Area A
3	Diversion1	22.55	1	1153	645,067	2	------	------	Q10 EX Outflow
4	Diversion2	72.73	1	1153	28,389	2	------	------	Detention Required
5	Manual	178.95	1	1153	1,264,808	----	------	------	Area B
6	Diversion1	33.83	1	1128	1,197,909	5	------	------	Q10 EX Outflow
7	Diversion2	145.12	1	1153	66,900	5	------	------	Detention Required

TTM Basins.gpw | Return Period: 100 Year | Thursday, Oct 18 2007, 11:19 AM

Design Procedure Form for T-3: Extended Detention Basin

Designer: JGK
Company: RBF Consulting
Date: 22-Oct-07
Project: Teal Club
Location: City of Oxnard (Drainage Area A)

1. Determine Basin Storage Volume			
a. Percent Imperviousness of Tributary Area	I_a =	65	%
b. Effective Imperviousness (Determine using Figure 3-4)	I_{wq} =	60	%
c. Required Unit Basin Storage Volume (V_u) Use Figure 5-1 with 40 hr drawdown and I_{wq}	V_u =	0.67	in.
d. Watershed Area Tributary to EDB	Area =	60.9	acres
e. Calculate SQDV SQDV = (V_u / 12) x Area	SQDV =	3.40025	acre-ft
f. Calculate Design Volume Design Volume = SQDV x 1.2	Design Volume =	4.0803	acre-ft
2. Outlet Works			
a. Outlet Type (check one)	Single Orifice		
	Multi-orifice Plate		
	Perforated Pipe	X	
	Other		
b. Depth of water above bottom oririce	Depth =	3	feet
c. Single Orifice Outlet			
1) Total Area	A =		square inches
2) Diameter or W x L	D =		inches
d. Multiple Orifice Outlet			
1) Area per row of perforations	A =	1.97	
2) Perforation Diameter (2 inches max.)	D =	3/4	
3) No. of Perforations (columns) per Row	Perforations =	4.5	
4) No. of Rows (4 inch spacing)	Rows =	5.5	
5) Total Orifice Area (Area per row) x (Number of Rows)	Area =	10.835	

Design Procedure Form for T-3: Extended Detention Basin (Page 2 of 2)

Project: Teal Club

3. Trash Rack or Gravel Pack (check one)	Trash Rack		Gravel Pack X
4. Basin Length-Width Ration (2:1 minimum)	Ratio =		L/W
5. Two-Stage Design			
a. Upper Stage			
1) Depth (2 feet minimum)	Depth =		feet
2) Width (30 feet minimum)	Width =		feet
3) Bottom Slope (2% to low flow channel)	Slope =		%
b. Bottom Stage			
1) Depth (1.5 to 3 feet deeper than Upper)	Depth =		feet
2) Storage Volume (5-15% of SQDV min.)	Volume =		acre-ft
6. Forebay Design			
a. Forebay Volume (5-10% of SQDV min.)	Volume =		acre-ft
b. Outlet pipe drainage time (~45 minutes)	Drainage Time		minutes
7. Low Flow Channel			
a. Depth (9 inches min.)	Depth =		feet
b. Flow Capacity (2 x outlet for Forebay)	Flow Capacity =		cfs
8. Vegetation	Native Grasses	X	
	Irrigated Turf		
	Other		
9. Embankment			
a. Interior Slope (4:1 max.)	Interior Slope =	4:01	H/V
b. Exterior Slope (3:1 max.)	Exterior Slope =		H/V
10. Access			
a. Slope (10% max.)	Slope =	10	%
b. Width (16 feet min.)	Width =	16	feet

Notes:

Design Procedure Form for T-3: Extended Detention Basin

Designer: JGK

Company: RBF Consulting

Date: 22-Oct-07

Project: Teal Club

Location: City of Oxnard (Drainage Area B)

1. Determine Basin Storage Volume			
a. Percent Imperviousness of Tributary Area	I_a =	65	%
b. Effective Imperviousness (Determine using Figure 3-4)	I_{wq} =	60	%
c. Required Unit Basin Storage Volume (V_u) Use Figure 5-1 with 40 hr drawdown and I_{wq}	V_u =	0.67	in.
d. Watershed Area Tributary to EDB	Area =	68	acres
e. Calculate SQDV SQDV = (V_u / 12) x Area	SQDV =	3.796666667	acre-ft
f. Calculate Design Volume Design Volume = SQDV x 1.2	Design Volume =	4.556	acre-ft
2. Outlet Works			
a. Outlet Type (check one)	Single Orifice		
	Multi-orifice Plate		
	Perforated Pipe	X	
	Other		
b. Depth of water above bottom orifice	Depth =		feet
c. Single Orifice Outlet			
1) Total Area	A =		square inches
2) Diameter or W x L	D =		inches
d. Multiple Orifice Outlet			
1) Area per row of perforations	A =	2.2	
2) Perforation Diameter (2 inches max.)	D =	3/4	
3) No. of Perforations (columns) per Row	Perforations =	5	
4) No. of Rows (4 inch spacing)	Rows =	7	
5) Total Orifice Area (Area per row) x (Number of Rows)	Area =	15.4	

Design Procedure Form for T-3: Extended Detention Basin (Page 2 of 2)

Project: Teal Club

3. Trash Rack or Gravel Pack (check one)	Trash Rack		Gravel Pack X
4. Basin Length-Width Ration (2:1 minimum)	Ratio =	2:01	L/W
5. Two-Stage Design			
a. Upper Stage			
1) Depth (2 feet minimum)	Depth =		feet
2) Width (30 feet minimum)	Width =		feet
3) Bottom Slope (2% to low flow channel)	Slope =		%
b. Bottom Stage			
1) Depth (1.5 to 3 feet deeper than Upper)	Depth =		feet
2) Storage Volume (5-15% of SQDV min.)	Volume =		acre-ft
6. Forebay Design			
a. Forebay Volume (5-10% of SQDV min.)	Volume =		acre-ft
b. Outlet pipe drainage time (~45 minutes)	Drainage Time		minutes
7. Low Flow Channel			
a. Depth (9 inches min.)	Depth =		feet
b. Flow Capacity (2 x outlet for Forebay)	Flow Capacity =		cfs
8. Vegetation	Native Grasses	X	
	Irrigated Turf		
	Other		
9. Embankment			
a. Interior Slope (4:1 max.)	Interior Slope =	4:01	H/V
b. Exterior Slope (3:1 max.)	Exterior Slope =		H/V
10. Access			
a. Slope (10% max.)	Slope =	10	%
b. Width (16 feet min.)	Width =	16	feet

Notes:

Calculation of Stormwater Quality Design Flow and Volume

Introduction

The primary control strategy for all of the treatment control measures specified in this Section is to treat the Stormwater Quality Design Flow (SQDF) or Stormwater Quality Design Volume (SQDV) of the storm water runoff. The following paragraphs present calculation procedures and design criteria necessary to determine the SQDF and SQDV.

The treatment control measure equations specified in this Section are listed in Table 5-2 along with the basis of design, SQDF or SQDV, to be used for the listed control measure.

Table 5-2. Sizing Criteria for Treatment Control Measures

Treatment Control Measure	Design Basis
T-1: Grass Strip Filter	SQDF
T-2: Grass Swale Filter	SQDF
T-3: Dry Detention Basin	SQDV
T-4: Wet Detention Basin	SQDV
T-5: Constructed Wetland	SQDV
T-6: Detention Basin/Sand Filter	SQDV
T-7: Porous Pavement Detention	SQDV
T-8: Porous Landscape Detention	SQDV
T-9: Infiltration Basin	SQDV
T-10: Infiltration Trench	SQDV
T-11: Media Filter	SQDV
T-12: Proprietary Control Measures	SQDV or SQDF

Contributing Impervious Area Determination

The SQDF and SQDV are calculated by determining runoff from the impervious and pervious areas of a site that are connected to the treatment control measure. Impervious areas include sidewalks, roadways, parking areas, staging areas, storage areas, slabs, roofs, and other non-vegetated areas, including compacted soil areas. Off-site areas that could run-on to a site and contribute drainage to the treatment control measure should be included in the impervious area determination. The effective imperviousness of a site can be reduced through implementation of general site design control measures (e.g. G-5.1 and G-5.2) to reduce flow from impervious areas, as described in Section 3. Procedures for calculating effective imperviousness are presented in Section 3, Fact Sheet G-5.

Stormwater Quality Design Flow (SQDF) Calculation

Hydrologic calculations for design of flow-based stormwater treatment control measures in Ventura County shall be in accordance with latest edition of the *Hydrology Manual* produced by Ventura County Public Works Agency, Flood Control Department, together with the procedure set forth herein. The designer is specifically reminded to regard minimum subarea sizes required in the *Hydrology Manual* (p. II-3). Where jurisdictions within Ventura County have approved alternative hydrologic calculation methods, the alternative methods may be utilized if they have been approved by the jurisdiction for use in design of flow-based stormwater quality BMPs. This procedure complies with Regional Board Order No. 00-108, NPDES Permit No. CAS004002, Attachment A – Ventura Countywide Stormwater Quality Urban Impact Mitigation Plan, issued July 27, 2000.

The Stormwater Quality Design Flow (SQDF) is defined to be equal to 10 percent of the peak rate of runoff flow from the 50-year storm as determined using the procedures set forth in the *Hydrology Manual*.

Calculation Procedure

1. The Stormwater Quality Design Flow (SQDF) in Ventura County is defined as $Q_{P,\,SQDF}$.
2. Calculate the peak rate of flow from the 50-year storm ($Q_{P,\,50\,yr.}$) using the procedures set forth in the *Hydrology Manual* or as directed by the local agency Drainage Master Plan.
3. Convert $Q_{P,\,50yr}$ (Step 2) to $Q_{P,\,SQDF}$ (Step 1).

$$Q_{P,\,SQDF} = 0.1 \times Q_{P,\,50yr}$$

Example Stormwater Quality Design Flow Calculation

The steps below illustrate calculation of SQDF:

Step 1: SQDF = $Q_{P,\,SQDF}$

Step 2: Calculate the peak rate of flow from a 50-year storm.

$Q_{p,\,50\,yr.}$ = 10 cfs from the *Hydrology Manual*

Step 3: Convert $Q_{p,50\,yr}$ (Step 2) to $Q_{p,\,SQDF}$ (Step 1)

$Q_{P,\,SQDF} = 0.1 \times 10$ cfs

$Q_{P,\,SQDF} = 1.0$ cfs

Stormwater Quality Design Volume (SQDV) Calculation

Hydrologic calculations for design of volume-based stormwater treatment controls in Ventura County shall be in accordance with the procedures set forth herein. This procedure complies with Regional Board Order No. 00-108, NPDES Permit No. CAS004002, Attachment A – Ventura Countywide Stormwater Quality Urban Impact Mitigation Plan, issued July 27, 2000.

The Stormwater Quality Design Volume (SQDV) is defined as the volume necessary to capture and treat 80 percent or more of the average annual runoff volume from the site at the design drawdown period specified in the Fact Sheet for the proposed treatment control measure.

Calculation Procedure

1. Review the area draining to the proposed treatment control measure. Determine the effective imperviousness (I_{WQ}) of the drainage area using the procedure presented in Section 3, Fact Sheet G-5.
2. Figure 5-1 provides a direct reading of Unit Basin Storage Volumes required for 80% annual capture of runoff for values of "I_{WQ}" determined in Step 1. Enter the horizontal axis of Figure 5-1 with the "I_{WQ}" value from Step 1. Move vertically up Figure 5-1 until the appropriate drawdown period line is intercepted. (The design drawdown period specified in the respective Fact Sheet for the proposed treatment control measure.) Move horizontally across Figure 5-1from this point until the vertical axis is intercepted. Read the Unit Basin Storage Volume along the vertical axis.

   Figure 5-1 is based on Precipitation Gage 168, Oxnard Airport. This gage has a data record of approximately 40 years of hourly readings and is maintained by Ventura County Flood Control District. Figure 5-1 is for use only in the permit area specified in Regional Board Order No. 00-108, NPDES Permit No. CAS004002.
3. The SQDV for the proposed treatment control measure is then calculated by multiplying the Unit Basin Storage Volume by the contributing drainage area. Due to the mixed units that result (e.g., acre-inches, acre-feet) it is recommended that the resulting volume be converted to cubic feet for use during design.

Example Stormwater Quality Design Volume Calculation

1. Determine the drainage area contributing to control measure, A_t. Example: 10 acres.
2. Determine the area of impervious surfaces in the drainage area, A_i. Example: 6.4 acres.
3. Calculate the percentage of impervious, $I_A = (A_i / A_t)*100$

   Example: Percent Imperviousness = $(A_i / A_t)*100$ = (6.4 acres/10 acres)*100 = 64%
4. Determine Effective Imperviousness using Figure 3-4.

   Example: G-5.1 employed → I_{WQ} = 60%
5. Determine design drawdown period for proposed control measure.

   Example: T-3:Extended Detention Basin → Drawdown period = 40 hours
6. Determine the Unit Basin Storage Volume for 80% Annual Capture, V_u using Figure 5-1.

   Example: for $I_{WQ}/100 = 0.60$ and drawdown = 40 hrs, V_u = 0.64 in.
7. Calculate the volume of the basin, V_b, where $V_b = V_u * A_t$.

   Example: V_b = (0.64 in)(10 ac)(ft/12 in(43,560 ft² / ac) = 23,232 ft³.
8. Solution: Size the proposed control measure for 23,232 ft³ and 40-hour drawdown.

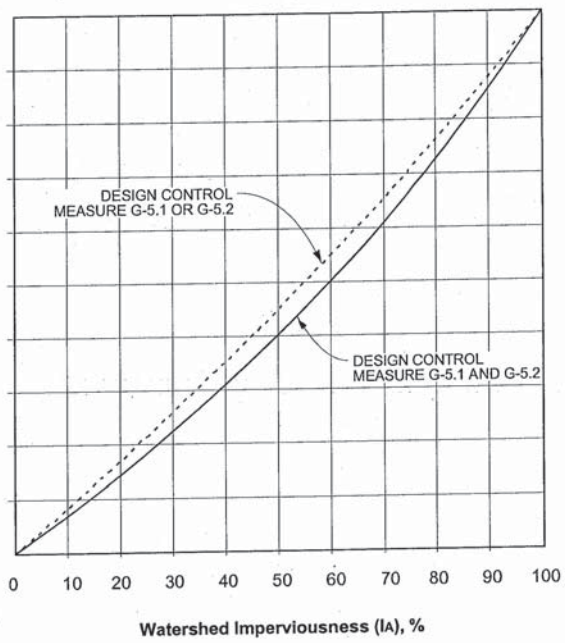


Figure 3-4. DETERMINATION OF EFFECTIVE IMPERVIOUSNESS

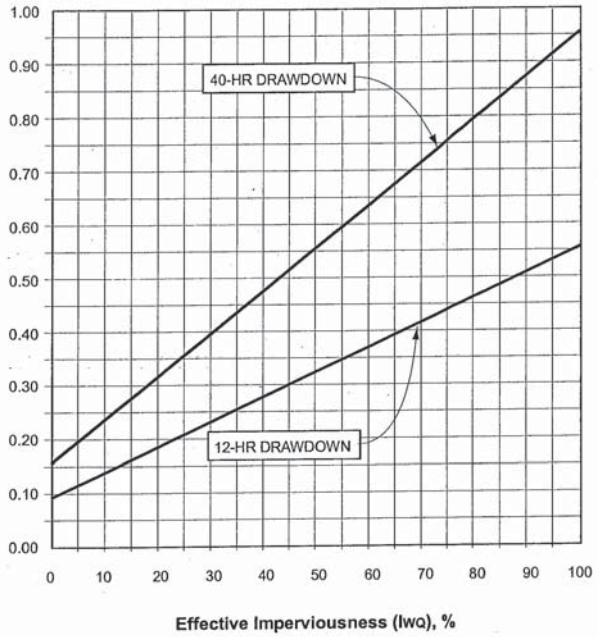


Figure 5-1. Unit Basin Storage Volume vs. Effective Imperviousness

Control Peak Stormwater Runoff Discharge Rates

Purpose

Unless controlled, peak stormwater runoff rates from developed areas are typically higher than those from previously undeveloped areas. Higher peak flows can change stream morphology and increase downstream erosion that can damage stream habitat and impact aesthetic value. In addition, higher flows convey larger pollutant loads to receiving waters. Control of peak stormwater discharge rates is thus required to protect stream habitat and aesthetic value by maintaining non-erosive hydraulic conditions in unlined receiving streams during stormwater runoff events.

Design Criteria

SQUIMP category projects, excluding single family hillside residences, that directly discharge to unlined receiving streams shall implement the following interim criteria:

1. 2-year post development discharge rates shall not exceed the predeveloped discharge rates for the 2-year frequency storm event.
2. Peak flows shall be determined using the procedures set forth in the latest edition of the *Hydrology Manual* and Direct Runoff curves produced by Ventura County Public Works Agency, Flood Control Department. The designer is specifically reminded to regard minimum subarea sizes required in the *Hydrology Manual*. Where jurisdictions within Ventura County have approved alternative hydrologic calculation methods, the alternative methods may be used if they have been approved by the jurisdiction for use in design of flow-based stormwater controls.

The Ventura County Public Works Agency, Flood Control Department is currently developing a modeling procedure to establish peak flow design criteria to avoid erosive conditions. A study in the upper reaches of the Arroyo Simi (Simi Valley) is currently underway to examine the relationship between runoff discharge rates and erosion. The results of the study will be used to revise/finalize the interim peak flow criteria presented in this manual upon approval of the co-permittee cities.

Description

Extended detention basins (EDB) are permanent basins formed by excavation and/or construction of embankments to temporarily detain the Stormwater Quality Design Volume (SQDV) of stormwater runoff to allow sedimentation of particulates to occur before the runoff is discharged. Extended detention basins are typically dry between storms, although a shallow pool, 1 to 3 feet deep, can be included in the design for aesthetic purposes and to promote biological uptake and conversion of pollutants. A bottom outlet provides controlled slow release of the detained runoff over a specified time period (40 hours for SQDV). The basic elements of an extended detention basin are shown in Figure 5-4. This configuration is most appropriate for large sites.

Surface basins are typical, but underground vaults may be appropriate in a small commercial development. Where irrigation water is available, basins should be vegetated to protect the basin slopes and bottom from erosion. To minimize erosion from inlet flow, basins are to be designed with an inlet energy dissipator and an inlet forebay section divided from the main basin by a secondary berm. The bottom of the basin is sloped toward the outlet end at a grade of approximately two percent. A low flow channel is provided to convey incidental flows directly to the outlet end of the basin.

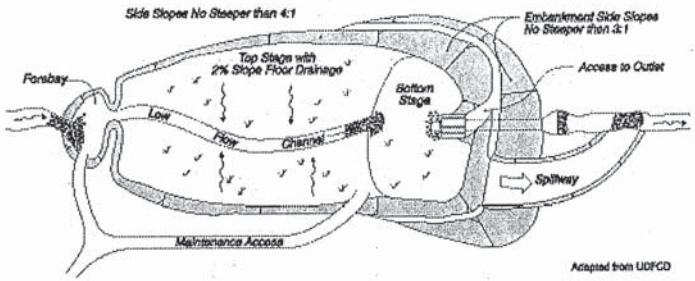
EDBs are sized to detain and release the SQDV. Storm volumes greater than the SQDV are passed through the basin by means of a secondary outlet or spillway. Outlets are designed to include erosion protection.

General Application

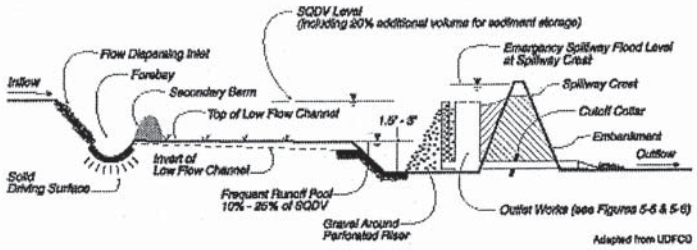
An EDB serves to reduce peak stormwater runoff rates, as well as provide treatment of stormwater runoff. If the basins are constructed early in the development cycle, they can also serve as sediment traps during construction within the tributary area. However, accumulated sediment must be removed after construction activities are complete and before the basin is placed into final long-term use as an EDB. Basins may be designed as dual-use facilities to provide recreational use during the dry season, and can be designed into flood control basins or sometimes retrofitted into existing flood control basins. EDBs that are intended to serve as a flood control basin, as well as a stormwater treatment control measure, must also be designed in accordance with applicable flood control design standards.

EDBs can serve essentially any size tributary area from an individual commercial development to a large residential or regional area, but are typically used for tributary areas greater than 10 acres. They work well in conjunction with other control measures, such as onsite source controls and downstream infiltration basins.

5-2



Plan View



Section View

Figure 5-4. Extended Detention Basin Conceptual Layout

Advantages/Disadvantages

General

EDBs may be designed to provide other benefits such as recreation, wildlife habitat, and open space. Safety issues must be address through proper design.

Site Suitability

Space requirements for EDBs are significant. Land requirements for EDBs typically range from approximately 0.5 to 2.0 percent of the of the tributary development area. Groundwater levels must be considered during site evaluation and design. Vector and vegetation control problems can develop when the seasonal high ground water level is above the basin bottom elevation.

Pollutant Removal

Relative pollutant removal effectiveness of an EDB is presented in Table 5-1. Removal effectiveness of EDBs for sediment and particulate forms of metals, nutrients and other pollutants is considered high to moderate. Removal effectiveness for dissolved pollutants is considered low. EDBs may be used upstream of control measures that are more effective at removing soluble pollutants, such as infiltration basins, filters or wetlands.

Design Criteria and Procedure

Principal design criteria for EDBs are listed in Table 5-5.

Table 5-5. Extended Detention Basin Design Criteria

Design Parameter	Unit	Design Criteria
Drawdown time for SQDV / 50% SQDV	hrs	40 / 12 (minimum)
SQDV	acre-ft	80% annual capture. Use Figure 5-1 @ 40-h drawdown
Basin design volume	acre-ft	1.2 x SQDV (privide 20% sediment storage volume)
Inlet/outlet erosion control	–	Energy dissipator to reduce inlet/outlet velocity
Forebay volume/ drain time	%/min.	5 to 15 % of SQDV / Drain time < 45 minutes
Low-flow channel depth/ flow capacity	in/–	9 / 2 x forebay outlet rate
Bottom slope of upper stage	%	2.0
Length to width ratio (minimum)	–	2:1 (larger preferred)
Upper stage depth/width (minimum)	ft	2.0/30
Bottom stage volume	%	10 to 25 % of SQDV
Bottom stage depth	ft	1.5 to 3 ft deeper than top stage
Freeboard (minimum)	ft	1.0
Embankment side slope (H:V)	–	≥ 4:1 inside/ ≥3:1 outside (without retaining walls)
Maintenance access ramp slope (H:V)	hrs	10:1 or flatter
Maintenance access ramp width	ft	16.0 – approach paved with asphalt concrete

Design procedure and application of design criteria are outlined in the following steps:

a) Basin Storage Volume

Provide a storage volume equal to 120 percent of the SQDV, based on a 40-hr drawdown time, above the lowest outlet (i.e. perforation or orifice) in the basin. The additional 20 percent provides an allowance for sediment accumulation.

a. Determine the percent imperviousness of the tributary area (I_a).

b. Determine effective imperviousness (I_{wq}) by adjusting for site design source controls using Figure 3-4, as appropriate.

c. Determine required unit basin storage volume (V_u) using Figure 5-1 with 40-hr drawdown and I_{wq} value from Step 1.b.

d. Calculate the SQDV in acre-ft as follows:

$$SQDV = (V_u / 12) \times Area$$

where

Area = Watershed area tributary to EDB in acre-ft

e. Calculate Design Volume in acre-ft as follows:

$$Design\ Volume = SQDV \times 1.2$$

where

1.2 factor = Multiplier to provide for sediment accumulation

2. Outlet Works

The Outlet Works are to be designed to release the SQDV (i.e. not Design Volume) over a 40-hour period, with no more than 50 percent released in 12 hours. Refer to Figures 5-5 and 5-6 for schematics pertaining to structure geometry; grates, trash racks, and screens; outlet type: orifice plate or perforated riser pipe.

a. For perforated pipe outlets or vertical plates with multiple orifices (see Figure 5-5), use the following equation to determine required area per row of perforations, based on the SQDV(ft^2) and depth of water above the centerline of the bottom perforation D_{BS} (ft).

$$Area/row\ (in^2) = SQDV/K_{40}$$

where

$$K_{40} = 0.013D_{BS}^2 + 0.22D_{BS} - 0.10$$

Select appropriate perforation diameter and number of perforations per row (i.e. columns) with the objective of minimizing the number of columns and using a maximum perforation diameter of 2 inches. Rows are spaced at 4 inches on center from the bottom perforation. Thus, there will be 3 rows for each foot of depth plus the top row. The

number of rows (nr) may be determined as follows:

$$nr = 1 + (D_{BS} \times 3)$$

Calculate total outlet area by multiplying the area per row by number of rows.

$$\text{Total orifice area} = \text{area/row} \times nr$$

b. For single orifice outlet control or single row of orifices at the basin bottom surface elevation (see Figures 5-6), use the following equation based on the SQDV (ft^3) and depth of water above orifice centerline D_{BS} (ft) to determine total orifice area (in^2):

$$\text{Total orifice area} = (SQDV) + [(60.19)(D_{BS}^{0.5})(T)]$$

where

T = drawdown period (hrs)= 40 hrs

3. Trash Rack/Gravel Pack — A trash rack or gravel pack around perforated risers shall be provided to protect outlet orifices from clogging. Trash racks are better suited for use with perforated vertical plates for outlet control and allow easier access to outlet orifices for purposes of inspection and cleaning. Trash rack shall be sized to prevent clogging of the primary water quality outlet without restricting with the hydraulic capacity of the outlet control orifices.

4. Basin Shape — Whenever possible, shape the basin with a gradual expansion from the inlet toward the middle and a gradual contraction from middle toward the outlet. The length to width ratio should be a minimum of 2:1. Internal baffling with berms may be necessary to achieve this ratio.

5. Two-Stage Design — A two-stage design with a pool that fills often with frequently occurring runoff minimizes standing water and sediment deposition in the remainder of the basin.

a. Upper Stage: The upper stage should be a minimum of 2 feet deep with the bottom sloped at 2 percent toward the low flow channel. Minimum width of the upper stage should be 30 ft.

b. Bottom Stage: The active storage basin of the bottom stage should be 1.5 to 3 feet deeper than the top stage and store 10 to 25 pecent of the SQDV. A mico-pool below the active storage volume of the bottom stage, if provided, should be one-half the depth of the top stage or 2 feet, which ever is greater.

6. Forebay Design — The forebay provides a location for sedimentation of larger particles that has a solid bottom surface to facilitate mechanical removal of accumulated sediment. The forebay volume should be 5 to 10 percent of the SQDV. A berm should separate the forebay from the upper stage of the basin. The outlet pipe from

be 5 to 10 percent of the SQDV. A berm should separate the forebay from the upper stage of the basin. The outlet pipe from the forebay to the lowflow channel should be sized to drain the forebay volume in 45 minutes. The outlet pipe entrance should be offset from the forebay inlet to prevent short circuiting.

7. Low-flow Channel — The low flow channel conveys flow from the forebay to the bottom stage. Erosion protection should be provided where the low-flow channel enters the bottom stage. Lining of the low flow channel with concrete is recommended. The depth of the channel should be at least 9 inches. The flow capacity of the channel should be twice the release capacity of the forebay outlet.

8. Inlet/Outlet Design — Basin inlet and outlet points should be provided with an energy dissipation structure and/or erosion protection.

9. Vegetation — Bottom vegetation provides erosion protection and sediment entrapment. Basin bottoms, berms, and side slopes may be planted with native grasses or with irrigated turf.

10. Embankment — Design embankments to conform to requirements State of California Division of Safety of Dams, if the basin dimensions cause it to fall under that agency's jurisdiction. Interior slopes should be no steeper than 4:1 and exterior slopes no steeper than 3:1. Flatter slopes are preferable.

11. Access — All-weather access to the bottom, forebay, and outlet works shall be provided for maintenance vehicles. Maximum grades of access ramps should be 10 percent and minimum width should be 16 feet. Ramps should be paved with concrete.

12. Bypass — Provide for bypass or overflow of runoff volumes in excess of the SQDV. Spillway and overflow structures should be designed in accordance with applicable standards of the Ventura County Flood Control District.

13. Geotextile Fabric — Non-woven geotextile fabric used in conjunction with gravel packs around perforated risers shall conform the specifications listed in Table 5-6.

Table 5-6. Non-woven Geotextile Fabric Specifications

Property	Test Reference	Minimum Specification
Grab Strength	ASTM D4632	90 lbs
Elongation at peak load	ASTM D4632	50 %
Puncture Strength	ASTM D3787	45 lbs
Permitivity	ASTM D4491	0.7 sec^{-1}
Burst Strength	ASTM D3786	180 psi
Toughness	% Elongation x Grab Strength	5,500 lbs
Ultraviolet Resistance (Percent strength retained at 500 Weatherometer hours)	ASTM D4355	70%

Adapted from SSPWC, 1997.

Design Example

Design forms to document the design procedure are provided in Appendix G. A completed design form follows as a design example.

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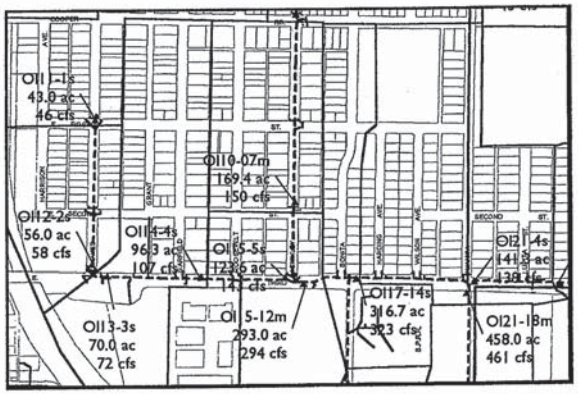
City of Oxnard

"The City That Cares"

MASTER PLAN OF DRAINAGE

OCTOBER 2003



Hawks & Associates
2259 Portola Rd. Suite B
Ventura, CA 93003

EXA010HR.I

```
005  0646    1A EXISTING 10YR CONDITION
005  0646    4ABLINE A AND B
005  0646    9ACLINE A AND C
999
999
006  0646    1A 0300  4.1113K102 13000002                          G1
006  0646    2A 0300  26.622K102  9000005
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006  0646    8C 0300  29.829K102  9000004
006  0646    9AC03000       K102   400002                      11 2
```

EX 100 YR JCHAT OUTPUT

VENTURA COUNTY FLOOD CONTROL DISTRICT
MODIFIED RATIONAL METHOD HYDROLOGY / PC 1.0-994

EXISTING 100YR CONDITION — STORM DAY 4

LOCATION		SUBAREA AREA	SUBAREA Q	TOTAL AREA	TOTAL Q	CONV TYPE	CONV LNGTH	CONV SLOPE	CONV SIZE	CONV Z	CONTROL Q	SOIL NAME	TC	RAIN ZONE	PCT IMPV
646	1A	4.	11.	4.	11.	2	1300.	0.00200	0.00	0.00	0.	30	11	B98	0.00
646	2A	27.	53.	31.	55.	2	900.	0.00500	0.00	0.00	0.	30	18	B98	0.00
646	3B	31.	51.	31.	51.	2	10.	0.00200	0.00	0.00	0.	30	24	B98	0.00

CONFLUENCE Q'S

646 4A TA 1166 QA 51. QAB 97. QB 47. 646 4B TB 1157 QB 51. QBA 85. QA 33.
646 4AB TAB 1164 QAB 99. QA 50. QB 49.

LOCATION		SUBAREA AREA	SUBAREA Q	TOTAL AREA	TOTAL Q	CONV TYPE	CONV LNGTH	CONV SLOPE	CONV SIZE	CONV Z	CONTROL Q	SOIL NAME	TC	RAIN ZONE	PCT IMPV
646	4AB	31.	51.	62.	99.	2	650.	0.00200	0.00	0.00	0.	30	0	B98	0.00
646	5A	15.	31.	77.	110.	2	1900.	0.00200	0.00	0.00	0.	30	17	B98	0.00
646	6A	44.	74.	121.	104.	2	10.	0.00200	0.00	0.00	0.	30	23	B98	0.00
646	7C	30.	50.	30.	50.	2	1100.	0.00300	0.00	0.00	0.	30	24	B98	0.00
646	8C	30.	50.	60.	85.	2	900.	0.00400	0.00	0.00	0.	30	24	B98	0.00

CONFLUENCE Q'S

646 9A TA 1171 QA 104. QAC 185. QC 81. 646 9C TC 1174 QC 83. QCA 183. QA 100.
646 9AC TAC 1171 QAC 185. QA 104. QC 81.

LOCATION		SUBAREA AREA	SUBAREA Q	TOTAL AREA	TOTAL Q	CONV TYPE	CONV LNGTH	CONV SLOPE	CONV SIZE	CONV Z	CONTROL Q	SOIL NAME	TC	RAIN ZONE	PCT IMPV
646	9AC	60.	83.	181.	185.	2	40.	0.00200	0.00	0.00	0.	30	0	B98	0.00

MODIFIED RATIONAL METHOD HYDROLOGY / PC 1.0-994

LINE A AND B

HYDROGRAPH AT 646 4A STORM DAY 4 REDUCTION FACTOR = 1.000

TIME	Q	TIME	Q	TIME	Q	TIME	Q	TIME	Q
0	0.	100	1.	200	1.	300	1.	400	1.
500	1.	600	1.	700	1.	800	1.	900	1.
1000	2.	1050	6.	1100	9.	1110	12.	1120	15.
1130	20.	1131	21.	1132	21.	1133	22.	1134	23.
1135	24.	1136	24.	1137	25.	1138	26.	1139	27.
1140	28.	1141	30.	1142	31.	1143	32.	1144	34.
1145	36.	1146	37.	1147	39.	1148	41.	1149	46.
1150	52.	1151	53.	1152	62.	1153	70.	1154	73.
1155	77.	1156	80.	1157	85.	1158	89.	1159	92.
1160	95.	1161	97.	1162	98.	1163	98.	1164	99.
1165	98.	1166	97.	1167	96.	1168	95.	1169	93.
1170	90.	1171	87.	1172	83.	1173	76.	1174	69.
1175	64.	1176	52.	1177	41.	1178	37.	1179	32.
1180	30.	1181	27.	1182	25.	1183	23.	1184	21.
1185	20.	1186	19.	1187	18.	1188	17.	1189	16.
1190	15.	1191	14.	1192	14.	1193	13.	1194	12.
1195	12.	1196	11.	1197	11.	1198	11.	1199	10.
1200	10.	1201	10.	1202	9.	1203	9.	1204	9.
1205	8.	1206	8.	1207	8.	1208	8.	1209	7.
1210	7.	1211	7.	1212	6.	1213	6.	1214	6.
1215	6.	1216	5.	1217	5.	1218	5.	1219	5.
1220	4.	1221	4.	1222	4.	1223	4.	1224	4.
1225	3.	1226	3.	1227	3.	1228	3.	1229	3.
1230	3.	1231	3.	1232	3.	1233	3.	1234	3.
1235	2.	1236	2.	1237	2.	1238	2.	1239	2.
1240	2.	1241	2.	1242	2.	1243	2.	1244	2.
1245	2.	1246	2.	1247	2.	1248	2.	1249	2.
1250	2.	1251	2.	1252	2.	1253	2.	1254	2.
1255	2.	1256	2.	1257	1.	1258	1.	1259	1.
1260	1.	1261	1.	1262	1.	1263	1.	1264	1.
1265	1.	1266	1.	1267	1.	1268	1.	1269	1.
1270	1.	1271	1.	1272	1.	1273	1.	1274	1.
1275	1.	1276	1.	1277	1.	1278	1.	1279	1.
1280	1.	1281	1.	1282	1.	1283	1.	1284	1.
1285	1.	1286	1.	1287	1.	1288	1.	1289	1.
1290	1.	1291	1.	1292	1.	1293	1.	1294	1.
1295	1.	1296	1.	1297	1.	1298	1.	1299	1.
1300	1.	1310	1.	1320	1.	1330	1.	1340	1.
1350	1.	1360	1.	1370	1.	1380	1.	1390	1.
1400	1.	1420	1.	1440	1.	1460	1.	1500	1.

MODIFIED RATIONAL METHOD HYDROLOGY / PC 1.0-994

LINE A AND C

HYDROGRAPH AT 646 9A STORM DAY 4 REDUCTION FACTOR = 1.000

TIME	Q	TIME	Q	TIME	Q	TIME	Q	TIME	Q
0	0.	100	1.	200	1.	300	1.	400	1.
500	1.	600	1.	700	1.	800	1.	900	1.
1000	3.	1050	11.	1100	20.	1110	25.	1120	30.
1130	39.	1131	40.	1132	41.	1133	43.	1134	44.
1135	46.	1136	47.	1137	48.	1138	50.	1139	51.
1140	53.	1141	55.	1142	58.	1143	60.	1144	62.
1145	65.	1146	68.	1147	71.	1148	74.	1149	82.
1150	91.	1151	94.	1152	107.	1153	119.	1154	123.
1155	128.	1156	131.	1157	137.	1158	141.	1159	146.
1160	150.	1161	153.	1162	156.	1163	160.	1164	164.
1165	168.	1166	171.	1167	175.	1168	178.	1169	181.
1170	183.	1171	185.	1172	183.	1173	180.	1174	183.
1175	174.	1176	166.	1177	166.	1178	164.	1179	164.
1180	162.	1181	159.	1182	156.	1183	154.	1184	151.
1185	149.	1186	147.	1187	144.	1188	141.	1189	139.
1190	136.	1191	133.	1192	128.	1193	125.	1194	121.
1195	117.	1196	113.	1197	109.	1198	105.	1199	101.
1200	97.	1201	93.	1202	90.	1203	86.	1204	83.
1205	79.	1206	76.	1207	73.	1208	70.	1209	67.
1210	65.	1211	62.	1212	59.	1213	57.	1214	55.
1215	53.	1216	51.	1217	49.	1218	47.	1219	45.
1220	43.	1221	42.	1222	40.	1223	38.	1224	37.
1225	36.	1226	35.	1227	33.	1228	32.	1229	31.
1230	30.	1231	29.	1232	28.	1233	27.	1234	26.
1235	26.	1236	25.	1237	24.	1238	23.	1239	23.
1240	22.	1241	21.	1242	21.	1243	20.	1244	19.
1245	19.	1246	18.	1247	18.	1248	17.	1249	17.
1250	16.	1251	16.	1252	15.	1253	15.	1254	14.
1255	14.	1256	14.	1257	13.	1258	13.	1259	13.
1260	12.	1261	12.	1262	11.	1263	11.	1264	11.
1265	11.	1266	10.	1267	10.	1268	10.	1269	10.
1270	9.	1271	9.	1272	9.	1273	9.	1274	8.
1275	8.	1276	8.	1277	8.	1278	8.	1279	7.
1280	7.	1281	7.	1282	7.	1283	7.	1284	7.
1285	7.	1286	6.	1287	6.	1288	6.	1289	6.
1290	6.	1291	6.	1292	6.	1293	5.	1294	5.
1295	5.	1296	5.	1297	5.	1298	5.	1299	5.
1300	5.	1310	4.	1320	3.	1330	3.	1340	2.
1350	2.	1360	2.	1370	2.	1380	2.	1390	2.
1400	1.	1420	1.	1440	1.	1460	1.	1500	1.

EXA100HR.I

```
005  0646    1A EXISTING 100YR CONDITION
005  0646    4ABLINE A AND B
005  0646    9ACLINE A AND C
999
999
006  0646    1A 0300  4.1111B982 13000002                        G1
006  0646    2A 0300  26.618B982  9000005
006  0646    3B 0300  30.824B982   100002
006  0646    4AB0300        B982  6500002                    11
006  0646    5A 0300  15.517B982 19000002
006  0646    6A 0300  44.423B982   100002
006  0646    7C 0300  30.424B982 11000003
006  0646    8C 0300  29.824B982  9000004
006  0646    9AC03000       B982   400002                    11 2
```

ESTIMATED PEAK EX. 2YR Q

EX: 10YR VCRAT

VENTURA COUNTY FLOOD CONTROL DISTRICT
MODIFIED RATIONAL METHOD HYDROLOGY / PC 1.0-994

STORM DAY 4

EXISTING 10YR CONDITION

LOCATION		SUBAREA AREA	SUBAREA Q	TOTAL AREA	TOTAL Q	CONV TYPE	CONV LNGTH	CONV SLOPE	CONV SIZE	CONV Z	CONTROL Q	SOIL NAME	TC	RAIN ZONE	PCT IMPV
646	1A	4.	6.	4.	6.	2	1300.	0.00200	0.00	0.00	0.	30	13	K10	0.00
646	2A	27.	30.	31.	31.	2	900.	0.00500	0.00	0.00	0.	30	22	K10	0.00
646	3B	31.	29.	31.	29.	2	10.	0.00200	0.00	0.00	0.	30	29	K10	0.00

CONFLUENCE Q'S

646 4A TA 1169 QA 29. QAB 55. QB 27. 646 4B TB 1160 QB 29. QBA 51. QA 21.
646 4AB TAB 1166 QAB 56. QA 28. QB 28.

LOCATION		SUBAREA AREA	SUBAREA Q	TOTAL AREA	TOTAL Q	CONV TYPE	CONV LNGTH	CONV SLOPE	CONV SIZE	CONV Z	CONTROL Q	SOIL NAME	TC	RAIN ZONE	PCT IMPV
646	4AB	31.	29.	62.	56.	2	650.	0.00200	0.00	0.00	0.	30	0	K10	0.00
646	5A	15.	17.	77.	62.	2	1900.	0.00200	0.00	0.00	0.	30	21	K10	0.00
646	6A	44.	44.	121.	46.	2	10.	0.00200	0.00	0.00	0.	30	27	K10	0.00
646	7C	30.	28.	30.	28.	2	1100.	0.00300	0.00	0.00	0.	30	29	K10	0.00
646	8C	30.	28.	60.	47.	2	900.	0.00400	0.00	0.00	0.	30	29	K10	0.00

CONFLUENCE Q'S

646 9A TA 1174 QA 46. QAC 89. QC 43. 646 9C TC 1180 QC 46. QCA 76. QA 31.
646 9AC TAC 1176 QAC 90. QA 45. QC 45.

LOCATION		SUBAREA AREA	SUBAREA Q	TOTAL AREA	TOTAL Q	CONV TYPE	CONV LNGTH	CONV SLOPE	CONV SIZE	CONV Z	CONTROL Q	SOIL NAME	TC	RAIN ZONE	PCT IMPV
646	9AC	60.	46.	181.	90.	2	40.	0.00200	0.00	0.00	0.	30	0	K10	0.00

$$\text{Peak } Q_{10\text{-}Ex} = 90 \text{ cfs}$$

$$\text{Peak } Q_{2yr\text{-}Ex} = \left(\frac{Q_{10}}{0.5} \times 0.08\right)$$ per VCWPD Hydrologic Multipliers

$$\text{Peak } Q_{2yr} = 14 \text{ cfs}$$ (Existing Condition)

Nolan

VENTURA COUNTY PUBLIC WORKS AGENCY

HYDROLOGIC MULTIPLIERS
STORM DURATION, PRECIP. FREQ.
PEAK FLOW FREQ. DEV., UNDEV.

STORM DURATION

DURATION (HOURS)	1	3	6	9	12	18	24	36	48	72
MULTIPLIER	0.28	0.44	0.58	0.68	0.76	0.89	1.00	1.18	1.32	1.56

PRECIPITATION FREQUENCY

FREQUENCY OF OCCURRENCE (YEARS)	2	5	10	25	50	100
MULTIPLIER	0.43	0.61	0.73	0.88	1.00	1.11

PEAK FLOWS FROM DEVELOPED WATERSHEDS: $P_{FREQ} = Q_{FREQ}$

FREQUENCY OF OCCURRENCE (YEARS)	2	5	10	25	50	100
MULTIPLIER	0.16	0.45	0.68	0.83	1.00	1.20

PEAK FLOWS FROM UNDEVELOPED WATERSHEDS: Q_{FREQ}

FREQUENCY OF OCCURRENCE (YEARS)	2	5	10	25	50	100
MULTIPLIER	0.08	0.23	0.50	0.70	1.00	1.38

Proposed Hydrology Calculations

Time of Concentration
Ventura County Modified Rational Method

VENTURA COUNTY WATERSHED PROTECTION DISTRICT
TIME OF CONCENTRATION
TC Program Version: 1.0.2007.2
Project: 30-100646
Date: 12:00:00 AM
Engineer: SUHLES
Consultant: RBF CONSULTING

Watershed Name: Watershed

Sub-Area Name: A
Tc: 20.923 Minutes
DATA FOR SUB AREA 1

SUB AREA TIME OF CONCENTRATION: 20.923 min. = 21 min.

SUB AREA INPUT DATA

Sub Area Name: A
Total Area (ac): 45.36
Flood Zone: 2
Rainfall Zone: K
Storm Frequency (years): 100
Development Type: Residential
Soil Type: 3.00
Percent Impervious: 60
SUB AREA OUTPUT

Intensity (in/hr): 2.426
C Total: 0.866
Sum Q Segments (cfs): 95.28
Q Total (cfs): 95.28
Sum Percent Area (%): 100.0
Sum of Flow Path Travel Times (sec): 1,255.37
Time of Concentration (min): 20.923

DATA FOR FLOW PATH 1

Flow Path Name: 1
FLOW PATH TRAVEL TIME (min): 4.2135
Flow Type: Overland
Length (ft): 200
Top Elevation (ft): 53.2
Bottom Elevation (ft): 53
Contributing Area (acres): 1
Percent of Sub-Area (%): 2.2
Overland Type: Valley
Development Type: Residential
Map Slope: 0.0010
Effective Slope: 0.0010
Q for Flow Path (cfs): 2.10
Avg Velocity (ft/s): 0.79
Passed Scour Check: N/A

DATA FOR FLOW PATH 2

Flow Path Name: 2
FLOW PATH TRAVEL TIME (min): 0.6785
Flow Type: Natural Channel
Length (ft): 137
Top Elevation (ft): 53
Bottom Elevation (ft): 51
Contributing Area (acres): 0.79
Percent of Sub-Area (%): 1.7
Overland Type: Valley
Map Slope: 0.0146
Effective Slope: 0.0146
Q for Flow Path (cfs): 1.66
Q Top (cfs): 2.10
Q Bottom (cfs): 3.76
Velocity Top (ft/s): 2.10
Velocity Bottom (ft/s): 2.39
Avg Velocity (ft/s): 2.24
Wave Velocity (ft/s): 3.37

DATA FOR FLOW PATH 3

Flow Path Name: 3
FLOW PATH TRAVEL TIME (min): 5.5309
Flow Type: Street
Length (ft): 960
Top Elevation (ft): 51
Bottom Elevation (ft): 48
Contributing Area (acres): 11.41
Percent of Sub-Area (%): 25.2
Street Width (ft): 40
Curb Height (in): 6
Map Slope: 0.0031
Q for Flow Path (cfs): 23.97
Q Top (cfs): 3.76
Q Bottom (cfs): 27.73
Velocity Top (ft/s): 1.49
Velocity Bottom (ft/s): 2.37
Avg Velocity (ft/s): 1.93
Wave Velocity (ft/s): 2.89

DATA FOR FLOW PATH 4

Flow Path Name: 4
FLOW PATH TRAVEL TIME (min): 3.5105
Flow Type: Street
Length (ft): 960
Top Elevation (ft): 48
Bottom Elevation (ft): 43.5
Contributing Area (acres): 15.51
Percent of Sub-Area (%): 34.2
Street Width (ft): 40
Curb Height (in): 6
Map Slope: 0.0047
Q for Flow Path (cfs): 32.58
Q Top (cfs): 27.73
Q Bottom (cfs): 60.30
Velocity Top (ft/s): 2.77
Velocity Bottom (ft/s): 3.31
Avg Velocity (ft/s): 3.04
Wave Velocity (ft/s): 4.56

DATA FOR FLOW PATH 5

Flow Path Name: 5
FLOW PATH TRAVEL TIME (min): 4.9548
Flow Type: Street
Length (ft): 960
Top Elevation (ft): 43.5
Bottom Elevation (ft): 42.2
Contributing Area (acres): 12.86
Percent of Sub-Area (%): 28.4
Street Width (ft): 40
Curb Height (in): 6
Map Slope: 0.0014
Q for Flow Path (cfs): 27.01
Q Top (cfs): 60.30
Q Bottom (cfs): 87.32
Velocity Top (ft/s): 2.06
Velocity Bottom (ft/s): 2.25
Avg Velocity (ft/s): 2.15
Wave Velocity (ft/s): 3.23

DATA FOR FLOW PATH 6

Flow Path Name: 6
FLOW PATH TRAVEL TIME (min): 2.0346
Flow Type: Street
Length (ft): 500
Top Elevation (ft): 42.2
Bottom Elevation (ft): 41.1
Contributing Area (acres): 3.79
Percent of Sub-Area (%): 8.4

Street Width (ft): 40
Curb Height (in): 6
Map Slope: 0.0022
Q for Flow Path (cfs): 7.96
Q Top (cfs): 87.32
Q Bottom (cfs): 95.28
Velocity Top (ft/s): 2.70
Velocity Bottom (ft/s): 2.76
Avg Velocity (ft/s): 2.73
Wave Velocity (ft/s): 4.10

Project: 30-100646
Date: 12:00:00 AM
Engineer: SUHLES
Consultant: RBF CONSULTING

Sub-Area Name: B
Tc: 13.620 Minutes
DATA FOR SUB AREA 2

SUB AREA TIME OF CONCENTRATION: 13.620 min. = 14 min.

SUB AREA INPUT DATA

Sub Area Name: B
Total Area (ac): 68.04
Flood Zone: 2
Rainfall Zone: K
Storm Frequency (years): 100
Development Type: Undeveloped
Soil Type: 3.00
Percent Impervious: 60
SUB AREA OUTPUT

Intensity (in/hr): 2.987
C Total: 0.880
Sum Q Segments (cfs): 178.95
Q Total (cfs): 178.95
Sum Percent Area (%): 100.0
Sum of Flow Path Travel Times (sec): 817.19
Time of Concentration (min): 13.620

DATA FOR FLOW PATH 1

Flow Path Name: 1
FLOW PATH TRAVEL TIME (min): 4.1739
Flow Type: Overland
Length (ft): 200
Top Elevation (ft): 53
Bottom Elevation (ft): 51.5
Contributing Area (acres): 1.39
Percent of Sub-Area (%): 2.0
Overland Type: Valley
Development Type: Residential
Map Slope: 0.0075
Effective Slope: 0.0075
Q for Flow Path (cfs): 3.66
Avg Velocity (ft/s): 0.80
Passed Scour Check: N/A

DATA FOR FLOW PATH 2

Flow Path Name: 2
FLOW PATH TRAVEL TIME (min): 1.5121
Flow Type: Natural Channel
Length (ft): 300
Top Elevation (ft): 51.5
Bottom Elevation (ft): 49
Contributing Area (acres): 5.06
Percent of Sub-Area (%): 7.4
Overland Type: Valley
Map Slope: 0.0083
Effective Slope: 0.0083
Q for Flow Path (cfs): 13.31

Q Top (cfs): 3.66
Q Bottom (cfs): 16.96
Velocity Top (ft/s): 1.79
Velocity Bottom (ft/s): 2.62
Avg Velocity (ft/s): 2.20
Wave Velocity (ft/s): 3.31

DATA FOR FLOW PATH 3

Flow Path Name: 3
FLOW PATH TRAVEL TIME (min): 4.0026
Flow Type: Street
Length (ft): 640
Top Elevation (ft): 49
Bottom Elevation (ft): 48
Contributing Area (acres): 7.29
Percent of Sub-Area (%): 10.7
Street Width (ft): 40
Curb Height (in): 6
Map Slope: 0.0016
Q for Flow Path (cfs): 19.17
Q Top (cfs): 16.96
Q Bottom (cfs): 36.14
Velocity Top (ft/s): 1.62
Velocity Bottom (ft/s): 1.93
Avg Velocity (ft/s): 1.78
Wave Velocity (ft/s): 2.66

DATA FOR FLOW PATH 4

Flow Path Name: 4
FLOW PATH TRAVEL TIME (min): 3.3269
Flow Type: Street
Length (ft): 900
Top Elevation (ft): 48
Bottom Elevation (ft): 44.5
Contributing Area (acres): 15.92
Percent of Sub-Area (%): 23.4
Street Width (ft): 40
Curb Height (in): 6
Map Slope: 0.0039
Q for Flow Path (cfs): 41.87
Q Top (cfs): 36.14
Q Bottom (cfs): 78.01
Velocity Top (ft/s): 2.74
Velocity Bottom (ft/s): 3.27
Avg Velocity (ft/s): 3.01
Wave Velocity (ft/s): 4.51

DATA FOR FLOW PATH 5

Flow Path Name: 5
FLOW PATH TRAVEL TIME (min): 0.3201
Flow Type: Street
Length (ft): 200
Top Elevation (ft): 44.5
Bottom Elevation (ft): 40
Contributing Area (acres): 28.3
Percent of Sub-Area (%): 41.6
Street Width (ft): 40
Curb Height (in): 6
Map Slope: 0.0225
Q for Flow Path (cfs): 74.43
Q Top (cfs): 78.01
Q Bottom (cfs): 152.44
Velocity Top (ft/s): 6.40
Velocity Bottom (ft/s): 7.48
Avg Velocity (ft/s): 6.94
Wave Velocity (ft/s): 10.41

DATA FOR FLOW PATH 6

Flow Path Name: 6
FLOW PATH TRAVEL TIME (min): 0.2841

Flow Type: Natural Channel
Length (ft): 100
Top Elevation (ft): 40
Bottom Elevation (ft): 39.5
Contributing Area (acres): 10.08
Percent of Sub-Area (%): 14.8
Overland Type: Valley
Map Slope: 0.0050
Effective Slope: 0.0050
Q for Flow Path (cfs): 26.51
Q Top (cfs): 152.44
Q Bottom (cfs): 178.95
Velocity Top (ft/s): 3.81
Velocity Bottom (ft/s): 4.01
Avg Velocity (ft/s): 3.91
Wave Velocity (ft/s): 5.87

Proposed Extended Detention Basin Analysis

Design Calculations
Storm Water Quality Design Volume Calculation
Hydraflow Hydrographs Output

Hydrograph Summary Report - 100 YEAR DETENTION REQUIREMENTS

Hyd. No.	Hydrograph type (origin)	Peak flow (cfs)	Time interval (min)	Time to peak (min)	Volume (cuft)	Inflow hyd(s)	Maximum elevation (ft)	Maximum storage (cuft)	Hydrograph description
1	Manual	5.100	1	1153	36,047	----	------	------	Unit Hydrograph
2	Manual	95.28	1	1153	673,456	----	------	------	Area A
3	Diversion1	22.55	1	1153	645,067	2	------	------	Q10 EX Outflow
4	Diversion2	72.73	1	1153	28,389	2	------	------	Detention Required
5	Manual	178.95	1	1153	1,264,808	----	------	------	Area B
6	Diversion1	33.83	1	1128	1,197,909	5	------	------	Q10 EX Outflow
7	Diversion2	145.12	1	1153	66,900	5	------	------	Detention Required

*

Design Procedure Form for T-3: Extended Detention Basin

Designer: JGK

Company: RBF Consulting

Date: 22-Oct-07

Project: Teal Club

Location: City of Oxnard (Drainage Area A)

1. Determine Basin Storage Volume			
a. Percent Imperviousness of Tributary Area	I_a =	65	%
b. Effective Imperviousness (Determine using Figure 3-4)	I_{wq} =	60	%
c. Required Unit Basin Storage Volume (V_u) Use Figure 5-1 with 40 hr drawdown and I_{wq}	V_u =	0.67	in.
d. Watershed Area Tributary to EDB	Area =	60.9	acres
e. Calculate SQDV SQDV = (V_u / 12) x Area	SQDV =	3.40025	acre-ft
f. Calculate Design Volume Design Volume = SQDV x 1.2	Design Volume =	4.0803	acre-ft
2. Outlet Works			
a. Outlet Type (check one)	Single Orifice		
	Multi-orifice Plate		
	Perforated Pipe	X	
	Other		
b. Depth of water above bottom oririce	Depth =	3	feet
c. Single Orifice Outlet			
1) Total Area	A =		square inches
2) Diameter or W x L	D =		inches
d. Multiple Orifice Outlet			
1) Area per row of perforations	A =	1.97	
2) Perforation Diameter (2 inches max.)	D =	3/4	
3) No. of Perforations (columns) per Row	Perforations =	4.5	
4) No. of Rows (4 inch spacing)	Rows =	5.5	
5) Total Orifice Area (Area per row) x (Number of Rows)	Area =	10.835	

Design Procedure Form for T-3: Extended Detention Basin (Page 2 of 2)

Project: Teal Club

3. Trash Rack or Gravel Pack (check one)	Trash Rack ____ Gravel Pack X		
4. Basin Length-Width Ration (2:1 minimum)	Ratio =		L/W
5. Two-Stage Design			
a. Upper Stage			
1) Depth (2 feet minimum)	Depth =		feet
2) Width (30 feet minimum)	Width =		feet
3) Bottom Slope (2% to low flow channel)	Slope =		%
b. Bottom Stage			
1) Depth (1.5 to 3 feet deeper than Upper)	Depth =		feet
2) Storage Volume (5-15% of SQDV min.)	Volume =		acre-ft
6. Forebay Design			
a. Forebay Volume (5-10% of SQDV min.)	Volume =		acre-ft
b. Outlet pipe drainage time (~45 minutes)	Drainage Time		minutes
7. Low Flow Channel			
a. Depth (9 inches min.)	Depth =		feet
b. Flow Capacity (2 x outlet for Forebay)	Flow Capacity =		cfs
8. Vegetation	Native Grasses	X	
	Irrigated Turf		
	Other		
9. Embankment			
a. Interior Slope (4:1 max.)	Interior Slope =	4:01	H/V
b. Exterior Slope (3:1 max.)	Exterior Slope =		H/V
10. Access			
a. Slope (10% max.)	Slope =	10	%
b. Width (16 feet min.)	Width =	16	feet

Notes: _____

Design Procedure Form for T-3: Extended Detention Basin

Designer: JGK

Company: RBF Consulting

Date: 22-Oct-07

Project: Teal Club

Location: City of Oxnard (Drainage Area B)

1. Determine Basin Storage Volume			
a. Percent Imperviousness of Tributary Area	I_a =	65	%
b. Effective Imperviousness (Determine using Figure 3-4)	I_{wq} =	60	%
c. Required Unit Basin Storage Volume (V_u) Use Figure 5-1 with 40 hr drawdown and I_{wq}	V_u =	0.67	in.
d. Watershed Area Tributary to EDB	Area =	68	acres
e. Calculate SQDV SQDV = (V_u / 12) x Area	SQDV =	3.796666667	acre-ft
f. Calculate Design Volume Design Volume = SQDV x 1.2	Design Volume =	4.556	acre-ft
2. Outlet Works			
a. Outlet Type (check one)	Single Orifice		
	Multi-orifice Plate		
	Perforated Pipe	X	
	Other		
b. Depth of water above bottom oririce	Depth =		feet
c. Single Orifice Outlet			
1) Total Area	A =		square inches
2) Diameter or W x L	D =		inches
d. Multiple Orifice Outlet			
1) Area per row of perforations	A =	2.2	
2) Perforation Diameter (2 inches max.)	D =	3/4	
3) No. of Perforations (columns) per Row	Perforations =	5	
4) No. of Rows (4 inch spacing)	Rows =	7	
5) Total Orifice Area (Area per row) x (Number of Rows)	Area =	15.4	

Design Procedure Form for T-3: Extended Detention Basin (Page 2 of 2)

Project: Teal Club

3. Trash Rack or Gravel Pack (check one)	Trash Rack ____ Gravel Pack X		
4. Basin Length-Width Ration (2:1 minimum)	Ratio =	2:01	L/W
5. Two-Stage Design			
a. Upper Stage			
1) Depth (2 feet minimum)	Depth =		feet
2) Width (30 feet minimum)	Width =		feet
3) Bottom Slope (2% to low flow channel)	Slope =		%
b. Bottom Stage			
1) Depth (1.5 to 3 feet deeper than Upper)	Depth =		feet
2) Storage Volume (5-15% of SQDV min.)	Volume =		acre-ft
6. Forebay Design			
a. Forebay Volume (5-10% of SQDV min.)	Volume =		acre-ft
b. Outlet pipe drainage time (~45 minutes)	Drainage Time		minutes
7. Low Flow Channel			
a. Depth (9 inches min.)	Depth =		feet
b. Flow Capacity (2 x outlet for Forebay)	Flow Capacity =		cfs
8. Vegetation	Native Grasses	X	
	Irrigated Turf		
	Other		
9. Embankment			
a. Interior Slope (4:1 max.)	Interior Slope =	4:01	H/V
b. Exterior Slope (3:1 max.)	Exterior Slope =		H/V
10. Access			
a. Slope (10% max.)	Slope =	10	%
b. Width (16 feet min.)	Width =	16	feet

Notes: _____

Calculation of Stormwater Quality Design Flow and Volume

Introduction

The primary control strategy for all of the treatment control measures specified in this Section is to treat the Stormwater Quality Design Flow (SQDF) or Stormwater Quality Design Volume (SQDV) of the storm water runoff. The following paragraphs present calculation procedures and design criteria necessary to determine the SQDF and SQDV.

The treatment control measure equations specified in this Section are listed in Table 5-2 along with the basis of design, SQDF or SQDV, to be used for the listed control measure.

Table 5-2. Sizing Criteria for Treatment Control Measures

Treatment Control Measure	Design Basis
T-1: Grass Strip Filter	SQDF
T-2: Grass Swale Filter	SQDF
T-3: Dry Detention Basin	SQDV
T-4: Wet Detention Basin	SQDV
T-5: Constructed Wetland	SQDV
T-6: Detention Basin/Sand Filter	SQDV
T-7: Porous Pavement Detention	SQDV
T-8: Porous Landscape Detention	SQDV
T-9: Infiltration Basin	SQDV
T-10: Infiltration Trench	SQDV
T-11: Media Filter	SQDV
T-12: Proprietary Control Measures	SQDV or SQDF

Contributing Impervious Area Determination

The SQDF and SQDV are calculated by determining runoff from the impervious and pervious areas of a site that are connected to the treatment control measure. Impervious areas include sidewalks, roadways, parking areas, staging areas, storage areas, slabs, roofs, and other non-vegetated areas, including compacted soil areas. Off-site areas that could run-on to a site and contribute drainage to the treatment control measure should be included in the impervious area determination. The effective imperviousness of a site can be reduced through implementation of general site design control measures (e.g. G-5.1 and G-5.2) to reduce flow from impervious areas, as described in Section 3. Procedures for calculating effective imperviousness are presented in Section 3, Fact Sheet G-5.

Stormwater Quality Design Flow (SQDF) Calculation

Hydrologic calculations for design of flow-based stormwater treatment control measures in Ventura County shall be in accordance with latest edition of the *Hydrology Manual* produced by Ventura County Public Works Agency, Flood Control Department, together with the procedure set forth herein. The designer is specifically reminded to regard minimum subarea sizes required in the *Hydrology Manual* (p. II-3). Where jurisdictions within Ventura County have approved alternative hydrologic calculation methods, the alternative methods may be utilized if they have been approved by the jurisdiction for use in design of flow-based stormwater quality BMPs. This procedure complies with Regional Board Order No. 00-108, NPDES Permit No. CAS004002, Attachment A – Ventura Countywide Stormwater Quality Urban Impact Mitigation Plan, issued July 27, 2000.

The Stormwater Quality Design Flow (SQDF) is defined to be equal to 10 percent of the peak rate of runoff flow from the 50-year storm as determined using the procedures set forth in the *Hydrology Manual.*

Calculation Procedure

1. The Stormwater Quality Design Flow (SQDF) in Ventura County is defined as $Q_{P, SQDF}$.
2. Calculate the peak rate of flow from the 50-year storm ($Q_{P, 50\ yr.}$) using the procedures set forth in the *Hydrology Manual* or as directed by the local agency Drainage Master Plan.
3. Convert $Q_{P, 50yr}$ (Step 2) to $Q_{P, SQDF}$ (Step 1).

$$Q_{P, SQDF} = 0.1 \times Q_{P, 50yr}$$

Example Stormwater Quality Design Flow Calculation

The steps below illustrate calculation of SQDF:

Step 1: SQDF = $Q_{P, SQDF}$

Step 2: Calculate the peak rate of flow from a 50-year storm.

$Q_{p, 50\ yr.}$ = 10 cfs from the *Hydrology Manual*

Step 3: Convert $Q_{p,50\ yr}$ (Step 2) to $Q_{p, SQDF}$ (Step 1)

$Q_{P, SQDF} = 0.1 \times 10$ cfs

$Q_{P, SQDF} = 1.0$ cfs

Stormwater Quality Design Volume (SQDV) Calculation

Hydrologic calculations for design of volume-based stormwater treatment controls in Ventura County shall be in accordance with the procedures set forth herein. This procedure complies with Regional Board Order No. 00-108, NPDES Permit No. CAS004002, Attachment A – Ventura Countywide Stormwater Quality Urban Impact Mitigation Plan, issued July 27, 2000.

The Stormwater Quality Design Volume (SQDV) is defined as the volume necessary to capture and treat 80 percent or more of the average annual runoff volume from the site at the design drawdown period specified in the Fact Sheet for the proposed treatment control measure.

Calculation Procedure

1. Review the area draining to the proposed treatment control measure. Determine the effective imperviousness (I_{WQ}) of the drainage area using the procedure presented in Section 3, Fact Sheet G-5.
2. Figure 5-1 provides a direct reading of Unit Basin Storage Volumes required for 80% annual capture of runoff for values of "I_{WQ}" determined in Step 1. Enter the horizontal axis of Figure 5-1 with the "I_{WQ}" value from Step 1. Move vertically up Figure 5-1 until the appropriate drawdown period line is intercepted. (The design drawdown period specified in the respective Fact Sheet for the proposed treatment control measure.) Move horizontally across Figure 5-1from this point until the vertical axis is intercepted. Read the Unit Basin Storage Volume along the vertical axis.

   Figure 5-1 is based on Precipitation Gage 168, Oxnard Airport. This gage has a data record of approximately 40 years of hourly readings and is maintained by Ventura County Flood Control District. Figure 5-1 is for use only in the permit area specified in Regional Board Order No. 00-108, NPDES Permit No. CAS004002.
3. The SQDV for the proposed treatment control measure is then calculated by multiplying the Unit Basin Storage Volume by the contributing drainage area. Due to the mixed units that result (e.g., acre-inches, acre-feet) it is recommended that the resulting volume be converted to cubic feet for use during design.

Example Stormwater Quality Design Volume Calculation

1. Determine the drainage area contributing to control measure, A_t. Example: 10 acres.
2. Determine the area of impervious surfaces in the drainage area, A_i. Example: 6.4 acres.
3. Calculate the percentage of impervious, $I_A = (A_i / A_t)*100$

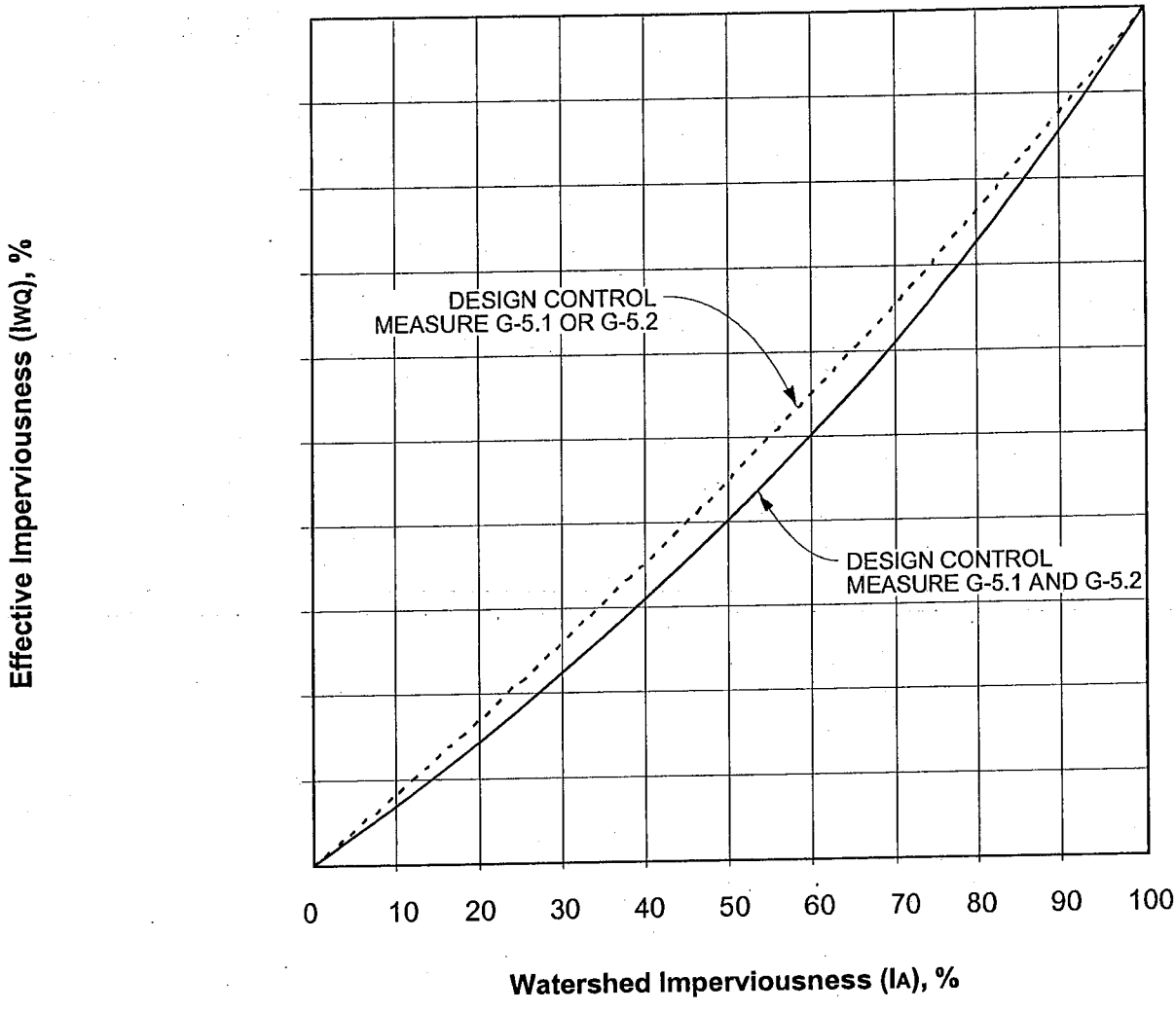
   Example: Percent Imperviousness = $(A_i / A_t)*100$ = (6.4 acres/10 acres)*100 = 64%
4. Determine Effective Imperviousness using Figure 3-4.

   Example: G-5.1 employed → I_{WQ} = 60%
5. Determine design drawdown period for proposed control measure.

   Example: T-3:Extended Detention Basin → Drawdown period = 40 hours
6. Determine the Unit Basin Storage Volume for 80% Annual Capture, V_u using Figure 5-1.

   Example: for $I_{WQ}/100 = 0.60$ and drawdown = 40 hrs, V_u = 0.64 in.
7. Calculate the volume of the basin, V_b, where $V_b = V_u * A_t$.

   Example: V_b = (0.64 in)(10 ac)(ft/12 in(43,560 ft^2 / ac) = 23,232 ft^3.
8. Solution: Size the proposed control measure for 23,232 ft^3 and 40-hour drawdown.



G-5.1: TURF BUFFER
G-5.2: GRASS-LINED CHANNEL

ADAPTED FROM URBAN STORM DRAIN CRITERIA MANUAL VOL. 3 - BEST MANAGEMENT PRACTICES, URBAN DRAINAGE AND FLOOD CONTROL DISTRICT, 11/99

Figure 3-4. DETERMINATION OF EFFECTIVE IMPERVIOUSNESS

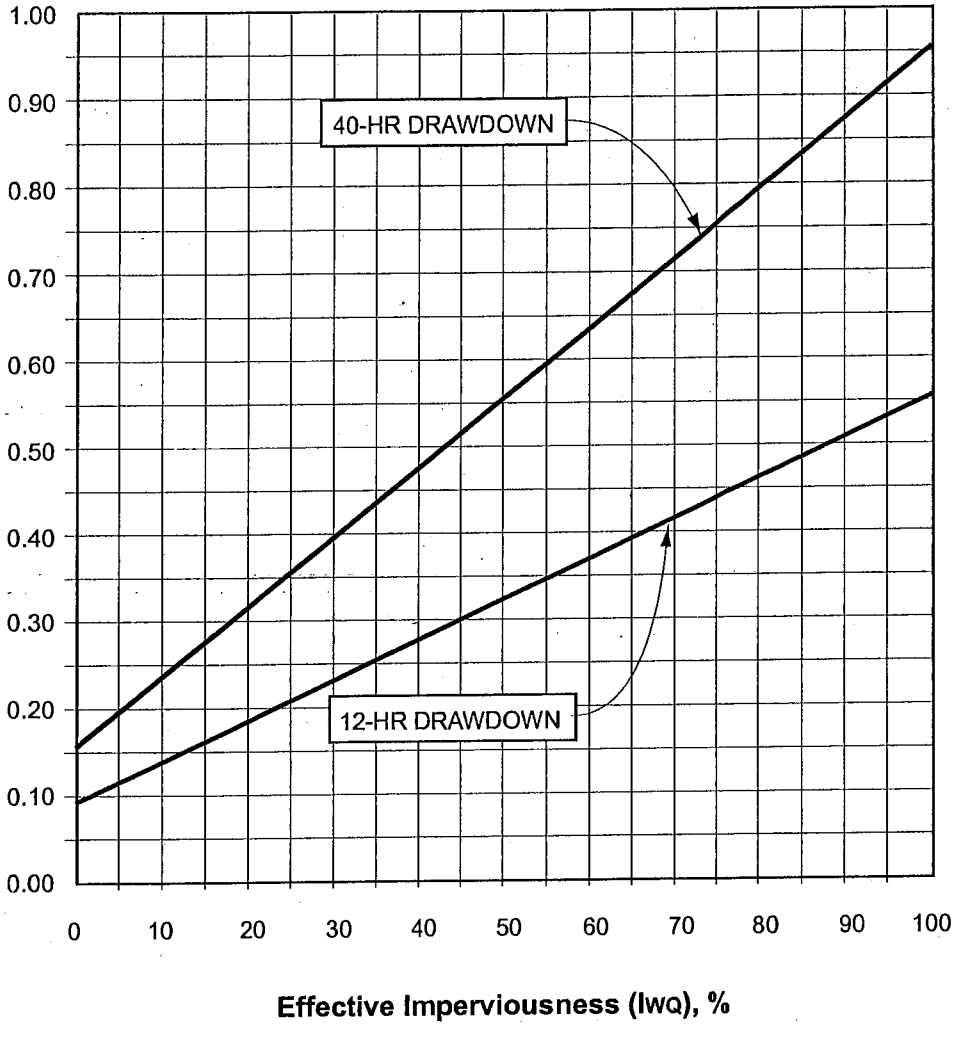


Figure 5-1. Unit Basin Storage Volume vs. Effective Imperviousness

Control Peak Stormwater Runoff Discharge Rates

Purpose

Unless controlled, peak stormwater runoff rates from developed areas are typically higher than those from previously undeveloped areas. Higher peak flows can change stream morphology and increase downstream erosion that can damage stream habitat and impact aesthetic value. In addition, higher flows convey larger pollutant loads to receiving waters. Control of peak stormwater discharge rates is thus required to protect stream habitat and aesthetic value by maintaining non-erosive hydraulic conditions in unlined receiving streams during stormwater runoff events.

Design Criteria

SQUIMP category projects, excluding single family hillside residences, that directly discharge to unlined receiving streams shall implement the following interim criteria:

1. 2-year post development discharge rates shall not exceed the predeveloped discharge rates for the 2-year frequency storm event.
2. Peak flows shall be determined using the procedures set forth in the latest edition of the *Hydrology Manual* and Direct Runoff curves produced by Ventura County Public Works Agency, Flood Control Department. The designer is specifically reminded to regard minimum subarea sizes required in the *Hydrology Manual*. Where jurisdictions within Ventura County have approved alternative hydrologic calculation methods, the alternative methods may be used if they have been approved by the jurisdiction for use in design of flow-based stormwater controls.

The Ventura County Public Works Agency, Flood Control Department is currently developing a modeling procedure to establish peak flow design criteria to avoid erosive conditions. A study in the upper reaches of the Arroyo Simi (Simi Valley) is currently underway to examine the relationship between runoff discharge rates and erosion. The results of the study will be used to revise/finalize the interim peak flow criteria presented in this manual upon approval of the co-permittee cities.

Description

Extended detention basins (EDB) are permanent basins formed by excavation and/or construction of embankments to temporarily detain the Stormwater Quality Design Volume (SQDV) of stormwater runoff to allow sedimentation of particulates to occur before the runoff is discharged. Extended detention basins are typically dry between storms, although a shallow pool, 1 to 3 feet deep, can be included in the design for aesthetic purposes and to promote biological uptake and conversion of pollutants. A bottom outlet provides controlled slow release of the detained runoff over a specified time period (40 hours for SQDV). The basic elements of an extended detention basin are shown in Figure 5-4. This configuration is most appropriate for large sites.

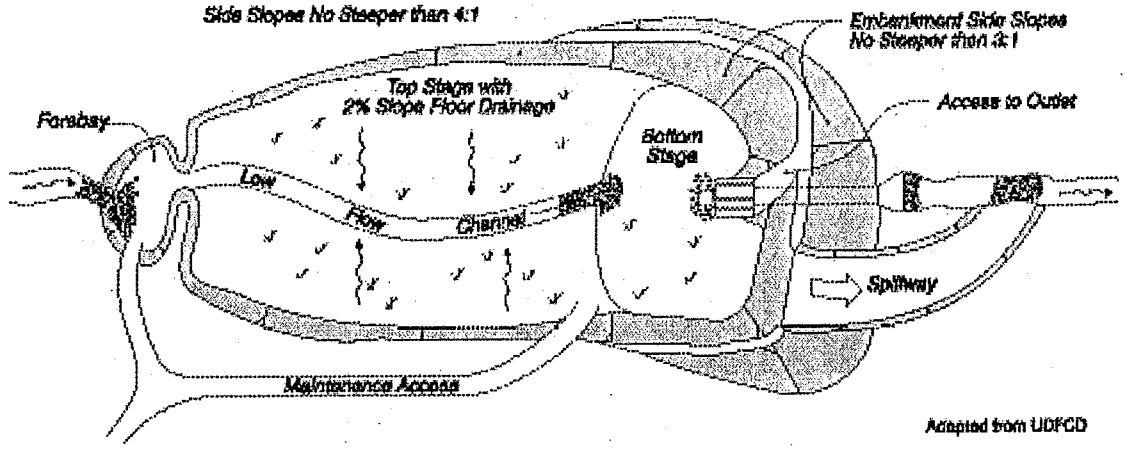
Surface basins are typical, but underground vaults may be appropriate in a small commercial development. Where irrigation water is available, basins should be vegetated to protect the basin slopes and bottom from erosion. To minimize erosion from inlet flow, basins are to be designed with an inlet energy dissipator and an inlet forebay section divided from the main basin by a secondary berm. The bottom of the basin is sloped toward the outlet end at a grade of approximately two percent. A low flow channel is provided to convey incidental flows directly to the outlet end of the basin.

EDBs are sized to detain and release the SQDV. Storm volumes greater than the SQDV are passed through the basin by means of a secondary outlet or spillway. Outlets are designed to include erosion protection.

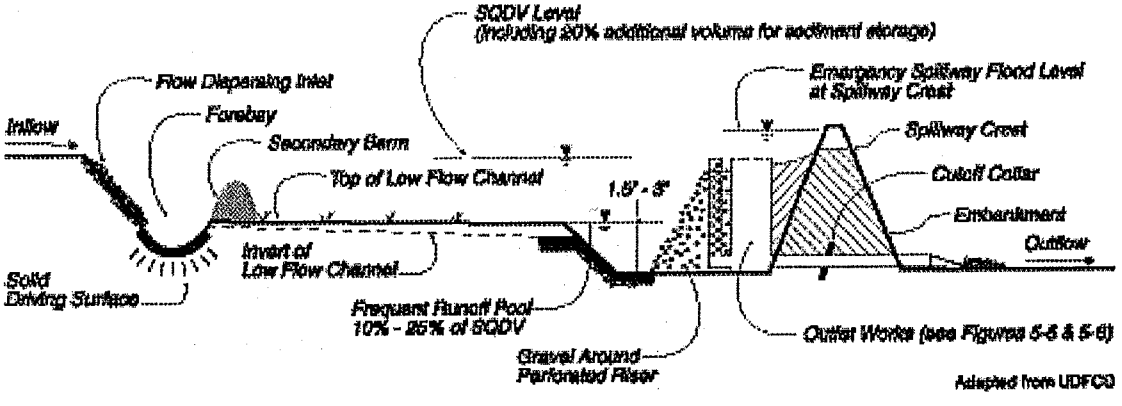
General Application

An EDB serves to reduce peak stormwater runoff rates, as well as provide treatment of stormwater runoff. If the basins are constructed early in the development cycle, they can also serve as sediment traps during construction within the tributary area. However, accumulated sediment must be removed after construction activities are complete and before the basin is placed into final long-term use as an EDB. Basins may be designed as dual-use facilities to provide recreational use during the dry season, and can be designed into flood control basins or sometimes retrofitted into existing flood control basins. EDBs that are intended to serve as a flood control basin, as well as a stormwater treatment control measure, must also be designed in accordance with applicable flood control design standards.

EDBs can serve essentially any size tributary area from an individual commercial development to a large residential or regional area, but are typically used for tributary areas greater than 10 acres. They work well in conjunction with other control measures, such as onsite source controls and downstream infiltration basins.



Plan View



Section View

Figure 5-4. Extended Detention Basin Conceptual Layout

Advantages/Disadvantages

General

EDBs may be designed to provide other benefits such as recreation, wildlife habitat, and open space. Safety issues must be address through proper design.

Site Suitability

Space requirements for EDBs are significant. Land requirements for EDBs typically range from approximately 0.5 to 2.0 percent of the of the tributary development area. Groundwater levels must be considered during site evaluation and design. Vector and vegetation control problems can develop when the seasonal high ground water level is above the basin bottom elevation.

Pollutant Removal

Relative pollutant removal effectiveness of an EDB is presented in Table 5-1. Removal effectiveness of EDBs for sediment and particulate forms of metals, nutrients and other pollutants is considered high to moderate. Removal effectiveness for dissolved pollutants is considered low. EDBs may be used upstream of control measures that are more effective at removing soluble pollutants, such as infiltration basins, filters or wetlands.

Design Criteria and Procedure

Principal design criteria for EDBs are listed in Table 5-5.

Table 5-5. Extended Detention Basin Design Criteria

Design Parameter	Unit	Design Criteria
Drawdown time for SQDV / 50% SQDV	hrs	40 / 12 (minimum)
SQDV	acre-ft	80% annual capture. Use Figure 5-1 @ 40-h drawdown
Basin design volume	acre-ft	1.2 x SQDV (privide 20% sediment storage volume)
Inlet/outlet erosion control	–	Energy dissipator to reduce inlet/outlet velocity
Forebay volume/ drain time	%/min.	5 to 15 % of SQDV / Drain time < 45 minutes
Low-flow channel depth/ flow capacity	in/–	9 / 2 x forebay outlet rate
Bottom slope of upper stage	%	2.0
Length to width ratio (minimum)	–	2:1 (larger preferred)
Upper stage depth/width (minimum)	ft	2.0/30
Bottom stage volume	%	10 to 25 % of SQDV
Bottom stage depth	ft	1.5 to 3 ft deeper than top stage
Freeboard (minimum)	ft	1.0
Embankment side slope (H:V)	–	≥ 4:1 inside/ ≥3:1 outside (without retaining walls)
Maintenance access ramp slope (H:V)	hrs	10:1 or flatter
Maintenance access ramp width	ft	16.0 – approach paved with asphalt concrete

Design procedure and application of design criteria are outlined in the following steps:

a) Basin Storage Volume

Provide a storage volume equal to 120 percent of the SQDV, based on a 40-hr drawdown time, above the lowest outlet (i.e. perforation or orifice) in the basin. The additional 20 percent provides an allowance for sediment accumulation.

a. Determine the percent imperviousness of the tributary area (I_a).

b. Determine effective imperviousness (I_{wq}) by adjusting for site design source controls using Figure 3-4, as appropriate.

c. Determine required unit basin storage volume (V_u) using Figure 5-1 with 40-hr drawdown and I_{wq} value from Step 1.b.

d. Calculate the SQDV in acre-ft as follows:

$$SQDV = (V_u / 12) \times Area$$

where

Area = Watershed area tributary to EDB in acre-ft

e. Calculate Design Volume in acre-ft as follows:

$$Design\ Volume = SQDV \times 1.2$$

where

1.2 factor = Multiplier to provide for sediment accumulation

2. Outlet Works

The Outlet Works are to be designed to release the SQDV (i.e. not Design Volume) over a 40-hour period, with no more than 50 percent released in 12 hours. Refer to Figures 5-5 and 5-6 for schematics pertaining to structure geometry; grates, trash racks, and screens; outlet type: orifice plate or perforated riser pipe.

a. For perforated pipe outlets or vertical plates with multiple orifices (see Figure 5-5), use the following equation to determine required area per row of perforations, based on the SQDV(ft^2) and depth of water above the centerline of the bottom perforation D_{BS} (ft).

$$Area/row\ (in^2) = SQDV/K_{40}$$

where

$$K_{40} = 0.013D_{BS}^2 + 0.22D_{BS} - 0.10$$

Select appropriate perforation diameter and number of perforations per row (i.e. columns) with the objective of minimizing the number of columns and using a maximum perforation diameter of 2 inches. Rows are spaced at 4 inches on center from the bottom perforation. Thus, there will be 3 rows for each foot of depth plus the top row. The

number of rows (nr) may be determined as follows:

$$nr = 1 + (D_{BS} \times 3)$$

Calculate total outlet area by multiplying the area per row by number of rows.

$$\text{Total orifice area} = \text{area/row} \times nr$$

b. For single orifice outlet control or single row of orifices at the basin bottom surface elevation (see Figures 5-6), use the following equation based on the SQDV (ft^3) and depth of water above orifice centerline D_{BS} (ft) to determine total orifice area (in^2):

$$\text{Total orifice area} = (SQDV) \div [(60.19)(D_{BS}^{0.5})(T)]$$

where

T = drawdown period (hrs)= 40 hrs

3. Trash Rack/Gravel Pack

A trash rack or gravel pack around perforated risers shall be provided to protect outlet orifices from clogging. Trash racks are better suited for use with perforated vertical plates for outlet control and allow easier access to outlet orifices for purposes of inspection and cleaning. Trash rack shall be sized to prevent clogging of the primary water quality outlet without restricting with the hydraulic capacity of the outlet control orifices.

4. Basin Shape

Whenever possible, shape the basin with a gradual expansion from the inlet toward the middle and a gradual contraction from middle toward the outlet. The length to width ratio should be a minimum of 2:1. Internal baffling with berms may be necessary to achieve this ratio.

5. Two-Stage Design

A two-stage design with a pool that fills often with frequently occurring runoff minimizes standing water and sediment deposition in the remainder of the basin.

a. Upper Stage: The upper stage should be a minimum of 2 feet deep with the bottom sloped at 2 percent toward the low flow channel. Minimum width of the upper stage should be 30 ft.

b. Bottom Stage: The active storage basin of the bottom stage should be 1.5 to 3 feet deeper than the top stage and store 10 to 25 pecent of the SQDV. A mico-pool below the active storage volume of the bottom stage, if provided, should be one-half the depth of the top stage or 2 feet, which ever is greater.

6. Forebay Design

The forebay provides a location for sedimentation of larger particles that has a solid bottom surface to facilitate mechanical removal of accumulated sediment. The forebay volume should be 5 to 10 percent of the SQDV. A berm should separate the forebay from the upper stage of the basin. The outlet pipe from

	be 5 to 10 percent of the SQDV. A berm should separate the forebay from the upper stage of the basin. The outlet pipe from the forebay to the lowflow channel should be sized to drain the forebay volume in 45 minutes. The outlet pipe entrance should be offset from the forebay inlet to prevent short circuiting.
7. Low-flow Channel	The low flow channel conveys flow from the forebay to the bottom stage. Erosion protection should be provided where the low-flow channel enters the bottom stage. Lining of the low flow channel with concrete is recommended. The depth of the channel should be at least 9 inches. The flow capacity of the channel should be twice the release capacity of the forebay outlet.
8. Inlet/Outlet Design	Basin inlet and outlet points should be provided with an energy dissipation structure and/or erosion protection.
9. Vegetation	Bottom vegetation provides erosion protection and sediment entrapment. Basin bottoms, berms, and side slopes may be planted with native grasses or with irrigated turf.
10. Embankment	Design embankments to conform to requirements State of California Division of Safety of Dams, if the basin dimensions cause it to fall under that agency's jurisdiction. Interior slopes should be no steeper than 4:1 and exterior slopes no steeper than 3:1. Flatter slopes are preferable.
11. Access	All-weather access to the bottom, forebay, and outlet works shall be provided for maintenance vehicles. Maximum grades of access ramps should be 10 percent and minimum width should be 16 feet. Ramps should be paved with concrete.
12. Bypass	Provide for bypass or overflow of runoff volumes in excess of the SQDV. Spillway and overflow structures should be designed in accordance with applicable standards of the Ventura County Flood Control District.
13. Geotextile Fabric	Non-woven geotextile fabric used in conjunction with gravel packs around perforated risers shall conform the specifications listed in Table 5-6.

Table 5-6. Non-woven Geotextile Fabric Specifications

Property	Test Reference	Minimum Specification
Grab Strength	ASTM D4632	90 lbs
Elongation at peak load	ASTM D4632	50 %
Puncture Strength	ASTM D3787	45 lbs
Permitivity	ASTM D4491	0.7 sec^{-1}
Burst Strength	ASTM D3786	180 psi
Toughness	% Elongation x Grab Strength	5,500 lbs
Ultraviolet Resistance (Percent strength retained at 500 Weatherometer hours)	ASTM D4355	70%

Adapted from SSPWC, 1997.

Design Example

Design forms to document the design procedure are provided in Appendix G. A completed design form follows as a design example.

City of Oxnard Master Plan of Drainage

October 2003

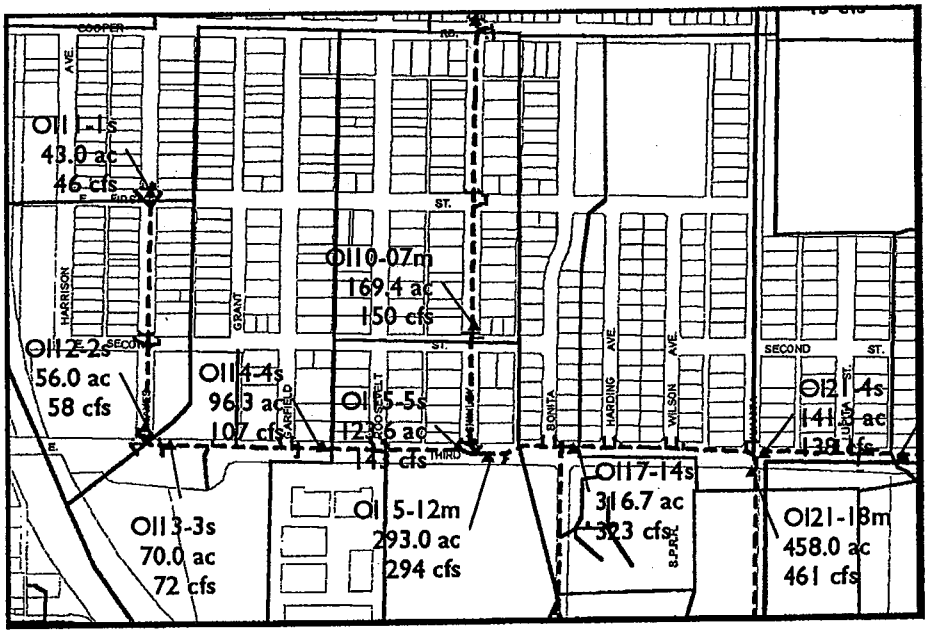
PRINTED AUG, 2004

City of Oxnard

"The City That Cares"

MASTER PLAN OF DRAINAGE

OCTOBER 2003



Hawks & Associates
2259 Portola Rd. Suite B
Ventura, CA 93003

Appendix H

Noise Measurements and Modeling Results

Noise Measurement 1

Data Logger 2		
Duration (seconds)		3
Weighting	A	
Response	SLOW	
Range	30-90	
L05		78.8
L10		76.8
L50		61.8
L90		48
L95		46.9
Lmax		86.3
Time		8/27/2019 7:20
SEL		99.5
Leq		72.1

Leq (Manual) **72.13096**

No.s	Date Time	dB	Sound Energy
1	8/27/2019 7:20	62.6	5459102.576
2	8/27/2019 7:20	69.7	27997629.02
3	8/27/2019 7:20	81.4	414115279.4
4	8/27/2019 7:20	71.1	38647486.55
5	8/27/2019 7:20	63.4	6563284.872
6	8/27/2019 7:20	75.9	116713543.5
7	8/27/2019 7:20	66	11943215.12
8	8/27/2019 7:20	70.5	33660553.63
9	8/27/2019 7:20	77.8	180767875.8
10	8/27/2019 7:20	76	119432151.2
11	8/27/2019 7:20	66.8	14358902.77
12	8/27/2019 7:20	62.3	5094730.957
13	8/27/2019 7:20	56.4	1309547.497
14	8/27/2019 7:20	53.8	719649.8757
15	8/27/2019 7:20	60.1	3069878.977
16	8/27/2019 7:20	73.5	67161634.16
17	8/27/2019 7:20	66.6	13712645.69
18	8/27/2019 7:20	73.4	65632848.72
19	8/27/2019 7:20	65.3	10165324.68
20	8/27/2019 7:20	80.8	360679330.4
21	8/27/2019 7:21	72.3	50947309.57
22	8/27/2019 7:21	74.5	84551487.94
23	8/27/2019 7:21	82.4	521340248.6
24	8/27/2019 7:21	73.3	64138862.69
25	8/27/2019 7:21	63.3	6413886.269
26	8/27/2019 7:21	57	1503561.701
27	8/27/2019 7:21	63.8	7196498.757

28	8/27/2019 7:21	77.1	153858415.2
29	8/27/2019 7:21	70.2	31413856.44
30	8/27/2019 7:21	64.2	7890803.976
31	8/27/2019 7:21	59.6	2736032.518
32	8/27/2019 7:21	63.6	6872602.958
33	8/27/2019 7:21	78.3	202824892.6
34	8/27/2019 7:21	69	23829847.04
35	8/27/2019 7:21	64	7535659.295
36	8/27/2019 7:21	59	2382984.704
37	8/27/2019 7:21	56.8	1435890.277
38	8/27/2019 7:21	54.8	905985.5161
39	8/27/2019 7:21	49.5	267375.2814
40	8/27/2019 7:21	48	189287.2033
41	8/27/2019 7:22	47.3	161109.5389
42	8/27/2019 7:22	47.8	180767.8758
43	8/27/2019 7:22	48.1	193696.2687
44	8/27/2019 7:22	49.3	255341.4115
45	8/27/2019 7:22	51.4	414115.2794
46	8/27/2019 7:22	53.3	641388.6269
47	8/27/2019 7:22	59.2	2495291.313
48	8/27/2019 7:22	66.7	14032054.24
49	8/27/2019 7:22	78.8	227573272.5
50	8/27/2019 7:22	74.9	92708862.98
51	8/27/2019 7:22	72.7	55862614.1
52	8/27/2019 7:22	77.5	168702397.6
53	8/27/2019 7:22	67.8	18076787.58
54	8/27/2019 7:22	61.9	4646449.857
55	8/27/2019 7:22	62.2	4978760.722
56	8/27/2019 7:22	74.8	90598551.61
57	8/27/2019 7:22	66.1	12221408.33
58	8/27/2019 7:22	61.7	4437325.165
59	8/27/2019 7:22	60.2	3141385.644
60	8/27/2019 7:22	58.9	2328741.35
61	8/27/2019 7:23	65.7	11146056.87
62	8/27/2019 7:23	77.1	153858415.2
63	8/27/2019 7:23	68.9	23287413.5
64	8/27/2019 7:23	60.9	3690806.312
65	8/27/2019 7:23	55.9	1167135.435
66	8/27/2019 7:23	54.1	771118.7348
67	8/27/2019 7:23	51.4	414115.2794
68	8/27/2019 7:23	49.7	279976.2902
69	8/27/2019 7:23	48.1	193696.2687
70	8/27/2019 7:23	46.3	127973.8556
71	8/27/2019 7:23	50.6	344446.0864
72	8/27/2019 7:23	62.7	5586261.41
73	8/27/2019 7:23	77	150356170.1
74	8/27/2019 7:23	69.4	26128907.7

75	8/27/2019 7:23	75.7	111460568.7
76	8/27/2019 7:23	65.5	10644401.68
77	8/27/2019 7:23	56.3	1279738.556
78	8/27/2019 7:23	53.2	626788.8393
79	8/27/2019 7:23	50.7	352469.2665
80	8/27/2019 7:23	49.6	273603.2518
81	8/27/2019 7:24	47.3	161109.5389
82	8/27/2019 7:24	46.2	125060.815
83	8/27/2019 7:24	45.8	114056.8189
84	8/27/2019 7:24	45.8	114056.8189
85	8/27/2019 7:24	46.6	137126.4569
86	8/27/2019 7:24	46.4	130954.7497
87	8/27/2019 7:24	46.5	134005.0776
88	8/27/2019 7:24	46	119432.1512
89	8/27/2019 7:24	46.9	146933.6458
90	8/27/2019 7:24	47.7	176653.0966
91	8/27/2019 7:24	47.2	157442.2381
92	8/27/2019 7:24	50.2	314138.5644
93	8/27/2019 7:24	58.3	2028248.926
94	8/27/2019 7:24	81.7	443732516.5
95	8/27/2019 7:24	72.4	52134024.86
96	8/27/2019 7:24	62.7	5586261.41
97	8/27/2019 7:24	74.5	84551487.94
98	8/27/2019 7:24	77.8	180767875.8
99	8/27/2019 7:24	70.7	35246926.65
100	8/27/2019 7:24	74.6	86520945.09
101	8/27/2019 7:25	64.9	9270886.298
102	8/27/2019 7:25	63.7	7032686.446
103	8/27/2019 7:25	81.5	423761263.4
104	8/27/2019 7:25	76.4	130954749.7
105	8/27/2019 7:25	80.5	336605536.3
106	8/27/2019 7:25	71.3	40468886.48
107	8/27/2019 7:25	63.6	6872602.958
108	8/27/2019 7:25	58.8	2275732.725
109	8/27/2019 7:25	55.8	1140568.189
110	8/27/2019 7:25	56.2	1250608.15
111	8/27/2019 7:25	58.9	2328741.35
112	8/27/2019 7:25	73.9	73641267.47
113	8/27/2019 7:25	81.8	454068374.5
114	8/27/2019 7:25	73.8	71964987.57
115	8/27/2019 7:25	68.6	21733078.8
116	8/27/2019 7:25	61.9	4646449.857
117	8/27/2019 7:25	58.1	1936962.687
118	8/27/2019 7:25	57.2	1574422.381
119	8/27/2019 7:25	74.2	78908039.76
120	8/27/2019 7:25	64.8	9059855.161
121	8/27/2019 7:26	57.1	1538584.152

122	8/27/2019 7:26	54.1	771118.7348
123	8/27/2019 7:26	51.4	414115.2794
124	8/27/2019 7:26	49.1	243849.1548
125	8/27/2019 7:26	47.4	164862.2622
126	8/27/2019 7:26	46.7	140320.5424
127	8/27/2019 7:26	46.7	140320.5424
128	8/27/2019 7:26	47.2	157442.2381
129	8/27/2019 7:26	48.3	202824.8926
130	8/27/2019 7:26	49.4	261289.077
131	8/27/2019 7:26	53.6	687260.2958
132	8/27/2019 7:26	63	5985786.945
133	8/27/2019 7:26	77.4	164862262.2
134	8/27/2019 7:26	74.9	92708862.98
135	8/27/2019 7:26	76.5	134005077.6
136	8/27/2019 7:26	76.2	125060815
137	8/27/2019 7:26	76.4	130954749.7
138	8/27/2019 7:26	66.7	14032054.24
139	8/27/2019 7:26	60	3000000
140	8/27/2019 7:26	57.9	1849785.006
141	8/27/2019 7:27	55.9	1167135.435
142	8/27/2019 7:27	53	598578.6945
143	8/27/2019 7:27	50.9	369080.6312
144	8/27/2019 7:27	50.3	321455.7916
145	8/27/2019 7:27	55.2	993393.3644
146	8/27/2019 7:27	66.1	12221408.33
147	8/27/2019 7:27	71.1	38647486.55
148	8/27/2019 7:27	62.8	5716382.154
149	8/27/2019 7:27	57.8	1807678.758
150	8/27/2019 7:27	58	1892872.033
151	8/27/2019 7:27	61.1	3864748.655
152	8/27/2019 7:27	81.7	443732516.5
153	8/27/2019 7:27	73.8	71964987.57
154	8/27/2019 7:27	63.7	7032686.446
155	8/27/2019 7:27	55.9	1167135.435
156	8/27/2019 7:27	52.7	558626.141
157	8/27/2019 7:27	49.4	261289.077
158	8/27/2019 7:27	49	238298.4704
159	8/27/2019 7:27	53.2	626788.8393
160	8/27/2019 7:27	62.4	5213402.486
161	8/27/2019 7:28	76.9	146933645.8
162	8/27/2019 7:28	67.2	15744223.81
163	8/27/2019 7:28	59	2382984.704
164	8/27/2019 7:28	54.6	865209.4509
165	8/27/2019 7:28	52.7	558626.141
166	8/27/2019 7:28	58.8	2275732.725
167	8/27/2019 7:28	76.5	134005077.6
168	8/27/2019 7:28	78.2	198208034.4

169	8/27/2019 7:28	76.1	122214083.3
170	8/27/2019 7:28	76.7	140320542.4
171	8/27/2019 7:28	72	47546795.77
172	8/27/2019 7:28	62.7	5586261.41
173	8/27/2019 7:28	59.8	2864977.758
174	8/27/2019 7:28	75.7	111460568.7
175	8/27/2019 7:28	73.8	71964987.57
176	8/27/2019 7:28	77.7	176653096.6
177	8/27/2019 7:28	73.4	65632848.72
178	8/27/2019 7:28	64.7	8853627.68
179	8/27/2019 7:28	60.5	3366055.363
180	8/27/2019 7:28	58.6	2173307.88
181	8/27/2019 7:29	56.6	1371264.569
182	8/27/2019 7:29	53.2	626788.8393
183	8/27/2019 7:29	54.7	885362.768
184	8/27/2019 7:29	59.8	2864977.758
185	8/27/2019 7:29	77.4	164862262.2
186	8/27/2019 7:29	69.5	26737528.14
187	8/27/2019 7:29	62.9	5849533.799
188	8/27/2019 7:29	62.1	4865430.292
189	8/27/2019 7:29	78.7	222393072.4
190	8/27/2019 7:29	69.6	27360325.18
191	8/27/2019 7:29	62.7	5586261.41
192	8/27/2019 7:29	64.5	8455148.794
193	8/27/2019 7:29	73.5	67161634.16
194	8/27/2019 7:29	64.4	8262686.11
195	8/27/2019 7:29	61.9	4646449.857
196	8/27/2019 7:29	80.1	306987897.7
197	8/27/2019 7:29	72.2	49787607.22
198	8/27/2019 7:29	79.6	273603251.8
199	8/27/2019 7:29	70	30000000
200	8/27/2019 7:29	63.5	6716163.416
201	8/27/2019 7:30	63.8	7196498.757
202	8/27/2019 7:30	65.5	10644401.68
203	8/27/2019 7:30	72.6	54591025.76
204	8/27/2019 7:30	71.9	46464498.57
205	8/27/2019 7:30	77.3	161109538.9
206	8/27/2019 7:30	75.9	116713543.5
207	8/27/2019 7:30	73	59857869.45
208	8/27/2019 7:30	64.6	8652094.509
209	8/27/2019 7:30	60.3	3214557.916
210	8/27/2019 7:30	61.2	3954770.216
211	8/27/2019 7:30	76.3	127973855.6
212	8/27/2019 7:30	82	475467957.7
213	8/27/2019 7:30	72.2	49787607.22
214	8/27/2019 7:30	63.8	7196498.757
215	8/27/2019 7:30	59.6	2736032.518

216	8/27/2019 7:30	62.9	5849533.799
217	8/27/2019 7:30	78.9	232874135
218	8/27/2019 7:30	69.7	27997629.02
219	8/27/2019 7:30	62.2	4978760.722
220	8/27/2019 7:30	56.9	1469336.458
221	8/27/2019 7:31	54.7	885362.768
222	8/27/2019 7:31	52	475467.9577
223	8/27/2019 7:31	50.1	306987.8977
224	8/27/2019 7:31	51.8	454068.3745
225	8/27/2019 7:31	50.8	360679.3304
226	8/27/2019 7:31	50.3	321455.7916
227	8/27/2019 7:31	50.9	369080.6312
228	8/27/2019 7:31	50.7	352469.2665
229	8/27/2019 7:31	52.2	497876.0722
230	8/27/2019 7:31	59.7	2799762.902
231	8/27/2019 7:31	71.7	44373251.65
232	8/27/2019 7:31	76.5	134005077.6
233	8/27/2019 7:31	72.1	48654302.92
234	8/27/2019 7:31	61.8	4540683.745
235	8/27/2019 7:31	55.3	1016532.468
236	8/27/2019 7:31	62.7	5586261.41
237	8/27/2019 7:31	80.5	336605536.3
238	8/27/2019 7:31	71.4	41411527.94
239	8/27/2019 7:31	61.7	4437325.165
240	8/27/2019 7:31	55.9	1167135.435
241	8/27/2019 7:32	55.5	1064440.168
242	8/27/2019 7:32	51.8	454068.3745
243	8/27/2019 7:32	48.4	207549.2913
244	8/27/2019 7:32	47.6	172631.9812
245	8/27/2019 7:32	47.7	176653.0966
246	8/27/2019 7:32	47.3	161109.5389
247	8/27/2019 7:32	47.6	172631.9812
248	8/27/2019 7:32	48.5	212383.7353
249	8/27/2019 7:32	53.2	626788.8393
250	8/27/2019 7:32	64.5	8455148.794
251	8/27/2019 7:32	76.6	137126456.9
252	8/27/2019 7:32	66.1	12221408.33
253	8/27/2019 7:32	57.2	1574422.381
254	8/27/2019 7:32	53.3	641388.6269
255	8/27/2019 7:32	57.5	1687023.976
256	8/27/2019 7:32	67	15035617.01
257	8/27/2019 7:32	80.5	336605536.3
258	8/27/2019 7:32	81.1	386474865.5
259	8/27/2019 7:32	81.5	423761263.4
260	8/27/2019 7:32	71.5	42376126.34
261	8/27/2019 7:33	62.7	5586261.41
262	8/27/2019 7:33	56.9	1469336.458

263	8/27/2019 7:33	54.9	927088.6298
264	8/27/2019 7:33	53.5	671616.3416
265	8/27/2019 7:33	51.3	404688.8648
266	8/27/2019 7:33	48.7	222393.0724
267	8/27/2019 7:33	46.5	134005.0776
268	8/27/2019 7:33	47.2	157442.2381
269	8/27/2019 7:33	48.2	198208.0344
270	8/27/2019 7:33	47.6	172631.9812
271	8/27/2019 7:33	48.7	222393.0724
272	8/27/2019 7:33	54.3	807460.4412
273	8/27/2019 7:33	67.4	16486226.22
274	8/27/2019 7:33	79.4	261289077
275	8/27/2019 7:33	69.2	24952913.13
276	8/27/2019 7:33	61.4	4141152.794
277	8/27/2019 7:33	56.6	1371264.569
278	8/27/2019 7:33	54.8	905985.5161
279	8/27/2019 7:33	53.4	656328.4872
280	8/27/2019 7:33	54.4	826268.611
281	8/27/2019 7:34	64.2	7890803.976
282	8/27/2019 7:34	69.4	26128907.7
283	8/27/2019 7:34	59.7	2799762.902
284	8/27/2019 7:34	52	475467.9577
285	8/27/2019 7:34	49	238298.4704
286	8/27/2019 7:34	48.2	198208.0344
287	8/27/2019 7:34	48.2	198208.0344
288	8/27/2019 7:34	49.1	243849.1548
289	8/27/2019 7:34	50.5	336605.5363
290	8/27/2019 7:34	56.2	1250608.15
291	8/27/2019 7:34	71.1	38647486.55
292	8/27/2019 7:34	71.2	39547702.16
293	8/27/2019 7:34	66	11943215.12
294	8/27/2019 7:34	61.9	4646449.857
295	8/27/2019 7:34	57.6	1726319.812
296	8/27/2019 7:34	57.1	1538584.152
297	8/27/2019 7:34	64.2	7890803.976
298	8/27/2019 7:34	70.9	36908063.12
299	8/27/2019 7:34	79.4	261289077
300	8/27/2019 7:34	80.3	321455791.6

Noise Measurement 2

Data Logger 2		
Duration (seconds)		3
Weighting	A	
Response	SLOW	
Range	40-100	
L05		81.1
L10		80.4
L50		76.7
L90		70.1
L95		67.9
Lmax		96.2
Time		8/27/2019 8:05
SEL		107.2
Leq		78.6

Leq (Manual) **78.59102**

No.s	Date Time	dB	Sound Energy
1	8/27/2019 8:05	72.4	52134024.86
2	8/27/2019 8:05	71.4	41411527.94
3	8/27/2019 8:05	71.1	38647486.55
4	8/27/2019 8:05	76.1	122214083.3
5	8/27/2019 8:05	71	37767762.35
6	8/27/2019 8:05	68.6	21733078.8
7	8/27/2019 8:05	70.1	30698789.77
8	8/27/2019 8:05	69.4	26128907.7
9	8/27/2019 8:05	71.2	39547702.16
10	8/27/2019 8:05	69.2	24952913.13
11	8/27/2019 8:05	67.3	16110953.89
12	8/27/2019 8:05	77.2	157442238.1
13	8/27/2019 8:06	81.5	423761263.4
14	8/27/2019 8:06	82	475467957.7
15	8/27/2019 8:06	79.3	255341411.5
16	8/27/2019 8:06	79.4	261289077
17	8/27/2019 8:06	79.3	255341411.5
18	8/27/2019 8:06	79	238298470.4
19	8/27/2019 8:06	77.1	153858415.2
20	8/27/2019 8:06	76.9	146933645.8
21	8/27/2019 8:06	77.3	161109538.9
22	8/27/2019 8:06	77	150356170.1
23	8/27/2019 8:06	75	94868329.81
24	8/27/2019 8:06	80.3	321455791.6
25	8/27/2019 8:06	73.9	73641267.47
26	8/27/2019 8:06	87	1503561701
27	8/27/2019 8:06	78.9	232874135

28	8/27/2019 8:06	77.8	180767875.8
29	8/27/2019 8:06	82.5	533483823
30	8/27/2019 8:06	80.2	314138564.4
31	8/27/2019 8:06	81.2	395477021.6
32	8/27/2019 8:06	81.1	386474865.5
33	8/27/2019 8:07	79.8	286497775.8
34	8/27/2019 8:07	79.5	267375281.4
35	8/27/2019 8:07	73.6	68726029.58
36	8/27/2019 8:07	75.4	104021055.1
37	8/27/2019 8:07	74.7	88536276.8
38	8/27/2019 8:07	77.2	157442238.1
39	8/27/2019 8:07	75.4	104021055.1
40	8/27/2019 8:07	73.7	70326864.46
41	8/27/2019 8:07	73.4	65632848.72
42	8/27/2019 8:07	75.1	97078097.08
43	8/27/2019 8:07	72.6	54591025.76
44	8/27/2019 8:07	71.3	40468886.48
45	8/27/2019 8:07	70.7	35246926.65
46	8/27/2019 8:07	69.9	29317116.63
47	8/27/2019 8:07	69.8	28649777.58
48	8/27/2019 8:07	79.3	255341411.5
49	8/27/2019 8:07	69.4	26128907.7
50	8/27/2019 8:07	67.9	18497850.06
51	8/27/2019 8:07	69.6	27360325.18
52	8/27/2019 8:07	72.8	57163821.54
53	8/27/2019 8:08	82.3	509473095.7
54	8/27/2019 8:08	76.8	143589027.7
55	8/27/2019 8:08	74.4	82626861.1
56	8/27/2019 8:08	78.1	193696268.7
57	8/27/2019 8:08	77	150356170.1
58	8/27/2019 8:08	75.4	104021055.1
59	8/27/2019 8:08	78.5	212383735.3
60	8/27/2019 8:08	76.1	122214083.3
61	8/27/2019 8:08	75.4	104021055.1
62	8/27/2019 8:08	75.7	111460568.7
63	8/27/2019 8:08	75.1	97078097.08
64	8/27/2019 8:08	77.5	168702397.6
65	8/27/2019 8:08	80.5	336605536.3
66	8/27/2019 8:08	80.4	328943458.8
67	8/27/2019 8:08	80.7	352469266.5
68	8/27/2019 8:08	79.7	279976290.2
69	8/27/2019 8:08	80.3	321455791.6
70	8/27/2019 8:08	78.6	217330788
71	8/27/2019 8:08	75.4	104021055.1
72	8/27/2019 8:08	79.1	243849154.8
73	8/27/2019 8:09	78.8	227573272.5
74	8/27/2019 8:09	79.5	267375281.4

75	8/27/2019 8:09	76.5	134005077.6
76	8/27/2019 8:09	73	59857869.45
77	8/27/2019 8:09	71.2	39547702.16
78	8/27/2019 8:09	71.1	38647486.55
79	8/27/2019 8:09	63	5985786.945
80	8/27/2019 8:09	65.5	10644401.68
81	8/27/2019 8:09	68.9	23287413.5
82	8/27/2019 8:09	74.5	84551487.94
83	8/27/2019 8:09	76	119432151.2
84	8/27/2019 8:09	76.4	130954749.7
85	8/27/2019 8:09	77.1	153858415.2
86	8/27/2019 8:09	78.2	198208034.4
87	8/27/2019 8:09	76.5	134005077.6
88	8/27/2019 8:09	79.2	249529131.3
89	8/27/2019 8:09	80.6	344446086.4
90	8/27/2019 8:09	79.3	255341411.5
91	8/27/2019 8:09	78.8	227573272.5
92	8/27/2019 8:09	78.5	212383735.3
93	8/27/2019 8:10	77.6	172631981.2
94	8/27/2019 8:10	76	119432151.2
95	8/27/2019 8:10	74.6	86520945.09
96	8/27/2019 8:10	75.7	111460568.7
97	8/27/2019 8:10	70.9	36908063.12
98	8/27/2019 8:10	71.3	40468886.48
99	8/27/2019 8:10	71.8	45406837.45
100	8/27/2019 8:10	67.1	15385841.52
101	8/27/2019 8:10	69.2	24952913.13
102	8/27/2019 8:10	75.2	99339336.44
103	8/27/2019 8:10	78.5	212383735.3
104	8/27/2019 8:10	78.7	222393072.4
105	8/27/2019 8:10	80.5	336605536.3
106	8/27/2019 8:10	78.6	217330788
107	8/27/2019 8:10	76.1	122214083.3
108	8/27/2019 8:10	80.2	314138564.4
109	8/27/2019 8:10	79.5	267375281.4
110	8/27/2019 8:10	77.3	161109538.9
111	8/27/2019 8:10	76.9	146933645.8
112	8/27/2019 8:10	72.1	48654302.92
113	8/27/2019 8:11	71.5	42376126.34
114	8/27/2019 8:11	69.8	28649777.58
115	8/27/2019 8:11	70.3	32145579.16
116	8/27/2019 8:11	75.7	111460568.7
117	8/27/2019 8:11	76.4	130954749.7
118	8/27/2019 8:11	74.9	92708862.98
119	8/27/2019 8:11	71.5	42376126.34
120	8/27/2019 8:11	70.1	30698789.77
121	8/27/2019 8:11	78.6	217330788

122	8/27/2019 8:11	71	37767762.35
123	8/27/2019 8:11	62.7	5586261.41
124	8/27/2019 8:11	64.9	9270886.298
125	8/27/2019 8:11	81.3	404688864.8
126	8/27/2019 8:11	81.1	386474865.5
127	8/27/2019 8:11	80.3	321455791.6
128	8/27/2019 8:11	80.3	321455791.6
129	8/27/2019 8:11	78.8	227573272.5
130	8/27/2019 8:11	80.8	360679330.4
131	8/27/2019 8:11	79.9	293171166.3
132	8/27/2019 8:11	80.6	344446086.4
133	8/27/2019 8:12	79.1	243849154.8
134	8/27/2019 8:12	78.1	193696268.7
135	8/27/2019 8:12	78.8	227573272.5
136	8/27/2019 8:12	76.4	130954749.7
137	8/27/2019 8:12	78	189287203.3
138	8/27/2019 8:12	77.5	168702397.6
139	8/27/2019 8:12	79.4	261289077
140	8/27/2019 8:12	78.4	207549291.3
141	8/27/2019 8:12	78.6	217330788
142	8/27/2019 8:12	78.1	193696268.7
143	8/27/2019 8:12	77.7	176653096.6
144	8/27/2019 8:12	75.8	114056818.9
145	8/27/2019 8:12	75.1	97078097.08
146	8/27/2019 8:12	76.5	134005077.6
147	8/27/2019 8:12	80.2	314138564.4
148	8/27/2019 8:12	71.7	44373251.65
149	8/27/2019 8:12	68.2	19820803.44
150	8/27/2019 8:12	69.4	26128907.7
151	8/27/2019 8:12	68.2	19820803.44
152	8/27/2019 8:12	77.4	164862262.2
153	8/27/2019 8:13	76.6	137126456.9
154	8/27/2019 8:13	73.4	65632848.72
155	8/27/2019 8:13	64.9	9270886.298
156	8/27/2019 8:13	58.9	2328741.35
157	8/27/2019 8:13	65.3	10165324.68
158	8/27/2019 8:13	78.3	202824892.6
159	8/27/2019 8:13	79	238298470.4
160	8/27/2019 8:13	76.9	146933645.8
161	8/27/2019 8:13	79.7	279976290.2
162	8/27/2019 8:13	78.2	198208034.4
163	8/27/2019 8:13	78.7	222393072.4
164	8/27/2019 8:13	77.3	161109538.9
165	8/27/2019 8:13	78.8	227573272.5
166	8/27/2019 8:13	77.1	153858415.2
167	8/27/2019 8:13	75.2	99339336.44
168	8/27/2019 8:13	76.3	127973855.6

169	8/27/2019 8:13	76.1	122214083.3
170	8/27/2019 8:13	75.1	97078097.08
171	8/27/2019 8:13	77.2	157442238.1
172	8/27/2019 8:13	74.4	82626861.1
173	8/27/2019 8:14	72.3	50947309.57
174	8/27/2019 8:14	74.3	80746044.12
175	8/27/2019 8:14	77.5	168702397.6
176	8/27/2019 8:14	96.2	12506081504
177	8/27/2019 8:14	89.3	2553414115
178	8/27/2019 8:14	81.8	454068374.5
179	8/27/2019 8:14	78.3	202824892.6
180	8/27/2019 8:14	76.1	122214083.3
181	8/27/2019 8:14	75	94868329.81
182	8/27/2019 8:14	74.3	80746044.12
183	8/27/2019 8:14	76.4	130954749.7
184	8/27/2019 8:14	73	59857869.45
185	8/27/2019 8:14	73.7	70326864.46
186	8/27/2019 8:14	73.2	62678883.93
187	8/27/2019 8:14	73.2	62678883.93
188	8/27/2019 8:14	73.4	65632848.72
189	8/27/2019 8:14	73.2	62678883.93
190	8/27/2019 8:14	73	59857869.45
191	8/27/2019 8:14	80.5	336605536.3
192	8/27/2019 8:14	80.8	360679330.4
193	8/27/2019 8:15	75.9	116713543.5
194	8/27/2019 8:15	74.4	82626861.1
195	8/27/2019 8:15	74.8	90598551.61
196	8/27/2019 8:15	75	94868329.81
197	8/27/2019 8:15	80.3	321455791.6
198	8/27/2019 8:15	80.9	369080631.2
199	8/27/2019 8:15	81.4	414115279.4
200	8/27/2019 8:15	78.3	202824892.6
201	8/27/2019 8:15	78.5	212383735.3
202	8/27/2019 8:15	80.9	369080631.2
203	8/27/2019 8:15	81.2	395477021.6
204	8/27/2019 8:15	79.1	243849154.8
205	8/27/2019 8:15	78.7	222393072.4
206	8/27/2019 8:15	78.1	193696268.7
207	8/27/2019 8:15	71.5	42376126.34
208	8/27/2019 8:15	70.6	34444608.64
209	8/27/2019 8:15	67.2	15744223.81
210	8/27/2019 8:15	73.1	61252138.34
211	8/27/2019 8:15	82.3	509473095.7
212	8/27/2019 8:15	80.8	360679330.4
213	8/27/2019 8:16	78.6	217330788
214	8/27/2019 8:16	80.3	321455791.6
215	8/27/2019 8:16	78.5	212383735.3

216	8/27/2019 8:16	79	238298470.4
217	8/27/2019 8:16	77.2	157442238.1
218	8/27/2019 8:16	78.9	232874135
219	8/27/2019 8:16	77.5	168702397.6
220	8/27/2019 8:16	71.9	46464498.57
221	8/27/2019 8:16	71.9	46464498.57
222	8/27/2019 8:16	74.1	77111873.48
223	8/27/2019 8:16	73.7	70326864.46
224	8/27/2019 8:16	72.9	58495337.99
225	8/27/2019 8:16	73.8	71964987.57
226	8/27/2019 8:16	79.8	286497775.8
227	8/27/2019 8:16	80.4	328943458.8
228	8/27/2019 8:16	77.9	184978500.6
229	8/27/2019 8:16	78	189287203.3
230	8/27/2019 8:16	75.8	114056818.9
231	8/27/2019 8:16	72.5	53348382.3
232	8/27/2019 8:16	71.2	39547702.16
233	8/27/2019 8:17	73.8	71964987.57
234	8/27/2019 8:17	77.2	157442238.1
235	8/27/2019 8:17	76.7	140320542.4
236	8/27/2019 8:17	73.1	61252138.34
237	8/27/2019 8:17	78.3	202824892.6
238	8/27/2019 8:17	75.2	99339336.44
239	8/27/2019 8:17	80.6	344446086.4
240	8/27/2019 8:17	77.6	172631981.2
241	8/27/2019 8:17	71.7	44373251.65
242	8/27/2019 8:17	78.3	202824892.6
243	8/27/2019 8:17	80.7	352469266.5
244	8/27/2019 8:17	79.1	243849154.8
245	8/27/2019 8:17	84.2	789080397.6
246	8/27/2019 8:17	79.7	279976290.2
247	8/27/2019 8:17	74.9	92708862.98
248	8/27/2019 8:17	77.5	168702397.6
249	8/27/2019 8:17	78.4	207549291.3
250	8/27/2019 8:17	77.8	180767875.8
251	8/27/2019 8:17	77.9	184978500.6
252	8/27/2019 8:17	77.4	164862262.2
253	8/27/2019 8:18	83.7	703268644.6
254	8/27/2019 8:18	79.8	286497775.8
255	8/27/2019 8:18	78.2	198208034.4
256	8/27/2019 8:18	80.1	306987897.7
257	8/27/2019 8:18	81.4	414115279.4
258	8/27/2019 8:18	79.1	243849154.8
259	8/27/2019 8:18	79.2	249529131.3
260	8/27/2019 8:18	78	189287203.3
261	8/27/2019 8:18	76	119432151.2
262	8/27/2019 8:18	78	189287203.3

263	8/27/2019 8:18	76	119432151.2
264	8/27/2019 8:18	75.5	106444016.8
265	8/27/2019 8:18	74.1	77111873.48
266	8/27/2019 8:18	72	47546795.77
267	8/27/2019 8:18	67.3	16110953.89
268	8/27/2019 8:18	66.8	14358902.77
269	8/27/2019 8:18	74.3	80746044.12
270	8/27/2019 8:18	74	75356592.95
271	8/27/2019 8:18	73.7	70326864.46
272	8/27/2019 8:18	71.2	39547702.16
273	8/27/2019 8:19	74.4	82626861.1
274	8/27/2019 8:19	74.5	84551487.94
275	8/27/2019 8:19	75.9	116713543.5
276	8/27/2019 8:19	80.8	360679330.4
277	8/27/2019 8:19	76.3	127973855.6
278	8/27/2019 8:19	74.5	84551487.94
279	8/27/2019 8:19	72.9	58495337.99
280	8/27/2019 8:19	74.2	78908039.76
281	8/27/2019 8:19	79.5	267375281.4
282	8/27/2019 8:19	76.6	137126456.9
283	8/27/2019 8:19	73.3	64138862.69
284	8/27/2019 8:19	74.6	86520945.09
285	8/27/2019 8:19	74.9	92708862.98
286	8/27/2019 8:19	74.7	88536276.8
287	8/27/2019 8:19	73	59857869.45
288	8/27/2019 8:19	73	59857869.45
289	8/27/2019 8:19	76.5	134005077.6
290	8/27/2019 8:19	69.6	27360325.18
291	8/27/2019 8:19	68.1	19369626.87
292	8/27/2019 8:19	78.1	193696268.7
293	8/27/2019 8:20	79.1	243849154.8
294	8/27/2019 8:20	77	150356170.1
295	8/27/2019 8:20	74.3	80746044.12
296	8/27/2019 8:20	78.3	202824892.6
297	8/27/2019 8:20	78.5	212383735.3
298	8/27/2019 8:20	80	300000000
299	8/27/2019 8:20	80.4	328943458.8
300	8/27/2019 8:20	79.6	273603251.8

Noise Measurement 3

Data Logger 2		
Duration (seconds)		3
Weighting	A	
Response	SLOW	
Range	40-100	
L05		73.3
L10		71.9
L50		61.8
L90		47.8
L95		45
Lmax		85
Time		8/27/2019 8:36
SEL		97.1
Leq		67.5

Leq (Manual) **67.47035**

No.s	Date Time	dB	Sound Energy
1	8/27/2019 8:36	50.5	336605.5363
2	8/27/2019 8:36	47.9	184978.5006
3	8/27/2019 8:36	45	94868.32981
4	8/27/2019 8:36	45.6	108923.4164
5	8/27/2019 8:36	43.4	65632.84872
6	8/27/2019 8:36	45.6	108923.4164
7	8/27/2019 8:37	46.6	137126.4569
8	8/27/2019 8:37	49.5	267375.2814
9	8/27/2019 8:37	63.9	7364126.747
10	8/27/2019 8:37	64.5	8455148.794
11	8/27/2019 8:37	53.7	703268.6446
12	8/27/2019 8:37	48.4	207549.2913
13	8/27/2019 8:37	50.9	369080.6312
14	8/27/2019 8:37	50	300000
15	8/27/2019 8:37	59.7	2799762.902
16	8/27/2019 8:37	66.6	13712645.69
17	8/27/2019 8:37	56.6	1371264.569
18	8/27/2019 8:37	53.3	641388.6269
19	8/27/2019 8:37	59.3	2553414.115
20	8/27/2019 8:37	70.4	32894345.88
21	8/27/2019 8:37	75.8	114056818.9
22	8/27/2019 8:37	68.6	21733078.8
23	8/27/2019 8:37	63	5985786.945
24	8/27/2019 8:37	61.2	3954770.216
25	8/27/2019 8:37	56.9	1469336.458
26	8/27/2019 8:37	58.4	2075492.913
27	8/27/2019 8:38	72.2	49787607.22

28	8/27/2019 8:38	76.4	130954749.7
29	8/27/2019 8:38	68.7	22239307.24
30	8/27/2019 8:38	71.9	46464498.57
31	8/27/2019 8:38	68.8	22757327.25
32	8/27/2019 8:38	67.3	16110953.89
33	8/27/2019 8:38	67.9	18497850.06
34	8/27/2019 8:38	68	18928720.33
35	8/27/2019 8:38	69.3	25534141.15
36	8/27/2019 8:38	72.3	50947309.57
37	8/27/2019 8:38	80.1	306987897.7
38	8/27/2019 8:38	79.1	243849154.8
39	8/27/2019 8:38	70.5	33660553.63
40	8/27/2019 8:38	69.9	29317116.63
41	8/27/2019 8:38	67.5	16870239.76
42	8/27/2019 8:38	62.6	5459102.576
43	8/27/2019 8:38	62.4	5213402.486
44	8/27/2019 8:38	58.1	1936962.687
45	8/27/2019 8:38	52.6	545910.2576
46	8/27/2019 8:38	48	189287.2033
47	8/27/2019 8:39	46.6	137126.4569
48	8/27/2019 8:39	45.4	104021.0551
49	8/27/2019 8:39	44.8	90598.55161
50	8/27/2019 8:39	44.5	84551.48794
51	8/27/2019 8:39	45	94868.32981
52	8/27/2019 8:39	44.8	90598.55161
53	8/27/2019 8:39	44.9	92708.86298
54	8/27/2019 8:39	45.8	114056.8189
55	8/27/2019 8:39	46.9	146933.6458
56	8/27/2019 8:39	52	475467.9577
57	8/27/2019 8:39	58.6	2173307.88
58	8/27/2019 8:39	65.3	10165324.68
59	8/27/2019 8:39	68.7	22239307.24
60	8/27/2019 8:39	75.2	99339336.44
61	8/27/2019 8:39	74.7	88536276.8
62	8/27/2019 8:39	66.8	14358902.77
63	8/27/2019 8:39	71.7	44373251.65
64	8/27/2019 8:39	70.5	33660553.63
65	8/27/2019 8:39	74.7	88536276.8
66	8/27/2019 8:39	72.8	57163821.54
67	8/27/2019 8:40	68.7	22239307.24
68	8/27/2019 8:40	74.6	86520945.09
69	8/27/2019 8:40	69.1	24384915.48
70	8/27/2019 8:40	61.4	4141152.794
71	8/27/2019 8:40	61.6	4336319.312
72	8/27/2019 8:40	63.9	7364126.747
73	8/27/2019 8:40	63.8	7196498.757
74	8/27/2019 8:40	63.7	7032686.446

75	8/27/2019 8:40	62.6	5459102.576
76	8/27/2019 8:40	63.9	7364126.747
77	8/27/2019 8:40	61.3	4046888.648
78	8/27/2019 8:40	63.8	7196498.757
79	8/27/2019 8:40	71.2	39547702.16
80	8/27/2019 8:40	69.1	24384915.48
81	8/27/2019 8:40	69.3	25534141.15
82	8/27/2019 8:40	65.8	11405681.89
83	8/27/2019 8:40	63.5	6716163.416
84	8/27/2019 8:40	61	3776776.235
85	8/27/2019 8:40	57.6	1726319.812
86	8/27/2019 8:40	59.1	2438491.548
87	8/27/2019 8:41	65.4	10402105.51
88	8/27/2019 8:41	67.4	16486226.22
89	8/27/2019 8:41	60.5	3366055.363
90	8/27/2019 8:41	55	948683.2981
91	8/27/2019 8:41	50	300000
92	8/27/2019 8:41	48.9	232874.135
93	8/27/2019 8:41	49.5	267375.2814
94	8/27/2019 8:41	48.6	217330.788
95	8/27/2019 8:41	50.2	314138.5644
96	8/27/2019 8:41	53.9	736412.6747
97	8/27/2019 8:41	70.8	36067933.04
98	8/27/2019 8:41	72.6	54591025.76
99	8/27/2019 8:41	68.8	22757327.25
100	8/27/2019 8:41	67.8	18076787.58
101	8/27/2019 8:41	73.5	67161634.16
102	8/27/2019 8:41	75.5	106444016.8
103	8/27/2019 8:41	72.6	54591025.76
104	8/27/2019 8:41	67.6	17263198.12
105	8/27/2019 8:41	62	4754679.577
106	8/27/2019 8:41	57	1503561.701
107	8/27/2019 8:42	52.4	521340.2486
108	8/27/2019 8:42	51.9	464644.9857
109	8/27/2019 8:42	56.6	1371264.569
110	8/27/2019 8:42	64.8	9059855.161
111	8/27/2019 8:42	67.8	18076787.58
112	8/27/2019 8:42	60.1	3069878.977
113	8/27/2019 8:42	63.7	7032686.446
114	8/27/2019 8:42	53.2	626788.8393
115	8/27/2019 8:42	50.1	306987.8977
116	8/27/2019 8:42	48.2	198208.0344
117	8/27/2019 8:42	60.6	3444460.864
118	8/27/2019 8:42	60.5	3366055.363
119	8/27/2019 8:42	65.7	11146056.87
120	8/27/2019 8:42	65.4	10402105.51
121	8/27/2019 8:42	57.5	1687023.976

122	8/27/2019 8:42	50.6	344446.0864
123	8/27/2019 8:42	47.6	172631.9812
124	8/27/2019 8:42	61.3	4046888.648
125	8/27/2019 8:42	55.4	1040210.551
126	8/27/2019 8:42	50.6	344446.0864
127	8/27/2019 8:43	59	2382984.704
128	8/27/2019 8:43	72.8	57163821.54
129	8/27/2019 8:43	72	47546795.77
130	8/27/2019 8:43	62.3	5094730.957
131	8/27/2019 8:43	58.9	2328741.35
132	8/27/2019 8:43	68.7	22239307.24
133	8/27/2019 8:43	74.1	77111873.48
134	8/27/2019 8:43	72.2	49787607.22
135	8/27/2019 8:43	66.4	13095474.97
136	8/27/2019 8:43	73.5	67161634.16
137	8/27/2019 8:43	67	15035617.01
138	8/27/2019 8:43	68.4	20754929.13
139	8/27/2019 8:43	71.4	41411527.94
140	8/27/2019 8:43	70.6	34444608.64
141	8/27/2019 8:43	66.9	14693364.58
142	8/27/2019 8:43	61.3	4046888.648
143	8/27/2019 8:43	55.5	1064440.168
144	8/27/2019 8:43	53.4	656328.4872
145	8/27/2019 8:43	50.1	306987.8977
146	8/27/2019 8:43	49.5	267375.2814
147	8/27/2019 8:44	60.8	3606793.304
148	8/27/2019 8:44	72.4	52134024.86
149	8/27/2019 8:44	64.5	8455148.794
150	8/27/2019 8:44	60.2	3141385.644
151	8/27/2019 8:44	63.7	7032686.446
152	8/27/2019 8:44	59.1	2438491.548
153	8/27/2019 8:44	63.5	6716163.416
154	8/27/2019 8:44	70.1	30698789.77
155	8/27/2019 8:44	69.1	24384915.48
156	8/27/2019 8:44	69.4	26128907.7
157	8/27/2019 8:44	63.7	7032686.446
158	8/27/2019 8:44	61.2	3954770.216
159	8/27/2019 8:44	62.1	4865430.292
160	8/27/2019 8:44	62.1	4865430.292
161	8/27/2019 8:44	68.7	22239307.24
162	8/27/2019 8:44	75.9	116713543.5
163	8/27/2019 8:44	72.2	49787607.22
164	8/27/2019 8:44	66.5	13400507.76
165	8/27/2019 8:44	58.4	2075492.913
166	8/27/2019 8:44	58.5	2123837.353
167	8/27/2019 8:45	70.5	33660553.63
168	8/27/2019 8:45	71.9	46464498.57

169	8/27/2019 8:45	70.5	33660553.63
170	8/27/2019 8:45	68.4	20754929.13
171	8/27/2019 8:45	71.6	43363193.12
172	8/27/2019 8:45	63.3	6413886.269
173	8/27/2019 8:45	54.9	927088.6298
174	8/27/2019 8:45	50.6	344446.0864
175	8/27/2019 8:45	48.3	202824.8926
176	8/27/2019 8:45	51.4	414115.2794
177	8/27/2019 8:45	49.6	273603.2518
178	8/27/2019 8:45	51	377677.6235
179	8/27/2019 8:45	52.5	533483.823
180	8/27/2019 8:45	58.8	2275732.725
181	8/27/2019 8:45	69.2	24952913.13
182	8/27/2019 8:45	74.1	77111873.48
183	8/27/2019 8:45	68.7	22239307.24
184	8/27/2019 8:45	67.6	17263198.12
185	8/27/2019 8:45	62.3	5094730.957
186	8/27/2019 8:45	76.7	140320542.4
187	8/27/2019 8:46	73.6	68726029.58
188	8/27/2019 8:46	64	7535659.295
189	8/27/2019 8:46	57	1503561.701
190	8/27/2019 8:46	55.1	970780.9708
191	8/27/2019 8:46	53.3	641388.6269
192	8/27/2019 8:46	56	1194321.512
193	8/27/2019 8:46	57.4	1648622.622
194	8/27/2019 8:46	70.7	35246926.65
195	8/27/2019 8:46	66.5	13400507.76
196	8/27/2019 8:46	63.8	7196498.757
197	8/27/2019 8:46	72.6	54591025.76
198	8/27/2019 8:46	70.8	36067933.04
199	8/27/2019 8:46	64.5	8455148.794
200	8/27/2019 8:46	69.4	26128907.7
201	8/27/2019 8:46	64.8	9059855.161
202	8/27/2019 8:46	63.3	6413886.269
203	8/27/2019 8:46	69.6	27360325.18
204	8/27/2019 8:46	65.9	11671354.35
205	8/27/2019 8:46	68.7	22239307.24
206	8/27/2019 8:46	71.5	42376126.34
207	8/27/2019 8:47	73.2	62678883.93
208	8/27/2019 8:47	67.3	16110953.89
209	8/27/2019 8:47	60.6	3444460.864
210	8/27/2019 8:47	56.6	1371264.569
211	8/27/2019 8:47	60.1	3069878.977
212	8/27/2019 8:47	63.7	7032686.446
213	8/27/2019 8:47	59.8	2864977.758
214	8/27/2019 8:47	52.3	509473.0957
215	8/27/2019 8:47	48.8	227573.2725

216	8/27/2019 8:47	47.8	180767.8758
217	8/27/2019 8:47	46	119432.1512
218	8/27/2019 8:47	44.5	84551.48794
219	8/27/2019 8:47	44.2	78908.03976
220	8/27/2019 8:47	43.8	71964.98757
221	8/27/2019 8:47	43.9	73641.26747
222	8/27/2019 8:47	46.3	127973.8556
223	8/27/2019 8:47	50.8	360679.3304
224	8/27/2019 8:47	50.3	321455.7916
225	8/27/2019 8:47	51.4	414115.2794
226	8/27/2019 8:47	50.1	306987.8977
227	8/27/2019 8:48	53.6	687260.2958
228	8/27/2019 8:48	57.1	1538584.152
229	8/27/2019 8:48	63	5985786.945
230	8/27/2019 8:48	62.3	5094730.957
231	8/27/2019 8:48	58.8	2275732.725
232	8/27/2019 8:48	54.4	826268.611
233	8/27/2019 8:48	51.3	404688.8648
234	8/27/2019 8:48	52.7	558626.141
235	8/27/2019 8:48	52.2	497876.0722
236	8/27/2019 8:48	50.5	336605.5363
237	8/27/2019 8:48	51	377677.6235
238	8/27/2019 8:48	59.7	2799762.902
239	8/27/2019 8:48	66.4	13095474.97
240	8/27/2019 8:48	67.5	16870239.76
241	8/27/2019 8:48	62.5	5334838.23
242	8/27/2019 8:48	68.2	19820803.44
243	8/27/2019 8:48	64.9	9270886.298
244	8/27/2019 8:48	61.8	4540683.745
245	8/27/2019 8:48	55.3	1016532.468
246	8/27/2019 8:48	50.5	336605.5363
247	8/27/2019 8:49	48.8	227573.2725
248	8/27/2019 8:49	47.7	176653.0966
249	8/27/2019 8:49	45.8	114056.8189
250	8/27/2019 8:49	46.4	130954.7497
251	8/27/2019 8:49	47.2	157442.2381
252	8/27/2019 8:49	49.2	249529.1313
253	8/27/2019 8:49	52.2	497876.0722
254	8/27/2019 8:49	58.1	1936962.687
255	8/27/2019 8:49	67.2	15744223.81
256	8/27/2019 8:49	69.1	24384915.48
257	8/27/2019 8:49	69.7	27997629.02
258	8/27/2019 8:49	61.5	4237612.634
259	8/27/2019 8:49	63.2	6267888.393
260	8/27/2019 8:49	64	7535659.295
261	8/27/2019 8:49	65.8	11405681.89
262	8/27/2019 8:49	74.1	77111873.48

263	8/27/2019 8:49	68.1	19369626.87
264	8/27/2019 8:49	63.4	6563284.872
265	8/27/2019 8:49	65.7	11146056.87
266	8/27/2019 8:49	60.1	3069878.977
267	8/27/2019 8:50	70.6	34444608.64
268	8/27/2019 8:50	69.5	26737528.14
269	8/27/2019 8:50	58.9	2328741.35
270	8/27/2019 8:50	51.6	433631.9312
271	8/27/2019 8:50	50.8	360679.3304
272	8/27/2019 8:50	50.4	328943.4588
273	8/27/2019 8:50	57.1	1538584.152
274	8/27/2019 8:50	68.7	22239307.24
275	8/27/2019 8:50	66.7	14032054.24
276	8/27/2019 8:50	69.7	27997629.02
277	8/27/2019 8:50	62.6	5459102.576
278	8/27/2019 8:50	61.8	4540683.745
279	8/27/2019 8:50	72.3	50947309.57
280	8/27/2019 8:50	67.7	17665309.66
281	8/27/2019 8:50	74	75356592.95
282	8/27/2019 8:50	71.3	40468886.48
283	8/27/2019 8:50	63.2	6267888.393
284	8/27/2019 8:50	61.4	4141152.794
285	8/27/2019 8:50	60.7	3524692.665
286	8/27/2019 8:50	56	1194321.512
287	8/27/2019 8:51	51.1	386474.8655
288	8/27/2019 8:51	49.3	255341.4115
289	8/27/2019 8:51	51.4	414115.2794
290	8/27/2019 8:51	53.6	687260.2958
291	8/27/2019 8:51	56.5	1340050.776
292	8/27/2019 8:51	54.1	771118.7348
293	8/27/2019 8:51	54.6	865209.4509
294	8/27/2019 8:51	57.4	1648622.622
295	8/27/2019 8:51	67	15035617.01
296	8/27/2019 8:51	57.2	1574422.381
297	8/27/2019 8:51	49.1	243849.1548
298	8/27/2019 8:51	46.7	140320.5424
299	8/27/2019 8:51	44.4	82626.8611
300	8/27/2019 8:51	43.6	68726.02958

Rincon Consultants, inc.
<Analysis By?>

24 November 2014
TNM 2.5
Calculated with TNM 2.5

RESULTS: SOUND LEVELS
PROJECT/CONTRACT: <Project Name?>
RUN: Teal Club 2020 No Project
BARRIER DESIGN: INPUT HEIGHTS
ATMOSPHERICS: 68 deg F, 50% RH

Average pavement type shall be used unless a State highway agency substantiates the use of a different type with approval of FHWA.

Receiver Name	No.	#DUs	Existing LAeq1h	No Barrier LAeq1h Calculated	No Barrier LAeq1h Crit'n	Increase over existing Calculated	Increase over existing Crit'n Sub'l Inc	Type Impact	With Barrier Calculated LAeq1h	With Barrier Noise Reduction Calculated	With Barrier Noise Reduction Goal	With Barrier Calculated minus Goal
			dBA	dBA	dBA	dB	dB		dBA	dB	dB	dB
Victoria Ave North of Doris Ave	6	1	0.0	72.9	66	72.9	10	Snd Lvl	72.9	0.0	8	-8.0
Victoria Ave South of Teal Club	12	1	0.0	76.1	66	76.1	10	Snd Lvl	76.1	0.0	8	-8.0
Doris Ave west of Patterson	14	1	0.0	60.9	66	60.9	10	----	60.9	0.0	8	-8.0
Doris Ave between Patterson Road and Ve	16	1	0.0	64.0	66	64.0	10	----	64.0	0.0	8	-8.0
Teal Club Road West of Patterson	18	1	0.0	57.6	66	57.6	10	----	57.6	0.0	8	-8.0
Patterson Road south of Doris Ave	23	1	0.0	57.4	66	57.4	10	----	57.4	0.0	8	-8.0
Ventura Road North of Doris Ave	25	1	0.0	72.6	66	72.6	10	Snd Lvl	72.6	0.0	8	-8.0
Ventura road Between Teal Club Road anc	26	1	0.0	72.8	66	72.8	10	Snd Lvl	72.8	0.0	8	-8.0
Ventura Road South of Teal Club Road	28	1	0.0	73.3	66	73.3	10	Snd Lvl	73.3	0.0	8	-8.0
Teal Club Road between Patterson and Ve	30	1	0.0	61.2	66	61.2	10	----	61.2	0.0	8	-8.0

Dwelling Units	# DUs	Noise Reduction Min	Noise Reduction Avg	Noise Reduction Max
		dB	dB	dB
All Selected	10	0.0	0.0	0.0
All Impacted	5	0.0	0.0	0.0
All that meet NR Goal	0	0.0	0.0	0.0

Rincon Consultants, Inc.
<Analysis By?>

24 November 2014
TNM 2.5
Calculated with TNM 2.5

RESULTS: SOUND LEVELS
PROJECT/CONTRACT: <Project Name?>
RUN: Teal Club 2020 with Project
BARRIER DESIGN: INPUT HEIGHTS
ATMOSPHERICS: 68 deg F, 50% RH

Average pavement type shall be used unless a State highway agency substantiates the use of a different type with approval of FHWA.

Receiver Name	No.	#DUs	Existing LAeq1h	No Barrier					With Barrier			
				LAeq1h		Increase over existing		Type Impact	Calculated LAeq1h	Noise Reduction		
				Calculated	Crit'n	Calculated	Crit'n Sub'l Inc			Calculated	Goal	Calculated minus Goal
			dBA	dBA	dBA	dB	dB		dBA	dB	dB	dB
Victoria Ave North of Doris Ave	6	1	0.0	73.0	66	73.0	10	Snd Lvl	73.0	0.0	8	-8.0
Victoria Ave South of Teal Club	12	1	0.0	76.1	66	76.1	10	Snd Lvl	76.1	0.0	8	-8.0
Doris Ave west of Patterson	14	1	0.0	61.5	66	61.5	10	----	61.5	0.0	8	-8.0
Doris Ave between Patterson Road and Ve	16	1	0.0	63.9	66	63.9	10	----	63.9	0.0	8	-8.0
Teal Club Road West of Patterson	18	1	0.0	59.0	66	59.0	10	----	59.0	0.0	8	-8.0
Patterson Road south of Doris Ave	23	1	0.0	58.1	66	58.1	10	----	58.1	0.0	8	-8.0
Ventura Road North of Doris Ave	25	1	0.0	73.0	66	73.0	10	Snd Lvl	73.0	0.0	8	-8.0
Ventura road Between Teal Club Road anc	26	1	0.0	73.2	66	73.2	10	Snd Lvl	73.2	0.0	8	-8.0
Ventura Road South of Teal Club Road	28	1	0.0	73.5	66	73.5	10	Snd Lvl	73.5	0.0	8	-8.0
Teal Club Road between Patterson and Ve	30	1	0.0	61.0	66	61.0	10	----	61.0	0.0	8	-8.0

Dwelling Units	# DUs	Noise Reduction		
		Min	Avg	Max
		dB	dB	dB
All Selected	10	0.0	0.0	0.0
All Impacted	5	0.0	0.0	0.0
All that meet NR Goal	0	0.0	0.0	0.0

Rincon Consultants, inc.
<Analysis By?>

24 November 2014
TNM 2.5
Calculated with TNM 2.5

RESULTS: SOUND LEVELS
PROJECT/CONTRACT: <Project Name?>
RUN: Teal Club 2030 No Project
BARRIER DESIGN: INPUT HEIGHTS
ATMOSPHERICS: 68 deg F, 50% RH

Average pavement type shall be used unless a State highway agency substantiates the use of a different type with approval of FHWA.

Receiver Name	No.	#DUs	Existing LAeq1h	No Barrier LAeq1h Calculated	LAeq1h Crit'n	Increase over existing Calculated	Increase over existing Crit'n Sub'l Inc	Type Impact	With Barrier Calculated LAeq1h	Noise Reduction Calculated	Noise Reduction Goal	Calculated minus Goal
			dBA	dBA	dBA	dB	dB		dBA	dB	dB	dB
Victoria Ave North of Doris Ave	6	1	0.0	73.2	66	73.2	10	Snd Lvl	73.2	0.0	8	-8.0
Victoria Ave South of Teal Club	12	1	0.0	76.1	66	76.1	10	Snd Lvl	76.1	0.0	8	-8.0
Doris Ave west of Patterson	14	1	0.0	61.8	66	61.8	10	----	61.8	0.0	8	-8.0
Doris Ave between Patterson Road and Ve	16	1	0.0	65.3	66	65.3	10	----	65.3	0.0	8	-8.0
Teal Club Road West of Patterson	18	1	0.0	59.0	66	59.0	10	----	59.0	0.0	8	-8.0
Patterson Road south of Doris Ave	23	1	0.0	59.0	66	59.0	10	----	59.0	0.0	8	-8.0
Ventura Road North of Doris Ave	25	1	0.0	73.3	66	73.3	10	Snd Lvl	73.3	0.0	8	-8.0
Ventura road Between Teal Club Road anc	26	1	0.0	72.9	66	72.9	10	Snd Lvl	72.9	0.0	8	-8.0
Ventura Road South of Teal Club Road	28	1	0.0	73.7	66	73.7	10	Snd Lvl	73.7	0.0	8	-8.0
Teal Club Road between Patterson and Ve	30	1	0.0	62.2	66	62.2	10	----	62.2	0.0	8	-8.0

Dwelling Units	# DUs	Noise Reduction Min	Noise Reduction Avg	Noise Reduction Max
		dB	dB	dB
All Selected	10	0.0	0.0	0.0
All Impacted	5	0.0	0.0	0.0
All that meet NR Goal	0	0.0	0.0	0.0

Rincon Consultants, Inc.
<Analysis By?>

24 November 2014
TNM 2.5
Calculated with TNM 2.5

RESULTS: SOUND LEVELS
PROJECT/CONTRACT: <Project Name?>
RUN: Teal Club 2030 Project
BARRIER DESIGN: INPUT HEIGHTS
ATMOSPHERICS: 68 deg F, 50% RH

Average pavement type shall be used unless a State highway agency substantiates the use of a different type with approval of FHWA.

Receiver Name	No.	#DUs	Existing LAeq1h	No Barrier LAeq1h Calculated	LAeq1h Crit'n	Increase over existing Calculated	Increase over existing Crit'n Sub'l Inc	Type Impact	With Barrier Calculated LAeq1h	Noise Reduction Calculated	Noise Reduction Goal	Calculated minus Goal
			dBA	dBA	dBA	dB	dB		dBA	dB	dB	dB
Victoria Ave North of Doris Ave	6	1	0.0	73.2	66	73.2	10	Snd Lvl	73.2	0.0	8	-8.0
Victoria Ave South of Teal Club	12	1	0.0	76.2	66	76.2	10	Snd Lvl	76.2	0.0	8	-8.0
Doris Ave west of Patterson	14	1	0.0	61.8	66	61.8	10	----	61.8	0.0	8	-8.0
Doris Ave between Patterson Road and Ve	16	1	0.0	65.2	66	65.2	10	----	65.2	0.0	8	-8.0
Teal Club Road West of Patterson	18	1	0.0	59.3	66	59.3	10	----	59.3	0.0	8	-8.0
Patterson Road south of Doris Ave	23	1	0.0	58.1	66	58.1	10	----	58.1	0.0	8	-8.0
Ventura Road North of Doris Ave	25	1	0.0	73.5	66	73.5	10	Snd Lvl	73.5	0.0	8	-8.0
Ventura road Between Teal Club Road anc	26	1	0.0	73.2	66	73.2	10	Snd Lvl	73.2	0.0	8	-8.0
Ventura Road South of Teal Club Road	28	1	0.0	73.6	66	73.6	10	Snd Lvl	73.6	0.0	8	-8.0
Teal Club Road between Patterson and Ve	30	1	0.0	62.0	66	62.0	10	----	62.0	0.0	8	-8.0

Dwelling Units	# DUs	Noise Reduction Min	Noise Reduction Avg	Noise Reduction Max
		dB	dB	dB
All Selected	10	0.0	0.0	0.0
All Impacted	5	0.0	0.0	0.0
All that meet NR Goal	0	0.0	0.0	0.0

Appendix I

Vehicle Miles Traveled Analysis and Traffic Impact Study

Stantec

Memo

To:	Jay Dobrowalski City of Oxnard	From:	Maria Morris and Daryl Zerfass Stantec
Project/File:	2064169300	Date:	September 29, 2022

Reference: Teal Club Specific Plan Vehicle Miles Traveled Analysis

Stantec Consulting Services Inc. (Stantec) has prepared a Vehicle Miles Traveled (VMT) analysis for the proposed Teal Club Specific Plan (Project) located in the City of Oxnard and Unincorporated Ventura County, California. The purpose of this memo is to document the findings of a VMT analysis prepared in support of the Project's environmental documentation and complies with the updated California Environmental Quality Act (CEQA) guidelines that incorporate the requirements of Senate Bill 743 (SB 743).

Project Description

For purposes of this analysis, the Project is defined as the Teal Club Specific Plan (TCSP) and annexation of parcels south of the Specific Plan area.

The Project involves the adoption of a Specific Plan that would involve residential, commercial, and park uses on 149.72-acres. Specifically, 220 single family residential units, 770 multifamily residential units (of which approximately 148 would be affordable housing units) for a total of 990 residential units; 132,000 square feet of light industrial/business park; up to 60,000 square feet of Urban Village commercial space; and 17.76 acres of community and neighborhood parks and open space. Street improvements, utility infrastructure, bicycle and pedestrian paths and sidewalks, bus transit stops, and various pocket parks and resident recreation areas will also be constructed.

Outside of the TCSP area, the Project also includes annexation of 11.4 acres (9 parcels) south of Teal Club Road that would be Pre-Zoned Light Manufacturing (M-1) with capacity for up to 347,608 square feet of manufacturing uses (173, 804 square feet manufacturing space and 173,804 square feet of warehouse space). The Project Site Location map is attached.

Analysis Methodology

SB 743 required the Governor's Office of Planning and Research (OPR) to establish recommendations for identifying and mitigating transportation impacts within CEQA. In response, OPR prepared a document referred to in this memorandum as OPR's Technical Advisory[1]. OPR's Technical Advisory recommends methodologies for quantifying VMT, significance thresholds for identifying a transportation impact, and screening criteria to quickly identify if a Project can be presumed to have a less than significant impact. Lead agencies are to adopt local guidelines appropriate for their jurisdiction. At the time of this analysis, the City of Oxnard has not formally adopted VMT guidelines. Ventura County has prepared draft changes to their Initial Study Assessment Guidelines, which includes interim VMT thresholds and methodology[2]. This

[1] Technical Advisory on Evaluating Transportation Impacts in CEQA, Governor's Office of Planning and Research, State of California, December 2018.
[2] Draft Changes to Initial Study Assessment Guidelines 30 Day Public Review Period Proposed Update to Section 27A(1) Transportation & Circulation Section of the Initial Study Assessment Guidelines to Include Interim Vehicles Miles Traveled Thresholds

analysis utilizes a combination of Ventura County, Ventura County Transportation Commission (VCTC), and OPR, thresholds and methodologies.

For mixed-use developments, OPR's Technical Advisory recommends that "lead agencies can evaluate each component of a mixed-used project independently and apply the significance threshold for each project component (e.g., residential, light industrial, and general commercial). The significance thresholds used in this analysis are summarized in **Table 1**.

Table 1 Significance Thresholds

Land Use Type	Metric	Threshold of Significance Description	Baseline VMT per Capita[1]	Threshold of Significance VMT per Capita[2]
Residential	Home-based VMT per capita	15% reduction of citywide average home-based VMT per capita[3]	14.80	12.58
Industrial	Work VMT per capita[4]	15% reduction of regional average work-based VMT per capita[5]	19.10	16.24
Retail	Net change in total VMT	No net increase in regional VMT[7]	NA[6]	NA[6]

Sources: OPR's Technical Advisory, Ventura County Draft Guidelines, VCTC, and VCTM (model run performed by Stantec on July 17, 2022)
[1] VCTM model run from VCTC (April 2022)
[2] Baseline minus 15% (Ventura County, OPR)
[3] OPR's Technical Advisory recommends using either citywide or regional average HB VMT per capita for evaluation of residential land use. For this analysis, the citywide average is used as that is the most common approach for Cities with an adopted methodology.
[4] Home-based-Work plus Work-based-Other trip purposes (VCTC model's VMT output tables)
[5] OPR's Technical Advisory recommends using a regional average VMT per employee for evaluation of office/industrial (employment) land uses.
[6] Not applicable, based on net total VMT
[7] Ventura County Guidelines uses net change in unincorporated county. For this analysis, a countywide total would be utilized.

As shown in **Table 1** the significance threshold for the residential portion of the Project is 12.58 Home-based (HB) VMT per capita. For industrial, the significance threshold is 16.24 Work VMT per capita.

The baseline average VMT per capita estimates shown in **Table 1** were derived using the Ventura County Transportation Model (VCTM). The VCTM is maintained by the Ventura County Transportation Commission (VCTC). VCTM covers the entire county and is used to understand project traffic in relationship to land use. VCTC has updated the VCTM to be used for impact analyses related to VMT. Coordination was made with VCTC staff to obtain the latest version of the VCTM. The 2016 base-year version of the model was used to derive Project level VMT estimates. Project land use was inputted to traffic analysis zone (TAZ) 60061400 (for the TCSP portion) and 60061200 (for the annexed parcels). A model run was carried out and the resulting VMT estimates are used herein. A second model run was also a carried out with Project Alternative 3 Reduced Intensity land uses, using the 2016 base-year version of the model. Project

and Methodology and Appendix B Vehicles Miles Traveled Estimates; And Remove Level of Service Thresholds and Methodology with Recommended Changes in Legislative Format, https://www.vcpublicworks.org/wp-content/uploads/2020/06/VMT-Draft-for-Public-Review-Clean-Version.pdf

Alternative 3 includes 387 single family residential units, 603 multifamily residential units, for a total of 990 residential units, and 50,000 square feet of commercial.

Project Screening

Prior to undertaking a detailed VMT analysis, OPR's Technical Advisory advises that lead agencies conduct a screening process "to quickly identify when a project should be expected to cause a less than significant impact without conducting a detailed study."[3] Lead agencies may screen out VMT impacts using project size, maps depicting areas of low VMT, transit availability and provision of affordable housing. In addition, local-serving development can also be presumed to have a less than significant impact on VMT. **Table 2** summarizes the screening process.

Table 2 Project Screening Criteria

Category	Criteria/Screening	Threshold	Does Project Meet Screening Criteria?
Trip generation screening	Small projects can be screened out from completing a full VMT analysis.	If the Project generates less than 110 trips per day, the Project is assumed to have a less than significant impact.	No
Map-based screening	Projects that are located in areas with low VMT can be screened out from completing a full VMT analysis.	If the Project is in a low VMT area, the Project is assumed to have a less than significant impact.	No
Proximity to transit	Projects within ½ mile of a major transit stop or a stop located along a high-quality transit corridor reduce VMT and therefore can be screened out from completing a full VMT analysis.	If the Project is within ½ mile of a major or high-quality transit stop/corridor, the Project is assumed to have a less than significant impact.	No
Affordable residential development	Affordable housing in infill locations can be screened out from completing a full VMT analysis.	If the Project is comprised 100% of affordable units and is located in an infill location, then the Project is assumed to have a less than significant impact.	The affordable housing portion of the Project, approximately 15% or 148 units, are less than significant.
Locally serving retail and other local serving uses	Retail projects that are local-serving can be screened out from completing a full VMT analysis. Other local serving uses approved by local agency.	If the retail component of the Project consists of individual retail components that are less than 50,000 square feet, then the retail portion of the Project is assumed to have a less than significant impact.	The retail portion of the Project can be screened out since each retail establishment would be less than 50,000 square feet. Examples of typical commercial neighborhood retail and service uses include a coffee shop, deli or sandwich shop, restaurants, dry cleaner, consumer electronics retail, mailbox/ package business, flower shop, hair salon, or copy center. Leasing preferences and incentives may be required so that the commercial provides a mix of uses that reduce vehicle trips by residents. Community and neighborhood parks, open space, and recreation areas are considered locally serving and are less than significant.

[3] Page 12 ibid.

As shown in **Table 2**, the Project's affordable housing units, retail component, and parks and recreation areas are screened out and are less than significant.

OPR's Technical Advisory makes a distinction between local-serving retail and regional-serving retail. As stated, "By adding retail opportunities into the urban fabric and thereby improving retail destination proximity, a local-serving retail development tends to shorten trips and reduce VMT. Thus, lead agencies generally may presume such development creates a less-than-significant transportation impact"[4]. Generally, OPR's Technical Advisory considers retail stores larger than 50,000 square feet regional-serving and stores less than 50,000 square feet local-serving. As shown in the previously referenced **Table 2** above, the Project's retail component would consist of a combination of retail stores totaling approximately 60,000 square feet and each business would be below the 50,000 square feet threshold. In addition, such businesses improve retail destination proximity by providing more local retail opportunities for residents.

Project Level VMT Analysis

The VCTM was used to estimate the Project's VMT. **Table 3** shows the Project's estimated VMT and a comparison to the significance thresholds.

Table 3 Project VMT Analysis – Residential

Description	Project TCSP HB VMT per Capita	Alternative 3 Reduced Intensity TCSP HB VMT per Capita
	(TAZ 60061400)	(TAZ 60061400)
Project HB VMT Rate	12.21	12.42
HB VMT Rate Baseline	14.80	14.80
HB VMT Rate Threshold (15% reduction from baseline)	12.58	12.58
Project HB VMT Rate (Difference from Threshold)	-0.37	-0.16
Is Project HB VMT Rate Above or Below Threshold?	Below	Below

Table 4 Project VMT Analysis – Industrial (Employment)

Description	Project		Alternative 3 Reduced Intensity	
	TCSP Work VMT per Capita	Annexed Parcels Work VMT per Capita	TCSP Work VMT per Capita	Annexed Parcels Work VMT per Capita
	(TAZ 60061400)	(TAZ 60061200)	(TAZ 60061400)	(TAZ 60061200)
Project HB VMT Rate	10.89	12.24	10.98	12.2
HB VMT Rate Baseline	19.10	19.10	19.10	19.10
HB VMT Rate Threshold (15% reduction from baseline)	16.24	16.24	16.24	16.24
Project HB VMT Rate (Difference from Threshold)	-5.35	-4.00	-5.26	-4.04
Is Project HB VMT Rate Above or Below Threshold?	Below	Below	Below	Below

[4] Page 16 ibid.

For the residential component of the Project, the VCTM calculates the HB VMT per capita using VCTM factors for population and housing. To have comparable data, the VCTM factors for population are used to convert from land use. The TCSP area is located in TAZ 60061400 (see attached **Figure 2** for TAZ boundaries). As shown the Project's HB VMT is 12.21 and is below the threshold of 12.58 HB VMT.

For the industrial (excluding general commercial) employment portion of the Project, the TCSP area (TAZ 60061400) and the annexed parcels portion of the Project (TAZ 60061200) are each compared to the threshold of significance. For TCSP, the work VMT per employee is 10.89 and is below the significance threshold of 16.24 work VMT per employee. For the annexed parcels employment, the work VMT per employee is 12.24 and is below the significance threshold of 16.24 work VMT per employee.

As discussed in the screening section above, the general commercial/retail portion of the Project is less than significant since the anticipated retail will be locally serving. Each retail establishment will be less than 50,000 square feet. Typical commercial neighborhood retail and service uses could include a coffee shop, deli or sandwich shop, restaurants, dry cleaner, consumer electronics retail, mailbox/ package business, flower shop, hair salon, or copy center. Leasing preferences and incentives may be required so that the commercial provides a mix of uses that reduce vehicle trips by residents.

In total, the Project would have a less than significant impact on VMT.

Cumulative Impact Analysis

Since the Project would have a less than significant impact at the Project level, the Project would have a less than significant impact at the cumulative level per OPR's Technical Advisory[5].

Project Components that Reduce VMT

The VMT estimates presented in this memorandum are derived from a travel demand model. In general, travel demand models have limitation and are not able to completely capture all the Project's features that research has shown to reduce VMT. Project components (PC) that can reduce VMT are listed below.

- **PC-1 Mix of Uses**: The Project will create an integrated land, transportation, and infrastructure plan that allows for a mix of residential, mixed-use and commercial development to minimize the need for short distance single-person vehicle trips both within the project and within the city.
- **PC-2 Affordable Housing**: The Project includes a total of 148 affordable housing units, 15% of the overall project units, are included in the total unit count and would not, when combined with market rate units, exceed 990 total residential dwelling units. Affordable units include only units affordable to extremely low, very-low, and low-income households.
- **PC-3 Pedestrian Amenities**: The Project will create a pedestrian circulation system that connects residential, industrial, and commercial uses within the Project. Internal pathways and common areas with connection to the public walking network and to the Urban Village.
- **PC-4 Bicycle Infrastructure**: The Project will provide bike and trail linkages between the TCSP area and existing facilities. Class II bike will surround the Project site on Doris Avenue, Teal Club Road, Patterson Road, and Ventura Road. Through the Project site will be multi-use trail.

[5] Page 6 ibid.

- **PC-5 Expand Transit Network**: The Project will construct a Transit Hub on Ventura Road.
- **PC-6 Encourage Remote Work**: The Project will encourage remote work activities to occur on-site by providing area where internet connection will be available such as in the retail area, business office of the residential buildings, and recreational areas.

Consistency with the Regional Transportation Plan/Sustainable Communities Strategy (RTP/SCS)

The Project is consistent with the RTP/SCS. Discussion is provided in Table 4.6-10 of the Project's DEIR.

Active Transportation

The Project will not block, remove, or restrict existing pedestrian and bicycle facilities. Existing bicycle and pedestrian infrastructure are discussed in the Project's DEIR. The Project will provide pedestrian and bicycle facilities to serve the Project's residents, employees, and visitors and would be designed to connect pedestrian and bike paths with public sidewalk and streets, greenbelts, and public bike lanes.

Transit

The Project will not block, remove, or restrict existing transit. See the Project's DEIR for discussion of existing transit around the Project, and future transit including the construction of a Transit Hub on Ventura Road.

Conclusion

A VMT analysis was conducted for the Project. This analysis utilizes a combination of Ventura County, Ventura County Transportation Commission (VCTC), and OPR thresholds and methodologies. The screening process finds that the affordable housing units, general commercial/retail, and parks/recreation uses are less than significant.

The VCTM was used to estimate Project level VMT per capita. The Project's HB VMT per capita is 12.21 and is below the significance threshold of 12.58 HB VMT per capita. For the industrial/employment portion of the Project, the TCSP area and the annexed parcels portion of the Project are individually compared to the threshold of significance. For TCSP industrial/employment, the work VMT per employee is 10.89 and is below the significance threshold of 16.24 work VMT per employee. For the annexed parcels employment, the work VMT per employee is 12.24 and is below the significance threshold of 16.24 work VMT per employee. Therefore, both the Project's residential portion and the Project's industrial/employment portion are less than significant.

Similarly, VMT estimates for the DEIR's Alternative 3 (Reduced Intensity) would have a less than significant impact for both the residential portion of the Project and the industrial/employment portion of the Project. Since the Project would have a less than significant impact at the Project level, the Project would have a less than significant impact at the cumulative level per OPR's Technical Advisory. The Project was also determined to be consistent with regional plans and to not negatively impact active transportation or transit use.

Reference: Teal Club Specific Plan Vehicle Miles Traveled Analysis

STANTEC CONSULTING SERVICES INC.

Maria Morris AICP, PTP
Senior Transportation Planner
Phone: 949 923 6072
maria.morris@stantec.com

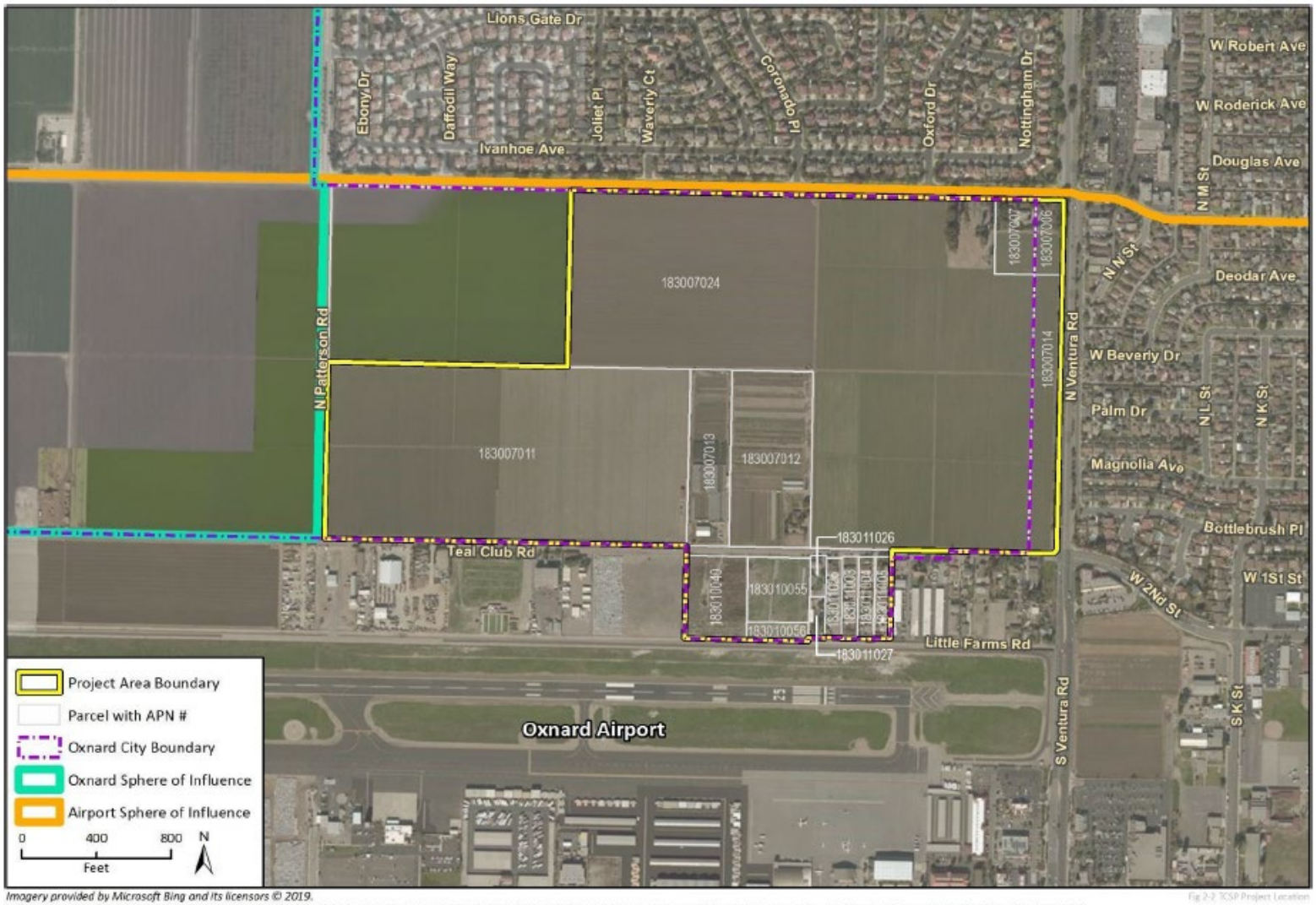
Daryl Zerfass PE,PTP
Principal, Transportation Planning & Traffic Eng
Phone: 949 302-8995
Daryl.Zerfass@stantec.com

Attachment: Project Site Location
TAZ Map
VCTM VMT Output Summary – Existing with Teal Club Specific Plan and Annexed Parcels
VCTM VMT Output Summary – Existing with Alternative 3 (Reduce Intensity) Teal Club Specific Plan and Annexed Parcels

c. C.C.

Reference: Teal Club Specific Plan Vehicle Miles Traveled Analysis

Figure 1 Project Site Location

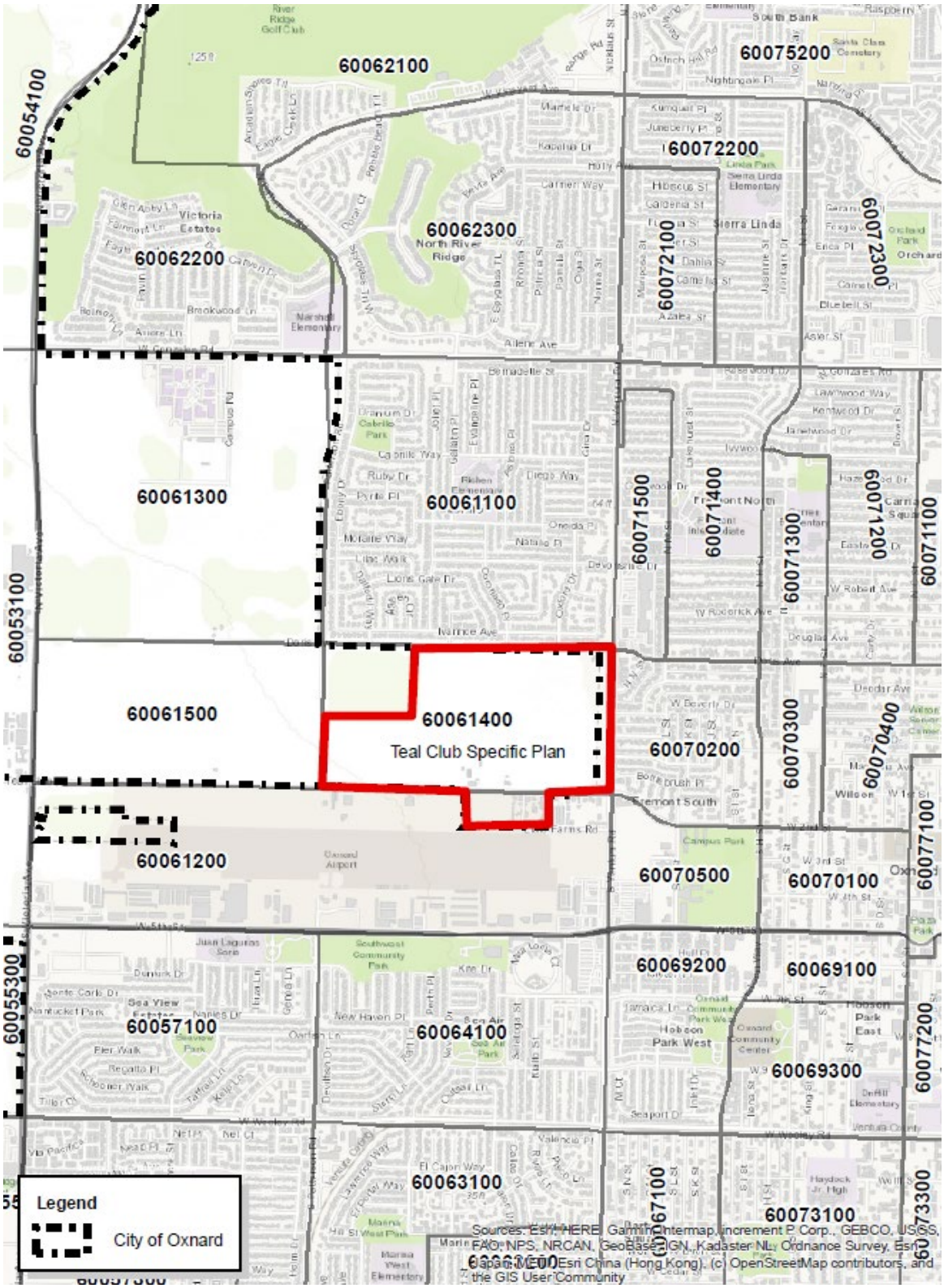


Imagery provided by Microsoft Bing and its licensors © 2019.
Project area boundary hand digitized from: TEAL CLUB SPECIFIC PLAN - EIR ALTERNATIVES SUMMARY (May 9, 2018 Update) – Development Planning Services, Inc. Additional data provided by County of Ventura 2018.

Source: Figure 2-2 from the Teal Club Specific Plan EIR

Reference: **Teal Club Specific Plan Vehicle Miles Traveled Analysis**

Figure 2 VCTM TAZ Map



VCTM VMT Output Summary
Existing with Teal Club Specific Plan and Annexed Parcels

City	Home-based VMT/Capita	Work-based VMT/Employee	Total VMT/Service Population
Camarillo	16.10	20.25	29.22
Fillmore	26.67	19.07	29.89
Moorpark	21.21	23.11	35.22
Ojai	9.00	17.93	27.36
Oxnard	14.59	12.94	20.52
Port Hueneme	15.27	12.47	20.01
San Buenaventura	11.75	17.45	26.65
Santa Paula	15.61	16.61	21.25
Simi Valley	19.28	20.05	29.23
Thousand Oaks	15.32	22.60	31.06
Unincorporated	20.61	23.79	31.02
Overall Ventura County	16.39	19.07	27.16

Oxnard			
ID	Purpose	Productions	Attractions
1	Home-based Work	1,557,391	676,451
2	Home-based School	69,962	22,404
3	Home-based University	24,350	17,143
4	Home-based Shopping	240,663	179,701
5	Home-based Social-Recreational	420,856	235,117
6	Home-based Serve Passenger	219,657	95,492
7	Home-based Other	493,547	257,316
8	Work-Based Other	108,815	122,922
9	Other Based Other	371,851	388,401
	Total VMT	3,507,092	1,994,946
	Total Home-based VMT		3,026,427
	Total Work-based VMT		785,266
	Total Population	207,437	
	Total Employees	60,669	
	Total Home-based VMT/Capita	**14.59**	
	Total Work-based VMT/Employee	**12.94**	
	Total VMT/Service Population	**20.52**	

Oxnard TAZ:		60061201	
ID	Purpose	Productions	Attractions
1	Home-based Work	207	31,752
2	Home-based School	47	-
3	Home-based University	4	-
4	Home-based Shopping	50	708
5	Home-based Social-Recreational	82	2,218
6	Home-based Serve Passenger	30	1,207
7	Home-based Other	99	3,662
8	Work-Based Other	2,933	4,390
9	Other Based Other	5,291	4,025
	Total VMT	8,743	47,962
	Total Home-based VMT		519
	Total Work-based VMT		34,685
	Total Population	85	
	Total Employees	2,834	
	Total Home-based VMT/Capita	**6.10**	
	Total Work-based VMT/Employee	**12.24**	
	Total VMT/Service Population	**19.43**	

Ventura County			
ID	Purpose	Productions	Attractions
1	Home-based Work	7,260,041	5,376,476
2	Home-based School	279,367	261,324
3	Home-based University	210,578	535,510
4	Home-based Shopping	1,137,847	1,060,522
5	Home-based Social-Recreational	2,110,929	1,940,831
6	Home-based Serve Passenger	717,780	677,147
7	Home-based Other	2,310,825	2,151,254
8	Work-Based Other	901,401	759,252
9	Other Based Other	2,346,604	2,152,565
	Total VMT	17,275,373	14,914,881
	Total Home-based VMT		14,027,367
	Total Work-based VMT		6,277,877
	Total Population	855,883	
	Total Employees	329,284	
	Total Home-based VMT/Capita	**16.39**	
	Total Work-based VMT/Employee	**19.07**	
	Total VMT/Service Population	**27.16**	

Ventura County TAZ:		60061401	
ID	Purpose	Productions	Attractions
1	Home-based Work	9,780	6,281
2	Home-based School	228	-
3	Home-based University	280	-
4	Home-based Shopping	1,518	2,901
5	Home-based Social-Recreational	2,788	2,095
6	Home-based Serve Passenger	481	559
7	Home-based Other	3,054	1,635
8	Work-Based Other	571	1,392
9	Other Based Other	4,962	4,462
	Total VMT	23,661	19,326
	Total Home-based VMT		18,129
	Total Work-based VMT		6,852
	Total Population	1,485	
	Total Employees	629	
	Total Home-based VMT/Capita	**12.21**	
	Total Work-based VMT/Employee	**10.89**	
	Total VMT/Service Population	**20.33**	

VCTM VMT Output Summary

Existing with Alternative 3 (Reduced Intensity) Teal Club Specific Plan and Annexed Parcels

City	Home-based VMT/Capita	Work-based VMT/Employee	Total VMT/Service Population
Camarillo	16.11	20.25	29.23
Fillmore	26.71	19.09	29.93
Moorpark	21.22	23.12	35.26
Ojai	9.00	17.96	27.39
Oxnard	14.63	12.93	20.55
Port Hueneme	15.30	12.45	20.03
San Buenaventura	11.76	17.44	26.66
Santa Paula	15.63	16.63	21.27
Simi Valley	19.29	20.06	29.25
Thousand Oaks	15.32	22.62	31.08
Unincorporated	20.63	23.99	31.10
Overall Ventura County	16.41	19.08	27.19

Oxnard			
ID	Purpose	Productions	Attractions
1	Home-based Work	1,564,711	675,148
2	Home-based School	70,049	22,418
3	Home-based University	24,358	17,135
4	Home-based Shopping	241,110	179,894
5	Home-based Social-Recreational	421,095	235,150
6	Home-based Serve Passenger	219,889	95,538
7	Home-based Other	494,084	257,320
8	Work-Based Other	109,001	122,955
9	Other Based Other	371,972	388,510
	Total VMT	3,516,269	1,994,068
	Total Home-based VMT		3,035,296
	Total Work-based VMT		784,149
	Total Population	207,437	
	Total Employees	60,669	
	Total Home-based VMT/Capita	**14.63**	
	Total Work-based VMT/Employee	**12.93**	
	Total VMT/Service Population	**20.55**	

Oxnard TAZ:		60061201	
ID	Purpose	Productions	Attractions
1	Home-based Work	210	31,642
2	Home-based School	47	-
3	Home-based University	4	-
4	Home-based Shopping	50	714
5	Home-based Social-Recreational	82	2,217
6	Home-based Serve Passenger	30	1,204
7	Home-based Other	99	3,666
8	Work-Based Other	2,944	4,386
9	Other Based Other	5,299	4,028
	Total VMT	8,765	47,858
	Total Home-based VMT		522
	Total Work-based VMT		34,587
	Total Population	85	
	Total Employees	2,834	
	Total Home-based VMT/Capita	**6.14**	
	Total Work-based VMT/Employee	**12.20**	
	Total VMT/Service Population	**19.40**	

Ventura County			
ID	Purpose	Productions	Attractions
1	Home-based Work	7,273,400	5,372,015
2	Home-based School	279,746	261,634
3	Home-based University	210,672	539,433
4	Home-based Shopping	1,138,410	1,061,163
5	Home-based Social-Recreational	2,111,577	1,941,336
6	Home-based Serve Passenger	718,055	677,479
7	Home-based Other	2,311,661	2,151,865
8	Work-Based Other	900,991	759,033
9	Other Based Other	2,346,343	2,152,349
	Total VMT	17,290,855	14,916,305
	Total Home-based VMT		14,043,520
	Total Work-based VMT		6,273,006
	Total Population	855,883	
	Total Employees	328,783	
	Total Home-based VMT/Capita	**16.41**	
	Total Work-based VMT/Employee	**19.08**	
	Total VMT/Service Population	**27.19**	

Ventura County TAZ:		60061401	
ID	Purpose	Productions	Attractions
1	Home-based Work	10,026	1,286
2	Home-based School	229	-
3	Home-based University	280	-
4	Home-based Shopping	1,563	2,419
5	Home-based Social-Recreational	2,796	1,984
6	Home-based Serve Passenger	484	415
7	Home-based Other	3,071	1,364
8	Work-Based Other	119	667
9	Other Based Other	4,272	3,843
	Total VMT	22,840	11,979
	Total Home-based VMT		18,448
	Total Work-based VMT		1,405
	Total Population	1,485	
	Total Employees	128	
	Total Home-based VMT/Capita	**12.42**	
	Total Work-based VMT/Employee	**10.98**	
	Total VMT/Service Population	**21.59**	

TEAL CLUB SPECIFIC PLAN
Traffic and Circulation Study

City of Oxnard, CA

December 2, 2019

W.O. 2064169300

Prepared By:

Stantec

111 E. Victoria Street
Santa Barbara, CA 93101
Phone: (805) 963-9532

SUMMARY

Stantec has prepared the following traffic and circulation study for the Teal Club specific Plan. The following section summarizes existing and future traffic conditions, the trip generation estimates for the Proposed Project, and the identified impacts and mitigations for the study-area roadways and intersections.

A total of 25 intersections were selected for analysis in consultation with City of Oxnard Traffic Engineering and Planning staff. Existing intersection turning volumes for the AM and PM peak commute periods were derived from counts collected in May 2018 and October 2019. In addition, vehicle classification counts were completed along Victoria Avenue were used to adjust the peak hour volumes (heavy vehicle adjustment of 2.7% during the AM peak hour and 1.5% during the PM peak hour).

Levels of service were calculated for the study-area intersections based on the Cities of Oxnard and Ventura calculation methodologies ((ICU methodology for signalized intersections and HCM methodology for unsignalized intersections) and Caltrans' calculation methodology (HCM methodology for U.S. Highway 101 Ramps intersections)

Existing Conditions

The existing conditions analysis (Table 2) indicated that the majority of the 25 intersections included in the analysis currently operate at LOS C or better during both peak hours, which is considered acceptable based on City and Caltrans level of service standards. The following intersection operate at LOS D or worse:

5. Victoria Avenue/Doris Avenue
6. Victoria Avenue/Teal Club Road
18. Ventura Road/Beverly Drive

Project-Specific Conditions

The site currently consists 149.6 acres of agricultural uses. The Specific Plan proposes 990 dwelling units at various densities, 12.3 acres of parks and open space, a 132 KSF Business Research Park and 60 KSF of mixed-use commercial in the Urban Village core along Ventura Road. Trip generation estimates for the Teal Club Specific Plan were developed based on the rates presented in the Institute of Transportation Engineers (ITE) *Trip Generation Manual* and SANDAG's *Traffic Generators,* and internal capture rates and pass-by rates contained in ITE's *Trip Generation Handbook.*

Based on these rates, the project is expected to generate 13,570 primary average daily trips (ADT), with 867 primary trips occurring during the AM peak hour and 956 trips occurring during the PM peak hour (Table 4).

Consistent with the 2030 General Plan, frontage improvements include the widening of Ventura Road, Patterson Road, Doris Avenue and Teal Club Road to Local (2-4 lanes) and Primary Arterial (6 lanes) standards. Where these roads are adjacent to the Teal Club Specific Plan project site,

the widening would be required to occur on the Teal Club properties. The frontage improvements and implementation phase are summarized below.

Project Frontage Roadway Segment Improvements

Segment	Improvements	Completion
Ventura Road (north of Doris to south of Teal club)	Full Roadway widening – 6 Lane Primary Arterial	Prior to occupancy of Phase 1
Patterson Road (Project boundary to Teal Club)	Full Roadway widening – 2 Lane Local Arterial	Prior to occupancy of Phase 2
Doris Avenue (Project boundary to Ventura)	Full Roadway widening – 4 lane Local Arterial	Prior to occupancy of Phase 1
Teal Club Road (Ventura to Coronado)	Full Roadway widening - 4 Lane Local Arterial	Prior to occupancy of Phase 1
Teal Club Road (Coronado to Patterson)	Full Roadway widening - 4 Lane Local Arterial	Prior to occupancy of Phase 2

The existing conditions analysis (Tables 6 and 7) indicated that the project would generate project-specific impacts based on City of Oxnard impact thresholds at the following intersections:

6. Victoria Avenue/Teal Club Road
18. Ventura Road/Beverly Drive

Review of the traffic signal warrants contained in *Chapter 4C. Traffic Control Signal Needs Studies* of the CAMUTCD indicates that the existing plus project volumes would satisfy *Warrant 3 – Peak Hour (70% Factor/Rural)* for both the intersections, which are currently controlled with stop signs.

The Victoria Avenue/Doris Avenue intersection would operate at LOS D during the AM peak hour, however the project addition of V/C 0.01 would not exceed the City's impact threshold of V/C 0.02.

Cumulative plus Project Conditions

The cumulative analysis (Tables 8 and 9) indicated that the project would generate cumulative impacts based on City of Oxnard impact thresholds at the following intersections:

5. Victoria Avenue/Doris Avenue
6. Victoria Avenue/Teal Club Road
10. Patterson Road/Doris Avenue
18. Ventura Road/Beverly Drive

Improvement measures to mitigate the cumulative impacts were developed and are discussed on Page 34 and Table 13 of the report. The project's proportionate share to the mitigations are also provided.

Buildout plus Project Conditions

The buildout analysis indicated that the project would generate buildout impacts based on City of Oxnard impact thresholds at the following intersections:

4. Victoria Avenue/Gonzales Road
11. Patterson Road/Teal Club Road
17. Ventura Road/Doris Avenue
18. Ventura Road/Beverly Drive

Improvement measures to mitigate the buildout impacts were developed and are discussed on Page 36 and Table 14 of the report. The project's proportionate share to the mitigations are also provided.

The table below summarizes the levels of service for the impacted intersections before and after mitigation.

Mitigated Intersection Levels of Service

Intersection	Mitigation	AM Peak Hour ICU/LOS	PM Peak Hour ICU/LOS	Project Proportionate Share
Existing + Project Conditions				
5. Victoria Ave/Doris Ave	1. 3rd NB through lane 2. 3rd SB through lane	0.62/LOS B	0.58/LOS A	40%
6. Victoria Ave/Teal Club Rd	1. Traffic signal	0.80/LOS C	0.77/LOS C	100%
18. Ventura Rd/Beverly Dr	1. Traffic signal 2. NB LT lane 3. 3rd NB through lane 4. 3rd SB through lane	0.60/LOS A	0.67/LOS B	100%
Cumulative + Project Conditions				
5. Victoria Ave/Doris Ave	1. 3rd NB through lane 2. 3rd SB through lane	0.67/LOS B	0.59/LOS A	40%
6. Victoria Ave/Teal Club Rd	1. Traffic signal 2. 3rd NB through lane 3. 3rd SB through lane	0.61/LOS B	0.59/LOS A	23%
10. Patterson Rd/Doris Ave	1. Traffic signal 2. LT lane + shared TH/RT lane on all approaches	0.71/LOS C	0.41/LOS A	21%
18. Ventura Rd/Beverly Dr	1. Traffic signal 2. NB LT lane 3. 3rd NB through lane 4. 3rd SB through lane	0.61/LOS B	0.68/LOS B	100%

Intersection	**Mitigation**	**AM Peak Hour ICU/LOS**	**PM Peak Hour ICU/LOS**	**Project Proportionate Share**
Buildout + Project Conditions				
4. Victoria Ave/Gonzales Rd	1. 3rd NB through lane 2. 3rd SB through lane 3. WB shared TH/RT lane	0.69/LOS B	0.77/LOS C	10%
11. Patterson Rd/Teal Club Rd	1. Traffic signal	0.40/LOS A	0.26/LOS A	17%
17. Ventura Rd/Doris Ave	1. EB LT lane + through lane + shared TH/RT lane 2. EB LT lane + through lane + shared TH/RT lane	0.76/LOS C	0.79/LOS C	33%
18. Ventura Rd/Beverly Dr	1. Traffic signal 2. NB LT lane 3. 3rd NB through lane 4. 3rd SB through lane	0.59/LOS A	0.68/LOS B	100%

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Appendix 6 – Proportionate Share Calculation Worksheets
Appendix 7 – Traffic Signal Warrant Worksheets

INTRODUCTION

Stantec has prepared the following traffic and circulation study for the Teal Club specific Plan. The traffic and circulation study provides an assessment of the existing and future traffic conditions within the study area, determines the trip generation and trip distribution for the proposed development, evaluates the potential traffic impacts to the vicinity roadways and intersections, and provides feasible mitigations where applicable. A discussion of the site access and circulation plan is also provided.

PROJECT DESCRIPTION

Exhibit 1 shows the location of the Teal Club Specific Plan in the City of Oxnard. The site currently consists 149.6 acres of agricultural uses. The Specific Plan proposes 990 dwelling units at various densities, 12.3 acres of parks and open space, a 132 KSF Business Research Park and 60 KSF of mixed-use commercial in the Urban Village core along Ventura Road. Exhibit 2 illustrates the conceptual site plan. The proposed school site located on approximately 25 acres in the northwest corner of the Specific Plan area is processed separately by the Oxnard School District and is not included in the proposed project.

Access is proposed via two new connections to Doris Avenue, four connections to Teal Club Road and one connection on Ventura Road opposite Beverly Drive. Frontage improvements include construction of Patterson Road, Doris Avenue, Teal Club Road and Ventura Road to General Plan arterial standards.

STUDY METHODOLOGY

Traffic Analysis Scenarios

Pursuant to CEQA and City traffic impact study requirements, The traffic analysis includes the following traffic scenarios:

- Existing Conditions
- Existing plus Project Conditions
- Cumulative (Existing plus approved and pending projects) Conditions
- Cumulative + Project Conditions
- Buildout Conditions

Level of Service Criteria

The traffic analysis focuses on key intersections within the study area during the AM and PM commute periods, when peak traffic volumes typically occur. A level of service (LOS) ranking scale is used to identify the operating condition at intersections. This scale compares traffic volumes to intersection capacity and assigns a letter value to this relationship. The letter scale ranges from A to F with LOS A representing free flow conditions and LOS F representing congested conditions. The level of service criteria are summarized in Table 1.

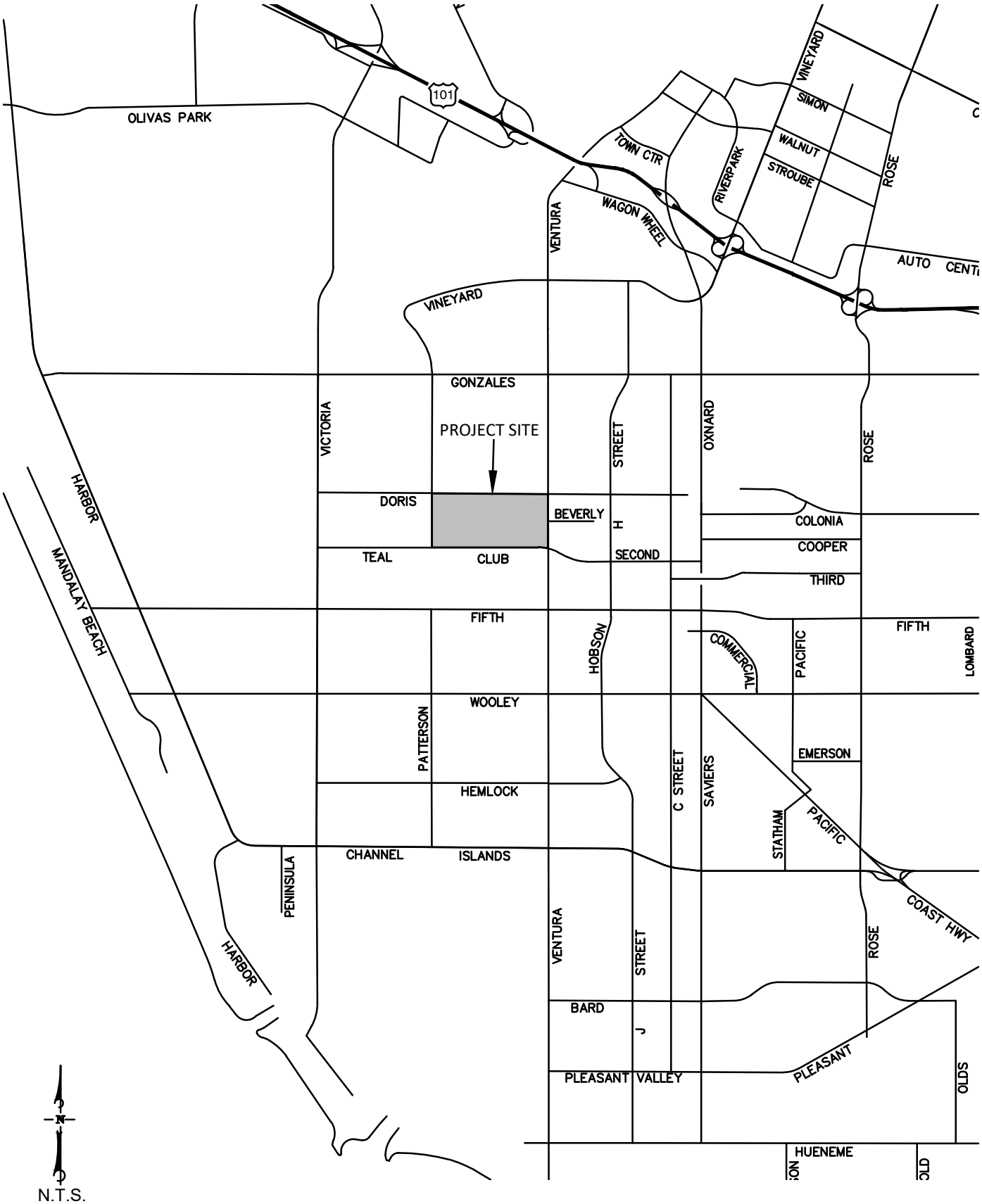

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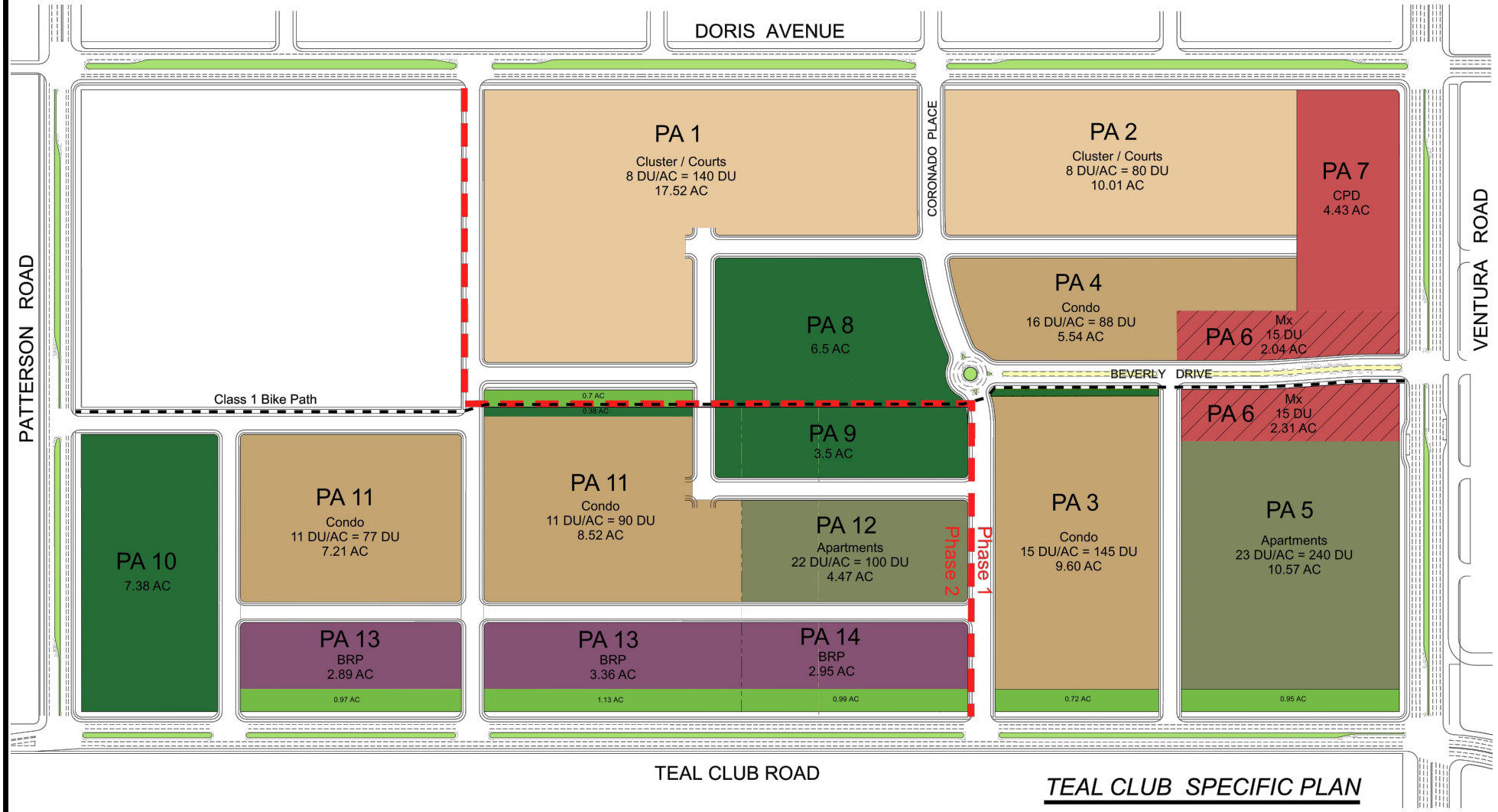
EXHIBIT 1
STUDY AREA STREET NETWORK
AND PROJECT LOCATION



TEAL CLUB SPECIFIC PLAN

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EXHIBIT 2
CONCEPTUAL SITE PLAN

Table1
Intersection Level of Service Criteria

LOS	Signalized Intersections (V/C Ratio)	Signalized Intersections (Sec. of Delay)	Unsignalized Intersections (Sec. of Delay)	Definition
A	< 0.60	≤ 10	≤ 10	Conditions of free unobstructed flow, no delays and all signal phases sufficient in duration to clear all approaching vehicles.
B	0.61 – 0.70	> 10 and ≤ 20	> 10 and ≤ 15	Conditions of stable flow, very little delay, a few phases are unable to handle all approaching vehicles.
C	0.71- 0.80	> 20 and ≤ 35	> 15 and ≤ 25	Conditions of stable flow, delays are low to moderate, full use of peak direction signal phases is experienced.
D	0.81 – 0.90	> 35 and ≤ 55	> 25 and ≤ 35	Conditions approaching unstable flow, delays are moderate to heavy, significant signal time deficiencies are experienced for short durations during the peak traffic period.
E	0.91 – 1.00	> 55 and ≤ 80	> 35 and ≤ 50	Conditions of unstable flow, delays are significant, signal phase timing is generally insufficient, congestion exists for extended duration throughout the peak period.
F	> 1.00	> 80	> 50	Conditions of forced flow, travel speeds are low and volumes are well above capacity. This condition is often caused when vehicles released by an upstream signal are unable to proceed because of back-ups from a downstream signal

Source: Highway Capacity Manual, 6th Edition.

The City of Oxnard considers LOS C or better acceptable for intersection operations, with LOS D acceptable at the following intersections only:

- Oxnard Boulevard with Gonzales Road;
- Oxnard Boulevard with Vineyard Avenue;
- Rose Avenue with Gonzales Road;
- Wooley Road with Oxnard Blvd/Saviers Rd (Five Points) and;
- Wooley Road with C Street.

The City of Ventura considers LOS D as acceptable. Caltrans has established the cusp of the LOS C/D range as the target level of service standard for State Highway facilities.

Level of Service Calculation Methodology

City of Oxnard. Pursuant to *Oxnard Traffic Study Guidelines*, the Intersection Capacity Utilization (ICU) Methodology was used to determine levels of service for signalized intersections, and the results are shown as a volume-to-capacity (V/C) ratio. The City's minimum V/C ratio for left-turns is V/C 0.05 and the minimum V/C ratio for the through movement is V/C 0.07. Level of service for the unsignalized intersections in the study area were calculated using the methodologies outlined in the Highway Capacity Manual (HCM)[1] and the results are presented as seconds of delay. Levels of service for unsignalized intersections were calculated using *HCS software*[2].

Caltrans. Levels of service for State intersections were analyzed based on the HCM methodologies. Intersection levels of service were calculated using Synchro[3] software, which

[1] Highway Capacity Manual, 6th Edition: A Guide for Multi-Modal Mobility Analysis, Transportation Research Board, 2016.
[2] Highway Capacity Software 7, McTrans, 2016.
[3] Synchro plus SimTraffic 10, Trafficware Ltd., 2018.

implements the HCM methodology to determine intersection levels of service, control delays and queue lengths for each approach.

EXISTING CONDITIONS

Roadway Network

The roadway system in the study area is comprised of a network of freeways, arterials and collectors. The study area roadway network is shown in Exhibit 3 and a brief description of the major components is provided below.

U.S. Highway 101 (U.S. 101) extends along the Pacific Coast between Los Angeles and San Francisco. Within the City of Oxnard, the six to eight-lane freeway is the principal route between Oxnard and the cities of Ventura and Santa Barbara to the north, and the cities of Camarillo, Thousand Oaks and Los Angeles to the south. Regional access from U.S. Highway 101 to the project site is provided via the interchanges with Victoria Avenue, Ventura Road and Oxnard Boulevard.

Oxnard Boulevard This street is one of the principal entrances to Oxnard. It is also the principal north-south access to the Central Area, and continues southerly through the "Five Points" intersection to southeast commercial and residential areas. Its location in the center of the City has led to its functioning as a primary arterial. North of the Ventura Freeway it terminates as a collector street in the River Park residential development.

Fifth Street is the principal east-west street serving the Central Business District of the City and the mid-City region on both the east and west sides of Oxnard. Fifth Street functions as a secondary arterial except for the segments from Victoria Avenue to H Street and Oxnard Boulevard to Rose Avenue, which presently function as primary arterials.

Gonzales Road is a main east-west thoroughfare that serves the central and north-central portions of the City of Oxnard. This roadway presently extends from Harbor Boulevard to Rice Avenue. Gonzales Road serves as a primary arterial over its length except from Victoria Avenue to Harbor Boulevard, where it functions as a local arterial. Primary arterials have a recommended right-of-way width of 120 feet. This can be larger based on landscaping requirements of the specific plan.

Patterson Road: This local arterial, which has a gap at the Oxnard Airport, provides access to residential neighborhoods in the northwest and southwest areas of Oxnard. In addition, Patterson Road provides access to the Oxnard Airport, the City of Port Hueneme and the U.S. Navy Construction Battalion Center.

Teal Club Road is a local two-lane arterial that will provide direct access to the project site. The roadway will be improved to secondary arterial standards.

Ventura Road: This four- to six-lane north-south primary arterial provides access to the west side of the City. To the south, the road serves the City of Port Hueneme, the U.S. Navy Construction Battalion Center, and, to a lesser degree, the current Hueneme Road industrial area. Ventura Road also extends north of Vineyard Avenue, and terminates in the Riverpark area.

Victoria Avenue is four-lane north-south arterial street in west Oxnard, which provides a crossing of the Santa Clara River for connection with the County Government Center in east Ventura. The southern terminus is in the Silver Strand area.

Wooley Road is a major east-west thoroughfare that provides access to the residential community in the southwest portion of the City, to the central area of Oxnard, and to the Central Industrial Area. This road functions as a secondary arterial but is affected by the presence of the rail lines belonging to the Ventura County Railway as well as operational limitations of the "Five Points" intersection.

Doris Avenue is a three-lane east-west local arterial with one eastbound lane and two westbound lanes adjacent to the project site. The intersections with Victoria Avenue and Ventura Road are signalized, all other intersections are controlled with stop signs on the side streets.

Alternative Transportation

Public Transit. Bus service in the project vicinity is provided by Gold Coast Transit Routes 19, 20, and 21. Route 19 and 20 travel along Gonzales Road, Victoria Avenue, and 5th Street. Route 21 travels along Victoria Avenue.

Vista routes provide regional transit connection with service from Oxnard to Ventura, Santa Barbara and UCSB to the north, and service along SR 34, SR 126 and U.S. Highway 101 to all cities in Ventura County, and the San Fernando Valley.

Bicycle Network. Class II bicycle lanes are provided on Patterson Road north of Doris Avenue and on westbound Doris Avenue. Pursuant to the City's *Bicycle & Pedestrian Master Plan*[4], construction of the Teal Club Specific Plan will result in provision of Class II bike lanes on Patterson Road, Doris Avenue, Teal Club Road and Ventura Road adjacent to the Specific Plan area.

Existing Intersection Operations

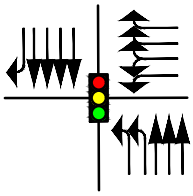
A total of 25 intersections were selected for analysis in consultation with City of Oxnard Traffic Engineering and Planning staff. Existing intersection turning volumes for the AM and PM peak commute periods (7am to 9am and 4pm to 6pm) were derived from counts collected in May 2018 and October 2019. In addition, vehicle classification counts were completed along Victoria Avenue to determine the percentage of heavy trucks and busses in the traffic stream. The classification counts were used to adjust the peak hour volumes (heavy vehicle adjustment of 2.7% during the AM peak hour and 1.5% during the PM peak hour).

Intersection turning counts are included in the Technical Appendix for reference. The existing lane geometry and control for the intersections within the study area are shown in Exhibit 3 and the AM and PM peak hour volumes are illustrated in Exhibit 4.

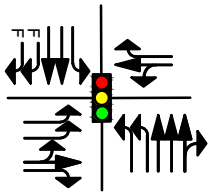
Levels of service were calculated for the study-area intersections based on the level of service methodology outlined previously. The existing intersection levels of service are summarized in Table 2.

[4] Final City of Oxnard Bicycle & Pedestrian Facilities Master Plan, City of Oxnard, February 2011.

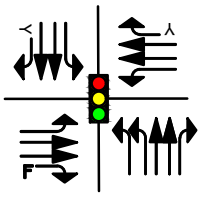
1. Victoria & US 101 NB



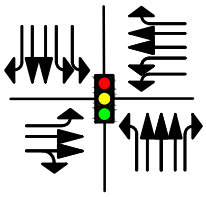
2. Victoria & Valentine



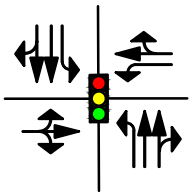
3. Victoria & Olivas Park



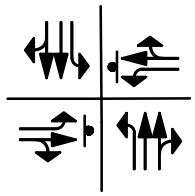
4. Victoria & Gonzales



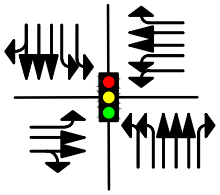
5. Victoria & Doris



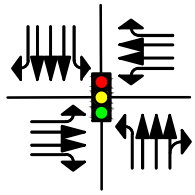
6. Victoria & Teal Club

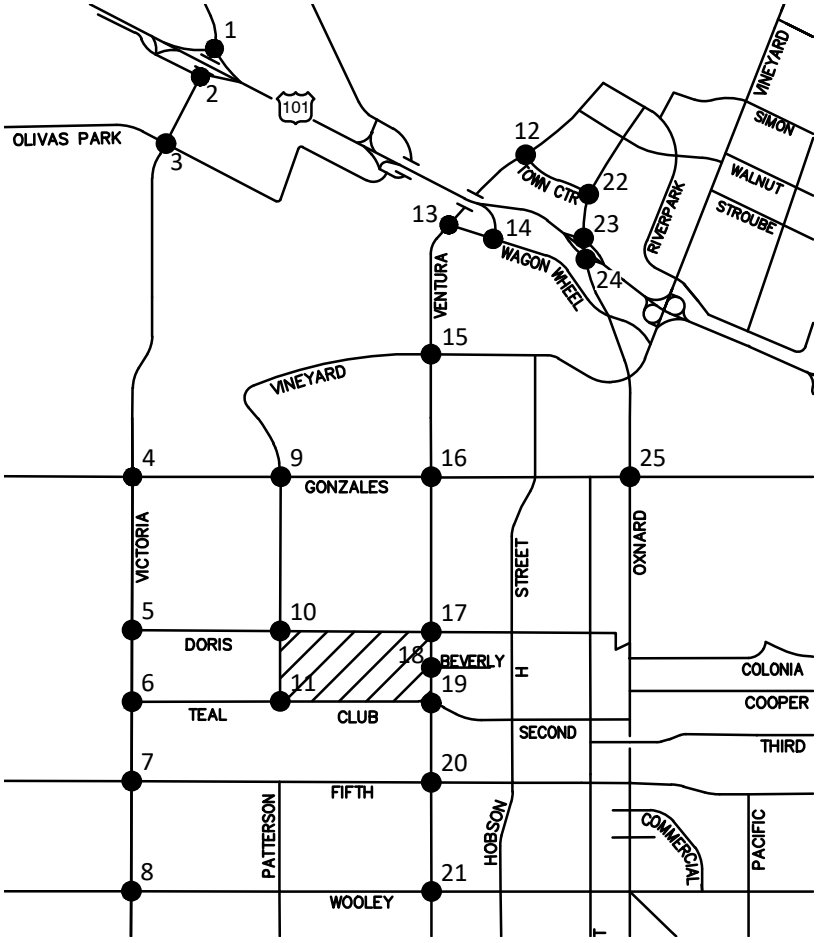


7. Victoria & Fifth

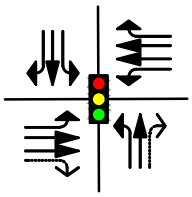


8. Victoria & Wooley

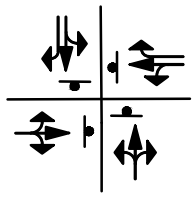




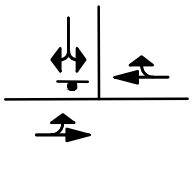
9. Patterson & Gonzales



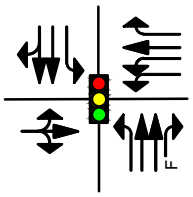
10. Patterson & Doris



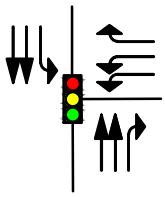
11. Patterson & Teal Club



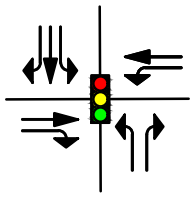
12. Ventura & Town Center



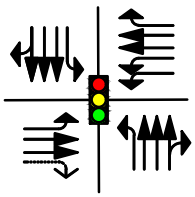
13. Ventura & Wagon Wheel



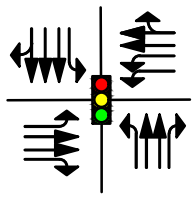
14. Ventura & US 101 SB



15. Ventura & Vineyard



16. Ventura & Gonzales



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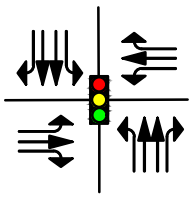
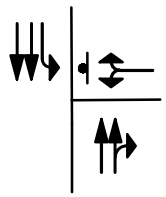
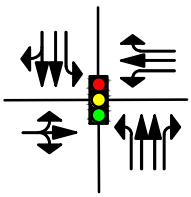


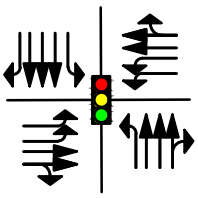
18. Ventura & Beverly



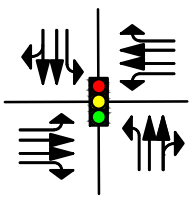
19. Ventura & Teal Club/Second



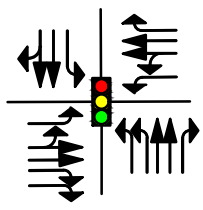
20. Ventura & Fifth



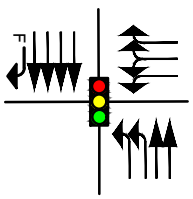
21. Ventura & Wooley



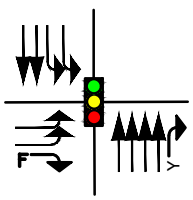
22. Oxnard & Town Center



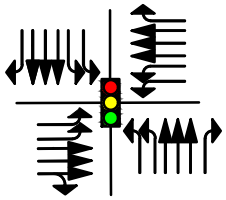
23. Oxnard & US 101 NB



24. Oxnard & US 101 NB



25. Oxnard & Gonzales



LEGEND

- Traffic Signal
- Stop Sign
- De-facto Right-Turn Lane
- Free Right-Turn Lane
- Yield Right-Turn Lane

N.T.S.

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EXHIBIT 3
EXISTING INTERSECTION GEOMETRIES

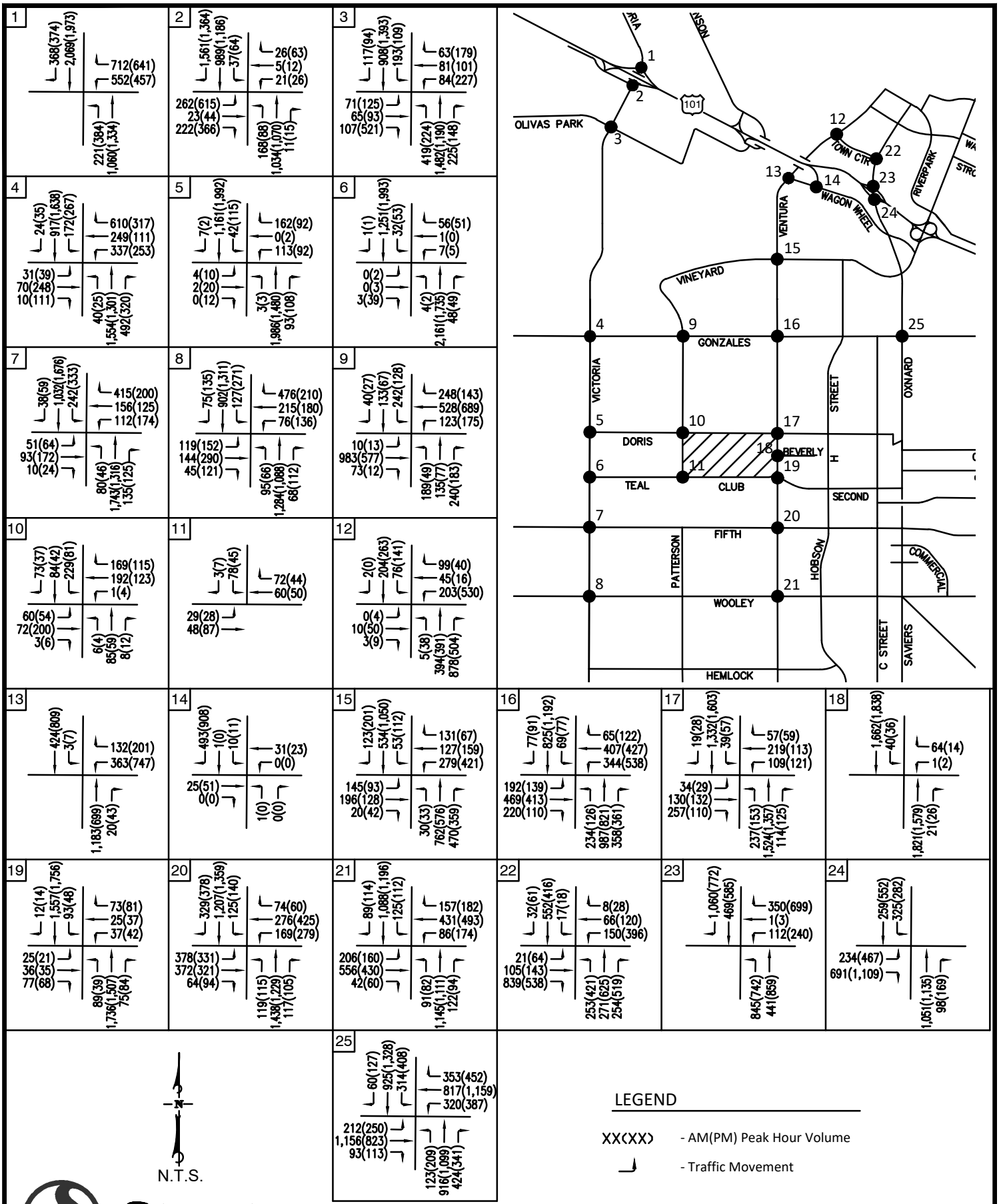

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EXHIBIT 4
EXISTING AM AND PM PEAK HOUR INTERSECTION VOLUMES

Table 2
Existing Intersection Peak Hour Levels of Service

Intersection	Control	AM Peak Hour		PM Peak Hour	
		ICU V/C Ratio	HCM Delay	ICU V/C Ratio	HCM Delay
1. Victoria Ave/U.S. 101 NB Ramps (CT)	Signal	-	21.4/LOS C	-	20.4/LOS C
2. Victoria Ave/Valentine Rd (Ven)	Signal	0.55/LOS A	-	0.68/LOS B	-
3. Victoria Ave/Olivas Park Rd (Ven)	Signal	0.70/LOS B	-	0.72/LOS C	-
4. Victoria Ave/Gonzales Rd	Signal	0.74/LOS C	-	0.75/LOS C	-
5. Victoria Ave/Doris Ave	Signal	**0.82/LOS D**	-	0.78/LOS C	-
6. Victoria Ave/Teal Club Rd	TWSC	-	**>50.0/LOS F**	-	**>50.0/LOS F**
7. Victoria Ave/Fifth St	Signal	0.67/LOS B	-	0.53/LOS A	-
8. Victoria Ave/Wooley Rd	Signal	0.65/LOS B	-	0.60/LOS A	-
9. Vineyard Ave/Gonzales Rd	Signal	0.60/LOS A	-	0.44/LOS A	-
10. Patterson Rd/Doris Ave	AWSC	-	13.2/LOS B	-	10.5/LOS B
11. Patterson Rd/Teal Club Rd	TWSC	-	10.2/LOS B	-	9.9/LOS A
12. Ventura Rd/Town Center Dr	Signal	0.30/LOS A	-	0.45/LOS A	-
13. Ventura Rd/Wagon Wheel Dr	Signal	0.53/LOS A	-	0.50/LOS A	-
14. Wagon Wheel Dr /U.S. 101 SB Off (CT)	Signal	-	7.6/LOS A	-	7.0/LOS A
15. Ventura Rd/Vineyard Dr	Signal	0.47/LOS A	-	0.48/LOS A	-
16. Ventura Rd/Gonzales Rd	Signal	0.63/LOS B	-	0.65/LOS B	-
17. Ventura Rd/Doris Ave	Signal	0.76/LOS C	-	0.76/LOS C	-
18. Ventura Rd/Beverly Dr	TWSC	-	**29.7/LOS D**	-	**44.9/LOS E**
19. Ventura Rd/Teal Club Rd	Signal	0.74/LOS C	-	0.75/LOS C	-
20. Ventura Rd/Fifth St	Signal	0.63/LOS B	-	0.62/LOS B	-
21. Ventura Rd/Wooley Rd	Signal	0.74/LOS C	-	0.71/LOS C	-
22. Oxnard Blvd/Town Center Dr	Signal	0.53/LOS A	-	0.52/LOS A	-
23. Oxnard Blvd/U.S. 101 NB Ramps (CT)	Signal	-	22.2/LOS C	-	26.9/LOS C
24. Oxnard Blvd/U.S. 101 SB Ramps (CT)	Signal	-	18.8/LOS B	-	19.5/LOS B
25. Oxnard Blvd/Gonzales Rd	Signal	0.65/LOS B	-	0.68/LOS B	-

Bolded values exceed LOS Standard.
TWSC: two-way stop control.
All intersections controlled by City of Oxnard except:
AWSC: all-way stop control.
(CT): Caltrans controlled intersection.
(Ven): City of Ventura controlled intersection.
Caltrans intersections and unsignalized intersections analyzed using the HCM methodology. LOS determined by vehicle delay in seconds.

As shown, the majority of intersections currently operate at LOS C or better during both peak hours, which is considered acceptable based on City and Caltrans level of service standards. The intersections of Victoria Avenue with Doris Avenue and Teal Club Road, and the Ventura Road/Beverly Drive intersection currently operate below the City's LOS C standard.

PROJECT SPECIFIC CONDITIONS

Traffic Impact Thresholds

City of Oxnard. The City has adopted level of service C as the threshold of significance for intersections during environmental review.

The City of Oxnard's criteria for evaluating project impacts at intersections is based upon the change in volume-to-capacity ratio attributable to the project. The City of Oxnard has adopted the following guidelines to prepare a traffic study and determine a project's effects on intersections (per City Resolution No. 10,453);

Traffic studies shall include a list of intersections where the project will worsen the Intersection Capacity Utilization (ICU) numeric value of Level of Service (LOS) by V/C 0.02 or more. This ICU list shall include intersections projected to be at LOS C with background traffic (existing plus approved plus pending projects) and LOS D, E, or F with background traffic plus project generated traffic.

At intersections where the project increases the ICU by .02 to .039, a list shall be prepared that identifies the improvements necessary to mitigate the identified project impact. City staff will then determine the amount of participation from the project for the necessary improvements. The developer shall mitigate the project's impacts to the circulation system by:

(A) Construction of all master-planned facilities within the project area, consisting of half the master planned roadways abutting the project area, plus one lane. "Roadways" include related improvements, such as sidewalks, curbs, gutters, and drainage facilities. "Project Area" means the area shown on the approved plans.
(B) Construction of all improvements necessary to mitigate impacts to intersections that the ICU list shows will be worsened by .02 or more (subject to mitigation fee limit).

The City of Oxnard Public Works Division collects traffic impact fees based on project generated traffic that would impact roadways within the City's jurisdiction. Standard conditions of permit issuance initiate collection of these fees for all projects within the City of Oxnard, regardless of whether the project is a private or a public project.

Caltrans. Caltrans has established the cusp of the LOS C/D range as the target level of service standard for State Highway intersections. If an existing State Highway facility is operating at less than the target LOS, the existing Measure of Effectiveness (MOE) should be maintained.

Project Trip Generation and Distribution

Trip Generation Rates. Trip generation estimates for the Teal Club Specific Plan were developed based on the rates presented in the Institute of Transportation Engineers *Trip Generation Manual*[5] for *Land Use #210 – Single Family Residence, Land Use #220 – Multi-Family Housing (Low-Rise)* and *Land Use #710 – General Office*. and rates contained in SANDAG's *Traffic Generators*[6] for *Neighborhood Commercial*, and *Community Park*. Table 3 lists the ITE and SANDAG trip generation rates.

Table 3
Project Trip Generation Rates

Land Use	Land Use Code	Trip Rate				
			AM		PM	
		ADT	In	Out	In	Out
SFD	210	9.44	0.185	0.555	0.630	0.360
Multi-Family (Low-Rise)	220	7.32	0.106	0.354	0.353	0.207
Neighborhood Commercial	SANDAG	120.00	2.880	1.920	6.000	6.000
Business Park/R&D	710	9.74	0.998	0.162	0.184	0.966
Community Park	SANDAG	20.00	0.400	0.400	0.800	0.800
Neighborhood Park	SANDAG	5.00	0.100	0.100	0.200	0.200

Internal Capture (Mixed-Use) Trips. The trip generation rates above assume that each project component is a stand-alone land use. Due to the mix of land uses proposed on the site, a portion of the trips generated by the project would remain internal to the site and not enter the external roadway network. ITE's *Trip Generation Handbook*[7] defines a multi-use development as a "real estate project that consists of two or more ITE land use classifications between which trips are made without using the off-site road system." The project's internal trips were determined based on the recommended procedure presented in *NCHRP Report 684: Enhancing Internal Trip Capture Estimation for Mixed-Use Developments*[8]. The internal capture calculation worksheets are included in the Technical Appendix for reference.

Pass-By Trips. A portion of external trips to the commercial land uses proposed along Ventura Road would be "pass-by trips", meaning trips that are already on the adjacent road system and simply stop at the site on their way to or from another (primary) destination. The pass-by trips would be attracted from traffic already traveling on Ventura Road, which offer direct access to the site. Pass-by trips are therefore not new to the immediate vicinity of the site.

Based on ITE's *Trip Generation Handbook Appendix E – Database on Pass-By, Diverted and Primary Trips,* the pass-by rate for commercial is 34% of the external PM peak hour trips, and a 10% pass-by rate was applied to the average daily trips and AM peak hour trips.

[5] Trip Generation Manual, Institute of Transportation Engineers, 10th Edition, 2017.
[6] Traffic Generators, San Diego Association of Governments, 2002.
[7] Trip Generation Handbook, Institute of Transportation Engineers, 3rd Edition, 2017.
[8] NCHRP Report 684: Enhancing Internal Trip Capture Estimation for Mixed-Use Developments. Washington, DC: Transportation Research Board, 2011.

As shown in Table 4, the project is expected to generate 13,570 primary average daily trips (ADT), with 867 primary trips occurring during the AM peak hour and 956 trips occurring during the PM peak hour.

Table 4
Project Trip Generation

Land Use	SF/DU	Land Use Code	Trips						
				AM			PM		
			ADT	In	Out	Total	In	Out	Total
SFD	220	210	2,077	41	122	163	139	79	218
Multi-Family (Low-Rise)	770	220	5,636	82	273	355	272	159	431
Neighborhood Commercial	60,000	SANDAG	7,200	173	115	288	360	360	720
Business Park/R&D	132,000	710	1,286	132	21	153	24	128	152
Community Park	17.8	SANDAG	356	7	7	14	14	14	28
Sub Total			*16,555*	*434*	*538*	*972*	*809*	*740*	*1,549*
Internal Trips [1]			*2,483*	*31*	*45*	*76*	*206*	*191*	*397*
External Trips			*14,072*	*403*	*493*	*896*	*603*	*549*	*1,152*
Pass-by Trips [2]			*502*	*17*	*12*	*29*	*107*	*89*	*196*
Total Primary Trips			***13,570***	***386***	***481***	***867***	***496***	***460***	***956***

[1] Internal capture per NCHRP 8-51/ITE Internal Capture, includes transit use.
[2] Pass-by trips limited to existing traffic volumes on Ventura Rd that are attracted to the retail component.

Project Trip Distribution. Project trips were distributed and assigned to the local street network based on modeled select zone volumes from the Oxnard Traffic Model, as developed for the project site for the *Teal Club Specific Plan – IER Traffic Impact Study (Stantec, 2015)*. The distribution percentages and project-added traffic volumes are shown in Exhibits 5 and 6, respectively.

Project Frontage Roadway Improvements

Frontage Improvements. Consistent with the 2030 General Plan, the local area roadway system adjacent to the site (Ventura Road, Patterson Road, Doris Avenue and Teal Club Road) will be widened to Local (2-4 lanes) and Primary Arterial (6 lanes) standards. Where these roads are adjacent to the Teal Club Specific Plan project site, the widening would be required to occur on the Teal Club properties.

Ventura Road will be built out to a 6-lane Primary Arterial, with the project improvement limits starting north of Doris Avenue and ending south of Teal Club Road. Included in the widening of Ventura Road, the project has planned for multiple bus pull-out locations on southbound and northbound lanes as well as on-street bike lane striping. The addition of bus stops on southbound and northbound lanes would help provide public transit options to serve the residents of the Teal Club Specific Plan development. This may require a partial realignment of the entire right of way (ROW) to create room for bus stops on the east side of Ventura Road, unless a suitable design alternative is feasible.

Teal Club Road is currently a 2-lane rural road and is programmed to be built up to 2-lane local arterial standards between Victoria Avenue and Patterson Road, and to secondary arterial standards between Patterson Road and Oxnard Boulevard. The preferred lane configuration for

the secondary arterial would be two travel lanes and a Class II bike lane in each direction divided by a raised median, Widening of Teal Club Road to local arterial and secondary arterial standards would improve roadway operations to accommodate the increase in traffic volume as a result of the proposed project.

Patterson Road between Doris Avenue and Teal Club Road is also programmed to be built out to a local arterial with a cross section similar to Teal Club Road. is noted that Patterson Road north of Doris Avenue has a 16-foot wide planted median, and this treatment could also be an option for Patterson Road between Doris Avenue and Teal Club Road.

Doris Avenue between Patterson Road and Ventura Road was resurfaced in July 2014. As a result of that resurfacing, westbound Doris Avenue was striped with 2 lanes plus a bicycle lane and a planted median with street lights between Coronado Place and Waverly Court. The City would prefer to see this median treatment continuous between Ventura Road and Patterson Road and the lanes match for the eastbound direction. The cross section would be two travel lanes and a Class II bike lane in each direction divided by a raised median.

The future roadway widening of Doris Avenue and Teal Club Road between Patterson Road and Victoria Avenue (to local arterial standards) should be planned based on future development in the area (including the adjacent Oxnard School District school site), for which the Teal Club Specific Plan project would pay its proportionate share to the cost of roadway widening. Based on the required mitigation improvements needed at each project completion phase, Table 5 summarizes the full build out of the local roadway network.

Table 5
Project Frontage Roadway Segment Improvements

Segment	Improvements	Completion
Ventura Road (north of Doris to south of Teal club)	Full Roadway widening – 6 Lane Primary Arterial	Prior to occupancy of Phase 1
Patterson Road (Project boundary to Teal Club)	Full Roadway widening – 2 Lane Local Arterial	Prior to occupancy of Phase 2
Doris Avenue (Project boundary to Ventura)	Full Roadway widening – 4 lane Local Arterial	Prior to occupancy of Phase 1
Teal Club Road (Ventura to Coronado)	Full Roadway widening - 4 Lane Local Arterial	Prior to occupancy of Phase 1
Teal Club Road (Coronado to Patterson)	Full Roadway widening - 4 Lane Local Arterial	Prior to occupancy of Phase 2

Teal Club Road between Patterson Road and Victoria Avenue. Teal Club Road is currently a 20-foot wide rural road consisting of two travel lanes without shoulders and a ditch running along the north side of the roadway. The roadway segment currently carries approximately 1,800 vehicles per day. Under existing plus project conditions, the segment would carry approximately 3,100 vehicles per day. The existing two-lane roadway would accommodate the existing plus project daily traffic volume (ADT), however the rural characteristics of the roadway (narrow cross section and lack of shoulders) presents operational concerns for any additional non-agricultural traffic. The roadway segment is programmed to be built up to 2-lane local arterial standards

between Victoria Avenue and Patterson Road[9]. Prior to full buildout to local arterial standards, the roadway segment could be widened to 12-foot travel lanes and 8-foot shoulders/Class II bike lanes.

Existing plus Project Intersection Operations

Project generated traffic was added to the existing peak hour traffic volumes and levels of service were recalculated for existing plus project conditions assuming the proposed frontage improvements (construction of Patterson Road, Doris Avenue, Teal Club Road and Ventura Road to General Plan arterial standards). These would result in increased capacity at the Patterson Road/Teal Club Road intersection and the intersections of Ventura Road with Doris Avenue, Beverly Drive and Teal Club Road, by adding turning lanes and through lanes at intersection approaches. The intersection geometries under project-specific conditions are shown in Exhibit 7.

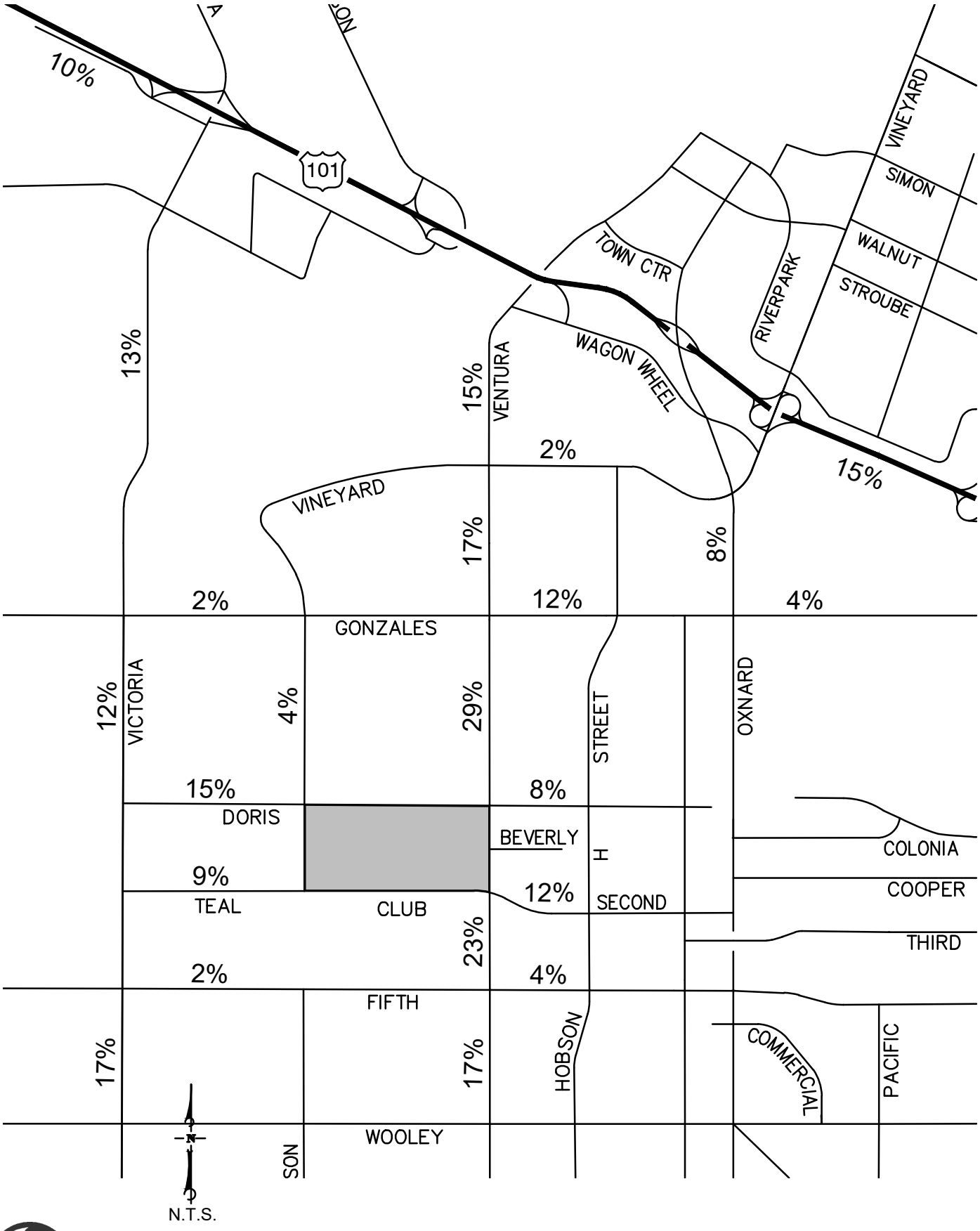
Project frontage improvements also include the signalization of the Ventura Road/Beverly Drive intersection, which serves as the main access point to the commercial portion of the specific plan. The existing plus project peak hour volumes would satisfy *Warrant 3 – Peak Hour* contained in the CAMUTCD[10], indicating the need for a traffic signal at the intersection. However, the project-specific analysis assumes that the intersection remains controlled by stop signs on Beverly Drive.

The existing plus project traffic volumes are illustrated in Exhibit 8 and Tables 6 and 7 summarize the level of service calculations. As shown in Table 6, the project would generate project-specific impacts based on City of Oxnard impact thresholds at the following intersections:

6. Victoria Avenue/Teal Club Road
18. Ventura Road/Beverly Drive

Mitigation measures for these two intersections are discussed in the Mitigations section of this report. The Victoria Avenue/Doris Avenue intersection would operate at LOS D during the AM peak hour. While the project addition of V/C 0.01 would not exceed the City's impact threshold of V/C 0.02, mitigations for this intersection are also included in the Mitigations section.

[9] City of Oxnard 2030 General Plan Circulation Diagram, City of Oxnard, revised 06/14/2011.
[10] California Manual on Uniform Traffic Control Devices, 2014 Edition, Revision 2 (April 7, 2017).



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LEGEND

25% - Trip Distribution Percentage

EXHIBIT 5
PROJECT TRIP DISTRIBUTION PERCENTAGES

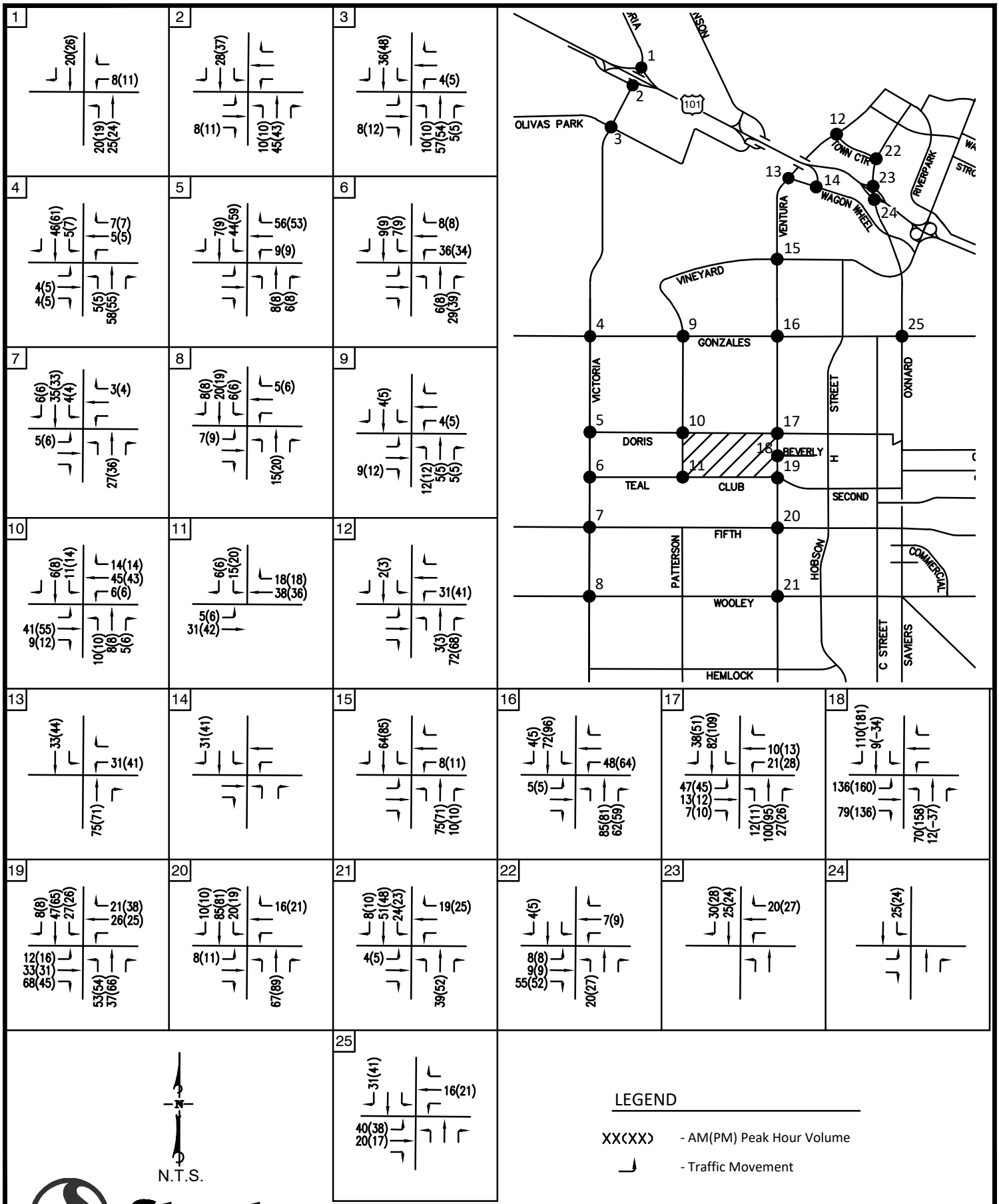

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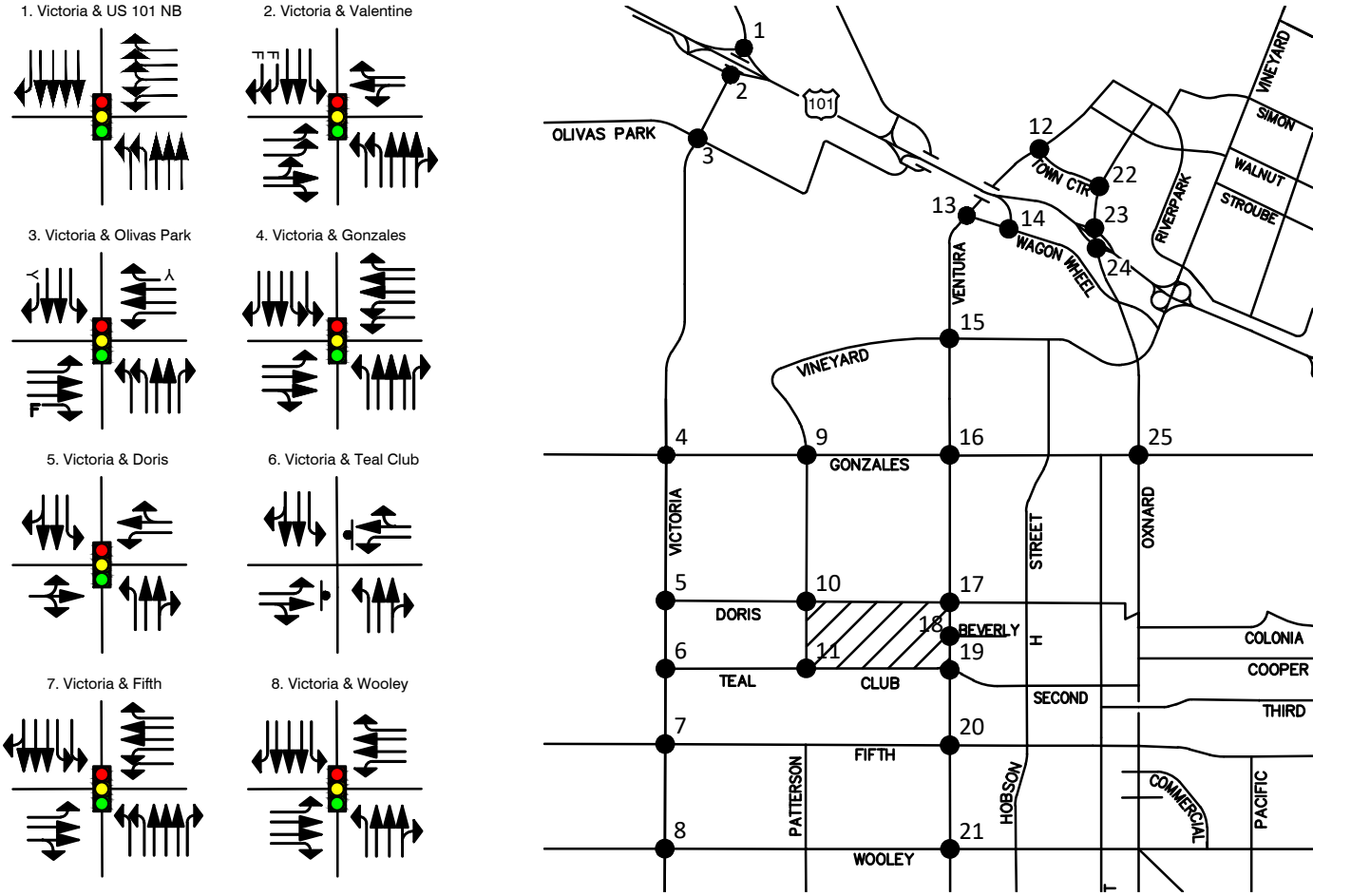
EXHIBIT 6
PROJECT AM AND PM PEAK HOUR
INTERSECTION VOLUMES



1. Victoria & US 101 NB

2. Victoria & Valentine

3. Victoria & Olivas Park

4. Victoria & Gonzales

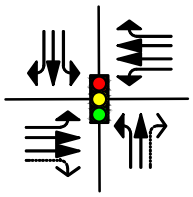
5. Victoria & Doris

6. Victoria & Teal Club

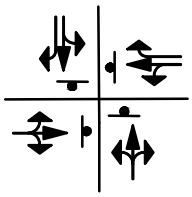
7. Victoria & Fifth

8. Victoria & Wooley

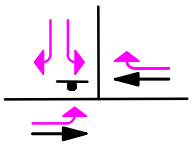
9. Patterson & Gonzales



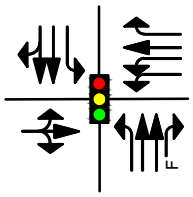
10. Patterson & Doris



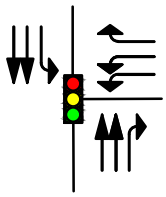
11. Patterson & Teal Club



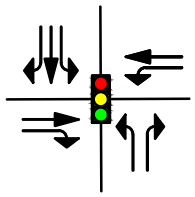
12. Ventura & Town Center



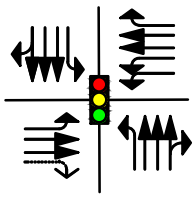
13. Ventura & Wagon Wheel



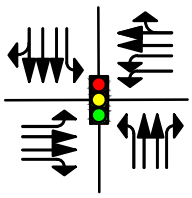
14. Ventura & US 101 SB



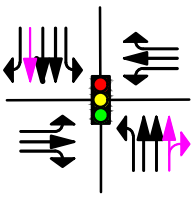
15. Ventura & Vineyard



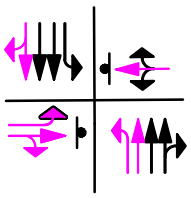
16. Ventura & Gonzales



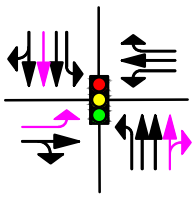
17. Ventura & Doris



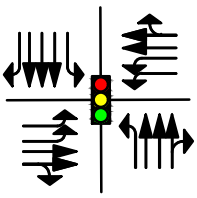
18. Ventura & Beverly



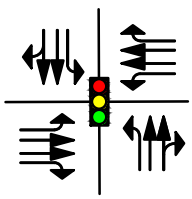
19. Ventura & Teal Club/Second



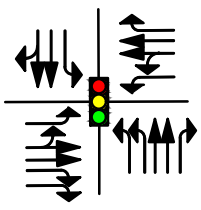
20. Ventura & Fifth



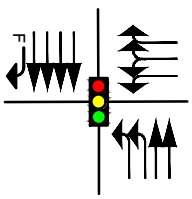
21. Ventura & Wooley



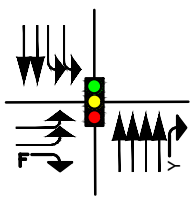
22. Oxnard & Town Center



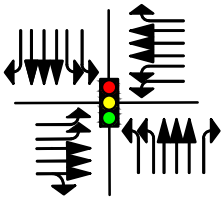
23. Oxnard & US 101 NB



24. Oxnard & US 101 NB



25. Oxnard & Gonzales



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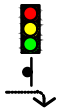

- Traffic Signal
- Stop Sign
- De-facto Right-Turn Lane
- Free Right-Turn Lane
- Yield Right-Turn Lane

N.T.S.

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EXHIBIT 7
PROJECT-SPECIFIC INTERSECTION GEOMETRIES

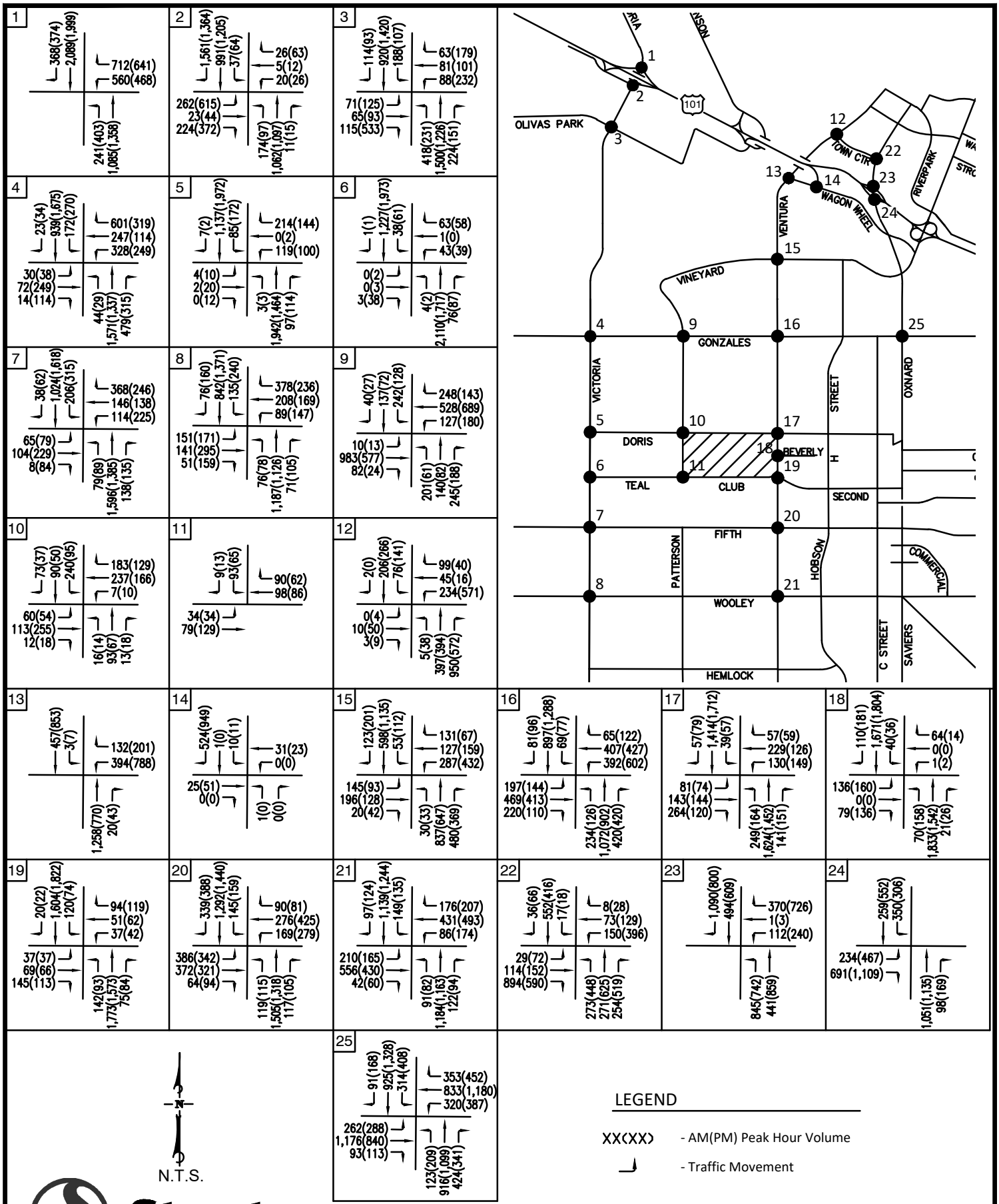

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EXHIBIT 8
EXISTING + PROJECT
AM AND PM PEAK HOUR INTERSECTION VOLUMES

Table 6
AM Peak hour
Existing plus Project Intersection Levels of Service

Intersection	AM Peak Hour		V/C or Delay Increase	Impact?
	Existing ICU - HCM/LOS	Existing + Project ICU – HCM/LOS		
1. Victoria Ave/U.S. 101 NB Ramps	21.4/LOS C	21.5/LOS C	0.1 sec.	No
2. Victoria Ave/Valentine Rd	0.55/LOS A	0.57/LOS A	0.02	No
3. Victoria Ave/Olivas Park Rd	0.70/LOS B	0.72/LOS C	0.02	No
4. Victoria Ave/Gonzales Rd	0.74/LOS C	0.77/LOS C	0.03	No
5. Victoria Ave/Doris Ave	**0.82/LOS D**	**0.83/LOS D**	0.01	No
6. Victoria Ave/Teal Club Rd	**>50.0/LOS F**	**>50.0/LOS F**	n/a	**Yes**
7. Victoria Ave/Fifth St	0.67/LOS B	0.68/LOS B	0.01	No
8. Victoria Ave/Wooley Rd	0.65/LOS B	0.66/LOS B	0.01	No
9. Vineyard Ave/Gonzales Rd	0.60/LOS A	0.61/LOS B	0.01	No
10. Patterson Rd/Doris Ave	13.2/LOS B	15.5/LOS C	2.3 sec.	No
11. Patterson Rd/Teal Club Rd [1]	10.2/LOS B	10.5/LOS B	0.3 sec.	No
12. Ventura Rd/Town Center Dr	0.30/LOS A	0.31/LOS A	0.01	No
13. Ventura Rd/Wagon Wheel Dr	0.53/LOS A	0.56/LOS A	0.03	No
14. Wagon Wheel Dr /U.S. 101 SB Off	7.6/LOS A	7.6/LOS A	0.0 sec.	No
15. Ventura Rd/Vineyard Dr	0.47/LOS A	0.48/LOS A	0.01	No
16. Ventura Rd/Gonzales Rd	0.63/LOS B	0.65/LOS B	0.02	No
17. Ventura Rd/Doris Ave [1]	0.76/LOS C	0.66/LOS B	n/a	No
18. Ventura Rd/Beverly Dr [1]	**29.7/LOS D**	**>50.0/LOS F**	>21.3 sec.	**Yes**
19. Ventura Rd/Teal Club Rd [1]	0.74/LOS C	0.65/LOS B	n/a	No
20. Ventura Rd/Fifth St	0.63/LOS B	0.66/LOS B	0.03	No
21. Ventura Rd/Wooley Rd	0.74/LOS C	0.76/LOS C	0.02	No
22. Oxnard Blvd/Town Center Dr	0.53/LOS A	0.54/LOS A	0.01	No
23. Oxnard Blvd/U.S. 101 NB Ramps	22.2/LOS C	22.5/LOS C	0.3 sec.	No
24. Oxnard Blvd/U.S. 101 SB Ramps	18.8/LOS B	18.9/LOS B	0.1 sec	No
25. Oxnard Blvd/Gonzales Rd	0.65/LOS B	0.65/LOS B	0.00	No

[1] Project frontage improvement: intersection widening and geometry improvements under project-specific conditions.

Table 7
PM Peak hour
Existing plus Project Intersection Levels of Service

Intersection	PM Peak Hour		V/C or Delay Increase	Impact?
	Existing ICU - HCM/LOS	Existing + Project ICU – HCM/LOS		
1. Victoria Ave/U.S. 101 NB Ramps	20.4/LOS C	20.5/LOS C	0.1 sec.	No
2. Victoria Ave/Valentine Rd	0.68/LOS B	0.69/LOS B	0.01	No
3. Victoria Ave/Olivas Park Rd	0.72/LOS C	0.74/LOS C	0.02	No
4. Victoria Ave/Gonzales Rd	0.75/LOS C	0.78/LOS C	0.03	No
5. Victoria Ave/Doris Ave	0.78/LOS C	0.79/LOS C	0.01	No
6. Victoria Ave/Teal Club Rd	**>50.0/LOS F**	**>50.0/LOS F**	n/a	**Yes**
7. Victoria Ave/Fifth St	0.53/LOS A	0.54/LOS A	0.01	No
8. Victoria Ave/Wooley Rd	0.60/LOS A	0.60/LOS A	0.00	No
9. Vineyard Ave/Gonzales Rd	0.44/LOS A	0.44/LOS A	0.00	No
10. Patterson Rd/Doris Ave	10.5/LOS B	12.5/LOS B	2.0 sec.	No
11. Patterson Rd/Teal Club Rd [1]	9.9/LOS A	10.4/LOS B	0.5 sec.	No
12. Ventura Rd/Town Center Dr	0.45/LOS A	0.46/LOS A	0.01	No
13. Ventura Rd/Wagon Wheel Dr	0.50/LOS A	0.54/LOS A	0.04	No
14. Wagon Wheel Dr /U.S. 101 SB Off	7.0/LOS A	7.0/LOS A	0.0 sec.	No
15. Ventura Rd/Vineyard Dr	0.48/LOS A	0.51/LOS A	0.03	No
16. Ventura Rd/Gonzales Rd	0.65/LOS B	0.69/LOS B	0.04	No
17. Ventura Rd/Doris Ave [1]	0.76/LOS C	0.65/LOS B	n/a	No
18. Ventura Rd/Beverly Dr [1]	**44.9/LOS E**	**>50.0/LOS F**	n/a	**Yes**
19. Ventura Rd/Teal Club Rd [1]	0.75/LOS C	0.59/LOS A	n/a	No
20. Ventura Rd/Fifth St	0.62/LOS B	0.67/LOS B	0.05	No
21. Ventura Rd/Wooley Rd	0.71/LOS C	0.73/LOS C	0.02	No
22. Oxnard Blvd/Town Center Dr	0.52/LOS A	0.53/LOS A	0.01	No
23. Oxnard Blvd/U.S. 101 NB Ramps	26.9/LOS C	27.3/LOS C	0.4 sec.	No
24. Oxnard Blvd/U.S. 101 SB Ramps	19.5/LOS B	23.2/LOS C	2.7 sec	No
25. Oxnard Blvd/Gonzales Rd	0.68/LOS B	0.70/LOS B	0.02	No

[1] Project frontage improvement: intersection widening and geometry improvements under project-specific conditions.

CUMULATIVE CONDITIONS

The City of Oxnard requires that the study-area intersections are analyzed assuming "background" traffic conditions, which include traffic that could be generated by other developments in the study area. The following section discusses the cumulative (existing conditions plus approved and pending projects) conditions.

Street Network Improvements

Review of roadway or intersection improvements associated with approved projects included in the cumulative analysis and the City's Five-Year Capital Improvement Plan indicates that the following improvements are planned within the study-area.

U.S. 101 Southbound Off-Ramp at Wagon Wheel Road. The *Oxnard Village Specific Plan*[11], proposed south of U.S. 101 and west of Oxnard Boulevard, will realign Wagon Wheel Road further south away from U.S. 101 and realign the U.S. 101 Southbound Off-Ramp to intersect with Ventura Road instead of Wagon Wheel Road. The Wagon Wheel Road/U.S. 101 SB Off-Ramp intersection is therefore removed from the cumulative analysis.

Patterson Road and Doris Avenue. The Oxnard School District school complex[12], proposed on the northwest corner of the Teal Club Specific Plan, will widen Patterson Road and Doris Avenue along its frontage to Local Arterial standards. The traffic study completed for the school site also indicated that school traffic would satisfy traffic signal warrants at the Patterson Road/Doris Avenue intersection. However, the following analysis does not assume that a traffic signal is installed under cumulative conditions.

Cumulative Traffic Volumes

Cumulative traffic volumes were developed using a list of pending development projects provided by City staff[13]. In addition, traffic generated by the Oxnard School District school site was added to the cumulative volumes. A map showing the pending projects within the study area is included in the Technical Appendix.

Trip generation estimates were developed for the pending projects based on rates contained in the Institute of Transportation Engineers (ITE) *Trip Generation* for the respective land uses. A trip generation worksheet is also included in the Technical Appendix. The cumulative projects traffic volumes were distributed onto the study-area street network based on each individual project's location, existing traffic patterns, and a general knowledge of the residential and commercial lay-out of the Oxnard area. The cumulative projects AM and PM peak turning volumes were assigned to the study area intersections and added to the existing peak hour volumes. The resulting cumulative peak hour volumes are shown in Exhibit 9 and the cumulative plus project peak hour volumes are illustrated in Exhibit 10.

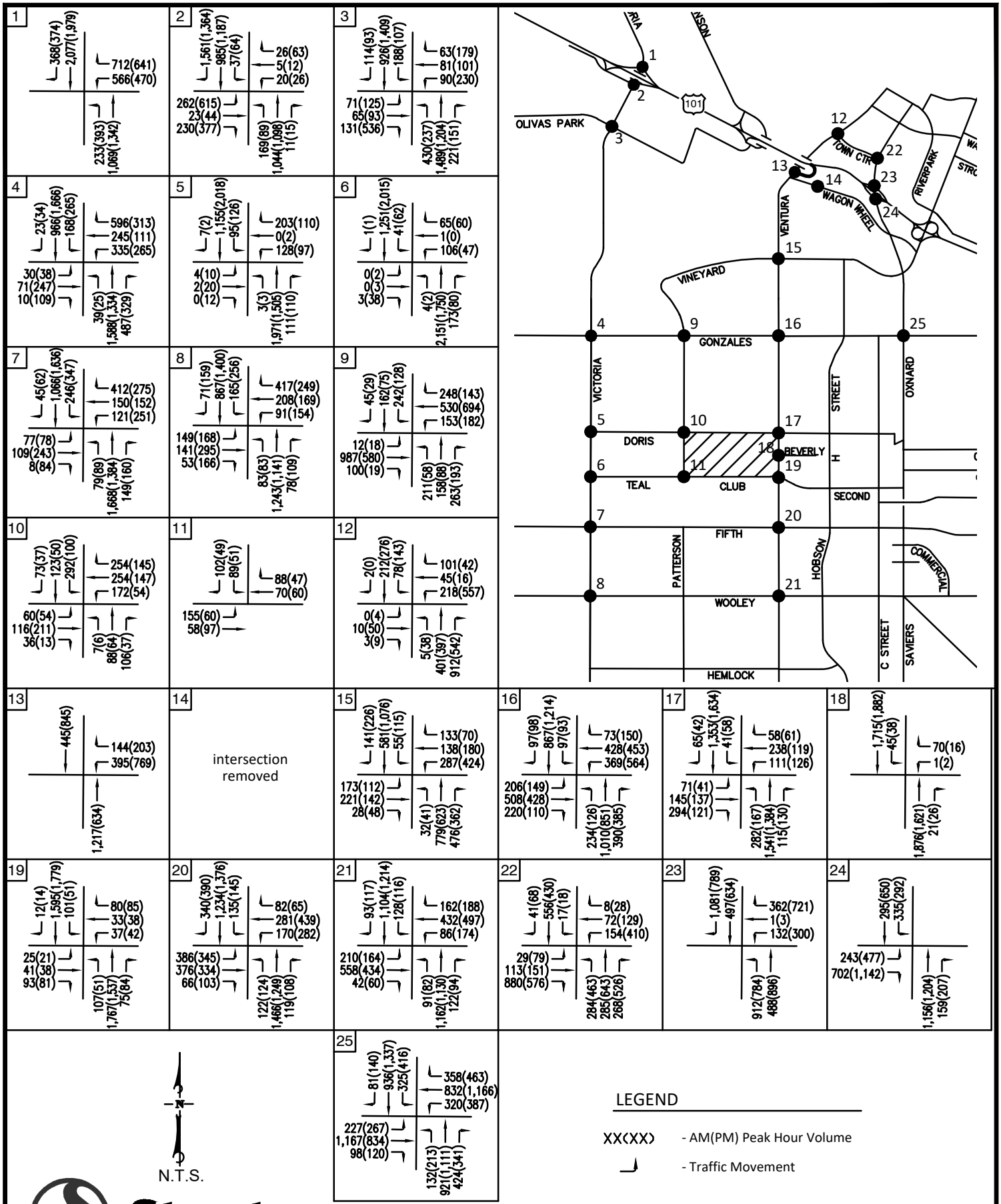
[11] Oxnard Village Specific Plan Traffic Impact Analysis, RBF Consulting, November 2014.
[12] Doris Patterson Educational Facilities Traffic Impact Analysis, Kunzman Associates, November 2017.
[13] Planning Division Quarterly Project List, City of Oxnard, April 2018.

Cumulative plus Project Intersection Operations

Intersection levels of service were recalculated assuming cumulative and cumulative traffic conditions. The calculations are summarized in Tables 8 and 9. As shown, the project would generate cumulative impacts based on City of Oxnard impact thresholds at the following intersections:

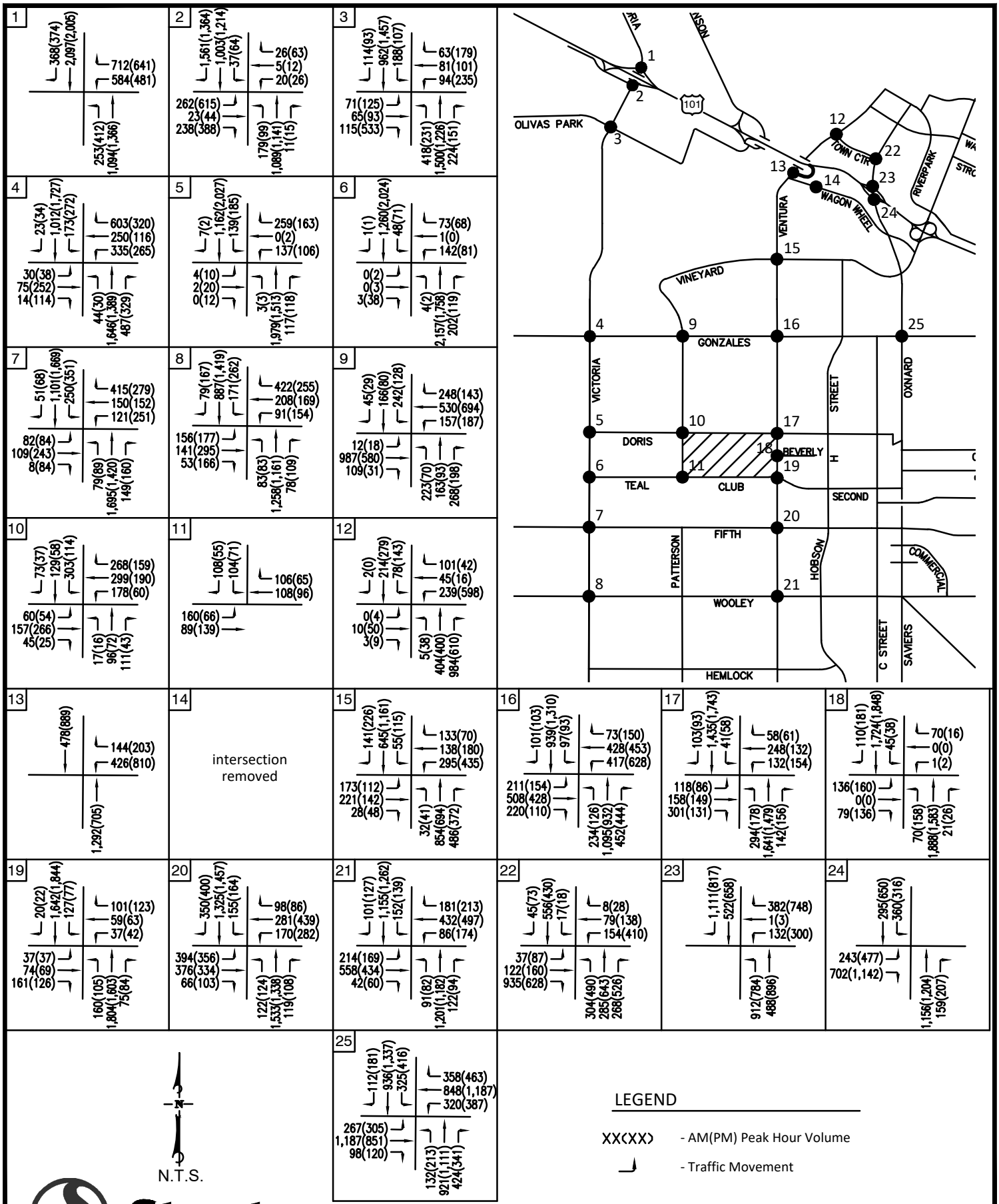
5. Victoria Avenue/Doris Avenue
6. Victoria Avenue/Teal Club Road
10. Patterson Road/Doris Avenue
18. Ventura Road/Beverly Drive

Mitigation measures are discussed in the Mitigations section of this report. Similarly to project-specific conditions, the project frontage improvement to widen Ventura Road to Primary Arterial standards would increase capacity intersections with Doris Avenue, Beverly Drive and Teal Club Road. The project would also reduce delays at the Patterson Road/Teal Club Road intersection under cumulative plus project conditions by adding capacity on the southbound and westbound approaches.



Stantec
111 East Victoria Street, Santa Barbara, CA 93101
Phone: (805) 963-9532 Fax: (805) 966-9801

EXHIBIT 9
CUMULATIVE AM AND PM PEAK HOUR
INTERSECTION VOLUMES



Stantec
111 East Victoria Street, Santa Barbara, CA 93101
Phone: (805) 963-9532 Fax: (805) 966-9801

EXHIBIT 10
CUMULATIVE + PROJECT
AM AND PM PEAK HOUR INTERSECTION VOLUMES

Table 8
AM Peak hour
Cumulative plus Project Intersection Levels of Service

Intersection	AM Peak Hour			
	Cumulative ICU - HCM/LOS	Cumulative + Project ICU – HCM/LOS	V/C or Delay Increase	Impact?
1. Victoria Ave/U.S. 101 NB Ramps	21.4/LOS C	21.5/LOS C	0.1 sec.	No
2. Victoria Ave/Valentine Rd	0.56/LOS A	0.58/LOS A	0.02	No
3. Victoria Ave/Olivas Park Rd	0.73/LOS C	0.75/LOS C	0.02	No
4. Victoria Ave/Gonzales Rd	0.77/LOS C	0.79/LOS C	0.02	No
5. Victoria Ave/Doris Ave	**0.86/LOS D**	**0.90/LOS D**	0.04	**Yes**
6. Victoria Ave/Teal Club Rd	**>50.0/LOS F**	**>50.0/LOS F**	n/a	**Yes**
7. Victoria Ave/Fifth St	0.73/LOS C	0.73/LOS C	0.00	No
8. Victoria Ave/Wooley Rd	0.71/LOS C	0.73/LOS C	0.02	No
9. Vineyard Ave/Gonzales Rd	0.66/LOS B	0.66/LOS B	0.00	No
10. Patterson Rd/Doris Ave	**>50.0/LOS F**	**>50.0/LOS F**	n/a	**Yes**
11. Patterson Rd/Teal Club Rd [1]	12.8/LOS B	14.9/LOS B	2.1 sec.	No
12. Ventura Rd/Town Center Dr	0.42/LOS A	0.43/LOS A	0.01	No
13. Ventura Rd/Wagon Wheel Dr	0.60/LOS A	0.63/LOS B	0.03	No
14. Wagon Wheel Dr /U.S. 101 SB Off	Intersection Removed			
15. Ventura Rd/Vineyard Dr	0.49/LOS A	0.51/LOS A	0.02	No
16. Ventura Rd/Gonzales Rd	0.66/LOS B	0.68/LOS B	0.02	No
17. Ventura Rd/Doris Ave [1]	**0.82/LOS D**	0.73/LOS C	n/a	No
18. Ventura Rd/Beverly Dr [1]	**32.9/LOS D**	**>50.0/LOS F**	n/a.	**Yes**
19. Ventura Rd/Teal Club Rd [1]	0.76/LOS C	0.67/LOS B	n/a	No
20. Ventura Rd/Fifth St	0.64/LOS B	0.68/LOS B	0.04	No
21. Ventura Rd/Wooley Rd	0.75/LOS C	0.78/LOS C	0.03	No
22. Oxnard Blvd/Town Center Dr	0.66/LOS B	0.68/LOS B	0.02	No
23. Oxnard Blvd/U.S. 101 NB Ramps	22.2/LOS C	22.6/LOS C	0.4 sec.	No
24. Oxnard Blvd/U.S. 101 SB Ramps	18.8/LOS B	18.8/LOS B	0.0 sec	No
25. Oxnard Blvd/Gonzales Rd	0.65/LOS B	0.66/LOS B	0.01	No

[1] Project frontage improvement: intersection widening and geometry improvements under cumulative + project conditions.

Table 9
PM Peak Hour
Cumulative plus Project Intersection Levels of Service

Intersection	PM Peak Hour			
	Cumulative ICU - HCM/LOS	Cumulative + Project ICU – HCM/LOS	V/C or Delay Increase	Impact?
1. Victoria Ave/U.S. 101 NB Ramps	20.4/LOS C	20.5/LOS C	0.1 sec.	No
2. Victoria Ave/Valentine Rd	0.70/LOS B	0.72/LOS C	0.02	No
3. Victoria Ave/Olivas Park Rd	0.74/LOS C	0.76/LOS C	0.02	No
4. Victoria Ave/Gonzales Rd	0.77/LOS C	0.80/LOS C	0.03	No
5. Victoria Ave/Doris Ave	0.80/LOS C	**0.81/LOS D**	0.01	**Yes**
6. Victoria Ave/Teal Club Rd	**>50.0/LOS F**	**>50.0/LOS F**	n/a	**Yes**
7. Victoria Ave/Fifth St	0.56/LOS A	0.57/LOS A	0.01	No
8. Victoria Ave/Wooley Rd	0.62/LOS B	0.63/LOS B	0.01	No
9. Vineyard Ave/Gonzales Rd	0.44/LOS A	0.45/LOS A	0.01	No
10. Patterson Rd/Doris Ave	11.7/LOS B	14.3/LOS B	2.6 sec.	No
11. Patterson Rd/Teal Club Rd [1]	10.3/LOS B	10.6/LOS B	0.3 sec.	No
12. Ventura Rd/Town Center Dr	0.55/LOS A	0.58/LOS A	0.03	No
13. Ventura Rd/Wagon Wheel Dr	0.60/LOS A	0.63/LOS B	0.03	No
14. Wagon Wheel Dr /U.S. 101 SB Off	Intersection Removed			
15. Ventura Rd/Vineyard Dr	0.50/LOS A	0.53/LOS A	0.03	No
16. Ventura Rd/Gonzales Rd	0.66/LOS B	0.70/LOS B	0.04	No
17. Ventura Rd/Doris Ave [1]	0.79/LOS C	0.68/LOS B	n/a	No
18. Ventura Rd/Beverly Dr [1]	**>50.0/LOS F**	**>50.0/LOS F**	n/a	**Yes**
19. Ventura Rd/Teal Club Rd [1]	0.75/LOS C	0.63/LOS B	n/a	No
20. Ventura Rd/Fifth St	0.64/LOS B	0.67/LOS B	0.03	No
21. Ventura Rd/Wooley Rd	0.73/LOS C	0.76/LOS C	0.03	No
22. Oxnard Blvd/Town Center Dr	0.58/LOS A	0.59/LOS A	0.01	No
23. Oxnard Blvd/U.S. 101 NB Ramps	27.9/LOS C	30.8/LOS C	2.9 sec.	No
24. Oxnard Blvd/U.S. 101 SB Ramps	23.0/LOS C	23.1/LOS C	0.1 sec	No
25. Oxnard Blvd/Gonzales Rd	0.68/LOS B	0.71/LOS C	0.03	No

[1] Project frontage improvement: intersection widening and geometry improvements under cumulative + project conditions.

BUILDOUT CONDITIONS

Buildout Traffic Volumes

Traffic volumes for City of Oxnard General Plan buildout conditions are derived from the City of Oxnard Traffic Model Year 2030 volumes and from the *Future (2030) Traffic Volumes With Specific Plan Amendment* contained in the *Riverpark Project FEIR Addendum No. 10*[14]. The 2030 Oxnard Traffic Model future (General Plan) intersection lane geometrics for the study-area intersections are shown in Exhibit 11. The analysis assumes that buildout of the General Plan street network includes signalization of the Victoria Avenue/Teal Club Road and Patterson Road/Doris Avenue intersections. The 2030 Oxnard Traffic Model peak hour traffic volumes without and with the Teal Club Specific Plan are shown in Exhibits 12 and 13, respectively.

Buildout plus Project Intersection Operations

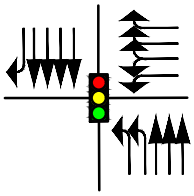
Intersection levels of service were recalculated assuming buildout and buildout plus project conditions. Tables 10 and 11 summarize the buildout and buildout plus project level of service calculations. As shown, the project would generate impacts at the following intersections:

7. Victoria Avenue/Gonzales Road
11. Patterson Road/Teal Club Road
17. Ventura Road/Doris Avenue
18. Ventura Road/Beverly Drive

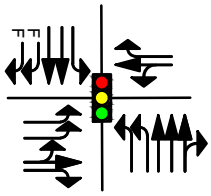
Mitigation measures are discussed in the Mitigations section of this report. The Oxnard Boulevard/U.S. 101 Northbound Ramps intersection would operate at the cusp of LOS C/D during the PM peak hour, which is considered acceptable based on Caltrans standards. The Oxnard Boulevard/Gonzales Road intersection would operate in the LOS D range under buildout conditions. The City Council allows as an exception level of service D either in the AM or PM periods, or both, at this location in order to avoid adversely impacting private homes and/or businesses resulting from additional mitigations, or preserve or enhance aesthetic integrity.

[14] Addendum No. 10 to the Riverpark Project, Final Environmental Impact Report, Impact Sciences, June 2011.

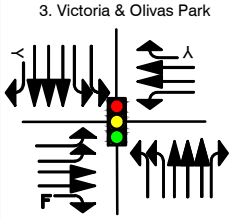
1. Victoria & US 101 NB



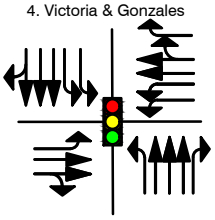
2. Victoria & Valentine



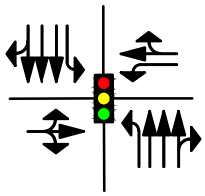
3. Victoria & Olivas Park



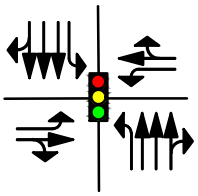
4. Victoria & Gonzales



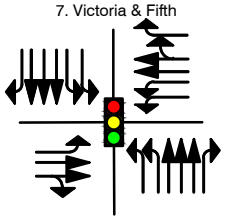
5. Victoria & Doris



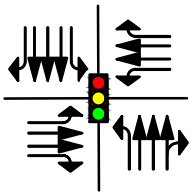
6. Victoria & Teal Club

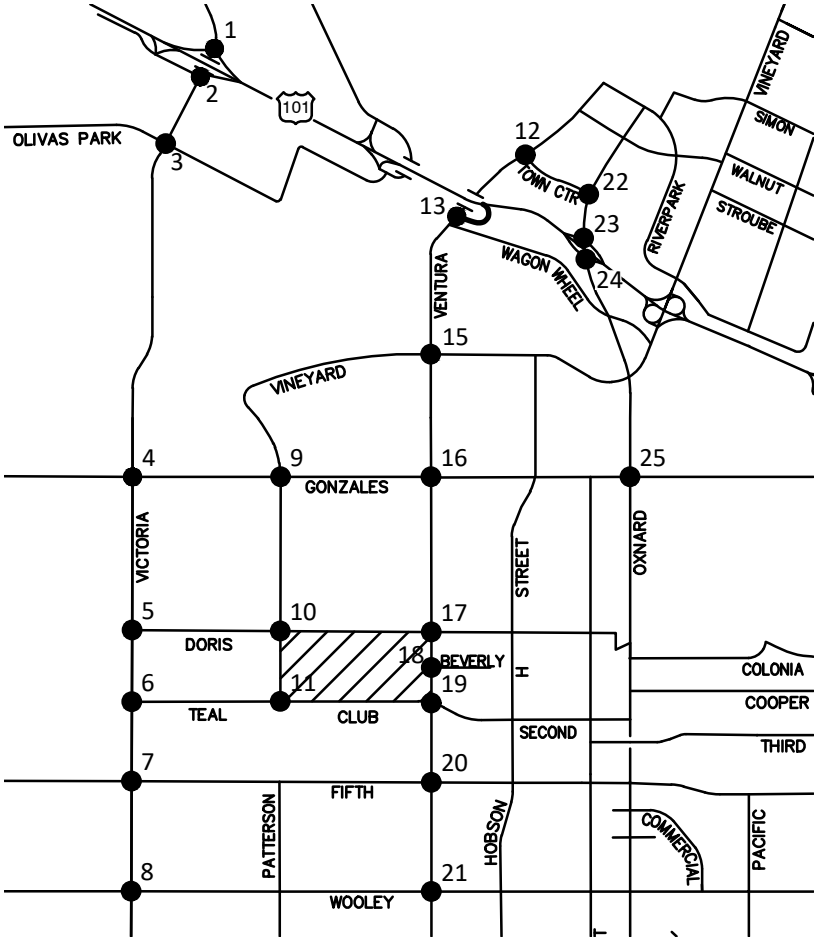


7. Victoria & Fifth

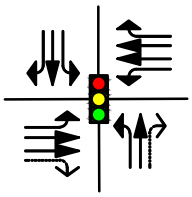


8. Victoria & Wooley

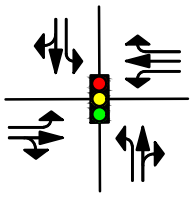




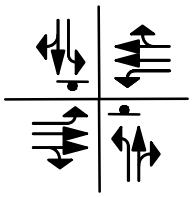
9. Patterson & Gonzales



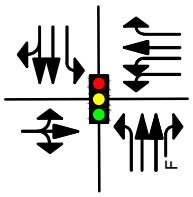
10. Patterson & Doris



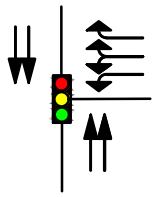
11. Patterson & Teal Club



12. Ventura & Town Center



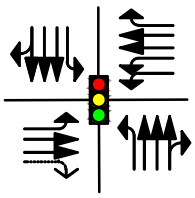
13. Ventura & Wagon Wheel



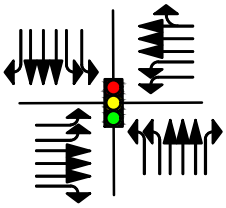
14. Ventura & US 101 SB

intersection removed

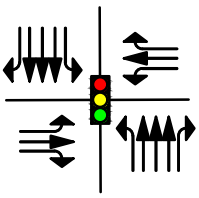
15. Ventura & Vineyard



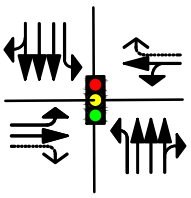
16. Ventura & Gonzales



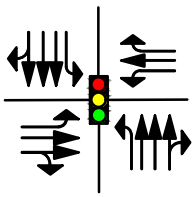
17. Ventura & Doris



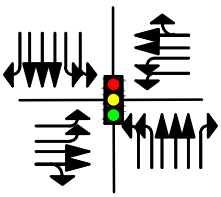
18. Ventura & Beverly



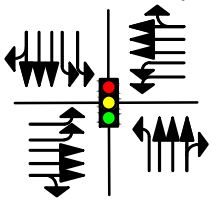
19. Ventura & Teal Club/Second



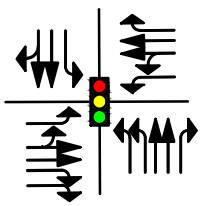
20. Ventura & Fifth



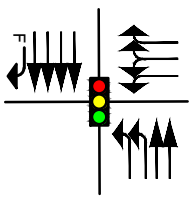
21. Ventura & Wooley



22. Oxnard & Town Center



23. Oxnard & US 101 NB



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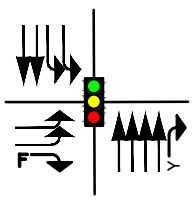
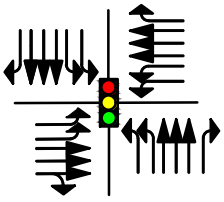


25. Oxnard & Gonzales

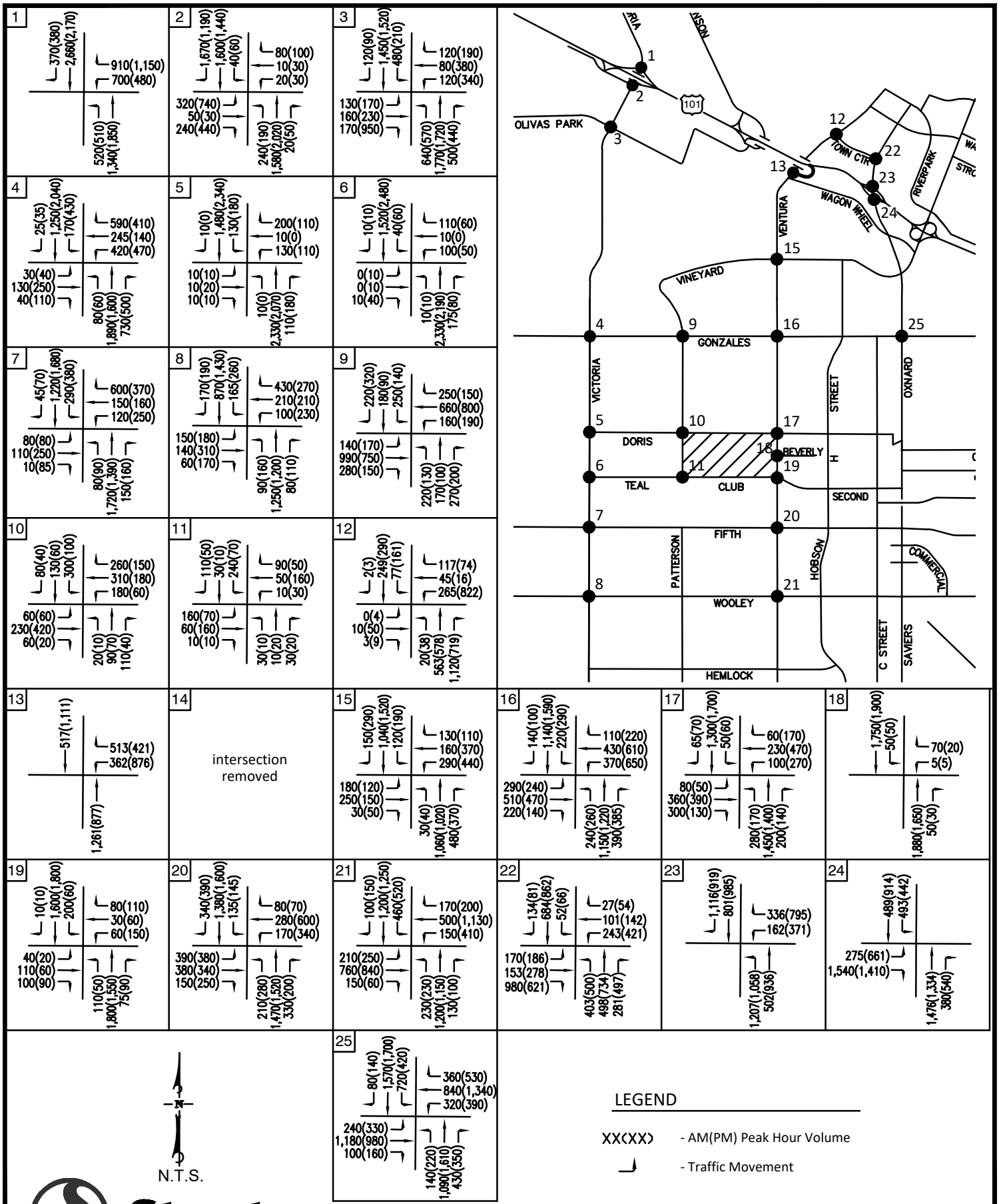


LEGEND

Stantec

111 East Victoria Street, Santa Barbara, CA 93101
Phone: (805) 963-9532 Fax: (805) 966-9801

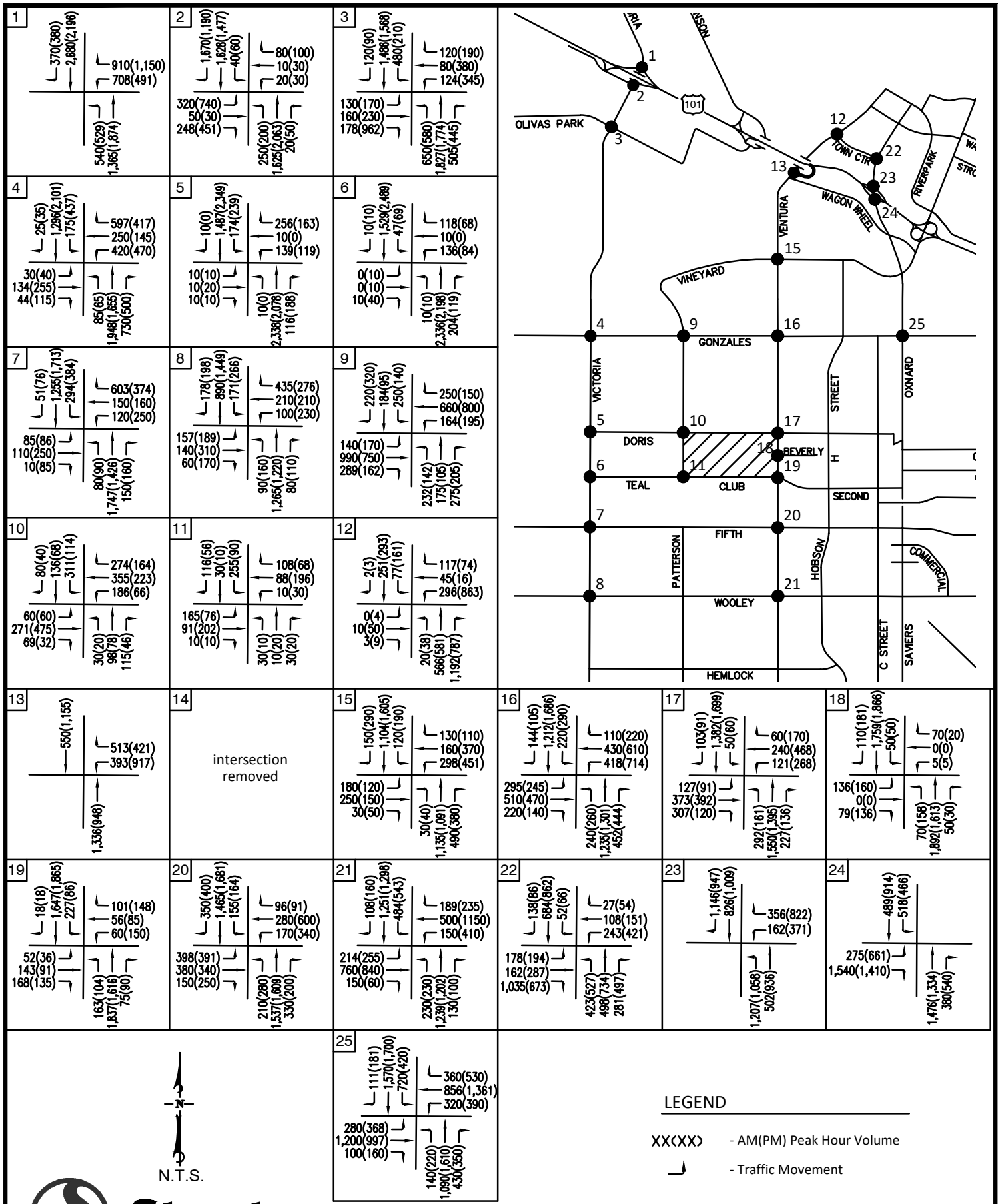
EXHIBIT 11
BUILDOUT INTERSECTION GEOMETRIES



Stantec

111 East Victoria Street, Santa Barbara, CA 93101
Phone: (805) 963-9532 Fax: (805) 966-9801

EXHIBIT 12
BUILDOUT AM AND PM PEAK HOUR INTERSECTION VOLUMES



Stantec
111 East Victoria Street, Santa Barbara, CA 93101
Phone: (805) 963-9532 Fax: (805) 966-9801

EXHIBIT 13
BUILDOUT + PROJECT
AM AND PM PEAK HOUR INTERSECTION VOLUMES

Table 10
AM Peak hour
Buildout plus Project Intersection Levels of Service

Intersection	AM Peak Hour			
	Buildout ICU - HCM/LOS	Buildout + Project ICU – HCM/LOS	V/C or Delay Increase	Impact?
1. Victoria Ave/U.S. 101 NB Ramps	35.5/LOS D	37.2/LOS D	1.7 sec.	No
2. Victoria Ave/Valentine Rd	0.76/LOS C	0.77/LOS C	0.01	No
3. Victoria Ave/Olivas Park Rd	0.67/LOS B	0.68/LOS B	0.01	No
4. Victoria Ave/Gonzales Rd [1]	**0.81/LOS D**	**0.83/LOS D**	0.02	**Yes**
5. Victoria Ave/Doris Ave	0.72/LOS C	0.76/LOS C	0.04	No
6. Victoria Ave/Teal Club Rd	0.64/LOS B	0.67/LOS B	0.03	No
7. Victoria Ave/Fifth St	0.57/LOS A	0.58/LOS A	0.01	No
8. Victoria Ave/Wooley Rd	0.64/LOS B	0.66/LOS B	0.02	No
9. Vineyard Ave/Gonzales Rd	0.68/LOS B	0.68/LOS B	0.00	No
10. Patterson Rd/Doris Ave	0.72/LOS C	0.75/LOS C	0.03	No
11. Patterson Rd/Teal Club Rd	20.3/LOS C	**28.4/LOS D**	8.1 sec.	**Yes**
12. Ventura Rd/Town Center Dr	0.48/LOS A	0.49/LOS A	0.01	No
13. Ventura Rd/Wagon Wheel Dr	0.67/LOS B	0.71/LOS C	0.04	No
14. Wagon Wheel Dr /U.S. 101 SB Off	Intersection Removed			
15. Ventura Rd/Vineyard Dr	0.55/LOS A	0.57/LOS A	0.02	No
16. Ventura Rd/Gonzales Rd	0.55/LOS A	0.57/LOS A	0.02	No
17. Ventura Rd/Doris Ave	0.74/LOS C	0.78/LOS C	0.04	No
18. Ventura Rd/Beverly Dr	**>50.0/LOS F**	**>50.0/LOS F**	n/a	**Yes**
19. Ventura Rd/Teal Club Rd	0.64/LOS B	0.69/LOS B	0.05	No
20. Ventura Rd/Fifth St	0.59/LOS A	0.62/LOS B	0.03	No
21. Ventura Rd/Wooley Rd	0.66/LOS B	0.68/LOS B	0.02	No
22. Oxnard Blvd/Town Center Dr	0.74/LOS C	0.75/LOS C	0.01	No
23. Oxnard Blvd/U.S. 101 NB Ramps	24.4/LOS C	24.5/LOS C	0.1 sec.	No
24. Oxnard Blvd/U.S. 101 SB Ramps	19.0/LOS B	19.0/LOS B	0.0 sec	No
25. Oxnard Blvd/Gonzales Rd	0.83/LOS D	0.83/LOS D	0.00	No

[1] Intersection analyzed assuming existing intersection lane geometry under General Plan Buildout conditions.

Table 11
PM Peak hour
Buildout plus Project Intersection Levels of Service

Intersection	PM Peak Hour			
	Buildout ICU - HCM/LOS	Buildout + Project ICU – HCM/LOS	V/C or Delay Increase	Impact?
1. Victoria Ave/U.S. 101 NB Ramps	24.7/LOS C	25.5/LOS C	0.0 sec.	No
2. Victoria Ave/Valentine Rd	0.76/LOS C	0.77/LOS C	0.01	No
3. Victoria Ave/Olivas Park Rd	0.78/LOS C	0.80/LOS C	0.02	No
4. Victoria Ave/Gonzales Rd [1]	**0.95/LOS E**	**0.98/LOS E**	0.03	**Yes**
5. Victoria Ave/Doris Ave	0.70/LOS C	0.74/LOS C	0.04	No
6. Victoria Ave/Teal Club Rd	0.71/LOS C	0.71/LOS C	0.00	No
7. Victoria Ave/Fifth St	0.58/LOS A	0.59/LOS A	0.01	No
8. Victoria Ave/Wooley Rd	0.67/LOS B	0.69/LOS B	0.02	No
9. Vineyard Ave/Gonzales Rd	0.52/LOS A	0.52/LOS A	0.00	No
10. Patterson Rd/Doris Ave	0.45/LOS A	0.51/LOS A	0.06	No
11. Patterson Rd/Teal Club Rd	12.9/LOS B	14.9/LOS B	2.0 sec.	No
12. Ventura Rd/Town Center Dr	0.71/LOS C	0.72/LOS C	0.01	No
13. Ventura Rd/Wagon Wheel Dr	0.72/LOS C	0.74/LOS C	0.02	No
14. Wagon Wheel Dr /U.S. 101 SB Off	Intersection Removed			
15. Ventura Rd/Vineyard Dr	0.62/LOS B	0.64/LOS B	0.02	No
16. Ventura Rd/Gonzales Rd	0.71/LOS C	0.75/LOS C	0.04	No
17. Ventura Rd/Doris Ave	**0.82/LOS D**	**0.88/LOS D**	0.06	**Yes**
18. Ventura Rd/Beverly Dr	**>50.0/LOS F**	**>50.0/LOS F**	n/a	**Yes**
19. Ventura Rd/Teal Club Rd	0.57/LOS A	0.62/LOS B	0.05	No
20. Ventura Rd/Fifth St	0.75/LOS C	0.78/LOS C	0.03	No
21. Ventura Rd/Wooley Rd	0.79/LOS C	0.80/LOS C	0.01	No
22. Oxnard Blvd/Town Center Dr	0.77/LOS C	0.78/LOS C	0.01	No
23. Oxnard Blvd/U.S. 101 NB Ramps	33.9/LOS C	35.5/LOS D	1.4 sec.	No
24. Oxnard Blvd/U.S. 101 SB Ramps	20.1/LOS C	20.4/LOS C	0.3 sec	No
25. Oxnard Blvd/Gonzales Rd	0.85/LOS D	0.87/LOS D	0.02	No

[1] Intersection analyzed assuming existing intersection lane geometry under General Plan Buildout conditions.

PROJECT SITE ACCESS

The conceptual site plan illustrated in Exhibit 2 shows that access to the Teal Club Specific Plan is proposed via two connections to Doris Avenue, four connections to Teal Club Road and one connection to Ventura Road opposite Beverly Drive. It is expected that the new intersections on Doris Avenue and Teal Club Road will operate acceptably with stop control on the minor (project) approaches, however the ultimate control and geometry of these intersections will be evaluated during future project design stages.

The Ventura Road/Beverly Drive intersection currently operates below the City's LOS C standard and project traffic would further increase (side street) delays. Existing plus project traffic volumes will satisfy *Warrant 3 – Peak Hour* contained in the CAMUTCD. Frontage improvements should therefore include installation of a traffic signal. The intersection is expected to operate at LOS C or better with a traffic signal and addition of a third lane in the southbound direction (project-specific and cumulative plus project conditions), and at LOS B or better with a traffic signal and addition of a third lane in the northbound and southbound direction (buildout plus project conditions). The ultimate intersection geometry is shown in Exhibit 11.

Roadways within the specific plan will be designed constructed according to City residential and collector roadway standards to provide adequate local, emergency vehicle and service vehicle access.

The specific plan will include an internal circulation system that will provide pedestrian connectivity between the residential, office, retail uses and parks, as well as to the adjacent future school complex and the external sidewalk system. Buildout of Patterson Road, Doris Avenue, Real Club Road and Ventura Road will include provision of sidewalks along the specific plan boundary, and crosswalks at the signalized intersections of Ventura Road with Doris Avenue, Beverly Drive and Teal Club Road. The future school complex is expected to install crosswalks at the Patterson Road/Doris Avenue. Installation of crosswalks at other (unsignalized) intersections along Doris Avenue could be evaluated in the future as pedestrian volumes warrant.

MITIGATION MEASURES

Project-Specific Mitigations

The project-specific analysis found that the project would generate a project-specific impact based on City of Oxnard impact thresholds at the following intersections:

6. Victoria Avenue/Teal Club Road
18. Ventura Road/Beverly Drive

The Victoria Avenue/Doris Avenue intersection would operate at LOS D during the AM peak hour. While the project addition of V/C 0.01 would not exceed the City's impact threshold of V/C 0.02, mitigations for this intersection were also developed.

Victoria Avenue/Doris Avenue: The intersection is expected to operate in the LOS D range during the AM peak hour and the project would add V/C 0.01, which would not exceed the City's V/C 0.02 threshold. Installation of a third northbound and southbound through lane, consistent with the future planned widening of Victoria Avenue to Primary Arterial (six-lane)

standards, would result in LOS B operations. The project's proportionate share for implementation of the improvements is shown in Table 13.

Victoria Avenue/Teal Club Road: The intersection is currently controlled by a stop sign on Teal Club Road. Review of the traffic signal warrants contained in *Chapter 4C. Traffic Control Signal Needs Studies* of the CAMUTCD indicates that the existing plus project volumes would satisfy *Warrant 3 – Peak Hour (70% Factor/Rural)*. With a traffic signal, the intersection would operate in the LOS C range, thereby mitigating the project's project-specific impact.

Ventura Road/Beverly Drive: The intersection is currently controlled by a stop sign on Beverly Drive. The existing plus project peak hour volumes would satisfy *Warrant 3 – Peak Hour* contained in the CAMUTCD. With a traffic signal, the intersection would operate in the LOS A-B range, thereby mitigating the project's project-specific impact.

Table 12
Project-Specific Mitigated Intersection Levels of Service

Intersection	AM Peak Hour		PM Peak Hour	
	Existing + Project ICU - HCM/LOS	Mitigated HCM/LOS	Existing + Project ICU - HCM/LOS	Mitigated HCM/LOS
5. Victoria Ave/Doris Ave	**0.83/LOS D**	0.62/LOS B	0.79/LOS C	0.58/LOS A
6. Victoria Ave/Teal Club Rd	**>50.0/LOS F**	0.80/LOS C	**>50.0/LOS F**	0.77/LOS C
18. Ventura Rd/Beverly Dr	**>50.0/LOS F**	0.60/LOS A	**>50.0/LOS F**	0.67/LOS B

The analysis contained in this report assumes that the project will widen Patterson Road, Doris Avenue and Teal Club Road to Local Arterial standards, and Ventura Road to Primary Arterial standards along its frontage. All frontage improvements will be fully constructed at project buildout, however the timing of each roadway segment widening is subject to project development phasing shown in Table 5.

Cumulative Mitigations

The cumulative analysis indicated that the project would generate cumulative impacts based on City of Oxnard impact thresholds at the following intersections:

8. Victoria Avenue/Doris Avenue
9. Victoria Avenue/Teal Club Road
12. Patterson Road/Doris Avenue
18. Ventura Road/Beverly Drive

Victoria Avenue/Doris Avenue: The intersection is expected to operate in the LOS D range during the AM peak hour and the project would add V/C 0.05, which exceeds the City's V/C 0.02 threshold. Installation of a third northbound and southbound through lane, consistent with the future planned widening of Victoria Avenue to Primary Arterial (six-lane) standards, would result in LOS B operations, thereby mitigating the project's cumulative impact. The project's proportionate share for implementation of the improvements is shown in Table 13.

Victoria Avenue/Teal Club Road: The intersection would operate at LOS F with and without the project traffic. The project-specific mitigation, signalization of the intersection, would provide for LOS D operations. To provide for acceptable service levels, installation of a third northbound and southbound through lane, consistent with the future planned widening of Victoria Avenue to Primary Arterial (six-lane) standards, would be required. The project's proportionate share for implementation of the improvements is shown in Table 13.

Patterson Road/Doris Avenue: The intersection would operate at LOS F during the AM peak hour assuming the current all-way stop control. The proposed Oxnard School District site will improve Patterson Road and Doris Avenue along its frontage to Local Arterial standards, and (payments toward) the signalization of the intersection was included as project-specific mitigation in the *Doris Avenue/Patterson Road Educational Facilities Project FEIR*.

To provide for acceptable operations, a traffic signal should be installed and a left-turn lane and shared through/right-turn lane should be provided on all approaches. This will require widening of the eastbound approach. Implementation of these mitigations would result in LOS C during the AM peak hour and LOS A during the PM peak hour. The project's proportionate share for implementation of the improvements is shown in Table 13.

The proposed traffic signal at the intersection of Patterson Rd and Doris Ave. is not part of the traffic model and therefore is not included in the traffic impact fee calculation of the standard traffic impact fee. The project project's proportionate share as shown on Table 10 is in addition to the traffic impact fee for the project.

Ventura Road/Beverly Drive: The intersection is currently controlled by a stop sign on Beverly Drive. The cumulative plus project peak hour volumes would satisfy *Warrant 3 – Peak Hour* contained in the CAMUTCD. With a traffic signal, the intersection would operate in the LOS A-B range, thereby mitigating the project's project-specific impact.

Table 13
Cumulative plus Project Mitigated Intersection Levels of Service

Intersection	AM Peak Hour		PM Peak Hour		Proportionate Share
	Cumulative + Project ICU - HCM/LOS	Mitigated HCM/LOS	Cumulative + Project ICU - HCM/LOS	Mitigated HCM/LOS	
5. Victoria Ave/Doris Ave	**0.90/LOS D**	0.67/LOS B	**0.81/LOS D**	0.59/LOS A	40%
6. Victoria Ave/Teal Club Rd	**>50.0/LOS F**	0.61/LOS B	**>50.0/LOS F**	0.59/LOS A	23%
10. Patterson Rd/Doris Ave	**>50.0/LOS F**	0.71/LOS C	14.3/LOS B	0.41/LOS A	21%
18. Ventura Rd/Beverly Dr	**>50.0/LOS F**	0.61/LOS B	**>50.0/LOS F**	0.68/LOS B	100%

Buildout Mitigations

The buildout analysis indicated that the project would generate a buildout impact based on City of Oxnard impact thresholds at the following intersections:

5. Victoria Avenue/Gonzales Road
13. Patterson Road/Teal Club Road
17. Ventura Road/Doris Avenue
18. Ventura Road/Beverly Drive

Victoria Avenue/Gonzales Road: To provide for acceptable operations under buildout conditions, the 2030 Oxnard Traffic Model General Plan intersection lane geometrics should be implemented (as illustrated in Exhibit 11). These include conversion of the southbound right-turn lane to a shared through/right-turn lane, and conversion of the westbound no.2 through lane to a shared through/right-turn lane. This would occur in conjunction with widening of Victoria Avenue south of Gonzales Road to provide three southbound travel lanes.

Patterson Road/Teal Club Road: The intersection is currently controlled by stop signs. The cumulative plus project peak hour volumes would satisfy *Warrant 3 – Peak Hour* contained in the CAMUTCD. With a traffic signal, the intersection would operate in the LOS A, thereby mitigating the buildout impact.

Ventura Road/Doris Avenue: The intersection's eastbound and westbound approaches contain a dedicated left-turn lane, a through lane and a dedicated right-turn. Reconfiguration to a dedicated left-turn lane, a through lane and a shared through/right-turn lane would provide for LOS C operations. This improvement would necessitate provision of two receiving lanes on both eastbound and westbound approaches.

Ventura Road/Beverly Drive: The intersection is currently controlled by a stop sign on Beverly Drive. The buildout plus project peak hour volumes would satisfy *Warrant 3 – Peak Hour* contained in the CAMUTCD. With a traffic signal, the intersection would operate in the LOS A-B range, thereby mitigating the buildout impact.

Table 14
Buildout plus Project Mitigated Intersection Levels of Service

Intersection	AM Peak Hour		PM Peak Hour		Proportionate Share
	Buildout + Project ICU - HCM/LOS	Mitigated HCM/LOS	Buildout + Project ICU - HCM/LOS	Mitigated HCM/LOS	
4. Victoria Ave/Gonzales Rd	**0.83/LOS D**	0.69/LOS B	**0.98/LOS E**	0.77/LOS C	10%
11. Patterson Road/Teal Club Road	**28.4/LOS D**	0.40/LOS A	14.9/LOS B	0.26/LOS A	17%
17. Ventura Rd/Doris Ave	0.78/LOS C	0.76/LOS C	**0.88/LOS D**	0.79/LOS C	33%
18. Ventura Rd/Beverly Dr	**>50.0/LOS F**	0.59/LOS A	**>50.0/LOS F**	0.68/LOS B	100%

CONGESTION MANAGEMENT PROGRAM (CMP) ANALYSIS

For the purposes of Congestion Management Program (CMP) traffic impact analysis, LOS E is considered to be acceptable, and a significant impact occurs if the proposed project increases traffic demand on a CMP facility by 2% of capacity (V/C > 0.02), causing or worsening LOS F (V/C > 1.00).

Roadways. U.S. 101, Victoria Avenue, Ventura Road and Oxnard Boulevard are included in the CMP network. According to the 2009 CMP[15], these facilities operate at LOS D or better during the AM and PM peak hour periods, except Northbound U.S. 101, which operates in the LOS F range during the PM peak hour. The project would add 47 PM peak hour trips to Northbound U.S. 101, which would increase the directional peak hour volume by less than 1%. This increase would not result in a CMP impact based on the impact criteria of an increase in traffic demand on a CMP facility by 2% of capacity.

Intersections. Within the study-area, the U.S. 101/Victoria Avenue interchange and the intersections of Gonzales Road with Victoria Avenue, Ventura Road and Oxnard Boulevard are included in the CMP network. The traffic analysis indicated that these intersections operate at LOS C or better. Based on the CMP criteria outlined above, the project would not generate an impact at any of the CMP intersections.

TEAL CLUB SPECIFIC PLAN EIR PROJECT ALTERNATIVES

As part of the environmental review process, the Teal Club Specific Plan Project contains EIR Alternatives. One of design alternatives is the "Reduced Intensity Alternative". The second EIR alternative, "Phase 1 Development Only Alternative", assumes the construction of the "Phase 1" portion of the project only, without the development of the Phase 2 component of the project. These Project Alternatives are discussed below.

Reduced Intensity Alternative

The Reduced Intensity Alternative is similar to the proposed project, with two differences:

- The business research park (BRP) area is replaced with single-family residential units;
- the Commercial building square footage is decreased by 10,000 square feet in the Urban Village core.

All other components of the "Project" version are retained, including the 990 dwelling unit total. The trip generation for the Reduced Intensity Alternative is summarized in Table 15. As shown, this Project Alternative is expected to generate 11,857 ADT, with 744 AM PHT and 910 PM PHT, or 123 AM PHT (-14%) and 46 PM PHT (-5%) less compared to the Proposed Project. From an intersection performance standpoint, the 14% or less change in trips that this alternative would produce is not sufficient to change the significant impact findings and mitigation measures for the proposed project.

[15] 2009 Ventura County Congestion Management Program, VCTC, Adopted July 10, 2009.

Table 15
Reduced Intensity Alternative Trip Generation

Land Use	SF/DU	Land Use Code	Trips						
				AM			PM		
			ADT	In	Out	Total	In	Out	Total
SFD	387	210	3,653	72	215	287	244	139	383
Multi-Family (Low-Rise)	603	220	4,414	64	213	277	213	125	338
Neighborhood Commercial	50,000	SANDAG	6,000	144	96	240	300	300	600
Community Park	17.8	SANDAG	356	7	7	14	14	14	28
Sub Total			*14,423*	*287*	*531*	*818*	*771*	*578*	*1,349*
Internal Trips [1]			*2,146*	*17*	*33*	*50*	*147*	*128*	*275*
External Trips			*12,277*	*270*	*498*	*768*	*624*	*450*	*1,074*
Pass-by Trips [2]			*420*	*14*	*10*	*24*	*90*	*74*	*164*
Total Primary Trips			***11,857***	***256***	***488***	***744***	***534***	***376***	***910***

[1] Internal capture per NCHRP 8-51/ITE Internal Capture, includes transit use.

[2] Pass-by trips limited to existing traffic volumes on Ventura Rd that are attracted to the retail component.

Phase 1 Development Only Alternative

The Phase 1 Development Only Alternative anticipates the potential that the 92.4 acres of the Phase 1 planning areas would be developed, agricultural buffers would be provided and the Phase 2 area would be deleted from the Specific Plan approval. The resulting project would include 723 dwelling units, a Beverly Drive Greenbelt and community park, and the Urban Village core along Ventura Road. The trip generation for the Phase 1 Development Only Alternative is summarized in Table 16.

Table 16
Phase 1 Development Only Alternative Trip Generation

Land Use	SF/DU	Land Use Code	Trips						
				AM			PM		
			ADT	In	Out	Total	In	Out	Total
SFD	220	210	2,077	41	122	163	139	79	218
Multi-Family (Low-Rise)	503	220	3,682	53	178	231	178	104	282
Neighborhood Commercial	60,000	SANDAG	7,200	173	115	288	360	360	720
Community Park	6.5	SANDAG	130	3	3	6	5	5	10
Sub Total			*13,089*	*270*	*418*	*688*	*682*	*548*	*1,230*
Internal Trips [1]			*1,932*	*9*	*19*	*28*	*152*	*136*	*288*
External Trips			*11,157*	*261*	*399*	*660*	*530*	*412*	*942*
Pass-by Trips [2]			*502*	*17*	*12*	*29*	*107*	*89*	*196*
Total Primary Trips			***10,655***	***244***	***387***	***631***	***423***	***323***	***746***

[1] Internal capture per NCHRP 8-51/ITE Internal Capture, includes transit use.

[2] Pass-by trips limited to existing traffic volumes on Ventura Rd that are attracted to the retail component.

Table 16 indicates that this Project Alternative is expected to generate 10,655 ADT, with 631 AM PHT and 746 PM PHT, or 236 AM PHT (-27%) and 210 PM PHT (-22%) less compared to the Proposed Project. From an intersection performance standpoint, the 27% change in trips that this alternative would produce during the PM peak hour is not expected to change the impact findings and mitigations developed for the proposed project. While the project generates significantly less peak hour trips, signalization of the Victoria Avenue/Teal Club Road and Ventura Boulevard/Beverly Drive intersections will be required under project-specific conditions. in addition to the project-specific mitigations, widening of Victoria Avenue to three through lanes in each direction at Doris Avenue and Teal Club Road will be required under cumulative conditions. In addition, signalization of Patterson Road/Doris Avenue will be needed to accommodate traffic from both the project and the proposed school complex site.

SOUTH OF TEAL CLUB ROAD ANNEXED LAND

Included with the project is the annexation of 11.4 acres of county land south of Teal Club Road (to avoid creating unincorporated islands). The additional nine parcels to be annexed are a mix of vacant land and residential development, and as indicated in the Oxnard 2030 General Plan land use map, are designated for Airport Compatible land uses (low intensity industrial and other uses that won't interfere with airport operations). If these parcels were annexed to the City of Oxnard and zoned Light Manufacturing (M-1) as proposed, the property owners would have the option of submitting applications to develop their properties with the uses and at the densities allowed in the City of Oxnard's zoning regulations for the M-1 Zone District.

Because no plans for development on the additional parcels to be annexed south of Teal Club Road are included in the proposed project, a reasonable maximum buildout scenario based on the General Plan and City Code Chapter 16 (Zoning) controls on development in the M-1 Zone District is assumed in this EIR. Based on these standards and the area of the nine parcels (11.4 acres, or 496,584 square feet), the maximum potential buildout of the nine parcels under the M-1 regulations would be 347,608.8 square feet of manufacturing space. For purposes of this analysis, assumed buildout would be half manufacturing space (173,804 square feet) and half warehouse space (173,804 square feet).

Thus, the total assumed light industrial development for the parcels to be annexed south of Teal Club Road is assumed to be 347,608 square feet. Development of 347,608 square feet of light industrial use on these parcels is in line with what is currently modeled in the City of Oxnard Traffic Model. The 11.4 acres of project land is located in traffic analysis zone (TAZ) 15 of the Oxnard Traffic Model. The modeled land use assumptions within TAZ 15 for General Plan Year 2030 consist of 400,000 square feet of Light/General Industrial and 20.65 acres of Agriculture, which Table 17 shows the trip generation summary for TAZ 15:

Table 17
Oxnard Traffic Model TAZ 15 Trip Generation Summary

Land Use	Units	AM Peak Hour			PM Peak Hour			ADT
		In	Out	Total	In	Out	Total	
Trip Rates								
16. Light/General Industrial	TSF	.58	.18	.76	.25	.61	.86	6.50
35. Agricultural	Acre	.01	.00	.01	.00	.01	.01	.10
TAZ 15								
16. Light/General Industrial	400 TSF	232	72	304	100	244	344	2,600
35. Agricultural	20.65 Acre	0	0	0	0	0	0	2
TOTAL		**232**	**72**	**304**	**100**	**244**	**344**	**2,602**

The 400,000 square feet of light industrial uses in TAZ 15 would cover the project assumption of 347,608 square feet of light industrial, as well as an additional 52,392 square foot light industrial development within the TAZ. Based on the modeled trip generation distribution for TAZ 15, the 400,000 square feet of light industrial uses would add less than 14 trips to the intersection of Oxnard Boulevard/Gonzales Road during the PM peak hour. From a no-build standpoint, if these 14 trips were removed from the intersection of Oxnard Boulevard/Gonzales Road during the PM peak hour, it would still operate at LOS D. Therefore it is determined that the addition of the annexed parcels to the City of Oxnard would not create any future significant traffic impacts.

■ ■ ■

TECHNICAL APPENDIX

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Appendix 1
AM and PM Peak Hour Intersection Counts

Prepared by National Data & Surveying Services

Victoria Ave & US 101 NB Ramps

Peak Hour Turning Movement Count

ID: 18-05313-001
City: Ventura

Day: Tuesday
Date: 05/08/2018

PEAK HOURS		COUNT PERIODS
07:15 AM - 08:15 AM	AM	07:00 AM - 09:00 AM
NONE	NOON	NONE
04:15 PM - 05:15 PM	PM	04:00 PM - 06:00 PM

Victoria Ave — SOUTHBOUND

AM	368	1973	0	0	1772	AM
NOON	0	0	0	0	0	NOON
PM	374	2096	0	0	1975	PM
	1	4	0	0		

US 101 NB Ramps — EASTBOUND

AM	NOON	PM	
589	0	758	
0	0	0	0
0	0	0	0
0	0	0	0
0	0	0	0
AM	NOON	PM	

US 101 NB Ramps — WESTBOUND

	PM	NOON	AM
2.5	641	0	712
0	0	0	0
1.5	457	0	552
0	0	0	0
	0	0	0
	PM	NOON	AM

CONTROL

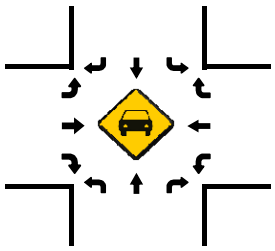
Signalized

	AM	NOON	PM
TEV	4886	0	5286
PHF	0.97		0.90

NORTHBOUND — Victoria Ave

		0	2	3	0	
PM	2553	0	384	1334	0	PM
NOON	0	0	0	0	0	NOON
AM	2525	0	221	1060	0	AM

Total Vehicles (AM)



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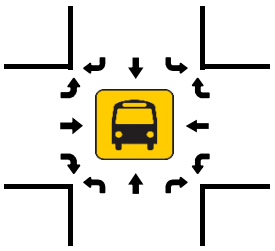

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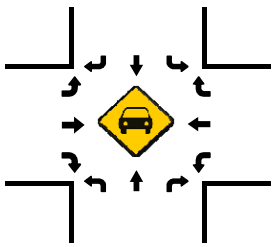

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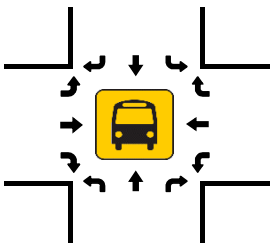

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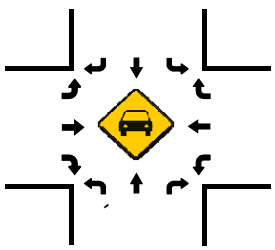

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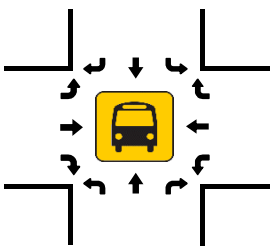
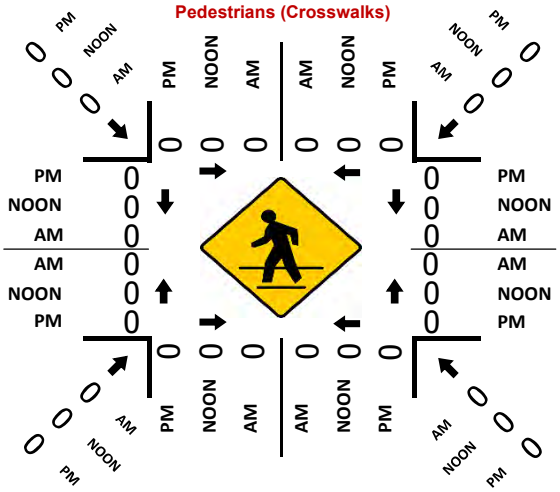


Pedestrians (Crosswalks)



Prepared by National Data & Surveying Services

Victoria Ave & Valentine Rd

Peak Hour Turning Movement Count

ID: 18-05313-002
City: Ventura

Day: Tuesday
Date: 05/08/2018

PEAK HOURS

AM: 07:30 AM - 08:30 AM
NOON: NONE
PM: 04:30 PM - 05:30 PM

COUNT PERIODS

AM: 07:00 AM - 09:00 AM
NOON: NONE
PM: 04:00 PM - 06:00 PM

Victoria Ave — SOUTHBOUND

AM	1561	963	37	0	1295	AM
NOON	0	0	0	0	0	NOON
PM	1364	1168	64	0	1732	PM

Valentine Rd — EASTBOUND

AM	NOON	PM		
1730	0	1463		
0	0	0	0	
262	0	615	2.5	
23	0	44	0.5	
216	0	361	1	
AM	NOON	PM		

CONTROL

Signalized

TEV	4295 AM	0 NOON	4873 PM
PHF	0.96		0.89

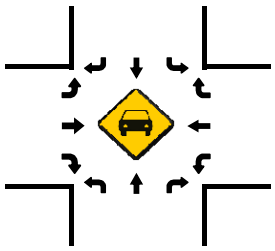
Valentine Rd — WESTBOUND

PM	NOON	AM		
63	0	26	1	
12	0	5	0.5	
26	0	20	0.5	
0	0	0	0	
123	0	71		
PM	NOON	AM		

Victoria Ave — NORTHBOUND

PM	1555	0	87	1054	15	PM
NOON	0	0	0	0	0	NOON
AM	1199	0	164	1007	11	AM

Total Vehicles (AM)



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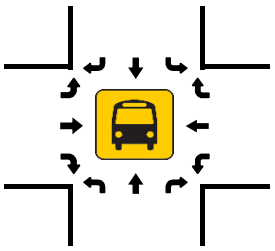

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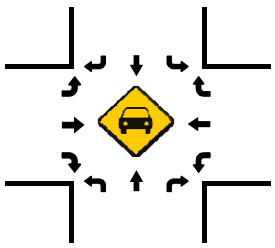

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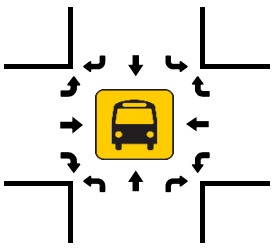
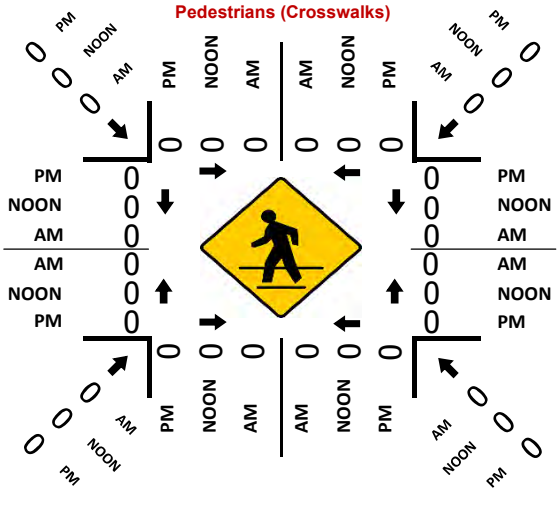


Pedestrians (Crosswalks)



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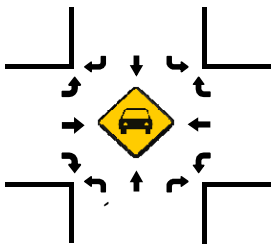

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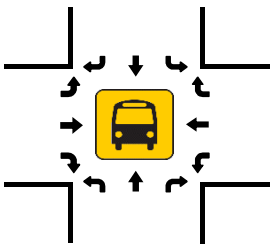


Prepared by National Data & Surveying Services

Victoria Ave & Olivas Park Rd

Peak Hour Turning Movement Count

ID: 18-05313-003
City: Ventura

Day: Tuesday
Date: 05/08/2018

PEAK HOURS

AM: 07:15 AM - 08:15 AM
NOON: NONE
PM: 04:15 PM - 05:15 PM

COUNT PERIODS

AM: 07:00 AM - 09:00 AM
NOON: NONE
PM: 04:00 PM - 06:00 PM

Victoria Ave — SOUTHBOUND

AM	114	884	186	2	1578	AM
NOON	0	0	0	0	0	NOON
PM	93	1372	104	3	1479	PM

Olivas Park Rd — EASTBOUND

AM	NOON	PM		
604	0	415	⇦	
1	0	0	↶	0
70	0	125	↱	1
65	0	93	→	2
107	0	521	↴	1

Olivas Park Rd — WESTBOUND

PM	NOON	AM		
179	0	63	↰	0.5
101	0	81	←	1.5
227	0	84	↰	1
0	0	0	↶	0
343	0	470	⇨	

Victoria Ave — NORTHBOUND

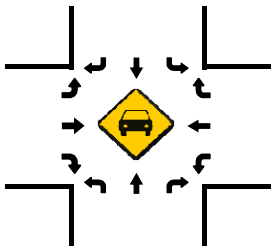
PM	2120	0	221	1172	146	PM
NOON	0	0	0	0	0	NOON
AM	1075	0	408	1443	219	AM

1	2	1	0	
0	2	2	1	

CONTROL: Signalized

TEV	3727 AM	0 NOON	4357 PM
PHF	0.92		0.95

Total Vehicles (AM)



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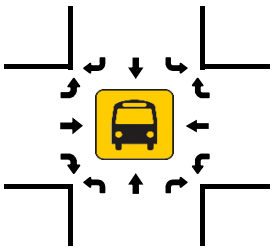

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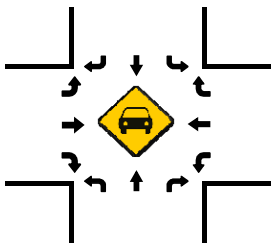

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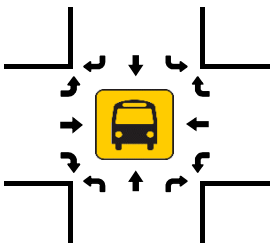
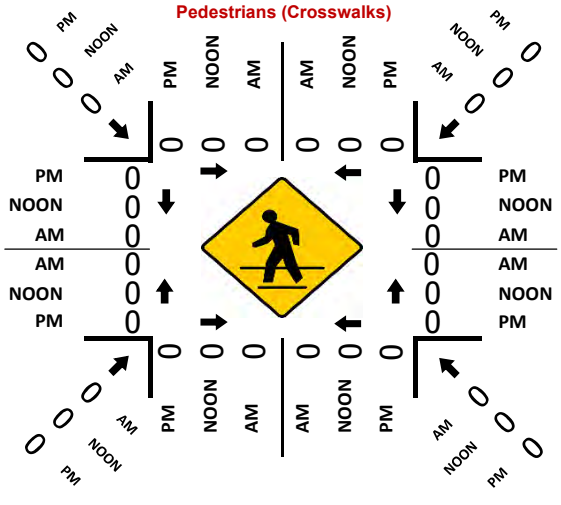


Pedestrians (Crosswalks)



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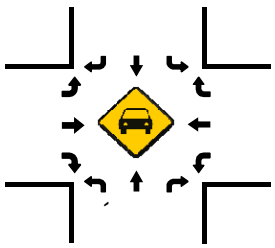

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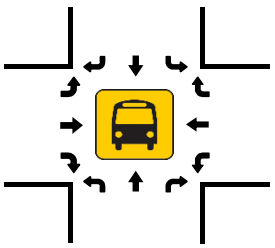
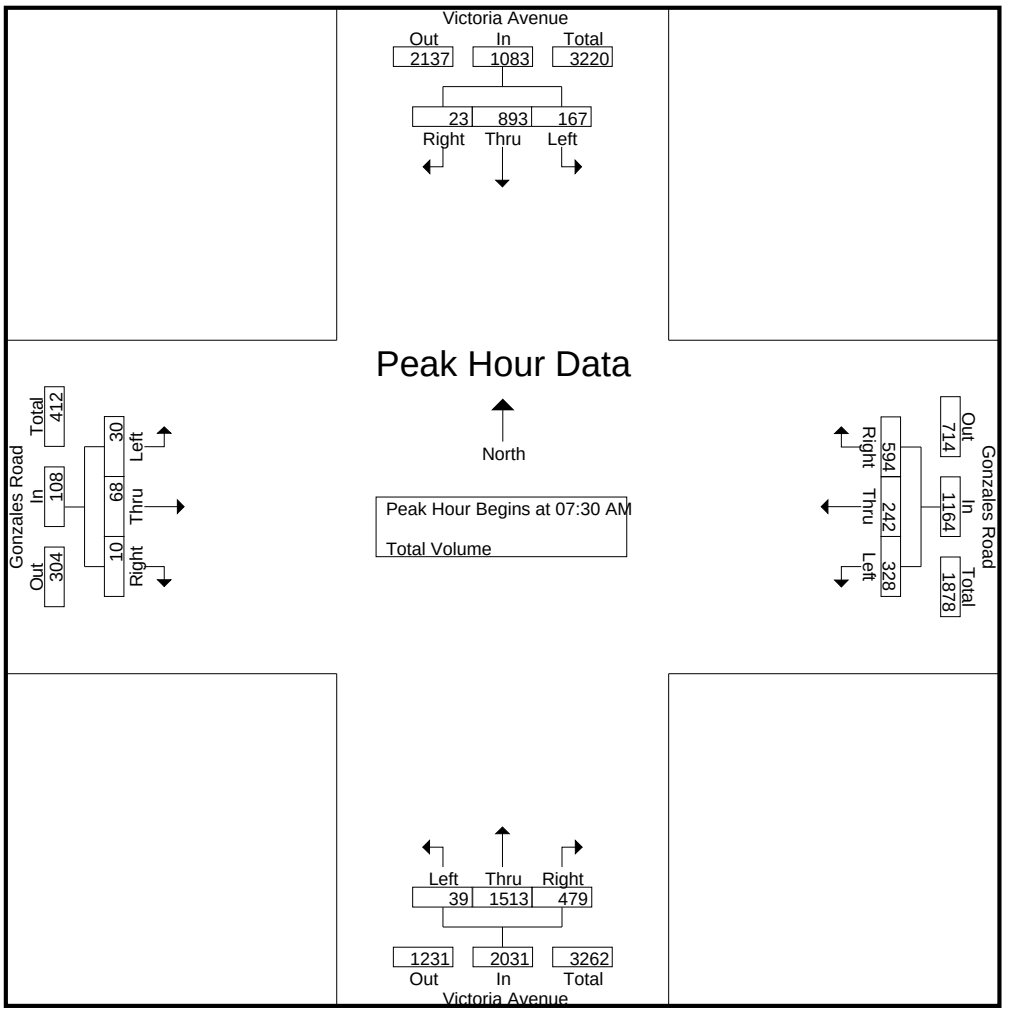


Counts Unlimited
PO Box 1178
Corona, CA 92878
(951) 268-6268

County of Ventura
N/S: Victoria Avenue
E/W: Gonzales Road
Weather: Clear

File Name : 01_VCO_VI GO AM
Site Code : 07517686
Start Date : 10/12/2017
Page No : 2



Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	07:45 AM				07:30 AM				07:15 AM				08:00 AM			
+0 mins.	47	**250**	**8**	**305**	79	51	115	245	8	432	66	506	7	12	3	22
+15 mins.	41	230	5	276	**114**	45	144	303	**10**	386	196	592	**11**	**18**	1	30
+30 mins.	39	199	4	242	92	66	149	307	10	**440**	**210**	**660**	10	14	1	25
+45 mins.	**53**	212	7	272	43	**80**	**186**	**309**	8	359	43	410	9	18	**6**	**33**
Total Volume	180	891	24	1095	328	242	594	1164	36	1617	515	2168	37	62	11	110
% App. Total	16.4	81.4	2.2		28.2	20.8	51		1.7	74.6	23.8		33.6	56.4	10	
PHF	.849	.891	.750	.898	.719	.756	.798	.942	.900	.919	.613	.821	.841	.861	.458	.833

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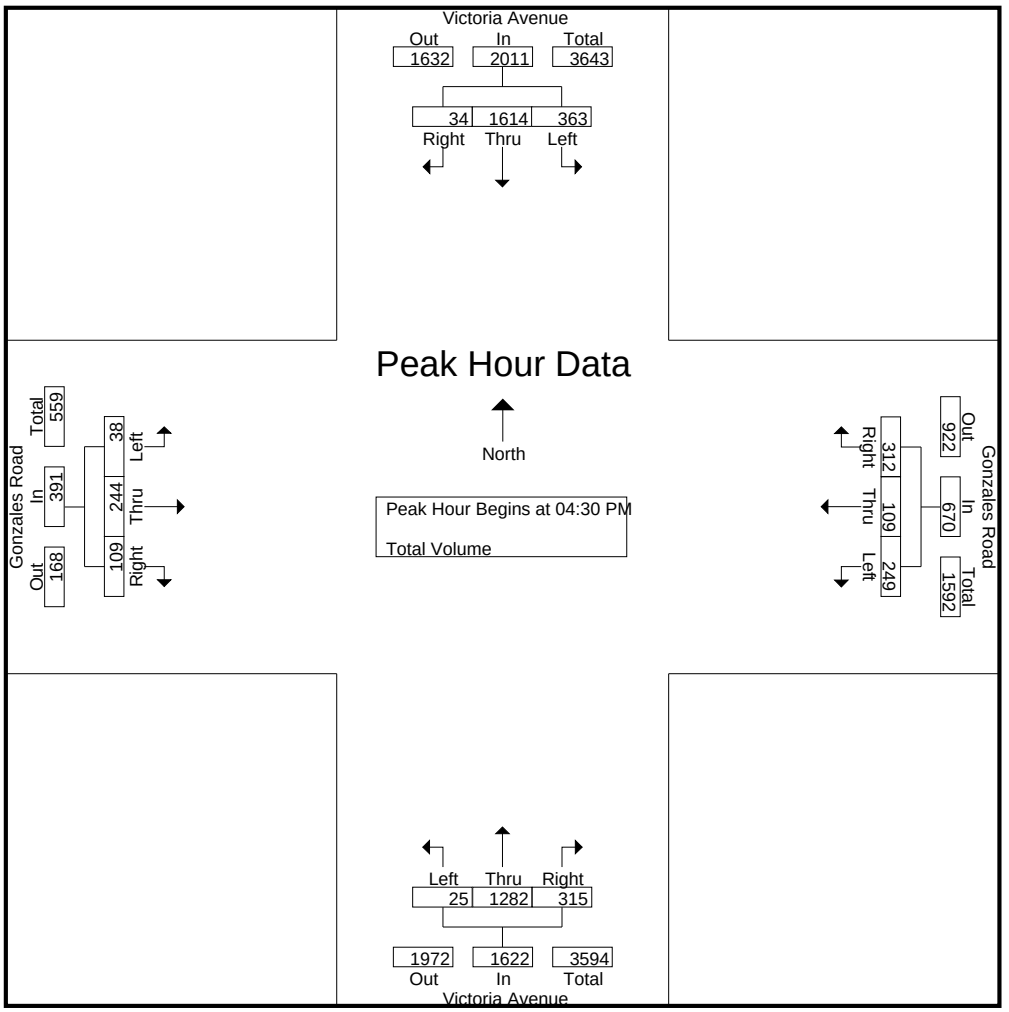
County of Ventura
N/S: Victoria Avenue
E/W: Gonzales Road
Weather: Clear

File Name : 01_VCO_VI GO PM
Site Code : 07517686
Start Date : 10/12/2017
Page No : 2



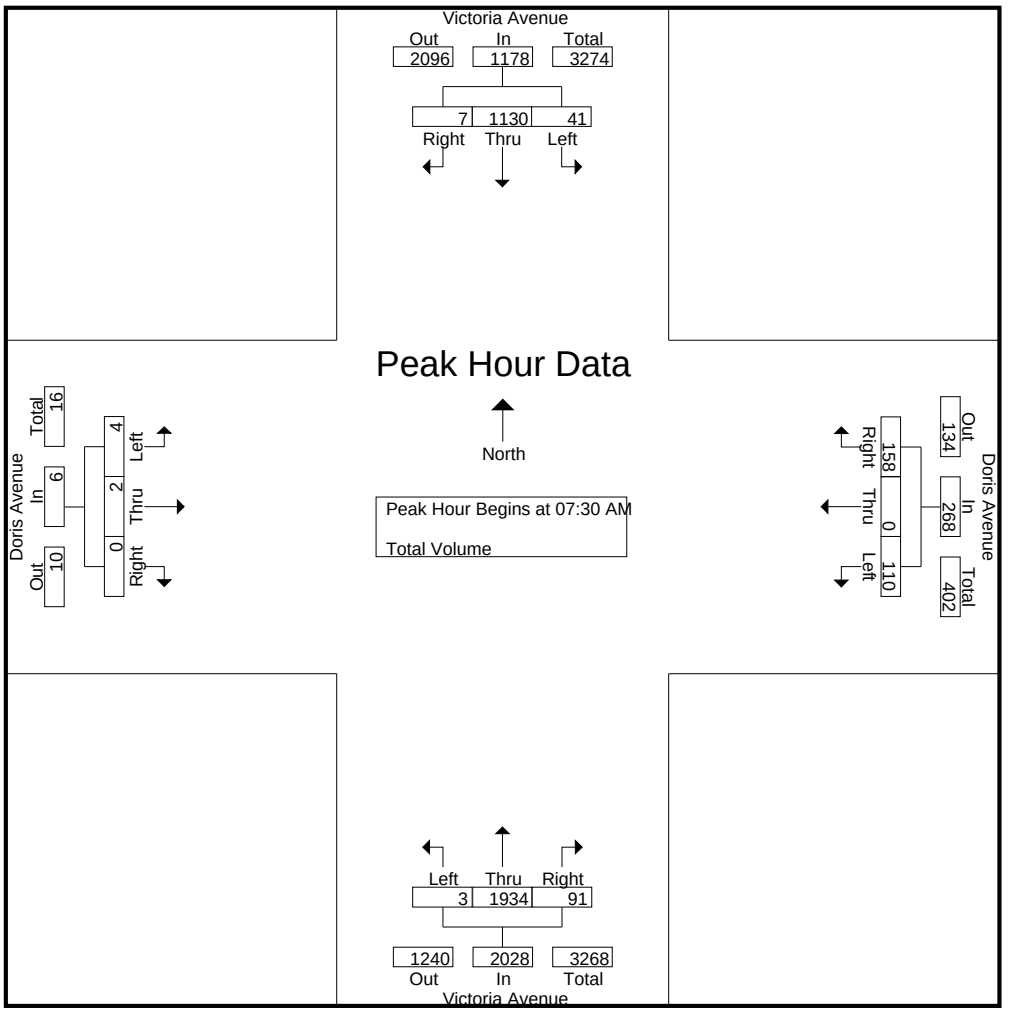
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	05:00 PM				04:15 PM				04:30 PM				04:15 PM			
+0 mins.	83	**478**	8	**569**	68	23	75	166	3	362	67	432	7	79	42	128
+15 mins.	**117**	429	**10**	556	57	21	80	158	**11**	257	75	343	**24**	**82**	**48**	**154**
+30 mins.	98	455	5	558	**74**	**34**	71	**179**	5	**385**	86	**476**	5	60	20	85
+45 mins.	77	426	6	509	63	30	**83**	176	6	278	**87**	371	3	48	20	71
Total Volume	375	1788	29	2192	262	108	309	679	25	1282	315	1622	39	269	130	438
% App. Total	17.1	81.6	1.3		38.6	15.9	45.5		1.5	79	19.4		8.9	61.4	29.7	
PHF	.801	.935	.725	.963	.885	.794	.931	.948	.568	.832	.905	.852	.406	.820	.677	.711

Counts Unlimited
PO Box 1178
Corona, CA 92878
(951) 268-6268

County of Ventura
N/S: Victoria Avenue
E/W: Doris Avenue
Weather: Clear

File Name : 02_VCO_VI DO AM
Site Code : 07517686
Start Date : 10/12/2017
Page No : 2



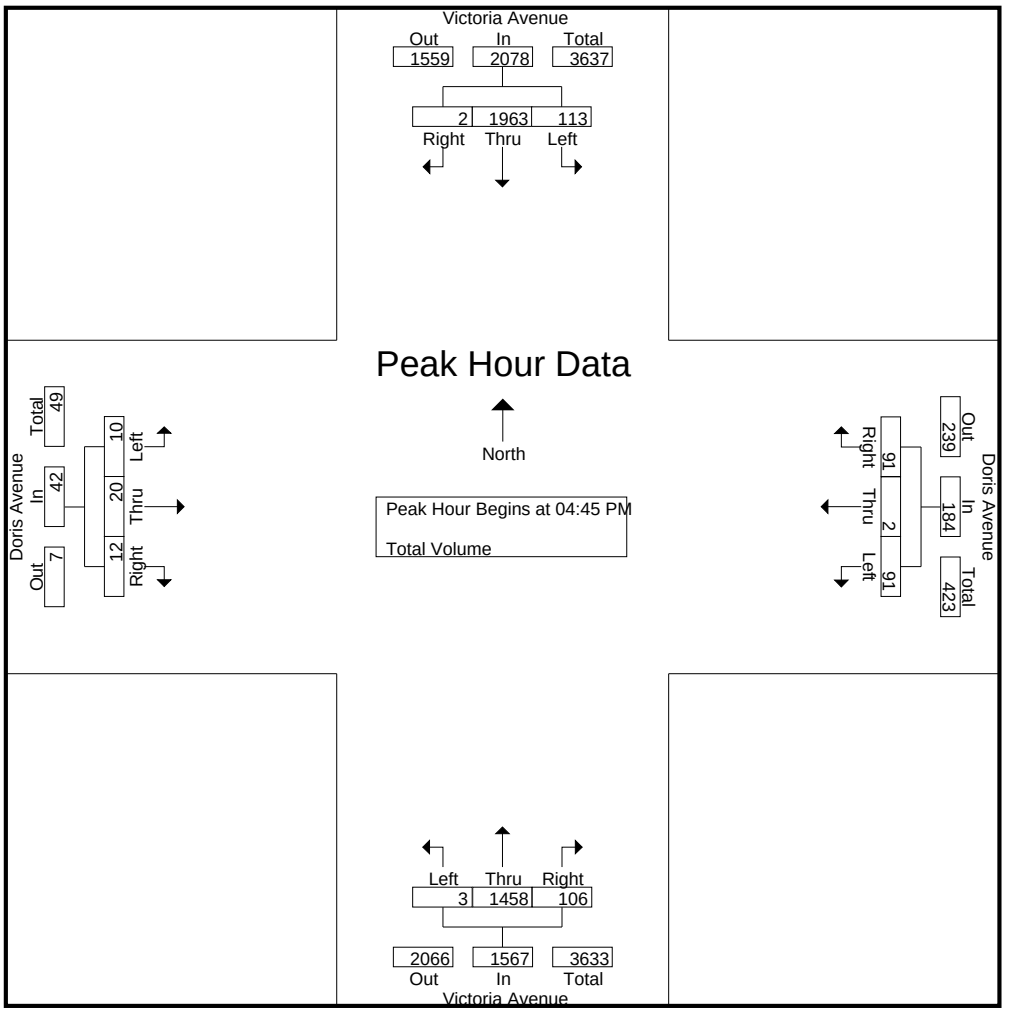
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	07:30 AM				07:30 AM				07:15 AM				07:00 AM			
+0 mins.	2	267	2	271	18	0	32	50	**3**	412	10	425	**4**	**1**	**3**	**8**
+15 mins.	12	295	**3**	310	**39**	0	**70**	**109**	0	**594**	20	**614**	0	0	3	3
+30 mins.	**14**	**312**	1	**327**	24	0	32	56	0	557	17	574	2	1	0	3
+45 mins.	13	256	1	270	29	0	24	53	1	408	**25**	434	0	1	0	1
Total Volume	41	1130	7	1178	110	0	158	268	4	1971	72	2047	6	3	6	15
% App. Total	3.5	95.9	0.6		41	0	59		0.2	96.3	3.5		40	20	40	
PHF	.732	.905	.583	.901	.705	.000	.564	.615	.333	.830	.720	.833	.375	.750	.500	.469

Counts Unlimited
PO Box 1178
Corona, CA 92878
(951) 268-6268

County of Ventura
N/S: Victoria Avenue
E/W: Doris Avenue
Weather: Clear

File Name : 02_VCO_VI DO PM
Site Code : 07517686
Start Date : 10/12/2017
Page No : 2



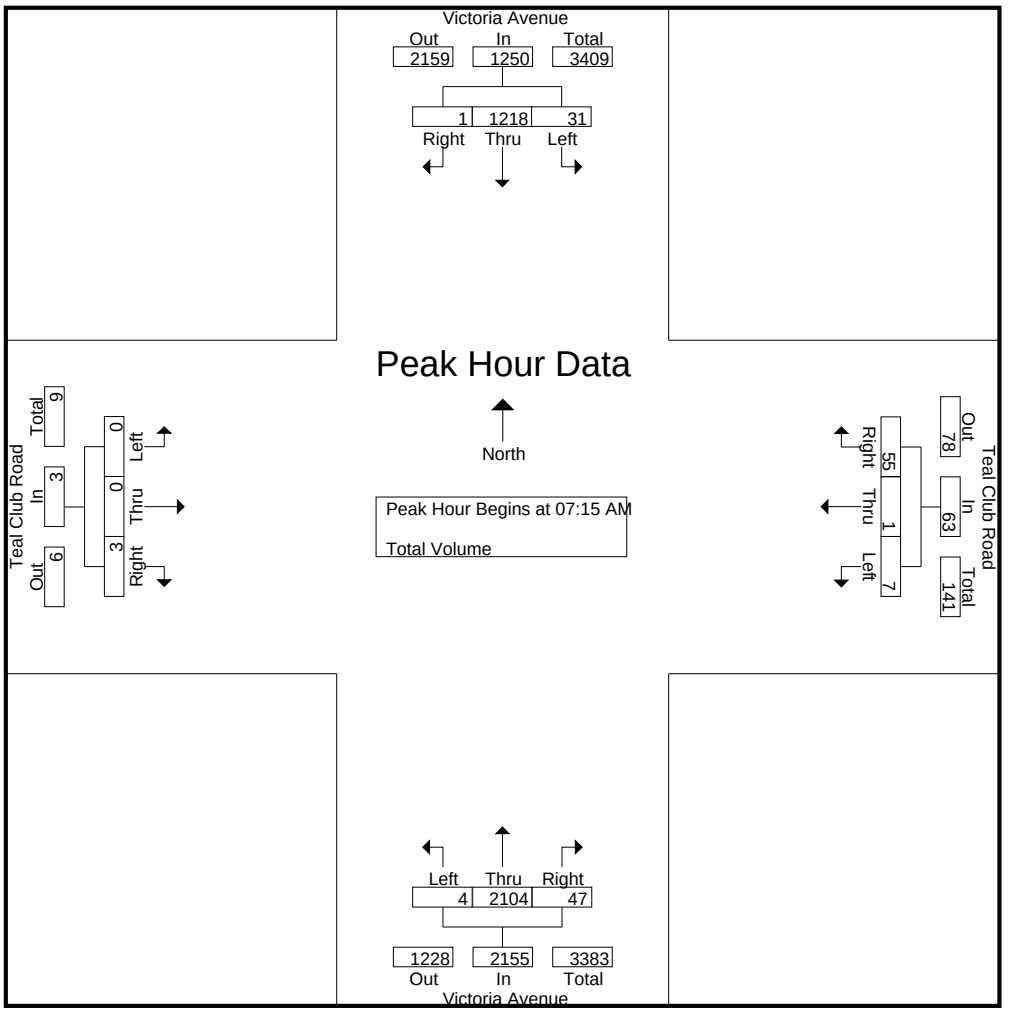
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	05:00 PM				04:30 PM				04:15 PM				04:45 PM			
+0 mins.	19	464	**1**	484	12	0	21	33	0	377	22	399	**4**	2	3	9
+15 mins.	23	482	0	505	**28**	0	25	**53**	**1**	**401**	20	422	2	3	3	8
+30 mins.	**35**	**533**	0	**568**	24	**1**	23	48	0	362	24	386	0	1	1	2
+45 mins.	33	490	0	523	22	0	**29**	51	0	393	**33**	**426**	4	**14**	**5**	**23**
Total Volume	110	1969	1	2080	86	1	98	185	1	1533	99	1633	10	20	12	42
% App. Total	5.3	94.7	0		46.5	0.5	53		0.1	93.9	6.1		23.8	47.6	28.6	
PHF	.786	.924	.250	.915	.768	.250	.845	.873	.250	.956	.750	.958	.625	.357	.600	.457

Counts Unlimited
PO Box 1178
Corona, CA 92878
(951) 268-6268

City of Oxnard
N/S: Victoria Avenue
E/W: Teal Club Road
Weather: Clear

File Name : 03_OXD_VI TE AM
Site Code : 07517686
Start Date : 10/12/2017
Page No : 2



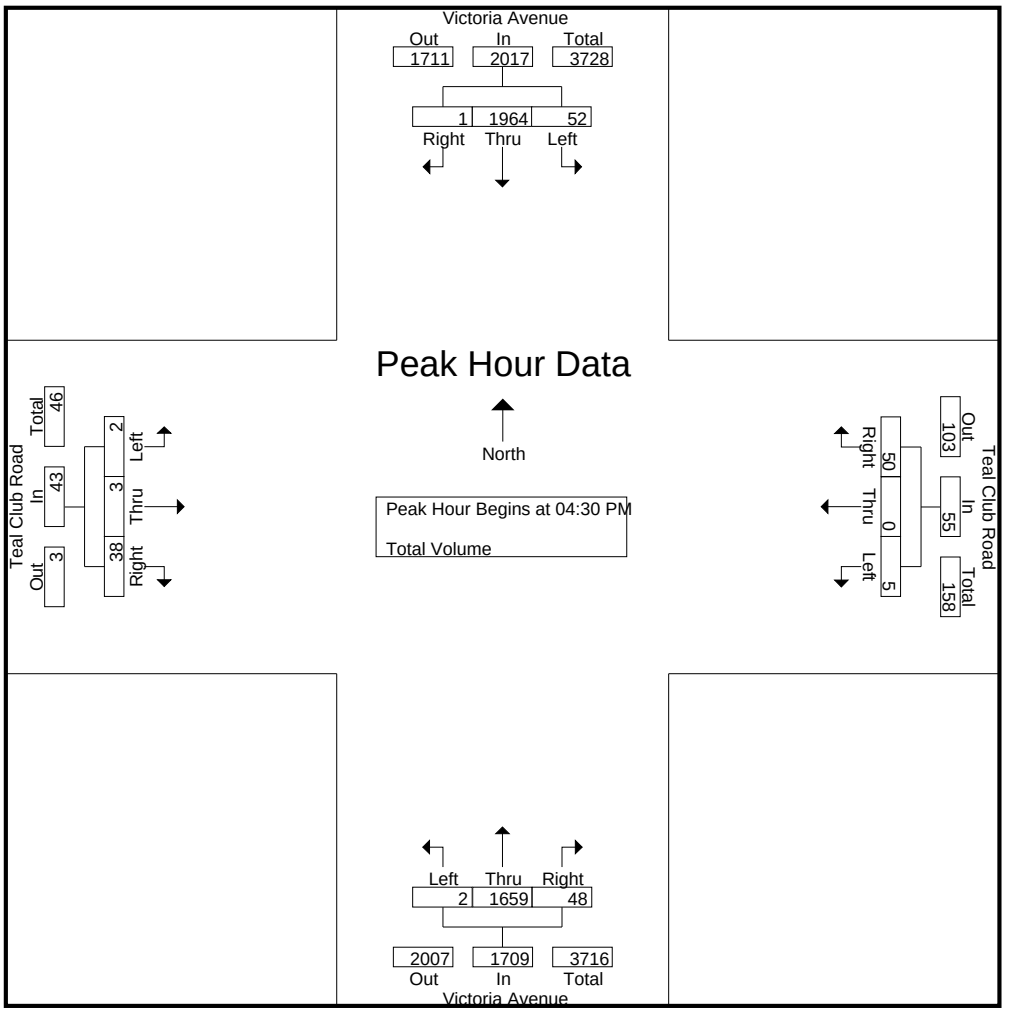
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	07:30 AM				07:30 AM				07:15 AM				07:00 AM			
+0 mins.	6	290	0	296	1	**1**	13	15	0	487	9	496	**1**	0	1	**2**
+15 mins.	**8**	**364**	0	**372**	2	0	**15**	**17**	**2**	**641**	**17**	**660**	0	0	1	1
+30 mins.	8	322	**1**	331	**4**	0	12	16	2	550	15	567	0	0	**2**	2
+45 mins.	7	276	0	283	2	0	15	17	0	426	6	432	0	0	0	0
Total Volume	29	1252	1	1282	9	1	55	65	4	2104	47	2155	1	0	4	5
% App. Total	2.3	97.7	0.1		13.8	1.5	84.6		0.2	97.6	2.2		20	0	80	
PHF	.906	.860	.250	.862	.563	.250	.917	.956	.500	.821	.691	.816	.250	.000	.500	.625

Counts Unlimited
PO Box 1178
Corona, CA 92878
(951) 268-6268

City of Oxnard
N/S: Victoria Avenue
E/W: Teal Club Road
Weather: Clear

File Name : 03_OXD_VI TE PM
Site Code : 07517686
Start Date : 10/12/2017
Page No : 2



Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	04:45 PM				04:45 PM				04:30 PM				04:00 PM			
+0 mins.	11	488	0	499	**3**	0	11	14	**2**	436	13	451	0	0	5	5
+15 mins.	**16**	503	0	519	1	0	**20**	**21**	0	377	10	387	0	0	2	2
+30 mins.	13	**528**	0	**541**	0	0	13	13	0	**470**	**17**	**487**	**1**	**2**	**27**	**30**
+45 mins.	11	517	0	528	0	0	12	12	0	376	8	384	1	1	9	11
Total Volume	51	2036	0	2087	4	0	56	60	2	1659	48	1709	2	3	43	48
% App. Total	2.4	97.6	0		6.7	0	93.3		0.1	97.1	2.8		4.2	6.2	89.6	
PHF	.797	.964	.000	.964	.333	.000	.700	.714	.250	.882	.706	.877	.500	.375	.398	.400

Prepared by National Data & Surveying Services

Victoria Ave & 5th St

Peak Hour Turning Movement Count

ID: 19-05604-004
City: Oxnard

Day: Thursday
Date: 10/10/2019

PEAK HOURS	COUNT PERIODS
07:15 AM - 08:15 AM	07:00 AM - 09:00 AM
NONE	NONE
04:00 PM - 05:00 PM	04:00 PM - 06:00 PM

SOUTHBOUND — Victoria Ave

AM	37	1006	219	13	2166	AM
NOON	0	0	0	0	0	NOON
PM	58	1655	321	3	1549	PM
	0	3	2	0		

EASTBOUND — 5th St

AM	NOON	PM	
259	0	209	
2	0	0	0
48	0	61	1
90	0	170	2
9	0	23	0

WESTBOUND — 5th St

PM	NOON	AM	
188	0	404	1
123	0	153	2
157	0	106	2
13	0	6	0
628	0	445	

NORTHBOUND — Victoria Ave

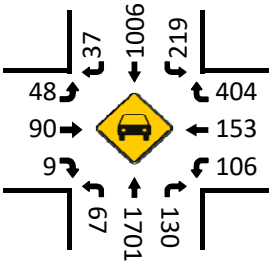
PM	1852	17	28	1297	124	PM
NOON	0	0	0	0	0	NOON
AM	1132	11	67	1701	130	AM
		0	2	3	1	

CONTROL

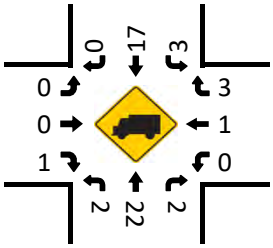
Signalized

TEV	4002	0	4238
	AM	NOON	PM
PHF	0.87		0.94

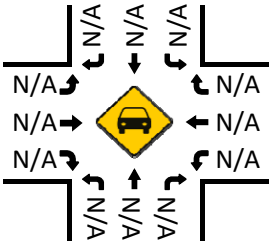
Total Vehicles (AM)



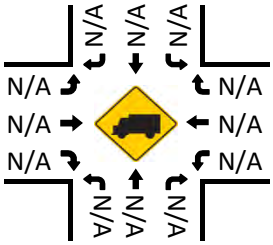
HT (AM)



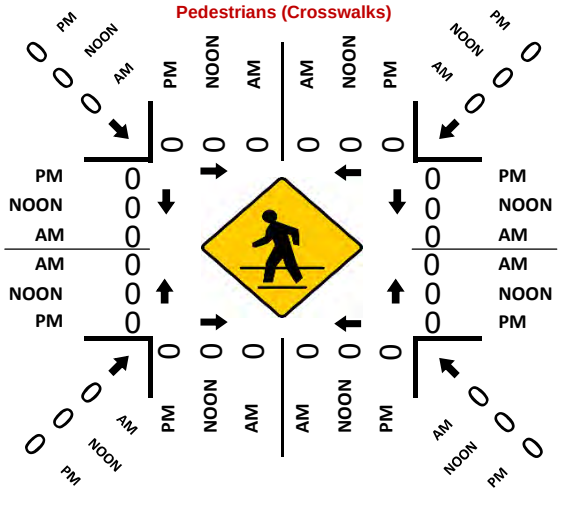
Total Vehicles (Noon)



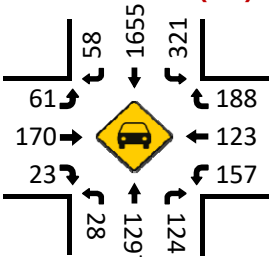
HT (NOON)



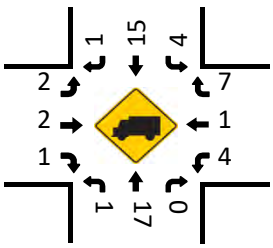
Pedestrians (Crosswalks)



Total Vehicles (PM)



HT (PM)



Prepared by National Data & Surveying Services

Victoria Ave & Wooley Rd

Peak Hour Turning Movement Count

ID: 19-05604-001
City: Oxnard

Day: Thursday
Date: 10/10/2019

PEAK HOURS	COUNT PERIODS
07:15 AM - 08:15 AM	07:00 AM - 09:00 AM
NONE	NONE
04:15 PM - 05:15 PM	04:00 PM - 06:00 PM

SOUTHBOUND (Victoria Ave)

AM	73	878	124	0	1829	AM
NOON	0	0	0	0	0	NOON
PM	133	1292	267	0	1429	PM
	1	3	1	0		

EASTBOUND (Wooley Rd)

AM	NOON	PM	
374	0	373	
0	0	0	0
116	0	150	1
140	0	286	2
44	0	119	1
AM	NOON	PM	

WESTBOUND (Wooley Rd)

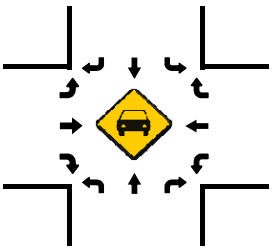
PM	NOON	AM	
207	0	463	1
177	0	209	2
132	0	73	1
2	0	1	0
665	0	331	
PM	NOON	AM	

NORTHBOUND (Victoria Ave)

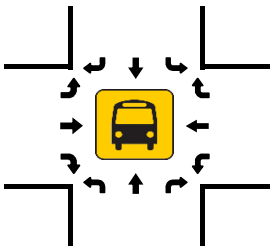
	0	1	3	0		
PM	1545	2	63	1072	110	PM
NOON	0	0	0	0	0	NOON
AM	996	1	92	1250	66	AM

CONTROL			
Signalized			
TEV	3530	0	4012
	AM	NOON	PM
PHF	0.88		0.97

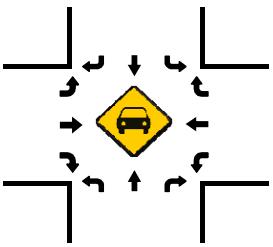
Total Vehicles (AM)



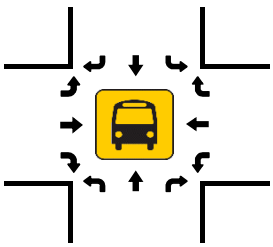
Total Vehicles (AM)



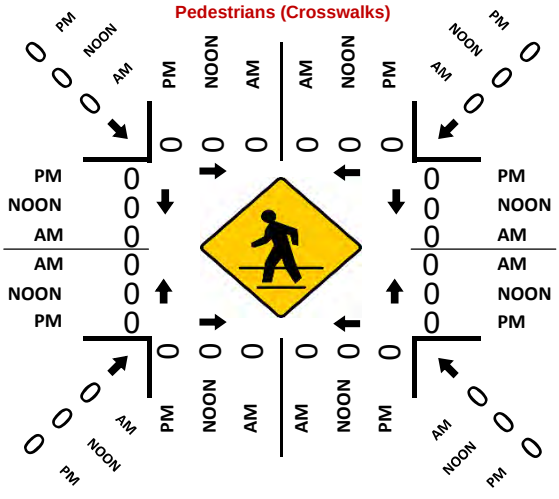
Total Vehicles (NOON)



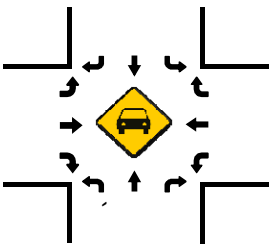
Total Vehicles (NOON)



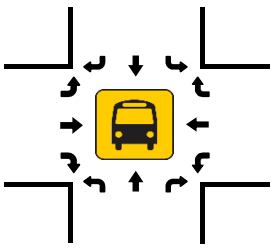
Pedestrians (Crosswalks)



Total Vehicles (PM)



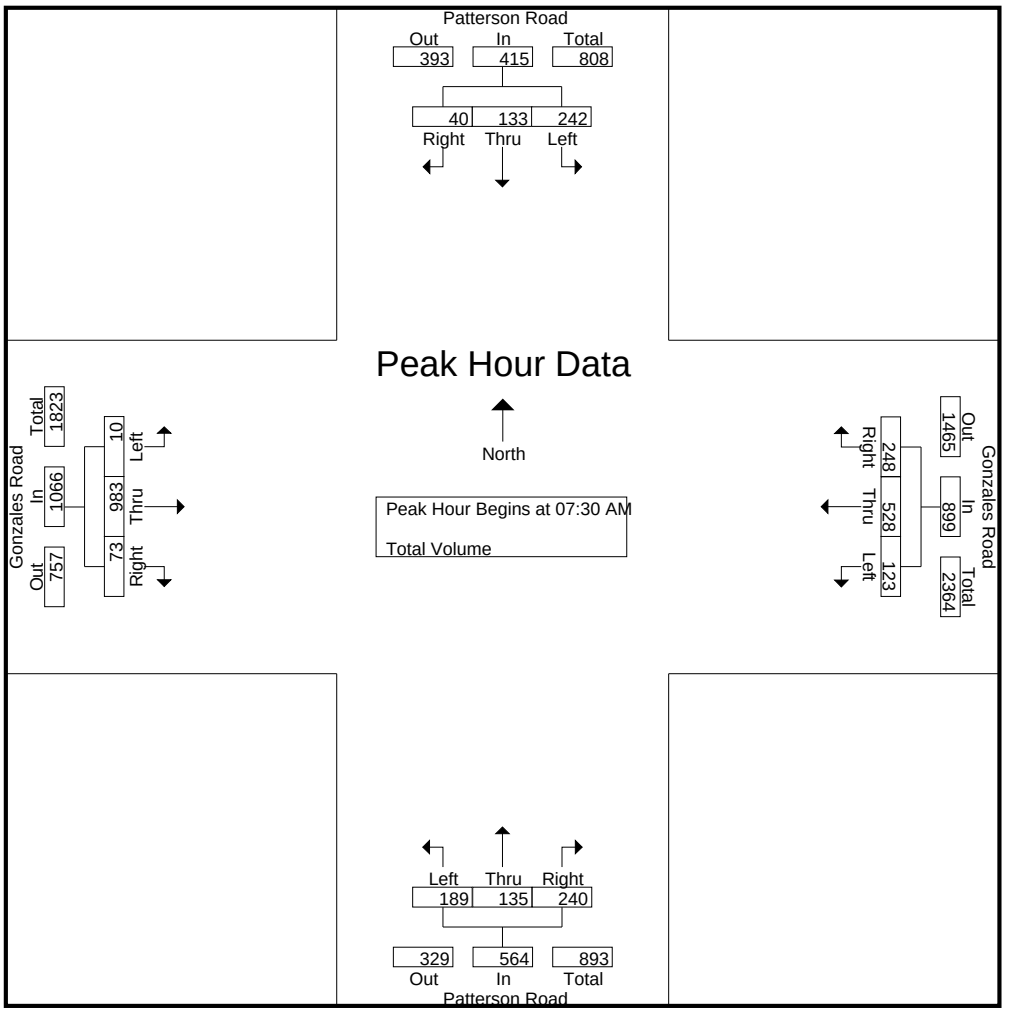
Total Vehicles (PM)



Counts Unlimited
PO Box 1178
Corona, CA 92878
(951) 268-6268

City of Oxnard
N/S: Patterson Road
E/W: Gonzales Road
Weather: Clear

File Name : 07_OXD_PA GO AM
Site Code : 07517686
Start Date : 10/12/2017
Page No : 2



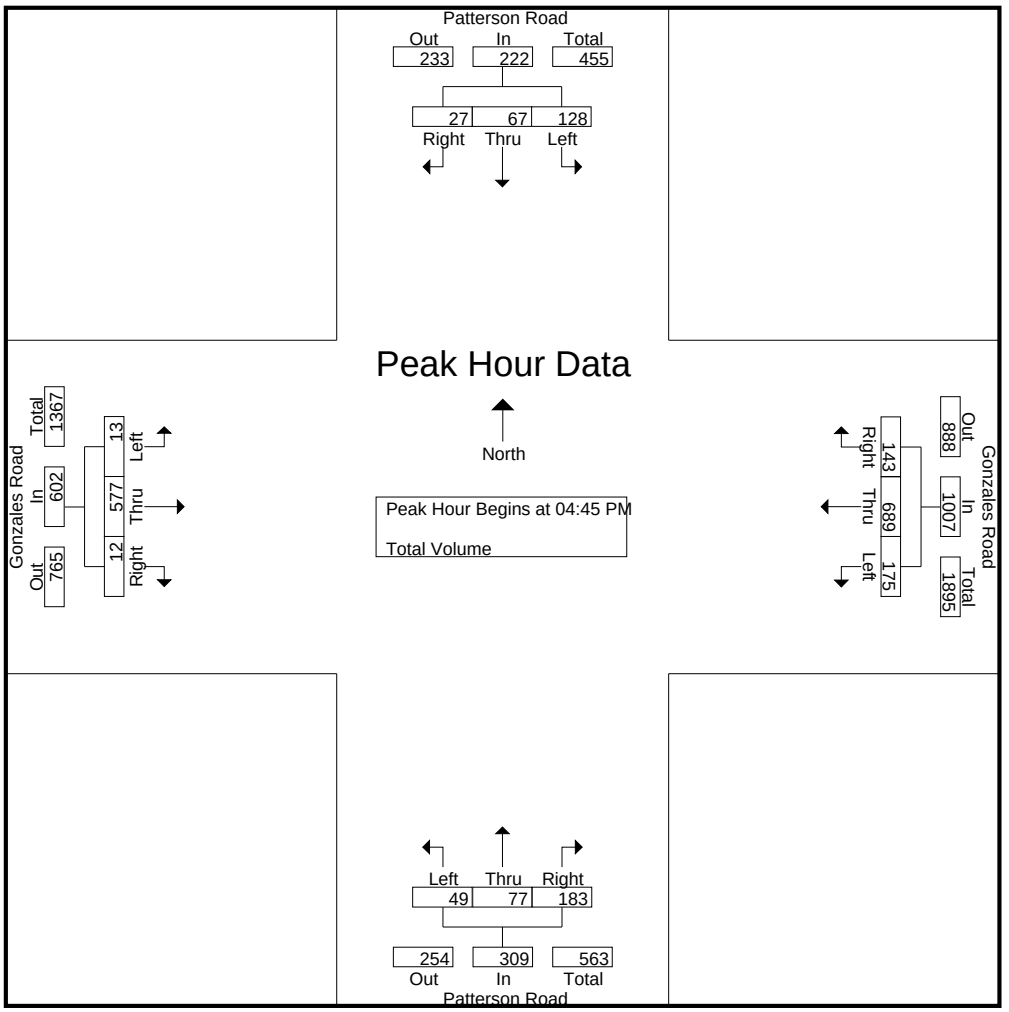
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	07:15 AM				07:15 AM				07:30 AM				07:30 AM			
+0 mins.	58	12	8	78	18	61	26	105	21	31	66	118	3	257	8	268
+15 mins.	**99**	29	**15**	**143**	26	143	70	239	34	24	64	122	**5**	**312**	21	**338**
+30 mins.	65	**44**	13	122	**50**	**194**	**110**	**354**	62	39	**68**	**169**	0	189	16	205
+45 mins.	45	29	5	79	21	130	54	205	**72**	**41**	42	155	2	225	**28**	255
Total Volume	267	114	41	422	115	528	260	903	189	135	240	564	10	983	73	1066
% App. Total	63.3	27	9.7		12.7	58.5	28.8		33.5	23.9	42.6		0.9	92.2	6.8	
PHF	.674	.648	.683	.738	.575	.680	.591	.638	.656	.823	.882	.834	.500	.788	.652	.788

Counts Unlimited
PO Box 1178
Corona, CA 92878
(951) 268-6268

City of Oxnard
N/S: Patterson Road
E/W: Gonzales Road
Weather: Clear

File Name : 07_OXD_PA GO PM
Site Code : 07517686
Start Date : 10/12/2017
Page No : 2



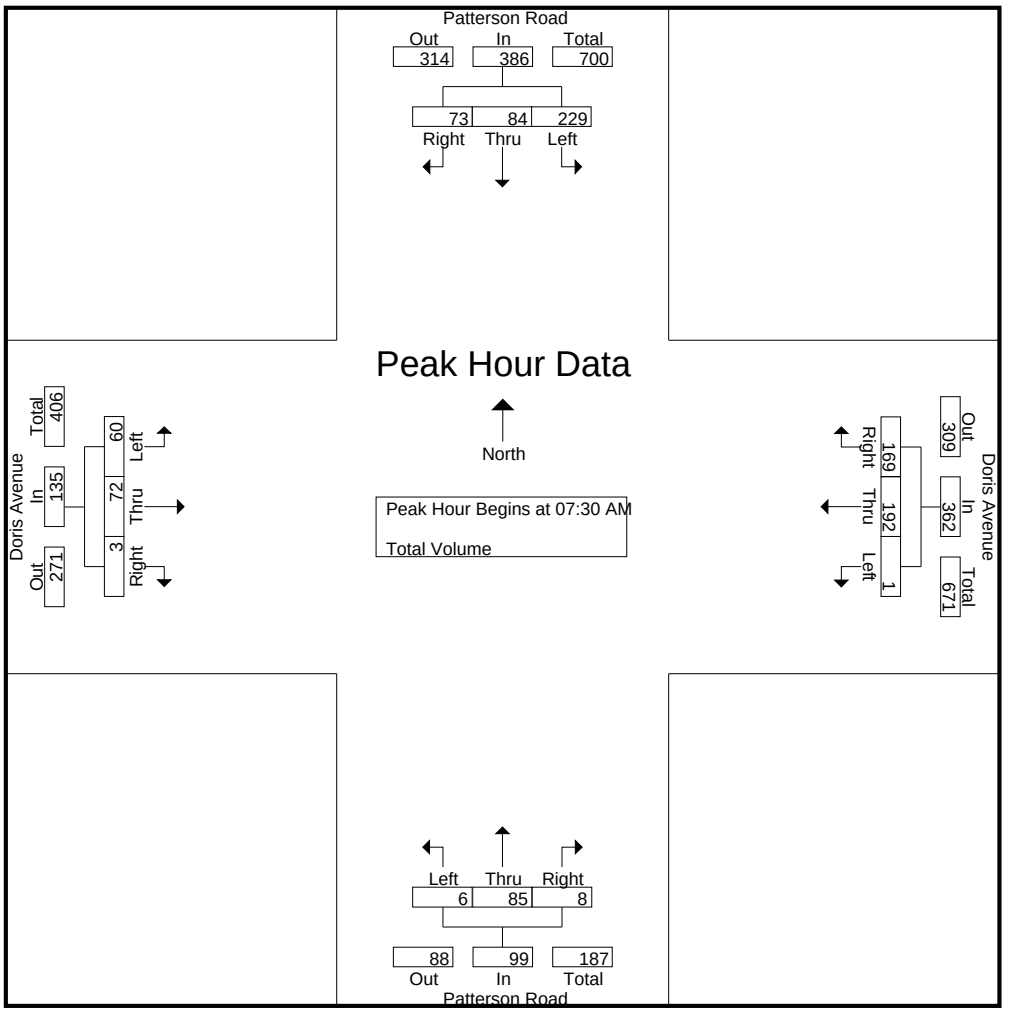
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	04:30 PM				04:15 PM				05:00 PM				04:45 PM			
+0 mins.	**38**	11	5	54	34	**186**	**49**	**269**	9	18	**57**	84	**5**	135	**6**	146
+15 mins.	35	17	3	55	45	174	42	261	8	23	41	72	3	157	2	162
+30 mins.	35	**18**	**10**	**63**	**46**	180	42	268	14	14	43	71	5	121	1	127
+45 mins.	35	15	7	57	39	159	37	235	**38**	**37**	44	**119**	0	**164**	3	**167**
Total Volume	143	61	25	229	164	699	170	1033	69	92	185	346	13	577	12	602
% App. Total	62.4	26.6	10.9		15.9	67.7	16.5		19.9	26.6	53.5		2.2	95.8	2	
PHF	.941	.847	.625	.909	.891	.940	.867	.960	.454	.622	.811	.727	.650	.880	.500	.901

Counts Unlimited
PO Box 1178
Corona, CA 92878
(951) 268-6268

City of Oxnard
N/S: Patterson Road
E/W: Doris Avenue
Weather: Clear

File Name : 08_OXD_PA DO AM
Site Code : 07517686
Start Date : 10/12/2017
Page No : 2



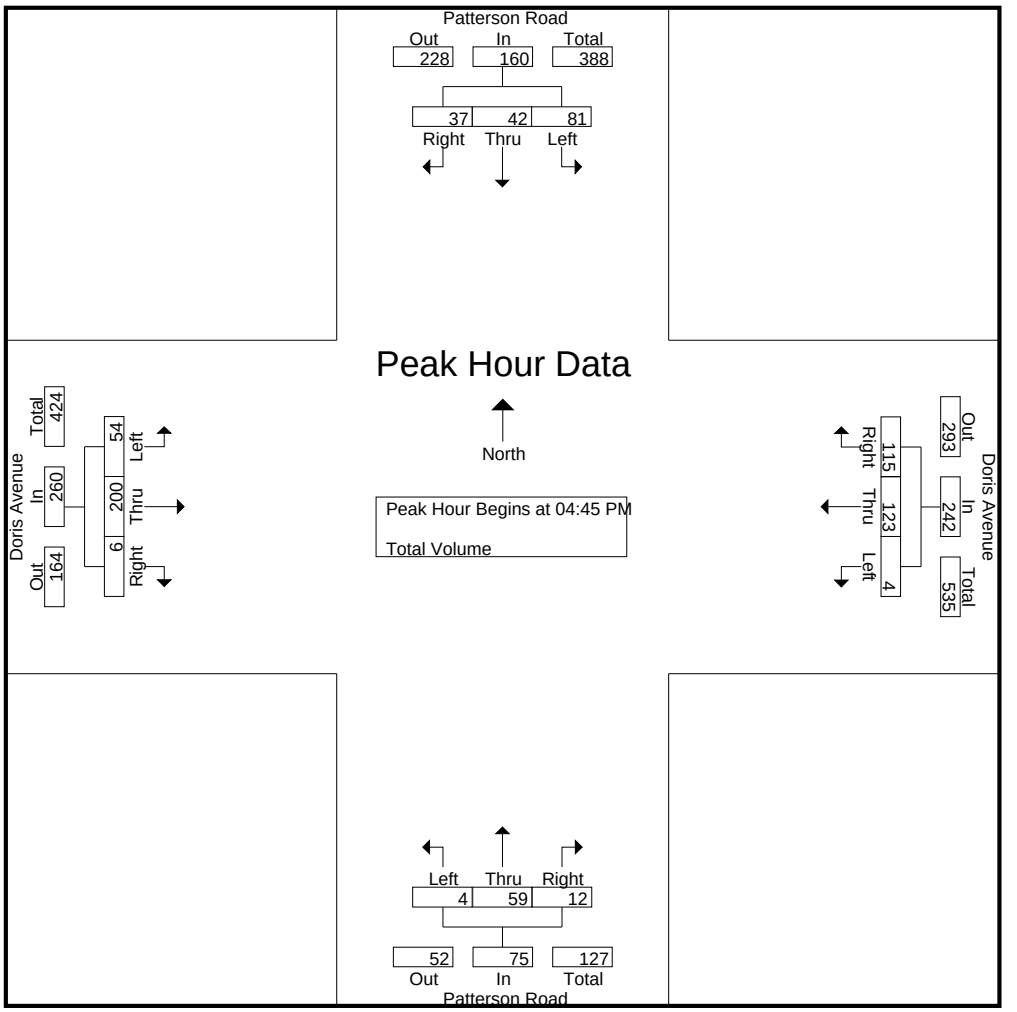
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	07:30 AM				07:00 AM				07:00 AM				07:45 AM			
+0 mins.	62	21	12	95	**1**	24	33	58	2	8	0	10	11	19	**1**	31
+15 mins.	**78**	**31**	**21**	**130**	1	42	41	84	1	9	0	10	**23**	**25**	0	**48**
+30 mins.	65	21	19	105	0	52	**82**	**134**	1	**41**	0	**42**	14	19	0	33
+45 mins.	24	11	21	56	0	**66**	35	101	**5**	28	**7**	40	8	17	1	26
Total Volume	229	84	73	386	2	184	191	377	9	86	7	102	56	80	2	138
% App. Total	59.3	21.8	18.9		0.5	48.8	50.7		8.8	84.3	6.9		40.6	58	1.4	
PHF	.734	.677	.869	.742	.500	.697	.582	.703	.450	.524	.250	.607	.609	.800	.500	.719

Counts Unlimited
PO Box 1178
Corona, CA 92878
(951) 268-6268

City of Oxnard
N/S: Patterson Road
E/W: Doris Avenue
Weather: Clear

File Name : 08_OXD_PA DO PM
Site Code : 07517686
Start Date : 10/12/2017
Page No : 2



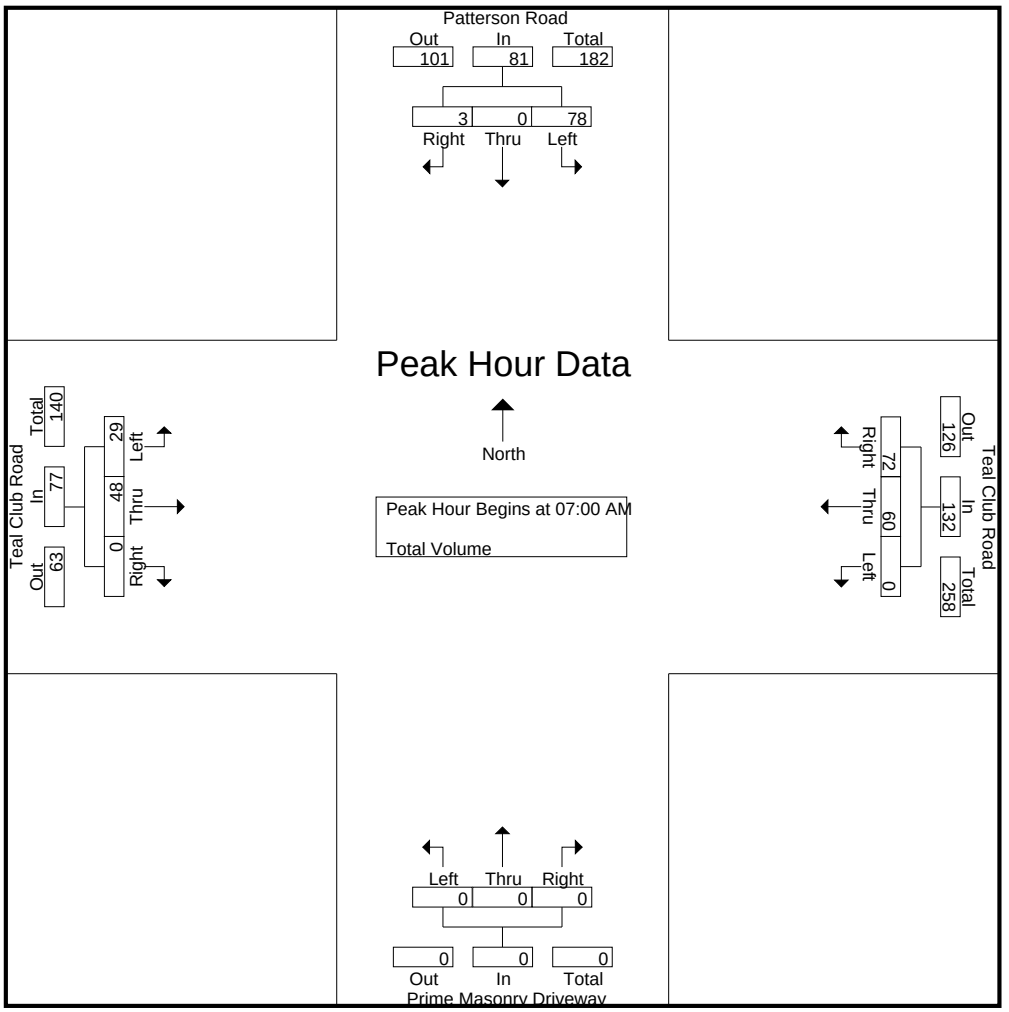
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	04:15 PM				04:30 PM				04:15 PM				04:45 PM			
+0 mins.	**37**	10	11	**58**	0	**38**	25	63	0	10	4	14	14	48	2	64
+15 mins.	31	**11**	8	50	**2**	33	32	**67**	0	12	2	14	**18**	44	0	62
+30 mins.	25	10	**12**	47	0	35	28	63	0	14	**6**	20	9	43	1	53
+45 mins.	24	11	11	46	0	30	**34**	64	**4**	**19**	4	**27**	13	**65**	**3**	**81**
Total Volume	117	42	42	201	2	136	119	257	4	55	16	75	54	200	6	260
% App. Total	58.2	20.9	20.9		0.8	52.9	46.3		5.3	73.3	21.3		20.8	76.9	2.3	
PHF	.791	.955	.875	.866	.250	.895	.875	.959	.250	.724	.667	.694	.750	.769	.500	.802

Counts Unlimited
PO Box 1178
Corona, CA 92878
(951) 268-6268

City of Oxnard
N/S: Patterson Road
E/W: Teal Club Road
Weather: Clear

File Name : 09_OXD_PA TE AM
Site Code : 07517686
Start Date : 10/12/2017
Page No : 2



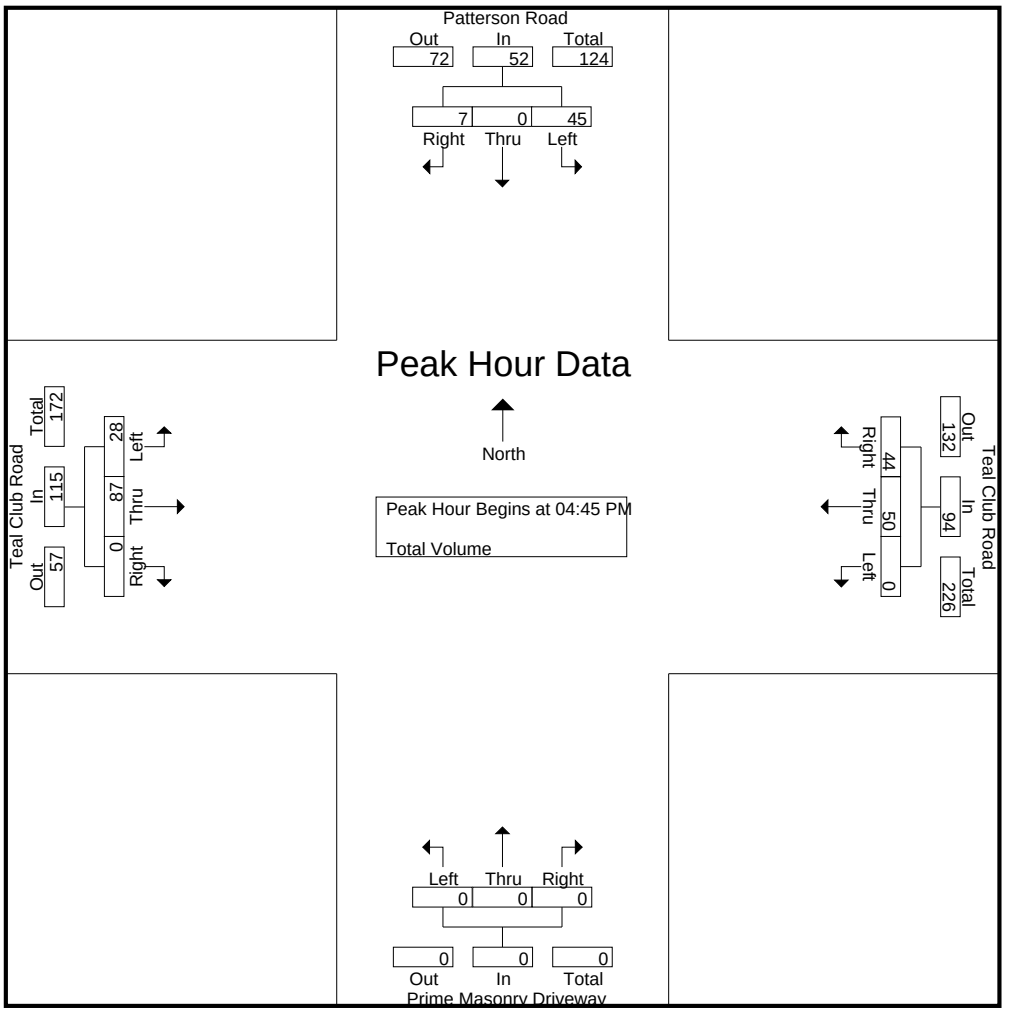
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	07:30 AM				07:15 AM				07:00 AM				07:00 AM			
+0 mins.	22	0	**2**	24	0	17	7	24	0	0	0	0	2	**15**	0	17
+15 mins.	**30**	0	0	**30**	0	12	**35**	**47**	0	0	0	0	5	9	0	14
+30 mins.	20	0	1	21	0	**18**	22	40	0	0	0	0	8	14	0	22
+45 mins.	11	0	1	12	0	15	7	22	0	0	0	0	**14**	10	0	**24**
Total Volume	83	0	4	87	0	62	71	133	0	0	0	0	29	48	0	77
% App. Total	95.4	0	4.6		0	46.6	53.4		0	0	0		37.7	62.3	0	
PHF	.692	.000	.500	.725	.000	.861	.507	.707	.000	.000	.000	.000	.518	.800	.000	.802

Counts Unlimited
PO Box 1178
Corona, CA 92878
(951) 268-6268

City of Oxnard
N/S: Patterson Road
E/W: Teal Club Road
Weather: Clear

File Name : 09_OXD_PA TE PM
Site Code : 07517686
Start Date : 10/12/2017
Page No : 2



Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	04:45 PM				04:15 PM				04:00 PM				05:00 PM			
+0 mins.	12	0	**3**	**15**	0	**18**	9	27	0	0	0	0	**12**	21	0	33
+15 mins.	11	0	1	12	0	5	9	14	0	0	0	0	3	24	0	27
+30 mins.	8	0	2	10	0	14	14	28	0	0	0	0	7	**27**	0	**34**
+45 mins.	**14**	0	1	15	0	16	**15**	**31**	0	0	0	0	6	23	0	29
Total Volume	45	0	7	52	0	53	47	100	0	0	0	0	28	95	0	123
% App. Total	86.5	0	13.5		0	53	47		0	0	0		22.8	77.2	0	
PHF	.804	.000	.583	.867	.000	.736	.783	.806	.000	.000	.000	.000	.583	.880	.000	.904

Prepared by National Data & Surveying Services

Ventura Rd & Town Center Dr

Peak Hour Turning Movement Count

ID: 18-05313-021
City: Oxnard

Day: Tuesday
Date: 05/08/2018

PEAK HOURS

AM: 07:30 AM - 08:30 AM
NOON: NONE
PM: 04:45 PM - 05:45 PM

COUNT PERIODS

AM: 07:00 AM - 09:00 AM
NOON: NONE
PM: 04:00 PM - 06:00 PM

Ventura Rd — SOUTHBOUND

AM	2	204	71	5	498	AM
NOON	0	0	0	0	0	NOON
PM	0	263	132	9	444	PM

Town Center Dr — EASTBOUND

AM	NOON	PM	
85	0	21	
0	0	0	0
0	0	4	0
10	0	50	1
3	0	9	0

CONTROL

Signalized

TEV	1952	0	1953
	AM	NOON	PM
PHF	0.93		0.95

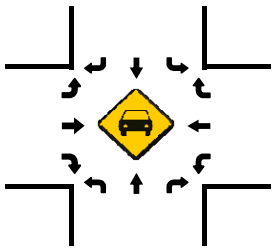
Town Center Dr — WESTBOUND

PM	NOON	AM	
40	0	99	1
16	0	45	1
530	0	203	2
0	0	0	0
686	0	959	

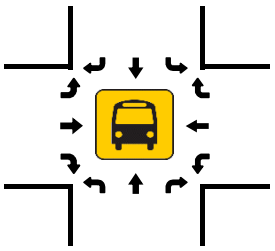
Ventura Rd — NORTHBOUND

PM	802	0	5	391	504	PM
NOON	0	0	0	0	0	NOON
AM	410	0	38	394	878	AM

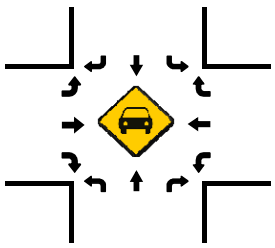
Total Vehicles (AM)



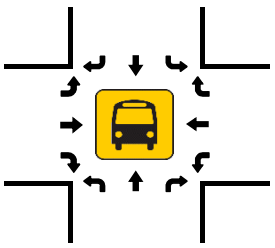
Total Vehicles (AM)



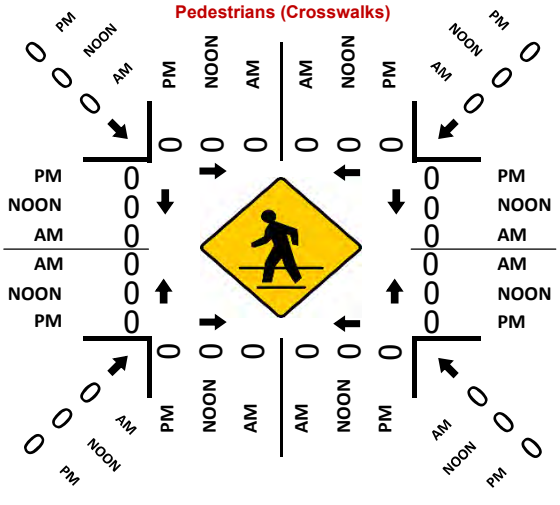
Total Vehicles (NOON)



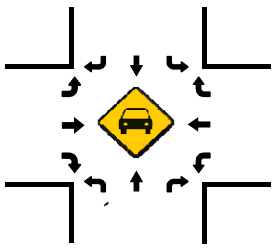
Total Vehicles (NOON)



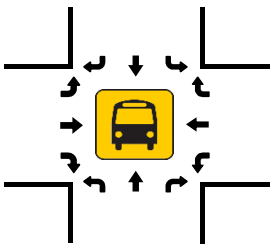
Pedestrians (Crosswalks)



Total Vehicles (PM)



Total Vehicles (PM)



Prepared by National Data & Surveying Services

Ventura Rd & Wagon Wheel Rd

Peak Hour Turning Movement Count

ID: 18-05313-020
City: Oxnard

Day: Tuesday
Date: 05/08/2018

PEAK HOURS		COUNT PERIODS
07:15 AM - 08:15 AM	AM	07:00 AM - 09:00 AM
NONE	NOON	NONE
04:45 PM - 05:45 PM	PM	04:00 PM - 06:00 PM

Ventura Rd — SOUTHBOUND

AM	0	424	3	0	1315	AM
NOON	0	0	0	0	0	NOON
PM	0	809	7	0	900	PM

0 2 1 0

Wagon Wheel Rd — EASTBOUND

AM	NOON	PM	
0	0	0	
0	0	0	0
0	0	0	0
0	0	0	0
0	0	0	0
AM	NOON	PM	

Wagon Wheel Rd — WESTBOUND

	PM	NOON	AM
1	201	0	132
0	0	0	0
2	747	0	363
0	0	0	0
	50	0	23
	PM	NOON	AM

CONTROL

Signalized

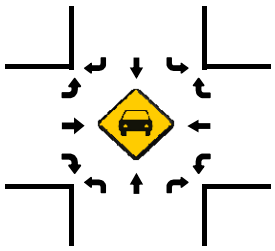
	AM	NOON	PM
TEV	2125	0	2506
PHF	0.90		0.95

0 0 2 1

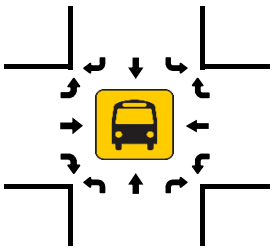
Ventura Rd — NORTHBOUND

PM	1556	0	0	699	43	PM
NOON	0	0	0	0	0	NOON
AM	787	0	0	1183	20	AM

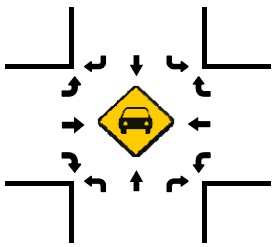
Total Vehicles (AM)



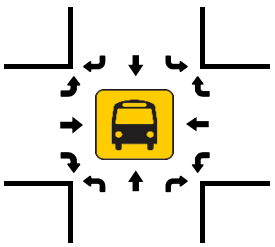
Total Vehicles (AM)



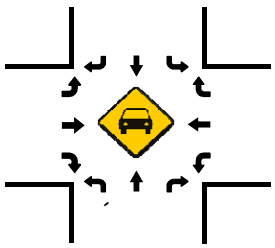
Total Vehicles (NOON)



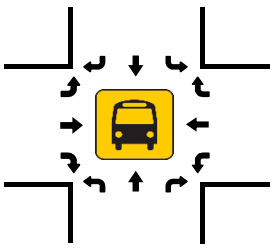
Total Vehicles (NOON)



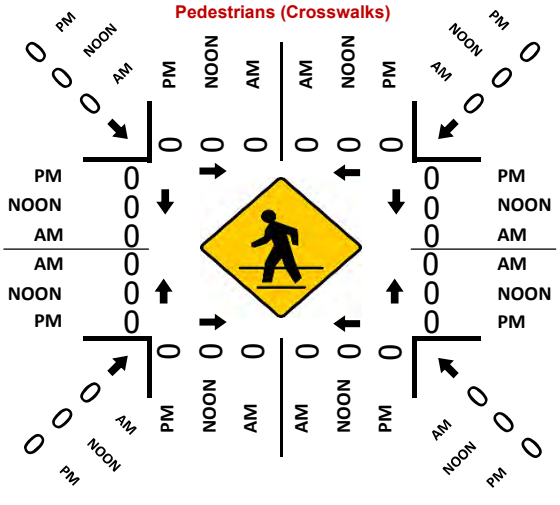
Total Vehicles (PM)



Total Vehicles (PM)



Pedestrians (Crosswalks)



Prepared by National Data & Surveying Services

U.S. 101 SB Off-Ramp & Wagon Wheel Rd

Peak Hour Turning Movement Count

ID: 18-05313-025
City: Oxnard

Day: Tuesday
Date: 05/08/2018

PEAK HOURS	COUNT PERIODS
07:45 AM - 08:45 AM	07:00 AM - 09:00 AM
NONE	NONE
04:45 PM - 05:45 PM	04:00 PM - 06:00 PM

SOUTHBOUND — U.S. 101 SB Off-Ramp

AM	493	1	10	0	0	AM
NOON	0	0	0	0	0	NOON
PM	908	0	11	0	0	PM

EASTBOUND — Wagon Wheel Rd

AM	NOON	PM	
518	0	939	⇦
1	0	0	↶ 0
0	0	0	↱ 1
25	0	51	→ 1
0	0	0	↷ 0
AM	NOON	PM	

WESTBOUND — Wagon Wheel Rd

PM	NOON	AM	
0	0	0	0 ↷
31	0	23	1 ←
0	0	0	1 ↰
0	0	0	0 ↶
62	0	35	⇨
PM	NOON	AM	

NORTHBOUND — U.S. 101 SB Off-Ramp

PM	0	0	0	0	0	PM
NOON	0	0	0	0	0	NOON
AM	1	0	1	0	0	AM

1	1	1	0

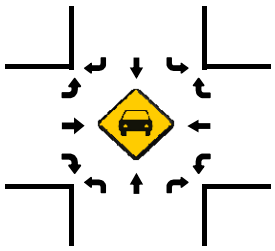
0	1	0	1

CONTROL

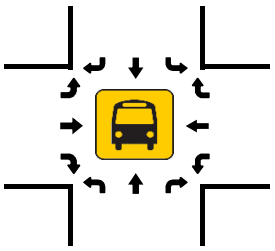
Signalized

TEV	554 AM	0 NOON	1001 PM
PHF	0.85		0.87

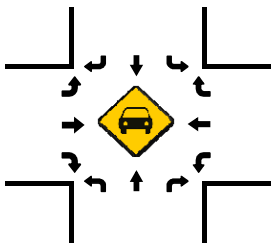
Total Vehicles (AM)



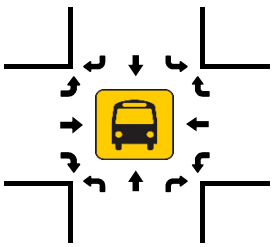
Total Vehicles (AM)



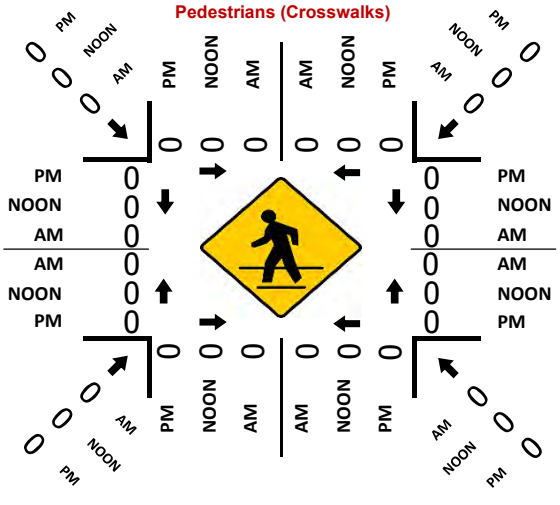
Total Vehicles (NOON)



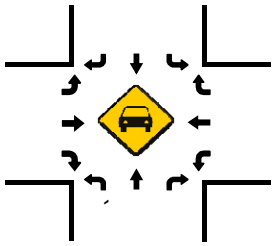
Total Vehicles (NOON)



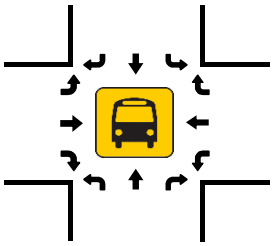
Pedestrians (Crosswalks)



Total Vehicles (PM)



Total Vehicles (PM)



Prepared by National Data & Surveying Services

Ventura Rd & Vineyard Ave

Peak Hour Turning Movement Count

ID: 18-05313-012
City: Oxnard

Day: Tuesday
Date: 05/08/2018

PEAK HOURS

AM	07:30 AM - 08:30 AM
NOON	NONE
PM	04:30 PM - 05:30 PM

COUNT PERIODS

AM	07:00 AM - 09:00 AM
NOON	NONE
PM	04:00 PM - 06:00 PM

Ventura Rd — SOUTHBOUND

AM	123	534	52	1	1039	AM
NOON	0	0	0	0	0	NOON
PM	201	1050	112	0	736	PM
	0	3	1	0		

Vineyard Ave — EASTBOUND

AM	NOON	PM	
280	0	392	
0	0	0	0
145	0	93	1
196	0	128	2
20	0	42	0

CONTROL

Signalized

TEV	2870 AM	0 NOON	3241 PM
PHF	0.94		0.95

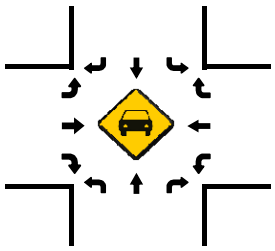
WESTBOUND — Vineyard Ave

PM	NOON	AM	
67	0	131	1
159	0	127	2
421	0	277	2
0	0	2	0
599	0	720	

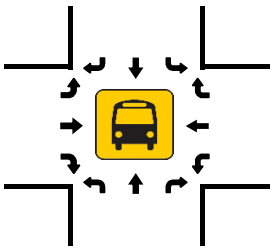
NORTHBOUND — Ventura Rd

	0	1	2.5	0.5	
PM	1514	1	32	576	359	PM
NOON	0	0	0	0	0	NOON
AM	831	0	30	762	470	AM

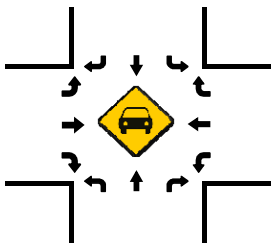
Total Vehicles (AM)



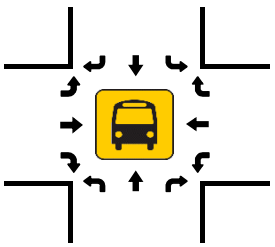
Total Vehicles (AM)



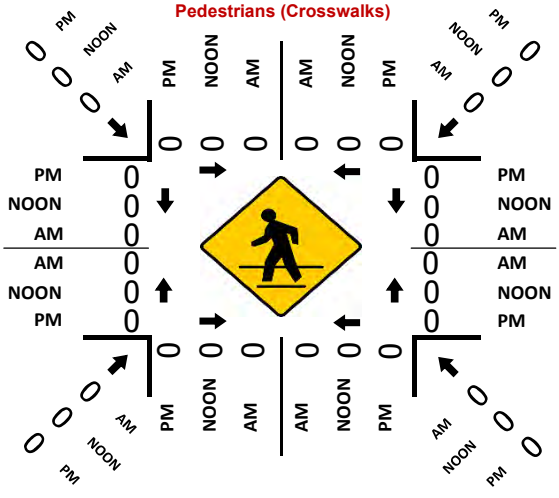
Total Vehicles (NOON)



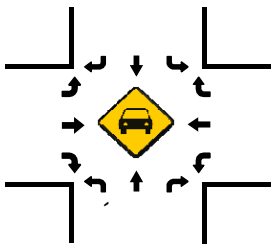
Total Vehicles (NOON)



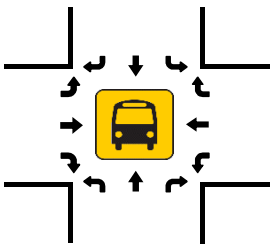
Pedestrians (Crosswalks)



Total Vehicles (PM)



Total Vehicles (PM)



Prepared by National Data & Surveying Services

Ventura Rd & Gonzales Rd

Peak Hour Turning Movement Count

ID: 18-05313-013
City: Oxnard

Day: Tuesday
Date: 05/08/2018

PEAK HOURS

AM	07:30 AM - 08:30 AM
NOON	NONE
PM	04:30 PM - 05:30 PM

COUNT PERIODS

AM	07:00 AM - 09:00 AM
NOON	NONE
PM	04:00 PM - 06:00 PM

Ventura Rd — SOUTHBOUND

AM	77	825	68	1	1237	AM
NOON	0	0	0	0	0	NOON
PM	91	1192	76	1	1075	PM
	0	3	1	0		

Gonzales Rd — EASTBOUND

AM	NOON	PM	
722	0	649	
8	0	8	0
184	0	131	1
469	0	413	2
220	0	110	1

CONTROL

Signalized

TEV	4247 AM	0 NOON	4417 PM
PHF	0.87		0.97

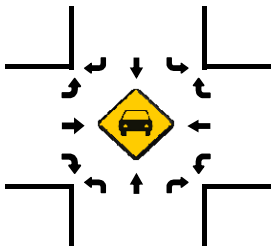
Gonzales Rd — WESTBOUND

PM	NOON	AM	
122	0	65	0
427	0	407	2
527	0	331	2
11	0	13	0
861	0	908	

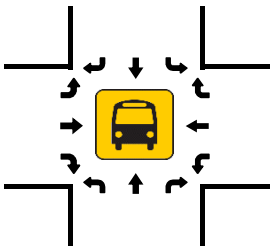
Ventura Rd — NORTHBOUND

PM	1832	3	123	821	361	PM
NOON	0	0	0	0	0	NOON
AM	1380	4	230	987	358	AM
		0	1	2	1	

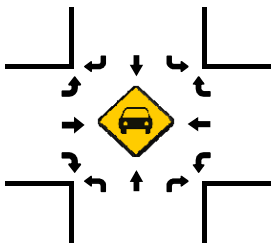
Total Vehicles (AM)



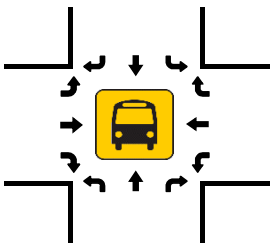
Total Vehicles (AM)



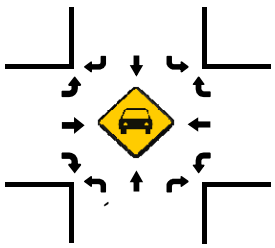
Total Vehicles (NOON)



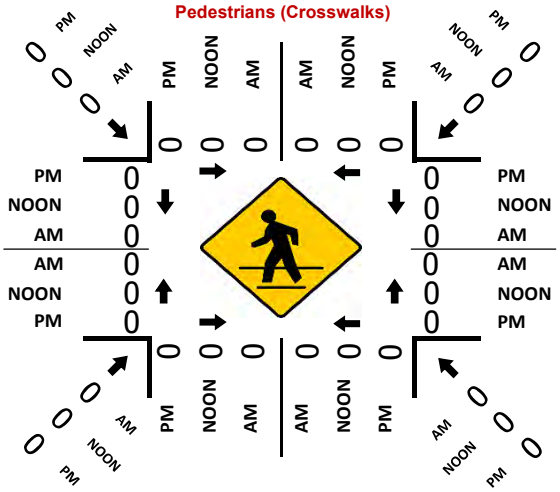
Total Vehicles (NOON)



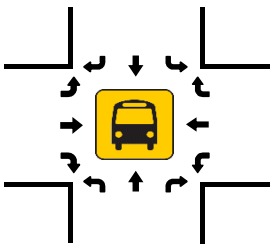
Total Vehicles (PM)



Pedestrians (Crosswalks)



Total Vehicles (PM)



Prepared by National Data & Surveying Services

Ventura Rd & Doris Ave

Peak Hour Turning Movement Count

ID: 18-05313-014
City: Oxnard

Day: Tuesday
Date: 05/08/2018

PEAK HOURS

AM	07:30 AM - 08:30 AM
NOON	NONE
PM	04:30 PM - 05:30 PM

COUNT PERIODS

AM	07:00 AM - 09:00 AM
NOON	NONE
PM	04:00 PM - 06:00 PM

Ventura Rd — SOUTHBOUND

AM	19	1332	39	0	1615	AM
NOON	0	0	0	0	0	NOON
PM	28	1603	57	0	1445	PM

EASTBOUND — Doris Ave

AM	NOON	PM		
475	0	294	⇦	
0	0	0	↶	0
34	0	29	↱	1
130	0	132	→	1
257	0	110	↴	1
AM	NOON	PM		

WESTBOUND — Doris Ave

PM	NOON	AM		
59	0	57	↰	1
113	0	219	←	1
121	0	109	↰	1
0	0	0	↷	0
314	0	283	⇨	
PM	NOON	AM		

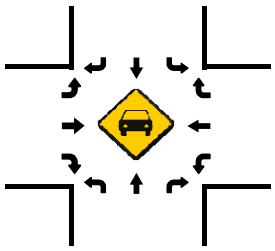
CONTROL: Signalized

TEV	4071	0	3887
	AM	NOON	PM
PHF	0.95		0.94

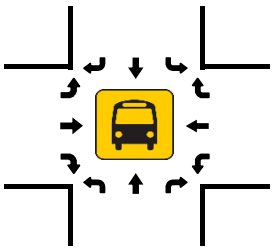
NORTHBOUND — Ventura Rd

PM	1834	0	153	1357	125	PM
NOON	0	0	0	0	0	NOON
AM	1698	0	237	1524	114	AM

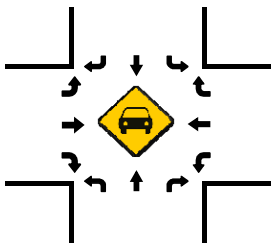
Total Vehicles (AM)



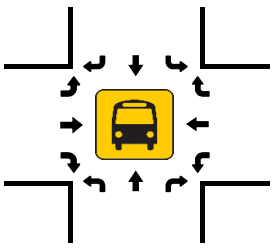
Total Vehicles (AM)



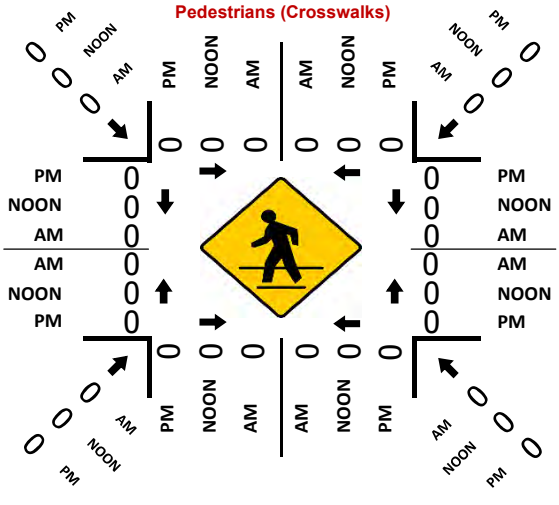
Total Vehicles (NOON)



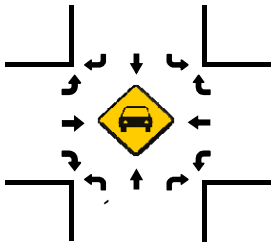
Total Vehicles (NOON)



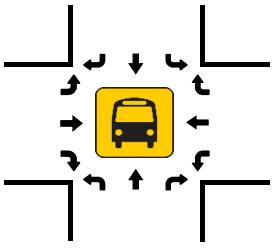
Pedestrians (Crosswalks)



Total Vehicles (PM)



Total Vehicles (PM)



Prepared by National Data & Surveying Services

Ventura Rd & Beverly Dr

Peak Hour Turning Movement Count

ID: 18-05313-015
City: Oxnard

Day: Tuesday
Date: 05/08/2018

PEAK HOURS		COUNT PERIODS
07:30 AM - 08:30 AM	AM	07:00 AM - 09:00 AM
NONE	NOON	NONE
04:30 PM - 05:30 PM	PM	04:00 PM - 06:00 PM

Ventura Rd — SOUTHBOUND

AM	0	1662	40	0	1885	AM
NOON	0	0	0	0	0	NOON
PM	0	1838	36	0	1593	PM
	0	2	1	0		

Beverly Dr — EASTBOUND

AM	NOON	PM	
0	0	0	
0	0	0	0
0	0	0	0
0	0	0	0
0	0	0	0
AM	NOON	PM	

CONTROL

1-Way Stop(WB)

	AM	NOON	PM
TEV	3609	0	3495
PHF	0.94		0.97

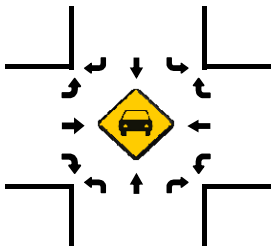
Beverly Dr — WESTBOUND

	PM	NOON	AM
0	14	0	64
1	0	0	0
0	2	0	1
0	0	0	0
	62	0	61
	PM	NOON	AM

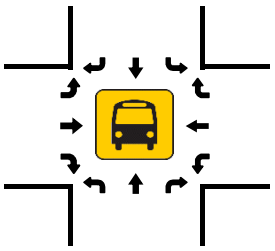
Ventura Rd — NORTHBOUND

		0	0	2	0	
PM	1840	0	0	1579	26	PM
NOON	0	0	0	0	0	NOON
AM	1663	0	0	1821	21	AM

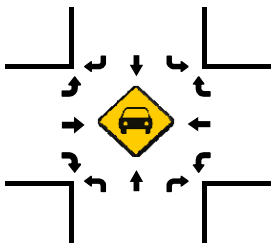
Total Vehicles (AM)



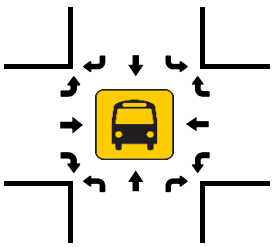
Total Vehicles (AM)



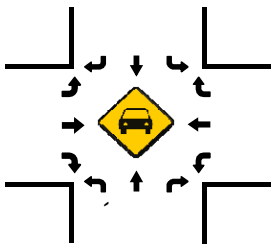
Total Vehicles (NOON)



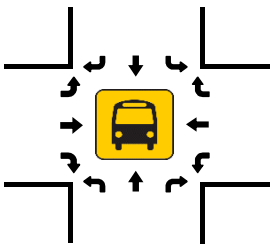
Total Vehicles (NOON)



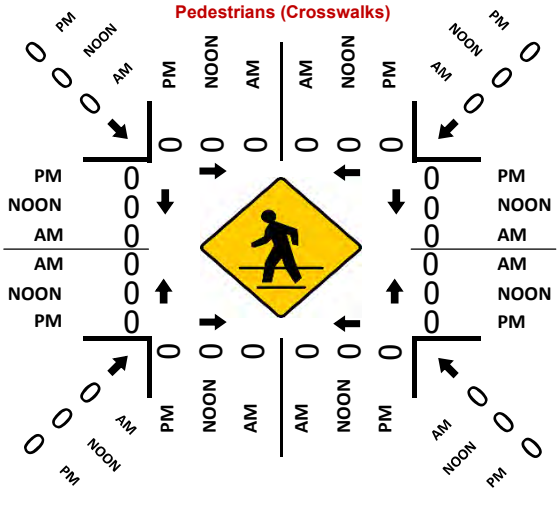
Total Vehicles (PM)



Total Vehicles (PM)



Pedestrians (Crosswalks)



Prepared by National Data & Surveying Services

Ventura Rd & Teal Club/2nd St

Peak Hour Turning Movement Count

ID: 18-05313-016
City: Oxnard

Day: Tuesday
Date: 05/08/2018

PEAK HOURS

AM: 07:30 AM - 08:30 AM
NOON: NONE
PM: 04:30 PM - 05:30 PM

COUNT PERIODS

AM: 07:00 AM - 09:00 AM
NOON: NONE
PM: 04:00 PM - 06:00 PM

Ventura Rd — SOUTHBOUND

AM	12	1557	93	0	1834	AM
NOON	0	0	0	0	0	NOON
PM	14	1756	48	0	1609	PM

Teal Club/2nd St — EASTBOUND

AM	NOON	PM	
125	0	89	
0	0	0	0
25	0	21	0
36	0	35	1
77	0	68	0

Teal Club/2nd St — WESTBOUND

	PM	NOON	AM
1	81	0	73
1	37	0	25
1	42	0	37
0	0	0	0
	167	0	204

CONTROL

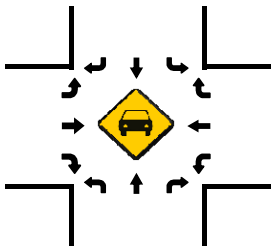
Signalized

TEV	3835	0	3732
	AM	NOON	PM
PHF	0.93		0.95

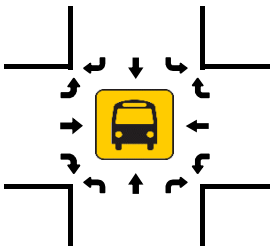
Ventura Rd — NORTHBOUND

PM	1867	1	38	1507	84	PM
NOON	0	0	0	0	0	NOON
AM	1672	1	88	1736	75	AM

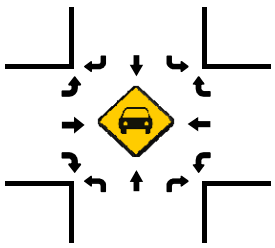
Total Vehicles (AM)



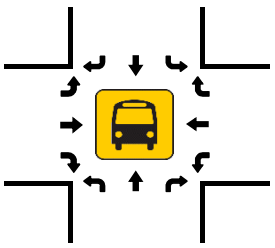
Total Vehicles (AM)



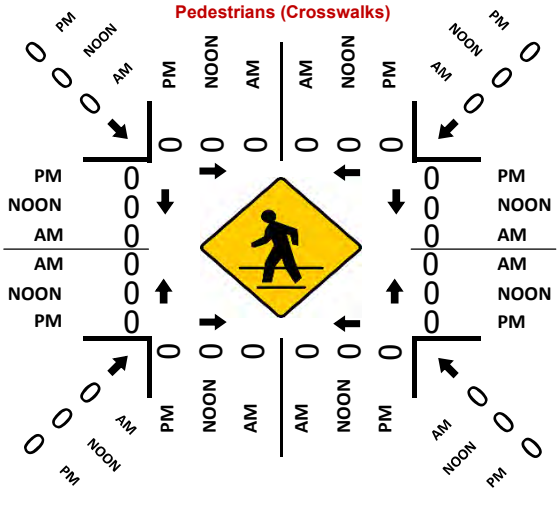
Total Vehicles (NOON)



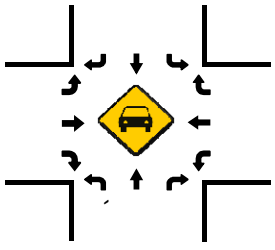
Total Vehicles (NOON)



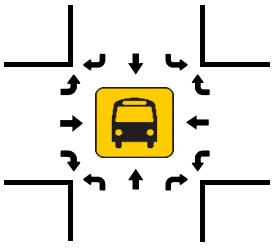
Pedestrians (Crosswalks)



Total Vehicles (PM)



Total Vehicles (PM)



Prepared by National Data & Surveying Services

Ventura Rd & 5th St

Peak Hour Turning Movement Count

ID: 18-05313-017
City: Oxnard

Day: Tuesday
Date: 05/08/2018

PEAK HOURS

AM	07:30 AM - 08:30 AM
NOON	NONE
PM	04:30 PM - 05:30 PM

COUNT PERIODS

AM	07:00 AM - 09:00 AM
NOON	NONE
PM	04:00 PM - 06:00 PM

Ventura Rd — SOUTHBOUND

AM	329	1207	80	45	1932	AM
NOON	0	0	0	0	0	NOON
PM	378	1359	82	58	1671	PM

EASTBOUND — 5th St

AM	NOON	PM		
727	0	924		
3	0	7	0	
375	0	324	2	
372	0	321	1.5	
64	0	94	0.5	
AM	NOON	PM		

WESTBOUND — 5th St

	PM	NOON	AM
0	60	0	74
2	425	0	276
2	279	0	169
0	0	0	0
	508	0	569
	PM	NOON	AM

CONTROL

Signalized

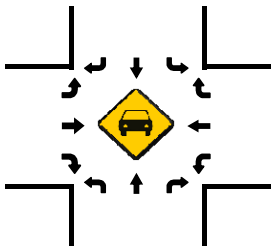
TEV	4668	0	4836
	AM	NOON	PM
PHF	0.91		0.96

Ventura Rd — NORTHBOUND

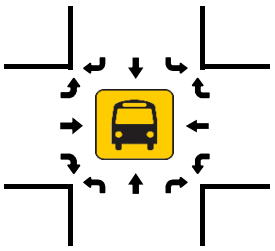
PM	1733	1	114	1229	105	PM
NOON	0	0	0	0	0	NOON
AM	1440	0	119	1438	117	AM

1	3	1	0	
0	1	3	0	

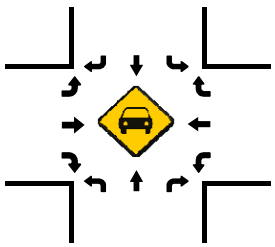
Total Vehicles (AM)



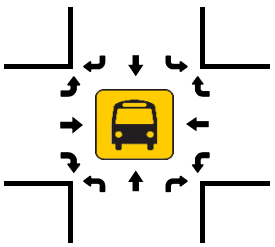
Total Vehicles (AM)



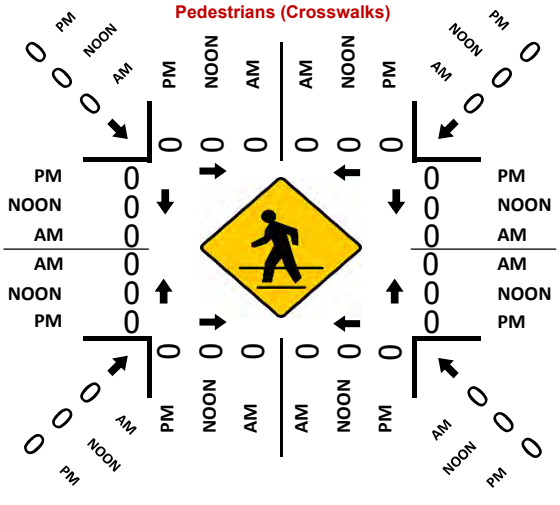
Total Vehicles (NOON)



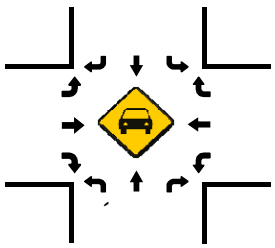
Total Vehicles (NOON)



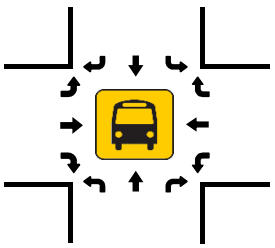
Pedestrians (Crosswalks)



Total Vehicles (PM)



Total Vehicles (PM)



Prepared by National Data & Surveying Services

Ventura Rd & Wooley Rd

Peak Hour Turning Movement Count

ID: 18-05313-018
City: Oxnard

Day: Tuesday
Date: 05/08/2018

PEAK HOURS

AM: 07:15 AM - 08:15 AM
NOON: NONE
PM: 04:15 PM - 05:15 PM

COUNT PERIODS

AM: 07:00 AM - 09:00 AM
NOON: NONE
PM: 04:00 PM - 06:00 PM

Ventura Rd — SOUTHBOUND

AM	89	1088	122	3	1504	AM
NOON	0	0	0	0	0	NOON
PM	114	1196	111	1	1443	PM

Wooley Rd — EASTBOUND

AM	NOON	PM		
618	0	700	⇦	
7	0	11	↶	0
199	0	149	↱	1
556	0	430	→	2
42	0	60	↴	1

CONTROL

Signalized

TEV	4138 AM	0 NOON	4208 PM
PHF	0.88		0.98

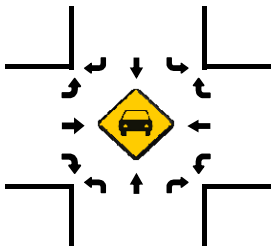
WESTBOUND — Wooley Rd

PM	NOON	AM		
182	0	157	↰	1
493	0	431	←	2
157	0	81	↰	1
17	0	5	↶	0
652	0	805	⇨	

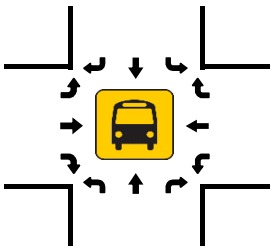
Ventura Rd — NORTHBOUND

PM	1413	0	82	1111	94	PM
NOON	0	0	0	0	0	NOON
AM	1211	0	91	1145	122	AM

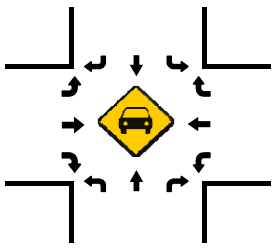
Total Vehicles (AM)



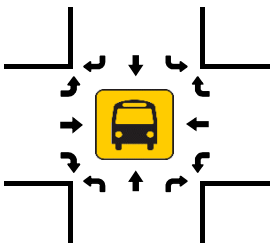
Total Vehicles (AM)



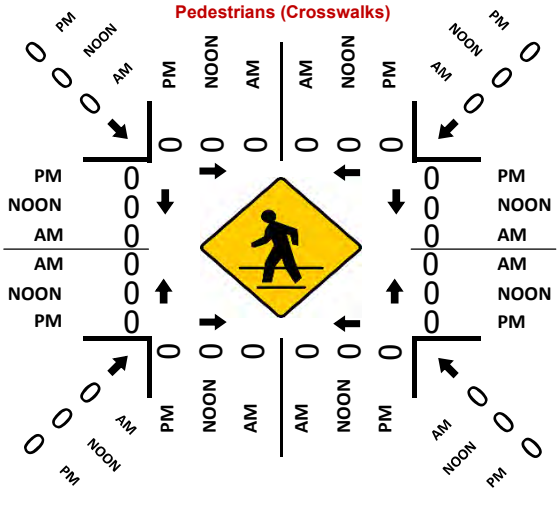
Total Vehicles (NOON)



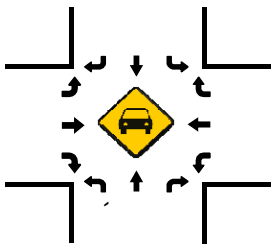
Total Vehicles (NOON)



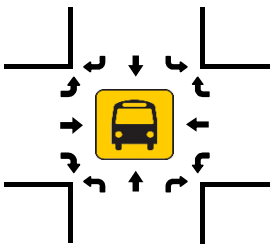
Pedestrians (Crosswalks)



Total Vehicles (PM)



Total Vehicles (PM)



Prepared by National Data & Surveying Services

Oxnard Blvd & Town Center Dr

Peak Hour Turning Movement Count

ID: 18-05313-022
City: Oxnard

Day: Tuesday
Date: 05/08/2018

PEAK HOURS		COUNT PERIODS
07:30 AM - 08:30 AM	AM	07:00 AM - 09:00 AM
NONE	NOON	NONE
04:45 PM - 05:45 PM	PM	04:00 PM - 06:00 PM

Oxnard Blvd — SOUTHBOUND

AM	32	552	17	0	300	AM
NOON	0	0	0	0	0	NOON
PM	61	416	18	0	717	PM
	0	2	1	0		

Town Center Dr — EASTBOUND

AM	NOON	PM	
351	0	598	
0	0	0	0
21	0	64	1.5
105	0	143	1.5
839	0	538	2
AM	NOON	PM	

Town Center Dr — WESTBOUND

	PM	NOON	AM
1	28	0	8
1.5	120	0	66
1.5	396	0	150
0	0	0	0
	680	0	376
	PM	NOON	AM

CONTROL

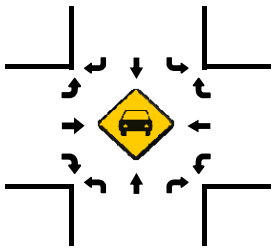
Signalized

	AM	NOON	PM
TEV	2568	0	3349
PHF	0.87		0.96

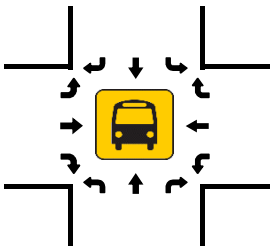
Oxnard Blvd — NORTHBOUND

		0	2	2	1	
PM	1354	4	417	625	519	PM
NOON	0	0	0	0	0	NOON
AM	1541	0	253	271	254	AM

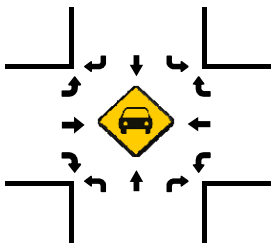
Total Vehicles (AM)



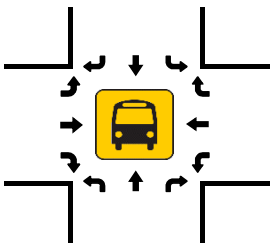
Total Vehicles (AM)



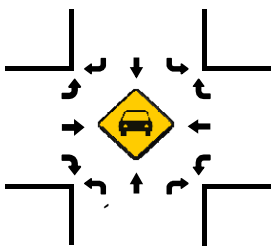
Total Vehicles (NOON)



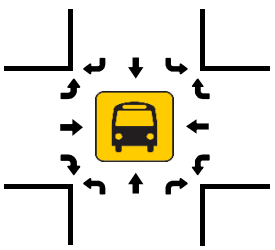
Total Vehicles (NOON)



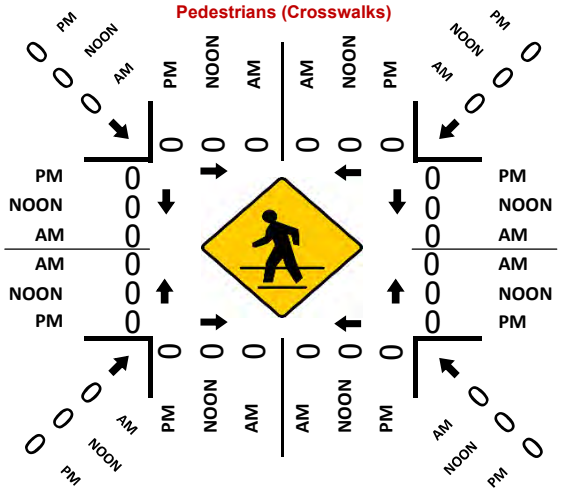
Total Vehicles (PM)



Total Vehicles (PM)



Pedestrians (Crosswalks)



Prepared by National Data & Surveying Services

Oxnard Blvd & US 101 NB ramps

Peak Hour Turning Movement Count

ID: 18-05313-023
City: Oxnard

Day: Tuesday
Date: 05/08/2018

PEAK HOURS		COUNT PERIODS
07:30 AM - 08:30 AM	AM	07:00 AM - 09:00 AM
NONE	NOON	NONE
04:45 PM - 05:45 PM	PM	04:00 PM - 06:00 PM

Oxnard Blvd — SOUTHBOUND

AM	1060	469	0	0	791	AM
NOON	0	0	0	0	0	NOON
PM	772	585	0	0	1558	PM
	1	4	0	0		

US 101 NB ramps — EASTBOUND

AM	NOON	PM	
1906	0	1516	
0	0	0	0
0	0	0	0
0	0	0	0
0	0	0	0
AM	NOON	PM	

US 101 NB ramps — WESTBOUND

	PM	NOON	AM
1.5	699	0	350
0	3	0	1
1.5	240	0	112
0	0	0	0
	0	0	0
	PM	NOON	AM

CONTROL

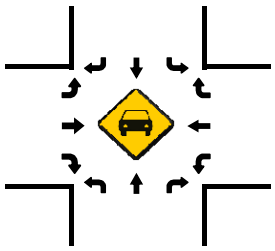
Signalized

	AM	NOON	PM
TEV	3278	0	3900
PHF	0.89		0.98

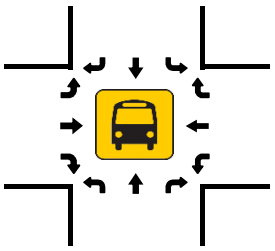
Oxnard Blvd — NORTHBOUND

		0	2	2	0	
PM	826	1	741	859	0	PM
NOON	0	0	0	0	0	NOON
AM	581	0	845	441	0	AM

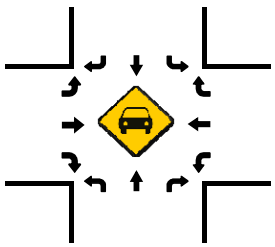
Total Vehicles (AM)



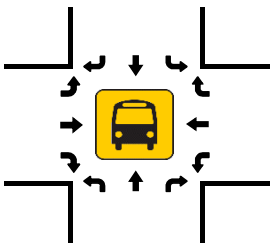
Total Vehicles (AM)



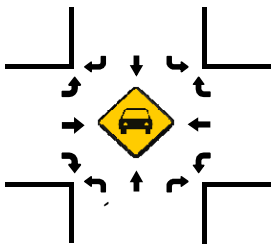
Total Vehicles (NOON)



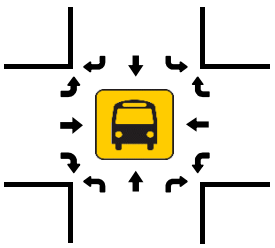
Total Vehicles (NOON)



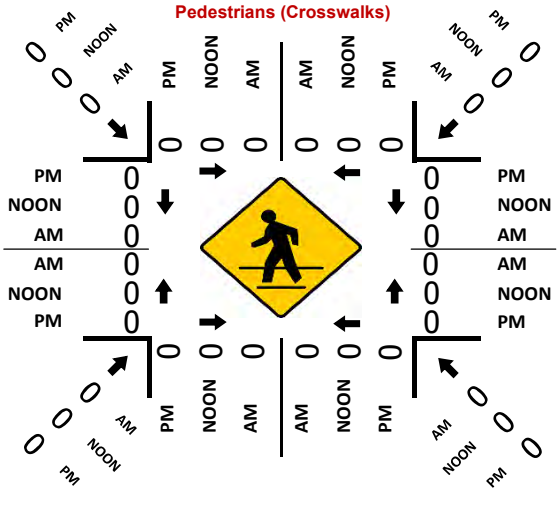
Total Vehicles (PM)



Total Vehicles (PM)



Pedestrians (Crosswalks)



Prepared by National Data & Surveying Services

Oxnard Blvd & US 101 SB ramps

Peak Hour Turning Movement Count

ID: 18-05313-024
City: Oxnard

Day: Tuesday
Date: 05/08/2018

PEAK HOURS

AM: 07:30 AM - 08:30 AM
NOON: NONE
PM: 04:45 PM - 05:45 PM

COUNT PERIODS

AM: 07:00 AM - 09:00 AM
NOON: NONE
PM: 04:00 PM - 06:00 PM

SOUTHBOUND — Oxnard Blvd

AM	0	259	325	0	1285	AM
NOON	0	0	0	0	0	NOON
PM	0	552	281	1	1603	PM

EASTBOUND — US 101 SB ramps

AM	NOON	PM		
0	0	0		
0	0	0	0	
234	0	467	2	
1	0	0	0	
691	0	1109	1	

WESTBOUND — US 101 SB ramps

PM	NOON	AM	
0	0	0	0
0	0	0	0
0	0	0	0
0	0	0	0
450	0	424	

NORTHBOUND — Oxnard Blvd

PM	1661	0	0	1135	169	PM
NOON	0	0	0	0	0	NOON
AM	950	0	0	1051	98	AM

1	2	2	0

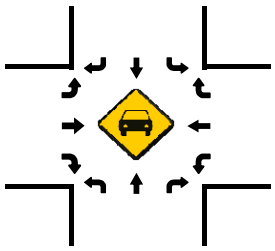
0	0	4	1

CONTROL

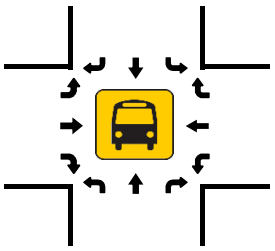
Signalized

TEV	2659	0	3714
	AM	NOON	PM
PHF	0.90		0.97

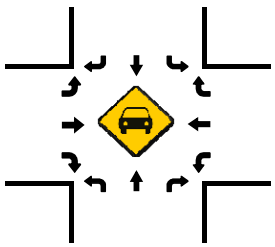
Total Vehicles (AM)



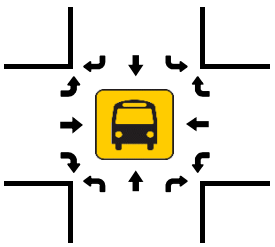
Total Vehicles (AM)



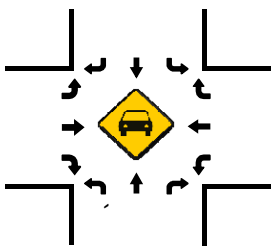
Total Vehicles (NOON)



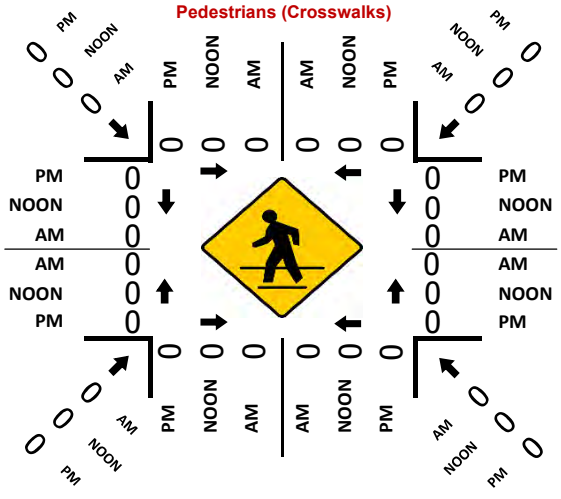
Total Vehicles (NOON)



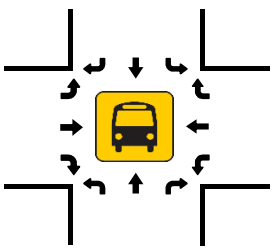
Total Vehicles (PM)



Pedestrians (Crosswalks)



Total Vehicles (PM)



Prepared by National Data & Surveying Services

Oxnard Blvd & Gonzales Rd

Peak Hour Turning Movement Count

ID: 18-05313-019
City: Oxnard

Day: Tuesday
Date: 05/08/2018

PEAK HOURS

AM: 07:30 AM - 08:30 AM
NOON: NONE
PM: 04:45 PM - 05:45 PM

COUNT PERIODS

AM: 07:00 AM - 09:00 AM
NOON: NONE
PM: 04:00 PM - 06:00 PM

Oxnard Blvd — SOUTHBOUND

AM	60	925	311	3	1478	AM
NOON	0	0	0	0	0	NOON
PM	127	1328	401	7	1797	PM
	1	3	2	0		

Gonzales Rd — EASTBOUND

AM	NOON	PM		
1005	0	1492	⇦	
6	0	11	↶	0
206	0	239	↱	2
1156	0	823	→	3
93	0	113	↳	0
AM	NOON	PM		

CONTROL

Signalized

TEV	5713 AM	0 NOON	6696 PM
PHF	0.84		0.97

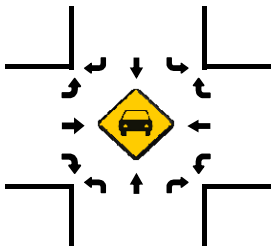
WESTBOUND — Gonzales Rd

PM	NOON	AM		
452	0	353	↰	1
1159	0	817	←	3
379	0	315	↰	2
8	0	5	↶	0
1573	0	1896	⇨	
PM	NOON	AM		

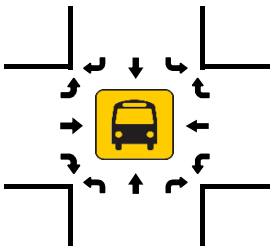
Oxnard Blvd — NORTHBOUND

PM	1834	14	195	1099	341	PM
NOON	0	0	0	0	0	NOON
AM	1334	1	122	916	424	AM
	⇩	0	2	3	1	

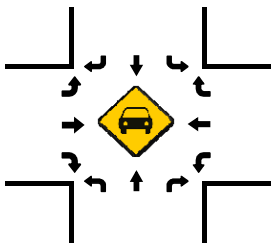
Total Vehicles (AM)



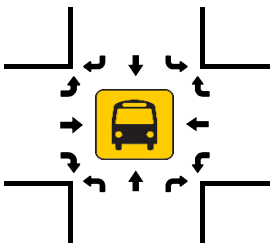
Total Vehicles (AM)



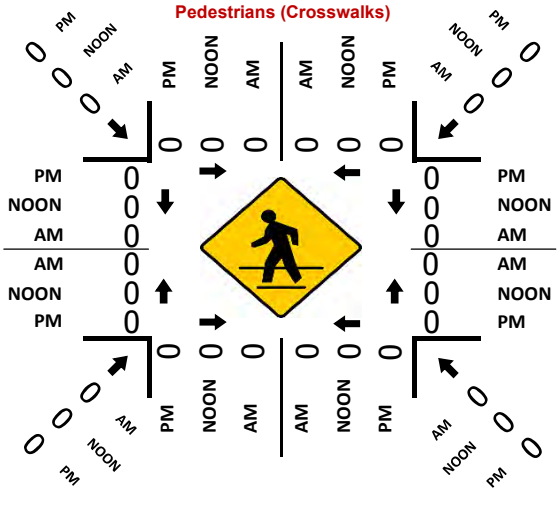
Total Vehicles (NOON)



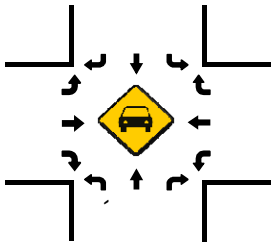
Total Vehicles (NOON)



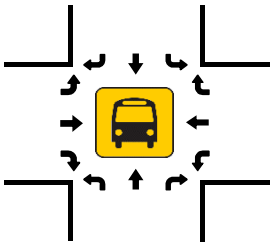
Pedestrians (Crosswalks)



Total Vehicles (PM)



Total Vehicles (PM)



Appendix 2

Project and Project Alternatives
Trip Generation Worksheets

Project Trip Generation

Land Use	SF/DU	Land Use Code	Trips						
			ADT	AM			PM		
				In	Out	Total	In	Out	Total
SFD	220	210	2,077	41	122	163	139	79	218
Multi-Family (Low-Rise)	770	220	5,636	82	273	355	272	159	431
Neighborhood Commercial	60,000	SANDAG	7,200	173	115	288	360	360	720
Business Park/R&D	132,000	710	1,286	132	21	153	24	128	152
Community Park	17.8	SANDAG	356	7	7	14	14	14	28
Sub Total			*16,555*	*434*	*538*	*972*	*809*	*740*	*1,549*
Internal Trips [1]			*2,483*	*31*	*45*	*76*	*206*	*191*	*397*
External Trips			*14,072*	*403*	*493*	*896*	*603*	*549*	*1,152*
Pass-by Trips [2]			*502*	*17*	*12*	*29*	*107*	*89*	*196*
Total Primary Trips			***13,570***	***386***	***481***	***867***	***496***	***460***	***956***

[1] Internal capture per NCHRP 8-51/ITE Internal Capture, includes transit use.

[2] Pass-by trips limited to existing traffic volumes on Ventura Rd that are attracted to the retail component.

Project Name:	Teal Club Specific Plan
Analysis Period:	**AM Street Peak Hour**

Table 7-A: Conversion of Vehicle-Trip Ends to Person-Trip Ends

Land Use	Table 7-A (D): Entering Trips			Table 7-A (O): Exiting Trips		
	Veh. Occ.	Vehicle-Trips	Person-Trips*	Veh. Occ.	Vehicle-Trips	Person-Trips*
Office	1.00	132	132	1.00	21	21
Retail	1.50	173	260	1.50	115	173
Restaurant	1.00	0	0	1.00	0	0
Cinema/Entertainment	1.00	0	0	1.00	0	0
Residential	1.50	123	185	1.50	395	593
Hotel	1.00	0	0	1.00	0	0

Table 8-A (O): Internal Person-Trip Origin-Destination Matrix (Computed at Origin)

Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office		6	13	0	0	0
Retail	50		22	0	24	0
Restaurant	0	0		0	0	0
Cinema/Entertainment	0	0	0		0	0
Residential	12	6	119	0		0
Hotel	0	0	0	0	0	

Table 8-A (D): Internal Person-Trip Origin-Destination Matrix (Computed at Destination)

Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office		83	0	0	0	0
Retail	5		0	0	4	0
Restaurant	18	21		0	9	0
Cinema/Entertainment	0	0	0		0	0
Residential	4	44	0	0		0
Hotel	4	10	0	0	0	

Table 9-A (D): Internal and External Trips Summary (Entering Trips)

Destination Land Use	Person-Trip Estimates			External Trips by Mode*		
	Internal	External	Total	Vehicles[1]	Transit[2]	Non-Motorized[2]
Office	9	123	132	123	0	0
Retail	12	248	260	165	0	0
Restaurant	0	0	0	0	0	0
Cinema/Entertainment	0	0	0	0	0	0
Residential	4	181	185	115	9	0
Hotel	0	0	0	0	0	0
All Other Land Uses[3]	0	0	0	0	0	0

Table 9-A (O): Internal and External Trips Summary (Exiting Trips)

Origin Land Use	Person-Trip Estimates			External Trips by Mode*		
	Internal	External	Total	Vehicles[1]	Transit[2]	Non-Motorized[2]
Office	6	15	21	15	0	0
Retail	9	164	173	109	0	0
Restaurant	0	0	0	0	0	0
Cinema/Entertainment	0	0	0	0	0	0
Residential	10	583	593	369	29	0
Hotel	0	0	0	0	0	0
All Other Land Uses[3]	0	0	0	0	0	0

[1]Vehicle-trips computed using the mode split and vehicle occupancy values provided in Table 2-A

[2]Person-Trips

[3]Total estimate for all other land uses at mixed-use development site-not subject to internal trip capture computations in this estimator

*Indicates computation that has been rounded to the nearest whole number.

Project Name:	Teal Club Specific Plan
Analysis Period:	**PM Street Peak Hour**

Table 7-P: Conversion of Vehicle-Trip Ends to Person-Trip Ends

Land Use	Table 7-P (D): Entering Trips			Table 7-P (O): Exiting Trips		
	Veh. Occ.	Vehicle-Trips	Person-Trips*	Veh. Occ.	Vehicle-Trips	Person-Trips*
Office	1.00	24	24	1.00	128	128
Retail	1.50	360	540	1.50	360	540
Restaurant	1.00	0	0	1.00	0	0
Cinema/Entertainment	1.00	0	0	1.00	0	0
Residential	1.25	411	514	1.25	238	298
Hotel	1.00	0	0	1.00	0	0

Table 8-P (O): Internal Person-Trip Origin-Destination Matrix (Computed at Origin)

Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office		21	5	0	3	0
Retail	11		157	22	140	27
Restaurant	0	0		0	0	0
Cinema/Entertainment	0	0	0		0	0
Residential	12	105	63	0		9
Hotel	0	0	0	0	0	

Table 8-P (D): Internal Person-Trip Origin-Destination Matrix (Computed at Destination)

Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office		36	0	0	21	0
Retail	7		0	0	236	0
Restaurant	7	270		0	82	0
Cinema/Entertainment	1	22	0		21	0
Residential	14	45	0	0		0
Hotel	0	11	0	0	0	

Table 9-P (D): Internal and External Trips Summary (Entering Trips)

Destination Land Use	Person-Trip Estimates			External Trips by Mode*		
	Internal	External	Total	Vehicles[1]	Transit[2]	Non-Motorized[2]
Office	19	5	24	5	0	0
Retail	66	474	540	316	0	0
Restaurant	0	0	0	0	0	0
Cinema/Entertainment	0	0	0	0	0	0
Residential	143	371	514	282	19	0
Hotel	0	0	0	0	0	0
All Other Land Uses[3]	0	0	0	0	0	0

Table 9-P (O): Internal and External Trips Summary (Exiting Trips)

Origin Land Use	Person-Trip Estimates			External Trips by Mode*		
	Internal	External	Total	Vehicles[1]	Transit[2]	Non-Motorized[2]
Office	24	104	128	104	0	0
Retail	147	393	540	262	0	0
Restaurant	0	0	0	0	0	0
Cinema/Entertainment	0	0	0	0	0	0
Residential	57	241	298	183	12	0
Hotel	0	0	0	0	0	0
All Other Land Uses[3]	0	0	0	0	0	0

[1]Vehicle-trips computed using the mode split and vehicle occupancy values provided in Table 2-P

[2]Person-Trips

[3]Total estimate for all other land uses at mixed-use development site-not subject to internal trip capture computations in this estimator

*Indicates computation that has been rounded to the nearest whole number.

Teal Club Specific Plan - Reduced Intensity Alternative

Land Use	SF/DU	Land Use Code	Trips						
			ADT	AM			PM		
				In	Out	Total	In	Out	Total
SFD	387	210	3,653	72	215	287	244	139	383
Multi-Family (Low-Rise)	603	220	4,414	64	213	277	213	125	338
Neighborhood Commercial	50,000	SANDAG	6,000	144	96	240	300	300	600
Community Park	17.8	SANDAG	356	7	7	14	14	14	28
Sub Total			*14,423*	*287*	*531*	*818*	*771*	*578*	*1,349*
Internal Trips [1]			*2,146*	*17*	*33*	*50*	*147*	*128*	*275*
External Trips			*12,277*	*270*	*498*	*768*	*624*	*450*	*1,074*
Pass-by Trips [2]			*420*	*14*	*10*	*24*	*90*	*74*	*164*
Total Primary Trips			***11,857***	***256***	***488***	***744***	***534***	***376***	***910***

[1] Internal capture per NCHRP 8-51/ITE Internal Capture, includes transit use.

[2] Pass-by trips limited to existing traffic volumes on Ventura Rd that are attracted to the retail component.

Project Name:	Teal Club Specific Plan - Reduced Alt
Analysis Period:	**AM Street Peak Hour**

Table 7-A: Conversion of Vehicle-Trip Ends to Person-Trip Ends

Land Use	Table 7-A (D): Entering Trips			Table 7-A (O): Exiting Trips		
	Veh. Occ.	Vehicle-Trips	Person-Trips*	Veh. Occ.	Vehicle-Trips	Person-Trips*
Office	1.00	0	0	1.00	0	0
Retail	1.50	144	216	1.50	96	144
Restaurant	1.00	0	0	1.00	0	0
Cinema/Entertainment	1.00	0	0	1.00	0	0
Residential	1.50	138	207	1.50	434	651
Hotel	1.00	0	0	1.00	0	0

Table 8-A (O): Internal Person-Trip Origin-Destination Matrix (Computed at Origin)

Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office		0	0	0	0	0
Retail	42		19	0	20	0
Restaurant	0	0		0	0	0
Cinema/Entertainment	0	0	0		0	0
Residential	13	7	130	0		0
Hotel	0	0	0	0	0	

Table 8-A (D): Internal Person-Trip Origin-Destination Matrix (Computed at Destination)

Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office		69	0	0	0	0
Retail	0		0	0	4	0
Restaurant	0	17		0	10	0
Cinema/Entertainment	0	0	0		0	0
Residential	0	37	0	0		0
Hotel	0	9	0	0	0	

Table 9-A (D): Internal and External Trips Summary (Entering Trips)

Destination Land Use	Person-Trip Estimates			External Trips by Mode*		
	Internal	External	Total	Vehicles[1]	Transit[2]	Non-Motorized[2]
Office	0	0	0	0	0	0
Retail	7	209	216	139	0	0
Restaurant	0	0	0	0	0	0
Cinema/Entertainment	0	0	0	0	0	0
Residential	4	203	207	129	10	0
Hotel	0	0	0	0	0	0
All Other Land Uses[3]	0	0	0	0	0	0

Table 9-A (O): Internal and External Trips Summary (Exiting Trips)

Origin Land Use	Person-Trip Estimates			External Trips by Mode*		
	Internal	External	Total	Vehicles[1]	Transit[2]	Non-Motorized[2]
Office	0	0	0	0	0	0
Retail	4	140	144	93	0	0
Restaurant	0	0	0	0	0	0
Cinema/Entertainment	0	0	0	0	0	0
Residential	7	644	651	408	32	0
Hotel	0	0	0	0	0	0
All Other Land Uses[3]	0	0	0	0	0	0

[1]Vehicle-trips computed using the mode split and vehicle occupancy values provided in Table 2-A

[2]Person-Trips

[3]Total estimate for all other land uses at mixed-use development site-not subject to internal trip capture computations in this estimator

*Indicates computation that has been rounded to the nearest whole number.

Project Name:	Teal Club Specific Plan - Reduced Alt
Analysis Period:	**PM Street Peak Hour**

Table 7-P: Conversion of Vehicle-Trip Ends to Person-Trip Ends

Land Use	Table 7-P (D): Entering Trips			Table 7-P (O): Exiting Trips		
	Veh. Occ.	Vehicle-Trips	Person-Trips*	Veh. Occ.	Vehicle-Trips	Person-Trips*
Office	1.00	0	0	1.00	0	0
Retail	1.50	300	450	1.50	300	450
Restaurant	1.00	0	0	1.00	0	0
Cinema/Entertainment	1.00	0	0	1.00	0	0
Residential	1.25	465	581	1.25	268	335
Hotel	1.00	0	0	1.00	0	0

Table 8-P (O): Internal Person-Trip Origin-Destination Matrix (Computed at Origin)

Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office		0	0	0	0	0
Retail	9		131	18	117	23
Restaurant	0	0		0	0	0
Cinema/Entertainment	0	0	0		0	0
Residential	13	117	70	0		10
Hotel	0	0	0	0	0	

Table 8-P (D): Internal Person-Trip Origin-Destination Matrix (Computed at Destination)

Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office		30	0	0	23	0
Retail	0		0	0	267	0
Restaurant	0	225		0	93	0
Cinema/Entertainment	0	18	0		23	0
Residential	0	38	0	0		0
Hotel	0	9	0	0	0	

Table 9-P (D): Internal and External Trips Summary (Entering Trips)

Destination Land Use	Person-Trip Estimates			External Trips by Mode*		
	Internal	External	Total	Vehicles[1]	Transit[2]	Non-Motorized[2]
Office	0	0	0	0	0	0
Retail	38	412	450	275	0	0
Restaurant	0	0	0	0	0	0
Cinema/Entertainment	0	0	0	0	0	0
Residential	117	464	581	353	23	0
Hotel	0	0	0	0	0	0
All Other Land Uses[3]	0	0	0	0	0	0

Table 9-P (O): Internal and External Trips Summary (Exiting Trips)

Origin Land Use	Person-Trip Estimates			External Trips by Mode*		
	Internal	External	Total	Vehicles[1]	Transit[2]	Non-Motorized[2]
Office	0	0	0	0	0	0
Retail	117	333	450	222	0	0
Restaurant	0	0	0	0	0	0
Cinema/Entertainment	0	0	0	0	0	0
Residential	38	297	335	226	15	0
Hotel	0	0	0	0	0	0
All Other Land Uses[3]	0	0	0	0	0	0

[1]Vehicle-trips computed using the mode split and vehicle occupancy values provided in Table 2-P

[2]Person-Trips

[3]Total estimate for all other land uses at mixed-use development site-not subject to internal trip capture computations in this estimator

*Indicates computation that has been rounded to the nearest whole number.

Teal Club Specific Plan - Phase 1 Only Alternative

Land Use	SF/DU	Land Use Code	Trips						
			ADT	AM			PM		
				In	Out	Total	In	Out	Total
SFD	220	210	2,077	41	122	163	139	79	218
Multi-Family (Low-Rise)	503	220	3,682	53	178	231	178	104	282
Neighborhood Commercial	60,000	SANDAG	7,200	173	115	288	360	360	720
Community Park	6.5	SANDAG	130	3	3	6	5	5	10
Sub Total			*13,089*	*270*	*418*	*688*	*682*	*548*	*1,230*
Internal Trips [1]			*1,932*	*9*	*19*	*28*	*152*	*136*	*288*
External Trips			*11,157*	*261*	*399*	*660*	*530*	*412*	*942*
Pass-by Trips [2]			*502*	*17*	*12*	*29*	*107*	*89*	*196*
Total Primary Trips			***10,655***	***244***	***387***	***631***	***423***	***323***	***746***

[1] Internal capture per NCHRP 8-51/ITE Internal Capture, includes transit use.

[2] Pass-by trips limited to existing traffic volumes on Ventura Rd that are attracted to the retail component.

Project Name:	Teal Club Specific Plan - Phase 1 Only Alt
Analysis Period:	**AM Street Peak Hour**

Table 7-A: Conversion of Vehicle-Trip Ends to Person-Trip Ends

Land Use	Table 7-A (D): Entering Trips			Table 7-A (O): Exiting Trips		
	Veh. Occ.	Vehicle-Trips	Person-Trips*	Veh. Occ.	Vehicle-Trips	Person-Trips*
Office	1.00	0	0	1.00	0	0
Retail	1.50	173	260	1.50	115	173
Restaurant	1.00	0	0	1.00	0	0
Cinema/Entertainment	1.00	0	0	1.00	0	0
Residential	1.50	92	138	1.50	294	441
Hotel	1.00	0	0	1.00	0	0

Table 8-A (O): Internal Person-Trip Origin-Destination Matrix (Computed at Origin)

Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office		0	0	0	0	0
Retail	50		22	0	24	0
Restaurant	0	0		0	0	0
Cinema/Entertainment	0	0	0		0	0
Residential	9	4	88	0		0
Hotel	0	0	0	0	0	

Table 8-A (D): Internal Person-Trip Origin-Destination Matrix (Computed at Destination)

Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office		83	0	0	0	0
Retail	0		0	0	3	0
Restaurant	0	21		0	7	0
Cinema/Entertainment	0	0	0		0	0
Residential	0	44	0	0		0
Hotel	0	10	0	0	0	

Table 9-A (D): Internal and External Trips Summary (Entering Trips)

Destination Land Use	Person-Trip Estimates			External Trips by Mode*		
	Internal	External	Total	Vehicles[1]	Transit[2]	Non-Motorized[2]
Office	0	0	0	0	0	0
Retail	4	256	260	171	0	0
Restaurant	0	0	0	0	0	0
Cinema/Entertainment	0	0	0	0	0	0
Residential	3	135	138	85	7	0
Hotel	0	0	0	0	0	0
All Other Land Uses[3]	0	0	0	0	0	0

Table 9-A (O): Internal and External Trips Summary (Exiting Trips)

Origin Land Use	Person-Trip Estimates			External Trips by Mode*		
	Internal	External	Total	Vehicles[1]	Transit[2]	Non-Motorized[2]
Office	0	0	0	0	0	0
Retail	3	170	173	113	0	0
Restaurant	0	0	0	0	0	0
Cinema/Entertainment	0	0	0	0	0	0
Residential	4	437	441	277	22	0
Hotel	0	0	0	0	0	0
All Other Land Uses[3]	0	0	0	0	0	0

[1]Vehicle-trips computed using the mode split and vehicle occupancy values provided in Table 2-A

[2]Person-Trips

[3]Total estimate for all other land uses at mixed-use development site-not subject to internal trip capture computations in this estimator

*Indicates computation that has been rounded to the nearest whole number.

Project Name:	Teal Club Specific Plan - Phase 1 Only Alt
Analysis Period:	**PM Street Peak Hour**

Table 7-P: Conversion of Vehicle-Trip Ends to Person-Trip Ends

Land Use	Table 7-P (D): Entering Trips			Table 7-P (O): Exiting Trips		
	Veh. Occ.	Vehicle-Trips	Person-Trips*	Veh. Occ.	Vehicle-Trips	Person-Trips*
Office	1.00	0	0	1.00	0	0
Retail	1.50	360	540	1.50	360	540
Restaurant	1.00	0	0	1.00	0	0
Cinema/Entertainment	1.00	0	0	1.00	0	0
Residential	1.25	309	386	1.25	179	224
Hotel	1.00	0	0	1.00	0	0

Table 8-P (O): Internal Person-Trip Origin-Destination Matrix (Computed at Origin)

Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office		0	0	0	0	0
Retail	11		157	22	140	27
Restaurant	0	0		0	0	0
Cinema/Entertainment	0	0	0		0	0
Residential	9	79	47	0		7
Hotel	0	0	0	0	0	

Table 8-P (D): Internal Person-Trip Origin-Destination Matrix (Computed at Destination)

Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office		36	0	0	15	0
Retail	0		0	0	178	0
Restaurant	0	270		0	62	0
Cinema/Entertainment	0	22	0		15	0
Residential	0	45	0	0		0
Hotel	0	11	0	0	0	

Table 9-P (D): Internal and External Trips Summary (Entering Trips)

Destination Land Use	Person-Trip Estimates			External Trips by Mode*		
	Internal	External	Total	Vehicles[1]	Transit[2]	Non-Motorized[2]
Office	0	0	0	0	0	0
Retail	45	495	540	330	0	0
Restaurant	0	0	0	0	0	0
Cinema/Entertainment	0	0	0	0	0	0
Residential	140	246	386	187	12	0
Hotel	0	0	0	0	0	0
All Other Land Uses[3]	0	0	0	0	0	0

Table 9-P (O): Internal and External Trips Summary (Exiting Trips)

Origin Land Use	Person-Trip Estimates			External Trips by Mode*		
	Internal	External	Total	Vehicles[1]	Transit[2]	Non-Motorized[2]
Office	0	0	0	0	0	0
Retail	140	400	540	267	0	0
Restaurant	0	0	0	0	0	0
Cinema/Entertainment	0	0	0	0	0	0
Residential	45	179	224	136	9	0
Hotel	0	0	0	0	0	0
All Other Land Uses[3]	0	0	0	0	0	0

[1]Vehicle-trips computed using the mode split and vehicle occupancy values provided in Table 2-P

[2]Person-Trips

[3]Total estimate for all other land uses at mixed-use development site-not subject to internal trip capture computations in this estimator

*Indicates computation that has been rounded to the nearest whole number.

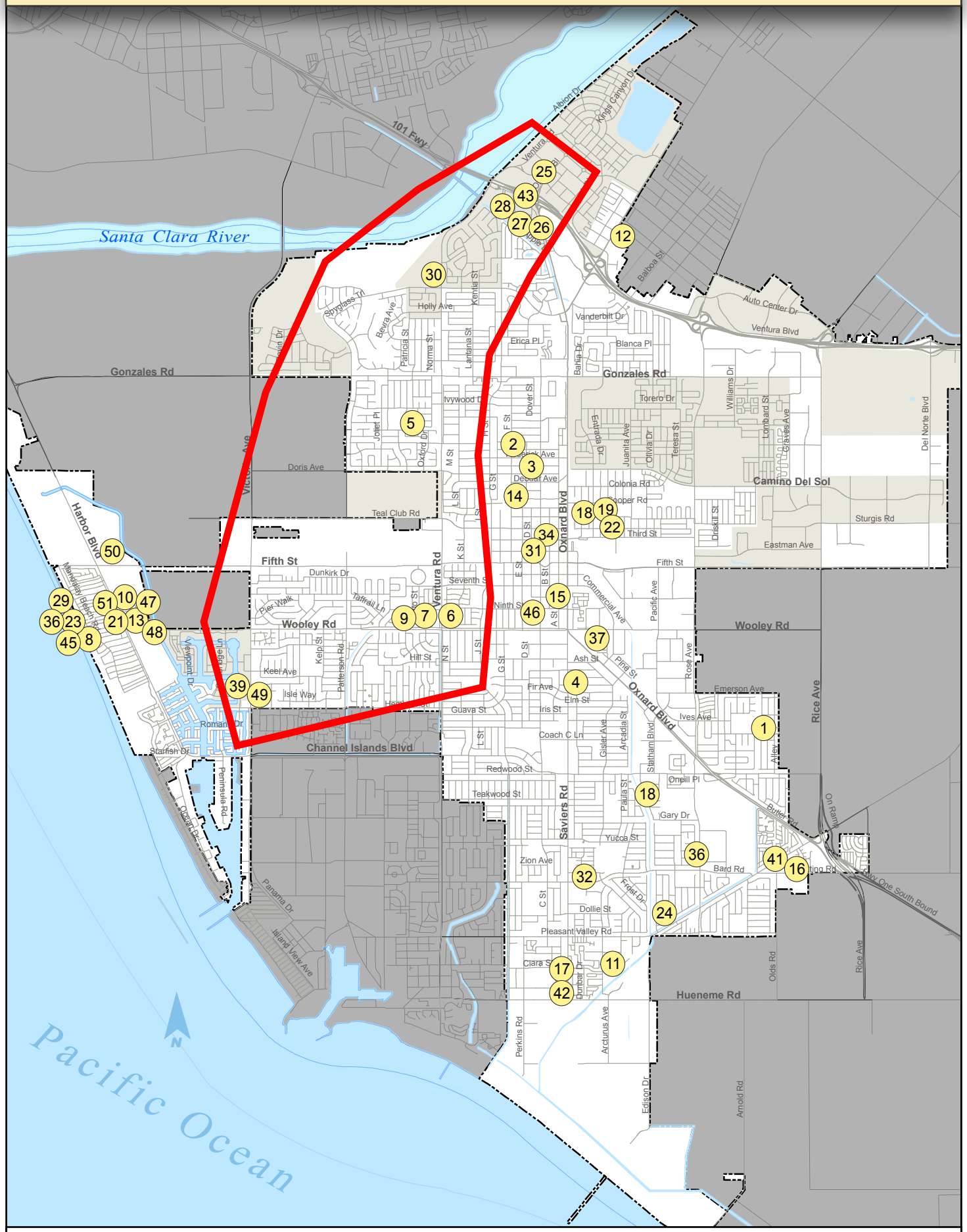
Appendix 3
Cumulative Projects List and Trip Generation Worksheet

TEAL CLUB SPECIFIC PLAN
CUMULATIVE PROJECTS TRIP GENERATION

City ID	Land Use	Size		Pass-by Factor	ADT Rate	ADT Trips	A.M. Rate	A.M. Trips	A.M. In %	A.M. In Trips	A.M. Out %	A.M. Out Trips	P.M. Rate	P.M. Trips	P.M. In %	P.M. In Trips	P.M. Out %	P.M. Out Trips
Residential																		
5.	ADU	1	Units	1.00	7.32	7	0.46	0	20%	0	80%	0	0.56	1	70%	1	30%	0
6.	ADU	1	Units	1.00	7.32	7	0.46	0	20%	0	80%	0	0.56	1	70%	1	30%	0
7.	ADU	1	Units	1.00	7.32	7	0.46	0	20%	0	80%	0	0.56	1	70%	1	30%	0
9.	ADU	1	Units	1.00	7.32	7	0.46	0	20%	0	80%	0	0.56	1	70%	1	30%	0
25.	Senior Living	85	Units	1.00	3.44	292	0.20	17	34%	6	66%	11	0.25	21	54%	11	46%	10
26.	MFH (Low-Rise)	88	Units	1.00	7.32	644	0.46	40	23%	9	77%	31	0.56	49	63%	31	37%	18
27.	MFH (Low-Rise)	78	Units	1.00	7.32	571	0.46	36	23%	8	77%	28	0.56	44	63%	28	37%	16
28.	MFH (Low-Rise)	144	Units	1.00	7.32	1,054	0.46	66	23%	15	77%	51	0.56	81	63%	51	37%	30
30.	SFD	152	Units	1.00	10.00	1,520	0.80	122	30%	37	70%	85	1.00	152	70%	106	30%	46
43.	MFH (Low-Rise)*	219	Units	1.00	7.32	1,603	0.46	101	23%	23	77%	78	0.56	123	63%	77	37%	46
	Subtotal					***5,684***		***382***		***98***		***284***		***470***		***304***		***166***
Commercial																		
2.	Hotels	240	Rooms	1.00	4.46	1,070	0.34	82	53%	43	47%	39	0.36	86	48%	41	52%	45
9.	Glovis Car Storage**	8	Acres	1.00	25.00	200	5.00	40	50%	20	50%	20	5.00	40	50%	20	50%	20
14.	Car Wash	5,500	S.F.	0.60	142.00	469	7.10	23	50%	12	50%	11	14.20	47	50%	24	50%	23
17.	Medical Office	27,046	S.F.	1.00	34.80	941	2.78	75	78%	59	22%	16	3.64	98	28%	27	72%	71
24.	Commercial	4,857	S.F.	0.66	30.00	96	1.00	3	60%	2	40%	1	3.00	10	50%	5	50%	5
29.	Shopping Center	53,950	S.F.	0.66	38.00	1,353	0.94	33	62%	20	38%	13	3.81	136	50%	68	50%	68
	Subtotal					***4,129***		***256***		***156***		***100***		***417***		***185***		***232***
Community Plans																		
3.	Wagon Wheel SP - Transit Cntr		Overlay	n/a		0		0		0		0		0		0		0
4.	Wagon Wheel SP*	219	Units		Residential #43			0		0		0		0		0		0
5.	Wagon Wheel SP*	78	Units		Residential #27			0		0		0		0		0		0
6.	Wagon Wheel SP*	88	Units		Residential #26			0		0		0		0		0		0
	Subtotal					***0***		***0***		***0***		***0***		***0***		***0***		***0***
	Approved & Pending Projects Total:					**9,813**		**638**		**254**		**384**		**887**		**489**		**398**

Pending and Approved Projects derived from City Projects List, April 2018

Residential Zone Projects April 2018



ID	DEVELOPER	PROJECT	LOCATION	STATUS	PZ Permit No.	PLNR	DESCRIPTION	Total Units	Affordable	Live/Work
1	Alejo Barragan Barragan Designs 741 Arneill Rd. Camarillo, CA 93010 (805)766-0110 alejobarragan73@gmail.com	Accessory dweling Unit (ADU)	2140 Hancock Pl	Proposed	17-240-10	RM	Proposal to construct a 630 square-foot Accessory Dwelling Unit (ADU).	1	0	0
2	Alejo Barragan Barragan Designs 741 Arneill Rd. Camarillo, CA 93010 (805)766-0110	Accessory dweling Unit (ADU)	631 Douglas Ave, Oxnard CA	Plan Check	17-240-08	CV	Convert an existing 564 sf patio lanai into an accessory dwelling unit (ADU) in the rear of an existing single-family residential lot.	1	0	0
3	Jaime Parga Parga Construction 151 Bellafonte Ct. Camarillo, CA 93012 (805)290-5952 pargaconstruction@aol.com	Accessory dweling Unit (ADU)	302 W. Doris Ave, Oxnard CA	Proposed	17-240-14	CV	Convert 600 sf of an existing single-family residence into an accessory dwelling unit (ADU).	1	0	0
4	Juan Tapia JTAP Construction (805)798-4113 jtap1@verizon.net	Accessory dweling Unit (ADU)	113 East Cedar St, Oxnard CA	Plan Check	17-240-05	CV	Construct a 600 sf accessory dwelling unit (ADU) in the rear of an exisiting single-family residence.	1	0	0
5	Alejo Barragan 805-766-01010	Accessory dweling Unit (ADU)	1711 Firethorne Pl, Oxnard CA	Plan Check	17-240-12	RM	Proposed 600 sf accessory dwelling unit in the rear of an existing single family home.	1	0	0
6	Frank Rogue (805) 236-1124 filiuserro@gmail.com	Accessory dweling Unit (ADU)	915 S K St, Oxnard CA	Plan Check	17-240-07	RM	Proposed 605 sf accessory dwelling unit in the rear of an existing single family home.	1	0	0
7	Jorge Escamilla 805-620-7466	Accessory dweling Unit (ADU)	1025 Ontario St, Oxnard CA	Proposed	17-240-02	RM	Convert exisitng accessory structure into an accessory dwelling unit.	1	0	0
8	Martha Picciotti, Architect mpdesign@charter.net Phone (805) 641-3221	Single-Family Beachfront House	1125 Capri Way, Oxnard CA	Proposed	17-400-04	JM	Demo existing 1,800 sf house and construct new 5,028 sf, two story single family house with attached four car garage on 6,328 quare foot beachfront lot	1	0	0
9	Jorge Escamilla 805-620-7466	Accessory dweling Unit (ADU)	1015 Ontario St, Oxnard CA	Proposed	17-240-03	JM	Proposed 600 sf accessory dwelling unit to existing 977 sf single family house	1	0	0
10	Rick Moraga (805)482-1836 (818)519-1861	Residential Duplex	5000 Catamaran St, Oxnard CA	Proposed	17-400-02	JM	Construct a two-story, residential duplex consisting of two, four bedroom dwelling units on a 7,500 square foot vacant lot.	2	0	0

ID	DEVELOPER	PROJECT	LOCATION	STATUS	PZ Permit No.	PLNR	DESCRIPTION	Total Units	Affordable	Live/Work
11	Mark Pettit, Lauterbach & Associates 300 Montgomery Av., Oxnard, CA 93036 (805) 988-0912 mark.pettit@la-arch.com	Garden City	5690 Cypress Road Oxnard CA	Proposed	17-200-04	CW	Cypress Road labor camp and special needs housing. Continued use of 72-person labor camp, 30 affordable special needs units	30	30	0
12	Mark Pettit, Lauterbach & Associates 300 Montgomery Av., Oxnard, CA 93036 (805) 988-0912 mark.pettit@la-arch.com	Rio Urbana	2714 Vineyard Ave Oxnard CA	Proposed	17-500-05	CW	Annexation and Density Bonus for 182 multi-family condominiums on 10.24 acre former Rio School site (also 15,000 sf office bldg)	182	24	0
13	Frank Rogue (805) 236-1124 filiuserro@gmail.com	Tepora Duplex	1030 Dunes St Oxnard CA	Proposed	17-400-01	JM	Construct a two-story, residential duplex on a 6,600 square foot vacant lot.	2	0	0
14	Jeff Zook Coastal Architects (805) 985-7654	F Street Condos	301-302 N F Street Oxnard CA	Proposed	17-500-01	KL	40 multi-family condominiums and associated site improvements on 2.8 acres	40	0	0
15	Henry Casillas hc@ca-realtypros.com (805) 231-3971	The Billboard Lofts	Eighth and A Street Oxnard CA	Proposed	17-500-02 17-535-03 17-300-03	DS	Mixed-use: 26 condominiums above approximately 5,000 square feet of commercial.	26	4	0
16	Cabrillo Economic Development Corp 702 County Square Drive Ventura CA 93003 Agent: Mark Pettit 805-988-0912 mark.pettit@la-arch.com	Etting Road AAHOP	Etting Rd and Pleasant Valley Rd Oxnard CA	Proposed	15-200-01	CW	42 affordable units in 2 and 3 multifamily structure, parking, community room	0	42	0
17	JBGR Investments, LLC 1105 Walnut Drive, Oxnard, CA 93036 Agent: Henry Casillas 805-231-3971 hc@ca-realtypros.com	20-Townhome units	5489 Saviers Rd Oxnard CA	Proposed/ City Council April 17,2018	16-500-06	IF	inclusive of 4 affordable units, which includes a Tentative Tract Map on a .91-acre on an All-Affordable Housing Opportunity Program (AAHOP) site.	20	4	0
18	Habitat For Humanity of Ventura County c/o Steven J. Dwyer 1850 Eastman Ave., Oxnard, CA 93030 805-485-6065	6- all affordable single-family units	First St and Hayes Ave Oxnard CA	Approved/ Under Construction	16-500-08	IF	Approval to construct 6- all affordable single-family residences, which includes a Tentative Tract Map to subdivide 5 parcels into 6 parcels on a .48 acre parcel.	6	6	0
19	Dimensions Drafting Eddie Alvarado (805) 223-9142	Cheyenne Development	3050 & 3060 Albany Dr Oxnard CA	Proposed	16-540-02 16-300-08	JM	Single family house on proposed 3,484.8 sf lot and residential duplex on proposed 6,969.6 sf lot	3	0	0

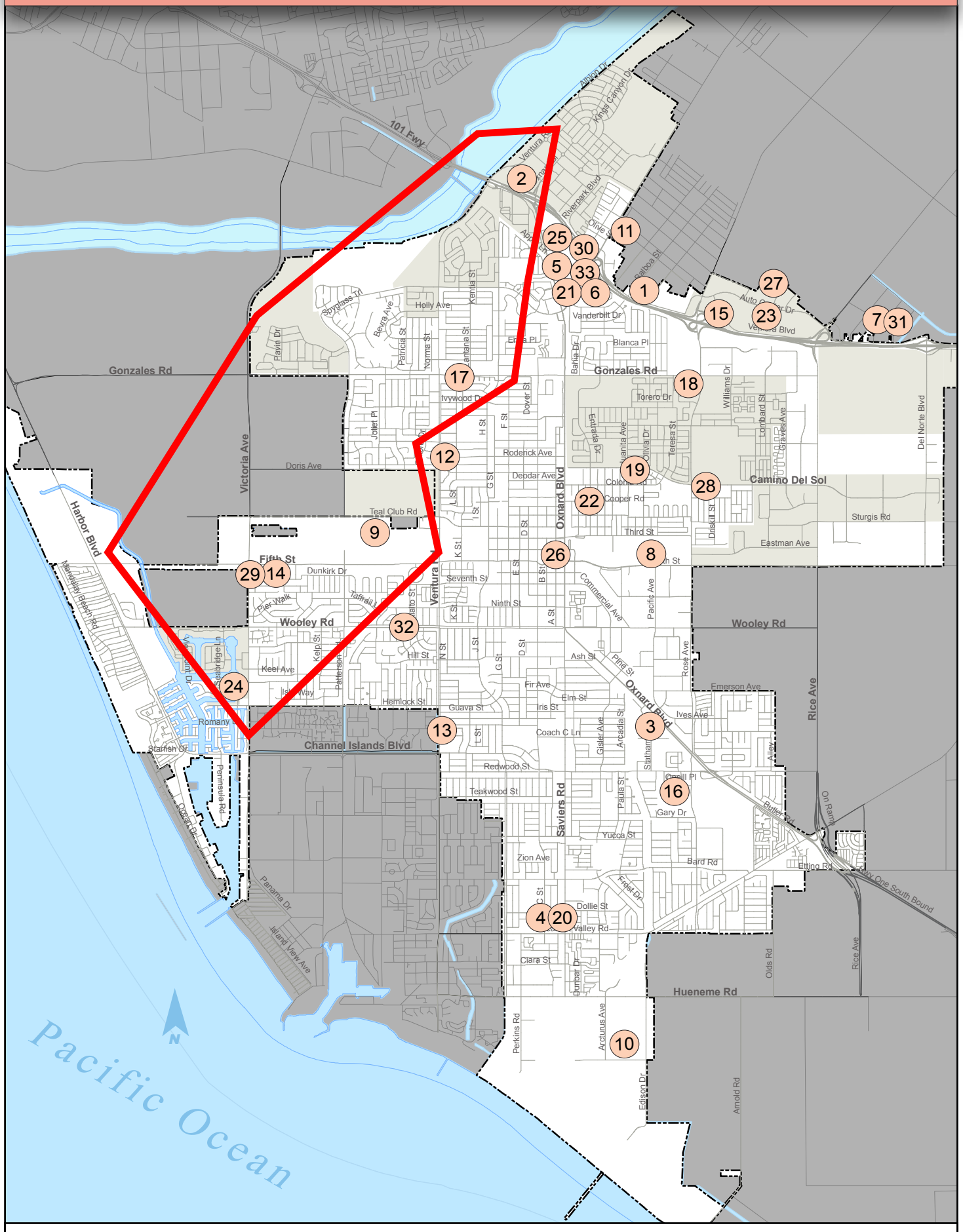
ID	DEVELOPER	PROJECT	LOCATION	STATUS	PZ Permit No.	PLNR	DESCRIPTION	Total Units	Affordable	Live/Work
20	Lisette Elenes, Architect (805) 824-4188 lizehelenes@live.com	Cooper Rd Mixed-use	600 Cooper Rd Oxnard CA	Plan Check	16-500-03	JM	Construct a two-story 5,671 square foot, mixed-use building consisting of 1,400 sf of commercial space on the first floor and two 2-bedroom apartments (1,385 sf each) on the second floor and 4 car garage parking on a 7,640 square foot lot	2	0	0
21	Jasper Li A Plus Building Design (626) 623-0706 aplusbuildinginc@gmail.com	Duplex	1011 - 1015 Dunes St Oxnard CA	Proposed	16-400-06	JM	Proposed 8,865 square foot, 2-story residential duplex	2	0	0
22	Jose Corona 422 San Pedro St. Port Hueneme, CA 93041 (805) 775-6893	New Single-Family Home	116 S. McKinley Ave Oxnard CA	Under Construction	16-200-09	RM	Two-story single-family residence	1	0	0
23	Charles Stevens 19911 Northridge Rd. Chatsworth CA 91311	Single - Family Beachfront House	1021 Mandalay Beach Road Oxnard CA	Plan Check	16-400-03	KM	Two story 4,000 sq. ft. residence with a 1, 432 sq. ft. garage / storage area.	1	0	0
24	Oscar Tirado 7562 Chaminade Ave. West Hills, CA 91304 (818) 378-4138	Triplex	4830 Terrace Avenue Oxnard CA	Under Construction	16-540-01	DS	Three-unit apartment complex with a request for three deviations from zoning standards, per the Planned Development Permit.	3	0	0
25	James Lawson 16511 Scientific Way, Suite 100 Irvine, CA 92618	Oakmont Senior Living	861 Town Center Drive Oxnard CA	Plan Check	16-200-05	DS	Two-story, 85-unit senior care facility	85	0	0
26	Oakwood Communities, Inc. V.P of Construction 886 Wagon Wheel Rd. Oxnard, CA 93036 (805) 278-4999 off (619) 726-2819 cell	"The Village" Wagon Wheel Development Project (PA 4)	Wagon Wheel Rd Oxnard CA	Approved	16-200-02	KM	Proposed construction of 88 condominium dwelling units (57 2-bdrm., 29 3-bdrm., and 2 4-bdrm. units) in 6, three-story residential buildings on 4.03 acres within the Village Specific Plan area	88	0	0
27	Oakwood Communities, Inc. V.P of Construction 886 Wagon Wheel Rd. Oxnard, CA 93036 (805) 278-4999 off (619) 726-2819 cell	"The Village" Wagon Wheel Development Projects (PA5 & PA11)	Southwest of the intersection of N Oxnard Blvd and the US-101 Freeway Wagon Wheel Rd Oxnard CA	Approved	16-200-01	KM	Proposed construction of 78 condominium dwelling units (52 3-bdrm., and 26 4-bdrm. units) in 26, four-story residential buildings on 4.34 acres within the Village Specific Plan area.	78	0	0
28	Oakwood Communities, Inc. V.P of Construction 886 Wagon Wheel Rd. Oxnard, CA 93036 (805) 278-4999 off (619) 726-2819 cell	"The Village" Wagon Wheel Development Projects (PA 7, 9, 10 & 8)	Wagon Wheel Rd Oxnard CA	Approved	15-200-07	KM	Proposed construction of 144 condominium dwelling units (36 2-bdrm., and 108 3-bdrm. units) in 12, four-story residential buildings on 6.51 acres within the Village Specific Plan area.	144	0	0

ID	DEVELOPER	PROJECT	LOCATION	STATUS	PZ Permit No.	PLNR	DESCRIPTION	Total Units	Affordable	Live/Work
29	Rosy Hernandez 418 W Third St. Oxnard, CA 93030 (805) 407-8473	Single - Family Beachfront House	703 Mandalay Beach Rd Oxnard CA	Plan Check	15-400-04	JD	Demolish one exsiting multi-family building and construct one three-story, 4,020 square-foot beachfront home with an attached garage and decks.	1	0	0
30	Ravello Holdings/Devco 211 Village Commons, Ste 11 Camarillo, CA 93012 (805) 987-2700	Ventura/Vineyard Homes	Vineyard Av and Ventura Rd Oxnard CA	Under Construction	06-540-01, 15-300-07, 15-670-01	KM	152 residential dwelling units.	152	0	0
31	Eddie Alvarado Dimensions Drafting 229 E Birch St. Oxnard, CA 93033 (805) 223-9142	Two Single-Family Residences	316 S D St Oxnard CA	Plan Check	15-200-06	RM	Two 1,026 square-foot, single-family residences with detatched garages on a 7,000 sq. ft. lot.	2	0	0
32	Mike Sanchez Coastal Architects 505 S A St. #200 Oxnard, CA 93030 (805) 985-7554	Oxnard Johnson Apartments	234 Johnson Rd Oxnard CA	Proposed	15-200-08	JM	19 affordable apartments on a .79 acre site.	19	19	0
33	Rosy Hernandez 418 W Third St. Oxnard, CA 93030 (805) 407-8473	Single-Family Beachfront House	701 Mandalay Beach Road Oxnard CA	Plan Check	15-400-03	JD	One three-story, 4,020 square-foot beachfront home with an attached garage.	1	0	0
34	Eddie Alvarado Dimensions Drafting 229 E Birch St. Oxnard, CA 93033 (805) 223-9142	Two Single-Family Residences	126 South B St Oxnard CA	Revoked	15-500-04	RM	Two 1,026 square-foot, single-family residences with detatched garages on a 7,000 sq. ft. lot.	0	0	0
35	Mark Pettit, Lauterbach & Associates 300 Montgomery Av., Oxnard, CA 933036 (805) 988-0912 mark.pettit@la-arch.com	Channel Islands Apartments	Statham Blvd and Channel Islands Blvd Oxnard CA	Under Construction	15-500-03, 15-535-01, 15-570-03	DS	Two and three-story, 72-unit multi-family apartments and associated site improvements	72	6	0
36	Mark Shellnut (805)649-2056 shellnut@sbcglobal.net	Single-Family Beachfront House	855 Mandalay Beach Road Oxnard CA	Under Construction	15-400-01	RM	A 6,997 square-foot, single-family house and garage on a 3,744 sq ft lot.	1	0	0
37	Jan K. Hochhauser, Architect Jan@hbarchitects.com (805) 962-2746 x102	Gateway Station	1250 South Oxnard Blvd Oxnard CA	Under Construction	15-200-02	JM	240-unit all-affordable apartment housing complex on 12-acre former drive-in site	240	240	0
38	John Bigley, UHC LLC 2000 East Fourth Street, No. 205 Santa Ana, CA 92705 (714) 835-3955	Las Cortes Phase I	Northeast Corner of E First Street and Marquita Street Oxnard CA	Under Construction	14-200-10	DS	144 multi-family apartments (142-affordable) within 10 buildings and a 2,500 square-foot community center on three lots.	144	142	0

ID	DEVELOPER	PROJECT	LOCATION	STATUS	PZ Permit No.	PLNR	DESCRIPTION	Total Units	Affordable	Live/Work
39	Tom Comber, Port 121 LLC tom@riverrangellc.com (661) 433-8062	Port 121 / The Reserve at Seabridge	3851 Harbour Island Lane Oxnard CA	Under Construction	15-140-45	DS	75 condominiums with 15 live-work units (completion of DR Horton building)	75	0	15
40	Mark Pettit, Lauterbach & Associates 300 Montgomery Av., Oxnard, CA 93036 (805) 988-0912 mark.pettit@la-arch.com	101 Apartment Units	2250 E Pleasant Valley Rd & 2295 Etting Rd Oxnard CA	Under Construction	14-535-01 14-540-01 14-570-02 14-310-05 14-687-01	JM	3-story, 101 unit apartment complex on a 6.23 ac lot. Untis range from 560 s.f. to 980 s.f.	101	15	0
41	Mark Pettit, Lauterbach & Associates 300 Montgomery Av., Oxnard, CA 93036 (805) 988-0912 mark.pettit@la-arch.com	70 Senior Housing Units	2300 E Pleasant Valley Rd Oxnard CA	Approved	14-500-04 14-580-01 14-570-02 14-310-05 14-570-02	JM	70 unit senior living and memory care facility on a 1.05 acre site.	70	0	0
42	Steve Topor Apchanco 18, LLC (909) 988-9000	Vista Pacifica	5557 & 5527 Saviers Rd Oxnard CA	Plan Check	14-300-04 14-300-03 16-140-15	JM	3-story, 40 unit apartment complex on a 1.8 acre site. 1 and 2 bedroom units will range between 743 sf and 1,033 sf	40	40	0
43	Doug Brooks Oakwood Development Inc. 16331 Scientific Way, Ste 250 Irvine, CA 92618 (949) 719-9040	"The Village" Wagon Wheel Development Projects (PA 18 & 19)	Wagon Wheel Rd Oxnard CA	Plan Check	14-200-01	KM	219 market rate apartments (1, 2 & 3 bedrooms), recreation/meeting room, tot lot, and landscaped paseos and 16,303 square-feet of commercial.	219	0	0
44	Roy Milbrandt (805) 218-1540	Single-Family Beachfront Home	935 Mandalay Beach Rd Oxnard CA	Under Construction	13-400-04	RM	One 4,500 square-foot, single-family beachfront house on piles.	1	0	0
45	Roy Milbrandt (805) 218-1540	Single-Family Beachfront Home	1131 Capri Wy Oxnard CA	Under Construction	13-400-05	RM	One 5,240 square-foot, single-family beachfront house on piles.	1	0	0
46	Matt Mansi Aldersgate Investments Press Courier Lofts, LLC, (805)-820-8863	The Lofts Affordable Senior Apartments	300 W Ninth St Oxnard CA	Under Construction	12-500-06 12-535-01 15-550-03	JM	Conversion of existing 52,000 square-foot industrial building into 115 affordable senior apartments.	115	115	0
47	Mike Marlow, Oxnard Shores Development Co. (805) 985-1557	Avalon Homes Subdivision	Dunes St and Canal St Oxnard CA	Proposed	11-400-01 11-300-01	IF	64 single-family homes and a tentative tract map for 16 parcels (4 houses per parcel) on an 8.1-acre property.	64	7	0
48	Oxnard Shores Development Co., Mike Marlow (805) 985-1557	Anacapa Townhomes	5001 W Wooley Rd Oxnard CA	Plan Check	08-400-04 09-300-01 13-420-02	IF	Approval to construct 50 townhome units and recreational facility.	70	0	0

ID	DEVELOPER	PROJECT	LOCATION	STATUS	PZ Permit No.	PLNR	DESCRIPTION	Total Units	Affordable	Live/Work
49	Greg Mendoza Tri Pointe Homes (949) 478-8645	Victoria & Hemlock	1830 S Victoria Av Oxnard CA	Under Construction	05-500-06	KM	116 multi-family condominiums	116	0	0
50	John Mellon MPL Property Holdings, LLC (805) 984-2301 jmellon@argentmanagementllc.com	North Shore Subdivision	W Fifth Street and Harbor Blvd Oxnard CA	Approved	05-300-08 05-500-04	JM	183 single-family homes and 109 detached condominiums.	292	0	0
51	Zareh Keshmeshian 5381 Long Shadow Court Westlake Village CA 91362	Duplex Condominium Subdivision	861 Dunes Oxnard CA	Proposed	17-300-07 17-400-06	PM	2 condominums on a single parcel	2	0	0

Commercial Zone Projects April 2018



City of Oxnard **Commercial Project List** Planning Division

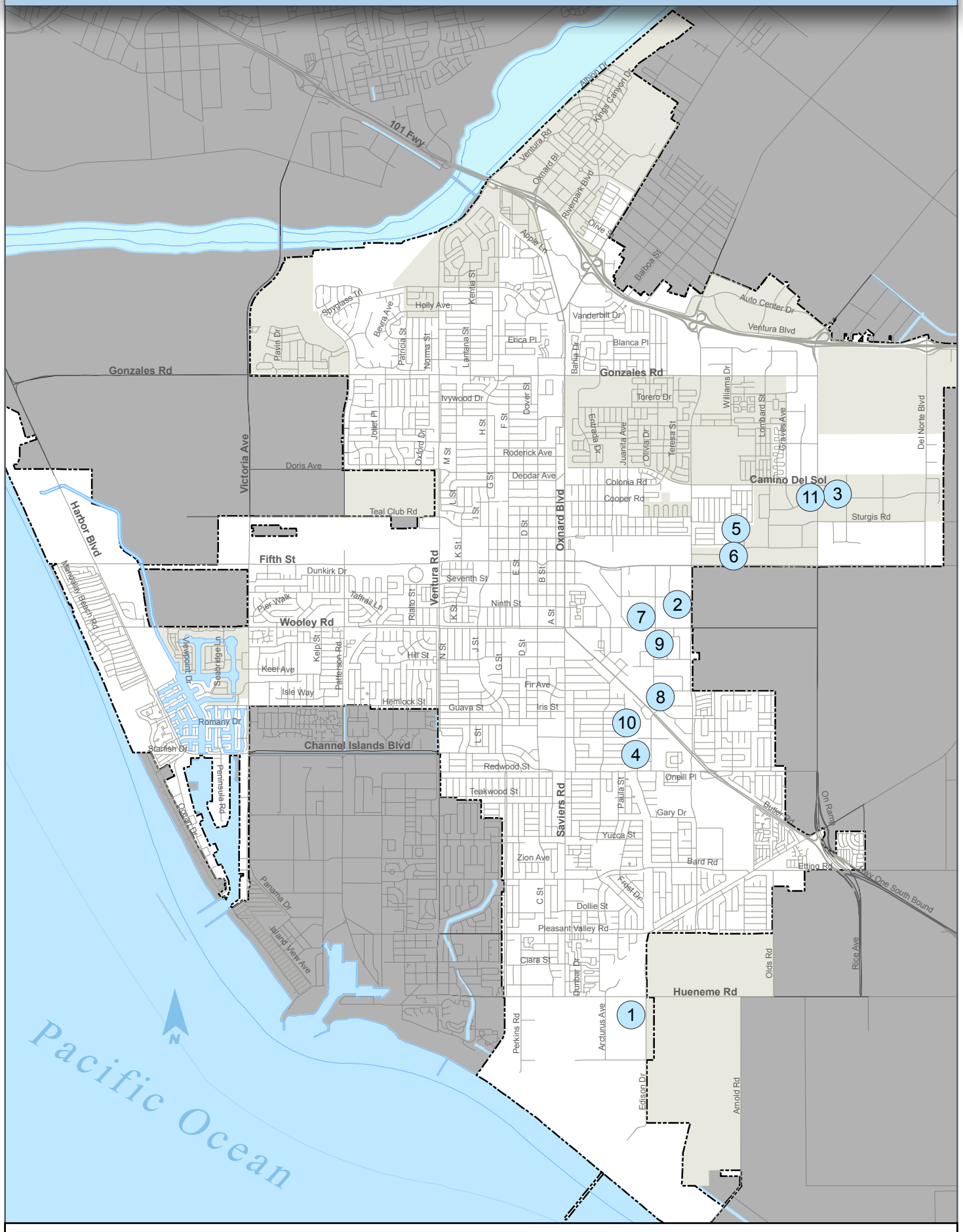
ID	DEVELOPER	PROJECT	LOCATION	STATUS	PZ Permit	PLNR	DESCRIPTION	SQF (Net)
1	Stephen Heinze / Dioji 315 Meigs Rd. Suite A #651 Santa Barbara CA 93109	Dog Daycare and Kennel	633 Ventura Blvd Oxnard CA	Proposed	17-500-17	PM	Remodel 2,814 square-foot, single story office and construct a 4,781 square-foot warehouse type addition	7,595
2	Jared Jones (DKN Hotels) 42 Corporate Park Irvine, Ca 92606 949.338.4139 jaredj@dknhotels.com	RiverPark Hotels	SW Town Center Drive and Oxnard Blvd Oxnard CA	Proposed	17-200-07 17-200-08	DS	Proposed development of two, four-story hotels (TownePlace Suites and SpringHill Suites), each featuring 120 rooms	162,285
3	Clinicas del Camino Real, Inc. 1040 Flynn Road, Camarillo, CA 93012 805.659.1740 email@clinicas.org	Clinicas	2001 Statham Blvd Oxnard CA	Proposed	17-500-19	JD	Proposed two story medical clinic	38,641
4	Jerry Ambrose (Eukon Group) 3905 State St, Suite 7-188 Santa Barbara CA 93105	AT&T Project	211 West Pleasant Valley Rd, Oxnard Ca	Proposed	17-530-03	RM	Proposed 60' monopalm wireless facility	200
5	Carlos Vizcarra -Amerco Real Estate Company 2727 N Central Ave, 5-N Phoenix, AZ 85004 (602) 263-6502 carlos_vizcarro@uhaul.com	U-Haul of North Oxnard	2420 N. Vineyard Ave Oxnard, CA	Under Construction	17-500-11	CW/HD	Reuse of existing structure for U-Haul, outdoor RV parking, indoor mini-storage use, and general warehouse as yet unleased.	152,000
6	Judy Munzig -Dusenberg Investments Co 1800 Avenue of the Stars, Sutie 1400 Los Angeles, CA 90067 (310) 203-0698 jbrokks@topa.com	Campus at Topa Towers	350 E Esplanade Oxnard, CA	Proposed	17-500-02	CW/HD	Remove 2 buildings and service station, replace with three buildings, one existing building remodeled. All retail and restaurant.	16,000
7	Craig Lopez Lopez Architects, A.I.A. 155 Granada St., Suite L Camarillo, CA 93010	Annexation Batelaan property	2971 E Ventura Blvd Oxnard CA	Proposed	17-500-06	CW/HD	annexation and 3,000 sf warehouse	3,000
8	Glovis America Attn: Michael Song 567 W Channel Island Dr #213 Port Hueneme, CA (805) 207-3044 Michael.Song@glovisusa.com	Glovis new car transit storage Third Street	1400-1500 E Third St Oxnard CA	Proposed	17-500-09	CW/HD	Car parking on 3.9 acres	169,884
9	Glovis America Attn: Michael Song 567 W Channel Island Dr #213 Port Hueneme, CA (805) 207-3044 Michael.Song@glovisusa.com	Glovis new car transit storage Tal Club Road	2400 Teal Club Road Oxnard CA	Proposed	17-500-07	CW/HD	Car parking on 8 acres	348,480

ID	DEVELOPER	PROJECT	LOCATION	STATUS	PZ Permit	PLNR	DESCRIPTION	SQF (Net)
10	Glovis America Attn: Michael Song 567 W Channel Island Dr #213 Port Hueneme, CA (805) 207-3044 Michael.Song@glovisusa.com	Glovis new car transit storage Arcturus Ave	5980 and 6000 Arturus Ave Oxnard CA	Proposed	17-500-08	CW/HD	Car parking on 14.6 acres	635,976
11	Mark Pettit, Lauterbach & Associates 300 Montgomery Av., Oxnard, CA 93036 (805) 988-0912 mark.pettit@la-arch.com	Rio Urbana	2714 Vineyard Ave, Oxnard CA	Proposed	17-500-05	CW/HD	Annexation and SUP for 15,000 sf office bldg (shared with 182 condiminium units - see Residential list)	15,000
12	Scott Dunaway D4 Communications 1114 State Street, Suite 222 Santa Barbara, CA 93101	Fremont Verizon	600 N. Ventura Rd Oxnard CA	Proposed	17-530-02	RM	Proposed 50' high Monopine wireless telecomunication facility	231
13	Alton Klein 1234 E. 17th St. Santa Ana, CA 92701 (714) 460-1542	Starbucks Drive Thru at Port Place Shoppes	Ventura Rd and W Channel Islands Bl Oxnard CA	Proposed	17-500-10	PM	Starbucks Drive Thru	1,842
14	Bijan Shahmoradi 8730 Wilshire Blvd. Suite 202 Beverly Hills, CA 90211 (310) 433-6815	WaterDrops Car Wash - Rancho Victoria	5th Street and Victoria Blvd Oxnard CA	Proposed	16-150-01	KL	Proposed automated full service car wash and approximately 5,500 square feet building on 1.4 acre lot	5,500
15	Marca Architecture Attn: Joe Marca 240 Market Pl. Escondido, CA 92029 (760) 743-4109	Audi Dealership	1600 Ventura Boulevard Oxnard CA	Under Construction	16-200-11	DS	Proposed 38,517 square-foot Audi automobile dealership and service facility	38,517
16	Tom Davis tdavies@cardiffdp.com (805) 496-6449	Medical Office Building	1601 Raiders Way Oxnard CA	Proposed	17-540-01	JM	one story medical office building with related site improvements on 0.66-acre site (28,566 sf) vacant lot	11,500
17	John Muller, Johnson + Muller Architects 1451 N. Rice Ave, Ste D Oxnard, CA 93030 (805) 983-7411 jmullerjma@aol.com	Medical Office	1100 W. Gonzales Rd Oxnard CA	Under Construction	17-140-06	DS	Request to rebuild a 2-story fire-damaged medical office building. New construction consists of adding a stair enclosure and lobby expansion	27,046

ID	DEVELOPER	PROJECT	LOCATION	STATUS	PZ Permit	PLNR	DESCRIPTION	SQF (Net)
18	Paul Cornejo, ALDI 12661 Aldi Place Moreno Valley, CA 92555 (951) 530-5750 paul.cornejo@aldi.us	ALDI Grocery Market	1710 & 1720 E. Gonzales Rd Oxnard CA	Completed	16-140-25	RM	New grocery market in the former Fresh & Easy tenant space and an adjacent tenant space at the Rose Ranch Shopping Center. The request includes a 1,648 sf addition to the rear of the building, façade upgrade, and full interior remodel.	73,852
19	Kluger Architects Megan Caldera 1855 Coronado Ave Signal Hill, CA 90755 Phone: 562 498-2400 ext. 204 mcaldera@klugerarchitects.com	Our Lady of Guadalupe School	530 North Juanita Avenue Oxnard CA	Under Construction	16-140-21	JM	Application proposes to demolish three existing school use structures totaling 2,874 square feet and replace with new 5,908 square foot, wood framed building for classroom use.	5,908
20	Barbara Ricketts Architect 3787 Calle Posadas Newbury Park, CA 91320 (805) 701-9134	Pleasant Valley Plaza	105 W. Pleasant Valley Rd. Oxnard CA	Proposed	16-550-04	JM	Remodel exiting shopping center, construct new 11,392 sf commercial/retail building with related site improvements to parking, landscaping, lighting, signage, etc.	193,394
21	Alex Kang 879 W. 190 Street Suite 935 Gardena CA 90248 (310) 768-2700 akang@satohbrothers.con	Shoe City	2441 Vineyard Ave. Oxnard CA	Proposed	16-540-03	PM	A Planned Development Permit for the construction of a new single story 17,513 sq. ft. shopping center on a 55,100 sq. ft. lot with associated parking and landscape.	17,513
22	Lizette Elenes Coastal Architects 505 S. A Street #200 Oxanrd CA 93030 (805) 985-7554	Cooper Rd Mixed-use	600 Cooper Rd Oxnard CA	Approved	16-500-03	JM	Mixed-use development for commeical/residential on a 7, 640 square-foot lot. Proposal includes two story building with two dwelling units over two commercial tenant spaces on the first floor and six attached garage spaces.	3,670
23	Costco Wholesale c/o Jennifer Murillo 999 Lake Drive, Issaquah, WA 98072	Costco Fuel Facility	2001 Ventura Bl Oxnard CA	Proposed	16-630-01 16-310-01 16-140-10	RM	Amend the Rose Santa Clara Specific Plan to allow the merger of two lots and the relocation of gas station associated with the existing Costco.	7,702
24	Doug Bergman Bergman Development 2850 Saturn St Brea, CA 92821 (909) 714-6273	Seabridge Marketplace Pad Building	1291 Victoria Ave. Oxnard CA	Under Construction	16-140-19	DS	A 4,857 square-foot retaurant and retail pad building within the Seabridge Marketplace	4,857
25	Ellitot Megdal & Associates 252-C S. Beverly Dr. Beverly Hills, CA 90212 (310) 277-0456	Esplanade Gateway	360 West Esplanade Dr Oxnard CA	Under Construction	16-500-02	CV	A 5,000 square-foot retail center with a 1,850 square-foot Starbucks drive-thru	6,850

ID	DEVELOPER	PROJECT	LOCATION	STATUS	PZ Permit	PLNR	DESCRIPTION	SQF (Net)
26	Michael Sanchez Coastal Architects (805) 985-7654	5th Street Banquet Hall	141 W Fifth St Oxnard CA	Plan Check	13-500-04	DS	Convert a portion of an existing office building to an assembly hall and event facility and construct a 2,274 square-foot addition.	2,274
27	Reed Caldwell, Gold Coast Transit (805) 483-3959	Gold Coast Maintenance Facility	Auto Center Drive and Paseo Mercado Oxnard CA	Under Construction	14-200-07	KM	Construction of an operations and maintenance facility: construct a 49,533 square foot facility - 17,935 sf office building; a 24,330 sqft maintenance building; a 2,105 sf fuel service station with fueling bays; and a 5,163 sf. wash building. The project includes outdoor parking for 125 buses along with landscaping and parking improvements to serve employees and visitors.	96,961
28	Tom Davis tdavies@cardiffdp.com (805) 496-6449	Trinity Church at Trinity Plaza	1800 Camino Del Sol Oxnard CA	Approved	14-500-06	JM	Request to permit a 7,400 square foot church (New Trinity Community Church) with seating for 250 persons on a 1.04-acre site.	7,400
29	Mark Pettit, Lauterbach & Associates mark.pettit@la-arch.com (805) 988-0912	Rancho Victoria Plaza Shopping Center	3600 & 3700 W Fifth St Oxnard CA	Approved	13-550-01 13-300-02	JM	Proposal to construct 11 retail/commerical buildings that will range between 3,388 and 6,472 square feet in size. Buildings will be constructed on separate lots.	53,950
30	Greg Peters Kroger Company 1100 West Artesia Blvd (310) 900-3589	Redevelopment of the Food-4-Less Site (former Target site)	150 W. Esplanade Dr Oxnard CA	Under Construction	12-540-01	KM	Redevelopment of the 14.47 acre Food 4 Less site, including the demolition of the former Target building, constructing of a new building to be occupied by Food 4 Less, a fuel station associated with Food 4 Less, rehabilitation of the existing on-site buildings, and 2 new retail buildings, for a net building area of 159,954 square feet. Also PZ Nos. 12-300-01 (Map), 12-500-01 (gas staion), 12-500-02 (drive-thru), 12-510-01 (off-site alcohol)	159,954
31	Heady Design & Associates (909) 215-6079	Dewey Pest Control	2991 Ventura Blvd Oxnard CA	Plan Check	11-540-02	DS	A 5,700 square-foot office building and associated site improvements.	5,700
32	Jaime Parga 805-290-5952Jaime Parga (805) 290-5952	Oralia's Bakery	942 W Wooley Rd Oxnard CA	Under Construction	11-500-01	DS	An 1,825 square-foot addition to existing bakery including landscaping and site improvements.	7,000
33	Duesenberg Investment Company Paul Geinger 1800 Avenue of The Stars, Suite 140 Los Angeles CA 90036	Third Tower	Vineyard Av and Esplanade Drive Oxnard CA	Approved	02-670-01	KM	Proposed 300,000 square-foot, 15-story office tower at Esplanade Financial Square.	300,000

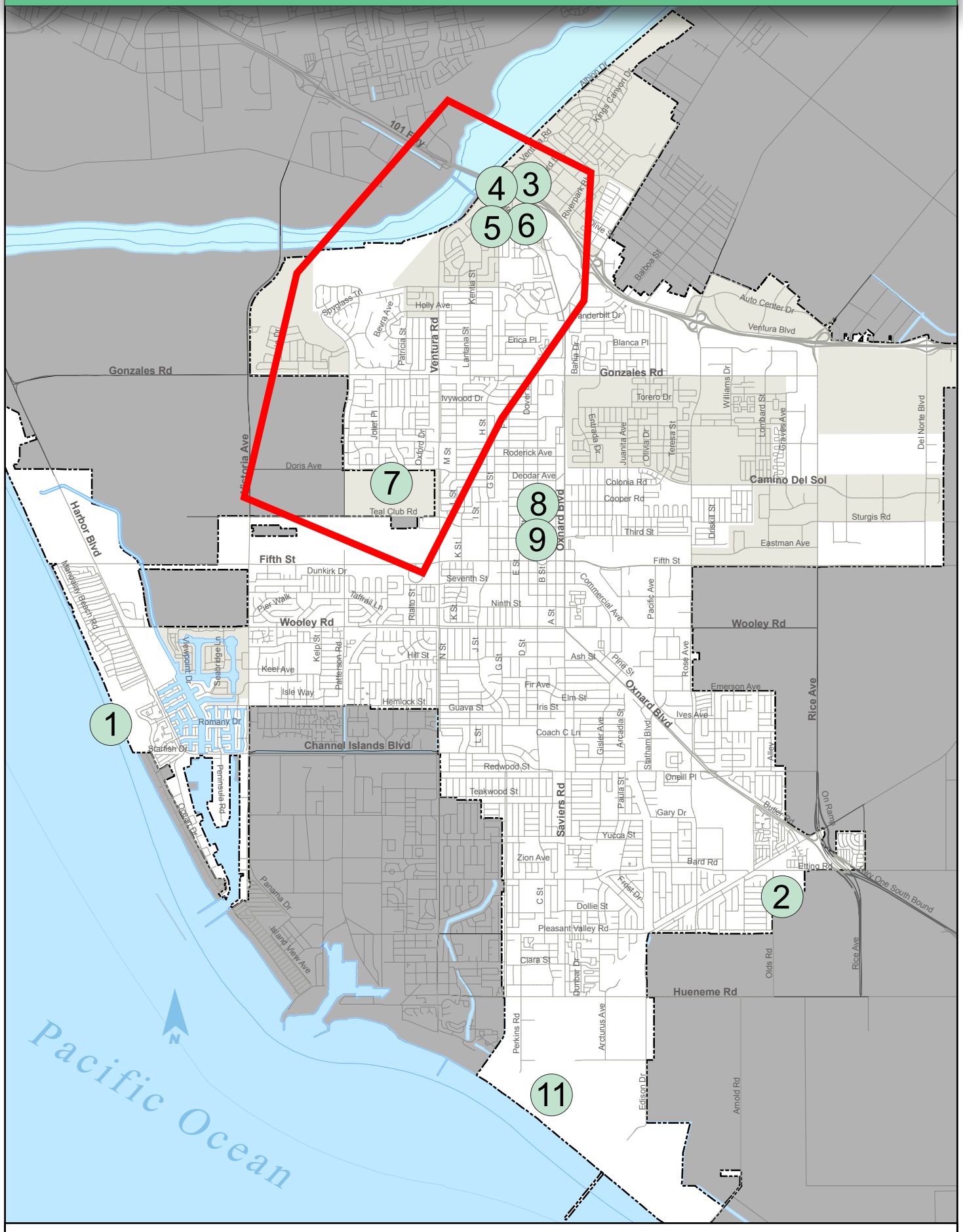
Industrial Zone Projects April 2018



Industrial Project List

ID	DEVELOPER	PROJECT	Location	STATUS	PZ Permit	PLNR	DESCRIPTION	SQF
1	WWL Vehicle Services America, Inc. Attn: Mike Wallace 5601 Edison Drive Oxnard, CA 93033 805.986.5714 mikewallace@2wglobal.com	Subaru vehicle processing facility	5601 Edison Drive, Oxnard CA	Proposed	17-500-18	JD	Proposed vehicle processing facility on a five acre site. Site has two buildings; project includes demolition of one structure and interior remodel of the other. No new structures are proposed.	217,800
2	Shahzain Husain Sapphire Engineering Company, Inc. 1843 Montgomery Rd Thousand Oaks, CA 91360 (805)426-9477 Shahzain@sapphireeci.com	J&A Pre-Cooling Warehouse Addition	1720 Mountain View Ave, Oxnard CA	Proposed	17-140-38	CV	Proposed one-story 4,314 square-foot warehouse addition and 400 square-foot detached accessory storage building.	4,714
3	Lee Dukehart, MWS Wire Industries 21200 Cedar Valley Dr Thousand Oaks, CA 91362 (818) 991-8553	MWS Wire Industries Industrial/Warehouse Building	3000 Camino Del Sol Oxnard CA	Proposed	17-200-05	PM	Two-story industrial/warehouse tilt-up building.	60,367
4	Ray L. Musser, Architect RM Architecture/Engineering 196 Camino Ruiz Camarillo, California 93012 rmarchitects7@msn.com Phone: (805) 987-5986	Dixieline Lumber and Home Centers	801 841 Albany Drive & 2325 Statham Boulevard	Approved	16-500-07 17-570-01	JM	Proposed outdoor lumber yard on vacant 4.68-acre site and occupy existing 38,880 square-foot portion of an existing 103,680 square-foot building to operate Dixieline lumber yard operations	38,800
5	Martin Teitelbaum 569 Constitution Ave, Suite H Camarillo, CA 93012 (805) 383-2221 martin@mtconstruct.com	Cabot Industrial	2011 2021 2031 Cabot Pl Oxnard CA	Under Construction	16-200-08	Staff	Proposed single-story 24,518 square-foot conrete tilt-up warehouse building with related interior improvements and exterior sitework.	24,518
6	Martin Teitelbaum 569 Constitution Ave, Suite H Camarillo, CA 93012 (805) 383-2221 martin@mtconstruct.com	Pacific Water Conditioning	2040 Eastman Ave Oxnard CA	Under Construction	14-200-08	Staff	A single-story warehouse building.	25,158
7	Michael Stroh, Architect (805) 259-5564	Gill's Onions Plant Expansion	1051 S Pacific Ave Oxnard CA	Under Construction	11-550-02	Staff	Construct 3 buildings; demolish 13,059 square feet; associated site improvements consisting of parking, stormwater and street improvements for existing food processing and manf. facility operating within a 13.72-acre site.	64,698
8	Aaron Walker Walker Architecture 1208 Lawrence Circle Simi Valley, CA 93065	St. Paul Baptist Church	1777 Statham Blvd Oxnard CA	Under Construction	11-140-48	JM	18,000 square-foot church with 788 seats.	18,000
9	Saint John the Baptist Coptic Church, Ramez Gerges (805) 722-5161	Saint John the Baptist Coptic Church	1200 Pacific Ave Oxnard CA	Under Construction	09-500-06	JM	A one-story church on a vacant 35,000 square-foot lot.	8,645
10	Pastor Gilbert Nery, Applicant (805) 824-2345	Victory Outreach Church	2311 Statham Blvd Oxnard CA	Plan Check	15-520-02 15-620-02 15-570-02	JM	Proposal to occupy and operate a church within an existing 36,480 square foot single story building.	36,480
11	Michael Chait, Applicant(818) 764-2067	Elevar Industrial	2801 Camino Del SolOxnard CA	Proposed	17-200-06	PM	Construction of a new 67,000 square-foot tilt up single story building	67,092

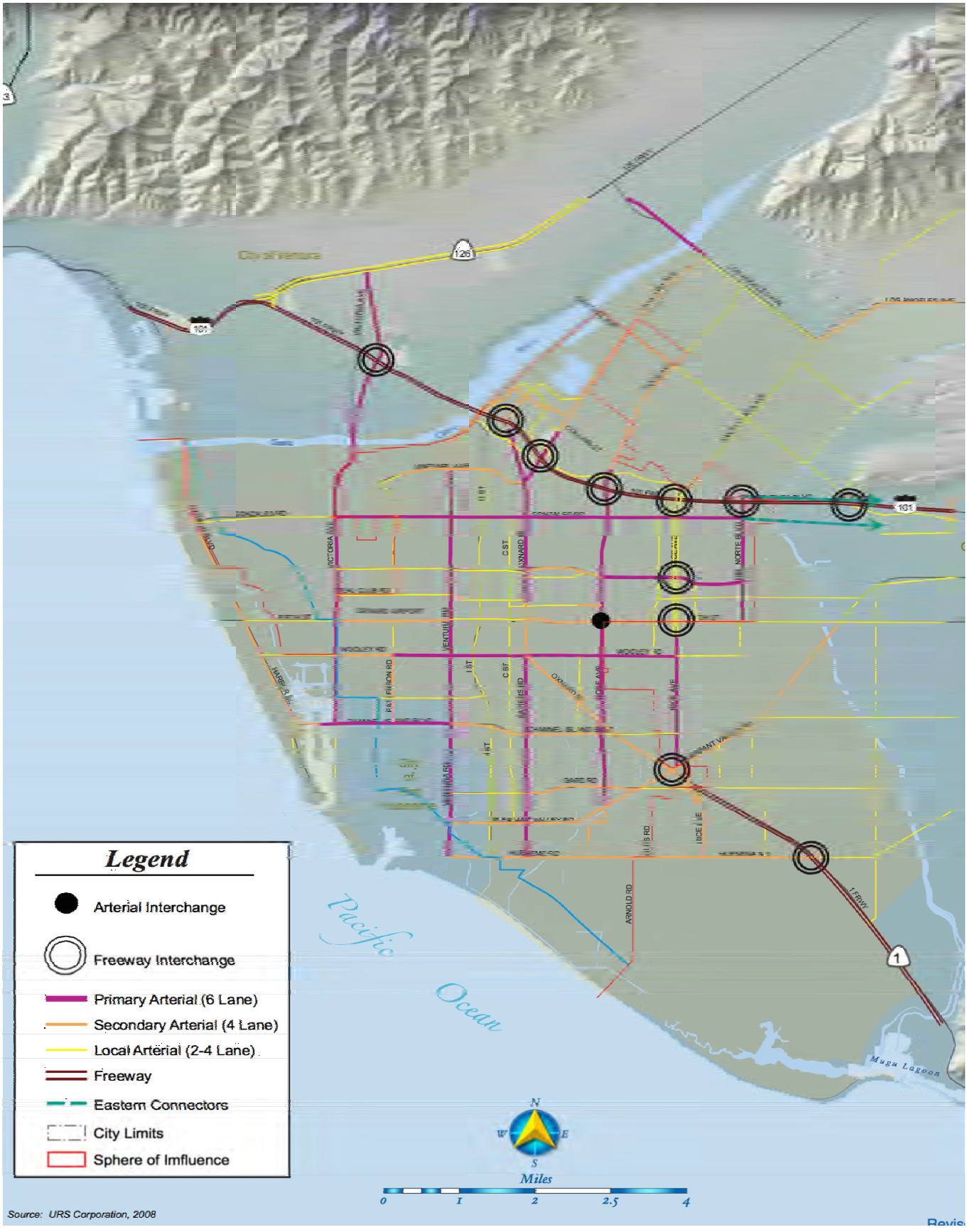
Community Plans April 2018



ID	DEVELOPER	PROJECT	LOCATION	STATUS	PZ Permit	PLNR	DESCRIPTION	Residential Untis	Commercial Area	Industrial Area	Affordable Housing	Live/Work
1	City of Oxnard Development Services Department 214 South C Street (805)-385-7858	Local Coastal Plan Update	Oxnard CA	Ongoing	15-410-01	IF	The City of Oxnard's Local Coastal Plan (LCP) Update project is a collaborative planning and outreach process that will revise the City's existing LCP to bring it into conformance with Coastal Commission policy directives and approaches to address climate change adaptation strategies, such as those for sea level rise. The City staff has begun putting together a draft of the LCP document. The update to the City's existing LCP is anticipated to be completed in Spring 2019. Additional information is available at the City's LCP update webpage: http://www.oxnardlcpupdate.com/	**-**	-	-	-	-
2	City of Oxnard Development Services Department 214 South C Street (805)-385-7858	Ocean View School Annexation	4600 Olds Rd, Oxnard CA	Preparing Anexation Application to be submitted to LAFCo	17-610-03	IF	A request to annex a parcel improved with the Ocean View Early Education School (preschool) owned and operated by the Ocean View School District (Ocean View) located at 4600 Olds Road into the City of Oxnard, Calleguas Municipal Water District and the Metropolitan Water District of Southern California.	**-**	-	-	-	-
3	Oakwood Communities Inc. 64 Maxwell Irvine, CA 92618 (949) 719 9040	Village Specific Plan Amendment	Wagon Wheel Rd Oxnard CA	Approved	15-630-02	KM	Specific plan amendment to create a transit center overlay for transit support uses on PA 19, 20, & 21.	**-**	-	-	-	-
4	Doug Brooks Oakwood Development Inc. 16331 Scientific Way, Ste 250 Irvine, CA 92618 (949) 719-9040	"The Village" Wagon Wheel Development Projects (PA 18 & 19) Wagon Wheel Rd Oxnard CA	Wagon Wheel Rd Oxnard CA	Plan Check	14-200-01	KM	219 market rate apartments (1, 2 & 3 bedrooms), recreation/meeting room, tot lot, and landscaped paseos and 16,303 square-feet of commercial.	**219**	0	0	0	0
5	Oakwood Communities, Inc. V.P of Construction 886 Wagon Wheel Rd. Oxnard, CA 93036 (805) 278-4999 off (619) 726-2819 cell	"The Village" Wagon Wheel Development Projects (PA5 & PA11) Southwest of the intersection of N Oxnard Blvd and the US-101 Freeway	Wagon Wheel Rd Oxnard CA	Proposed	16-200-01	KM	Proposed construction of 78 condominium dwelling units (52 3-bdrm., and 26 4-bdrm. units) in 26, four-story residential buildings on 4.34 acres within the Village Specific Plan area.	**78**	0	0	0	0
6	Oakwood Communities, Inc. V.P of Construction 886 Wagon Wheel Rd. Oxnard, CA 93036 (805) 278-4999 off (619) 726-2819 cell	"The Village" Wagon Wheel Development Project (PA 4)	Wagon Wheel Rd Oxnard CA	Proposed	16-200-02	KM	Proposed construction of 88 condominium dwelling units (57 2-bdrm., 29 3-bdrm., and 2 4-bdrm. units) in 6, three-story residential buildings on 4.03 acres within the Village Specific Plan area	**88**	0	0	0	0
7	Borchard Teal Club Ranch Dennis Hardgrave (805) 484-8993	Teal Club Specific Plan	NE Ventura Rd & Teal Club, Oxnard CA	Preparing Final EIR leading to initial Planning Commission review	11-600-01	JD	990 residential units of varying density, single-family, townhomes, condominium, and apartment units; 24 acres, community park; 8 acres public/semi public use; 4 acres of mixed use, retail, commercial; 10 acres of Business/Research Park. 60,000 s.f. mixed use and retail; 1 ac. fire station site.	**990**	60000	10 acres	31	24
8	City of Oxnard Planning Division (805)-385-7858	Downtown Design Guidelines and Land Use Policies	Downtown Oxnard Central Business District	Proposed	17-620-06 17-580-10 17-640-01	DS	Update the 2030 General Plan and Zoning Ordinance and preparation of Downtown Design Guidelines and Land Use Policies within the Centra Business District zone	**-**	-	-	-	-
9	City of Oxnard Planning Division (805)-385-7858	Downtown Parking Management Plan	Downtown Oxnard Central Business District	Proposed	17-580-11	DS	Update the Zoning Ordinance to modify off-street parking and loading requirements within the Central Business District and establish an in-lieu fee	**-**	-	-	-	-
10	City of Oxnard Development Services Department 214 South C Street (805)-385-7858	Industrail Code Update	Oxnard CA	Ongoing	**-**	IF	Update the industrial zone sections of the Zoning Ordinance to address current needs and relfect 2030 General Plan policies and directives.	**-**	-	-	-	-
11	City of Oxnard Development Services Department 214 South C Street (805)-385-7858	Ormond Beach Restoration and Access Plan (ORRAP)	Oxnard CA	Ongoing	**-**	IF	Partner with the Nature Conservancy and Coastal Conservancy to develop the Ormond Beach Wetlands Restoration Plan with a long-term vision to attract tourism and protect.	**-**	-	-	-	-

Appendix 4

City of Oxnard 2030 General Plan Circulation Diagram

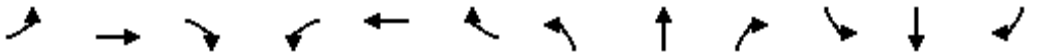


Stantec
111 East Victoria Street, Santa Barbara, CA 93101
Phone: (805) 963-9532 Fax: (805) 966-9801

EXHIBIT A
CITY OF OXNARD 2030 GENERAL PLAN
CIRCULATION DIAGRAM

Appendix 5
Intersection Level of Service Calculation Worksheets

Existing and Existing + Project AM and PM Peak Hour



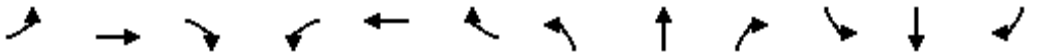
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	0	552	0	712	221	1060	0	0	2069	368
Future Volume (veh/h)	0	0	0	552	0	712	221	1060	0	0	2069	368
Initial Q (Qb), veh				0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)				1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach					No			No			No	
Adj Sat Flow, veh/h/ln				1870	1870	1870	1870	1870	0	0	1870	1870
Adj Flow Rate, veh/h				721	0	599	233	1116	0	0	2178	387
Peak Hour Factor				0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %				2	2	2	2	2	0	0	2	2
Cap, veh/h				1019	0	907	701	3305	0	0	2645	652
Arrive On Green				0.29	0.00	0.29	0.41	1.00	0.00	0.00	0.41	0.41
Sat Flow, veh/h				3563	0	3170	3456	5274	0	0	6696	1585
Grp Volume(v), veh/h				721	0	599	233	1116	0	0	2178	387
Grp Sat Flow(s),veh/h/ln				1781	0	1585	1728	1702	0	0	1609	1585
Q Serve(g_s), s				16.3	0.0	15.0	4.2	0.0	0.0	0.0	27.1	17.1
Cycle Q Clear(g_c), s				16.3	0.0	15.0	4.2	0.0	0.0	0.0	27.1	17.1
Prop In Lane				1.00		1.00	1.00		0.00	0.00		1.00
Lane Grp Cap(c), veh/h				1019	0	907	701	3305	0	0	2645	652
V/C Ratio(X)				0.71	0.00	0.66	0.33	0.34	0.00	0.00	0.82	0.59
Avail Cap(c_a), veh/h				1385	0	1233	701	3305	0	0	2645	652
HCM Platoon Ratio				1.00	1.00	1.00	2.00	2.00	1.00	1.00	1.00	1.00
Upstream Filter(I)				1.00	0.00	1.00	0.92	0.92	0.00	0.00	1.00	1.00
Uniform Delay (d), s/veh				28.8	0.0	28.3	22.6	0.0	0.0	0.0	23.6	20.6
Incr Delay (d2), s/veh				1.1	0.0	0.8	0.3	0.3	0.0	0.0	3.1	4.0
Initial Q Delay(d3),s/veh				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln				6.9	0.0	5.6	1.6	0.1	0.0	0.0	10.1	6.7
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh				29.8	0.0	29.1	22.8	0.3	0.0	0.0	26.6	24.6
LnGrp LOS				C	A	C	C	A	A	A	C	C
Approach Vol, veh/h					1320			1349			2565	
Approach Delay, s/veh					29.5			4.2			26.3	
Approach LOS					C			A			C	

Timer - Assigned Phs		2			5	6		8				
Phs Duration (G+Y+Rc), s		61.3			21.3	40.0		28.7				
Change Period (Y+Rc), s		4.0			4.0	4.0		4.0				
Max Green Setting (Gmax), s		48.0			8.0	36.0		34.0				
Max Q Clear Time (g_c+I1), s		2.0			6.2	29.1		18.3				
Green Ext Time (p_c), s		6.5			0.2	5.9		6.4				

Intersection Summary		
HCM 6th Ctrl Delay	21.4	
HCM 6th LOS	C	

Notes

User approved volume balancing among the lanes for turning movement.



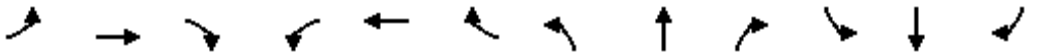
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	0	560	0	712	241	1085	0	0	2089	368
Future Volume (veh/h)	0	0	0	560	0	712	241	1085	0	0	2089	368
Initial Q (Qb), veh				0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)				1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach					No			No			No	
Adj Sat Flow, veh/h/ln				1870	1870	1870	1870	1870	0	0	1870	1870
Adj Flow Rate, veh/h				729	0	599	254	1142	0	0	2199	387
Peak Hour Factor				0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %				2	2	2	2	2	0	0	2	2
Cap, veh/h				1026	0	913	694	3294	0	0	2645	652
Arrive On Green				0.29	0.00	0.29	0.40	1.00	0.00	0.00	0.41	0.41
Sat Flow, veh/h				3563	0	3170	3456	5274	0	0	6696	1585
Grp Volume(v), veh/h				729	0	599	254	1142	0	0	2199	387
Grp Sat Flow(s),veh/h/ln				1781	0	1585	1728	1702	0	0	1609	1585
Q Serve(g_s), s				16.5	0.0	14.9	4.6	0.0	0.0	0.0	27.5	17.1
Cycle Q Clear(g_c), s				16.5	0.0	14.9	4.6	0.0	0.0	0.0	27.5	17.1
Prop In Lane				1.00		1.00	1.00		0.00	0.00		1.00
Lane Grp Cap(c), veh/h				1026	0	913	694	3294	0	0	2645	652
V/C Ratio(X)				0.71	0.00	0.66	0.37	0.35	0.00	0.00	0.83	0.59
Avail Cap(c_a), veh/h				1385	0	1233	694	3294	0	0	2645	652
HCM Platoon Ratio				1.00	1.00	1.00	2.00	2.00	1.00	1.00	1.00	1.00
Upstream Filter(I)				1.00	0.00	1.00	0.92	0.92	0.00	0.00	1.00	1.00
Uniform Delay (d), s/veh				28.7	0.0	28.1	22.9	0.0	0.0	0.0	23.7	20.6
Incr Delay (d2), s/veh				1.1	0.0	0.8	0.3	0.3	0.0	0.0	3.2	4.0
Initial Q Delay(d3),s/veh				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln				7.0	0.0	5.6	1.7	0.1	0.0	0.0	10.3	6.7
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh				29.8	0.0	28.9	23.2	0.3	0.0	0.0	26.9	24.6
LnGrp LOS				C	A	C	C	A	A	A	C	C
Approach Vol, veh/h					1328			1396			2586	
Approach Delay, s/veh					29.4			4.4			26.6	
Approach LOS					C			A			C	

Timer - Assigned Phs		2			5	6		8				
Phs Duration (G+Y+Rc), s		61.1			21.1	40.0		28.9				
Change Period (Y+Rc), s		4.0			4.0	4.0		4.0				
Max Green Setting (Gmax), s		48.0			8.0	36.0		34.0				
Max Q Clear Time (g_c+I1), s		2.0			6.6	29.5		18.5				
Green Ext Time (p_c), s		6.7			0.1	5.6		6.4				

Intersection Summary		
HCM 6th Ctrl Delay	21.5	
HCM 6th LOS	C	

Notes

User approved volume balancing among the lanes for turning movement.



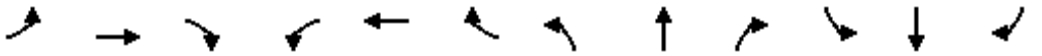
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	0	457	0	641	384	1334	0	0	1973	374
Future Volume (veh/h)	0	0	0	457	0	641	384	1334	0	0	1973	374
Initial Q (Qb), veh				0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)				1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach					No			No			No	
Adj Sat Flow, veh/h/ln				1870	1870	1870	1870	1870	0	0	1870	1870
Adj Flow Rate, veh/h				607	0	540	404	1404	0	0	2077	394
Peak Hour Factor				0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %				2	2	2	2	2	0	0	2	2
Cap, veh/h				871	0	775	883	3517	0	0	2574	634
Arrive On Green				0.24	0.00	0.24	0.51	1.00	0.00	0.00	0.40	0.40
Sat Flow, veh/h				3563	0	3170	3456	5274	0	0	6696	1585
Grp Volume(v), veh/h				607	0	540	404	1404	0	0	2077	394
Grp Sat Flow(s),veh/h/ln				1781	0	1585	1728	1702	0	0	1609	1585
Q Serve(g_s), s				14.0	0.0	14.0	6.7	0.0	0.0	0.0	25.7	17.9
Cycle Q Clear(g_c), s				14.0	0.0	14.0	6.7	0.0	0.0	0.0	25.7	17.9
Prop In Lane				1.00		1.00	1.00		0.00	0.00		1.00
Lane Grp Cap(c), veh/h				871	0	775	883	3517	0	0	2574	634
V/C Ratio(X)				0.70	0.00	0.70	0.46	0.40	0.00	0.00	0.81	0.62
Avail Cap(c_a), veh/h				1188	0	1057	883	3517	0	0	2574	634
HCM Platoon Ratio				1.00	1.00	1.00	2.00	2.00	1.00	1.00	1.00	1.00
Upstream Filter(I)				1.00	0.00	1.00	0.92	0.92	0.00	0.00	1.00	1.00
Uniform Delay (d), s/veh				31.0	0.0	31.0	18.0	0.0	0.0	0.0	23.9	21.6
Incr Delay (d2), s/veh				1.1	0.0	1.2	0.3	0.3	0.0	0.0	2.8	4.5
Initial Q Delay(d3),s/veh				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln				6.0	0.0	5.3	2.3	0.1	0.0	0.0	9.6	7.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh				32.1	0.0	32.2	18.4	0.3	0.0	0.0	26.8	26.1
LnGrp LOS				C	A	C	B	A	A	A	C	C
Approach Vol, veh/h					1147			1808			2471	
Approach Delay, s/veh					32.1			4.3			26.7	
Approach LOS					C			A			C	

Timer - Assigned Phs		2			5	6		8				
Phs Duration (G+Y+Rc), s		65.0			26.0	39.0		25.0				
Change Period (Y+Rc), s		4.0			4.0	4.0		4.0				
Max Green Setting (Gmax), s		53.0			14.0	35.0		29.0				
Max Q Clear Time (g_c+I1), s		2.0			8.7	27.7		16.0				
Green Ext Time (p_c), s		9.2			0.9	6.0		5.0				

Intersection Summary												
HCM 6th Ctrl Delay			20.4									
HCM 6th LOS			C									

Notes

User approved volume balancing among the lanes for turning movement.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	0	468	0	641	403	1358	0	0	1999	374
Future Volume (veh/h)	0	0	0	468	0	641	403	1358	0	0	1999	374
Initial Q (Qb), veh				0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)				1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach					No			No			No	
Adj Sat Flow, veh/h/ln				1870	1870	1870	1870	1870	0	0	1870	1870
Adj Flow Rate, veh/h				619	0	540	424	1429	0	0	2104	394
Peak Hour Factor				0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %				2	2	2	2	2	0	0	2	2
Cap, veh/h				882	0	785	872	3502	0	0	2574	634
Arrive On Green				0.25	0.00	0.25	0.50	1.00	0.00	0.00	0.40	0.40
Sat Flow, veh/h				3563	0	3170	3456	5274	0	0	6696	1585
Grp Volume(v), veh/h				619	0	540	424	1429	0	0	2104	394
Grp Sat Flow(s),veh/h/ln				1781	0	1585	1728	1702	0	0	1609	1585
Q Serve(g_s), s				14.2	0.0	13.9	7.2	0.0	0.0	0.0	26.2	17.9
Cycle Q Clear(g_c), s				14.2	0.0	13.9	7.2	0.0	0.0	0.0	26.2	17.9
Prop In Lane				1.00		1.00	1.00		0.00	0.00		1.00
Lane Grp Cap(c), veh/h				882	0	785	872	3502	0	0	2574	634
V/C Ratio(X)				0.70	0.00	0.69	0.49	0.41	0.00	0.00	0.82	0.62
Avail Cap(c_a), veh/h				1188	0	1057	872	3502	0	0	2574	634
HCM Platoon Ratio				1.00	1.00	1.00	2.00	2.00	1.00	1.00	1.00	1.00
Upstream Filter(I)				1.00	0.00	1.00	0.92	0.92	0.00	0.00	1.00	1.00
Uniform Delay (d), s/veh				30.8	0.0	30.7	18.5	0.0	0.0	0.0	24.1	21.6
Incr Delay (d2), s/veh				1.2	0.0	1.2	0.4	0.3	0.0	0.0	3.0	4.5
Initial Q Delay(d3),s/veh				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln				6.1	0.0	5.3	2.4	0.1	0.0	0.0	9.8	7.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh				32.0	0.0	31.9	18.8	0.3	0.0	0.0	27.1	26.1
LnGrp LOS				C	A	C	B	A	A	A	C	C
Approach Vol, veh/h					1159			1853			2498	
Approach Delay, s/veh					32.0			4.6			26.9	
Approach LOS					C			A			C	

Timer - Assigned Phs		2			5	6		8				
Phs Duration (G+Y+Rc), s		64.7			25.7	39.0		25.3				
Change Period (Y+Rc), s		4.0			4.0	4.0		4.0				
Max Green Setting (Gmax), s		53.0			14.0	35.0		29.0				
Max Q Clear Time (g_c+I1), s		2.0			9.2	28.2		16.2				
Green Ext Time (p_c), s		9.4			0.9	5.7		5.0				

Intersection Summary												
HCM 6th Ctrl Delay			20.5									
HCM 6th LOS			C									

Notes

User approved volume balancing among the lanes for turning movement.

INTERSECTION CAPACITY UTILIZATION

INTERSECTION NUMBER: 2
NORTH/SOUTH STREET: Victoria St
EAST/WEST STREET: Valentine Rd (split phased)
SCENARIO: Existing Conditions
TIME PERIOD: AM Peak Hour
COUNT DATE: 05/2018
WORK ORDER #: 2064169300

VOLUMES	Northbound			Southbound			Eastbound			Westbound		
	L	T	R	L	T	R	L	T	R	L	T	R
AM Peak	168	1034	11	37	989	1561	262	23	222	21	5	26
Project Trips	10	45	0	0	28	0	0	0	8	0	0	0
GEOMETRY	LL	TT TR		L	TT	RR	LL	LT	R		LT	R

	Level of Service Calculations					
Move-	**Lanes**		**Volume**		**V/C Ratio**	
ment	Lane	Capacity	Existing	Project	Existing	Ex+Project
NBL	2.0	3,200	168	178	0.05 *	0.06 *
NBT	3.0	4,800	1,034	1,079	0.22	0.23
NBR	0.0	0	11	11	0.00	0.00
SBL	1.0	1,600	37	37	0.05	0.05
SBT	2.0	3,200	989	1,017	0.31 *	0.32 *
SBR (a)	2.0	3,200	1,561	1,561	0.00	0.00
EBL	0.0	0	262	262	0.00	0.00
EBT	3.0	4,800	23	23	0.06	0.06
EBR (b)	1.0	1,600	185	193	0.12 *	0.12 *
WBL	0.0	0	21	21	0.00	0.00
WBT	1.0	1,600	5	5	0.07 *	0.07 *
WBR (b)	1.0	1,600	26	26	0.00	0.00
N/S Critical Movements					0.36	0.38
E/W Critical Movements					0.19	0.19
Clearance Interval					0.00	0.00
ICU					0.55	0.57
Level of Service (LOS)					A	A

Notes: V/C - Volume to Capacity Ratio
(a) Free right-turn
(b) RT overlap arrow

INTERSECTION CAPACITY UTILIZATION

INTERSECTION NUMBER: 2
NORTH/SOUTH STREET: Victoria St
EAST/WEST STREET: Valentine Rd (split phased)
SCENARIO: Existing Conditions
TIME PERIOD: PM ~~AM~~ Peak Hour
COUNT DATE: 05/2018
WORK ORDER #: 2064169300

VOLUMES	Northbound			Southbound			Eastbound			Westbound		
	L	T	R	L	T	R	L	T	R	L	T	R
PM Peak	88	1070	15	64	1186	1364	615	44	366	26	12	63
Project Trips	10	43	0	0	37	0	0	0	11	0	0	0
GEOMETRY	LL	TT	TR	L	TT	RR	LL	LT	R		LT	R

	Level of Service Calculations					
Move-	**Lanes**		**Volume**		**V/C Ratio**	
ment	Lane	Capacity	Existing	Project	Existing	Ex+Project
NBL	2.0	3,200	88	98	0.05 *	0.05 *
NBT	3.0	4,800	1,070	1,113	0.23	0.24
NBR	0.0	0	15	15	0.00	0.00
SBL	1.0	1,600	64	64	0.05	0.05
SBT	2.0	3,200	1,186	1,223	0.37 *	0.38 *
SBR (a)	2.0	3,200	1,364	1,364	0.00	0.00
EBL	0.0	0	615	615	0.00	0.00
EBT	3.0	4,800	44	44	0.14	0.14
EBR (b)	1.0	1,600	302	313	0.19 *	0.20 *
WBL	0.0	0	26	26	0.00	0.00
WBT	1.0	1,600	12	12	0.07 *	0.07 *
WBR (b)	1.0	1,600	63	63	0.00	0.00
N/S Critical Movements					0.42	0.43
E/W Critical Movements					0.26	0.26
Clearance Interval					0.00	0.00
ICU					0.68	0.69
Level of Service (LOS)					B	B

Notes: V/C - Volume to Capacity Ratio
(a) Free right-turn
(b) RT overlap arrow

INTERSECTION CAPACITY UTILIZATION

INTERSECTION NUMBER: 3
NORTH/SOUTH STREET: Victoria Ave
EAST/WEST STREET: Olivas Park Rd
SCENARIO: Existing Conditions
TIME PERIOD: AM Peak Hour
COUNT DATE: 05/2018
WORK ORDER #: 2064169300

VOLUMES	Northbound			Southbound			Eastbound			Westbound		
	L	T	R	L	T	R	L	T	R	L	T	R
AM Peak	419	1482	225	193	908	117	71	65	107	84	81	63
Project Trips	10	57	5	0	36	0	0	0	8	0	0	0
GEOMETRY	LL	TT	R	L	TT	R	L	TT	R	L	TT	R

	Level of Service Calculations						
Move-	**Lanes**			**Volume**		**V/C Ratio**	
ment	Lane		Capacity	Existing	Project	Existing	Ex+Project
NBL	2.0		3,200	419	429	0.13	0.13
NBT	2.0		3,200	1,482	1,539	0.46 *	0.48 *
NBR	1.0		1,600	225	230	0.14	0.14
SBL	1.0		1,600	193	193	0.12 *	0.12 *
SBT	2.0		3,200	908	944	0.28	0.29
SBR	1.0	(a)	1,600	117	117	0.07	0.07
EBL	1.0		1,600	71	71	0.05 *	0.05 *
EBT	2.0		3,200	65	65	0.07	0.07
EBR	1.0	(b)	1,600	107	115	0.00	0.00
WBL	1.0		1,600	84	84	0.05	0.05
WBT	2.0		3,200	81	81	0.07 *	0.07 *
WBR	1.0	(a)	1,600	63	63	0.00	0.00
N/S Critical Movements						0.58	0.60
E/W Critical Movements						0.12	0.12
Clearance Interval						0.00	0.00
ICU						0.70	0.72
Level of Service (LOS)						B	C

Notes: V/C - Volume to Capacity Ratio
(a) Yield control
(b) Free RT

INTERSECTION CAPACITY UTILIZATION

INTERSECTION NUMBER: 3
NORTH/SOUTH STREET: Victoria Ave
EAST/WEST STREET: Olivas Park Rd
SCENARIO: Existing Conditions
TIME PERIOD: PM Peak Hour
COUNT DATE: 05/2018
WORK ORDER #: 2064169300

VOLUMES	Northbound			Southbound			Eastbound			Westbound		
	L	T	R	L	T	R	L	T	R	L	T	R
PM Peak	224	1190	148	109	1393	94	125	93	521	227	101	179
Project Trips	10	54	5	0	48	0	0	0	12	5	0	0
GEOMETRY	LL	TT	R	L	TT	R	L	TT	R	L	TT	R

	Level of Service Calculations						
Move-	**Lanes**			**Volume**		**V/C Ratio**	
ment	Lane		Capacity	Existing	Project	Existing	Ex+Project
NBL	2.0		3,200	224	234	0.07 *	0.07 *
NBT	2.0		3,200	1,190	1,244	0.37	0.39
NBR	1.0		1,600	148	153	0.09	0.10
SBL	1.0		1,600	109	109	0.07	0.07
SBT	2.0		3,200	1,393	1,441	0.44 *	0.45 *
SBR	1.0	(a)	1,600	94	94	0.06	0.06
EBL	1.0		1,600	125	125	0.08	0.08
EBT	2.0		3,200	93	93	0.07 *	0.07 *
EBR	1.0	(b)	1,600	521	533	0.00	0.00
WBL	1.0		1,600	227	232	0.14 *	0.15 *
WBT	2.0		3,200	101	101	0.07	0.07
WBR	1.0	(a)	1,600	179	179	0.00	0.00
N/S Critical Movements						0.51	0.52
E/W Critical Movements						0.21	0.22
Clearance Interval						0.00	0.00
ICU						0.72	0.74
Level of Service (LOS)						C	C

Notes: V/C - Volume to Capacity Ratio
(a) Yield control
(b) Free RT

INTERSECTION CAPACITY UTILIZATION

INTERSECTION NUMBER: 4
NORTH/SOUTH STREET: Victoria Ave
EAST/WEST STREET: Gonzales Rd
SCENARIO: Existing Conditions
TIME PERIOD: AM Peak Hour
COUNT DATE: 05/2018
WORK ORDER #: 2064169300

VOLUMES	Northbound			Southbound			Eastbound			Westbound		
	L	T	R	L	T	R	L	T	R	L	T	R
AM Peak	40	1554	492	172	917	24	31	70	10	337	249	610
Project Trips	5	58	0	5	46	0	0	4	4	0	5	7
GEOMETRY	L	TTT	R	LL	TT	R	L	T TR		LL	TT	R

	Level of Service Calculations						
Move-	**Lanes**			**Volume**		**V/C Ratio**	
ment	Lane		Capacity	Existing	Project	Existing	Ex+Project
NBL	1.0		1,600	40	45	0.05	0.05
NBT	3.0		4,800	1,554	1,612	0.32 *	0.34 *
NBR	1.0	(a)	1,600	324	324	0.20	0.20
SBL	2.0		3,200	172	177	0.05 *	0.06 *
SBT	2.0		3,200	917	963	0.29	0.30
SBR	1.0		1,600	24	24	0.01	0.01
EBL	1.0		1,600	31	31	0.05 *	0.05 *
EBT	2.0		3,200	70	74	0.07	0.07
EBR	0.0		0	10	14	0.00	0.00
WBL	2.0		3,200	337	337	0.11	0.11
WBT	2.0		3,200	249	254	0.08	0.08
WBR	1.0	(b)	1,600	524	529	0.33 *	0.33 *
N/S Critical Movements						0.37	0.40
E/W Critical Movements						0.37	0.37
Clearance Interval						0.00	0.00
ICU						0.74	0.77
Level of Service (LOS)						C	C

Notes: V/C - Volume to Capacity Ratio
(a) RTOR overlap w/WBL
(b) RTOR overlap w/SBL

INTERSECTION CAPACITY UTILIZATION

INTERSECTION NUMBER: 4
NORTH/SOUTH STREET: Victoria Ave
EAST/WEST STREET: Gonzales Rd
SCENARIO: Existing Conditions
TIME PERIOD: PM Peak Hour
COUNT DATE: 04/21/2016
WORK ORDER #: 2064169300

VOLUMES	Northbound			Southbound			Eastbound			Westbound		
	L	T	R	L	T	R	L	T	R	L	T	R
PM Peak	25	1301	320	267	1638	35	39	248	111	253	111	317
Project Trips	5	55	0	7	61	0	0	5	5	0	5	7
GEOMETRY	L	TTT	R	LL	TT	R	L	T TR		LL	TT	R

	Level of Service Calculations					
Move-	**Lanes**		**Volume**		**V/C Ratio**	
ment	Lane	Capacity	Existing	Project	Existing	Ex+Project
NBL	1.0	1,600	25	30	0.05 *	0.05 *
NBT	3.0	4,800	1,301	1,356	0.27	0.28
NBR	1.0	1,600	193	193	0.12	0.12
SBL	2.0	3,200	267	274	0.08	0.09
SBT	2.0	3,200	1,638	1,699	0.51 *	0.53 *
SBR	1.0	1,600	35	35	0.02	0.02
EBL	1.0	1,600	39	39	0.05	0.05
EBT	2.0	3,200	248	253	0.11 *	0.12 *
EBR	0.0	0	111	116	0.00	0.00
WBL	2.0	3,200	253	253	0.08 *	0.08 *
WBT	2.0	3,200	111	116	0.03	0.04
WBR	1.0 (a)	1,600	183	187	0.11	0.12
N/S Critical Movements					0.56	0.58
E/W Critical Movements					0.19	0.20
Clearance Interval					0.00	0.00
ICU					0.75	0.78
Level of Service (LOS)					C	C

Notes: V/C - Volume to Capacity Ratio
(a) RTOR overlap w/WBL
(b) RTOR overlap w/SBL

INTERSECTION CAPACITY UTILIZATION

INTERSECTION NUMBER: 5
NORTH/SOUTH STREET: Victoria Ave
EAST/WEST STREET: Doris Ave
SCENARIO: Existing Conditions
TIME PERIOD: AM Peak Hour
COUNT DATE: 05/2018
WORK ORDER #: 2064169300

VOLUMES	Northbound			Southbound			Eastbound			Westbound		
	L	T	R	L	T	R	L	T	R	L	T	R
AM Peak	3	1986	93	42	1161	7	4	2	0	113	0	162
Project Trips	0	8	6	44	7	0	0	0	0	9	0	56
GEOMETRY	L	T TR		L	T TR			LTR		L	TR	

	Level of Service Calculations					
Move-	**Lanes**		**Volume**		**V/C Ratio**	
ment	Lane	Capacity	Existing	Project	Existing	Ex+Project
NBL	1.0	1,600	3	3	0.05	0.05
NBT	2.0	3,200	1,986	1,994	0.65 *	0.65 *
NBR	0.0	0	93	99	0.00	0.00
SBL	1.0	1,600	42	86	0.05 *	0.05 *
SBT	2.0	3,200	1,161	1,168	0.36	0.37
SBR	0.0	0	7	7	0.00	0.00
EBL	0.0	0	4	4	0.00	0.00
EBT	1.0	1,600	2	2	0.05 *	0.05 *
EBR	0.0	0	0	0	0.00	0.00
WBL	1.0	1,600	113	122	0.07 *	0.08 *
WBT	1.0 (a)	1,600	0	0	0.10	0.14
WBR	0.0	0	162	218	0.00	0.00
N/S Critical Movements					0.70	0.70
E/W Critical Movements					0.12	0.13
Clearance Interval					0.00	0.00
ICU					0.82	0.83
Level of Service (LOS)					D	D

Notes: V/C - Volume to Capacity Ratio
(a) not critical due to RTOR

INTERSECTION CAPACITY UTILIZATION

INTERSECTION NUMBER: 5 **MITIGATED**
NORTH/SOUTH STREET: Victoria Ave
EAST/WEST STREET: Doris Ave
SCENARIO: Existing Conditions
TIME PERIOD: AM Peak Hour
COUNT DATE: 05/2018
WORK ORDER #: 2064169300

VOLUMES	Northbound			Southbound			Eastbound			Westbound		
	L	T	R	L	T	R	L	T	R	L	T	R
AM Peak	3	1986	93	42	1161	7	4	2	0	113	0	162
Project Trips	0	8	6	44	7	0	0	0	0	9	0	56
GEOMETRY	L	**TT**	**TR**	L	**TT**	**TR**	LTR			L	TR	

	Level of Service Calculations					
Move-	**Lanes**		**Volume**		**V/C Ratio**	
ment	Lane	Capacity	Existing	Project	Existing	Ex+Project
NBL	1.0	1,600	3	3	0.05	0.05
NBT	3.0	4,800	1,986	1,994	0.43 *	0.44 *
NBR	0.0	0	93	99	0.00	0.00
SBL	1.0	1,600	42	86	0.05 *	0.05 *
SBT	3.0	4,800	1,161	1,168	0.24	0.24
SBR	0.0	0	7	7	0.00	0.00
EBL	0.0	0	4	4	0.00	0.00
EBT	1.0	1,600	2	2	0.05 *	0.05 *
EBR	0.0	0	0	0	0.00	0.00
WBL	1.0	1,600	113	122	0.07 *	0.08 *
WBT	1.0 (a)	1,600	0	0	0.10	0.14
WBR	0.0	0	162	218	0.00	0.00
N/S Critical Movements					0.48	0.49
E/W Critical Movements					0.12	0.13
Clearance Interval					0.00	0.00
ICU					0.60	0.62
Level of Service (LOS)					A	B

Notes: V/C - Volume to Capacity Ratio
(a) not critical due to RTOR

INTERSECTION CAPACITY UTILIZATION

INTERSECTION NUMBER: 5
NORTH/SOUTH STREET: Victoria Ave
EAST/WEST STREET: Doris Ave
SCENARIO: Existing Conditions
TIME PERIOD: PM Peak Hour
COUNT DATE: 04/21/2016
WORK ORDER #: 2064169300

VOLUMES	Northbound			Southbound			Eastbound			Westbound		
	L	T	R	L	T	R	L	T	R	L	T	R
PM Peak	3	1480	108	115	1992	2	10	20	12	92	2	92
Project Trips	0	8	8	59	9	0	0	0	0	9	0	53
GEOMETRY	L	T TR		L	T TR			LTR		L	TR	

	Level of Service Calculations					
Move-	**Lanes**		**Volume**		**V/C Ratio**	
ment	Lane	Capacity	Existing	Project	Existing	Ex+Project
NBL	1.0	1,600	3	3	0.05 *	0.05 *
NBT	2.0	3,200	1,480	1,488	0.50	0.50
NBR	0.0	0	108	116	0.00	0.00
SBL	1.0	1,600	115	174	0.07	0.11
SBT	2.0	3,200	1,992	2,001	0.62 *	0.63 *
SBR	0.0	0	2	2	0.00	0.00
EBL	0.0	0	10	10	0.00	0.00
EBT	1.0	1,600	20	20	0.05 *	0.05 *
EBR	0.0	0	12	12	0.00	0.00
WBL	1.0	1,600	92	101	0.06 *	0.06 *
WBT	1.0	1,600	2	2	0.06	0.09
WBR	0.0	0	92	145	0.00	0.00
N/S Critical Movements					0.67	0.68
E/W Critical Movements					0.11	0.11
Clearance Interval					0.00	0.00
ICU					0.78	0.79
Level of Service (LOS)					C	C

Notes: V/C - Volume to Capacity Ratio

INTERSECTION CAPACITY UTILIZATION

INTERSECTION NUMBER: 5 **MITIGATED**
NORTH/SOUTH STREET: Victoria Ave
EAST/WEST STREET: Doris Ave
SCENARIO: Existing Conditions
TIME PERIOD: PM Peak Hour
COUNT DATE: 04/21/2016
WORK ORDER #: 2064169300

VOLUMES	Northbound			Southbound			Eastbound			Westbound		
	L	T	R	L	T	R	L	T	R	L	T	R
PM Peak	3	1480	108	115	1992	2	10	20	12	92	2	92
Project Trips	0	8	8	59	9	0	0	0	0	9	0	53
GEOMETRY	L	**TT**	**TR**	L	**TT**	**TR**	LTR			L	TR	

	Level of Service Calculations					
Move-	**Lanes**		**Volume**		**V/C Ratio**	
ment	Lane	Capacity	Existing	Project	Existing	Ex+Project
NBL	1.0	1,600	3	3	0.05 *	0.05 *
NBT	3.0	4,800	1,480	1,488	0.33	0.33
NBR	0.0	0	108	116	0.00	0.00
SBL	1.0	1,600	115	174	0.07	0.11
SBT	3.0	4,800	1,992	2,001	0.42 *	0.42 *
SBR	0.0	0	2	2	0.00	0.00
EBL	0.0	0	10	10	0.00	0.00
EBT	1.0	1,600	20	20	0.05 *	0.05 *
EBR	0.0	0	12	12	0.00	0.00
WBL	1.0	1,600	92	101	0.06 *	0.06 *
WBT	1.0	1,600	2	2	0.06	0.09
WBR	0.0	0	92	145	0.00	0.00
N/S Critical Movements					0.47	0.47
E/W Critical Movements					0.11	0.11
Clearance Interval					0.00	0.00
ICU					0.58	0.58
Level of Service (LOS)					A	A

Notes: V/C - Volume to Capacity Ratio

HCS7 Two-Way Stop-Control Report

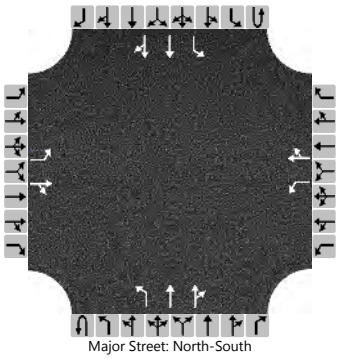
General Information

Analyst	06. DJL
Agency/Co.	STANTEC
Date Performed	7/3/2018
Analysis Year	2018
Time Analyzed	AM PEAK HOUR
Intersection Orientation	North-South
Project Description	TEAL CLUB SP

Site Information

Intersection	VICTORIA AVE/TEAL CLUB RD
Jurisdiction	OXNARD
East/West Street	TEAL CLUB RD
North/South Street	VICTORIA AVE
Peak Hour Factor	1.00
Analysis Time Period (hrs)	1.00

Lanes



Major Street: North-South

Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority		10	11	12		7	8	9	1U	1	2	3	4U	4	5	6
Number of Lanes		1	1	0		1	1	0	0	1	2	0	0	1	2	0
Configuration		L		TR		L		TR		L	T	TR		L	T	TR
Volume (veh/h)		0	0	3		7	1	55	0	4	2104	47	0	31	1218	1
Percent Heavy Vehicles (%)		3	3	3		3	3	3	3	3			3	3		
Proportion Time Blocked																
Percent Grade (%)	0				0											
Right Turn Channelized																
Median Type | Storage	Undivided															

Critical and Follow-up Headways

Base Critical Headway (sec)		7.5	6.5	6.9		7.5	6.5	6.9		4.1				4.1		
Critical Headway (sec)		7.56	6.56	6.96		7.56	6.56	6.96		4.16				4.16		
Base Follow-Up Headway (sec)		3.5	4.0	3.3		3.5	4.0	3.3		2.2				2.2		
Follow-Up Headway (sec)		3.53	4.03	3.33		3.53	4.03	3.33		2.23				2.23		

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)		0		3		7		56		4				31		
Capacity, c (veh/h)		11		435		7		132		562				243		
v/c Ratio		0.00		0.01		0.95		0.42		0.01				0.13		
95% Queue Length, Q_{95} (veh)		0.0		0.0		3.1		2.1		0.0				0.4		
Control Delay (s/veh)		329.0		13.3		1364.2		52.1		11.4				22.0		
Level of Service (LOS)		F		B		F		F		B				C		
Approach Delay (s/veh)	13.3				197.9				0.0				0.5			
Approach LOS	B				F											

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HCS7 Two-Way Stop-Control Report

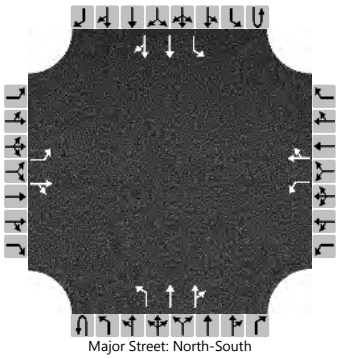
General Information

Analyst	06. DJL
Agency/Co.	STANTEC
Date Performed	7/3/2018
Analysis Year	EXPR
Time Analyzed	AM PEAK HOUR
Intersection Orientation	North-South
Project Description	TEAL CLUB SP

Site Information

Intersection	VICTORIA AVE/TEAL CLUB RD
Jurisdiction	OXNARD
East/West Street	TEAL CLUB RD
North/South Street	VICTORIA AVE
Peak Hour Factor	1.00
Analysis Time Period (hrs)	1.00

Lanes


Major Street: North-South

Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority		10	11	12		7	8	9	1U	1	2	3	4U	4	5	6
Number of Lanes		1	1	0		1	1	0	0	1	2	0	0	1	2	0
Configuration		L		TR		L		TR		L	T	TR		L	T	TR
Volume (veh/h)		0	0	3		43	1	63	0	4	2110	76	0	38	1227	1
Percent Heavy Vehicles (%)		3	3	3		3	3	3	3	3			3	3		
Proportion Time Blocked																
Percent Grade (%)	0				0											
Right Turn Channelized																
Median Type | Storage	Undivided															

Critical and Follow-up Headways

Base Critical Headway (sec)		7.5	6.5	6.9		7.5	6.5	6.9		4.1				4.1		
Critical Headway (sec)		7.56	6.56	6.96		7.56	6.56	6.96		4.16				4.16		
Base Follow-Up Headway (sec)		3.5	4.0	3.3		3.5	4.0	3.3		2.2				2.2		
Follow-Up Headway (sec)		3.53	4.03	3.33		3.53	4.03	3.33		2.23				2.23		

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)		0		3		43		64		4				38		
Capacity, c (veh/h)		10		432		7		131		558				236		
v/c Ratio		0.00		0.01		6.45		0.49		0.01				0.16		
95% Queue Length, Q_{95} (veh)		0.0		0.0		21.2		2.7		0.0				0.6		
Control Delay (s/veh)		383.2		13.4		10960.3		58.2		11.5				23.2		
Level of Service (LOS)		F		B		F		F		B				C		
Approach Delay (s/veh)	13.4				4439.4				0.0				0.7			
Approach LOS	B				F											

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INTERSECTION CAPACITY UTILIZATION

INTERSECTION NUMBER: 6 **Mitigated**
NORTH/SOUTH STREET: Victoria Ave
EAST/WEST STREET: Teal Club Rd
SCENARIO: Existing Conditions
TIME PERIOD: AM Peak Hour
COUNT DATE: 05/2018
WORK ORDER #: 2064169300

VOLUMES	Northbound			Southbound			Eastbound			Westbound		
	L	T	R	L	T	R	L	T	R	L	T	R
AM Peak	4	2104	47	31	1218	1	0	0	3	7	1	55
Project Trips	0	6	29	7	9	0	0	0	0	36	0	8
GEOMETRY	L	T TR		L	T TR		L	TR		L	TR	

	Level of Service Calculations					
Move-	**Lanes**		**Volume**		**V/C Ratio**	
ment	Lane	Capacity	Existing	Project	Existing	Ex+Project
NBL	1.0	1,600	4	4	0.05	0.05
NBT	2.0	3,200	2,104	2,110	0.67 *	0.68 *
NBR	0.0	0	47	76	0.00	0.00
SBL	1.0	1,600	31	38	0.05 *	0.05 *
SBT	2.0	3,200	1,218	1,227	0.38	0.38
SBR	0.0	0	1	1	0.00	0.00
EBL	1.0	1,600	0	0	0.00	0.00
EBT	1.0	1,600	0	0	0.00	0.00 *
EBR	0.0	0	3	3	0.00	0.00
WBL	1.0	1,600	7	43	0.00	0.05
WBT	1.0	1,600	1	1	0.07 *	0.07 *
WBR	0.0	0	55	63	0.00	0.00
N/S Critical Movements					0.72	0.73
E/W Critical Movements					0.07	0.07
Clearance Interval					0.00	0.00
ICU					0.79	0.80
Level of Service (LOS)					C	C

Notes: V/C - Volume to Capacity Ratio

HCS7 Two-Way Stop-Control Report

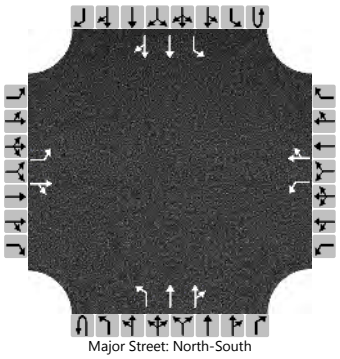
General Information

Analyst	06. DJL
Agency/Co.	STANTEC
Date Performed	7/3/2018
Analysis Year	2018
Time Analyzed	PM PEAK HOUR
Intersection Orientation	North-South
Project Description	TEAL CLUB SP

Site Information

Intersection	VICTORIA AVE/TEAL CLUB RD
Jurisdiction	OXNARD
East/West Street	TEAL CLUB RD
North/South Street	VICTORIA AVE
Peak Hour Factor	1.00
Analysis Time Period (hrs)	1.00

Lanes


Major Street: North-South

Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority		10	11	12		7	8	9	1U	1	2	3	4U	4	5	6
Number of Lanes		1	1	0		1	1	0	0	1	2	0	0	1	2	0
Configuration		L		TR		L		TR		L	T	TR		L	T	TR
Volume (veh/h)		2	3	38		5	0	50	0	2	1709	48	0	52	1964	1
Percent Heavy Vehicles (%)		3	3	3		3	3	3	3	3			3	3		
Proportion Time Blocked																
Percent Grade (%)	0				0											
Right Turn Channelized																
Median Type | Storage	Undivided															

Critical and Follow-up Headways

Base Critical Headway (sec)		7.5	6.5	6.9		7.5	6.5	6.9		4.1				4.1		
Critical Headway (sec)		7.56	6.56	6.96		7.56	6.56	6.96		4.16				4.16		
Base Follow-Up Headway (sec)		3.5	4.0	3.3		3.5	4.0	3.3		2.2				2.2		
Follow-Up Headway (sec)		3.53	4.03	3.33		3.53	4.03	3.33		2.23				2.23		

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)		2		41		5		50		2				52		
Capacity, c (veh/h)		5		36		1		289		288				348		
v/c Ratio		0.41		1.14		9.25		0.17		0.01				0.15		
95% Queue Length, Q_{95} (veh)		1.2		9.2		4.1		0.6		0.0				0.5		
Control Delay (s/veh)		1133.7		694.8		26990.2		20.1		17.6				17.2		
Level of Service (LOS)		F		F		F		C		C				C		
Approach Delay (s/veh)	715.2				2471.9				0.0				0.4			
Approach LOS	F				F											

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HCS7 Two-Way Stop-Control Report

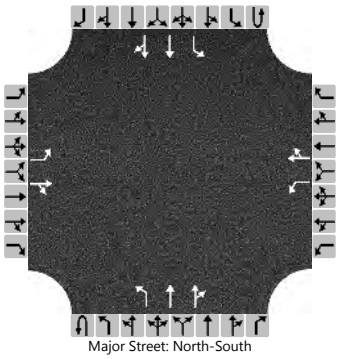
General Information

Analyst	06. DJL
Agency/Co.	STANTEC
Date Performed	7/3/2018
Analysis Year	EXPR
Time Analyzed	PM PEAK HOUR
Intersection Orientation	North-South
Project Description	TEAL CLUB SP

Site Information

Intersection	VICTORIA AVE/TEAL CLUB RD
Jurisdiction	OXNARD
East/West Street	TEAL CLUB RD
North/South Street	VICTORIA AVE
Peak Hour Factor	1.00
Analysis Time Period (hrs)	1.00

Lanes



Major Street: North-South

Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority		10	11	12		7	8	9	1U	1	2	3	4U	4	5	6
Number of Lanes		1	1	0		1	1	0	0	1	2	0	0	1	2	0
Configuration		L		TR		L		TR		L	T	TR		L	T	TR
Volume (veh/h)		2	3	38		39	0	58	0	2	1717	87	0	61	1973	1
Percent Heavy Vehicles (%)		3	3	3		3	3	3	3	3			3	3		
Proportion Time Blocked																
Percent Grade (%)	0				0											
Right Turn Channelized																
Median Type | Storage	Undivided															

Critical and Follow-up Headways

Base Critical Headway (sec)		7.5	6.5	6.9		7.5	6.5	6.9		4.1				4.1		
Critical Headway (sec)		7.56	6.56	6.96		7.56	6.56	6.96		4.16				4.16		
Base Follow-Up Headway (sec)		3.5	4.0	3.3		3.5	4.0	3.3		2.2				2.2		
Follow-Up Headway (sec)		3.53	4.03	3.33		3.53	4.03	3.33		2.23				2.23		

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)		2		41		39		58		2				61		
Capacity, c (veh/h)		4		31		0		279		286				333		
v/c Ratio		0.47		1.30				0.21		0.01				0.18		
95% Queue Length, Q_{95} (veh)		1.3		10.6				0.8		0.0				0.7		
Control Delay (s/veh)		1347.4		978.9				21.3		17.7				18.2		
Level of Service (LOS)		F		F				C		C				C		
Approach Delay (s/veh)	996.1								0.0				0.5			
Approach LOS	F															

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INTERSECTION CAPACITY UTILIZATION

INTERSECTION NUMBER: 6 **Mitigated**
NORTH/SOUTH STREET: Victoria Ave
EAST/WEST STREET: Teal Club Rd
SCENARIO: Existing Conditions
TIME PERIOD: PM Peak Hour
COUNT DATE: 05/2018
WORK ORDER #: 2064169300

VOLUMES	Northbound			Southbound			Eastbound			Westbound		
	L	T	R	L	T	R	L	T	R	L	T	R
AM Peak	2	1709	48	52	1964	1	2	3	38	5	0	50
Project Trips	0	8	39	9	9	0	0	0	0	34	0	8
GEOMETRY	L	T TR		L	T TR		L	TR		L	TR	

	Level of Service Calculations					
Move-	**Lanes**		**Volume**		**V/C Ratio**	
ment	Lane	Capacity	Existing	Project	Existing	Ex+Project
NBL	1.0	1,600	2	2	0.05 *	0.05 *
NBT	2.0	3,200	1,709	1,717	0.55	0.56
NBR	0.0	0	48	87	0.00	0.00
SBL	1.0	1,600	52	61	0.05	0.05
SBT	2.0	3,200	1,964	1,973	0.61 *	0.62 *
SBR	0.0	0	1	1	0.00	0.00
EBL	1.0	1,600	2	2	0.00 *	0.00
EBT	1.0	1,600	3	3	0.05	0.05 *
EBR	0.0	0	38	38	0.00	0.00
WBL	1.0	1,600	5	39	0.00	0.05 *
WBT	1.0	1,600	0	0	0.07 *	0.07
WBR	0.0	0	50	58	0.00	0.00
N/S Critical Movements					0.66	0.67
E/W Critical Movements					0.07	0.10
Clearance Interval					0.00	0.00
ICU					0.73	0.77
Level of Service (LOS)					C	C

Notes: V/C - Volume to Capacity Ratio

INTERSECTION CAPACITY UTILIZATION

INTERSECTION NUMBER: 7
NORTH/SOUTH STREET: Victoria Ave
EAST/WEST STREET: 5th St
SCENARIO: Existing Conditions
TIME PERIOD: AM Peak Hour
COUNT DATE: 10/2019
WORK ORDER #: 2064169300

VOLUMES	Northbound			Southbound			Eastbound			Westbound		
	L	T	R	L	T	R	L	T	R	L	T	R
AM Peak	80	1743	135	242	1032	38	51	93	10	112	156	415
Project Trips	0	36	0	4	35	6	5	0	0	0	0	3
GEOMETRY	LL	TTT	R	LL	TT TR		L	T TR		LL	TT	R

	Level of Service Calculations					
Move-	**Lanes**		**Volume**		**V/C Ratio**	
ment	Lane	Capacity	Existing	Project	Existing	Ex+Project
NBL	2.0	3,200	80	80	0.05	0.05
NBT	3.0	4,800	1,743	1,779	0.36 *	0.37 *
NBR	1.0	1,600	135	135	0.08	0.08
SBL	2.0	3,200	242	246	0.08 *	0.08 *
SBT	3.0	4,800	1,032	1,067	0.22	0.23
SBR	0.0	0	38	44	0.00	0.00
EBL	1.0	1,600	51	56	0.05 *	0.05 *
EBT	2.0	3,200	93	93	0.07	0.07
EBR	0.0	0	10	10	0.00	0.00
WBL	2.0	3,200	112	112	0.05	0.05
WBT	2.0	3,200	156	156	0.07	0.07
WBR	1.0 (a)	1,600	294	295	0.18 *	0.18 *
N/S Critical Movements					0.44	0.45
E/W Critical Movements					0.23	0.23
Clearance Interval					0.00	0.00
ICU					0.67	0.68
Level of Service (LOS)					B	B

Notes: V/C - Volume to Capacity Ratio

(a) RTOR overlap w/SB LT

INTERSECTION CAPACITY UTILIZATION

INTERSECTION NUMBER: 7
NORTH/SOUTH STREET: Victoria Ave
EAST/WEST STREET: 5th St
SCENARIO: Existing Conditions
TIME PERIOD: PM Peak Hour
COUNT DATE: 10/2019
WORK ORDER #: 2064169300

VOLUMES	Northbound			Southbound			Eastbound			Westbound		
	L	T	R	L	T	R	L	T	R	L	T	R
PM Peak	46	1316	125	333	1676	59	64	172	24	174	125	200
Project Trips	0	36	0	4	33	6	6	0	0	0	0	4
GEOMETRY	LL	TTT	R	LL	TT	TR	L	T	TR	LL	TT	R

	Level of Service Calculations					
Move-	**Lanes**		**Volume**		**V/C Ratio**	
ment	Lane	Capacity	Existing	Project	Existing	Ex+Project
NBL	2.0	3,200	46	46	0.05 *	0.05 *
NBT	3.0	4,800	1,316	1,352	0.27	0.28
NBR	1.0	1,600	125	125	0.08	0.08
SBL	2.0	3,200	333	337	0.10	0.11
SBT	3.0	4,800	1,676	1,709	0.36 *	0.37 *
SBR	0.0	0	59	65	0.00	0.00
EBL	1.0	1,600	64	70	0.05 *	0.05 *
EBT	2.0	3,200	172	172	0.07	0.07
EBR	0.0	0	24	24	0.00	0.00
WBL	2.0	3,200	174	174	0.05	0.05
WBT	2.0	3,200	125	125	0.07 *	0.07 *
WBR	1.0 (a)	1,600	34	36	0.02	0.02
N/S Critical Movements					0.41	0.42
E/W Critical Movements					0.12	0.12
Clearance Interval					0.00	0.00
ICU					0.53	0.54
Level of Service (LOS)					A	A

Notes: V/C - Volume to Capacity Ratio

(a) RTOR overlap w/SB LT

INTERSECTION CAPACITY UTILIZATION

INTERSECTION NUMBER: 8
NORTH/SOUTH STREET: Victoria Ave
EAST/WEST STREET: Wooley Rd
SCENARIO: Existing Conditions
TIME PERIOD: AM Peak Hour
COUNT DATE: 10/2019
WORK ORDER #: 2064169300

VOLUMES	Northbound			Southbound			Eastbound			Westbound		
	L	T	R	L	T	R	L	T	R	L	T	R
AM Peak	95	1284	68	127	902	75	119	144	45	76	215	476
Project Trips	0	15	0	6	20	8	7	0	0	0	0	5
GEOMETRY	L	TT	TR	L	TTT	R	L	TT	R	L	TT	R

	Level of Service Calculations					
Move-	**Lanes**		**Volume**		**V/C Ratio**	
ment	Lane	Capacity	Existing	Project	Existing	Ex+Project
NBL	1.0	1,600	95	95	0.06	0.06
NBT	3.0	4,800	1,284	1,299	0.28 *	0.28 *
NBR	0.0	0	68	68	0.00	0.00
SBL	1.0	1,600	127	133	0.08 *	0.08 *
SBT	3.0	4,800	902	922	0.19	0.19
SBR	1.0	1,600	75	83	0.05	0.05
EBL	1.0	1,600	119	126	0.07 *	0.08 *
EBT	2.0	3,200	144	144	0.07	0.07
EBR	1.0	1,600	45	45	0.03	0.03
WBL	1.0	1,600	76	76	0.05	0.05
WBT	2.0	3,200	215	215	0.07	0.07
WBR	1.0 (a)	1,600	349	348	0.22 *	0.22 *
N/S Critical Movements					0.36	0.36
E/W Critical Movements					0.29	0.30
Clearance Interval					0.00	0.00
ICU					0.65	0.66
Level of Service (LOS)					B	B

Notes: V/C - Volume to Capacity Ratio

(a) RTOR overlap w/SBL

INTERSECTION CAPACITY UTILIZATION

INTERSECTION NUMBER: 8
NORTH/SOUTH STREET: Victoria Ave
EAST/WEST STREET: Wooley Rd
SCENARIO: Existing Conditions
TIME PERIOD: PM Peak Hour
COUNT DATE: 10/2019
WORK ORDER #: 2064169300

VOLUMES	Northbound			Southbound			Eastbound			Westbound		
	L	T	R	L	T	R	L	T	R	L	T	R
PM Peak	66	1088	112	271	1311	135	152	290	121	136	180	210
Project Trips	0	20	0	6	19	8	9	0	0	0	0	6
GEOMETRY	L	TT	TR	L	TTT	R	L	TT	R	L	TT	R

	Level of Service Calculations					
Move-	**Lanes**		**Volume**		**V/C Ratio**	
ment	Lane	Capacity	Existing	Project	Existing	Ex+Project
NBL	1.0	1,600	66	66	0.04	0.04
NBT	3.0	4,800	1,088	1,108	0.25 *	0.25 *
NBR	0.0	0	112	112	0.00	0.00
SBL	1.0	1,600	271	277	0.17 *	0.17 *
SBT	3.0	4,800	1,311	1,330	0.27	0.28
SBR	1.0	1,600	135	143	0.08	0.09
EBL	1.0	1,600	152	161	0.10	0.10
EBT	2.0	3,200	290	290	0.09 *	0.09 *
EBR	1.0	1,600	121	121	0.08	0.08
WBL	1.0	1,600	136	136	0.09 *	0.09 *
WBT	2.0	3,200	180	180	0.06	0.06
WBR	1.0 (a)	1,600	84	86	0.05	0.05
N/S Critical Movements					0.42	0.42
E/W Critical Movements					0.18	0.18
Clearance Interval					0.00	0.00
ICU					0.60	0.60
Level of Service (LOS)					A	A

Notes: V/C - Volume to Capacity Ratio

(a) RTOR overlap w/SBL

INTERSECTION CAPACITY UTILIZATION

INTERSECTION NUMBER: 9
NORTH/SOUTH STREET: Patterson Rd
EAST/WEST STREET: Gonzales Rd
SCENARIO: Existing Conditions
TIME PERIOD: AM Peak Hour
COUNT DATE: 05/2018
WORK ORDER #: 2064169300

VOLUMES	Northbound			Southbound			Eastbound			Westbound		
	L	T	R	L	T	R	L	T	R	L	T	R
AM Peak	189	135	240	242	133	40	10	935	73	123	528	248
Project Trips	12	5	5	0	4	0	0	0	9	4	0	0
GEOMETRY	L	T	R	L	T	R	L	TT	R	L	TT	R

	Level of Service Calculations						
Move-	**Lanes**			**Volume**		**V/C Ratio**	
ment	Lane		Capacity	Existing	Project	Existing	Ex+Project
NBL	1.0		1,600	189	201	0.12	0.13
NBT	1.0		1,600	135	140	0.08 *	0.09 *
NBR	1.0	(a)	1,600	117	118	0.07	0.07
SBL	1.0		1,600	242	242	0.15 *	0.15 *
SBT	1.0		1,600	133	137	0.08	0.09
SBR	1.0		1,600	40	40	0.03	0.03
EBL	1.0		1,600	10	10	0.05	0.05
EBT	2.0		3,200	935	935	0.29 *	0.29 *
EBR	1.0		1,600	73	82	0.05	0.05
WBL	1.0		1,600	123	127	0.08 *	0.08 *
WBT	2.0		3,200	528	528	0.17	0.17
WBR	1.0		1,600	6	6	0.00	0.00
N/S Critical Movements						0.23	0.24
E/W Critical Movements						0.37	0.37
Clearance Interval						0.00	0.00
ICU						0.60	0.61
Level of Service (LOS)						A	B

Notes: V/C - Volume to Capacity Ratio

(a) RTOR overlap w/WBL

INTERSECTION CAPACITY UTILIZATION

INTERSECTION NUMBER: 9
NORTH/SOUTH STREET: Patterson Rd
EAST/WEST STREET: Gonzales Rd
SCENARIO: Existing Conditions
TIME PERIOD: PM Peak Hour
COUNT DATE: 05/2018
WORK ORDER #: 2064169300

VOLUMES	Northbound			Southbound			Eastbound			Westbound		
	L	T	R	L	T	R	L	T	R	L	T	R
PM Peak	49	77	183	128	67	27	13	577	12	175	689	143
Project Trips	12	5	5	0	5	0	0	0	12	5	0	0
GEOMETRY	L	T	R	L	T	R	L	TT	R	L	TT	R

	Level of Service Calculations					
Move-	**Lanes**		**Volume**		**V/C Ratio**	
ment	Lane	Capacity	Existing	Project	Existing	Ex+Project
NBL	1.0	1,600	49	61	0.05	0.05
NBT	1.0	1,600	77	82	0.07 *	0.07 *
NBR	1.0 (a)	1,600	8	8	0.01	0.01
SBL	1.0	1,600	128	128	0.08 *	0.08 *
SBT	1.0	1,600	67	72	0.07	0.07
SBR	1.0	1,600	27	27	0.02	0.02
EBL	1.0	1,600	13	13	0.05	0.05
EBT	2.0	3,200	577	577	0.18 *	0.18 *
EBR	1.0	1,600	12	24	0.01	0.02
WBL	1.0	1,600	175	180	0.11 *	0.11 *
WBT	2.0	3,200	689	689	0.22	0.22
WBR	1.0	1,600	15	15	0.01	0.01
N/S Critical Movements					0.15	0.15
E/W Critical Movements					0.29	0.29
Clearance Interval					0.00	0.00
ICU					0.44	0.44
Level of Service (LOS)					A	A

Notes: V/C - Volume to Capacity Ratio

(a) RTOR overlap w/WBL

HCS7 All-Way Stop Control Report

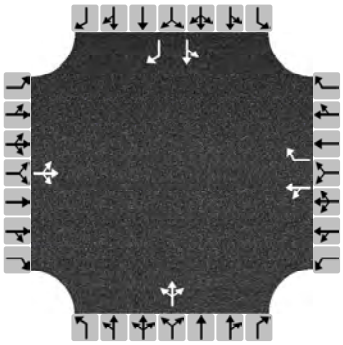
General Information

Analyst	10. DJL
Agency/Co.	STANTEC
Date Performed	6/5/2018
Analysis Year	2018
Analysis Time Period (hrs)	1.00
Time Analyzed	AM PEAK HOUR
Project Description	TEAL CLUB SP

Site Information

Intersection	PATTERSON RD/DORIS ST
Jurisdiction	OXNARD
East/West Street	DORIS ST
North/South Street	PATTERSON RD
Peak Hour Factor	1.00

Lanes



Vehicle Volume and Adjustments

Approach	Eastbound			Westbound			Northbound			Southbound		
Movement	L	T	R	L	T	R	L	T	R	L	T	R
Volume	60	72	3	1	192	169	6	85	8	229	84	73
% Thrus in Shared Lane												
Lane	L1	L2	L3	L1	L2	L3	L1	L2	L3	L1	L2	L3
Configuration	LTR			LT	R		LTR			LT	R	
Flow Rate, v (veh/h)	135			193	169		99			313	73	
Percent Heavy Vehicles	2			2	2		2			2	2	

Departure Headway and Service Time

Initial Departure Headway, hd (s)	3.20			3.20	3.20		3.20			3.20	3.20	
Initial Degree of Utilization, x	0.120			0.172	0.150		0.088			0.278	0.065	
Final Departure Headway, hd (s)	6.68			6.28	5.57		6.61			6.50	5.43	
Final Degree of Utilization, x	0.250			0.337	0.262		0.182			0.565	0.110	
Move-Up Time, m (s)	2.0			2.3	2.3		2.0			2.3	2.3	
Service Time, ts (s)	4.68			3.98	3.27		4.61			4.20	3.13	

Capacity, Delay and Level of Service

Flow Rate, v (veh/h)	135			193	169		99			313	73	
Capacity	539			573	646		544			554	663	
95% Queue Length, Q_{95} (veh)	1.0			1.5	1.1		0.7			3.8	0.4	
Control Delay (s/veh)	11.9			12.2	10.2		11.1			17.6	8.8	
Level of Service, LOS	B			B	B		B			C	A	
Approach Delay (s/veh)	11.9			11.3			11.1			15.9		
Approach LOS	B			B			B			C		
Intersection Delay, s/veh | LOS	13.2						B					

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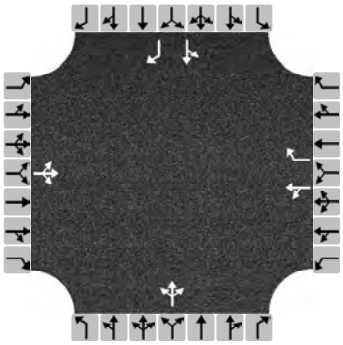
HCS7 All-Way Stop Control Report

General Information		Site Information	
Analyst	10. DJL	Intersection	PATTERSON RD/DORIS ST
Agency/Co.	STANTEC	Jurisdiction	OXNARD
Date Performed	6/5/2018	East/West Street	DORIS ST
Analysis Year	2018	North/South Street	PATTERSON RD
Analysis Time Period (hrs)	1.00	Peak Hour Factor	1.00
Time Analyzed	AM PEAK HOUR		
Project Description	TEAL CLUB SP		

Lanes



Vehicle Volume and Adjustments

Approach	Eastbound			Westbound			Northbound			Southbound		
Movement	L	T	R	L	T	R	L	T	R	L	T	R
Volume	54	200	6	4	123	115	4	59	12	81	42	37
% Thrus in Shared Lane												
Lane	L1	L2	L3	L1	L2	L3	L1	L2	L3	L1	L2	L3
Configuration	LTR			LT	R		LTR			LT	R	
Flow Rate, v (veh/h)	260			127	115		75			123	37	
Percent Heavy Vehicles	2			2	2		2			2	2	

Departure Headway and Service Time

Initial Departure Headway, hd (s)	3.20			3.20	3.20		3.20			3.20	3.20	
Initial Degree of Utilization, x	0.231			0.113	0.102		0.067			0.109	0.033	
Final Departure Headway, hd (s)	5.58			5.58	4.86		6.04			6.29	5.25	
Final Degree of Utilization, x	0.403			0.197	0.155		0.126			0.215	0.054	
Move-Up Time, m (s)	2.0			2.3	2.3		2.0			2.3	2.3	
Service Time, ts (s)	3.58			3.28	2.56		4.04			3.99	2.95	

Capacity, Delay and Level of Service

Flow Rate, v (veh/h)	260			127	115		75			123	37	
Capacity	645			645	741		596			573	686	
95% Queue Length, Q_{95} (veh)	2.0			0.7	0.6		0.4			0.8	0.2	
Control Delay (s/veh)	12.3			9.6	8.4		9.9			10.7	8.2	
Level of Service, LOS	B			A	A		A			B	A	
Approach Delay (s/veh)	12.3			9.1			9.9			10.1		
Approach LOS	B			A			A			B		
Intersection Delay, s/veh | LOS	10.5						B					

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HCS7 All-Way Stop Control Report

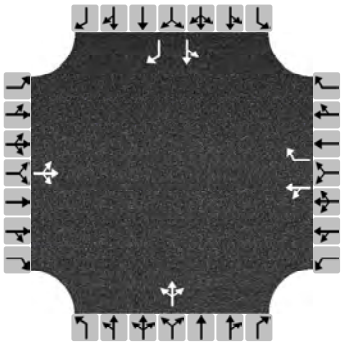
General Information

Analyst	10. DJL
Agency/Co.	STANTEC
Date Performed	6/5/2018
Analysis Year	EXPR
Analysis Time Period (hrs)	1.00
Time Analyzed	AM PEAK HOUR
Project Description	TEAL CLUB SP

Site Information

Intersection	PATTERSON RD/DORIS ST
Jurisdiction	OXNARD
East/West Street	DORIS ST
North/South Street	PATTERSON RD
Peak Hour Factor	1.00

Lanes



Vehicle Volume and Adjustments

Approach	Eastbound			Westbound			Northbound			Southbound		
Movement	L	T	R	L	T	R	L	T	R	L	T	R
Volume	60	113	12	7	237	183	16	93	13	240	90	73
% Thrus in Shared Lane												
Lane	L1	L2	L3	L1	L2	L3	L1	L2	L3	L1	L2	L3
Configuration	LTR			LT	R		LTR			LT	R	
Flow Rate, v (veh/h)	185			244	183		122			330	73	
Percent Heavy Vehicles	2			2	2		2			2	2	

Departure Headway and Service Time

Initial Departure Headway, hd (s)	3.20			3.20	3.20		3.20			3.20	3.20	
Initial Degree of Utilization, x	0.164			0.217	0.163		0.108			0.293	0.065	
Final Departure Headway, hd (s)	7.02			6.66	5.94		7.16			6.97	5.90	
Final Degree of Utilization, x	0.361			0.452	0.302		0.243			0.639	0.120	
Move-Up Time, m (s)	2.0			2.3	2.3		2.0			2.3	2.3	
Service Time, ts (s)	5.02			4.36	3.64		5.16			4.67	3.60	

Capacity, Delay and Level of Service

Flow Rate, v (veh/h)	185			244	183		122			330	73	
Capacity	513			540	606		503			516	611	
95% Queue Length, Q_{95} (veh)	1.7			2.4	1.3		1.0			5.0	0.4	
Control Delay (s/veh)	14.0			14.8	11.2		12.5			21.8	9.4	
Level of Service, LOS	B			B	B		B			C	A	
Approach Delay (s/veh)	14.0			13.3			12.5			19.6		
Approach LOS	B			B			B			C		
Intersection Delay, s/veh | LOS	15.5						C					

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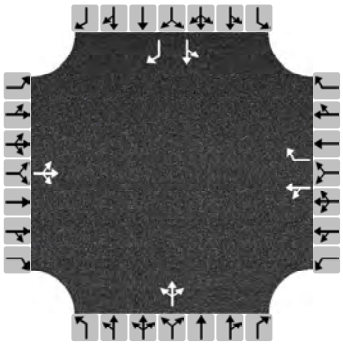
HCS7 All-Way Stop Control Report

General Information		Site Information	
Analyst	10. DJL	Intersection	PATTERSON RD/DORIS ST
Agency/Co.	STANTEC	Jurisdiction	OXNARD
Date Performed	6/5/2018	East/West Street	DORIS ST
Analysis Year	EXPR	North/South Street	PATTERSON RD
Analysis Time Period (hrs)	1.00	Peak Hour Factor	1.00
Time Analyzed	AM PEAK HOUR		
Project Description	TEAL CLUB SP		

Lanes



Vehicle Volume and Adjustments

Approach	Eastbound			Westbound			Northbound			Southbound		
Movement	L	T	R	L	T	R	L	T	R	L	T	R
Volume	54	255	18	10	166	129	14	67	18	95	50	37
% Thrus in Shared Lane												
Lane	L1	L2	L3	L1	L2	L3	L1	L2	L3	L1	L2	L3
Configuration	LTR			LT	R		LTR			LT	R	
Flow Rate, v (veh/h)	327			176	129		99			145	37	
Percent Heavy Vehicles	2			2	2		2			2	2	

Departure Headway and Service Time

Initial Departure Headway, hd (s)	3.20			3.20	3.20		3.20			3.20	3.20	
Initial Degree of Utilization, x	0.291			0.156	0.115		0.088			0.129	0.033	
Final Departure Headway, hd (s)	5.89			5.95	5.22		6.57			6.78	5.74	
Final Degree of Utilization, x	0.535			0.291	0.187		0.181			0.273	0.059	
Move-Up Time, m (s)	2.0			2.3	2.3		2.0			2.3	2.3	
Service Time, ts (s)	3.89			3.65	2.92		4.57			4.48	3.44	

Capacity, Delay and Level of Service

Flow Rate, v (veh/h)	327			176	129		99			145	37	
Capacity	612			605	690		548			531	627	
95% Queue Length, Q_{95} (veh)	3.4			1.2	0.7		0.7			1.1	0.2	
Control Delay (s/veh)	15.6			11.1	9.1		11.0			12.0	8.8	
Level of Service, LOS	C			B	A		B			B	A	
Approach Delay (s/veh)	15.6			10.3			11.0			11.4		
Approach LOS	C			B			B			B		
Intersection Delay, s/veh | LOS	12.5						B					

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HCS7 Two-Way Stop-Control Report

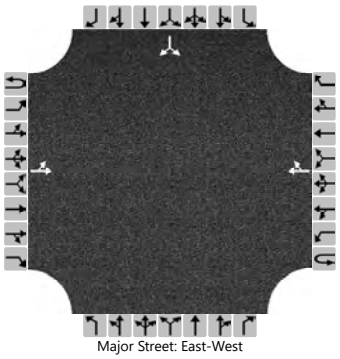
General Information

Analyst	11. DJL
Agency/Co.	STANTEC
Date Performed	7/3/2018
Analysis Year	2018
Time Analyzed	AM PEAK HOUR
Intersection Orientation	East-West
Project Description	TEAL CLUB SP

Site Information

Intersection	PATTERSON RD/TEAL CLUB RD
Jurisdiction	OXNARD
East/West Street	TEAL CLUB RD
North/South Street	PATTERSON RD
Peak Hour Factor	1.00
Analysis Time Period (hrs)	1.00

Lanes



Major Street: East-West

Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority	1U	1	2	3	4U	4	5	6		7	8	9		10	11	12
Number of Lanes	0	0	1	0	0	0	1	0		0	0	0		0	1	0
Configuration		LT						TR							LR	
Volume (veh/h)		29	48				60	72						78		3
Percent Heavy Vehicles (%)		3												3		3
Proportion Time Blocked																
Percent Grade (%)														0		
Right Turn Channelized																
Median Type | Storage	Undivided															

Critical and Follow-up Headways

Base Critical Headway (sec)		4.1												7.1		6.2
Critical Headway (sec)		4.13												6.43		6.23
Base Follow-Up Headway (sec)		2.2												3.5		3.3
Follow-Up Headway (sec)		2.23												3.53		3.33

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)		29													81	
Capacity, c (veh/h)		1447													774	
v/c Ratio		0.02													0.10	
95% Queue Length, Q_{95} (veh)		0.1													0.4	
Control Delay (s/veh)		7.5													10.2	
Level of Service (LOS)		A													B	
Approach Delay (s/veh)	2.9												10.2			
Approach LOS													B			

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HCS7 Two-Way Stop-Control Report

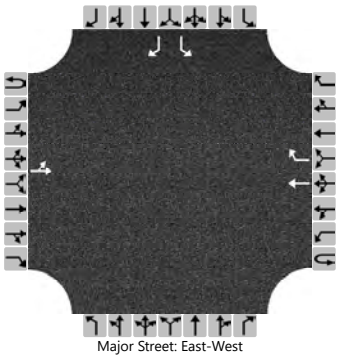
General Information

Analyst	11. DJL
Agency/Co.	STANTEC
Date Performed	7/3/2018
Analysis Year	EXPR
Time Analyzed	AM PEAK HOUR
Intersection Orientation	East-West
Project Description	TEAL CLUB SP

Site Information

Intersection	PATTERSON RD/TEAL CLUB RD
Jurisdiction	OXNARD
East/West Street	TEAL CLUB RD
North/South Street	PATTERSON RD
Peak Hour Factor	1.00
Analysis Time Period (hrs)	1.00

Lanes



Major Street: East-West

Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority	1U	1	2	3	4U	4	5	6		7	8	9		10	11	12
Number of Lanes	0	0	1	0	0	0	1	1		0	0	0		1	0	1
Configuration		LT					T	R						L		R
Volume (veh/h)		34	79				98	90						93		9
Percent Heavy Vehicles (%)		3												3		3
Proportion Time Blocked																
Percent Grade (%)														0		
Right Turn Channelized						No								No		
Median Type | Storage						Undivided										

Critical and Follow-up Headways

Base Critical Headway (sec)		4.1												7.1		6.2
Critical Headway (sec)		4.13												6.43		6.23
Base Follow-Up Headway (sec)		2.2												3.5		3.3
Follow-Up Headway (sec)		2.23												3.53		3.33

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)		34												93		9
Capacity, c (veh/h)		1380												723		955
v/c Ratio		0.02												0.13		0.01
95% Queue Length, Q_{95} (veh)		0.1												0.4		0.0
Control Delay (s/veh)		7.7												10.7		8.8
Level of Service (LOS)		A												B		A
Approach Delay (s/veh)		2.4												10.5		
Approach LOS														B		

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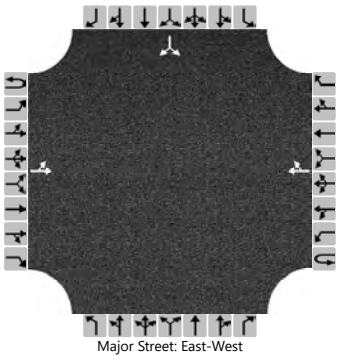
HCS7 Two-Way Stop-Control Report

General Information		Site Information	
Analyst	11. DJL	Intersection	PATTERSON RD/TEAL CLUB RD
Agency/Co.	STANTEC	Jurisdiction	OXNARD
Date Performed	7/3/2018	East/West Street	TEAL CLUB RD
Analysis Year	2018	North/South Street	PATTERSON RD
Time Analyzed	PM PEAK HOUR	Peak Hour Factor	1.00
Intersection Orientation	East-West	Analysis Time Period (hrs)	1.00
Project Description	TEAL CLUB SP		

Lanes



Major Street: East-West

Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority	1U	1	2	3	4U	4	5	6		7	8	9		10	11	12
Number of Lanes	0	0	1	0	0	0	1	0		0	0	0		0	1	0
Configuration		LT						TR							LR	
Volume (veh/h)		28	87				50	44						45		7
Percent Heavy Vehicles (%)		3												3		3
Proportion Time Blocked																
Percent Grade (%)													0			
Right Turn Channelized																
Median Type | Storage	Undivided															

Critical and Follow-up Headways

Base Critical Headway (sec)		4.1												7.1		6.2
Critical Headway (sec)		4.13												6.43		6.23
Base Follow-Up Headway (sec)		2.2												3.5		3.3
Follow-Up Headway (sec)		2.23												3.53		3.33

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)		28													52	
Capacity, c (veh/h)		1494													781	
v/c Ratio		0.02													0.07	
95% Queue Length, Q_{95} (veh)		0.1													0.2	
Control Delay (s/veh)		7.5													9.9	
Level of Service (LOS)		A													A	
Approach Delay (s/veh)	1.9												9.9			
Approach LOS													A			

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HCS7 Two-Way Stop-Control Report

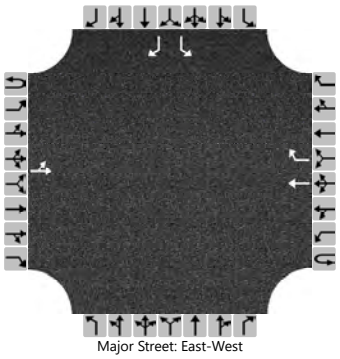
General Information

Analyst	11. DJL
Agency/Co.	STANTEC
Date Performed	7/3/2018
Analysis Year	EXPR
Time Analyzed	PM PEAK HOUR
Intersection Orientation	East-West
Project Description	TEAL CLUB SP

Site Information

Intersection	PATTERSON RD/TEAL CLUB RD
Jurisdiction	OXNARD
East/West Street	TEAL CLUB RD
North/South Street	PATTERSON RD
Peak Hour Factor	1.00
Analysis Time Period (hrs)	1.00

Lanes



Major Street: East-West

Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority	1U	1	2	3	4U	4	5	6		7	8	9		10	11	12
Number of Lanes	0	0	1	0	0	0	1	1		0	0	0		1	0	1
Configuration		LT					T	R						L		R
Volume (veh/h)		34	129				86	62						65		13
Percent Heavy Vehicles (%)		3												3		3
Proportion Time Blocked																
Percent Grade (%)														0		
Right Turn Channelized							No							No		
Median Type | Storage			Undivided													

Critical and Follow-up Headways

Base Critical Headway (sec)		4.1												7.1		6.2
Critical Headway (sec)		4.13												6.43		6.23
Base Follow-Up Headway (sec)		2.2												3.5		3.3
Follow-Up Headway (sec)		2.23												3.53		3.33

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)		34												65		13
Capacity, c (veh/h)		1427												688		970
v/c Ratio		0.02												0.09		0.01
95% Queue Length, Q_{95} (veh)		0.1												0.3		0.0
Control Delay (s/veh)		7.6												10.8		8.8
Level of Service (LOS)		A												B		A
Approach Delay (s/veh)		1.7												10.4		
Approach LOS														B		

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INTERSECTION CAPACITY UTILIZATION

INTERSECTION NUMBER: 12
NORTH/SOUTH STREET: Ventura Rd
EAST/WEST STREET: Town Center Dr
SCENARIO: Existing Conditions
TIME PERIOD: AM Peak Hour
COUNT DATE: 05/2018
WORK ORDER #: 2064136900

VOLUMES	Northbound			Southbound			Eastbound			Westbound		
	L	T	R	L	T	R	L	T	R	L	T	R
AM Peak	5	394	878	76	204	2	0	10	3	203	45	99
Project Trips	0	3	72	0	2	0	0	0	0	31	0	0
GEOMETRY	L	TT	R	L	T TR			LTR		LL	T	R

	Level of Service Calculations					
Move-	**Lanes**		**Volume**		**V/C Ratio**	
ment	Lane	Capacity	Existing	Project	Existing	Ex+Project
NBL	1.0	1,600	5	5	0.05	0.05
NBT	2.0	3,200	394	397	0.12 *	0.12 *
NBR (a)	1.0	1,600	878	950	0.00	0.00
SBL	1.0	1,600	76	76	0.05 *	0.05 *
SBT	2.0	3,200	204	206	0.07	0.07
SBR	0.0	0	2	2	0.00	0.00
EBL	0.0	0	0	0	0.00	0.00
EBT	1.0	1,600	10	10	0.07 *	0.07 *
EBR	0.0	0	3	3	0.00	0.00
WBL	2.0	3,200	203	234	0.06 *	0.07 *
WBT	1.0	1,600	45	45	0.07	0.07
WBR	1.0	1,600	99	99	0.06	0.06
N/S Critical Movements					0.17	0.17
E/W Critical Movements					0.13	0.14
Clearance Interval					0.00	0.00
ICU					0.30	0.31
Level of Service (LOS)					A	A

Notes: V/C - Volume to Capacity Ratio
(a) Free right-turn

INTERSECTION CAPACITY UTILIZATION

INTERSECTION NUMBER: 12
NORTH/SOUTH STREET: Ventura Rd
EAST/WEST STREET: Town Center Dr
SCENARIO: Existing Conditions
TIME PERIOD: PM Peak Hour
COUNT DATE: 05/2018
WORK ORDER #: 2064113300

VOLUMES	Northbound			Southbound			Eastbound			Westbound		
	L	T	R	L	T	R	L	T	R	L	T	R
PM Peak	38	391	504	141	263	0	4	50	9	530	16	40
Project Trips	0	3	68	0	3	0	0	0	0	41	0	0
GEOMETRY	L	TT	R	L	T TR			LTR		LL	T	R

	Level of Service Calculations					
Move-	**Lanes**		**Volume**		**V/C Ratio**	
ment	Lane	Capacity	Existing	Project	Existing	Ex+Project
NBL	1.0	1,600	38	38	0.05	0.05
NBT	2.0	3,200	391	394	0.12 *	0.12 *
NBR (a)	1.0	1,600	504	572	0.00	0.00
SBL	1.0	1,600	141	141	0.09 *	0.09 *
SBT	2.0	3,200	263	266	0.07	0.07
SBR	0.0	0	0	0	0.00	0.00
EBL	0.0	0	4	4	0.00	0.00
EBT	1.0	1,600	50	50	0.07 *	0.07 *
EBR	0.0	0	9	9	0.00	0.00
WBL	2.0	3,200	530	571	0.17 *	0.18 *
WBT	1.0	1,600	16	16	0.07	0.07
WBR	1.0	1,600	40	40	0.03	0.03
N/S Critical Movements					0.21	0.21
E/W Critical Movements					0.24	0.25
Clearance Interval					0.00	0.00
ICU					0.45	0.46
Level of Service (LOS)					A	A

Notes: V/C - Volume to Capacity Ratio
(a) Free right-turn

INTERSECTION CAPACITY UTILIZATION

INTERSECTION NUMBER: 13
NORTH/SOUTH STREET: Ventura Rd
EAST/WEST STREET: Wagon Wheel Rd
SCENARIO: Existing Conditions
TIME PERIOD: AM Peak Hour
COUNT DATE: 05/2018
WORK ORDER #: 2064169300

VOLUMES	Northbound			Southbound			Eastbound			Westbound		
	L	T	R	L	T	R	L	T	R	L	T	R
AM Peak	0	1183	20	3	424	0	0	0	0	363	0	132
Project Trips	0	75	0	0	33	0	0	0	0	31	0	0
GEOMETRY		TT	R	L	TT					LL		R

	Level of Service Calculations					
Move-	**Lanes**		**Volume**		**V/C Ratio**	
ment	Lane	Capacity	Existing	Project	Existing	Ex+Project
NBL	0.0	0	0	0	0.00	0.00
NBT	2.0	3,200	1,183	1,258	0.37 *	0.39 *
NBR	1.0	1,600	20	20	0.01	0.01
SBL	1.0	1,600	3	3	0.05 *	0.05 *
SBT	2.0	3,200	424	457	0.13	0.14
SBR	0.0	0	0	0	0.00	0.00
EBL	0.0	0	0	0	0.00	0.00
EBT	0.0	0	0	0	0.00	0.00
EBR	0.0	0	0	0	0.00	0.00
WBL	2.0	3,200	363	394	0.11 *	0.12 *
WBT	0.0	0	0	0	0.00	0.00
WBR	1.0	1,600	132	132	0.08	0.08
N/S Critical Movements					0.42	0.44
E/W Critical Movements					0.11	0.12
Clearance Interval					0.00	0.00
ICU					0.53	0.56
Level of Service (LOS)					A	A

Notes: V/C - Volume to Capacity Ratio

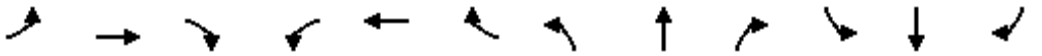
INTERSECTION CAPACITY UTILIZATION

INTERSECTION NUMBER: 13
NORTH/SOUTH STREET: Ventura Rd
EAST/WEST STREET: Wagon Wheel Rd
SCENARIO: Existing Conditions
TIME PERIOD: PM Peak Hour
COUNT DATE: 03/2016
WORK ORDER #: 2064113300

VOLUMES	Northbound			Southbound			Eastbound			Westbound		
	L	T	R	L	T	R	L	T	R	L	T	R
PM Peak	0	699	43	7	809	0	0	0	0	747	0	201
Project Trips	0	71	0	0	44	0	0	0	0	41	0	0
GEOMETRY		TT	R	L	TT					LL		R

	Level of Service Calculations					
Move-	**Lanes**		**Volume**		**V/C Ratio**	
ment	Lane	Capacity	Existing	Project	Existing	Ex+Project
NBL	0.0	0	0	0	0.00	0.00
NBT	2.0	3,200	699	770	0.22 *	0.24 *
NBR	1.0	1,600	43	43	0.03	0.03
SBL	1.0	1,600	7	7	0.05 *	0.05 *
SBT	2.0	3,200	809	853	0.25	0.27
SBR	0.0	0	0	0	0.00	0.00
EBL	0.0	0	0	0	0.00	0.00
EBT	0.0	0	0	0	0.00	0.00
EBR	0.0	0	0	0	0.00	0.00
WBL	2.0	3,200	747	788	0.23 *	0.25 *
WBT	0.0	0	0	0	0.00	0.00
WBR	1.0	1,600	201	201	0.13	0.13
N/S Critical Movements					0.27	0.29
E/W Critical Movements					0.23	0.25
Clearance Interval					0.00	0.00
ICU					0.50	0.54
Level of Service (LOS)					A	A

Notes: V/C - Volume to Capacity Ratio



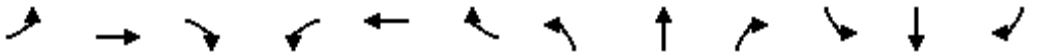
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	25	0	0	31	0	1	0	0	10	0	493
Future Volume (veh/h)	0	25	0	0	31	0	1	0	0	10	0	493
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	0	1870	1870	1870	1870	0	1870	0	1870	1870	1870	1870
Adj Flow Rate, veh/h	0	27	0	0	34	0	1	0	0	11	0	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	0	2	2	2	2	0	2	0	2	2	2	2
Cap, veh/h	0	118	100	832	118	0	0	0	0	21	23	
Arrive On Green	0.00	0.06	0.00	0.00	0.06	0.00	0.00	0.00	0.00	0.01	0.00	0.00
Sat Flow, veh/h	0	1870	1585	1383	1870	0		0		1781	1870	1585
Grp Volume(v), veh/h	0	27	0	0	34	0		0.0		11	0	0
Grp Sat Flow(s),veh/h/ln	0	1870	1585	1383	1870	0				1781	1870	1585
Q Serve(g_s), s	0.0	0.1	0.0	0.0	0.2	0.0				0.1	0.0	0.0
Cycle Q Clear(g_c), s	0.0	0.1	0.0	0.0	0.2	0.0				0.1	0.0	0.0
Prop In Lane	0.00		1.00	1.00		0.00				1.00		1.00
Lane Grp Cap(c), veh/h	0	118	100	832	118	0				21	23	
V/C Ratio(X)	0.00	0.23	0.00	0.00	0.29	0.00				0.51	0.00	
Avail Cap(c_a), veh/h	0	3460	2932	3304	3460	0				3501	3676	
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Upstream Filter(I)	0.00	1.00	0.00	0.00	1.00	0.00				1.00	0.00	0.00
Uniform Delay (d), s/veh	0.0	3.9	0.0	0.0	3.9	0.0				4.2	0.0	0.0
Incr Delay (d2), s/veh	0.0	1.0	0.0	0.0	1.3	0.0				17.6	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0				0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	0.0	0.0	0.0	0.0	0.0				0.1	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	0.0	4.8	0.0	0.0	5.2	0.0				21.8	0.0	0.0
LnGrp LOS	A	A	A	A	A	A				C	A	
Approach Vol, veh/h		27			34						11	A
Approach Delay, s/veh		4.8			5.2						21.8	
Approach LOS		A			A						C	

Timer - Assigned Phs				4		6		8				
Phs Duration (G+Y+Rc), s				4.5		4.1		4.5				
Change Period (Y+Rc), s				4.0		4.0		4.0				
Max Green Setting (Gmax), s				16.0		17.0		16.0				
Max Q Clear Time (g_c+I1), s				2.1		2.1		2.2				
Green Ext Time (p_c), s				0.0		0.0		0.1				

Intersection Summary		
HCM 6th Ctrl Delay		7.6
HCM 6th LOS		A

Notes

Unsignalized Delay for [SBR] is excluded from calculations of the approach delay and intersection delay.



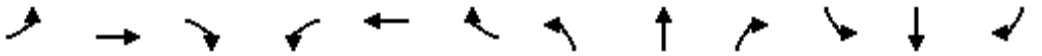
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	25	0	0	31	0	1	0	0	10	0	524
Future Volume (veh/h)	0	25	0	0	31	0	1	0	0	10	0	524
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	0	1870	1870	1870	1870	0	1870	0	1870	1870	1870	1870
Adj Flow Rate, veh/h	0	27	0	0	34	0	1	0	0	11	0	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	0	2	2	2	2	0	2	0	2	2	2	2
Cap, veh/h	0	118	100	832	118	0	0	0	0	21	23	
Arrive On Green	0.00	0.06	0.00	0.00	0.06	0.00	0.00	0.00	0.00	0.01	0.00	0.00
Sat Flow, veh/h	0	1870	1585	1383	1870	0		0		1781	1870	1585
Grp Volume(v), veh/h	0	27	0	0	34	0		0.0		11	0	0
Grp Sat Flow(s),veh/h/ln	0	1870	1585	1383	1870	0				1781	1870	1585
Q Serve(g_s), s	0.0	0.1	0.0	0.0	0.2	0.0				0.1	0.0	0.0
Cycle Q Clear(g_c), s	0.0	0.1	0.0	0.0	0.2	0.0				0.1	0.0	0.0
Prop In Lane	0.00		1.00	1.00		0.00				1.00		1.00
Lane Grp Cap(c), veh/h	0	118	100	832	118	0				21	23	
V/C Ratio(X)	0.00	0.23	0.00	0.00	0.29	0.00				0.51	0.00	
Avail Cap(c_a), veh/h	0	3460	2932	3304	3460	0				3501	3676	
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Upstream Filter(I)	0.00	1.00	0.00	0.00	1.00	0.00				1.00	0.00	0.00
Uniform Delay (d), s/veh	0.0	3.9	0.0	0.0	3.9	0.0				4.2	0.0	0.0
Incr Delay (d2), s/veh	0.0	1.0	0.0	0.0	1.3	0.0				17.6	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0				0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	0.0	0.0	0.0	0.0	0.0				0.1	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	0.0	4.8	0.0	0.0	5.2	0.0				21.8	0.0	0.0
LnGrp LOS	A	A	A	A	A	A				C	A	
Approach Vol, veh/h		27			34						11	A
Approach Delay, s/veh		4.8			5.2						21.8	
Approach LOS		A			A						C	

Timer - Assigned Phs				4		6		8				
Phs Duration (G+Y+Rc), s				4.5		4.1		4.5				
Change Period (Y+Rc), s				4.0		4.0		4.0				
Max Green Setting (Gmax), s				16.0		17.0		16.0				
Max Q Clear Time (g_c+I1), s				2.1		2.1		2.2				
Green Ext Time (p_c), s				0.0		0.0		0.1				

Intersection Summary		
HCM 6th Ctrl Delay		7.6
HCM 6th LOS		A

Notes

Unsignalized Delay for [SBR] is excluded from calculations of the approach delay and intersection delay.



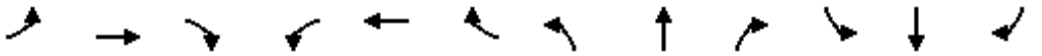
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	51	0	0	23	0	0	0	0	11	0	908
Future Volume (veh/h)	0	51	0	0	23	0	0	0	0	11	0	908
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	0	1870	1870	1870	1870	0	1870	0	1870	1870	1870	1870
Adj Flow Rate, veh/h	0	55	0	0	25	0	0	0	0	12	0	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	0	2	2	2	2	0	2	0	2	2	2	2
Cap, veh/h	0	151	128	816	151	0	0	0	0	23	25	
Arrive On Green	0.00	0.08	0.00	0.00	0.08	0.00	0.00	0.00	0.00	0.01	0.00	0.00
Sat Flow, veh/h	0	1870	1585	1349	1870	0		0		1781	1870	1585
Grp Volume(v), veh/h	0	55	0	0	25	0		0.0		12	0	0
Grp Sat Flow(s),veh/h/ln	0	1870	1585	1349	1870	0				1781	1870	1585
Q Serve(g_s), s	0.0	0.2	0.0	0.0	0.1	0.0				0.1	0.0	0.0
Cycle Q Clear(g_c), s	0.0	0.2	0.0	0.0	0.1	0.0				0.1	0.0	0.0
Prop In Lane	0.00		1.00	1.00		0.00				1.00		1.00
Lane Grp Cap(c), veh/h	0	151	128	816	151	0				23	25	
V/C Ratio(X)	0.00	0.36	0.00	0.00	0.17	0.00				0.51	0.00	
Avail Cap(c_a), veh/h	0	3602	3052	3304	3602	0				3430	3602	
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Upstream Filter(I)	0.00	1.00	0.00	0.00	1.00	0.00				1.00	0.00	0.00
Uniform Delay (d), s/veh	0.0	3.8	0.0	0.0	3.8	0.0				4.3	0.0	0.0
Incr Delay (d2), s/veh	0.0	1.5	0.0	0.0	0.5	0.0				16.3	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0				0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	0.1	0.0	0.0	0.0	0.0				0.1	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	0.0	5.3	0.0	0.0	4.3	0.0				20.6	0.0	0.0
LnGrp LOS	A	A	A	A	A	A				C	A	
Approach Vol, veh/h		55			25						12	A
Approach Delay, s/veh		5.3			4.3						20.6	
Approach LOS		A			A						C	

Timer - Assigned Phs				4		6		8				
Phs Duration (G+Y+Rc), s				4.7		4.1		4.7				
Change Period (Y+Rc), s				4.0		4.0		4.0				
Max Green Setting (Gmax), s				17.0		17.0		17.0				
Max Q Clear Time (g_c+I1), s				2.2		2.1		2.1				
Green Ext Time (p_c), s				0.2		0.0		0.0				

Intersection Summary												
HCM 6th Ctrl Delay			7.0									
HCM 6th LOS			A									

Notes

Unsignalized Delay for [SBR] is excluded from calculations of the approach delay and intersection delay.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	51	0	0	23	0	0	0	0	11	0	949
Future Volume (veh/h)	0	51	0	0	23	0	0	0	0	11	0	949
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	0	1870	1870	1870	1870	0	1870	0	1870	1870	1870	1870
Adj Flow Rate, veh/h	0	55	0	0	25	0	0	0	0	12	0	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	0	2	2	2	2	0	2	0	2	2	2	2
Cap, veh/h	0	151	128	816	151	0	0	0	0	23	25	
Arrive On Green	0.00	0.08	0.00	0.00	0.08	0.00	0.00	0.00	0.00	0.01	0.00	0.00
Sat Flow, veh/h	0	1870	1585	1349	1870	0		0		1781	1870	1585
Grp Volume(v), veh/h	0	55	0	0	25	0		0.0		12	0	0
Grp Sat Flow(s),veh/h/ln	0	1870	1585	1349	1870	0				1781	1870	1585
Q Serve(g_s), s	0.0	0.2	0.0	0.0	0.1	0.0				0.1	0.0	0.0
Cycle Q Clear(g_c), s	0.0	0.2	0.0	0.0	0.1	0.0				0.1	0.0	0.0
Prop In Lane	0.00		1.00	1.00		0.00				1.00		1.00
Lane Grp Cap(c), veh/h	0	151	128	816	151	0				23	25	
V/C Ratio(X)	0.00	0.36	0.00	0.00	0.17	0.00				0.51	0.00	
Avail Cap(c_a), veh/h	0	3602	3052	3304	3602	0				3430	3602	
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Upstream Filter(I)	0.00	1.00	0.00	0.00	1.00	0.00				1.00	0.00	0.00
Uniform Delay (d), s/veh	0.0	3.8	0.0	0.0	3.8	0.0				4.3	0.0	0.0
Incr Delay (d2), s/veh	0.0	1.5	0.0	0.0	0.5	0.0				16.3	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0				0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	0.1	0.0	0.0	0.0	0.0				0.1	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	0.0	5.3	0.0	0.0	4.3	0.0				20.6	0.0	0.0
LnGrp LOS	A	A	A	A	A	A				C	A	
Approach Vol, veh/h		55			25						12	A
Approach Delay, s/veh		5.3			4.3						20.6	
Approach LOS		A			A						C	

Timer - Assigned Phs				4		6		8				
Phs Duration (G+Y+Rc), s				4.7		4.1		4.7				
Change Period (Y+Rc), s				4.0		4.0		4.0				
Max Green Setting (Gmax), s				17.0		17.0		17.0				
Max Q Clear Time (g_c+I1), s				2.2		2.1		2.1				
Green Ext Time (p_c), s				0.2		0.0		0.0				

Intersection Summary		
HCM 6th Ctrl Delay		7.0
HCM 6th LOS		A

Notes

Unsignalized Delay for [SBR] is excluded from calculations of the approach delay and intersection delay.

INTERSECTION CAPACITY UTILIZATION

INTERSECTION NUMBER: 15
NORTH/SOUTH STREET: Ventura Rd
EAST/WEST STREET: Vineyard Ave
SCENARIO: Existing Conditions
TIME PERIOD: AM Peak Hour
COUNT DATE: 05/2018
WORK ORDER #: 2064169300

VOLUMES	Northbound			Southbound			Eastbound			Westbound		
	L	T	R	L	T	R	L	T	R	L	T	R
AM Peak	30	762	470	53	534	123	145	196	20	279	127	131
Project Trips	0	75	10	0	64	0	0	0	0	8	0	0
GEOMETRY	L	TT	TR	L	TT	TR	L	TT	R	LL	TT	R

	Level of Service Calculations					
Move-	**Lanes**		**Volume**		**V/C Ratio**	
ment	Lane	Capacity	Existing	Project	Existing	Ex+Project
NBL	1.0	1,600	30	30	0.05	0.05
NBT	3.0	4,800	762	837	0.26 *	0.27 *
NBR	0.0	0	470	480	0.00	0.00
SBL	1.0	1,600	53	53	0.05 *	0.05 *
SBT	3.0	4,800	534	598	0.14	0.15
SBR	0.0	0	123	123	0.00	0.00
EBL	1.0	1,600	145	145	0.09 *	0.09 *
EBT	2.0	3,200	196	196	0.07	0.07
EBR	1.0	1,600	20	20	0.01	0.01
WBL	2.0	3,200	279	287	0.09	0.09
WBT	2.0	3,200	127	127	0.07 *	0.07 *
WBR	1.0 (a)	1,600	131	131	0.08	0.08
N/S Critical Movements					0.31	0.32
E/W Critical Movements					0.16	0.16
Clearance Interval					0.00	0.00
ICU					0.47	0.48
Level of Service (LOS)					A	A

Notes: V/C - Volume to Capacity Ratio

(a) not critical due to RTOR

INTERSECTION CAPACITY UTILIZATION

INTERSECTION NUMBER: 15
NORTH/SOUTH STREET: Ventura Rd
EAST/WEST STREET: Vineyard Ave
SCENARIO: Existing Conditions
TIME PERIOD: PM Peak Hour
COUNT DATE: 05/2018
WORK ORDER #: 2064169300

VOLUMES	Northbound			Southbound			Eastbound			Westbound		
	L	T	R	L	T	R	L	T	R	L	T	R
AM Peak	33	576	359	112	1050	201	93	128	42	421	159	67
Project Trips	0	71	10	0	85	0	0	0	0	11	0	0
GEOMETRY	L	TT	TR	L	TT	TR	L	TT	R	LL	TT	R

	Level of Service Calculations					
Move-	**Lanes**		**Volume**		**V/C Ratio**	
ment	Lane	Capacity	Existing	Project	Existing	Ex+Project
NBL	1.0	1,600	33	33	0.02	0.02 *
NBT	3.0	4,800	576	647	0.19	0.21
NBR	0.0	0	359	369	0.00	0.00
SBL	1.0	1,600	112	112	0.07 *	0.07 *
SBT	3.0	4,800	1,050	1,135	0.26	0.28
SBR	0.0	0	201	201	0.00	0.00
EBL	1.0	1,600	93	93	0.06	0.06
EBT	2.0	3,200	128	128	0.07 *	0.07 *
EBR	1.0	1,600	42	42	0.03	0.03
WBL	2.0	3,200	421	432	0.13 *	0.14 *
WBT	2.0	3,200	159	159	0.05	0.05
WBR	1.0	1,600	67	67	0.04	0.04
N/S Critical Movements					0.28	0.30
E/W Critical Movements					0.20	0.21
Clearance Interval					0.00	0.00
ICU					0.48	0.51
Level of Service (LOS)					A	A

Notes: V/C - Volume to Capacity Ratio

INTERSECTION CAPACITY UTILIZATION

INTERSECTION NUMBER: 16
NORTH/SOUTH STREET: Ventura Rd
EAST/WEST STREET: Gonzales Rd
SCENARIO: Existing Conditions
TIME PERIOD: AM Peak Hour
COUNT DATE: 05/2018
WORK ORDER #: 2064169300

VOLUMES	Northbound			Southbound			Eastbound			Westbound		
	L	T	R	L	T	R	L	T	R	L	T	R
AM Peak	234	978	358	69	825	77	192	469	220	344	407	65
Project Trips	0	85	62	0	72	4	5	0	0	48	0	0
GEOMETRY	L	TT	R	L	TT TR		L	TT	R	LL	T TR	

	Level of Service Calculations					
Move-	**Lanes**		**Volume**		**V/C Ratio**	
ment	Lane	Capacity	Existing	Project	Existing	Ex+Project
NBL	1.0	1,600	234	234	0.15	0.15
NBT	2.0	3,200	978	1,063	0.31 *	0.33 *
NBR	1.0	1,600	358	420	0.22	0.26
SBL	1.0	1,600	69	69	0.05 *	0.05 *
SBT	3.0	4,800	825	897	0.19	0.20
SBR	0.0	0	77	81	0.00	0.00
EBL	1.0	1,600	192	197	0.12 *	0.12 *
EBT	2.0	3,200	469	469	0.15	0.15
EBR	1.0	1,600	220	220	0.14	0.14
WBL	2.0	3,200	344	392	0.11	0.12
WBT	2.0	3,200	407	407	0.15 *	0.15 *
WBR	0.0	0	65	65	0.00	0.00
N/S Critical Movements					0.36	0.38
E/W Critical Movements					0.27	0.27
Clearance Interval					0.00	0.00
ICU					0.63	0.65
Level of Service (LOS)					B	B

Notes: V/C - Volume to Capacity Ratio

INTERSECTION CAPACITY UTILIZATION

INTERSECTION NUMBER: 16
NORTH/SOUTH STREET: Ventura Rd
EAST/WEST STREET: Gonzales Rd
SCENARIO: Existing Conditions
TIME PERIOD: PM Peak Hour
COUNT DATE: 05/2018
WORK ORDER #: 2064169300

VOLUMES	Northbound			Southbound			Eastbound			Westbound		
	L	T	R	L	T	R	L	T	R	L	T	R
AM Peak	126	821	361	77	1192	91	139	413	110	538	427	122
Project Trips	0	81	59	0	96	5	5	0	0	64	0	0
GEOMETRY	L	TT	R	L	TT TR		L	TT	R	LL	T TR	

	Level of Service Calculations					
Move-	**Lanes**		**Volume**		**V/C Ratio**	
ment	Lane	Capacity	Existing	Project	Existing	Ex+Project
NBL	1.0	1,600	126	126	0.08 *	0.08 *
NBT	2.0	3,200	821	902	0.26	0.28
NBR	1.0	1,600	361	420	0.23	0.26
SBL	1.0	1,600	77	77	0.05	0.05
SBT	3.0	4,800	1,192	1,288	0.27 *	0.29 *
SBR	0.0	0	91	96	0.00	0.00
EBL	1.0	1,600	139	144	0.09	0.09
EBT	2.0	3,200	413	413	0.13 *	0.13 *
EBR	1.0	1,600	110	110	0.07	0.07
WBL	2.0	3,200	538	602	0.17 *	0.19 *
WBT	2.0	3,200	427	427	0.17	0.17
WBR	0.0	0	122	122	0.00	0.00
N/S Critical Movements					0.35	0.37
E/W Critical Movements					0.30	0.32
Clearance Interval					0.00	0.00
ICU					0.65	0.69
Level of Service (LOS)					B	B

Notes: V/C - Volume to Capacity Ratio

INTERSECTION CAPACITY UTILIZATION

INTERSECTION NUMBER: 17
NORTH/SOUTH STREET: Ventura Rd
EAST/WEST STREET: Doris Ave
SCENARIO: Existing Conditions
TIME PERIOD: AM Peak Hour
COUNT DATE: 05/2018
WORK ORDER #: 2064169300

VOLUMES	Northbound			Southbound			Eastbound			Westbound		
	L	T	R	L	T	R	L	T	R	L	T	R
AM Peak	237	1524	114	39	1332	19	34	130	257	109	219	57
Project Trips	12	100	27	0	82	38	47	13	7	21	10	0
GEOMETRY	L	TT	R	L	TT	R	L	T	R	L	T	R

	Level of Service Calculations					
Move-	**Lanes**		**Volume**		**V/C Ratio**	
ment	Lane	Capacity	Existing	Project	Existing	Ex+Project
NBL	1.0	1,600	237	249	0.15 *	
NBT	2.0	3,200	1,524	1,624	0.48	
NBR	1.0	1,600	114	141	0.07	
SBL	1.0	1,600	39	39	0.05	
SBT	2.0	3,200	1,332	1,414	0.42 *	
SBR	1.0	1,600	19	57	0.01	
EBL	1.0	1,600	34	81	0.05 *	
EBT	1.0	1,600	130	143	0.08	
EBR	1.0	1,600	257	264	0.16	
WBL	1.0	1,600	109	130	0.07	
WBT	1.0	1,600	219	229	0.14 *	
WBR	1.0	1,600	57	57	0.04	
N/S Critical Movements					0.57	
E/W Critical Movements					0.19	
Clearance Interval					0.00	
ICU					0.76	0.00
Level of Service (LOS)					C	A

Notes: V/C - Volume to Capacity Ratio

INTERSECTION CAPACITY UTILIZATION

INTERSECTION NUMBER: 17
NORTH/SOUTH STREET: Ventura Rd
EAST/WEST STREET: Doris Ave
SCENARIO: Existing Conditions
TIME PERIOD: AM Peak Hour
COUNT DATE: 05/2018
WORK ORDER #: 2064169300

VOLUMES	Northbound			Southbound			Eastbound			Westbound		
	L	T	R	L	T	R	L	T	R	L	T	R
AM Peak	237	1524	114	39	1332	19	34	130	257	109	219	57
Project Trips	12	100	27	0	82	38	47	13	7	21	10	0
GEOMETRY	L	**TT**	**TR**	L	**TT**	**TR**	L	T	R	L	T	R

	Level of Service Calculations					
Move-	**Lanes**		**Volume**		**V/C Ratio**	
ment	Lane	Capacity	Existing	Project	Existing	Ex+Project
NBL	1.0	1,600	237	249		0.16 *
NBT	**3.0**	4,800	1,524	1,624		0.37
NBR	0.0	0	114	141		0.00
SBL	1.0	1,600	39	39		0.05
SBT	**3.0**	4,800	1,332	1,414		0.31 *
SBR	0.0	0	19	57		0.00
EBL	1.0	1,600	34	81		0.05 *
EBT	1.0	1,600	130	143		0.09
EBR	1.0	1,600	257	264		0.17
WBL	1.0	1,600	109	130		0.08
WBT	1.0	1,600	219	229		0.14 *
WBR	1.0	1,600	57	57		0.04
N/S Critical Movements						0.47
E/W Critical Movements						0.19
Clearance Interval						0.00
ICU					0.00	0.66
Level of Service (LOS)					A	B

Notes: V/C - Volume to Capacity Ratio

INTERSECTION CAPACITY UTILIZATION

INTERSECTION NUMBER: 17
NORTH/SOUTH STREET: Ventura Rd
EAST/WEST STREET: Doris Ave
SCENARIO: Existing Conditions
TIME PERIOD: AM Peak Hour
COUNT DATE: 05/2018
WORK ORDER #: 2064169300

VOLUMES	Northbound			Southbound			Eastbound			Westbound		
	L	T	R	L	T	R	L	T	R	L	T	R
PM Peak	153	1357	125	57	1603	28	29	132	110	121	113	59
Project Trips	11	95	26	0	109	51	45	12	10	28	13	0
GEOMETRY	L	TT	R	L	TT	R	L	T	R	L	T	R

	Level of Service Calculations					
Move-	**Lanes**		**Volume**		**V/C Ratio**	
ment	Lane	Capacity	Existing	Project	Existing	Ex+Project
NBL	1.0	1,600	153	164	0.10 *	
NBT	2.0	3,200	1,357	1,452	0.42	
NBR	1.0	1,600	125	151	0.08	
SBL	1.0	1,600	57	57	0.05	
SBT	2.0	3,200	1,603	1,712	0.50 *	
SBR	1.0	1,600	28	79	0.02	
EBL	1.0	1,600	29	74	0.05	
EBT	1.0	1,600	132	144	0.08 *	
EBR	1.0	1,600	110	120	0.07	
WBL	1.0	1,600	121	149	0.08 *	
WBT	1.0	1,600	113	126	0.07	
WBR	1.0	1,600	59	59	0.04	
N/S Critical Movements					0.60	0.00
E/W Critical Movements					0.16	0.00
Clearance Interval					0.00	0.00
ICU					0.76	0.00
Level of Service (LOS)					C	A

Notes: V/C - Volume to Capacity Ratio

INTERSECTION CAPACITY UTILIZATION

INTERSECTION NUMBER: 17
NORTH/SOUTH STREET: Ventura Rd
EAST/WEST STREET: Doris Ave
SCENARIO: Existing Conditions
TIME PERIOD: AM Peak Hour
COUNT DATE: 05/2018
WORK ORDER #: 2064169300

VOLUMES	Northbound			Southbound			Eastbound			Westbound		
	L	T	R	L	T	R	L	T	R	L	T	R
PM Peak	153	1357	125	57	1603	28	29	132	110	121	113	59
Project Trips	11	95	26	0	109	51	45	12	10	28	13	0
GEOMETRY	L	**TT**	**TR**	L	**TT**	**TR**	L	T	R	L	T	R

	Level of Service Calculations					
Move-ment	**Lanes** Lane	Capacity	**Volume** Existing	Project	**V/C Ratio**	Ex+Project
NBL	1.0	1,600	153	164		0.10 *
NBT	**3.0**	4,800	1,357	1,452		0.33
NBR	0.0	0	125	151		0.00
SBL	1.0	1,600	57	57		0.05
SBT	**3.0**	4,800	1,603	1,712		0.37 *
SBR	0.0	0	28	79		0.00
EBL	1.0	1,600	29	74		0.05
EBT	1.0	1,600	132	144		0.09 *
EBR	1.0	1,600	110	120		0.08
WBL	1.0	1,600	121	149		0.09 *
WBT	1.0	1,600	113	126		0.08
WBR	1.0	1,600	59	59		0.04
N/S Critical Movements						0.47
E/W Critical Movements						0.18
Clearance Interval						0.00
ICU					0.00	0.65
Level of Service (LOS)					A	B

Notes: V/C - Volume to Capacity Ratio

HCS7 Two-Way Stop-Control Report

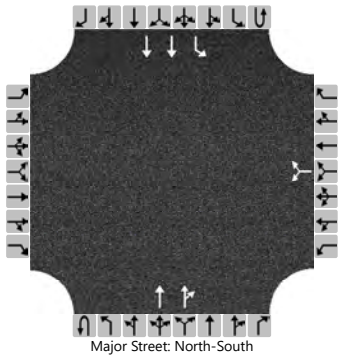
General Information

Analyst	18. DJL
Agency/Co.	STANTEC
Date Performed	7/3/2018
Analysis Year	2018
Time Analyzed	AM PEAK HOUR
Intersection Orientation	North-South
Project Description	TEAL CLUB SP

Site Information

Intersection	VENTURA AVE/BEVERLY DR
Jurisdiction	OXNARD
East/West Street	BEVERLY DR
North/South Street	VENTURA AVE
Peak Hour Factor	1.00
Analysis Time Period (hrs)	1.00

Lanes



Major Street: North-South

Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority		10	11	12		7	8	9	1U	1	2	3	4U	4	5	6
Number of Lanes		0	0	0		0	1	0	0	0	2	0	0	1	2	0
Configuration							LR				T	TR		L	T	
Volume (veh/h)						1		64			1821	21	0	40	1662	
Percent Heavy Vehicles (%)						3		3					3	3		
Proportion Time Blocked																
Percent Grade (%)						0										
Right Turn Channelized																
Median Type | Storage						Undivided										

Critical and Follow-up Headways

Base Critical Headway (sec)						7.5		6.9						4.1		
Critical Headway (sec)						6.86		6.96						4.16		
Base Follow-Up Headway (sec)						3.5		3.3						2.2		
Follow-Up Headway (sec)						3.53		3.33						2.23		

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)							65							40		
Capacity, c (veh/h)							211							322		
v/c Ratio							0.31							0.12		
95% Queue Length, Q_{95} (veh)							1.3							0.4		
Control Delay (s/veh)							29.7							17.8		
Level of Service (LOS)							D							C		
Approach Delay (s/veh)						29.7							0.4			
Approach LOS						D										

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HCS7 Two-Way Stop-Control Report

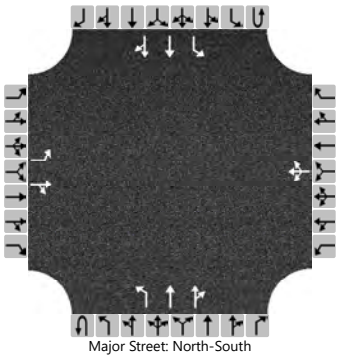
General Information

Analyst	18. DJL
Agency/Co.	STANTEC
Date Performed	7/3/2018
Analysis Year	EXPR
Time Analyzed	AM PEAK HOUR
Intersection Orientation	North-South
Project Description	TEAL CLUB SP

Site Information

Intersection	VENTURA AVE/BEVERLY DR
Jurisdiction	OXNARD
East/West Street	BEVERLY DR
North/South Street	VENTURA AVE
Peak Hour Factor	1.00
Analysis Time Period (hrs)	1.00

Lanes



Major Street: North-South

Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority		10	11	12		7	8	9	1U	1	2	3	4U	4	5	6
Number of Lanes		1	1	0		0	1	0	0	1	2	0	0	1	2	0
Configuration		L		TR			LTR			L	T	TR		L	T	TR
Volume (veh/h)		136	0	79		1	0	64	0	70	1833	21	0	40	1671	110
Percent Heavy Vehicles (%)		3	3	3		3	3	3	3	3			3	3		
Proportion Time Blocked																
Percent Grade (%)	0				0											
Right Turn Channelized																
Median Type | Storage	Undivided															

Critical and Follow-up Headways

Base Critical Headway (sec)		7.5	6.5	6.9		7.5	6.5	6.9		4.1				4.1		
Critical Headway (sec)		7.56	6.56	6.96		7.56	6.56	6.96		4.16				4.16		
Base Follow-Up Headway (sec)		3.5	4.0	3.3		3.5	4.0	3.3		2.2				2.2		
Follow-Up Headway (sec)		3.53	4.03	3.33		3.53	4.03	3.33		2.23				2.23		

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)		136		79			65			70				40		
Capacity, c (veh/h)		4		284			130			340				319		
v/c Ratio		31.33		0.28			0.50			0.21				0.13		
95% Queue Length, Q_{95} (veh)		68.8		1.1			2.7			0.8				0.4		
Control Delay (s/veh)		56268.6		22.6			59.2			18.3				17.9		
Level of Service (LOS)		F		C			F			C				C		
Approach Delay (s/veh)	35601.5				59.2				0.7				0.4			
Approach LOS	F				F											

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INTERSECTION CAPACITY UTILIZATION

INTERSECTION NUMBER: 18 **MITIGATED**
NORTH/SOUTH STREET: Ventura Rd
EAST/WEST STREET: Beverly Dr
SCENARIO: Existing Conditions
TIME PERIOD: AM Peak Hour
COUNT DATE: 05/2018
WORK ORDER #: 2064169300

VOLUMES	Northbound			Southbound			Eastbound			Westbound		
	L	T	R	L	T	R	L	T	R	L	T	R
AM Peak	0	1821	21	40	1662	0	0	0	0	1	0	64
Project Trips	70	12	0	0	9	110	136	0	79	0	0	0
GEOMETRY	L	**TT**	**TR**	L	**TT**	**TR**	**L**	**TR**		LTR		

Move-ment	**Level of Service Calculations**					
	Lanes		**Volume**		**V/C Ratio**	
	Lane	Capacity	Existing	Project	Existing	Ex+Project
NBL	1.0	1,600	0	70	0.00	0.05
NBT	**3.0**	4,800	1,821	1,833	0.38 *	0.39 *
NBR	0.0	0	21	21	0.00	0.00
SBL	1.0	1,600	40	40	0.05	0.05 *
SBT	**3.0**	4,800	1,662	1,671	0.35	0.37
SBR	0.0	0	0	110	0.00	0.00
EBL	**1.0**	1,600	0	136	0.00 *	0.09 *
EBT	**1.0**	1,600	0	0	0.00	0.07
EBR	0.0	0	0	79	0.00	0.00
WBL	0.0	0	1	1	0.00	0.00
WBT	1.0	1,600	0	0	0.07 *	0.07 *
WBR	0.0	0	64	64	0.00	0.00
N/S Critical Movements					0.43	0.44
E/W Critical Movements					0.07	0.16
Clearance Interval					0.00	0.00
ICU					0.50	0.60
Level of Service (LOS)					A	A

Notes: V/C - Volume to Capacity Ratio

HCS7 Two-Way Stop-Control Report

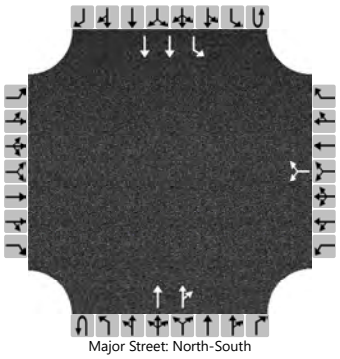
General Information

Analyst	18. DJL
Agency/Co.	STANTEC
Date Performed	7/3/2018
Analysis Year	2018
Time Analyzed	PM PEAK HOUR
Intersection Orientation	North-South
Project Description	TEAL CLUB SP

Site Information

Intersection	VENTURA AVE/BEVERLY DR
Jurisdiction	OXNARD
East/West Street	BEVERLY DR
North/South Street	VENTURA AVE
Peak Hour Factor	1.00
Analysis Time Period (hrs)	1.00

Lanes



Major Street: North-South

Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority		10	11	12		7	8	9	1U	1	2	3	4U	4	5	6
Number of Lanes		0	0	0		0	1	0	0	0	2	0	0	1	2	0
Configuration							LR				T	TR		L	T	
Volume (veh/h)						2		14			1579	26	0	36	1838	
Percent Heavy Vehicles (%)						3		3					3	3		
Proportion Time Blocked																
Percent Grade (%)						0										
Right Turn Channelized																
Median Type | Storage						Undivided										

Critical and Follow-up Headways

Base Critical Headway (sec)						7.5		6.9						4.1		
Critical Headway (sec)						6.86		6.96						4.16		
Base Follow-Up Headway (sec)						3.5		3.3						2.2		
Follow-Up Headway (sec)						3.53		3.33						2.23		

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)							16							36		
Capacity, c (veh/h)							106							399		
v/c Ratio							0.15							0.09		
95% Queue Length, Q_{95} (veh)							0.5							0.3		
Control Delay (s/veh)							44.9							14.9		
Level of Service (LOS)							E							B		
Approach Delay (s/veh)						44.9							0.3			
Approach LOS						E										

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HCS7 Two-Way Stop-Control Report

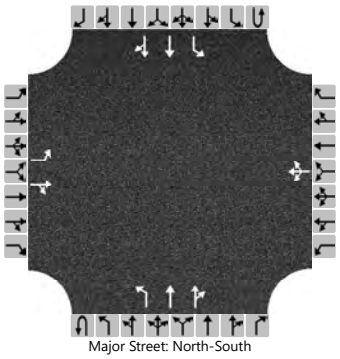
General Information

Analyst	18. DJL
Agency/Co.	STANTEC
Date Performed	7/3/2018
Analysis Year	EXPR
Time Analyzed	PM PEAK HOUR
Intersection Orientation	North-South
Project Description	TEAL CLUB SP

Site Information

Intersection	VENTURA AVE/BEVERLY DR
Jurisdiction	OXNARD
East/West Street	BEVERLY DR
North/South Street	VENTURA AVE
Peak Hour Factor	1.00
Analysis Time Period (hrs)	1.00

Lanes



Major Street: North-South

Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority		10	11	12		7	8	9	1U	1	2	3	4U	4	5	6
Number of Lanes		1	1	0		0	1	0	0	1	2	0	0	1	2	0
Configuration		L		TR			LTR			L	T	TR		L	T	TR
Volume (veh/h)		160	0	136		2	0	14	0	158	1542	26	0	36	1804	181
Percent Heavy Vehicles (%)		3	3	3		3	3	3	3	3			3	3		
Proportion Time Blocked																
Percent Grade (%)		0				0										
Right Turn Channelized																
Median Type | Storage		Undivided														

Critical and Follow-up Headways

Base Critical Headway (sec)		7.5	6.5	6.9		7.5	6.5	6.9		4.1				4.1		
Critical Headway (sec)		7.56	6.56	6.96		7.56	6.56	6.96		4.16				4.16		
Base Follow-Up Headway (sec)		3.5	4.0	3.3		3.5	4.0	3.3		2.2				2.2		
Follow-Up Headway (sec)		3.53	4.03	3.33		3.53	4.03	3.33		2.23				2.23		

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)		160		136			16			158				36		
Capacity, c (veh/h)		3		243			14			283				412		
v/c Ratio		60.35		0.56			1.17			0.56				0.09		
95% Queue Length, Q_{95} (veh)		81.6		3.6			5.5			3.6				0.3		
Control Delay (s/veh)		109558.1		38.4			1178.0			33.5				14.6		
Level of Service (LOS)		F		E			F			D				B		
Approach Delay (s/veh)		59238.2				1178.0				3.1				0.3		
Approach LOS		F				F										

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INTERSECTION CAPACITY UTILIZATION

INTERSECTION NUMBER: 18 **MITIGATED**
NORTH/SOUTH STREET: Ventura Rd
EAST/WEST STREET: Beverly Dr
SCENARIO: Existing Conditions
TIME PERIOD: PM Peak Hour
COUNT DATE: 05/2018
WORK ORDER #: 2064169300

VOLUMES	Northbound			Southbound			Eastbound			Westbound		
	L	T	R	L	T	R	L	T	R	L	T	R
AM Peak	0	1579	26	36	1838	0	0	0	0	2	0	14
Project Trips	158	-37	0	0	-34	181	160	0	136	0	0	0
GEOMETRY	L	**TT**	**TR**	L	**TT**	**TR**	**L**	**TR**		LTR		

	Level of Service Calculations					
Move-	**Lanes**		**Volume**		**V/C Ratio**	
ment	Lane	Capacity	Existing	Project	Existing	Ex+Project
NBL	1.0	1,600	0	158	0.00	0.10 *
NBT	**3.0**	4,800	1,579	1,542	0.33	0.33
NBR	0.0	0	26	26	0.00	0.00
SBL	1.0	1,600	36	36	0.05	0.05
SBT	**3.0**	4,800	1,838	1,804	0.38 *	0.41 *
SBR	0.0	0	0	181	0.00	0.00
EBL	**1.0**	1,600	0	160	0.00 *	0.05
EBT	**1.0**	1,600	0	0	0.00	0.09 *
EBR	0.0	0	0	136	0.00	0.00
WBL	0.0	0	2	2	0.00	0.00
WBT	1.0	1,600	0	0	0.07 *	0.07 *
WBR	0.0	0	14	14	0.00	0.00
N/S Critical Movements					0.38	0.51
E/W Critical Movements					0.07	0.16
Clearance Interval					0.00	0.00
ICU					0.45	0.67
Level of Service (LOS)					A	B

Notes: V/C - Volume to Capacity Ratio

INTERSECTION CAPACITY UTILIZATION

INTERSECTION NUMBER: 19
NORTH/SOUTH STREET: Ventura Rd
EAST/WEST STREET: Teal Club/2nd St
SCENARIO: Existing Conditions
TIME PERIOD: AM Peak Hour
COUNT DATE: 05/2018
WORK ORDER #: 2064169300

VOLUMES	Northbound			Southbound			Eastbound			Westbound		
	L	T	R	L	T	R	L	T	R	L	T	R
AM Peak	89	1736	75	93	1557	12	25	36	77	37	25	73
Project Trips	53	37	0	27	47	8	12	33	68	0	26	21
GEOMETRY	L	TT	R	L	T TR			LTR		L	T	R

	Level of Service Calculations					
Move-	**Lanes**		**Volume**		**V/C Ratio**	
ment	Lane	Capacity	Existing	Project	Existing	
NBL	1.0	1,600	89	142	0.06	
NBT	2.0	3,200	1,736	1,773	0.54	*
NBR	1.0	1,600	75	75	0.05	
SBL	1.0	1,600	93	120	0.06	*
SBT	2.0	3,200	1,557	1,604	0.49	
SBR	0.0	0	12	20	0.00	
EBL	0.0	0	25	37	0.00	
EBT	1.0	1,600	36	69	0.09	*
EBR	0.0	0	77	145	0.00	
WBL	1.0	1,600	37	37	0.05	*
WBT	1.0	1,600	25	51	0.07	
WBR	1.0	1,600	73	94	0.05	
N/S Critical Movements					0.60	
E/W Critical Movements					0.14	
Clearance Interval					0.00	
ICU					0.74	0.00
Level of Service (LOS)					C	A

Notes: V/C - Volume to Capacity Ratio

INTERSECTION CAPACITY UTILIZATION

INTERSECTION NUMBER: 19
NORTH/SOUTH STREET: Ventura Rd
EAST/WEST STREET: Teal Club/2nd St
SCENARIO: Existing Conditions
TIME PERIOD: AM Peak Hour
COUNT DATE: 05/2018
WORK ORDER #: 2064169300

VOLUMES	Northbound			Southbound			Eastbound			Westbound		
	L	T	R	L	T	R	L	T	R	L	T	R
AM Peak	89	1736	75	93	1557	12	25	36	77	37	25	73
Project Trips	53	37	0	27	47	8	12	33	68	0	26	21
GEOMETRY	L	**TT**	**TR**	L	**TT**	**TR**	**L**	**TR**		L	T	R

Move-ment	**Level of Service Calculations**					
	Lanes		**Volume**		**V/C Ratio**	
	Lane	Capacity	Existing	Project		Ex+Project
NBL	1.0	1,600	89	142		0.09
NBT	**3.0**	4,800	1,736	1,773		0.39 *
NBR	0.0	0	75	75		0.00
SBL	1.0	1,600	93	120		0.08 *
SBT	**3.0**	4,800	1,557	1,604		0.34
SBR	0.0	0	12	20		0.00
EBL	**1.0**	1,600	25	37		0.05
EBT	**1.0**	1,600	36	69		0.13 *
EBR	0.0	0	77	145		0.00
WBL	1.0	1,600	37	37		0.05 *
WBT	1.0	1,600	25	51		0.07
WBR	1.0	1,600	73	94		0.00
N/S Critical Movements						0.47
E/W Critical Movements						0.18
Clearance Interval						0.00
ICU					0.00	0.65
Level of Service (LOS)					A	B

Notes: V/C - Volume to Capacity Ratio

INTERSECTION CAPACITY UTILIZATION

INTERSECTION NUMBER: 19
NORTH/SOUTH STREET: Ventura Rd
EAST/WEST STREET: Teal Club/2nd St
SCENARIO: Existing Conditions
TIME PERIOD: PM Peak Hour
COUNT DATE: 05/2018
WORK ORDER #: 2064169300

VOLUMES	Northbound			Southbound			Eastbound			Westbound		
	L	T	R	L	T	R	L	T	R	L	T	R
AM Peak	39	1507	84	48	1756	14	21	35	68	42	37	81
Project Trips	54	66	0	26	65	8	16	31	45	0	25	38
GEOMETRY	L	TT	R	L	T TR			LTR		L	T	R

	Level of Service Calculations					
Move-	**Lanes**		**Volume**		**V/C Ratio**	
ment	Lane	Capacity	Existing	Project	Existing	
NBL	1.0	1,600	39	93	0.05 *	
NBT	2.0	3,200	1,507	1,573	0.47	
NBR	1.0	1,600	84	84	0.05	
SBL	1.0	1,600	48	74	0.05	
SBT	2.0	3,200	1,756	1,821	0.55 *	
SBR	0.0	0	14	22	0.00	
EBL	0.0	0	21	37	0.00	
EBT	1.0	1,600	35	66	0.08 *	
EBR	0.0	0	68	113	0.00	
WBL	1.0	1,600	42	42	0.05 *	
WBT	1.0	1,600	37	62	0.07	
WBR	1.0	1,600	81	119	0.05	
N/S Critical Movements					0.60	
E/W Critical Movements					0.15	
Clearance Interval					0.00	
ICU					0.75	0.00
Level of Service (LOS)					C	A

Notes: V/C - Volume to Capacity Ratio

INTERSECTION CAPACITY UTILIZATION

INTERSECTION NUMBER: 19
NORTH/SOUTH STREET: Ventura Rd
EAST/WEST STREET: Teal Club/2nd St
SCENARIO: Existing Conditions
TIME PERIOD: PM Peak Hour
COUNT DATE: 05/2018
WORK ORDER #: 2064169300

VOLUMES	Northbound			Southbound			Eastbound			Westbound		
	L	T	R	L	T	R	L	T	R	L	T	R
AM Peak	39	1507	84	48	1756	14	21	35	68	42	37	81
Project Trips	54	66	0	26	65	8	16	31	45	0	25	38
GEOMETRY	L	**TT**	**TR**	L	**TT**	**TR**	**L**	**TR**		L	T	R

Move-ment	**Level of Service Calculations**					
	Lanes		**Volume**		**V/C Ratio**	
	Lane	Capacity	Existing	Project		Ex+Project
NBL	1.0	1,600	39	93		0.05 *
NBT	**3.0**	4,800	1,507	1,573		0.35
NBR	0.0	0	84	84		0.00
SBL	1.0	1,600	48	74		0.05
SBT	**3.0**	4,800	1,756	1,821		0.38 *
SBR	0.0	0	14	22		0.00
EBL	**1.0**	1,600	21	37		0.05
EBT	**1.0**	1,600	35	66		0.11 *
EBR	0.0	0	68	113		0.00
WBL	1.0	1,600	42	42		0.05 *
WBT	1.0	1,600	37	62		0.07
WBR	1.0	1,600	81	119		0.00
N/S Critical Movements						0.43
E/W Critical Movements						0.16
Clearance Interval						0.00
ICU					0.00	0.59
Level of Service (LOS)					A	A

Notes: V/C - Volume to Capacity Ratio

INTERSECTION CAPACITY UTILIZATION

INTERSECTION NUMBER: 20
NORTH/SOUTH STREET: Ventura Rd
EAST/WEST STREET: Fifth St
SCENARIO: Existing Conditions
TIME PERIOD: AM Peak Hour
COUNT DATE: 05/2018
WORK ORDER #: 2064169300

VOLUMES	Northbound			Southbound			Eastbound			Westbound		
	L	T	R	L	T	R	L	T	R	L	T	R
AM Peak	119	1438	117	125	1207	329	378	372	64	169	276	74
Project Trips	0	67	0	20	85	10	8	0	0	0	0	16
GEOMETRY	L	TT	TR	L	TTT	R	LL	T	TR	LL	T	TR

	Level of Service Calculations					
Move-	**Lanes**		**Volume**		**V/C Ratio**	
ment	Lane	Capacity	Existing	Project	Existing	Ex+Project
NBL	1.0	1,600	119	119	0.07	0.07
NBT	3.0	4,800	1,438	1,505	0.32 *	0.34 *
NBR	0.0	0	117	117	0.00	0.00
SBL	1.0	1,600	125	145	0.08 *	0.09 *
SBT	3.0	4,800	1,207	1,292	0.25	0.27
SBR	1.0	1,600	329	339	0.21	0.21
EBL	2.0	3,200	378	386	0.12 *	0.12 *
EBT	2.0	3,200	372	372	0.14	0.14
EBR	0.0	0	64	64	0.00	0.00
WBL	2.0	3,200	169	169	0.05	0.05
WBT	2.0	3,200	276	276	0.11 *	0.11 *
WBR	0.0	0	74	90	0.00	0.00
N/S Critical Movements					0.40	0.43
E/W Critical Movements					0.23	0.23
Clearance Interval					0.00	0.00
ICU					0.63	0.66
Level of Service (LOS)					B	B

Notes: V/C - Volume to Capacity Ratio

INTERSECTION CAPACITY UTILIZATION

INTERSECTION NUMBER: 20
NORTH/SOUTH STREET: Ventura Rd
EAST/WEST STREET: Fifth St
SCENARIO: Existing Conditions
TIME PERIOD: PM Peak Hour
COUNT DATE: 05/2018
WORK ORDER #: 2064169300

VOLUMES	Northbound			Southbound			Eastbound			Westbound		
	L	T	R	L	T	R	L	T	R	L	T	R
AM Peak	115	1229	105	140	1359	378	331	321	94	279	425	60
Project Trips	0	89	0	19	81	10	11	0	0	0	0	21
GEOMETRY	L	TT	TR	L	TTT	R	LL	T	TR	LL	T	TR

	Level of Service Calculations					
Move-	**Lanes**		**Volume**		**V/C Ratio**	
ment	Lane	Capacity	Existing	Project	Existing	Ex+Project
NBL	1.0	1,600	115	115	0.07	0.07
NBT	3.0	4,800	1,229	1,318	0.28 *	0.30 *
NBR	0.0	0	105	105	0.00	0.00
SBL	1.0	1,600	140	159	0.09 *	0.10 *
SBT	3.0	4,800	1,359	1,440	0.28	0.30
SBR	1.0	1,600	378	388	0.24	0.24
EBL	2.0	3,200	331	342	0.10 *	0.11 *
EBT	2.0	3,200	321	321	0.13	0.13
EBR	0.0	0	94	94	0.00	0.00
WBL	2.0	3,200	279	279	0.09	0.09
WBT	2.0	3,200	425	425	0.15 *	0.16 *
WBR	0.0	0	60	81	0.00	0.00
N/S Critical Movements					0.37	0.40
E/W Critical Movements					0.25	0.27
Clearance Interval					0.00	0.00
ICU					0.62	0.67
Level of Service (LOS)					B	B

Notes: V/C - Volume to Capacity Ratio

INTERSECTION CAPACITY UTILIZATION

INTERSECTION NUMBER: 21
NORTH/SOUTH STREET: Ventura Rd
EAST/WEST STREET: Wooley Rd
SCENARIO: Existing Conditions
TIME PERIOD: AM Peak Hour
COUNT DATE: 05/2018
WORK ORDER #: 2064169300

VOLUMES	Northbound			Southbound			Eastbound			Westbound		
	L	T	R	L	T	R	L	T	R	L	T	R
AM Peak	91	1145	122	125	1088	89	206	556	42	86	431	157
Project Trips	0	39	0	24	51	10	4	0	0	0	0	19
GEOMETRY	L	T TR		L	T TR		L	TT	R	L	TT	R

	Level of Service Calculations					
Move-	**Lanes**		**Volume**		**V/C Ratio**	
ment	Lane	Capacity	Existing	Project	Existing	Ex+Project
NBL	1.0	1,600	91	91	0.06	0.06
NBT	2.0	3,200	1,145	1,184	0.40 *	0.41 *
NBR	0.0	0	122	122	0.00	0.00
SBL	1.0	1,600	125	149	0.08 *	0.09 *
SBT	2.0	3,200	1,088	1,139	0.37	0.39
SBR	0.0	0	89	99	0.00	0.00
EBL	1.0	1,600	206	210	0.13 *	0.13 *
EBT	2.0	3,200	556	556	0.17	0.17
EBR	1.0	1,600	42	42	0.03	0.03
WBL	1.0	1,600	86	86	0.05	0.05
WBT	2.0	3,200	431	431	0.13 *	0.13 *
WBR	1.0	1,600	157	176	0.10	0.11
N/S Critical Movements					0.48	0.50
E/W Critical Movements					0.26	0.26
Clearance Interval					0.00	0.00
ICU					0.74	0.76
Level of Service (LOS)					C	C

Notes: V/C - Volume to Capacity Ratio

INTERSECTION CAPACITY UTILIZATION

INTERSECTION NUMBER: 21
NORTH/SOUTH STREET: Ventura Rd
EAST/WEST STREET: Wooley Rd
SCENARIO: Existing Conditions
TIME PERIOD: PM Peak Hour
COUNT DATE: 05/2018
WORK ORDER #: 2064169300

VOLUMES	Northbound			Southbound			Eastbound			Westbound		
	L	T	R	L	T	R	L	T	R	L	T	R
AM Peak	82	1111	94	112	1196	114	160	430	60	174	493	182
Project Trips	0	52	0	23	48	10	5	0	0	0	0	25
GEOMETRY	L	T TR		L	T TR		L	TT	R	L	TT	R

	Level of Service Calculations					
Move-	**Lanes**		**Volume**		**V/C Ratio**	
ment	Lane	Capacity	Existing	Project	Existing	Ex+Project
NBL	1.0	1,600	82	82	0.05	0.05
NBT	2.0	3,200	1,111	1,163	0.38 *	0.39 *
NBR	0.0	0	94	94	0.00	0.00
SBL	1.0	1,600	112	135	0.07	0.08 *
SBT	2.0	3,200	1,196	1,244	0.41	0.43
SBR	0.0	0	114	124	0.00	0.00
EBL	1.0	1,600	160	165	0.10 *	0.10 *
EBT	2.0	3,200	430	430	0.13	0.13
EBR	1.0	1,600	60	60	0.04	0.04
WBL	1.0	1,600	174	174	0.11	0.11
WBT	2.0	3,200	493	493	0.15 *	0.15 *
WBR	1.0	1,600	182	207	0.11	0.13
N/S Critical Movements					0.46	0.48
E/W Critical Movements					0.25	0.25
Clearance Interval					0.00	0.00
ICU					0.71	0.73
Level of Service (LOS)					C	C

Notes: V/C - Volume to Capacity Ratio

INTERSECTION CAPACITY UTILIZATION

INTERSECTION NUMBER: 22
NORTH/SOUTH STREET: Oxnard Blvd
EAST/WEST STREET: Town Center Dr
SCENARIO: Existing Conditions
TIME PERIOD: AM Peak Hour
COUNT DATE: 05/2018
WORK ORDER #: 2064169300

VOLUMES	Northbound			Southbound			Eastbound			Westbound		
	L	T	R	L	T	R	L	T	R	L	T	R
AM Peak	253	271	254	17	552	32	21	105	839	150	66	8
Project Trips	20	0	0	0	0	4	8	9	55	0	7	0
GEOMETRY	LL	TT	R	L	T TR		L	LT T	RR	L	LT T	R

	Level of Service Calculations						
Move-	**Lanes**			**Volume**		**V/C Ratio**	
ment	Lane		Capacity	Existing	Project	Existing	Ex+Project
NBL	2.0		3,200	253	273	0.08 *	0.09 *
NBT	2.0		3,200	271	271	0.08	0.08
NBR	1.0	(a)	1,600	254	254	0.16	0.16
SBL	1.0		1,600	17	17	0.05	0.05
SBT	2.0		3,200	552	552	0.18 *	0.18 *
SBR	0.0		0	32	36	0.00	0.00
EBL	0.0		0	21	29	0.00	0.00
EBT	3.0		4,800	105	114	0.07	0.07
EBR	2.0	(b)	3,200	629	671	0.20 *	0.21 *
WBL	0.0		0	150	150	0.00	0.00
WBT	3.0		4,800	66	73	0.07 *	0.07 *
WBR	1.0	(a)	1,600	8	8	0.01	0.01
N/S Critical Movements						0.26	0.27
E/W Critical Movements						0.27	0.27
Clearance Interval						0.00	0.00
ICU						0.53	0.54
Level of Service (LOS)						A	A

Notes: V/C - Volume to Capacity Ratio
EB/WB split phased
(a) RTOR arrow - not critical
(b) RTOR arrow - 25% overlap

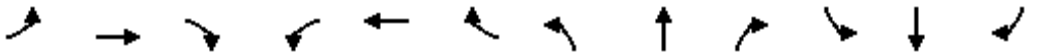
INTERSECTION CAPACITY UTILIZATION

INTERSECTION NUMBER: 22
NORTH/SOUTH STREET: Oxnard Blvd
EAST/WEST STREET: Town Center Dr
SCENARIO: Existing Conditions
TIME PERIOD: PM Peak Hour
COUNT DATE: 05/2018
WORK ORDER #: 2064169300

VOLUMES	Northbound			Southbound			Eastbound			Westbound		
	L	T	R	L	T	R	L	T	R	L	T	R
PM Peak	421	625	519	18	416	61	64	143	538	396	120	28
Project Trips	27	0	0	0	0	5	8	9	52	0	9	0
GEOMETRY	LL	TT	R	L	T TR		L	LT T	RR	L	LT T	R

	Level of Service Calculations						
Move-	**Lanes**			**Volume**		**V/C Ratio**	
ment	Lane		Capacity	Existing	Project	Existing	Ex+Project
NBL	2.0		3,200	421	448	0.13 *	0.14 *
NBT	2.0		3,200	625	625	0.20	0.20
NBR	1.0	(a)	1,600	519	519	0.32	0.32
SBL	1.0		1,600	18	18	0.05	0.05
SBT	2.0		3,200	416	416	0.15 *	0.15 *
SBR	0.0		0	61	66	0.00	0.00
EBL	0.0		0	64	72	0.00	0.00
EBT	3.0		4,800	143	152	0.07 *	0.07 *
EBR	2.0	(a)	3,200	538	590	0.17	0.18
WBL	0.0		0	396	396	0.00	0.00
WBT	3.0		4,800	120	129	0.07 *	0.07 *
WBR	1.0	(a)	1,600	28	28	0.02	0.02
N/S Critical Movements						0.28	0.29
E/W Critical Movements						0.14	0.14
Clearance Interval						0.10	0.10
ICU						0.52	0.53
Level of Service (LOS)						A	A

Notes: V/C - Volume to Capacity Ratio
EB/WB split phased
(a) RTOR arrow - not critical



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	0	112	0	350	845	441	0	0	469	1060
Future Volume (veh/h)	0	0	0	112	0	350	845	441	0	0	469	1060
Initial Q (Qb), veh				0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)				1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach					No			No			No	
Adj Sat Flow, veh/h/ln				1870	1870	1870	1870	1870	0	0	1870	1870
Adj Flow Rate, veh/h				81	0	424	918	479	0	0	510	0
Peak Hour Factor				0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %				2	2	2	2	2	0	0	2	2
Cap, veh/h				289	0	515	1031	2661	0	0	2613	
Arrive On Green				0.16	0.00	0.16	0.50	1.00	0.00	0.00	0.41	0.00
Sat Flow, veh/h				1781	0	3170	3456	3647	0	0	6696	1585
Grp Volume(v), veh/h				81	0	424	918	479	0	0	510	0
Grp Sat Flow(s),veh/h/ln				1781	0	1585	1728	1777	0	0	1609	1585
Q Serve(g_s), s				3.6	0.0	11.6	21.6	0.0	0.0	0.0	4.6	0.0
Cycle Q Clear(g_c), s				3.6	0.0	11.6	21.6	0.0	0.0	0.0	4.6	0.0
Prop In Lane				1.00		1.00	1.00		0.00	0.00		1.00
Lane Grp Cap(c), veh/h				289	0	515	1031	2661	0	0	2613	
V/C Ratio(X)				0.28	0.00	0.82	0.89	0.18	0.00	0.00	0.20	
Avail Cap(c_a), veh/h				376	0	669	1536	2661	0	0	2613	
HCM Platoon Ratio				1.00	1.00	1.00	1.67	1.67	1.00	1.00	1.00	1.00
Upstream Filter(I)				1.00	0.00	1.00	0.95	0.95	0.00	0.00	1.00	0.00
Uniform Delay (d), s/veh				33.1	0.0	36.5	21.3	0.0	0.0	0.0	17.2	0.0
Incr Delay (d2), s/veh				0.5	0.0	6.4	4.6	0.1	0.0	0.0	0.2	0.0
Initial Q Delay(d3),s/veh				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln				1.5	0.0	4.7	6.3	0.1	0.0	0.0	1.6	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh				33.6	0.0	42.9	25.8	0.1	0.0	0.0	17.4	0.0
LnGrp LOS				C	A	D	C	A	A	A	B	
Approach Vol, veh/h					505			1397			510	A
Approach Delay, s/veh					41.4			17.0			17.4	
Approach LOS					D			B			B	

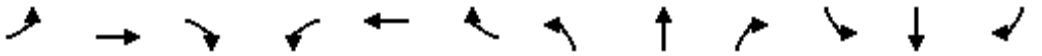
Timer - Assigned Phs	2		5	6		8						
Phs Duration (G+Y+Rc), s	71.4		30.8	40.6		18.6						
Change Period (Y+Rc), s	4.0		4.0	4.0		4.0						
Max Green Setting (Gmax), s	63.0		40.0	19.0		19.0						
Max Q Clear Time (g_c+I1), s	2.0		23.6	6.6		13.6						
Green Ext Time (p_c), s	3.2		3.3	2.5		1.0						

Intersection Summary	
HCM 6th Ctrl Delay	22.2
HCM 6th LOS	C

Notes

User approved volume balancing among the lanes for turning movement.

Unsignalized Delay for [SBR] is excluded from calculations of the approach delay and intersection delay.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	0	112	0	370	845	441	0	0	494	1090
Future Volume (veh/h)	0	0	0	112	0	370	845	441	0	0	494	1090
Initial Q (Qb), veh				0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)				1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach					No			No			No	
Adj Sat Flow, veh/h/ln				1870	1870	1870	1870	1870	0	0	1870	1870
Adj Flow Rate, veh/h				81	0	446	918	479	0	0	537	0
Peak Hour Factor				0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %				2	2	2	2	2	0	0	2	2
Cap, veh/h				301	0	535	1031	2638	0	0	2572	
Arrive On Green				0.17	0.00	0.17	0.50	1.00	0.00	0.00	0.40	0.00
Sat Flow, veh/h				1781	0	3170	3456	3647	0	0	6696	1585
Grp Volume(v), veh/h				81	0	446	918	479	0	0	537	0
Grp Sat Flow(s),veh/h/ln				1781	0	1585	1728	1777	0	0	1609	1585
Q Serve(g_s), s				3.6	0.0	12.2	21.6	0.0	0.0	0.0	4.9	0.0
Cycle Q Clear(g_c), s				3.6	0.0	12.2	21.6	0.0	0.0	0.0	4.9	0.0
Prop In Lane				1.00		1.00	1.00		0.00	0.00		1.00
Lane Grp Cap(c), veh/h				301	0	535	1031	2638	0	0	2572	
V/C Ratio(X)				0.27	0.00	0.83	0.89	0.18	0.00	0.00	0.21	
Avail Cap(c_a), veh/h				376	0	669	1536	2638	0	0	2572	
HCM Platoon Ratio				1.00	1.00	1.00	1.67	1.67	1.00	1.00	1.00	1.00
Upstream Filter(I)				1.00	0.00	1.00	0.91	0.91	0.00	0.00	1.00	0.00
Uniform Delay (d), s/veh				32.6	0.0	36.2	21.3	0.0	0.0	0.0	17.7	0.0
Incr Delay (d2), s/veh				0.5	0.0	7.3	4.4	0.1	0.0	0.0	0.2	0.0
Initial Q Delay(d3),s/veh				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln				1.5	0.0	5.0	6.3	0.1	0.0	0.0	1.7	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh				33.1	0.0	43.5	25.7	0.1	0.0	0.0	17.9	0.0
LnGrp LOS				C	A	D	C	A	A	A	B	
Approach Vol, veh/h					527			1397			537	A
Approach Delay, s/veh					41.9			16.9			17.9	
Approach LOS					D			B			B	

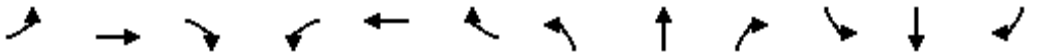
Timer - Assigned Phs		2			5	6		8				
Phs Duration (G+Y+Rc), s		70.8			30.8	40.0		19.2				
Change Period (Y+Rc), s		4.0			4.0	4.0		4.0				
Max Green Setting (Gmax), s		63.0			40.0	19.0		19.0				
Max Q Clear Time (g_c+I1), s		2.0			23.6	6.9		14.2				
Green Ext Time (p_c), s		3.2			3.3	2.6		0.9				

Intersection Summary		
HCM 6th Ctrl Delay	22.5	
HCM 6th LOS	C	

Notes

User approved volume balancing among the lanes for turning movement.

Unsignalized Delay for [SBR] is excluded from calculations of the approach delay and intersection delay.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	0	240	3	699	742	859	0	0	585	772
Future Volume (veh/h)	0	0	0	240	3	699	742	859	0	0	585	772
Initial Q (Qb), veh				0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)				1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach					No			No			No	
Adj Sat Flow, veh/h/ln				1870	1870	1870	1870	1870	0	0	1870	1870
Adj Flow Rate, veh/h				175	0	854	807	934	0	0	636	0
Peak Hour Factor				0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %				2	2	2	2	2	0	0	2	2
Cap, veh/h				546	0	971	921	2149	0	0	1890	
Arrive On Green				0.31	0.00	0.31	0.27	0.60	0.00	0.00	0.29	0.00
Sat Flow, veh/h				1781	0	3170	3456	3647	0	0	6696	1585
Grp Volume(v), veh/h				175	0	854	807	934	0	0	636	0
Grp Sat Flow(s),veh/h/ln				1781	0	1585	1728	1777	0	0	1609	1585
Q Serve(g_s), s				6.8	0.0	23.0	20.1	12.7	0.0	0.0	7.0	0.0
Cycle Q Clear(g_c), s				6.8	0.0	23.0	20.1	12.7	0.0	0.0	7.0	0.0
Prop In Lane				1.00		1.00	1.00		0.00	0.00		1.00
Lane Grp Cap(c), veh/h				546	0	971	921	2149	0	0	1890	
V/C Ratio(X)				0.32	0.00	0.88	0.88	0.43	0.00	0.00	0.34	
Avail Cap(c_a), veh/h				633	0	1127	1114	2149	0	0	1890	
HCM Platoon Ratio				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)				1.00	0.00	1.00	0.85	0.85	0.00	0.00	1.00	0.00
Uniform Delay (d), s/veh				24.0	0.0	29.6	31.6	9.5	0.0	0.0	24.9	0.0
Incr Delay (d2), s/veh				0.3	0.0	7.4	6.0	0.5	0.0	0.0	0.5	0.0
Initial Q Delay(d3),s/veh				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln				2.7	0.0	9.1	8.6	4.2	0.0	0.0	2.5	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh				24.3	0.0	37.0	37.6	10.1	0.0	0.0	25.4	0.0
LnGrp LOS				C	A	D	D	B	A	A	C	
Approach Vol, veh/h					1029			1741			636	A
Approach Delay, s/veh					34.9			22.8			25.4	
Approach LOS					C			C			C	

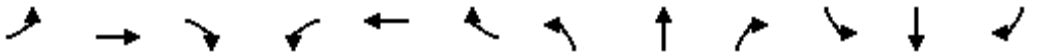
Timer - Assigned Phs		2			5	6		8				
Phs Duration (G+Y+Rc), s		58.4			28.0	30.4		31.6				
Change Period (Y+Rc), s		4.0			4.0	4.0		4.0				
Max Green Setting (Gmax), s		50.0			29.0	17.0		32.0				
Max Q Clear Time (g_c+I1), s		14.7			22.1	9.0		25.0				
Green Ext Time (p_c), s		7.0			1.9	2.4		2.6				

Intersection Summary		
HCM 6th Ctrl Delay	26.9	
HCM 6th LOS	C	

Notes

User approved volume balancing among the lanes for turning movement.

Unsignalized Delay for [SBR] is excluded from calculations of the approach delay and intersection delay.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	0	240	3	726	742	859	0	0	609	800
Future Volume (veh/h)	0	0	0	240	3	726	742	859	0	0	609	800
Initial Q (Qb), veh				0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)				1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach					No			No			No	
Adj Sat Flow, veh/h/ln				1870	1870	1870	1870	1870	0	0	1870	1870
Adj Flow Rate, veh/h				175	0	883	807	934	0	0	662	0
Peak Hour Factor				0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %				2	2	2	2	2	0	0	2	2
Cap, veh/h				559	0	995	921	2122	0	0	1841	
Arrive On Green				0.31	0.00	0.31	0.27	0.60	0.00	0.00	0.29	0.00
Sat Flow, veh/h				1781	0	3170	3456	3647	0	0	6696	1585
Grp Volume(v), veh/h				175	0	883	807	934	0	0	662	0
Grp Sat Flow(s),veh/h/ln				1781	0	1585	1728	1777	0	0	1609	1585
Q Serve(g_s), s				6.7	0.0	23.8	20.1	12.9	0.0	0.0	7.4	0.0
Cycle Q Clear(g_c), s				6.7	0.0	23.8	20.1	12.9	0.0	0.0	7.4	0.0
Prop In Lane				1.00		1.00	1.00		0.00	0.00		1.00
Lane Grp Cap(c), veh/h				559	0	995	921	2122	0	0	1841	
V/C Ratio(X)				0.31	0.00	0.89	0.88	0.44	0.00	0.00	0.36	
Avail Cap(c_a), veh/h				633	0	1127	1114	2122	0	0	1841	
HCM Platoon Ratio				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)				1.00	0.00	1.00	0.85	0.85	0.00	0.00	1.00	0.00
Uniform Delay (d), s/veh				23.5	0.0	29.4	31.6	9.9	0.0	0.0	25.6	0.0
Incr Delay (d2), s/veh				0.3	0.0	8.1	6.0	0.6	0.0	0.0	0.5	0.0
Initial Q Delay(d3),s/veh				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln				2.7	0.0	9.4	8.6	4.3	0.0	0.0	2.7	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh				23.8	0.0	37.4	37.6	10.5	0.0	0.0	26.1	0.0
LnGrp LOS				C	A	D	D	B	A	A	C	
Approach Vol, veh/h					1058			1741			662	A
Approach Delay, s/veh					35.2			23.1			26.1	
Approach LOS					D			C			C	

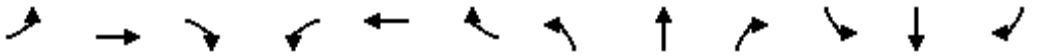
Timer - Assigned Phs	2		5	6		8						
Phs Duration (G+Y+Rc), s	57.7		28.0	29.8		32.3						
Change Period (Y+Rc), s	4.0		4.0	4.0		4.0						
Max Green Setting (Gmax), s	50.0		29.0	17.0		32.0						
Max Q Clear Time (g_c+I1), s	14.9		22.1	9.4		25.8						
Green Ext Time (p_c), s	7.0		1.9	2.5		2.4						

Intersection Summary		
HCM 6th Ctrl Delay	27.3	
HCM 6th LOS	C	

Notes

User approved volume balancing among the lanes for turning movement.

Unsignalized Delay for [SBR] is excluded from calculations of the approach delay and intersection delay.



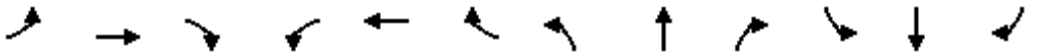
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	234	0	691	0	0	0	0	1051	98	325	259	0
Future Volume (veh/h)	234	0	691	0	0	0	0	1051	98	325	259	0
Initial Q (Qb), veh	0	0	0				0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00				1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00				1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No						No			No	
Adj Sat Flow, veh/h/ln	1870	0	1870				0	1870	1870	1870	1870	0
Adj Flow Rate, veh/h	254	0	0				0	1142	0	353	282	0
Peak Hour Factor	0.92	0.92	0.92				0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	0	2				0	2	2	2	2	0
Cap, veh/h	346	0					0	2574		1267	2882	0
Arrive On Green	0.10	0.00	0.00				0.00	0.40	0.00	0.61	1.00	0.00
Sat Flow, veh/h	3456	0	1585				0	6696	1585	3456	3647	0
Grp Volume(v), veh/h	254	0	0				0	1142	0	353	282	0
Grp Sat Flow(s),veh/h/ln	1728	0	1585				0	1609	1585	1728	1777	0
Q Serve(g_s), s	6.4	0.0	0.0				0.0	11.7	0.0	4.3	0.0	0.0
Cycle Q Clear(g_c), s	6.4	0.0	0.0				0.0	11.7	0.0	4.3	0.0	0.0
Prop In Lane	1.00		1.00				0.00		1.00	1.00		0.00
Lane Grp Cap(c), veh/h	346	0					0	2574		1267	2882	0
V/C Ratio(X)	0.74	0.00					0.00	0.44		0.28	0.10	0.00
Avail Cap(c_a), veh/h	691	0					0	2574		1267	2882	0
HCM Platoon Ratio	1.00	1.00	1.00				1.00	1.00	1.00	1.67	1.67	1.00
Upstream Filter(I)	1.00	0.00	0.00				0.00	1.00	0.00	0.98	0.98	0.00
Uniform Delay (d), s/veh	39.3	0.0	0.0				0.0	19.7	0.0	11.9	0.0	0.0
Incr Delay (d2), s/veh	3.0	0.0	0.0				0.0	0.6	0.0	0.1	0.1	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0				0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.8	0.0	0.0				0.0	4.3	0.0	1.5	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	42.4	0.0	0.0				0.0	20.3	0.0	12.0	0.1	0.0
LnGrp LOS	D	A					A	C		B	A	A
Approach Vol, veh/h		254	A					1142	A		635	
Approach Delay, s/veh		42.4						20.3			6.7	
Approach LOS		D						C			A	

Timer - Assigned Phs	1	2		4		6						
Phs Duration (G+Y+Rc), s	37.0	40.0		13.0		77.0						
Change Period (Y+Rc), s	4.0	4.0		4.0		4.0						
Max Green Setting (Gmax), s	24.0	36.0		18.0		64.0						
Max Q Clear Time (g_c+I1), s	6.3	13.7		8.4		2.0						
Green Ext Time (p_c), s	1.2	8.8		0.6		2.0						

Intersection Summary	
HCM 6th Ctrl Delay	18.8
HCM 6th LOS	B

Notes

Unsignalized Delay for [NBR, EBR] is excluded from calculations of the approach delay and intersection delay.



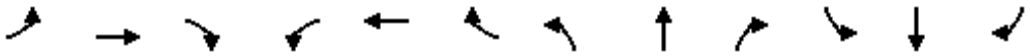
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	234	0	691	0	0	0	0	1051	98	350	259	0
Future Volume (veh/h)	234	0	691	0	0	0	0	1051	98	350	259	0
Initial Q (Qb), veh	0	0	0				0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00				1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00				1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No						No			No	
Adj Sat Flow, veh/h/ln	1870	0	1870				0	1870	1870	1870	1870	0
Adj Flow Rate, veh/h	254	0	0				0	1142	0	380	282	0
Peak Hour Factor	0.92	0.92	0.92				0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	0	2				0	2	2	2	2	0
Cap, veh/h	346	0					0	2574		1267	2882	0
Arrive On Green	0.10	0.00	0.00				0.00	0.40	0.00	0.61	1.00	0.00
Sat Flow, veh/h	3456	0	1585				0	6696	1585	3456	3647	0
Grp Volume(v), veh/h	254	0	0				0	1142	0	380	282	0
Grp Sat Flow(s),veh/h/ln	1728	0	1585				0	1609	1585	1728	1777	0
Q Serve(g_s), s	6.4	0.0	0.0				0.0	11.7	0.0	4.7	0.0	0.0
Cycle Q Clear(g_c), s	6.4	0.0	0.0				0.0	11.7	0.0	4.7	0.0	0.0
Prop In Lane	1.00		1.00				0.00		1.00	1.00		0.00
Lane Grp Cap(c), veh/h	346	0					0	2574		1267	2882	0
V/C Ratio(X)	0.74	0.00					0.00	0.44		0.30	0.10	0.00
Avail Cap(c_a), veh/h	691	0					0	2574		1267	2882	0
HCM Platoon Ratio	1.00	1.00	1.00				1.00	1.00	1.00	1.67	1.67	1.00
Upstream Filter(I)	1.00	0.00	0.00				0.00	1.00	0.00	0.98	0.98	0.00
Uniform Delay (d), s/veh	39.3	0.0	0.0				0.0	19.7	0.0	12.0	0.0	0.0
Incr Delay (d2), s/veh	3.0	0.0	0.0				0.0	0.6	0.0	0.1	0.1	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0				0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.8	0.0	0.0				0.0	4.3	0.0	1.6	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	42.4	0.0	0.0				0.0	20.3	0.0	12.1	0.1	0.0
LnGrp LOS	D	A					A	C		B	A	A
Approach Vol, veh/h		254	A					1142	A		662	
Approach Delay, s/veh		42.4						20.3			7.0	
Approach LOS		D						C			A	

Timer - Assigned Phs	1	2		4		6						
Phs Duration (G+Y+Rc), s	37.0	40.0		13.0		77.0						
Change Period (Y+Rc), s	4.0	4.0		4.0		4.0						
Max Green Setting (Gmax), s	24.0	36.0		18.0		64.0						
Max Q Clear Time (g_c+I1), s	6.7	13.7		8.4		2.0						
Green Ext Time (p_c), s	1.2	8.8		0.6		2.0						

Intersection Summary												
HCM 6th Ctrl Delay			18.7									
HCM 6th LOS			B									

Notes

Unsignalized Delay for [NBR, EBR] is excluded from calculations of the approach delay and intersection delay.



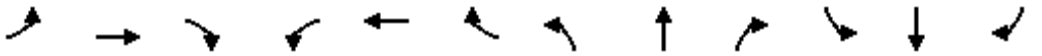
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	467	0	1109	0	0	0	0	1135	169	282	552	0
Future Volume (veh/h)	467	0	1109	0	0	0	0	1135	169	282	552	0
Initial Q (Qb), veh	0	0	0				0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00				1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00				1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No						No			No	
Adj Sat Flow, veh/h/ln	1870	0	1870				0	1870	1870	1870	1870	0
Adj Flow Rate, veh/h	508	0	0				0	1234	0	307	600	0
Peak Hour Factor	0.92	0.92	0.92				0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	0	2				0	2	2	2	2	0
Cap, veh/h	624	0					0	2359		1104	2596	0
Arrive On Green	0.18	0.00	0.00				0.00	0.37	0.00	0.64	1.00	0.00
Sat Flow, veh/h	3456	0	1585				0	6696	1585	3456	3647	0
Grp Volume(v), veh/h	508	0	0				0	1234	0	307	600	0
Grp Sat Flow(s),veh/h/ln	1728	0	1585				0	1609	1585	1728	1777	0
Q Serve(g_s), s	12.7	0.0	0.0				0.0	13.5	0.0	3.5	0.0	0.0
Cycle Q Clear(g_c), s	12.7	0.0	0.0				0.0	13.5	0.0	3.5	0.0	0.0
Prop In Lane	1.00		1.00				0.00		1.00	1.00		0.00
Lane Grp Cap(c), veh/h	624	0					0	2359		1104	2596	0
V/C Ratio(X)	0.81	0.00					0.00	0.52		0.28	0.23	0.00
Avail Cap(c_a), veh/h	1037	0					0	2359		1104	2596	0
HCM Platoon Ratio	1.00	1.00	1.00				1.00	1.00	1.00	2.00	2.00	1.00
Upstream Filter(I)	1.00	0.00	0.00				0.00	1.00	0.00	0.93	0.93	0.00
Uniform Delay (d), s/veh	35.4	0.0	0.0				0.0	22.3	0.0	11.7	0.0	0.0
Incr Delay (d2), s/veh	2.6	0.0	0.0				0.0	0.8	0.0	0.1	0.2	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0				0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	5.5	0.0	0.0				0.0	5.1	0.0	1.2	0.1	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	38.1	0.0	0.0				0.0	23.2	0.0	11.8	0.2	0.0
LnGrp LOS	D	A					A	C		B	A	A
Approach Vol, veh/h		508	A					1234	A		907	
Approach Delay, s/veh		38.1						23.2			4.1	
Approach LOS		D						C			A	

Timer - Assigned Phs	1	2		4		6						
Phs Duration (G+Y+Rc), s	32.7	37.0		20.3		69.7						
Change Period (Y+Rc), s	4.0	4.0		4.0		4.0						
Max Green Setting (Gmax), s	18.0	33.0		27.0		55.0						
Max Q Clear Time (g_c+I1), s	5.5	15.5		14.7		2.0						
Green Ext Time (p_c), s	0.9	8.4		1.6		4.8						

Intersection Summary												
HCM 6th Ctrl Delay			19.5									
HCM 6th LOS			B									

Notes

Unsignalized Delay for [NBR, EBR] is excluded from calculations of the approach delay and intersection delay.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	467	0	1109	0	0	0	0	1135	169	306	552	0
Future Volume (veh/h)	467	0	1109	0	0	0	0	1135	169	306	552	0
Initial Q (Qb), veh	0	0	0				0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00				1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00				1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No						No			No	
Adj Sat Flow, veh/h/ln	1870	0	1870				0	1870	1870	1870	1870	0
Adj Flow Rate, veh/h	508	0	0				0	1234	0	333	600	0
Peak Hour Factor	0.92	0.92	0.92				0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	0	2				0	2	2	2	2	0
Cap, veh/h	624	0					0	2359		1104	2596	0
Arrive On Green	0.18	0.00	0.00				0.00	0.37	0.00	0.21	0.49	0.00
Sat Flow, veh/h	3456	0	1585				0	6696	1585	3456	3647	0
Grp Volume(v), veh/h	508	0	0				0	1234	0	333	600	0
Grp Sat Flow(s),veh/h/ln	1728	0	1585				0	1609	1585	1728	1777	0
Q Serve(g_s), s	12.7	0.0	0.0				0.0	13.5	0.0	7.3	8.7	0.0
Cycle Q Clear(g_c), s	12.7	0.0	0.0				0.0	13.5	0.0	7.3	8.7	0.0
Prop In Lane	1.00		1.00				0.00		1.00	1.00		0.00
Lane Grp Cap(c), veh/h	624	0					0	2359		1104	2596	0
V/C Ratio(X)	0.81	0.00					0.00	0.52		0.30	0.23	0.00
Avail Cap(c_a), veh/h	1037	0					0	2359		1104	2596	0
HCM Platoon Ratio	1.00	1.00	1.00				1.00	1.00	1.00	0.67	0.67	1.00
Upstream Filter(I)	1.00	0.00	0.00				0.00	1.00	0.00	0.93	0.93	0.00
Uniform Delay (d), s/veh	35.4	0.0	0.0				0.0	22.3	0.0	26.9	8.4	0.0
Incr Delay (d2), s/veh	2.6	0.0	0.0				0.0	0.8	0.0	0.1	0.2	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0				0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	5.5	0.0	0.0				0.0	5.1	0.0	3.1	3.3	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	38.1	0.0	0.0				0.0	23.2	0.0	27.1	8.6	0.0
LnGrp LOS	D	A					A	C		C	A	A
Approach Vol, veh/h		508	A					1234	A		933	
Approach Delay, s/veh		38.1						23.2			15.2	
Approach LOS		D						C			B	

Timer - Assigned Phs	1	2		4		6
Phs Duration (G+Y+Rc), s	32.7	37.0		20.3		69.7
Change Period (Y+Rc), s	4.0	4.0		4.0		4.0
Max Green Setting (Gmax), s	18.0	33.0		27.0		55.0
Max Q Clear Time (g_c+I1), s	9.3	15.5		14.7		10.7
Green Ext Time (p_c), s	0.8	8.4		1.6		4.7

Intersection Summary	
HCM 6th Ctrl Delay	23.2
HCM 6th LOS	C

Notes

Unsignalized Delay for [NBR, EBR] is excluded from calculations of the approach delay and intersection delay.

INTERSECTION CAPACITY UTILIZATION

INTERSECTION NUMBER: 25
NORTH/SOUTH STREET: Oxnard Blvd
EAST/WEST STREET: Gonzales Rd
SCENARIO: Existing Conditions
TIME PERIOD: AM Peak Hour
COUNT DATE: 05/2018
WORK ORDER #: 2064169300

VOLUMES	Northbound			Southbound			Eastbound			Westbound		
	L	T	R	L	T	R	L	T	R	L	T	R
AM Peak	123	916	424	314	925	60	212	1156	93	320	817	353
Project Trips	0	0	0	0	0	31	40	20	0	0	16	0
GEOMETRY	LL	TTT	R	LL	TTT	R	LL	TT TR		LL	TTT	R

	Level of Service Calculations					
Move-	**Lanes**		**Volume**		**V/C Ratio**	
ment	Lane	Capacity	Existing	Project	Existing	Ex+Project
NBL	2.0	3,200	123	123	0.04	0.04
NBT	3.0	4,800	916	916	0.19 *	0.19 *
NBR	1.0 (a)	1,600	104	104	0.07	0.07
SBL	2.0	3,200	314	314	0.10 *	0.10 *
SBT	3.0	4,800	925	925	0.19	0.19
SBR	1.0	1,600	60	91	0.04	0.06
EBL	2.0	3,200	212	252	0.07	0.08
EBT	3.0	4,800	1,156	1,176	0.26 *	0.26 *
EBR	0.0	0	93	93	0.00	0.00
WBL	2.0	3,200	320	320	0.10 *	0.10 *
WBT	3.0	4,800	817	833	0.17	0.17
WBR	1.0 (b)	1,600	196	196	0.12	0.12
N/S Critical Movements					0.29	0.29
E/W Critical Movements					0.36	0.36
Clearance Interval					0.00	0.00
ICU					0.65	0.65
Level of Service (LOS)					B	B

Notes: V/C - Volume to Capacity Ratio
(a) RTOR overlap w/WB LT
(b) RTOR overlap w/SB LT

INTERSECTION CAPACITY UTILIZATION

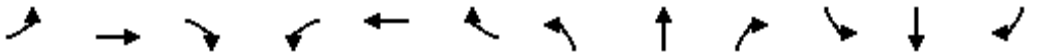
INTERSECTION NUMBER: 25
NORTH/SOUTH STREET: Oxnard Blvd
EAST/WEST STREET: Gonzales Rd
SCENARIO: Existing Conditions
TIME PERIOD: PM Peak Hour
COUNT DATE: 05/2018
WORK ORDER #: 2064169300

VOLUMES	Northbound			Southbound			Eastbound			Westbound		
	L	T	R	L	T	R	L	T	R	L	T	R
PM Peak	209	1099	341	408	1328	127	250	823	113	387	1159	452
Project Trips	0	0	0	0	0	41	38	17	0	0	21	0
GEOMETRY	LL	TTT	R	LL	TTT	R	LL	TT TR		LL	TTT	R

	Level of Service Calculations						
Move-	**Lanes**		**Volume**		**V/C Ratio**		
ment	Lane	Capacity	Existing	Project	Existing	Ex+Project	
NBL	2.0	3,200	209	209	0.07	0.07	
NBT	3.0	4,800	1,099	1,099	0.23 *	0.23 *	
NBR	1.0 (a)	1,600	341	341	0.21	0.21	
SBL	2.0	3,200	408	408	0.13 *	0.13 *	
SBT	3.0	4,800	1,328	1,328	0.28	0.28	
SBR	1.0	1,600	127	168	0.08	0.11	
EBL	2.0	3,200	250	288	0.08 *	0.09 *	
EBT	3.0	4,800	823	840	0.20	0.20	
EBR	0.0	0	113	113	0.00	0.00	
WBL	2.0	3,200	387	387	0.12	0.12	
WBT	3.0	4,800	1,159	1,180	0.24 *	0.25 *	
WBR	1.0 (b)	1,600	248	248	0.16	0.16	
N/S Critical Movements					0.36	0.36	
E/W Critical Movements					0.32	0.34	
Clearance Interval					0.00	0.00	
ICU					0.68	0.70	
Level of Service (LOS)					B	B	

Notes: V/C - Volume to Capacity Ratio
(a) not critical due to RTOR overlap w/WB LT
(b) RTOR overlap w/SB LT

Cumulative and Cumulative + Project AM and PM Peak Hour



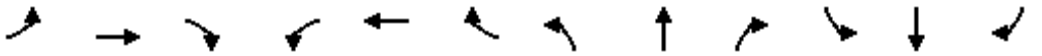
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	0	566	0	712	233	1069	0	0	2077	368
Future Volume (veh/h)	0	0	0	566	0	712	233	1069	0	0	2077	368
Initial Q (Qb), veh				0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)				1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach					No			No			No	
Adj Sat Flow, veh/h/ln				1870	1870	1870	1870	1870	0	0	1870	1870
Adj Flow Rate, veh/h				736	0	599	245	1125	0	0	2186	387
Peak Hour Factor				0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %				2	2	2	2	2	0	0	2	2
Cap, veh/h				1033	0	919	688	3285	0	0	2645	652
Arrive On Green				0.29	0.00	0.29	0.40	1.00	0.00	0.00	0.41	0.41
Sat Flow, veh/h				3563	0	3170	3456	5274	0	0	6696	1585
Grp Volume(v), veh/h				736	0	599	245	1125	0	0	2186	387
Grp Sat Flow(s),veh/h/ln				1781	0	1585	1728	1702	0	0	1609	1585
Q Serve(g_s), s				16.6	0.0	14.9	4.5	0.0	0.0	0.0	27.3	17.1
Cycle Q Clear(g_c), s				16.6	0.0	14.9	4.5	0.0	0.0	0.0	27.3	17.1
Prop In Lane				1.00		1.00	1.00		0.00	0.00		1.00
Lane Grp Cap(c), veh/h				1033	0	919	688	3285	0	0	2645	652
V/C Ratio(X)				0.71	0.00	0.65	0.36	0.34	0.00	0.00	0.83	0.59
Avail Cap(c_a), veh/h				1385	0	1233	688	3285	0	0	2645	652
HCM Platoon Ratio				1.00	1.00	1.00	2.00	2.00	1.00	1.00	1.00	1.00
Upstream Filter(I)				1.00	0.00	1.00	0.92	0.92	0.00	0.00	1.00	1.00
Uniform Delay (d), s/veh				28.6	0.0	28.0	23.0	0.0	0.0	0.0	23.6	20.6
Incr Delay (d2), s/veh				1.1	0.0	0.8	0.3	0.3	0.0	0.0	3.1	4.0
Initial Q Delay(d3),s/veh				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln				7.1	0.0	5.6	1.7	0.1	0.0	0.0	10.2	6.7
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh				29.7	0.0	28.8	23.3	0.3	0.0	0.0	26.8	24.6
LnGrp LOS				C	A	C	C	A	A	A	C	C
Approach Vol, veh/h					1335			1370			2573	
Approach Delay, s/veh					29.3			4.4			26.4	
Approach LOS					C			A			C	

Timer - Assigned Phs		2			5	6		8				
Phs Duration (G+Y+Rc), s		60.9			20.9	40.0		29.1				
Change Period (Y+Rc), s		4.0			4.0	4.0		4.0				
Max Green Setting (Gmax), s		48.0			8.0	36.0		34.0				
Max Q Clear Time (g_c+I1), s		2.0			6.5	29.3		18.6				
Green Ext Time (p_c), s		6.6			0.2	5.8		6.5				

Intersection Summary		
HCM 6th Ctrl Delay	21.4	
HCM 6th LOS	C	

Notes

User approved volume balancing among the lanes for turning movement.



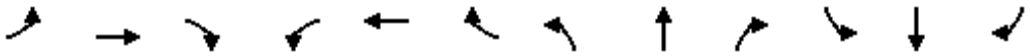
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	0	584	0	712	253	1094	0	0	2097	368
Future Volume (veh/h)	0	0	0	584	0	712	253	1094	0	0	2097	368
Initial Q (Qb), veh				0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)				1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach					No			No			No	
Adj Sat Flow, veh/h/ln				1870	1870	1870	1870	1870	0	0	1870	1870
Adj Flow Rate, veh/h				755	0	599	266	1152	0	0	2207	387
Peak Hour Factor				0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %				2	2	2	2	2	0	0	2	2
Cap, veh/h				1050	0	934	671	3261	0	0	2645	652
Arrive On Green				0.29	0.00	0.29	0.39	1.00	0.00	0.00	0.41	0.41
Sat Flow, veh/h				3563	0	3170	3456	5274	0	0	6696	1585
Grp Volume(v), veh/h				755	0	599	266	1152	0	0	2207	387
Grp Sat Flow(s),veh/h/ln				1781	0	1585	1728	1702	0	0	1609	1585
Q Serve(g_s), s				17.1	0.0	14.8	5.0	0.0	0.0	0.0	27.7	17.1
Cycle Q Clear(g_c), s				17.1	0.0	14.8	5.0	0.0	0.0	0.0	27.7	17.1
Prop In Lane				1.00		1.00	1.00		0.00	0.00		1.00
Lane Grp Cap(c), veh/h				1050	0	934	671	3261	0	0	2645	652
V/C Ratio(X)				0.72	0.00	0.64	0.40	0.35	0.00	0.00	0.83	0.59
Avail Cap(c_a), veh/h				1385	0	1233	671	3261	0	0	2645	652
HCM Platoon Ratio				1.00	1.00	1.00	2.00	2.00	1.00	1.00	1.00	1.00
Upstream Filter(I)				1.00	0.00	1.00	0.92	0.92	0.00	0.00	1.00	1.00
Uniform Delay (d), s/veh				28.4	0.0	27.6	23.7	0.0	0.0	0.0	23.8	20.6
Incr Delay (d2), s/veh				1.2	0.0	0.7	0.3	0.3	0.0	0.0	3.3	4.0
Initial Q Delay(d3),s/veh				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln				7.2	0.0	5.5	1.9	0.1	0.0	0.0	10.4	6.7
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh				29.7	0.0	28.3	24.1	0.3	0.0	0.0	27.0	24.6
LnGrp LOS				C	A	C	C	A	A	A	C	C
Approach Vol, veh/h					1354			1418			2594	
Approach Delay, s/veh					29.1			4.7			26.7	
Approach LOS					C			A			C	

Timer - Assigned Phs		2			5	6		8				
Phs Duration (G+Y+Rc), s		60.5			20.5	40.0		29.5				
Change Period (Y+Rc), s		4.0			4.0	4.0		4.0				
Max Green Setting (Gmax), s		48.0			8.0	36.0		34.0				
Max Q Clear Time (g_c+I1), s		2.0			7.0	29.7		19.1				
Green Ext Time (p_c), s		6.8			0.1	5.5		6.5				

Intersection Summary		
HCM 6th Ctrl Delay	21.5	
HCM 6th LOS	C	

Notes

User approved volume balancing among the lanes for turning movement.



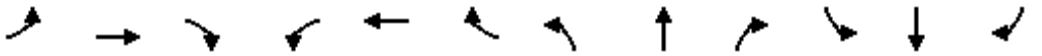
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	0	470	0	641	393	1342	0	0	1979	374
Future Volume (veh/h)	0	0	0	470	0	641	393	1342	0	0	1979	374
Initial Q (Qb), veh				0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)				1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach					No			No			No	
Adj Sat Flow, veh/h/ln				1870	1870	1870	1870	1870	0	0	1870	1870
Adj Flow Rate, veh/h				621	0	540	414	1413	0	0	2083	394
Peak Hour Factor				0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %				2	2	2	2	2	0	0	2	2
Cap, veh/h				884	0	786	871	3499	0	0	2574	634
Arrive On Green				0.25	0.00	0.25	0.50	1.00	0.00	0.00	0.40	0.40
Sat Flow, veh/h				3563	0	3170	3456	5274	0	0	6696	1585
Grp Volume(v), veh/h				621	0	540	414	1413	0	0	2083	394
Grp Sat Flow(s),veh/h/ln				1781	0	1585	1728	1702	0	0	1609	1585
Q Serve(g_s), s				14.3	0.0	13.9	7.0	0.0	0.0	0.0	25.9	17.9
Cycle Q Clear(g_c), s				14.3	0.0	13.9	7.0	0.0	0.0	0.0	25.9	17.9
Prop In Lane				1.00		1.00	1.00		0.00	0.00		1.00
Lane Grp Cap(c), veh/h				884	0	786	871	3499	0	0	2574	634
V/C Ratio(X)				0.70	0.00	0.69	0.48	0.40	0.00	0.00	0.81	0.62
Avail Cap(c_a), veh/h				1188	0	1057	871	3499	0	0	2574	634
HCM Platoon Ratio				1.00	1.00	1.00	2.00	2.00	1.00	1.00	1.00	1.00
Upstream Filter(I)				1.00	0.00	1.00	0.92	0.92	0.00	0.00	1.00	1.00
Uniform Delay (d), s/veh				30.8	0.0	30.7	18.4	0.0	0.0	0.0	24.0	21.6
Incr Delay (d2), s/veh				1.2	0.0	1.2	0.4	0.3	0.0	0.0	2.9	4.5
Initial Q Delay(d3),s/veh				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln				6.1	0.0	5.3	2.4	0.1	0.0	0.0	9.7	7.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh				32.0	0.0	31.8	18.8	0.3	0.0	0.0	26.8	26.1
LnGrp LOS				C	A	C	B	A	A	A	C	C
Approach Vol, veh/h					1161			1827			2477	
Approach Delay, s/veh					31.9			4.5			26.7	
Approach LOS					C			A			C	

Timer - Assigned Phs		2			5	6		8				
Phs Duration (G+Y+Rc), s		64.7			25.7	39.0		25.3				
Change Period (Y+Rc), s		4.0			4.0	4.0		4.0				
Max Green Setting (Gmax), s		53.0			14.0	35.0		29.0				
Max Q Clear Time (g_c+I1), s		2.0			9.0	27.9		16.3				
Green Ext Time (p_c), s		9.2			0.9	6.0		5.0				

Intersection Summary												
HCM 6th Ctrl Delay			20.4									
HCM 6th LOS			C									

Notes

User approved volume balancing among the lanes for turning movement.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	0	481	0	641	412	1366	0	0	2005	374
Future Volume (veh/h)	0	0	0	481	0	641	412	1366	0	0	2005	374
Initial Q (Qb), veh				0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)				1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach					No			No			No	
Adj Sat Flow, veh/h/ln				1870	1870	1870	1870	1870	0	0	1870	1870
Adj Flow Rate, veh/h				632	0	540	434	1438	0	0	2111	394
Peak Hour Factor				0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %				2	2	2	2	2	0	0	2	2
Cap, veh/h				894	0	795	861	3485	0	0	2574	634
Arrive On Green				0.25	0.00	0.25	0.50	1.00	0.00	0.00	0.40	0.40
Sat Flow, veh/h				3563	0	3170	3456	5274	0	0	6696	1585
Grp Volume(v), veh/h				632	0	540	434	1438	0	0	2111	394
Grp Sat Flow(s),veh/h/ln				1781	0	1585	1728	1702	0	0	1609	1585
Q Serve(g_s), s				14.5	0.0	13.8	7.6	0.0	0.0	0.0	26.4	17.9
Cycle Q Clear(g_c), s				14.5	0.0	13.8	7.6	0.0	0.0	0.0	26.4	17.9
Prop In Lane				1.00		1.00	1.00		0.00	0.00		1.00
Lane Grp Cap(c), veh/h				894	0	795	861	3485	0	0	2574	634
V/C Ratio(X)				0.71	0.00	0.68	0.50	0.41	0.00	0.00	0.82	0.62
Avail Cap(c_a), veh/h				1188	0	1057	861	3485	0	0	2574	634
HCM Platoon Ratio				1.00	1.00	1.00	2.00	2.00	1.00	1.00	1.00	1.00
Upstream Filter(I)				1.00	0.00	1.00	0.92	0.92	0.00	0.00	1.00	1.00
Uniform Delay (d), s/veh				30.7	0.0	30.4	18.8	0.0	0.0	0.0	24.1	21.6
Incr Delay (d2), s/veh				1.3	0.0	1.1	0.4	0.3	0.0	0.0	3.1	4.5
Initial Q Delay(d3),s/veh				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln				6.3	0.0	5.3	2.5	0.1	0.0	0.0	9.9	7.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh				32.0	0.0	31.6	19.3	0.3	0.0	0.0	27.2	26.1
LnGrp LOS				C	A	C	B	A	A	A	C	C
Approach Vol, veh/h					1172			1872			2505	
Approach Delay, s/veh					31.8			4.7			27.0	
Approach LOS					C			A			C	

Timer - Assigned Phs		2			5	6		8				
Phs Duration (G+Y+Rc), s		64.4			25.4	39.0		25.6				
Change Period (Y+Rc), s		4.0			4.0	4.0		4.0				
Max Green Setting (Gmax), s		53.0			14.0	35.0		29.0				
Max Q Clear Time (g_c+I1), s		2.0			9.6	28.4		16.5				
Green Ext Time (p_c), s		9.5			0.8	5.6		5.0				

Intersection Summary												
HCM 6th Ctrl Delay			20.5									
HCM 6th LOS			C									

Notes

User approved volume balancing among the lanes for turning movement.

INTERSECTION CAPACITY UTILIZATION

INTERSECTION NUMBER: 2
NORTH/SOUTH STREET: Victoria St
EAST/WEST STREET: Valentine Rd (split phased)
SCENARIO: Cumulative Conditions
TIME PERIOD: AM Peak Hour
COUNT DATE: 05/2018
WORK ORDER #: 2064169300

VOLUMES	Northbound			Southbound			Eastbound			Westbound		
	L	T	R	L	T	R	L	T	R	L	T	R
AM Peak	173	1071	11	37	1011	1561	262	23	236	21	5	26
Project Trips	10	45	0	0	28	0	0	0	8	0	0	0
GEOMETRY	LL	TT	TR	L	TT	RR	LL	LT	R		LT	R

	Level of Service Calculations					
Move-	**Lanes**		**Volume**		**V/C Ratio**	
ment	Lane	Capacity	Cumulative	Project	Cumulative	Project
NBL	2.0	3,200	173	183	0.05 *	0.06 *
NBT	3.0	4,800	1,071	1,116	0.23	0.23
NBR	0.0	0	11	11	0.00	0.00
SBL	1.0	1,600	37	37	0.05	0.05
SBT	2.0	3,200	1,011	1,039	0.32 *	0.32 *
SBR (a)	2.0	3,200	1,561	1,561	0.00	0.00
EBL	0.0	0	262	262	0.00	0.00
EBT	3.0	4,800	23	23	0.06	0.06
EBR (b)	1.0	1,600	199	207	0.12 *	0.13 *
WBL	0.0	0	21	21	0.00	0.00
WBT	1.0	1,600	5	5	0.07 *	0.07 *
WBR (b)	1.0	1,600	26	26	0.00	0.00
N/S Critical Movements					0.37	0.38
E/W Critical Movements					0.19	0.20
Clearance Interval					0.00	0.00
ICU					0.56	0.58
Level of Service (LOS)					A	A

Notes: V/C - Volume to Capacity Ratio
(a) Free right-turn
(b) RT overlap arrow

INTERSECTION CAPACITY UTILIZATION

INTERSECTION NUMBER: 2
NORTH/SOUTH STREET: Victoria St
EAST/WEST STREET: Valentine Rd (split phased)
SCENARIO: Cumulative Conditions
TIME PERIOD: PM ~~AM~~ Peak Hour
COUNT DATE: 05/2018
WORK ORDER #: 2064169300

VOLUMES	Northbound			Southbound			Eastbound			Westbound		
	L	T	R	L	T	R	L	T	R	L	T	R
PM Peak	90	1114	15	64	1205	1364	615	44	382	26	12	63
Project Trips	10	43	0	0	37	0	0	0	11	0	0	0
GEOMETRY	LL	TT	TR	L	TT	RR	LL	LT	R		LT	R

	Level of Service Calculations					
Move-	**Lanes**		**Volume**		**V/C Ratio**	
ment	Lane	Capacity	Cumulative	Project	Cumulative	Project
NBL	2.0	3,200	90	100	0.05 *	0.05 *
NBT	3.0	4,800	1,114	1,157	0.24	0.24
NBR	0.0	0	15	15	0.00	0.00
SBL	1.0	1,600	64	64	0.05	0.05
SBT	2.0	3,200	1,205	1,242	0.38 *	0.39 *
SBR (a)	2.0	3,200	1,364	1,364	0.00	0.00
EBL	0.0	0	615	615	0.00	0.00
EBT	3.0	4,800	44	44	0.14	0.14
EBR (b)	1.0	1,600	318	329	0.20 *	0.21 *
WBL	0.0	0	26	26	0.00	0.00
WBT	1.0	1,600	12	12	0.07 *	0.07 *
WBR (b)	1.0	1,600	63	63	0.00	0.00
N/S Critical Movements					0.43	0.44
E/W Critical Movements					0.27	0.28
Clearance Interval					0.00	0.00
ICU					0.70	0.72
Level of Service (LOS)					B	C

Notes: V/C - Volume to Capacity Ratio
(a) Free right-turn
(b) RT overlap arrow

INTERSECTION CAPACITY UTILIZATION

INTERSECTION NUMBER: 3
NORTH/SOUTH STREET: Victoria Ave
EAST/WEST STREET: Olivas Park Rd
SCENARIO: Cumulative Conditions
TIME PERIOD: AM Peak Hour
COUNT DATE: 05/2018
WORK ORDER #: 2064169300

VOLUMES	Northbound			Southbound			Eastbound			Westbound		
	L	T	R	L	T	R	L	T	R	L	T	R
AM Peak	441	1528	227	193	950	117	71	65	131	90	81	63
Project Trips	10	57	5	0	36	0	0	0	8	0	0	0
GEOMETRY	LL	TT	R	L	TT	R	L	TT	R	L	TT	R

	Level of Service Calculations						
Move-	**Lanes**			**Volume**		**V/C Ratio**	
ment	Lane		Capacity	Cumulative	Project	Cumulative	Project
NBL	2.0		3,200	441	451	0.14	0.14
NBT	2.0		3,200	1,528	1,585	0.48 *	0.50 *
NBR	1.0		1,600	227	232	0.14	0.15
SBL	1.0		1,600	193	193	0.12 *	0.12 *
SBT	2.0		3,200	950	986	0.30	0.31
SBR	1.0	(a)	1,600	117	117	0.00	0.00
EBL	1.0		1,600	71	71	0.05	0.05
EBT	2.0		3,200	65	65	0.07 *	0.07 *
EBR	1.0	(b)	1,600	131	139	0.00	0.00
WBL	1.0		1,600	90	90	0.06 *	0.06 *
WBT	2.0		3,200	81	81	0.07	0.07
WBR	1.0	(a)	1,600	63	63	0.00	0.00
N/S Critical Movements						0.60	0.62
E/W Critical Movements						0.13	0.13
Clearance Interval						0.00	0.00
ICU						0.73	0.75
Level of Service (LOS)						C	C

Notes: V/C - Volume to Capacity Ratio
(a) Yield control
(b) Free RT

INTERSECTION CAPACITY UTILIZATION

INTERSECTION NUMBER: 3
NORTH/SOUTH STREET: Victoria Ave
EAST/WEST STREET: Olivas Park Rd
SCENARIO: Cumulative Conditions
TIME PERIOD: PM Peak Hour
COUNT DATE: 05/2018
WORK ORDER #: 2064169300

VOLUMES	Northbound			Southbound			Eastbound			Westbound		
	L	T	R	L	T	R	L	T	R	L	T	R
PM Peak	240	1222	153	109	1430	94	125	93	536	230	101	179
Project Trips	10	54	5	0	48	0	0	0	12	5	0	0
GEOMETRY	LL	TT	R	L	TT	R	L	TT	R	L	TT	R

	Level of Service Calculations						
Move-	**Lanes**			**Volume**		**V/C Ratio**	
ment	Lane		Capacity	Cumulative	Project	Cumulative	Project
NBL	2.0		3,200	240	250	0.08 *	0.08 *
NBT	2.0		3,200	1,222	1,276	0.38	0.40
NBR	1.0		1,600	153	158	0.10	0.10
SBL	1.0		1,600	109	109	0.07	0.07
SBT	2.0		3,200	1,430	1,478	0.45 *	0.46 *
SBR	1.0	(a)	1,600	94	94	0.00	0.00
EBL	1.0		1,600	125	125	0.08	0.08
EBT	2.0		3,200	93	93	0.07 *	0.07 *
EBR	1.0	(b)	1,600	536	548	0.00	0.00
WBL	1.0		1,600	230	235	0.14 *	0.15 *
WBT	2.0		3,200	101	101	0.07	0.07
WBR	1.0	(a)	1,600	179	179	0.00	0.00
N/S Critical Movements						0.53	0.54
E/W Critical Movements						0.21	0.22
Clearance Interval						0.00	0.00
ICU						0.74	0.76
Level of Service (LOS)						C	C

Notes: V/C - Volume to Capacity Ratio
(a) Yield control
(b) Free RT

INTERSECTION CAPACITY UTILIZATION

INTERSECTION NUMBER: 4
NORTH/SOUTH STREET: Victoria Ave
EAST/WEST STREET: Gonzales Rd
SCENARIO: Cumulative Conditions
TIME PERIOD: AM Peak Hour
COUNT DATE: 05/2018
WORK ORDER #: 2064169300

VOLUMES	Northbound			Southbound			Eastbound			Westbound		
	L	T	R	L	T	R	L	T	R	L	T	R
AM Peak	40	1629	500	173	1,010	24	31	73	10	344	252	612
Project Trips	5	58	0	5	46	0	0	4	4	0	5	7
GEOMETRY	L	TTT	R	LL	TT	R	L	T TR		LL	TT	R

	Level of Service Calculations						
Move-	**Lanes**			**Volume**		**V/C Ratio**	
ment	Lane		Capacity	Cumulative	Project	Cumulative	Project
NBL	1.0		1,600	40	45	0.05	0.05
NBT	3.0		4,800	1,629	1,687	0.34 *	0.35 *
NBR	1.0	(a)	1,600	328	328	0.21	0.21
SBL	2.0		3,200	173	178	0.05 *	0.06 *
SBT	2.0		3,200	1,010	1,056	0.32	0.33
SBR	1.0		1,600	24	24	0.02	0.02
EBL	1.0		1,600	31	31	0.05 *	0.05 *
EBT	2.0		3,200	73	77	0.07	0.07
EBR	0.0		0	10	14	0.00	0.00
WBL	2.0		3,200	344	344	0.11	0.11
WBT	2.0		3,200	252	257	0.08	0.08
WBR	1.0	(b)	1,600	526	530	0.33 *	0.33 *
N/S Critical Movements						0.39	0.41
E/W Critical Movements						0.38	0.38
Clearance Interval						0.00	0.00
ICU						0.77	0.79
Level of Service (LOS)						C	C

Notes: V/C - Volume to Capacity Ratio
(a) RTOR overlap w/WBL
(b) RTOR overlap w/SBL

INTERSECTION CAPACITY UTILIZATION

INTERSECTION NUMBER: 4
NORTH/SOUTH STREET: Victoria Ave
EAST/WEST STREET: Gonzales Rd
SCENARIO: Cumulative Conditions
TIME PERIOD: PM Peak Hour
COUNT DATE: 04/21/2016
WORK ORDER #: 2064169300

VOLUMES	Northbound			Southbound			Eastbound			Westbound		
	L	T	R	L	T	R	L	T	R	L	T	R
PM Peak	25	1353	334	269	1690	35	39	251	111	269	113	318
Project Trips	5	55	0	7	61	0	0	5	5	0	5	7
GEOMETRY	L	TTT	R	LL	TT	R	L	T TR		LL	TT	R

	Level of Service Calculations					
Move-	**Lanes**		**Volume**		**V/C Ratio**	
ment	Lane	Capacity	Cumulative	Project	Cumulative	Project
NBL	1.0	1,600	25	30	0.05 *	0.05 *
NBT	3.0	4,800	1,353	1,408	0.28	0.29
NBR	1.0	1,600	200	200	0.12	0.12
SBL	2.0	3,200	269	276	0.08	0.09
SBT	2.0	3,200	1,690	1,751	0.53 *	0.55 *
SBR	1.0	1,600	35	35	0.02	0.02
EBL	1.0	1,600	39	39	0.05	0.05
EBT	2.0	3,200	251	256	0.11 *	0.12 *
EBR	0.0	0	111	116	0.00	0.00
WBL	2.0	3,200	269	269	0.08 *	0.08 *
WBT	2.0	3,200	113	118	0.07	0.07
WBR	1.0 (a)	1,600	184	187	0.11	0.12
N/S Critical Movements					0.58	0.60
E/W Critical Movements					0.19	0.20
Clearance Interval					0.00	0.00
ICU					0.77	0.80
Level of Service (LOS)					C	C

Notes: V/C - Volume to Capacity Ratio
(a) RTOR overlap w/WBL
(b) RTOR overlap w/SBL

INTERSECTION CAPACITY UTILIZATION

INTERSECTION NUMBER: 5
NORTH/SOUTH STREET: Victoria Ave
EAST/WEST STREET: Doris Ave
SCENARIO: Cumulative Conditions
TIME PERIOD: AM Peak Hour
COUNT DATE: 05/2018
WORK ORDER #: 2064169300

VOLUMES	Northbound			Southbound			Eastbound			Westbound		
	L	T	R	L	T	R	L	T	R	L	T	R
AM Peak	3	2023	113	96	1186	7	4	2	0	131	0	207
Project Trips	0	8	6	44	7	0	0	0	0	9	0	56
GEOMETRY	L	T TR		L	T TR			LTR		L	TR	

	Level of Service Calculations					
Move-	**Lanes**		**Volume**		**V/C Ratio**	
ment	Lane	Capacity	Cumulative	Project	Cumulative	Project
NBL	1.0	1,600	3	3	0.05	0.05
NBT	2.0	3,200	2,023	2,031	0.67 *	0.67 *
NBR	0.0	0	113	119	0.00	0.00
SBL	1.0	1,600	96	140	0.06 *	0.09 *
SBT	2.0	3,200	1,186	1,193	0.37	0.38
SBR	0.0	0	7	7	0.00	0.00
EBL	0.0	0	4	4	0.00	0.00
EBT	1.0	1,600	2	2	0.05 *	0.05 *
EBR	0.0	0	0	0	0.00	0.00
WBL	1.0	1,600	131	140	0.08 *	0.09 *
WBT	1.0 (a)	1,600	0	0	0.13	0.16
WBR	0.0	0	207	263	0.00	0.00
N/S Critical Movements					0.73	0.76
E/W Critical Movements					0.13	0.14
Clearance Interval					0.00	0.00
ICU					0.86	0.90
Level of Service (LOS)					D	D

Notes: V/C - Volume to Capacity Ratio
(a) not critical due to RTOR

INTERSECTION CAPACITY UTILIZATION

INTERSECTION NUMBER: 5 **MITIGATED**
NORTH/SOUTH STREET: Victoria Ave
EAST/WEST STREET: Doris Ave
SCENARIO: Cumulative Conditions
TIME PERIOD: AM Peak Hour
COUNT DATE: 05/2018
WORK ORDER #: 2064169300

VOLUMES	Northbound			Southbound			Eastbound			Westbound		
	L	T	R	L	T	R	L	T	R	L	T	R
AM Peak	3	2023	113	96	1186	7	4	2	0	131	0	207
Project Trips	0	8	6	44	7	0	0	0	0	9	0	56
GEOMETRY	L	**TT**	**TR**	L	**TT**	**TR**	LTR			L	TR	

	Level of Service Calculations					
Move-	**Lanes**		**Volume**		**V/C Ratio**	
ment	Lane	Capacity	Cumulative	Project	Cumulative	Project
NBL	1.0	1,600	3	3	0.05	0.05
NBT	**3.0**	4,800	2,023	2,031	0.45 *	0.45 *
NBR	0.0	0	113	119	0.00	0.00
SBL	1.0	1,600	96	140	0.06 *	0.09 *
SBT	**3.0**	4,800	1,186	1,193	0.25	0.25
SBR	0.0	0	7	7	0.00	0.00
EBL	0.0	0	4	4	0.00	0.00
EBT	1.0	1,600	2	2	0.05 *	0.05 *
EBR	0.0	0	0	0	0.00	0.00
WBL	1.0	1,600	131	140	0.08 *	0.09 *
WBT	1.0 (a)	1,600	0	0	0.13	0.16
WBR	0.0	0	207	263	0.00	0.00
N/S Critical Movements					0.51	0.54
E/W Critical Movements					0.13	0.14
Clearance Interval					0.00	0.00
ICU					0.64	0.68
Level of Service (LOS)					B	B

Notes: V/C - Volume to Capacity Ratio
(a) not critical due to RTOR

INTERSECTION CAPACITY UTILIZATION

INTERSECTION NUMBER: 5
NORTH/SOUTH STREET: Victoria Ave
EAST/WEST STREET: Doris Ave
SCENARIO: Cumulative Conditions
TIME PERIOD: PM Peak Hour
COUNT DATE: 04/21/2016
WORK ORDER #: 2064169300

VOLUMES	Northbound			Southbound			Eastbound			Westbound		
	L	T	R	L	T	R	L	T	R	L	T	R
PM Peak	3	1527	112	128	2047	2	10	20	12	98	2	111
Project Trips	0	8	8	59	9	0	0	0	0	9	0	53
GEOMETRY	L	T TR		L	T TR			LTR		L	TR	

	Level of Service Calculations					
Move-	**Lanes**		**Volume**		**V/C Ratio**	
ment	Lane	Capacity	Cumulative	Project	Cumulative	Project
NBL	1.0	1,600	3	3	0.05 *	0.05 *
NBT	2.0	3,200	1,527	1,535	0.51	0.52
NBR	0.0	0	112	120	0.00	0.00
SBL	1.0	1,600	128	187	0.08	0.12
SBT	2.0	3,200	2,047	2,056	0.64 *	0.64 *
SBR	0.0	0	2	2	0.00	0.00
EBL	0.0	0	10	10	0.00	0.00
EBT	1.0	1,600	20	20	0.05 *	0.05 *
EBR	0.0	0	12	12	0.00	0.00
WBL	1.0	1,600	98	107	0.06 *	0.07 *
WBT	1.0	1,600	2	2	0.07	0.10
WBR	0.0	0	111	164	0.00	0.00
N/S Critical Movements					0.69	0.69
E/W Critical Movements					0.11	0.12
Clearance Interval					0.00	0.00
ICU					0.80	0.81
Level of Service (LOS)					C	D

Notes: V/C - Volume to Capacity Ratio

INTERSECTION CAPACITY UTILIZATION

INTERSECTION NUMBER: 5 **MITIGATED**
NORTH/SOUTH STREET: Victoria Ave
EAST/WEST STREET: Doris Ave
SCENARIO: Cumulative Conditions
TIME PERIOD: PM Peak Hour
COUNT DATE: 04/21/2016
WORK ORDER #: 2064169300

VOLUMES	Northbound			Southbound			Eastbound			Westbound		
	L	T	R	L	T	R	L	T	R	L	T	R
PM Peak	3	1527	112	128	2047	2	10	20	12	98	2	111
Project Trips	0	8	8	59	9	0	0	0	0	9	0	53
GEOMETRY	L	**TT**	**TR**	L	**TT**	**TR**	LTR			L	TR	

	Level of Service Calculations					
Move-	**Lanes**		**Volume**		**V/C Ratio**	
ment	Lane	Capacity	Cumulative	Project	Cumulative	Project
NBL	1.0	1,600	3	3	0.05 *	0.05 *
NBT	**3.0**	4,800	1,527	1,535	0.34	0.34
NBR	0.0	0	112	120	0.00	0.00
SBL	1.0	1,600	128	187	0.08	0.12
SBT	**3.0**	4,800	2,047	2,056	0.43 *	0.43 *
SBR	0.0	0	2	2	0.00	0.00
EBL	0.0	0	10	10	0.00	0.00
EBT	1.0	1,600	20	20	0.05 *	0.05 *
EBR	0.0	0	12	12	0.00	0.00
WBL	1.0	1,600	98	107	0.06 *	0.07 *
WBT	1.0	1,600	2	2	0.07	0.10
WBR	0.0	0	111	164	0.00	0.00
N/S Critical Movements					0.48	0.48
E/W Critical Movements					0.11	0.12
Clearance Interval					0.00	0.00
ICU					0.59	0.60
Level of Service (LOS)					A	A

Notes: V/C - Volume to Capacity Ratio

HCS7 Two-Way Stop-Control Report

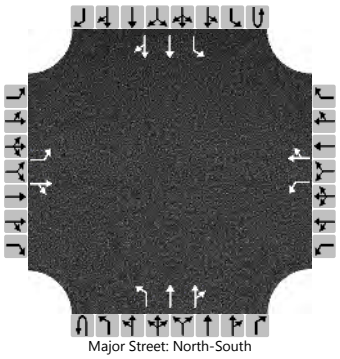
General Information

Analyst	06. DJL
Agency/Co.	STANTEC
Date Performed	7/3/2018
Analysis Year	CUMU
Time Analyzed	AM PEAK HOUR
Intersection Orientation	North-South
Project Description	TEAL CLUB SP

Site Information

Intersection	VICTORIA AVE/TEAL CLUB RD
Jurisdiction	OXNARD
East/West Street	TEAL CLUB RD
North/South Street	VICTORIA AVE
Peak Hour Factor	1.00
Analysis Time Period (hrs)	1.00

Lanes



Major Street: North-South

Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority		10	11	12		7	8	9	1U	1	2	3	4U	4	5	6
Number of Lanes		1	1	0		1	1	0	0	1	2	0	0	1	2	0
Configuration		L		TR		L		TR		L	T	TR		L	T	TR
Volume (veh/h)		0	0	3		106	1	65	0	4	2151	173	0	41	1251	1
Percent Heavy Vehicles (%)		3	3	3		3	3	3	3	3			3	3		
Proportion Time Blocked																
Percent Grade (%)	0				0											
Right Turn Channelized																
Median Type | Storage	Undivided															

Critical and Follow-up Headways

Base Critical Headway (sec)		7.5	6.5	6.9		7.5	6.5	6.9		4.1				4.1		
Critical Headway (sec)		7.56	6.56	6.96		7.56	6.56	6.96		4.16				4.16		
Base Follow-Up Headway (sec)		3.5	4.0	3.3		3.5	4.0	3.3		2.2				2.2		
Follow-Up Headway (sec)		3.53	4.03	3.33		3.53	4.03	3.33		2.23				2.23		

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)		0		3		106		66		4				41		
Capacity, c (veh/h)		8		425		5		113		546				208		
v/c Ratio		0.00		0.01		19.98		0.58		0.01				0.20		
95% Queue Length, Q_{95} (veh)		0.0		0.0		53.3		3.6		0.0				0.7		
Control Delay (s/veh)		481.9		13.5		35539.2		78.8		11.6				26.6		
Level of Service (LOS)		F		B		F		F		B				D		
Approach Delay (s/veh)	13.5				21932.3				0.0				0.8			
Approach LOS	B				F											

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HCS7 Two-Way Stop-Control Report

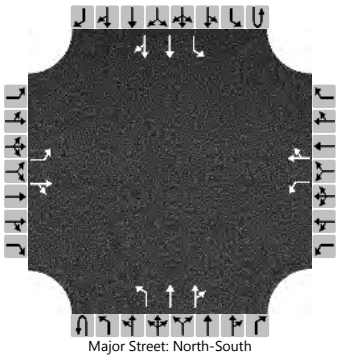
General Information

Analyst	06. DJL
Agency/Co.	STANTEC
Date Performed	7/3/2018
Analysis Year	CUPR
Time Analyzed	AM PEAK HOUR
Intersection Orientation	North-South
Project Description	TEAL CLUB SP

Site Information

Intersection	VICTORIA AVE/TEAL CLUB RD
Jurisdiction	OXNARD
East/West Street	TEAL CLUB RD
North/South Street	VICTORIA AVE
Peak Hour Factor	1.00
Analysis Time Period (hrs)	1.00

Lanes


Major Street: North-South

Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority		10	11	12		7	8	9	1U	1	2	3	4U	4	5	6
Number of Lanes		1	1	0		1	1	0	0	1	2	0	0	1	2	0
Configuration		L		TR		L		TR		L	T	TR		L	T	TR
Volume (veh/h)		0	0	3		142	1	73	0	4	1758	202	0	48	1260	1
Percent Heavy Vehicles (%)		3	3	3		3	3	3	3	3			3	3		
Proportion Time Blocked																
Percent Grade (%)		0				0										
Right Turn Channelized																
Median Type | Storage		Undivided														

Critical and Follow-up Headways

Base Critical Headway (sec)		7.5	6.5	6.9		7.5	6.5	6.9		4.1				4.1		
Critical Headway (sec)		7.56	6.56	6.96		7.56	6.56	6.96		4.16				4.16		
Base Follow-Up Headway (sec)		3.5	4.0	3.3		3.5	4.0	3.3		2.2				2.2		
Follow-Up Headway (sec)		3.53	4.03	3.33		3.53	4.03	3.33		2.23				2.23		

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)		0		3		142		74		4				48		
Capacity, c (veh/h)		13		422		10		174		542				290		
v/c Ratio		0.00		0.01		13.56		0.43		0.01				0.17		
95% Queue Length, Q_{95} (veh)		0.0		0.0		68.9		2.1		0.0				0.6		
Control Delay (s/veh)		292.4		13.6		23330.2		40.7		11.7				19.9		
Level of Service (LOS)		F		B		F		E		B				C		
Approach Delay (s/veh)		13.6				15351.4				0.0				0.7		
Approach LOS		B				F										

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INTERSECTION CAPACITY UTILIZATION

INTERSECTION NUMBER: 6 **Mitigated**
NORTH/SOUTH STREET: Victoria Ave
EAST/WEST STREET: Teal Club Rd
SCENARIO: Cumulative Conditions
TIME PERIOD: AM Peak Hour
COUNT DATE: 05/2018
WORK ORDER #: 2064169300

VOLUMES	Northbound			Southbound			Eastbound			Westbound		
	L	T	R	L	T	R	L	T	R	L	T	R
AM Peak	4	2151	173	41	1251	1	0	0	3	106	1	65
Project Trips	0	6	29	7	9	0	0	0	0	36	0	8
GEOMETRY	L	**TT**	**TR**	L	**TT**	**TR**	L	TR		L	TR	

	Level of Service Calculations					
Move-	**Lanes**		**Volume**		**V/C Ratio**	
ment	Lane	Capacity	Existing	Project	Existing	Ex+Project
NBL	1.0	1,600	4	4	0.05	0.05
NBT	**3.0**	4,800	2,151	2,157	0.48 *	0.49 *
NBR	0.0	0	173	202	0.00	0.00
SBL	1.0	1,600	41	48	0.05 *	0.05 *
SBT	**3.0**	4,800	1,251	1,260	0.26	0.26
SBR	0.0	0	1	1	0.00	0.00
EBL	1.0	1,600	0	0	0.00	0.00
EBT	1.0	1,600	0	0	0.00	0.00 *
EBR	0.0	0	3	3	0.00	0.00
WBL	1.0	1,600	106	142	0.07	0.05
WBT	1.0	1,600	1	1	0.07 *	0.07 *
WBR	0.0	0	65	73	0.00	0.00
N/S Critical Movements					0.53	0.54
E/W Critical Movements					0.07	0.07
Clearance Interval					0.00	0.00
ICU					0.60	0.61
Level of Service (LOS)					A	B

Notes: V/C - Volume to Capacity Ratio

HCS7 Two-Way Stop-Control Report

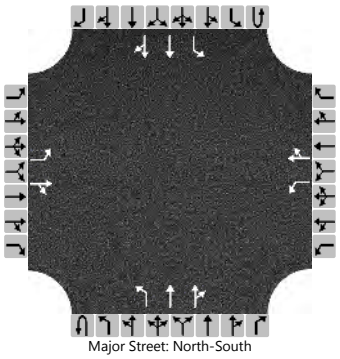
General Information

Analyst	06. DJL
Agency/Co.	STANTEC
Date Performed	7/3/2018
Analysis Year	CUMU
Time Analyzed	PM PEAK HOUR
Intersection Orientation	North-South
Project Description	TEAL CLUB SP

Site Information

Intersection	VICTORIA AVE/TEAL CLUB RD
Jurisdiction	OXNARD
East/West Street	TEAL CLUB RD
North/South Street	VICTORIA AVE
Peak Hour Factor	1.00
Analysis Time Period (hrs)	1.00

Lanes



Major Street: North-South

Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority		10	11	12		7	8	9	1U	1	2	3	4U	4	5	6
Number of Lanes		1	1	0		1	1	0	0	1	2	0	0	1	2	0
Configuration		L		TR		L		TR		L	T	TR		L	T	TR
Volume (veh/h)		2	3	38		47	0	60	0	2	1750	80	0	62	2015	1
Percent Heavy Vehicles (%)		3	3	3		3	3	3	3	3			3	3		
Proportion Time Blocked																
Percent Grade (%)	0				0											
Right Turn Channelized																
Median Type | Storage	Undivided															

Critical and Follow-up Headways

Base Critical Headway (sec)		7.5	6.5	6.9		7.5	6.5	6.9		4.1				4.1		
Critical Headway (sec)		7.56	6.56	6.96		7.56	6.56	6.96		4.16				4.16		
Base Follow-Up Headway (sec)		3.5	4.0	3.3		3.5	4.0	3.3		2.2				2.2		
Follow-Up Headway (sec)		3.53	4.03	3.33		3.53	4.03	3.33		2.23				2.23		

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)		2		41		47		60		2				62		
Capacity, c (veh/h)		4		28		0		273		275				326		
v/c Ratio		0.54		1.46				0.22		0.01				0.19		
95% Queue Length, Q_{95} (veh)		1.4		11.7				0.8		0.0				0.7		
Control Delay (s/veh)		1606.7		1251.9				21.9		18.2				18.6		
Level of Service (LOS)		F		F				C		C				C		
Approach Delay (s/veh)	1268.4								0.0				0.6			
Approach LOS	F															

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HCS7 Two-Way Stop-Control Report

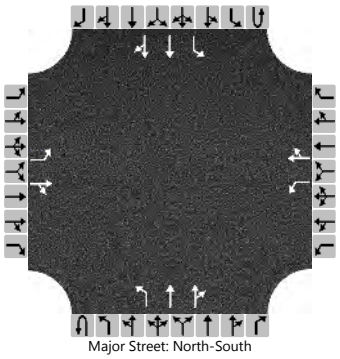
General Information

Analyst	06. DJL
Agency/Co.	STANTEC
Date Performed	7/3/2018
Analysis Year	CUPR
Time Analyzed	PM PEAK HOUR
Intersection Orientation	North-South
Project Description	TEAL CLUB SP

Site Information

Intersection	VICTORIA AVE/TEAL CLUB RD
Jurisdiction	OXNARD
East/West Street	TEAL CLUB RD
North/South Street	VICTORIA AVE
Peak Hour Factor	1.00
Analysis Time Period (hrs)	1.00

Lanes



Major Street: North-South

Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority		10	11	12		7	8	9	1U	1	2	3	4U	4	5	6
Number of Lanes		1	1	0		1	1	0	0	1	2	0	0	1	2	0
Configuration		L		TR		L		TR		L	T	TR		L	T	TR
Volume (veh/h)		2	3	38		81	0	68	0	2	1758	119	0	71	2024	1
Percent Heavy Vehicles (%)		3	3	3		3	3	3	3	3			3	3		
Proportion Time Blocked																
Percent Grade (%)	0				0											
Right Turn Channelized																
Median Type | Storage	Undivided															

Critical and Follow-up Headways

Base Critical Headway (sec)		7.5	6.5	6.9		7.5	6.5	6.9		4.1				4.1		
Critical Headway (sec)		7.56	6.56	6.96		7.56	6.56	6.96		4.16				4.16		
Base Follow-Up Headway (sec)		3.5	4.0	3.3		3.5	4.0	3.3		2.2				2.2		
Follow-Up Headway (sec)		3.53	4.03	3.33		3.53	4.03	3.33		2.23				2.23		

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)		2		41		81		68		2				71		
Capacity, c (veh/h)		3		24		0		264		273				312		
v/c Ratio		0.62		1.69				0.26		0.01				0.23		
95% Queue Length, Q_{95} (veh)		1.5		13.1				1.0		0.0				0.9		
Control Delay (s/veh)		1939.5		1685.3				23.4		18.3				19.9		
Level of Service (LOS)		F		F				C		C				C		
Approach Delay (s/veh)	1697.1								0.0				0.7			
Approach LOS	F															

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INTERSECTION CAPACITY UTILIZATION

INTERSECTION NUMBER: 6 **Mitigated**
NORTH/SOUTH STREET: Victoria Ave
EAST/WEST STREET: Teal Club Rd
SCENARIO: Cumulative Conditions
TIME PERIOD: PM Peak Hour
COUNT DATE: 05/2018
WORK ORDER #: 2064169300

VOLUMES	Northbound			Southbound			Eastbound			Westbound		
	L	T	R	L	T	R	L	T	R	L	T	R
AM Peak	2	1750	80	62	2015	1	2	3	38	47	0	60
Project Trips	0	8	39	9	9	0	0	0	0	34	0	8
GEOMETRY	L	**TT**	**TR**	L	**TT**	**TR**	L	TR		L	TR	

	Level of Service Calculations					
Move-	**Lanes**		**Volume**		**V/C Ratio**	
ment	Lane	Capacity	Existing	Project	Existing	Ex+Project
NBL	1.0	1,600	2	2	0.05 *	0.05 *
NBT	**3.0**	4,800	1,750	1,758	0.38	0.39
NBR	0.0	0	80	119	0.00	0.00
SBL	1.0	1,600	62	71	0.05	0.05
SBT	**3.0**	4,800	2,015	2,024	0.42 *	0.42 *
SBR	0.0	0	1	1	0.00	0.00
EBL	1.0	1,600	2	2	0.00 *	0.00
EBT	1.0	1,600	3	3	0.05	0.05 *
EBR	0.0	0	38	38	0.00	0.00
WBL	1.0	1,600	47	81	0.03	0.05
WBT	1.0	1,600	0	0	0.07 *	0.07 *
WBR	0.0	0	60	68	0.00	0.00
N/S Critical Movements					0.47	0.47
E/W Critical Movements					0.07	0.12
Clearance Interval					0.00	0.00
ICU					0.54	0.59
Level of Service (LOS)					A	A

Notes: V/C - Volume to Capacity Ratio

INTERSECTION CAPACITY UTILIZATION

INTERSECTION NUMBER: 7
NORTH/SOUTH STREET: Victoria Ave
EAST/WEST STREET: 5th St
SCENARIO: Cumulative Conditions
TIME PERIOD: AM Peak Hour
COUNT DATE: 10/2019
WORK ORDER #: 2064169300

VOLUMES	Northbound			Southbound			Eastbound			Westbound		
	L	T	R	L	T	R	L	T	R	L	T	R
AM Peak	80	1852	157	286	1109	51	77	98	10	119	160	462
Project Trips	0	36	0	4	35	6	5	0	0	0	0	3
GEOMETRY	LL	TTT	R	LL	TT	TR	L	T	TR	LL	TT	R

	Level of Service Calculations					
Move-	**Lanes**		**Volume**		**V/C Ratio**	
ment	Lane	Capacity	Cumulative	Project	Cumulative	Project
NBL	2.0	3,200	80	80	0.05	0.05
NBT	3.0	4,800	1,852	1,888	0.39 *	0.39 *
NBR	1.0	1,600	157	157	0.10	0.10
SBL	2.0	3,200	286	290	0.09 *	0.09 *
SBT	3.0	4,800	1,109	1,144	0.24	0.25
SBR	0.0	0	51	57	0.00	0.00
EBL	1.0	1,600	77	82	0.05 *	0.05 *
EBT	2.0	3,200	98	98	0.07	0.07
EBR	0.0	0	10	10	0.00	0.00
WBL	2.0	3,200	119	119	0.05	0.05
WBT	2.0	3,200	160	160	0.07	0.07
WBR	1.0 (a)	1,600	319	320	0.20 *	0.20 *
N/S Critical Movements					0.48	0.48
E/W Critical Movements					0.25	0.25
Clearance Interval					0.00	0.00
ICU					0.73	0.73
Level of Service (LOS)					C	C

Notes: V/C - Volume to Capacity Ratio

(a) RTOR overlap w/SB LT

INTERSECTION CAPACITY UTILIZATION

INTERSECTION NUMBER: 7
NORTH/SOUTH STREET: Victoria Ave
EAST/WEST STREET: 5th St
SCENARIO: Cumulative Conditions
TIME PERIOD: PM Peak Hour
COUNT DATE: 10/2019
WORK ORDER #: 2064169300

VOLUMES	Northbound			Southbound			Eastbound			Westbound		
	L	T	R	L	T	R	L	T	R	L	T	R
PM Peak	46	1351	150	369	1696	65	78	186	24	200	139	233
Project Trips	0	36	0	4	33	6	6	0	0	0	0	4
GEOMETRY	LL	TTT	R	LL	TT	TR	L	T	TR	LL	TT	R

	Level of Service Calculations					
Move-	**Lanes**		**Volume**		**V/C Ratio**	
ment	Lane	Capacity	Cumulative	Project	Cumulative	Project
NBL	2.0	3,200	46	46	0.05 *	0.05 *
NBT	3.0	4,800	1,351	1,387	0.28	0.29
NBR	1.0	1,600	150	150	0.09	0.09
SBL	2.0	3,200	369	373	0.12	0.12
SBT	3.0	4,800	1,696	1,729	0.37 *	0.38 *
SBR	0.0	0	65	71	0.00	0.00
EBL	1.0	1,600	78	84	0.05	0.05
EBT	2.0	3,200	186	186	0.07 *	0.07 *
EBR	0.0	0	24	24	0.00	0.00
WBL	2.0	3,200	200	200	0.06	0.06
WBT	2.0	3,200	139	139	0.07 *	0.07 *
WBR	1.0 (a)	1,600	49	51	0.03	0.03
N/S Critical Movements					0.42	0.43
E/W Critical Movements					0.14	0.14
Clearance Interval					0.00	0.00
ICU					0.56	0.57
Level of Service (LOS)					A	A

Notes: V/C - Volume to Capacity Ratio

(a) RTOR overlap w/SB LT

INTERSECTION CAPACITY UTILIZATION

INTERSECTION NUMBER: 8
NORTH/SOUTH STREET: Victoria Ave
EAST/WEST STREET: Wooley Rd
SCENARIO: Cumulative Conditions
TIME PERIOD: AM Peak Hour
COUNT DATE: 10/2019
WORK ORDER #: 2064169300

VOLUMES	Northbound			Southbound			Eastbound			Westbound		
	L	T	R	L	T	R	L	T	R	L	T	R
AM Peak	102	1355	75	163	947	78	149	143	47	78	215	520
Project Trips	0	15	0	6	20	8	7	0	0	0	0	5
GEOMETRY	L	TT TR		L	TTT	R	L	TT	R	L	TT	R

	Level of Service Calculations					
Move-	**Lanes**		**Volume**		**V/C Ratio**	
ment	Lane	Capacity	Cumulative	Project	Cumulative	Project
NBL	1.0	1,600	102	102	0.06	0.06
NBT	3.0	4,800	1,355	1,370	0.30 *	0.30 *
NBR	0.0	0	75	75	0.00	0.00
SBL	1.0	1,600	163	169	0.10 *	0.11 *
SBT	3.0	4,800	947	967	0.20	0.20
SBR	1.0	1,600	78	86	0.05	0.05
EBL	1.0	1,600	149	156	0.09 *	0.10 *
EBT	2.0	3,200	143	143	0.07	0.07
EBR	1.0	1,600	47	47	0.03	0.03
WBL	1.0	1,600	78	78	0.05	0.05
WBT	2.0	3,200	215	215	0.07	0.07
WBR	1.0 (a)	1,600	357	356	0.22 *	0.22 *
N/S Critical Movements					0.40	0.41
E/W Critical Movements					0.31	0.32
Clearance Interval					0.00	0.00
ICU					0.71	0.73
Level of Service (LOS)					C	C

Notes: V/C - Volume to Capacity Ratio

(a) RTOR overlap w/SBL

INTERSECTION CAPACITY UTILIZATION

INTERSECTION NUMBER: 8
NORTH/SOUTH STREET: Victoria Ave
EAST/WEST STREET: Wooley Rd
SCENARIO: Cumulative Conditions
TIME PERIOD: PM Peak Hour
COUNT DATE: 10/2019
WORK ORDER #: 2064169300

VOLUMES	Northbound			Southbound			Eastbound			Westbound		
	L	T	R	L	T	R	L	T	R	L	T	R
PM Peak	71	1123	116	293	1359	142	168	290	128	143	180	229
Project Trips	0	20	0	6	19	8	9	0	0	0	0	6
GEOMETRY	L	TT	TR	L	TTT	R	L	TT	R	L	TT	R
	-12.0	-18	7	37	-41	-17	0	-5	-38	-11	11	-20

	Level of Service Calculations					
Move-	**Lanes**		**Volume**		**V/C Ratio**	
ment	Lane	Capacity	Cumulative	Project	Cumulative	Project
NBL	1.0	1,600	71	71	0.04	0.04
NBT	3.0	4,800	1,123	1,143	0.26 *	0.26 *
NBR	0.0	0	116	116	0.00	0.00
SBL	1.0	1,600	293	299	0.18 *	0.19 *
SBT	3.0	4,800	1,359	1,378	0.28	0.29
SBR	1.0	1,600	142	150	0.09	0.09
EBL	1.0	1,600	168	177	0.11 *	0.11 *
EBT	2.0	3,200	290	290	0.07	0.07
EBR	1.0	1,600	128	128	0.08	0.08
WBL	1.0	1,600	143	143	0.09	0.09
WBT	2.0	3,200	180	180	0.07 *	0.07 *
WBR	1.0 (a)	1,600	92	94	0.06	0.06
N/S Critical Movements					0.44	0.45
E/W Critical Movements					0.18	0.18
Clearance Interval					0.00	0.00
ICU					0.62	0.63
Level of Service (LOS)					B	B

Notes: V/C - Volume to Capacity Ratio

(a) RTOR overlap w/SBL

INTERSECTION CAPACITY UTILIZATION

INTERSECTION NUMBER: 9
NORTH/SOUTH STREET: Patterson Rd
EAST/WEST STREET: Gonzales Rd
SCENARIO: Cumulative Conditions
TIME PERIOD: AM Peak Hour
COUNT DATE: 05/2018
WORK ORDER #: 2064169300

VOLUMES	Northbound			Southbound			Eastbound			Westbound		
	L	T	R	L	T	R	L	T	R	L	T	R
AM Peak	211	158	263	242	162	45	12	987	100	153	530	248
Project Trips	12	5	5	0	4	0	0	0	9	4	0	0
GEOMETRY	L	T	R	L	T	R	L	TT	R	L	TT	R

	Level of Service Calculations						
Move-	**Lanes**			**Volume**		**V/C Ratio**	
ment	Lane		Capacity	Cumulative	Project	Cumulative	Project
NBL	1.0		1,600	211	223	0.13	0.14
NBT	1.0		1,600	158	163	0.10 *	0.10 *
NBR	1.0	(a)	1,600	110	111	0.07	0.07
SBL	1.0		1,600	242	242	0.15 *	0.15 *
SBT	1.0		1,600	162	166	0.10	0.10
SBR	1.0		1,600	45	45	0.03	0.03
EBL	1.0		1,600	12	12	0.05	0.05
EBT	2.0		3,200	987	987	0.31 *	0.31 *
EBR	1.0		1,600	100	109	0.06	0.07
WBL	1.0		1,600	153	157	0.10 *	0.10 *
WBT	2.0		3,200	530	530	0.17	0.17
WBR	1.0		1,600	6	6	0.00	0.00
N/S Critical Movements						0.25	0.25
E/W Critical Movements						0.41	0.41
Clearance Interval						0.00	0.00
ICU						0.66	0.66
Level of Service (LOS)						B	B

Notes: V/C - Volume to Capacity Ratio

(a) RTOR overlap w/WBL

INTERSECTION CAPACITY UTILIZATION

INTERSECTION NUMBER: 9
NORTH/SOUTH STREET: Patterson Rd
EAST/WEST STREET: Gonzales Rd
SCENARIO: Cumulative Conditions
TIME PERIOD: PM Peak Hour
COUNT DATE: 05/2018
WORK ORDER #: 2064169300

VOLUMES	Northbound			Southbound			Eastbound			Westbound		
	L	T	R	L	T	R	L	T	R	L	T	R
PM Peak	58	88	193	128	75	29	18	580	19	182	694	143
Project Trips	12	5	5	0	5	0	0	0	12	5	0	0
GEOMETRY	L	T	R	L	T	R	L	TT	R	L	TT	R

	Level of Service Calculations						
Move-	**Lanes**			**Volume**		**V/C Ratio**	
ment	Lane		Capacity	Cumulative	Project	Cumulative	Project
NBL	1.0		1,600	58	70	0.05	0.05
NBT	1.0		1,600	88	93	0.07 *	0.07 *
NBR	1.0	(a)	1,600	11	11	0.01	0.01
SBL	1.0		1,600	128	128	0.08 *	0.08 *
SBT	1.0		1,600	75	80	0.07	0.07
SBR	1.0		1,600	29	29	0.02	0.02
EBL	1.0		1,600	18	18	0.05	0.05
EBT	2.0		3,200	580	580	0.18 *	0.18 *
EBR	1.0		1,600	19	31	0.01	0.02
WBL	1.0		1,600	182	187	0.11 *	0.12 *
WBT	2.0		3,200	694	694	0.22	0.22
WBR	1.0		1,600	15	15	0.01	0.01
N/S Critical Movements						0.15	0.15
E/W Critical Movements						0.29	0.30
Clearance Interval						0.00	0.00
ICU						0.44	0.45
Level of Service (LOS)						A	A

Notes: V/C - Volume to Capacity Ratio

(a) RTOR overlap w/WBL

HCS7 All-Way Stop Control Report

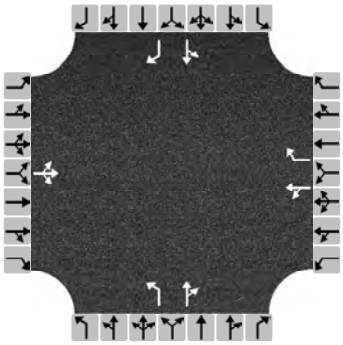
General Information

Analyst	10. DJL
Agency/Co.	STANTEC
Date Performed	6/5/2018
Analysis Year	CUMU
Analysis Time Period (hrs)	1.00
Time Analyzed	AM PEAK HOUR
Project Description	TEAL CLUB SP

Site Information

Intersection	PATTERSON RD/DORIS ST
Jurisdiction	OXNARD
East/West Street	DORIS ST
North/South Street	PATTERSON RD
Peak Hour Factor	1.00

Lanes



Vehicle Volume and Adjustments

Approach	Eastbound			Westbound			Northbound			Southbound		
Movement	L	T	R	L	T	R	L	T	R	L	T	R
Volume	60	116	36	172	254	254	7	88	106	292	123	73
% Thrus in Shared Lane												
Lane	L1	L2	L3	L1	L2	L3	L1	L2	L3	L1	L2	L3
Configuration	LTR			LT	R		L	TR		LT	R	
Flow Rate, v (veh/h)	212			426	254		7	194		415	73	
Percent Heavy Vehicles	2			2	2		2	2		2	2	

Departure Headway and Service Time

Initial Departure Headway, hd (s)	3.20			3.20	3.20		3.20	3.20		3.20	3.20	
Initial Degree of Utilization, x	0.188			0.379	0.226		0.006	0.172		0.369	0.065	
Final Departure Headway, hd (s)	8.29			7.88	6.97		9.18	8.27		8.23	7.15	
Final Degree of Utilization, x	0.488			0.932	0.491		0.018	0.446		0.949	0.145	
Move-Up Time, m (s)	2.0			2.3	2.3		2.3	2.3		2.3	2.3	
Service Time, ts (s)	6.29			5.58	4.67		6.88	5.97		5.93	4.85	

Capacity, Delay and Level of Service

Flow Rate, v (veh/h)	212			426	254		7	194		415	73	
Capacity	434			457	517		392	435		437	503	
95% Queue Length, Q_{95} (veh)	2.8			18.7	2.8		0.1	2.4		20.0	0.5	
Control Delay (s/veh)	19.1			79.8	16.3		12.1	17.6		92.2	11.1	
Level of Service, LOS	C			F	C		B	C		F	B	
Approach Delay (s/veh)	19.1			56.1			17.4			80.1		
Approach LOS	C			F			C			F		
Intersection Delay, s/veh | LOS	53.6						F					

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HCS7 All-Way Stop Control Report

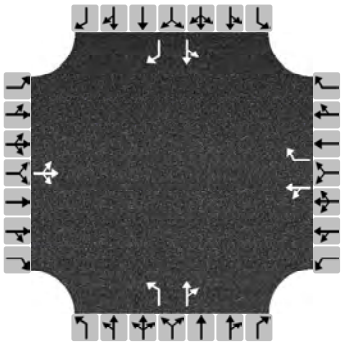
General Information

Analyst	10. DJL
Agency/Co.	STANTEC
Date Performed	6/5/2018
Analysis Year	CUPR
Analysis Time Period (hrs)	1.00
Time Analyzed	AM PEAK HOUR
Project Description	TEAL CLUB SP

Site Information

Intersection	PATTERSON RD/DORIS ST
Jurisdiction	OXNARD
East/West Street	DORIS ST
North/South Street	PATTERSON RD
Peak Hour Factor	1.00

Lanes



Vehicle Volume and Adjustments

Approach	Eastbound			Westbound			Northbound			Southbound		
Movement	L	T	R	L	T	R	L	T	R	L	T	R
Volume	60	157	45	178	299	268	17	96	111	303	129	73
% Thrus in Shared Lane												
Lane	L1	L2	L3	L1	L2	L3	L1	L2	L3	L1	L2	L3
Configuration	LTR			LT	R		L	TR		LT	R	
Flow Rate, v (veh/h)	262			477	268		17	207		432	73	
Percent Heavy Vehicles	2			2	2		2	2		2	2	

Departure Headway and Service Time

Initial Departure Headway, hd (s)	3.20			3.20	3.20		3.20	3.20		3.20	3.20	
Initial Degree of Utilization, x	0.233			0.424	0.238		0.015	0.184		0.384	0.065	
Final Departure Headway, hd (s)	8.65			8.20	7.32		9.44	8.57		8.46	7.42	
Final Degree of Utilization, x	0.629			1.086	0.545		0.045	0.493		1.015	0.151	
Move-Up Time, m (s)	2.0			2.3	2.3		2.3	2.3		2.3	2.3	
Service Time, ts (s)	6.65			5.90	5.02		7.14	6.27		6.16	5.12	

Capacity, Delay and Level of Service

Flow Rate, v (veh/h)	262			477	268		17	207		432	73	
Capacity	416			439	492		382	420		425	485	
95% Queue Length, Q_{95} (veh)	4.8			37.9	3.5		0.1	2.8		27.1	0.5	
Control Delay (s/veh)	26.0			237.1	18.7		12.6	19.5		150.1	11.4	
Level of Service, LOS	D			F	C		B	C		F	B	
Approach Delay (s/veh)	26.0			158.5			19.0			130.1		
Approach LOS	D			F			C			F		
Intersection Delay, s/veh | LOS	112.3						F					

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INTERSECTION CAPACITY UTILIZATION

INTERSECTION NUMBER: 10 **MITIGATED**
NORTH/SOUTH STREET: Patterson Rd
EAST/WEST STREET: Doris Avenue
SCENARIO: Cumulative Conditions
TIME PERIOD: AM Peak Hour
COUNT DATE: 05/2018
WORK ORDER #: 2064169300

VOLUMES	Northbound			Southbound			Eastbound			Westbound		
	L	T	R	L	T	R	L	T	R	L	T	R
AM Peak	7	88	106	292	123	73	60	116	36	172	254	254
Project Trips	10	8	5	11	6	0	0	41	9	6	45	14
GEOMETRY	**L**	**TR**		**L**	**TR**		**L**	**TR**		L	TR	

	Level of Service Calculations					
Move-	**Lanes**		**Volume**		**V/C Ratio**	
ment	Lane	Capacity	Cumulative	Project	Cumulative	Project
NBL	1.0	1,600	7	17	0.00	0.05
NBT	1.0	1,600	88	96	0.12 *	0.13 *
NBR	0.0	0	106	111	0.00	0.00
SBL	1.0	1,600	292	303	0.18 *	0.19 *
SBT	1.0	1,600	123	129	0.12	0.13
SBR	0.0	0	73	73	0.00	0.00
EBL	1.0	1,600	60	60	0.04 *	0.04 *
EBT	1.0	1,600	116	157	0.10	0.13
EBR	0.0	0	36	45	0.00	0.00
WBL	1.0	1,600	172	178	0.11	0.11
WBT	1.0	1,600	254	299	0.32 *	0.35 *
WBR	0.0	0	254	268	0.00	0.00
N/S Critical Movements					0.30	0.32
E/W Critical Movements					0.36	0.39
Clearance Interval					0.00	0.00
ICU					0.66	0.71
Level of Service (LOS)					B	C

Notes: V/C - Volume to Capacity Ratio

HCS7 All-Way Stop Control Report

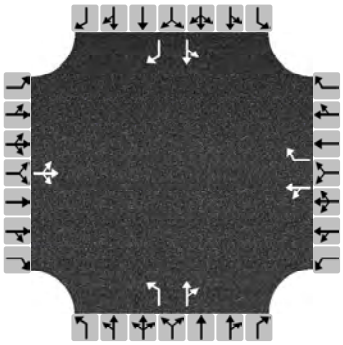
General Information

Analyst	10. DJL
Agency/Co.	STANTEC
Date Performed	6/5/2018
Analysis Year	CUM
Analysis Time Period (hrs)	1.00
Time Analyzed	AM PEAK HOUR
Project Description	TEAL CLUB SP

Site Information

Intersection	PATTERSON RD/DORIS ST
Jurisdiction	OXNARD
East/West Street	DORIS ST
North/South Street	PATTERSON RD
Peak Hour Factor	1.00

Lanes



Vehicle Volume and Adjustments

Approach	Eastbound			Westbound			Northbound			Southbound		
Movement	L	T	R	L	T	R	L	T	R	L	T	R
Volume	54	211	13	54	147	145	6	64	37	100	50	37
% Thrus in Shared Lane												
Lane	L1	L2	L3	L1	L2	L3	L1	L2	L3	L1	L2	L3
Configuration	LTR			LT	R		L	TR		LT	R	
Flow Rate, v (veh/h)	278			201	145		6	101		150	37	
Percent Heavy Vehicles	2			2	2		2	2		2	2	

Departure Headway and Service Time

Initial Departure Headway, hd (s)	3.20			3.20	3.20		3.20	3.20		3.20	3.20	
Initial Degree of Utilization, x	0.247			0.179	0.129		0.005	0.090		0.133	0.033	
Final Departure Headway, hd (s)	5.91			5.98	5.14		7.08	6.32		6.75	5.70	
Final Degree of Utilization, x	0.456			0.334	0.207		0.012	0.177		0.281	0.059	
Move-Up Time, m (s)	2.0			2.3	2.3		2.3	2.3		2.3	2.3	
Service Time, ts (s)	3.91			3.68	2.84		4.78	4.02		4.45	3.40	

Capacity, Delay and Level of Service

Flow Rate, v (veh/h)	278			201	145		6	101		150	37	
Capacity	609			602	701		508	570		534	632	
95% Queue Length, Q_{95} (veh)	2.5			1.5	0.8		0.0	0.6		1.2	0.2	
Control Delay (s/veh)	13.8			11.7	9.2		9.9	10.4		12.1	8.8	
Level of Service, LOS	B			B	A		A	B		B	A	
Approach Delay (s/veh)	13.8			10.6			10.3			11.4		
Approach LOS	B			B			B			B		
Intersection Delay, s/veh | LOS	11.7						B					

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HCS7 All-Way Stop Control Report

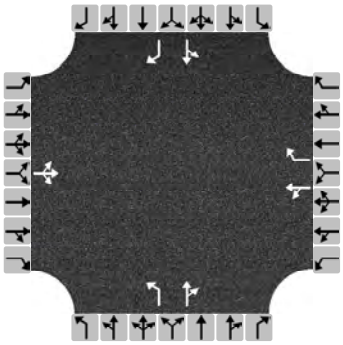
General Information

Analyst	10. DJL
Agency/Co.	STANTEC
Date Performed	6/5/2018
Analysis Year	CUPR
Analysis Time Period (hrs)	1.00
Time Analyzed	AM PEAK HOUR
Project Description	TEAL CLUB SP

Site Information

Intersection	PATTERSON RD/DORIS ST
Jurisdiction	OXNARD
East/West Street	DORIS ST
North/South Street	PATTERSON RD
Peak Hour Factor	1.00

Lanes



Vehicle Volume and Adjustments

Approach	Eastbound			Westbound			Northbound			Southbound		
Movement	L	T	R	L	T	R	L	T	R	L	T	R
Volume	54	266	25	60	190	159	16	72	43	114	58	37
% Thrus in Shared Lane												
Lane	L1	L2	L3	L1	L2	L3	L1	L2	L3	L1	L2	L3
Configuration	LTR			LT	R		L	TR		LT	R	
Flow Rate, v (veh/h)	345			250	159		16	115		172	37	
Percent Heavy Vehicles	2			2	2		2	2		2	2	

Departure Headway and Service Time

Initial Departure Headway, hd (s)	3.20			3.20	3.20		3.20	3.20		3.20	3.20	
Initial Degree of Utilization, x	0.307			0.222	0.141		0.014	0.102		0.153	0.033	
Final Departure Headway, hd (s)	6.22			6.34	5.52		7.62	6.84		7.24	6.20	
Final Degree of Utilization, x	0.596			0.440	0.244		0.034	0.219		0.346	0.064	
Move-Up Time, m (s)	2.0			2.3	2.3		2.3	2.3		2.3	2.3	
Service Time, ts (s)	4.22			4.04	3.22		5.32	4.54		4.94	3.90	

Capacity, Delay and Level of Service

Flow Rate, v (veh/h)	345			250	159		16	115		172	37	
Capacity	579			568	652		472	526		497	581	
95% Queue Length, Q_{95} (veh)	4.3			2.3	1.0		0.1	0.8		1.6	0.2	
Control Delay (s/veh)	18.3			14.0	10.0		10.6	11.5		13.8	9.3	
Level of Service, LOS	C			B	A		B	B		B	A	
Approach Delay (s/veh)	18.3			12.4			11.3			13.0		
Approach LOS	C			B			B			B		
Intersection Delay, s/veh | LOS	14.3						B					

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INTERSECTION CAPACITY UTILIZATION

INTERSECTION NUMBER: 10 **MITIGATED**
NORTH/SOUTH STREET: Patterson Rd
EAST/WEST STREET: Doris Avenue
SCENARIO: Cumulative Conditions
TIME PERIOD: PM Peak Hour
COUNT DATE: 05/2018
WORK ORDER #: 2064169300

VOLUMES	Northbound			Southbound			Eastbound			Westbound		
	L	T	R	L	T	R	L	T	R	L	T	R
PM Peak	6	64	37	100	50	37	54	211	13	54	147	145
Project Trips	10	8	6	14	8	0	0	55	12	6	43	14
GEOMETRY	**L**	**TR**		**L**	**TR**		**L**	**TR**		L	TR	

	Level of Service Calculations					
Move-	**Lanes**		**Volume**		**V/C Ratio**	
ment	Lane	Capacity	Cumulative	Project	Cumulative	Project
NBL	1.0	1,600	6	16	0.05	0.05
NBT	1.0	1,600	64	72	0.07 *	0.07 *
NBR	0.0	0	37	43	0.00	0.00
SBL	1.0	1,600	100	114	0.06 *	0.07 *
SBT	1.0	1,600	50	58	0.07	0.07
SBR	0.0	0	37	37	0.00	0.00
EBL	1.0	1,600	54	54	0.05 *	0.05 *
EBT	1.0	1,600	211	266	0.14	0.18
EBR	0.0	0	13	25	0.00	0.00
WBL	1.0	1,600	54	60	0.03	0.04
WBT	1.0	1,600	147	190	0.18	0.22
WBR	0.0	0	145	159	0.00	0.00
N/S Critical Movements					0.13	0.14
E/W Critical Movements					0.23	0.27
Clearance Interval					0.00	0.00
ICU					0.36	0.41
Level of Service (LOS)					A	A

Notes: V/C - Volume to Capacity Ratio

HCS7 Two-Way Stop-Control Report

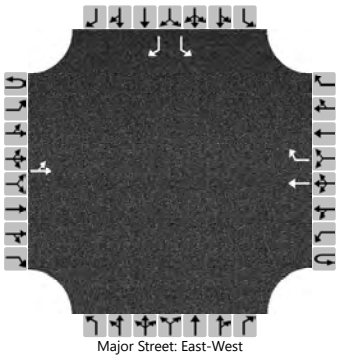
General Information

Analyst	11. DJL
Agency/Co.	STANTEC
Date Performed	7/3/2018
Analysis Year	CUMU
Time Analyzed	AM PEAK HOUR
Intersection Orientation	East-West
Project Description	TEAL CLUB SP

Site Information

Intersection	PATTERSON RD/TEAL CLUB RD
Jurisdiction	OXNARD
East/West Street	TEAL CLUB RD
North/South Street	PATTERSON RD
Peak Hour Factor	1.00
Analysis Time Period (hrs)	1.00

Lanes



Major Street: East-West

Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority	1U	1	2	3	4U	4	5	6		7	8	9		10	11	12
Number of Lanes	0	0	1	0	0	0	1	1		0	0	0		1	0	1
Configuration		LT					T	R						L		R
Volume (veh/h)		155	58				70	88						89		102
Percent Heavy Vehicles (%)		3												3		3
Proportion Time Blocked																
Percent Grade (%)														0		
Right Turn Channelized							No							No		
Median Type | Storage							Undivided									

Critical and Follow-up Headways

Base Critical Headway (sec)		4.1												7.1		6.2
Critical Headway (sec)		4.13												6.43		6.23
Base Follow-Up Headway (sec)		2.2												3.5		3.3
Follow-Up Headway (sec)		2.23												3.53		3.33

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)		155												89		102
Capacity, c (veh/h)		1416												511		990
v/c Ratio		0.11												0.17		0.10
95% Queue Length, Q_{95} (veh)		0.4												0.6		0.3
Control Delay (s/veh)		7.9												13.5		9.1
Level of Service (LOS)		A												B		A
Approach Delay (s/veh)		6.0												11.1		
Approach LOS														B		

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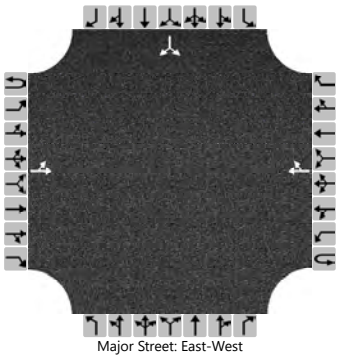
HCS7 Two-Way Stop-Control Report

General Information		Site Information	
Analyst	11. DJL	Intersection	PATTERSON RD/TEAL CLUB RD
Agency/Co.	STANTEC	Jurisdiction	OXNARD
Date Performed	7/3/2018	East/West Street	TEAL CLUB RD
Analysis Year	CUPR	North/South Street	PATTERSON RD
Time Analyzed	AM PEAK HOUR	Peak Hour Factor	1.00
Intersection Orientation	East-West	Analysis Time Period (hrs)	1.00
Project Description	TEAL CLUB SP		

Lanes



Major Street: East-West

Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority	1U	1	2	3	4U	4	5	6		7	8	9		10	11	12
Number of Lanes	0	0	1	0	0	0	1	0		0	0	0		0	1	0
Configuration		LT						TR							LR	
Volume (veh/h)		160	89				108	106						104		108
Percent Heavy Vehicles (%)		3												3		3
Proportion Time Blocked																
Percent Grade (%)													0			
Right Turn Channelized																
Median Type | Storage	Undivided															

Critical and Follow-up Headways

Base Critical Headway (sec)		4.1												7.1		6.2
Critical Headway (sec)		4.13												6.43		6.23
Base Follow-Up Headway (sec)		2.2												3.5		3.3
Follow-Up Headway (sec)		2.23												3.53		3.33

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)		160													212	
Capacity, c (veh/h)		1350													577	
v/c Ratio		0.12													0.37	
95% Queue Length, Q_{95} (veh)		0.4													1.7	
Control Delay (s/veh)		8.0													14.9	
Level of Service (LOS)		A													B	
Approach Delay (s/veh)	5.5												14.9			
Approach LOS													B			

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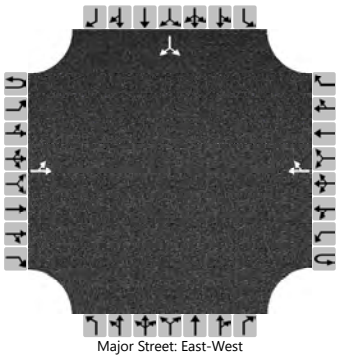
HCS7 Two-Way Stop-Control Report

General Information		Site Information	
Analyst	11. DJL	Intersection	PATTERSON RD/TEAL CLUB RD
Agency/Co.	STANTEC	Jurisdiction	OXNARD
Date Performed	7/3/2018	East/West Street	TEAL CLUB RD
Analysis Year	CUMU	North/South Street	PATTERSON RD
Time Analyzed	PM PEAK HOUR	Peak Hour Factor	1.00
Intersection Orientation	East-West	Analysis Time Period (hrs)	1.00
Project Description	TEAL CLUB SP		

Lanes



Major Street: East-West

Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority	1U	1	2	3	4U	4	5	6		7	8	9		10	11	12
Number of Lanes	0	0	1	0	0	0	1	0		0	0	0		0	1	0
Configuration		LT						TR							LR	
Volume (veh/h)		60	97				60	47						51		49
Percent Heavy Vehicles (%)		3												3		3
Proportion Time Blocked																
Percent Grade (%)													0			
Right Turn Channelized																
Median Type | Storage	Undivided															

Critical and Follow-up Headways

Base Critical Headway (sec)		4.1												7.1		6.2
Critical Headway (sec)		4.13												6.43		6.23
Base Follow-Up Headway (sec)		2.2												3.5		3.3
Follow-Up Headway (sec)		2.23												3.53		3.33

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)		60													100	
Capacity, c (veh/h)		1478													784	
v/c Ratio		0.04													0.13	
95% Queue Length, Q_{95} (veh)		0.1													0.4	
Control Delay (s/veh)		7.5													10.3	
Level of Service (LOS)		A													B	
Approach Delay (s/veh)	3.1												10.3			
Approach LOS													B			

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HCS7 Two-Way Stop-Control Report

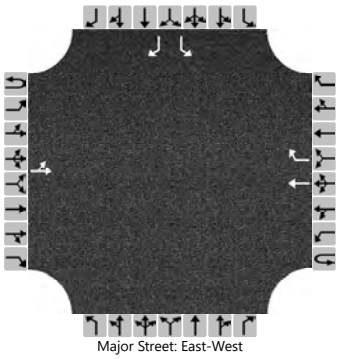
General Information

Analyst	11. DJL
Agency/Co.	STANTEC
Date Performed	7/3/2018
Analysis Year	CUPR
Time Analyzed	PM PEAK HOUR
Intersection Orientation	East-West
Project Description	TEAL CLUB SP

Site Information

Intersection	PATTERSON RD/TEAL CLUB RD
Jurisdiction	OXNARD
East/West Street	TEAL CLUB RD
North/South Street	PATTERSON RD
Peak Hour Factor	1.00
Analysis Time Period (hrs)	1.00

Lanes



Major Street: East-West

Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority	1U	1	2	3	4U	4	5	6		7	8	9		10	11	12
Number of Lanes	0	0	1	0	0	0	1	1		0	0	0		1	0	1
Configuration		LT					T	R						L		R
Volume (veh/h)		66	139				96	65						71		55
Percent Heavy Vehicles (%)		3												3		3
Proportion Time Blocked																
Percent Grade (%)														0		
Right Turn Channelized							No							No		
Median Type | Storage							Undivided									

Critical and Follow-up Headways

Base Critical Headway (sec)		4.1												7.1		6.2
Critical Headway (sec)		4.13												6.43		6.23
Base Follow-Up Headway (sec)		2.2												3.5		3.3
Follow-Up Headway (sec)		2.23												3.53		3.33

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)		66												71		55
Capacity, c (veh/h)		1412												601		958
v/c Ratio		0.05												0.12		0.06
95% Queue Length, Q_{95} (veh)		0.1												0.4		0.2
Control Delay (s/veh)		7.7												11.8		9.0
Level of Service (LOS)		A												B		A
Approach Delay (s/veh)		2.7												10.6		
Approach LOS														B		

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INTERSECTION CAPACITY UTILIZATION

INTERSECTION NUMBER: 12
NORTH/SOUTH STREET: Ventura Rd
EAST/WEST STREET: Town Center Dr
SCENARIO: Cumulative Conditions
TIME PERIOD: AM Peak Hour
COUNT DATE: 05/2018
WORK ORDER #: 2064136900

VOLUMES	Northbound			Southbound			Eastbound			Westbound		
	L	T	R	L	T	R	L	T	R	L	T	R
AM Peak	5	401	912	78	212	2	0	10	3	218	45	101
Project Trips	0	3	72	0	2	0	0	0	0	31	0	0
GEOMETRY	L	TT	R	L	T TR			LTR		LL	T	R

	Level of Service Calculations					
Move-	**Lanes**		**Volume**		**V/C Ratio**	
ment	Lane	Capacity	Cumulative	Project	Cumulative	Project
NBL	1.0	1,600	5	5	0.05	0.05
NBT	2.0	3,200	401	404	0.13 *	0.13 *
NBR (a)	1.0	1,600	912	984	0.00	0.00
SBL	1.0	1,600	78	78	0.05 *	0.05 *
SBT	2.0	3,200	212	214	0.07	0.07
SBR	0.0	0	2	2	0.00	0.00
EBL	0.0	0	0	0	0.00	0.00
EBT	1.0	1,600	10	10	0.07 *	0.07 *
EBR	0.0	0	3	3	0.00	0.00
WBL	2.0	3,200	218	249	0.07 *	0.08 *
WBT	1.0	1,600	45	45	0.07	0.07
WBR	1.0	1,600	101	101	0.06	0.06
N/S Critical Movements					0.18	0.18
E/W Critical Movements					0.14	0.15
Clearance Interval					0.10	0.10
ICU					0.42	0.43
Level of Service (LOS)					A	A

Notes: V/C - Volume to Capacity Ratio
(a) Free right-turn

INTERSECTION CAPACITY UTILIZATION

INTERSECTION NUMBER: 12
NORTH/SOUTH STREET: Ventura Rd
EAST/WEST STREET: Town Center Dr
SCENARIO: Cumulative Conditions
TIME PERIOD: PM Peak Hour
COUNT DATE: 05/2018
WORK ORDER #: 2064136900

VOLUMES	Northbound			Southbound			Eastbound			Westbound		
	L	T	R	L	T	R	L	T	R	L	T	R
PM Peak	38	397	542	143	276	0	4	50	9	557	16	42
Project Trips	0	3	68	0	3	0	0	0	0	41	0	0
GEOMETRY	L	TT	R	L	T TR			LTR		LL	T	R

	Level of Service Calculations					
Move-	**Lanes**		**Volume**		**V/C Ratio**	
ment	Lane	Capacity	Cumulative	Project	Cumulative	Project
NBL	1.0	1,600	38	38	0.05	0.05
NBT	2.0	3,200	397	400	0.12 *	0.13 *
NBR (a)	1.0	1,600	542	610	0.00	0.00
SBL	1.0	1,600	143	143	0.09 *	0.09 *
SBT	2.0	3,200	276	279	0.07	0.07
SBR	0.0	0	0	0	0.00	0.00
EBL	0.0	0	4	4	0.00	0.00
EBT	1.0	1,600	50	50	0.07 *	0.07 *
EBR	0.0	0	9	9	0.00	0.00
WBL	2.0	3,200	557	598	0.17 *	0.19 *
WBT	1.0	1,600	16	16	0.07	0.07
WBR	1.0	1,600	42	42	0.03	0.03
N/S Critical Movements					0.21	0.22
E/W Critical Movements					0.24	0.26
Clearance Interval					0.10	0.10
ICU					0.55	0.58
Level of Service (LOS)					A	A

Notes: V/C - Volume to Capacity Ratio
(a) Free right-turn

INTERSECTION CAPACITY UTILIZATION

INTERSECTION NUMBER: 13
NORTH/SOUTH STREET: Ventura Rd
EAST/WEST STREET: U.S. 101 SB Off-Ramp
SCENARIO: Cumulative Conditions
TIME PERIOD: AM Peak Hour
COUNT DATE: 03/2016
WORK ORDER #: 2064113300

VOLUMES	Northbound			Southbound			Eastbound			Westbound		
	L	T	R	L	T	R	L	T	R	L	T	R
AM Peak	0	1217	0	0	445	0	0	0	0	395	0	144
Project Trips	0	75	0	0	33	0	0	0	0	31	0	0
GEOMETRY		TT			TT					LL		R

	Level of Service Calculations					
Move-	**Lanes**		**Volume**		**V/C Ratio**	
ment	Lane	Capacity	Cumulative	Project	Cumulative	Project
NBL	0.0	0	0	0	0.00	0.00
NBT	2.0	3,200	1,217	1,292	0.38 *	0.40 *
NBR	0.0	0	0	0	0.00	0.00
SBL	0.0	0	0	0	0.00 *	0.00 *
SBT	2.0	3,200	445	478	0.14	0.15
SBR	0.0	0	0	0	0.00	0.00
EBL	0.0	0	0	0	0.00	0.00
EBT	0.0	0	0	0	0.00	0.00
EBR	0.0	0	0	0	0.00	0.00
WBL	2.0	3,200	395	426	0.12 *	0.13 *
WBT	0.0	0	0	0	0.00	0.00
WBR	1.0	1,600	144	144	0.09	0.09
N/S Critical Movements					0.38	0.40
E/W Critical Movements					0.12	0.13
Clearance Interval					0.10	0.10
ICU					0.60	0.63
Level of Service (LOS)					A	B

Notes: V/C - Volume to Capacity Ratio

INTERSECTION CAPACITY UTILIZATION

INTERSECTION NUMBER: 13
NORTH/SOUTH STREET: Ventura Rd
EAST/WEST STREET: U.S. 101 SB Off-Ramp
SCENARIO: Cumulative Conditions
TIME PERIOD: PM Peak Hour
COUNT DATE: 03/2016
WORK ORDER #: 2064113300

VOLUMES	Northbound			Southbound			Eastbound			Westbound		
	L	T	R	L	T	R	L	T	R	L	T	R
PM Peak	0	634	0	0	845	0	0	0	0	769	0	203
Project Trips	0	71	0	0	44	0	0	0	0	41	0	0
GEOMETRY		TT			TT					LL		R

	Level of Service Calculations					
Move-	**Lanes**		**Volume**		**V/C Ratio**	
ment	Lane	Capacity	Cumulative	Project	Cumulative	Project
NBL	0.0	0	0	0	0.00 *	0.00 *
NBT	2.0	3,200	634	705	0.20	0.22
NBR	0.0	0	0	0	0.00	0.00
SBL	0.0	0	0	0	0.00	0.00
SBT	2.0	3,200	845	889	0.26 *	0.28 *
SBR	0.0	0	0	0	0.00	0.00
EBL	0.0	0	0	0	0.00	0.00
EBT	0.0	0	0	0	0.00	0.00
EBR	0.0	0	0	0	0.00	0.00
WBL	2.0	3,200	769	810	0.24 *	0.25 *
WBT	0.0	0	0	0	0.00	0.00
WBR	1.0	1,600	203	203	0.13	0.13
N/S Critical Movements					0.26	0.28
E/W Critical Movements					0.24	0.25
Clearance Interval					0.10	0.10
ICU					0.60	0.63
Level of Service (LOS)					A	B

Notes: V/C - Volume to Capacity Ratio

INTERSECTION CAPACITY UTILIZATION

INTERSECTION NUMBER: 15
NORTH/SOUTH STREET: Ventura Rd
EAST/WEST STREET: Vineyard Ave
SCENARIO: Cumulative Conditions
TIME PERIOD: AM Peak Hour
COUNT DATE: 05/2018
WORK ORDER #: 2064169300

VOLUMES	Northbound			Southbound			Eastbound			Westbound		
	L	T	R	L	T	R	L	T	R	L	T	R
AM Peak	32	779	476	55	581	141	173	221	28	287	138	133
Project Trips	0	75	10	0	64	0	0	0	0	8	0	0
GEOMETRY	L	TT	TR	L	TT	TR	L	TT	R	LL	TT	R

	Level of Service Calculations					
Move-	**Lanes**		**Volume**		**V/C Ratio**	
ment	Lane	Capacity	Cumulative	Project	Cumulative	Project
NBL	1.0	1,600	32	32	0.05	0.05
NBT	3.0	4,800	779	854	0.26 *	0.28 *
NBR	0.0	0	476	486	0.00	0.00
SBL	1.0	1,600	55	55	0.05 *	0.05 *
SBT	3.0	4,800	581	645	0.15	0.16
SBR	0.0	0	141	141	0.00	0.00
EBL	1.0	1,600	173	173	0.11 *	0.11 *
EBT	2.0	3,200	221	221	0.07	0.07
EBR	1.0	1,600	28	28	0.02	0.02
WBL	2.0	3,200	287	295	0.09	0.09
WBT	2.0	3,200	138	138	0.07 *	0.07 *
WBR	1.0 (a)	1,600	133	133	0.08	0.08
N/S Critical Movements					0.31	0.33
E/W Critical Movements					0.18	0.18
Clearance Interval					0.00	0.00
ICU					0.49	0.51
Level of Service (LOS)					A	A

Notes: V/C - Volume to Capacity Ratio

(a) not critical due to RTOR

INTERSECTION CAPACITY UTILIZATION

INTERSECTION NUMBER: 15
NORTH/SOUTH STREET: Ventura Rd
EAST/WEST STREET: Vineyard Ave
SCENARIO: Cumulative Conditions
TIME PERIOD: PM Peak Hour
COUNT DATE: 05/2018
WORK ORDER #: 2064169300

VOLUMES	Northbound			Southbound			Eastbound			Westbound		
	L	T	R	L	T	R	L	T	R	L	T	R
AM Peak	41	623	362	115	1076	226	112	142	48	424	180	70
Project Trips	0	71	10	0	85	0	0	0	0	11	0	0
GEOMETRY	L	TT	TR	L	TT	TR	L	TT	R	LL	TT	R

	Level of Service Calculations					
Move-	**Lanes**		**Volume**		**V/C Ratio**	
ment	Lane	Capacity	Cumulative	Project	Cumulative	Project
NBL	1.0	1,600	41	41	0.03 *	0.03 *
NBT	3.0	4,800	623	694	0.21	0.22
NBR	0.0	0	362	372	0.00	0.00
SBL	1.0	1,600	115	115	0.07	0.07
SBT	3.0	4,800	1,076	1,161	0.27 *	0.29 *
SBR	0.0	0	226	226	0.00	0.00
EBL	1.0	1,600	112	112	0.07	0.07
EBT	2.0	3,200	142	142	0.07 *	0.07 *
EBR	1.0	1,600	48	48	0.03	0.03
WBL	2.0	3,200	424	435	0.13 *	0.14 *
WBT	2.0	3,200	180	180	0.06	0.06
WBR	1.0	1,600	70	70	0.04	0.04
N/S Critical Movements					0.30	0.32
E/W Critical Movements					0.20	0.21
Clearance Interval					0.00	0.00
ICU					0.50	0.53
Level of Service (LOS)					A	A

Notes: V/C - Volume to Capacity Ratio

INTERSECTION CAPACITY UTILIZATION

INTERSECTION NUMBER: 16
NORTH/SOUTH STREET: Ventura Rd
EAST/WEST STREET: Gonzales Rd
SCENARIO: Cumulative Conditions
TIME PERIOD: AM Peak Hour
COUNT DATE: 05/2018
WORK ORDER #: 2064169300

VOLUMES	Northbound			Southbound			Eastbound			Westbound		
	L	T	R	L	T	R	L	T	R	L	T	R
AM Peak	234	1010	390	97	867	97	206	508	220	369	428	73
Project Trips	0	85	62	0	72	4	5	0	0	48	0	0
GEOMETRY	L	TT	R	L	TT TR		L	TT	R	LL	T TR	

	Level of Service Calculations					
Move-	**Lanes**		**Volume**		**V/C Ratio**	
ment	Lane	Capacity	Cumulative	Project	Cumulative	Project
NBL	1.0	1,600	234	234	0.15	0.15
NBT	2.0	3,200	1,010	1,095	0.32 *	0.34 *
NBR	1.0	1,600	390	452	0.24	0.28
SBL	1.0	1,600	97	97	0.05 *	0.05 *
SBT	3.0	4,800	867	939	0.20	0.22
SBR	0.0	0	97	101	0.00	0.00
EBL	1.0	1,600	206	211	0.13 *	0.13 *
EBT	2.0	3,200	508	508	0.16	0.16
EBR	1.0	1,600	220	220	0.14	0.14
WBL	2.0	3,200	369	417	0.12	0.13
WBT	2.0	3,200	428	428	0.16 *	0.16 *
WBR	0.0	0	73	73	0.00	0.00
N/S Critical Movements					0.37	0.39
E/W Critical Movements					0.29	0.29
Clearance Interval					0.00	0.00
ICU					0.66	0.68
Level of Service (LOS)					B	B

Notes: V/C - Volume to Capacity Ratio

INTERSECTION CAPACITY UTILIZATION

INTERSECTION NUMBER: 16
NORTH/SOUTH STREET: Ventura Rd
EAST/WEST STREET: Gonzales Rd
SCENARIO: Cumulative Conditions
TIME PERIOD: PM Peak Hour
COUNT DATE: 05/2018
WORK ORDER #: 2064169300

VOLUMES	Northbound			Southbound			Eastbound			Westbound		
	L	T	R	L	T	R	L	T	R	L	T	R
AM Peak	126	851	385	93	1214	98	149	428	110	564	453	150
Project Trips	0	81	59	0	96	5	5	0	0	64	0	0
GEOMETRY	L	TT	R	L	TT TR		L	TT	R	LL	T TR	

	Level of Service Calculations					
Move-	**Lanes**		**Volume**		**V/C Ratio**	
ment	Lane	Capacity	Cumulative	Project	Cumulative	Project
NBL	1.0	1,600	126	126	0.08 *	0.08 *
NBT	2.0	3,200	851	932	0.27	0.29
NBR	1.0	1,600	385	444	0.24	0.28
SBL	1.0	1,600	93	93	0.06	0.06
SBT	3.0	4,800	1,214	1,310	0.27 *	0.29 *
SBR	0.0	0	98	103	0.00	0.00
EBL	1.0	1,600	149	154	0.09	0.10
EBT	2.0	3,200	428	428	0.13 *	0.13 *
EBR	1.0	1,600	110	110	0.07	0.07
WBL	2.0	3,200	564	628	0.18 *	0.20 *
WBT	2.0	3,200	453	453	0.19	0.19
WBR	0.0	0	150	150	0.00	0.00
N/S Critical Movements					0.35	0.37
E/W Critical Movements					0.31	0.33
Clearance Interval					0.00	0.00
ICU					0.66	0.70
Level of Service (LOS)					B	B

Notes: V/C - Volume to Capacity Ratio

INTERSECTION CAPACITY UTILIZATION

INTERSECTION NUMBER: 17
NORTH/SOUTH STREET: Ventura Rd
EAST/WEST STREET: Doris Ave
SCENARIO: Cumulative Conditions
TIME PERIOD: AM Peak Hour
COUNT DATE: 05/2018
WORK ORDER #: 2064169300

VOLUMES	Northbound			Southbound			Eastbound			Westbound		
	L	T	R	L	T	R	L	T	R	L	T	R
AM Peak	282	1541	115	41	1353	65	71	145	294	111	238	58
Project Trips	12	100	27	0	82	38	47	13	7	21	10	0
GEOMETRY	L	TT	R	L	TT		L	T	R	L	T	R

	Level of Service Calculations					
Move-	**Lanes**		**Volume**		**V/C Ratio**	
ment	Lane	Capacity	Cumulative	Project	Cumulative	Project
NBL	1.0	1,600	282	294	0.18 *	
NBT	2.0	3,200	1,541	1,641	0.48	
NBR	1.0	1,600	115	142	0.07	
SBL	1.0	1,600	41	41	0.05	
SBT	2.0	3,200	1,353	1,435	0.44 *	
SBR	0.0	0	65	103	0.00	
EBL	1.0	1,600	71	118	0.05 *	
EBT	1.0	1,600	145	158	0.09	
EBR	1.0	1,600	294	301	0.18	
WBL	1.0	1,600	111	132	0.07	
WBT	1.0	1,600	238	248	0.15 *	
WBR	1.0	1,600	58	58	0.04	
N/S Critical Movements					0.62	
E/W Critical Movements					0.20	
Clearance Interval					0.00	
ICU					0.82	0.00
Level of Service (LOS)					D	A

Notes: V/C - Volume to Capacity Ratio

INTERSECTION CAPACITY UTILIZATION

INTERSECTION NUMBER: 17
NORTH/SOUTH STREET: Ventura Rd
EAST/WEST STREET: Doris Ave
SCENARIO: Cumulative Conditions
TIME PERIOD: AM Peak Hour
COUNT DATE: 05/2018
WORK ORDER #: 2064169300

VOLUMES	Northbound			Southbound			Eastbound			Westbound		
	L	T	R	L	T	R	L	T	R	L	T	R
AM Peak	282	1541	115	41	1353	65	71	145	294	111	238	58
Project Trips	12	100	27	0	82	38	47	13	7	21	10	0
GEOMETRY	L	**TT**	**TR**	L	**TT**	**TR**	L	T	R	L	T	R

	Level of Service Calculations					
Move-ment	**Lanes** Lane	Capacity	**Volume** Cumulative	Project		**V/C Ratio** Project
NBL	1.0	1,600	282	294		0.18 *
NBT	**3.0**	4,800	1,541	1,641		0.37
NBR	0.0	0	115	142		0.00
SBL	1.0	1,600	41	41		0.05
SBT	**3.0**	4,800	1,353	1,435		0.32 *
SBR	0.0	0	65	103		0.00
EBL	1.0	1,600	71	118		0.07 *
EBT	1.0	1,600	145	158		0.10
EBR	1.0	1,600	294	301		0.19
WBL	1.0	1,600	111	132		0.08
WBT	1.0	1,600	238	248		0.16 *
WBR	1.0	1,600	58	58		0.04
N/S Critical Movements						0.50
E/W Critical Movements						0.23
Clearance Interval						0.00
ICU					0.00	0.73
Level of Service (LOS)					A	C

Notes: V/C - Volume to Capacity Ratio

INTERSECTION CAPACITY UTILIZATION

INTERSECTION NUMBER: 17
NORTH/SOUTH STREET: Ventura Rd
EAST/WEST STREET: Doris Ave
SCENARIO: Cumulative Conditions
TIME PERIOD: AM Peak Hour
COUNT DATE: 05/2018
WORK ORDER #: 2064169300

VOLUMES	Northbound			Southbound			Eastbound			Westbound		
	L	T	R	L	T	R	L	T	R	L	T	R
PM Peak	167	1384	130	58	1634	42	41	137	121	126	119	61
Project Trips	11	95	26	0	109	51	45	12	10	28	13	0
GEOMETRY	L	TT	R	L	TT		L	T	R	L	T	R

	Level of Service Calculations					
Move-	**Lanes**		**Volume**		**V/C Ratio**	
ment	Lane	Capacity	Cumulative	Project	Cumulative	Project
NBL	1.0	1,600	167	178	0.10 *	
NBT	2.0	3,200	1,384	1,479	0.43	
NBR	1.0	1,600	130	156	0.08	
SBL	1.0	1,600	58	58	0.05	
SBT	2.0	3,200	1,634	1,743	0.52 *	
SBR	0.0	0	42	93	0.00	
EBL	1.0	1,600	41	86	0.05	
EBT	1.0	1,600	137	149	0.09 *	
EBR	1.0	1,600	121	131	0.08	
WBL	1.0	1,600	126	154	0.08 *	
WBT	1.0	1,600	119	132	0.07	
WBR	1.0	1,600	61	61	0.04	
N/S Critical Movements					0.62	
E/W Critical Movements					0.17	
Clearance Interval					0.00	
ICU					0.79	0.00
Level of Service (LOS)					C	A

Notes: V/C - Volume to Capacity Ratio

INTERSECTION CAPACITY UTILIZATION

INTERSECTION NUMBER: 17
NORTH/SOUTH STREET: Ventura Rd
EAST/WEST STREET: Doris Ave
SCENARIO: Cumulative Conditions
TIME PERIOD: AM Peak Hour
COUNT DATE: 05/2018
WORK ORDER #: 2064169300

VOLUMES	Northbound			Southbound			Eastbound			Westbound		
	L	T	R	L	T	R	L	T	R	L	T	R
PM Peak	167	1384	130	58	1634	42	41	137	121	126	119	61
Project Trips	11	95	26	0	109	51	45	12	10	28	13	0
GEOMETRY	L	**TT**	**TR**	L	**TT**	**TR**	L	T	R	L	T	R

	Level of Service Calculations					
Move-	**Lanes**		**Volume**		**V/C Ratio**	
ment	Lane	Capacity	Cumulative	Project	Cumulative	Project
NBL	1.0	1,600	167	178		0.11 *
NBT	**3.0**	4,800	1,384	1,479		0.34
NBR	0.0	0	130	156		0.00
SBL	1.0	1,600	58	58		0.05
SBT	**3.0**	4,800	1,634	1,743		0.38 *
SBR	0.0	0	42	93		0.00
EBL	1.0	1,600	41	86		0.05
EBT	1.0	1,600	137	149		0.09 *
EBR	1.0	1,600	121	131		0.08
WBL	1.0	1,600	126	154		0.10 *
WBT	1.0	1,600	119	132		0.08
WBR	1.0	1,600	61	61		0.04
N/S Critical Movements						0.49
E/W Critical Movements						0.19
Clearance Interval						0.00
ICU					0.00	0.68
Level of Service (LOS)					A	B

Notes: V/C - Volume to Capacity Ratio

HCS7 Two-Way Stop-Control Report

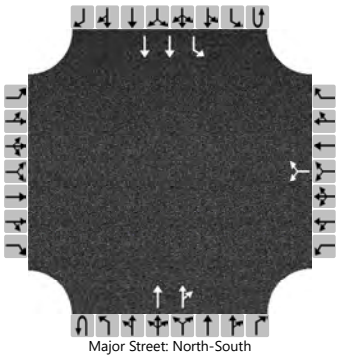
General Information

Analyst	18. DJL
Agency/Co.	STANTEC
Date Performed	7/3/2018
Analysis Year	CUMU
Time Analyzed	AM PEAK HOUR
Intersection Orientation	North-South
Project Description	TEAL CLUB SP

Site Information

Intersection	VENTURA AVE/BEVERLY DR
Jurisdiction	OXNARD
East/West Street	BEVERLY DR
North/South Street	VENTURA AVE
Peak Hour Factor	1.00
Analysis Time Period (hrs)	1.00

Lanes



Major Street: North-South

Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority		10	11	12		7	8	9	1U	1	2	3	4U	4	5	6
Number of Lanes		0	0	0		0	1	0	0	0	2	0	0	1	2	0
Configuration							LR				T	TR		L	T	
Volume (veh/h)						1		70			1876	21	0	45	1715	
Percent Heavy Vehicles (%)						3		3					3	3		
Proportion Time Blocked																
Percent Grade (%)						0										
Right Turn Channelized																
Median Type | Storage						Undivided										

Critical and Follow-up Headways

Base Critical Headway (sec)						7.5		6.9						4.1		
Critical Headway (sec)						6.86		6.96						4.16		
Base Follow-Up Headway (sec)						3.5		3.3						2.2		
Follow-Up Headway (sec)						3.53		3.33						2.23		

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)							71							45		
Capacity, c (veh/h)							200							307		
v/c Ratio							0.36							0.15		
95% Queue Length, Q_{95} (veh)							1.6							0.5		
Control Delay (s/veh)							32.9							18.8		
Level of Service (LOS)							D							C		
Approach Delay (s/veh)						32.9							0.5			
Approach LOS						D										

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INTERSECTION CAPACITY UTILIZATION

INTERSECTION NUMBER: 18 **MITIGATED**
NORTH/SOUTH STREET: Ventura Rd
EAST/WEST STREET: Beverly Dr
SCENARIO: Cumulative Conditions
TIME PERIOD: AM Peak Hour
COUNT DATE: 05/2018
WORK ORDER #: 2064169300

VOLUMES	Northbound			Southbound			Eastbound			Westbound		
	L	T	R	L	T	R	L	T	R	L	T	R
AM Peak	0	1876	21	45	1715	0	0	0	0	1	0	70
Project Trips	70	12	0	0	9	110	136	0	79	0	0	0
GEOMETRY	L	**TT**	**TR**	L	**TT**	**TR**	**L**	**TR**		LTR		

Move-ment	Level of Service Calculations					
	Lanes		**Volume**		**V/C Ratio**	
	Lane	Capacity	Cumulative	Project	Cumulative	Project
NBL	1.0	1,600	0	70	0.00	0.05
NBT	**3.0**	4,800	1,876	1,888	0.40	0.40 *
NBR	0.0	0	21	21	0.00	0.00
SBL	1.0	1,600	45	45	0.05	0.05 *
SBT	**3.0**	4,800	1,715	1,724	0.36	0.38
SBR	0.0	0	0	110	0.00	0.00
EBL	**1.0**	1,600	0	136	0.00 *	0.09 *
EBT	**1.0**	1,600	0	0	0.00	0.07
EBR	0.0	0	0	79	0.00	0.00
WBL	0.0	0	1	1	0.00	0.00
WBT	1.0	1,600	0	0	0.05 *	0.07 *
WBR	0.0	0	70	70	0.00	0.00
N/S Critical Movements					0.45	0.45
E/W Critical Movements					0.05	0.16
Clearance Interval					0.00	0.00
ICU					0.50	0.61
Level of Service (LOS)					A	B

Notes: V/C - Volume to Capacity Ratio

HCS7 Two-Way Stop-Control Report

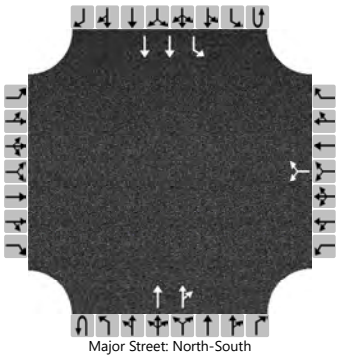
General Information

Analyst	18. DJL
Agency/Co.	STANTEC
Date Performed	7/3/2018
Analysis Year	CUMU
Time Analyzed	PM PEAK HOUR
Intersection Orientation	North-South
Project Description	TEAL CLUB SP

Site Information

Intersection	VENTURA AVE/BEVERLY DR
Jurisdiction	OXNARD
East/West Street	BEVERLY DR
North/South Street	VENTURA AVE
Peak Hour Factor	1.00
Analysis Time Period (hrs)	1.00

Lanes



Major Street: North-South

Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority		10	11	12		7	8	9	1U	1	2	3	4U	4	5	6
Number of Lanes		0	0	0		0	1	0	0	0	2	0	0	1	2	0
Configuration							LR				T	TR		L	T	
Volume (veh/h)						2		16			1621	26	0	38	1882	
Percent Heavy Vehicles (%)						3		3					3	3		
Proportion Time Blocked																
Percent Grade (%)						0										
Right Turn Channelized																
Median Type | Storage						Undivided										

Critical and Follow-up Headways

Base Critical Headway (sec)						7.5		6.9						4.1		
Critical Headway (sec)						6.86		6.96						4.16		
Base Follow-Up Headway (sec)						3.5		3.3						2.2		
Follow-Up Headway (sec)						3.53		3.33						2.23		

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)							18							38		
Capacity, c (veh/h)							105							384		
v/c Ratio							0.17							0.10		
95% Queue Length, Q_{95} (veh)							0.6							0.3		
Control Delay (s/veh)							46.5							15.4		
Level of Service (LOS)							E							C		
Approach Delay (s/veh)						46.5								0.3		
Approach LOS						E										

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INTERSECTION CAPACITY UTILIZATION

INTERSECTION NUMBER: 18 **MITIGATED**
NORTH/SOUTH STREET: Ventura Rd
EAST/WEST STREET: Beverly Dr
SCENARIO: Cumulative Conditions
TIME PERIOD: PM Peak Hour
COUNT DATE: 05/2018
WORK ORDER #: 2064169300

VOLUMES	Northbound			Southbound			Eastbound			Westbound		
	L	T	R	L	T	R	L	T	R	L	T	R
AM Peak	0	1621	26	38	1882	0	0	0	0	2	0	16
Project Trips	158	-37	0	0	-34	181	160	0	136	0	0	0
GEOMETRY	L	**TT**	**TR**	L	**TT**	**TR**	**L**	**TR**		LTR		

	Level of Service Calculations					
Move-	**Lanes**		**Volume**		**V/C Ratio**	
ment	Lane	Capacity	Cumulative	Project	Cumulative	Project
NBL	1.0	1,600	0	158	0.00	0.10 *
NBT	**3.0**	4,800	1,621	1,584	0.34 *	0.34
NBR	0.0	0	26	26	0.00	0.00
SBL	1.0	1,600	38	38	0.05 *	0.05
SBT	**3.0**	4,800	1,882	1,848	0.39	0.42 *
SBR	0.0	0	0	181	0.00	0.00
EBL	**1.0**	1,600	0	160	0.05 *	0.05
EBT	**1.0**	1,600	0	0	0.00	0.09 *
EBR	0.0	0	0	136	0.00	0.00
WBL	0.0	0	2	2	0.00	0.00
WBT	1.0	1,600	0	0	0.05 *	0.07 *
WBR	0.0	0	16	16	0.00	0.00
N/S Critical Movements					0.39	0.52
E/W Critical Movements					0.10	0.16
Clearance Interval					0.00	0.00
ICU					0.49	0.68
Level of Service (LOS)					A	B

Notes: V/C - Volume to Capacity Ratio

INTERSECTION CAPACITY UTILIZATION

INTERSECTION NUMBER: 19
NORTH/SOUTH STREET: Ventura Rd
EAST/WEST STREET: Teal Club/2nd St
SCENARIO: Cumulative Conditions
TIME PERIOD: AM Peak Hour
COUNT DATE: 05/2018
WORK ORDER #: 2064169300

VOLUMES	Northbound			Southbound			Eastbound			Westbound		
	L	T	R	L	T	R	L	T	R	L	T	R
AM Peak	107	1767	75	101	1595	12	25	41	93	37	33	80
Project Trips	53	37	0	27	47	8	12	33	68	0	26	21
GEOMETRY	L	TT	R	L	T TR		LTR			L	T	R

Move-ment	**Level of Service Calculations**					
	Lanes		**Volume**		**V/C Ratio**	
	Lane	Capacity	Cumulative	Project	Cumulative	Project
NBL	1.0	1,600	107	160	0.07	0.10
NBT	2.0	3,200	1,767	1,804	0.55 *	0.56 *
NBR	1.0	1,600	75	75	0.05	0.05
SBL	1.0	1,600	101	128	0.06 *	0.08 *
SBT	2.0	3,200	1,595	1,642	0.50	0.52
SBR	0.0	0	12	20	0.00	0.00
EBL	0.0	0	25	37	0.00	0.00
EBT	1.0	1,600	41	74	0.10 *	0.17 *
EBR	0.0	0	93	161	0.00	0.00
WBL	1.0	1,600	37	37	0.05 *	0.05 *
WBT	1.0	1,600	33	59	0.07	0.07
WBR	1.0	1,600	80	101	0.05	0.06
N/S Critical Movements					0.61	0.64
E/W Critical Movements					0.15	0.22
Clearance Interval					0.00	0.00
ICU					0.76	0.86
Level of Service (LOS)					C	D

Notes: V/C - Volume to Capacity Ratio

INTERSECTION CAPACITY UTILIZATION

INTERSECTION NUMBER: 19
NORTH/SOUTH STREET: Ventura Rd
EAST/WEST STREET: Teal Club/2nd St
SCENARIO: Cumulative Conditions
TIME PERIOD: AM Peak Hour
COUNT DATE: 05/2018
WORK ORDER #: 2064169300

VOLUMES	Northbound			Southbound			Eastbound			Westbound		
	L	T	R	L	T	R	L	T	R	L	T	R
AM Peak	107	1767	75	101	1595	12	25	41	93	37	33	80
Project Trips	53	37	0	27	47	8	12	33	68	0	26	21
GEOMETRY	L	**TT**	**TR**	L	**TT**	**TR**	**L**	**TR**		L	**TT**	**R**

Move-ment	**Lanes** Lane	Capacity	**Volume** Existing	Project	**V/C Ratio** Ex+Project	
			Level of Service Calculations			
NBL	1.0	1,600	107	160	0.10	
NBT	**3.0**	4,800	1,767	1,804	0.39	*
NBR	0.0	0	75	75	0.00	
SBL	1.0	1,600	101	128	0.08	*
SBT	**3.0**	4,800	1,595	1,642	0.35	
SBR	0.0	0	12	20	0.00	
EBL	**1.0**	1,600	25	37	0.05	
EBT	**1.0**	1,600	41	74	0.15	*
EBR	0.0	0	93	161	0.00	
WBL	1.0	1,600	37	37	0.05	*
WBT	1.0	1,600	33	59	0.07	
WBR	1.0	1,600	80	101	0.06	
N/S Critical Movements					0.47	
E/W Critical Movements					0.20	
Clearance Interval					0.00	
ICU				0.00	0.67	
Level of Service (LOS)				A	B	

Notes: V/C - Volume to Capacity Ratio

INTERSECTION CAPACITY UTILIZATION

INTERSECTION NUMBER: 19
NORTH/SOUTH STREET: Ventura Rd
EAST/WEST STREET: Teal Club/2nd St
SCENARIO: Cumulative Conditions
TIME PERIOD: PM Peak Hour
COUNT DATE: 05/2018
WORK ORDER #: 2064169300

VOLUMES	Northbound			Southbound			Eastbound			Westbound		
	L	T	R	L	T	R	L	T	R	L	T	R
AM Peak	51	1537	84	51	1779	14	21	38	81	42	38	85
Project Trips	54	66	0	26	65	8	16	31	45	0	25	38
GEOMETRY	L	TT	R	L	T TR		LTR			L	T	R

	Level of Service Calculations					
Move-	**Lanes**		**Volume**		**V/C Ratio**	
ment	Lane	Capacity	Cumulative	Project	Cumulative	Project
NBL	1.0	1,600	51	105	0.05 *	0.07 *
NBT	2.0	3,200	1,537	1,603	0.48	0.50
NBR	1.0	1,600	84	84	0.05	0.05
SBL	1.0	1,600	51	77	0.05	0.05
SBT	2.0	3,200	1,779	1,844	0.56 *	0.58 *
SBR	0.0	0	14	22	0.00	0.00
EBL	0.0	0	21	37	0.00	0.00
EBT	1.0	1,600	38	69	0.09 *	0.15 *
EBR	0.0	0	81	126	0.00	0.00
WBL	1.0	1,600	42	42	0.05 *	0.05 *
WBT	1.0	1,600	38	63	0.07	0.07
WBR	1.0	1,600	85	123	0.05	0.08
N/S Critical Movements					0.61	0.65
E/W Critical Movements					0.14	0.20
Clearance Interval					0.00	0.00
ICU					0.75	0.85
Level of Service (LOS)					C	D

Notes: V/C - Volume to Capacity Ratio

INTERSECTION CAPACITY UTILIZATION

INTERSECTION NUMBER: 19
NORTH/SOUTH STREET: Ventura Rd
EAST/WEST STREET: Teal Club/2nd St
SCENARIO: Existing Conditions
TIME PERIOD: PM Peak Hour
COUNT DATE: 05/2018
WORK ORDER #: 2064169300

VOLUMES	Northbound			Southbound			Eastbound			Westbound		
	L	T	R	L	T	R	L	T	R	L	T	R
AM Peak	51	1537	84	51	1779	14	21	38	81	42	38	85
Project Trips	54	66	0	26	65	8	16	31	45	0	25	38
GEOMETRY	L	**TT**	**TR**	L	**TT**	**TR**	**L**	**TR**		L	**TT**	**R**

Move-ment	**Level of Service Calculations**					
	Lanes		**Volume**		**V/C Ratio**	
	Lane	Capacity	Existing	Project		Ex+Project
NBL	1.0	1,600	51	105		0.07 *
NBT	**3.0**	4,800	1,537	1,603		0.35
NBR	0.0	0	84	84		0.00
SBL	1.0	1,600	51	77		0.05
SBT	**3.0**	4,800	1,779	1,844		0.39 *
SBR	0.0	0	14	22		0.00
EBL	**1.0**	1,600	21	37		0.05
EBT	**1.0**	1,600	38	69		0.12 *
EBR	0.0	0	81	126		0.00
WBL	1.0	1,600	42	42		0.05 *
WBT	1.0	1,600	38	63		0.07
WBR	1.0	1,600	85	123		0.08
N/S Critical Movements						0.46
E/W Critical Movements						0.17
Clearance Interval						0.00
ICU					0.00	0.63
Level of Service (LOS)					A	B

Notes: V/C - Volume to Capacity Ratio

INTERSECTION CAPACITY UTILIZATION

INTERSECTION NUMBER: 20
NORTH/SOUTH STREET: Ventura Rd
EAST/WEST STREET: Fifth St
SCENARIO: Cumulative Conditions
TIME PERIOD: AM Peak Hour
COUNT DATE: 05/2018
WORK ORDER #: 2064169300

VOLUMES	Northbound			Southbound			Eastbound			Westbound		
	L	T	R	L	T	R	L	T	R	L	T	R
AM Peak	122	1466	119	135	1234	340	386	376	66	170	281	82
Project Trips	0	67	0	20	85	10	8	0	0	0	0	16
GEOMETRY	L	TT	TR	L	TTT	R	LL	T	TR	LL	T	TR

	Level of Service Calculations					
Move-	**Lanes**		**Volume**		**V/C Ratio**	
ment	Lane	Capacity	Cumulative	Project	Cumulative	Project
NBL	1.0	1,600	122	122	0.08	0.08
NBT	3.0	4,800	1,466	1,533	0.33 *	0.34 *
NBR	0.0	0	119	119	0.00	0.00
SBL	1.0	1,600	135	155	0.08 *	0.10 *
SBT	3.0	4,800	1,234	1,319	0.26	0.27
SBR	1.0	1,600	340	350	0.21	0.22
EBL	2.0	3,200	386	394	0.12 *	0.12 *
EBT	2.0	3,200	376	376	0.14	0.14
EBR	0.0	0	66	66	0.00	0.00
WBL	2.0	3,200	170	170	0.05	0.05
WBT	2.0	3,200	281	281	0.11 *	0.12 *
WBR	0.0	0	82	98	0.00	0.00
N/S Critical Movements					0.41	0.44
E/W Critical Movements					0.23	0.24
Clearance Interval					0.00	0.00
ICU					0.64	0.68
Level of Service (LOS)					B	B

Notes: V/C - Volume to Capacity Ratio

INTERSECTION CAPACITY UTILIZATION

INTERSECTION NUMBER: 20
NORTH/SOUTH STREET: Ventura Rd
EAST/WEST STREET: Fifth St
SCENARIO: Cumulative Conditions
TIME PERIOD: PM Peak Hour
COUNT DATE: 05/2018
WORK ORDER #: 2064169300

VOLUMES	Northbound			Southbound			Eastbound			Westbound		
	L	T	R	L	T	R	L	T	R	L	T	R
AM Peak	124	1249	108	145	1376	390	345	334	103	282	439	65
Project Trips	0	89	0	19	81	10	11	0	0	0	0	21
GEOMETRY	L	TT	TR	L	TTT	R	LL	T	TR	LL	T	TR

	Level of Service Calculations					
Move-	**Lanes**		**Volume**		**V/C Ratio**	
ment	Lane	Capacity	Cumulative	Project	Cumulative	Project
NBL	1.0	1,600	124	124	0.08	0.08
NBT	3.0	4,800	1,249	1,338	0.28 *	0.30 *
NBR	0.0	0	108	108	0.00	0.00
SBL	1.0	1,600	145	164	0.09	0.10 *
SBT	3.0	4,800	1,376	1,457	0.29	0.30
SBR	1.0	1,600	390	400	0.24	0.25
EBL	2.0	3,200	345	356	0.11 *	0.11 *
EBT	2.0	3,200	334	334	0.14	0.14
EBR	0.0	0	103	103	0.00	0.00
WBL	2.0	3,200	282	282	0.09	0.09
WBT	2.0	3,200	439	439	0.16 *	0.16 *
WBR	0.0	0	65	86	0.00	0.00
N/S Critical Movements					0.37	0.40
E/W Critical Movements					0.27	0.27
Clearance Interval					0.00	0.00
ICU					0.64	0.67
Level of Service (LOS)					B	B

Notes: V/C - Volume to Capacity Ratio

INTERSECTION CAPACITY UTILIZATION

INTERSECTION NUMBER: 21
NORTH/SOUTH STREET: Ventura Rd
EAST/WEST STREET: Wooley Rd
SCENARIO: Cumulative Conditions
TIME PERIOD: AM Peak Hour
COUNT DATE: 05/2018
WORK ORDER #: 2064169300

VOLUMES	Northbound			Southbound			Eastbound			Westbound		
	L	T	R	L	T	R	L	T	R	L	T	R
AM Peak	91	1162	122	128	1104	93	210	558	42	86	432	162
Project Trips	0	39	0	24	51	10	4	0	0	0	0	19
GEOMETRY	L	T TR		L	T TR		L	TT	R	L	TT	R

	Level of Service Calculations					
Move-	**Lanes**		**Volume**		**V/C Ratio**	
ment	Lane	Capacity	Cumulative	Project	Cumulative	Project
NBL	1.0	1,600	91	91	0.06	0.06
NBT	2.0	3,200	1,162	1,201	0.40 *	0.41 *
NBR	0.0	0	122	122	0.00	0.00
SBL	1.0	1,600	128	152	0.08 *	0.10 *
SBT	2.0	3,200	1,104	1,155	0.37	0.39
SBR	0.0	0	93	103	0.00	0.00
EBL	1.0	1,600	210	214	0.13 *	0.13 *
EBT	2.0	3,200	558	558	0.17	0.17
EBR	1.0	1,600	42	42	0.03	0.03
WBL	1.0	1,600	86	86	0.05	0.05
WBT	2.0	3,200	432	432	0.14 *	0.14 *
WBR	1.0	1,600	162	181	0.10	0.11
N/S Critical Movements					0.48	0.51
E/W Critical Movements					0.27	0.27
Clearance Interval					0.00	0.00
ICU					0.75	0.78
Level of Service (LOS)					C	C

Notes: V/C - Volume to Capacity Ratio

INTERSECTION CAPACITY UTILIZATION

INTERSECTION NUMBER: 21
NORTH/SOUTH STREET: Ventura Rd
EAST/WEST STREET: Wooley Rd
SCENARIO: Cumulative Conditions
TIME PERIOD: PM Peak Hour
COUNT DATE: 05/2018
WORK ORDER #: 2064169300

VOLUMES	Northbound			Southbound			Eastbound			Westbound		
	L	T	R	L	T	R	L	T	R	L	T	R
AM Peak	82	1130	94	116	1214	117	164	434	60	174	497	188
Project Trips	0	52	0	23	48	10	5	0	0	0	0	25
GEOMETRY	L	T TR		L	T TR		L	TT	R	L	TT	R

	Level of Service Calculations					
Move-	**Lanes**		**Volume**		**V/C Ratio**	
ment	Lane	Capacity	Cumulative	Project	Cumulative	Project
NBL	1.0	1,600	82	82	0.05	0.05
NBT	2.0	3,200	1,130	1,182	0.38 *	0.40 *
NBR	0.0	0	94	94	0.00	0.00
SBL	1.0	1,600	116	139	0.07	0.09 *
SBT	2.0	3,200	1,214	1,262	0.42	0.43
SBR	0.0	0	117	127	0.00	0.00
EBL	1.0	1,600	164	169	0.10 *	0.11 *
EBT	2.0	3,200	434	434	0.14	0.14
EBR	1.0	1,600	60	60	0.04	0.04
WBL	1.0	1,600	174	174	0.11	0.11
WBT	2.0	3,200	497	497	0.16 *	0.16 *
WBR	1.0	1,600	188	213	0.12	0.13
N/S Critical Movements					0.47	0.49
E/W Critical Movements					0.26	0.27
Clearance Interval					0.00	0.00
ICU					0.73	0.76
Level of Service (LOS)					C	C

Notes: V/C - Volume to Capacity Ratio

INTERSECTION CAPACITY UTILIZATION

INTERSECTION NUMBER: 22
NORTH/SOUTH STREET: Oxnard Blvd
EAST/WEST STREET: Town Center Dr
SCENARIO: Cumulative Conditions
TIME PERIOD: AM Peak Hour
COUNT DATE: 03/2016
WORK ORDER #: 2064113300

VOLUMES	Northbound			Southbound			Eastbound			Westbound		
	L	T	R	L	T	R	L	T	R	L	T	R
AM Peak	284	285	268	17	556	41	29	113	880	154	72	8
Project Trips	20	0	0	0	0	4	8	9	55	0	7	0
GEOMETRY	LL	TT	R	L	T TR		L	LT T	RR	L	LT T	R

	Level of Service Calculations						
Move-	**Lanes**			**Volume**		**V/C Ratio**	
ment	Lane		Capacity	Cumulative	Project	Cumulative	Project
NBL	2.0		3,200	284	304	0.09 *	0.10 *
NBT	2.0		3,200	285	285	0.09	0.09
NBR	1.0	(a)	1,600	268	268	0.17	0.17
SBL	1.0		1,600	17	17	0.05	0.05
SBT	2.0		3,200	556	556	0.19 *	0.19 *
SBR	0.0		0	41	45	0.00	0.00
EBL	0.0		0	29	37	0.00	0.00
EBT	3.0		4,800	113	122	0.07	0.07
EBR	2.0	(b)	3,200	660	701	0.21 *	0.22 *
WBL	0.0		0	154	154	0.00	0.00
WBT	3.0		4,800	72	79	0.07 *	0.07 *
WBR	1.0	(a)	1,600	8	8	0.01	0.01
N/S Critical Movements						0.28	0.29
E/W Critical Movements						0.28	0.29
Clearance Interval						0.10	0.10
ICU						0.66	0.68
Level of Service (LOS)						B	B

Notes: V/C - Volume to Capacity Ratio
EB/WB split phased
(a) RTOR arrow - not critical
(b) RTOR arrow - 25% overlap

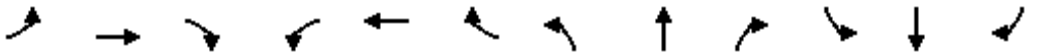
INTERSECTION CAPACITY UTILIZATION

INTERSECTION NUMBER: 22
NORTH/SOUTH STREET: Oxnard Blvd
EAST/WEST STREET: Town Center Dr
SCENARIO: Cumulative Conditions
TIME PERIOD: PM Peak Hour
COUNT DATE: 03/2016
WORK ORDER #: 2064113300

VOLUMES	Northbound			Southbound			Eastbound			Westbound		
	L	T	R	L	T	R	L	T	R	L	T	R
PM Peak	463	643	526	18	430	68	79	151	576	410	129	28
Project Trips	27	0	0	0	0	5	8	9	52	0	9	0
GEOMETRY	LL	TT	R	L	T TR		L	LT T	RR	L	LT T	R

	Level of Service Calculations						
Move-	**Lanes**			**Volume**		**V/C Ratio**	
ment	Lane		Capacity	Cumulative	Project	Cumulative	Project
NBL	2.0		3,200	463	490	0.14 *	0.15 *
NBT	2.0		3,200	643	643	0.20	0.20
NBR	1.0	(a)	1,600	526	526	0.33	0.33
SBL	1.0		1,600	18	18	0.05	0.05
SBT	2.0		3,200	430	430	0.16 *	0.16 *
SBR	0.0		0	68	73	0.00	0.00
EBL	0.0		0	79	87	0.00	0.00
EBT	3.0		4,800	151	160	0.07 *	0.07 *
EBR	2.0	(a)	3,200	576	628	0.18	0.20
WBL	0.0		0	410	410	0.00	0.00
WBT	3.0		4,800	129	138	0.11 *	0.11 *
WBR	1.0	(a)	1,600	28	28	0.02	0.02
N/S Critical Movements						0.30	0.31
E/W Critical Movements						0.18	0.18
Clearance Interval						0.10	0.10
ICU						0.58	0.59
Level of Service (LOS)						A	A

Notes: V/C - Volume to Capacity Ratio
EB/WB split phased
(a) RTOR arrow - not critical

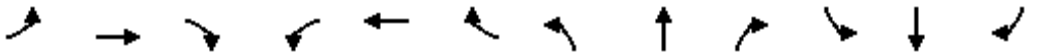


Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	0	132	0	362	912	488	0	0	497	1081
Future Volume (veh/h)	0	0	0	132	0	362	912	488	0	0	497	1081
Initial Q (Qb), veh				0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)				1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach					No			No			No	
Adj Sat Flow, veh/h/ln				1870	1870	1870	1870	1870	0	0	1870	1870
Adj Flow Rate, veh/h				95	0	444	991	530	0	0	540	0
Peak Hour Factor				0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %				2	2	2	2	2	0	0	2	2
Cap, veh/h				300	0	534	1100	2639	0	0	2444	
Arrive On Green				0.17	0.00	0.17	0.53	1.00	0.00	0.00	0.38	0.00
Sat Flow, veh/h				1781	0	3170	3456	3647	0	0	6696	1585
Grp Volume(v), veh/h				95	0	444	991	530	0	0	540	0
Grp Sat Flow(s),veh/h/ln				1781	0	1585	1728	1777	0	0	1609	1585
Q Serve(g_s), s				4.2	0.0	12.2	23.2	0.0	0.0	0.0	5.1	0.0
Cycle Q Clear(g_c), s				4.2	0.0	12.2	23.2	0.0	0.0	0.0	5.1	0.0
Prop In Lane				1.00		1.00	1.00		0.00	0.00		1.00
Lane Grp Cap(c), veh/h				300	0	534	1100	2639	0	0	2444	
V/C Ratio(X)				0.32	0.00	0.83	0.90	0.20	0.00	0.00	0.22	
Avail Cap(c_a), veh/h				376	0	669	1536	2639	0	0	2444	
HCM Platoon Ratio				1.00	1.00	1.00	1.67	1.67	1.00	1.00	1.00	1.00
Upstream Filter(I)				1.00	0.00	1.00	0.91	0.91	0.00	0.00	1.00	0.00
Uniform Delay (d), s/veh				32.9	0.0	36.2	19.8	0.0	0.0	0.0	18.9	0.0
Incr Delay (d2), s/veh				0.6	0.0	7.2	5.3	0.2	0.0	0.0	0.2	0.0
Initial Q Delay(d3),s/veh				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln				1.8	0.0	5.0	6.5	0.1	0.0	0.0	1.8	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh				33.5	0.0	43.4	25.1	0.2	0.0	0.0	19.1	0.0
LnGrp LOS				C	A	D	C	A	A	A	B	
Approach Vol, veh/h					539			1521			540	A
Approach Delay, s/veh					41.6			16.4			19.1	
Approach LOS					D			B			B	

Timer - Assigned Phs	2		5	6		8						
Phs Duration (G+Y+Rc), s	70.8		32.7	38.2		19.2						
Change Period (Y+Rc), s	4.0		4.0	4.0		4.0						
Max Green Setting (Gmax), s	63.0		40.0	19.0		19.0						
Max Q Clear Time (g_c+I1), s	2.0		25.2	7.1		14.2						
Green Ext Time (p_c), s	3.6		3.5	2.6		1.0						

Intersection Summary		
HCM 6th Ctrl Delay	22.2	
HCM 6th LOS	C	

Notes
User approved volume balancing among the lanes for turning movement.
Unsignalized Delay for [SBR] is excluded from calculations of the approach delay and intersection delay.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	0	300	3	721	784	896	0	0	634	789
Future Volume (veh/h)	0	0	0	300	3	721	784	896	0	0	634	789
Initial Q (Qb), veh				0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)				1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach					No			No			No	
Adj Sat Flow, veh/h/ln				1870	1870	1870	1870	1870	0	0	1870	1870
Adj Flow Rate, veh/h				218	0	901	852	974	0	0	689	0
Peak Hour Factor				0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %				2	2	2	2	2	0	0	2	2
Cap, veh/h				569	0	1012	961	2103	0	0	1733	
Arrive On Green				0.32	0.00	0.32	0.28	0.59	0.00	0.00	0.27	0.00
Sat Flow, veh/h				1781	0	3170	3456	3647	0	0	6696	1585
Grp Volume(v), veh/h				218	0	901	852	974	0	0	689	0
Grp Sat Flow(s),veh/h/ln				1781	0	1585	1728	1777	0	0	1609	1585
Q Serve(g_s), s				8.5	0.0	24.3	21.3	13.9	0.0	0.0	7.9	0.0
Cycle Q Clear(g_c), s				8.5	0.0	24.3	21.3	13.9	0.0	0.0	7.9	0.0
Prop In Lane				1.00		1.00	1.00		0.00	0.00		1.00
Lane Grp Cap(c), veh/h				569	0	1012	961	2103	0	0	1733	
V/C Ratio(X)				0.38	0.00	0.89	0.89	0.46	0.00	0.00	0.40	
Avail Cap(c_a), veh/h				633	0	1127	1114	2103	0	0	1733	
HCM Platoon Ratio				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)				1.00	0.00	1.00	0.85	0.85	0.00	0.00	1.00	0.00
Uniform Delay (d), s/veh				23.8	0.0	29.1	31.1	10.3	0.0	0.0	26.9	0.0
Incr Delay (d2), s/veh				0.4	0.0	8.5	6.9	0.6	0.0	0.0	0.7	0.0
Initial Q Delay(d3),s/veh				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln				3.4	0.0	9.7	9.1	4.6	0.0	0.0	2.9	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh				24.2	0.0	37.6	38.0	10.9	0.0	0.0	27.6	0.0
LnGrp LOS				C	A	D	D	B	A	A	C	
Approach Vol, veh/h					1119			1826			689	A
Approach Delay, s/veh					35.0			23.6			27.6	
Approach LOS					C			C			C	

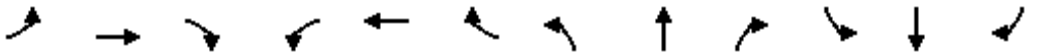
Timer - Assigned Phs	2		5	6		8						
Phs Duration (G+Y+Rc), s	57.3		29.0	28.2		32.7						
Change Period (Y+Rc), s	4.0		4.0	4.0		4.0						
Max Green Setting (Gmax), s	50.0		29.0	17.0		32.0						
Max Q Clear Time (g_c+I1), s	15.9		23.3	9.9		26.3						
Green Ext Time (p_c), s	7.4		1.8	2.4		2.4						

Intersection Summary	
HCM 6th Ctrl Delay	27.9
HCM 6th LOS	C

Notes

User approved volume balancing among the lanes for turning movement.

Unsignalized Delay for [SBR] is excluded from calculations of the approach delay and intersection delay.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	0	132	0	382	912	488	0	0	522	1081
Future Volume (veh/h)	0	0	0	132	0	382	912	488	0	0	522	1081
Initial Q (Qb), veh				0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)				1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach					No			No			No	
Adj Sat Flow, veh/h/ln				1870	1870	1870	1870	1870	0	0	1870	1870
Adj Flow Rate, veh/h				95	0	466	991	530	0	0	567	0
Peak Hour Factor				0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %				2	2	2	2	2	0	0	2	2
Cap, veh/h				311	0	554	1100	2617	0	0	2404	
Arrive On Green				0.17	0.00	0.17	0.53	1.00	0.00	0.00	0.37	0.00
Sat Flow, veh/h				1781	0	3170	3456	3647	0	0	6696	1585
Grp Volume(v), veh/h				95	0	466	991	530	0	0	567	0
Grp Sat Flow(s),veh/h/ln				1781	0	1585	1728	1777	0	0	1609	1585
Q Serve(g_s), s				4.2	0.0	12.8	23.2	0.0	0.0	0.0	5.4	0.0
Cycle Q Clear(g_c), s				4.2	0.0	12.8	23.2	0.0	0.0	0.0	5.4	0.0
Prop In Lane				1.00		1.00	1.00		0.00	0.00		1.00
Lane Grp Cap(c), veh/h				311	0	554	1100	2617	0	0	2404	
V/C Ratio(X)				0.31	0.00	0.84	0.90	0.20	0.00	0.00	0.24	
Avail Cap(c_a), veh/h				376	0	669	1536	2617	0	0	2404	
HCM Platoon Ratio				1.00	1.00	1.00	1.67	1.67	1.00	1.00	1.00	1.00
Upstream Filter(I)				1.00	0.00	1.00	0.91	0.91	0.00	0.00	1.00	0.00
Uniform Delay (d), s/veh				32.4	0.0	35.9	19.8	0.0	0.0	0.0	19.4	0.0
Incr Delay (d2), s/veh				0.5	0.0	8.1	5.3	0.2	0.0	0.0	0.2	0.0
Initial Q Delay(d3),s/veh				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln				1.8	0.0	5.3	6.5	0.1	0.0	0.0	1.9	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh				32.9	0.0	44.1	25.1	0.2	0.0	0.0	19.6	0.0
LnGrp LOS				C	A	D	C	A	A	A	B	
Approach Vol, veh/h					561			1521			567	A
Approach Delay, s/veh					42.2			16.4			19.6	
Approach LOS					D			B			B	

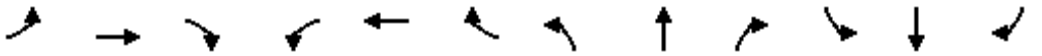
Timer - Assigned Phs		2			5	6		8				
Phs Duration (G+Y+Rc), s		70.3			32.7	37.6		19.7				
Change Period (Y+Rc), s		4.0			4.0	4.0		4.0				
Max Green Setting (Gmax), s		63.0			40.0	19.0		19.0				
Max Q Clear Time (g_c+I1), s		2.0			25.2	7.4		14.8				
Green Ext Time (p_c), s		3.6			3.5	2.7		0.9				

Intersection Summary		
HCM 6th Ctrl Delay	22.6	
HCM 6th LOS	C	

Notes

User approved volume balancing among the lanes for turning movement.

Unsignalized Delay for [SBR] is excluded from calculations of the approach delay and intersection delay.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	0	300	3	748	784	896	0	0	658	817
Future Volume (veh/h)	0	0	0	300	3	748	784	896	0	0	658	817
Initial Q (Qb), veh				0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)				1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach					No			No			No	
Adj Sat Flow, veh/h/ln				1870	1870	1870	1870	1870	0	0	1870	1870
Adj Flow Rate, veh/h				218	0	930	852	974	0	0	715	0
Peak Hour Factor				0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %				2	2	2	2	2	0	0	2	2
Cap, veh/h				581	0	1034	971	2078	0	0	1670	
Arrive On Green				0.33	0.00	0.33	0.19	0.39	0.00	0.00	0.26	0.00
Sat Flow, veh/h				1781	0	3170	3456	3647	0	0	6696	1585
Grp Volume(v), veh/h				218	0	930	852	974	0	0	715	0
Grp Sat Flow(s),veh/h/ln				1781	0	1585	1728	1777	0	0	1609	1585
Q Serve(g_s), s				8.5	0.0	25.2	21.6	18.4	0.0	0.0	8.3	0.0
Cycle Q Clear(g_c), s				8.5	0.0	25.2	21.6	18.4	0.0	0.0	8.3	0.0
Prop In Lane				1.00		1.00	1.00		0.00	0.00		1.00
Lane Grp Cap(c), veh/h				581	0	1034	971	2078	0	0	1670	
V/C Ratio(X)				0.38	0.00	0.90	0.88	0.47	0.00	0.00	0.43	
Avail Cap(c_a), veh/h				633	0	1127	1114	2078	0	0	1670	
HCM Platoon Ratio				1.00	1.00	1.00	0.67	0.67	1.00	1.00	1.00	1.00
Upstream Filter(I)				1.00	0.00	1.00	0.84	0.84	0.00	0.00	1.00	0.00
Uniform Delay (d), s/veh				23.3	0.0	28.9	35.0	16.9	0.0	0.0	27.8	0.0
Incr Delay (d2), s/veh				0.4	0.0	9.3	6.3	0.6	0.0	0.0	0.8	0.0
Initial Q Delay(d3),s/veh				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln				3.4	0.0	10.1	10.0	7.8	0.0	0.0	3.1	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh				23.7	0.0	38.2	41.4	17.6	0.0	0.0	28.6	0.0
LnGrp LOS				C	A	D	D	B	A	A	C	
Approach Vol, veh/h					1148			1826			715	A
Approach Delay, s/veh					35.5			28.7			28.6	
Approach LOS					D			C			C	

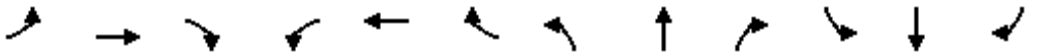
Timer - Assigned Phs	2		5	6		8						
Phs Duration (G+Y+Rc), s	56.6		29.3	27.4		33.4						
Change Period (Y+Rc), s	4.0		4.0	4.0		4.0						
Max Green Setting (Gmax), s	50.0		29.0	17.0		32.0						
Max Q Clear Time (g_c+I1), s	20.4		23.6	10.3		27.2						
Green Ext Time (p_c), s	7.2		1.7	2.4		2.2						

Intersection Summary		
HCM 6th Ctrl Delay	30.8	
HCM 6th LOS	C	

Notes

User approved volume balancing among the lanes for turning movement.

Unsignalized Delay for [SBR] is excluded from calculations of the approach delay and intersection delay.



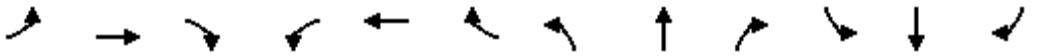
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	234	0	702	0	0	0	0	1156	159	335	295	0
Future Volume (veh/h)	234	0	702	0	0	0	0	1156	159	335	295	0
Initial Q (Qb), veh	0	0	0				0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00				1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00				1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No						No			No	
Adj Sat Flow, veh/h/ln	1870	0	1870				0	1870	1870	1870	1870	0
Adj Flow Rate, veh/h	254	0	0				0	1257	0	364	321	0
Peak Hour Factor	0.92	0.92	0.92				0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	0	2				0	2	2	2	2	0
Cap, veh/h	346	0					0	2574		1267	2882	0
Arrive On Green	0.10	0.00	0.00				0.00	0.40	0.00	0.61	1.00	0.00
Sat Flow, veh/h	3456	0	1585				0	6696	1585	3456	3647	0
Grp Volume(v), veh/h	254	0	0				0	1257	0	364	321	0
Grp Sat Flow(s),veh/h/ln	1728	0	1585				0	1609	1585	1728	1777	0
Q Serve(g_s), s	6.4	0.0	0.0				0.0	13.1	0.0	4.5	0.0	0.0
Cycle Q Clear(g_c), s	6.4	0.0	0.0				0.0	13.1	0.0	4.5	0.0	0.0
Prop In Lane	1.00		1.00				0.00		1.00	1.00		0.00
Lane Grp Cap(c), veh/h	346	0					0	2574		1267	2882	0
V/C Ratio(X)	0.74	0.00					0.00	0.49		0.29	0.11	0.00
Avail Cap(c_a), veh/h	691	0					0	2574		1267	2882	0
HCM Platoon Ratio	1.00	1.00	1.00				1.00	1.00	1.00	1.67	1.67	1.00
Upstream Filter(I)	1.00	0.00	0.00				0.00	1.00	0.00	0.97	0.97	0.00
Uniform Delay (d), s/veh	39.3	0.0	0.0				0.0	20.1	0.0	11.9	0.0	0.0
Incr Delay (d2), s/veh	3.0	0.0	0.0				0.0	0.7	0.0	0.1	0.1	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0				0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.8	0.0	0.0				0.0	4.8	0.0	1.6	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	42.4	0.0	0.0				0.0	20.8	0.0	12.0	0.1	0.0
LnGrp LOS	D	A					A	C		B	A	A
Approach Vol, veh/h		254	A					1257	A		685	
Approach Delay, s/veh		42.4						20.8			6.4	
Approach LOS		D						C			A	

Timer - Assigned Phs	1	2		4		6
Phs Duration (G+Y+Rc), s	37.0	40.0		13.0		77.0
Change Period (Y+Rc), s	4.0	4.0		4.0		4.0
Max Green Setting (Gmax), s	24.0	36.0		18.0		64.0
Max Q Clear Time (g_c+I1), s	6.5	15.1		8.4		2.0
Green Ext Time (p_c), s	1.2	9.5		0.6		2.4

Intersection Summary	
HCM 6th Ctrl Delay	18.8
HCM 6th LOS	B

Notes

Unsignalized Delay for [NBR, EBR] is excluded from calculations of the approach delay and intersection delay.



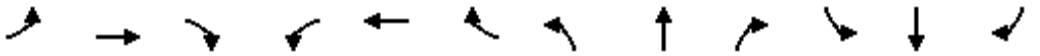
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	234	0	702	0	0	0	0	1156	159	360	295	0
Future Volume (veh/h)	234	0	702	0	0	0	0	1156	159	360	295	0
Initial Q (Qb), veh	0	0	0				0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00				1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00				1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No						No			No	
Adj Sat Flow, veh/h/ln	1870	0	1870				0	1870	1870	1870	1870	0
Adj Flow Rate, veh/h	254	0	0				0	1257	0	391	321	0
Peak Hour Factor	0.92	0.92	0.92				0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	0	2				0	2	2	2	2	0
Cap, veh/h	346	0					0	2574		1267	2882	0
Arrive On Green	0.10	0.00	0.00				0.00	0.40	0.00	0.61	1.00	0.00
Sat Flow, veh/h	3456	0	1585				0	6696	1585	3456	3647	0
Grp Volume(v), veh/h	254	0	0				0	1257	0	391	321	0
Grp Sat Flow(s),veh/h/ln	1728	0	1585				0	1609	1585	1728	1777	0
Q Serve(g_s), s	6.4	0.0	0.0				0.0	13.1	0.0	4.9	0.0	0.0
Cycle Q Clear(g_c), s	6.4	0.0	0.0				0.0	13.1	0.0	4.9	0.0	0.0
Prop In Lane	1.00		1.00				0.00		1.00	1.00		0.00
Lane Grp Cap(c), veh/h	346	0					0	2574		1267	2882	0
V/C Ratio(X)	0.74	0.00					0.00	0.49		0.31	0.11	0.00
Avail Cap(c_a), veh/h	691	0					0	2574		1267	2882	0
HCM Platoon Ratio	1.00	1.00	1.00				1.00	1.00	1.00	1.67	1.67	1.00
Upstream Filter(I)	1.00	0.00	0.00				0.00	1.00	0.00	0.96	0.96	0.00
Uniform Delay (d), s/veh	39.3	0.0	0.0				0.0	20.1	0.0	12.0	0.0	0.0
Incr Delay (d2), s/veh	3.0	0.0	0.0				0.0	0.7	0.0	0.1	0.1	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0				0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.8	0.0	0.0				0.0	4.8	0.0	1.7	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	42.4	0.0	0.0				0.0	20.8	0.0	12.1	0.1	0.0
LnGrp LOS	D	A					A	C		B	A	A
Approach Vol, veh/h		254	A					1257	A		712	
Approach Delay, s/veh		42.4						20.8			6.7	
Approach LOS		D						C			A	

Timer - Assigned Phs	1	2		4		6						
Phs Duration (G+Y+Rc), s	37.0	40.0		13.0		77.0						
Change Period (Y+Rc), s	4.0	4.0		4.0		4.0						
Max Green Setting (Gmax), s	24.0	36.0		18.0		64.0						
Max Q Clear Time (g_c+I1), s	6.9	15.1		8.4		2.0						
Green Ext Time (p_c), s	1.3	9.5		0.6		2.4						

Intersection Summary	
HCM 6th Ctrl Delay	18.7
HCM 6th LOS	B

Notes

Unsignalized Delay for [NBR, EBR] is excluded from calculations of the approach delay and intersection delay.



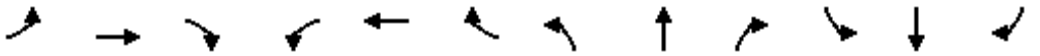
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	477	0	1142	0	0	0	0	1204	207	292	650	0
Future Volume (veh/h)	477	0	1142	0	0	0	0	1204	207	292	650	0
Initial Q (Qb), veh	0	0	0				0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00				1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00				1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No						No			No	
Adj Sat Flow, veh/h/ln	1870	0	1870				0	1870	1870	1870	1870	0
Adj Flow Rate, veh/h	518	0	0				0	1309	0	317	707	0
Peak Hour Factor	0.92	0.92	0.92				0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	0	2				0	2	2	2	2	0
Cap, veh/h	635	0					0	2359		1093	2585	0
Arrive On Green	0.18	0.00	0.00				0.00	0.37	0.00	0.21	0.49	0.00
Sat Flow, veh/h	3456	0	1585				0	6696	1585	3456	3647	0
Grp Volume(v), veh/h	518	0	0				0	1309	0	317	707	0
Grp Sat Flow(s),veh/h/ln	1728	0	1585				0	1609	1585	1728	1777	0
Q Serve(g_s), s	13.0	0.0	0.0				0.0	14.6	0.0	6.9	10.6	0.0
Cycle Q Clear(g_c), s	13.0	0.0	0.0				0.0	14.6	0.0	6.9	10.6	0.0
Prop In Lane	1.00		1.00				0.00		1.00	1.00		0.00
Lane Grp Cap(c), veh/h	635	0					0	2359		1093	2585	0
V/C Ratio(X)	0.82	0.00					0.00	0.55		0.29	0.27	0.00
Avail Cap(c_a), veh/h	1037	0					0	2359		1093	2585	0
HCM Platoon Ratio	1.00	1.00	1.00				1.00	1.00	1.00	0.67	0.67	1.00
Upstream Filter(I)	1.00	0.00	0.00				0.00	1.00	0.00	0.89	0.89	0.00
Uniform Delay (d), s/veh	35.3	0.0	0.0				0.0	22.7	0.0	27.0	9.0	0.0
Incr Delay (d2), s/veh	2.6	0.0	0.0				0.0	0.9	0.0	0.1	0.2	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0				0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	5.6	0.0	0.0				0.0	5.5	0.0	2.9	4.3	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	37.9	0.0	0.0				0.0	23.6	0.0	27.1	9.2	0.0
LnGrp LOS	D	A					A	C		C	A	A
Approach Vol, veh/h		518	A					1309	A		1024	
Approach Delay, s/veh		37.9						23.6			14.8	
Approach LOS		D						C			B	

Timer - Assigned Phs	1	2		4		6
Phs Duration (G+Y+Rc), s	32.5	37.0		20.5		69.5
Change Period (Y+Rc), s	4.0	4.0		4.0		4.0
Max Green Setting (Gmax), s	18.0	33.0		27.0		55.0
Max Q Clear Time (g_c+I1), s	8.9	16.6		15.0		12.6
Green Ext Time (p_c), s	0.8	8.6		1.6		5.8

Intersection Summary	
HCM 6th Ctrl Delay	23.0
HCM 6th LOS	C

Notes

Unsignalized Delay for [NBR, EBR] is excluded from calculations of the approach delay and intersection delay.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	477	0	1142	0	0	0	0	1204	207	316	650	0
Future Volume (veh/h)	477	0	1142	0	0	0	0	1204	207	316	650	0
Initial Q (Qb), veh	0	0	0				0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00				1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00				1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No						No			No	
Adj Sat Flow, veh/h/ln	1870	0	1870				0	1870	1870	1870	1870	0
Adj Flow Rate, veh/h	518	0	0				0	1309	0	343	707	0
Peak Hour Factor	0.92	0.92	0.92				0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	0	2				0	2	2	2	2	0
Cap, veh/h	635	0					0	2359		1093	2585	0
Arrive On Green	0.18	0.00	0.00				0.00	0.37	0.00	0.21	0.49	0.00
Sat Flow, veh/h	3456	0	1585				0	6696	1585	3456	3647	0
Grp Volume(v), veh/h	518	0	0				0	1309	0	343	707	0
Grp Sat Flow(s),veh/h/ln	1728	0	1585				0	1609	1585	1728	1777	0
Q Serve(g_s), s	13.0	0.0	0.0				0.0	14.6	0.0	7.5	10.6	0.0
Cycle Q Clear(g_c), s	13.0	0.0	0.0				0.0	14.6	0.0	7.5	10.6	0.0
Prop In Lane	1.00		1.00				0.00		1.00	1.00		0.00
Lane Grp Cap(c), veh/h	635	0					0	2359		1093	2585	0
V/C Ratio(X)	0.82	0.00					0.00	0.55		0.31	0.27	0.00
Avail Cap(c_a), veh/h	1037	0					0	2359		1093	2585	0
HCM Platoon Ratio	1.00	1.00	1.00				1.00	1.00	1.00	0.67	0.67	1.00
Upstream Filter(I)	1.00	0.00	0.00				0.00	1.00	0.00	0.89	0.89	0.00
Uniform Delay (d), s/veh	35.3	0.0	0.0				0.0	22.7	0.0	27.2	9.0	0.0
Incr Delay (d2), s/veh	2.6	0.0	0.0				0.0	0.9	0.0	0.1	0.2	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0				0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	5.6	0.0	0.0				0.0	5.5	0.0	3.2	4.3	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	37.9	0.0	0.0				0.0	23.6	0.0	27.4	9.2	0.0
LnGrp LOS	D	A					A	C		C	A	A
Approach Vol, veh/h		518	A					1309	A		1050	
Approach Delay, s/veh		37.9						23.6			15.2	
Approach LOS		D						C			B	

Timer - Assigned Phs	1	2		4		6
Phs Duration (G+Y+Rc), s	32.5	37.0		20.5		69.5
Change Period (Y+Rc), s	4.0	4.0		4.0		4.0
Max Green Setting (Gmax), s	18.0	33.0		27.0		55.0
Max Q Clear Time (g_c+I1), s	9.5	16.6		15.0		12.6
Green Ext Time (p_c), s	0.8	8.6		1.6		5.8

Intersection Summary	
HCM 6th Ctrl Delay	23.1
HCM 6th LOS	C

Notes

Unsignalized Delay for [NBR, EBR] is excluded from calculations of the approach delay and intersection delay.

INTERSECTION CAPACITY UTILIZATION

INTERSECTION NUMBER: 25
NORTH/SOUTH STREET: Oxnard Blvd
EAST/WEST STREET: Gonzales Rd
SCENARIO: Cumulative Conditions
TIME PERIOD: AM Peak Hour
COUNT DATE: 05/2018
WORK ORDER #: 2064169300

VOLUMES	Northbound			Southbound			Eastbound			Westbound		
	L	T	R	L	T	R	L	T	R	L	T	R
AM Peak	132	921	424	325	936	81	227	1167	98	320	832	358
Project Trips	0	0	0	0	0	31	40	20	0	0	16	0
GEOMETRY	LL	TTT	R	LL	TTT	R	LL	TT TR		LL	TTT	R

	Level of Service Calculations						
Move-	**Lanes**			**Volume**		**V/C Ratio**	
ment	Lane		Capacity	Cumulative	Project	Cumulative	Project
NBL	2.0		3,200	132	132	0.04	0.04
NBT	3.0		4,800	921	921	0.19 *	0.19 *
NBR	1.0	(a)	1,600	104	104	0.07	0.07
SBL	2.0		3,200	325	325	0.10 *	0.10 *
SBT	3.0		4,800	936	936	0.20	0.20
SBR	1.0		1,600	81	112	0.05	0.07
EBL	2.0		3,200	227	267	0.07	0.08
EBT	3.0		4,800	1,167	1,187	0.26 *	0.27 *
EBR	0.0		0	98	98	0.00	0.00
WBL	2.0		3,200	320	320	0.10 *	0.10 *
WBT	3.0		4,800	832	848	0.17	0.18
WBR	1.0	(b)	1,600	196	196	0.12	0.12
N/S Critical Movements						0.29	0.29
E/W Critical Movements						0.36	0.37
Clearance Interval						0.00	0.00
ICU						0.65	0.66
Level of Service (LOS)						B	B

Notes: V/C - Volume to Capacity Ratio
(a) RTOR overlap w/WB LT
(b) RTOR overlap w/SB LT

INTERSECTION CAPACITY UTILIZATION

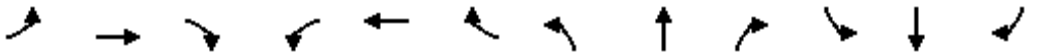
INTERSECTION NUMBER: 25
NORTH/SOUTH STREET: Oxnard Blvd
EAST/WEST STREET: Gonzales Rd
SCENARIO: Cumulative Conditions
TIME PERIOD: PM Peak Hour
COUNT DATE: 05/2018
WORK ORDER #: 2064169300

VOLUMES	Northbound			Southbound			Eastbound			Westbound		
	L	T	R	L	T	R	L	T	R	L	T	R
PM Peak	213	1111	341	416	1337	140	267	834	120	387	1166	463
Project Trips	0	0	0	0	0	41	38	17	0	0	21	0
GEOMETRY	LL	TTT	R	LL	TTT	R	LL	TT TR		LL	TTT	R

	Level of Service Calculations						
Move-	**Lanes**			**Volume**		**V/C Ratio**	
ment	Lane		Capacity	Cumulative	Project	Cumulative	Project
NBL	2.0		3,200	213	213	0.07	0.07
NBT	3.0		4,800	1,111	1,111	0.23 *	0.23 *
NBR	1.0	(a)	1,600	341	341	0.21	0.21
SBL	2.0		3,200	416	416	0.13 *	0.13 *
SBT	3.0		4,800	1,337	1,337	0.28	0.28
SBR	1.0		1,600	140	181	0.09	0.11
EBL	2.0		3,200	267	305	0.08 *	0.10 *
EBT	3.0		4,800	834	851	0.20	0.20
EBR	0.0		0	120	120	0.00	0.00
WBL	2.0		3,200	387	387	0.12	0.12
WBT	3.0		4,800	1,166	1,187	0.24 *	0.25 *
WBR	1.0	(b)	1,600	255	255	0.16	0.16
N/S Critical Movements						0.36	0.36
E/W Critical Movements						0.32	0.35
Clearance Interval						0.00	0.00
ICU						0.68	0.71
Level of Service (LOS)						B	C

Notes: V/C - Volume to Capacity Ratio
(a) not critical due to RTOR overlap w/WB LT
(b) RTOR overlap w/SB LT

Buildout and Buildout + Project AM and PM Peak Hour



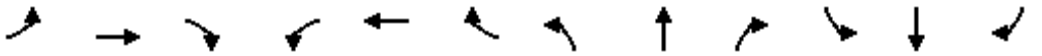
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	0	700	0	910	520	1340	0	0	2660	370
Future Volume (veh/h)	0	0	0	700	0	910	520	1340	0	0	2660	370
Initial Q (Qb), veh				0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)				1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach					No			No			No	
Adj Sat Flow, veh/h/ln				1870	1870	1870	1870	1870	0	0	1870	1870
Adj Flow Rate, veh/h				916	0	766	547	1411	0	0	2800	389
Peak Hour Factor				0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %				2	2	2	2	2	0	0	2	2
Cap, veh/h				1120	0	997	565	3160	0	0	2717	669
Arrive On Green				0.31	0.00	0.31	0.33	1.00	0.00	0.00	0.42	0.42
Sat Flow, veh/h				3563	0	3170	3456	5274	0	0	6696	1585
Grp Volume(v), veh/h				916	0	766	547	1411	0	0	2800	389
Grp Sat Flow(s),veh/h/ln				1781	0	1585	1728	1702	0	0	1609	1585
Q Serve(g_s), s				21.4	0.0	19.7	14.0	0.0	0.0	0.0	38.0	16.9
Cycle Q Clear(g_c), s				21.4	0.0	19.7	14.0	0.0	0.0	0.0	38.0	16.9
Prop In Lane				1.00		1.00	1.00		0.00	0.00		1.00
Lane Grp Cap(c), veh/h				1120	0	997	565	3160	0	0	2717	669
V/C Ratio(X)				0.82	0.00	0.77	0.97	0.45	0.00	0.00	1.03	0.58
Avail Cap(c_a), veh/h				1188	0	1057	565	3160	0	0	2717	669
HCM Platoon Ratio				1.00	1.00	1.00	2.00	2.00	1.00	1.00	1.00	1.00
Upstream Filter(I)				1.00	0.00	1.00	0.92	0.92	0.00	0.00	1.00	1.00
Uniform Delay (d), s/veh				28.5	0.0	27.9	30.1	0.0	0.0	0.0	26.0	19.9
Incr Delay (d2), s/veh				4.4	0.0	3.3	28.5	0.4	0.0	0.0	25.8	3.7
Initial Q Delay(d3),s/veh				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln				9.5	0.0	7.7	6.7	0.1	0.0	0.0	18.2	6.5
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh				32.9	0.0	31.2	58.6	0.4	0.0	0.0	51.8	23.6
LnGrp LOS				C	A	C	E	A	A	A	F	C
Approach Vol, veh/h					1682			1958			3189	
Approach Delay, s/veh					32.1			16.7			48.3	
Approach LOS					C			B			D	

Timer - Assigned Phs		2			5	6		8				
Phs Duration (G+Y+Rc), s		58.7			17.7	41.0		31.3				
Change Period (Y+Rc), s		4.0			4.0	4.0		4.0				
Max Green Setting (Gmax), s		53.0			12.0	37.0		29.0				
Max Q Clear Time (g_c+I1), s		2.0			16.0	40.0		23.4				
Green Ext Time (p_c), s		9.2			0.0	0.0		3.9				

Intersection Summary												
HCM 6th Ctrl Delay			35.3									
HCM 6th LOS			D									

Notes

User approved volume balancing among the lanes for turning movement.



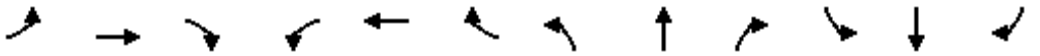
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	0	708	0	910	540	1365	0	0	2680	370
Future Volume (veh/h)	0	0	0	708	0	910	540	1365	0	0	2680	370
Initial Q (Qb), veh				0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)				1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach					No			No			No	
Adj Sat Flow, veh/h/ln				1870	1870	1870	1870	1870	0	0	1870	1870
Adj Flow Rate, veh/h				924	0	766	568	1437	0	0	2821	389
Peak Hour Factor				0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %				2	2	2	2	2	0	0	2	2
Cap, veh/h				1124	0	1000	561	3155	0	0	2717	669
Arrive On Green				0.32	0.00	0.32	0.32	1.00	0.00	0.00	0.42	0.42
Sat Flow, veh/h				3563	0	3170	3456	5274	0	0	6696	1585
Grp Volume(v), veh/h				924	0	766	568	1437	0	0	2821	389
Grp Sat Flow(s),veh/h/ln				1781	0	1585	1728	1702	0	0	1609	1585
Q Serve(g_s), s				21.6	0.0	19.6	14.6	0.0	0.0	0.0	38.0	16.9
Cycle Q Clear(g_c), s				21.6	0.0	19.6	14.6	0.0	0.0	0.0	38.0	16.9
Prop In Lane				1.00		1.00	1.00		0.00	0.00		1.00
Lane Grp Cap(c), veh/h				1124	0	1000	561	3155	0	0	2717	669
V/C Ratio(X)				0.82	0.00	0.77	1.01	0.46	0.00	0.00	1.04	0.58
Avail Cap(c_a), veh/h				1188	0	1057	561	3155	0	0	2717	669
HCM Platoon Ratio				1.00	1.00	1.00	2.00	2.00	1.00	1.00	1.00	1.00
Upstream Filter(I)				1.00	0.00	1.00	0.92	0.92	0.00	0.00	1.00	1.00
Uniform Delay (d), s/veh				28.5	0.0	27.8	30.4	0.0	0.0	0.0	26.0	19.9
Incr Delay (d2), s/veh				4.6	0.0	3.2	39.7	0.4	0.0	0.0	28.3	3.7
Initial Q Delay(d3),s/veh				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln				9.6	0.0	7.6	7.7	0.1	0.0	0.0	18.6	6.5
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh				33.0	0.0	31.0	70.1	0.4	0.0	0.0	54.3	23.6
LnGrp LOS				C	A	C	F	A	A	A	F	C
Approach Vol, veh/h					1690			2005			3210	
Approach Delay, s/veh					32.1			20.2			50.5	
Approach LOS					C			C			D	

Timer - Assigned Phs		2			5	6		8				
Phs Duration (G+Y+Rc), s		58.6			17.6	41.0		31.4				
Change Period (Y+Rc), s		4.0			4.0	4.0		4.0				
Max Green Setting (Gmax), s		53.0			12.0	37.0		29.0				
Max Q Clear Time (g_c+I1), s		2.0			16.6	40.0		23.6				
Green Ext Time (p_c), s		9.5			0.0	0.0		3.8				

Intersection Summary		
HCM 6th Ctrl Delay	37.2	
HCM 6th LOS	D	

Notes

User approved volume balancing among the lanes for turning movement.



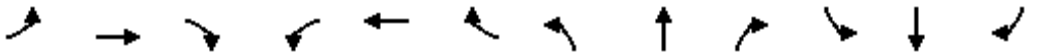
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	0	480	0	1150	520	1850	0	0	2170	380
Future Volume (veh/h)	0	0	0	480	0	1150	520	1850	0	0	2170	380
Initial Q (Qb), veh				0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)				1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach					No			No			No	
Adj Sat Flow, veh/h/ln				1870	1870	1870	1870	1870	0	0	1870	1870
Adj Flow Rate, veh/h				337	0	1391	547	1947	0	0	2284	400
Peak Hour Factor				0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %				2	2	2	2	2	0	0	2	2
Cap, veh/h				534	0	1427	576	3064	0	0	2466	608
Arrive On Green				0.30	0.00	0.30	0.17	0.60	0.00	0.00	0.38	0.38
Sat Flow, veh/h				1781	0	4755	3456	5274	0	0	6696	1585
Grp Volume(v), veh/h				337	0	1391	547	1947	0	0	2284	400
Grp Sat Flow(s),veh/h/ln				1781	0	1585	1728	1702	0	0	1609	1585
Q Serve(g_s), s				9.8	0.0	17.4	9.4	14.8	0.0	0.0	20.4	12.5
Cycle Q Clear(g_c), s				9.8	0.0	17.4	9.4	14.8	0.0	0.0	20.4	12.5
Prop In Lane				1.00		1.00	1.00		0.00	0.00		1.00
Lane Grp Cap(c), veh/h				534	0	1427	576	3064	0	0	2466	608
V/C Ratio(X)				0.63	0.00	0.98	0.95	0.64	0.00	0.00	0.93	0.66
Avail Cap(c_a), veh/h				534	0	1427	576	3064	0	0	2466	608
HCM Platoon Ratio				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)				1.00	0.00	1.00	0.92	0.92	0.00	0.00	1.00	1.00
Uniform Delay (d), s/veh				18.1	0.0	20.8	24.8	7.8	0.0	0.0	17.7	15.3
Incr Delay (d2), s/veh				2.4	0.0	18.1	24.2	0.9	0.0	0.0	7.5	5.5
Initial Q Delay(d3),s/veh				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln				4.0	0.0	8.1	5.4	4.0	0.0	0.0	7.6	4.8
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh				20.5	0.0	38.9	48.9	8.7	0.0	0.0	25.2	20.8
LnGrp LOS				C	A	D	D	A	A	A	C	C
Approach Vol, veh/h					1728			2494			2684	
Approach Delay, s/veh					35.3			17.5			24.5	
Approach LOS					D			B			C	

Timer - Assigned Phs		2			5	6		8				
Phs Duration (G+Y+Rc), s		39.0			13.0	26.0		21.0				
Change Period (Y+Rc), s		4.0			4.0	4.0		4.0				
Max Green Setting (Gmax), s		35.0			9.0	22.0		17.0				
Max Q Clear Time (g_c+I1), s		16.8			11.4	22.4		19.4				
Green Ext Time (p_c), s		10.4			0.0	0.0		0.0				

Intersection Summary		
HCM 6th Ctrl Delay	24.7	
HCM 6th LOS	C	

Notes

User approved volume balancing among the lanes for turning movement.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	0	491	0	1150	529	1874	0	0	2196	380
Future Volume (veh/h)	0	0	0	491	0	1150	529	1874	0	0	2196	380
Initial Q (Qb), veh				0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)				1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach					No			No			No	
Adj Sat Flow, veh/h/ln				1870	1870	1870	1870	1870	0	0	1870	1870
Adj Flow Rate, veh/h				345	0	1396	557	1973	0	0	2312	400
Peak Hour Factor				0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %				2	2	2	2	2	0	0	2	2
Cap, veh/h				534	0	1427	576	3064	0	0	2466	608
Arrive On Green				0.30	0.00	0.30	0.17	0.60	0.00	0.00	0.38	0.38
Sat Flow, veh/h				1781	0	4755	3456	5274	0	0	6696	1585
Grp Volume(v), veh/h				345	0	1396	557	1973	0	0	2312	400
Grp Sat Flow(s),veh/h/ln				1781	0	1585	1728	1702	0	0	1609	1585
Q Serve(g_s), s				10.1	0.0	17.5	9.6	15.1	0.0	0.0	20.8	12.5
Cycle Q Clear(g_c), s				10.1	0.0	17.5	9.6	15.1	0.0	0.0	20.8	12.5
Prop In Lane				1.00		1.00	1.00		0.00	0.00		1.00
Lane Grp Cap(c), veh/h				534	0	1427	576	3064	0	0	2466	608
V/C Ratio(X)				0.65	0.00	0.98	0.97	0.64	0.00	0.00	0.94	0.66
Avail Cap(c_a), veh/h				534	0	1427	576	3064	0	0	2466	608
HCM Platoon Ratio				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)				1.00	0.00	1.00	0.92	0.92	0.00	0.00	1.00	1.00
Uniform Delay (d), s/veh				18.2	0.0	20.8	24.8	7.8	0.0	0.0	17.8	15.3
Incr Delay (d2), s/veh				2.7	0.0	18.9	27.8	1.0	0.0	0.0	8.4	5.5
Initial Q Delay(d3),s/veh				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln				4.1	0.0	8.3	5.8	4.1	0.0	0.0	7.9	4.8
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh				20.9	0.0	39.7	52.7	8.8	0.0	0.0	26.2	20.8
LnGrp LOS				C	A	D	D	A	A	A	C	C
Approach Vol, veh/h					1741			2530			2712	
Approach Delay, s/veh					35.9			18.5			25.4	
Approach LOS					D			B			C	

Timer - Assigned Phs		2			5	6		8				
Phs Duration (G+Y+Rc), s		39.0			13.0	26.0		21.0				
Change Period (Y+Rc), s		4.0			4.0	4.0		4.0				
Max Green Setting (Gmax), s		35.0			9.0	22.0		17.0				
Max Q Clear Time (g_c+I1), s		17.1			11.6	22.8		19.5				
Green Ext Time (p_c), s		10.5			0.0	0.0		0.0				

Intersection Summary												
HCM 6th Ctrl Delay			25.5									
HCM 6th LOS			C									

Notes

User approved volume balancing among the lanes for turning movement.

INTERSECTION CAPACITY UTILIZATION

INTERSECTION NUMBER: 2
NORTH/SOUTH STREET: Victoria St
EAST/WEST STREET: Valentine Rd (split phased)
SCENARIO: Buildout Conditions
TIME PERIOD: AM Peak Hour
COUNT DATE: 05/2018
WORK ORDER #: 2064169300

VOLUMES	Northbound			Southbound			Eastbound			Westbound		
	L	T	R	L	T	R	L	T	R	L	T	R
AM Peak	240	1580	20	40	1600	1670	320	50	240	20	10	80
Project Trips	10	45	0	0	28	0	0	0	8	0	0	0
GEOMETRY	LL	TT	TR	L	TT	RR	LL	LT	R		LT	R

	Level of Service Calculations					
Move-	**Lanes**		**Volume**		**V/C Ratio**	
ment	Lane	Capacity	Buildout	Project	Buildout	Project
NBL	2.0	3,200	240	250	0.08 *	0.08 *
NBT	3.0	4,800	1,580	1,625	0.33	0.34
NBR	0.0	0	20	20	0.00	0.00
SBL	1.0	1,600	40	40	0.05	0.05
SBT	2.0	3,200	1,600	1,628	0.50 *	0.51 *
SBR (a)	2.0	3,200	1,670	1,670	0.00	0.00
EBL	0.0	0	320	320	0.00	0.00
EBT	3.0	4,800	50	50	0.08	0.08
EBR (b)	1.0	1,600	200	208	0.13 *	0.13 *
WBL	0.0	0	20	20	0.00	0.00
WBT	1.0	1,600	10	10	0.07 *	0.07 *
WBR (b)	1.0	1,600	80	80	0.00	0.00
N/S Critical Movements					0.58	0.59
E/W Critical Movements					0.18	0.18
Clearance Interval					0.00	0.00
ICU					0.76	0.77
Level of Service (LOS)					C	C

Notes: V/C - Volume to Capacity Ratio
(a) Free right-turn
(b) RT overlap arrow

INTERSECTION CAPACITY UTILIZATION

INTERSECTION NUMBER: 2
NORTH/SOUTH STREET: Victoria St
EAST/WEST STREET: Valentine Rd (split phased)
SCENARIO: Buildout Conditions
TIME PERIOD: AM Peak Hour
COUNT DATE: 05/2018
WORK ORDER #: 2064169300

VOLUMES	Northbound			Southbound			Eastbound			Westbound		
	L	T	R	L	T	R	L	T	R	L	T	R
PM Peak	190	2020	50	60	1440	1190	740	50	440	30	30	100
Project Trips	10	43	0	0	37	0	0	0	11	0	0	0
GEOMETRY	LL	TT	TR	L	TT	RR	LL	LT	R		LT	R

	Level of Service Calculations					
Move-	**Lanes**		**Volume**		**V/C Ratio**	
ment	Lane	Capacity	Buildout	Project	Buildout	Project
NBL	2.0	3,200	190	200	0.05 *	0.05 *
NBT	3.0	4,800	2,020	2,063	0.43	0.44
NBR	0.0	0	50	50	0.00	0.00
SBL	1.0	1,600	60	60	0.05	0.05
SBT	2.0	3,200	1,440	1,477	0.45 *	0.46 *
SBR (a)	2.0	3,200	1,190	1,190	0.00	0.00
EBL	0.0	0	740	740	0.00	0.00
EBT	3.0	4,800	50	50	0.16	0.16
EBR (b)	1.0	1,600	380	391	0.24 *	0.24 *
WBL	0.0	0	30	30	0.00	0.00
WBT	1.0	1,600	30	30	0.07 *	0.07 *
WBR (b)	1.0	1,600	100	100	0.00	0.00
N/S Critical Movements					0.50	0.51
E/W Critical Movements					0.26	0.26
Clearance Interval					0.00	0.00
ICU					0.76	0.77
Level of Service (LOS)					C	C

Notes: V/C - Volume to Capacity Ratio
(a) Free right-turn
(b) RT overlap arrow

INTERSECTION CAPACITY UTILIZATION

INTERSECTION NUMBER: 3
NORTH/SOUTH STREET: Victoria Ave
EAST/WEST STREET: Olivas Park Rd
SCENARIO: Buildout Conditions
TIME PERIOD: AM Peak Hour
COUNT DATE: 05/2018
WORK ORDER #: 2064169300

VOLUMES	Northbound			Southbound			Eastbound			Westbound		
	L	T	R	L	T	R	L	T	R	L	T	R
AM Peak	640	1770	500	480	1450	120	130	160	170	120	80	120
Project Trips	10	57	5	0	36	0	0	0	8	0	0	0
GEOMETRY	LL	TTT	R	LL	TTT	R	LL	TT	R	L	TT	R

	Level of Service Calculations						
Move-	**Lanes**			**Volume**		**V/C Ratio**	
ment	Lane		Capacity	Buildout	Project	Buildout	Project
NBL	2.0		3,200	640	650	0.20	0.20
NBT	3.0		4,800	1,770	1,827	0.37 *	0.38 *
NBR	1.0		1,600	500	505	0.31	0.32
SBL	2.0		3,200	480	480	0.15 *	0.15 *
SBT	3.0		4,800	1,450	1,486	0.30	0.31
SBR	1.0	(a)	1,600	120	120	0.00	0.00
EBL	2.0		3,200	130	130	0.05 *	0.05 *
EBT	2.0		3,200	160	160	0.07	0.07
EBR	1.0	(b)	1,600	170	178	0.00	0.00
WBL	1.0		1,600	120	120	0.08	0.08
WBT	2.0		3,200	80	80	0.07 *	0.07 *
WBR	1.0	(a)	1,600	120	120	0.00	0.00
N/S Critical Movements						0.52	0.53
E/W Critical Movements						0.15	0.15
Clearance Interval						0.00	0.00
ICU						0.67	0.68
Level of Service (LOS)						B	B

Notes: V/C - Volume to Capacity Ratio
(a) Yield control
(b) Free RT

INTERSECTION CAPACITY UTILIZATION

INTERSECTION NUMBER: 3
NORTH/SOUTH STREET: Victoria Ave
EAST/WEST STREET: Olivas Park Rd
SCENARIO: Buildout Conditions
TIME PERIOD: PM Peak Hour
COUNT DATE: 05/2018
WORK ORDER #: 2064169300

VOLUMES	Northbound			Southbound			Eastbound			Westbound		
	L	T	R	L	T	R	L	T	R	L	T	R
PM Peak	570	1720	440	210	1520	90	170	230	950	340	380	190
Project Trips	10	54	5	0	48	0	0	0	12	5	0	0
GEOMETRY	LL	TTT	R	LL	TTT	R	LL	TT	R	L	TT	R

	Level of Service Calculations						
Move-	**Lanes**			**Volume**		**V/C Ratio**	
ment	Lane		Capacity	Buildout	Project	Buildout	Project
NBL	2.0		3,200	570	580	0.18 *	0.18 *
NBT	3.0		4,800	1,720	1,774	0.36	0.37
NBR	1.0		1,600	440	445	0.28	0.28
SBL	2.0		3,200	210	210	0.07	0.07
SBT	3.0		4,800	1,520	1,568	0.32 *	0.33 *
SBR	1.0	(a)	1,600	90	90	0.00	0.00
EBL	2.0		3,200	170	170	0.05	0.05
EBT	2.0		3,200	230	230	0.07 *	0.07 *
EBR	1.0	(b)	1,600	950	962	0.00	0.00
WBL	1.0		1,600	340	345	0.21 *	0.22 *
WBT	2.0		3,200	380	380	0.12	0.12
WBR	1.0	(a)	1,600	190	190	0.00	0.00
N/S Critical Movements						0.50	0.51
E/W Critical Movements						0.28	0.29
Clearance Interval						0.00	0.00
ICU						0.78	0.80
Level of Service (LOS)						C	C

Notes: V/C - Volume to Capacity Ratio
(a) Yield control
(b) Free RT

INTERSECTION CAPACITY UTILIZATION

INTERSECTION NUMBER: 4
NORTH/SOUTH STREET: Victoria Ave
EAST/WEST STREET: Gonzales Rd
SCENARIO: Buildout Conditions
TIME PERIOD: AM Peak Hour
COUNT DATE: 05/2018
WORK ORDER #: 2064169300

VOLUMES	Northbound			Southbound			Eastbound			Westbound		
	L	T	R	L	T	R	L	T	R	L	T	R
AM Peak	80	1890	730	170	1250	25	30	130	40	420	245	590
Project Trips	5	58	0	5	46	0	0	4	4	0	5	7
GEOMETRY	L	TTT	R	LL	TT	R	L	T TR		LL	TT	R

	Level of Service Calculations						
Move-	**Lanes**			**Volume**		**V/C Ratio**	
ment	Lane		Capacity	Cumulative	Project	Cumulative	Project
NBL	1.0		1,600	80	85	0.05	0.05
NBT	3.0		4,800	1,890	1,948	0.39 *	0.41 *
NBR	1.0	(a)	1,600	520	520	0.33	0.33
SBL	2.0		3,200	170	175	0.05 *	0.05 *
SBT	2.0		3,200	1,250	1,296	0.39	0.41
SBR	1.0		1,600	25	25	0.02	0.02
EBL	1.0		1,600	30	30	0.05 *	0.05 *
EBT	2.0		3,200	130	134	0.07	0.07
EBR	0.0		0	40	44	0.00	0.00
WBL	2.0		3,200	420	420	0.13	0.13
WBT	2.0		3,200	245	250	0.08	0.08
WBR	1.0	(b)	1,600	505	510	0.32 *	0.32 *
N/S Critical Movements						0.44	0.46
E/W Critical Movements						0.37	0.37
Clearance Interval						0.00	0.00
ICU						0.81	0.83
Level of Service (LOS)						D	D

Notes: V/C - Volume to Capacity Ratio
(a) RTOR overlap w/WBL
(b) RTOR overlap w/SBL

INTERSECTION CAPACITY UTILIZATION

INTERSECTION NUMBER: 4
NORTH/SOUTH STREET: Victoria Ave
EAST/WEST STREET: Gonzales Rd
SCENARIO: Buildout Conditions
TIME PERIOD: AM Peak Hour
COUNT DATE: 05/2018
WORK ORDER #: 2064169300

GENERAL PLAN BUILDOUT
INTERSECTION GEOMETRY

VOLUMES	Northbound			Southbound			Eastbound			Westbound		
	L	T	R	L	T	R	L	T	R	L	T	R
AM Peak	80	1890	730	170	1250	25	30	130	40	420	245	590
Project Trips	5	58	0	5	46	0	0	4	4	0	5	7
GEOMETRY	L	TTT	R	LL	TT TR		L	T TR		LL	T TR	R

	Level of Service Calculations						
Move-	**Lanes**			**Volume**		**V/C Ratio**	
ment	Lane		Capacity	Buildout	Project	Cumulative	Project
NBL	1.0		1,600	80	85	0.05	0.05
NBT	3.0		4,800	1,890	1,948	0.39 *	0.41 *
NBR	1.0	(a)	1,600	520	520	0.33	0.33
SBL	2.0		3,200	170	175	0.05 *	0.05 *
SBT	3.0		4,800	1,250	1,296	0.27	0.28
SBR	0.0		0	25	25	0.00	0.00
EBL	1.0		1,600	30	30	0.05 *	0.05 *
EBT	2.0		3,200	130	134	0.07	0.07
EBR	0.0		0	40	44	0.00	0.00
WBL	2.0		3,200	420	420	0.13	0.13
WBT	3.0		4,800	245	250	0.17 *	0.18 *
WBR	0.0		0	590	597	0.00	0.00
N/S Critical Movements						0.44	0.46
E/W Critical Movements						0.22	0.23
Clearance Interval						0.00	0.00
ICU						0.66	0.69
Level of Service (LOS)						B	B

Notes: V/C - Volume to Capacity Ratio
(a) RTOR overlap w/WBL

INTERSECTION CAPACITY UTILIZATION

INTERSECTION NUMBER: 4
NORTH/SOUTH STREET: Victoria Ave
EAST/WEST STREET: Gonzales Rd
SCENARIO: Buildout Conditions
TIME PERIOD: PM Peak Hour
COUNT DATE: 04/21/2016
WORK ORDER #: 2064169300

VOLUMES	Northbound			Southbound			Eastbound			Westbound		
	L	T	R	L	T	R	L	T	R	L	T	R
PM Peak	60	1600	500	430	2040	35	40	250	110	470	140	410
Project Trips	5	55	0	7	61	0	0	5	5	0	5	7
GEOMETRY	L	TTT	R	LL	TT	R	L	T TR		LL	TT	R

	Level of Service Calculations					
	Lanes		**Volume**		**V/C Ratio**	
Move-ment	Lane	Capacity	Cumulative	Project	Cumulative	Project
NBL	1.0	1,600	60	65	0.05 *	0.05 *
NBT	3.0	4,800	1,600	1,655	0.33	0.34
NBR	1.0	1,600	265	265	0.17	0.17
SBL	2.0	3,200	430	437	0.13	0.14
SBT	2.0	3,200	2,040	2,101	0.64 *	0.66 *
SBR	1.0	1,600	35	35	0.02	0.02
EBL	1.0	1,600	40	40	0.05	0.05
EBT	2.0	3,200	250	255	0.11 *	0.12 *
EBR	0.0	0	110	115	0.00	0.00
WBL	2.0	3,200	470	470	0.15 *	0.15 *
WBT	2.0	3,200	140	145	0.07	0.07
WBR	1.0 (a)	1,600	195	199	0.12	0.12
N/S Critical Movements					0.69	0.71
E/W Critical Movements					0.26	0.27
Clearance Interval					0.00	0.00
ICU					0.95	0.98
Level of Service (LOS)					E	E

Notes: V/C - Volume to Capacity Ratio
(a) RTOR overlap w/WBL
(b) RTOR overlap w/SBL

INTERSECTION CAPACITY UTILIZATION

INTERSECTION NUMBER: 4
NORTH/SOUTH STREET: Victoria Ave
EAST/WEST STREET: Gonzales Rd
SCENARIO: Buildout Conditions
TIME PERIOD: PM Peak Hour
COUNT DATE: 04/21/2016
WORK ORDER #: 2064169300

GENERAL PLAN BUILDOUT
INTERSECTION GEOMETRY

VOLUMES	Northbound			Southbound			Eastbound			Westbound		
	L	T	R	L	T	R	L	T	R	L	T	R
PM Peak	60	1600	500	430	2040	35	40	250	110	470	140	410
Project Trips	5	55	0	7	61	0	0	5	5	0	5	7
GEOMETRY	L	TTT	R	LL	TT TR		L	T TR		LL	T TR	R

	Level of Service Calculations					
Move-	**Lanes**		**Volume**		**V/C Ratio**	
ment	Lane	Capacity	Buildout	Project	Buildout	Project
NBL	1.0	1,600	60	65	0.05 *	0.05 *
NBT	3.0	4,800	1,600	1,655	0.33	0.34
NBR	1.0	1,600	265	265	0.17	0.17
SBL	2.0	3,200	430	437	0.13	0.14
SBT	3.0	4,800	2,040	2,101	0.43 *	0.45 *
SBR	0.0	0	35	35	0.00	0.00
EBL	1.0	1,600	40	40	0.05	0.05
EBT	2.0	3,200	250	255	0.11 *	0.12 *
EBR	0.0	0	110	115	0.00	0.00
WBL	2.0	3,200	470	470	0.15 *	0.15 *
WBT	3.0	4,800	140	145	0.11	0.12
WBR	0.0	0	410	417	0.00	0.00
N/S Critical Movements					0.48	0.50
E/W Critical Movements					0.26	0.27
Clearance Interval					0.00	0.00
ICU					0.74	0.77
Level of Service (LOS)					C	C

Notes: V/C - Volume to Capacity Ratio
(a) RTOR overlap w/WBL

INTERSECTION CAPACITY UTILIZATION

INTERSECTION NUMBER: 5
NORTH/SOUTH STREET: Victoria Ave
EAST/WEST STREET: Doris Ave
SCENARIO: Buildout Conditions
TIME PERIOD: AM Peak Hour
COUNT DATE: 05/2018
WORK ORDER #: 2064169300

VOLUMES	Northbound			Southbound			Eastbound			Westbound		
	L	T	R	L	T	R	L	T	R	L	T	R
AM Peak	10	2330	110	130	1480	10	10	10	10	130	10	200
Project Trips	0	8	6	44	7	0	0	0	0	9	0	56
GEOMETRY	L	TT	TR	L	TT	TR	LTR			L	TR	

	Level of Service Calculations					
Move-	**Lanes**		**Volume**		**V/C Ratio**	
ment	Lane	Capacity	Buildout	Project	Buildout	Project
NBL	1.0	1,600	10	10	0.01	0.01
NBT	3.0	4,800	2,330	2,338	0.51 *	0.51 *
NBR	0.0	0	110	116	0.00	0.00
SBL	1.0	1,600	130	174	0.08 *	0.11 *
SBT	3.0	4,800	1,480	1,487	0.31	0.31
SBR	0.0	0	10	10	0.00	0.00
EBL	0.0	0	10	10	0.00	0.00
EBT	1.0	1,600	10	10	0.05 *	0.05 *
EBR	0.0	0	10	10	0.00	0.00
WBL	1.0	1,600	130	139	0.08 *	0.09 *
WBT	1.0 (a)	1,600	10	10	0.13	0.17
WBR	0.0	0	200	256	0.00	0.00
N/S Critical Movements					0.59	0.62
E/W Critical Movements					0.13	0.14
Clearance Interval					0.00	0.00
ICU					0.72	0.76
Level of Service (LOS)					C	C

Notes: V/C - Volume to Capacity Ratio
(a) not critical due to RTOR

INTERSECTION CAPACITY UTILIZATION

INTERSECTION NUMBER: 5
NORTH/SOUTH STREET: Victoria Ave
EAST/WEST STREET: Doris Ave
SCENARIO: Buildout Conditions
TIME PERIOD: PM Peak Hour
COUNT DATE: 04/21/2016
WORK ORDER #: 2064169300

VOLUMES	Northbound			Southbound			Eastbound			Westbound		
	L	T	R	L	T	R	L	T	R	L	T	R
PM Peak	0	2070	180	180	2340	0	10	20	10	110	0	110
Project Trips	0	8	8	59	9	0	0	0	0	9	0	53
GEOMETRY	L	TT	TR	L	TT	TR	LTR			L	TR	

	Level of Service Calculations					
Move-	**Lanes**		**Volume**		**V/C Ratio**	
ment	Lane	Capacity	Buildout	Project	Buildout	Project
NBL	1.0	1,600	0	0	0.05	0.05
NBT	3.0	4,800	2,070	2,078	0.47 *	0.47 *
NBR	0.0	0	180	188	0.00	0.00
SBL	1.0	1,600	180	239	0.11 *	0.15 *
SBT	3.0	4,800	2,340	2,349	0.49	0.49
SBR	0.0	0	0	0	0.00	0.00
EBL	0.0	0	10	10	0.00	0.00
EBT	1.0	1,600	20	20	0.05 *	0.05 *
EBR	0.0	0	10	10	0.00	0.00
WBL	1.0	1,600	110	119	0.07 *	0.07 *
WBT	1.0 (a)	1,600	0	0	0.07	0.10
WBR	0.0	0	110	163	0.00	0.00
N/S Critical Movements					0.58	0.62
E/W Critical Movements					0.12	0.12
Clearance Interval					0.00	0.00
ICU					0.70	0.74
Level of Service (LOS)					B	C

Notes: V/C - Volume to Capacity Ratio
(a) not critical due to RTOR

HCS7 Two-Way Stop-Control Report

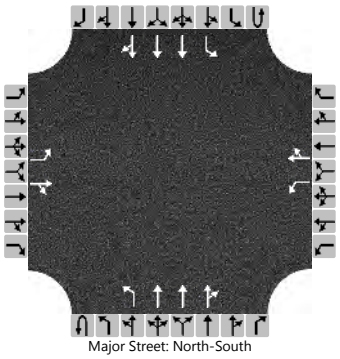
General Information

Analyst	06. DJL
Agency/Co.	STANTEC
Date Performed	7/3/2018
Analysis Year	BO
Time Analyzed	AM PEAK HOUR
Intersection Orientation	North-South
Project Description	TEAL CLUB SP

Site Information

Intersection	VICTORIA AVE/TEAL CLUB RD
Jurisdiction	OXNARD
East/West Street	TEAL CLUB RD
North/South Street	VICTORIA AVE
Peak Hour Factor	1.00
Analysis Time Period (hrs)	1.00

Lanes


Major Street: North-South

Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority		10	11	12		7	8	9	1U	1	2	3	4U	4	5	6
Number of Lanes		1	1	0		1	1	0	0	1	3	0	0	1	3	0
Configuration		L		TR		L		TR		L	T	TR		L	T	TR
Volume (veh/h)		0	0	10		100	10	110	0	10	2330	175	0	40	1520	10
Percent Heavy Vehicles (%)		3	3	3		3	3	3	3	3			3	3		
Proportion Time Blocked																
Percent Grade (%)	0				0											
Right Turn Channelized																
Median Type | Storage	Undivided															

Critical and Follow-up Headways

Base Critical Headway (sec)		6.4	6.5	7.1		6.4	6.5	7.1		5.3				5.3		
Critical Headway (sec)		6.46	6.56	7.16		6.46	6.56	7.16		5.36				5.36		
Base Follow-Up Headway (sec)		3.8	4.0	3.9		3.8	4.0	3.9		3.1				3.1		
Follow-Up Headway (sec)		3.83	4.03	3.93		3.83	4.03	3.93		3.13				3.13		

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)		0		10		100		120		10				40		
Capacity, c (veh/h)		0		295		6		11		213				68		
v/c Ratio				0.03		16.95		10.77		0.05				0.59		
95% Queue Length, Q_{95} (veh)				0.1		50.0		57.6		0.1				3.5		
Control Delay (s/veh)				17.6		29951.3		18269.1		22.7				127.9		
Level of Service (LOS)				C		F		F		C				F		
Approach Delay (s/veh)					23579.2				0.1				3.3			
Approach LOS					F											

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HCS7 Two-Way Stop-Control Report

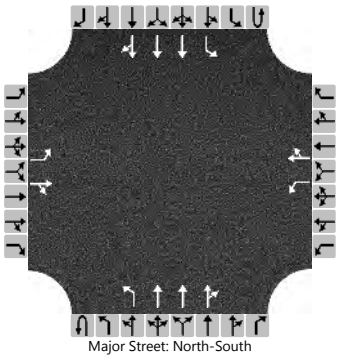
General Information

Analyst	06. DJL
Agency/Co.	STANTEC
Date Performed	7/3/2018
Analysis Year	BOPR
Time Analyzed	AM PEAK HOUR
Intersection Orientation	North-South
Project Description	TEAL CLUB SP

Site Information

Intersection	VICTORIA AVE/TEAL CLUB RD
Jurisdiction	OXNARD
East/West Street	TEAL CLUB RD
North/South Street	VICTORIA AVE
Peak Hour Factor	1.00
Analysis Time Period (hrs)	1.00

Lanes


Major Street: North-South

Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority		10	11	12		7	8	9	1U	1	2	3	4U	4	5	6
Number of Lanes		1	1	0		1	1	0	0	1	3	0	0	1	3	0
Configuration		L		TR		L		TR		L	T	TR		L	T	TR
Volume (veh/h)		0	0	10		136	10	118	0	10	2336	204	0	47	1529	10
Percent Heavy Vehicles (%)		3	3	3		3	3	3	3	3			3	3		
Proportion Time Blocked																
Percent Grade (%)	0				0											
Right Turn Channelized																
Median Type | Storage	Undivided															

Critical and Follow-up Headways

Base Critical Headway (sec)		6.4	6.5	7.1		6.4	6.5	7.1		5.3				5.3		
Critical Headway (sec)		6.46	6.56	7.16		6.46	6.56	7.16		5.36				5.36		
Base Follow-Up Headway (sec)		3.8	4.0	3.9		3.8	4.0	3.9		3.1				3.1		
Follow-Up Headway (sec)		3.83	4.03	3.93		3.83	4.03	3.93		3.13				3.13		

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)		0		10		136		128		10				47		
Capacity, c (veh/h)		0		293		4		8		211				65		
v/c Ratio				0.03		31.46		16.71		0.05				0.72		
95% Queue Length, Q_{95} (veh)				0.1		68.8		63.2		0.1				5.0		
Control Delay (s/veh)				17.7		56510.9		29249.0		22.9				177.4		
Level of Service (LOS)				C		F		F		C				F		
Approach Delay (s/veh)					43293.0				0.1				5.3			
Approach LOS					F											

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INTERSECTION CAPACITY UTILIZATION

INTERSECTION NUMBER: 6
NORTH/SOUTH STREET: Victoria Ave
EAST/WEST STREET: Teal Club Rd
SCENARIO: Buildout Conditions
TIME PERIOD: AM Peak Hour
COUNT DATE: 05/2018
WORK ORDER #: 2064169300

VOLUMES	Northbound			Southbound			Eastbound			Westbound		
	L	T	R	L	T	R	L	T	R	L	T	R
AM Peak	10	2330	175	40	1520	10	0	0	5	100	10	110
Project Trips	0	6	29	7	9	0	0	0	0	36	0	8
GEOMETRY	L	TT	TR	L	TT	TR	L	TR		L	TR	

	Level of Service Calculations					
Move-	**Lanes**		**Volume**		**V/C Ratio**	
ment	Lane	Capacity	Existing	Project	Existing	Ex+Project
NBL	1.0	1,600	10	10	0.05	0.05
NBT	3.0	4,800	2,330	2,336	0.52 *	0.53 *
NBR	0.0	0	175	204	0.00	0.00
SBL	1.0	1,600	40	47	0.05 *	0.05 *
SBT	3.0	4,800	1,520	1,529	0.32	0.32
SBR	0.0	0	10	10	0.00	0.00
EBL	1.0	1,600	0	0	0.00	0.00
EBT	1.0	1,600	0	0	0.00	0.00 *
EBR	0.0	0	5	5	0.00	0.00
WBL	1.0	1,600	100	136	0.06	0.09 *
WBT	1.0	1,600	10	10	0.07 *	0.07
WBR	0.0	0	110	118	0.00	0.00
N/S Critical Movements					0.57	0.58
E/W Critical Movements					0.07	0.09
Clearance Interval					0.00	0.00
ICU					0.64	0.67
Level of Service (LOS)					B	B

Notes: V/C - Volume to Capacity Ratio

HCS7 Two-Way Stop-Control Report

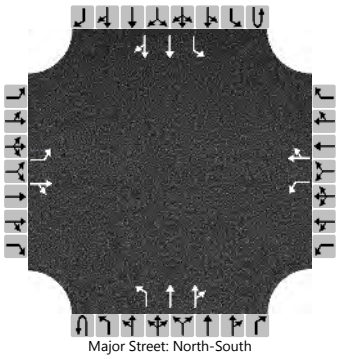
General Information

Analyst	06. DJL
Agency/Co.	STANTEC
Date Performed	7/3/2018
Analysis Year	BO
Time Analyzed	PM PEAK HOUR
Intersection Orientation	North-South
Project Description	TEAL CLUB SP

Site Information

Intersection	VICTORIA AVE/TEAL CLUB RD
Jurisdiction	OXNARD
East/West Street	TEAL CLUB RD
North/South Street	VICTORIA AVE
Peak Hour Factor	1.00
Analysis Time Period (hrs)	1.00

Lanes



Major Street: North-South

Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority		10	11	12		7	8	9	1U	1	2	3	4U	4	5	6
Number of Lanes		1	1	0		1	1	0	0	1	2	0	0	1	2	0
Configuration		L		TR		L		TR		L	T	TR		L	T	TR
Volume (veh/h)		10	10	40		50	0	60	0	10	2190	80	0	60	2480	10
Percent Heavy Vehicles (%)		3	3	3		3	3	3	3	3			3	3		
Proportion Time Blocked																
Percent Grade (%)	0				0											
Right Turn Channelized																
Median Type | Storage	Undivided															

Critical and Follow-up Headways

Base Critical Headway (sec)		7.5	6.5	6.9		7.5	6.5	6.9		4.1				4.1		
Critical Headway (sec)		7.56	6.56	6.96		7.56	6.56	6.96		4.16				4.16		
Base Follow-Up Headway (sec)		3.5	4.0	3.3		3.5	4.0	3.3		2.2				2.2		
Follow-Up Headway (sec)		3.53	4.03	3.33		3.53	4.03	3.33		2.23				2.23		

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)		10		50		50		60		10				60		
Capacity, c (veh/h)		1		2		0		195		178				218		
v/c Ratio		12.38		22.47				0.31		0.06				0.27		
95% Queue Length, Q_{95} (veh)		6.8		26.7				1.3		0.2				1.1		
Control Delay (s/veh)		28986.2		41900.8				31.7		26.4				27.7		
Level of Service (LOS)		F		F				D		D				D		
Approach Delay (s/veh)	39748.3								0.1				0.7			
Approach LOS	F															

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HCS7 Two-Way Stop-Control Report

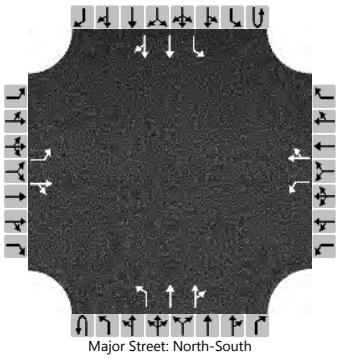
General Information

Analyst	06. DJL
Agency/Co.	STANTEC
Date Performed	7/3/2018
Analysis Year	BO
Time Analyzed	PM PEAK HOUR
Intersection Orientation	North-South
Project Description	TEAL CLUB SP

Site Information

Intersection	VICTORIA AVE/TEAL CLUB RD
Jurisdiction	OXNARD
East/West Street	TEAL CLUB RD
North/South Street	VICTORIA AVE
Peak Hour Factor	1.00
Analysis Time Period (hrs)	1.00

Lanes



Major Street: North-South

Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority		10	11	12		7	8	9	1U	1	2	3	4U	4	5	6
Number of Lanes		1	1	0		1	1	0	0	1	2	0	0	1	2	0
Configuration		L		TR		L		TR		L	T	TR		L	T	TR
Volume (veh/h)		10	10	40		50	0	60	0	10	2190	80	0	60	2480	10
Percent Heavy Vehicles (%)		3	3	3		3	3	3	3	3			3	3		
Proportion Time Blocked																
Percent Grade (%)	0				0											
Right Turn Channelized																
Median Type | Storage	Undivided															

Critical and Follow-up Headways

Base Critical Headway (sec)		7.5	6.5	6.9		7.5	6.5	6.9		4.1				4.1		
Critical Headway (sec)		7.56	6.56	6.96		7.56	6.56	6.96		4.16				4.16		
Base Follow-Up Headway (sec)		3.5	4.0	3.3		3.5	4.0	3.3		2.2				2.2		
Follow-Up Headway (sec)		3.53	4.03	3.33		3.53	4.03	3.33		2.23				2.23		

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)		10		50		50		60		10				60		
Capacity, c (veh/h)		1		2		0		195		178				218		
v/c Ratio		12.38		22.47				0.31		0.06				0.27		
95% Queue Length, Q_{95} (veh)		6.8		26.7				1.3		0.2				1.1		
Control Delay (s/veh)		28986.2		41900.8				31.7		26.4				27.7		
Level of Service (LOS)		F		F				D		D				D		
Approach Delay (s/veh)	39748.3								0.1				0.7			
Approach LOS	F															

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INTERSECTION CAPACITY UTILIZATION

INTERSECTION NUMBER: 6 **Mitigated**
NORTH/SOUTH STREET: Victoria Ave
EAST/WEST STREET: Teal Club Rd
SCENARIO: Cumulative Conditions
TIME PERIOD: PM Peak Hour
COUNT DATE: 05/2018
WORK ORDER #: 2064169300

VOLUMES	Northbound			Southbound			Eastbound			Westbound		
	L	T	R	L	T	R	L	T	R	L	T	R
AM Peak	5	2190	80	60	2480	10	5	5	40	50	0	60
Project Trips	0	8	39	9	9	0	0	0	0	34	0	8
GEOMETRY	L	TT	TR	L	TT	TR	L	TR		L	TR	

	Level of Service Calculations					
Move-	**Lanes**		**Volume**		**V/C Ratio**	
ment	Lane	Capacity	Existing	Project	Existing	Ex+Project
NBL	1.0	1,600	5	5	0.05 *	0.05 *
NBT	3.0	4,800	2,190	2,198	0.47	0.48
NBR	0.0	0	80	119	0.00	0.00
SBL	1.0	1,600	60	69	0.05	0.05
SBT	3.0	4,800	2,480	2,489	0.52 *	0.52 *
SBR	0.0	0	10	10	0.00	0.00
EBL	1.0	1,600	5	5	0.00	0.00
EBT	1.0	1,600	5	5	0.07 *	0.07 *
EBR	0.0	0	40	40	0.00	0.00
WBL	1.0	1,600	50	84	0.05	0.05
WBT	1.0	1,600	0	0	0.07 *	0.07 *
WBR	0.0	0	60	68	0.00	0.00
N/S Critical Movements					0.57	0.57
E/W Critical Movements					0.14	0.14
Clearance Interval					0.00	0.00
ICU					0.71	0.71
Level of Service (LOS)					C	C

Notes: V/C - Volume to Capacity Ratio

INTERSECTION CAPACITY UTILIZATION

INTERSECTION NUMBER: 7
NORTH/SOUTH STREET: Victoria Ave
EAST/WEST STREET: 5th St
SCENARIO: Buildout Conditions
TIME PERIOD: AM Peak Hour
COUNT DATE: 05/2018
WORK ORDER #: 2064169300

VOLUMES	Northbound			Southbound			Eastbound			Westbound		
	L	T	R	L	T	R	L	T	R	L	T	R
AM Peak	79	1668	160	246	1066	45	77	109	8	121	150	412
Project Trips	0	36	0	4	35	6	5	0	0	0	0	3
GEOMETRY	LL	TTT	R	LL	TTT	R	L	T TR		LL	T TR	R

	Level of Service Calculations					
Move-	**Lanes**		**Volume**		**V/C Ratio**	
ment	Lane	Capacity	Buildout	Project	Buildout	Project
NBL	2.0	3,200	79	79	0.05	0.05
NBT	3.0	4,800	1,668	1,704	0.35 *	0.36 *
NBR	1.0	1,600	160	160	0.10	0.10
SBL	2.0	3,200	246	250	0.08 *	0.08 *
SBT	3.0	4,800	1,066	1,101	0.22	0.23
SBR	1.0	1,600	45	51	0.03	0.03
EBL	1.0	1,600	77	82	0.05 *	0.05 *
EBT	2.0	3,200	109	109	0.07	0.07
EBR	0.0	0	8	8	0.00	0.00
WBL	2.0	3,200	121	121	0.05	0.05
WBT	3.0	4,800	150	150	0.09 *	0.09 *
WBR	0.0 (a)	0	289	290	0.00	0.00
N/S Critical Movements					0.43	0.44
E/W Critical Movements					0.14	0.14
Clearance Interval					0.00	0.00
ICU					0.57	0.58
Level of Service (LOS)					A	A

Notes: V/C - Volume to Capacity Ratio

(a) RTOR overlap w/SB LT

INTERSECTION CAPACITY UTILIZATION

INTERSECTION NUMBER: 7
NORTH/SOUTH STREET: Victoria Ave
EAST/WEST STREET: 5th St
SCENARIO: Buildout Conditions
TIME PERIOD: PM Peak Hour
COUNT DATE: 05/2018
WORK ORDER #: 2064169300

VOLUMES	Northbound			Southbound			Eastbound			Westbound		
	L	T	R	L	T	R	L	T	R	L	T	R
PM Peak	89	1384	160	347	1636	62	78	243	84	251	152	275
Project Trips	0	36	0	4	33	6	6	0	0	0	0	4
GEOMETRY	LL	TTT	R	LL	TTT	R	L	T TR		LL	T TR	R

	Level of Service Calculations					
Move-	**Lanes**		**Volume**		**V/C Ratio**	
ment	Lane	Capacity	Buildout	Project	Buildout	Project
NBL	2.0	3,200	89	89	0.05	0.05
NBT	3.0	4,800	1,384	1,420	0.29 *	0.30 *
NBR	1.0	1,600	160	160	0.10	0.10
SBL	2.0	3,200	347	351	0.11 *	0.11 *
SBT	3.0	4,800	1,636	1,669	0.34	0.35
SBR	1.0	1,600	62	68	0.00	0.00
EBL	1.0	1,600	78	84	0.05	0.05
EBT	2.0	3,200	243	243	0.10 *	0.10 *
EBR	0.0	0	84	84	0.00	0.00
WBL	2.0	3,200	251	251	0.08 *	0.08 *
WBT	3.0	4,800	152	152	0.07 *	0.07
WBR	0.0 (a)	0	102	104	0.00	0.00
N/S Critical Movements					0.40	0.41
E/W Critical Movements					0.18	0.18
Clearance Interval					0.00	0.00
ICU					0.58	0.59
Level of Service (LOS)					A	A

Notes: V/C - Volume to Capacity Ratio

(a) RTOR overlap w/SB LT

INTERSECTION CAPACITY UTILIZATION

INTERSECTION NUMBER: 8
NORTH/SOUTH STREET: Victoria Ave
EAST/WEST STREET: Wooley Rd
SCENARIO: Buildout Conditions
TIME PERIOD: AM Peak Hour
COUNT DATE: 05/2018
WORK ORDER #: 2064169300

VOLUMES	Northbound			Southbound			Eastbound			Westbound		
	L	T	R	L	T	R	L	T	R	L	T	R
AM Peak	90	1250	80	165	870	170	150	140	60	100	210	430
Project Trips	0	15	0	6	20	8	7	0	0	0	0	5
GEOMETRY	L	TT	TR	L	TTT	R	L	TT	R	L	TT	R

	Level of Service Calculations					
Move-	**Lanes**		**Volume**		**V/C Ratio**	
ment	Lane	Capacity	Buildout	Project	Buildout	Project
NBL	1.0	1,600	90	90	0.06	0.06
NBT	3.0	4,800	1,250	1,265	0.28 *	0.28 *
NBR	0.0	0	80	80	0.00	0.00
SBL	1.0	1,600	165	171	0.10 *	0.11 *
SBT	3.0	4,800	870	890	0.18	0.19
SBR	1.0	1,600	170	178	0.11	0.11
EBL	1.0	1,600	150	157	0.09 *	0.10 *
EBT	2.0	3,200	140	140	0.07	0.07
EBR	1.0	1,600	60	60	0.04	0.04
WBL	1.0	1,600	100	100	0.06	0.06
WBT	2.0	3,200	210	210	0.07	0.07
WBR	1.0 (a)	1,600	265	264	0.17 *	0.17 *
N/S Critical Movements					0.38	0.39
E/W Critical Movements					0.26	0.27
Clearance Interval					0.00	0.00
ICU					0.64	0.66
Level of Service (LOS)					B	B

Notes: V/C - Volume to Capacity Ratio

(a) RTOR overlap w/SBL

INTERSECTION CAPACITY UTILIZATION

INTERSECTION NUMBER: 8
NORTH/SOUTH STREET: Victoria Ave
EAST/WEST STREET: Wooley Rd
SCENARIO: Buildout Conditions
TIME PERIOD: PM Peak Hour
COUNT DATE: 05/2018
WORK ORDER #: 2064169300

VOLUMES	Northbound			Southbound			Eastbound			Westbound		
	L	T	R	L	T	R	L	T	R	L	T	R
PM Peak	160	1200	110	260	1430	190	180	310	170	230	210	270
Project Trips	0	20	0	6	19	8	9	0	0	0	0	6
GEOMETRY	L	TT	TR	L	TTT	R	L	TT	R	L	TT	R

	Level of Service Calculations					
Move-	**Lanes**		**Volume**		**V/C Ratio**	
ment	Lane	Capacity	Buildout	Project	Buildout	Project
NBL	1.0	1,600	160	160	0.10	0.10
NBT	3.0	4,800	1,200	1,220	0.27 *	0.28 *
NBR	0.0	0	110	110	0.00	0.00
SBL	1.0	1,600	260	266	0.16 *	0.17 *
SBT	3.0	4,800	1,430	1,449	0.30	0.30
SBR	1.0	1,600	190	198	0.12	0.12
EBL	1.0	1,600	180	189	0.11	0.12
EBT	2.0	3,200	310	310	0.10 *	0.10 *
EBR	1.0	1,600	170	170	0.11	0.11
WBL	1.0	1,600	230	230	0.14 *	0.14 *
WBT	2.0	3,200	210	210	0.07	0.07
WBR	1.0 (a)	1,600	108	110	0.07	0.07
N/S Critical Movements					0.43	0.45
E/W Critical Movements					0.24	0.24
Clearance Interval					0.00	0.00
ICU					0.67	0.69
Level of Service (LOS)					B	B

Notes: V/C - Volume to Capacity Ratio

(a) RTOR overlap w/SBL

INTERSECTION CAPACITY UTILIZATION

INTERSECTION NUMBER: 9
NORTH/SOUTH STREET: Patterson Rd
EAST/WEST STREET: Gonzales Rd
SCENARIO: Buildout Conditions
TIME PERIOD: AM Peak Hour
COUNT DATE: 05/2018
WORK ORDER #: 2064169300

VOLUMES	Northbound			Southbound			Eastbound			Westbound		
	L	T	R	L	T	R	L	T	R	L	T	R
AM Peak	220	170	270	250	180	220	140	990	280	160	660	250
Project Trips	12	5	5	0	4	0	0	0	9	4	0	0
GEOMETRY	L	T	R	L	T	R	L	TT	R	L	TT	R

	Level of Service Calculations					
Move-	**Lanes**		**Volume**		**V/C Ratio**	
ment	Lane	Capacity	Buildout	Project	Buildout	Project
NBL	1.0	1,600	220	232	0.14	0.15 *
NBT	1.0	1,600	170	175	0.11 *	0.11
NBR	1.0 (a)	1,600	110	111	0.07	0.07
SBL	1.0	1,600	250	250	0.16 *	0.16
SBT	1.0	1,600	180	184	0.11	0.12 *
SBR	1.0	1,600	220	220	0.14	0.14
EBL	1.0	1,600	140	140	0.05	0.05
EBT	2.0	3,200	990	990	0.31 *	0.31 *
EBR	1.0	1,600	280	289	0.18	0.18
WBL	1.0	1,600	160	164	0.10 *	0.10 *
WBT	2.0	3,200	660	660	0.21	0.21
WBR	1.0	1,600	0	0	0.00	0.00
N/S Critical Movements					0.27	0.27
E/W Critical Movements					0.41	0.41
Clearance Interval					0.00	0.00
ICU					0.68	0.68
Level of Service (LOS)					B	B

Notes: V/C - Volume to Capacity Ratio

(a) RTOR overlap w/WBL

INTERSECTION CAPACITY UTILIZATION

INTERSECTION NUMBER: 9
NORTH/SOUTH STREET: Patterson Rd
EAST/WEST STREET: Gonzales Rd
SCENARIO: Buildout Conditions
TIME PERIOD: PM Peak Hour
COUNT DATE: 05/2018
WORK ORDER #: 2064169300

VOLUMES	Northbound			Southbound			Eastbound			Westbound		
	L	T	R	L	T	R	L	T	R	L	T	R
PM Peak	130	100	200	140	90	320	170	750	150	190	800	150
Project Trips	12	5	5	0	5	0	0	0	12	5	0	0
GEOMETRY	L	T	R	L	T	R	L	TT	R	L	TT	R

	Level of Service Calculations					
Move-	**Lanes**		**Volume**		**V/C Ratio**	
ment	Lane	Capacity	Buildout	Project	Buildout	Project
NBL	1.0	1,600	130	142	0.08	0.09 *
NBT	1.0	1,600	100	105	0.07 *	0.07
NBR	1.0 (a)	1,600	10	10	0.01	0.01
SBL	1.0	1,600	140	140	0.09 *	0.09
SBT	1.0	1,600	90	95	0.07	0.07 *
SBR	1.0	1,600	320	320	0.20	0.20
EBL	1.0	1,600	170	170	0.11 *	0.11 *
EBT	2.0	3,200	750	750	0.23	0.23
EBR	1.0	1,600	150	162	0.09	0.10
WBL	1.0	1,600	190	195	0.12	0.12
WBT	2.0	3,200	800	800	0.25 *	0.25 *
WBR	1.0	1,600	10	10	0.01	0.01
N/S Critical Movements					0.16	0.16
E/W Critical Movements					0.36	0.36
Clearance Interval					0.00	0.00
ICU					0.52	0.52
Level of Service (LOS)					A	A

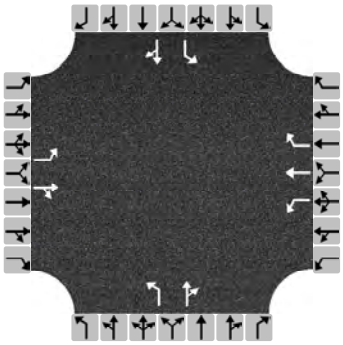
Notes: V/C - Volume to Capacity Ratio

(a) RTOR overlap w/WBL

HCS7 All-Way Stop Control Report

General Information		Site Information	
Analyst	10. DJL	Intersection	PATTERSON RD/DORIS ST
Agency/Co.	STANTEC	Jurisdiction	OXNARD
Date Performed	6/5/2018	East/West Street	DORIS ST
Analysis Year	BO	North/South Street	PATTERSON RD
Analysis Time Period (hrs)	1.00	Peak Hour Factor	1.00
Time Analyzed	AM PEAK HOUR		
Project Description	TEAL CLUB SP		

Lanes



Vehicle Volume and Adjustments

Approach	Eastbound			Westbound			Northbound			Southbound		
Movement	L	T	R	L	T	R	L	T	R	L	T	R
Volume	60	230	60	180	310	260	20	88	110	300	130	80
% Thrus in Shared Lane												
Lane	L1	L2	L3	L1	L2	L3	L1	L2	L3	L1	L2	L3
Configuration	L	TR		L	T	R	L	TR		L	TR	
Flow Rate, v (veh/h)	60	290		180	310	260	20	198		300	210	
Percent Heavy Vehicles	2	2		2	2	2	2	2		2	2	

Departure Headway and Service Time

Initial Departure Headway, hd (s)	3.20	3.20		3.20	3.20	3.20	3.20	3.20		3.20	3.20	
Initial Degree of Utilization, x	0.053	0.258		0.160	0.276	0.231	0.018	0.176		0.267	0.187	
Final Departure Headway, hd (s)	11.31	10.64		10.31	9.79	9.06	11.88	10.95		10.72	9.93	
Final Degree of Utilization, x	0.189	0.857		0.516	0.843	0.654	0.066	0.602		0.894	0.579	
Move-Up Time, m (s)	2.3	2.3		2.3	2.3	2.3	2.3	2.3		2.3	2.3	
Service Time, ts (s)	9.01	8.34		8.01	7.49	6.76	9.58	8.65		8.42	7.63	

Capacity, Delay and Level of Service

Flow Rate, v (veh/h)	60	290		180	310	260	20	198		300	210	
Capacity	318	338		349	368	397	303	329		336	363	
95% Queue Length, Q_{95} (veh)	0.7	12.0		3.1	11.5	5.3	0.2	4.3		14.1	3.9	
Control Delay (s/veh)	16.6	66.2		23.9	57.8	28.5	15.4	29.9		80.2	26.0	
Level of Service, LOS	C	F		C	F	D	C	D		F	D	
Approach Delay (s/veh)	57.7			39.5			28.5			57.9		
Approach LOS	F			E			D			F		
Intersection Delay, s/veh | LOS	46.8						E					

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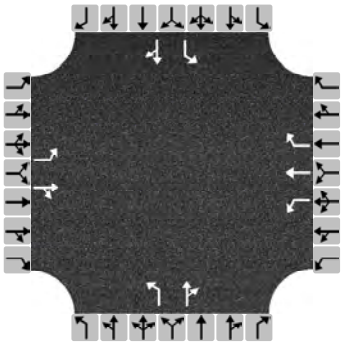
HCS7 All-Way Stop Control Report

General Information		Site Information	
Analyst	10. DJL	Intersection	PATTERSON RD/DORIS ST
Agency/Co.	STANTEC	Jurisdiction	OXNARD
Date Performed	6/5/2018	East/West Street	DORIS ST
Analysis Year	BOPR	North/South Street	PATTERSON RD
Analysis Time Period (hrs)	1.00	Peak Hour Factor	1.00
Time Analyzed	AM PEAK HOUR		
Project Description	TEAL CLUB SP		

Lanes



Vehicle Volume and Adjustments

Approach	Eastbound			Westbound			Northbound			Southbound		
Movement	L	T	R	L	T	R	L	T	R	L	T	R
Volume	60	271	69	186	355	274	30	888	115	311	136	80
% Thrus in Shared Lane												
Lane	L1	L2	L3	L1	L2	L3	L1	L2	L3	L1	L2	L3
Configuration	L	TR		L	T	R	L	TR		L	TR	
Flow Rate, v (veh/h)	60	340		186	355	274	30	1003		311	216	
Percent Heavy Vehicles	2	2		2	2	2	2	2		2	2	

Departure Headway and Service Time

Initial Departure Headway, hd (s)	3.20	3.20		3.20	3.20	3.20	3.20	3.20		3.20	3.20	
Initial Degree of Utilization, x	0.053	0.302		0.165	0.316	0.244	0.027	0.892		0.276	0.192	
Final Departure Headway, hd (s)	12.46	11.82		11.44	10.94	10.24	12.55	11.98		11.95	11.20	
Final Degree of Utilization, x	0.208	1.116		0.591	1.079	0.779	0.105	3.337		1.033	0.672	
Move-Up Time, m (s)	2.3	2.3		2.3	2.3	2.3	2.3	2.3		2.3	2.3	
Service Time, ts (s)	10.16	9.52		9.14	8.64	7.94	10.25	9.68		9.65	8.90	

Capacity, Delay and Level of Service

Flow Rate, v (veh/h)	60	340		186	355	274	30	1003		311	216	
Capacity	289	305		315	329	352	287	301		301	321	
95% Queue Length, Q_{95} (veh)	0.8	33.1		4.1	30.4	8.7	0.3	355.4		24.2	5.6	
Control Delay (s/veh)	18.4	305.2		30.3	246.4	46.3	16.7	4238.1		196.1	36.0	
Level of Service, LOS	C	F		D	F	E	C	F		F	E	
Approach Delay (s/veh)	262.2			129.8			4115.5			130.5		
Approach LOS	F			F			F			F		
Intersection Delay, s/veh | LOS	1632.7						F					

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INTERSECTION CAPACITY UTILIZATION

INTERSECTION NUMBER: 10 **MITIGATED**
NORTH/SOUTH STREET: Patterson Rd
EAST/WEST STREET: Doris Avenue
SCENARIO: Buildout Conditions
TIME PERIOD: PM Peak Hour
COUNT DATE: 05/2018
WORK ORDER #: 2064169300

VOLUMES	Northbound			Southbound			Eastbound			Westbound		
	L	T	R	L	T	R	L	T	R	L	T	R
PM Peak	10	70	40	100	60	40	60	420	10	60	180	150
Project Trips	10	8	6	14	8	0	0	55	12	6	43	14
GEOMETRY	L	TR		L	TR		L	TR		L	TR	

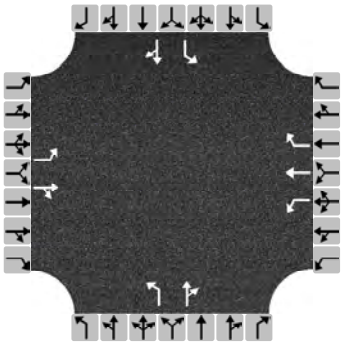
	Level of Service Calculations					
Move-	**Lanes**		**Volume**		**V/C Ratio**	
ment	Lane	Capacity	Cumulative	Project	Cumulative	Project
NBL	1.0	1,600	10	20	0.05	0.05
NBT	1.0	1,600	70	78	0.07 *	0.08 *
NBR	0.0	0	40	46	0.00	0.00
SBL	1.0	1,600	100	114	0.06 *	0.07 *
SBT	1.0	1,600	60	68	0.07	0.07
SBR	0.0	0	40	40	0.00	0.00
EBL	1.0	1,600	60	60	0.05	0.05
EBT	1.0	1,600	420	475	0.27 *	0.31 *
EBR	0.0	0	10	22	0.00	0.00
WBL	1.0	1,600	60	66	0.05 *	0.05 *
WBT	1.0	1,600	180	223	0.21	0.24
WBR	0.0	0	150	164	0.00	0.00
N/S Critical Movements					0.13	0.15
E/W Critical Movements					0.32	0.36
Clearance Interval					0.00	0.00
ICU					0.45	0.51
Level of Service (LOS)					A	A

Notes: V/C - Volume to Capacity Ratio

HCS7 All-Way Stop Control Report

General Information		Site Information	
Analyst	10. DJL	Intersection	PATTERSON RD/DORIS ST
Agency/Co.	STANTEC	Jurisdiction	OXNARD
Date Performed	6/5/2018	East/West Street	DORIS ST
Analysis Year	BO	North/South Street	PATTERSON RD
Analysis Time Period (hrs)	1.00	Peak Hour Factor	1.00
Time Analyzed	AM PEAK HOUR		
Project Description	TEAL CLUB SP		

Lanes



Vehicle Volume and Adjustments

Approach	Eastbound			Westbound			Northbound			Southbound		
Movement	L	T	R	L	T	R	L	T	R	L	T	R
Volume	60	420	20	60	180	150	10	70	40	100	60	40
% Thrus in Shared Lane												
Lane	L1	L2	L3	L1	L2	L3	L1	L2	L3	L1	L2	L3
Configuration	L	TR		L	T	R	L	TR		L	TR	
Flow Rate, v (veh/h)	60	440		60	180	150	10	110		100	100	
Percent Heavy Vehicles	2	2		2	2	2	2	2		2	2	

Departure Headway and Service Time

Initial Departure Headway, hd (s)	3.20	3.20		3.20	3.20	3.20	3.20	3.20		3.20	3.20	
Initial Degree of Utilization, x	0.053	0.391		0.053	0.160	0.133	0.009	0.098		0.089	0.089	
Final Departure Headway, hd (s)	7.52	6.98		7.90	7.39	6.68	8.80	8.03		8.51	7.71	
Final Degree of Utilization, x	0.125	0.853		0.132	0.370	0.278	0.024	0.245		0.236	0.214	
Move-Up Time, m (s)	2.3	2.3		2.3	2.3	2.3	2.3	2.3		2.3	2.3	
Service Time, ts (s)	5.22	4.68		5.60	5.09	4.38	6.50	5.73		6.21	5.41	

Capacity, Delay and Level of Service

Flow Rate, v (veh/h)	60	440		60	180	150	10	110		100	100	
Capacity	479	516		456	487	539	409	448		423	467	
95% Queue Length, Q_{95} (veh)	0.4	13.0		0.5	1.7	1.1	0.1	1.0		0.9	0.8	
Control Delay (s/veh)	11.3	45.3		11.8	14.4	11.9	11.7	13.3		13.8	12.5	
Level of Service, LOS	B	E		B	B	B	B	B		B	B	
Approach Delay (s/veh)	41.2			13.1			13.2			13.2		
Approach LOS	E			B			B			B		
Intersection Delay, s/veh | LOS	24.7						C					

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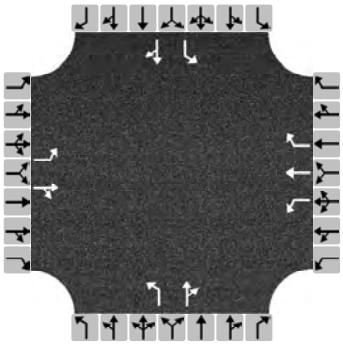
HCS7 All-Way Stop Control Report

General Information		Site Information	
Analyst	10. DJL	Intersection	PATTERSON RD/DORIS ST
Agency/Co.	STANTEC	Jurisdiction	OXNARD
Date Performed	6/5/2018	East/West Street	DORIS ST
Analysis Year	BOPR	North/South Street	PATTERSON RD
Analysis Time Period (hrs)	1.00	Peak Hour Factor	1.00
Time Analyzed	AM PEAK HOUR		
Project Description	TEAL CLUB SP		

Lanes



Vehicle Volume and Adjustments

Approach	Eastbound			Westbound			Northbound			Southbound		
Movement	L	T	R	L	T	R	L	T	R	L	T	R
Volume	60	475	32	66	223	164	20	78	46	114	68	40
% Thrus in Shared Lane												
Lane	L1	L2	L3	L1	L2	L3	L1	L2	L3	L1	L2	L3
Configuration	L	TR		L	T	R	L	TR		L	TR	
Flow Rate, v (veh/h)	60	507		66	223	164	20	124		114	108	
Percent Heavy Vehicles	2	2		2	2	2	2	2		2	2	

Departure Headway and Service Time

Initial Departure Headway, hd (s)	3.20	3.20		3.20	3.20	3.20	3.20	3.20		3.20	3.20	
Initial Degree of Utilization, x	0.053	0.451		0.059	0.198	0.146	0.018	0.110		0.101	0.096	
Final Departure Headway, hd (s)	8.02	7.47		8.31	7.81	7.11	9.28	8.53		9.00	8.24	
Final Degree of Utilization, x	0.134	1.051		0.152	0.484	0.324	0.052	0.294		0.285	0.247	
Move-Up Time, m (s)	2.3	2.3		2.3	2.3	2.3	2.3	2.3		2.3	2.3	
Service Time, ts (s)	5.72	5.17		6.01	5.51	4.81	6.98	6.23		6.70	5.94	

Capacity, Delay and Level of Service

Flow Rate, v (veh/h)	60	507		66	223	164	20	124		114	108	
Capacity	449	482		433	461	506	388	422		400	437	
95% Queue Length, Q_{95} (veh)	0.5	34.5		0.5	2.7	1.4	0.2	1.2		1.2	1.0	
Control Delay (s/veh)	12.0	183.9		12.5	17.8	13.2	12.5	14.8		15.3	13.6	
Level of Service, LOS	B	F		B	C	B	B	B		C	B	
Approach Delay (s/veh)	165.7			15.3			14.5			14.5		
Approach LOS	F			C			B			B		
Intersection Delay, s/veh | LOS	76.6						F					

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INTERSECTION CAPACITY UTILIZATION

INTERSECTION NUMBER: 10
NORTH/SOUTH STREET: Patterson Rd
EAST/WEST STREET: Doris Avenue
SCENARIO: Buildout Conditions
TIME PERIOD: AM Peak Hour
COUNT DATE: 05/2018
WORK ORDER #: 2064169300

VOLUMES	Northbound			Southbound			Eastbound			Westbound		
	L	T	R	L	T	R	L	T	R	L	T	R
AM Peak	20	90	110	300	130	80	60	230	60	180	310	260
Project Trips	10	8	5	11	6	0	0	41	9	6	45	14
GEOMETRY	L	TR		L	TR		L	TR		L	TR	

	Level of Service Calculations					
Move-	**Lanes**		**Volume**		**V/C Ratio**	
ment	Lane	Capacity	Cumulative	Project	Cumulative	Project
NBL	1.0	1,600	20	30	0.01	0.05
NBT	1.0	1,600	90	98	0.13 *	0.13 *
NBR	0.0	0	110	115	0.00	0.00
SBL	1.0	1,600	300	311	0.19 *	0.19 *
SBT	1.0	1,600	130	136	0.13	0.14
SBR	0.0	0	80	80	0.00	0.00
EBL	1.0	1,600	60	60	0.04 *	0.04 *
EBT	1.0	1,600	230	271	0.18	0.21
EBR	0.0	0	60	69	0.00	0.00
WBL	1.0	1,600	180	186	0.11	0.12
WBT	1.0	1,600	310	355	0.36 *	0.39 *
WBR	0.0	0	260	274	0.00	0.00
N/S Critical Movements					0.32	0.32
E/W Critical Movements					0.40	0.43
Clearance Interval					0.00	0.00
ICU					0.72	0.75
Level of Service (LOS)					C	C

Notes: V/C - Volume to Capacity Ratio

HCS7 Two-Way Stop-Control Report

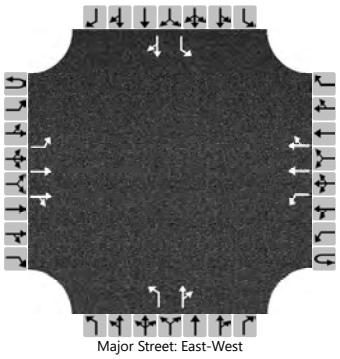
General Information

Analyst	11. DJL
Agency/Co.	STANTEC
Date Performed	7/3/2018
Analysis Year	BO
Time Analyzed	AM PEAK HOUR
Intersection Orientation	East-West
Project Description	TEAL CLUB SP

Site Information

Intersection	PATTERSON RD/TEAL CLUB RD
Jurisdiction	OXNARD
East/West Street	TEAL CLUB RD
North/South Street	PATTERSON RD
Peak Hour Factor	1.00
Analysis Time Period (hrs)	1.00

Lanes



Major Street: East-West

Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority	1U	1	2	3	4U	4	5	6		7	8	9		10	11	12
Number of Lanes	0	1	2	0	0	1	2	0		1	1	0		1	1	0
Configuration		L	T	TR		L	T	TR		L		TR		L		TR
Volume (veh/h)	0	160	60	10	0	10	50	90		30	10	30		240	30	110
Percent Heavy Vehicles (%)	3	3			3	3				3	3	3		3	3	3
Proportion Time Blocked																
Percent Grade (%)										0				0		
Right Turn Channelized																
Median Type | Storage		Undivided														

Critical and Follow-up Headways

Base Critical Headway (sec)		4.1				4.1				7.5	6.5	6.9		7.5	6.5	6.9
Critical Headway (sec)		4.16				4.16				7.56	6.56	6.96		7.56	6.56	6.96
Base Follow-Up Headway (sec)		2.2				2.2				3.5	4.0	3.3		3.5	4.0	3.3
Follow-Up Headway (sec)		2.23				2.23				3.53	4.03	3.33		3.53	4.03	3.33

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)		160				10				30		40		240		140
Capacity, c (veh/h)		1434				1521				377		729		411		754
v/c Ratio		0.11				0.01				0.08		0.05		0.58		0.19
95% Queue Length, Q_{95} (veh)		0.4				0.0				0.3		0.2		4.0		0.7
Control Delay (s/veh)		7.8				7.4				15.4		10.2		25.9		10.9
Level of Service (LOS)		A				A				C		B		D		B
Approach Delay (s/veh)	5.4				0.5				12.4				20.3			
Approach LOS									B				C			

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HCS7 Two-Way Stop-Control Report

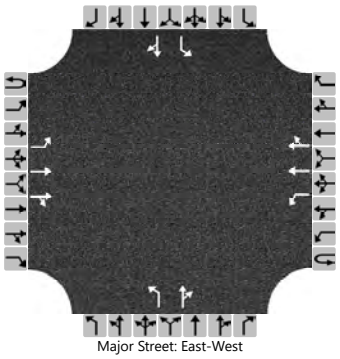
General Information

Analyst	11. DJL
Agency/Co.	STANTEC
Date Performed	7/3/2018
Analysis Year	BOPR
Time Analyzed	AM PEAK HOUR
Intersection Orientation	East-West
Project Description	TEAL CLUB SP

Site Information

Intersection	PATTERSON RD/TEAL CLUB RD
Jurisdiction	OXNARD
East/West Street	TEAL CLUB RD
North/South Street	PATTERSON RD
Peak Hour Factor	1.00
Analysis Time Period (hrs)	1.00

Lanes



Major Street: East-West

Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority	1U	1	2	3	4U	4	5	6		7	8	9		10	11	12
Number of Lanes	0	1	2	0	0	1	2	0		1	1	0		1	1	0
Configuration		L	T	TR		L	T	TR		L		TR		L		TR
Volume (veh/h)	0	165	91	10	0	10	88	108		30	10	30		255	30	116
Percent Heavy Vehicles (%)	3	3			3	3				3	3	3		3	3	3
Proportion Time Blocked																
Percent Grade (%)										0				0		
Right Turn Channelized																
Median Type | Storage		Undivided														

Critical and Follow-up Headways

Base Critical Headway (sec)		4.1				4.1				7.5	6.5	6.9		7.5	6.5	6.9
Critical Headway (sec)		4.16				4.16				7.56	6.56	6.96		7.56	6.56	6.96
Base Follow-Up Headway (sec)		2.2				2.2				3.5	4.0	3.3		3.5	4.0	3.3
Follow-Up Headway (sec)		2.23				2.23				3.53	4.03	3.33		3.53	4.03	3.33

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)		165				10				30		40		255		146
Capacity, c (veh/h)		1367				1482				332		674		361		706
v/c Ratio		0.12				0.01				0.09		0.06		0.71		0.21
95% Queue Length, Q_{95} (veh)		0.4				0.0				0.3		0.2		6.5		0.8
Control Delay (s/veh)		8.0				7.4				16.9		10.7		38.1		11.4
Level of Service (LOS)		A				A				C		B		E		B
Approach Delay (s/veh)	5.0				0.4				13.3				28.4			
Approach LOS									B				D			

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INTERSECTION CAPACITY UTILIZATION

INTERSECTION NUMBER: 11
NORTH/SOUTH STREET: Patterson Rd
EAST/WEST STREET: Teal Club Road
SCENARIO: Buildout Conditions
TIME PERIOD: AM Peak Hour
COUNT DATE: 05/2018
WORK ORDER #: 2064169300

VOLUMES	Northbound			Southbound			Eastbound			Westbound		
	L	T	R	L	T	R	L	T	R	L	T	R
AM Peak	30	10	30	240	30	110	160	60	10	10	50	90
Project Trips	0	0	0	15	0	6	5	31	0	0	38	18
GEOMETRY	L	TR		L	TR		L	T TR		L	T TR	

	Level of Service Calculations					
Move-	**Lanes**		**Volume**		**V/C Ratio**	
ment	Lane	Capacity	Cumulative	Project	Cumulative	Project
NBL	1.0	1,600	30	30	0.05	0.05
NBT	1.0	1,600	10	10	0.07 *	0.07 *
NBR	0.0	0	30	30	0.00	0.00
SBL	1.0	1,600	240	255	0.15 *	0.16 *
SBT	1.0	1,600	30	30	0.09	0.09
SBR	0.0	0	110	116	0.00	0.00
EBL	1.0	1,600	160	165	0.10 *	0.10 *
EBT	2.0	3,200	60	91	0.07	0.07
EBR	0.0	0	10	10	0.00	0.00
WBL	1.0	1,600	10	10	0.05	0.05
WBT	2.0	3,200	50	88	0.07 *	0.07 *
WBR	0.0	0	90	108	0.00	0.00
N/S Critical Movements					0.22	0.23
E/W Critical Movements					0.17	0.17
Clearance Interval					0.00	0.00
ICU					0.39	0.40
Level of Service (LOS)					A	A

Notes: V/C - Volume to Capacity Ratio

HCS7 Two-Way Stop-Control Report

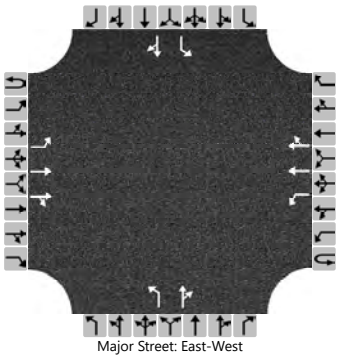
General Information

Analyst	11. DJL
Agency/Co.	STANTEC
Date Performed	7/3/2018
Analysis Year	BO
Time Analyzed	PM PEAK HOUR
Intersection Orientation	East-West
Project Description	TEAL CLUB SP

Site Information

Intersection	PATTERSON RD/TEAL CLUB RD
Jurisdiction	OXNARD
East/West Street	TEAL CLUB RD
North/South Street	PATTERSON RD
Peak Hour Factor	1.00
Analysis Time Period (hrs)	1.00

Lanes



Major Street: East-West

Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority	1U	1	2	3	4U	4	5	6		7	8	9		10	11	12
Number of Lanes	0	1	2	0	0	1	2	0		1	1	0		1	1	0
Configuration		L	T	TR		L	T	TR		L		TR		L		TR
Volume (veh/h)	0	70	160	10	0	30	160	50		10	20	20		70	10	50
Percent Heavy Vehicles (%)	3	3			3	3				3	3	3		3	3	3
Proportion Time Blocked																
Percent Grade (%)										0				0		
Right Turn Channelized																
Median Type | Storage			Undivided													

Critical and Follow-up Headways

Base Critical Headway (sec)		4.1				4.1				7.5	6.5	6.9		7.5	6.5	6.9
Critical Headway (sec)		4.16				4.16				7.56	6.56	6.96		7.56	6.56	6.96
Base Follow-Up Headway (sec)		2.2				2.2				3.5	4.0	3.3		3.5	4.0	3.3
Follow-Up Headway (sec)		2.23				2.23				3.53	4.03	3.33		3.53	4.03	3.33

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)		70				30				10		40		70		60
Capacity, c (veh/h)		1351				1397				430		558		419		762
v/c Ratio		0.05				0.02				0.02		0.07		0.17		0.08
95% Queue Length, Q_{95} (veh)		0.2				0.1				0.1		0.2		0.6		0.3
Control Delay (s/veh)		7.8				7.6				13.6		12.0		15.3		10.1
Level of Service (LOS)		A				A				B		B		C		B
Approach Delay (s/veh)	2.3				1.0				12.3				12.9			
Approach LOS									B				B			

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HCS7 Two-Way Stop-Control Report

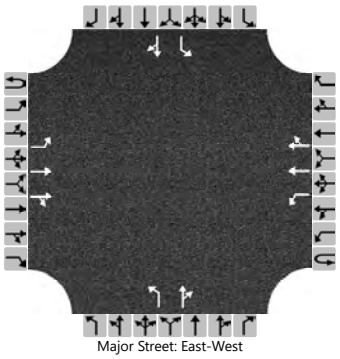
General Information

Analyst	11. DJL
Agency/Co.	STANTEC
Date Performed	7/3/2018
Analysis Year	BOPR
Time Analyzed	PM PEAK HOUR
Intersection Orientation	East-West
Project Description	TEAL CLUB SP

Site Information

Intersection	PATTERSON RD/TEAL CLUB RD
Jurisdiction	OXNARD
East/West Street	TEAL CLUB RD
North/South Street	PATTERSON RD
Peak Hour Factor	1.00
Analysis Time Period (hrs)	1.00

Lanes


Major Street: East-West

Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority	1U	1	2	3	4U	4	5	6		7	8	9		10	11	12
Number of Lanes	0	1	2	0	0	1	2	0		1	1	0		1	1	0
Configuration		L	T	TR		L	T	TR		L		TR		L		TR
Volume (veh/h)	0	76	202	10	0	30	196	68		10	20	20		90	10	56
Percent Heavy Vehicles (%)	3	3			3	3				3	3	3		3	3	3
Proportion Time Blocked																
Percent Grade (%)										0				0		
Right Turn Channelized																
Median Type | Storage			Undivided													

Critical and Follow-up Headways

Base Critical Headway (sec)		4.1				4.1				7.5	6.5	6.9		7.5	6.5	6.9
Critical Headway (sec)		4.16				4.16				7.56	6.56	6.96		7.56	6.56	6.96
Base Follow-Up Headway (sec)		2.2				2.2				3.5	4.0	3.3		3.5	4.0	3.3
Follow-Up Headway (sec)		2.23				2.23				3.53	4.03	3.33		3.53	4.03	3.33

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)		76				30				10		40		90		66
Capacity, c (veh/h)		1290				1348				375		496		363		723
v/c Ratio		0.06				0.02				0.03		0.08		0.25		0.09
95% Queue Length, Q_{95} (veh)		0.2				0.1				0.1		0.3		1.0		0.3
Control Delay (s/veh)		8.0				7.7				14.9		12.9		18.2		10.5
Level of Service (LOS)		A				A				B		B		C		B
Approach Delay (s/veh)		2.1				0.8				13.3				14.9		
Approach LOS										B				B		

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INTERSECTION CAPACITY UTILIZATION

INTERSECTION NUMBER: 11
NORTH/SOUTH STREET: Patterson Rd
EAST/WEST STREET: Teal Club Road
SCENARIO: Buildout Conditions
TIME PERIOD: PM Peak Hour
COUNT DATE: 05/2018
WORK ORDER #: 2064169300

VOLUMES	Northbound			Southbound			Eastbound			Westbound		
	L	T	R	L	T	R	L	T	R	L	T	R
AM Peak	10	20	20	70	10	50	70	160	10	30	160	50
Project Trips	0	0	0	20	0	6	6	42	0	0	36	18
GEOMETRY	L	TR		L	TR		L	T TR		L	T TR	

	Level of Service Calculations					
Move-	**Lanes**		**Volume**		**V/C Ratio**	
ment	Lane	Capacity	Cumulative	Project	Cumulative	Project
NBL	1.0	1,600	10	10	0.05	0.05
NBT	1.0	1,600	20	20	0.07	0.07 *
NBR	0.0	0	20	20	0.00	0.00
SBL	1.0	1,600	70	90	0.05 *	0.06 *
SBT	1.0	1,600	10	10	0.07	0.07
SBR	0.0	0	50	56	0.00	0.00
EBL	1.0	1,600	70	76	0.05 *	0.05 *
EBT	2.0	3,200	160	202	0.07	0.07
EBR	0.0	0	10	10	0.00	0.00
WBL	1.0	1,600	30	30	0.05	0.05
WBT	2.0	3,200	160	196	0.07 *	0.08 *
WBR	0.0	0	50	68	0.00	0.00
N/S Critical Movements					0.12	0.13
E/W Critical Movements					0.12	0.13
Clearance Interval					0.00	0.00
ICU					0.24	0.26
Level of Service (LOS)					A	A

Notes: V/C - Volume to Capacity Ratio

INTERSECTION CAPACITY UTILIZATION

INTERSECTION NUMBER: 12
NORTH/SOUTH STREET: Ventura Rd
EAST/WEST STREET: Town Center DR
SCENARIO: Buildout Conditions
TIME PERIOD: AM Peak Hour
COUNT DATE: 03/2016
WORK ORDER #: 2064136900

VOLUMES	Northbound			Southbound			Eastbound			Westbound		
	L	T	R	L	T	R	L	T	R	L	T	R
AM Peak	20	563	1120	77	249	2	0	10	3	265	45	117
Project Trips	0	3	72	0	2	0	0	0	0	31	0	0
GEOMETRY	L	TT	R	L	T TR		LTR			LL	T	R

	Level of Service Calculations					
Move-	**Lanes**		**Volume**		**V/C Ratio**	
ment	Lane	Capacity	Existing	Project	Existing	Project
NBL	1.0	1,600	20	20	0.05	0.05
NBT	2.0	3,200	563	566	0.18 *	0.18 *
NBR (a)	1.0	1,600	1,120	1,192	0.00	0.00
SBL	1.0	1,600	77	77	0.05 *	0.05 *
SBT	2.0	3,200	249	251	0.08	0.08
SBR	0.0	0	2	2	0.00	0.00
EBL	0.0	0	0	0	0.00	0.00
EBT	1.0	1,600	10	10	0.07 *	0.07 *
EBR	0.0	0	3	3	0.00	0.00
WBL	2.0	3,200	265	296	0.08 *	0.09 *
WBT	1.0	1,600	45	45	0.07	0.07
WBR	1.0	1,600	117	117	0.07	0.07
N/S Critical Movements					0.23	0.23
E/W Critical Movements					0.15	0.16
Clearance Interval					0.10	0.10
ICU					0.48	0.49
Level of Service (LOS)					A	A

Notes: V/C - Volume to Capacity Ratio
(a) Free right-turn

INTERSECTION CAPACITY UTILIZATION

INTERSECTION NUMBER: 12
NORTH/SOUTH STREET: Ventura Rd
EAST/WEST STREET: Town Center Dr
SCENARIO: Buildout Conditions
TIME PERIOD: PM Peak Hour
COUNT DATE: 03/2016
WORK ORDER #: 2064136900

VOLUMES	Northbound			Southbound			Eastbound			Westbound		
	L	T	R	L	T	R	L	T	R	L	T	R
PM Peak	38	578	719	161	290	3	4	50	9	822	16	74
Project Trips	0	3	68	0	3	0	0	0	0	41	0	0
GEOMETRY	L	TT	R	L	T TR			LTR		LL	T	R

	Level of Service Calculations					
Move-	**Lanes**		**Volume**		**V/C Ratio**	
ment	Lane	Capacity	Buildout	Project	Buildout	Project
NBL	1.0	1,600	38	38	0.05	0.05
NBT	2.0	3,200	578	581	0.18 *	0.18 *
NBR (a)	1.0	1,600	719	787	0.00	0.00
SBL	1.0	1,600	161	161	0.10 *	0.10 *
SBT	2.0	3,200	290	293	0.09	0.09
SBR	0.0	0	3	3	0.00	0.00
EBL	0.0	0	4	4	0.00	0.00
EBT	1.0	1,600	50	50	0.07 *	0.07 *
EBR	0.0	0	9	9	0.00	0.00
WBL	2.0	3,200	822	863	0.26 *	0.27 *
WBT	1.0	1,600	16	16	0.07	0.07
WBR	1.0	1,600	74	74	0.05	0.05
N/S Critical Movements					0.28	0.28
E/W Critical Movements					0.33	0.34
Clearance Interval					0.10	0.10
ICU					0.71	0.72
Level of Service (LOS)					C	C

Notes: V/C - Volume to Capacity Ratio
(a) Free right-turn

INTERSECTION CAPACITY UTILIZATION

INTERSECTION NUMBER: 13
NORTH/SOUTH STREET: Ventura Rd
EAST/WEST STREET: U.S. 101 SB Off-Ramp
SCENARIO: Buildout Conditions
TIME PERIOD: AM Peak Hour
COUNT DATE: 03/2016
WORK ORDER #: 2064113300

VOLUMES	Northbound			Southbound			Eastbound			Westbound		
	L	T	R	L	T	R	L	T	R	L	T	R
AM Peak	0	1261	0	0	517	0	0	0	0	362	0	513
Project Trips	0	75	0	0	33	0	0	0	0	31	0	0
GEOMETRY		TT			TT					L	LR	R

	Level of Service Calculations					
Move-	**Lanes**		**Volume**		**V/C Ratio**	
ment	Lane	Capacity	Buildout	Project	Buildout	Project
NBL	0.0	0	0	0	0.00	0.00
NBT	2.0	3,200	1,261	1,336	0.39 *	0.42 *
NBR	0.0	0	0	0	0.00	0.00
SBL	0.0	0	0	0	0.00 *	0.00 *
SBT	2.0	3,200	517	550	0.16	0.17
SBR	0.0	0	0	0	0.00	0.00
EBL	0.0	0	0	0	0.00 *	0.00 *
EBT	0.0	0	0	0	0.00	0.00
EBR	0.0	0	0	0	0.00	0.00
WBL	0.0	0	362	393	0.00	0.00
WBT	3.0	4,800	0	0	0.18 *	0.19 *
WBR	0.0	0	513	513	0.00	0.00
N/S Critical Movements					0.39	0.42
E/W Critical Movements					0.18	0.19
Clearance Interval					0.10	0.10
ICU					0.67	0.71
Level of Service (LOS)					B	C

Notes: V/C - Volume to Capacity Ratio

INTERSECTION CAPACITY UTILIZATION

INTERSECTION NUMBER: 13
NORTH/SOUTH STREET: Ventura Rd
EAST/WEST STREET: U.S. 101 SB Off-Ramp
SCENARIO: Buildout Conditions
TIME PERIOD: PM Peak Hour
COUNT DATE: 03/2016
WORK ORDER #: 2064113300

VOLUMES	Northbound			Southbound			Eastbound			Westbound		
	L	T	R	L	T	R	L	T	R	L	T	R
PM Peak	0	877	0	0	1111	0	0	0	0	876	0	421
Project Trips	0	71	0	0	44	0	0	0	0	41	0	0
GEOMETRY		TT			TT					L	LR	R

	Level of Service Calculations					
Move-	**Lanes**		**Volume**		**V/C Ratio**	
ment	Lane	Capacity	Buildout	Project	Buildout	Project
NBL	0.0	0	0	0	0.00 *	0.00 *
NBT	2.0	3,200	877	948	0.27	0.30
NBR	0.0	0	0	0	0.00	0.00
SBL	0.0	0	0	0	0.00	0.00
SBT	2.0	3,200	1,111	1,155	0.35 *	0.36 *
SBR	0.0	0	0	0	0.00	0.00
EBL	0.0	0	0	0	0.00 *	0.00 *
EBT	0.0	0	0	0	0.00	0.00
EBR	0.0	0	0	0	0.00	0.00
WBL	0.0	0	876	917	0.00	0.00
WBT	3.0	4,800	0	0	0.27 *	0.28 *
WBR	0.0	0	421	421	0.00	0.00
N/S Critical Movements					0.35	0.36
E/W Critical Movements					0.27	0.28
Clearance Interval					0.10	0.10
ICU					0.72	0.74
Level of Service (LOS)					C	C

Notes: V/C - Volume to Capacity Ratio

INTERSECTION CAPACITY UTILIZATION

INTERSECTION NUMBER: 15
NORTH/SOUTH STREET: Ventura Rd
EAST/WEST STREET: Vineyard Ave
SCENARIO: Buildout Conditions
TIME PERIOD: AM Peak Hour
COUNT DATE: 05/2018
WORK ORDER #: 2064169300

VOLUMES	Northbound			Southbound			Eastbound			Westbound		
	L	T	R	L	T	R	L	T	R	L	T	R
AM Peak	30	1060	480	120	1040	150	180	250	30	290	160	130
Project Trips	0	75	10	0	64	0	0	0	0	8	0	0
GEOMETRY	L	TT	TR	L	TT	TR	L	TT	R	LL	TT	R

	Level of Service Calculations					
Move-	**Lanes**		**Volume**		**V/C Ratio**	
ment	Lane	Capacity	Buildout	Project	Buildout	Project
NBL	1.0	1,600	30	30	0.05	0.05
NBT	3.0	4,800	1,060	1,135	0.32 *	0.34 *
NBR	0.0	0	480	490	0.00	0.00
SBL	1.0	1,600	120	120	0.05 *	0.05 *
SBT	3.0	4,800	1,040	1,104	0.25	0.26
SBR	0.0	0	150	150	0.00	0.00
EBL	1.0	1,600	180	180	0.11 *	0.11 *
EBT	2.0	3,200	250	250	0.07	0.07
EBR	1.0	1,600	30	30	0.02	0.02
WBL	2.0	3,200	290	298	0.09	0.09
WBT	2.0	3,200	160	160	0.07 *	0.07 *
WBR	1.0 (a)	1,600	130	130	0.08	0.08
N/S Critical Movements					0.37	0.39
E/W Critical Movements					0.18	0.18
Clearance Interval					0.00	0.00
ICU					0.55	0.57
Level of Service (LOS)					A	A

Notes: V/C - Volume to Capacity Ratio

(a) not critical due to RTOR

INTERSECTION CAPACITY UTILIZATION

INTERSECTION NUMBER: 15
NORTH/SOUTH STREET: Ventura Rd
EAST/WEST STREET: Vineyard Ave
SCENARIO: Buildout Conditions
TIME PERIOD: PM Peak Hour
COUNT DATE: 05/2018
WORK ORDER #: 2064169300

VOLUMES	Northbound			Southbound			Eastbound			Westbound		
	L	T	R	L	T	R	L	T	R	L	T	R
AM Peak	40	1020	370	190	1520	290	120	150	50	440	370	110
Project Trips	0	71	10	0	85	0	0	0	0	11	0	0
GEOMETRY	L	TT	TR	L	TT	TR	L	TT	R	LL	TT	R

	Level of Service Calculations					
Move-	**Lanes**		**Volume**		**V/C Ratio**	
ment	Lane	Capacity	Buildout	Project	Buildout	Project
NBL	1.0	1,600	40	40	0.03 *	0.03 *
NBT	3.0	4,800	1,020	1,091	0.29	0.31
NBR	0.0	0	370	380	0.00	0.00
SBL	1.0	1,600	190	190	0.12	0.12
SBT	3.0	4,800	1,520	1,605	0.38 *	0.39 *
SBR	0.0	0	290	290	0.00	0.00
EBL	1.0	1,600	120	120	0.08	0.08
EBT	2.0	3,200	150	150	0.07	0.07 *
EBR	1.0	1,600	50	50	0.03	0.03
WBL	2.0	3,200	440	451	0.14 *	0.14 *
WBT	2.0	3,200	370	370	0.12	0.12
WBR	1.0	1,600	110	110	0.07	0.07
N/S Critical Movements					0.41	0.43
E/W Critical Movements					0.21	0.21
Clearance Interval					0.00	0.00
ICU					0.62	0.64
Level of Service (LOS)					B	B

Notes: V/C - Volume to Capacity Ratio

INTERSECTION CAPACITY UTILIZATION

INTERSECTION NUMBER: 16
NORTH/SOUTH STREET: Ventura Rd
EAST/WEST STREET: Gonzales Rd
SCENARIO: Buildout Conditions
TIME PERIOD: AM Peak Hour
COUNT DATE: 05/2018
WORK ORDER #: 2064169300

VOLUMES	Northbound			Southbound			Eastbound			Westbound		
	L	T	R	L	T	R	L	T	R	L	T	R
AM Peak	240	1150	390	220	1140	140	290	510	220	370	430	110
Project Trips	0	85	62	0	72	4	5	0	0	48	0	0
GEOMETRY	LL	TTT	R	LL	TTT	R	LL	TTT	R	LL	TT TR	

	Level of Service Calculations						
Move-	**Lanes**		**Volume**		**V/C Ratio**	
ment	Lane	Capacity	Buildout	Project	Buildout	Project
NBL	2.0	3,200	240	240	0.08 *	0.08 *
NBT	3.0	4,800	1,150	1,235	0.24	0.26
NBR	1.0 (a)	1,600	245	305	0.15	0.19
SBL	2.0	3,200	220	220	0.07	0.07
SBT	3.0	4,800	1,140	1,212	0.24 *	0.25 *
SBR	1.0	1,600	140	144	0.09	0.09
EBL	2.0	3,200	290	295	0.09	0.09
EBT	3.0	4,800	510	510	0.11 *	0.11 *
EBR	1.0	1,600	110	148	0.07	0.09
WBL	2.0	3,200	370	418	0.12 *	0.13 *
WBT	3.0	4,800	430	430	0.11	0.11
WBR	0.0	0	110	110	0.00	0.00
N/S Critical Movements					0.32	0.33
E/W Critical Movements					0.23	0.24
Clearance Interval					0.00	0.00
ICU					0.55	0.57
Level of Service (LOS)					A	A

Notes: V/C - Volume to Capacity Ratio

(a) RTOR overlap with EBL

INTERSECTION CAPACITY UTILIZATION

INTERSECTION NUMBER: 16
NORTH/SOUTH STREET: Ventura Rd
EAST/WEST STREET: Gonzales Rd
SCENARIO: Buildout Conditions
TIME PERIOD: PM Peak Hour
COUNT DATE: 05/2018
WORK ORDER #: 2064169300

VOLUMES	Northbound			Southbound			Eastbound			Westbound		
	L	T	R	L	T	R	L	T	R	L	T	R
AM Peak	260	1220	385	290	1590	100	240	470	140	650	610	220
Project Trips	0	81	59	0	96	5	5	0	0	64	0	0
GEOMETRY	LL	TTT	R	LL	TTT	R	LL	TTT	R	LL	TT	TR

	Level of Service Calculations						
Move-	**Lanes**			**Volume**		**V/C Ratio**	
ment	Lane		Capacity	Buildout	Project	Buildout	Project
NBL	2.0		3,200	260	260	0.08 *	0.08 *
NBT	3.0		4,800	1,220	1,301	0.25	0.27
NBR	1.0	(a)	1,600	265	322	0.17	0.20
SBL	2.0		3,200	290	290	0.09	0.09
SBT	3.0		4,800	1,590	1,686	0.33 *	0.35 *
SBR	1.0		1,600	100	105	0.06	0.07
EBL	2.0		3,200	240	245	0.08	0.08
EBT	3.0		4,800	470	470	0.10 *	0.10 *
EBR	1.0		1,600	-5	88	0.00	0.05
WBL	2.0		3,200	650	714	0.20 *	0.22 *
WBT	3.0		4,800	610	610	0.17	0.17
WBR	0.0		0	220	220	0.00	0.00
N/S Critical Movements						0.41	0.43
E/W Critical Movements						0.30	0.32
Clearance Interval						0.00	0.00
ICU						0.71	0.75
Level of Service (LOS)						C	C

Notes: V/C - Volume to Capacity Ratio

(a) RTOR overlap with EBL

INTERSECTION CAPACITY UTILIZATION

INTERSECTION NUMBER: 17
NORTH/SOUTH STREET: Ventura Rd
EAST/WEST STREET: Doris Ave
SCENARIO: Buildout Conditions
TIME PERIOD: AM Peak Hour
COUNT DATE: 05/2018
WORK ORDER #: 2064169300

VOLUMES	Northbound			Southbound			Eastbound			Westbound		
	L	T	R	L	T	R	L	T	R	L	T	R
AM Peak	280	1450	200	50	1300	65	80	360	300	100	230	60
Project Trips	12	100	27	0	82	38	47	13	7	21	10	0
GEOMETRY	L	TTT	R	L	TTT	R	L	T	R	L	T	R

	Level of Service Calculations					
Move-	**Lanes**		**Volume**		**V/C Ratio**	
ment	Lane	Capacity	Buildout	Project	Buildout	Project
NBL	1.0	1,600	280	292	0.18 *	0.18 *
NBT	3.0	4,800	1,450	1,550	0.30	0.32
NBR	1.0	1,600	200	227	0.13	0.14
SBL	1.0	1,600	50	50	0.05	0.05
SBT	3.0	4,800	1,300	1,382	0.27 *	0.29 *
SBR	1.0	1,600	65	103	0.04	0.06
EBL	1.0	1,600	80	127	0.05	0.08
EBT	1.0	1,600	360	373	0.23 *	0.23 *
EBR	1.0	1,600	300	307	0.19	0.19
WBL	1.0	1,600	100	121	0.06 *	0.08 *
WBT	1.0	1,600	230	240	0.14	0.15
WBR	1.0	1,600	60	60	0.04	0.04
N/S Critical Movements					0.45	0.47
E/W Critical Movements					0.29	0.31
Clearance Interval					0.00	0.00
ICU					0.74	0.78
Level of Service (LOS)					C	C

Notes: V/C - Volume to Capacity Ratio

INTERSECTION CAPACITY UTILIZATION

INTERSECTION NUMBER: 17 **MITIGATED**
NORTH/SOUTH STREET: Ventura Rd
EAST/WEST STREET: Doris Ave
SCENARIO: Buildout Conditions
TIME PERIOD: AM Peak Hour
COUNT DATE: 05/2018
WORK ORDER #: 2064169300

VOLUMES	Northbound			Southbound			Eastbound			Westbound		
	L	T	R	L	T	R	L	T	R	L	T	R
AM Peak	280	1450	200	50	1300	65	80	360	300	100	230	60
Project Trips	12	100	27	0	82	38	47	13	7	21	10	0
GEOMETRY	L	TTT	R	L	TTT	R	L	**T TR**		L	**T TR**	

	Level of Service Calculations					
Move-	**Lanes**		**Volume**		**V/C Ratio**	
ment	Lane	Capacity	Buildout	Project	Buildout	Project
NBL	1.0	1,600	280	292	0.18 *	0.18 *
NBT	3.0	4,800	1,450	1,550	0.30	0.32
NBR	1.0	1,600	200	227	0.13	0.14
SBL	1.0	1,600	50	50	0.05	0.05
SBT	3.0	4,800	1,300	1,382	0.27 *	0.29 *
SBR	1.0	1,600	65	103	0.04	0.06
EBL	1.0	1,600	80	127	0.05	0.08
EBT	**2.0**	3,200	360	373	0.21 *	0.21 *
EBR	0.0	0	300	307	0.00	0.00
WBL	1.0	1,600	100	121	0.06 *	0.08 *
WBT	**2.0**	3,200	230	240	0.09	0.09
WBR	0.0	0	60	60	0.00	0.00
N/S Critical Movements					0.45	0.47
E/W Critical Movements					0.27	0.29
Clearance Interval					0.00	0.00
ICU					0.72	0.76
Level of Service (LOS)					C	C

Notes: V/C - Volume to Capacity Ratio

INTERSECTION CAPACITY UTILIZATION

INTERSECTION NUMBER: 17
NORTH/SOUTH STREET: Ventura Rd
EAST/WEST STREET: Doris Ave
SCENARIO: Buildout Conditions
TIME PERIOD: AM Peak Hour
COUNT DATE: 05/2018
WORK ORDER #: 2064169300

VOLUMES	Northbound			Southbound			Eastbound			Westbound		
	L	T	R	L	T	R	L	T	R	L	T	R
PM Peak	160	1300	110	60	1590	40	50	380	120	240	455	170
Project Trips	11	95	26	0	109	51	45	12	10	28	13	0
GEOMETRY	L	TTT	R	L	TTT	R	L	T	R	L	T	R

	Level of Service Calculations					
Move-	**Lanes**		**Volume**		**V/C Ratio**	
ment	Lane	Capacity	Buildout	Project	Buildout	Project
NBL	1.0	1,600	160	171	0.10 *	0.11 *
NBT	3.0	4,800	1,300	1,395	0.27	0.29
NBR	1.0	1,600	110	136	0.07	0.09
SBL	1.0	1,600	60	60	0.05	0.05
SBT	3.0	4,800	1,590	1,699	0.33 *	0.35 *
SBR	1.0	1,600	40	91	0.03	0.06
EBL	1.0	1,600	50	95	0.05	0.06
EBT	1.0	1,600	380	392	0.24 *	0.25 *
EBR	1.0	1,600	120	130	0.08	0.08
WBL	1.0	1,600	240	268	0.15 *	0.17 *
WBT	1.0	1,600	455	468	0.28	0.29
WBR	1.0	1,600	170	170	0.11	0.11
N/S Critical Movements					0.43	0.46
E/W Critical Movements					0.39	0.42
Clearance Interval					0.00	0.00
ICU					0.82	0.88
Level of Service (LOS)					D	D

Notes: V/C - Volume to Capacity Ratio

INTERSECTION CAPACITY UTILIZATION

INTERSECTION NUMBER: 17 **MITIGATED**
NORTH/SOUTH STREET: Ventura Rd
EAST/WEST STREET: Doris Ave
SCENARIO: Buildout Conditions
TIME PERIOD: AM Peak Hour
COUNT DATE: 05/2018
WORK ORDER #: 2064169300

VOLUMES	Northbound			Southbound			Eastbound			Westbound		
	L	T	R	L	T	R	L	T	R	L	T	R
PM Peak	160	1300	110	60	1590	40	50	380	120	240	455	170
Project Trips	11	95	26	0	109	51	45	12	10	28	13	0
GEOMETRY	L	TTT	R	L	TTT	R	L	**T TR**		L	**T TR**	

	Level of Service Calculations					
Move-	**Lanes**		**Volume**		**V/C Ratio**	
ment	Lane	Capacity	Buildout	Project	Buildout	Project
NBL	1.0	1,600	160	171	0.10 *	0.11 *
NBT	3.0	4,800	1,300	1,395	0.27	0.29
NBR	1.0	1,600	110	136	0.07	0.09
SBL	1.0	1,600	60	60	0.05	0.05
SBT	3.0	4,800	1,590	1,699	0.33 *	0.35 *
SBR	1.0	1,600	40	91	0.03	0.06
EBL	1.0	1,600	50	95	0.05	0.06
EBT	**2.0**	3,200	380	392	0.16 *	0.16 *
EBR	0.0	0	120	130	0.00	0.00
WBL	1.0	1,600	240	268	0.15 *	0.17 *
WBT	**2.0**	3,200	455	468	0.20	0.20
WBR	0.0	0	170	170	0.00	0.00
N/S Critical Movements					0.43	0.46
E/W Critical Movements					0.31	0.33
Clearance Interval					0.00	0.00
ICU					0.74	0.79
Level of Service (LOS)					C	C

Notes: V/C - Volume to Capacity Ratio

INTERSECTION CAPACITY UTILIZATION

INTERSECTION NUMBER: 18
NORTH/SOUTH STREET: Ventura Rd
EAST/WEST STREET: Beverly Dr
SCENARIO: Buildout Conditions
TIME PERIOD: AM Peak Hour
COUNT DATE: 05/2018
WORK ORDER #: 2064169300

VOLUMES	Northbound			Southbound			Eastbound			Westbound		
	L	T	R	L	T	R	L	T	R	L	T	R
AM Peak	0	1880	50	50	1750	0	0	0	0	5	0	70
Project Trips	70	12	0	0	9	110	136	0	79	0	0	0
GEOMETRY	L	TT	TR	L	TT	TR	L	TR		LTR		

	Level of Service Calculations					
Move-	**Lanes**		**Volume**		**V/C Ratio**	
ment	Lane	Capacity	Buildout	Project	Buildout	Project
NBL	1.0	1,600	0	70	0.00	0.04
NBT	3.0	4,800	1,880	1,892	0.40 *	0.40 *
NBR	0.0	0	50	50	0.00	0.00
SBL	1.0	1,600	50	50	0.05 *	0.05 *
SBT	3.0	4,800	1,750	1,759	0.36	0.39
SBR	0.0	0	0	110	0.00	0.00
EBL	1.0	1,600	0	136	0.05 *	0.09 *
EBT	1.0	1,600	0	0	0.00	0.05
EBR	0.0	0	0	79	0.00	0.00
WBL	0.0	0	5	5	0.00	0.00
WBT	1.0	1,600	0	0	0.05 *	0.05 *
WBR	0.0	0	70	70	0.00	0.00
N/S Critical Movements					0.45	0.45
E/W Critical Movements					0.10	0.14
Clearance Interval					0.00	0.00
ICU					0.55	0.59
Level of Service (LOS)					A	A

Notes: V/C - Volume to Capacity Ratio

INTERSECTION CAPACITY UTILIZATION

INTERSECTION NUMBER: 18
NORTH/SOUTH STREET: Ventura Rd
EAST/WEST STREET: Beverly Dr
SCENARIO: Buildout Conditions
TIME PERIOD: PM Peak Hour
COUNT DATE: 05/2018
WORK ORDER #: 2064169300

VOLUMES	Northbound			Southbound			Eastbound			Westbound		
	L	T	R	L	T	R	L	T	R	L	T	R
AM Peak	0	1650	30	50	1900	0	0	0	0	5	0	20
Project Trips	158	-37	0	0	-34	181	160	0	136	0	0	0
GEOMETRY	L	TT	TR	L	TT	TR	L	TR		LTR		

	Level of Service Calculations					
Move-	**Lanes**		**Volume**		**V/C Ratio**	
ment	Lane	Capacity	Buildout	Project	Buildout	Project
NBL	1.0	1,600	0	158	0.00	0.10 *
NBT	3.0	4,800	1,650	1,613	0.35	0.34
NBR	0.0	0	30	30	0.00	0.00
SBL	1.0	1,600	50	50	0.05	0.05
SBT	3.0	4,800	1,900	1,866	0.40 *	0.43 *
SBR	0.0	0	0	181	0.00	0.00
EBL	1.0	1,600	0	160	0.00	0.10 *
EBT	1.0	1,600	0	0	0.00	0.09
EBR	0.0	0	0	136	0.00	0.00
WBL	0.0	0	5	5	0.00	0.00
WBT	1.0	1,600	0	0	0.05 *	0.05 *
WBR	0.0	0	20	20	0.00	0.00
N/S Critical Movements					0.40	0.53
E/W Critical Movements					0.05	0.15
Clearance Interval					0.00	0.00
ICU					0.45	0.68
Level of Service (LOS)					A	B

Notes: V/C - Volume to Capacity Ratio

INTERSECTION CAPACITY UTILIZATION

INTERSECTION NUMBER: 19
NORTH/SOUTH STREET: Ventura Rd
EAST/WEST STREET: Teal Club/2nd St
SCENARIO: Buildout Conditions
TIME PERIOD: AM Peak Hour
COUNT DATE: 05/2018
WORK ORDER #: 2064169300

VOLUMES	Northbound			Southbound			Eastbound			Westbound		
	L	T	R	L	T	R	L	T	R	L	T	R
AM Peak	110	1800	75	200	1600	10	40	110	100	60	30	80
Project Trips	53	37	0	27	47	8	12	33	68	0	26	21
GEOMETRY	L	TT	TR	L	TT	TR	L	T	TR	L	T	R

	Level of Service Calculations					
Move-	**Lanes**		**Volume**		**V/C Ratio**	
ment	Lane	Capacity	Buildout	Project	Buildout	Project
NBL	1.0	1,600	110	163	0.07	0.10
NBT	3.0	4,800	1,800	1,837	0.39 *	0.40 *
NBR	0.0	0	75	75	0.00	0.00
SBL	1.0	1,600	200	227	0.13 *	0.14 *
SBT	3.0	4,800	1,600	1,647	0.34	0.35
SBR	0.0	0	10	18	0.00	0.00
EBL	1.0	1,600	40	52	0.05	0.05
EBT	1.0	1,600	110	143	0.13	0.19 *
EBR	0.0	0	100	168	0.00	0.00
WBL	1.0	1,600	60	60	0.05	0.05 *
WBT	1.0	1,600	30	56	0.07 *	0.07
WBR	1.0	1,600	80	101	0.05	0.06
N/S Critical Movements					0.52	0.54
E/W Critical Movements					0.12	0.24
Clearance Interval					0.00	0.00
ICU					0.64	0.78
Level of Service (LOS)					B	C

Notes: V/C - Volume to Capacity Ratio

INTERSECTION CAPACITY UTILIZATION

INTERSECTION NUMBER: 19
NORTH/SOUTH STREET: Ventura Rd
EAST/WEST STREET: Teal Club/2nd St
SCENARIO: Buildout Conditions
TIME PERIOD: PM Peak Hour
COUNT DATE: 05/2018
WORK ORDER #: 2064169300

VOLUMES	Northbound			Southbound			Eastbound			Westbound		
	L	T	R	L	T	R	L	T	R	L	T	R
AM Peak	50	1550	90	60	1800	10	20	60	90	150	60	110
Project Trips	54	66	0	26	65	8	16	31	45	0	25	38
GEOMETRY	L	TT	TR	L	TT	TR	L	T	TR	L	T	R

	Level of Service Calculations					
Move-	**Lanes**		**Volume**		**V/C Ratio**	
ment	Lane	Capacity	Buildout	Project	Buildout	Project
NBL	1.0	1,600	50	104	0.05 *	0.07 *
NBT	3.0	4,800	1,550	1,616	0.34	0.36
NBR	0.0	0	90	90	0.00	0.00
SBL	1.0	1,600	60	86	0.05	0.05
SBT	3.0	4,800	1,800	1,865	0.38 *	0.39 *
SBR	0.0	0	10	18	0.00	0.00
EBL	1.0	1,600	20	36	0.05	0.05
EBT	2.0	3,200	60	91	0.05 *	0.07 *
EBR	0.0	0	90	135	0.00	0.00
WBL	1.0	1,600	150	150	0.09 *	0.09 *
WBT	1.0	1,600	60	85	0.07	0.07
WBR	1.0	1,600	110	148	0.07	0.09
N/S Critical Movements					0.43	0.46
E/W Critical Movements					0.14	0.16
Clearance Interval					0.00	0.00
ICU					0.57	0.62
Level of Service (LOS)					A	B

Notes: V/C - Volume to Capacity Ratio

INTERSECTION CAPACITY UTILIZATION

INTERSECTION NUMBER: 20
NORTH/SOUTH STREET: Ventura Rd
EAST/WEST STREET: Fifth St
SCENARIO: Buildout Conditions
TIME PERIOD: AM Peak Hour
COUNT DATE: 05/2018
WORK ORDER #: 2064169300

VOLUMES	Northbound			Southbound			Eastbound			Westbound		
	L	T	R	L	T	R	L	T	R	L	T	R
AM Peak	210	1470	330	135	1380	340	390	380	150	170	280	80
Project Trips	0	67	0	20	85	10	8	0	0	0	0	16
GEOMETRY	LL	TTT	R	LL	TTT	R	LL	T TR		LL	T TR	

	Level of Service Calculations					
Move-	**Lanes**		**Volume**		**V/C Ratio**	
ment	Lane	Capacity	Buildout	Project	Buildout	Project
NBL	2.0	3,200	210	210	0.07	0.07
NBT	3.0	4,800	1,470	1,537	0.31 *	0.32 *
NBR	1.0	1,600	330	330	0.00	0.00
SBL	2.0	3,200	135	155	0.04	0.05 *
SBT	3.0	4,800	1,380	1,465	0.29	0.31
SBR	1.0	1,600	340	350	0.21	0.22
EBL	2.0	3,200	390	398	0.12 *	0.12 *
EBT	2.0	3,200	380	380	0.17	0.17
EBR	0.0	0	150	150	0.00	0.00
WBL	2.0	3,200	170	170	0.05	0.05
WBT	2.0	3,200	280	280	0.11 *	0.12 *
WBR	0.0	0	80	96	0.00	0.00
N/S Critical Movements					0.36	0.38
E/W Critical Movements					0.23	0.24
Clearance Interval					0.00	0.00
ICU					0.59	0.62
Level of Service (LOS)					A	B

Notes: V/C - Volume to Capacity Ratio

INTERSECTION CAPACITY UTILIZATION

INTERSECTION NUMBER: 20
NORTH/SOUTH STREET: Ventura Rd
EAST/WEST STREET: Fifth St
SCENARIO: Buildout Conditions
TIME PERIOD: PM Peak Hour
COUNT DATE: 05/2018
WORK ORDER #: 2064169300

VOLUMES	Northbound			Southbound			Eastbound			Westbound		
	L	T	R	L	T	R	L	T	R	L	T	R
AM Peak	280	1520	200	145	1600	390	380	340	250	340	600	70
Project Trips	0	89	0	19	81	10	11	0	0	0	0	21
GEOMETRY	LL	TTT	R	LL	TTT	R	LL	T TR		LL	T TR	

	Level of Service Calculations					
Move-	**Lanes**		**Volume**		**V/C Ratio**	
ment	Lane	Capacity	Buildout	Project	Buildout	Project
NBL	2.0	3,200	280	280	0.09 *	0.09 *
NBT	3.0	4,800	1,520	1,609	0.32	0.34
NBR	1.0	1,600	200	200	0.00	0.00
SBL	2.0	3,200	145	164	0.05	0.05
SBT	3.0	4,800	1,600	1,681	0.33 *	0.35 *
SBR	1.0	1,600	390	400	0.24	0.25
EBL	2.0	3,200	380	391	0.12 *	0.12 *
EBT	2.0	3,200	340	340	0.18	0.18
EBR	0.0	0	250	250	0.00	0.00
WBL	2.0	3,200	340	340	0.11	0.11
WBT	2.0	3,200	600	600	0.21 *	0.22 *
WBR	0.0	0	70	91	0.00	0.00
N/S Critical Movements					0.42	0.44
E/W Critical Movements					0.33	0.34
Clearance Interval					0.00	0.00
ICU					0.75	0.78
Level of Service (LOS)					C	C

Notes: V/C - Volume to Capacity Ratio

INTERSECTION CAPACITY UTILIZATION

INTERSECTION NUMBER: 21
NORTH/SOUTH STREET: Ventura Rd
EAST/WEST STREET: Wooley Rd
SCENARIO: Buildout Conditions
TIME PERIOD: AM Peak Hour
COUNT DATE: 05/2018
WORK ORDER #: 2064169300

VOLUMES	Northbound			Southbound			Eastbound			Westbound		
	L	T	R	L	T	R	L	T	R	L	T	R
AM Peak	230	1200	130	460	1200	100	210	760	150	150	500	170
Project Trips	0	39	0	24	51	10	4	0	0	0	0	19
GEOMETRY	L	TT	TR	LL	TT	TR	LL	TT	TR	LL	TT	TR

	Level of Service Calculations					
Move-	**Lanes**		**Volume**		**V/C Ratio**	
ment	Lane	Capacity	Buildout	Project	Buildout	Project
NBL	1.0	1,600	230	230	0.14	0.14
NBT	3.0	4,800	1,200	1,239	0.28 *	0.29 *
NBR	0.0	0	130	130	0.00	0.00
SBL	2.0	3,200	460	484	0.14 *	0.15 *
SBT	3.0	4,800	1,200	1,251	0.27	0.28
SBR	0.0	0	100	110	0.00	0.00
EBL	2.0	3,200	210	214	0.07	0.07
EBT	3.0	4,800	760	760	0.19 *	0.19 *
EBR	0.0	0	150	150	0.00	0.00
WBL	2.0	3,200	150	150	0.05 *	0.05 *
WBT	3.0	4,800	500	500	0.14	0.14
WBR	0.0	0	170	189	0.00	0.00
N/S Critical Movements					0.42	0.44
E/W Critical Movements					0.24	0.24
Clearance Interval					0.00	0.00
ICU					0.66	0.68
Level of Service (LOS)					B	B

Notes: V/C - Volume to Capacity Ratio

INTERSECTION CAPACITY UTILIZATION

INTERSECTION NUMBER: 21
NORTH/SOUTH STREET: Ventura Rd
EAST/WEST STREET: Wooley Rd
SCENARIO: Buildout Conditions
TIME PERIOD: PM Peak Hour
COUNT DATE: 05/2018
WORK ORDER #: 2064169300

VOLUMES	Northbound			Southbound			Eastbound			Westbound		
	L	T	R	L	T	R	L	T	R	L	T	R
AM Peak	230	1150	100	520	1250	150	250	840	60	410	1,130	200
Project Trips	0	52	0	23	48	10	5	0	0	0	0	25
GEOMETRY	L	TT	TR	LL	TT	TR	LL	TT	TR	LL	TT	TR

	Level of Service Calculations					
Move-	**Lanes**		**Volume**		**V/C Ratio**	
ment	Lane	Capacity	Buildout	Project	Buildout	Project
NBL	1.0	1,600	230	230	0.14	0.14
NBT	3.0	4,800	1,150	1,202	0.26 *	0.27 *
NBR	0.0	0	100	100	0.00	0.00
SBL	2.0	3,200	520	543	0.16 *	0.17 *
SBT	3.0	4,800	1,250	1,298	0.29	0.30
SBR	0.0	0	150	160	0.00	0.00
EBL	2.0	3,200	250	255	0.08 *	0.08 *
EBT	3.0	4,800	840	840	0.19	0.19
EBR	0.0	0	60	60	0.00	0.00
WBL	2.0	3,200	410	410	0.13	0.13
WBT	3.0	4,800	1,130	1,130	0.28 *	0.28 *
WBR	0.0	0	200	225	0.00	0.00
N/S Critical Movements					0.43	0.44
E/W Critical Movements					0.36	0.36
Clearance Interval					0.00	0.00
ICU					0.79	0.80
Level of Service (LOS)					C	C

Notes: V/C - Volume to Capacity Ratio

INTERSECTION CAPACITY UTILIZATION

INTERSECTION NUMBER: 22
NORTH/SOUTH STREET: Oxnard Blvd
EAST/WEST STREET: Town Center Dr
SCENARIO: Buildout Conditions
TIME PERIOD: AM Peak Hour
COUNT DATE: 05/2018
WORK ORDER #: 2064169300

VOLUMES	Northbound			Southbound			Eastbound			Westbound		
	L	T	R	L	T	R	L	T	R	L	T	R
AM Peak	403	498	281	52	684	134	170	153	980	243	101	27
Project Trips	20	0	0	0	0	4	8	9	55	0	7	0
GEOMETRY	LL	TT	R	L	T TR		L	LT T	RR	L	LT T	R

	Level of Service Calculations						
Move-	**Lanes**			**Volume**		**V/C Ratio**	
ment	Lane		Capacity	Buildout	Project	Buildout	Project
NBL	2.0		3,200	403	423	0.13 *	0.13 *
NBT	2.0		3,200	498	498	0.16	0.16
NBR	1.0	(a)	1,600	281	281	0.18	0.18
SBL	1.0		1,600	52	52	0.05	0.05
SBT	2.0		3,200	684	684	0.26 *	0.26 *
SBR	0.0		0	134	138	0.00	0.00
EBL	0.0		0	170	178	0.00	0.00
EBT	3.0		4,800	153	162	0.07	0.07
EBR	2.0	(b)	3,200	578	611	0.18 *	0.19 *
WBL	0.0		0	243	243	0.00	0.00
WBT	3.0		4,800	101	108	0.07 *	0.07 *
WBR	1.0	(a)	1,600	27	27	0.02	0.02
N/S Critical Movements						0.39	0.39
E/W Critical Movements						0.25	0.26
Clearance Interval						0.10	0.10
ICU						0.74	0.75
Level of Service (LOS)						C	C

Notes: V/C - Volume to Capacity Ratio
EB/WB split phased
(a) RTOR arrow - not critical
(b) RTOR arrow - 41% overlap

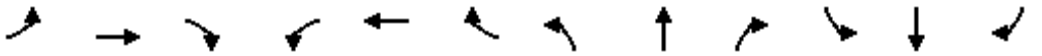
INTERSECTION CAPACITY UTILIZATION

INTERSECTION NUMBER: 22
NORTH/SOUTH STREET: Oxnard Blvd
EAST/WEST STREET: Town Center Dr
SCENARIO: Buildout Conditions
TIME PERIOD: PM Peak Hour
COUNT DATE: 03/2016
WORK ORDER #: 2064113300

VOLUMES	Northbound			Southbound			Eastbound			Westbound		
	L	T	R	L	T	R	L	T	R	L	T	R
PM Peak	500	734	497	66	862	81	186	275	621	421	142	54
Project Trips	27	0	0	0	0	5	8	9	52	0	9	0
GEOMETRY	LL	TT	R	L	T TR		L	LT T	RR	L	LT T	R

	Level of Service Calculations						
Move-	**Lanes**			**Volume**		**V/C Ratio**	
ment	Lane		Capacity	Buildout	Project	Buildout	Project
NBL	2.0		3,200	500	527	0.16 *	0.16 *
NBT	2.0		3,200	734	734	0.23	0.23
NBR	1.0	(a)	1,600	497	497	0.31	0.31
SBL	1.0		1,600	66	66	0.05	0.05
SBT	2.0		3,200	862	862	0.29 *	0.30 *
SBR	0.0		0	81	86	0.00	0.00
EBL	0.0		0	186	194	0.00	0.00
EBT	3.0		4,800	275	284	0.10 *	0.10 *
EBR	2.0	(a)	3,200	621	673	0.19	0.21
WBL	0.0		0	421	421	0.00	0.00
WBT	3.0		4,800	142	151	0.12 *	0.12 *
WBR	1.0	(a)	1,600	54	54	0.03	0.03
N/S Critical Movements						0.45	0.46
E/W Critical Movements						0.22	0.22
Clearance Interval						0.10	0.10
ICU						0.77	0.78
Level of Service (LOS)						C	C

Notes: V/C - Volume to Capacity Ratio
EB/WB split phased
(a) RTOR arrow - not critical



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	0	162	0	370	1207	502	0	0	801	1116
Future Volume (veh/h)	0	0	0	162	0	370	1207	502	0	0	801	1116
Initial Q (Qb), veh				0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)				1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach					No			No			No	
Adj Sat Flow, veh/h/ln				1870	1870	1870	1870	1870	0	0	1870	1870
Adj Flow Rate, veh/h				117	0	465	1312	546	0	0	871	0
Peak Hour Factor				0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %				2	2	2	2	2	0	0	2	2
Cap, veh/h				311	0	554	1386	2617	0	0	1871	
Arrive On Green				0.17	0.00	0.17	0.67	1.00	0.00	0.00	0.29	0.00
Sat Flow, veh/h				1781	0	3170	3456	3647	0	0	6696	1585
Grp Volume(v), veh/h				117	0	465	1312	546	0	0	871	0
Grp Sat Flow(s),veh/h/ln				1781	0	1585	1728	1777	0	0	1609	1585
Q Serve(g_s), s				5.2	0.0	12.8	30.8	0.0	0.0	0.0	10.0	0.0
Cycle Q Clear(g_c), s				5.2	0.0	12.8	30.8	0.0	0.0	0.0	10.0	0.0
Prop In Lane				1.00		1.00	1.00		0.00	0.00		1.00
Lane Grp Cap(c), veh/h				311	0	554	1386	2617	0	0	1871	
V/C Ratio(X)				0.38	0.00	0.84	0.95	0.21	0.00	0.00	0.47	
Avail Cap(c_a), veh/h				376	0	669	1536	2617	0	0	1871	
HCM Platoon Ratio				1.00	1.00	1.00	1.67	1.67	1.00	1.00	1.00	1.00
Upstream Filter(I)				1.00	0.00	1.00	0.90	0.90	0.00	0.00	1.00	0.00
Uniform Delay (d), s/veh				32.8	0.0	35.9	14.0	0.0	0.0	0.0	26.2	0.0
Incr Delay (d2), s/veh				0.8	0.0	8.0	10.9	0.2	0.0	0.0	0.8	0.0
Initial Q Delay(d3),s/veh				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln				2.2	0.0	5.3	7.3	0.1	0.0	0.0	3.7	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh				33.6	0.0	43.9	24.9	0.2	0.0	0.0	27.0	0.0
LnGrp LOS				C	A	D	C	A	A	A	C	
Approach Vol, veh/h					582			1858			871	A
Approach Delay, s/veh					41.8			17.7			27.0	
Approach LOS					D			B			C	

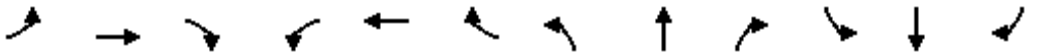
Timer - Assigned Phs	2		5	6		8						
Phs Duration (G+Y+Rc), s	70.3		40.1	30.2		19.7						
Change Period (Y+Rc), s	4.0		4.0	4.0		4.0						
Max Green Setting (Gmax), s	63.0		40.0	19.0		19.0						
Max Q Clear Time (g_c+I1), s	2.0		32.8	12.0		14.8						
Green Ext Time (p_c), s	3.7		3.3	3.0		1.0						

Intersection Summary		
HCM 6th Ctrl Delay	24.4	
HCM 6th LOS	C	

Notes

User approved volume balancing among the lanes for turning movement.

Unsignalized Delay for [SBR] is excluded from calculations of the approach delay and intersection delay.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	0	162	0	388	1207	502	0	0	826	1146
Future Volume (veh/h)	0	0	0	162	0	388	1207	502	0	0	826	1146
Initial Q (Qb), veh				0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)				1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach					No			No			No	
Adj Sat Flow, veh/h/ln				1870	1870	1870	1870	1870	0	0	1870	1870
Adj Flow Rate, veh/h				117	0	485	1312	546	0	0	898	0
Peak Hour Factor				0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %				2	2	2	2	2	0	0	2	2
Cap, veh/h				321	0	571	1386	2597	0	0	1836	
Arrive On Green				0.18	0.00	0.18	0.67	1.00	0.00	0.00	0.29	0.00
Sat Flow, veh/h				1781	0	3170	3456	3647	0	0	6696	1585
Grp Volume(v), veh/h				117	0	485	1312	546	0	0	898	0
Grp Sat Flow(s),veh/h/ln				1781	0	1585	1728	1777	0	0	1609	1585
Q Serve(g_s), s				5.2	0.0	13.3	30.8	0.0	0.0	0.0	10.4	0.0
Cycle Q Clear(g_c), s				5.2	0.0	13.3	30.8	0.0	0.0	0.0	10.4	0.0
Prop In Lane				1.00		1.00	1.00		0.00	0.00		1.00
Lane Grp Cap(c), veh/h				321	0	571	1386	2597	0	0	1836	
V/C Ratio(X)				0.36	0.00	0.85	0.95	0.21	0.00	0.00	0.49	
Avail Cap(c_a), veh/h				376	0	669	1536	2597	0	0	1836	
HCM Platoon Ratio				1.00	1.00	1.00	1.67	1.67	1.00	1.00	1.00	1.00
Upstream Filter(I)				1.00	0.00	1.00	0.81	0.81	0.00	0.00	1.00	0.00
Uniform Delay (d), s/veh				32.4	0.0	35.7	14.0	0.0	0.0	0.0	26.7	0.0
Incr Delay (d2), s/veh				0.7	0.0	8.9	10.1	0.1	0.0	0.0	0.9	0.0
Initial Q Delay(d3),s/veh				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln				2.2	0.0	5.6	7.1	0.1	0.0	0.0	3.8	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh				33.1	0.0	44.6	24.1	0.1	0.0	0.0	27.6	0.0
LnGrp LOS				C	A	D	C	A	A	A	C	
Approach Vol, veh/h					602			1858			898	A
Approach Delay, s/veh					42.4			17.0			27.6	
Approach LOS					D			B			C	

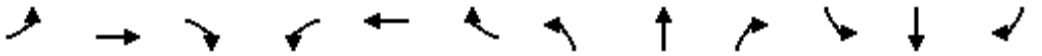
Timer - Assigned Phs	2		5	6		8						
Phs Duration (G+Y+Rc), s	69.8		40.1	29.7		20.2						
Change Period (Y+Rc), s	4.0		4.0	4.0		4.0						
Max Green Setting (Gmax), s	63.0		40.0	19.0		19.0						
Max Q Clear Time (g_c+I1), s	2.0		32.8	12.4		15.3						
Green Ext Time (p_c), s	3.7		3.3	3.0		0.9						

Intersection Summary		
HCM 6th Ctrl Delay	24.4	
HCM 6th LOS	C	

Notes

User approved volume balancing among the lanes for turning movement.

Unsignalized Delay for [SBR] is excluded from calculations of the approach delay and intersection delay.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	0	371	0	795	1058	936	0	0	985	919
Future Volume (veh/h)	0	0	0	371	0	795	1058	936	0	0	985	919
Initial Q (Qb), veh				0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)				1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach					No			No			No	
Adj Sat Flow, veh/h/ln				1870	1870	1870	1870	1870	0	0	1870	1870
Adj Flow Rate, veh/h				269	0	1008	1150	1017	0	0	1071	0
Peak Hour Factor				0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %				2	2	2	2	2	0	0	2	2
Cap, veh/h				534	0	951	1209	2132	0	0	1287	
Arrive On Green				0.30	0.00	0.30	0.58	1.00	0.00	0.00	0.20	0.00
Sat Flow, veh/h				1781	0	3170	3456	3647	0	0	6696	1585
Grp Volume(v), veh/h				269	0	1008	1150	1017	0	0	1071	0
Grp Sat Flow(s),veh/h/ln				1781	0	1585	1728	1777	0	0	1609	1585
Q Serve(g_s), s				10.0	0.0	24.0	24.9	0.0	0.0	0.0	12.8	0.0
Cycle Q Clear(g_c), s				10.0	0.0	24.0	24.9	0.0	0.0	0.0	12.8	0.0
Prop In Lane				1.00		1.00	1.00		0.00	0.00		1.00
Lane Grp Cap(c), veh/h				534	0	951	1209	2132	0	0	1287	
V/C Ratio(X)				0.50	0.00	1.06	0.95	0.48	0.00	0.00	0.83	
Avail Cap(c_a), veh/h				534	0	951	1253	2132	0	0	1287	
HCM Platoon Ratio				1.00	1.00	1.00	1.67	1.67	1.00	1.00	1.00	1.00
Upstream Filter(I)				1.00	0.00	1.00	0.69	0.69	0.00	0.00	1.00	0.00
Uniform Delay (d), s/veh				23.1	0.0	28.0	16.0	0.0	0.0	0.0	30.7	0.0
Incr Delay (d2), s/veh				0.8	0.0	46.4	11.4	0.5	0.0	0.0	6.4	0.0
Initial Q Delay(d3),s/veh				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln				3.9	0.0	14.3	7.0	0.2	0.0	0.0	5.1	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh				23.8	0.0	74.4	27.4	0.5	0.0	0.0	37.1	0.0
LnGrp LOS				C	A	F	C	A	A	A	D	
Approach Vol, veh/h					1277			2167			1071	A
Approach Delay, s/veh					63.8			14.8			37.1	
Approach LOS					E			B			D	

Timer - Assigned Phs	2		5	6		8						
Phs Duration (G+Y+Rc), s	52.0		32.0	20.0		28.0						
Change Period (Y+Rc), s	4.0		4.0	4.0		4.0						
Max Green Setting (Gmax), s	48.0		29.0	15.0		24.0						
Max Q Clear Time (g_c+I1), s	2.0		26.9	14.8		26.0						
Green Ext Time (p_c), s	8.2		1.1	0.1		0.0						

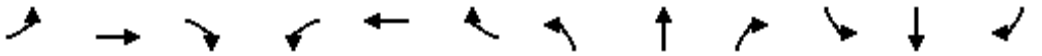
Intersection Summary		
HCM 6th Ctrl Delay	33.9	
HCM 6th LOS	C	

Notes

User approved pedestrian interval to be less than phase max green.

User approved volume balancing among the lanes for turning movement.

Unsignalized Delay for [SBR] is excluded from calculations of the approach delay and intersection delay.

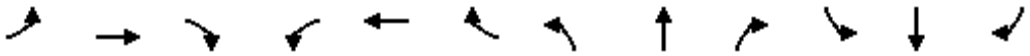


Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	0	371	0	822	1058	936	0	0	1009	947
Future Volume (veh/h)	0	0	0	371	0	822	1058	936	0	0	1009	947
Initial Q (Qb), veh				0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)				1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach					No			No			No	
Adj Sat Flow, veh/h/ln				1870	1870	1870	1870	1870	0	0	1870	1870
Adj Flow Rate, veh/h				269	0	1037	1150	1017	0	0	1097	0
Peak Hour Factor				0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %				2	2	2	2	2	0	0	2	2
Cap, veh/h				557	0	991	1166	2088	0	0	1287	
Arrive On Green				0.31	0.00	0.31	0.56	0.98	0.00	0.00	0.20	0.00
Sat Flow, veh/h				1781	0	3170	3456	3647	0	0	6696	1585
Grp Volume(v), veh/h				269	0	1037	1150	1017	0	0	1097	0
Grp Sat Flow(s),veh/h/ln				1781	0	1585	1728	1777	0	0	1609	1585
Q Serve(g_s), s				9.8	0.0	25.0	26.2	0.8	0.0	0.0	13.2	0.0
Cycle Q Clear(g_c), s				9.8	0.0	25.0	26.2	0.8	0.0	0.0	13.2	0.0
Prop In Lane				1.00		1.00	1.00		0.00	0.00		1.00
Lane Grp Cap(c), veh/h				557	0	991	1166	2088	0	0	1287	
V/C Ratio(X)				0.48	0.00	1.05	0.99	0.49	0.00	0.00	0.85	
Avail Cap(c_a), veh/h				557	0	991	1166	2088	0	0	1287	
HCM Platoon Ratio				1.00	1.00	1.00	1.67	1.67	1.00	1.00	1.00	1.00
Upstream Filter(I)				1.00	0.00	1.00	0.71	0.71	0.00	0.00	1.00	0.00
Uniform Delay (d), s/veh				22.3	0.0	27.5	17.3	0.3	0.0	0.0	30.9	0.0
Incr Delay (d2), s/veh				0.7	0.0	41.6	18.9	0.6	0.0	0.0	7.3	0.0
Initial Q Delay(d3),s/veh				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln				3.8	0.0	14.1	8.5	0.3	0.0	0.0	5.3	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh				22.9	0.0	69.1	36.2	0.9	0.0	0.0	38.1	0.0
LnGrp LOS				C	A	F	D	A	A	A	D	
Approach Vol, veh/h					1306			2167			1097	A
Approach Delay, s/veh					59.6			19.6			38.1	
Approach LOS					E			B			D	

Timer - Assigned Phs	2		5	6		8						
Phs Duration (G+Y+Rc), s	51.0		31.0	20.0		29.0						
Change Period (Y+Rc), s	4.0		4.0	4.0		4.0						
Max Green Setting (Gmax), s	47.0		27.0	16.0		25.0						
Max Q Clear Time (g_c+I1), s	2.8		28.2	15.2		27.0						
Green Ext Time (p_c), s	8.2		0.0	0.6		0.0						

Intersection Summary		
HCM 6th Ctrl Delay	35.5	
HCM 6th LOS	D	

Notes
User approved pedestrian interval to be less than phase max green.
User approved volume balancing among the lanes for turning movement.
Unsignalized Delay for [SBR] is excluded from calculations of the approach delay and intersection delay.



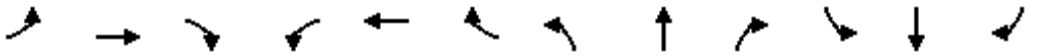
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	275	0	1540	0	0	0	0	1476	380	493	489	0
Future Volume (veh/h)	275	0	1540	0	0	0	0	1476	380	493	489	0
Initial Q (Qb), veh	0	0	0				0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00				1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00				1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No						No			No	
Adj Sat Flow, veh/h/ln	1870	0	1870				0	1870	1870	1870	1870	0
Adj Flow Rate, veh/h	299	0	0				0	1604	0	536	532	0
Peak Hour Factor	0.92	0.92	0.92				0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	0	2				0	2	2	2	2	0
Cap, veh/h	393	0					0	2574		1220	2834	0
Arrive On Green	0.11	0.00	0.00				0.00	0.40	0.00	0.59	1.00	0.00
Sat Flow, veh/h	3456	0	1585				0	6696	1585	3456	3647	0
Grp Volume(v), veh/h	299	0	0				0	1604	0	536	532	0
Grp Sat Flow(s),veh/h/ln	1728	0	1585				0	1609	1585	1728	1777	0
Q Serve(g_s), s	7.6	0.0	0.0				0.0	17.9	0.0	7.7	0.0	0.0
Cycle Q Clear(g_c), s	7.6	0.0	0.0				0.0	17.9	0.0	7.7	0.0	0.0
Prop In Lane	1.00		1.00				0.00		1.00	1.00		0.00
Lane Grp Cap(c), veh/h	393	0					0	2574		1220	2834	0
V/C Ratio(X)	0.76	0.00					0.00	0.62		0.44	0.19	0.00
Avail Cap(c_a), veh/h	691	0					0	2574		1220	2834	0
HCM Platoon Ratio	1.00	1.00	1.00				1.00	1.00	1.00	1.67	1.67	1.00
Upstream Filter(I)	1.00	0.00	0.00				0.00	1.00	0.00	0.85	0.85	0.00
Uniform Delay (d), s/veh	38.7	0.0	0.0				0.0	21.6	0.0	13.5	0.0	0.0
Incr Delay (d2), s/veh	3.1	0.0	0.0				0.0	1.1	0.0	0.2	0.1	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0				0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.3	0.0	0.0				0.0	6.7	0.0	2.5	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	41.8	0.0	0.0				0.0	22.7	0.0	13.7	0.1	0.0
LnGrp LOS	D	A					A	C		B	A	A
Approach Vol, veh/h		299	A					1604	A		1068	
Approach Delay, s/veh		41.8						22.7			7.0	
Approach LOS		D						C			A	

Timer - Assigned Phs	1	2		4		6						
Phs Duration (G+Y+Rc), s	35.8	40.0		14.2		75.8						
Change Period (Y+Rc), s	4.0	4.0		4.0		4.0						
Max Green Setting (Gmax), s	24.0	36.0		18.0		64.0						
Max Q Clear Time (g_c+I1), s	9.7	19.9		9.6		2.0						
Green Ext Time (p_c), s	1.7	10.3		0.7		4.2						

Intersection Summary			
HCM 6th Ctrl Delay			19.0
HCM 6th LOS			B

Notes

Unsignalized Delay for [NBR, EBR] is excluded from calculations of the approach delay and intersection delay.



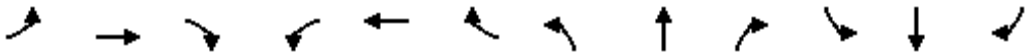
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	275	0	1540	0	0	0	0	1476	380	518	489	0
Future Volume (veh/h)	275	0	1540	0	0	0	0	1476	380	518	489	0
Initial Q (Qb), veh	0	0	0				0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00				1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00				1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No						No			No	
Adj Sat Flow, veh/h/ln	1870	0	1870				0	1870	1870	1870	1870	0
Adj Flow Rate, veh/h	299	0	0				0	1604	0	563	532	0
Peak Hour Factor	0.92	0.92	0.92				0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	0	2				0	2	2	2	2	0
Cap, veh/h	393	0					0	2574		1220	2834	0
Arrive On Green	0.11	0.00	0.00				0.00	0.40	0.00	0.59	1.00	0.00
Sat Flow, veh/h	3456	0	1585				0	6696	1585	3456	3647	0
Grp Volume(v), veh/h	299	0	0				0	1604	0	563	532	0
Grp Sat Flow(s),veh/h/ln	1728	0	1585				0	1609	1585	1728	1777	0
Q Serve(g_s), s	7.6	0.0	0.0				0.0	17.9	0.0	8.3	0.0	0.0
Cycle Q Clear(g_c), s	7.6	0.0	0.0				0.0	17.9	0.0	8.3	0.0	0.0
Prop In Lane	1.00		1.00				0.00		1.00	1.00		0.00
Lane Grp Cap(c), veh/h	393	0					0	2574		1220	2834	0
V/C Ratio(X)	0.76	0.00					0.00	0.62		0.46	0.19	0.00
Avail Cap(c_a), veh/h	691	0					0	2574		1220	2834	0
HCM Platoon Ratio	1.00	1.00	1.00				1.00	1.00	1.00	1.67	1.67	1.00
Upstream Filter(I)	1.00	0.00	0.00				0.00	1.00	0.00	0.85	0.85	0.00
Uniform Delay (d), s/veh	38.7	0.0	0.0				0.0	21.6	0.0	13.6	0.0	0.0
Incr Delay (d2), s/veh	3.1	0.0	0.0				0.0	1.1	0.0	0.2	0.1	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0				0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.3	0.0	0.0				0.0	6.7	0.0	2.7	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	41.8	0.0	0.0				0.0	22.7	0.0	13.9	0.1	0.0
LnGrp LOS	D	A					A	C		B	A	A
Approach Vol, veh/h		299	A					1604	A		1095	
Approach Delay, s/veh		41.8						22.7			7.2	
Approach LOS		D						C			A	

Timer - Assigned Phs	1	2		4		6						
Phs Duration (G+Y+Rc), s	35.8	40.0		14.2		75.8						
Change Period (Y+Rc), s	4.0	4.0		4.0		4.0						
Max Green Setting (Gmax), s	24.0	36.0		18.0		64.0						
Max Q Clear Time (g_c+I1), s	10.3	19.9		9.6		2.0						
Green Ext Time (p_c), s	1.8	10.3		0.7		4.2						

Intersection Summary	
HCM 6th Ctrl Delay	19.0
HCM 6th LOS	B

Notes

Unsignalized Delay for [NBR, EBR] is excluded from calculations of the approach delay and intersection delay.



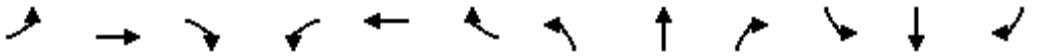
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	661	0	1410	0	0	0	0	1334	540	442	914	0
Future Volume (veh/h)	661	0	1410	0	0	0	0	1334	540	442	914	0
Initial Q (Qb), veh	0	0	0				0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00				1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00				1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No						No			No	
Adj Sat Flow, veh/h/ln	1870	0	1870				0	1870	1870	1870	1870	0
Adj Flow Rate, veh/h	718	0	0				0	1450	0	480	993	0
Peak Hour Factor	0.92	0.92	0.92				0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	0	2				0	2	2	2	2	0
Cap, veh/h	841	0					0	2171		930	2334	0
Arrive On Green	0.24	0.00	0.00				0.00	0.34	0.00	0.36	0.87	0.00
Sat Flow, veh/h	3456	0	1585				0	6696	1585	3456	3647	0
Grp Volume(v), veh/h	718	0	0				0	1450	0	480	993	0
Grp Sat Flow(s),veh/h/ln	1728	0	1585				0	1609	1585	1728	1777	0
Q Serve(g_s), s	15.9	0.0	0.0				0.0	15.4	0.0	8.8	4.5	0.0
Cycle Q Clear(g_c), s	15.9	0.0	0.0				0.0	15.4	0.0	8.8	4.5	0.0
Prop In Lane	1.00		1.00				0.00		1.00	1.00		0.00
Lane Grp Cap(c), veh/h	841	0					0	2171		930	2334	0
V/C Ratio(X)	0.85	0.00					0.00	0.67		0.52	0.43	0.00
Avail Cap(c_a), veh/h	1037	0					0	2171		930	2334	0
HCM Platoon Ratio	1.00	1.00	1.00				1.00	1.00	1.00	1.33	1.33	1.00
Upstream Filter(I)	1.00	0.00	0.00				0.00	1.00	0.00	0.51	0.51	0.00
Uniform Delay (d), s/veh	28.9	0.0	0.0				0.0	22.7	0.0	21.6	2.0	0.0
Incr Delay (d2), s/veh	5.9	0.0	0.0				0.0	1.6	0.0	0.3	0.3	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0				0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	7.0	0.0	0.0				0.0	5.8	0.0	3.2	1.1	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	34.8	0.0	0.0				0.0	24.3	0.0	21.8	2.3	0.0
LnGrp LOS	C	A					A	C		C	A	A
Approach Vol, veh/h		718	A					1450	A		1473	
Approach Delay, s/veh		34.8						24.3			8.7	
Approach LOS		C						C			A	

Timer - Assigned Phs	1	2		4		6						
Phs Duration (G+Y+Rc), s	25.5	31.0		23.5		56.5						
Change Period (Y+Rc), s	4.0	4.0		4.0		4.0						
Max Green Setting (Gmax), s	17.0	27.0		24.0		48.0						
Max Q Clear Time (g_c+I1), s	10.8	17.4		17.9		6.5						
Green Ext Time (p_c), s	1.0	6.4		1.6		9.1						

Intersection Summary												
HCM 6th Ctrl Delay			20.1									
HCM 6th LOS			C									

Notes

Unsignalized Delay for [NBR, EBR] is excluded from calculations of the approach delay and intersection delay.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	661	0	1410	0	0	0	0	1334	540	466	914	0
Future Volume (veh/h)	661	0	1410	0	0	0	0	1334	540	466	914	0
Initial Q (Qb), veh	0	0	0				0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00				1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00				1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No						No			No	
Adj Sat Flow, veh/h/ln	1870	0	1870				0	1870	1870	1870	1870	0
Adj Flow Rate, veh/h	718	0	0				0	1450	0	507	993	0
Peak Hour Factor	0.92	0.92	0.92				0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	0	2				0	2	2	2	2	0
Cap, veh/h	841	0					0	2762		613	2334	0
Arrive On Green	0.24	0.00	0.00				0.00	0.43	0.00	0.18	0.66	0.00
Sat Flow, veh/h	3456	0	1585				0	6696	1585	3456	3647	0
Grp Volume(v), veh/h	718	0	0				0	1450	0	507	993	0
Grp Sat Flow(s),veh/h/ln	1728	0	1585				0	1609	1585	1728	1777	0
Q Serve(g_s), s	15.9	0.0	0.0				0.0	13.3	0.0	11.3	10.7	0.0
Cycle Q Clear(g_c), s	15.9	0.0	0.0				0.0	13.3	0.0	11.3	10.7	0.0
Prop In Lane	1.00		1.00				0.00		1.00	1.00		0.00
Lane Grp Cap(c), veh/h	841	0					0	2762		613	2334	0
V/C Ratio(X)	0.85	0.00					0.00	0.53		0.83	0.43	0.00
Avail Cap(c_a), veh/h	1037	0					0	2762		778	2334	0
HCM Platoon Ratio	1.00	1.00	1.00				1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00				0.00	1.00	0.00	0.49	0.49	0.00
Uniform Delay (d), s/veh	28.9	0.0	0.0				0.0	16.8	0.0	31.7	6.5	0.0
Incr Delay (d2), s/veh	5.9	0.0	0.0				0.0	0.7	0.0	3.0	0.3	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0				0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	7.0	0.0	0.0				0.0	4.7	0.0	4.8	3.4	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	34.8	0.0	0.0				0.0	17.5	0.0	34.7	6.8	0.0
LnGrp LOS	C	A					A	B		C	A	A
Approach Vol, veh/h		718	A					1450	A		1500	
Approach Delay, s/veh		34.8						17.5			16.3	
Approach LOS		C						B			B	

Timer - Assigned Phs	1	2		4		6						
Phs Duration (G+Y+Rc), s	18.2	38.3		23.5		56.5						
Change Period (Y+Rc), s	4.0	4.0		4.0		4.0						
Max Green Setting (Gmax), s	18.0	26.0		24.0		48.0						
Max Q Clear Time (g_c+I1), s	13.3	15.3		17.9		12.7						
Green Ext Time (p_c), s	0.9	7.0		1.6		8.8						

Intersection Summary												
HCM 6th Ctrl Delay			20.4									
HCM 6th LOS			C									

Notes

Unsignalized Delay for [NBR, EBR] is excluded from calculations of the approach delay and intersection delay.

INTERSECTION CAPACITY UTILIZATION

INTERSECTION NUMBER: 25
NORTH/SOUTH STREET: Oxnard Blvd
EAST/WEST STREET: Gonzales Rd
SCENARIO: Buildout Conditions
TIME PERIOD: AM Peak Hour
COUNT DATE: 05/2018
WORK ORDER #: 2064169300

VOLUMES	Northbound			Southbound			Eastbound			Westbound		
	L	T	R	L	T	R	L	T	R	L	T	R
AM Peak	140	1090	430	720	1570	80	240	1180	100	320	840	360
Project Trips	0	0	0	0	0	31	40	20	0	0	16	0
GEOMETRY	LL	TTT	R	LL	TTT	R	LL	TT TR		LL	TTT	R

	Level of Service Calculations						
Move-	**Lanes**			**Volume**		**V/C Ratio**	
ment	Lane		Capacity	Buildout	Project	Buildout	Project
NBL	2.0		3,200	140	140	0.04	0.04
NBT	3.0		4,800	1,090	1,090	0.23 *	0.23 *
NBR	1.0	(a)	1,600	110	110	0.07	0.07
SBL	2.0		3,200	720	720	0.23 *	0.23 *
SBT	3.0		4,800	1,570	1,570	0.33	0.33
SBR	1.0		1,600	80	111	0.05	0.07
EBL	2.0		3,200	240	280	0.08	0.09
EBT	3.0		4,800	1,180	1,200	0.27 *	0.27 *
EBR	0.0		0	100	100	0.00	0.00
WBL	2.0		3,200	320	320	0.10 *	0.10 *
WBT	3.0		4,800	840	856	0.18	0.18
WBR	1.0	(b)	1,600	0	0	0.00	0.00
N/S Critical Movements						0.46	0.46
E/W Critical Movements						0.37	0.37
Clearance Interval						0.00	0.00
ICU						0.83	0.83
Level of Service (LOS)						D	D

Notes: V/C - Volume to Capacity Ratio
(a) RTOR overlap w/WB LT
(b) RTOR overlap w/SB LT

INTERSECTION CAPACITY UTILIZATION

INTERSECTION NUMBER: 25
NORTH/SOUTH STREET: Oxnard Blvd
EAST/WEST STREET: Gonzales Rd
SCENARIO: Buildout Conditions
TIME PERIOD: PM Peak Hour
COUNT DATE: 05/2018
WORK ORDER #: 2064169300

VOLUMES	Northbound			Southbound			Eastbound			Westbound		
	L	T	R	L	T	R	L	T	R	L	T	R
PM Peak	220	1610	350	420	1700	140	330	980	160	390	1340	530
Project Trips	0	0	0	0	0	41	38	17	0	0	21	0
GEOMETRY	LL	TTT	R	LL	TTT	R	LL	TT TR		LL	TTT	R

	Level of Service Calculations						
Move-	**Lanes**			**Volume**		**V/C Ratio**	
ment	Lane		Capacity	Buildout	Project	Buildout	Project
NBL	2.0		3,200	220	220	0.07	0.07
NBT	3.0		4,800	1,610	1,610	0.34 *	0.34 *
NBR	1.0	(a)	1,600	350	350	0.22	0.22
SBL	2.0		3,200	420	420	0.13 *	0.13 *
SBT	3.0		4,800	1,700	1,700	0.35	0.35
SBR	1.0		1,600	140	181	0.09	0.11
EBL	2.0		3,200	330	368	0.10 *	0.12 *
EBT	3.0		4,800	980	997	0.24	0.24
EBR	0.0		0	160	160	0.00	0.00
WBL	2.0		3,200	390	390	0.12	0.12
WBT	3.0		4,800	1,340	1,361	0.28 *	0.28 *
WBR	1.0	(b)	1,600	320	320	0.20	0.20
N/S Critical Movements						0.47	0.47
E/W Critical Movements						0.38	0.40
Clearance Interval						0.00	0.00
ICU						0.85	0.87
Level of Service (LOS)						D	D

Notes: V/C - Volume to Capacity Ratio
(a) not critical due to RTOR overlap w/WB LT
(b) RTOR overlap w/SB LT

Appendix 6
Proportionate Share Calculation Worksheets

05. VICTORIA AVE & DORIS AVE INTERSECTION
Proportionate Share Calculation

AM Peak Hour - Entering Volumes

Total Trips - Existing Conditions:	3,480 PHT
Total Trips - Cumulative Conditions:	3,679 PHT
Cumulative Increase	199 PHT
Project Trips	130 PHT
Cumulative + Project Increase:	329 PHT

Formula:

$$\frac{\text{Project PHT}}{\text{Cumulative Increase PHT + Project PHT}}$$

Calculation:

$$\frac{\text{130 PHT}}{\text{199 PHT + 130 PHT}} = 40\%$$

06. VICTORIA AVE & TEAL CLUB RD INTERSECTION
Proportionate Share Calculation

	AM Peak Hour	PM Peak Hour
Total Trips - Existing Conditions:	3,471 PHT	3,873 PHT
Total Trips - Cumulative Conditions:	3,796 PHT	4,060 PHT
Cumulative Increase	325 PHT	187 PHT
Project Trips	95 PHT	107 PHT
Cumulative + Project Increase:	420 PHT	294 PHT

Formula:

$$\frac{\text{Project PHT}}{\text{Cumulative Increase PHT + Project PHT}}$$

Calculation:

$$\frac{\text{202 PHT}}{\text{512 PHT + 202 PHT}} = 28\%$$

10. PATTERSON AVE & DORIS AVE INTERSECTION
Proportionate Share Calculation

AM Peak Hour - Entering Volumes

Total Trips - Existing Conditions:	982 PHT
Total Trips - Cumulative Conditions:	1,581 PHT
Cumulative Increase	599 PHT
Project Trips	155 PHT
Cumulative + Project Increase:	754 PHT

Formula:

$$\frac{\text{Project PHT}}{\text{Cumulative Increase PHT + Project PHT}}$$

Calculation:

$$\frac{\text{155 PHT}}{\text{599 PHT + 155 PHT}} = 21\%$$

04. VICTORIA AVE & GONZALES RD INTERSECTION
Proportionate Share Calculation

	AM Peak Hour	PM Peak Hour
Total Trips - Existing Conditions:	4,386 PHT	4,594 PHT
Total Trips - Buildout Conditions:	5,600 PHT	6,085 PHT
Buildout Increase	1,214 PHT	1,491 PHT
Project Trips	134 PHT	150 PHT
Buildout + Project Increase:	1,348 PHT	1,641 PHT

Formula:

$$\frac{\text{Project PHT}}{\text{Cumulative Increase PHT + Project PHT}}$$

Calculation:

$$\frac{\text{284 PHT}}{\text{2,989 PHT}} = 33\%$$

11. PATTERSON AVE & TEAL CLUB ROAD INTERSECTION
Proportionate Share Calculation

AM Peak Hour - Entering Volumes

Total Trips - Existing Conditions:	290 PHT
Total Trips - Buildout Conditions:	830 PHT
Cumulative Increase	540 PHT
Project Trips	113 PHT
Cumulative + Project Increase:	653 PHT

Formula:

$$\frac{\text{Project PHT}}{\text{Cumulative Increase PHT + Project PHT}}$$

Calculation:

$$\frac{\text{113 PHT}}{\text{653 PHT}} = 17\%$$

17. VENTURA RD & DORIS AVE INTERSECTION
Proportionate Share Calculation

	AM Peak Hour	PM Peak Hour
Total Trips - Existing Conditions:	4,071 PHT	3,887 PHT
Total Trips - Buildout Conditions:	4,475 PHT	5,020 PHT
Buildout Increase	404 PHT	1,133 PHT
Project Trips	357 PHT	400 PHT
Buildout + Project Increase:	761 PHT	1,533 PHT

Formula:

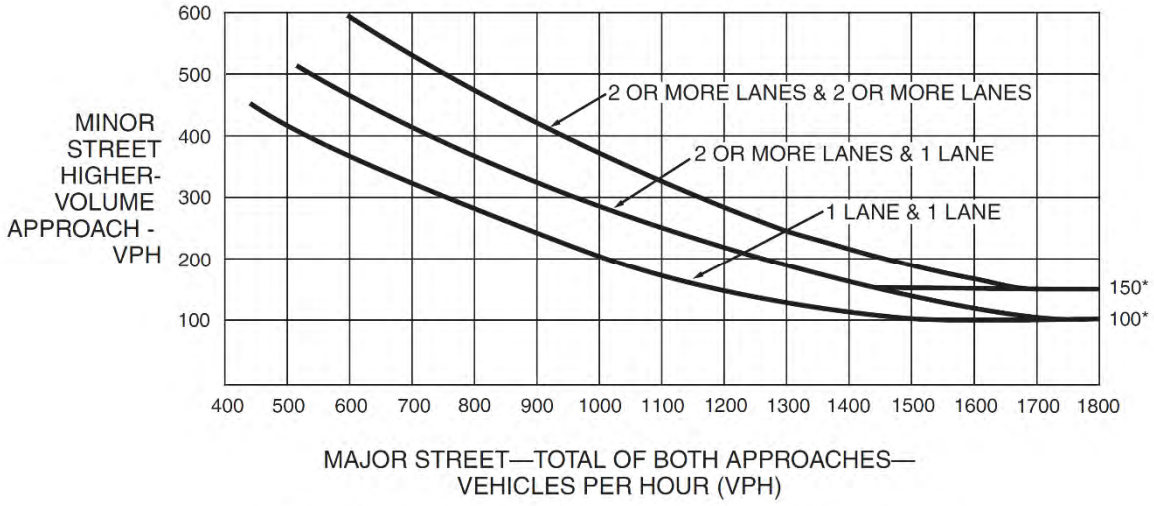
$$\frac{\text{Project PHT}}{\text{Cumulative Increase PHT + Project PHT}}$$

Calculation:

$$\frac{\text{757 PHT}}{\text{2,294 PHT}} = 33\%$$

Appendix 7
Traffic Signal Warrant Worksheets

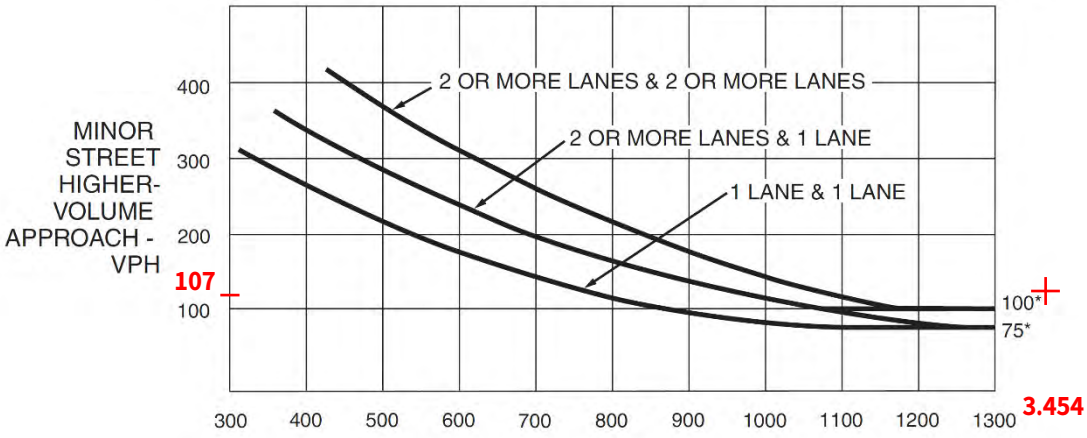
Figure 4C-3. Warrant 3, Peak Hour



*Note: 150 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 100 vph applies as the lower threshold volume for a minor-street approach with one lane.

Figure 4C-4. Warrant 3, Peak Hour (70% Factor)

(COMMUNITY LESS THAN 10,000 POPULATION OR ABOVE 40 MPH ON MAJOR STREET)



*Note: 100 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 75 vph applies as the lower threshold volume for a minor-street approach with one lane.

Figure 4C-101 (CA). Traffic Signal Warrants Worksheet (Sheet 2 of 5)

WARRANT 2 - Four Hour Vehicular Volume **SATISFIED* YES ☐ NO ☐**

Record hourly vehicular volumes for any four hours of an average day.

APPROACH LANES	One	2 or More	Hour			
Both Approaches - Major Street						
Higher Approach - Minor Street						

*All plotted points fall above the applicable curve in Figure 4C-1. (URBAN AREAS)	Yes ☐	No ☐
OR, All plotted points fall above the applicable curve in Figure 4C-2. (RURAL AREAS)	Yes ☐	No ☐

WARRANT 3 - Peak Hour **SATISFIED YES ☒ NO ☐**
(Part A or Part B must be satisfied)

PART A **SATISFIED YES ☐ NO ☒**

(All parts 1, 2, and 3 below must be satisfied for the same one hour, for any four consecutive 15-minute periods)

1. The total delay experienced by traffic on one minor street approach (one direction only) controlled by a STOP sign equals or exceeds four vehicle-hours for a one-lane approach, or five vehicle-hours for a two-lane approach; AND	Yes ☒	No ☐
2. The volume on the same minor street approach (one direction only) equals or exceeds 100 vph for one moving lane of traffic or 150 vph for two moving lanes; AND	Yes ☐	No ☒
3. The total entering volume serviced during the hour equals or exceeds 800 vph for intersections with four or more approaches or 650 vph for intersections with three approaches.	Yes ☒	No ☐

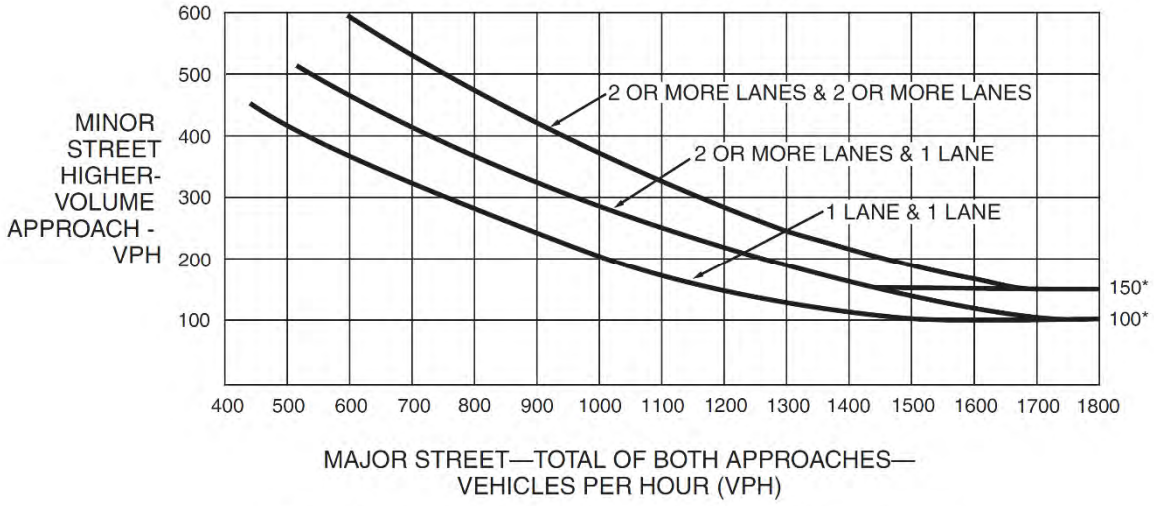
PART B **SATISFIED YES ☒ NO ☐**

APPROACH LANES	One	2 or More	AM Peak Hour
Both Approaches - Major Street		X	3,454
Higher Approach - Minor Street		X	107

The plotted point falls above the applicable curve in Figure 4C-3. (URBAN AREAS)	Yes ☐	No ☐
OR, The plotted point falls above the applicable curve in Figure 4C-4. (RURAL AREAS)	Yes ☒	No ☐

The satisfaction of a traffic signal warrant or warrants shall not in itself require the installation of a traffic control signal.

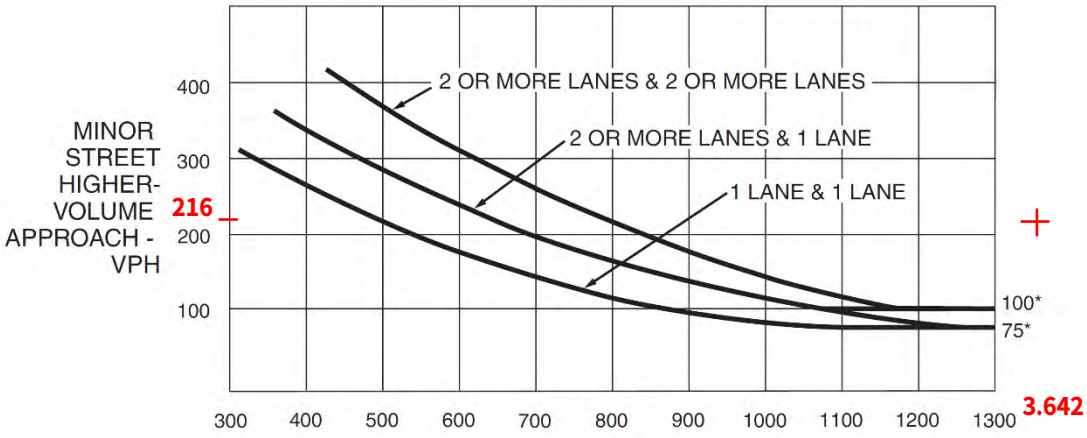
Figure 4C-3. Warrant 3, Peak Hour



*Note: 150 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 100 vph applies as the lower threshold volume for a minor-street approach with one lane.

Figure 4C-4. Warrant 3, Peak Hour (70% Factor)

(COMMUNITY LESS THAN 10,000 POPULATION OR ABOVE 40 MPH ON MAJOR STREET)



*Note: 100 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 75 vph applies as the lower threshold volume for a minor-street approach with one lane.

Figure 4C-101 (CA). Traffic Signal Warrants Worksheet (Sheet 2 of 5)

WARRANT 2 - Four Hour Vehicular Volume **SATISFIED* YES ☐ NO ☐**

Record hourly vehicular volumes for any four hours of an average day.

APPROACH LANES	One	2 or More	Hour			
Both Approaches - Major Street						
Higher Approach - Minor Street						

*All plotted points fall above the applicable curve in Figure 4C-1. (URBAN AREAS)	Yes ☐	No ☐
OR, All plotted points fall above the applicable curve in Figure 4C-2. (RURAL AREAS)	Yes ☐	No ☐

WARRANT 3 - Peak Hour **SATISFIED YES ☒ NO ☐**
(Part A or Part B must be satisfied)

PART A **SATISFIED YES ☒ NO ☐**

(All parts 1, 2, and 3 below must be satisfied for the same one hour, for any four consecutive 15-minute periods)

1. The total delay experienced by traffic on one minor street approach (one direction only) controlled by a STOP sign equals or exceeds four vehicle-hours for a one-lane approach, or five vehicle-hours for a two-lane approach; AND	Yes ☒	No ☐
2. The volume on the same minor street approach (one direction only) equals or exceeds 100 vph for one moving lane of traffic or 150 vph for two moving lanes; AND	Yes ☒	No ☐
3. The total entering volume serviced during the hour equals or exceeds 800 vph for intersections with four or more approaches or 650 vph for intersections with three approaches.	Yes ☒	No ☐

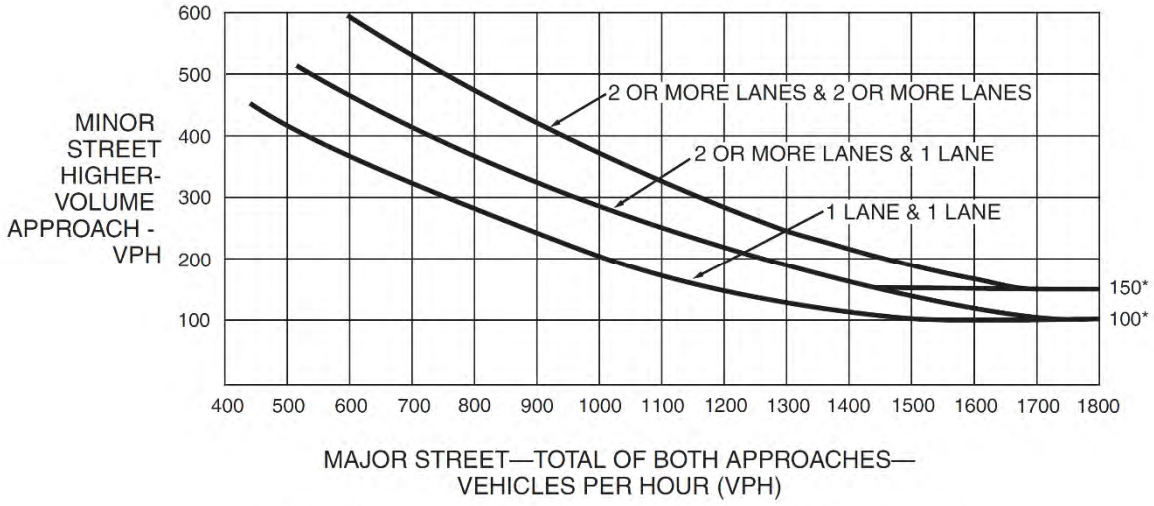
PART B **SATISFIED YES ☒ NO ☐**

APPROACH LANES	One	2 or More	AM Peak Hour
Both Approaches - Major Street		X	3,642
Higher Approach - Minor Street		X	216

The plotted point falls above the applicable curve in Figure 4C-3. (URBAN AREAS)	Yes ☐	No ☐
OR, The plotted point falls above the applicable curve in Figure 4C-4. (RURAL AREAS)	Yes ☒	No ☐

The satisfaction of a traffic signal warrant or warrants shall not in itself require the installation of a traffic control signal.

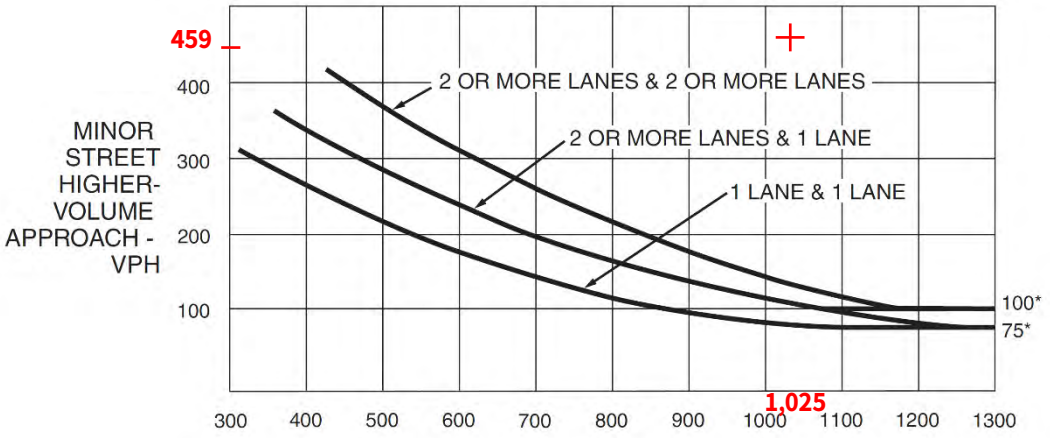
Figure 4C-3. Warrant 3, Peak Hour



*Note: 150 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 100 vph applies as the lower threshold volume for a minor-street approach with one lane.

Figure 4C-4. Warrant 3, Peak Hour (70% Factor)

(COMMUNITY LESS THAN 10,000 POPULATION OR ABOVE 40 MPH ON MAJOR STREET)



*Note: 100 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 75 vph applies as the lower threshold volume for a minor-street approach with one lane.

Figure 4C-101 (CA). Traffic Signal Warrants Worksheet (Sheet 2 of 5)

WARRANT 2 - Four Hour Vehicular Volume **SATISFIED* YES ☐ NO ☐**

Record hourly vehicular volumes for any four hours of an average day.

APPROACH LANES	One	2 or More	Hour			
Both Approaches - Major Street						
Higher Approach - Minor Street						

*All plotted points fall above the applicable curve in Figure 4C-1. (URBAN AREAS)	Yes ☐	No ☐
OR, All plotted points fall above the applicable curve in Figure 4C-2. (RURAL AREAS)	Yes ☐	No ☐

WARRANT 3 - Peak Hour **SATISFIED YES ☒ NO ☐**
(Part A or Part B must be satisfied)

PART A **SATISFIED YES ☒ NO ☐**

(All parts 1, 2, and 3 below must be satisfied for the same one hour, for any four consecutive 15-minute periods)

1. The total delay experienced by traffic on one minor street approach (one direction only) controlled by a STOP sign equals or exceeds four vehicle-hours for a one-lane approach, or five vehicle-hours for a two-lane approach; AND	Yes ☒	No ☐
2. The volume on the same minor street approach (one direction only) equals or exceeds 100 vph for one moving lane of traffic or 150 vph for two moving lanes; AND	Yes ☒	No ☐
3. The total entering volume serviced during the hour equals or exceeds 800 vph for intersections with four or more approaches or 650 vph for intersections with three approaches.	Yes ☒	No ☐

PART B **SATISFIED YES ☒ NO ☐**

APPROACH LANES	One	2 or More	AM Peak Hour
Both Approaches - Major Street		X	1,025
Higher Approach - Minor Street		X	459

The plotted point falls above the applicable curve in Figure 4C-3. (URBAN AREAS)	Yes ☐	No ☐
OR, The plotted point falls above the applicable curve in Figure 4C-4. (RURAL AREAS)	Yes ☒	No ☐

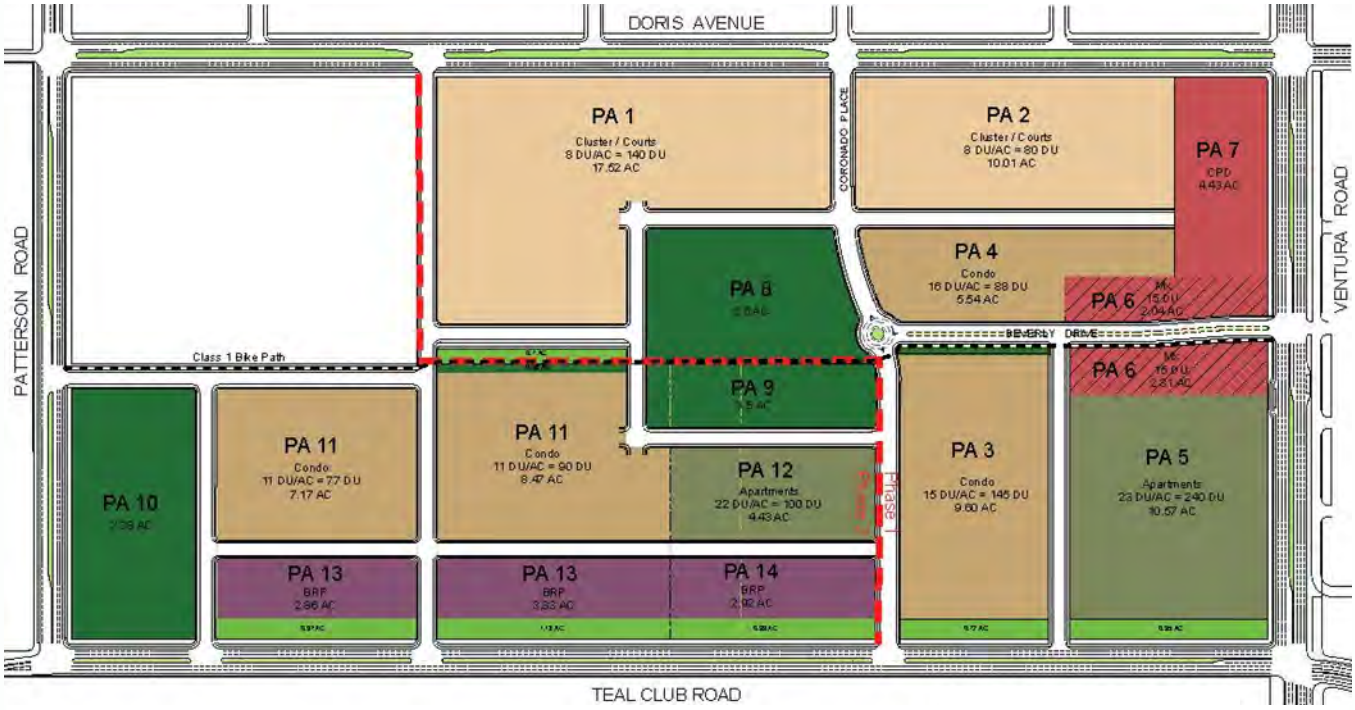
The satisfaction of a traffic signal warrant or warrants shall not in itself require the installation of a traffic control signal.

Appendix J

Water Supply Assessment

REVISED FINAL DRAFT
WATER SUPPLY ASSESSMENT
TEAL CLUB DEVELOPMENT

OCTOBER 2019



Prepared for:

Rincon Consultants, Inc
Ventura, CA

Prepared by:

Milner-Villa Consulting
Ventura, CA

REVISED FINAL DRAFT
WATER SUPPLY ASSESSMENT
TEAL CLUB DEVELOPMENT

OCTOBER 2019

Prepared For:

RINCON CONSULTANTS, INC.

Karly Kaufman, Project Manager
449 15th Street, Suite 303
Oakland, California, 94612
510-834-4455

Prepared By:

MILNER-VILLA CONSULTING, LLC

Brad Milner, President
1746 S. Victoria Ave. #F126
Ventura, California, 93003
805-551-3294
www.milnervilla.com

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C City of Oxnard 2019 Consumer Confidence Report.

LIST OF FREQUENTLY USED ACRONYMS AND ABBREVIATIONS

AF	acre-feet
AFY	acre-feet per year
AWPF	Advanced Water Purification Facility
BGS	below ground surface
CEQA	California Environmental Quality Act
City	City of Oxnard
CMWD	Calleguas Municipal Water District
County	County of Ventura
DDW	Division of Drinking Water (SWRCB)
DWR	California Department of Water Resources
FCGMA	Fox Canyon Ground water Management Agency
gpcd	gallons per capita per day
gpd/ft^2	gallons per day per square foot
gpm	gallons per minute
GREAT	Ground water Recovery Enhancement and Treatment
IRP	Integrated Resources Program
LAS	lower aquifer system
LRP	Local Resources Program
LTCP	Long Term Conservation Plan
MAF	million acre feet
MGD	million gallons per day
MWDSC	Metropolitan Water District of Southern California (also "Metropolitan")
NBVC	Naval Base Ventura County
O-H	Oxnard-Hueneme Pipeline System
OWWTP	Oxnard Wastewater Treatment Plant
PHWA	Port Hueneme Water Agency
Project	Teal Club Project
SB	Senate Bill
sq.ft.	square feet
SWP	State Water Project (State of CA)
SWRCB	State Water Resources Control Board
TDS	total dissolved solids
UAS	upper aquifer system
USEPA	United States Environmental Protection Agency
UWCD	United Water Conservation District (or District)
UWMP	Urban Water Management Plan
WSA	Water Supply Assessment.

SECTION 1: INTRODUCTION

1.1 Purpose of Water Supply Assessment

Milner-Villa Consulting was contracted to prepare a Water Supply Assessment (WSA) for the proposed Teal Club Development (Project) located in the City of Oxnard, Oxnard, California. In addition, this WSA was prepared to partially satisfy the requirements of California Water Code and to supplement the Project Draft Environmental Impact Report (EIR).

The purpose of this Water Supply Assessment is to determine if sufficient water supplies are available to meet the proposed water demands of the proposed Teal Club Development. This assessment has been prepared in accordance with the requirements of SB 610. Senate Bill 610 (Costa), an amendment to California Law (Public Resources Code Section 21151.9, Water Code Sections 10631, 10656, 10657, 10910-10915), places additional requirements upon the local water agencies and or planning agencies regarding land use planning and water supply availability. A copy of California Water Code Section 10910-10915 is provided in Appendix A.

SB 610 requires cities and counties, which determine if a project is subject to the California Environmental Quality Act, to identify any public water system that may supply water for a project. The cities and counties may request those public water systems to prepare a project-specific water supply assessment to be included in any environmental document prepared for a project. This assessment must include, among other information, an identification of existing water supply entitlements, water rights, or water service contracts relevant to the identified water supply for the proposed project and water received in prior years pursuant to those entitlements, rights, and contracts. If the assessment concludes that water supplies are or will be insufficient, the public water system must submit plans for acquiring additional water supplies.

SB 610 took effect on 1 January 2002 and requires that water agencies and or planning agencies demonstrate that sufficient and reliable sources are available in order for local agencies to approve large-scale developments and complete the environmental review process for projects. Water Code Section 10912 requires a Water Supply Assessment for several types of proposed projects, including "...a proposed residential development of more than 500 dwelling units (Water Code, Section 10912.a.5)". The proposed Project includes a mixed-use development plan including up to 990 residential units. Based upon the criteria defining a project under Water Code, Section 10912.a.5, the proposed Project meets the intent of the law, thus the Project requires a Water Supply Assessment.

In general, water supply assessments are prepared utilizing data and information from local UWMPs and other relevant sources. This Water Supply Assessment was prepared in October 2019 using available information known at the time of the preparation of this document.

1.2 Teal Club Project

1.2.1 Project Location

The Project area is located in southern California, within an unincorporated area of Ventura County adjacent to the City of Oxnard (City), and within the City's Sphere of Influence and City Urban Restriction Boundary (CURB) lines (see Figure 1-1). The proposed Teal Club Specific Plan Area comprises approximately 150 acres (gross) generally bounded by Doris Avenue on the north, Patterson Road on the west, Teal Club Road on the south, and Ventura Road on the east (see Figure 1-2).

1.2.2 Project Description

The proposed Project by Borchard Ownership Interests (Project Proponents) will involve annexation of the approximately 150-acre (gross) project area to the City, and adoption of an updated Teal Club Specific Plan (in progress). Current Ventura County General Plan land use and zoning designations for the project area are Agricultural and Agricultural Exclusive. The proposed Teal Club Specific Plan designates residential, retail commercial, business/research park, parks, and public facilities uses (see Figure 1-2). A central focus of this development will be in the provision of balanced community with jobs, recreation, shopping, and affordable and market-rate housing. The 2030 General Plan land use map designates the project site for an Urban Village, thereby encouraging neo-traditional town planning with a focus on sustainability and transit-oriented development.

The Project Proponents propose to complete one of three versions of the Teal Club Project. The three versions are named "Project", "Reduced Intensity Alternative", and "Phase 1 Development Only Alternative". Each of these versions are summarized below.

The "Project" will include the following major components:

- Approximately 150 total acres
- Up to 990 residential units in a variety of densities and product types on approximately 73 acres
- Up to 132,000 square feet of light industrial development on approximately 9 acres
- Up to 60,000 square feet of retail commercial uses on approximately 9 acres
- Approximately 18 acres of community park space, pocket parks, and greenbelts
- Approximately 41 acres of roadways and storm water detention basins.

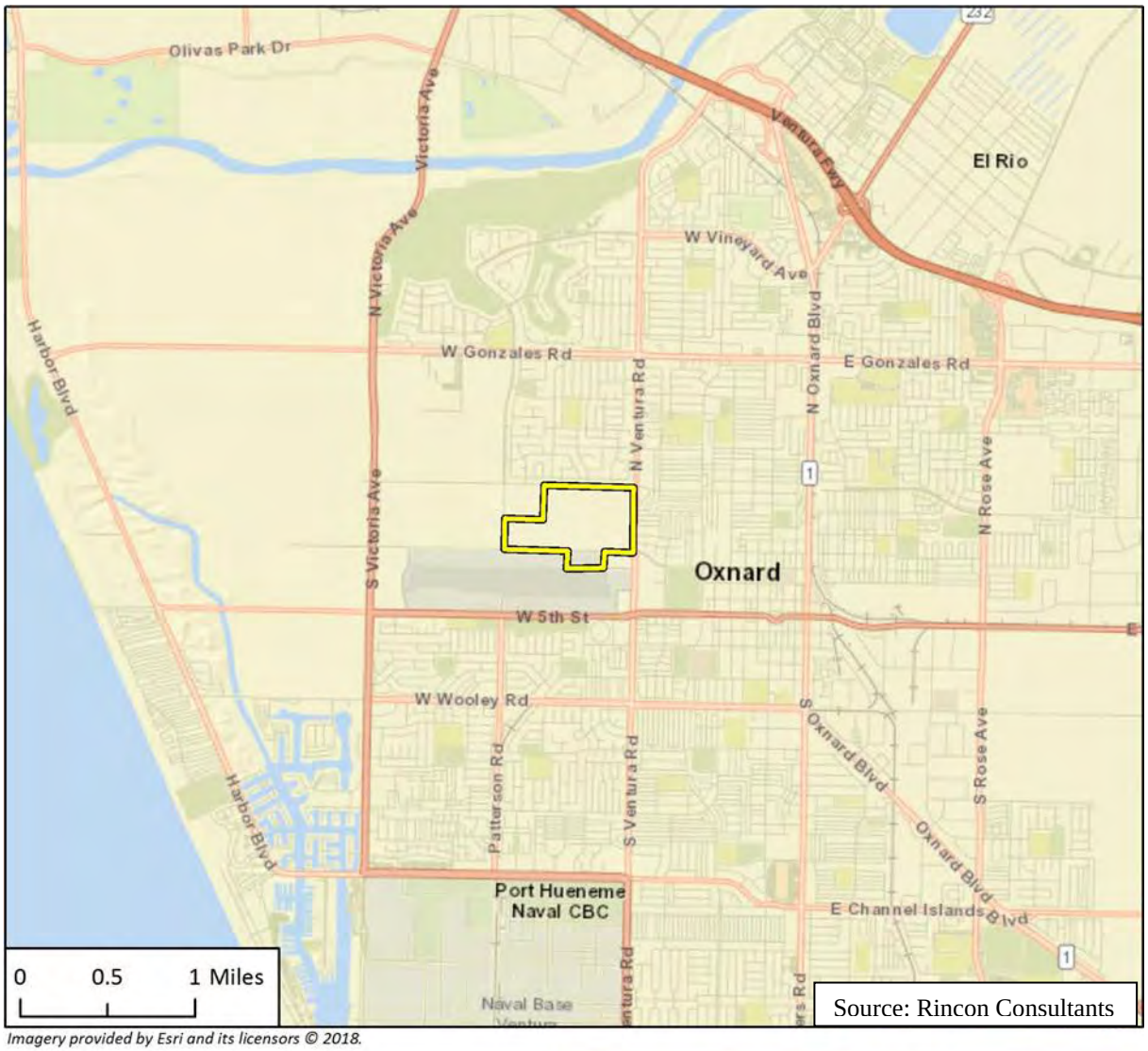
The "Reduced Intensity Alternative" will include the following major components:

- Approximately 150 total acres
- Up to 990 residential units in a variety of densities and product types on approximately 86 acres
- Up to 50,000 square feet of retail commercial uses on approximately 9 acres
- Approximately 18 acres of community park space, pocket parks, and greenbelts
- . Approximately 38 acres of roadways and storm water detention basins.

The "Phase 1 Development Only Alternative" will include the following major components:

- Approximately 92 total acres
- Up to 723 residential units in a variety of densities and product types on approximately 53 acres
- Up to 60,000 square feet of retail commercial uses on approximately 9 acres
- Approximately 6.5 acres of park space and greenbelts
- Approximately 23 acres of roadways and storm water detention basins.

The proposed Project will require review by other agencies including the Ventura County Airport Land Use Commission, California Division of Aeronautics, City of Oxnard, and the Ventura County Local Agency Formation Commission. The State Water Resources Control Board, Division of Drinking Water will be responsible for regulatory approvals for drinking water supply and water quality for the Project. The Fox Canyon Groundwater Management Agency will be responsible for approval of the transfer of ground water extraction allocations from the property owner to the City. The City will be responsible for delivery of water and recycled water to the Project.



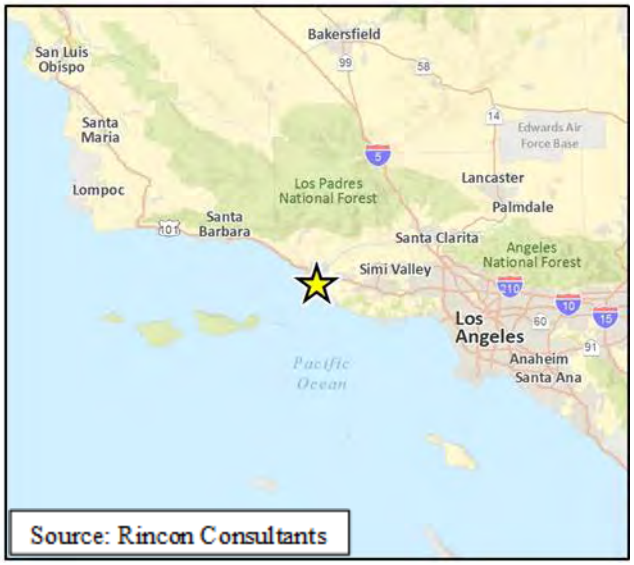


FIGURE 1-1
PROJECT VICINITY

FIGURE 1-2
PROJECT SITE PLAN

Source: Rincon Consultants

1.2.3 Project Status

This Project is required to prepare an Environmental Impact Report (EIR) in accordance with the City of Oxnard requirements and California Environmental Quality Act (CEQA; Public Resources Code § 21000 et seq.). A Draft EIR dated 2015 is available for the Project (prepared by Rincon Consultants). The Final EIR is anticipated to available in the fourth quarter of 2019.

1.3 Area Characteristics

The Project is located in Ventura County. Rugged mountainous terrain covers most of the northern Ventura County while broader alluvial valleys and lower rolling topography occur in the southern portions of the County. Mountainous areas to the north rise to elevations in excess of 6,000 feet above mean sea level. Ground surface elevations vary from about 60 to 150 feet above mean sea level on the Oxnard Plain and from about 15 to 250 feet above mean sea level in Pleasant Valley (Oxnard, 2004). The Santa Clara River watershed runs 84 miles from the Pacifico Mountain to the estuary. The Santa Clara River drains an area of 1,634 square miles including most of northern Ventura County (60 percent of watershed) and northwestern Los Angeles County (40 percent of watershed). Nearly 90 percent of this drainage area is characterized by rugged topography, while the remainder consists of flatter valley floor and coastal plain topography.

The Project is located about 60 miles northwest of Los Angeles along a beautiful stretch of the Pacific Ocean coastline in western Ventura County and adjacent to the City of Oxnard. Oxnard is the largest city within Ventura County, and the center of a regional agricultural industry and a progressive business center. In addition, Oxnard is a relaxed seaside destination with a variety of neighborhoods and community services. Bordered by mountains and the Pacific Ocean, western Ventura County provides a seaside environment with expansive mountain views. Oxnard incorporates both of these attributes through its pattern of relatively compact urban development focused on the downtown, coastline and harbor, and the Highway 101 corridor. The moderate Mediterranean climate, fertile topsoil, and generally adequate ground water supply lead to year-round agricultural production in the surrounding Oxnard Plain (Oxnard, 2011).

Adjacent communities include the cities of San Buenaventura, Port Hueneme, and Camarillo. Naval Base Ventura County, consisting of Naval Air Station Point Mugu and Construction Battalion Center Port Hueneme is located to the south of Oxnard. The Oxnard Plain is bordered by mountains with numerous public recreation areas while the Channel Islands National Park (generally located off the coast) frames the western horizon.

The 150-acre proposed Teal Club Project is in the western portion of Ventura County, in the western part of the City of Oxnard, north of the Oxnard Airport. The Plan Area is located within an unincorporated area of Ventura County adjacent to the City of Oxnard, and within the City of Oxnard's Sphere of Influence and City Urban Restriction Boundary lines. The Plan Area comprises five contiguous assessor’s parcels generally bounded by Doris Avenue on the north, Patterson Road on the west, Teal Club Road on the south, and Ventura Road on the east. The additional annexation area comprises nine assessor’s parcels on the south side of Teal Club Road, north and west of Little Farms Road and bisected by Mallard Way. Additional details regarding the assessor parcel numbers for the Plan Area and the proposed additional annexation area are provided in the Draft EIR (in progress). Regional access to the site is provided by the Ventura Freeway (U.S. Highway 101) and the Pacific Coast Highway (State Route 1).

The Plan Area is in active agricultural use, currently cultivated with irrigated row crops. There are several agricultural accessory buildings in the proposed Plan Area, the largest being a barn and greenhouses in the central-southern portion along Teal Club Road. The Plan Area also supports two single family residences, one just east of the barn and one in the northeastern corner of the site at Doris Avenue and North Ventura Road. The additional parcels to be annexed south of Teal Club Road are a mix of vacant land (the westernmost three parcels) and residential and industrial development (the easternmost six parcels).

1.4 Population and Demographics

The City of Oxnard has a mix of housing types, including single-family residences and multiple-family residences. Residential customers represent the largest category of water users in terms of accounts and volume purchased. According to the 2010 U.S. Census, there was a population of approximately 198,000 persons within the City service area. According to the City's UWMP (2016), the estimated City population for 2015 is 193,654 (Oxnard, 2016). The UWMP includes the following population projections:

- 2020: 220,248
- 2025: 229,622
- 2030: 238,996
- 2035: 248,370
- 2040: 257,744.

1.5 Local Climate

The Project site is located adjacent to the City of Oxnard. The City is located within the Oxnard Plain, which has a mild Mediterranean style climate, with cool wet winters and mild, dry summers. Temperatures only rarely fall below freezing in winter. Annual average monthly temperatures range from a high of 75.3°F (September) to low of 44.0°F (January). See Table 1-1 for details. Annual average precipitation is approximately 13.9 inches per year (see Table 1-1 for details), of which most occurs during the winter season (November to March).

TABLE 1-1
MONTHLY CLIMATE DATA FOR RAINFALL and TEMPERATURE

Parameter (a)	**Jan**	**Feb**	**Mar**	**Apr**	**May**	**Jun**	
Average Rainfall (in)	3.11	3.21	2.32	1.04	0.19	0.07	
Average Max Temperature (°F)	65.9	66.1	66.8	68.3	69.5	71.5	
Average Min Temperature (°F)	44.0	44.7	46.0	48.0	51.1	54.2	
Parameter (a)	**Jul**	**Aug**	**Sept**	**Oct**	**Nov**	**Dec**	**Annual**
Average Rainfall (in)	0.02	0.05	0.20	0.48	1.43	2.43	**13.9**
Average Max Temperature (°F)	74.4	75.1	75.3	74.2	71.3	66.5	**70.4**
Average Min Temperature (°F)	57.3	57.8	56.4	52.6	47.6	44.3	**50.2**

Notes:
(a) Temperature and rainfall data obtained from National Weather Service Office, Oxnard, CA.

Additional details regarding potential impacts of climate change on water demands and water resources are provided in Sections 2, 3, and 4.

1.6 Review of Local Urban Water Management Plans

SB 610 provides that if the projected water demand associated with the proposed project was accounted for in the Urban Water Management Plan (UWMP), or if the UWMP includes information applicable to the proposed project, then relevant information from that document may be incorporated into the SB 610 water supply assessment.

The City of Oxnard (City) adopted its current UWMP in May 2016 (Oxnard, 2016). The City will supply potable water to the Project. Information in the City UWMP relevant to this Water Supply Assessment will be identified and incorporated into this Assessment. Relevant information in the City UWMP (2016) includes, but is not limited to, the following:

- City currently supplies water to 41,514 service connections including residential, commercial, and industrial customers.
- City's current and future water supplies include imported State Water Project (SWP) water and treated ground water.
- City also distributes recycled water to customers within the City's service area.
- City water demand in 2015 is 25,423 acre-feet per year (AFY) including sales for municipal, commercial, industrial, agriculture, and system losses.
- City estimates a normal water-year demand of 52,225 AFY for the year 2040.
- City estimates ground water pumping or purchase of ground water of 28,515 AFY by 2040
- City estimates purchase of imported surface water of 11,826 AFY for the year 2040
- City estimates recycled water sales of 14,000 AFY for the year 2040.

1.7 Report Organization

The remainder of this Water Supply Assessment is organized as follows:

- Section 2 – Water Supply
- Section 3 – Water Demand
- Section 4 – Water Supply Reliability
- Section 5 – Summary and Conclusions.

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SECTION 2: WATER SUPPLY

2.1 WSA Requirement

The WSA must comply with the following California Water Code requirements:

> 10910(b) The city or county, at the time that it determines whether an environmental impact report, a negative declaration, or a mitigated negative declaration is required for any project subject to the California Environmental Quality Act pursuant to Section 21080.1 of the Public Resources Code, shall identify any water system that is, or may become as a result of supplying water to the project identified pursuant to this subdivision, a public water system, as defined in Section 10912, that may supply water for the project. If the city or county is not able to identify any public water system that may supply water for the project, the city or county shall prepare the water assessment required by this part after consulting with any entity serving domestic water supplies whose service area includes the project site, the local agency formation commission, and any public water system adjacent to the project site.
>
> (d) (1) The assessment required by this section shall include an identification of any existing water supply entitlements, water rights, or water service contracts relevant to the identified water supply for the proposed project, and a description of the quantities of water received in prior years by the public water system, or the city or county if either is required to comply with this part pursuant to subdivision (b), under the existing water supply entitlements, water rights, or water service contracts.
> (2) An identification of existing water supply entitlements, water rights, or water service contracts held by the public water system, or the city or county if either is required to comply with this part pursuant to subdivision (b), shall be demonstrated by providing information related to all of the following:
> (A) Written contracts or other proof of entitlement to an identified water supply.
> (B) Copies of a capital outlay program for financing the delivery of a water supply that has been adopted by the public water system.
> (C) Federal, state, and local permits for construction of necessary infrastructure associated with delivering the water supply.
> (D) Any necessary regulatory approvals that are required in order to be able to convey or deliver the water supply.
>
> (f) If a water supply for a proposed project includes ground water, the following additional information shall be included in the water supply assessment:
> (1) A review of any information contained in the urban water management plan relevant to the identified water supply for the proposed project.
> (2) A description of any ground water basin or basins from which the proposed project will be supplied. For basins that have not been adjudicated, information as to whether the department has identified the basin or basins as overdrafted or has projected that the basin will become overdrafted if present management conditions continue, in the most current bulletin of the department that characterizes the condition of the ground water basin, and a detailed description by the public system, or the city or county if either is required to comply with this part pursuant to subdivision (b), of the efforts being undertaken in the basin or basins to eliminate the long-term overdraft condition.
> (3) A detailed description and analysis of the amount and location of ground water pumped by the public water system, or the city or county if either is required to comply with this part pursuant to subdivision (b), for the past five years from any ground water basin from which

> the proposed project will be supplied. The description and analysis shall be based on information that is reasonably available, including, but not limited to, historic use records.
> (4) A detailed description and analysis of the amount and location of ground water that is projected to be pumped by the public water system, or the city or county if either is required to comply with this part pursuant to subdivision (b), from any basin from which the proposed project will be supplied. The description and analysis shall be based on information that is reasonably available, including, but not limited to, historic use records.
> (5) An analysis of the sufficiency of the ground water from the basin or basins from which the proposed project will be supplied to meet the projected water demand associated with the proposed project. A water supply assessment shall not be required to include the information required by this paragraph if the public water system determines, as part of the review required by paragraph (1), that the sufficiency of ground water necessary to meet the initial and projected water demand associated with the project was addressed in the description and analysis.

2.2 Project Water Supplies

The Project site is currently in active agriculture use with row crops. The primary source of water for the Project site is ground water produced by several private agricultural wells located on the property. Project Proponents anticipate annexing to the City of Oxnard. Figure 2-1 provides a graphical summary of the City service area. The Project will connect to City drinking water infrastructure available nearby within Ventura Road. The City's current water supply consists of City ground water, purchased ground water, and imported surface water. The City blends water from these three sources to achieve an appropriate balance between water quality, quantity, reliability, and cost. In addition, the City will provide recycled water to the Project site for non-potable demands. Each of these sources of supply are summarized below.

2.3 Local Ground Water

2.3.1 Santa Clara River Watershed Overview

The ground water sources of supply for the City of Oxnard include ground water from the City's wells and purchases the UWCD, drawn from two basins referred to locally as the Oxnard Forebay Ground Water Basin and the Oxnard Plain Ground Water Basin. These Basins are important elements of the extensive ground water basins of Ventura County (see Figure 2-2). The Oxnard Forebay Ground Water Basin and the Oxnard Plain Ground Water Basin are both located in the Oxnard Subbasin of the Santa Clara River Valley Ground Water Basin (Ground Water Basin Number 4-4.02), as identified in California Department of Water Resources (DWR) Bulletin 118 (DWR, 2006). Ground water currently comprises approximately 58 percent of the City's water supply (Oxnard, 2016). Additional details regarding local ground water basins are provided in the following sections.

The Santa Clara River, which drains the headwaters of the mountainous areas of northern Ventura County and northwestern Los Angeles County, is the largest river system in Southern California that remains in a relatively natural state. The Santa Clara River watershed runs generally in a western direction for 84 miles from the Pacifico Mountain to the estuary near Ventura Harbor (see Figure 2-3). The Santa Clara River drains an area of 1,634 square miles including most of northern Ventura County (60 percent of watershed) and northwestern Los Angeles County (40 percent of watershed).

Nearly 90 percent of this drainage area is characterized by rugged topography to the north and east of the river including portions of the San Gabriel Mountains, the Sierra Pelona, and the Topatopa Mountains of the Sespe back-country to headwaters near Pine Mountain and Mt. Pinos, and the Santa Susana Mountains, Oak Ridge, and South Mountain to the south of the river. Much of this area is in the Angeles National Forest and Los Padres National Forest (WCVC, 2014).

Source: City of Oxnard, 2012.

FIGURE 2-1
CITY OF OXNARD WATER SERVICE AREA

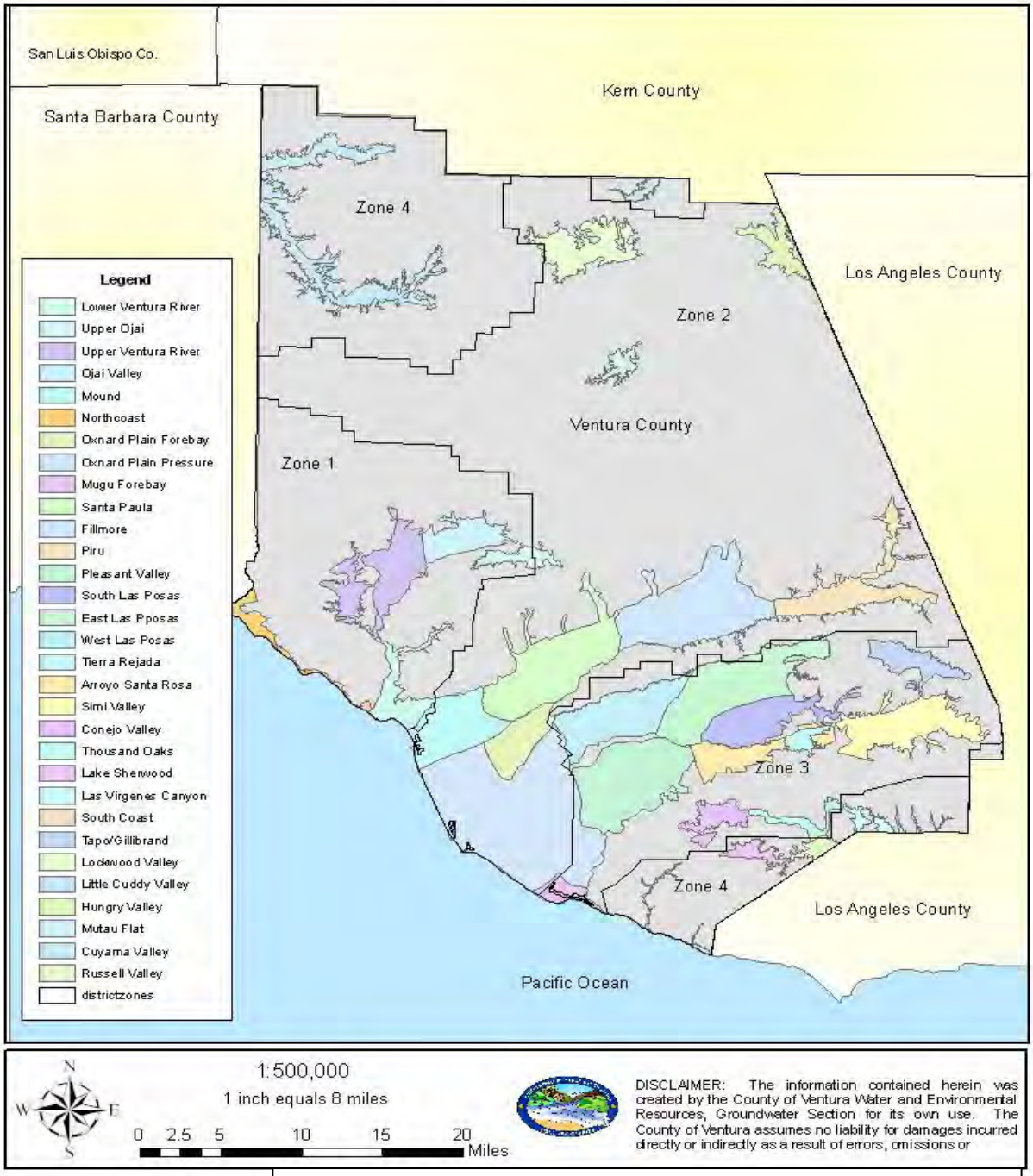


FIGURE 2-2
GROUND WATER BASINS OF VENTURA COUNTY

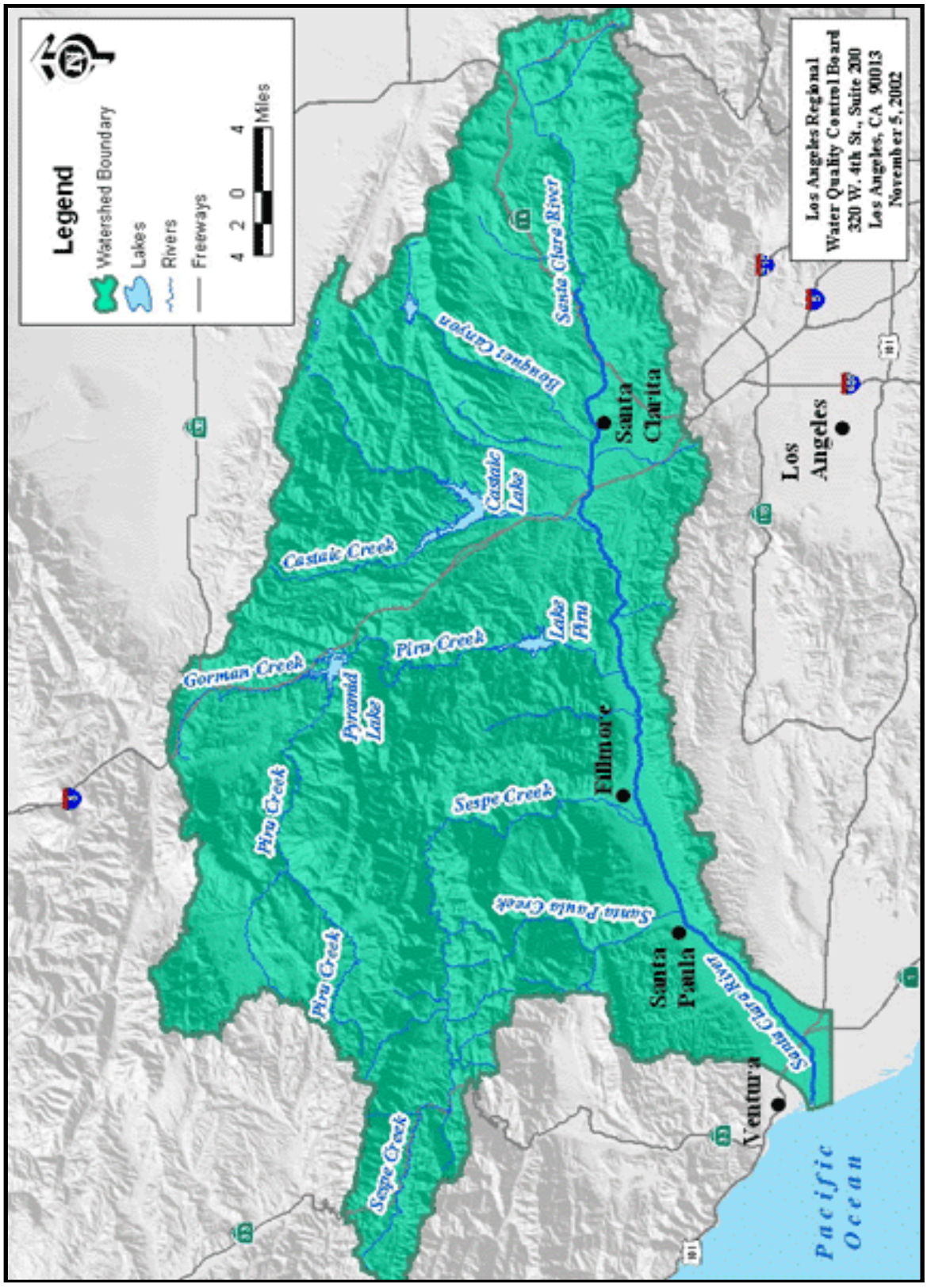


FIGURE 2-3
SANTA CLARA RIVER WATERSHED

The remaining 10 percent of the watershed is largely the relatively flat terrain of the Oxnard Plain, Santa Clarita Valley, Castaic Valley, Santa Clara River Valley, and the floors of the larger canyons, including upper Soledad, lower Sand, Mint, Bouquet, Placerita, San Francisquito, Piru, Santa Paula, and Sespe (WCVC, 2014).

Historic records indicate that the climatic and basin characteristics of the Santa Clara River Watershed generally produce an intermittent flow regime in the mainstem; however, flows can increase rapidly in response to high intensity rainfall with the potential for severe flooding. At certain times of the year, the river may have continuous surface flow to the Pacific Ocean from natural watershed discharge. Controlled releases of water from Lake Piru supplement surface flows in the river reach in Ventura County. Incidental flows are supplied from water reclamation plant discharges and imported water runoff in the middle reach from the Santa Clarita vicinity to the Los Angeles County and Ventura County line. It is important to note that the current and future amounts of effluent discharges from these facilities can fluctuate due to several factors including seasonal variations, changes in treatment requirements, population growth, and effluent reuse. These flows are not considered a component of the natural base flows for the river; however, they do constitute a component of the comprehensive hydrological regime (i.e., surface and recharge waters) (WCVC, 2014).

2.3.2 Local Basin Overview

There are two primary aquifer systems of importance to the City within the Oxnard Forebay Ground Water Basin and the Oxnard Plain Ground Water Basin including the following:

- Upper Aquifer System (UAS) – The UAS consists of the semiperched zone, the Oxnard Aquifer, and the Mugu Aquifer.
- Lower Aquifer System (LAS) – The LAS is comprised of the Hueneme, Fox Canyon, and Grimes Canyon Aquifers.

The Forebay Basin is an important part of the aquifer system, where the aquifers come together and are unconfined (see Figure 2-4). The Forebay Basin is recharged from the Santa Clara River and by river water that is diverted to UWCD's spreading basins. The Forebay Basin is hydraulically connected to the aquifers in the Oxnard Basin. Thus, the primary recharge to the Oxnard Basin is from the underflow from the Forebay Basin (Oxnard, 2016).

Many of the ground water zones of the Oxnard Plain are confined, meaning the ground water aquifers are overlain by one or more clay layers (see Figure 2-4). Above the uppermost layer there is perched water, but this water is of poor quality and is not used as a water supply.

The semiperched zone is the uppermost water-bearing unit in the area (see Figure 2-4). It is composed of fine to medium-grained sand with interbedded silty clay lenses, with an average thickness of about 30 feet with a maximum of 80 feet. Immediately below the semiperched zone and overlying the Oxnard Aquifer is a confining bed, or clay cap, consisting primarily of silty and sandy clays with an average thickness of approximately 35 feet (Oxnard, 1994) and with a maximum thickness of 150 feet (Oxnard, 2012).

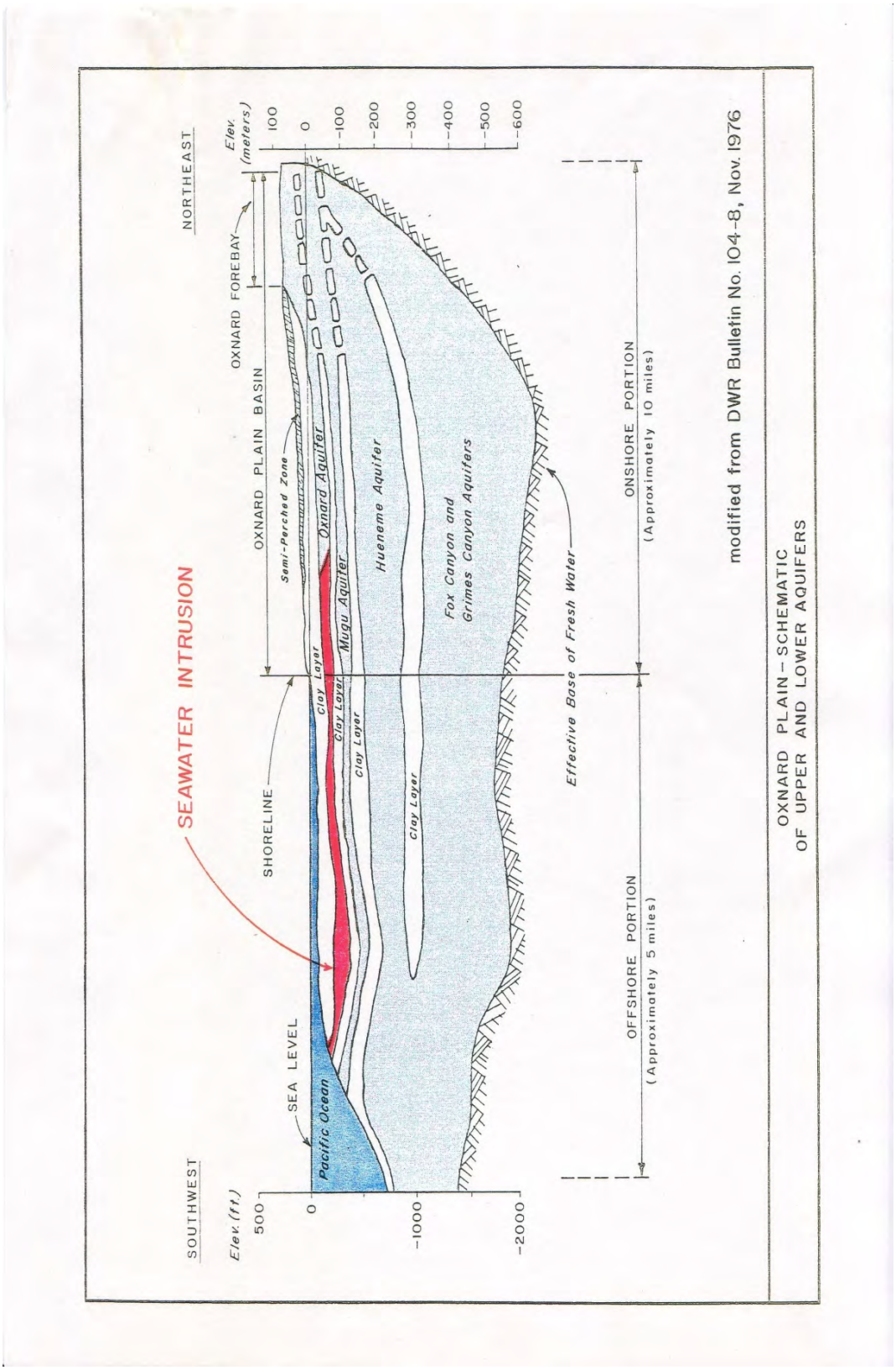


FIGURE 2-4
CROSS-SECTION OF THE OXNARD PLAIN AQUIFERS

The Oxnard Aquifer, one of the most important water sources on the Oxnard Plain, is composed of fine to coarse-grained sand, gravel, and boulder deposits (see Figure 2-4). Within these areas, the aquifer is a single unit of high permeability with no prominent silt or clay lens interruptions and has an average and maximum thickness of approximately 91 and 150 feet, respectively, at an average depth of 100 to 180 feet below grade. Permeability, or the ability to transmit water, of this aquifer ranges from 1,700 to 2,000 gallons per day per square foot (gpd/ft^2). Ground water levels in the Oxnard Aquifer change considerably from year to year depending on Santa Clara River recharge and total pumping quantities (Oxnard, 1994).

Immediately below the Oxnard Aquifer, and separating it from the Mugu Aquifer, is an aquitard composed of silty clay with some interbedded sandy clay lenses (see Figure 2-4). The average thickness of this aquitard is approximately 30 feet, although the maximum thickness has been reported to be 150 feet. The material which forms the Mugu Aquifer is fine to coarse-grained sand and gravel with some interbedded silty clay. The average thickness of the water-bearing zone is approximately 110 feet. Permeability at the Mugu Aquifer ranges between 1,900 and 2,200 gpd/ft^2. In the Forebay area where the Santa Clara River enters the Oxnard Plain near Saticoy and near the Mugu Lagoon, the Mugu Aquifer merges with the Oxnard Aquifer. The Mugu Aquifer is reported to be in hydraulic continuity with the ocean (Oxnard, 1994). Underlying the Mugu Aquifer is an aquitard composed of silty clay that reaches a maximum thickness of 80 feet within the Oxnard Plain. This aquitard is continuous, except in the Forebay area, where the Hueneme Aquifer merges with the other ground waters (Oxnard, 1994).

The Hueneme Aquifer is composed of irregularly interbedded sand, silt and clay, with some gravel, ranging in thickness from 100 feet within the City of Port Hueneme to about 300 feet north of the City of Oxnard (see Figure 2-4). Permeability for this water-bearing zone is estimated to be 400 to 600 gpd/ft^2. This aquifer is reported to be in hydraulic continuity with the ocean. The Hueneme Aquifer is separated from the underlying Fox Canyon aquifer by an aquitard composed of silt and clay and which is absent only where the Fox Canyon Aquifer merges with the Hueneme Aquifer in the northern portion of the Forebay area. The maximum thickness in the basin is approximately 170 feet (Oxnard, 1994).

The Fox Canyon Aquifer is composed of fine to coarse-grained sand with gravel stringers and interbedded silt and clay (see Figure 2-4). With a maximum thickness of approximately 550 feet in the Oxnard Plain, permeability of this water-bearing zone range from 200 to 400 gpd/ft^2. The aquitard that separates the Fox Canyon and the underlying Grimes Canyon Aquifers is composed of silt and clay, and attains a maximum thickness of about 40 feet in the Oxnard Basin.

The Grimes Canyon Aquifer (see Figure 2-4) is composed of fine to coarse-grained materials, with a maximum thickness of more than 1,500 feet and corresponds in area to the Fox Canyon Aquifer (Oxnard, 1994).

The City has wells that take water from both the Upper Aquifer System and the Lower Aquifer System, as further described in Section 2.3.5.

2.3.3 Fox Canyon Groundwater Management Agency

The Fox Canyon Groundwater Management Agency (FCGMA, staffed by County of Ventura employees) was created at the direction of the State Water Resources Control Board to address ongoing overdraft and seawater intrusion into the Oxnard Plain Basin. The purpose of the FCGMA is to manage the region's ground water supply by protecting the quantity and quality of local ground water resources and by balancing the supply and demand for ground water resources.

The FCGMA was formed in 1982 by Act 2750 passed by the California Legislature. The Agency monitors and controls pumping within the FCGMA boundaries. Preceding this Act was State Assembly Bill No. 2995 (AB 2995) passed by the California Legislature in September 1982. Specifically, the legislation allows the agency to perform the following functions:

"Planning, managing, controlling, preserving and regulating the extraction and use of ground water within the agency (§§ 402, 403). May collect data and carry out investigations (§ 501). May recommend and encourage wastewater reclamation and reuse projects that contribute to good ground water management (§ 503). May control extractions from the Oxnard and Mugu aquifers with the goal of balancing supply and demand within the basin by year 2010 (§ 601); develop ground water management plan for the Grimes Hueneme and Fox Canyon basins and may limit future extractions, considering the effects of seawater intrusion and other factors (§§ 313, 602). If the board determines that ground water management activities are necessary to protect an aquifer, it may require conservation practices, control ground water extractions and extraction facilities, pursue legal actions to prevent unreasonable use and unreasonable methods of use that adversely affect the ground water supply, impose spacing limitations on new extractions, establish operating procedures for extraction facilities including rotation pumping requirements (§ 701). May require registration of extraction facilities and installation of water flow measuring devices (§§ 801, 804). May require reports of annual extractions (§ 810)."

Importantly, the FCGMA may establish uniform ground water extraction charges (§§ 1001, 1003). This is a mechanism intended by the FCGMA to limit the amount of ground water pumping to amounts that meet basin objectives. This authority was granted by Senate Bill 747 (SB 747), approved in June 1991, which amended and added to AB 2995, to allow extraction allocations for each water well.

The FCGMA has jurisdiction over ground water pumping for all of the land which overlies the Fox Canyon Aquifer. This encompasses approximately 185 square miles and includes the Oxnard Forebay and the Oxnard Plain Basins underlying most of the City of Oxnard. While the basins of the FCGMA are not adjudicated basins, the basins are fully managed by FCGMA.

2.3.3.1 FCGMA Programs

In 1985, a plan for management of the LAS and UAS within the FCGMA boundaries was adopted. Major elements of the UAS Plan include the following:

- Ventura County Ordinance No. 3739, which prohibits the construction, repair, or modification of UAS wells in areas where increased extractions would increase the overdraft and the rate of seawater intrusion in the Oxnard Plain.
- Completion of the Seawater Intrusion Abatement Project through improvement of the Vern Freeman Diversion Dam Project and operating the project under criteria developed to ensure proper water allocation.
- Annual monitoring to determine the effectiveness of the Vern Freeman Project.
- Preparation of and updates to a Groundwater Management Plan.

The FCGMA establishes its management policies based on its comprehensive assessment of current and anticipated future ground water conditions, given its assessment of changes in ground water use, planned local and regional water supply projects, and other relevant conditions. The most recent assessment is documented in the FCGMA Groundwater Management Plan (GWMP) adopted in May 2007 (FCGMA, 2007). A copy of the GWMP is provided in Appendix B.

2.3.3.2 FCGMA Ordinances

One of the most significant ordinances by the FCGMA was Ordinance No. 5, adopted in August 1990; its current terms and conditions are contained in Ordinance 8, as amended. This ordinance required reductions in ground water extractions of 25 percent, within the FCGMA boundary, with the objective of reducing extractions to the achieve the Basin "safe yield".

Ordinance No. 5 was periodically updated over the years. Ordinance 8, as amended, provides for baseline allocations, historical allocations, and a schedule of historical pumping allocation reductions. The baseline pumping allocations of one acre-foot (AF) per acre are credited to the pumper for lands not irrigated during 1985 to 1989 base period. Historical extractions were established during the 5-year period from 1985 to 1989. A series of five reductions of 5 percent each (25 percent total) to baseline pumping allocations were implemented over the period 1990 to 2010. Ordinance No. 7, adopted in June 1991, which later was amended into Ordinance No. 5.1 (and later contained in Ordinance 8, as amended), was established to prevent the waste of water by agricultural users. This Ordinance requires an agricultural water well operator to be 80 percent efficient when considering ETo and crop factors when an operator lacks enough historical allocation for the current crop being grown to avoid penalties.

Ordinance No. 8 was adopted in 2002 and includes a conglomeration of all prior ordinances into an "Ordinance Code". The main purpose of combining the ordinances together in an "Ordinance Code" was to reduce confusion, eliminate redundant text, and to shorten the laws into a more manageable format. Ordinance No. 8.9 (adopted December 2018) is the most recent revision to Ordinance No. 8.

Emergency Ordinance E, adopted April 2014, requires additional pumping restrictions of 20 percent within the FCGMA boundary. These reductions include an additional 10 percent on July 1, 2014, additional 5 percent on January 1, 2015, and additional 5 percent on July 1, 2015. In addition, Emergency Ordinance E states the following, "…conservation credits shall not be obtained and may not be used to avoid paying surcharges for extractions while this emergency ordinance is in effect". Emergency Ordinance E may impact the City's ground water allocations, allocation transfers, extraction of local ground water, and management of ground water conservation credits.

2.3.3.3 Credits and Transfers

Historically, unused ground water allocations (or conservation credits) could be accumulated and used in future years without monetary penalty. Ground water pumpers, including the City, could also accrue ground water storage credits by recharging the aquifers with foreign water (including but not limited to recycled water and imported water). These ground water storage credits could also be used in the future, with FCGMA advance approval, without incurring the FCGMA penalty. In addition, adjustments and transfers of ground water extraction allocations are allowed under Ordinance 8, as amended. As noted above, Emergency Ordinance E includes the provision that conservation credits shall not be obtained and may not be used to avoid paying surcharges for extractions while Emergency Ordinance E is in effect. It is understood that Emergency Ordinance E did not impact FCGMA adjustments and transfers of ground water extraction allocations (FCGMA, 2018).

When irrigated agricultural land within the FCGMA jurisdiction changes to municipal and industrial (M&I) use, the ground water extraction allocation may be transferred to the M&I water supply provider. The amount of allocation available for transfer from agricultural land is based on the amount of extraction allocation for a given base period (2005-2014). For purposes of preparing this WSA, it is understood that the FCGMA ground water allocation transfer rate for agriculture to M&I projects is anticipated to be 1.0 AFY transferred per 1.0 AFY of irrigation extraction (FCGMA, 2019). The Project Proponents (with the coordination from and approval by the City) will be required to obtain FCGMA approval for the ground water allocation transfer to the City (FCGMA, 2018).

2.3.4 City Ground Water Production

The City serves a diverse customer base including a population of nearly 200,000 and over 41,500 accounts. The City's current service area includes nearly 27 square miles (see Figure 2-1). The City currently has six active wells located at the Water Campus and four additional wells located at Blending Station No. 3. As indicated in Section 2.3, local ground water is generally extracted from the aquifers of the Oxnard Plain Ground Water Basin.

After the City pumps the ground water, the water is mixed (blended) with imported water or desalted water at the City's blending stations. Ground water pumping capacity is a function of aquifer condition as well as the condition of the well, pumping equipment, and ground water levels.

Table 2-1 summarizes the City's ground water production for 2011-2015. Average production for 2011-2015 is 7,283 AFY. The City's ground water production in 2015 is 7,110 AFY. City ground water pumped includes brine from the City's Desalter facility (Oxnard, 2016).

TABLE 2-1
CITY GROUND WATER PRODUCTION FOR 2011-2015

	2011 (AF)	2012 (AF)	2013 (AF)	2014 (AF)	2015 (AF)
City Ground Water (a)	**10,731**	**5,174**	**5,748**	**7,650**	**7,110**

Notes:
All values rounded in AFY.
(a) Source: Oxnard, 2016.

Table 2-2 indicates that the City ground water production, purchases of ground water from UWCD, and purchases of imported surface water from CMWD provided 25,066 AFY in 2015. Table 2-2 also indicates that City ground water production provided 7,110 AFY in 2015 (28 percent of the City's water supply).

TABLE 2-2
CITY WATER PRODUCTION AND PURCHASES FOR 2015

Year	City Ground Water Production (AF)	City Ground Water Purchased from UWCD (AF)	City Surface Water Purchased from CMWD (AF)	Total (AF)
2015 (a)	**7,110**	**7,344**	**10,612**	**25,066**
Percentage	**28**	**29**	**42**	**100**

Notes:
All values rounded in AFY.
(a) Source: Oxnard, 2016.

2.3.5 Purchase of Ground Water From United Water Conservation District

United Water Conservation District is a public agency that manages ground water and delivers water to cities and agriculture within an area of approximately 330 square miles within Ventura County. Among United's urban water customers are the cities of Oxnard, Port Hueneme, and the United States Naval Base Ventura County. The District got its name in 1954 when farmers and cities "united" to develop local water supplies. Figure 2-5 provides an overview of the District's facilities in the Oxnard Area.

The original founding organization for United Water was named the "Santa Clara River Protective Association". It was formed in 1925 to protect the runoff of the Santa Clara River from being appropriated and exported outside the watershed. One reason local farmers formed the Association was to prevent the Los Angeles Department of Water and Power from exporting local water to Los Angeles. The District began a systematic program of ground water recharge in 1928, primarily by constructing spreading grounds along the Santa Clara River in Piru, Santa Paula, and Saticoy.

In the early 1900s, ground water was so plentiful in the Oxnard Plain that some water wells flowed freely under artesian pressure. Seeping ground water caused the ocean to be fresh near the coast, and ships refilled their water stores while anchored offshore. But by the early 1950s, over-pumping had caused seawater to intrude into about 20 square miles of the aquifer near the coast, causing some wells to become unusable. In 1954, cities and farmers "united" to solve these problems and subsequently formed United Water Conservation District to recharge underground aquifers and to supply water to cities and farms.

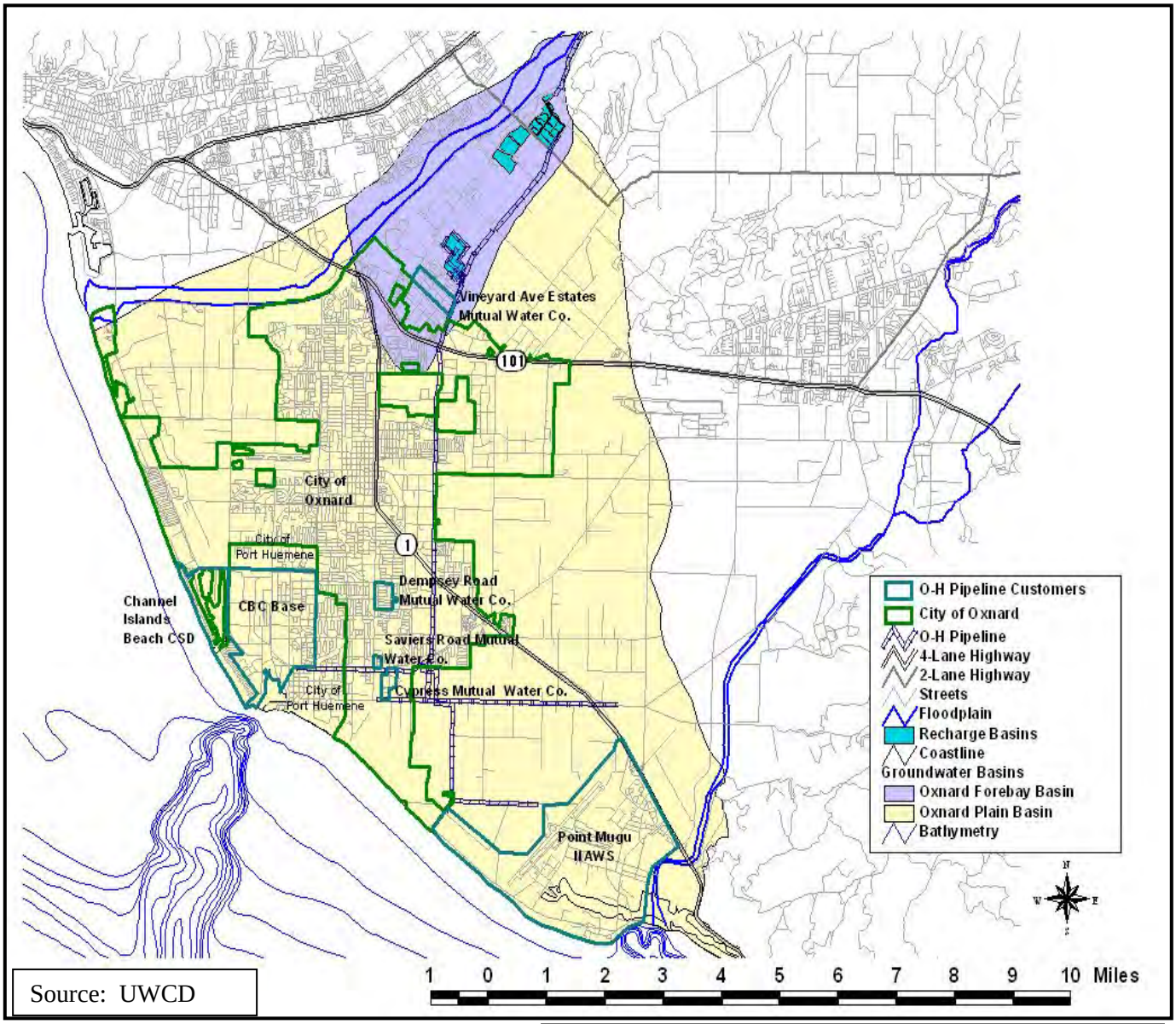


FIGURE 2-5
UWCD FACILITIES IN THE OXNARD AREA

Many of the District's facilities were built in the 1950s, including the Santa Felicia Dam (Lake Piru), new spreading grounds at Saticoy and El Rio, the Oxnard-Hueneme Pipeline System (O-H System), and the Pleasant Valley Pipeline (an irrigation water system to replace canals on the Oxnard Plain). Since then, other facilities have been built as needed to manage local water, including the Pumping Trough Pipeline (serving agriculture on the Oxnard Plain), the improved Freeman Diversion Dam on the Santa Clara River, and the O-H system improvements in 1998. Since it was formed in 1954, United has equally served both cities and farms within its service area.

UWCD diverts Santa Clara River water at the Vern Freeman Diversion Dam southeast of Saticoy and delivers a portion of the water to the Saticoy and El Rio Spreading Grounds and to agricultural users on the Oxnard Plain. Water percolated in these spreading basins recharges the Forebay Basin and the Oxnard Plain Basin. Eleven UWCD wells are then used to extract the water and deliver it to the O-H users. Of the eleven wells, three extract water from the LAS, and the remaining eight extract water from the UAS. The El Rio wellfield has sufficient active pumping capacity to supply the peak O-H pipeline capacity of 53.0 cfs. Water extracted by these wells is delivered to the El Rio Pumping Station, disinfected, and pumped through the O-H Pipeline to each of the O-H customers. UWCD built the O-H system in 1954 to move municipal ground water extraction away from coastal areas subject to seawater intrusion. The O-H System consists of 12 miles of transmission pipeline.

Table 2-2 indicates that UWCD provided the City with 7,344 AF of ground water in 2015 or 29 percent of the City's water supply (Oxnard, 2016). This arrangement has been in place since 1954 and formalized in the 1996 Water Supply Agreement for Delivery of Water through the Oxnard-Hueneme Pipeline. UWCD holds a pumping sub-allocation for all users of the O-H Pipeline, which includes the City, PHWA, and a number of small mutual water companies.

2.4 Purchase of Imported Surface Water

To provide for long-range improvement of its water quality, the City annexed to Calleguas Municipal Water District (CMWD) in February 1961. CMWD is a member agency of (Metropolitan Water District of Southern California (MWDSC). MWDSC is the State Water Contractor from which CMWD purchases SWP supplies.

2.4.1 State Water Project

Oxnard receives imported surface water from the State Water Project (SWP) via CMWD. The SWP is the largest state-built, multi-purpose water project in the country. It was authorized by the California State Legislature in 1959, with the construction of most initial facilities completed by 1973. The SWP is owned by the State of California and operated by the DWR. The primary purpose of the SWP is to deliver water to 29 urban and agricultural water suppliers in Northern California, San Francisco Bay Area, San Joaquin Valley, Central Coast, and Southern California, including 20 million urban users and 750,000 acres of farmland. Of the contracted water supply, approximately 70 percent goes to urban users and 30 percent goes to agricultural users.

SWP facilities originate in northern California at Lake Oroville on the Feather River (see Figure 2-6). Storage released from Lake Oroville flows into the Feather River, goes downstream to its confluence with the Sacramento River, and then travels into the Sacramento-San Joaquin River Delta (Delta). Water is pumped from the Delta region to contractors in areas north and south of the San Francisco Bay and south of the Delta. SWP deliveries consist solely of untreated water. The SWP system currently consists of 700 miles of canals and pipelines (500 miles to Oxnard), 33 storage facilities totaling 5.8 million acre-feet (MAF) of storage, 5 hydro-electric power plants, 4 pumping-generating plants, and 20 pumping plants. Figure 2-6 illustrates the location of major SWP facilities.

While some SWP supplies are pumped from the northern Delta into the North Bay Aqueduct, the clear majority of SWP supplies are pumped from the southern Delta into the 444-mile-long California Aqueduct.

The California Aqueduct conveys water along the west side of the San Joaquin Valley to Edmonston Pumping Plant, where water is pumped over the Tehachapi Mountains and the aqueduct then divides into the East and West Branches. In addition to delivering water to its contractors, the SWP is operated to improve water quality in the Bay-Delta region, control flood waters, provide recreation, power generation, and environmental enhancement.

Source: CA DWR.

FIGURE 2-6
STATE WATER PROJECT FACILITIES

2.4.2 SWP Reliability

The amount of SWP water delivered to MWDSC and other State Water Contractors in a given year depends on a number of factors, including the demand for the supply, amount of rainfall, snowpack, runoff, water in storage, pumping capacity from the Delta, and legal/regulatory constraints on SWP operation. Water delivery reliability depends on three general factors: the availability of water, the ability to convey water to the desired point of delivery, and the magnitude of demand for the water. Urban SWP contractors' requests for SWP water, which were low in the early years of the SWP, have been steadily increasing over time. Regulatory constraints have changed over time, becoming more restrictive.

"Water delivery reliability" is defined as the annual amount of water that can be expected to be delivered with a certain frequency. SWP delivery reliability is calculated using computer simulations based on nearly 100 years of historical data. Contractors' requests for their water entitlements cannot always be met. In some years there are shortages and in other years surpluses.

Recent DWR reports have recognized continuing challenges to the ability of the SWP to deliver full contractual allocations of SWP water. Factors that affect the ability to estimate existing and future SWP water delivery reliability include the following:

- water availability at the source
- water rights with priority over the SWP
- climate change
- regulatory restrictions on SWP exports
- ongoing environmental and policy planning efforts
- San Joaquin River/Sacramento River Delta levee failure.

2.4.3 Metropolitan Water District

Metropolitan Water District of Southern California (MWD) was organized in 1928 by a vote of the electorates of 13 Southern California cities. The first function of Metropolitan was building the Colorado River Aqueduct (CRA) to convey water from the Colorado River. Deliveries through the aqueduct to member agencies began in 1941 and supplemented the local water supplies of the Southern California member cities. In 1960, to meet growing water demands in its service area, Metropolitan contracted for additional water supplies from the State Water Project via the California Aqueduct, which is owned and operated by DWR. SWP deliveries began in 1972. Metropolitan currently receives imported water from both of the following sources: (1) Colorado River water via the CRA, and (2) the SWP via the California Aqueduct (MWD, 2016).

Metropolitan's service area covers the Southern California coastal plain. It extends about 200 miles along the Pacific Ocean from the city of Oxnard on the north to the international boundary with Mexico on the south, and it reaches as far as 70 miles inland from the coast. The total area served is approximately 5,200 square miles, and it includes portions of Los Angeles, Orange, Riverside, San Bernardino, San Diego, and Ventura counties. Although only 14 percent of the land area of the six Southern California counties is within Metropolitan's service area, nearly 85 percent of the population (18.7 million people) within those counties reside within Metropolitan's boundaries (MWD, 2016).

The Colorado River was Metropolitan's original source of water after Metropolitan's establishment in 1928. Metropolitan has a legal entitlement to receive water from the Colorado River under a permanent service contract with the Secretary of the Interior. The CRA, which has a capacity of 1.2 MAF a year, is owned and operated by Metropolitan. It transports water from Lake Havasu, at the border of the state of California and Arizona, approximately 242 miles to its terminus at Lake Mathews in Riverside County (MWD, 2016).

Metropolitan imports water from the SWP, owned by the state of California and operated by the DWR. This project transports Feather River water stored in and released from Oroville Dam and conveyed through the Bay-Delta, as well as unregulated flows diverted directly from the Bay-Delta south via the California

Aqueduct to four delivery points near the northern and eastern boundaries of Metropolitan's service area. In 1960, Metropolitan signed a contract with DWR for SWP water supplies. Metropolitan is one of 29 agencies that have long-term contracts for water service from DWR and is the largest agency in terms of the number of people it serves. In 1960 MWD agreed to purchase up to 1.9 million AFY from the SWP. However, MWD only receives approximately 1.3 million AFY during an average year and 0.5 million AFY in a single dry water-year due to climatic, operational, and regulatory restrictions (MWD, 2016).

2.4.4 Calleguas Municipal Water District

CMWD is an enterprise special district that was formed by the voters of southern Ventura County in 1953 for the purpose of providing a safe, reliable water supply. In 1960, CMWD became a member agency of MWD, which provides wholesale water from the Colorado River via the Colorado Aqueduct and from northern California via the State Water Project (SWP). CMWD distributes high quality drinking water on a wholesale basis to 19 local purveyors, who in turn deliver water to area residents, businesses, and agricultural customers. See Figure 2-7 for the CMWD service area. Approximately 630,000 people within Ventura County, including Oxnard, receive all or a portion of their municipal water from CMWD.

The SWP water purchased by CMWD is filtered and disinfected at MWDSC's Joseph Jensen Filtration Facility in Granada Hills. CMWD receives the treated water from MWDSC via the West Valley Feeder and either stores the treated water in Lake Bard (see Figure 2-8) to be re-treated at the Lake Bard Water Filtration plant before distribution or feeds the water directly to the Springville Reservoir near Camarillo.

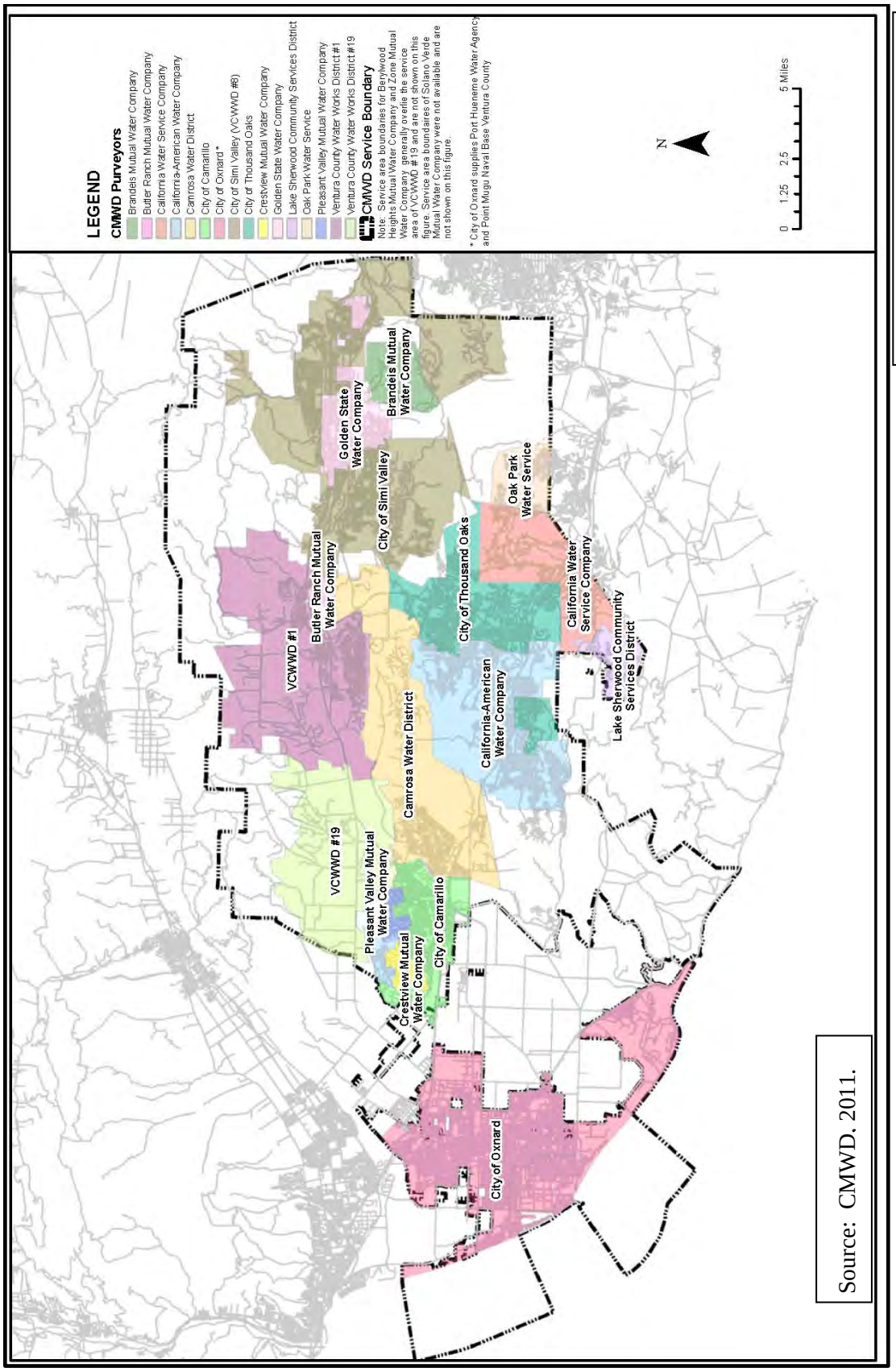
2.4.5 City Imported Surface Water Supply

The City receives imported surface water from CMWD's Springville Reservoir (see Figure 2-8) through the City's Oxnard and Del Norte Conduits that feed five of the City's six water blending stations. Table 2-2 indicates that in 2015 the City purchased approximately 10,612 AF of water from CMWD (Oxnard, 2016). The City is part of the Three-Party Agreement with the Port Hueneme Water Agency (PHWA) and CMWD to transfer approximately 700 AFY of SWP in exchange for an equal amount of PHWA local ground water allocations.

2.5 Oxnard Water Quality

The City is committed to providing its customers with high quality water that meets all national (US Environmental Protection Agency, USEPA) and State (California SWRCB, Division of Drinking Water, CDDW) primary drinking water standards. As noted earlier in this Section, the City is fortunate to have multiple sources of water supplies. The City distributes a blend of treated UWCD ground water, treated City ground water, and treated CMWD surface water. If necessary, the City can temporarily shift production or purchases between water sources while resolving a water quality issue with a specific source.

Each of the City's water resources includes one or more water quality issues. This includes SWP water (total dissolved solids, TDS, and organics), UWCD water (TDS and nitrates), and City ground water (TDS, nitrates, and radionuclides). A copy of the City's 2019 Consumer Confidence Report (Oxnard, 2019), which summarizes the City's water quality for the year 2018, is provided in Appendix C. However, the City does not anticipate the loss of any of its current or planned supplies or change in reliability due to water quality impacts.



Source: CMWD. 2011.

FIGURE 2-7
CMWD SERVICE AREA

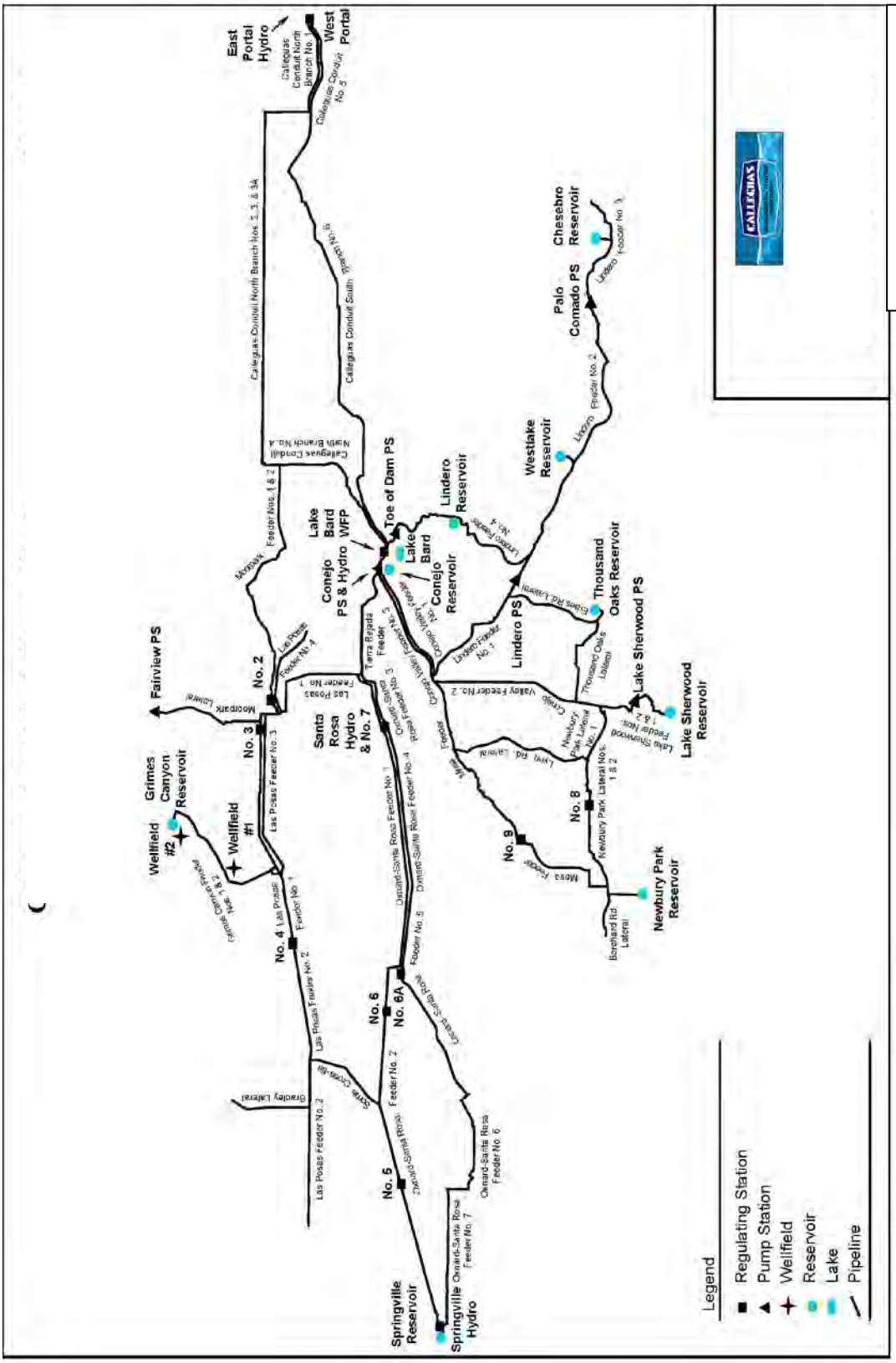


FIGURE 2-8
CMWD FACILITIES

2.6 Recycled Water

The City's recycled water system obtains source water from the City's Oxnard Wastewater Treatment Plant (OWWTP). The OWWTP is a secondary treatment plant located at 6001 S. Perkins Road in the City of Oxnard. All the treated effluent is currently discharged to the Pacific Ocean (Oxnard, 2012). The OWWTP has an average dry weather flow (ADWF) design capacity of 31.7 MGD (35,500 AFY) with provision for an ultimate ADWF design capacity of 39.7 MGD (44,500 AFY). The 2012 flow to the OWWTP was 23 MGD (25,800 AFY).

One key component of the GREAT Program is the development of the Advanced Water Purification Facility (AWPF) and the Recycled Water System (Oxnard, 2002; Oxnard 2005). The AWPF is a highly innovative wastewater purification plant designed to deliver recycled water that is safe, clean, and clear to meet any future needs (Oxnard, 2012). Water produced from the City's AWPF will undergo one of the world's most highly developed purification processes, one that is successfully used in several locations. Treated wastewater from the Oxnard Wastewater Treatment Plant that is usually sent to the ocean will instead be further purified using three steps: microfiltration, reverse osmosis, and advanced oxidation with ultraviolet light and hydrogen peroxide.

The resulting high-quality recycled water will be distributed through the City's recycled water pipeline system. Initial uses of recycled water may include: irrigation of parks, medians, golf courses and athletic fields; watering of agricultural crops; and process water for local industries (Oxnard, 2012). In addition, the recycled water can be injected into the ground water to create a seawater intrusion barrier to help ensure that salt water from the ocean does not intrude into the City's local ground water sources. This water is so pure it can be used to meet any water supply needs in the future, including replenishing Oxnard's ground water supply.

The first phase of the AWPF and the Recycled Water Backbone System (RWBS) have been completed. In 2015, the City sold approximately 605 AFY of recycled water for golf course irrigation. Future expansions of the AWPF and the Recycled Water System will be developed when funding becomes available (Oxnard, 2012). Recycled water will be a key component of the City's future water supply strategy as noted in Section 3 and Section 4.

All the above uses are identified within the FCGMA 2007 Ground water Management Plan as key strategies to alleviate over-pumping within the Oxnard Plain and Pleasant Valley areas of western Ventura County (Oxnard, 2012). Use of high quality recycled water within the region will have a direct benefit of introducing a new, additional water supply source to the region. The high quality water (low salt content) also has the supplemental benefit of reducing the salt content of water used within the region. To the extent this high-quality water is used within the City to offset current potable demand, it will also have the direct benefit of offsetting or reducing use of local ground water and imported water. Direct agricultural use of recycled water will provide tandem benefits of reducing reliance on local ground water and reducing salt loading in comparison to the lower quality ground water and surface water currently used for applied irrigation. FCGMA policies will allow the City the right to pump ground water (via recycled water pumping allocations) in an amount equivalent to the recycled water used (to replace potable water use and or ground water pumping) within the region.

2.7 Future Water Supplies

Table 2-3 indicates that the City estimates approximately 40,341 AFY of available supplies in 2020, with supplies increasing to approximately 54,341 AFY in 2040. The City anticipates 21,186 AFY of ground water via City wells for the period 2025-2040, including desalted water and water from the aquifer storage and recovery (ASR) program wells. Estimated ground water purchases from UWCD will be 7,329 AFY through 2040. The City estimates purchases of imported surface water from CMWD at 11,826 AFY through 2040. Estimated available recycled water supplies include 14,000 AFY through 2040 (Oxnard, 2016).

TABLE 2-3
SUMMARY OF PROJECTED WATER SUPPLIES 2020-2040

Projected Water Supplies (AFY) (a)	**2020**	**2025**	**2030**	**2035**	**2040**
Ground Water - City-Produced	14,186	21,186	21,186	21,186	21,186
Ground Water – Purchase from UWCD	7,329	7,329	7,329	7,329	7,329
Imported Surface Water – Purchase from CMWD	11,826	11,826	11,826	11,826	11,826
Recycled Water – City Produced	7,000	14,000	14,000	14,000	14,000
Total Estimated Water Supplies	**40,341**	**54,341**	**54,341**	**54,341**	**54,341**

Notes:
All values rounded in AFY.
(a) Source: Oxnard, 2016.

The City plans to implement an aquifer storage and recovery (ASR) program. This proposed program will include construction of new wells to inject up to 6,000 AFY of high-quality recycled water into local aquifers (also known as indirect potable reuse, or IPR). The City will then extract and treat the water at existing City facilities in times of high potable water demand. The injected recycled water and subsequent treatment will meet all requirements of the new California IPR regulations. In addition, the City plans to implement a direct potable reuse (DPR) program starting in 2025, whereby up to 5,000 AFY (by 2040) of high-quality recycled water is mixed with potable water within the distribution system (Oxnard, 2016).

SECTION 3: WATER DEMAND

3.1 WSA Requirements

The WSA must comply with the following California Water Code requirements:

> (c) (1) The city or county, at the time it makes the determination required under Section 21080.1 of the Public Resources Code, shall request each public water system identified pursuant to subdivision (b) to determine whether the projected water demand associated with a proposed project was included as part of the most recently adopted urban water management plan adopted pursuant to Part 2.6 (commencing with Section 10610).
>
> (2) If the projected water demand associated with the proposed project was accounted for in the most recently adopted urban water management plan, the public water system may incorporate the requested information from the urban water management plan in preparing the elements of the assessment required to comply with subdivisions (d), (e), (f), and (g).

3.2 Current Site Water Demand

The Project site is currently in active agriculture use with row crops. Active wells on the Project site are summarized in Table 3-1. Ground water extraction data were obtained for several wells including Well No. 02N22W33N05 (data available for 1984 to 2017) and Well No. 01N22W05B01 (data available for 1985 to 2017) (FCGMA, 2018). Total extractions for these two wells, with both wells pumping for 32 years, included an average of 475 AFY and same-year maximum of 744 AFY (1990). During the FCGMA base period, currently 2005 - 2014, these two wells produced an average of 509 AFY. Additional active wells located on the Project site include 01N22W04D01A (data available for 1985-2018), 01N22W04D01B (data available for 1985-2014), and 01N22W04D02 (data available for 2014-2018) (FCGMA, 2018).

TABLE 3-1
WELLS KNOWN TO OPERATE ON PROJECT SITE

Well Number (a)	**Annual Average (AFY)**	**Annual Maximum (AFY)**
01N22W04D01A	**2**	**5**
01N22W04D01B	**7**	**21**
01N22W04D02	**3**	**3**
01N22W05B01	**300**	**488**
02N22W33N05	**175**	**337**

Notes:
All values rounded in AFY.
(a) Source: FCGMA, 2018.

3.3 Current City Water Demand

Table 3-2 indicates that the 2015 City water demand is 26,028 AFY (Oxnard, 2016; Table 4-3). These demands include potable water, raw water, and recycled water. Demands include residential, commercial, industrial, institutional, governmental, landscape, agricultural, other, and infrastructure losses. The City also

provided 558 AF of imported surface water to PHWA in 2015 as part of the Three-Party Water Supply Agreement with CMWD.

Water demands for the existing Project site are not included in the City's current demand estimate since the City does not currently supply water to the site.

TABLE 3-2
CURRENT AND PROJECTED CITY WATER DEMAND

	2015	2020	2025	2030	2035	2040
Total Estimated Demand (a)	**26,028**	**39,664**	**48,054**	**49,445**	**50,835**	**52,225**

Notes:
All values rounded in AFY.
(a) Source: Oxnard, 2016.

3.4 Future Project Water Demand

The Project will utilize water primarily for the following:

- Up to 990 residential units in a variety of densities and product types on approximately 73 acres
- Up to 132,000 square feet of light industrial development on approximately 9 acres
- Up to 60,000 square feet of retail commercial uses on approximately 9 acres
- Approximately 18 acres of community park space, pocket parks, and greenbelts.

Project Proponents have a primary goal for this Project to be water neutral. To achieve neutrality, the Project needs to contribute water rights, water supplies, or financial or physical offsets to the City that ensure sufficient supply to address Project water demands. Options available may include transfers of FCGMA ground water extraction allocations to the City through agricultural conversion to municipal uses, participation in expansions of the City's recycled water system through physical or financial contributions, and or participation in water conservation projects that produce measurable and sustainable water savings. Non-potable water demands, to be met with City recycled water, will be metered separately. Another Project goal is that water supplies will consist of 100 percent local and sustainable sources including local ground water and recycled water.

Single-family residential customers in the coastal Ventura County areas use an average of approximately 50 to 60 percent of daily water demands for indoor uses, while multiple-family residential customers likely use 70 to 80 percent of water demand for indoor uses. City staff approved of the conservative value of 50 percent of annual water demand used for indoor purposes (potable water) for low-density residential customers within the Project, and 70 percent of water demand used for indoor purposes for medium-density and high-density residential customers within the Project. However, the City does not currently approve of recycled water to be piped to single-family and multiple-family residential parcels for indoor nor outdoor uses. Therefore, landscaped areas for single-family residential and multiple-family residential will be irrigated with potable water. City staff also approved of commercial, mixed use, and light industrial customers likely use of an average of 80 percent indoors (potable water) and 20 percent outdoors (recycled water). Once again, these values are conservative for coastal Ventura County. Landscaped areas for commercial and industrial areas within the Project will be irrigated with recycled water. Also, City staff approved of the water demand rates listed in the Teal Club Development Infrastructure Review (TCDIR; Oxnard, 2007) to be reduced by an additional 10 percent to account for current water efficient indoor fixtures and efficient outdoor irrigation equipment.

This Project will also incorporate extensive water conservation measures to be water neutral. The Project water demand estimate includes significant reductions due to anticipated use of highly water efficient fixtures and appliances by the proposed residential, commercial, and light industrial elements. These water efficient fixtures and appliances are anticipated to be used throughout the bathrooms, kitchens, and laundry facilities within the development.

The Project will include extensive use of City of Oxnard recycled water for landscape irrigation water demands. Recycled water is anticipated to be used for nearly 100 percent of the anticipated landscape irrigation water demands for the proposed commercial and light industrial elements reducing use of potable water. In addition, the Project will include anticipated use of highly water efficient landscape equipment. It is anticipated that this Project will include separate landscape water meters for all properties.

Availability of potable water is the critical water-related criteria for this Water Supply Assessment. This Water Supply Assessment will provide a water demand estimate by the Project Proponents and an estimate by City staff. Water demand estimates are only provided for the "Project" alternative since this alternative will have the highest potable water demands of the three alternatives proposed.

3.4.1 Project Water Demand Estimated by Project Proponents

To estimate annual water demands, the Project Proponents utilized the rates in the City's TCDIR. The TCDIR includes estimated water demands on a gallons per acre per day (gpad) basis which is a valid but basic tool to estimate water demands. Table 3-1 in the TCDIR lists single-family residential estimated water demand as 2,100 gpad, multiple-family residential as 2,800 gpad, and commercial uses (including industrial) as 1,500 gpad. Table 3-2 in the TCDIR indicates that estimated water demand for landscaped areas as 2.5 AFY/acre (2,232 gpad).

Daily potable water demand for the low-density residential areas is estimated to be 2,100 gpad (Oxnard, 2007) minus 10% (demand reduction for current efficiency) equals 1,890 gpad. Table 3-3, provided on the following page, summarizes the estimated water demands for the Project. Potable water demand for the medium-density and high-density residential elements is anticipated to 2,800 gpad (Oxnard, 2007) minus 10% equals 2,520 gpad. Potable water demand for the commercial, mixed use commercial, and light industrial is estimated to be 1,500 gpad (Oxnard, 2007) x 80% (indoors) minus 10% = 1,080 gpad.

Table 3-3 indicates an estimated Project total water demand of 255 AFY, including 210 AFY of potable water and 45 AFY of recycled water for landscape irrigation. Project total water demand at full build-out represents approximately 1.0 percent of the City's 2015 total demand (based on 26,028 AFY; Oxnard, 2016) and approximately 0.5 percent of the City's estimated 2040 total water demand (based on 52,225 AFY; Oxnard, 2016). Estimated total water demand for the Project at full build-out represents approximately 1.0 percent of the estimated increase in City water demand over the next 20 years (difference is 26,197 AFY; 2015 total demand compared to 2040 projected total demand; Oxnard, 2016).

The proposed Project will utilize a total of approximately 255 AFY of water resources, including 210 AFY of City potable water and 45 AFY of City recycled water. The proposed Project is anticipated to transfer to the City approximately 500 AFY of ground water extraction allocations via agriculture land converted to urban uses. This transfer will result in a net increase of approximately 245 AFY to the City which may generate additional revenue for the City. However, the FCGMA may require adjustments to the final amount of extraction allocations transferred to the City. The proposed Project will not require additional ground water or surface water purchases from local or imported sources. The proposed Project will not require or result in the construction of significant additional City water facilities or expansion of existing facilities. Thus, the proposed Project will be water neutral with respect to potable water and recycled water.

TABLE 3-3
PROJECT WATER DEMAND ESTIMATED BY PROJECT PROPONENTS

Sector	**Acres** (a)	**Daily Demand Factor (gpad)** (b)	**Total Annual Demand (AFY)**
Potable Water Demand			
Residential – low density	27.53	1,890	58.3
Residential – medium and high density	45.78	2,520	129.2
Light industrial (d)	9.11	1,080	11.0
Commercial/mixed use (d)	8.78	1,080	10.6
Total Potable Water Demand			**209.2**
Recycled Water Demand			
Residential – low density (e)	27.73	0	0
Residential – medium and high density (e)	45.78	0	0
Light industrial (d)	9.11	270	2.8
Commercial/mixed use (d)	8.78	270	2.7
Park and landscaping	17.76	2,009	40.0
Total Recycled Water Demand			**45.4**
Total Water Demand			**255**

Notes:
All values rounded.
(a) Development Planning Services, July 2019. Project also includes approximately 41 acres of roadways and storm water detention basins.
(b) Source: Oxnard, 2007, Teal Club Development Infrastructure Review, Tables 3-1 and 3-2.
(c) Includes demand reduction of 10% to convert to 2019 standards and use of high-efficiency water conservation measures.
(d) Includes demand split of 80% potable water for indoor uses and 20% recycled water for landscape irrigation.
(e) City of Oxnard does not currently approve of recycled water to be piped to single-family and multiple-family residential parcels.

3.4.2 Project Water Demand Estimated by City

City staff estimated the water demand for the Project using significantly higher daily demand factors as compared with the estimated water demand prepared by the Project Proponents. Table 3-4 indicates an estimated Project total water demand of 447 AFY, including 421 AFY of potable water and 26 AFY of recycled water. Project total water demand at full build-out represents approximately 1.7 percent of the City's 2015 total demand (based on 26,028 AFY; Oxnard, 2016) and approximately 0.9 percent of the City's estimated 2040 total water demand (based on 52,225 AFY; Oxnard, 2016). Estimated total water demand for the Project at full build-out represents approximately 1.7 percent of the estimated increase in City water demand over the next 20 years (difference is 26,197 AFY; 2015 total demand compared to 2040 total demand; Oxnard, 2016).

TABLE 3-4
PROJECT WATER DEMAND ESTIMATED BY CITY STAFF

Sector	**Acres** (a)	**Daily Demand Factor (gpad)** (b)	**Total Annual Demand (AFY)**
Potable Water Demand			
Residential – low density	27.53	2,250	69.4
Residential – medium and high density	45.78	6,000	307.7
Light industrial (c)	9.11	2,800	28.6
Commercial/mixed use (d)	8.78	1,600	15.7
Total Potable Water Demand			**421.4**
Recycled Water Demand			
Residential – low density (e)	27.73	0	0
Residential – medium and high density (e)	45.78	0	0
Light industrial (c)	9.11	700	7.1
Commercial/mixed use (d)	8.78	400	3.9
Park and landscaping	17.76	750	14.9
Total Recycled Water Demand			**26.0**
Total Water Demand			**447**

Notes:
All values rounded.
(a) Development Planning Services, July 2019. Project also includes approximately 41 acres of roadways and storm water detention basins.
(b) Source: Oxnard, 2017, Public Works Integrated Master Plan, Project Memorandum 2.2, Table 5.
(c) Demand represents 3,500 gpad with 80% potable water for indoor uses and 20% recycled water for landscape irrigation.
(d) Demand represents 2,000 gpad with 80% potable water for indoor uses and 20% recycled water for landscape irrigation.
(e) City of Oxnard does not currently approve of recycled water to be piped to single-family and multiple-family residential parcels

3.5 Future City Water Demand

The City's UWMP (Oxnard, 2016) provided projected water demands based on current demands, development projects that are under construction, and projects in the planning process. Table 3-2 indicates that the City's water demand is projected to increase to approximately 52,225 AFY by 2040. Future water demands for the Project are included in the City's future demand estimate.

3.6 City Water Neutrality Policy

The City's water neutrality policy is not codified, which means that Oxnard may choose to approve a project regardless of its water neutrality status (Oxnard, 2017). However, the City has been making planning and permitting decisions pursuant to the water neutrality policy since 2008 and it is therefore assumed that a project needs to present a plan for water neutrality. The neutrality policy requires that all new development approved in the city must offset its water demand with a supplemental water supply. "New development" includes all planned (anticipated in the current General Plan) and any unplanned future development occurring in the City. Under the policy, a development can be water neutral by meeting its projected demand

through one or more of following: (1) existing Fox Canyon Groundwater Management Agency (FCGMA) groundwater allocations that are transferred to the city; (2) contributing to increased efficiency by funding water conservation or recycled water retrofit projects; (3) providing additional water supplies; or (4) any combination of these options. The Project Proponents anticipate complying with the premise of the City's Water Neutrality Policy via transfer of ground water extraction allocations to the City (see Section 3.7).

3.7 Evaluation of Project and Ground Water Transfer

Project Proponents anticipate compliance with the City's Water Neutrality Policy (see Section 3.6). It is understood that the Project Proponents will transfer ground water allocations to the City upon final approval of the Project. The FCGMA Ordinance Code allows a transfer of extraction allocations for conversion of agricultural land to municipal land. The current transfer rate is 1 AFY of extraction allocation per 1 AFY of irrigation extraction (FCGMA, 2019).

The proposed Project is anticipated to transfer to the City approximately 500 AFY of ground water extraction allocations via agriculture land converted to urban uses. This transfer will result in a net increase of approximately 245 AFY for the City (500 AFY allocations transferred by the Project – 255 AFY Project demand = 245 AFY net increase) which may generate additional revenue for the City. However, the FCGMA may require adjustments to the final amount of extraction allocations transferred to the City.

SECTION 4: WATER SUPPLY RELIABILITY

4.1 WSA Requirements

The WSA must comply with the following California Water Code requirements:

> 10910(c)(3) If the projected water demand associated with the proposed project was not accounted for in the most recently adopted urban management plan, or the public water system has no urban water management plan, the water supply assessment for the project shall include a discussion with regard to whether the public water system's total projected water supplies available during normal, single dry, and multiple dry water years during a 20-year projection will meet the projected water demand associated with the proposed project, in addition to the public water system's existing and planned future uses, including agricultural and manufacturing uses.
>
> (4) If the city or county is required to comply with this part pursuant to subdivision (b), the water supply assessment for the project shall include a discussion with regard to whether the total projected water supplies, determined to be available by the city or county for the project during normal, single dry, and multiple dry years during a 20-year projection, will meet the projected water demand associated with the proposed project, in addition to existing and planned future uses, including agricultural and manufacturing uses.

4.2 Introduction

Water supply reliability is commonly defined as "how much one can count on a certain amount of water being delivered to a specific place at a specific time". Reliability planning requires significant details about, but not limited to, the following: (1) availability of each water supply from the source; (2) current and future demand forecasts; (3) current and future weather forecasts; (4) anticipated frequency and severity of shortages due to regulatory constraints; (5) shortages due to failure of extraction, treatment, conveyance, and storage facilities; and (6) how available contingency measures can reduce the impact of shortages when they occur.

As previously described, the City of Oxnard will provide potable water for the Project. Anticipated future water supplies include SWP water, UWCD ground water, City ground water, and recycled water. City future imported surface water supply projections assume normal inflows from the Sacramento Delta for SWP water and normal deliveries by MWDSC and CMWD. The City utilized SWP delivery estimates for future SWP water supply reliability based on best available data from DWR, MWDSC, and CMWD.

4.3 Reliability Comparison

The Water Code requires an assessment of water supply reliability and vulnerability to seasonal or climatic shortage (CA Water Code, Section 10910). This assessment must include a comparison of the total projected water demand with the supply available for the following conditions: (1) average or normal water-year, (2) single dry water-year, and (3) three consecutive dry water-years (multiple dry water-years). Additional details are provided in the Oxnard UWMP (Oxnard, 2016).

4.3.1 Normal Water-Year Supply and Demand

Table 4-1 provides a summary of the City's projected 20-year water supplies for a normal water-year condition. Table 4-1 indicates that the City has a projected supply of 40,341 to 54,341 AFY during a normal

water-year for the period 2020 to 2040 (Oxnard, 2016). Current City demands were estimated to be 39,664 to 52,225 AFY. The City projects a supply surplus range of 677 AFY (2020) to 6,287 AFY (2025).

TABLE 4-1
PROJECTED SUPPLY AND DEMAND COMPARISON – NORMAL WATER-YEAR

	2020	2025	2030	2035	2040
Total Estimated Supplies (a)	40,341	54,341	54,341	54,341	54,341
Total Estimated Demand (a)	39,664	48,054	49,445	50,835	52,225
Difference = Supply - Demand	**677**	**6,287**	**4,896**	**3,506**	**2,116**

Notes:
All values rounded in AFY.
(a) Source: Oxnard, 2016.

4.3.2 Single Dry-Year Supply and Demand

Table 4-2 provides a summary of the City's projected 20-year water supplies for a single dry water-year condition. Table 4-2 indicates that the City has a projected supply of 39,247 to 52,867 AFY during a single dry-year for the period 2020 to 2040 (Oxnard, 2016). Current City demands, with implementation of conservation programs, were estimated to be 39,664 to 52,225 AFY. The City projects a supply difference range of minus 417 AFY (2020) to supply surplus of 4,813 AFY (2025). The City may need to consider additional water supplies to meet future water demands in single dry water-years with supply deficits. These supplies may include but not limited to the following: additional ground water production and desalted ground water, additional purchases from UWCD and CMWD, water from the ASR program, additional recycled water, water from indirect potable water reuse, and water from direct potable reuse.

TABLE 4-2
PROJECTED SUPPLY AND DEMAND COMPARISON – SINGLE DRY-YEAR

	2020	2025	2030	2035	2040
Total Estimated Supplies (a)	39,247	52,867	52,867	52,867	52,867
Total Estimated Demand (a)	39,664	48,054	49,445	50,835	52,225
Difference = Supply - Demand	**(417)**	**4,813**	**3,422**	**2,032**	**642**

Notes:
All values rounded in AFY.
(a) Source: Oxnard, 2016.

4.3.3 Multiple Dry Water-Years Supply and Demand

Table 4-3 provides a summary of the City's projected 20-year water supplies for a multiple dry water-years condition. Table 4-3 indicates that the City has a projected supply of 36,383 to 52,206 AFY during a multiple dry-year condition for the period 2020 to 2040 (Oxnard, 2016). City demands were estimated to be 39,664 to 52,225 AFY. The City projects a supply difference range of minus 3,281 AFY (2020) to supply surplus of 4,152 AFY (2025). The City may need to consider additional water supplies to meet future water demands in multiple dry water-years with supply deficits. These supplies may include but not limited to the following: additional ground water production and desalted ground water, additional purchases from UWCD and

CMWD, water from the ASR program, additional recycled water, water from indirect potable water reuse, and water from direct potable reuse.

TABLE 4-3
PROJECTED SUPPLY AND DEMAND COMPARISON – MULTIPLE DRY-YEARS

	2020	2025	2030	2035	2040
Year 1 Total Estimated Supplies (a)	38,756	52,206	52,206	52,206	52,206
Year 1 Total Estimated Demand (a)	39,664	48,054	49,445	50,835	52,225
Year 1 Difference = Supply - Demand	**(908)**	**4,152**	**2,761**	**1,371**	**(19)**
Year 2 Total Estimated Supplies (a)	38,426	51,762	51,762	51,762	51,762
Year 2 Total Estimated Demand (a)	39,664	48,054	49,445	50,835	52,225
Year 2 Difference = Supply - Demand	**(1,238**	**3,708**	**2,317**	**927**	**(463)**
Year 3 Total Estimated Supplies (a)	36,383	49,009	49,009	49,009	49,009
Year 3 Total Estimated Demand (a)	39,664	48,054	49,445	50,835	52,225
Year 3 Difference = Supply - Demand	**(3,281**	**955**	**(436)**	**(1,826)**	**(3,216)**

Notes:
All values rounded in AFY.
(a) Source: Oxnard, 2016.

4.4 City Water Supply Shortages

The City has established diverse approaches to meeting future water demands including: facility improvements and increased deliveries of local ground water; increased deliveries of imported water; implementing a recycled water program; and supporting water demand management programs. This has allowed the City, to date, to meet demands in spite of drought conditions. Water shortages can be triggered by a hydrologic limitation in supply (i.e., a prolonged period of below normal precipitation and runoff), regulatory constraint, catastrophic event, and limitation or failure of supply and treatment infrastructure. Hydrologic or drought limitations tend to develop and abate more slowly. Whereas, infrastructure failure, regulatory constraint, and a catastrophic event tend to happen quickly and relatively unpredictably (Oxnard, 2016).

Ordinances approved by the City established permanent water conservation standards to maximize water use efficiency for non-shortage conditions and refines response actions implemented during water shortage conditions. The conservation resulting from improved water use efficiency, and water shortage response actions supported by City Ordinance, should help ensure a reliable and sustainable minimum supply of water for the public health, safety and welfare by maintaining local and imported water resources (Oxnard, 2016).

As defined in the Oxnard City Code, during a declared water shortage condition the water sources available to the City will be put to the maximum beneficial use to the greatest extent possible. Priorities for use of available water, based on California Water Code, include the following:

- Health and Safety: Interior residential, sanitation and fire protection
- Commercial, Industrial, and Governmental: Maintain jobs and economic base

- Existing Landscaping: Especially trees and shrubs
- New Demand: Projects with permits when shortage declared.

The waste or unreasonable use of water will be prevented, and water supplies available will be conserved for public welfare in the interests of City residents. Primary purpose of the Ordinance is to provide response actions for use during water shortages, including procedures that will significantly reduce the consumption of City water over an extended period. The aim is to extend the water available to City residents while reducing the hardship on the City and the general public to the greatest extent possible.

After determining the severity of the water shortage emergency, the City Council will establish, by resolution, water conservation goals by stages. Immediately after adoption of a City Council resolution declaring the water conservation goals, water allocations will be in effect and customers will be prohibited from using water in excess of their allocation. Each customer will be solely responsible for managing his/her water uses in such a manner as to not exceed the amount of water allocated. Percentage reduction stages and goals will be in effect with the first full billing period commencing on or after the effective date of the City Council resolution adopting a water shortage plan. During a water shortage emergency, the City Manager will take specific actions in response to the failure of any customer to comply with established water use restrictions.

The City may need to consider additional water supplies to meet future water demands in years with supply deficits. These supplies may include but not limited to the following: additional ground water production and desalted ground water, additional purchases from UWCD and CMWD, water from the ASR program, additional recycled water, water from indirect potable water reuse, and water from direct potable reuse.

4.5 Effects of Global Climate Change

4.5.1 Introduction

Current climate change projections suggest that California will continue to enjoy a Mediterranean climate with the typical seasonal pattern of relatively cool and wet winters and hot, dry summers. However, climate patterns are different now and may continue to change at an accelerated pace. Increases in global emissions of greenhouse gases are leading to serious consequences for California including, but not limited to, the following: higher air and water temperatures, rising sea levels, increased droughts and floods, decreased amount and duration of snow pack, and extreme variability in weather patterns (DWR, 2013; California Natural Resources Agency, CANRA, 2009). These changes are anticipated to intensify over the 20-year planning horizon of this Assessment. Even if all emissions of greenhouse gases ceased today, some of these developments would be unavoidable because of the increase in greenhouse gases recorded over the last 100 years and the fact that the climate system changes slowly (Public Policy Institute of California, PPIC, 2011). Many of these climate changes would affect the availability, volume, and quality of California water supplies.

4.5.2 Potential Impacts of Climate Change

State and local water supplies and water demands may be impacted by climate change via one or more processes including precipitation, air temperature, runoff, sea level change, and flooding. Rainfall variability is expected to increase, leading to more frequent droughts and floods. Runoff from snowpack may be earlier and less predictable, and precipitation may fall as more rain and less snow. Air temperatures in California are anticipated to increase by 2 to 9 degrees Fahrenheit by the year 2100 (CANRA, 2009). Higher air temperatures may result in more rain and less snow, diminishing the reserves of water held in the Sierra Nevada snowpack (CANRA, 2009). Spring runoff from snowpack is occurring earlier now than it did in the first part of the 20th century. This change in runoff could affect availability of spring and summer snowmelt from mountain areas, including State Water Project water from the Sacramento Delta and local rivers and streams. Total annual exports from the Delta for State and Federal contractors may also decrease by 20 to 25 percent by the year 2100 (California Climate Change Center, CCCC, 2009).

Sea levels have risen by as much as 7 inches along the California coast over the last century (CANRA, 2009). According to some estimates, sea level is projected to rise an additional 2 to 5 feet by 2100 (PPIC, 2011; Pacific Institute, 2009; CANRA, 2009; Climate Action Team, CAT, 2008). These sea level increases could significantly impact infrastructure within coastal areas and affect quantity and timing of State Water Project water exports from the Sacramento Delta. Effects of sea level rise in the Delta would be two-fold: (1) problems with weak levees protecting the low-lying land, many already below sea level; and (2) increased salinity intrusion from the ocean which could degrade fresh water transfer supplies pumped at the southern edge of the Delta or require more fresh water releases to repel ocean salinity.

The DWR Water Plan includes an assessment of the impacts of global climate change on the State's water supply was conducted using a series of computer models based on decades of scientific research (DWR, 2013). Model results for California indicate a significant likelihood of increased temperature, reduction in Sierra snow depth, early snow melt, and a rise in sea level. These changing hydrological conditions could affect future planning efforts which are typically based on historic conditions. Difficulties in water supplies planning that may arise include, but are not limited to, the following:

- hydrological conditions, variability, and extremes that are different than what current water systems were designed to manage.
- changes occurring too rapidly to allow sufficient time and information to permit managers to respond appropriately.
- special efforts or plans to protect against surprises and uncertainties.

As such, DWR will continue to provide updated results from these models as further research is completed and new information becomes available.

4.5.3 Potential Effects of Climate Change on Water Demand

Climate change may increase daytime and nighttime temperatures and seasonal temperatures. This change may impact the length of the growing season. This general increase in temperatures coupled with greater variability and unpredictability in precipitation is expected to lead to increases in evapotranspiration resulting from warmer seasons; thereby creating an increase in demand for irrigation water and an increase in the year-to-year variability of demand.

Temperate fruit and nut trees such as almonds, pistachios, and apples require adequate winter chill to produce economically viable yields. Increased temperatures daytime, nighttime, and season temperatures may reduce winter chill hours thereby causing adverse effects on the yield of some crops. Some farmers are beginning to overcome this change by planting trees closer together and using new varieties.

Studies are now underway to prepare farmers for the likely impacts of climate change. Such efforts include breeding varieties of fruit trees which can withstand the decreased water chill hours, developing tools to aid the crops in coping with insufficient chill, and researching the temperature responses of orchard crops to better understand potential long-term effects. However, some solutions such as replanting orchards with altered crop varieties or the installation of aiding tools may not be feasible for many irrigators.

4.5.4 Mitigation and Adaptation

Responding to climate change generally takes two forms: mitigation and adaptation. Mitigation is taking steps to reduce human contribution to the causes of climate change by reducing greenhouse gas (GHG) emissions. Adaptation is the process of responding to the effects of climate change by modifying our systems and behaviors to function in a warmer climate (DWR, 2013).

In the water sector, climate change mitigation is generally achieved by reducing energy use, becoming more efficient with energy use, and/or substituting renewable energy sources in place of fossil fuel-based energy sources. Because water requires energy to move, treat, use, heat, and discharge, water conservation is also energy conservation. As each water supplier implements water conservation measures and determines its water conservation targets, it can also calculate conserved energy and GHGs not-emitted as a side benefit. Once a water supplier has calculated the water conserved by a best management practice (BMP), it is straightforward to convert that volume to conserved energy, and GHGs not-emitted. Additionally, water suppliers may want to focus on implementing water conservation measures that conserve water but do so at a significant decrease in GHG emissions as compared with other measures (DWR, 2013).

Climate change means more than hotter days. Continued warming of the climate system has considerable impact on the operation of most water districts. Snow in the Sierra Nevada provides 65 percent of California's water supply. Predictions indicate that by 2050 the Sierra snowpack will be significantly reduced. Much of the lost snow will fall as rain, which flows quickly down the mountains during winter and cannot be stored in our current water system for use during California's hot, dry summers. The climate is also expected to become more variable, bringing more droughts and floods. Water districts will have to adapt to new, more variable conditions (DWR, 2013).

Principles of climate change adaptation include the following:

- As more mitigation is completed now, the less adaptation we may have to do in the future, because climate impacts could be less severe.
- Mitigation is much less expensive than adaptation.
- Mitigation should happen globally.
- Adaptation must happen locally.
- Adaptation strategies should be implemented according to future conditions, regular assessment and recalibration.
- Some adaptation strategies have benefits that can be realized today.

4.5.5 Local Strategies

As climate change continues to unfold in the coming decades, water agencies may need to mitigate and adapt to new strategies, which may require reevaluating existing agency missions, policies, regulations, facilities, funding priorities, and other responsibilities. Examples of mitigation and adaptation strategies include, but not limited to, the following:

- Prepare long-term facility and sustainability master plans including specific elements for climate change adaptation.
- Increase ground water recharge using additional surface water and recycled water.
- Increase recycled water demands.
- Promote additional water use efficiency for urban, commercial, and industrial best management practices.
- Implement proposed indirect potable water reuse program and direct potable reuse program.
- Increase investments in infrastructure that promotes adaptation strategies (such as ground water recharge, and recycled water) and existing principal facilities susceptible to impacts of climate change.

Notwithstanding the above strategies for dealing with climate change, the reality is that current environmental regulations place a very high priority on releasing additional water for endangered species (i.e., Sacramento River and San Joaquin River) and the environment. The potential for increased water demand for environmental resources and the possibility of reduced water supplies will be one of the biggest challenges confronting water agencies.

The goal of the City is to utilize the available surface water and ground water supplies as effectively as possible in meeting the requirements of the customers water demands. It is worth noting, however, that the City's control over water supplies is limited; thus, management practice changes will need to be adaptive in nature.

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SECTION 5: SUMMARY AND CONCLUSIONS

This Water Supply Assessment (WSA) was prepared to assist the Project Proponents in satisfying the requirements of SB 610/California Water Code and supplement the Project DEIR. The WSA included a review of local Urban Water Management Plans, local planning documents, and the water requirements for the subject Project.

The proposed Project by Borchard Ownership Interests (Project Proponents) will involve annexation of the approximately 150-acre (gross) project area to the City of Oxnard, and adoption of an updated Teal Club Specific Plan (in progress, anticipated completion date of second quarter 2019). Current Ventura County General Plan land use and zoning designations for the project area are Agricultural and Agricultural Exclusive. The proposed Teal Club Specific Plan designates residential, retail commercial, business/research park, parks, and public facilities uses (see Figure 1-2). A central focus of this development will be in the provision of balanced community with jobs, recreation, shopping, and affordable and market-rate housing. The 2030 General Plan land use map designates the project site for an Urban Village, thereby encouraging neo-traditional town planning with a focus on sustainability and transit-oriented development.

The Project Proponents propose to complete one of three versions of the Teal Club Project. The three versions are named “Project”, “Reduced Intensity Alternative”, and “Phase 1 Development Only Alternative”. Each of these versions are summarized below.

The “Project” will include the following major components:

- Approximately 150 total acres
- Up to 990 residential units in a variety of densities and product types on approximately 73 acres
- Up to 132,000 square feet of light industrial development on approximately 9 acres
- Up to 60,000 square feet of retail commercial uses on approximately 9 acres
- Approximately 18 acres of community park space, pocket parks, and greenbelts
- Approximately 41 acres of roadways and storm water detention basins.

The “Reduced Intensity Alternative” will include the following major components:

- Approximately 150 total acres
- Up to 990 residential units in a variety of densities and product types on approximately 86 acres
- Up to 50,000 square feet of retail commercial uses on approximately 9 acres
- Approximately 18 acres of community park space, pocket parks, and greenbelts
- . Approximately 38 acres of roadways and storm water detention basins.

The “Phase 1 Development Only Alternative” will include the following major components:

- Approximately 92 total acres
- Up to 723 residential units in a variety of densities and product types on approximately 53 acres
- Up to 60,000 square feet of retail commercial uses on approximately 9 acres
- Approximately 6.5 acres of park space and greenbelts
- Approximately 23 acres of roadways and storm water detention basins.

Project Proponents have a primary goal for this Project to be water neutral. To achieve neutrality, the Project needs to contribute water rights, water supplies, or financial or physical offsets to the City that ensure sufficient supply to address Project water demands. Options available may include transfers of FCGMA ground water extraction allocations to the City through agricultural conversion to municipal uses, participation in expansions of the City's recycled water system through physical or financial contributions, and or participation in water conservation projects that produce measurable and sustainable water savings. Non-potable water demands, to be met with City recycled water, will be metered separately. Another Project goal is that water supplies will consist of 100 percent local and sustainable sources including local ground water and recycled water.

Project Proponents estimated a Project total water demand of 255 AFY, including 210 AFY of potable water and 45 AFY of recycled water for landscape irrigation (see Table 3-3 for details). Project total water demand at full build-out represents approximately 1.0 percent of the City's 2015 total demand (based on 26,028 AFY; Oxnard, 2016) and approximately 0.5 percent of the City's estimated 2040 total water demand (based on 52,225 AFY; Oxnard, 2016). Estimated total water demand for the Project at full build-out represents approximately 1.0 percent of the estimated increase in City water demand over the next 20 years (difference is 26,197 AFY; 2015 total demand compared to 2040 projected total demand; Oxnard, 2016).

City staff estimated the water demand for the Project using significantly higher daily demand factors as compared with the estimated water demand prepared by the Project Proponents. Table 3-4 indicates an estimated Project total water demand of 447 AFY, including 421 AFY of potable water and 26 AFY of recycled water. Project total water demand at full build-out represents approximately 1.7 percent of the City's 2015 total demand (based on 26,028 AFY; Oxnard, 2016) and approximately 0.9 percent of the City's estimated 2040 total water demand (based on 52,225 AFY; Oxnard, 2016). Estimated total water demand for the Project at full build-out represents approximately 1.7 percent of the estimated increase in City water demand over the next 20 years (difference is 26,197 AFY; 2015 total demand compared to 2040 total demand; Oxnard, 2016).

Project Proponents anticipate compliance with the City's Water Neutrality Policy via transfer of ground water extraction allocations to the City (see Section 3.7). It is anticipated that the Project Proponents will transfer ground water extraction allocations to the City upon final approval of the Project. The FCGMA Ordinance Code allows ground water extraction allocations to be transferred when converting agricultural acreage to municipal/urban uses. The current transfer rate is 1 AFY of applicable agricultural extraction allocation to 1 AFY of municipal extraction allocation (FCGMA, 2019). The transfer process and allocations to be transferred will be subject to FCGMA review and approval.

Based on review of FCGMA Ordinances and discussions with the FCGMA staff, the City could potentially receive approximately 500 AFY of transferred ground water allocations via agriculture land converted to urban uses. This transfer will result in a net increase of approximately 245 AFY for the City (500 AFY allocations transferred by the Project – 255 AFY Project demand = 245 AFY net increase) which may generate additional revenue for the City. However, the FCGMA may require adjustments to the final amount of extraction allocations transferred to the City.

Based on the analysis provided in the City's Urban Water Management Plan (Oxnard, 2016), the City's total projected normal water-year water supplies available through the year 2040 will generally meet the City's projected water demands, including the Project, within the service area (see Table 4-1 for details). Under single dry water-year conditions (see Table 4-2 for details), the City anticipates that projected supplies will meet projected demands including the Project, in most years through the year 2040. For multiple dry water-year conditions, the City's projected water resources will meet the projected water demands including the Project, in most years through the year 2040 (see Table 4-3 for details). During years when deliveries of existing water supplies are below normal, the City anticipates implementing multiple strategies

including but not limited to the following: 1) obtaining additional water resources via supplemental local ground water extractions, 2) additional purchases from local and regional suppliers, and 3) increasing water conservation and demand management measures.

The proposed Project will utilize local and sustainable water resources, including City potable water and City recycled water for landscape irrigation. The City has sufficient water supplies available to serve the Project from existing entitlements and resources during normal water-years (Oxnard, 2016). These water supplies are available via treated local ground water, imported surface water from the SWP, and recycled water. The proposed Project will transfer approximately 500 AFY of ground water extraction allocations to the City via agriculture land converted to urban uses. This transfer will result in creating additional ground water extraction allocations (i.e., exceeding demands) and potential additional revenue for the City. The proposed Project will not require additional ground water or surface water purchases from local or imported sources. The proposed Project will not require or result in the construction of significant additional City water facilities or expansion of existing facilities. Thus, the Project will be water neutral with respect to use of potable water and recycled water.

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APPENDICES

A California Water Code – Section 10910-10915

B Fox Canyon Groundwater Management Agency – Groundwater Management Plan

C City of Oxnard 2019 Consumer Confidence Report

Appendix A

California Water Code – Section 10910-10915

CALIFORNIA CODES
WATER CODE
SECTION **10910**-**10915**

10910. (a) Any city or county that determines that a project, as defined in Section 10912, is subject to the California Environmental Quality Act (Division 13 (commencing with Section 21000) of the Public Resources **Code**) under Section 21080 of the Public Resources **Code** shall comply with this part.

(b) The city or county, at the time that it determines whether an environmental impact report, a negative declaration, or a mitigated negative declaration is required for any project subject to the California Environmental Quality Act pursuant to Section 21080.1 of the Public Resources **Code**, shall identify any **water** system that is, or may become as a result of supplying **water** to the project identified pursuant to this subdivision, a public **water** system, as defined in Section 10912, that may supply **water** for the project. If the city or county is not able to identify any public **water** system that may supply **water** for the project, the city or county shall prepare the **water** assessment required by this part after consulting with any entity serving domestic **water** supplies whose service area includes the project site, the local agency formation commission, and any public **water** system adjacent to the project site.

(c) (1) The city or county, at the time it makes the determination required under Section 21080.1 of the Public Resources **Code**, shall request each public **water** system identified pursuant to subdivision (b) to determine whether the projected **water** demand associated with a proposed project was included as part of the most recently adopted urban **water** management plan adopted pursuant to Part 2.6 (commencing with Section 10610).

(2) If the projected **water** demand associated with the proposed project was accounted for in the most recently adopted urban **water** management plan, the public **water** system may incorporate the requested information from the urban **water** management plan in preparing the elements of the assessment required to comply with subdivisions (d), (e), (f), and (g).

(3) If the projected **water** demand associated with the proposed project was not accounted for in the most recently adopted urban **water** management plan, or the public **water** system has no urban **water** management plan, the **water** supply assessment for the project shall include a discussion with regard to whether the public **water** system's total projected **water** supplies available during normal, single dry, and multiple dry **water** years during a 20-year projection will meet the projected **water** demand associated with the proposed project, in addition to the public **water** system's existing and planned future uses, including agricultural and manufacturing uses.

(4) If the city or county is required to comply with this part pursuant to subdivision (b), the **water** supply assessment for the project shall include a discussion with regard to whether the total projected **water** supplies, determined to be available by the city or county for the project during normal, single dry, and multiple dry **water** years during a 20-year projection, will meet the projected **water** demand associated with the proposed project, in addition to existing and planned future uses, including agricultural and manufacturing uses.

(d) (1) The assessment required by this section shall include an identification of any existing **water** supply entitlements, **water** rights, or **water** service contracts relevant to the identified **water** supply for the proposed project, and a description of the quantities of **water** received in prior years by the public **water** system, or the city or county if either is required to comply with this part pursuant to subdivision (b), under the existing **water** supply entitlements, **water** rights, or **water** service contracts.

(2) An identification of existing **water** supply entitlements, **water** rights, or **water** service contracts held by the public **water** system, or the city or county if either is required to comply with this part pursuant to subdivision (b), shall be demonstrated by providing information related to all of the following:

(A) Written contracts or other proof of entitlement to an identified **water** supply.

(B) Copies of a capital outlay program for financing the delivery of a **water** supply that has been adopted by the public **water** system.

(C) Federal, state, and local permits for construction of

necessary infrastructure associated with delivering the **water** supply.
(D) Any necessary regulatory approvals that are required in order to be able to convey or deliver the **water** supply.
(e) If no **water** has been received in prior years by the public **water** system, or the city or county if either is required to comply with this part pursuant to subdivision (b), under the existing **water** supply entitlements, **water** rights, or **water** service contracts, the public **water** system, or the city or county if either is required to comply with this part pursuant to subdivision (b), shall also include in its **water** supply assessment pursuant to subdivision (c), an identification of the other public **water** systems or **water** service contractholders that receive a **water** supply or have existing **water** supply entitlements, **water** rights, or **water** service contracts, to the same source of **water** as the public **water** system, or the city or county if either is required to comply with this part pursuant to subdivision (b), has identified as a source of **water** supply within its **water** supply assessments.
(f) If a **water** supply for a proposed project includes groundwater, the following additional information shall be included in the **water** supply assessment:
(1) A review of any information contained in the urban **water** management plan relevant to the identified **water** supply for the proposed project.
(2) A description of any groundwater basin or basins from which the proposed project will be supplied. For those basins for which a court or the board has adjudicated the rights to pump groundwater, a copy of the order or decree adopted by the court or the board and a description of the amount of groundwater the public **water** system, or the city or county if either is required to comply with this part pursuant to subdivision (b), has the legal right to pump under the order or decree. For basins that have not been adjudicated, information as to whether the department has identified the basin or basins as overdrafted or has projected that the basin will become overdrafted if present management conditions continue, in the most current bulletin of the department that characterizes the condition of the groundwater basin, and a detailed description by the public **water** system, or the city or county if either is required to comply with this part pursuant to subdivision (b), of the efforts being undertaken in the basin or basins to eliminate the long-term overdraft condition.
(3) A detailed description and analysis of the amount and location of groundwater pumped by the public **water** system, or the city or county if either is required to comply with this part pursuant to subdivision (b), for the past five years from any groundwater basin from which the proposed project will be supplied. The description and analysis shall be based on information that is reasonably available, including, but not limited to, historic use records.
(4) A detailed description and analysis of the amount and location of groundwater that is projected to be pumped by the public **water** system, or the city or county if either is required to comply with this part pursuant to subdivision (b), from any basin from which the proposed project will be supplied. The description and analysis shall be based on information that is reasonably available, including, but not limited to, historic use records.
(5) An analysis of the sufficiency of the groundwater from the basin or basins from which the proposed project will be supplied to meet the projected **water** demand associated with the proposed project. A **water** supply assessment shall not be required to include the information required by this paragraph if the public **water** system determines, as part of the review required by paragraph (1), that the sufficiency of groundwater necessary to meet the initial and projected **water** demand associated with the project was addressed in the description and analysis required by paragraph (4) of subdivision (b) of Section 10631.
(g) (1) Subject to paragraph (2), the governing body of each public **water** system shall submit the assessment to the city or county not later than 90 days from the date on which the request was received. The governing body of each public **water** system, or the city or county if either is required to comply with this act pursuant to subdivision (b), shall approve the assessment prepared pursuant to this section at a regular or special meeting.
(2) Prior to the expiration of the 90-day period, if the public **water** system intends to request an extension of time to prepare and adopt the assessment, the public **water** system shall meet with the city or county to request an extension of time, which shall not exceed 30 days, to prepare and adopt the assessment.
(3) If the public **water** system fails to request an extension of time, or fails to submit the assessment notwithstanding the extension

of time granted pursuant to paragraph (2), the city or county may seek a writ of mandamus to compel the governing body of the public **water** system to comply with the requirements of this part relating to the submission of the **water** supply assessment.

(h) Notwithstanding any other provision of this part, if a project has been the subject of a **water** supply assessment that complies with the requirements of this part, no additional **water** supply assessment shall be required for subsequent projects that were part of a larger project for which a **water** supply assessment was completed and that has complied with the requirements of this part and for which the public **water** system, or the city or county if either is required to comply with this part pursuant to subdivision (b), has concluded that its **water** supplies are sufficient to meet the projected **water** demand associated with the proposed project, in addition to the existing and planned future uses, including, but not limited to, agricultural and industrial uses, unless one or more of the following changes occurs:

(1) Changes in the project that result in a substantial increase in **water** demand for the project.

(2) Changes in the circumstances or conditions substantially affecting the ability of the public **water** system, or the city or county if either is required to comply with this part pursuant to subdivision (b), to provide a sufficient supply of **water** for the project.

(3) Significant new information becomes available which was not known and could not have been known at the time when the assessment was prepared.

10911. (a) If, as a result of its assessment, the public **water** system concludes that its **water** supplies are, or will be, insufficient, the public **water** system shall provide to the city or county its plans for acquiring additional **water** supplies, setting forth the measures that are being undertaken to acquire and develop those **water** supplies. If the city or county, if either is required to comply with this part pursuant to subdivision (b), concludes as a result of its assessment, that **water** supplies are, or will be, insufficient, the city or county shall include in its **water** supply assessment its plans for acquiring additional **water** supplies, setting forth the measures that are being undertaken to acquire and develop those **water** supplies. Those plans may include, but are not limited to, information concerning all of the following:

(1) The estimated total costs, and the proposed method of financing the costs, associated with acquiring the additional **water** supplies.

(2) All federal, state, and local permits, approvals, or entitlements that are anticipated to be required in order to acquire and develop the additional **water** supplies.

(3) Based on the considerations set forth in paragraphs (1) and (2), the estimated timeframes within which the public **water** system, or the city or county if either is required to comply with this part pursuant to subdivision (b), expects to be able to acquire additional **water** supplies.

(b) The city or county shall include the **water** supply assessment provided pursuant to Section **10910**, and any information provided pursuant to subdivision (a), in any environmental document prepared for the project pursuant to Division 13 (commencing with Section 21000) of the Public Resources **Code**.

(c) The city or county may include in any environmental document an evaluation of any information included in that environmental document provided pursuant to subdivision (b). The city or county shall determine, based on the entire record, whether projected **water** supplies will be sufficient to satisfy the demands of the project, in addition to existing and planned future uses. If the city or county determines that **water** supplies will not be sufficient, the city or county shall include that determination in its findings for the project.

10912. For the purposes of this part, the following terms have the following meanings:

(a) "Project" means any of the following:

(1) A proposed residential development of more than 500 dwelling units.

(2) A proposed shopping center or business establishment employing more than 1,000 persons or having more than 500,000 square feet of floor space.

(3) A proposed commercial office building employing more than 1,000 persons or having more than 250,000 square feet of floor space.
(4) A proposed hotel or motel, or both, having more than 500 rooms.
(5) (A) Except as otherwise provided in subparagraph (B), a proposed industrial, manufacturing, or processing plant, or industrial park planned to house more than 1,000 persons, occupying more than 40 acres of land, or having more than 650,000 square feet of floor area.
(B) A proposed photovoltaic or wind energy generation facility approved on or after the effective date of the amendments made to this section at the 2011-12 Regular Session is not a project if the facility would demand no more than 75 acre-feet of **water** annually.
(6) A mixed-use project that includes one or more of the projects specified in this subdivision.
(7) A project that would demand an amount of **water** equivalent to, or greater than, the amount of **water** required by a 500 dwelling unit project.
(b) If a public **water** system has fewer than 5,000 service connections, then "project" means any proposed residential, business, commercial, hotel or motel, or industrial development that would account for an increase of 10 percent or more in the number of the public **water** system's existing service connections, or a mixed-use project that would demand an amount of **water** equivalent to, or greater than, the amount of **water** required by residential development that would represent an increase of 10 percent or more in the number of the public **water** system's existing service connections.
(c) "Public **water** system" means a system for the provision of piped **water** to the public for human consumption that has 3,000 or more service connections. A public **water** system includes all of the following:
(1) Any collection, treatment, storage, and distribution facility under control of the operator of the system that is used primarily in connection with the system.
(2) Any collection or pretreatment storage facility not under the control of the operator that is used primarily in connection with the system.
(3) Any person who treats **water** on behalf of one or more public **water** systems for the purpose of rendering it safe for human consumption.
(d) This section shall remain in effect only until January 1, 2017, and as of that date is repealed, unless a later enacted statute, that is enacted before January 1, 2017, deletes or extends that date.

10912. For the purposes of this part, the following terms have the following meanings:
(a) "Project" means any of the following:
(1) A proposed residential development of more than 500 dwelling units.
(2) A proposed shopping center or business establishment employing more than 1,000 persons or having more than 500,000 square feet of floor space.
(3) A proposed commercial office building employing more than 1,000 persons or having more than 250,000 square feet of floor space.
(4) A proposed hotel or motel, or both, having more than 500 rooms.
(5) A proposed industrial, manufacturing, or processing plant, or industrial park planned to house more than 1,000 persons, occupying more than 40 acres of land, or having more than 650,000 square feet of floor area.
(6) A mixed-use project that includes one or more of the projects specified in this subdivision.
(7) A project that would demand an amount of **water** equivalent to, or greater than, the amount of **water** required by a 500 dwelling unit project.
(b) If a public **water** system has fewer than 5,000 service connections, then "project" means any proposed residential, business, commercial, hotel or motel, or industrial development that would account for an increase of 10 percent or more in the number of the public **water** system's existing service connections, or a mixed-use project that would demand an amount of **water** equivalent to, or greater than, the amount of **water** required by residential development that would represent an increase of 10 percent or more in the number of the public **water** system's existing service connections.
(c) "Public **water** system" means a system for the provision of piped **water** to the public for human consumption that has 3,000 or

more service connections. A public **water** system includes all of the following:
(1) Any collection, treatment, storage, and distribution facility under control of the operator of the system that is used primarily in connection with the system.
(2) Any collection or pretreatment storage facility not under the control of the operator that is used primarily in connection with the system.
(3) Any person who treats **water** on behalf of one or more public **water** systems for the purpose of rendering it safe for human consumption.
(d) This section shall become operative on January 1, 2017.

10914. (a) Nothing in this part is intended to create a right or entitlement to **water** service or any specific level of **water** service.
(b) Nothing in this part is intended to either impose, expand, or limit any duty concerning the obligation of a public **water** system to provide certain service to its existing customers or to any future potential customers.
(c) Nothing in this part is intended to modify or otherwise change existing law with respect to projects which are not subject to this part.
(d) This part applies only to a project for which a notice of preparation is submitted on or after January 1, 1996.

10915. The County of San Diego is deemed to comply with this part if the Office of Planning and Research determines that all of the following conditions have been met:
(a) Proposition C, as approved by the voters of the County of San Diego in November 1988, requires the development of a regional growth management plan and directs the establishment of a regional planning and growth management review board.
(b) The County of San Diego and the cities in the county, by agreement, designate the San Diego Association of Governments as that review board.
(c) A regional growth management strategy that provides for a comprehensive regional strategy and a coordinated economic development and growth management program has been developed pursuant to Proposition C.
(d) The regional growth management strategy includes a **water** element to coordinate planning for **water** that is consistent with the requirements of this part.
(e) The San Diego County **Water** Authority, by agreement with the San Diego Association of Governments in its capacity as the review board, uses the association's most recent regional growth forecasts for planning purposes and to implement the **water** element of the strategy.
(f) The procedures established by the review board for the development and approval of the regional growth management strategy, including the **water** element and any certification process established to ensure that a project is consistent with that element, comply with the requirements of this part.
(g) The environmental documents for a project located in the County of San Diego include information that accomplishes the same purposes as a **water** supply assessment that is prepared pursuant to Section **10910**.

Appendix B

Fox Canyon Groundwater Management Agency – Groundwater Management Plan

2007 Update to the Fox Canyon Groundwater Management Agency Groundwater Management Plan

Prepared by

Fox Canyon Groundwater Management Agency
United Water Conservation District
Calleguas Municipal Water District

May 2007

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This Groundwater Management Plan was prepared by Steven Bachman, with extensive advice and reviews by Fox Canyon Groundwater Management Agency staff (Jeff Pratt, Gerhardt Hubner, Gerard Kapuscik, Christian Laber, David Panaro, and Sheila Lopez) and United Water Conservation District staff (Dana Wisehart, Ken Turner, Dan Detmer, Jim Kentosh, Murray McEachron, Pete Dal Pozzo, and John Dickenson). Lowell Preston (formerly of FCGMA), Curtis Hopkins (for Municipal and Industrial [M&I] providers), Rob Saperstein (for City of Oxnard), John Mathews (for Pleasant Valley County Water District), Tony Emmert (City of Oxnard), Lucia McGovern (City of Camarillo), John Powell (Saticoy Country Club), David Borchard (FCGMA Board Member), and Lawrence (Larry) Fuller provided additional comments and reviews.

EXECUTIVE SUMMARY

The Fox Canyon Groundwater Management Agency (FCGMA) was initially created to manage the groundwater in both overdrafted and potentially seawater-intruded areas within Ventura County. The prime objectives and purposes of the FCGMA are to preserve groundwater resources for agricultural, municipal, and industrial uses in the best interests of the public and for the common benefit of all water users. Protection of water quality and quantity along with maintenance of long-term water supply are included in those goals and objectives.

Initial goals of the FCGMA included balancing water supply and demand in the Upper Aquifer System (UAS) by the year 2000 and in the Lower Aquifer System (LAS) by year 2010. These goals and the FCGMA's basic purpose remain relatively unchanged today. The initial Groundwater Management Plan for the FCGMA was prepared in 1985. This current document is an update to that initial Plan. Since preparation of the initial Plan, significantly more is now known about the occurrence of the seawater intrusion and basin overdraft through focused monitoring programs, studies, and modeling. There has also been a period of time to observe how FCGMA policies and water conservation facilities have improved groundwater conditions.

The goals of this Management Plan are to set specific, measurable management objectives for each basin, identify strategies to reach these goals, and set future FCGMA policy to help implement these strategies. The FCGMA cannot itself build and operate conservation facilities, so the focus of this Plan is both on potential FCGMA policies and on strategies and policies that can assist in implementing conservation projects by other agencies. Thus, the FCGMA acts as a partner with the other agencies in improving conditions in the aquifers within the Agency.

The main focus of the initial Groundwater Management Plan was to contain seawater intrusion in the south Oxnard Plain basin. The combination of FCGMA policies and new water conservation facilities, which included the FCGMA pumping reductions, shifting of pumping from the Upper Aquifer System to the Lower Aquifer System, the construction of the Freeman Diversion, and the operation of the Pumping Trough and Pleasant Valley pipeline systems, has had a significant effect on seawater intrusion in at least a portion of the aquifers. The most significant effect was the reduction of the lobe of seawater in the Upper Aquifer System at Port Hueneme. Monitoring wells drilled into this lobe indicate that seawater intrusion has retreated and is no longer detectable in some areas near Port Hueneme, with groundwater in one well improving from near-seawater back to drinking-quality water.

However, the containment of saline waters is not complete. In the Pleasant Valley and south Oxnard Plain basins, saline waters both from the ocean and from adjacent fine-grained sediments have expanded the area of saline intrusion since 1985. This increase occurred in the Upper Aquifer System near Point Mugu and the Lower Aquifer System in the Port Hueneme and Point Mugu areas. Thus, continuation of current strategies and the implementation of additional strategies are required to fully contain saline intrusion.

Additional water quality problems have also been identified since the original FCGMA Plan was adopted. These include increasing chlorides and other salts in the South Las Posas basin and locally in the Pleasant Valley basin, as well as increased nitrates in the Forebay basin during periods of reduced rainfall and groundwater recharge.

This 2007 Update to the FCGMA Groundwater Management Plan discusses and reviews a number of aspects of groundwater management:

- background information on the groundwater basins;
- history of groundwater extractions within the FCGMA;
- water quality issues, both generally and basin-by-basin,
- basin management objectives to indicate the health of the basin and the efficacy of current and future management strategies;
- the yield of the groundwater basins;
- current management strategies and their effectiveness;
- management strategies under development and their potential effectiveness;
- potential future management strategies and their potential effectiveness; and
- recommended actions to be taken by the FCGMA.

In addition, three appendices include:

- progression of saline intrusion in the Upper and Lower Aquifers;
- description of the Ventura Regional Groundwater Model that was used to evaluate management strategies, as well as details of those evaluations; and
- East Las Posas Basin Management Plan, which deals with issues specific to that basin and that will be adopted as part of this Groundwater Management Plan.

Basin Management Objectives (BMOs) are defined for the basins within the FCGMA in this Plan. The BMOs are measurable groundwater elevation and water quality goals that, if reached, protect the aquifers from further saline intrusion and other water quality problems. The BMOs are set at particular key wells in the groundwater basins. Current groundwater conditions meet the BMO criteria in some, but not all of the basins. They fail to meet BMOs in the Lower Aquifer and portions of the Upper Aquifer in the Oxnard Plain and Pleasant Valley basins, periodically in the Forebay basin, and locally in the Las Posas and Santa Rosa basins. Using the Ventura Regional Groundwater Model to evaluate the effectiveness of management strategies into the future, current management strategies are predicted to meet BMOs for groundwater elevations 51% of the time in the Upper Aquifer and only 5% of the time in the Lower Aquifer*.

The annual yield of the basins within the FCGMA was calculated to be about 120,000 acre-feet (AF) for the 1985 Groundwater Management Plan. Current pumping within the FCGMA has decreased to something close to that number, however, and BMOs are not being met in key areas – which is consistent with the groundwater model results discussed in the previous paragraph. To recalculate the yield of the basin, groundwater pumping was progressively reduced in the model until BMOs were met on average 50% or more of the time. Pumping would have to be reduced to 100,000 acre-feet per year (AFY) to meet the BMOs, providing that these additional reductions were accomplished largely in the south Oxnard Plain and Pleasant Valley basins.

Because current management strategies are not sufficient to meet BMOs and pumping needs to be reduced to 100,000 AFY, additional management strategies need to be implemented. A series of these additional strategies are proposed in this Plan. Some of these strategies are currently being developed, whereas others would be implemented in the future. For strategies

* Percentage is based on the average number of quarters when BMOs are met at each BMO well during the 55-year modeling period of the Ventura Regional Groundwater Model. For an initial target, it is proposed that groundwater elevation BMOs be met at least 50% of the time, thus taking into account that climatic cycles will cause groundwater elevations to rise and fall periodically above and below these objectives.

that were amenable to being evaluated using the Ventura Regional Groundwater Model, the effectiveness in meeting BMOs was calculated.

The following table summarizes the proposed strategies; the strategies are grouped initially by when they could be implemented and secondarily within each time increment by their potential effectiveness in managing the basins and meeting BMOs.

Strategies Currently Under Development

- GREAT Project (recycled water for in-lieu delivery and direct injection)
- South Las Posas Pump/Treat (pump poor quality water and blend/treat it)
- Development Brackish Groundwater, Pleasant Valley (similar to previous, pumping from northern Pleasant Valley basin)
- Non-Export FCGMA Water (water pumped within FCGMA and applied in adjacent areas outside the Agency)
- Continuation of 25% Pump Reduction (continue original Plan strategy of 25% reductions by 2010)
- RiverPark Recharge (additional Santa Clara River recharge)

5-Year Strategies

- 5-Year Update of Plan
- Shift Pumping to UAS (prepare technical basis and policy)
- Protect Recharge (protect current sources of recharge)
- Limit Nitrates in the Forebay (land use, Best Management Practices)
- Recovery of Credits from the Forebay (uniform policy)
- Verification of Extraction Reporting (verify accuracy of reporting)
- Separate Strategies for Each Basin (as needed)
- FCGMA Boundary (adjust slightly to reflect new hydrogeologic understanding)
- Irrigation Efficiency (determine if warrants modifications)
- Additional Storage Projects (to help fill overdrafted basins)
- Penalties Used to Purchase Replacement Water (refill overpumped areas)
- Additional Water Conservation (encourage local agencies)
- Shelf Life for Conservation Credits (limit the long-term accumulation of credits and/or limit number of credits pumped in any one year)

10-Year Strategies

- Additional In-lieu Deliveries to South Oxnard Plain
- Import Additional State Water (for direct or in-lieu recharge)
- Further Destruction of Abandoned or Leaking Wells
- Additional Monitoring Needs (as needed to track saline intrusion or other groundwater issues)

15-Year Strategies

- Barrier Wells in South Oxnard Plain
- Injection of Treated River Water into Overdrafted Basins
- Increase Diversions from Santa Clara River (additional water rights from peak storm flows)
- Shift Pumping to Northwest Oxnard Plain

Greater Than 15-Year Strategies

- Additional Reductions in Pumping Allocations (if strategies are not fully implemented or if they fail to meet BMO targets)

The Ventura Regional Groundwater Model was used to evaluate the effect of individual strategies, as well as the combination of strategies. If all the strategies are implemented as recommended (especially those ranked highest in each time horizon), the model predicts that BMOs for the Upper Aquifer will be met 67% of the time and BMOs for the Lower Aquifer will be met 76% of the time – a major improvement that would likely halt further degradation of groundwater quality.

This management plan calls for a set of actions to implement the recommended strategies. Some of these strategies can be implemented directly by the FCGMA through policy additions or modifications. Other strategies, especially those requiring infrastructure to be built, will be largely the responsibility of other organizations. To ensure that all the strategies are implemented as seamlessly as possible, it is recommended that there be a joint Strategic Planning and Implementation effort with the other agencies that will help implement the strategies in this Plan.

The importance of implementing the strategies in this Plan is illustrated by three potential choices that are available to the FCGMA, organizations, and groundwater pumpers:

- Implementation of recommended strategies in this Plan –resulting in major improvement in overdraft conditions and the potential halt in further degradation of groundwater quality; or
- Most effective strategies not implemented because of cost, lack of cooperation, lack of will – resulting in further FCGMA reductions in pumping allocations. Reductions of an additional 85% of pumping in the south Oxnard Plain and Pleasant Valley basins would be required to meet BMOs; or
- No effective management strategies are implemented and there are no further reductions in pumping allocations – the Lower Aquifer in the south Oxnard Plain and Pleasant Valley basins will degrade until it can no longer be pumped without expensive treatment prior to delivery of the groundwater.

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1.0 INTRODUCTION

The Fox Canyon Groundwater Management Agency (FCGMA) (Figure 1 and Plate 1) is located in Ventura County and encompasses several coastal basins that underlie the cities of Oxnard, Port Hueneme, Camarillo, and Moorpark. The Agency overlies about 118,000 acres (185 sq mi). The FCGMA was initially created to manage the groundwater in both overdrafted and potentially seawater-intruded areas within Ventura County. The prime objectives and purposes of the FCGMA are to preserve groundwater resources for agricultural, municipal, and industrial uses in the best interests of the public and for the common benefit of all water users. Protection of water quality and quantity along with maintenance of long-term water supply are included in those goals and objectives.

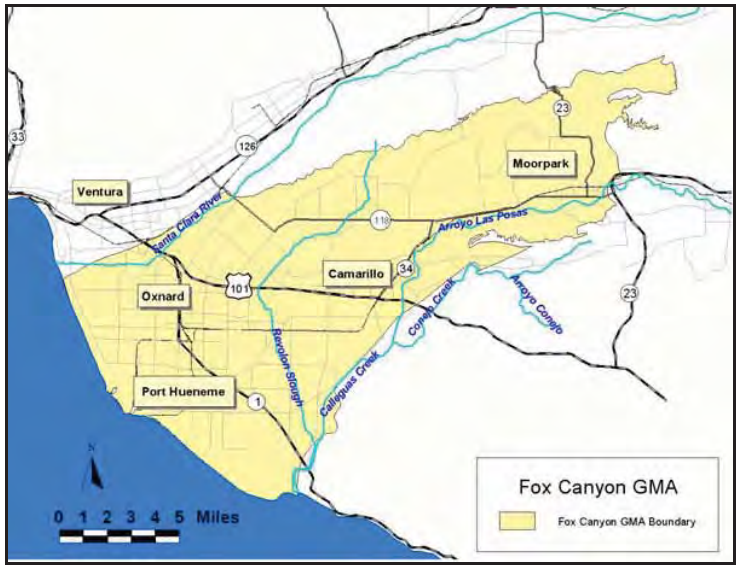
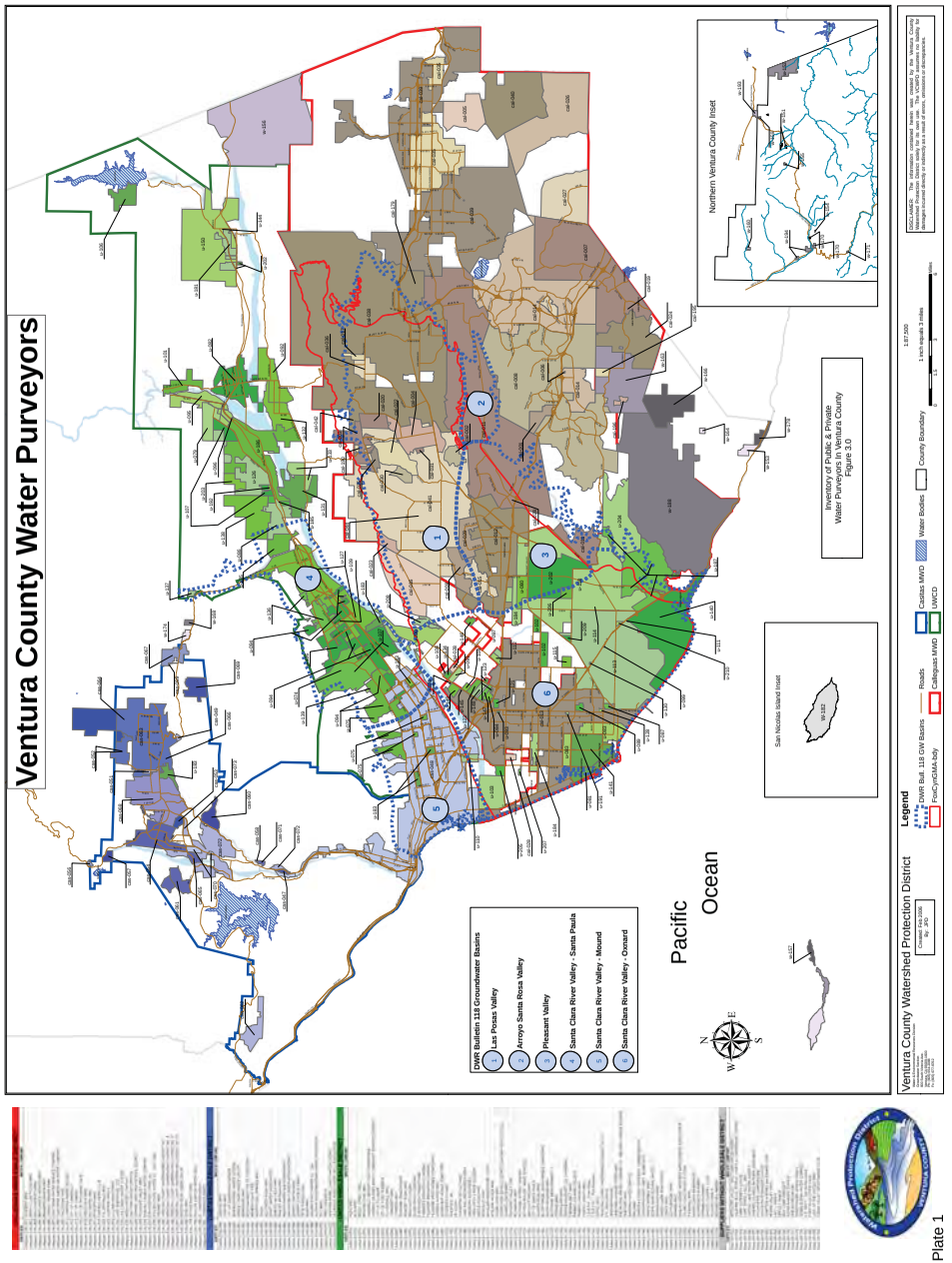


Figure 1. Location map of Fox Canyon Groundwater Management Agency boundary.

The Annotated California Codes Water Appendix, Chapter 121-102 et seq. required the FCGMA to develop, adopt, and implement a plan to control groundwater extractions from the Upper Aquifer System (UAS) to achieve a balanced water supply and demand in the Upper Aquifer System by the year 2000. Additionally, the Water Code required the FCGMA to adopt a Lower Aquifer System (LAS) Management Plan for future extractions from the Lower Aquifer System, including a policy for issuing well permits and a Contingency Plan for seawater intrusion into the Lower Aquifer System. The FCGMA adopted its original Groundwater Management Plan in 1985. The original FCGMA Groundwater Management Plan specified several major items or tasks for accomplishment.



At the time of the initial Management Plan development in 1984-1985, the primary threat to the aquifers of western Ventura County was seawater intrusion in the Upper Aquifer System. Since that time, a number of studies have identified other water quality problems, including saline intrusion in the Lower Aquifer System (LAS) in the Pleasant Valley basin, and in the Las Posas basin. This update to the groundwater management plan is designed to look at a broader range of problems and to suggest potential solutions to these problems.

Since 1985, there have been a number of studies conducted within the FCGMA, the most comprehensive being the Regional Aquifer System Analysis (or RASA Study) done by the U.S. Geological Survey (USGS) in the late 1980s and 1990s. This study, conducted with the cooperation of local agencies, consisted of drilling monitoring wells with individual casings perforated in selected aquifers or water-bearing zones, constructing a groundwater model, and conducting hydrogeologic studies. Monitoring wells, most constructed along the coastline of the Oxnard Plain, continued to provide critical information on the status of saline intrusion. In addition, a number of more specific or follow-up studies have been conducted by the United Water Conservation District (UWCD) and other agencies. These studies have helped characterized seawater intrusion along the coastline, saline contamination in more inland areas, and nitrate contamination in the Upper Aquifer System. The USGS MODFLOW groundwater model has been used and refined by the groundwater staff at UWCD to test a variety of projects that could help mitigate the water quality problems within the FCGMA.

This 2007 Update to the FCGMA Groundwater Management Plan incorporates all previous work and the specific studies that were undertaken as part of this most-recent planning process. The Plan is organized with the results of past and current studies followed by an evaluation of both current management strategies and potential future management strategies for the FCGMA. Various groundwater management ideas and strategies have been evaluated first by FCGMA staff, and UWCD staff, and then reviewed by Calleguas Municipal Water District (CMWD) management and staff and consultants from the water purveyors within the FCGMA. Extensive public review by stakeholders was also a critical part of the planning process.

Appendix C includes a document entitled, the East Los Posas Basin Management Plan (ELPBMP). The ELPBMP was developed through ongoing discussions between CMWD and the Las Posas Basin Users Group (farm well owners, mutual water companies, and the Ventura County Water Works Districts that supply water to the City of Moorpark and others). The ELPBMP serves as a more detailed sub-basin management planning document grounded in the FCGMA February 23, 1994 approval of CMWD's Application for Injection/Storage Facilities in the North Los Posas Groundwater Basin. (Appendix C - Exhibit A). As such, the ELPBMP particularly addresses the interaction of CMWD's Aquifer Storage and Recovery (ASR) project with other basin pumpers regarding both basin-wide and local effects of the project.

2.0 BACKGROUND OF GROUNDWATER MANAGEMENT AND OVERDRAFT WITHIN THE FCGMA

Although high chloride levels were first documented near Port Hueneme in the 1930s (California Department of Water Resources [DWR], 1954), the conditions for widespread seawater intrusion on the Oxnard Plain were initiated as early as the 1940s, when groundwater levels beneath the southern portion of the Oxnard Plain basin dropped below sea level (see Appendix A). Within 5 to 10 years, chloride concentrations in wells in the Port Hueneme area started to increase rapidly. At that time, seawater had only affected a few wells in the Port Hueneme area, encompassing an area less than one square mile (Appendix A).

Within 20 years, seawater intrusion in the Port Hueneme area had extended as much as 3 miles inland. In some of the affected wells, chloride concentrations were as high as those of seawater (just less than 20,000 mg/L). Appendix A documents the progression of seawater intrusion beneath the southern portion of the Oxnard Plain basin. This seawater intrusion into the Upper Aquifer System was located adjacent to the Hueneme Submarine Canyon that is directly offshore of Port Hueneme (Figure 2). Seawater intrusion also occurred in the Point Mugu area, adjacent to the Mugu Submarine Canyon that extends offshore from Mugu Lagoon. This intrusion in the Point Mugu area first impacted Upper Aquifer System wells in late 1950s (Appendix A).

In the Port Hueneme area, seawater in the Upper Aquifer System reached its farthest point inland in the early 1980s (Appendix A). Following the high rainfall year of 1983, chloride levels began to decrease in many of the Port Hueneme area wells perforated in the UAS. Coupled with pumping allocations and management strategies imposed by the FCGMA, this improving trend in chloride reductions was accelerated in the 1990s, as the Freeman Diversion was completed by UWCD and several wet years occurred, which allowed increased recharge available from the diversion, helping restore aquifer pressures and pushing seawater back toward the coast.

Groundwater levels in the Lower Aquifer System also dropped below sea level in the late 1950s. This Lower Aquifer System intrusion was first detected in wells in the late 1980s (Appendix A). As with the Upper Aquifer System, the intrusion in the Lower Aquifer System spread into the aquifer both near Port Hueneme and at Point Mugu. Further exacerbating the drops in groundwater levels in the LAS was an increase in production in the Lower System – partly in search of better quality water supplies and partly because new or replacement wells were required to be drilled in the LAS as a strategy to lessen pumping in the intruded Upper Aquifer System.

The overpumping of the aquifers that led to seawater intrusion also created land subsidence of up to 2.2 feet in the Pleasant Valley area north and northwest of Mugu Lagoon by the early 1970s as dewatered clay layers between aquifer zones collapsed from reduced hydrostatic pressures. This subsidence is permanent – refilling of the sand and gravel aquifers cannot force water back into the dewatered clay layers.

In the Point Mugu area (Figure 2), chlorides have not lessened over the past two decades. Instead, chloride concentrations continued to increase in the area of Mugu Lagoon, reaching concentrations almost as high as seawater in some wells. The CM1A monitoring well in that area showed an increase in chloride concentrations from several hundred mg/L to 4,600 mg/L in a little more than one decade.

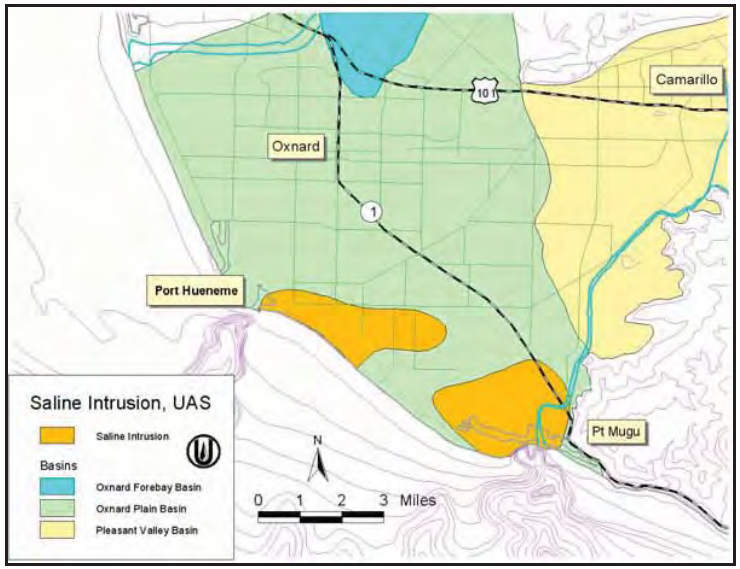


Figure 2. Areas of saline intrusion beneath the Oxnard Plain basin in 2006. The sources of the saline intrusion are discussed in section 5.1.1 *Seawater Intrusion*.

As the USGS began their work in Ventura County in late 1980s, they proposed that the increase in chlorides in the UAS and LAS was caused not just from seawater intrusion but also from the intrusion of saline waters being pulled from surrounding sediments and from deeper depths along fault zones (Izbicki, 1991, 1992; discussed in more detail in section 5.1.1 *Seawater Intrusion*). The cause of this additional saline contamination was the same as for seawater intrusion, that is, very low groundwater levels. This additional saline contamination of groundwater inland from the lobes of seawater intrusion was caused by excessive groundwater pumping and lowered groundwater levels. This finding raised the possibility that saline contamination could occur in inland areas wherever groundwater levels are particularly depressed.

There was some initial concern chloride concentrations measured in some of the producing wells were simply detecting high chloride waters flowing downward from failed well casings. To ensure monitoring results were accurately depicting saline intrusion, a series of monitoring wells were drilled along the coastal portions of the Oxnard Plain. These multiple-completion wells consist of a single well bore containing several smaller-diameter PVC wells completed at varying aquifer depths. These monitoring wells give discrete depth-dependent data from the aquifers and form the basis of much of the current monitoring program.

Several trends in saline intrusion are evident on the south Oxnard Plain. The Port Hueneme lobe of seawater intrusion has decreased considerably in size and chloride concentration in the

Upper Aquifer System. However, Lower Aquifer System chloride concentrations have somewhat increased in this Port Hueneme lobe. In the more southeastern Point Mugu lobe, concentrations of chloride are generally higher than in the past both in the UAS and LAS; the areal extent of the intrusion of seawater is not known with precision. The area affected by saline intrusion from surrounding sediments has increased both in size and in chloride concentration. This increase in size has prompted United Water Conservation District to drill new monitoring wells inboard of this saline intrusion to detect further movement of salts.

Local and State Actions – The increasing seawater intrusion prompted the State Water Resources Control Board to consider adjudication in the early 1980s, with the result that local agencies, working with the State Board, created a series of physical solutions and institutions to tackle the problem. The physical solutions included adding artificial recharge capability for the aquifers and providing additional in-lieu surface water to groundwater pumpers. The institutional solution was the formation of the Fox Canyon Groundwater Management Agency to bring water usage into balance with recharge sources to prevent overdraft conditions.

Formation of the Fox Canyon Groundwater Management Agency – In 1982, State Senate Bill 2995 was approved creating the Fox Canyon Groundwater Management Agency (FCGMA). The agency's activities were defined as "planning, managing, controlling, preserving, and regulating the extraction and use of groundwater within the territory of the agency." That directive also went on to say, "shall not involve itself in activities normally and historically undertaken by its member agencies, such as the construction and operation of dams, spreading grounds, pipelines, flood control facilities, and water distribution facilities, or the wholesale and retail sale of water." This prohibition of water conservation and distribution facilities along with water sales by the FCGMA was clearly meant to delineate the separate powers of the various agencies within the County (see following section).

The FCGMA officially began operations on January 1, 1983 with the County of Ventura contracting to provide staffing and related services to the new agency. In May 1983, Ordinance No. 1 was adopted requiring all wells within the agency to register and begin reporting groundwater extractions. This ordinance also set extraction management fees (at $0.50/AF), becoming the sole source of income to the fledgling agency sans any minor penalty or surcharge fees that would be instituted in later ordinance revisions. Ordinance No. 2 (October 1983) was a short amendment to Ordinance No. 1 establishing semi-annual groundwater extraction reporting to cover the first and second half of each calendar year, with statements due within 30 days following each period.

A groundwater management plan was adopted in 1985 to set goals and to help guide FCGMA policies. In February 1987, Ordinance No. 3 was adopted to require flow meters on all but domestic wells. Ordinance No. 4 (July 1987) soon followed that protected the aquifer outcrop areas in the East and West Las Posas basin (formerly collectively referred to as the North Las Posas basin) and regulated groundwater extractions in the basin via more detailed rules than those in any previous ordinance. The adoption of Ordinance No. 5 in August 1990 completed the first steps for the FCGMA by setting up a system of scheduled extraction reductions, allowing for the use of Historical, Baseline, and Agricultural Efficiency Allocations, and establishing a credit system to encourage cutbacks in pumping, along with a penalty system for overpumping beyond the established annual allocation.

Agencies' responsibilities - Several agencies are responsible for managing water resources in Ventura County. The FCGMA has responsibility for groundwater management planning, managing pumping allocations and credits, and developing policies related to groundwater

extractions and recharge. United Water Conservation District (UWCD) has responsibility for managing groundwater resources in seven basins in the county, including most of the basins within the Fox Canyon Groundwater Management Agency (FCGMA) (Plate 1). UWCD's responsibilities include groundwater and surface water monitoring, constructing and maintaining water conservation and recharge facilities, reporting on groundwater conditions, and groundwater management and planning activities. Groundwater management and planning functions overlap between the FCGMA, UWCD, and other local agencies, with the FCGMA focusing on extractions and policy and UWCD focusing on planning and implementing projects. Calleguas Municipal Water District (CMWD) is responsible for providing State Water to portions of Ventura County and providing water management strategies to ensure a reliable source of water for its customers (Plate 1). The Ventura County Watershed Protection District (VCWPD) is responsible for flood control functions, groundwater/surface water monitoring, and water well permitting. The water purveyors (cities and water districts) decide how much and from where their groundwater supplies are extracted, as well as plan projects that benefit the aquifers. There has been a remarkable amount of cooperation among these organizations in addressing groundwater issues over the last 20+ years.

In practice, groundwater management functions within the boundaries of the FCGMA are performed in the following ways:

1. Groundwater levels and groundwater quality sampling and analysis are conducted by UWCD, VCWPD, and individual water purveyors;
2. Groundwater extraction records are collected by both the FCGMA and UWCD, with the FCGMA maintaining records on extraction allocations and credits;
3. An annual report on groundwater conditions is prepared by UWCD within UWCD boundaries and CMWD prepares reports on groundwater conditions within the West, East, and South Las Posas basins (in conjunction with the Las Posas Basin Users Group;
4. Water purveyors prepare regular plans on current and future water use and supplies (e.g., Urban Water Management Plans);
5. The FCGMA prepares this Groundwater Management Plan to evaluate basin management objectives, strategies, and policies;
6. UWCD and some of the water purveyors construct and operate water conservation facilities; and
7. The VCWPD (and the City of Oxnard within its boundaries) oversees all well drilling, well destruction, and monitoring well requirements and permitting.

The initial Groundwater Management Plan (September 1985) prepared by the FCGMA recommended groundwater pumping be reduced by 25% over a 20-year period to help bring the aquifers into balance or to reach safe yield by year 2010 and to mitigate seawater intrusion by that same target date. This plan was based on groundwater demand projections for the period between 1980 and 2010. Subsequent Board ordinances (Ordinance No. 5) formulated an extraction allocation for all groundwater pumpers within the FCGMA, based on average extractions during the years 1985 to 1989. Starting in 1990, these pumping or "Historical" allocations were to be reduced by 5% every five years, with a planned 25% total reduction by the year 2010.

A program of "Conservation" and "Storage" credits allows well operators to vary their annual pumping in accordance with crop changes and/or annual hydrologic conditions. In addition, agricultural pumpers are allowed the option of using Irrigation Efficiency instead of the allocation/credit program. Agricultural efficiency for individual pumpers (later deemed as

"operators" of one or more wells) is required to be at least 80% or better (20% or less going to leaching, deep percolation, or runoff), when compared to FCGMA allowed water for particular crop water demand based on daily evapotranspiration and precipitation measurements from a series of weather stations installed throughout the FCGMA. A surcharge fee, based on the extraction reporting, was formulated to penalize individual pumping above allowed annual allocations or not meeting the required irrigation efficiency percentage minimum. These penalties have been seldom used since their inception, largely because of widespread cooperation among pumpers to reduce groundwater extractions.

In cooperation with the Watershed Protection District, the FCGMA also helped formulate requirements that new wells be completed in specific aquifers to help control seawater intrusion. A similar cooperative program that utilized Federal 319(h) grant funds coupled with matching local funds helped destroy a number of abandoned wells across the Oxnard Plain which, had the potential to act as conduits allowing inter-aquifer mixing. A total of 49 old abandoned or leaking wells were destroyed under this program.

3.0 GROUNDWATER BASINS & HYDROGEOLOGY

The basins within the FCGMA are part of the Transverse Ranges geologic province, in which the mountain ranges and basins are oriented in an east-west rather than the typical northeast-southwest trend in much of California and the western United States. Active thrust faults border the basins of the Santa Clara River, causing rapid uplift of the adjacent mountains and downdropping of the basins. The alluvial basins are filled with substantial amounts of Tertiary and Quaternary sediments deposited in both marine and terrestrial (non-marine) settings. The basins beneath the Oxnard Plain are filled with sediments deposited on a wide delta complex formed at the terminus of the Santa Clara River and was heavily influenced by alternating episodes of advancing or retreating shallow seas that varied with world-wide sea level changes over many millions of years.

There are seven main or significant groundwater basins within the FCGMA (Figure 3). These groundwater basins have been called by somewhat different names historically; this Plan uses the terminology of the U.S. Geological Survey from their work in the 1990s and early 2000s (e.g., Hanson et al., 2003) because it is the most recent comprehensive study of the basins. These groundwater basins include the Oxnard Plain, the Oxnard Plain Forebay, the Pleasant Valley, the Santa Rosa, and the East, West and South Las Posas basins. These basins generally contain two major aquifer systems, the Upper Aquifer System (UAS) and the Lower Aquifer System (LAS). Separate aquifers locally named within these systems include the Oxnard and Mugu aquifers (UAS) and the Hueneme, Fox Canyon, and Grimes Canyon aquifers (LAS). A shallower, unconfined aquifer is also present locally underlying rivers and creeks. Underlying the Oxnard Plain and Pleasant Valley basins are sand layers of the "semi-perched zone," which may locally contain poor-quality water. This zone extends from the surface to no more than 100 ft in depth. These sands overlie confining clay of the upper Oxnard Aquifer which generally protects the underlying aquifers from contamination from surface land uses. The Semi-perched zone is rarely used for water supply.

The aquifers are comprised of sand and gravel deposited along the ancestral Santa Clara River, within alluvial fans along the flanks of the mountains, or in a coastal plain/delta complex at the terminus of the Santa Clara River and Calleguas Creek. The aquifers are recharged by infiltration of streamflow (primarily the Santa Clara River), artificial recharge of diverted streamflow, mountain-front recharge along the exterior boundary of the basins, direct infiltration of precipitation on the valley floors of the basins and on bedrock outcrops in adjacent mountain

fronts, return flow from agricultural and household irrigation in some areas, and in varying degrees by groundwater underflow from adjacent basins.

LOWER AQUIFER SYSTEM – The Lower Aquifer System (LAS) consists of the Grimes Canyon, Fox Canyon, and Hueneme aquifers (e.g., Figure 6) from the deepest to the shallowest. The LAS is part of the Santa Barbara, San Pedro, and Saugus formations of Plio-Pleistocene age (Hanson et al, 2003). The lowest water-bearing unit of the East Las Posas and Pleasant Valley basins is commonly referred to as the Grimes Canyon aquifer (California Department of Water Resources, 1954; Turner, 1975). The Fox Canyon aquifer underlies all of the groundwater basins beneath the FCGMA, but is most significant in the East and West Las Posas, Pleasant Valley, Oxnard Plain Forebay, and Oxnard Plain basins. The Hueneme aquifer is considered to underlie most coastal areas of the southern Oxnard Plain (Hanson et al, 2003), and is an important source of water in the Oxnard Plain, Pleasant Valley, and the West Las Posas basins.

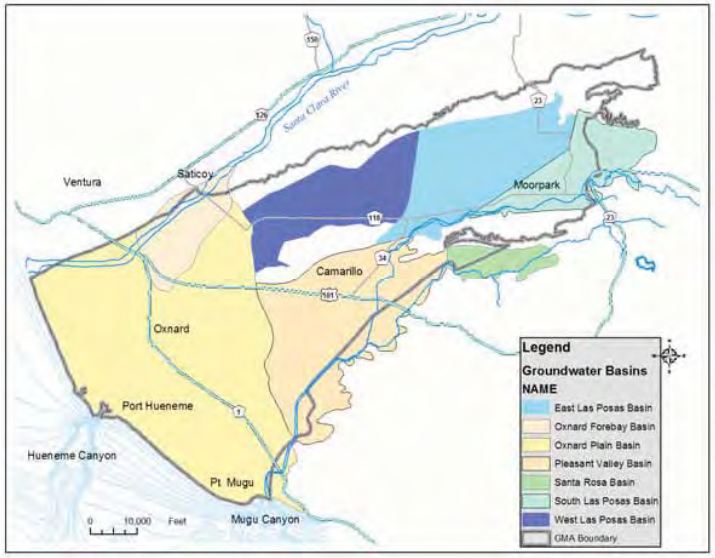


Figure 3. Groundwater basins within the Fox Canyon Groundwater Management Agency.

The aquifers within the LAS are commonly isolated from each other vertically by low-permeability units (silts and clays) and horizontally by regional fault systems. There is active tectonism (faulting and folding) within the area of the FCGMA, caused by compressional and lateral forces as the Transverse Ranges are caught in a vise between the Pacific and North American tectonic plates. As a result, the LAS is folded and tilted in many areas, and has been eroded along an unconformity separating the Upper and Lower aquifer systems.

UPPER AQUIFER SYSTEM – The Upper Aquifer System (UAS) within the FCGMA consists of the Mugu and Oxnard aquifers (Figure 5, Figure 6), from deepest to most shallow, of Late Pleistocene and Holocene age. The UAS rests unconformably on the Lower Aquifer System, with basal conglomerates in many areas (Hanson et al, 2003). In the Oxnard Plain, these coarse-grained basal deposits have been referred to as the Mugu aquifer (Turner, 1975). The Mugu aquifer is generally penetrated at a depth of 255 ft to 425 ft below land surface. The younger Oxnard aquifer is present throughout the Oxnard Plain. The Oxnard aquifer is the primary aquifer used for groundwater supply on the Oxnard Plain. This highly-permeable assemblage of sand and gravel is generally found at a depth of approximately 100 ft to 220 ft below land surface elevation.

OXNARD PLAIN FOREBAY AND OXNARD PLAIN BASINS – Both Upper and Lower aquifers are present in the Oxnard Plain Forebay and Oxnard Plain basins (Figure 4). The Oxnard Plain basin extends several miles offshore beneath the marine shelf, where outer edges of the aquifer are in direct contact with seawater. In areas near Port Hueneme and Point Mugu where submarine canyons extend nearly to the coastline (Figure 2, Figure 7), the fresh-water aquifers are in direct contact with seawater only a short distance offshore.

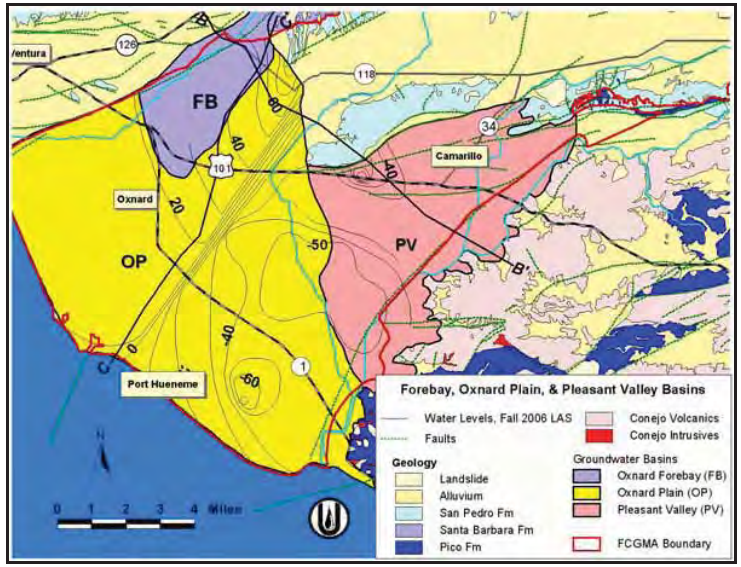


Figure 4. Map of Oxnard Forebay, Oxnard Plain, and Pleasant Valley basins. Contours of Lower Aquifer groundwater elevations in the Fall of 2006 indicate that the south Oxnard Plain and Pleasant Valley basins have significant areas below sea level. The locations of geologic sections B-B' (Figure 5) and C-C' (Figure 6) are indicated on map.

The Oxnard Plain Forebay basin is the main source of recharge to aquifers beneath the Oxnard Plain. The absence of low-permeability confining layers (no continuous clay or silt layers)

between surface recharge sources and the underlying aquifers (sand and gravel layers) in the Forebay basin allows for effective recharge of the basin and subsequent recharge of aquifers further to the south and southwest (e.g., Figure 6). Recharge to the Forebay basin comes from a combination of percolation of Santa Clara River flows, artificial recharge from United's spreading grounds at Saticoy and El Rio, agricultural and household irrigation return flows, percolation of rainfall, and lesser amounts of underflow from adjacent basins. In the area of the Forebay between the El Rio and Saticoy spreading grounds, the Lower Aquifer System has been folded and uplifted and then truncated (eroded away) along its contact with the Upper Aquifer System (Figure 5, Figure 6). In this area, recharge from surface sources may enter both the Upper Aquifer System and the underlying Lower Aquifer System. It is estimated that about 20% of the water recharged to this area reaches the Lower Aquifer System, with the remainder recharging the Upper Aquifer System (Hanson, 1998).

The Oxnard Plain Forebay basin accepts large quantities of recharge water in a single year, and the basin was filled to near-capacity during several recent wet years (UWCD, 2003). High groundwater elevations in the Oxnard Plain Forebay basin increase the hydraulic head (pressure) in the confined aquifers of the Oxnard Plain, raising water levels throughout the Plain and promoting natural offshore flow in coastal areas.

The Oxnard Plain Forebay basin is hydrologically connected with the aquifers of the Oxnard Plain basin (e.g., Figure 6). Thus, the primary recharge to the Oxnard Plain basin is from underflow from the Forebay rather than the deep percolation of water from surface sources on the Plain. When groundwater levels are below sea level along the coastline, there may also be significant recharge by seawater flowing into the aquifers (from the historic discharge areas shown in Figure 7 where the aquifers are exposed on the sea floor). When Lower Aquifer System (LAS) water levels are substantially lower than Upper Aquifer System (UAS) water levels (creating a downward gradient), there may be substantial leakage of UAS water into the LAS both through discontinuities within the silts and clays between aquifers on the Oxnard Plain and as slow vertical percolation directly through the silt and clay material itself. Some amount of downward percolation can also occur via wells that are perforated in both aquifer systems and via compromised (failed or leaking) well casings.

One of the more recent findings associated with groundwater beneath the Oxnard Plain basin is a zone with a steeply-dipping groundwater gradient in the Lower Aquifer System that extends across the Oxnard Plain from just south of Port Hueneme northeastward to the south flank of the Camarillo Hills (Figure 4, just south of section C-C'). This steep gradient is apparently caused by a lower-conductance zone that bisects the Oxnard Plain at the depth of the Lower Aquifer System (e.g., UWCD, 2003). This zone, likely a fault or other structural feature, reduces recharge flowing from the Oxnard Plain Forebay basin to the south Oxnard Plain and Pleasant Valley. This zone may be an extension of the Simi-Santa Rosa fault that extends along the southern flank of the Camarillo Hills. The presence of this subsurface feature that reduces groundwater flow also limits the effectiveness of management strategies that rely on groundwater flowing in the LAS from recharge areas in the Oxnard Plain Forebay basin to the south Oxnard Plain and to Pleasant Valley. This Management Plan proposes specific strategies to overcome this geologic hurdle to recharging the LAS in these southern areas of the FCGMA.

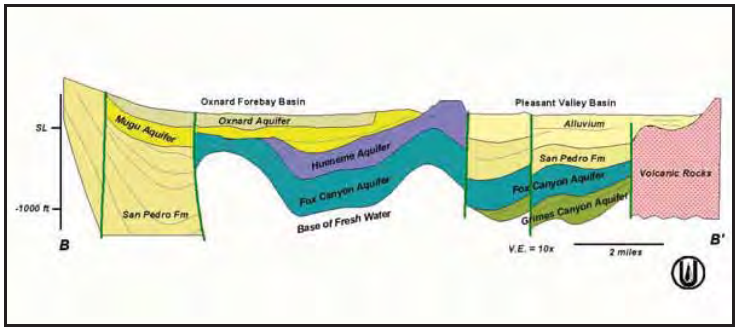


Figure 5. Geologic section B-B'. Simplified from Mukae and Turner (1975). Note ten times vertical exaggeration to accentuate stratigraphic units.

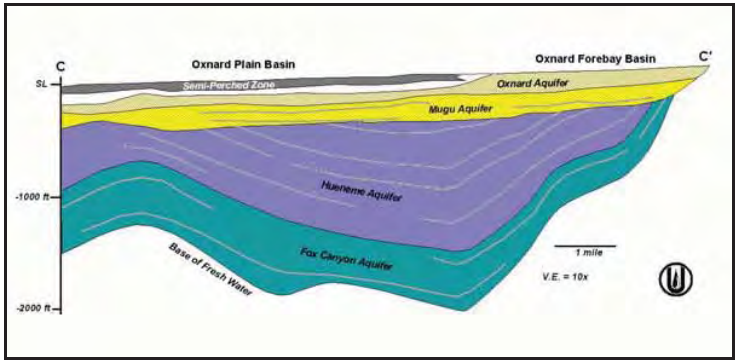


Figure 6. Geologic section C-C'. Simplified from Mukae and Turner (1975). Note ten times vertical exaggeration to accentuate stratigraphic units.

PLEASANT VALLEY BASIN – The Pleasant Valley groundwater basin (Figure 4) has been historically differentiated from the Oxnard Plain basin by a general lack of Upper Aquifer System aquifers (Turner, 1975). However, there may be local water-producing Upper Aquifer System units within the Pleasant Valley basin (Turner, 1975; Hanson et al, 2003). The Pleasant Valley basin is confined by thick fine-grained deposits overlying the aquifers of the basin. The Fox Canyon aquifer is the major water-bearing unit in the basin. Despite the fault barrier to the west, the Lower Aquifer System is in hydrologic continuity with the adjacent southern portion of the Oxnard Plain basin.

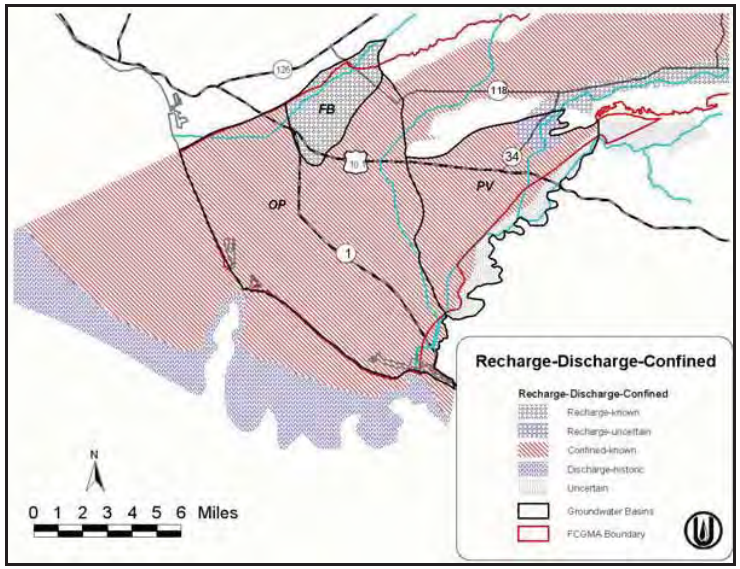


Figure 7. Recharge and discharge areas of coastal aquifers, with confined portions of the aquifers indicated. The offshore discharge area is the location where the aquifers are exposed on the ocean bottom and in submarine canyons. See text for discussion. Basin designations: OP-Oxnard Plain, FB-Oxnard Forebay, PV-Pleasant Valley.

Historically it was assumed that the LAS of the Pleasant Valley Basin was relatively confined and received little overall recharge across the fault that extends from the Camarillo Hills to Port Hueneme. However, since the early 1990s, water levels have begun to rise in the northern adjacent basins. The City of Camarillo has two existing wells in the northeast portion of the Pleasant Valley Basin (hereafter called the Somis Area) and these wells confirm that rising water levels in northern adjacent basins directly impact recharge rates, water quality, and water levels in the Somis Area. The recharge in the Somis Area may be a result of uplift and folding of Lower Aquifer units that allow rapid stream flow percolation. This area is indicated as "Recharge-uncertain" at the north end of the Pleasant Valley basin on Figure 7 to reflect the uncertainty of the extent of this area of recharge. It is recommended that additional monitoring and studies be conducted to determine the dimensions and nature of this apparent recharge area.

The groundwater hydrology of the portion of the Pleasant Valley basin east of the city of Camarillo is not well understood because there are not many wells drilled in the area. Along Calleguas Creek near California State University Channel Islands, water has been produced historically from aquifer depths that are shallower than the typical LAS well, suggesting that water-bearing strata are not limited to the LAS in this area.

It is clear that the eastern and northeastern portions of the Pleasant Valley basin need to be better understood (indicated as "Unknown" along the eastern edge of the Pleasant Valley basin on Figure 7). Past studies have considered the basin as largely confined, with perhaps some perched water along a portion of its eastern edge. The conceptual hydrogeology that was the basis for the Ventura Regional Groundwater Model used the conclusions from these studies. As suggested above, additional monitoring and studies are needed to better determine the hydrogeology of the area, with these results integrated into the groundwater model.

SANTA ROSA BASIN – The Santa Rosa basin (Figure 8) is the smallest basin within the FCGMA. Groundwater levels are heavily influenced by flows in the overlying Conejo Creek; discharges from a wastewater treatment plant and dewatering wells in Thousand Oaks have considerably increased year-round flows in the creek. Aquifers in the basin include a shallow alluvium aquifer and portions of the Lower Aquifer System. The structure of this basin is dominated by the east-trending Santa Rosa syncline that folds the San Pedro and Santa Barbara Formations (CSWRB, 1956). This syncline helps direct groundwater flow in the San Pedro Formation. The Santa Rosa fault zone forms a barrier to groundwater flow into the basin from the north. A sharp change in water level in the western part of the basin may be caused by a roughly north-trending fault that restricts groundwater flow (CDWR, 2003). Elevated nitrate and sulfate have been a problem in the basin.

LAS POSAS BASIN –The Las Posas groundwater basin (Figure 8) is bounded on the south by the Camarillo and Las Posas Hills and on the north by South Mountain and Oak Ridge (CSWRB, 1954). The basin has been variously subdivided into North and South basins (e.g., Turner and Mukae, 1975) or by West, East, and South basins (e.g., Hanson, 1998). The U.S. Geological Survey terminology (Hanson, 1998) is used in this Management Plan. Productive aquifers in this basin include a shallow unconfined aquifer that is most transmissive along the Arroyo Las Posas and a lower confined aquifer system that is considered to be the equivalent of the Lower Aquifer System on the Oxnard Plain (Figure 9).

South Las Posas Basin – This basin is separated from the East Las Posas basin by an east-trending anticline (fold) that affects all but the shallowest alluvium (Figure 9). This fold may affect groundwater flow between the East and South Las Posas basins at some aquifer depths, although recharge from the South Las Posas basin flows readily into the East Las Posas basin at Lower Aquifer System (LAS) depths. To the south, the Springville and Santa Rosa fault zones produce disrupted and tightly folded rocks along the edge of the basin, restricting groundwater flow to the south (CSWRB, 1956). There is a shallow alluvial aquifer that follows the trend of Arroyo Las Posas as it crosses the South Las Posas basin; this shallow aquifer is in hydrologic connection with the underlying LAS and is the main source of recharge to the LAS (indicated as the recharge area along the south edge of the East and South Las Posas basins on Figure 10).

There has been a significant change in average groundwater levels over the past 40 years in the South Las Posas basin, with groundwater levels rising more than 100 ft during this period. The mechanism for this rise in groundwater elevations is the increased recharge from percolation beneath the Arroyo Las Posas as discharges from the Moorpark and Simi Valley wastewater treatment plants and dewatering wells in Simi Valley have increase year-round flow in the arroyo. The entire alluvial aquifer near the arroyo has progressively filled to the elevation of the arroyo, starting in the easternmost portion of the basin in the 1960s and moving westward through the 1990s (Bachman, 2002). Water from the filled alluvial aquifer has percolated downward into the underlying Lower Aquifer System, creating a recharge mound in the Lower

Aquifer System that extends from the arroyo northward into the East Las Posas basin (CH2MHill, 1993; Bachman, 1999).

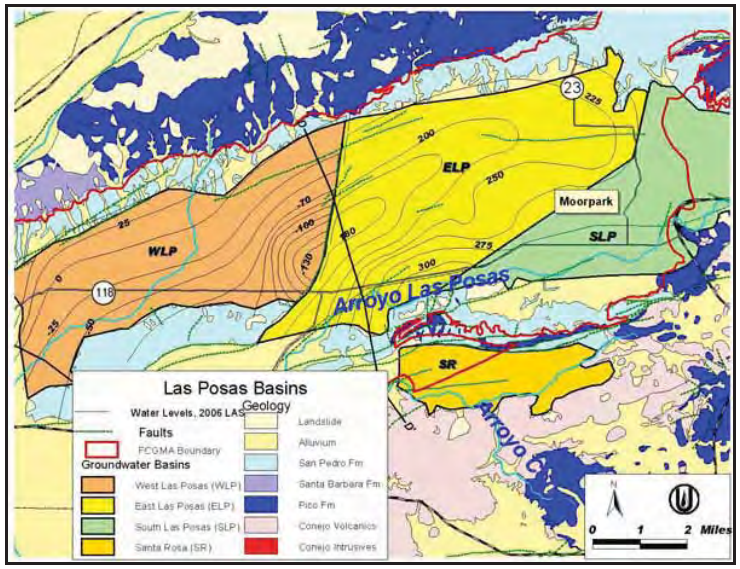


Figure 8. Map of Las Posas and Santa Rosa basins. Contours of Lower Aquifer groundwater elevations in 2006 indicate the recharge mound along Arroyo Las Posas and the change in groundwater elevations across the fault that forms the boundary between the West and East Las Posas basins. The location of geologic section D-D' (Figure 9) is indicated on the map.

Salts (i.e., chloride, sulfate) in the groundwater have increased in the South Las Posas basin and the southwestern portion of the East Las Posas basin as the shallow aquifer filled along Arroyo Las Posas. These salts apparently were leached from the shallow aquifer as groundwater levels reached record highs, saturating sediments that have been unsaturated for the historic period. These salts apparently migrated vertically with percolating groundwater into the LAS and then laterally into the main portion of the East Las Posas basin as the recharge mound developed. Some of this groundwater is unsuitable for irrigation without being blended with better-quality water.

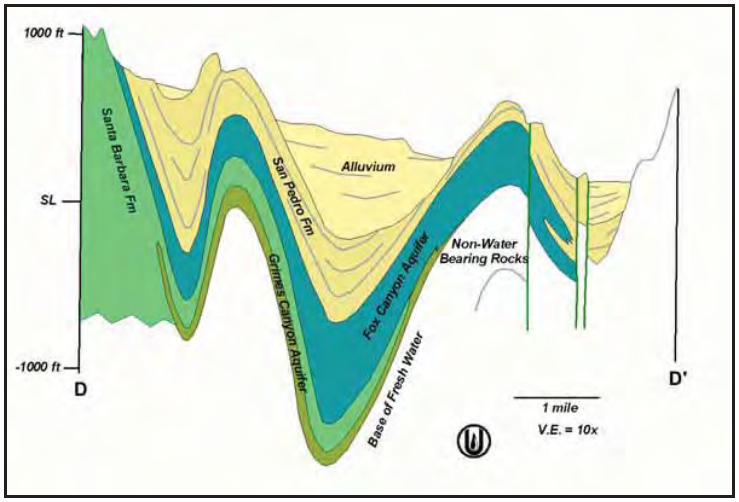


Figure 9. Geologic section D-D'. Simplified from Mukae and Turner (1975). Note ten times vertical exaggeration to accentuate stratigraphic units.

East Las Posas Basin – The East Las Posas basin is separated from the West Las Posas basin by a north-trending unnamed fault running through Somis (CH2MHill, 1993; Hanson, 1998), across which groundwater levels differ by as much as 400 feet (Figure 8). The fault also acts as a barrier to transport of saline waters from the East Las Posas basin to the West Las Posas basin (Bachman, 1999).

The source of recharge to the East Las Posas basin has changed significantly since urban development of the Simi Valley and Moorpark areas over the last 30 years. Prior to this time, recharge was predominantly from rainfall on outcrop areas and from percolation of winter floodwater along the Arroyo Las Posas. Geochemical studies show that groundwater in the central portion of the East Las Posas basin is hundreds to thousands of years old (Izbicki, 1996b), indicating a slow rate of historical recharge along the flanks of the basin. As discussed for the South Las Posas basin, urban development has brought increased discharges of both treated wastewater and shallow groundwater into Arroyo Las Posas, providing a year-round recharge source for the South and East Las Posas basins (CH2MHill, 1993; Bachman, 2002). This increased percolation from the arroyo has created a recharge mound that extends northward into the East Las Posas basin, where groundwater levels have risen by 125 ft to 200 ft during the past 30 years.

Conversely, pumping in the basin has resulted in falling groundwater levels in the eastern portion of the basin, away from the recharge mound. The largest drop in groundwater levels (190 ft) over the period 1973 to 1998 occurred in this region (Bachman, 1999). Groundwater levels have stabilized somewhat across the basin since the late 1990s, at least in part because of the addition of in-lieu and injected recharge by CMWD as part of the Las Posas Basin Aquifer Storage and Recovery (ASR) project.

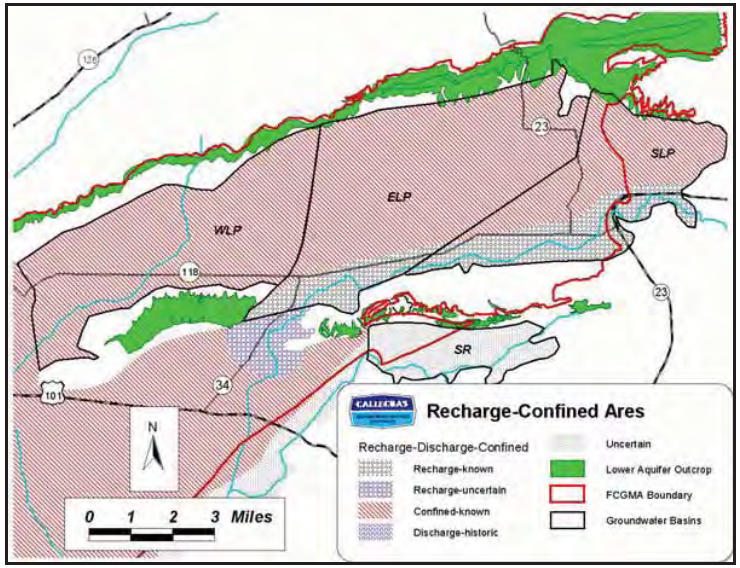


Figure 10. Recharge and discharge areas of Las Posas and Santa Rosa basins, with confined portions of the aquifers indicated. See text for discussion. Basin designations: WLP-West Las Posas, ELP-East Las Posas, SLP-South Las Posas, SR-Santa Rosa.

West Las Posas Basin – The West Las Posas basin (Figure 8) is isolated from the recharge sources of the East and South Las Posas basins by the north-south fault discussed in the previous paragraphs. Instead, the West Las Posas basin is hydrologically connected to the Oxnard Plain basin, with groundwater levels in the western portion of the basin rising and falling with wet and dry climatic cycles of recharge. Groundwater elevation contours are interpreted to extend continuously in the LAS from the Oxnard Plain basin into the West Las Posas basin, suggesting that there is no hydrologic boundary at the western end of the basin. Instead, the western boundary of the basin is defined by surface features – the end of the Las Posas Valley and the beginning of the flat terrain of the Oxnard Plain.

In the eastern portion of the basin, just to the west of the north-trending fault at Somis, a groundwater level trough that was 35 ft below sea level in 1973 had dropped to 150 ft below sea level by 1998 (the trough has since stabilized, with a slight rise in groundwater levels during the last several years). Groundwater elevations slope from their highest point at the western end of the basin to their lowest point at the eastern end of the basin, indicating that recharge water flows from the Oxnard Plain eastward into the basin. There is a flow component from the northern flank of the basin, suggesting that there is also significant mountain-front recharge.

4.0 GROUNDWATER EXTRACTIONS

The FCGMA has collected records of extraction for wells within the Agency for semi-annual periods since 1985. These extraction records are entered into a computer database, and individual wells that reported any pumping between 1985 and 1989 (known as the FCGMA "Base Period") have been assigned Historical Allocations based on those extractions. These extraction records are also used to calculate Conservation Credits and to determine pumping trends within the FCGMA.

Extractions vary from year to year (Figure 11) based largely on the amount (Figure 12) and patterns of rainfall for agricultural uses and the ratio of groundwater to imported water ordered by M&I providers in any year. This year-to-year variation makes it difficult to compare pumping from one year to the next without factoring in these climate and policy variations. However, now that there are historic records available that were gathered over at least a 20-year period, similar climatic years can be compared to determine general trends in pumping. For instance, a comparison of the dry years 1987 and 2002 (the two driest years during the 20-year period, Figure 12) indicates that overall reported pumping declined by about 37,000 acre-feet per year (164,700 to 127,700 AFY) within the Agency. Likewise, comparing average precipitation years 1988 and 2000 (Figure 12) indicates that reported pumping was reduced by 36,800 acre-feet per year (160,500 to 123,700 AFY).

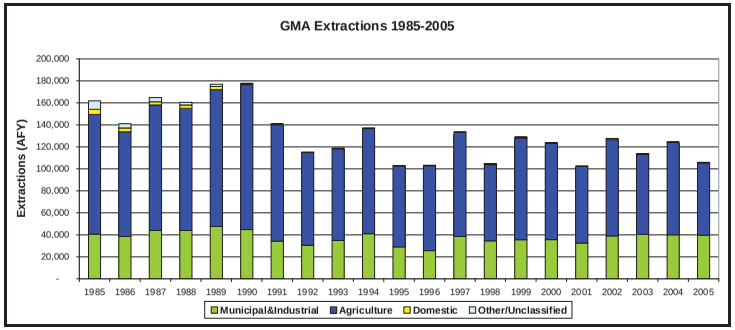


Figure 11. Reported extractions within the FCGMA for years 1985 to 2005.

This apparent decreasing trend in FCGMA pumping occurred in different fashions for agriculture and M&I. Agricultural pumping decreased earliest, following the end of the 1986-1991 drought. This decrease in agricultural pumping has also been documented by UWCD (2002) in a study of agricultural efficiencies within the FCGMA. The increased irrigation efficiency is likely the result of improved irrigation systems such as drip tape and micro sprinklers that were installed within that time frame. A portion of the decrease in agricultural pumping can also be attributed to land conversion to urban uses (see discussion below) and increased yields from the Freeman Diversion and the Conejo Creek project that supplied growers an alternative water source to pumped groundwater.

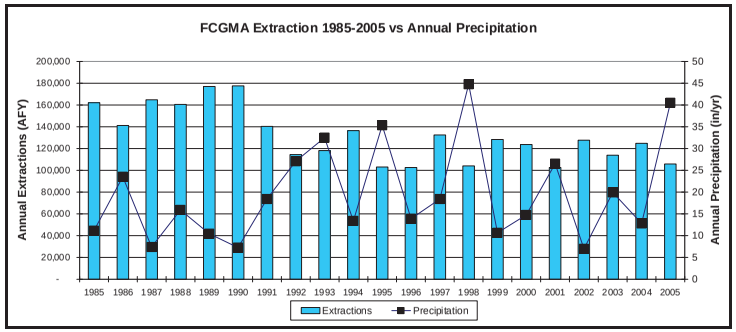


Figure 12. FCGMA extractions plotted against annual precipitation to indicate the general correlation between rainfall and extractions.

Municipal and Industrial (M&I) pumping is somewhat less affected by annual rainfall changes than agricultural irrigation. M&I pumping has been relative flat, with an average of 40,000 AFY pumped during the first decade of FCGMA reported pumping (1985-1994) and an average of 38,300 AFY pumping during the past five years (2001-2005). However, this flat pumping trend occurred as overall urban acreage increased (with an accompanying increase in potential water demand) as agricultural land has converted to urban use. An analysis of changes in land use during the period between aerial photos taken in 1998 and 2002 indicates that about 1,150 acres converted from agriculture to M&I in the Oxnard Plain and Pleasant Valley areas. At the FCGMA conversion rate of two AFY per acre, that represents about 2,300 AFY of new allocation to M&I during this four-year period.

5.0 WATER QUALITY ISSUES

Water quality issues are discussed in two parts: current issues that are evident today and potential future threats that could occur within the basins of the FCGMA if proactive steps are not taken now through management strategies.

5.1 CURRENT WATER QUALITY ISSUES

Seawater intrusion has long been the primary water concern within the FCGMA and was the problem for which the FCGMA was originally formulated to help fix. The intrusion occurs exclusively along the coastline in the Oxnard Plain basin. The U.S. Geological Survey also identified another type of saline intrusion on the Oxnard Plain – salts moving from the surrounding marine clays and older geologic units as pressure in the aquifers is reduced from overpumping. This type of intrusion may also be occurring on a minor scale in the Pleasant Valley basin. Chloride has also become a problem along Arroyo Las Posas, where groundwater from an area in the East and South Las Posas basins must be blended with lower-chloride water to meet irrigation suitability. This problem appears to have migrated downstream, with some of the City of Camarillo's wells now affected.

Chloride is also a problem in the Piru basin near the Los Angeles County line, where high chlorides from discharge of wastewater treatment plants along the Santa Clara River have

degraded the recharge water for the basin. This chloride problem is currently isolated to the Piru basin, although long-term recharge of poorer quality water could eventually move through the groundwater basins along the Santa Clara River and reach the Freeman Diversion.

High nitrate concentrations in groundwater are a localized problem in the Oxnard Plain Forebay and Santa Rosa basins. In and adjacent to the Forebay, nitrates affect drinking water wells of UWCD's Oxnard-Hueneme wellfield, mutual water companies, and the City of Oxnard, particularly during and following dry periods.

5.1.1 Seawater Intrusion

High chloride levels from intrusion of seawater were induced by lowered groundwater levels that formed a distinct pumping trough in the southern Oxnard Plain (Figure 13). In 1989, the U.S. Geological Survey initiated their Regional Aquifer-System Analysis (RASA) study in a cooperative effort with local agencies. As part of this and companion cooperative studies, a series of 14 nested well sites with three or more wells installed at each site, were drilled and completed at specific depths in the Oxnard Plain, Oxnard Plain Forebay, Pleasant Valley, and Las Posas basins (Densmore, 1996). Figure 14 shows the locations of the RASA well sites on the Oxnard Plain.

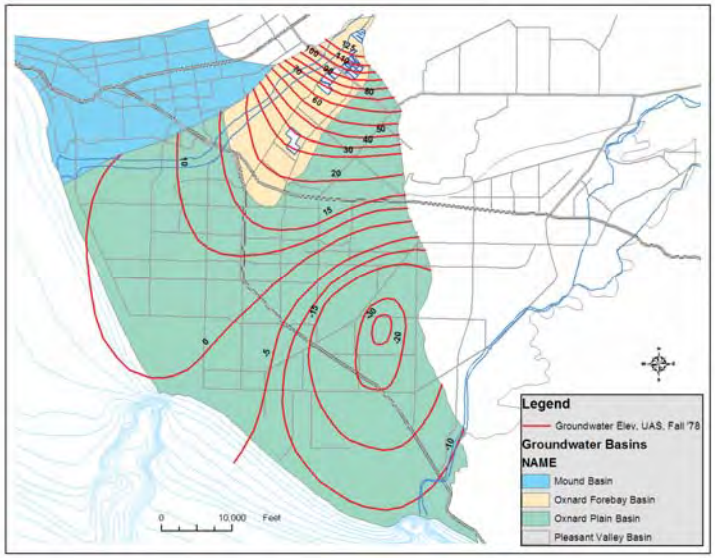


Figure 13. Groundwater elevations in the Upper Aquifer System in Fall 1978, indicating the large pumping trough in the south Oxnard Plain (water levels as much as 30 feet below sea level). This pumping trough, created by overpumping, pulled in seawater from the ocean.

Saline intrusion is recognized in monitoring wells by concentrations of chloride and Total Dissolved Solids (TDS) that are several times higher than the Basin Plan Objectives of 150

mg/L and 1,200 mg/L, respectively. In practice, the leading edge of the intrusion is mapped on the Oxnard Plain as the first occurrence of chloride in excess of 500 mg/L. In some wells that have been intruded, chloride exceeds 10,000 mg/L. The increase in chloride concentration has been rapid in some wells, increasing 1,000s of mg/L in a year or two.

Prior to the RASA study, it was believed an area extending from approximately 3 miles north of Port Hueneme to well SCE (near Highway 1) and south to Point Mugu was intruded by seawater. The installation of a dedicated monitoring network and detailed chemical analysis of water samples from the new wells and other wells yielded new interpretations on the extent of seawater intrusion on the Oxnard Plain. It is now known some areas of the southern Oxnard Plain are not intruded by seawater, but that high chloride readings from older production wells were the result of perched water leaking down failed well casings and contaminating the aquifer (Izbicki, 1992; Izbicki et al., 1995; Izbicki, 1996 a,b). As a partial result of these findings, many of the older wells on the Oxnard Plain have since been destroyed via a cooperative FCGMA-initiated program using Federal 319(h) grant money and matching funds contributed by the City of Oxnard, UWCD, FCGMA, and the County of Ventura. Figure 14 delineates the approximate extent of high-chloride water in the Oxnard aquifer (Upper Aquifer System). Figure 15 delineates the approximate extent of high-chloride water in the Lower Aquifer System.

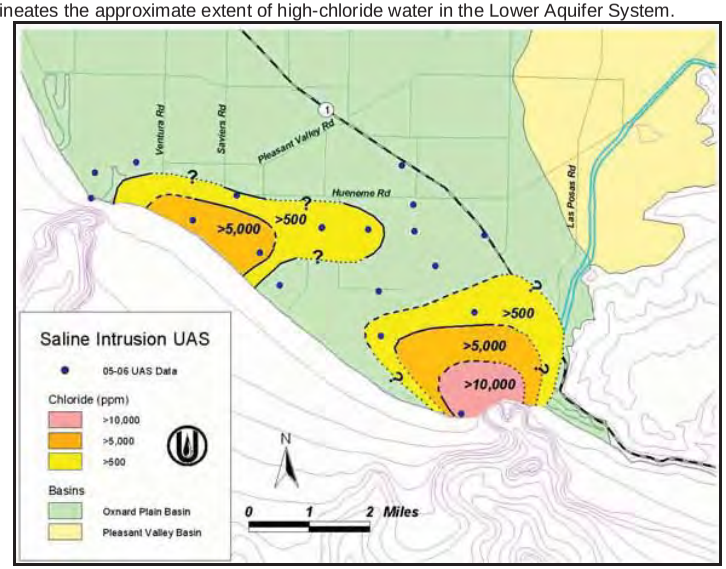


Figure 14. Areas of saline intrusion in the Upper Aquifer System of the Oxnard Plain in 2005-06. Contours of chloride concentrations indicate the maximum extent of the UAS saline intrusion – individual aquifers within the UAS may be less intruded. Contour lines are dashed where inferred and queried where uncertain. Bathymetric contour lines indicate the offshore submarine canyons where the aquifers are eroded along the canyon walls and exposed to seawater.

In addition to drilling and installing the nested monitoring wells, the USGS conducted geophysical surveys to determine the general extent of the high-saline areas (Stamos et al., 1992; Zohdy et al., 1993). This work indicated high-saline areas consisted of two distinct lobes,

with relatively fresh water separating the lobes (Izbicki, 1996a). The lobes identified by the USGS form the basis of the areas of high chloride concentration shown on UWCD maps.

Additional down-hole conductivity surveys by the USGS indicate the edges of the lobes are relatively distinct, with the first saline intrusion occurring in thin individual beds of permeable sand and gravel. As intrusion continues, more individual beds or geologic layers are impacted, resulting in increasing chloride levels within the affected aquifer. Thus, the interpretation of high-chloride areas shown on the maps combine measured concentrations from the monitoring wells, geophysical measurements, and study results about the nature of the intrusion front.

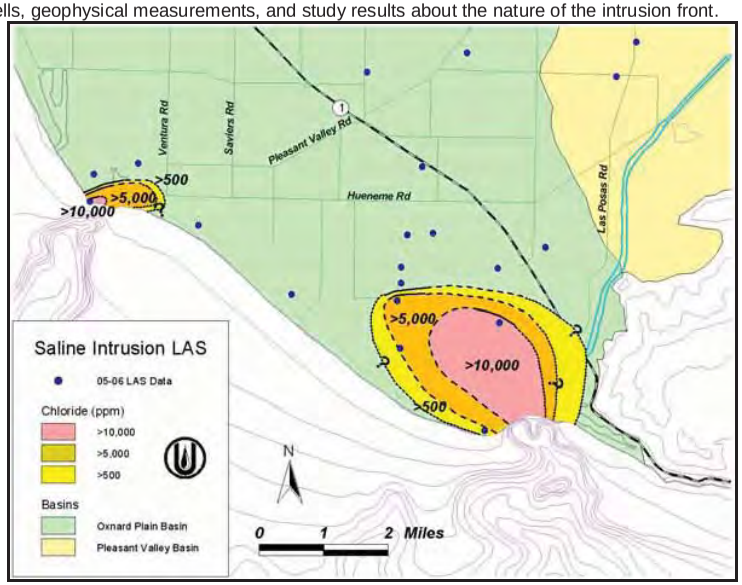


Figure 15. Areas of saline intrusion in the Lower Aquifer System of the Oxnard Plain in 2005-06. Contours of chloride concentrations indicate the maximum extent of the LAS saline intrusion – individual aquifers within the LAS may be less intruded. Contour lines are dashed where inferred and queried where uncertain. Bathymetric contour lines indicate the offshore submarine canyons where the aquifers are eroded along the canyon walls and exposed to seawater.

In addition to monitoring wells and geophysical measurements, isotope studies of groundwater samples from the nested wells indicate that the cause of the elevated chloride levels varies in the Oxnard Plain basin (Izbicki, 1991, 1992). Four major types of chloride degradation were documented:

Lateral Seawater Intrusion - the inland movement of seawater adjacent to the Hueneme and Mugu submarine canyons.

Cross Contamination - the introduction of poor-quality water into the fresh water supply via existing well bores improperly constructed or improperly destroyed, or via corroded casings caused by poor-quality water in the Semi-Perched zone.

Salt-Laden Marine Clays - the dewatering of marine clays, interbedded within the sand and gravel-rich aquifers and containing salts from their marine deposition, yields high concentrations of chloride-enriched water. This dewatering is the result of decreased pressure in the aquifers, caused by regional pumping stresses (excessive groundwater withdrawals).

Lateral Movement of Brines from Tertiary-Age Geological Formations - the lateral movement of saline water from older geologic formations caused by uplift along faults. An example is where older Tertiary rocks are in contact with younger aquifers across a buried fault face near Pt. Mugu.

5.1.2 Saline Intrusion from Surrounding Sediments

A significant portion of the salinity in the aquifers of the Oxnard Plain basin is coming from salts (primarily chloride) pulled from the surrounding sediments, as discussed in the previous section. When this saline intrusion occurs near the coastline, it largely resembles seawater intrusion in concentration and movement in the aquifer, and mitigation measures are similar to those for seawater intrusion (i.e., raising groundwater levels). In more inland areas such as the Pleasant Valley basin, chloride concentrations are generally less, with only a few wells showing any increase in chloride. It is too early to know whether chloride concentrations in the Pleasant Valley basin will escalate to a problem affecting local pumpers.

5.1.3 High Salinity Associated with High Groundwater Levels

Increased salt concentrations (chloride, sulfate, sodium) in aquifers underlying the Arroyo Las Posas in the East Las Posas, South Las Posas, and northern Pleasant Valley basins correspond in time with rising groundwater levels along the arroyo. This rise in groundwater levels has been created by increased recharge as natural streamflow was augmented by the addition of the upstream discharge of treated wastewater and aquifer dewatering projects along the arroyo. The shallow groundwater levels, which are higher than any historic levels, apparently leach salts from the previously unsaturated portions of the aquifer. The problem caused by high groundwater levels in the shallow aquifer has migrated down Arroyo Las Posas across the Las Posas basin and into the northern part of the Pleasant Valley basin, where water levels have risen and salts have increased. Solutions to this salinity problem will likely be based on removing and treating the high-salinity water.

5.1.4 Nitrate in Groundwater

High nitrates in groundwater primarily affect the Oxnard Plain Forebay and Santa Rosa basins. Nitrate is a primary drinking water standard (45 mg/L as NO3), so high nitrate concentrations directly affect the potable water supply. Nitrate is largely introduced into groundwater by man's activities in overlying recharge areas where the nitrate travels directly into the aquifers. Nitrate concentrations typically are a balance between nitrate input and the amount of recharge water available for dilution. Nitrate concentrations commonly increase during dry periods when there is less recharge water for dilution. In groundwater away from recharge areas, nitrates have generally been diluted and are at concentrations well below drinking water standards. An exception to this occurred in the 1990s, when nitrate occurred in City of Oxnard wells in the Oxnard Plain basin, just outside of the Forebay basin. This nitrate may have migrated downward from the Semi-Perched zone through improperly abandoned private wells.

The primary sources of nitrate are septic systems (especially if they are poorly maintained or being used above design capacity) and agricultural fertilizer. These are both being addressed.

As discussed below, septic systems have been prohibited in the Oxnard Plain Forebay basin. In addition, agricultural nitrate, contributed largely from fertilizers, will be monitored in 2006 as part of the Agricultural Irrigated Lands Conditional Waiver program adopted by the Los Angeles Regional Water Quality Control Board. If nitrates are shown to be entering groundwater from agricultural fertilizers through the monitoring program, the waiver requires the implementation of Best Management Practices.

5.2 WATER QUALITY ISSUES BY BASIN

5.2.1 Oxnard Plain Forebay Basin

The primary water quality concern in the Oxnard Plain Forebay basin is nitrate concentrations above the Department of Health Services' Maximum Contaminant Level. Nitrate concentrations in the Upper Aquifer System spike in the Forebay basin during dry periods when there is reduced recharge to the basin. Nitrate concentrations periodically exceed the primary drinking water standard of 45 mg/L (as NO3) in individual wells (Figure 16). Because much of the pumping in the Forebay delivers potable water through the Oxnard-Hueneme (O-H) pipeline (a potable water delivery line that provides groundwater to the cities of Oxnard and Port Hueneme), the drinking water standard is of prime importance. The O-H system has been able to deliver potable water by blending lower-nitrate water and by temporarily shutting down impacted high-nitrate wells.

These nitrates have been attributed to both agricultural activities (fertilizer application) and adjacent septic systems (leach-line effluent discharges). The nitrate problem will continue to be a water quality issue for drinking water wells as long as the sources of nitrate continue to contribute this mineral salt into the groundwater resources. As a result of the high nitrate concentrations, the Regional Water Quality Control Board enacted in 1999 a prohibition on septic systems in portions of the Forebay, with orders that most such disposal systems be eliminated from the Oxnard Plain Forebay basin before 2008. Since that time, disconnecting the nearby El Rio septic tanks and connecting to a sanitary sewer system has been a high priority water quality improvement project for the County.

5.2.2 Oxnard Plain Basin

The significant water quality issue in the Oxnard Plain basin is saline intrusion from both seawater and from surrounding marine sediments. Chloride degradation is directly related to groundwater levels in the basin. The water balance of the Oxnard Plain and the offshore component of the aquifer units is a dynamic balance between groundwater recharge, groundwater extraction, and change in aquifer storage. High groundwater levels in the recharge zone in the Oxnard Plain Forebay basin exert a positive pressure on the confined aquifers of the Oxnard Plain, and water flows from the recharge areas toward the coast (Figure 17). Whereas the pressure exerted by high water levels in the Forebay propagates rapidly through the aquifers, the actual movement of the water itself is slow, at approximately 3 feet per day or less in the Forebay (Izbicki et al, 1992). The pressure (piezometric) surface of the confined aquifer is diminished by the extraction of water from the system. If pressure heads at the coast fall below sea level, the lateral intrusion of seawater will occur. The dewatering of marine clays can occur if heads in the surrounding sediments remain below their historic levels for prolonged periods.

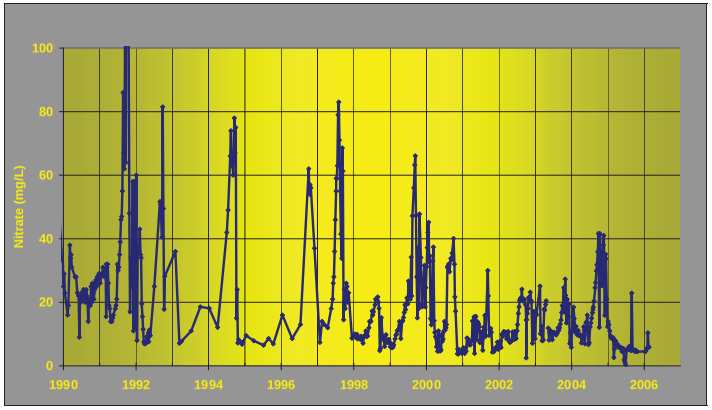


Figure 16. Nitrate concentrations (as NO3) in Oxnard-Hueneme El Rio well #5. Note that nitrate increases during dry portion of year, when nitrate input from overlying land uses is less diluted by low-nitrate recharge water. When nitrate levels are high, this well is either not used or the produced groundwater is diluted with low-nitrate water from other wells in the system.

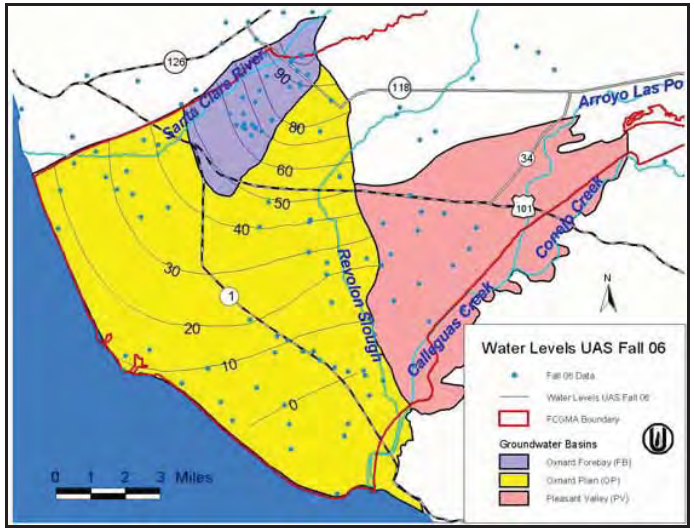


Figure 17. Groundwater elevation contours in the Upper Aquifer System, Fall 2006. Note that southeastern portion of Oxnard Plain remains below sea level (line labeled "zero") and is susceptible to continued seawater intrusion.

Chloride levels in coastal monitoring wells in the Upper Aquifer System show a direct relationship to groundwater levels – with groundwater levels below sea level, chloride levels increased in the early 1990s (e.g., well A1 in Figure 18). However, as the Freeman Diversion on the Santa Clara River began operation in 1991 and a series of wet years followed, the amount of recharge to the former pumping trough area and to the Port Hueneme area increased significantly. This has resulted in a rise in groundwater elevations on the Oxnard Plain and drastic reduction in seawater in some coastal monitoring wells (e.g., well A1 in Figure 18). In fact, the significantly intruded well A1 has returned to its pre-intrusion water quality levels and is currently (2006) within drinking water standards. This may be the first documented instance of such a reversal of seawater intrusion in a coastal basin.

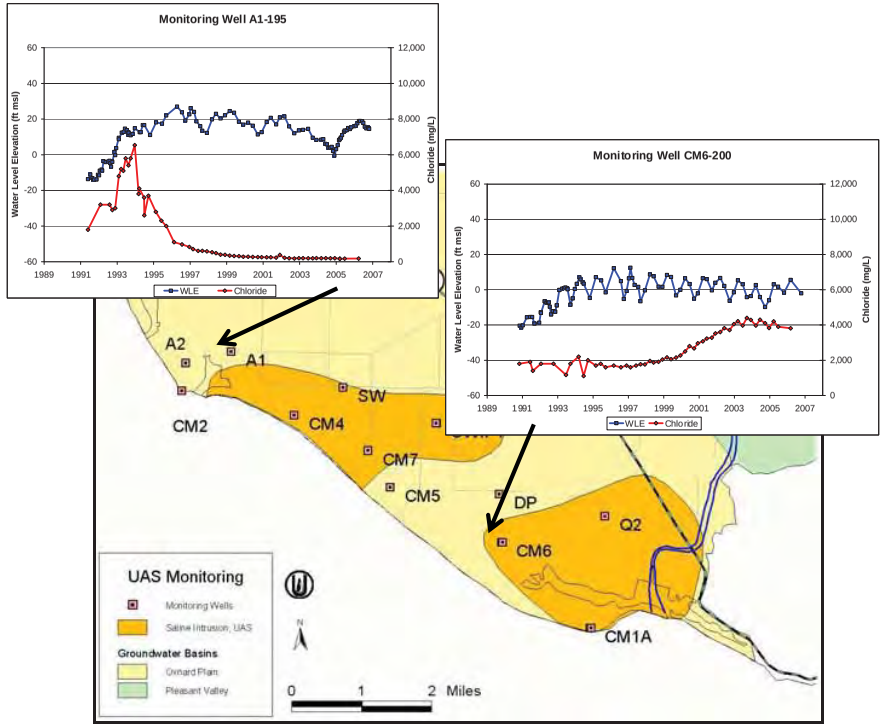


Figure 18. Chloride levels in two Upper Aquifer System coastal monitoring wells. Note that chloride levels have improved to drinking water quality in the A1 well (Port Hueneme lobe), whereas chloride levels continue to increase in the Point Mugu lobe. Uncertainties in exact configuration of saline lobes are indicated in Figure 14.

Despite some encouraging gains, however, the Upper Aquifer System is not completely restored. Although high recharge rates related to the increased flows from the Freeman Diversion have improved water levels and water quality south to Port Hueneme and the higher water levels appear to have eliminated the pumping trough, groundwater levels are still at or below sea level (Figure 17) and water quality continues to degrade in the southern portion of the Oxnard Plain near Point Mugu (e.g., well CM6 in Figure 18). It is likely that the pumping trough situation is similar to the one discussed next for the Lower Aquifer System – namely, that this portion of the Upper Aquifer System may be too far from the recharge areas for direct recharge to be effective, and must rely on artificial or in-lieu (surface water delivered and used in-lieu of pumping groundwater) recharge methods to transport replacement water from the Oxnard Plain Forebay basin or other sources of supply. Groundwater levels in the Lower Aquifer System in the south and southeast Oxnard Plain and central and southern portions of the Pleasant Valley areas have been consistently below sea level since at least the early 1950s (Mann, 1959)(Figure 19). The strategy to switch pumping from the Upper Aquifer to the Lower Aquifer has apparently been at least a portion of the cause for the low water levels and high chlorides that were encountered when the RASA monitoring wells were completed at LAS depths. These high chloride levels occur in several wells at the position of the two Upper Aquifer System seawater lobes (Figure 20).

U.S. Geological Survey studies indicated that the chloride in the LAS occurred not just from seawater intrusion, but also from slow dewatering of the surrounding volcanics and older sediments, as well as chloride-rich marine clays that serve as the aquitard between the Upper and Lower aquifer zones. After the U.S. Geological Survey findings became known and there was the realization the shift in pumping was actually mining LAS groundwater, the County of Ventura took action to change the County Well Ordinance (May 1999) so that only replacement wells or special situations would be allowed to draw water from the LAS; new wells would have to be drilled in the UAS.

The decline in Lower Aquifer System water levels from the late 1980s into the 2000s exacerbated a pumping trough extending from the coastline northeastward to the city of Camarillo (Figure 19). This trough is typically well below sea level, with the deepest portion as much as 180 feet below sea level during the drought of the late 1980s and early 1990s. Despite above-average rainfall in many of the preceding ten years, this pumping trough was still as much as 100 feet below sea level in the fall of 2006 (Figure 19).

Although FCGMA policies and new UWCD recharge facilities built over the last 20 years have significantly improved conditions in the Upper Aquifer System, the Lower Aquifer System continues to experience intrusion by saline waters. This saline intrusion comes both from seawater entering the aquifers along the coastline and from saline waters intruded from surrounding sediments. Any solution to this saline intrusion must include raising water levels in the Lower Aquifer System while concurrently keeping water levels in the Upper Aquifer System at their current elevations. One of the biggest groundwater challenges is to provide either additional recharge or an alternative source of water to the south Oxnard Plain and Pleasant Valley to prevent further water quality degradation in the Lower Aquifer System.

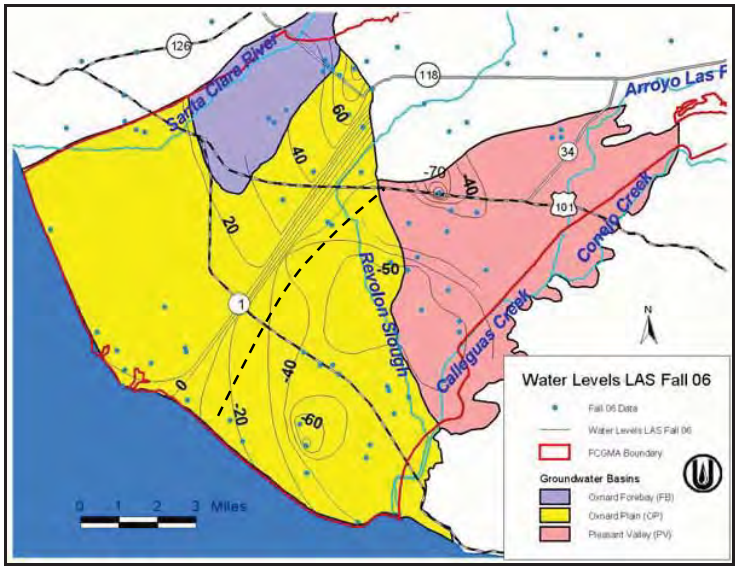


Figure 19. Groundwater elevation contours in the Lower Aquifer System, Fall 2006. Note the distinct series of troughs that extend from the ocean in the south Oxnard Plain northeastward toward Camarillo. These troughs are entirely below sea level. The dashed line indicates the approximate trend of the steep groundwater flow gradients that separate the recharge area in the Forebay from the south Oxnard Plain and Pleasant Valley pumping trough.

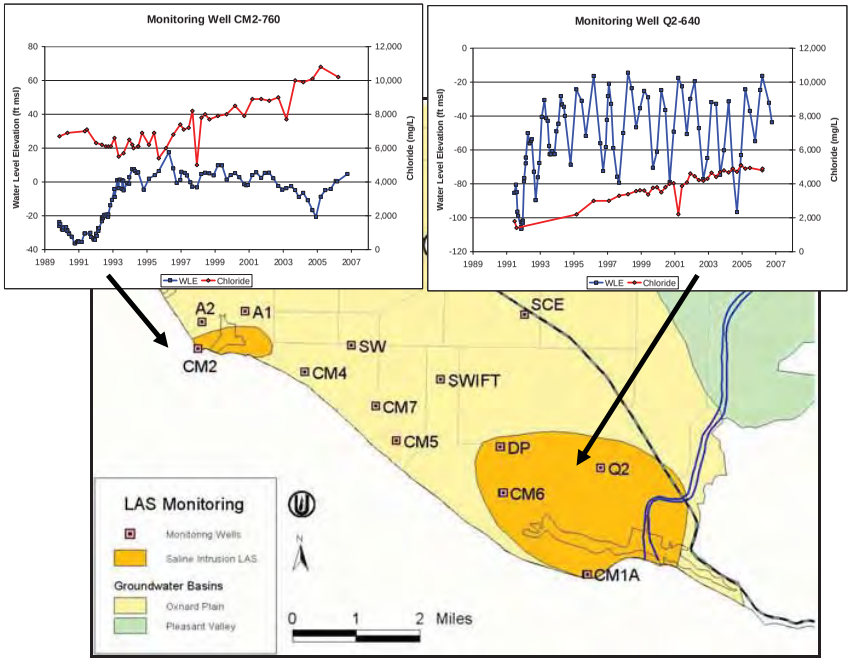


Figure 20. Chloride levels in two Lower Aquifer System coastal monitoring wells. Chloride levels continue to rise in the Point Mugu lobe, requiring new monitoring wells to be drilled inland of current wells to determine the extent of landward movement of high-chloride groundwater. Uncertainties in exact configuration of saline lobes are indicated in Figure 15.

5.2.3 Pleasant Valley Basin

Saline intrusion from surrounding sediments and salinity associated with high groundwater levels are the primary water quality concern in the Pleasant Valley basin. The potential for saline intrusion exists in the depressed groundwater elevations in the Lower Aquifer System of the Pleasant Valley basin (see previous section for discussion of these depressed groundwater levels). The area of depressed groundwater elevations extends from the City of Camarillo to the ocean (Figure 19). Chloride levels within the Pleasant Valley basin are generally less than 150 mg/L, but several wells have shown an increase in chloride. City of Camarillo wells near the Camarillo airport have been affected by the rising chlorides, with one well taken out of service. Increasing chlorides in other wells in the Pleasant Valley basin have recently been shown to have the geochemical signature of "oil-field production water" that underlies the fresh-water bearing aquifers in the basin (Izbicki et al., 2005). This poor-quality water likely was pulled up

along fault zones or other conduits towards the lower pressures of the LAS aquifer that were created by overpumping of the basin.

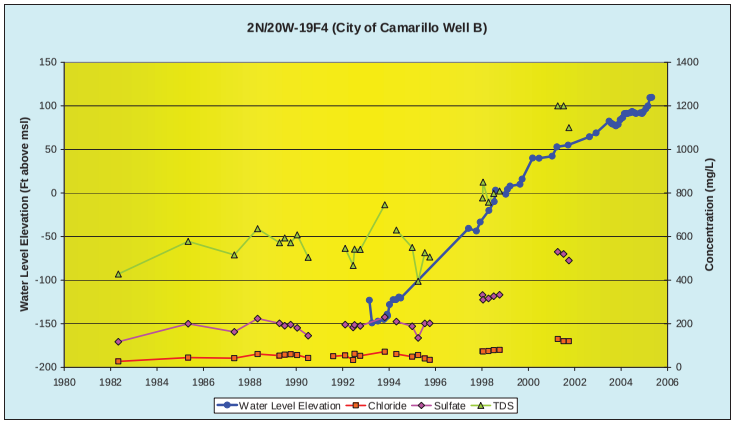


Figure 21. Salts increasing with groundwater elevations, northern Pleasant Valley basin.

Where Arroyo Las Posas crosses into the Pleasant Valley basin in the northern area of the City of Camarillo, the increased flows in the arroyo have raised groundwater levels in the area to historic highs (Figure 21). Coincident with this, water quality has degraded, especially for the constituents sulfate, chloride (Figure 21), iron, and manganese. As in the South Las Posas basin, this higher-salinity water will need to be treated for potable or irrigation use. The City of Camarillo has evaluated the feasibility of treating this poor-quality water, while reducing pumping in the areas of depressed groundwater levels (discussed in section 9.3 *Development of Brackish Groundwater, Pleasant Valley Basin*).

5.2.4 Santa Rosa Basin

The Santa Rosa basin has had long periods where nitrates in some areas were well above drinking water standards (as high as 200 mg/L). Chloride concentrations in the basin are generally between 100 and 150 mg/L, although they have spike locally above 200 mg/L. High chloride concentrations can affect crop production.

5.2.5 West Las Posas Basin

The water quality of the West Las Posas basin currently meets standards for irrigation and drinking water use. Within the pumping depression in the far eastern portion of the basin, samples from two wells have had increased chloride concentrations since 2004. It is not clear if this is the beginning of a trend or if these chlorides were transported into the basin from the shallow aquifer that is generally located along Arroyo Las Posas in the East Las Posas basin (the wells themselves are not along the arroyo).

5.2.6 East Las Posas Basin

Increasing concentrations of salts (chloride, sulfate, sodium) in the portion of the basin along the Arroyo Las Posas continue to be a problem in the East Las Posas basin. Chloride concentrations in the shallow aquifer beneath the arroyo can reach 360 mg/L, whereas chloride concentrations in the surface waters in the arroyo are in the range of 120-180 mg/L (Bachman, 2002). These increased chloride concentrations in the shallow aquifer are associated with historically-high groundwater levels (see discussion in section 5.1.3 *High Salinity Associated with High Groundwater Levels*) that apparently leach salts from previously-unsaturated sediments in the shallow aquifer along the arroyo. The groundwater that contains these chloride-rich salts recharges the Lower Aquifer System by moving downward from the shallow aquifer into the LAS, then northward into the basin. This recharge has formed a chloride-rich recharge mound beneath the Arroyo Las Posas (Figure 22) and northward into the main portion of the East Las Posas basin (Bachman, 2002). Individual wells along the south flank of the basin show a progression of filling of the shallow aquifer, with a coincident increase in chloride concentration (Figure 23). The following section on the South Las Posas basin discusses the age progression of this filling.

5.2.7 South Las Posas Basin

Water quality in the South Las Posas basin is dominated by the movement of salts discussed in the previous section. The filling of the shallow aquifer of the South Las Posas basin progressed from the upstream to the downstream portions of the basin (
Figure 24). With continuing dissolution of salts in the previously-unsaturated sediments, water quality could improve as the salts are expended. Two wells completed in the shallow aquifer beneath the arroyo that have had elevated salts for 20 years have shown a lessening of salinity in the past two years. It is not yet clear if these wells may be a precursor of further salt reduction as salts in the sediments are dissolved and the shallow aquifer begins to reflect the chemistry of surface water in the arroyo (which is higher in chlorides than pre-development conditions, but lower than the groundwater with dissolved salt).

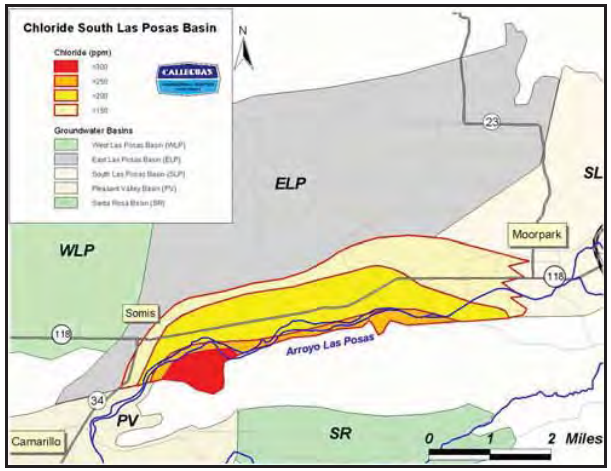


Figure 22. Chloride concentrations (2005-06) in aquifers beneath the Arroyo Las Posas in the East and South Las Posas basins. These concentrations have increased during the last two decades as the shallow aquifer beneath the arroyo has filled to its spill point, caused by increased flow in the arroyo from discharges from dewatering wells and wastewater treatment plants. (Bachman, 2002).

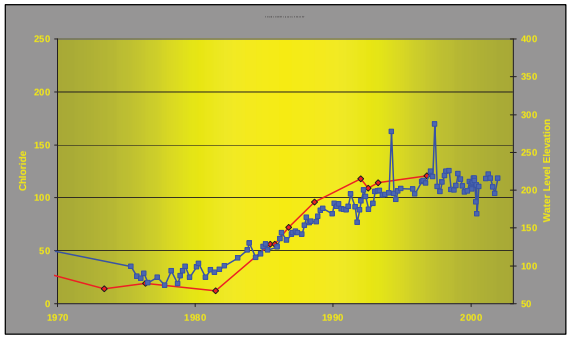


Figure 23. Coincidence of groundwater level rise (blue line with squares) and chloride concentrations (red line with diamonds) in a well in the shallow aquifer along Arroyo Las Posas (Bachman, 2002).

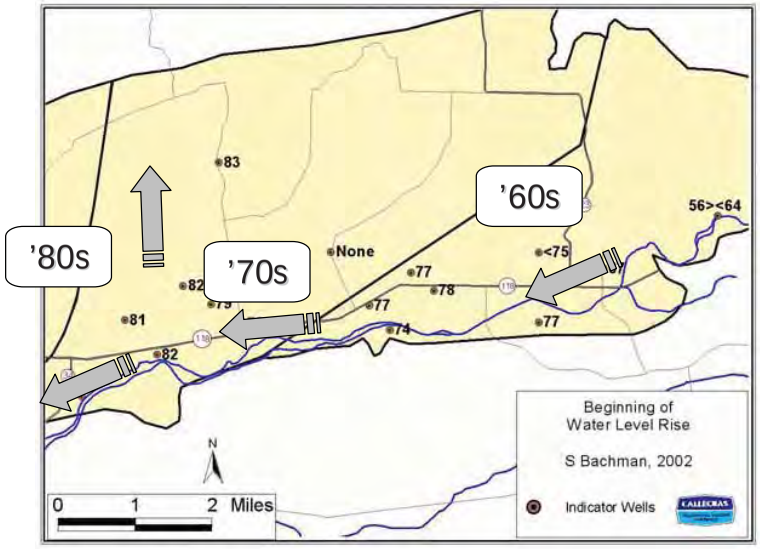


Figure 24. Beginning time of the progressive filling of the shallow aquifer along the Arroyo Las Posas in the South and East Las Posas basins. The number next to each well is the year when groundwater levels started to rise during the filling episode.

5.3 POTENTIAL FUTURE WATER QUALITY THREATS

An area of concern, discussed in the previous section, is potential water quality problems in the Pleasant Valley basin. With groundwater elevations as low as 160 feet below sea level, there exists the potential to pull significant amounts of lower-quality water from surrounding sediments, across or along faults, and from deeper depths (high salinity and/or petroleum-tainted water). Mitigation of these low water levels is important to avoid future water quality problems.

In the northern portion of the Pleasant Valley basin, within the City of Camarillo, increasing chloride concentrations could migrate into the main portion of the basin. However, the details of the hydrogeologic connections from the shallow aquifer to the Lower Aquifer System are still somewhat unclear. Likewise, salt-laden groundwater in proximity to California State University Channel Islands could also migrate from the shallow aquifers to deeper aquifers. This connection is also not well known and the mechanics of transport have yet to be adequately determined, although water level and quality monitoring from wells in the vicinity of the university suggests that the water quality in Lower Aquifer System wells is not affected by poor-quality water in the shallow aquifers. This suggests some barrier to vertical flow between the aquifers in this area.

There are also several other potential water quality concerns within the FCGMA basins. There is a number of leaking underground tanks, some of which have polluted the main aquifers in the basins. Past contamination has been localized and has been addressed through various clean-up operations mandated by the Los Angeles Regional Water Quality Control Board and the Ventura County Environmental Health Department. Water purveyors have become directly involved to ensure rapid cleanup operations in some areas. The FCGMA has lent it support to some of these efforts by water purveyors. There are also possibilities of more-widespread contamination by plumes of such contaminants as perchlorate. Large releases of perchlorate have occurred in the Santa Susana Mountains adjacent to Simi Valley and along the Santa Clara River in Santa Clarita (Los Angeles County). The FCGMA may have to be proactive in the future in ensuring that these and other potential sources do not adversely affect the FCGMA aquifers.

A matter of future water quality concern is the maintenance of current recharge projects that positively affect the Oxnard Plain. Environmental issues in the Santa Clara River and its tributary Piru Creek have the potential for reducing useable water resources – the amount of water available from stored water in Lake Piru and river water at the Freeman Diversion. Since these projects play an integral role in the current FCGMA water management strategies, any loss of yield from these projects would likely reduce some of the gains used in mitigating saline intrusion within the Oxnard Plain.

6.0 BASIN MANAGEMENT OBJECTIVES

6.1 CURRENT OBJECTIVES

Basin Management Objectives (BMOs) are quantitative targets established in a groundwater basin to measure and evaluate the health of the basin. For groundwater basins with seawater intrusion, a critical BMO is maintaining groundwater levels along the coastline to prevent the further intrusion of seawater. In addition, another BMO would be to maintain low concentrations, to the extent possible, of chloride at critical coastal monitoring wells. In inland areas, a BMO would be to ensure groundwater levels prevent conditions that cause groundwater quality degradation. A concurrent BMO would be to maintain concentrations of deleterious chemical constituents in groundwater, such as nitrate and chloride, at or below levels that are harmful to human or animal health or damaging to irrigated crops. Within the FCGMA, several BMOs are appropriate to measure and evaluate the health of the basins. Wells used as monitoring points for the Basin Management Objectives are shown in Figure 25 and described in the following paragraphs.

As part of the BMO attainment process, additional wells may be added to the monitoring process to provide early indications of improving or degrading aquifer conditions at critical locations. An example of such location would be at the north end of the Pleasant Valley Basin where poor quality water from the Las Posas Basin is apparently beginning to enter the Pleasant Valley Basin. This will be an iterative process that will allow the FCGMA to monitor both the current conditions and the relative success of basin management strategies implemented to control water quality in these areas.

6.1.1 Oxnard Plain Basin

The BMO most critical for coastal areas of the FCGMA is the maintenance of groundwater elevations high enough to prevent further seawater intrusion. Because the source of seawater is likely from offshore submarine canyons where the aquifers are truncated and in contact with seawater, coastal aquifers must have groundwater elevations high enough to prevent movement of seawater from the canyons to nearby onshore areas (see discussions in section 5.1.1 *Seawater Intrusion* and section 5.2.2 *Oxnard Plain Basin*). However, seawater is denser than fresh water and the heavier seawater exerts pressure on the fresh water aquifers exposed on the canyon walls – much like water pressure pushes on a diver's mask when the diver descends.

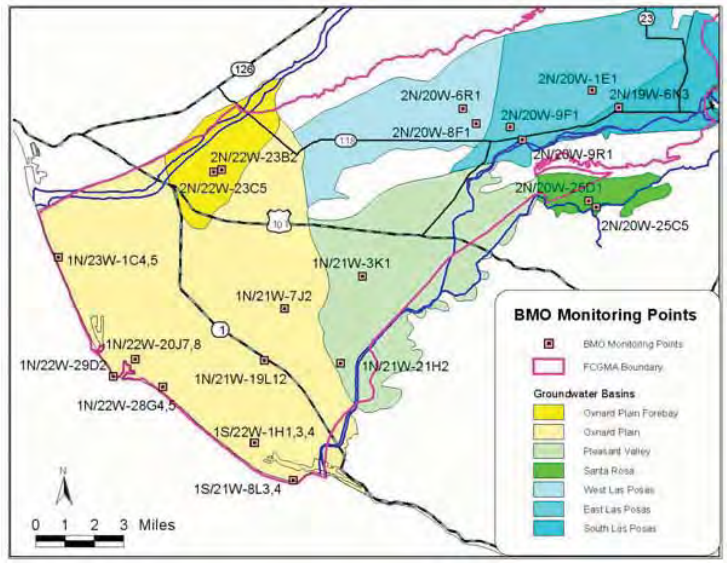


Figure 25. Wells used as monitoring points for Basin Management Objectives.

The pressure differential exerted on the fresh water aquifer depends upon the ocean depth where the aquifer is truncated along the canyon wall – there is the equivalent of 2.5 ft of head (pressure) exerted for every 100 ft of ocean depth. Therefore, an aquifer that is exposed on a submarine canyon wall at 200 ft ocean depth has 5 ft of head exerted on the aquifer by the more-dense seawater. To prevent seawater from intruding from the canyon wall and flowing through the aquifer to the coastline, coastal groundwater elevations must be, on average, at least as high as the head exerted by seawater. Thus, for the example given above, groundwater elevations in monitoring wells at the coastline must average at least 5 ft above sea level to prevent seawater intrusion. The greater ocean depth where the aquifer is exposed to seawater, the higher the average groundwater elevation required to prevent seawater intrusion.

A set of wells was selected to establish the BMOs for the Oxnard Plain basin (Figure 25). Many of these are coastal monitoring wells, completed at different aquifer depths within the Upper (Table 1) and Lower Aquifer Systems (Table 2). There are also several inland wells to detect if a new pumping depression forms in the UAS and if the existing pumping depression in the LAS dissipates. Coastal groundwater elevation objectives were determined using the groundwater elevation and water quality criteria in the preceding paragraph. Inland groundwater elevation objectives were determined such that there is a slight groundwater gradient from the inland areas to the coastline, thereby preventing further landward migration of the existing saline intrusion. The tables list the management objectives for each of the well completions.

The Ventura Regional Groundwater Model suggests that if these groundwater levels are maintained for an adequate period of time, additional saline intrusion will likely be minimized. Water quality objectives for chloride at these wells are also listed in the tables. These objectives follow the Regional Water Quality Control Board's Basin Plan Objective of 150 mg/L for chloride.

Well	BMO Groundwater Level (msl)	Current Level (msl)*	BMO Chloride (mg/L)	Current Chloride (mg/L)
1N/23W-1C5 (CM3-145, 120-145)	Average 3'	9.2'	<150	41
1N/22W-20J8 (A1-195, 155-195)	Average 4'	14.6'	<150	177
1N/22W-20J7 (A1-320, 280-320)	Average 8'	15.5'	<150	81
1N/22W-28G5 (CM4-200, 180-200)	Average 5'	9.0'	<150	237
1N/22W-28G4 (CM4-275, 255-275)	Average 7'	8.4'	<150	6,536
1N/21W-19L12 (SCE-220, 200-220)	Average 5'	11.3'	<150	67
1S/22W-1H4 (CM6-200, 180-200)	Average 5'	1.8'	<150	4,089
1S/22W-1H3 (CM6-330, 310-330)	Average 8'	-12.5'	<150	1,630
1S/21W-8L4 (CM1A-220, 200-220)	Average 5'	-4.9'	<150	16,917

Table 1. Basin Management Objectives for Upper Aquifer System wells in the Oxnard Plain basin. Well name and perforation depths follow State Well Number.

Well	BMO Groundwater Level (msl)	Current Level (msl)*	BMO Chloride (mg/L)	Current Chloride (mg/L)
1N/23W-1C4 (CM3-695, 630-695)	Average 17'	15.4'	<150	36
1N/22W-29D2 (CM2-760, 720-760)	Average 19'	0.2'	<150	9,783
1S/22W-1H1 (CM6-550, 490-550)	Average 13'	-33.3'	<150	3,512
1S/21W-8L3 (CM1A-565, 525-565)	Average 14'	-42.3'	<150	4,161
1N/21W-7J2 (PTP #1, 590-1280)	Average 20'	-52.0'	<150	42

Table 2. Basin Management Objectives for Lower Aquifer System wells in the Oxnard Plain basin. Well name and perforation depths follow State Well Number.

6.1.2 Pleasant Valley Basin

In the Pleasant Valley basin, groundwater elevation objectives were calculated to be slightly higher than coastal objectives to prevent landward migration of existing saline intrusion, and to

* Groundwater levels are average for last 10 years; chemical concentrations are average for last 3 years.

minimize vertical groundwater gradients that pull salts from encasing marine clays, from surrounding older marine and volcanic rocks, or from deeper waters within the oil fields of the basin. An additional BMO is to maintain chloride concentrations at or below the Regional Water Quality Control Board's Basin Plan Objective of 150 mg/L. These objectives are indicated in Table 3.

Well	BMO Groundwater Level (msl)	Current Level (msl)*	BMO Chloride (mg/L)	Current Chloride (mg/L)
1N/21W-3K1 (PV #4, 403-1433)	Average 20'	-47.2'	<150	107
1N/21W-21H2 (PV #10, 503-863)	Average 20'	-51.9'	<150	93

Table 3. Basin Management Objectives in the Pleasant Valley basin. Well name and perforation depths follow State Well Number.

6.1.3 Oxnard Plain Forebay Basin

In the Oxnard Plain Forebay basin, nitrate concentrations above drinking water standards have historically been a recurring problem. BMOs in the Forebay basin focus on protection of public drinking water wells (nitrate and TDS) and irrigation suitability (TDS). The management objectives are chosen for wells in the Oxnard-Hueneme wellfield (operated by UWCD) because this is the largest potable water system in the Forebay. The management objectives will maintain nitrate concentrations at one-half or less of the Maximum Contaminant Level for drinking water (45 mg/L of NO3 which is a primary drinking-water standard); at concentrations higher than the BMO of 22.5 mg/L, water purveyors must increase monitoring and reporting to the California Department of Health Services. The TDS objective is set at the Regional Board's Basin Plan Objective of 1,200 mg/L. These BMOs are set at two representative pumping wells (Figure 25) in the O-H Wellfield (Table 4).

Well	BMO Nitrate (as NO_3) (mg/L)	Current Nitrate (mg/L)*	BMO TDS (mg/L)	Current TDS (mg/L)
2N/22W-23B2 (135-277)	<22.5	13	<1200	1044
2N/22W-23C5 (140-310)	<22.5	8	<1200	1010

Table 4. Basin Management Objectives for the Oxnard Plain Forebay basin. Perforation depths follow State Well Number.

6.1.4 Las Posas Basins

In the South and East Las Posas basins, BMOs cannot be linked directly to observed groundwater levels, because the Calleguas MWD aquifer storage project (in-lieu deliveries and direct injection into the aquifer) creates artificially high groundwater levels that are not indicative of the state of the basin. Instead, the proposed East Las Posas Basin Management Plan (Appendix C) contains a method to use groundwater levels along with a computerized groundwater model to monitor the health of the basins.

The recharge mound that is moving northward from the Arroyo Las Posas (Bachman, 2002) has mobilized salts from the shallow aquifer (primarily located along the Arroyo) vertically downward into the Lower Aquifer System and then north into the main portion of the basin. This

* Groundwater levels are average for last 10 years; chemical concentrations are average for last 3 years.

subsurface movement of groundwater occurs because the head (pressure) in the LAS are lower than in the UAS. Therefore, an appropriate BMO for the East and West Las Posas basins is to maintain a chloride concentration that is suitable for agricultural irrigation use (this concentration is well below the standard for drinking water).

Monitoring points for these BMO chloride concentrations (Figure 25) were selected both in the degraded southern portion of the basin, as well as in areas unaffected by the migrating salts. The East and West Las Posas basins' objective for the chlorides is set at 100 mg/L to protect salt-sensitive crops such as avocados and berries (Table 5). It should be noted that salt concentrations, and especially chloride, are already high within the South Las Posas basin. This chloride is caused by groundwater at historically high elevations apparently dissolving salts from sediments that were historically unsaturated (see section 5.1.3 *High Salinity Associated with High Groundwater Levels*). Specific management strategies to address the South Las Posas basin are discussed later in this Plan. The BMOs for chloride and TDS in the South Las Posas basin are set at the average concentration of the surface water in Arroyo Las Posas, which is the concentration that would likely be attained when salts dissolved from sediments are either removed or have migrated elsewhere, and the groundwater then reflects the chemistry of its primary recharge source.

Well	BMO Chloride (mg/L)	Current Chloride (mg/L)§	BMO TDS (mg/L)	Current TDS (mg/L)
2N/20W-9F1 (906-1290)(ELP)	<100	164	<500	1,196
2N/20W-9R1 (456-724)(ELP)	<100	187	<500	1,330
2N/20W-1E1 (567-907)(ELP)	<100	28	<500	638
2N/20W-6R1 (1090-1512)(WLP)	<100	12	<600	520
2N/20W-8F1 (752-1406)(WLP)	<100	34	<600	410
2N/19W-6N3 (101-121)(SLP)	<160	150	<1500	1,500

Table 5. Basin Management Objectives for the Las Posas basins. Perforation depths and basin identifier follow State Well Number.

There are also specific water quality criteria for water injected into the East Las Posas basin as part of the Las Posas Basin ASR project. These criteria are included in a letter from the FCGMA to Calleguas MWD dated July 12, 1994 that approved the project as an injection/extraction facility. These criteria include: sodium absorption ratio 1-4 meq/L, TDS 100-800 mg/L, electrical conductivity not to exceed 1100 uMHO, chloride not to exceed 120 mg/L, boron not to exceed 1 mg/L, and nitrate (presumably as NO3) less than 45 mg/L.

6.1.5 Santa Rosa Basin

Basin Management Objectives for the Santa Rosa basin follow the Regional Board's Basin Plan Objectives (Table 6).

§ Groundwater levels are average for last 10 years, chemical concentrations are average for last 3 years.

Well	BMO Nitrate (mg/L)	Current Nitrate (mg/L)*	BMO Chloride (mg/L)	Current Chloride (mg/L)
2N/20W-25C5 (Unknown)	<45	116	<150	145
2N/20W-25D1 (UAS)	<45	60	<150	78

Table 6. Basin Management Objectives for the Santa Rosa basin. Aquifer designation (if known) follows State Well Number.

6.2 ASSESSMENT OF BASIN MANAGEMENT OBJECTIVES

The parameters for the proposed Basin Management Objectives (BMOs) are currently monitored on a regular frequency throughout the FCGMA, primarily by the VCWPD and UWCD. Along the coastline of the southern portion of the Oxnard Plain basin, BMOs are being met only in a portion of the Upper Aquifer System (see description and discussion of the Oxnard Plain basin in section 3.0 *Groundwater Basins and Hydrogeology*). Within the Lower Aquifer System, BMOs are significantly different than observed measurements. Groundwater levels are well below sea level both near the coastline and in a wide trough that extends into the Pleasant Valley basin beneath the City of Camarillo.

The Ventura Regional Groundwater Model was used to determine the effectiveness of current and future management strategies in meeting BMOs for groundwater levels. These results are reported under each management strategy and are summarized in Table 8 within the sections on management strategies. The model results were compared to the groundwater level goals set in the BMOs for each strategy that was amenable to evaluation by the model. For instance, strategies that involve shifting the place or amount of recharge and/or pumping can be effectively simulated using the model. Strategies that deal exclusively with water quality, such as reductions in nitrate sources, are not amendable to evaluation using the groundwater flow model.

When current management strategies are applied in the model, BMOs for groundwater levels are met or exceeded in 51% of the quarterly time-steps during the 55-year model period for the Upper Aquifer System (meaning that about half of the time groundwater levels are at or above the BMO values and half the time they are below) and only 5% of the time for the Lower Aquifer System. Successful management strategies are those where groundwater levels meet or exceed the BMOs at least half the time – meeting BMOs all the time is a more conservative approach, but requires much larger and more expensive strategies and does not take into account the natural climatic variations in groundwater levels that occurred even before the basin was pumped extensively. When coastal groundwater elevations are below the BMOs during dry periods, seawater could be pulled into the aquifers, but would then be pushed out during wet periods as groundwater levels rose above the BMOs. This has been the experience in the Upper Aquifer near Port Hueneme, where seawater moved inland and then receded with climatic variations in groundwater elevations below and above the BMOs for that area.

BMOs for LAS groundwater elevations are not being met in the Pleasant Valley basin because of this wide trough of depressed groundwater elevations (see map and discussion in section 3.0 *Groundwater Basins and Hydrogeology*). BMOs for chloride concentrations are not currently being met in all portions of the basin, with chlorides increasing in several wells. A study

conducted by UWCD (see following section) indicate some of these chlorides might be pulled from depth with "oil-field production water"** that underlies the fresh-water bearing aquifers in the basin (Izbicki et al, 2005). Chloride concentrations are being carefully monitored in the Pleasant Valley basin.

In the Oxnard Plain Forebay basin, BMOs are being met most of the time. However, nitrate concentrations in individual wells in the Oxnard-Hueneme wellfield have periodically been at or above the drinking water standard during drought. Currently, these high nitrates have been evident only during the driest portions of the year when pumping water elevations were at their maximum depth. Both fertilizers from overlying agriculture operations and numerous individual septic tanks are likely contributors to the recurring high nitrate levels in the Forebay, as discussed in the following section. Nitrate problems continue to plague the Santa Rosa basin as well. The high nitrate concentrations in the Santa Rosa basin are also believed to be caused by excessive fertilizer use and numerous individual septic systems.

Two emerging processes could significantly improve source control of nitrate within the FCGMA. Ventura County is in the process of eliminating hundreds of concentrated leach-line septic systems located in the El Rio area of the southern portion of the Oxnard Plain Forebay basin and the northern Oxnard Plain basin; the homes will be connected instead to the adjacent City of Oxnard wastewater system. In addition, the Conditional Discharge Waiver for Irrigated Lands is being put into effect in 2005-2006 by the Los Angeles Regional Water Quality Control Board. This process, with sub-watershed sampling of runoff from agricultural lands, will likely decrease the loading of nitrates from fertilizer through Best Management Practices and education. By 2010, the required monitoring will likely extend to agricultural waters that are percolating to groundwater, in addition to the current emphasis on surface waters.

In the East Las Posas basin, chloride concentrations are higher than the basin management objective in the two wells closest to the Arroyo Las Posas (wells 9F1 and 9R1, Figure 25). Chloride concentrations as high as 273 mg/L have been detected in these wells. Farther into the main portion of the basin, well 1E1 has chloride concentrations of less than 30 mg/L, well below the BMO. In the West Las Posas basin, chloride concentrations remain below the BMO largely because the fault that separates the West and East Las Posas basins appears to be an effective barrier to groundwater flow and the poor-quality water in the East Las Posas basin does not flow into the western basin. Of concern, however, is the recent transient occurrence of higher chlorides in two wells just to the west of the fault. It is not yet known if this is the beginning of wider-spread degradation or if this is caused by periodic overtopping of the fault by poor quality waters in the shallow aquifer along the Arroyo Las Posas.

7.0 YIELD OF THE GROUNDWATER BASINS

7.1 ORIGINAL FCGMA CALCULATION

The approximate yield of all basins within the FCGMA was calculated for the original management plan as approximately 120,000 AFY. This yield was based on a water budget for the year 1980, with estimates of the water balance for every fifth year to 2010. In the year 2010, there were estimated to be extraction rates 25% higher than recharge rates. This calculation is

** Izbicki compared the isotopic composition of the sampled groundwater with that of water produced with the oil that was pumped from nearby shallow oil wells.

the origin of the 25% pumping reduction required by the FCGMA. The potential inaccuracies in the assumptions that went into the original balance calculation were not discussed in the previous Management Plan, but they are likely to be relatively high (e.g., Bachman et al, 2005). Note that this yield is not basin-specific, which is discussed in more detail below.

7.2 DEFINITION OF BASIN YIELD

The yield of a basin is the average quantity of water that can be extracted from an aquifer or groundwater basin over a period of time without causing undesirable results. Undesirable results include permanently lowered groundwater levels, subsidence, or degradation of water quality in the aquifer. A basin is in overdraft if the amount of water pumped from the basin exceeds the yield of the basin over a period of time. This does not mean that the same amount of water must be pumped each year – pumping in individual years may vary above or below the yield of the basin during drought or wet years, or as part of basin management plans. If water management in the basin changes, the yield of the basin may change.

The term "safe yield" is often used in judicial proceedings for basin yield; it is determined by technical professionals and subsequently interpreted by courts to define the legal rights to extract groundwater in a basin (further discussion in Bachman et al, 2005). Outside of judicial proceedings, terms such as "perennial yield" are commonly used for basin yield. For the purpose of this Management Plan, the term "yield" is synonymous with "perennial yield" which follows the definition in the previous paragraph.

7.3 METHOD OF CALCULATING BASIN YIELD

To evaluate whether falling groundwater levels are likely to cause an undesirable result (i.e., whether the basin is presently in overdraft), a basin's water levels are evaluated over at least one complete hydrologic cycle to establish a trend. Since hydrologic conditions vary throughout each year and over long periods of time spanning multiple years, conditions must be analyzed over a long period (generally several decades) to accurately determine if the yield has been exceeded such that overdraft is present. If the trend suggests a continual drop in water levels over time, even after wet year conditions, then undesirable results are likely to eventually occur and the basin is considered to be in a state of overdraft.

Methods to determine basin yield include (e.g., Bachman et al, 2005):

- Hydrologic balance,
- Change in groundwater levels over an average hydrologic base period,
- Zero net groundwater level fluctuation,
- The correlation between groundwater levels and extractions,
- Change of storage vs. extractions,
- Calculation of groundwater inflow,
- Groundwater modeling,
- Annual retained inflow and change in groundwater levels,
- Pumping trough in a coastal aquifer (basin yield is exceeded if pumping trough at the ocean creates conditions for seawater intrusion).

The yield calculation for the 1985 FCGMA Management Plan used the hydrologic balance method – summing up all the water inputs and outputs to determine how much could be extracted from the basins. The calculation was not done over a period of wet and dry years, which is the current standard. The basin yield for this Management Plan was calculated using

the groundwater modeling method. This method integrates aspects of some of the other methods:

- A hydrologic balance is calculated in the model;
- One of the model outputs is a change in groundwater levels over an average hydrologic base period; and
- A pumping trough in a coastal aquifer is one of the criteria to determine if the basin yield has been exceeded.

The groundwater model technique is more rigorous than the 1985 hydrologic balance calculation because the calculation of a water budget depends upon inputs and outputs (Table 7) to the groundwater basins which can be difficult to estimate independently. The groundwater model also has similar inputs and outputs, but the groundwater model is calibrated to match actual measured groundwater levels over a long period of wet and dry years. This calibration of the groundwater model lessens some of the potential errors in a water budget calculation.

Model Parameter	Input	Output
Aquifer geometry	Yes	
Recharge, discharge areas	Yes	
Aquifer properties (e.g., transmissivity, storage coefficient)	Yes	
Boundary conditions at edge of model	Yes	
Faults	Yes	
Rainfall percolation	Yes	
Streamflow	Yes	
Recharge from adjacent bedrock	Yes	
Irrigation return flow	Yes	
Artificial recharge	Yes	
Pumping	Yes	
Groundwater elevations	For calibration	Yes
Groundwater flow from one area to another (horizontal & vertical)		Yes

Table 7. Inputs and outputs from groundwater flow model (Ventura Regional Groundwater Model).

The groundwater model used was constructed by the U.S. Geological Survey as part of their RASA study (Hanson et al, 2003), which has since been updated and upgraded by UWCD. The groundwater model is described in more detail in Appendix B. The model was also used to test the efficacy of various management strategies. The base period used for the model runs was 1944 to 1998, which encompasses several wet and dry cycles; this period was also used as a base period in the Santa Paula basin and Santa Maria basin adjudications during the last decade. The base period is only used in the model to simulate the natural hydrology over the 55-year period – modern and future man-made inputs and outputs such as water facilities, pumping, and artificial recharge are added to the model to determine both the current state of the basin and the future state of the basin with new management strategies applied.

There is little doubt that the coastal basins within the FCGMA have exceeded their yield and been in overdraft for several decades. The over-arching undesirable result of lowered groundwater levels has been seawater and other saline intrusion. A key aspect of the modeling was to determine the basin yield such that these undesirable results caused by lowered groundwater levels were eliminated.

Basins within the FCGMA that do not abut the coastline and do not themselves have saline intrusion cannot be evaluated directly for this undesirable result. The 1985 FCGMA Management Plan handled this by treating all the basins of the FCGMA as a common pool – an action in one of the basins would also affect the other basins – so pumping in one basin affects groundwater levels in adjacent basins. There is ample evidence that this proposition continues to be correct, with potentially two exceptions (East and South Las Posas basins). The Oxnard Plain Forebay, Pleasant Valley, West Las Posas, and Santa Rosa basins are all hydrologically connected to the coastal basins, evidenced by the continuity of groundwater elevation contours across their boundaries. The East and South Las Posas basins appear to be hydrologically disconnected within the subsurface from the other basins, separated from adjacent basins by either the north-south fault between the East and West Las Posas basins or a structural discontinuity between the basins and the northern Pleasant Valley basin at LAS depths. Thus, in this Management Plan, the East and South Las Posas basins are combined in determining basin yield and the remaining basins are combined for the same purpose. An example of this combination is the Oxnard Plain Forebay basin – although the basin regularly fills during wet periods, it is so directly connected to the Oxnard Plain basin (there are no hydrologic barriers preventing flow between the basins) that it is not considered separately in determining basin yield.

To determine the yield of the two sets of basins, groundwater levels calculated by the groundwater model for the 55-year forward model period were then compared to the section 6.0 *Basin Management Objectives* in the various basins to determine how close the modeled groundwater levels were to the objective groundwater levels. Because the model simulates conditions over several wet and dry climatic cycles, average modeled groundwater levels were compared to the objectives. The following section summarizes the results of these comparisons.

The basin yield calculation was accomplished in several steps:

1) The groundwater model was run in its 55-year forward model configuration (see Appendix B) with current management strategies included. If modeled groundwater levels were at or higher than Basin Management Objectives for more than half of the time, then undesirable effects such as seawater intrusion were less likely to occur and the basins were considered to be operated within their yield. If not, then the basins were considered to be operating in excess of their yield.

2) Groundwater extractions in the basins were either increased or decreased by stepwise amounts to determine the amount of pumping that would meet the criteria of modeled groundwater levels being at or above BMOs for more than half of the time, but not exceed, BMOs. Extraction were modified in two ways: a) changes were made proportionately to all wells in the basins within the FCGMA, and b) changes were made only in portions of the basins that were tailored to prevent undesirable effects (e.g., extractions were reduced in the south Oxnard Plain and Pleasant Valley only).

3) As an additional calculation, all of the management strategies in this Management Plan were combined in one model scenario to simulate whether Basin Management Objectives can be met when all the strategies were applied – in other words, can these objectives be met with the tools that may be available.

7.4 BASIN YIELD

When current strategies were applied in the Base Case groundwater model run (see Appendix B), groundwater levels in the Upper Aquifer System met or exceeded BMOs 51% of the time and in the Lower Aquifer System 5% of the time. These results are consistent with observed groundwater conditions today, where groundwater levels are close to BMOs in the Upper Aquifer (and seawater is largely being held back) and significantly below BMOs in the Lower Aquifer. Thus, both the model results and observed groundwater levels indicate that the basins within the FCGMA are not being operated within their yield under the current pumping patterns and management strategies – lowered groundwater levels create undesirable effects such as saline intrusion.

To determine basin yield, pumping was then reduced step-wise in the forward model until BMOs were met at least half the time during the model simulation. As indicated above, two methods of pumping reductions were used – GMA-wide and targeted only to the south Oxnard Plain and Pleasant Valley basins. The results of these model runs are shown in Figure 26.

Figure 26 indicates that when progressively greater pumping reductions are applied to all wells within the FCGMA, Lower Aquifer BMOs are attained at least 50% of the time when FCGMA pumping is reduced to about 65,000 AFY – about half of current average pumping. When the reductions are limited to the south Oxnard Plain and Pleasant Valley basins, overall FCGMA pumping is reduced to about 100,000 AFY to attain the same Lower Aquifer BMO goals. Because the significant lowering of groundwater levels has occurred in the south Oxnard Plain and Pleasant Valley areas, it is appropriate that this is where pumping reductions should occur, as they have through historic in-lieu water deliveries. Thus, 100,000 AFY appears to be an appropriate number for basin yield.

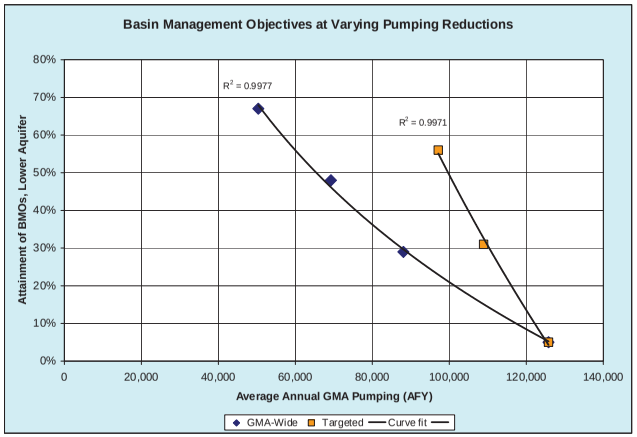


Figure 26. Groundwater model results from progressively reducing FCGMA pumping both agency-wide (diamond symbol) and targeted to the south Oxnard Plain and Pleasant Valley basins (square symbol). Results are indicated as percent of time that BMOs are met or exceeded in the Lower Aquifer System. R^2 values are indicated for the two curve fits.

There are three caveats to this calculation of basin yield:

1) Overall pumping in the south Oxnard Plain and Pleasant Valley areas was reduced by about 25,000 AFY (an 85% reduction). There are several approaches to achieve this reduction, with replacing the pumping with in-lieu deliveries being the primary historic method that is also favored in the management strategies discussed in this Plan.

2) The yield of the basins is not a forever-fixed number, but depends upon the projects in the basin – increasing the amount of recharge in the basins also increases the yield of the basins. Therefore, the yield of the basins must be recalculated periodically as new projects become operational and conjunctive use is increased.

3) When Lower Aquifer BMOs are attained 50% of the time, there should be no net movement of seawater within the aquifers. However, during dry periods there would be onshore gradients and during wet periods there would be offshore gradients. Thus, seawater may move landward during the dry periods and be pushed back during wet periods (which has been evident over the past 15 years at coastal Port Hueneme). To create conditions such that seawater could never move landward, the Lower Aquifer goals would have to be met nearly 100% of the time – an unrealistic goal that would require very large pumping reductions and create conditions where large quantities of fresh water were flowing to the ocean almost all the time. The 50% attainment of BMOs should be considered as an initial target level, but should be revisited as that goal is approached to ensure that it is sufficiently protective of the aquifers. If water quality problems continue as the 50% attainment level is approached, an increase in the attainment level should then be considered. Thus, the basin yield of 100,000 AFY that is tied to the 50% attainment level may have to be adjusted in the future.

An additional basin yield task was to apply all the future management strategies into one simulation of the model to determine whether Basin Management Objectives could be met if these strategies were in place. After applying the management strategies discussed in section 9.0 *Management Strategies Under Development* and section 10.0 *Potential Future Management Strategies*, the groundwater modeling indicates that Upper Aquifer BMOs could be met 67% of the time and Lower Aquifer BMOs could be met 76% of the time. Thus, application of the management strategies in this Plan apparently can solve the overdraft within the FCGMA.

8.0 CURRENT GROUNDWATER MANAGEMENT STRATEGIES

This Plan evaluated three types of management strategies for effectiveness: 1) currently implemented management strategies; 2) strategies under development where some action has already been taken to design and implement those strategies; and 3) potential future management strategies. Current strategies were evaluated by measuring their effect on changing groundwater levels and improving groundwater quality. Proposed and future strategies were evaluated using the Ventura County Regional Groundwater Model (an empirical computer simulation of groundwater flow described in Appendix B).

Several management strategies were adopted as part of the original 1985 FCGMA Management Plan. In addition, several other strategies were also implemented in the ensuing period since 1985. The previously-adopted 1985 FCGMA management strategies are discussed first, followed by the additional strategies. The effectiveness of these management strategies is then evaluated in the following discussion.

8.1 DESCRIPTION OF 1985 FCGMA MANAGEMENT PLAN STRATEGIES

The original 1985 FCGMA Management Plan specified several management strategies that would be implemented. These included the following general strategies.

8.1.1 Limitation of Groundwater Extractions

The most visible of the FCGMA strategies was the phased reduction in pumping within the FCGMA, implemented under FCGMA Ordinance No. 5 (now Chapter 5 within Ordinance No. 8.1). This strategy called for a 25% pumping reduction over a 20-year period via phased 5% incremental cutbacks to Historical Allocations every 5 years. As part of this strategy, pumping allocations, conservation credits, and agricultural irrigation efficiency allowances were implemented. To allow inherent flexibility, the Ordinance provides for Historical Allocation adjustments of no more than two acre feet per acre when land use changes from farming to municipal/industrial. A Baseline Allocation of one acre foot per acre was established for lands without allocations or lands that were developed after the baseline period ended in 1989 and were dependent upon groundwater. In addition, an Efficiency Allocation that allows farmers sufficient allocation to grow different crops as long as they remain at least 80% efficient (less than 20% of irrigation water runs off, leaches, or goes to deep percolation). Baseline and Efficiency allocations are exempt from the mandatory 25% reductions. To discourage overpumping, the FCGMA Ordinance imposes an extraction surcharge on all water pumped in excess of the annual allocation. The penalty initially ranged from $50/AF to $200/AF under a four-tiered system; however, that system was modified in favor of a single flat rate that was adjusted upward to $725/AF.

Ordinance No. 5, now part of Ordinance No. 8.1, also has a provision for establishing Conservation Credits by extracting less groundwater than the Historical Allocation. Conservation Credits can be used to avoid paying penalties when extractions exceed the allocation. A second type of credit, Injection or Storage, may be established and applied to future extractions when foreign water is injected or percolated into the aquifer. Conservation credits are allowed to accumulate with no restrictions, allowing some pumpers to accumulate credits for tens of thousands of acre-feet of water.

The required phased 5% reductions occurred in 1992, 1995, and 2000 for a current reduction of 15% of allocation for pumpers using their Historical Allocation. The planned additional 5% reduction for 2005 has been delayed per a request from M&I well owners who have asked for a re-evaluation of the effectiveness of such reductions as part of formulating this Management Plan.

8.1.2 Encourage Both Wastewater Reclamation and Water Conservation

The Ventura County Planning Department prepared a “Water Conservation Management Plan” which recommended various voluntary measures that could be employed to conserve water. Many farmers, individual households, and cities have adopted voluntary agricultural and urban water conservation programs. For several years, in the late 1980s and early 1990s, the County Planning Department designated Planner positions as “Water Conservation Coordinators.” This program no longer has funding, but the water conservation program created material that continues to be distributed to schools and the public.

A Countywide Wastewater Reuse Study, prepared in 1981, identified wastewater reuse opportunities in the Las Posas Valley from either the Simi Valley Wastewater Treatment Plant or the Moorpark Wastewater Treatment Plant, and identified an opportunity to use recycled

wastewater from the Thousand Oaks/Hill Canyon Wastewater Treatment Plant for irrigation on the Oxnard Plain. Since that report, the Moorpark Wastewater Treatment plant has upgraded to tertiary disinfection and a portion of the recycled water is supplied for irrigation to nearby golf courses. The Thousand Oaks/Hill Canyon project (now known as the Conejo Creek Diversion project) has been in operation for several years; it is discussed in the following section. In addition, the City of Oxnard's proposed recycled water project is discussed in section 9.1 GREAT Project (Recycled Water).

8.1.3 Operation of the Oxnard Plain Seawater Intrusion Abatement Project (UWCD's Pumping Trough Pipeline, Lower Aquifer System Wells, Freeman Diversion) –

The Pumping Trough Pipeline (PTP) was constructed in 1986 to convey diverted Santa Clara River water to agricultural pumpers on the Oxnard Plain, thus reducing the amount of groundwater extractions in areas susceptible to seawater intrusion (Figure 27). When river water is not available, five Lower Aquifer System wells pump water into the pipeline. The Freeman Diversion (1991), which replaced the former use of temporary diversion dikes in the Santa Clara River with a permanent concrete structure, now allows for diversion of river storm flows throughout the winter rainy season. As a side benefit, the Freeman Diversion helped stabilize the riverbed after years of degradation caused by in-stream gravel mining. The permanent Freeman Diversion increased the yield of the Seawater Intrusion Control Project by about 6,000 AFY over the previous means of temporary diversion.

8.1.4 Operating Criteria for the Oxnard Plain –

The combination of FCGMA policies and water conservation facilities have effectively moved pumping away from the coastline and from the Upper Aquifer System to the Lower Aquifer System. The switch in aquifer pumping is discussed in the next FCGMA strategy. The effectiveness of these criteria is discussed in section 8.3 Effectiveness To-Date of Current Management Strategies.

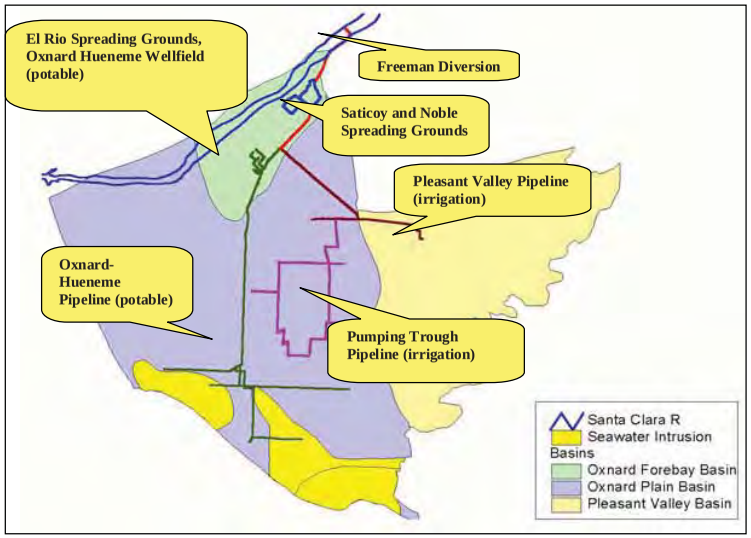


Figure 27. Elements of the Seawater Intrusion Control Project on the Oxnard Plain.

8.1.5 Construction/Modification Restrictions on Upper Aquifer System Water Wells –

In areas where they could cause overdraft or seawater intrusion in the Oxnard Plain basin, the County adopted a well ordinance that prohibited new wells in the Upper Aquifer System in the Oxnard Plain basin, instead requiring new and replacement wells to be drilled in the Lower Aquifer System. The effectiveness of this strategy is discussed in section 8.3 *Effectiveness To-Date of Current Management Strategies*.

This policy has now been shifted. A new policy for areas where pumping could cause overdraft or seawater intrusion in the Oxnard Plain basin (especially in what are called Sealing Zones 1 and 2 where multiple aquifer layers exist) was adopted by the County. This new well ordinance, adopted in 1998, prohibited new wells in the LAS beneath the Oxnard Plain, instead requiring new and replacement wells to be drilled into the more-easily replenished UAS. This shift in pumping was effected by a change in the County Well Ordinance to institute a complete reversal in which aquifers are targeted for production based on findings from the U.S. Geological Survey RASA study and observations from the network of monitoring wells. Since the County Well Ordinance was revised in 1998, only replacement wells or situations with no other water supply option available may tap into the LAS beneath the Oxnard Plain.

8.1.6 Annual Groundwater Monitoring Program

The FCGMA and UWCD participated with the USGS in installing (circa 1990) a series of multiple-completion nested monitoring wells along coastal areas of the Oxnard Plain basin and

in a few inland areas. These wells allow measurement of groundwater levels and sampling of water quality at two to six discrete aquifer depths at each well site. These wells, in addition to a wide range of productions wells, are now being monitored at regular intervals by VCWPD and UWCD. The VCWPD findings are entered into a database and published as supporting data in various reports on water quality, groundwater basins, or special subject or area studies. UWCD enters its monitoring data into a database that is then augmented by monitoring data from VCWPD and California Department of Health Services (public supply wells). UWCD conducts an annual evaluation of all the monitoring results in its database and prepares an annual report that is available on UWCD's website (www.unitedwater.org).

8.1.7 Contingency Plan for LAS Seawater Intrusion

Although it was hoped that such a plan would never be needed, the FCGMA staff developed an as-yet-unfinished and informal contingency plan that consists of a list of possible measures that could be instituted to address intrusion of seawater into the LAS. The list items were only to be offered to the FCGMA Board as possible countermeasures in the event of a severe water quality decline in a significant number of LAS wells. This list included suggestions such as managing the intruded basin in a separate management scheme, further reductions in LAS well Historical Allocations, possible groundwater use restrictions by maximum volume per acre served (in the case of irrigated lands or per resident or dwelling unit in the case of urbanized areas), a complete ban on all future LAS wells regardless of need or circumstance, monetary or other potential incentives to encourage LAS well owners to destroy wells in favor of other possible water sources, and other such means of LAS management.

8.1.8 North (now called East and West) Las Posas Basin Pumping Restrictions

The FCGMA adopted Ordinance No. 4 (now Chapter 4 within Ordinance 8) that prohibits expansion of water use outside the Las Posas Basins and/or the Agency boundary, especially on the sensitive Aquifer Outcrop Zone or Expansion Area. The Aquifer Outcrop Zone is that land or geographic area where the Fox Canyon and/or Grimes Canyon aquifers reach the ground surface and are exposed as outcrops. Ordinance 4 restricts or precludes use of any harmful land uses in this zone (such as impervious surfaces, septic systems, pesticides, fertilizers, or groundwater withdrawals), because this area acts as a direct conduit to the usable aquifer water stored at depth. The Expansion Area was defined as that portion of land from the crest of the hill or 1.5 miles beyond the Agency boundary (northernmost extension of the Aquifer Outcrop) that drains into the Agency. Because groundwater quality protection and prevention of volume exports are the prime subjects of these laws, the Expansion Area was officially designated as an official Sphere of Influence zone by the Ventura LAFCO (Local Area Formation Commission). No wells, no additional agriculture, and only very limited single family home development is allowed in these areas, and only under special restrictions and circumstances.

8.1.9 Monitor FCGMA Groundwater Extractions to Ensure That They Do Not Exceed Adopted Projections for That Basin

The FCGMA requires semi-annual reporting of extractions from pumpers within the Agency as part of the measures instituted within Ordinance No. 5 (now Ordinance No. 8). These data are entered into a database maintained by the FCGMA. Individual operator annual extractions are compared against allowed allocations or irrigation efficiency at the end of each calendar year to determine whether well operators are within their allowed pumping. As discussed under the first

strategy on limitations of groundwater pumping, penalties are assessed for overpumping, and credits are posted for conservation or storage.

8.1.10 Implementation of Drilling and Pumping Restrictions

This strategy is discussed as part of several of the strategies above and is supported by the County Well Ordinance and the cooperation of water districts and well owners.

8.1.11 Metering of Groundwater Extractions

As part of the original Ordinance No. 5, extractions must be reported to the FCGMA on a semi-annual basis. Ordinance No. 3 (now Chapter 3 within Ordinance No. 8) required water flow meters to be installed at owners' expense on all groundwater pumps except domestic users on one acre or less. Not all pumpers have installed meters or use their meter readings to report extractions. Resolution 2006-1 requires periodic accuracy calibration of every water flow meter by independent testing agents. This Resolution also tightened requirements and imposed restrictions on well extraction reporting in addition to adding more strict penalties for non-compliance.

8.2 DESCRIPTION OF OTHER CURRENT STRATEGIES

There are several other groundwater management strategies that have been implemented within the FCGMA area that were not foreseen when the original management plan was formulated some 20 years ago. These include:

8.2.1 Fox Canyon Outcrop Expansion Area

A buffer zone ("Expansion Area") along the outcrops of the Fox and Grimes Canyon aquifers, which are adjacent to and outside of the FCGMA boundaries, was established in 1997. This zone was established to protect any land uses on the outcrop or within the Agency that might adversely affect groundwater recharge, groundwater extractions, or water quality.

8.2.2 Noble Spreading Basins

The Noble Spreading Basins (1995), across Los Angeles Avenue opposite UWCD's Saticoy Spreading Grounds, were constructed to store and recharge additional Santa Clara River water diverted at the upstream Freeman Diversion, particularly during wet periods. These relatively shallow basins were reclaimed gravel pits purchased by UWCD and reconfigured as water spreading basins. Water placed in the facility recharges both the Upper Aquifer System and the Lower Aquifer System. The ten-year average for the facility is 6,000 AFY, with individual years varying from 0 AF to 17,800 AF.

8.2.3 Las Posas Basin ASR Project

The FCGMA in 1994 approved Calleguas MWD's Las Posas Basin Aquifer Storage and Recovery (ASR) project as an Injection/Storage Facility. This allowed Calleguas MWD to receive Storage Credits for water recharged as part of the project. Conditions of the approval included registration of the injection/extraction wells, monthly reporting of injection/extraction volumes, water quality requirements for injected water, a limit on the amount of water in storage (300,000 AF), required points of extraction, a limitation to use the stored water only within Ventura County, periodic review of injection/extraction effects, and an agreement to halt operations if any conditions are not met. As of 2006, Calleguas MWD has stored over 60,000

AF of water through in-lieu deliveries to basin pumpers and direct injection. Although most extractions have been for testing and maintenance purposes, full-scale extractions occurred during January 2007 to supply customers during a scheduled maintenance shut-down of the supply line bringing State Water to Calleguas MWD.

8.2.4 Conejo Creek Diversion Project

The Conejo Creek Diversion Project (2002), constructed by Camrosa Water District just south of where Highway 101 crosses Conejo Creek, diverts flows from the creek and delivers the water to Pleasant Valley County Water District to meet local irrigation demands within the overdrafted Pleasant Valley basin. The water diverted from the creek is a combination of natural stream flow and recycled water released into the creek from wastewater treatment plants upstream. This diverted water replaces Lower Aquifer System pumping in the Pleasant Valley basin. The contractual amount of water from the diversion is 3,000 AFY (if available), although an average of 5,300 AFY has been diverted in the first four years of operations. These diversions may increase temporarily, but are likely to decrease over the next 20 years as the recycled water is used elsewhere by Camrosa Water District customers.

8.2.5 Supplemental M&I Water Program

The Supplemental M&I Water Program is operated through the Oxnard-Hueneme (O-H) Pipeline system. The joint UWCD-Calleguas MWD project uses FCGMA credits earned by Pleasant Valley County Water District from the Conejo Creek Diversion Project to supplement O-H water supply. This project effectively shifts Lower Aquifer System pumping in the Pleasant Valley basin to Upper Aquifer System pumping in the Oxnard Plain Forebay basin. The program is capped at 4,000 AFY and is only implemented in years when groundwater levels in the Forebay are sufficiently high to prevent harm to other Forebay pumpers. The program effectively reimburses Calleguas MWD for their investments in the Conejo Creek project, a precedent that may allow similar types of projects in the future.

8.2.6 Saticoy Wellfield

The UWCD Saticoy Wellfield (2005) was constructed adjacent to the UWCD Saticoy Spreading Grounds to pump shallow water from the recharge mound underlying the spreading grounds in wet years and deliver the water to users along United's existing agricultural pipeline system (Pleasant Valley and PTP pipelines). This pumping from the Oxnard Plain Forebay basin decreases the recharge mound, allowing more spreading and groundwater recharge from the basins during wet periods. The water produced by the pumping in the Forebay replaces LAS groundwater pumping along the Pumping Trough Pipeline (PTP) and Pleasant Valley (PV) Pipelines.

8.2.7 Importation of State Water

The County of Ventura holds a State Water allocation of 20,000 AFY administered by the California Department of Water Resources (DWR). This allocation is divided among UWCD, the City of Ventura, Port Hueneme Water Agency (as a sub-allocation of UWCD's portion), and Casitas MWD. UWCD uses its allocation to supplement recharge to the aquifers along the Santa Clara River within Ventura County. UWCD's 3,150 AFY allocation (UWCD's allocation was 5,000 AFY, but the Port Hueneme Water Agency acquired 1,850 AFY of the allocation) is ordered from DWR during normal and dry years for delivery to Lake Piru via stream releases from the DWR-operated Lake Pyramid downstream along Piru Creek. This State Water is then released from Lake Piru as part of UWCD's normal conservation release in the late summer and fall. As this water flows down Piru Creek and the Santa Clara River, a portion of it percolates into the groundwater basins along the river (Piru, Fillmore, and Santa Paula) and a portion reaches the Freeman Diversion for recharge to the Oxnard Plain.

This recharge is not credited by the FCGMA to UWCD directly, but based on many years of study, measurement, and computer modeling, the portion of the DWR purchased water that ultimately reaches the Freeman Diversion is credited as new or foreign water. The credits are placed in a UWCD-held trust fund that may be used in the future to solve common FCGMA management issues that are beneficial to the aquifers within the Agency. The Port Hueneme Water Agency's 1,850 AFY is delivered via Calleguas MWD's conveyance facilities. Except for 2,000 AF imported in 2002, no other portion of the 20,000 AFY entitlement has ever been imported to Ventura County, although annual capital costs continue to be paid to DWR to maintain this Allocation. Additional importation of State Water is discussed in section 10.0 *Potential Future Management Strategies*.

8.2.8 Additional Groundwater Monitoring

As saline intrusion has encroached further inland beneath the south Oxnard Plain, saline waters have moved eastward of the existing monitoring well network in some areas. In 2006, UWCD will install two additional nested monitoring well sites north of Mugu Lagoon, with funds obtained from a Department of Water Resources grant. These monitoring wells will be incorporated into the monitoring network and sampling protocol for the existing dedicated monitoring wells.

8.2.9 Calibration of Groundwater Extraction Meters

Resolution 2006-1 was adopted by the FCGMA Board that will phase-in a flow meter calibration and inspection program over three years. After the phase-in, each meter will be required to be checked at 3-year intervals.

8.3 EFFECTIVENESS TO-DATE OF CURRENT MANAGEMENT STRATEGIES

The management strategies applied over the past 20 years to combat seawater intrusion have resulted in significant changes in water levels and in water quality indicators in the FCGMA aquifers. Conditions in the Upper Aquifer System (UAS) have improved with groundwater elevations increasing to, or exceeding, acceptable levels and chloride-impacted water decreasing in both concentration and geographic extent in most areas. However, water quality conditions in the Lower Aquifer System (LAS) have worsened over this same time period. Specifically, LAS groundwater elevations in the southern portion of the Pleasant Valley Basin and southern Oxnard Plain Basin have decreased and remained well below sea level and salinity has increased in both concentration and geographic extent. This has occurred for two reasons. First, the combined UAS and LAS extraction in this area has exceeded levels the resource can support. Second, policies adding recharge to the UAS and switching pumping from the UAS to the LAS have relieved the stress on the Upper Aquifer but increased the stress on the Lower Aquifer.

The FCGMA policy of reduced pumping has had positive effects in all the aquifers. For pumpers using their Historical Allocation under Ordinance No. 5, there has been a pumping reduction in excess of the 15% currently required by the FCGMA. There have been only isolated incidents of pumping in excess of allocation, reflecting both the general acceptance of the pumping reductions and the stiff monetary penalty for overpumping. For agricultural pumpers using an Irrigation Efficiency calculation, pumping reductions have been even more dramatic. In a study using the FCGMA weather stations to calculate daily crop water demand, Agency-wide irrigation efficiency (measured by less reported water use compared to FCGMA-computed crop water demand) improved by about 30% during the first several years of the FCGMA pumping reductions (UWCD, 2002). The increased efficiency is consistent with the decreased extractions reported to the FCGMA over the last decade (see section 4.0

Groundwater Extractions). Widespread acceptance and installation of drip tape, micro sprinklers, mini sprinklers, leak repairs, computer controlled watering cycles, farm-operated weather stations to assist with irrigation frequency and duration, various ground-based moisture sensors and lysimeters, farmer and irrigation crew education, and a shift away from wasteful furrow irrigation or high volume sprinkler heads, along with reduction of tailwater losses have all contributed to the reduction in groundwater use.

One of the key hydrogeologic findings over the last 10 years indicated that a zone of lower conductivity (such as a fault or some other deformation) extends from the Camarillo Hills to Port Hueneme (aligned with the known location of the Simi-Santa Rosa fault in the Camarillo Hills) limiting the amount of recharge that can flow from the Oxnard Plain Forebay basin into the south Oxnard Plain and Pleasant Valley areas. This zone appears to be limited to the Lower Aquifer System, with no evidence that the lower conductivity zone extends upward into the Upper Aquifer System. In these areas of the LAS, extractions far exceed recharge, resulting in groundwater levels that have fallen to well below sea level from the ocean inland to the City of Camarillo. Three current projects recharge these critically overdrafted areas: diverted Santa Clara River water is delivered via the Pleasant Valley and Pumping Trough pipelines and diverted Conejo Creek water is delivered via the Conejo Creek project. These three projects deliver in-lieu recharge to the south Oxnard Plain and Pleasant Valley basins (the delivered surface water is used for irrigation in-lieu of pumping groundwater).

However, the Pumping Trough Pipeline (PTP) operated by UWCD provides mixed effects in reducing pumping in the Lower Aquifer System. The diverted Santa Clara River supplies delivered to PTP customers in-lieu of pumping groundwater have unambiguous benefits in helping to eliminate the pumping trough in the Upper Aquifer System and helping eliminate overdraft in the Lower Aquifer System. But the PTP project also has five LAS wells that provide irrigation water to customers along the pipeline when there are insufficient supplies in the Santa Clara River available for diversion and delivery. These wells were completed in the LAS because at the time the LAS was in better shape than the UAS. Since the UAS has substantially recovered from overpumping but the LAS has been severely depleted, these five LAS wells are no longer optimally-located; they now pump from the flank of the large pumping depression in the LAS of the south Oxnard Plain and Pleasant Valley basins. Thus, one of the previously-assumed solutions to reduce groundwater extractions within the pumping trough of the UAS has created new problems in the LAS. Some of this LAS pumping for the PTP project is being replaced by UAS pumping from the UWCD Saticoy Wellfield (located in the Oxnard Plain Forebay basin); this strategy should be maximized in the future.

One of the FCGMA strategies historically underutilized is the substitution of recycled water for groundwater pumping. The Conejo Creek project has begun the process of using recycled water which originates in the City of Thousand Oaks. Other recycled projects are not yet operational (e.g., see later discussion of the City of Oxnard's GREAT project).

The Ventura Regional Groundwater Model was used to test the future effectiveness of current projects to reduce the overdraft in the FCGMA basins. This analysis assumes that hydrological conditions of the past 50 years are similar to future conditions, that projects continue to be implemented as designed, and that FCGMA reported pumping is relatively accurate. This modeling indicates that when all current projects that implement the FCGMA Management Plan are operational, there will still be an overdraft in the basins within the Agency. With only current strategies in place, BMOs for groundwater levels would be met 51% of the time in the Upper Aquifer and 5% of the time in the Lower Aquifer (see Appendix B). This analysis is derived from the model Base Case, which uses reported pumping over the past 10 years as the basis for

modeled extractions. If actual pumping was higher than reported, then the model would have to be recalibrated to reflect this. A sensitivity analysis was conducted to examine the effect of understated pumping in the model (Appendix B, section A2.2.2 *Sensitivity Analysis – Understatement of Reported Extractions*), which indicated that if agricultural pumping was understated by 15% (caused by poorly-calibrated meters or inaccuracies in other reporting methods), results from the current model could be up to 15 feet too high in the Lower Aquifer (the aquifers would be in worse shape than modeling suggested). If the model was recalibrated to reflect this understatement of pumping, these results would be corrected.

It is clear both from the modeling results and from the observation that BMOs are not being met in many areas, and that additional management strategies and projects must be initiated to alleviate this continued overdraft. The following sections address this need.

9.0 MANAGEMENT STRATEGIES UNDER DEVELOPMENT

There are several projects at various stages of development that will further reduce water supply and water quality problems within the FCGMA. Some of these projects follow the original management strategies of the Agency, whereas others deal with issues not contemplated in the original management plan. The strategies are presented in the order of their impact on the aquifer (high impact strategies are discussed first), with projects under development discussed in this section and future strategies discussed in the following section. The ranking of both strategies under development and future strategies that were amenable to testing with the groundwater model is indicated in Table 8. For strategies that could not be directly evaluated with the groundwater model (because there was no change in the place or amount of recharge or pumping), other ranking factors are discussed with each strategy.

Strategy	*UAS ΔWL*	*Meet UAS BMOs*	*LAS ΔWL*	*Meet LAS BMOs*
Current Strategies		**51%**		**5%**
Barrier Wells	+11'	63%	+46'	48%
GREAT Project	-1'	51%	+38'	36%
Injection River Water	+1'	53%	+7'	11%
Shift Pumping UAS	-1'	50%	+8'	9%
Increase River Diversions	+3'	54%	+3'	8%
Addtl Recharge S Oxnard	+1'	53%	+4'	7%
Continue 25% Reduction	+1'	53%	+2'	7%
Import State Water	+2'	54%	+1'	7%
RiverPark Recharge	<1'	52%	<1'	6%
Shift Pumping NW Oxnard	<1'	51%	<1'	5%
All Strategies	**+15'**	**67%**	**100'**	**76%**

Table 8. Ranked results of groundwater modeling of management strategies amenable to evaluation with the groundwater model. The table indicates the average change in groundwater levels expected in each aquifer at the wells for which there is a BMO for each strategy. The table also indicates the average amount of time that groundwater levels were at or above BMOs for each aquifer (see discussion of this technique in section 6.0*Basin Management Objectives*).

9.1 GREAT PROJECT (RECYCLED WATER)

The GREAT (Groundwater Recovery Enhancement and Treatment) project is ranked highest of the projects under development because of its effectiveness in reducing Lower Aquifer overdraft (see Table 8). However, the most effective portion of the project would occur at 10 to 15 years from now, when all components of the project are scheduled to be in place.

9.1.1 Description

The project is being designed and implemented by the City of Oxnard. The project has three major components: 1) a new regional groundwater desalination facility; 2) a recycled water system to deliver water to M&I non-potable water uses within the City of Oxnard, to deliver water to agricultural users in the Pleasant Valley area, and to inject water as a barrier to seawater intrusion; and 3) conveyance of desalination backwash concentrates through a brine line to either the City's existing ocean outfall or the Ormond Beach area for coastal wetland restoration. Potable water supplies for the City would then be pumped from the Forebay by utilizing FCGMA credits earned from both direct recharge (barrier wells) and in-lieu recharge (M&I non-potable and agricultural deliveries). This Forebay supply could be pumped from existing Oxnard-Hueneme system UAS wells, existing City wells, and/or new City wells. The FCGMA would have to approve recharge and pumping facilities, as well as implement policies discussed later in this section.

The project will be constructed in phases, with project yield ramping up over time from around 5,000 AFY to more than 21,000 AFY. Actual timing of construction will depend upon projected growth in water demand and funding. This project implements the strategy of pumping groundwater from areas of the aquifer readily recharged and reducing pumping in areas of the aquifer that are more difficult to recharge. In addition to offsetting existing potable water demands with recycled water supplies, this is accomplished by supplying in-lieu and injected recharge to the Pleasant Valley basin and south Oxnard Plain areas where it is needed most. A similar amount of water would be pumped from the Oxnard Plain Forebay basin. This strategy moves a considerable amount of extractions from areas that are overpumped to the easily-recharged Oxnard Plain Forebay basin.

Because M&I non-potable and agricultural demand is lower in the winter and recycled water cannot be effectively utilized during that time, a direct recharge component is necessary to accommodate the winter quantities of recycled water. A configuration of injection wells along Highway 1 and Hueneme Road was examined using the Ventura Regional Groundwater Model; this conceptual configuration is discussed in the EIR for the GREAT Project (City of Oxnard, 2005). Injecting water during only a portion of the year is less effective than with full-time injection; the addition of supplemental waters to use for injection is discussed as another strategy of this management plan.

Two FCGMA policy issues need to be addressed relative to the GREAT project. The FCGMA has allowed a one-for-one earning of storage credits – one acre-foot of stored water equals one acre-foot of storage credits – that has been applied to such projects as Calleguas MWD's Las Posas ASR project. When water is injected into a groundwater barrier to contain saline intrusion, however, some of the injected water will likely be tainted by the saline waters. The policy question then becomes whether the entire injected water should earn one-for-one storage credits; this is largely a policy decision rather than a technical decision.

The other FCGMA policy issue relates to pumping the storage credits from the Oxnard Plain Forebay basin. Moving the location of pumping to the Forebay is beneficial to the Pleasant Valley and Oxnard Plain basins, providing that the added pumping stress in the Forebay can be accommodated. For other strategies that involve pumping in the Forebay (e.g., Saticoy Wellfield, Supplemental M&I Water Program), there is a caveat that pumping not occur when groundwater levels have dropped below a threshold that applies to the use of water from the Freeman Diversion as a grant condition from the State Water Resources Control Board (available Forebay storage of 80,000 AF, using two index wells). Such a caveat is also appropriate for the GREAT project. The City of Oxnard can accommodate such an operational requirement by shifting its pumping to wells in the Oxnard Plain just outside of the Forebay when groundwater levels are low in the Forebay. The FCGMA should implement a general policy for all projects that shift pumping from overdrafted areas to the Forebay.

In addition, there are water quality concerns with injection of recycled water. The GREAT project will be performing a Title 22 analysis to permit this injection, which is administered by the Los Angeles Regional Water Quality Control Board with input from the California Department of Health Services. Water quality monitoring will be required by the permit; the FCGMA should review any proposed monitoring and comment to the Regional Board as needed.

9.1.2 Potential Effectiveness

This planned GREAT project would implement one of the strategies likely to be successful in restoring groundwater levels in the Pleasant Valley and Oxnard Plain basins. As part of the EIR for this project, the Regional Groundwater Model was used to test the effects of the project. The project was tested both at the lower initial yield and at full implementation. The effectiveness of the project must be judged by balancing raising Lower Aquifer System water levels in the Pleasant Valley basin and south Oxnard Plain areas against lowering water levels in the Oxnard Plain Forebay basin. The groundwater model indicated water levels in the LAS beneath the southern Oxnard Plain basin and the Pleasant Valley basin would rise by as much as 70 feet, whereas UAS water levels in the Forebay basin would only drop by about 5 feet during wet periods and 20 feet during dry periods. Thus, the project will have to carefully balance the positive and negative effects on water levels. Potential mitigation of lowered water levels in the Forebay include inducing more recharge from existing facilities and from potential increased diversion rights at the Freeman Diversion. The results of the groundwater modeling suggest that BMOs for groundwater levels would be met 51% of the time in the Upper Aquifer (compared to 51% with current management strategies) and 36% of the time in the Lower Aquifer (compared to 5% with current management strategies) with full construction of the GREAT project.

If current recharge is reduced in the Forebay because of required fish flows or other reasons, then the Forebay basin may not be able to accommodate increased pumping, particularly in dryer periods. The City of Oxnard will conduct a monitoring program as part of the GREAT project to measure effects of the project. It would be prudent for the FCGMA to have a written agreement on operation of the GREAT project to ensure long-term operation of the project would continue to meet Agency strategies.

9.2 SOUTH LAS POSAS BASIN PUMP/TREAT

This management strategy is ranked high because it is in a mature stage of design and the problem that it aims to help solve is an ongoing problem for the Las Posas basin that needs a rapid solution to prevent further water quality degradation.

9.2.1 Description

As discussed in section 5.1.3 *High Salinity Associated with High Groundwater Levels*, high groundwater levels in the South Las Posas basin have apparently dissolved salts from the unsaturated portions of the shallow aquifer and created a mound of water more saline than ambient groundwater. One potential mitigation measure would be to pump the saline groundwater from the shallow aquifer, creating space in the aquifer thus allowing less-saline winter storm water to percolate into the aquifer. Under the current conditions, the majority of these winter flows now bypass the recharge areas because there is no available storage in the shallow aquifer. If implemented, this strategy would involve the pumped saline water being blended with low-chloride water and/or desalinated before delivery to customers.

Ventura County Waterworks Districts #1 (Moorpark) and #19 (Somis) are working with the Calleguas MWD to design and fund such a pilot project in the South Las Posas basin. The pumping associated with such a project would be in excess of current FCGMA allocations and would require approval of the FCGMA Board prior to implementation. Under FCGMA Resolution 2003-03, the Board indicated that upon its review and approval, it may change or alter an allocation for pumping from the South Las Posas basin to accommodate a responsible entity that submits a plan to render this groundwater usable. A general FCGMA policy for these types of projects in the future is discussed in section 11.3 *Recommended Additions to FCGMA Policies.*

9.2.2 Potential Effectiveness

The effectiveness of this particular strategy can be evaluated using two criteria. The first is the overall reduction in salts in the South Las Posas basin because higher-salinity groundwater is extracted and treated, removing salts from the system. The improvement in water quality in the basin would depend upon the amount of groundwater extracted and the amount of water recharged versus the ability of the aquifer or other sources to contribute additional dissolved salts. Another measurement of effectiveness would be the efficacy of drawing down the shallow groundwater to create space for recharge of better quality rain water. Greater drawdown could create conditions more favorable to recharge thus allowing more “fresh water” into the basin. It could also create space for addition salt-impacted waters. Thus, there are several factors that control the effectiveness of removing salts by pumping and treating the groundwater.

It is not possible at this time to adequately combine the factors to determine overall potential changes in water quality, although it is likely that dissolved salts removed during extraction and treatment would remove at least a portion of the salt load in the basin. Further analysis of nature and extent of the of the salts, quantification of the salt inputs (for example, mass balance), and evaluation of potential removal efficacy may be necessary to estimate the potential success of this strategy.

9.3 DEVELOPMENT OF BRACKISH GROUNDWATER, PLEASANT VALLEY BASIN

This strategy is also highly ranked because it can be implemented relatively quickly, may prevent water quality degradation in the northern Pleasant Valley basin, and would reduce pumping in the middle of the largest pumping depression in the Pleasant Valley basin.

9.3.1 Description

There are additional areas along Calleguas Creek besides the South Las Posas basin where groundwater has elevated salinity. Base flow from the Arroyo Las Posas has migrated completely across the South and East Las Posas basins and into the northernmost Pleasant Valley basin, providing a source of recharge to this portion of the Pleasant Valley basin. However, this recharge water has created water quality problems for groundwater pumpers. There are additional areas along Calleguas Creek besides the South Las Posas basin where groundwater has elevated salinity. Base flow from the Arroyo Las Posas has migrated completely across the South and East Las Posas basins and into the northernmost Pleasant Valley basin, providing a source of recharge to this portion of the Pleasant Valley basin. However, this recharge water has created water quality problems for groundwater pumpers. City of Camarillo wells in this area have experienced increased salts as groundwater levels have risen over the last decade (Figure 21), similar to the condition described in section 9.2 *South Las Posas Basin Pump/Treat*.

It is not yet clear if this recharge water from the Arroyo Las Posas will create a mound of poorer-quality groundwater that would move out into the main portion of the Pleasant Valley basin under recharge conditions. This would depend upon how well-connected the recharge area is to the main portion of the LAS in the Pleasant Valley basin. The City of Camarillo is considering a strategy to move some of its current pumping from the area of the LAS pumping depression in the central portion of the Pleasant Valley basin to the northern portion of the basin where rise in poorer-quality groundwater is being observed. Under this plan, the poorer-quality water would be extracted and desalinated in a similar manner to the South Las Posas basin project.

The City of Camarillo has assessed the feasibility of constructing a Groundwater Treatment Facility that would be located in the Somis Gap area of the Pleasant Valley Basin (Black and Veatch, 2005). The study determined the project to be technically feasible and would allow Camarillo to halt pumping from an area of the LAS with depressed groundwater levels and instead pump in an area of rising groundwater levels.

Camrosa Water District is considering another type of project that potentially develops the use of brackish groundwater. In an area of the eastern portion of the Pleasant Valley basin near California State University, Channel Islands along Calleguas Creek, Camrosa has been studying the possibility of extracting poor-quality Upper Aquifer(?) water, treating it, and putting it in their delivery system. This water, some of which was used historically, has risen to relatively high levels. Water quality monitoring in the adjacent main portion of the Pleasant Valley basin indicates that this poorer-quality water may not be migrating into the Lower Aquifer of the Pleasant Valley basin. Thus, there is the possibility this water could be pumped without lessening the supply to the Pleasant Valley basin. Some of this area is outside the FCGMA boundary.

Previously, both the potential Camarillo and Camrosa projects would have to be pumped using existing allocations if the well was within the FCGMA boundary. However, as FCGMA policy has evolved over time, pumping of poorer quality groundwater without an allocation has been evaluated on a case-by-case basis. A coordinated effort between the FCGMA and proponents of such projects in the Pleasant Valley basin should be undertaken to determine whether these projects are within this policy. Also, a feasibility analysis of these projects may be necessary to determine the potential net effects to the area and evaluate whether additional pumping would improve or degrade current water quality conditions. This FCGMA policy issue is discussed in more detail in Section 11.3 *Recommended Additions to FCGMA Policies.*

9.3.2 Potential Effectiveness

Pumping and removing salts from groundwater is an effective means of reducing the salt load in a watershed. If the areas from which the salts are removed are hydrologically connected to the main portions of the groundwater basins within the FCGMA, then this removal of salts could also have a positive impact. If the pumping of this poorer-quality groundwater does not affect the main groundwater basins, then these projects would have a neutral effect on the main groundwater basins while increasing the supply of available water. However, if these projects reduce the recharge to the FCGMA groundwater basins without also providing a significant benefit to water quality in these basins, than the projects could have a negative impact on the groundwater basins within the Agency. Any such projects would require monitoring of both water levels and water quality to determine their effect on adjacent areas of the basin.

The potential City of Camarillo project also has an element of moving existing pumping from the area of the Pleasant Valley basin near the Camarillo airport, which has the most-depressed groundwater levels, to an area more favorable for recharge along Arroyo Las Posas. The portion of the potential project related to the pumping reduction was tested using the Ventura Regional Groundwater Model (see Appendix B). Model results indicate that the worst portion of the pumping depression would be decreased considerably in size, leaving a smaller depression in the southern Pleasant Valley basin. The other element of the project, increasing pumping along the Arroyo Las Posas, cannot yet be tested effectively with the model. The model does not now capture the hydrogeology of the northernmost portion of the Pleasant Valley basin – a recharge area of the basin near Somis that is now apparent from monitoring data needs to be better understood and integrated into the model.

9.4 NON-EXPORT OF FCGMA WATER

This strategy is important in preventing additional un-authorized pumping within FCGMA basins, where additional strategies are required to mitigate current pumping. The strategy can also be implemented rather rapidly through FCGMA actions.

9.4.1 Description

Current policies and ordinances limit the use of groundwater produced from within the FCGMA to only those areas within the boundaries of the Agency with only rare exceptions. In 1997, original or prior historical uses outside the FCGMA boundary that were not known in 1985 were allowed through grandfathering of these uses. Since 1997, however, recent aerial photo analysis of new developments and additional crops grown near the FCGMA boundary indicate that there is a “fringe” of crops or additional lands being irrigated outside the boundary that are apparently being irrigated by groundwater produced from within the FCGMA. In most cases, these crops are contiguous across the FCGMA boundary from inside the boundary to outside the boundary; in some cases, the crops are grown on a parcel that spans the boundary. Some of these crops may have been planted in earlier years, but air photo analyses indicate that a portion of the crops have been planted in the last several years.

When the FCGMA was formed, it was envisioned that some undeveloped acreage within the FCGMA would be developed in the future and would create a new water use. A baseline allocation of one acre-feet per acre of water was to be allocated to any newly-developed lands. However, this baseline allocation was only for land within the FCGMA boundaries. If groundwater produced from inside the FCGMA boundaries was used on adjacent hillsides outside of the FCGMA boundary, this new irrigation would provide considerable extra draft on

the groundwater basins. This additional draft on the aquifers is counter to all the FCGMA policies aimed at reducing pumping in the overdrafted aquifers.

Preventing this additional draft on the aquifers is clearly a high priority of this management plan. It appears that current ordinances and policies of the FCGMA may be sufficient to deal with its export issue, but this should be reviewed. What is needed is a regular procedure to both educate pumpers of the export policy and to identify areas where this policy has been violated. It is recommended that the FCGMA developed such a procedure and determine how to address past and current violations of this policy.

9.4.2 Potential Effectiveness

Preventing additional draft on the groundwater basins of the FCGMA is equivalent in effectiveness to pumping reductions. Many of the areas where water is exported across the FCGMA boundary are adjacent to the Pleasant Valley and Las Posas basins where lowered groundwater levels are particularly apparent. Therefore, much of this additional draft on the groundwater basins is occurring in the areas of the aquifer that can least sustain them. This fact increases the effectiveness of preventing these water exports.

9.5 CONTINUATION OF 25% PUMPING REDUCTION

This strategy is already in place, but is being reviewed by the FCGMA Board.

9.5.1 Description

Current FCGMA management strategies include the 25% reduction in pumping allocation that was called for in the original management plan. This management strategy is to continue the planned reductions as they were originality intended -- the planned reduction to 20% of allocation occurring during 2007 (delayed from 2005) and the 25% reduction occurring according to the 2010 schedule. These reductions were to stay in force until the FCGMA basins are no longer in overdraft and there is sufficient water for recharge to compensate for the increased pumping created when the restrictions are removed.

9.5.2 Potential Effectiveness

The original 25% pumping reduction has had the effect of reducing both M&I pumping and agricultural pumping (see section 8.3 *Effectiveness To-Date of Current Management Strategies*). The effect of continuing the phased reductions to the full 25% reduction was modeled using the Ventura Regional Groundwater Model. This model scenario assumed that pumping reductions beyond the current 15% reduction were applied only to M&I pumping; it was assumed that any agricultural wells currently using their reduced pumping allocation for FCGMA reporting would simply shift to an efficiency calculation, rather than further reduce pumping. The results of the modeling suggest that these additional pumping reductions, which amount to 3,800 acre-feet per year throughout the FCGMA, would raise groundwater levels in the Upper Aquifer System by a little over one foot at the Port Hueneme coastline and raise Lower Aquifer System groundwater levels by an average of a little over two feet. BMOs for groundwater levels would be met 53% of the time in the Upper Aquifer (compared to 51% with current management strategies) and 7% of the time in the Lower Aquifer (compared to 5% with current management strategies).

9.6 RIVERPARK RECHARGE PITS

This strategy is being implemented through a Joint Powers Agreement between the City of Oxnard and United Water Conservation District.

9.6.1 Description

Decades of relatively unrestricted deep gravel mining beginning in the 1950s created a series of large open pits (formerly owned by S.P. Milling) along the Santa Clara River within the Oxnard Plain Forebay basin that are now unused and expose groundwater in the pits to evaporation and potential contamination. As part of an agreement between the City of Oxnard, a developer (RiverPark), the FCGMA, County of Ventura, and UWCD, these pits are being stabilized and urban surface drainage is being diverted away from the pits. If all the work on the pits is accomplished appropriately, the plan is to have UWCD operate the pits as a recharge and storage facility. UWCD would build a water conveyance system that would allow flood flows diverted at the Freeman Diversion to be transported to the RiverPark pits for recharge. These facilities would allow increased diversions of the Santa Clara River; silt-laden river water could be diverted and recharged, water that now must be bypassed and which flows to the ocean following large rainstorms.

Use of the RiverPark pits serves two purposes for the aquifer. First, the facilities will allow additional recharge to the aquifers from silty water that is now bypassed at the Freeman Diversion. Second, the project moves a portion of the Forebay recharge further down-gradient in the basin, away from the recharge mound that forms in the upgradient portions of the Forebay basin beneath the UWCD Saticoy Spreading Grounds. Thus, more recharge water will infiltrate into the Forebay during wet years, a time when a recharge mound builds in the upgradient portion of the basin and reduces recharge rates in existing spreading facilities. No FCGMA policy changes would be required to implement this project.

9.6.2 Potential Effectiveness

UWCD has analyzed the effectiveness of the RiverPark recharge project by combining UWCD's surface water model with the Ventura Regional Groundwater Model. This modeling suggests the yield of the project could be as much as 4,000 AFY (combined with a higher diversion rate at the Freeman Diversion), with the annual yield ranging from 400 AF in dry years to 11,500 AF in wet years. This additional recharge in the Forebay will raise water levels in the basin, which helps pressurize the greater Oxnard Plain. In addition, higher water levels in the Forebay basin will help mitigate the effects of other projects described in this management plan that rely on increased pumping in the Forebay.

The results of the groundwater modeling suggest that BMOs for groundwater levels would be met 52% of the time in the Upper Aquifer (compared to 51% with current management strategies) and 6% of the time in the Lower Aquifer (compared to 5% with current management strategies).

10.0 POTENTIAL FUTURE MANAGEMENT STRATEGIES

Groundwater modeling indicates that additional management strategies are required to eliminate overdraft in both Upper Aquifer and Lower Aquifer System aquifers and to prevent further seawater intrusion along the coastline and saline intrusion in more inland areas. A variety of potential future strategies are ranked below, with those that are the most effective and

can be implemented the soonest discussed first. Because of the large number of strategies, they are separated into those that can be implemented within 5 years, 10 years, 15 years, and greater than 15 years.

10.1 5-YEAR STRATEGIES

The following strategies that can be implemented within five years are ranked by order of effectiveness and/or importance.

10.1.1 5-Year Update of FCGMA Management Plan

10.1.1.1 Description

It is recommended that this Plan be updated every five years. This update should include a status of how the BMOs are being met, effectiveness of strategies that have been implemented, status of other recommended strategies, and recommendations for any additional management strategies.

10.1.1.2 Potential Effectiveness

Updating the Plan every five years will be an effective milestone for the FCGMA to evaluate and re-evaluate its course of action. This will keep the FCGMA's goals and its successes and failures front and center where they belong.

10.1.2 A Plan To Shift Some Pumping Back to Upper Aquifer System

10.1.2.1 Description

One of the initial groundwater management strategies for the FCGMA was to shift pumping to the Lower Aquifer System from the Upper Aquifer System to relieve pumping stresses that created a pumping trough in the UAS on the Oxnard Plain basin. This was accomplished by requiring new and replacement wells to be drilled in the LAS. Now that it is clear that the LAS cannot accommodate all this new pumping, it would be prudent to move some of the LAS pumping back to the UAS. However, this must be done very carefully to prevent a shift that would again create problems in the UAS.

A shift in pumping back to the UAS has already been initiated through County well permitting requirements. However, this shift cannot be uniformly enforced across the basins within the FCGMA. A detailed plan must be formulated that takes into account local recharge sources, hydrologic connection between portions of the basin, and current/future in-lieu recharge projects. This should be accomplished through use of the Ventura Regional Groundwater Model in fine-tuning the details of this plan, with the FCGMA, VCWPD, and UWCD working together.

10.1.2.2 Potential Effectiveness

By shifting pumping from the LAS to the UAS in areas where the Lower Aquifer System is not readily recharged could substantially raise groundwater levels in critical areas of the basins. This strategy only works, however, if the increased UAS pumping can be accommodated by the shift in pumping. For this reason, a sophisticated tool such as the Ventura Regional Groundwater Model is required to predict where and how much pumping should be shifted.

For an indication of how this strategy might work, 5,000 AFY of Lower Aquifer pumping was moved to the Upper Aquifer in the triangular area of the south Oxnard Plain from the Port

Hueneme zone of low conductance (fault?) to the western edge of the Pleasant Valley basin. The results of the groundwater modeling suggest that BMOs for groundwater levels would be met 50% of the time in the Upper Aquifer (compared to 51% with current management strategies) and 9% of the time in the Lower Aquifer (compared to 5% with current management strategies) – raising Lower Aquifer water levels at BMO wells an average of 8 feet (Table 8).

10.1.3 Protect Current Sources of Recharge

10.1.3.1 Description

Protecting current sources of recharge to the FCGMA basins is particularly important as we face additional groundwater management problems. Maintaining Santa Clara River flows and water quality has been a focus for Ventura County over the past decade. The County of Ventura and UWCD went to court in the late 1990s to ensure that increasing land development and water use in the Santa Clarita area of Los Angeles County did not jeopardize Santa Clara River flows across the County line into Ventura County. More recently, local water agencies and especially the farming community have expressed concerned about rising chlorides from waste water discharges coming from Los Angeles County. It is very important to the FCGMA to continue to protect this important source of groundwater recharge through support of local agencies who deal directly with these issues.

On Calleguas Creek, where a portion of the flow originates from discharges produced by wastewater treatment plants, downstream users have come to rely on the increased flows in the Creek for recharge. Agreements on wastewater discharges flowing down Arroyo Santa Rosa resulted in the Conejo Creek project. Similar flows along the Arroyo Las Posas provide recharge to the Las Posas basins and the northern Pleasant Valley basin. The Arroyo Las Posas flows are augmented by discharges from the Simi Valley and Moorpark wastewater treatment plants and from dewatering of shallow groundwater in western Simi Valley. Similar to the Santa Clara River, maintenance of these flows is necessary to recharge the downstream groundwater basins. As such, the quantitative effects of shallow groundwater extraction in the Las Posas and northern Pleasant Valley Basins may need to be evaluated for the potential impacts to downstream surface water flows.

10.1.3.2 Potential Effectiveness

The current sources of recharge to the groundwater basins within the FCGMA are essential not only in maintaining current management strategies but also in implementing future strategies. Without protecting current recharge sources, the overdraft within the FCGMA could increase and negate some of the benefits realized by projects and strategies that have been very successful to date. Therefore, this strategy is one of the most effective in reducing overdraft, and is an essential FCGMA strategy.

10.1.4 Limitation on Nitrate Sources in Portions of the Oxnard Plain Forebay Basin

10.1.4.1 Description

High nitrate concentrations are present in groundwater in portions of the Oxnard Plain Forebay basin (see section 5.1.4 *Nitrate in Groundwater*). The source of a portion of this nitrate is from fertilizer use on overlying crops. A thick vadose zone (unsaturated zone) between the crops and the groundwater table allows natural processes to degrade some of the nitrate before it percolates with irrigation waters down to groundwater. Gravel pits within the Forebay were generally mined to five feet above historic groundwater levels, with reclamation plan restrictions

on growing high-nitrate use crops within the mined pits where the vadose zone is so limited. As reclamation is completed, however, there are no longer crop restrictions. Thus, high-nitrate crops could be grown in these former gravel basins with a limited vadose zone.

The FCGMA should take a leading role in preventing further nitrate contamination in the Forebay. The FCGMA should work with land use planners and the Regional Water Quality Control Board to ensure that high-nitrate crops are not grown in areas with a limited vadose zone caused by gravel mining.

10.1.4.2 Potential Effectiveness

Limiting sources of nitrate is the most effective method of reducing nitrate in groundwater. Because nitrate is a primary drinking water contaminant that can cause serious adverse health effects and because the Forebay is a primary source of drinking water for consumers across the Oxnard Plain, limiting sources of nitrate should be a high priority for the FCGMA.

10.1.5 Policy on Recovery of Credits from Oxnard Plain Forebay Basin

10.1.5.1 Description

There are several management strategies that involve increased pumping in the Oxnard Plain Forebay basin to either supply water to overdrafted areas (e.g., Saticoy Wellfield) or to recover FCGMA credits earned by reducing pumping in overdrafted areas (e.g., Supplemental M&I Water Program, GREAT project). Using the Forebay in such a manner is definitely beneficial to both the Pleasant Valley and Oxnard Plain basins – however, it must be done in a manner such that the added pumping stress in the Forebay can be accommodated. For the Saticoy Wellfield and the Supplemental M&I Program, there is a caveat that pumping not occur when groundwater levels have dropped below a certain threshold. This threshold is the same as the grant condition applied to the use of water from the Freeman Diversion by the State Water Resources Control Board – that there is no more than 80,000 AF of available storage in the Forebay. In practice, this means that the average of combined groundwater levels of two index wells in the Forebay be above a certain level.

To assure a uniform policy, the FCGMA should implement a general policy for all projects that use FCGMA credits to shift pumping from overdrafted areas to the Forebay. It is recommended that this policy follow the State Board criteria discussed above and delineated in Table 9, or equivalent criteria if these wells are not available in the future. In addition, pumping using these credits should not adversely impact other pumpers in the basin. How these adverse impacts are defined will depend upon the specifics of each project and will have to be detailed when individual projects are approved by the FCGMA. It is also recommended that the FCGMA establish a policy for prioritizing the types of projects that can use transferred credits to pump in the Forebay. This will be especially important if there is more demand for these transfer projects than the Forebay can accommodate.

Wells Used	*Groundwater Elevations*
2N/22W-12R1 *2N/22W-22R1*	>17 ft above msl for combined groundwater elevations

Table 9. Criteria for using Credits for extraction in the Oxnard Plain Forebay basin.

10.1.5.2 Potential Effectiveness

Shifting pumping from an impacted area to the Forebay through the use of FCGMA credits is a very effective strategy, providing that this pumping doesn't adversely impact the Forebay. Using the criteria outlined in the previous paragraph, Forebay impacts can be avoided or mitigated.

10.1.6 Verification of Extraction Reporting

10.1.6.1 Description

Meters are required to be installed on all but domestic wells by Chapter 3 of Ordinance 8, although not all pumpers have installed meters or use their meters for reporting extractions. In addition, all extractions are self-reported and the accuracy of FCGMA extraction records relies on correct self-reporting. To ensure the accuracy of extraction records, which are used by the FCGMA and others to determine the changing pumping stress on the aquifers in the FCGMA, it is recommended that the FCGMA make periodic random checks on a small number of meters annually to ensure that meters are correctly installed and that the extractions reported by pumpers to the FCGMA correctly reflect actual meter readings.

10.1.6.2 Potential Effectiveness

The accuracy of FCGMA reporting records is important for extraction trends, determination of credits and efficiency, and overall compliance with pumping reductions. It is essential that all pumpers believe that everyone is "playing by the rules" and a verification procedure could help ensure that pumpers continue to believe that everyone is in this together.

10.1.7 Separate Management Strategies for Some Basins

10.1.7.1 Description

The initial FCGMA Management Plan treated all the FCGMA basins the same in that the same rules applied to all basins. We now know more about how these basins are interconnected and whether some of the basins have unique circumstances. For example, we know that the East Las Posas basin is largely hydraulically disconnected from both the West Las Posas basin and the northern Pleasant Valley basin. However, these basins also share some common elements; for instance, the East Las Posas basin and northern Pleasant Valley basin share a common recharge source, the Arroyo Las Posas. One element common to all the FCGMA basins is that they are overdrafted. Current FCGMA management strategies such as pumping reductions are thus appropriate to all the basins.

The FCGMA has considered localized management strategies. In the South Las Posas basin, for instance, a project to pump and treat poor-quality water without an allocation has been considered by the FCGMA Board. The strategy of moving pumping away from coastal areas applies largely to the Oxnard plain basin.

New strategies in this Management Plan are also applied to specific situations in each basin. The Management Plan for the East Las Posas basin, included as Appendix C, addresses issues specific to the operation of Calleguas' ASR project. This plan is adopted as part of the overall FCGMA Management Plan and the FCGMA Board will consider how its elements will be integrated into FCGMA ordinances. Likewise, the strategies for potentially pumping shallow groundwater along Calleguas Creek are also specific to the Pleasant Valley basin. The basin management objectives of this plan are also specific to each basin.

The FCGMA-wide strategy of pumping reductions across all FCGMA basins engenders the most discussion of whether this is appropriate in all cases. As discussed in section 9.5 *Continuation of 25% Pumping Reduction*, these reductions are appropriate across all FCGMA basins as long as there is overdraft in all basins. It would be appropriate, however, to re-evaluate any future additional pumping reductions by examining each basin separately.

10.1.7.2 Potential Effectiveness

The current strategy of allowing specific policies to address individual basin problems is the most effective means of addressing the overdraft and water quality problems within the FCGMA.

10.1.8 FCGMA Boundary

10.1.8.1 Description

The FCGMA boundary is defined as the outer edge of Fox Canyon Aquifer. In most areas, this outer edge is either the outcrop of the Fox Canyon Aquifer (such as along the north and east flanks of the Las Posas basin) or is the point where the Fox Canyon Aquifer onlaps older rocks (such as along the east side of the Pleasant Valley basin). However, along the western boundary of the FCGMA, it is defined as the western edge of the Oxnard Plain Forebay and Oxnard Plain basins (west of which the Fox Canyon Aquifer is not identified). Thus, this western boundary is also the boundary between the Oxnard Plain and Mound basins or the Oxnard Plain Forebay and Santa Paula basins.

Recent work done as part of the Santa Paula Basin Stipulated Judgment has moved the southern boundary of the Santa Paula basin farther north to coincide with the current known location of the Oak Ridge fault. This boundary of the Santa Paula basin was agreed to by experts working for the parties in the Santa Paula Basin Stipulated Judgment, including UWCD, the city of San Buenaventura, and the Santa Paula Basin Pumpers Association. In addition, UWCD groundwater staff have carefully monitored groundwater elevations in wells on both sides of this Santa Paula basin boundary and have confirmed that groundwater elevations south of the adjudicated basin boundary respond to recharge operations in the Oxnard Plain Forebay basin, whereas groundwater elevations to the north of the boundary do not. In addition, there is a significant discontinuity in groundwater elevations from one side of this boundary to the other.

The practical effect of this change in the Santa Paula basin boundary is that there is now a small region between the old and new boundary of the Santa Paula basin (Figure 28) that is not managed under either the Santa Paula Basin Stipulated Judgment or FCGMA rules and regulations. Because this area is in hydrologic continuity with the remainder of the Oxnard Plain Forebay basin, it would be appropriate to move the FCGMA boundary slightly north and east to coincide with the reinterpreted boundary of the Santa Paula basin and to reflect the reality of the continuity of this area with the Oxnard Plain Forebay basin. It is recommended that the FCGMA consider making this boundary change based on the technical information available.

10.1.8.2 Potential Effectiveness

By allowing a strip of land to be unmanaged through either the Santa Paula Stipulated Judgment or the FCGMA, it is possible to site wells on this strip of land and directly benefit from the significant recharge that takes place in the Oxnard Plain Forebay basin, meanwhile adversely affecting downgradient portions of the aquifers that rely on this recharge to repel seawater intrusion. By bringing this area into the FCGMA, wells sited in a strip of land will appropriately be subject to FCGMA extraction allocations and other management strategies. If the land described here is not brought into the FCGMA, it could invite unmanaged pumping that would adversely affect the basins within the FCGMA.

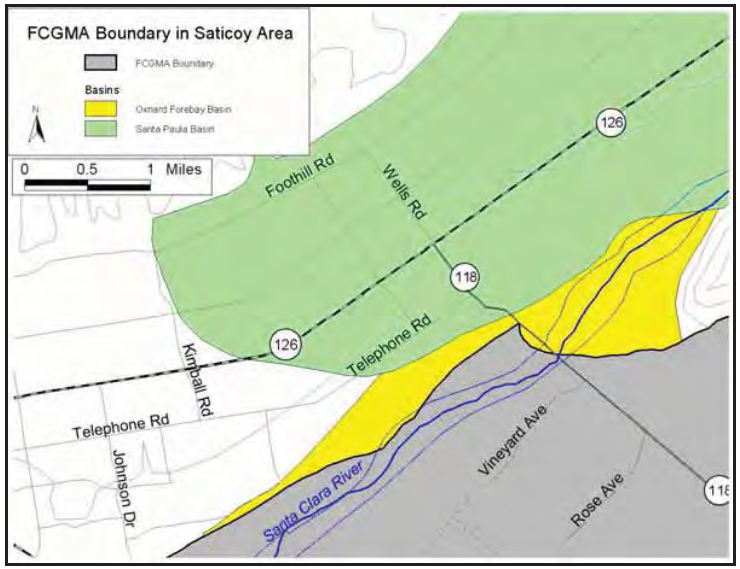


Figure 28. Area southeast of Santa Paula basin where FCGMA boundary is not coincident with current basin boundaries. The yellow area represents the portion of the Oxnard Forebay basin which is currently outside of the FCGMA.

10.1.9 Irrigation Efficiency Calculations

10.1.9.1 Description

Current FCGMA policies allow agricultural pumpers to meet a crop efficiency standard for their irrigation as an alternative to the Historical or Baseline allocation and credit program. This option is called the Irrigation Efficiency allocation. FCGMA efficiency calculations are based on daily information from a set of weather information gathering stations maintained across the FCGMA. Water demand for an index crop (cool season grass) is calculated daily. A crop factor is then applied to this index water demand to adjust the required water demand downward for four major categories of crops grown within the FCGMA. The final step in calculating crop irrigation efficiency is to adjust for 80% irrigation efficiency by taking the annual allowed water demand for each of the four major crop types and allowing an extra 20% water use for salt leaching and irrigation-system inefficiencies. The Irrigation Efficiency allocation was intentionally designed to make it possible for growers to sustain profitable agriculture within the FCGMA, but at the same time raise awareness of water conservation. The FCGMA should review the effectiveness of the efficiency allocation periodically to ensure that it being equitably applied.

In practice, Irrigation Efficiencies that pumpers report to the FCGMA are as a rule quite high – 100% to as much as 300% (water use as little as one third of estimated demand). This

suggests the method of calculating Irrigation Efficiency may not be appropriate. Improving the method would not affect the vast majority of pumpers who now report high efficiencies. However, it may identify any pumpers who are not using irrigation water efficiently by making it more difficult for them to reach the minimum required efficiency. It is recommended that the FCGMA Board consider a strategy to examine the method of calculating Irrigation Efficiency. Topics to consider might include adjusting crop demand for more specific crops, re-examining the 80% efficiency requirement, and ensuring that acreages reported be actual irrigated acreage rather than total owned acreage.

10.1.9.2 Potential Effectiveness

It is not clear exactly what amount of reduction in agricultural pumping would occur by adjusting the Irrigation Efficiency calculation. As documented elsewhere in this Management Plan, agricultural pumping reported to the FCGMA has been reduced by as much as 30% since the FCGMA pumping restrictions were initiated. Thus, most agricultural pumpers have apparently increased their irrigation efficiency substantially over the last 15 years. As discussed above, the vast majority of those efficient pumpers are unlikely to be affected by any changes in the Irrigation Efficiency calculation. However, changes in the efficiency calculation might affect those pumpers who have not already improved their irrigation efficiency.

10.1.10 Additional Storage Projects in Overdrafted Basins

10.1.10.1 Description

Aquifer Storage and Recovery (ASR) projects, such as the Las Posas Basin ASR project, provide benefits to an overdrafted basin because water stored in the basin raises groundwater levels above what they would be without the project. The water is not permanently devoted to the basin, but is removed from time to time, generally during periods of water shortage in droughts or emergencies. In practice, the water generally remains in storage for multiple years and is not completely removed during extraction periods. Thus, there is a long-term benefit to the basin. Such projects need to be carefully designed so that neither recharge nor recovery adversely affects other users in the basin. The recovery periods generally cause a significant decline in water levels in the vicinity of the ASR wellfield, especially if the ASR is operated in a confined aquifer setting.

ASR projects are most effective in areas where groundwater levels have been substantially lowered by overdrafting and where the physical properties of the in-situ geologic formation are amenable to both efficient injection and efficient extraction. Within the FCGMA, the Pleasant Valley and south Oxnard Plain areas are both candidates for ASR projects under current conditions because groundwater elevations are continuously below sea level due to overpumping and the geologic formations in these areas have relatively high permeability and transmissivity (e.g., Densmore, 1996; Hanson et al., 2003). To make this strategy effective, saline intrusion currently evident in the south Oxnard Plain would need to be hydrologically isolated from any ASR project to protect the stored water from degradation and to prevent additional intrusion of saline waters during extraction of the stored water. An ASR project could potentially be paired with a barrier well project (discussed in section 10.3.1 *Barrier Wells in South Oxnard Plain*).

The available storage space in the Pleasant Valley and southern Oxnard Plain basins has not been rigorously calculated. The amount of water that has been extracted from coastal areas in excess of recharge has been calculate as about one million acre-feet since the 1950s (UWCD, 2006), with permanent loss of aquifer storage capability from resulting subsidence of about 200,000 AF. The remaining 800,000 AF of potential storage space in the aquifer has been

partially refilled by intruded seawater, but there remains a large amount of potential aquifer storage space available.

10.1.10.2 Potential Effectiveness

Storage projects can be effective in restoring groundwater levels in overdrafted basins. However, the restoration only occurs during the period when water is stored in the basin. For many storage projects, the period of storage can be many years and not all the stored water may be removed during the extraction phase of the project – in that case, there is a long-term positive effect on the basin.

There are two issues that must be addressed with any storage project to ensure that the project does not adversely impact a basin: 1) the storage project must not interfere with recharge to the basin by creating groundwater levels so high that there is rejected natural and artificial recharge; and 2) extraction of stored water must not adversely affect the basin and other pumpers by pulling in poor-quality water, dewatering clays and creating subsidence, or creating large cones of depression around project extraction wells that prevent nearby pumpers from using their wells efficiently. Mitigation of such potential impacts may be feasible. Higher groundwater levels from storage projects may also mask continuing overdraft in a basin, so it is essential to continually determine what the basin condition would be without the storage project. Such safeguards are part of the East Las Posas Basin Management Plan (Appendix C) with regards to the Las Posas Basin ASR project.

10.1.11 Penalties Used to Purchase Replacement Water

10.1.11.1 Description

The FCGMA charges a penalty to pumpers for extracting more water than is allowed under the various allocations (Historical, Baseline, Irrigation Efficiency). Up to 2006, this has not generated significant revenue because few pumpers have exceeded their allocation. There may be circumstances in the future, however, where this may not be true. The increased groundwater use caused by the over-pumping could be offset by using the fees generated by penalties to purchase replacement water for the extracted groundwater. This is a strategy used by the Orange County Water District, where the penalty is called a Basin Assessment Fee. The FCGMA has several options to obtain additional water, including purchasing unused portions of Ventura County's State Water Allocation, paying M&I users to increase their imported/groundwater blend, and purchase of water through a variety of programs from the State or others such as turn-back pool water, Dry-Year Purchase Program, and other programs. This water could be delivered through either conveyance down the Santa Clara River or Calleguas MWD's pipeline, depending upon how the water was purchased and used.

10.1.11.2 Potential Effectiveness

A FCGMA policy to purchase water to replace over-pumped groundwater would have a direct effect on the aquifers. If the replacement was done judiciously, more water could be purchased than was originally pumped and/or the water could be used for recharge particularly stressed areas such as the southern Oxnard Plain basin or the Pleasant Valley basin. Thus, the replacement water could actually improve groundwater conditions.

10.1.12 Additional Water Conservation

10.1.12.1 Description

There is a growing move to require the use of recycled water to replace non-potable uses in new developments in California. The FCGMA could encourage local cities and other planning agencies to require a dual plumbing system (where it meets plumbing code) in new developments where it is practical to deliver recycled water of suitable quality. The FCGMA could make this policy known to the permitting agencies through both a resolution sent to these organizations and by commenting on this issue when reviewing EIRs and other planning documents. This policy would be consistent with the requirements in some areas within the Agency, such as the County policy that requires all new golf courses to use 100% reclaimed water and the City of Camarillo that requires dual plumbing systems in new larger developments.

Another water conservation strategy is to require maximum feasible infiltration of stormwater within a new development (Low Impact Development). This strategy is only effective when the development overlies a recharge area for the aquifer. When a development overlies perched water or sealing clay near the surface, the infiltrated water does not benefit the aquifers.

10.1.12.2 Potential Effectiveness

The effectiveness of this policy in reducing pumping depends upon the amount of groundwater that would otherwise be pumped from groundwater and delivered to the project. Many water purveyors within the FCGMA serve a blend of groundwater and imported water, so the pumping savings would be in the groundwater component. The savings would also depend upon the amount of non-potable water needs or uses within these projects. Where there is substantial landscaping in a new project, for example, the savings in potable water would be more substantial. In developments that require a dual plumbing system, there have been estimated savings of 30% to 40% in potable water use just from outdoor landscaping.

As discussed above, the effectiveness of maximizing recharge of stormwater can be variable. When a development is located in a basin such as the Oxnard Plain Forebay, percolation of rain is an important component of recharge and should be protected. In areas where percolated surface water does not reach the aquifers, the strategy is not effective.

10.1.13 Shelf Life for Conservation Credits

10.1.13.1 Description

The initial 1985 FCGMA Management Plan set the policy that when a well operator pumped less than his allocation in any particular year, Conservation Credits were awarded for the unpumped portion of the allocation. The theory behind the Conservation Credit policy was that pumping would vary between wet and dry years; credits would be earned during wet years when pumping was reduced and the credits would then be used during the dry years when above-average pumping was required. With this scheme, pumping credits would theoretically zero-out at the end of each wet-dry cycle. However, no process was put in place to assure that large numbers of Conservation Credits were not accumulated beyond the end at each wet-dry cycle. The practical result of this policy is large numbers of Conservation Credits continue to accrue to some well owners – as many as tens of thousands of acre-feet of Conservation Credits have accrued to some organizations with multiple wells.

The current method of accumulating Conservation Credits with no expiration date has effectively left a large theoretical pumping debt on the aquifers (equivalent to several years of pumping at current extraction rates). This large debt complicates evaluation of the health of the basin because current groundwater conditions do not reflect this unused pumping debt. This is no different than judging a company's financial condition without considering monetary debt.

To bring FCGMA policy into line with the purpose for which credits were originally intended, several approaches are available. Perhaps the most important approach could be to have a limit on the annual use of these credits so that the aquifers would not be overly stressed in any single year. Another approach could be similar to that used in the adjacent Santa Paula basin, where the Stipulated Judgment from the basin adjudication allows unpumped allocations to be accumulated, but unlike in the FCGMA, any unpumped allocations for a single year expire after seven years. In this manner, accumulated debt is restricted to unpumped allocations earned within any single wet-dry cycle.

If unused credits were to expire after a period of time, the strategy would have to reflect a reasonable management strategy that takes into account the needs of pumpers, which vary by water use. For agricultural pumpers, credits are accrued for both future drought conditions and cropping changes. M&I pumpers may have accrued credits by substituting more-expensive imported water to provide a drought or emergency buffer. To ensure that any change in credit policy reflects these varying management strategies, the FCGMA should consider forming a committee (similar to the one that proposed the policy on calibration of meters) to study the issue and make recommendations on any policy changes. There are two issues that would need to be addressed – the shelf life on credits to be earned in the future and the fate of credits earned in the past.

This policy is not appropriate for Storage Credits, where water is stored for both dry periods and for emergencies such as earthquakes or levee failures in the Sacramento Delta. No change is recommended for Storage Credits.

10.1.13.2 Potential Effectiveness

The current policy for Conservation Credits allowing continuing accumulation makes it difficult to determine the current health of the basin – especially when the current pumping debt is equivalent to about three years' total pumping within the FCGMA. Modifying the FCGMA policy to expire older credits would allow a more accurate view of the health of the basin and would prevent a large pumping debt from accumulating. The effect a changed policy would have on future extractions within the FCGMA is not clear. On one hand, credit holders might be encouraged to pump credits prior to their expiration. This might effectively increase FCGMA pumping over its current levels, because some of these credits are currently being accumulated instead of being pumped. Alternatively, under the current policy of accumulating credits, many years-worth of accumulated credits could be pumped in a single dry year far exceeding any annual recharge, adversely impacting the groundwater basins through pulling in poor-quality waters and/or causing irreversible basin subsidence.

10.2 10-YEAR STRATEGIES

The following strategies that can be implemented within ten years are ranked by order of effectiveness and/or importance.

10.2.1 Additional In-Lieu Recharge to South Oxnard Plain

10.2.1.1 Description

One of the most effective management strategies in reducing overdraft is to supply water directly to overdrafted areas. This in-lieu strategy has been very effective in the Upper Aquifer System, where Santa Clara River water delivered through the Pumping Trough Pipeline has helped to alleviate the pumping trough that has been present for several decades beneath the south Oxnard Plain. Because the Lower Aquifer System now has its own pumping trough beneath the same area, extending the Pumping Trough Pipeline and/or bringing in water from other sources to the south Oxnard Plain would likely be equally as effective.

There are several options available to implement this strategy. UWCD could extend the Pumping Trough Pipeline to supply water to pumpers who are south of the current pipeline. The source of this water would likely be a combination of diverted Santa Clara River water and groundwater pumped from the Saticoy Wellfield located in the Oxnard Plain Forebay basin. UWCD has investigated such a project in the past, but costs were prohibitive. Another method of bringing water to the area would be to use Calleguas MWD's regional brine line (under construction in 2006) to bring recycled or other water from upstream areas, providing this water was of sufficient irrigation suitability. A third option would be to use water from Oxnard's GREAT project either for direct delivery to pumpers or for injection into the Lower Aquifer System. Any water delivered through an in-lieu program to this area should be eligible for credits. If there is any transfer of pumping back to the Oxnard Plain Forebay basin as part of a project using this strategy, then the considerations discussed in section 10.1.5 *Policy on Recovery of Credits from Oxnard Plain Forebay Basin* would be applicable.

10.2.1.2 Potential Effectiveness

Reducing pumping and/or injecting water into the aquifer in areas just inland of seawater intrusion can be a very effective strategy. Simulations of the Ventura Regional Groundwater Model that implement this management strategy have been shown to be effective in reducing the overdraft. For example, when 3,000 AFY of additional water are delivered or injected in the south Oxnard Plain, groundwater levels in the Lower Aquifer System rise by an average of 7 feet. The results of the groundwater modeling suggest that BMOs for groundwater levels would be met 53% of the time in the Upper Aquifer (compared to 51% with current management strategies) and 7% of the time in the Lower Aquifer (compared to 5% with current management strategies).

10.2.2 Import Additional State Water

10.2.2.1 Description

As part of a joint integrated water management plan, UWCD and Calleguas MWD are considering expansion of State Water importation by obtaining additional amounts of Ventura County's State Water allocation on a year-by-year basis when it is not used by other Ventura County agencies. This additional water would likely be delivered to Lake Piru and released as part of UWCD's conservation release to benefit the Oxnard Plain. Currently, State Water is released from Lake Piru by UWCD as part of its conveyance of stored storm water to downstream basins. Typically, a portion of the released water percolates into basins upstream from the Freeman Diversions and the remainder of the water is diverted for recharge (direct and in-lieu). How this additional State Water is used and accounted for will likely depend upon how it is financed.

10.2.2.2 Potential Effectiveness

The effectiveness of new water importation depends upon how the water is recharged to the aquifers or delivered. If this imported water could be delivered to FCGMA pumpers in-lieu of pumping groundwater, then there would be a direct benefit to the aquifers from reduced pumping proportional to the amount of imported water. If, instead, this water was extracted by pumpers and substituted for a like amount of the imported water that would they would otherwise have delivered by Calleguas MWD, then the effects of the importation would be neutral. Thus, the ultimate fate of this additional imported water would govern the effectiveness of the strategy.

The Ventura Regional Groundwater Model was used to test the effectiveness of importing additional State Water. For the model scenario, the water was imported through Lake Piru, released with UWCD's annual conservation release down the Santa Clara River, diverted at the Freeman Diversion, and recharged in the Oxnard Plain Forebay basin. For the model simulation, it was assumed that 10,000 AFY of additional State Water were purchased in dry and average years. The results of the groundwater modeling suggest that Upper Aquifer groundwater levels in the Forebay basin would rise by an average of 6 feet. BMOs for groundwater levels would be met 54% of the time in the Upper Aquifer (compared to 51% with current management strategies) and 7% of the time in the Lower Aquifer (compared to 5% with current management strategies).

10.2.3 Further Destruction of Abandoned or Leaking Wells

10.2.3.1 Description

With grant support, the FCGMA destroyed 49 abandoned or leaking wells that were considered by the FCGMA and UWCD to have the highest potential for cross-contamination from perched waters into the main aquifers within the FCGMA (cost and feasibility were also considered in ranking the wells for destruction). There remains a long list of additional wells that also have the potential for cross contamination of the aquifers. The FCGMA should give a priority to finding additional funds to continue this effort of well destruction.

10.2.3.2 Potential Effectiveness

Destroying abandoned or leaking wells is very effective in preventing cross contamination of aquifers within the FCGMA. In the Oxnard Plain and Pleasant Valley basins, perched waters have a much higher head (elevation) than underlying aquifers, so the conditions for cross contamination are widespread. Although there are documented cases of this cross contamination occurring, it is not known how widespread this has actually occurred.

10.2.4 Additional Monitoring Needs

10.2.4.1 Description

The current groundwater monitoring program has worked well in tracking saline intrusion beneath the Oxnard Plain. This monitoring network, along with a few other monitoring wells, were installed around 1990 by the US Geological Survey with financing provided by local agencies. Since the initial installation of the monitoring network, the continuing monitoring of these wells has been conducted by UWCD, VCWPD, and the City of San Buenaventura. As the saline intrusion on the south Oxnard Plain has moved inland, UWCD has sited and will drill two new multiple-completion monitoring wells inland of the saline intrusion. This increased monitoring program will adequately track water level and water quality trends on the south Oxnard Plain for the next several years.

In the Pleasant Valley basin, additional monitoring wells might be required if chloride levels continue to increase. The location of these potential monitoring wells would depend upon where the chloride increases occur. In the Las Posas basins, most of the existing monitoring utilizes existing production or injection wells. As part of the East Las Posas Basin Management Plan (Appendix C), new monitoring wells would provide information on the effects of the Calleguas Aquifer Storage and Recovery (ASR) project. Any such monitoring wells would likely be drilled by the Calleguas Municipal Water District. Monitoring of these wells would likely become a part of the overall Calleguas ASR monitoring program.

As more management strategies rely on increased pumping in the Oxnard Plain Forebay basin, increased monitoring will be required to ensure Forebay pumpers are not adversely affected or that pumping does not create additional groundwater problems. Increased monitoring in the Forebay has already been planned during operation of the UWCD Saticoy Wellfield. Additional monitoring should be required by the FCGMA for other projects where pumping will be shifted to the Forebay basin. An example is the GREAT project, where a substantial amount of pumping may be shifted to the Forebay; environmental documentation for the project proposes such increased monitoring. The exact monitoring required for any Forebay pumping that uses a transfer of credits should be appropriate to the location of increased pumping. At a minimum, this monitoring should include collection of monthly groundwater levels and quarterly water quality samples (to include constituents of concern such as nitrate and TDS) should include both Forebay monitoring and monitoring between the Forebay and the coast to determine potential effects in coastal groundwater levels.

10.2.4.2 Potential Effectiveness

Monitoring by itself does not solve the overdraft problem, but it is essential in determining the effectiveness of the other management strategies. In particular, monitoring provides the continuing evaluation of whether basin management objectives are being met, and often serves to increase the understanding of the dynamics of the multiple aquifer systems identified within the FCGMA.

10.3 15-YEAR STRATEGIES

The following strategies that can be implemented within 15 years are ranked by order of effectiveness and/or importance.

10.3.1 Barrier Wells in South Oxnard Plain

10.3.1.1 Description

Seawater barrier wells are used extensively in Los Angeles and Orange counties as a means of controlling seawater intrusion. A barrier project injects water along a series of wells creating a mound of recharge water as protection against seawater moving inland. Barrier wells are both expensive and complex, with costs of maintaining a barrier several times higher than for typical facilities in Ventura County such as the Freeman Diversion, spreading ponds, and distribution pipelines. In Los Angeles and Orange counties, there is a significant component of recycled water in the injected water. Thus, special health regulations govern this type of injection and are a necessary component of plans and facilities. In Ventura County, an attempt to construct a seawater barrier in the late 1970s and 1980s by the California Department of Water Resources in the Port Hueneme area was not particularly successful. Since that attempt, barrier wells were not seriously considered again because lower-cost options were identified.

We now know portions of the aquifer on the south Oxnard Plain are very difficult to recharge. In particular, the Lower Aquifer System of the south Oxnard Plain has been largely unaffected by spreading operations in the Oxnard Plain Forebay basin because this recharge is partially impeded from flowing into the areas of depressed groundwater levels by a fault or other structural barrier (see discussion in section 3.0 *Groundwater Basins and Hydrogeology – Oxnard Plain Basin*). The City of Oxnard GREAT project has evaluated barrier wells in the south Oxnard Plain as a method of delivering recycled water during winter months when agricultural irrigation demand is low. It may be prudent to consider expanding winter injection to more seasons of the year to create a full-time barrier. Additional source water for this full-time barrier would need to be identified.

A difficulty with barrier wells is that the injected water must be of very high quality to prevent clogging of the well screens. Thus, the source water for the injection would likely be a combination of highly-treated recycled water and potable water. The expense of building, maintaining, and providing water to a full-time barrier project currently makes such a project for Ventura County a lower priority. If other projects to supply in-lieu water to the south Oxnard Plain fail to prevent the increasing intrusion of saline waters or if a full-time barrier was considered as an add-on to injection wells already built through the GREAT project, then a full-time barrier project might be economically feasible.

As discussed in section 9.1 *GREAT Project (Recycled Water)*, FCGMA credits for recharge in a barrier project might be less than 1:1 because the recharged water might mix with contaminated saline groundwater. Likewise, if these credits are used for extraction from the Oxnard Plain Forebay basin, these extractions would have to follow uniform procedures addressed in section 10.1.5 *Policy on Recovery of Credits from Oxnard Plain Forebay Basin*.

10.3.1.2 Potential Effectiveness

Barrier wells could be very effective in preventing saline intrusion from moving further inland. Simulations of the Ventura Regional Groundwater Model indicate a barrier project with injection rates of 21,000 AFY into the Lower Aquifer System would raise Lower Aquifer water levels an average of 46 feet at the BMO wells, with an average groundwater elevation at the barrier of 28 ft msl. The rate of injection that was tested in the model was chosen to match the winter injection rate of the GREAT project at full planned implementation.

The groundwater modeling suggests that BMOs for groundwater levels would be met 63% of the time in the Upper Aquifer (compared to 51% with current management strategies) and 48% of the time in the Lower Aquifer (compared to 5% with current management strategies. The barrier project is the most effective strategy modeled in meeting BMOs (Table 8). However, the barrier would not prevent saline intrusion in areas inland of the barrier within the LAS groundwater depression in the Pleasant Valley basin; the only prevention for saline intrusion within the groundwater depression would be to raise groundwater levels within the depression.

10.3.2 Injection of Treated River Water into Overdrafted Basins

10.3.2.1 Description

A management strategy that is commonly suggested is taking diversions from the Santa Clara River when there is abundant river flow and injecting it into the aquifers that have depressed water levels. However, raw river water could not be injected without treatment that would bring the water to at least drinking water quality to prevent well clogging and potential health concerns; the cost of this treatment was generally considered to be prohibitive when compared

to other management strategies. This assumption may no longer be correct, as treatment costs become more affordable when compared to alternatives.

Much of the infrastructure to convey water from the Freeman Diversion to Pleasant Valley and the south Oxnard Plain already exists. The costs of the injection would be building a treatment facility, installing injection wells, and operating the treatment plant.

This injection would logically operate during periods when there is more water in the Santa Clara River than recharge facilities can accommodate. These conditions occur following rainstorms during many average precipitation years and can occur for extended periods (several months) during heavy precipitation years. The additional diversions could be conveyed to Pleasant Valley and the South Oxnard Plain via the existing Pleasant Valley and PTP pipelines. The raw water would then be treated and injected. Unlike aquifer storage and recovery (ASR) projects, the water would be placed in the aquifer for recharge purposes and would not be extracted at a later time as part of the project.

10.3.2.2 Potential Effectiveness

Besides reducing groundwater pumping in areas of lowered groundwater levels, providing direct recharge to affected aquifers is the most effective method of reducing pumping stresses and overdraft.

Injection of treated river water could be very effective in raising groundwater levels in the pumping depression in the south Oxnard Plain and Pleasant Valley basins. Simulations of the Ventura Regional Groundwater Model indicate an injection project with rates into the Lower Aquifer System of 1,500 AFY during dry years to 5,000 AFY during wet years would raise Lower Aquifer water levels an average of as much as 13 feet at the BMO wells in the area of injection.

The groundwater modeling suggests that BMOs for groundwater levels would be met 53% of the time in the Upper Aquifer (compared to 51% with current management strategies) and 11% of the time in the Lower Aquifer (compared to 5% with current management strategies.

10.3.3 Increase Diversions from Santa Clara River

10.3.3.1 Description

The Freeman Diversion was designed to divert more river water than current diversions. However, the current water right for the Freeman Diversion permitted by the State Water Resources Control Board is only 375 cfs (cubic feet per second) because other conveyance facilities downstream of the Freeman Diversion were not designed for the higher flow rate. If these conveyance facilities were modified and additional spreading facilities were constructed to physically handle the additional volume of water, a right to a higher diversion rate could be beneficial during periods of high flow in the river. Any higher diversion procedure would have to be designed so that there was sufficient water available for environmental uses. In order to increase diversions at the Freeman Diversion, a modified water right would have to be obtained from the State Water Resources Control Board and appropriate State and Federal agencies would have to be consulted. UWCD is studying options for such an expansion.

10.3.3.2 Potential Effectiveness

The Santa Clara River remains the primary recharge source for the Oxnard Plain basin and supplies significant recharge to the Pleasant Valley basin. It is clear that increased recharge since the Freeman Diversion was constructed has had a major positive impact in reducing seawater intrusion in the Upper Aquifer System. Likewise, many other strategies of this

Management Plan rely on substituting pumping in areas of poor recharge to pumping in the Oxnard Plain Forebay basin, which is easily recharged by water diverted from the Santa Clara River. Additional diversions and recharge to the Forebay basin, therefore, are necessary to make other management strategies possible.

UWCD's River Routing Model was used to predict the amount of additional diversions that were possible from peak winter storm flows at the Freeman Diversion, within the current 1,000 cfs flow capacity limitation of key portions of the conveyance system. The model, which uses daily flow data, predicted that additional potential diversions ranged from an average of 3,000 AFY during dry years to an average of 43,000 AFY in wet years. This additional water was largely recharged in hypothetical recharge facilities in the RiverPark and Ferro mining pits.

The Ventura Regional Groundwater Model simulations suggest that the additional diversions have several beneficial effects. The additional recharge from the diversions raise groundwater levels in the Upper Aquifer of the Oxnard Plain Forebay basin by more than 10 ft, allowing the Forebay to fully fill during wet years and lessening the impact of the dry-year pumping envisioned in other strategies in this Plan. At Upper and Lower Aquifer wells with BMOs, average groundwater levels would increase by about 3 ft. BMOs for groundwater levels would be met 54% of the time in the Upper Aquifer (compared to 51% with current management strategies) and 8% of the time in the Lower Aquifer (compared to 5% with current management strategies.

10.3.4 Shift Pumping to Northwest Oxnard Plain

10.3.4.1 Description

The northwest Oxnard Plain, in the area south of the Santa Clara River, has historically had groundwater elevations that have rarely gone below sea level. There are also no submarine canyons offshore of the northwest Oxnard Plain, eliminating a short-circuit route for seawater intrusion to reach coastal aquifers. Groundwater gradients in the Upper Aquifer System indicate that some of the water recharged to the UAS in the Forebay likely flows offshore in the coastal northwest Oxnard Plain basin. Thus, this portion of the aquifer might sustain some increased pumping without negative consequences. The amount of pumping that could be shifted to this area would depend upon the configuration of the pumping wells and the volume of pumping.

10.3.4.2 Potential Effectiveness

If pumping is shifted from areas that are difficult to recharge, such as the LAS in the southern portion of the Oxnard Plain basin and in the Pleasant Valley basin, to areas that are more-easily recharged, the effect is beneficial to the aquifers. Simulations of the Ventura Regional Groundwater Model indicate that with a shift of pumping of 2,000 AFY from near the edge of the Oxnard Plain Forebay basin to the northwest Oxnard Plain basin, groundwater levels improve less than a foot at wells with BMOs, but drop less than a foot in the northwest Oxnard Plain. Because the current groundwater levels in the Upper Aquifer of the northwest Oxnard Plain are more than 6 ft above their BMO, a more substantial shift in pumping could be accommodated, with a like amount of improvement in other areas of the coastal basins.

10.4 GREATER THAN 15-YEAR STRATEGIES

The following strategies that would be implemented later than 15 years are ranked by order of effectiveness and/or importance.

10.4.1 Additional Reductions in Pumping Allocations

10.4.1.1 Description

After other feasible strategies for reducing the overdraft within the FCGMA are considered, pumping reductions beyond the 25% may have to be examined. As discussed below, any further pumping reductions may not be necessary if most of the strategies discussed in this Plan are implemented. These strategies are likely to be expensive, however, so the FCGMA should retain as a further strategy additional pumping reductions if the means are not found to implement the strategies. Any additional required reductions should be effected using the current system of allocations and efficiencies. If this step is necessary, it would be prudent to revisit whether agricultural efficiency should be tightened up or continue to be used, or whether all pumpers should use the allocation/credit method of reporting. If significant portions of the strategies recommended in this Plan are not implemented, consideration should be given to applying further pumping reductions only in areas where groundwater levels are particularly depressed. For instance, as part of the evaluation of basin yield (section 7.0 *Yield of the Groundwater Basins*), a further reduction of 85% in pumping in the south Oxnard Plain and Pleasant Valley basins allowed groundwater elevations to meet Basin Management Objectives.

10.4.1.2 Potential Effectiveness

The necessity of any further pumping reductions was evaluated using the Ventura Regional Groundwater Model. This modeling suggested that with all strategies implemented, BMOs for groundwater levels would be met 67% of the time in the Upper Aquifer (compared to 51% with current management strategies) and 76% of the time in the Lower Aquifer (compared to 5% with current management strategies. Section 7.0 *Yield of the Groundwater Basins* discusses the issue of how often BMOs should be met to be protective of the basins in the FCGMA. The above numbers suggest that implementation of all the management strategies would vastly improve the health of the basins. Actual future observations of basin conditions, particularly the fate of sweater intrusion, will determine whether these strategies truly protect the basins. The modeling does suggest that further reductions in FCGMA extractions would not be warranted until the effect of the other management strategies can be observed or unless may of the strategies are not implemented because of financial or other reasons. However, implementation of a significant number of the strategies recommended in this Plan would be necessary to avoid further pumping reductions.

11.0 ACTION PLAN TO ATTAIN BASIN MANAGEMENT OBJECTIVES

11.1 PLANNING/IMPLEMENTATION ACTIONS

11.1.1 Strategic Planning

Many of the management strategies in this plan involve considerable cooperation among agencies within the FCGMA and come at considerable cost. The FCGMA is the common element among these agencies and is the appropriate forum in which to discuss the management strategies. Although many of the actual projects that would implement the management strategies would be built and managed by individual agencies within the FCGMA, the cost of the projects is likely to be spread to a wider group. Projects that have the most advantageous cost/benefit ratios would likely be supported by this wider group.

The FCGMA should initiate the discussion of how all the strategies fit together with current and future project of individual agencies. The topics to be covered could include:

1) Cost/benefit analyses of management strategies;

2) Cooperative efforts needed;

3) Methods to finance the projects;

4) Actions to implement the projects.

Parts of the analyses needed for the discussion have already been generated through agency's master planning efforts either within agencies or as larger cooperative efforts, and these plans cold be used as the starting point in these discussions.

11.1.2 Implementation

As a follow-up to the strategic planning effort, the FCGMA should take the results of the strategic planning and facilitate their implementation. The main focus of this effort would be to assist in cooperative efforts to implement the FCGMA management strategies.

11.2 RECOMMENDED CHANGES TO EXISTING FCGMA POLICIES

11.2.1 Continuation of 25% Pumping Reduction

Groundwater modeling of extending the phased FCGMA pumping reductions to their conclusion at 25% reductions indicated that this policy results in modest improvements at BMO indicator wells. Despite these modest improvements, it is necessary to continue this policy because the modeling also indicated that it will take the combination of all of the strategies recommended in this Plan to reach BMO goals – although individual strategies may not make large contributions, the sum of these strategies is the key to solving the overdraft problem. It is recommended that the FCGMA Board implement the delayed reduction to 20% before the end of 2007 and implement the reduction to 25% on the 2010 scheduled date.

11.2.2 Credits to be Transferred to Forebay Basin

Current water conservation facilities and FCGMA policies encourage reduced pumping in areas of seawater intrusion or overdrafted areas by moving those pumping stresses to areas that are more readily recharged. Examples of these projects are the Oxnard-Hueneme Pipeline system, the Pumping Trough Pipeline, and the Pleasant Valley Pipeline. A more recent transfer is for credits accrued by the Conejo Creek project to be used for extractions from the Oxnard Plain Forebay basin as part of the Supplemental M&I Water Program. The program has criteria to prevent adverse impacts from this increased pumping in the Forebay, including a restriction on pumping when groundwater elevations in key wells in the Forebay are below pre-determined levels.

The FCGMA should establish a policy for future credit transfers to the Forebay. This policy should include both criteria to ensure that projects do not harm the Forebay and to prioritize future projects if there is more demand for these transfers than the Forebay can accommodate. The Conejo Creek-Supplemental M&I Water projects serve as a good model for future projects that would provide in-lieu recharge or injection through wells in overdrafted areas and then recover that water from the Forebay or other areas that are readily recharged. Any such pumping using FCGMA credits should be able to demonstrate that a plan for increased pumping would not adversely impact the basin pumped. The FCGMA should encourage these types of projects, as long as there is a net benefit to the aquifers and the pumping does not adversely

affect that basin. Specific criteria that the FCGMA could use for future projects are discussed in section 10.1.5 *Policy on Recovery of Credits from Oxnard Plain Forebay Basin*.

11.2.3 Shift Some Pumping from Lower Aquifer System to Upper Aquifer System

A shift in pumping back to the UAS has already been initiated through County well permitting requirements. However, this shift should not be uniformly enforced across the basins within the FCGMA. A detailed plan must be formulated that takes into account local recharge sources, hydrologic connection between portions of the basin, and current/future in-lieu recharge projects. This should be accomplished through use of the Ventura Regional Groundwater Model in fine-tuning the details of this plan, with the FCGMA, VCWPD, and UWCD working together.

11.2.4 Irrigation Efficiency Calculation

As discussed in section 10.1.9 *Irrigation Efficiency Calculations*, the irrigation efficiency calculation should be revisited to ensure that the methodology gives appropriate results. The FCGMA Board should convene a committee of experts and stakeholders to examine the efficiency methodology. This committee would incorporate current methods of determining crop demand, including recommending updated weather station technology if necessary. The purpose of this exercise is to ensure that the efficiency calculations submitted to the FCGMA by agricultural irrigators are accurate. Any changes to the methodology should focus on improving actual irrigation efficiency by pumpers and ensuring pumpers reporting actual groundwater use against their allocation are on the same "level field" as those using irrigation efficiency.

The committee would also review whether 80% irrigation efficiency is appropriate to current farm management methods or whether this efficiency percentage should be changed. The committee should be convened within six months of adoption of this Management Plan. Recommendations of the committee would be presented to the FCGMA for possible modification of current ordinances.

11.2.5 Additional Monitoring

Additional monitoring may be required by the FCGMA when certain management strategies are implemented. For instance, projects that rely upon new pumping from the Forebay basin, as a result of water delivery to areas that are not as readily recharged such as the south Oxnard Plain, may require additional monitoring to ensure that other Forebay pumpers are not adversely impacted. It is recommended that this additional monitoring be a condition of approval for applying pumping credits to the Forebay when they are earned elsewhere within the FCGMA.

Additional monitoring is also required as part of the East Las Posas Basin Management Plan (Attachment C). This additional monitoring is incorporated in the FCGMA Management Plan by reference.

In addition, monitoring should also be required for projects in the future that pump poor-quality water without an allocation along Calleguas Creek. This monitoring would focus on detecting both improvements in water quality in the pumped area and un-anticipated changes in water levels or water quality in adjacent portions of the FCGMA aquifers.

11.2.6 Use Penalties to Purchase Replacement Water

The FCGMA charges a penalty to pumpers for extracting more water than is allowed under the various allocations (Historical, Baseline, Irrigation Efficiency). The increased groundwater use caused by the over-pumping could be offset by using the fees generated by penalties to purchase replacement water for the extracted groundwater. The FCGMA has several options to obtain additional water, including purchasing unused portions of Ventura County's State Water Allocation, paying M&I users to increase their imported/groundwater blend, and purchase of water through a variety of programs from the State or others such as turn-back pool water, Dry-Year Purchase Program, and other programs. This water could be delivered through either conveyance down the Santa Clara River or Calleguas MWD's pipeline, depending upon how the water was purchased and used.

11.3 RECOMMENDED ADDITIONS TO FCGMA POLICIES

11.3.1 5-Year Update of FCGMA Management Plan

It is recommended that this Plan be updated every five years. This update should include a status of how the BMOs are being met, effectiveness of strategies that have been implemented, status of other recommended strategies, and recommendations for any additional management strategies.

11.3.2 Separate Management Plans for Some Basins

All of the basins within the FCGMA are managed under an umbrella of this Management Plan. However, there are circumstances in some of the basins that require additional management policies, such as in the East Las Posas basin. It is recommended that the FCGMA Board adopt the East Las Posas Management Plan (Appendix C) by resolution. In addition, the policies on pumping and treating poorer quality groundwater without an allocation should be incorporated into FCGMA policy by adopting this overall FCGMA Management Plan.

It is recommended that no changes be made to current FCGMA pumping reductions that treat all the FCGMA basins the same. It would be appropriate to revisit this policy in the future if basin management objectives have been achieved in a particular basin; the FCGMA Board might consider whether it is appropriate to continue with additional pumping reductions.

11.3.3 Adoption of Basin Management Objectives

The basin management objectives recommended in this Management Plan should be adopted by resolution by the FCGMA Board. As additional information becomes known about individual groundwater basins, it may be appropriate to modify the recommended objectives and/or to add additional objectives.

11.3.4 Extractions of Poor-Quality Water Without an Allocation

There are additional areas along Calleguas Creek besides the South Las Posas basin where groundwater has elevated salinity. Base flow from the Arroyo Las Posas has migrated completely across the South and East Las Posas basins and into the northernmost Pleasant Valley basin, providing a source of new recharge to this portion of the Pleasant Valley basin. However, this new recharge water has created water quality problems for groundwater pumpers. City of Camarillo wells in this area have experienced increased salts as groundwater

levels have risen over the last decade, similar to what has already happened in the South and East Las Posas basins.

Extraction of this groundwater is an appropriate groundwater management strategy providing that either: 1) extracting the groundwater improves the overall water quality in the basin without also causing overpumping of the basin or 2) extracting the groundwater provides a new water supply outside of those currently allocated by the FCGMA. If these conditions are not met, then the extractions should be debited against an existing allocation. In the South Las Posas basin, for example, pumping and treating the shallow groundwater would both improve the water quality and not reduce supplies to the basin (better quality stormwater that now bypasses the basin would then have the ability to infiltrate and replace the pumped water). Alternatively, if shallow groundwater along Calleguas Creek was not hydraulically connected to the main portion of the basin, and pumping that groundwater would have no effect on groundwater in the main basin, then pumping this groundwater could provide a new supply of water. This lack of hydrologic connection would have to be demonstrated using standard geologic techniques. These techniques would include analysis of groundwater levels, water quality parameters, well logs, age-dating, geochemical analyses, or other techniques.

11.3.5 Barrier Wells

As discussed in section 10.3.1 *Barrier Wells in South Oxnard Plain*, construction of injection barrier wells near the coastline to prevent landward migration of saline intrusion is one management strategy. Under current FCGMA policy, any project in the future that has barrier wells as a project component would need FCGMA approval to earn extraction credits that could be used to pump a like amount of groundwater elsewhere within the FCGMA. As discussed in section 10.1.5 *Policy on Recovery of Credits from Oxnard Plain Forebay Basin*, there may be issues related to the pump-back. It is recommended that any such FCGMA approval be contingent upon analysis of the potential effectiveness of the barrier in the improving water quality, analysis showing that pumping credits earned by injection that are used elsewhere does not adversely affect the pumped area, and a monitoring program to measure the effects of both the barrier wells and the extraction wells.

11.3.6 Protecting Recharge Supplies

Because of the importance of preserving current recharge sources for the aquifers and potentially adding additional recharge, the FCGMA adopts a policy that protects these recharge sources. Although the FCGMA cannot determine water rights, it will use its influence with other agencies to ensure protection of the recharge sources. FCGMA actions might include writing letters of support, discussing the issues with other agencies, and testifying at hearings related to these recharge sources.

11.3.7 Nitrate Sources in Oxnard Plain Forebay Basin

It is recommended that the FCGMA develop a policy to limit high-nitrate crops in reclaimed gravel basins where there is little or no vadose zone for degradation of the nitrate before it reaches groundwater. The particulars of this issue are discussed in section 10.1.4 *Limitation on Nitrate Sources in Portions of the Oxnard Plain Forebay Basin*.

11.3.8 Additional Conservation Measures

It is recommended that the FCGMA Board adopt a policy encouraging all planning agencies within the FCGMA to require dual plumbing in new developments where treated wastewater is

feasible for use. As part of this policy, the FCGMA should work with planners to incorporate these policies into general plans and other appropriate planning documents.

11.3.9 Verification Procedure for Extraction Reporting

It is recommended that the FCGMA establish a verification procedure to ensure that self-reporting of extractions by pumpers to the FCGMA is accurate. This procedure could be as simple as an annual random inspection of a few meters to ensure that the meter is installed and that the readings that are reported to the FCGMA agree with the meter readings.

11.3.10 Consideration of Further Pumping Reductions

If most of the effective strategies recommended in this Plan are not implemented because of cost, lack of cooperation, lack of will, or some other factor, the FCGMA should consider further pumping reductions. The actual reductions required would depend upon how the basins have responded to the strategies that have been implemented, and the required reductions could be determined using the groundwater model at that time.

12.0 SUMMARY OF FCGMA MANAGEMENT STRATEGIES

FCGMA management strategies are separated into three categories – current, in development, and future. Each strategy has a short description. For a full discussion of each strategy, refer to the earlier three sections on management strategies. Some of these strategies related directly to FCGMA ordinances and other actions. Many of these strategies are carried out by agencies other than the FCGMA, but FCGMA policies either encourage these projects or make them possible through the credit program.

12.1 CURRENT STRATEGIES

Includes those within the original 1985 FCGMA Management Plan and those that have been developed since that time:

- Limitation of Groundwater Extractions – 25% phased reduction in pumping, including 80% agricultural efficiency.
- Encourage Both Wastewater Reclamation and Water Conservation – Encouraged use of recycled water and water conservation techniques.
- Operation of the Oxnard Plain Seawater Intrusion Control Project (UWCD's Pumping Trough Pipeline, Lower Aquifer System Wells, Freeman Diversion) – Encourage UWCD projects.
- Annual Groundwater Monitoring Program – Conducted by VCWPD and UWCD.
- East and West Las Posas Basin Pumping Restrictions – Restricted water use outside La Posas basin and FCGMA boundary.
- Monitor FCGMA Groundwater Extractions – Program of reporting extractions to FCGMA.
- Implementation of Drilling and Pumping Restrictions – Various policies for aquifers used for water production and for well completions.

- Metering of Groundwater Extractions – Required meters on all except domestic wells.
- Fox Canyon Outcrop Expansion Area – Grandfathered some historic areas where groundwater pumped from within the FCGMA is delivered outside of Agency boundaries.
- Noble Spreading Basins – Encouraged expanding UWCD historical artificial recharge areas.
- Las Posas Basin ASR Project – Set criteria for Aquifer Storage and Recovery project in Las Posas basin.
- Conejo Creek Diversion Project – Allowed credits for diversion and delivery of water to pumpers in-lieu of their pumping groundwater.
- Supplemental M&I Water Program – Allowed credits earned in Pleasant Valley basin to be pumped from Oxnard Plain Forebay basin which is more easily recharged.
- Saticoy Wellfield – Groundwater pumped by UWCD from Oxnard Plain Forebay basin is delivered to pumpers in Oxnard Plain and Pleasant Valley basins in lieu of pumping local groundwater.
- Importation of State Water – Credits earned by UWCD for importing State Water for recharge are put in a special account to help solve management problems in the future.
- Calibration of Groundwater Extraction Meters – Meters on wells will now be re-calibrated every three years.

12.2 STRATEGIES UNDER DEVELOPMENT

Includes strategies in which planning and design of projects is currently taking place:

- RiverPark Recharge Pits – Encourage additional recharge facilities in Forebay.
- GREAT Project (Recycled Water) – Credits earned from in-lieu deliveries and injection of recycled can be pumped from Forebay.
- South Las Posas Basin Pump/Treat – Poor quality water can be pumped and treated without using credits.
- Development of Brackish Groundwater, Pleasant Valley Basin – Poor quality water may be able to be pumped and treated without using credits.
- Non-Export of FCGMA Water – Enforce current restrictions on water export; determine procedure for periodic evaluation of whether there are new water exports.

12.3 FUTURE STRATEGIES – 5 YEARS

Includes strategies that could be implemented within the first 5 years (ranked in order of effectiveness):

- 5-Year Update of FCGMA Management Plan – Regular updating of plan, report on BMOs and progress

- Plan to Shift Some Pumping Back to Upper Aquifer System – Shift some new wells back to UAS, with area and number to be determined jointly with UWCD using Ventura Regional Groundwater Model.
- Protect Current Sources of Recharge – Use FCGMA influence with regulatory agencies to ensure that sources of recharge such as the Santa Clara River are not degraded or unduly dedicated to non-recharge uses.
- Limitation on Nitrate Sources in Portions of the Oxnard Plain Forebay Basin – Limit high-nitrate crops in reclaimed gravel basins in Forebay where a vadose zone is either very thin or missing.
- Policy on Recovery of Credits from Oxnard Plain Forebay Basin – Adopt a recommended policy for transfer of credits for pumping in the Oxnard Plain Forebay basin.
- Verification of Extraction Reporting – Annually check a few random wells for meter use and accurate reporting of meter readings.
- Separate Management Strategies for Some Basins – Adopt East Las Posas Basin Management Plan.
- FCGMA Boundary – Adjust FCGMA boundary to conform to Oak Ridge fault and boundary with Santa Paula Basin Adjudication.
- Irrigation Efficiency Calculations – Consider modifying calculations for Irrigation Efficiency Allocation.
- Additional Storage Projects in Overdrafted Basins – Consider storage projects in Pleasant Valley and perhaps southern Oxnard Plain basins, ensuring that the storage does not interfere with current groundwater uses or recharge to the basin.
- Penalties Used to Purchase Replacement Water – Use penalties for pumping beyond allocation to purchase water for recharge to the aquifers.
- Additional Water Conservation – Encourage agencies and cities to require dual plumbing in new developments, where possible, to replace groundwater use with recycled water.
- Shelf Life for Conservation Credits – Allow Conservation Credits to expire after a wet-dry cycle to bring credit policy in line with goals of this program.

12.4 FUTURE STRATEGIES – 10 YEARS

Includes strategies that could be implemented within 5 to 10 years (ranked in order of effectiveness):

- Additional In-Lieu Recharge to South Oxnard Plain – Deliver additional water to southern Oxnard Plain to offset pumping.
- Import Additional State Water – Import and recharge more of Ventura County's State Water Allocation.

- Further Destruction of Abandoned or Leaking Wells – Seek grant funding to reinstate program of destroying abandoned or leaking wells that pose a risk of cross contamination of FCGMA aquifers.
- Additional Monitoring Needs – Support UWCD and VCWPD in determining additional monitoring needs as contamination threats evolve.

12.5 FUTURE STRATEGIES – 10 TO 15 YEARS

Includes strategies that could be implemented within 10 to 15 years (ranked in order of effectiveness):

- Barrier Wells in South Oxnard Plain – Develop a policy for credits for water injected in barrier wells.
- Injection of Treated River Water into Overdrafted Basins – Treat diverted river water to drinking water quality and recharge it through injection in Oxnard Plain and Pleasant Valley basin.
- Increase Diversions from Santa Clara River– Increase diversions of high-volume storm flows for recharge.
- Shift Pumping to Northwest Oxnard Plain – Shift some pumping to the more easily recharged northwestern Oxnard Plain.

12.6 FUTURE STRATEGIES – GREATER THAN 15 YEARS

Includes strategies that could be implemented more than 15 years from now (ranked in order of effectiveness):

- Additional Reductions in Pumping Allocations – As a last resort if the other strategies fail to meet Basin Management Objectives, consider reducing allocations beyond the required 25% reduction. Also consider focusing these reductions in the south Oxnard Plain and Pleasant Valley basins where groundwater levels are particularly depressed.

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A 1.0 APPENDIX A - PROGRESSION OF SEAWATER INTRUSION BENEATH THE SOUTH OXNARD PLAIN

Although seawater intrusion under the Oxnard Plain has been studied over several decades, the details of the intrusion have not been analyzed until recently when United Water Conservation District (UWCD) entered all historic data on water levels, water quality, and well construction into digital databases and GIS coverages so the entire data set could be analyzed systematically. This new analysis uses all this digital information to construct a series of maps depicting groundwater levels and chloride concentrations in wells within the south Oxnard Plain from as far back as 1920. The analysis used 5-year time slices in both the Lower Aquifer System and Upper Aquifer System to determine when groundwater levels first dropped below sea level, when chloride levels first increased as a result of the landward gradient caused by these lowered groundwater levels, and the progression of saline water since that time.

Saline intrusion is recognized in monitoring wells by concentrations of chloride and Total Dissolved Solids (TDS) that are several times higher than the Basin Plan Objectives of 150 mg/L and 1,200 mg/L, respectively. In practice, the leading edge of the intrusion is mapped on the Oxnard Plain as the first occurrence of chloride in excess of 500 mg/L., which is used in the following set of maps.

Groundwater levels first dropped below sea level in the period 1945-49 in the Upper Aquifer System (Figure 34), although groundwater levels were scarce at the coastline for some years prior to that time. In the following 5-year time slice of 1950-54 (Figure 35), groundwater levels dropped below sea level across much of the south Oxnard Plain, and chlorides increased to as much as 1,925 mg/L at the Port Hueneme coastline. Thus, the apparent time lag between groundwater dropping below sea level and the encroachment of seawater was somewhere in the range of 5 to 10 years. In the following 5-year time slice of 1955-59, chlorides increased rapidly in coastal wells, reaching as high as 27,350 mg/L (Figure 36).

Although a few sampled wells may have had corroded casings that allowed poorer-quality perched water to flow into the well, most of the early chloride readings were taken from pumping wells with a smaller chance of significant cross-contamination during sampling (groundwater flowing into pumping wells would likely come mostly from screened intervals in the well). Outliers of wells with poorer quality water were not considered in the interpretation of the areas of saline intrusion to minimize random instances of cross-contamination; it was only concentrations of wells with poor quality water that were considered as significant. Within the first 20 years of intrusion, higher chloride levels were evident up to 3 miles inland from the area of initial intrusion, an intrusion rate of about 800 feet per year. This rate of intrusion is similar to rates calculated for seawater intrusion in the Salinas groundwater basin (e.g., CDWR, 1973).

The intrusion of the Upper Aquifer System in the Port Hueneme area was temporarily arrested during the mid 1980s following a wet climatic cycle (e.g., Figure 42). As the new FCGMA policies, the Freeman Diversion, and the PTP Pipeline came online, chloride levels in the Port Hueneme saline lobe in the Upper Aquifer System continued to decrease, with chloride concentrations in some wells near the coastline returning to drinking-water quality. However, chloride levels remain high in smaller lobes centered around both Port Hueneme Harbor and Mugu Lagoon (Figure 44). Unfortunately, some of the saline water intruded around Port Hueneme did not exit via the canyon when high water levels return. Unquantified amounts of saline water were transported to the southeast along the coast by the prevailing (non-drought period) groundwater gradient.

Intrusion in the Lower Aquifer System lagged considerably in time behind the Upper Aquifer System. Groundwater levels near the coastline first went below sea level in the 1955-59 time period (Figure 48), but high chlorides were not detected until the 1985-89 time period at Port Hueneme and the 1990-94 time period near Point Mugu (Figure 52, Figure 53), some 30 years later. This time lag is partially caused by the longer travel time for seawater intruded from the Lower Aquifer System outcrops along the offshore Hueneme Submarine Canyon walls and partially the result of the lack of monitoring points right at the coastline until the USGS monitoring wells were drilled in the late 1980s and early 1990s. As discussed in section 5.0 *Water Quality Issues*, the U.S. Geological Survey interpretation is that the majority of the saline intrusion in the Lower Aquifer System near Point Mugu is saline water being pulled from surrounding sediments rather than from the ocean itself (see Figure 56).

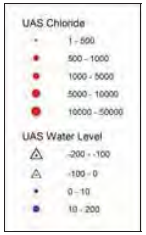

Figure 29. Legend for Figure 30 to Figure 44 for Upper Aquifer System time slices. Chloride concentrations are in mg/L, water level is elevation above or below mean sea level. All maps are oriented with north to the top of the page. Area of map coincides with location map in Figure 2 in section 2.0 *Background of Groundwater Management and Overdraft Within the FCGMA.*

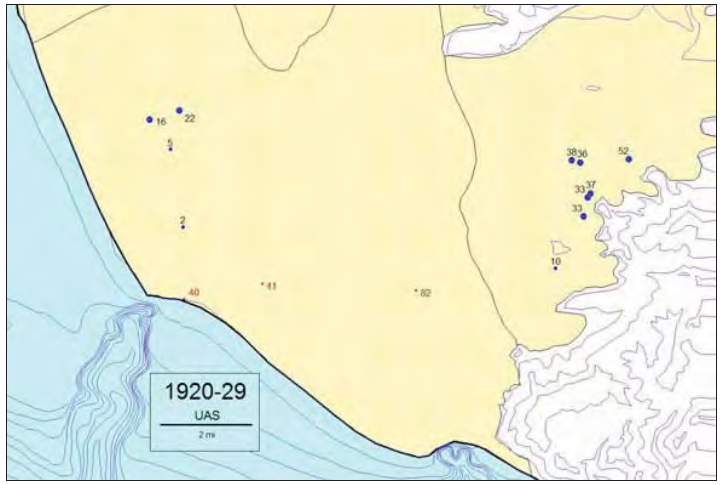

Figure 30. Upper Aquifer System groundwater levels and chloride levels, 1920 to 1929. Legend is shown in Figure 29. Line in title block is two miles in length.

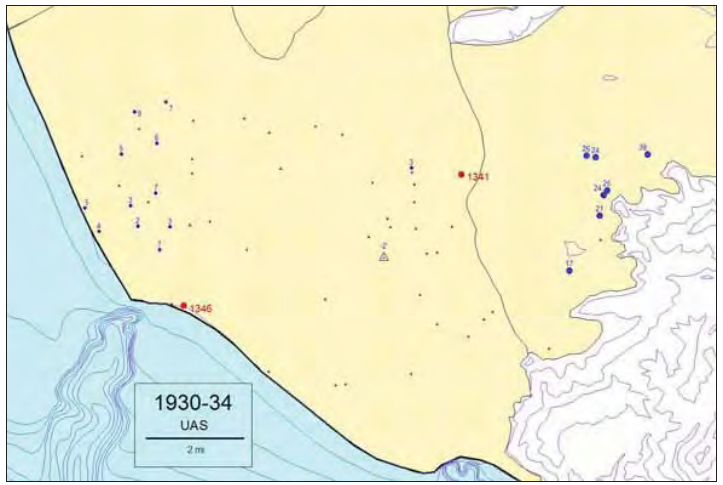

Figure 31. Upper Aquifer System groundwater levels and chloride levels, 1930 to 1934. Legend is shown in Figure 29. Line in title block is two miles in length.

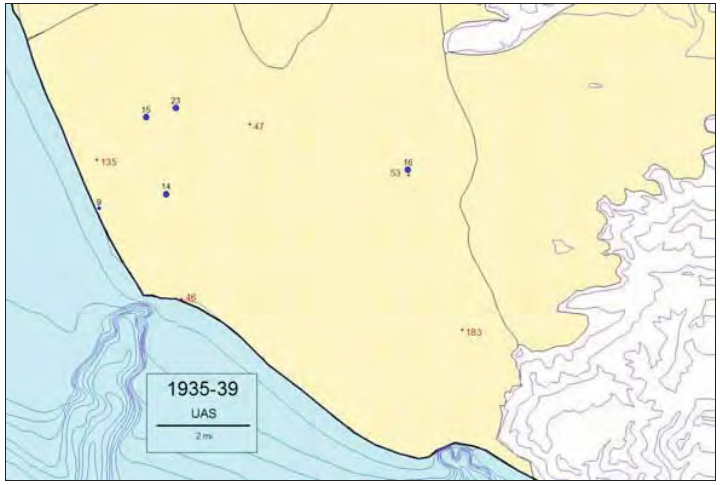

Figure 32. Upper Aquifer System groundwater levels and chloride levels, 1935 to 1939. Legend is shown in Figure 29. Line in title block is two miles in length.

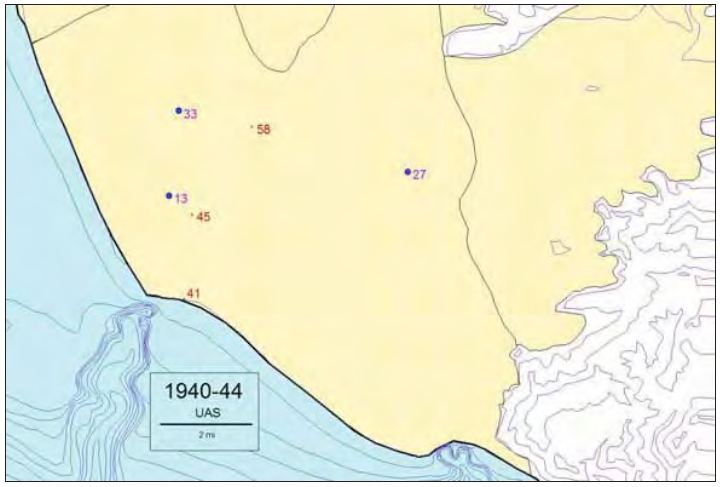

Figure 33. Upper Aquifer System groundwater levels and chloride levels, 1940 to 1944. Legend is shown in Figure 29. Line in title block is two miles in length.

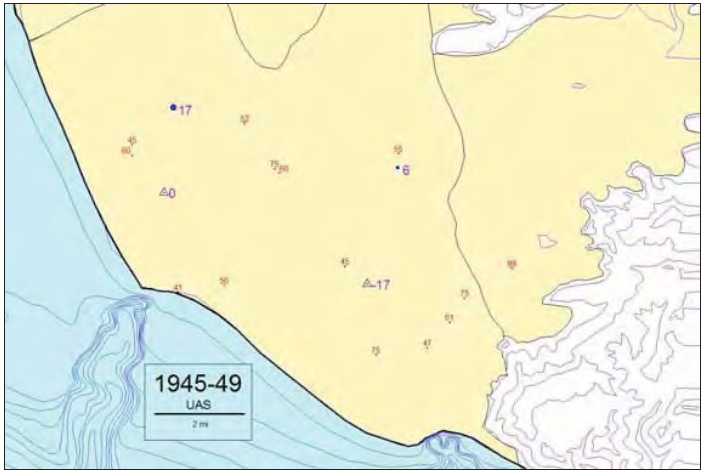

Figure 34. Upper Aquifer System groundwater levels and chloride levels, 1945 to 1949. Legend is shown in Figure 29. Line in title block is two miles in length.

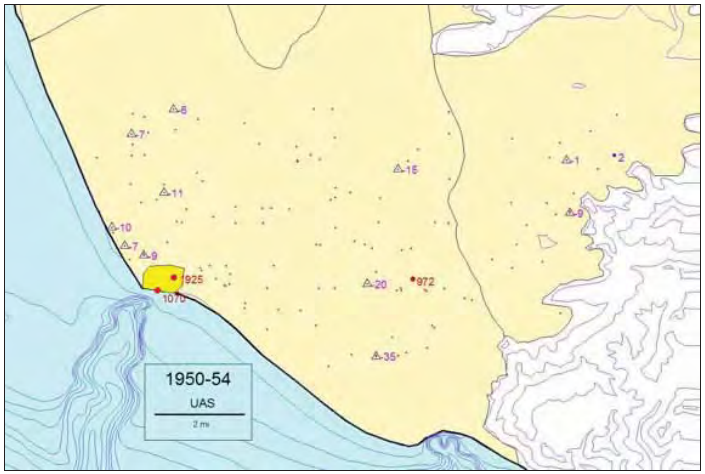

Figure 35. Upper Aquifer System groundwater levels and chloride levels, 1950 to 1954. Legend is shown in Figure 29. Bright yellow area is intruded by seawater near Hueneme Submarine Canyon. Line in title block is two miles in length.

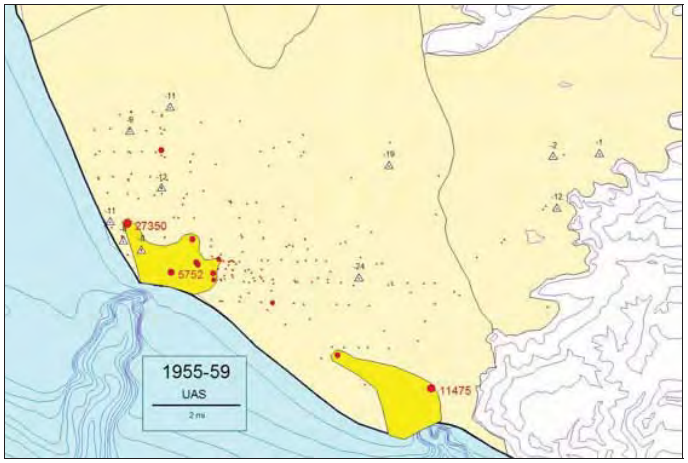

Figure 36. Upper Aquifer System groundwater levels and chloride levels, 1955 to 1959. Legend is shown in Figure 29. Bright yellow areas are intruded by saline waters. Line in title block is two miles in length.

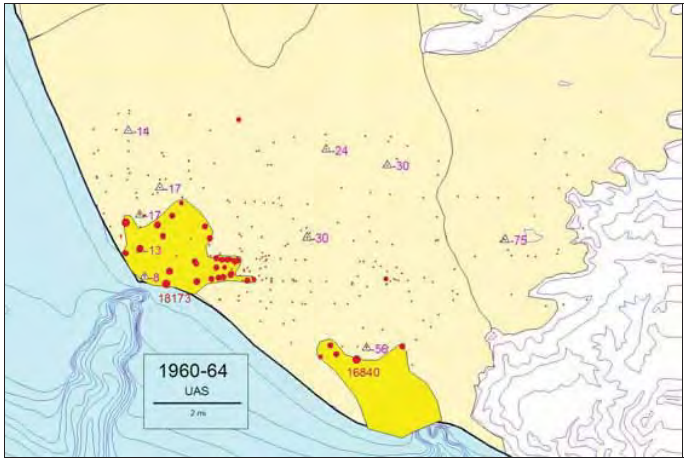

Figure 37. Upper Aquifer System groundwater levels and chloride levels, 1960 to 1964. Legend is shown in Figure 29. Bright yellow areas are intruded by saline waters. Line in title block is two miles in length.

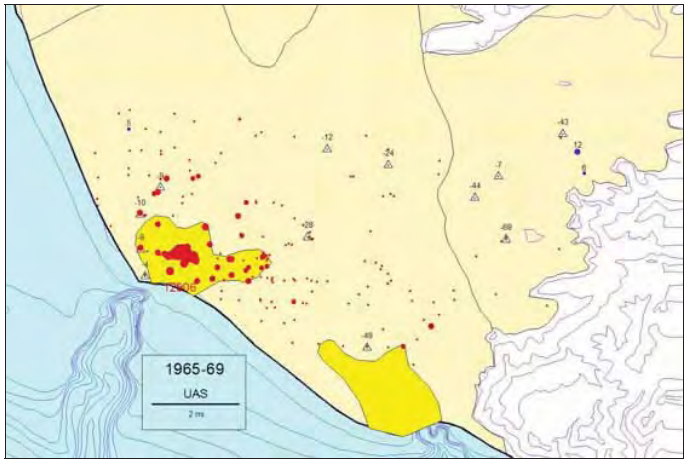

Figure 38. Upper Aquifer System groundwater levels and chloride levels, 1965 to 1969. Legend is shown in Figure 29. Bright yellow areas are intruded by saline waters. Line in title block is two miles in length.

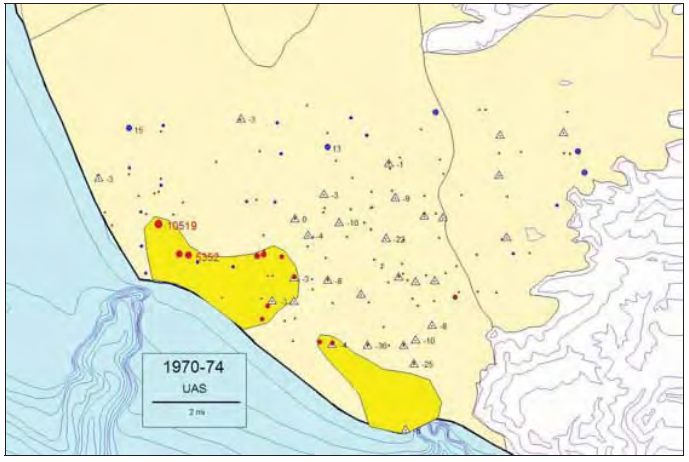

Figure 39. Upper Aquifer System groundwater levels and chloride levels, 1970 to 1974. Legend is shown in Figure 29. Bright yellow areas are intruded by saline waters. Line in title block is two miles in length.

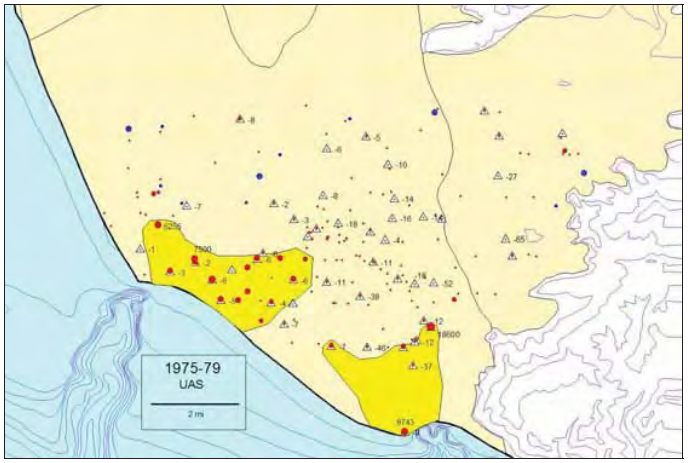

Figure 40. Upper Aquifer System groundwater levels and chloride levels, 1975 to 1979. Legend is shown in Figure 29. Bright yellow areas are intruded by saline waters. Line in title block is two miles in length.

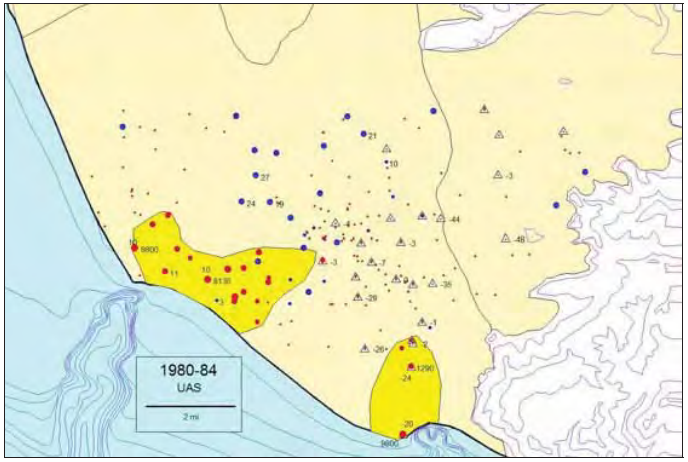

Figure 41. Upper Aquifer System groundwater levels and chloride levels, 1980 to 1984. Legend is shown in Figure 29. Bright yellow areas are intruded by saline waters. Line in title block is two miles in length.

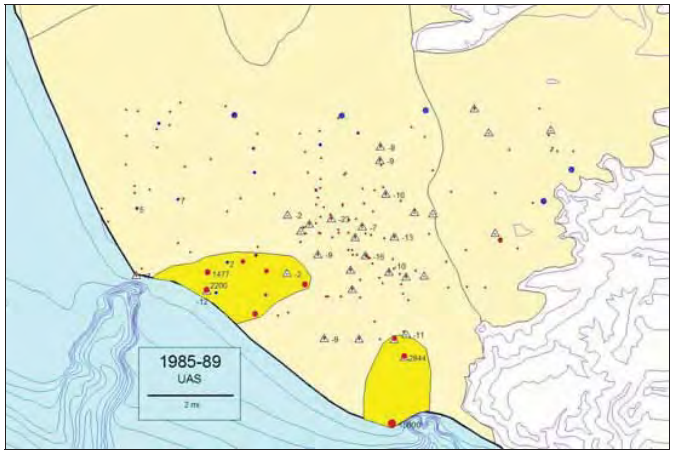

Figure 42. Upper Aquifer System groundwater levels and chloride levels, 1985 to 1989. Legend is shown in Figure 29. Bright yellow areas are intruded by saline waters. Line in title block is two miles in length.

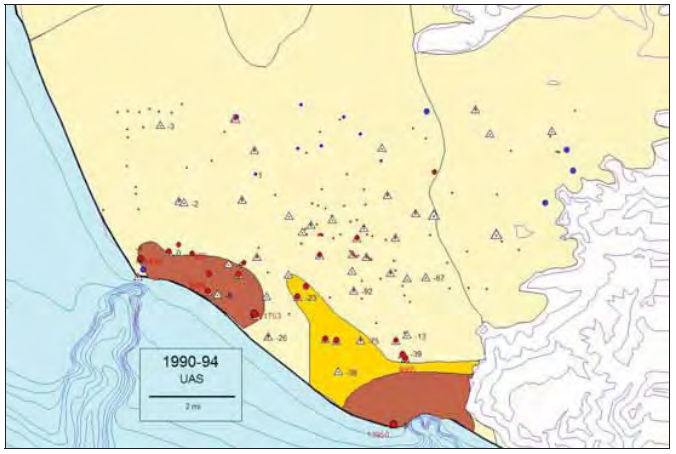

Figure 43. Upper Aquifer System groundwater levels and chloride levels, 1990 to 1994. Legend is shown in Figure 29. Source of saline intruded areas: reddish brown is from seawater; yellow-orange is from sediments. Line in title block is two miles in length.

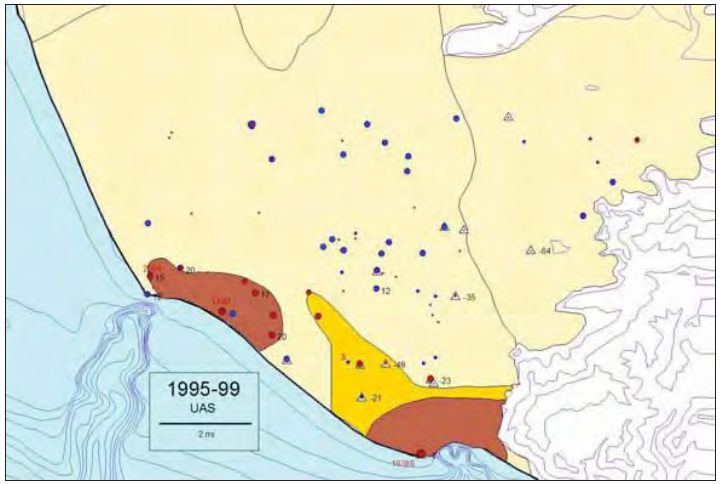

Figure 44 Upper Aquifer System groundwater levels and chloride levels, 1995 to 1999. Legend is shown in Figure 29. Source of saline intruded areas: reddish brown is from seawater; yellow-orange is from sediments. Line in title block is two miles in length.

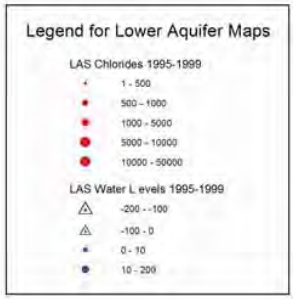

Figure 45. Legend for Figure 46 to Figure 56 for Lower Aquifer System time slices. Chloride concentrations are in mg/L, water level is elevation above or below mean sea level. All maps are

oriented with north to the top of the page. Area of map coincides with location map in Figure 2 in section 2.0 *Background of Groundwater Management and Overdraft Within the FCGMA*.

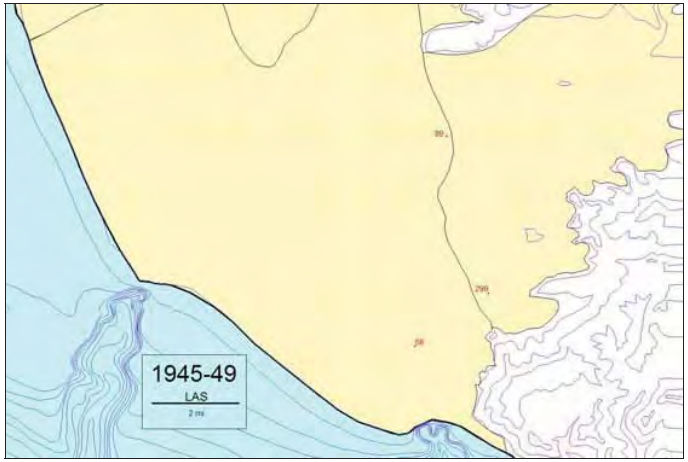

Figure 46. Lower Aquifer System groundwater levels and chloride levels, 1945 to 1949. Legend is shown in Figure 45. Line in title block is two miles in length.

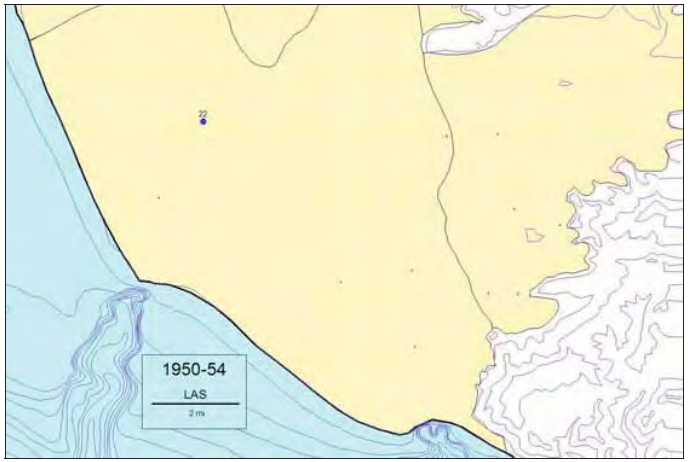

Figure 47. Lower Aquifer System groundwater levels and chloride levels, 1950 to 1954. Legend is shown in Figure 45. Line in title block is two miles in length.

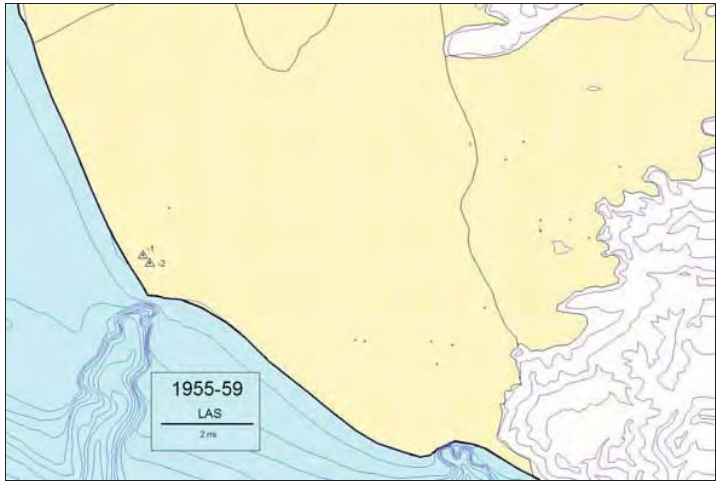

Figure 48. Lower Aquifer System groundwater levels and chloride levels, 1955 to 1959. Legend is shown in Figure 45. Line in title block is two miles in length.

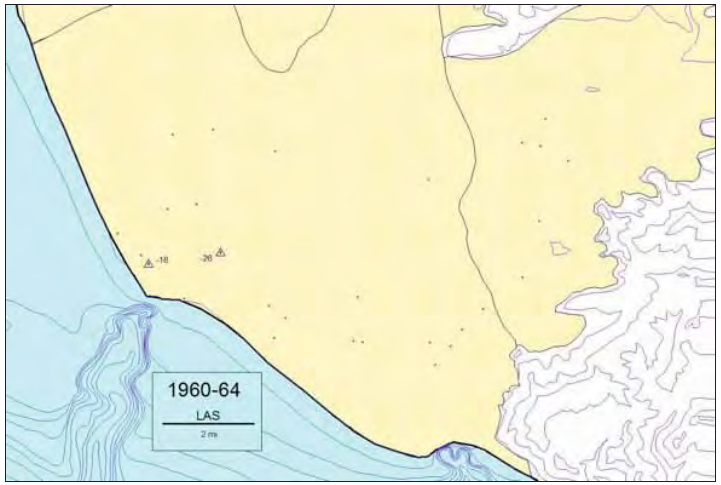

Figure 49. Lower Aquifer System groundwater levels and chloride levels, 1960 to 1964. Legend is shown in Figure 45. Line in title block is two miles in length.

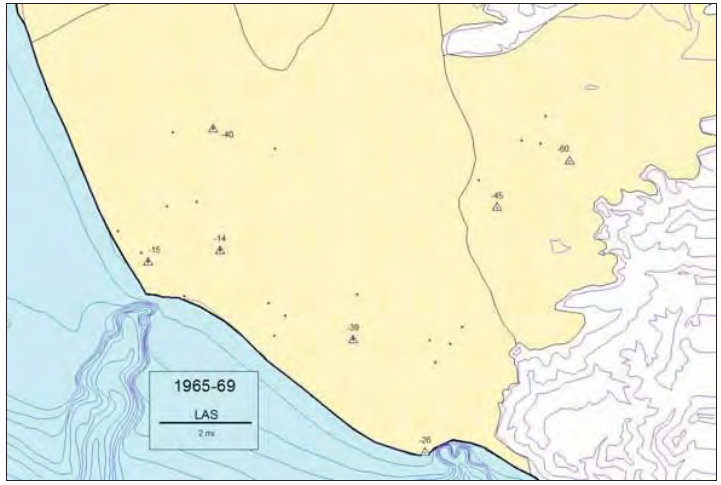

Figure 50. Lower Aquifer System groundwater levels and chloride levels, 1965 to 1969. Legend is shown in Figure 45. Line in title block is two miles in length.

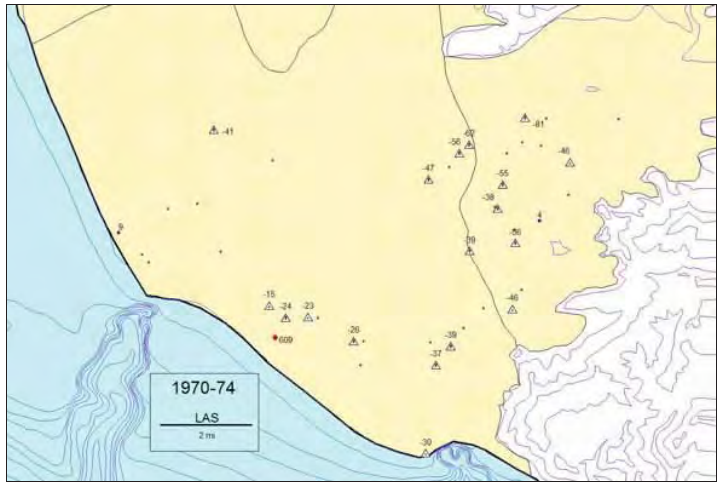

Figure 51. Lower Aquifer System groundwater levels and chloride levels, 1970 to 1974. Legend is shown in Figure 45. Line in title block is two miles in length.

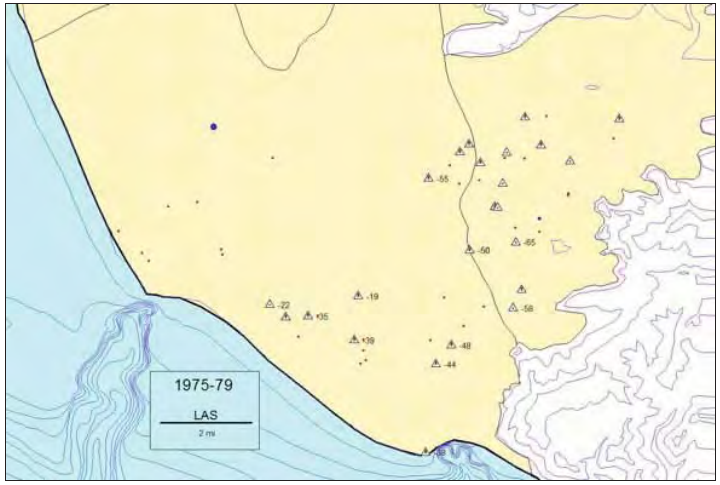

Figure 52. Lower Aquifer System groundwater levels and chloride levels, 1975 to 1979. Legend is shown in Figure 45. Line in title block is two miles in length.

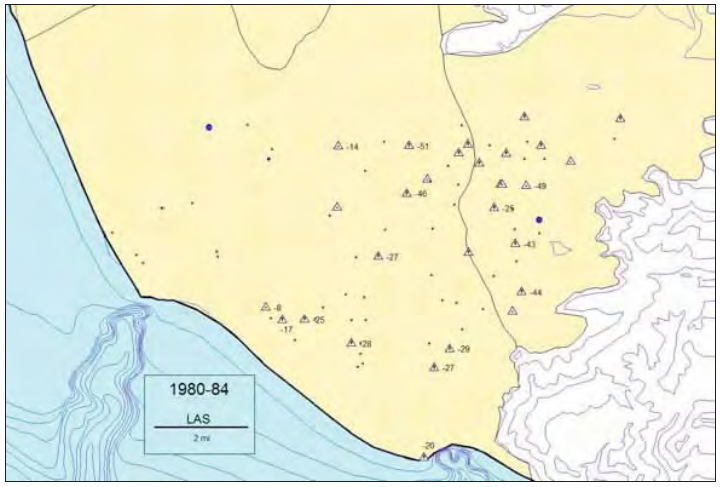

Figure 53. Lower Aquifer System groundwater levels and chloride levels, 1980 to 1984. Legend is shown in Figure 45. Line in title block is two miles in length.

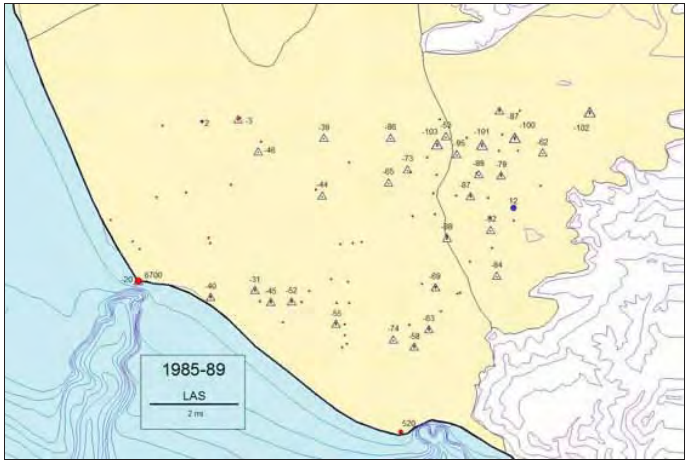

Figure 54. Lower Aquifer System groundwater levels and chloride levels, 1985 to 1989. Legend is shown in Figure 45. Note start of seawater intrusion (red dot) at head of Hueneme Submarine Canyon. Line in title block is two miles in length.

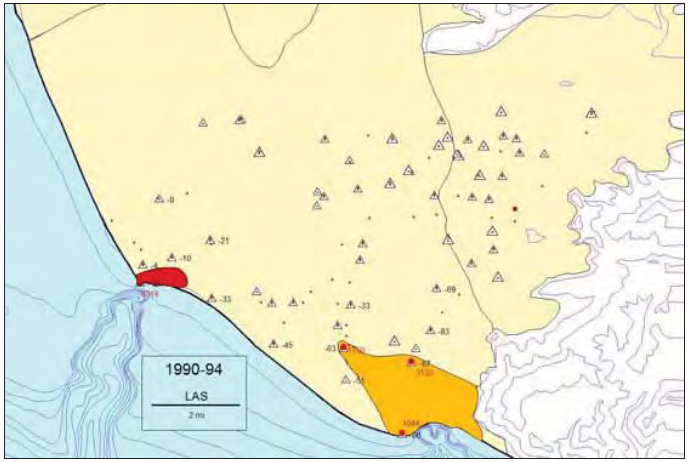

Figure 55. Lower Aquifer System groundwater levels and chloride levels, 1990 to 1994. Legend is shown in Figure 45. Source of saline intruded areas: reddish brown is from seawater; yellow-orange is from sediments. Line in title block is two miles in length.

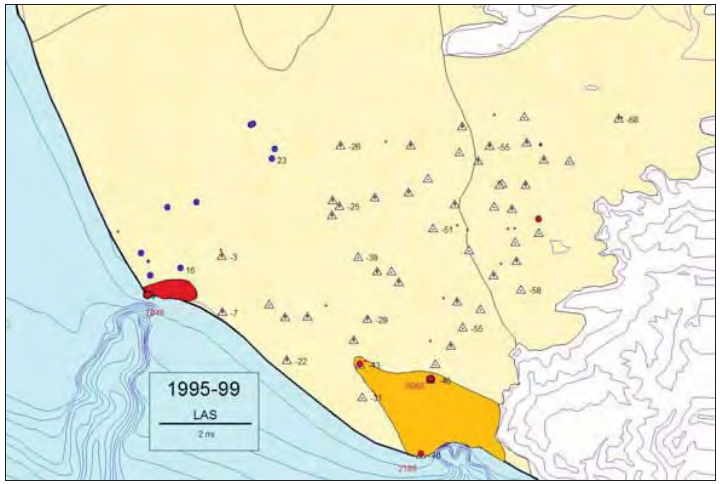

Figure 56. Lower Aquifer System groundwater levels and chloride levels, 1995 to 1999. Legend is shown in Figure 45. Source of saline intruded areas: reddish brown is from seawater; yellow-orange is from sediments. Line in title block is two miles in length.

A2.0 APPENDIX B. - VENTURA REGIONAL GROUNDWATER MODEL

A2.1 INTRODUCTION

The Ventura Regional Groundwater Model is a tool developed to evaluate multifaceted conjunctive use groundwater management projects designed to alleviate seawater intrusion, overdraft, land subsidence and other problems. These projects include in-lieu use of surface water, shifts in pumping and waste water effluent recycling.

The regional groundwater flow model was originally developed by the U.S. Geological Survey (Hanson et al., 2003) as part of the Regional Aquifer Systems Analysis (RASA), jointly funded by United Water Conservation District and Ventura County Water Resources.

The model is a finite difference numerical model which uses the MODFLOW code. The USGS developed an historical model from 1891 to 1993 and a forward model based on 1970 to 1993 hydrology. The original 2 layer model (Upper Aquifer System and Lower

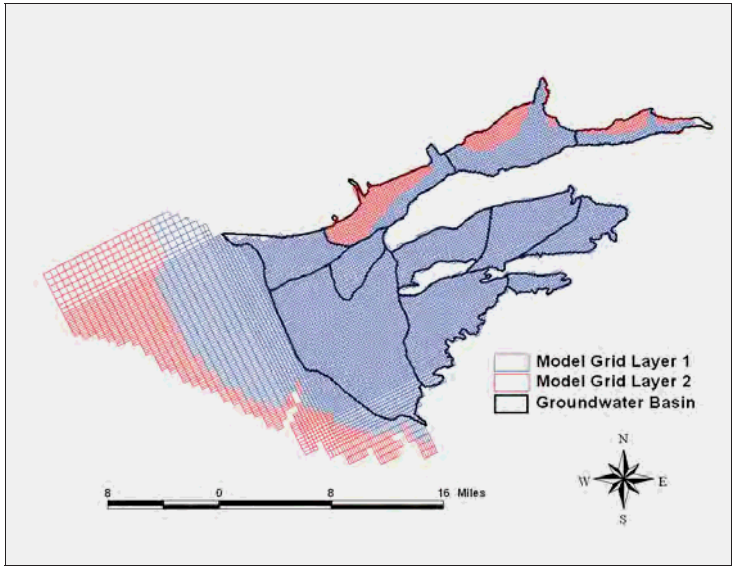

Figure 57. Updated model grid for Ventura Regional Groundwater Model.

Aquifer System) consists of a grid that contains 60 rows and 110 columns for a total of 6,600 cells (Figure 57). Within each cell a groundwater level can be computed. Volume amounts of flow can be computed from cell to cell, basin to basin and from layer to layer. The groundwater

basins within the model include Piru, Fillmore, Santa Paula, Mound, Oxnard Plain Forebay, Oxnard Plain, Pleasant Valley, East Las Posas, West Las Posas, South Las Posas, and Santa Rosa.

Water resource inputs to the model include stream flow, artificial recharge, onshore flow, effluent recharge, recharge on permeable mountain front outcrops, rainfall infiltration on the valley floor, and groundwater storage within the permeable sand and gravel aquifers. Water resource outputs include offshore flow and pumping.

The United Water Conservation District has recently modified the groundwater model. The modifications include the following:

- Model was put on user friendly *Groundwater Vistas* platform. This eliminates having to run the model in DOS.
- Refinement of cell size from 1/2 mile x 1/2 mile to 1/6 mile x 1/6 mile for the alluvial basins. This, for example, enables the artificial recharge water to more accurately be input to the appropriate area instead of overlapping into the river.
- Reduction in grid size. In the original USGS model only 28% of the grid cells are active. In the modified model 47% of grid cells are active (ETIC, 2003).
- Extension of the historical and forward model to include 1994 to 2000 hydrology.
- Addition of a zone of lower hydraulic conductivity in the Lower Aquifer System extending in a linear trend from the Camarillo Hills anti-cline to Port Hueneme. This is to simulate the maximum uplift and truncation of the more permeable upper portion of the Lower Aquifer System along this linear trend.
- Addition of an additional layer in the upper basins of Piru, Fillmore, and Santa Paula to better simulate the more permeable alluvium along the Santa Clara River, Sespe Creek, Santa Paula Creek and Piru Creek.
- Recalibration of the Forebay and Oxnard Plain portions of the model over the period 1983 to 1998 to reflect the increased diversions and recharge that have occurred in this area since the USGS originally calibrated the model (UWCD, 2006b).
- Expansion of the forward model period to a full 55 years that reflect the climate and hydrology of the years 1944 to 1998. This period is a commonly-used base period because it starts and ends in very wet years, spans several wet and dry cycles, and represents zero cumulative departure for rainfall across the period.

The regional groundwater flow model has been used in the following projects and analyses:

- Oxnard Plain LAS and UAS overdraft analysis – UWCD (2001)
- GREAT Project EIR – UWCD and City of Oxnard
- Las Posas Basin ASR project operations – Calleguas MWD
- City of Fillmore water supply planning – UWCD and City of Fillmore
- Pleasant Valley AB303 grant study – UWCD
- Fox Canyon Groundwater Management Agency Groundwater Management Plan – UWCD and FCGMA

A2.2 MODELING FOR THE FCGMA GROUNDWATER MANAGEMENT PLAN

The Ventura Regional Groundwater Model was used to evaluate all FCGMA management strategies that change the water budget within the FCGMA – that is, all projects that have recharge and/or groundwater pumping components. The model is a groundwater flow model, not a chemical transport model, so water quality changes could not be directly tested. However,

water quality changes could be inferred from the groundwater flows and groundwater elevations in cases such as seawater intrusion – we know how high groundwater elevations need to be at the coastline to prevent seawater from intruding into the aquifers.

The method of evaluation of management strategies was straightforward:

1) First, the forward model was used to determine conditions in the aquifer using only existing strategies and facilities (Base Case).

2) Each strategy was independently added to the Base Case and was run through the forward model (one model run for each strategy). A final model simulation combined all the strategies to determine if together they could solve the overdraft conditions. For ease of evaluation, it was assumed that the new strategy was in place at the beginning of the model period and remained in place for the entire model period.

3) Groundwater elevation results for all the time steps within the forward model were extracted for each of the wells for which there are water-level BMOs. Water levels at the BMO wells were compared between the Base Case and the individual management strategy to determine the effect of the strategy in meeting water-level BMOs.

A2.2.1 Base Case

The Base Case included strategies and facilities currently in place. Although the hydrology of the 55 years of the forward model is based on historical data, several other model inputs are different than they were during the historic period. For instance, the Freeman Diversion allows greater diversions now than were possible before it was constructed; these additional diversions are factored into the forward model. Likewise, groundwater extractions have been reduced during the past 15 years and the forward model must reflect these changes. To calculate the correct extractions for the forward model, the 55-year period was divided into dry, average, and wet years depending upon historical rainfall and stream flow for each model year. There were roughly equal numbers of dry, average, and wet years in the model. Representative data for dry, average, and wet years were used to approximate pumping during the model period; the representative pumping included only the previous 15 years since FCGMA pumping has been reduced and was adjusted to reflect the current 15% FCGMA pumping reduction. The average pumping over the 55-year period of the forward model was calculated to be equivalent to the actual average pumping of the past 15 years (adjusted for FCGMA pumping reductions).

The Base Case does not include potential future changes in pumping or recharge – it represents today's social, economic, and water use conditions, but tests the status quo over a range of hydrologic conditions. In this manner, various groundwater management strategies can be modeled and compared to the Base Case with no other changing conditions to complicate the comparison. Additional model simulations could factor in such changes as potential land use conversion (e.g., agriculture to urban), but it is appropriate to have these model simulations separate from the Base Case.

The Base Case is the starting point for each of the management strategies that were evaluated with the model. Each simulation discussed below simply adds the new management strategy to the Base Case for comparison. The only exception is the Combined Strategies simulation, where all the modeled strategies are combined in a single simulation.

Base Case Evaluation	Upper Aquifer	Lower Aquifer
BMO Avg (ft msl)	5.3	17.6
Base Case		
Avg (ft msl)	3.7	-40.0
% of Time Above BMO	51%	5%

Table 10. Results of Base Case groundwater model simulation. Groundwater elevations are averages for Upper and Lower Aquifer wells for which there is a groundwater elevation BMO. Also indicated is the percentage of time (weekly time steps) that groundwater elevations were above the BMO elevation for each BMO well.

A2.2.2 Sensitivity Analysis – Understatement of Reported Extractions

Concerns have been voiced that pumping reported to the FCGMA may be understated by agricultural irrigators because of either poorly-calibrated water meters or inaccuracies in using other reporting methods. To test the effect of understated pumping on modeling results, the Base Case was modified to increase agricultural pumping by 15% during all hydrologic conditions (i.e., wet, average, and dry model years). This modified simulation yielded lower groundwater levels, as would be expected (Table 11).

Pumping Sensitivity Analysis	Upper Aquifer	Lower Aquifer
Change in Avg BMO Water Levels (ft)	-7.3	-15.0
Change in % of Time Above BMO	-9%	-3%

Table 11. Change in model results for the Base Case if actual agricultural pumping was increased by 15%. The negative changes indicate that groundwater levels would be lower at BMO wells and the percentage of time that groundwater levels were above BMOs would be less.

The sensitivity analysis indicates that the Base Case modeling results may be overestimating future groundwater levels. However, if the model was recalibrated in the future to correct for any understatement of pumping, it is likely that the results would not look much different than the present Base Case. This would happen because if pumping was increased over the calibration period, then this pumping must be balanced by additional recharge that has not been accounted for. If the re-calibrated model has more recharge, then the increased pumping that would be added to the Base Case would potentially be offset by this increased recharge.

The main conclusion to be drawn from the sensitivity analysis is that the current management strategies for the basin may not be as effective as modeled, but not by any amount that would change conclusions of this Plan. More management strategies are still required, and because most of the modeling effort compares one strategy against another (a comparative rather than an absolute analysis), errors will be relatively small. However, if the meter calibration effort planned by the FCGMA proves that there is indeed understating of pumping, the model should be recalibrated to ensure that errors are marginalized.

A2.2.3 Continuation of 25% Pumping Reduction

This simulation compares attainment of BMOs between current 15% pumping reduction and full 25% pumping reduction. The 15% pumping reduction is the Base Case for the model. Thus, an additional 10% pumping reduction is applied for this comparison simulation. This reduction is applied only to M&I wells because agricultural wells have already taken actions that have reduced pumping in excess of 25% and it is unlikely that any additional steps in changing

irrigation methods will be undertaken before the 2010 date for full implementation of the 25% pumping reductions. .

Pumping for each M&I well in the model is reduced by an additional 10% for the complete model period. This results in 3,800 AFY of reduced pumping across the FCGMA.

The results of this simulation are indicated in Table 12.

25% Reduction Evaluation	Upper Aquifer	Lower Aquifer
BMO Avg Level (ft msl)	5.3	17.6
Base Case		
Avg Level (ft msl)	3.7	-40.0
% of Time Above BMO	51%	5%
25% Pumping Reduction		
Avg Level (ft msl)	4.9	-37.8
Improve from Base Case (ft)	1.2	2.2
% of Time Above BMO	53%	7%

Table 12. Results of groundwater model simulation for the continuation of the 25% FCGMA pumping reduction. Groundwater elevations are averages for Upper and Lower Aquifer wells for which there is a groundwater elevation BMO. Also indicated is the percentage of time (weekly time steps) that groundwater elevations were above the BMO elevation for each BMO well.

A2.2.4 RiverPark Recharge Pits

Compares attainment of BMOs between current recharge operations (Base Case) and the addition of the RiverPark Recharge pits. Using UWCD's daily river routing model, available storm flow that is not already diverted by the Freeman Diversion is diverted to the RiverPark Recharge Pits for percolation and recharge. This additional recharge is generally only available during the winter and spring of wetter years when river flow exceeds UWCD's current recharge capabilities. The amount of recharge water applied in any one quarter to the model for the RiverPark pits is calculated in daily increments through the river routing model, and takes into account both water availability and recharge capacity in the pits. The extra recharge varies from an average of 400 AFY in dry years to an average of 11,500 AFY during wet years.

The results of this simulation are indicated in Table 13.

RiverPark Recharge Evaluation	Upper Aquifer	Lower Aquifer
BMO Avg Level (ft msl)	5.3	17.6
Base Case		
Avg Level (ft msl)	3.7	-40.0
% of Time Above BMO	51%	5%
RiverPark Recharge		
Avg Level (ft msl)	3.7	-40.0
Improve from Base Case (ft)	<0.1	<0.1
% of Time Above BMO	52%	6%

Table 13. Results of groundwater model simulation for the RiverPark Recharge project. Groundwater elevations are averages for Upper and Lower Aquifer wells for which there is a groundwater elevation BMO. Also indicated is the percentage of time (weekly time steps) that groundwater elevations were above the BMO elevation for each BMO well.

A2.2.5 GREAT Project

This simulation compares attainment of BMOs between current basin operations (Base Case) and the addition of the GREAT project. This simulation was performed in two parts to reflect the two phases of the project that were evaluated in the City of Oxnard's EIR for the project. Although the project phases are in reality scheduled sequentially, the model simulates each phase separately to determine the effectiveness of each. For model purposes, Phase I includes 5,000 AFY of reclaimed water, with one fourth of the water being injected in the Ocean view area of the south Oxnard Plain during the first quarter of each year when agricultural demand is low, and three fourths of the water delivered to agricultural irrigators within the PTP service area in-lieu of pumping their own wells. The City of Oxnard then retrieves the 5,000 AFY of injection/in-lieu recharge (as storage credits) equally from UWCD's O-H well field in the Oxnard Plain Forebay and the City's Water Yard wells located just outside the Forebay.

The Phase II model simulation includes 21,000 AFY of reclaimed water delivered in the same proportions between direct injection and in-lieu deliveries. However, the area receiving reclaimed water for irrigation is expanded to include the Pleasant Valley County Water District delivery area. In addition, the winter injection is accomplished through a series of barrier wells located along Highway 1 and Hueneme Road. The City of Oxnard then retrieves one-third of the 21,000 AFY of injection/in-lieu recharge (as storage credits) from UWCD's O-H well field in the Oxnard Plain Forebay and two-thirds from the City's own wells located just outside the Forebay.

Phase I Results: The results of this simulation are indicated in Table 1. The 8-foot improvement in Lower Aquifer groundwater levels at BMO wells is partially offset by the drop of less than one foot in Upper Aquifer BMO wells. The average drop in groundwater levels in the Oxnard Plain Forebay basin resulting from the extraction of the FCGMA credits is 2 to 3 feet.

GREAT Project Phase I Evaluation	*Upper Aquifer*	*Lower Aquifer*
BMO Avg Level (ft msl)	5.3	17.6
Base Case		
Avg Level (ft msl)	3.7	-40.0
% of Time Above BMO	51%	5%
GREAT Project Phase I		
Avg Level (ft msl)	3.4	-31.9
Improve from Base Case (ft)	-0.3	8.1
% of Time Above BMO	51%	9%

Table 1. Results of groundwater model simulation for Phase I of the GREAT project at full capacity. Groundwater elevations are averages for Upper and Lower Aquifer wells for which there is a groundwater elevation BMO. Also indicated is the percentage of time (weekly time steps) that groundwater elevations were above the BMO elevation for each BMO well.

Phase II Results: The results of this simulation are indicated in Table 15. The 38-foot improvement in Lower Aquifer groundwater levels at BMO wells is partially offset by the one-foot drop in Upper Aquifer BMO wells. The average drop in groundwater levels in the Oxnard Plain Forebay basin resulting from the extraction of the FCGMA credits is 6 to 11 feet.

GREAT Project Phase II Evaluation	*Upper Aquifer*	*Lower Aquifer*
BMO Avg Level (ft msl)	5.3	17.6
Base Case		
Avg Level (ft msl)	3.7	-40.0
% of Time Above BMO	51%	5%
GREAT Project Phase II		
Avg Level (ft msl)	2.6	-1.5
Improve from Base Case (ft)	-1.1	38.5
% of Time Above BMO	51%	36%

Table 15. Results of groundwater model simulation for Phase II of the GREAT project at full capacity. Groundwater elevations are averages for Upper and Lower Aquifer wells for which there is a groundwater elevation BMO. Also indicated is the percentage of time (weekly time steps) that groundwater elevations were above the BMO elevation for each BMO well.

A2.2.6 Shift Some Pumping From LAS to UAS

This simulation compares attainment of BMOs between current basin operations (Base Case) and the shifting of some pumping from the Lower Aquifer back to the Upper Aquifer in critical areas. For purposes of the model scenario, pumping is shifted only in the area of the Oxnard Plain basin where Lower Aquifer groundwater levels are well below sea level (southwest of the zone of low conductance that extends from the Camarillo Hills to Port Hueneme). Actual FCGMA policy might vary from this, but the model run demonstrates the effect of this policy change in a discrete area. In the simulation, 5,000 AFY of Lower Aquifer System pumping is moved to nearby Upper Aquifer System wells (or new UAS wells if necessary). There is no shift in pumping in areas where UAS water quality is not suitable for irrigation.

The results of this simulation are indicated in Table 16.

LAS to UAS Evaluation	*Upper Aquifer*	*Lower Aquifer*
BMO Avg Level (ft msl)	5.3	17.6
Base Case		
Avg Level (ft msl)	3.7	-40.0
% of Time Above BMO	51%	5%
LAS to UAS Shift		
Avg Level (ft msl)	2.6	-31.8
Improve from Base Case (ft)	-1.1	8.2
% of Time Above BMO	50%	9%

Table 16. Results of groundwater model simulation for shifting 5,000 AFY of pumping from the Lower to the Upper Aquifer in the south Oxnard Plain basin. Groundwater elevations are averages for Upper and Lower Aquifer wells for which there is a groundwater elevation BMO. Also indicated is the percentage of time (weekly time steps) that groundwater elevations were above the BMO elevation for each BMO well.

A2.2.7 Import Additional State Water

This scenario compares attainment of BMOs between current basin operations (Base Case) and the purchase and recharge of additional State Water. For the purposes of this model simulation, an additional 10,000 AF of State Water is purchased during average and dry years, delivered to Lake Piru, and then released down the Santa Clara River as part of UWCD's

normal conservation release. The portion of this water that is likely to reach the Freeman Diversion, as calculated separately using UWCD's daily river routing model, is then diverted at the Freeman Diversion and recharged in UWCD's spreading ponds in the Oxnard Plain Forebay basin.

The results of this simulation are indicated in Table 17. Average groundwater levels in the Oxnard Plain Forebay basin would be 4 to 6 ft higher than the Base Case, providing mitigation for other strategies that have a component of pumping additional groundwater from the Forebay.

Import State Water Evaluation	*Upper Aquifer*	*Lower Aquifer*
BMO Avg Level (ft msl)	5.3	17.6
Base Case		
Avg Level (ft msl)	3.7	-40.0
% of Time Above BMO	51%	5%
Import SWP		
Avg Level (ft msl)	5.5	-38.7
Improve from Base Case (ft)	1.8	1.3
% of Time Above BMO	54%	7%

Table 17. Results of groundwater model simulation of importing additional State Water. Groundwater elevations are averages for Upper and Lower Aquifer wells for which there is a groundwater elevation BMO. Also indicated is the percentage of time (weekly time steps) that groundwater elevations were above the BMO elevation for each BMO well.

A2.2.8 Increase Diversions from Santa Clara River

This simulation compares attainment of BMOs between current basin operations (Base Case) and increasing recharge from the Santa Clara River during periods of high storm flow. For purposes of this model simulation, it is assumed that the diversion rate and license of the Freeman Diversion is increased to 1,000 cfs from its current 375 cfs. Thus, during times of high flow, up to 1,000 cfs could be diverted. These additional diversions are recharged at UWCD's facilities according to their unused capacity, as determined by UWCD's daily river routing model. For purposes of the model scenario, it is assumed that the RiverPark recharge facility is available and that the Ferro gravel pit has been converted to use for recharge and storage.

The results of this simulation are indicated in Table 18. Average groundwater levels in the Oxnard Plain Forebay basin would be 6 ft higher than the Base Case, providing mitigation for other strategies that have a component of pumping additional groundwater from the Forebay.

Increase Diversions Evaluation	*Upper Aquifer*	*Lower Aquifer*
BMO Avg Level (ft msl)	5.3	17.6
Base Case		
Avg Level (ft msl)	3.7	-40.0
% of Time Above BMO	51%	5%
Increase Diversions		
Avg Level (ft msl)	6.4	-37.4
Improve from Base Case (ft)	2.7	2.6
% of Time Above BMO	54%	8%

Table 18. Results of groundwater model simulation for increasing diversions from the Santa Clara River. Groundwater elevations are averages for Upper and Lower Aquifer wells for which there is a groundwater elevation BMO. Also indicated is the percentage of time (weekly time steps) that groundwater elevations were above the BMO elevation for each BMO well.

A2.2.9 Additional In-Lieu Deliveries to South Oxnard Plain

This model scenario compares attainment of BMOs between current basin operations (Base Case) and the delivery of additional in-lieu recharge water to the south Oxnard Plain. For purposes of this model simulation, it is assumed that there are 3,000 AFY of in-lieu water available for delivery to irrigation irrigators in the area south of the end of the PTP Pipeline. This in-lieu water delivery is adjusted for changes in quarterly agricultural demand.

The results of this simulation are indicated in Table 19.

In-Lieu S Oxnard Plain Evaluation	*Upper Aquifer*	*Lower Aquifer*
BMO Avg Level (ft msl)	5.3	17.6
Base Case		
Avg Level (ft msl)	3.7	-40.0
% of Time Above BMO	51%	5%
In-Lieu S Oxnard Plain		
Avg Level (ft msl)	4.9	-35.9
Improve from Base Case (ft)	1.2	4.1
% of Time Above BMO	53%	7%

Table 19. Results of groundwater model simulation of delivering additional in-lieu water to pumpers on the southern Oxnard Plain basin. Groundwater elevations are averages for Upper and Lower Aquifer wells for which there is a groundwater elevation BMO. Also indicated is the percentage of time (weekly time steps) that groundwater elevations were above the BMO elevation for each BMO well.

A2.2.10 Shift Some Pumping to Northwest Oxnard Plain

This simulation compares attainment of BMOs between current basin operations (Base Case) and shifting some pumping to the northwest Oxnard Plain from areas less easily recharged. For this model simulation, it is assumed that 2,000 AFY of M&I pumping is moved from the portion of the Oxnard Plain near the Forebay basin to the northwest Oxnard Plain. This pumping is shifted from the City of Oxnard's Water Yard and Blending Station to the area within 2 miles of the ocean along Gonzalez Rd.

The results of this simulation are indicated in Table 20.

Shift NW Oxnard Plain Evaluation	Upper Aquifer	Lower Aquifer
BMO Avg Level (ft msl)	5.3	17.6
Base Case		
Avg Level (ft msl)	3.7	-40.0
% of Time Above BMO	51%	5%
Shift NW Oxnard Plain		
Avg Level (ft msl)	3.9	-39.7
Improve from Base Case (ft)	0.2	0.3
% of Time Above BMO	51%	5%

Table 20. Results of groundwater model simulation of shifting some pumping to the northwestern portion of the Oxnard Plain basin. Groundwater elevations are averages for Upper and Lower Aquifer wells for which there is a groundwater elevation BMO. Also indicated is the percentage of time (weekly time steps) that groundwater elevations were above the BMO elevation for each BMO well.

A2.2.11 Injection of Treated River Water in Overdrafted Basins

This model scenario compares attainment of BMOs between current basin operations (Base Case) and the injection of treated river water into the south Oxnard Plain and Pleasant Valley areas when there are unused river diversions either during the wet portion of the year or during extended times during very wet years. The rate of injection was varied from 1,500 AFY during dry years to 5,000 AFY during wet years. For purposes of this simulation, it is assumed that the injection sites are located both within the PTP system and the Pleasant Valley CWD service area along the deepest portion of LAS pumping depression.

The results of this simulation are indicated in Table 21.

Injecting River Water Evaluation	Upper Aquifer	Lower Aquifer
BMO Avg Level (ft msl)	5.3	17.6
Base Case		
Avg Level (ft msl)	3.7	-40.0
% of Time Above BMO	51%	5%
Injecting River Water		
Avg Level (ft msl)	5.0	-32.6
Improve from Base Case (ft)	1.3	7.4
% of Time Above BMO	53%	11%

Table 21. Results of groundwater model simulation of injecting treated river water in the south Oxnard Plain and Pleasant Valley areas. Groundwater elevations are averages for Upper and Lower Aquifer wells for which there is a groundwater elevation BMO. Also indicated is the percentage of time (weekly time steps) that groundwater elevations were above the BMO elevation for each BMO well.

A2.2.12 Switch Location of City of Camarillo Pumping

To test the effectiveness of moving pumping from near the Camarillo airport to an area along the Arroyo Las Posas (see section 9.3 *Development of Brackish Groundwater, Pleasant Valley Basin*), the pumping from the airport well was eliminated for the model simulation. Model results indicate that the worst portion of the pumping depression would be decreased considerably in size, leaving a smaller depression in the southern Pleasant Valley basin (Figure 58).

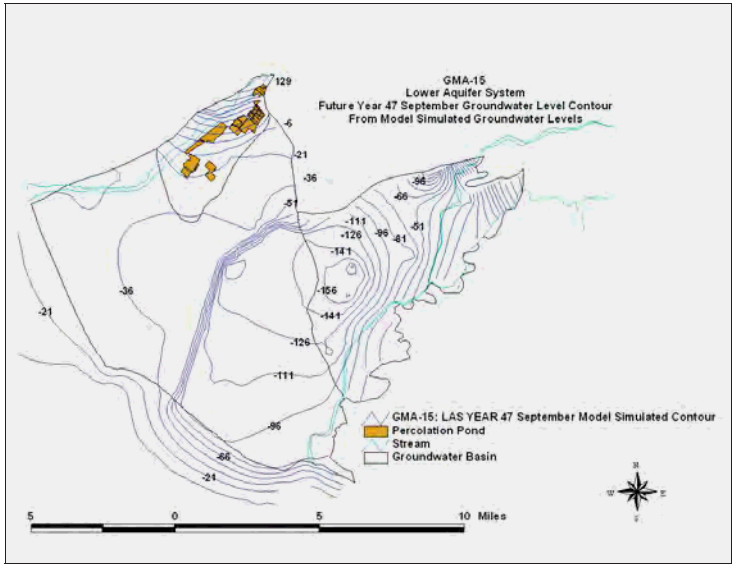

Figure 58. Simulated groundwater elevations for the LAS during the model year corresponding to the 1990 drought year, when the pumping trough beneath Pleasant Valley and the south Oxnard Plain was most pronounced. The elimination of pumping from the City's airport well decreased the size of the northern portion of the pumping depression.

A2.2.13 Full-Time Barrier Wells in South Oxnard Plain

This simulation compares attainment of BMOs between current basin operations (Base Case) and the use of barrier wells in the south Oxnard Plain to build a recharge mound that prevents coastal chloride contamination from moving further inland. The effectiveness of barrier wells was partially tested for the GREAT project. This simulation assumes that there is water available during the entire year for injection – the actual water available would likely be a combination of recycled water and other water sources. To dovetail with the GREAT simulation's winter-only injection scenario, the water available for injection in the barrier wells was modeled at 21,000 AFY, which was injected at a constant rate throughout the year. The barrier wells used in the simulation are identical to the locations of the GREAT Phase II barrier wells along Highway 1 and Hueneme Road.

The results of this simulation are indicated in Table 22.

Barrier Wells Evaluation	Upper Aquifer	Lower Aquifer
BMO Avg Level (ft msl)	5.3	17.6
Base Case		
Avg Level (ft msl)	3.7	-40.0
% of Time Above BMO	51%	5%
Barrier Wells		
Avg Level (ft msl)	15.2	6.5
Improve from Base Case (ft)	11.5	46.5
% of Time Above BMO	63%	48%

Table 22. Results of groundwater model simulation for a barrier well project in the south Oxnard Plain. Groundwater elevations are averages for Upper and Lower Aquifer wells for which there is a groundwater elevation BMO. Also indicated is the percentage of time (weekly time steps) that groundwater elevations were above the BMO elevation for each BMO well.

A2.2.14 Combined Management Strategies

The management strategies used in the previous simulations were combined in a single model run to determine their overall combined effect in reaching BMOs. This model simulation is an indicator of whether additional management strategies are needed beyond those in this Plan.

The results of this simulation are indicated in Table 23. The most important result is that the combined management strategies allow BMOs to be met 67% of the time in the Upper Aquifer and 76% of the time in the Lower Aquifer. This result suggests that if all the management strategies in the Plan are implemented, the basin would be relatively safe from saline intrusion (see discussion in section 7.0 *Yield of the Groundwater Basins* on level of attainment of BMOs).

Combined Strategies Evaluation	Upper Aquifer	Lower Aquifer
BMO Avg Level (ft msl)	5.3	17.6
Base Case		
Avg Level (ft msl)	3.7	-40.0
% of Time Above BMO	51%	5%
Combined Strategies		
Avg Level (ft msl)	18.4	59.8
Improve from Base Case (ft)	14.7	99.8
% of Time Above BMO	67%	76%

Table 23. Results of groundwater model simulation of implementing the combination of all the management strategies evaluated using the groundwater model. Groundwater elevations are averages for Upper and Lower Aquifer wells for which there is a groundwater elevation BMO. Also indicated is the percentage of time (weekly time steps) that groundwater elevations were above the BMO elevation for each BMO well.

A3.0 APPENDIX C. EAST LAS POSAS BASIN MANAGEMENT PLAN

During the February 23, 1994 meeting, the Board of Directors of the FCGMA conditionally approved CMWD's Application for the Injection/Storage Facilities in the North Los Posas Basin. (**Note:** The reference to the North Las Posas Basin stems from the FCGMA original Groundwater Management Plan adopted in 1985. The current correct reference is the East Las Posas Basin).

This approval was conditioned upon several factors including but not limited to: (1) a maximum of 20 injection/storage wells registered with the FCGMA; (2) well injection/extraction schedule determined by availability of water and needs of CMWD's customers; (3) continuous injection period well testing and monthly reporting of acre-feet injected/extracted from wells along with water quality analysis for selected constituents to the FCGMA by CMWD; (4) maximum storage limit of 300,000 acre-feet without further approval of the FCGMA; (5) extraction/injection points shall be coterminous, or in proximate vicinity and coordinated with the FCGMA; (6) water stored in such facilities shall be used in Ventura County; (7) CMWD periodic review of the effects of the injection on surrounding basins to ensure no detrimental effect; (8) CMWD shall have an affirmative obligation to mitigate any detrimental effects found; and (9) FCGMA approval standards for the injection/storage wells shall be mandatory. These conditions were memorialized in a July 12, 1994 letter from Lowell Preston, Ph.D., Agency Coordinator, to Eric Berg, Administrator, CMWD (See Appendix C - Exhibit A).

Subsequently to FCGMA's above mentioned approval, CMWD engaged in several years of discussions about groundwater issues in the Las Posas basin with members of the East Las Posas Basin Users Group (the Group) and individual pumpers. This informal Group, which meets every second month, discusses both basin-wide groundwater issues and potential issues related to Calleguas' Las Posas Basin ASR project.

As a result of those discussions, CMWD and the Group developed the East Los Posas Basin Management Plan (ELPBMP). The ELPBMP, which outlines a monitoring program for the injection/storage wells, establishes action levels, sets stakeholder responsibilities for operation of the ASR project by CMWD, and provides for a dispute resolution mechanism between the parties, attempts to manage the ASR project in such a way as to minimize problems and maximize the beneficial use of groundwater within the East Las Posas Basin..

The ELPBMP is attached to the FCGMA Management Plan as Appendix C. It is understood by the parties that the East Las Posas Basin Management Plan will be reviewed and updated regularly as conditions warrant it.

The Plan begins on the following page.

EAST LAS POSAS BASIN MANAGEMENT PLAN

THIS MANAGEMENT PLAN FOR THE EAST LAS POSAS BASIN (the "Plan"**)** is effective as of _____, 2006, and is created with reference to the following recitals of fact, understandings and intentions:

RECITALS

A. Calleguas Municipal Water District ("Calleguas") operates an Aquifer Storage and Recovery Project ("ASR") for the benefit of its urban, industrial and agricultural water delivery customers in the Las Posas Basin ("Basin") in Ventura County, California.

B. The Basin is identified as a groundwater subsystem within the boundaries of the Fox Canyon Groundwater Management Agency ("GMA").

C. The ASR project stores potable water in the aquifers of the Basin for use during emergencies and drought periods.

D. The Las Posas Basin Pumpers extract groundwater from the Basin for beneficial uses that include agricultural, domestic, urban and industrial uses. The "Las Posas Basin Pumpers" includes members of the Las Posas Basin Users Group and all other persons or entities extracting groundwater from the East Las Posas Basin (within the boundaries of the GMA).

E. Calleguas and the Las Posas Basin Pumpers desire to manage the groundwater basin such that the ASR project and the Las Posas Basin Pumpers' beneficial uses co-exist to the benefit of all.

F. Calleguas has previously entered into an agreement with the GMA for operation of the ASR project ("Calleguas-GMA Agreement"). A copy of the Calleguas-GMA Agreement is attached hereto as Exhibit "A" and incorporated herein by reference. The Calleguas-GMA Agreement describes the general principles within which the ASR project will operate.

G. Pursuant to the Calleguas-GMA Agreement, stored water is credited to the ASR project when Calleguas either injects potable water into the aquifer through wells or when water is delivered by or through Calleguas to the Las Posas Basin Pumpers in lieu of pumping groundwater. The storage credit pursuant to the Calleguas-GMA Agreement remains in the Basin until the stored water is extracted.

H. Calleguas and the Las Posas Basin Pumpers desire to have the GMA incorporate the terms of this Plan into the updated GMA plan.

NOW, THEREFORE, in consideration of the mutual benefits, covenants and promises set forth herein, the Management Plan for the East Las Posas Basin is as follows:

1. Monitoring Program. Calleguas will maintain a monitoring program to track changes in groundwater levels and groundwater quality in the Basin. This monitoring program will consist of two parts: (1) a set of four representative key wells spaced throughout the Basin

("baseline key wells") will monitor the overall health of the Basin (Exhibit "B" and identified by State Well number); and (2) a set of monitoring and producing wells on parcels within or adjacent to the ASR project ("local vicinity wells") will monitor the effects of the ASR injection and pumping on the Basin (Exhibit "C").

2. Report of Results of Monitoring Program. Calleguas will report results of the monitoring program described in paragraph 1 above in writing to the Las Posas Basin Pumpers at least every six (6) months during noticed meetings of the Las Posas Basin Users Group. In addition, Calleguas will prepare a written report on ASR activities, monitoring results and the state of the Basin annually, and that report will also be made available to the Las Posas Basin Users Group.

3. Extractions and Storage Credits. Calleguas covenants and promises that it will only extract water consistent with the Calleguas-GMA Agreement and in an amount which does not exceed Calleguas' storage credits in the Basin, as they may exist at any time. Calleguas will apply for storage credits from the GMA annually based on the amount of water injected and in lieu water delivered that year; the GMA will maintain the storage credit balance for the ASR project and will give written notice to the Las Posas Basin Users Group of the amount of those credits annually and provide a report directly to the Las Posas Basin Users Group every six months as to the amount of storage and extractions which have occurred.

4. Operation of ASR Project. Calleguas will operate the ASR project in a manner that does not adversely affect the Basin by creating, by way of example only, chronic declining water levels, increased levels of TDS or chlorides, significant increased pumping lifts, or saline intrusion. It is acknowledged that all currently available information indicates that the Basin may be in overdraft. Although it is not projected that the ASR project will alleviate the overdraft, Calleguas will make a good faith effort to assist the Las Posas Basin Pumpers in reducing the overdraft. Additionally, it is recognized that there is a mound of high-chloride, high-TDS water migrating into the Basin from beneath the Arroyo Las Posas. Calleguas will assist in mitigating this water quality problem by facilitating projects that will pump this poor-quality water, treat it for agricultural and drinking water use and discharge the resulting brine into a regional brine line. To keep Las Posas Basin Pumpers informed of ASR operations, Calleguas will provide a summary sheet of injections and extractions relating to ASR operations at every Las Posas Basin Users Group meeting (held approximately every two months, but no less than 4 times a year). This summary will discuss, among other things, all injection, extraction and in-lieu activities for the two months prior to the meeting. This summary will also be provided to the GMA.

5. Groundwater Levels. Calleguas will operate the ASR project in a manner which will not significantly impact Las Posas Basin Pumpers' ability to use groundwater from the Basin. Impacts will be measured on two levels – basin-wide and local. Basin-wide impacts will be measured using the four baseline key wells. Local impacts will be measured using the local vicinity wells.

Basin-Wide Effects: In order to establish groundwater levels that would exist without the ASR project ("baseline"), the USGS Santa Clara-Calleguas MODFLOW groundwater flow model, as updated by United Water Conservation District and Calleguas, will be used in conjunction with the four baseline key wells. The baseline will be established by running the groundwater model every two years using all available actual pumping and hydrologic data for the period, but excluding any ASR injection/extraction operations or water deliveries in-lieu of injection. The first run of the model for purposes of this Plan will be as follows: The modeled "no ASR project" groundwater levels determined as of September 1, 2006, at the four baseline key

wells would establish the baseline for the two-year period. If actual measured water levels fall below the baseline in any of the baseline key wells during the applicable two-year period, then the cause of the groundwater level decline below the baseline will be investigated by Calleguas within 45 days of Calleguas learning of the measured water level falling below the baseline. If the water level drop below baseline is determined to be caused by ASR operations, then Calleguas will present a written plan to the Las Posas Basin Pumpers to mitigate the excess drawdown. That written plan will be presented by Calleguas to the Las Posas Basin Users Group no later than 120 days after Calleguas learns that measured water levels are below baseline.

Local Effects: In the vicinity of the ASR injection/extraction wells, it is recognized that groundwater levels will fluctuate depending upon rates of injection/extraction and proximity to the wells. Nearby wells will see groundwater levels rise and pumping lifts decrease during and following injections of stored water. During extractions of stored water, groundwater levels in the vicinity of the extraction may decrease below levels normally seen in nearby wells, with this pumping effect dissipating when extraction is terminated. Calleguas will use all reasonable efforts to insure that nearby wells can continue to be pumped during this extraction period; if lowered water levels create operational problems such as the inability to pump groundwater because groundwater levels are below pump bowls or the pump breaks suction in any nearby well, Calleguas will attempt to assist well owners in mitigating the problem. Such mitigation measures may include, among other things, providing in-lieu water to well owners at prevailing rates.

6. Disputes. If any dispute arises over the effects of the ASR program and this Plan, the specifics of the dispute will first be presented within 45 days of the dispute arising to an advisory group of members of the Las Posas Basin Users Group numbering not less than 5. If the dispute is not resolved within 45 days after submittal to the advisory group, the dispute shall be presented to Calleguas in writing. Calleguas will then, within 45 days of receiving written notice of the dispute, investigate the issues in the dispute, including performing any hydrogeologic investigation where appropriate. The disputing party will not unreasonably withhold access to historic groundwater data known to the party or access to wells for monitoring. Calleguas will, within 120 days, give a written reply to the disputing party which will include results of any hydrogeologic investigation. In the event that the party is not satisfied by this procedure, the disputing party can deliver a copy of the written dispute to the GMA. If the GMA does not resolve the problem to the satisfaction of the disputing party within 120 days of the delivery of a copy of the written dispute to the GMA, then the disputing party can take whatever legal action it deems appropriate.

7. Term. This Plan shall remain in effect so long as the Calleguas-GMA Agreement remains in effect.

8. Existing Water Rights Unaffected. This Plan and the ASR project shall in no way affect or alter existing water rights in the Basin or grant new or additional water rights to Calleguas or the Las Posas Basin Pumpers (other than the specific rights of injection and extraction granted herein). All injections or extractions are done with the knowledge and consent of the Las Posas Basin Pumpers and under no circumstances will any injections or extractions or pumping under this Plan ripen into a claim for prescriptive or superior rights.

9. Condition of Basin. This Plan is made with the express understanding and assumption that the Basin is of such condition that any water injected by Calleguas into the Basin will remain in the Basin until extracted by Calleguas (or by other pumpers). If this

understanding/assumption is determined to be incorrect or determined to be substantially called into question, then **either** Calleguas or the Las Posas Basin Pumpers may immediately proceed to dispute resolution as set forth in Section 6 above.

END OF PLAN

A3.1 **EXHIBIT "A"**

FOX CANYON
GROUNDWATER MANAGEMENT AGENCY

BOARD OF DIRECTORS
Jon E. Maulhardt, Chair
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AGENCY COORDINATOR
Lowell Preston, Ph.D.

July 12, 1994

Eric Berg, Projects Administrator
Calleguas Municipal Water District
2100 Olsen Road
Thousand Oaks, CA 91360-6800

SUBJECT: BOARD APPROVAL OF CMWD APPLICATION FOR INJECTION/STORAGE FACILITIES IN NORTH LAS POSAS GROUNDWATER BASIN

Dear Mr. Berg:

At the Board of Directors meeting on February 23, 1994, the Board approved the CMWD application for injection/storage facilities in the North Las Posas Basin. The approval of this application, as provided for under Ordinance 5.3, was subject to the conditions that follow. These conditions include several changes and additions requested by the Board of Directors.

NORTH LAS POSAS BASIN
INJECTION/STORAGE FACILITIES CONDITIONS

1. *The identification, size, depth, well logs and location of wells used for injection/extraction will be registered with the GMA. A maximum of twenty (20) wells all to be permitted by the County of Ventura, Public Works Agency, and registered with the GMA.*

2. *Calleguas will inject/extract on a schedule determined by availability of water to inject and the needs of their customers. The number of acre-feet injected/extracted from each well shall be reported to the GMA monthly. The monthly report shall also include a water quality analysis for the injected water that covers and conforms to the limits listed for the following items:*

a.	Sodium Adsorption Ratio (SAR) calculated in meq/l as $SAR=NA/((CA+Mg)/2)^{.5}$	≥1≤4	
b.	Total Dissolved Solids (TDS) Electrical conductivity (EC)	≥100≤800 ≤1100	mg/l uMHO
c.	Chloride (Cl)	≤120	mg/l
d.	Boron (H_3Bo_3)	≤1	mg/l
e.	Nitrates	≤45	mg/l

(NOTE: These limits are based on University of California research. Should the University reverse these limits, the recommended changes will be incorporated into these conditions.)

800 South Victoria Avenue, Ventura, CA 93009
(805) 654-2068 FAX:(805) 654-3952

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Testing shall be conducted monthly during periods of continuous injection, prior to beginning an injection of more than one hundred (100) acre-feet (but no more frequently than monthly), and as frequently as necessary when a change in water quality is suspected or known to exist.

3. *The total water in storage at any one time shall not exceed three hundred thousand (300,000) acre-feet (AF) unless approved by the GMA Board of Directors.*

4. *The point of extraction shall be the same as the point of injection or in the near vicinity. Extraction from points other than that of injection may be desirable and shall be coordinated with, and approved by the GMA.*

5. *Water stored by the facility shall be used in Ventura County.*

6. *Calleguas shall periodically review the effects of the injection on surrounding basins to ensure no detrimental effects result from the injection alone or in combination with natural recharge. Should negative effects exist, Calleguas shall take action to mitigate those effects caused by the injection program.*

7. *Should the injected water or conditions deviate from these standards, injection will stop, or not be started until the condition has been corrected.*

If you have any questions regarding this Agency's approval of your project facilities, please call Rick Farnsworth at 654-2327 or myself at 648-9204.

Very truly yours,

Lowell Preston, Ph.D.
Agency Coordinator

RF:vg

A3.2 EXHIBIT "B"

Key wells will be used to monitor the overall health of the basin (Figure B-1). These wells, which have a long historic monitoring record of groundwater levels, include State Well Numbers 2N/20W-8F1, 2N/20W-9F1, 3N/20W-34G1, and 3N/19W-29K4.

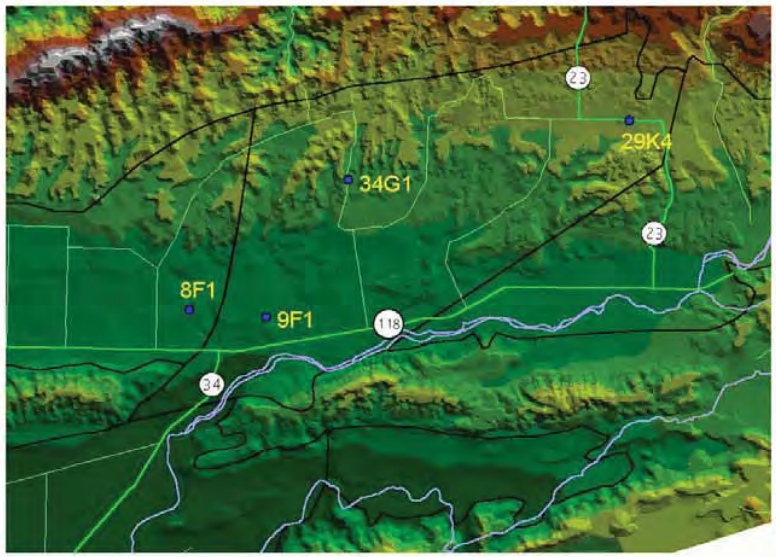

Figure B-1. Key wells in the Las Posas basin.

A3.3 EXHIBIT "C"

Calleguas Municipal Water District will monitor the effects of its Las Posas Basin ASR project using both its ASR wells and additional monitoring points surrounding the ASR project (Figure C-1). These additional monitoring points will consist of existing production wells or, where necessary to complete the area 1 coverage, new monitoring well(s) installed by Calleguas MWD.

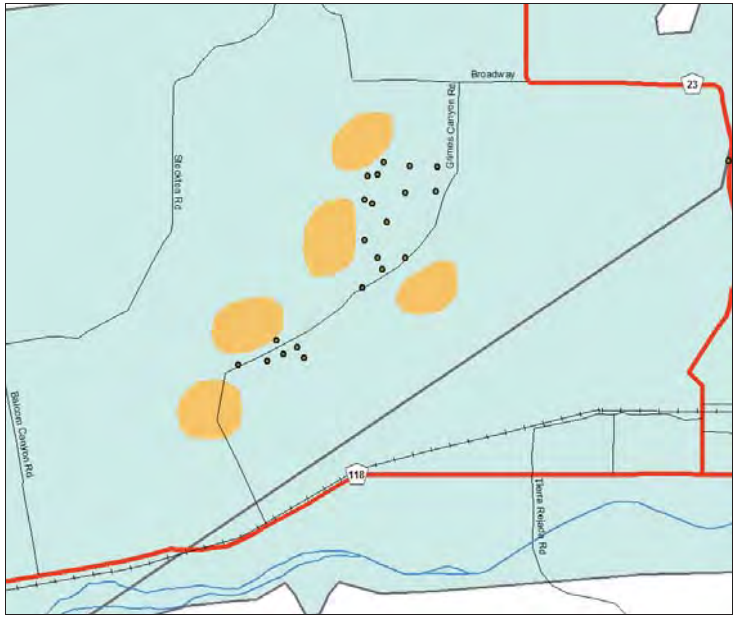

Figure C-1. Locations (indicated by orange circular areas) of monitoring to track the effects of ASR injection and pumping. Dots represent Calleguas MWD ASR wells.

A4.0 APPENDIX D. RESPONSE TO PUBLIC COMMENTS ON THE FCGMA GROUNDWATER MANAGEMENT PLAN

The development of the final FCGMA Groundwater Management Plan involved the release of three separate written drafts between June 2006 and February 2007, presenting the Plan at three public workshops over the same time period, and presenting the Final Plan at a special meeting for the Agency's Board of Directors in March 2007. The Agency accepted public comments throughout the Plan development process.

This section is a compilation of the written public comments to the Plan submitted to the Agency between June 2006 and April 2007. The first part contains a verbatim transcription of each comment and a specific Agency response to each comment. The second part contains a reproduction of the original public comment document.

FCGMA responses to written comments submitted on behalf of the City of Oxnard, City of Camarillo, and Crestview Mutual Water Company (Crestview) by:
Robert J. Saperstein
HATCH & PARENT
A Law Corporation
Santa Barbara, CA

1. ***Oxnard, Camarillo, and Crestview's Comment:*** *GMA Board attendance at the workshops. While we understand the time commitment is extensive, this update to the Management Plan is very important. It will guide GMA policy and decision-making for years to come. We are not sure how the GMA Board can obtain adequate familiarity with all the issues and the constituents' concerns without some attendance at the workshops. No board members attended the first workshop.*

Response to Oxnard, Camarillo, and Crestview's Comment #1: This issue was subsequently resolved by the Board member attendance at subsequent workshops and the Special Groundwater Management Plan Workshop held on March 9, 2007. Four Directors and two Alternate Directors were in attendance at this Workshop. Minutes for this meeting have been included in this Appendix (D) to the Groundwater Management Plan.

2. ***Oxnard, Camarillo, and Crestview's Comment: Executive Summary****. This Section is written as part introduction and part summary. An Executive Summary is normally drafted when the remainder of the document is complete. Given the length and technical nature of the material, the Executive Summary will be the most important Section of the Plan. It may be the only portion of the document many individuals read. It should summarize the purpose, issues and recommendations, once all of the technical work is complete.*

Response to Oxnard, Camarillo, and Crestview's Comment #2: Taking this suggestion, the Executive Summary was put on hold until the final draft. The final version now includes an Executive Summary

3. ***Oxnard, Camarillo, and Crestview's Comment: Acknowledgements.*** *Throughout the document, there is repetitive recognition of United and Calleguas as the two entities who contribute to the GMA. This recognition is limited almost exclusively to these two entities. Either this self-congratulatory language should be eliminated, or there should be proper acknowledgement of the work of all the individuals and agencies who have and continue to contribute to the GMA's success.*

Response to Oxnard, Camarillo, and Crestview's Comment #3: The final Fox Canyon Groundwater Management Plan (Plan) acknowledges the contributions many contributors including members of the three sponsoring agencies (Fox Canyon Groundwater Management Agency, United Water Conservation District, Calleguas Municipal Water District) as well as six other stakeholders who provided written comments, reviews, or provided other material input to the completion of the plan. Any other omission of other individual who provided contributions to the completion of the FCGMP is the result of simple oversight.

4. ***Oxnard, Camarillo, and Crestview's Comment:*** *Modeling. There needs to be a distinct Section that better describes the model details used for the technical analysis. This Section need not be long, but it should include mention of the software, construction, assumptions and details of the model construct. It ought to give enough information for the technically capable reader to understand its basics.*

Response to Oxnard, Camarillo, and Crestview's Comment #4: There is now a considerable discussion of the modeling approach, assumptions, limitations, and modeling

results included as Appendix B of the final FCGMP. While not an exhaustive technical discussion of model development and results, it provides a thorough and meaningful summary of the model approach and its use in the development and analysis of various policies developed in the Plan.

5. ***Oxnard, Camarillo, and Crestview's Comment: Organization and Redundancy.*** *There is tremendous redundancy in the report. Perhaps with different organization, it could be slimmed down significantly. You might describe the water quality and quantity issues generally applicable to all areas, along with the general concept of basin management objectives. Then discuss all the issues comprehensively, separated for each basin or in some cases regions with multiple basins. As an alternative, some of the nonessential background and detailed technical information might be moved to appendices.*

Response to Oxnard, Camarillo, and Crestview's Comment #5: The final Plan has been reorganized and indexed to limit redundancies and improve the organizational structure. Due to the interrelated nature and technical complexity of many of the water quality, water quantity, and public policy issues, some redundancy is necessary to provide the appropriate context for specific topics.

6. ***Oxnard, Camarillo, and Crestview's Comment: Management Strategies: Organization.*** *In a fashion, the Management Plan is really several separate management plans. Perhaps it should be organized by basin for the three content subjects: strategies under development, future strategies and actions to attain BMO's. There may need to be one more general Section that addresses those strategies that cross basin boundaries. You may be able to combine all the basin specific discussions in one Section for each basin. A couple different organizational approaches might be tested, with the goal of, reducing redundancy and volume of text.*

Response to Oxnard, Camarillo, and Crestview's Comment #6: See the response to Oxnard, Camarillo, and Crestview's Comment #5.

7. ***Oxnard, Camarillo, and Crestview's Comment: Specific strategy: Forebay priorities****. The potential over-reliance on the Forebay under certain conditions is acknowledged in the document. However, there is no mention of the importance, from a policy perspective, to establish some hierarchy for use of the Forebay. There will be increasing reliance on the Forebay. To the extent access to the Forebay may be limited under certain conditions; the GMA board must consider limiting certain uses before others.*

Response to Oxnard, Camarillo, and Crestview's Comment #7: As implied by Oxnard, Camarillo, and Crestview's Comment #7, the Plan acknowledges that the Oxnard Plain Forebay Basin represents one of the most significant sources of subsurface storage and recharge within the FCGMA. Specific groundwater management strategies directly involving the use of the Oxnard Plain Forebay Basin have been addressed in Sections 10.1.4, 10.1.5, 10.1.7. Other policy recommendations are addressed in Sections 11.2.2, 11.3.6, and 11.3.7. Through its discussion in these Sections as well as its implicit inclusion other strategies, the Plan acknowledges the significance and challenge of prioritizing use of the Oxnard Plain Forebay Basin. The Oxnard Plain Forebay Basin will remain a source of significant consideration and focus in the development of effective future strategies.

8. ***Oxnard, Camarillo, and Crestview's Comment: Specific strategy: Transfers across basins.*** *There is no direct mention that transfers (of allocation or credits) from challenged areas to areas of abundance may be the simplest method of mitigating problems. This has been a policy not favored in the past. However, this is an appropriate time to reconsider this question, particularly if the technical analysis suggests that a surgical approach is required to solve certain problem areas.*

Response to Oxnard, Camarillo, and Crestview's Comment #8: Allocation or Credit transfers are now discussed in relation to several strategies that would physically move water from one basin to another, particularly moving credits to the Forebay Groundwater Basin. In addition, many of the listed potential water management strategies move river water or reclaimed water across basins to be used for either in-lieu deliveries that replace groundwater pumping, or for direct groundwater recharge. The fundamental concept of localized management strategies is also discussed in Section 10.1.7.

9. ***Oxnard, Camarillo, and Crestview's Comment: Specific strategy: Ag recycled water use****. The draft Plan acknowledges (assumes) that larger volumes of recycled water will be available for Ag use in the future. The assumption is correct that highly purified recycled water will be available and recycled water use could be a very efficient method of solving several regional problems. However, there is some resistance in the Ag community to take direct use of recycled water. The resistance is not over the quality of the recycled water, but over the required reporting to distributors and product buyers that the crop was grown with recycled water. As long as there is the Ag industry perception that recycled water use may harm the user's competitiveness, recycled water will not be widely accepted. The Board may be able to help influence certain industry groups to alter the current reporting requirements that create these problems for individual users.*

Response to Oxnard, Camarillo, and Crestview's Comment #9: The comment is noted.

10. ***Oxnard, Camarillo, and Crestview's Comment: Analytic Methodology.*** *There appears to be no intent to model the expected (inevitable) conversion of Ag use to M&I use over the period of the modeling run. Without this detail, the modeling exercise may provide very misleading results. For example, there are several significant Ag to M&I projects that are in the planning stages located in the south Oxnard Plain area, nearby the City's wastewater treatment plant and the military bases. The result of these conversions will be a shift in groundwater use from wells in a highly sensitive area, to City and United wells located far from the coast (and imported water). If the model does not take into account these expected transitions, it will predict a materially different future than that which will occur. In this fashion, the modeling results may be very misleading.*

Response to Oxnard, Camarillo, and Crestview's Comment #10: The groundwater modeling purposely kept land use constant through the forward model period to analyze the quantitative effect of different groundwater management strategies (such as 5% reduction of historical allocation or implementation of an injection barrier). A typical model-based quantitative analysis, including the Ventura Regional Groundwater Model (VRGM), alters only one variable at a time to determine its effect on the entire system. Often, if more than one variable is changed, (e.g., adding a management strategy plus changing land use), the quantitative effect of either variables is obscured. The effect of changing land-use was not one of the variables examined in this analysis; however, adding such a scenario would be instructive. As part of the Plan implementation process, this may be one of the recommendations to the Technical Analysis Group (TAG).

11. ***Oxnard, Camarillo, and Crestview's Comment: Water Quality.*** *It is somewhat troubling that the cornerstone of the Plan is the setting of Basin Management Objectives, some of which are water quality objectives. However, the model has no capability to predict water quality changes. Thus, we need to be very careful in how we set and monitor compliance with the Basin Management Objectives.*

Response to Oxnard, Camarillo, and Crestview's Comment #11: It is true that the groundwater model cannot directly predict water quality changes, although there is some capacity to determine the effects of seawater intrusion in coastal areas. In these areas, controlling seawater through management of groundwater elevations is a priority goal and key component of the management plan, and is addressed in Sections 9.1, 10.2.1, and 10.3.1. In other areas, the BMOs are the Regional Board's Basin Plan Groundwater Objectives Other water quality objectives and are discussed in Section 6.1, 9.2, 9.3, 10.1.3, and 10.1.4. In the Forebay basin, nitrate BMO's are set at the Department of Health Services notification level for drinking water. As part of the Plan implementation process, this may be one of the recommendations to the Technical Analysis Group (TAG).

12. Oxnard, Camarillo, and Crestview's Comment: Periodic update. *Either as a component of the Plan, or as a Board measure in adopting the Plan, there should be a built in requirement to update the Plan no less than every 5 years. This should not be so difficult if the model proves to be as useful a tool as is expected.*

Response to Oxnard, Camarillo, and Crestview's Comment #12: This recommendation for periodic reviews and updates are now a strategy and action item in the Plan and is discussed in Section 11.1.3.

13a. Oxnard, Camarillo, and Crestview's Comment: Pg. 12. There is no such thing as "in-lieu"' credits. Ordinance 8 only defines storage and conservation credits. There are special credit transfer agreements/programs the GMA has approved that amount to "in-lieu" transfer of credits, but the term has no meaning in Ordinance 8.

Response to Oxnard, Camarillo, and Crestview's Comment #13a: The reference to "In-Lieu" credits have been eliminated or corrected and the term in-lieu is only used to refer to imported, surface, or reclaimed water that could be used instead of extracted groundwater.

13b. Oxnard, Camarillo, and Crestview's Comment: *Ordinance 8 requires Ag to demonstrate 80% efficiency, based on the individual crops grown. The Plan does not propose tightening the efficiency percentage as a potential method of reducing water use. Also, the current reporting requirements are not clear in requiring that the efficiency calculation is to be based on irrigated acreage, not total owned property. In some cases, the irrigated acreage may be materially smaller than the property footprint. In that circumstance, the user gets a substantial benefit in reporting efficiency based on the property footprint instead of the irrigated acreage.*

Response to Oxnard, Camarillo, and Crestview's Comment #13b: As indicated in Section 11.2.4, an examination of the irrigation efficiency allocation will be undertaken as part of the implementation of the Plan.

13c. Oxnard, Camarillo, and Crestview's Comment: Pgs. 13, 16. *There is no mention of M&I return flows as a source of recharge.*

Response to Oxnard, Camarillo, and Crestview's Comment #13c: Return flows have been added as a nominal potential recharge source, with the caveat this only occurs in some areas. In fact, return flows can only reach the main FCGMA aquifers in a few areas where there is hydrologic continuity between surface uses and these aquifers – elsewhere, it is intercepted by impermeable layers and/or perched aquifers.

13d. Oxnard, Camarillo, and Crestview's Comment: *Two different definitions of basin yield are used and overdraft is not defined.*

Response to Oxnard, Camarillo, and Crestview's Comment #13d: Section 7.0 of the final Plan addresses the concept of Yield of Groundwater Basins, its calculation, and the associated assumptions.

13e. Oxnard, Camarillo, and Crestview's Comment*: The discussion of the decreasing trend of extractions is incomplete and therefore misleading. As to the Ag side: (1) there is no quantification of the reduction of Ag pumping resulting from reduced acreage in production over the past two decades, and (2) there is no recognition that the initial period against which we are measuring reduced usage was a very dry period. During dry periods, Ag groundwater use tends to be greatest. Since those early years, we have been in a generally wet period. Thus, we would expect a natural reduction in Ag groundwater use simply based on the historical hydrology.*

As to the M&I side, there is no quantification of the increase in municipal demand as a result of conversion of Ag use to M&I use. There is no discussion of the relative efficiencies of use of water prior to the imposition of the cutback goals. The implication of the current discussion in the Plan is that Ag has done more than its share and M&I has not. There is insufficient information or analysis for this conclusion or implication. This discussion should either be made complete and correct, or eliminated, especially if policy decisions might be influenced by it.

Response to Oxnard, Camarillo, and Crestview's Comment #13e: The language has been changed to eliminate any implication that M&I has not done its share of water conservation or planned reductions in overall groundwater extractions. An example of ag to urban conversion was also added. The discussion of reduction in pumping does not simply compare the dry years of the base period to the wet years following that period to document reductions in pumping. Instead, extraction in like years were compared (dry to dry, wet to wet), with the comparison included in the discussion of overall FCGMA annual extractions and any changes over time. Therefore, the language on FCGMA pumping reductions remains in the Plan.

13f. Oxnard, Camarillo, and Crestview's Comment: Pg.29. *The discussion of increasing salt concentrations in the Las Posas basins is somewhat conclusory and incomplete. It might help to actually provide the POTW discharge water quality for TDS and chlorides, so that it would be more clear to the reader that the problem is, in fact, generating from aquifer conditions, not discharge water quality.*

Response to Oxnard, Camarillo, and Crestview's Comment #13f: Language was added to point out that chloride concentrations of surface waters (including POTW discharges) were considerably lower than those of the affected aquifer. While it is true that the problem was not generated by the quality of the discharge water, the problem appears to have been created by the increased quantity of discharge water (POTW's plus Simi Valley Groundwater Basin dewatering and increased urban runoff throughout the watershed). The higher stream flows created by these discharges have apparently filled the shallow aquifer above historic levels, which may be dissolving salts in the previously unsaturated portion of the shallow aquifer. The Plan references a report done for Calleguas MWD for a more-detailed discussion of this water quality problem.

FCGMA responses to written comments submitted on behalf of the City of Oxnard by:
Anthony Emmert
Water Resources Manager
City of Oxnard, California

1. ***Oxnard's Comment:*** *At the last workshop on the draft Plan, the group discussed the potential that incorrect assumptions about the quantity of groundwater production could result in erroneous outcomes from the model. Indeed, there is substantial anecdotal evidence that groundwater production reporting may be materially incorrect because of inaccurate meters or other faulty reporting mechanisms. For this reason, we recommend that the model be run to assume a band of uncertainty relating to the quantity of groundwater production within FCGMA. Such sensitivity analysis will help verify the integrity of the model results.*

Response to Oxnard's Comment #1: A sensitivity analysis was added to the discussion of model results in Appendix B of the final Plan. Following implementation of the meter calibration program scheduled to begin in mid-2007, it would be prudent to revisit this issue to ensure the model is calibrated with the most accurate extraction data.

2. ***Oxnard's Comment****: As a related matter, the FCGMA will pursue an aggressive review of meter calibrations over the next several years. However, this process is not scheduled to start until 2007 and it will take three years to complete the first cycle. We recommend that the model be periodically rerun and updated with this new, more accurate production data when it becomes available. In the interim, we recommend that FCGMA staff review suspect accounts and perform a preliminary audit of groundwater production reporting to determine the scope of potential discrepancies*.

Response to Oxnard's Comment #2: Periodic reviews and updates to both the VRGM and the Plan are now a strategy and action item in the Plan (Section 11.3.1). More frequent changes or additions to the Management Plan and/or changes to the model could be performed at the Board's discretion, although additional funding may need to be obtained for such efforts.

The final Plan contains a discussion of verification of extraction reporting as a management strategy as well as a proposed procedure for verification. Verification of extraction reporting coupled with revised model inputs represents a fundamental step to enhancing the accuracy and effectiveness of the model. Both are addressed in the final Plan.
FCGMA staff has, and continues to, work diligently on an ongoing basis to identify, research, and, to the extent practical, correct extraction reporting anomalies. Fundamentally, the current system relies on the honesty, forthrightness, and diligence of individual well operators. Given that the Agency has limited resources, the FCGMA will need to continue to rely on self-monitoring reports from the operators, education efforts highlighting the need for accurate reporting, and the contributions of its member agencies to enable it to capture the most accurate data available.

3. ***Oxnard's Comment:*** *The Draft Plan sets forth several potential future management strategies that should be further explored for their potential effectiveness in addressing seawater intrusion and other adverse hydrogeologic conditions. We recommend that the next draft of the Plan prioritize these potential future strategies in terms of their potential effectiveness. We further recommend that the FCGMA develop procedure to apply a cost/benefit analysis to determine which of the prioritized strategies should be implemented.*

Response to Oxnard's Comment #3: The final Plan (October 2006) prioritizes groundwater management strategies as suggested. At the March 2007 special Groundwater

Management Plan Workshop, the FCGMA staff introduced a proposed implementation approach that involves both technical and strategic advisory groups that would work together to evaluate each of the groundwater management strategies on both a technical and a cost/benefit basis. These groups will subsequently provide recommendations to the Board.

4. ***Oxnard's Comment:*** *As a general matter, we also encourage the FCGMA to consider more dynamic use of aquifers with dewatered storage space as a potential resource for future conjunctive use programs. Other basins, such as the Chino and Orange County basins, are currently planning and using available dewatered storage space for local and regional conjunctive use programs that yield better water supply reliability and financial benefits to support other necessary basin management programs. The FCGMA could pursue similar programs. There are numerous hydrogeologic and policy matters that must be resolved to implement a large scale groundwater storage program. Still, we recommend that the Plan include additional and more detailed discussion of potential opportunities for active conjunctive use programs within the FCGMA area.*

Response to Oxnard's Comment #4: The final Plan includes several strategies that utilize existing aquifer space for storage including the Oxnard Plain Forebay Basin (Sections 9.6.6, 10.1.5, 10.2.2), the South and East Las Posas Basins (Sections 9.2, 10.1.7, and 10.1.10) and the Pleasant Valley Basin (Sections 9.3, 10.1.7, and 10.1.10) In addition, the use of recycled water for injection is discussed in Section 9.1. Ultimately, the technical and cost/benefit of each of these strategies will have to be evaluated by the advisory group(s) and recommended to the Board for implementation.

FCGMA responses to written comments submitted on behalf of Pleasant Valley County Water District (PVCWD) by:
Mr. John Mathews
Arnold, Bluel, Mathews, & Zirbel, Attorney's at Law, LLP
Oxnard, CA
Legal Counsel for Pleasant Valley County Water District
Camarillo, CA

1. ***PVCWD's Comment:*** *Under the section "Groundwater Extractions", in the third paragraph it refers to increased agricultural efficiencies. We believe that somewhere in this paragraph reference should be made to the fact that extractions from the groundwater may have also decreased because increased yields from the Freeman diversion and the Conejo Creek project.*

Response to PVCWD's Comment #1: A sentence has been added as suggested.

2. ***PVCWD's Comment****: On page 43, in the section entitled "Assessment of Basin Management Objectives", in the second paragraph it refers to Basin Management Objectives (BMO's) for groundwater levels in the Pleasant Valley basin. In table 3, it makes reference to Basin Management Objectives in the Pleasant Valley area, but does not set forth what the current levels are, it would be helpful to state the groundwater BMO's.*

Response to PVCWD's Comment #2: Current levels have been added to all the BMO tables.

3. ***PVCWD's Comment:*** *On page 48, under the Section "Contingency Plan for LAS Seawater Intrusion", it states that the GMA staff has developed a contingency plan to address the intrusion of seawater into the LAS. It would be helpful if drafts of that Contingency Plan could be made available for public review.*

Response to PVCWD's Comment #3: As stated in the final Plan (Section 8.1), no formalized Contingency Plan for LAS Seawater Intrusion exists. The original FCGMA Groundwater Management Plan completed in September 1985 contained a list of countermeasures that could be employed either temporarily or for longer periods of time to offset an extreme and threatening loss of fresh water resources. Some of the schemes listed, such as a complete ban on all future LAS wells, forced urban and farm water conservation, or monetary incentives to encourage destruction of LAS wells, have limited feasibility at the present time. Others such as implementing voluntary conservation measures, changing the County Well Ordinance to limit new LAS wells, and additional monitoring efforts either proposed in the current plan or already under development.

4. ***PVCWD's Comment****: On page 50, under the Section "Conejo Creek Diversion Project", the last sentence references that over the "net 20 years" that the yield of the diversion might decrease. There obviously is a spelling error there in that the word "net" should be "next". Furthermore, input should be sought from Camrosa Water District to determine whether or not their proposed plans will in fact reduce yield to Pleasant Valley. In discussions with Richard Hajas, it is our understanding that Camrosa's intent is to continue to provide current levels of diverted water to Pleasant Valley and in fact yields may be increased.*

Response to PVCWD's Comment #4: The typo has been corrected. The information in this Section was based on a conversation with Camrosa staff, who emphasized that yields of the Conejo Creek diversion project may not always be available to PVCWD.

5. ***PVCWD's Comment:*** *Under the Section "Great Project (Recycled Water)", the first paragraph makes reference to the delivery of recycled water to the Pleasant Valley area. PVCWD has continued to express their concerns to the City of Oxnard about the suitability of the recycled water for agricultural use. In particular, Pleasant Valley is concerned about the "stigma" that recycled water has in the market place. Many growers are now required to provide information on the source of their irrigation water. In the event that recycled water is used, the agricultural produce is often downgraded.*

   Also, Pleasant Valley has concern about the injection of recycled water into the LAS. Injection into the LAS is discussed on pages 65 and 66 (June 2006 Draft Plan). Because the LAS is the only groundwater source for the PVCWD, Pleasant Valley will closely scrutinize any injection of recycled water into the LAS. We feel that a better alternative to injection would be the transportation of the recycled water to the spreading grounds. This would enhance recharge and remove concerns relative to injection.

Response to PVCWD's Comment #5: The use of reclaimed water, as well as most or all of the proposed strategies will need to be analyzed for both technical feasibility and cost/benefit considerations prior to implementation. At that time, the proposed alternative, as well as other alternatives, will be considered. Indeed, the purpose of the advisory groups proposed by the FCGMA Staff at the March 2007 Special Groundwater Management Plan Workshop is to evaluate both the Plan-proposed and alternative groundwater management strategies.

With respect to the specifics of your proposal, the alternative to injection suggested above has two major drawbacks:

1) Reclaimed water recharged in the spreading grounds is not as quantitatively effective or efficient in recharging the Lower Aquifer on a unit for unit basis as using the water in place of extracted groundwater or injecting water directly into the areas with lowered groundwater levels; specifically, the south Oxnard Plain and Pleasant Valley basins; and

2) Reclaimed water delivered via pipeline to the spreading grounds would trigger a host of California Department of Health Services (DHS) requirements, including a zone surrounding the spreading grounds where no groundwater could be pumped for potable use. The DHS requirements for the spreading grounds with piped reclaimed water could significantly alter United Water's operations of the spreading grounds. Any directly injected recycled water would be subject to existing or future DHS stringent water quality standards for domestic consumption, which are very stringent.

6. ***PVCWD's Comment****: Under the Section "Non-Export of FCGMA Water", the last paragraph on that page states "It appears that current ordinances and policies of the FCGMA are sufficient to deal with its export issue." In light of recent issues, the ordinances of the GMA should be reviewed again to make sure that they are adequate to address the export issues. In particular, the enforcement provisions relating to export of "GMA" water should be closely reviewed.*

Response to PVCWD's Comment #6: A discussion about reviewing the sufficiency of current ordinances and policies was added to the Plan in Section 10.1.8.

7. ***PVCWD's Comment****: Under the Section "Increase Diversions from Santa Clara River, Potential Effectiveness". the first sentence states "The Santa Clara River remains a primary recharge source for the Oxnard Plain and Pleasant Valley basins." Based upon our understandings of various studies, it is a little misleading to suggest that the Pleasant Valley*

basin gets much recharge from the Santa Clara River. Although there may be some recharge, even that is disputed, it is clear that the amount of recharge is minimal at best.

Response to PVCWD's Comment #7: PVCWD's comment has merit and the corresponding text has been amended to indicate there is some uncertainty with regards to the quantitative contribution of the Santa Clara River to the southern portion of the Oxnard Plain Pressure Basin and the Pleasant Valley Basin. However, the Santa Clara River likely provides significant recharge to the northern Oxnard Plain Pressure Basin. It is probably not accurate to portray the recharge going to Pleasant Valley from the Santa Clara River as "minimal at best." Although recharge to this basin is hampered by the zone of lower conductivity (fault?) that separates it from the Santa Clara River, there is still recharge moving across the zone. The river also alleviates the need for some recharge through the pipeline delivery of surface water as a replacement for extracted groundwater.

***8. PVCWD's Comment**: Under the section "Shelf Life for Conservation Credits", it is Pleasant Valley's opinion that at the present time there is no need for "sunsetting" of conservation credits. While conservation credits have been built up by not only Pleasant Valley, but other entities, it was the very purpose of allowing for conservation credits so that the credits could be retained and used for future needs. Pleasant Valley sees no present need to "sunset" the conservation credits. Credits would only be used when there was inadequate surface water from the Freeman Diversion and the Conejo Creek Project, and pumping from our wells were insufficient to meet our needs. Putting a shelf life on credits seems to suggest that Pleasant Valley would utilize their credits to over-pump and waste water.*
It is also our opinion that putting a shelf life on credits, will also remove incentives to look for creative water solutions. For example, much of the impetus for Pleasant Valley to participate in the Conejo Creek Project, was the fact that credits would be generated.

Response to PVCWD's Comment #8: Your comments are noted. Currently, there are no restrictions on the use of conservation credits, thus there is significant potential for over-use of the groundwater resource through the conservation credit program. The "sunsetting proposal" has been one of several proposals advanced by FCGMA stakeholders to mitigate the potentially negative consequences of the current credit program. Ultimately, current program will need to be evaluated in the context of the groundwater conditions and other groundwater management strategies to determine its potential benefit/consequences.

FCGMA responses to written comments submitted on behalf of Saticoy Country Club (SCC) by:
Mr. John Powell, Water Committee Representative
Saticoy Country Club

1. ***SCC's Comment:** Continuation of 25% Pumping Reduction. SCC supports all efforts to bring the basins into safe yield and we not only have committed to reduce our overall pumping but we also have committed significant capital resources to increase our efficiencies. As briefly described above we have made a significant efficiency effort already through our infrastructure alterations and water management practices and will continue that effort in the future. As such it is our opinion that to continue the phased reductions to the full 25% reduction (with possible further reductions) only to M&I users is unfair and that the Draft Management Plan Update should either include provisions to reward increases in efficiencies by M&I users and/or to implement additional productive measures to also reduce agricultural pumping. Agricultural users consume far more of the resource and it is completely unfair to place the burden of balancing the basin on the M&I users.*

Response to SCC's Comment #1: Your comments and continuing conservation efforts are very much appreciated. As a point of clarification, the proposed further reductions in groundwater extraction under historical allocation are **not** limited to M & I Operators as suggested by your comment. Other extraction reduction strategies included in the final Plan include a change to the Irrigation Efficiency Calculation (Section 10.1.9) and Additional Water Conservation strategies (Section 10.1.12). A generic discussion of M&I and agricultural conservation efforts has been added the final Plan (Section 4.0).
One of the somewhat surprising conclusions that resulted from the many computer modeling scenarios was that implementation of the remaining two 5% scheduled reductions in Historical Allocations would not eliminate the overuse of groundwater resources within the FCGMA. Thus, reduction of allocation will have to be considered in conjunction with other groundwater management strategies. Ultimately, the responsibility for efficient and effective groundwater use falls on all of the FCGMA stakeholders.

2. ***SCC's Comment: Shelf Life for Conservation Credits.** We understand the potential concerns of accumulating Conservation Credits with no expiration date and that this accumulation effectively has left a large theoretical pumping debt on the aquifers. Sunset provisions may be warranted in many cases. Our initial concerns with this proposed provision alteration is how it may impact different size users and also the potential for removal of credits earned through our continued efficiency improvements.*

Response to SCC's Comment #2: As noted in a response to similar comments, there are no restrictions on the use of conservation credits, thus there is significant potential for over-use of the groundwater resource through the conservation credit program. The "sunsetting proposal" has been one of several proposals advanced by FCGMA stakeholders to mitigate the potentially negative consequences of the current credit program. As part of the implementation of the Plan, both the quantitative contribution and cost/benefit of all groundwater management strategies will be evaluated as part of the development process.

FCGMA responses to written comments submitted on behalf of the City of Camarillo (Camarillo) by:

Ms. Lucia McGovern, Deputy Public Works Director
City of Camarillo

1. ***Camarillo's Comment:*** *Page 58* (of the June 2006 Draft Plan Draft Plan) *indicates the following, "the City of Camarillo is considering a strategy to move some of its current pumping from the area of the LAS pumping depression beneath Pleasant Valley to this area of poorer-quality rising groundwater. Under this plan, the poorer-quality water would be extracted and desalted in a similar manner to the South Las Posas Basin project approved by the FCGMA."*

   Recommended Action: Consider replacing this text with the following, "The City of Camarillo has assessed the feasibility of constructing a Groundwater Treatment Facility that would be located in the Somis Gap area of the Pleasant Valley Basin (Black & Veatch, August 2005). The study determined the project to be technically feasible and would allow Camarillo to halt pumping from an area of the LAS with depressed groundwater levels and instead pump in an area of rising groundwater levels. This plan is similar in nature to the South Las Posas Basin project, which was previously approved by the FCGMA Board and consistent with policy to move pumping to areas of known substantial recharge (i.e., Oxnard Forebay) which will create more storage space for future recharge events. The City of Camarillo proposes to coordinate pumping strategies between various stakeholders in the neighboring sub-basins in order maintain replenishment of the Pleasant Valley Basin."

Response to Camarillo's Comment #1: Some of this language has been added to the final Plan. Parenthetically, moving pumping away from Camarillo's airport wells has been simulated using the Ventura Regional Groundwater Model, with results discussed in Appendix B of the revised report and included in the discussion of this particular management strategy.

As a point of clarification, the Board **has not**, in fact, approved any plan for pumping without allocation in the South Las Posas Basin, although the Board has addressed the potential for consideration of such a plan. Specifically, Resolution 2003-03 states that "an allocation for pumping from the South Las Posas Basin may be changed or altered to accommodate a responsible entity that submits **a plan** to render this groundwater usable"[*] To date, no specific plan has been approved through ordinance or resolution by the Board.

2. ***Camarillo's Comment****: The majority of the discussion on page 58 focuses on the development of brackish groundwater in the LAS of the Pleasant Valley Basin by means of Camarillo's Groundwater Treatment Facility project. However, the third paragraph awkwardly mixes in a brief discussion of an alternate subject in an area of the Pleasant Valley Basin that is far away from the observed recharge in the Forebay.*

   Recommended Action: Please elaborate on the significance of this paragraph to Camarillo's Groundwater Treatment Facility Project or relocate this paragraph to an alternate location to maintain the continuity of the discussion regarding Camarillo's Groundwater Treatment Facility project which is in the Forebay.

[*] FCGMA, 2003. Item 4: Minutes of the October 22, 2003 Board Meeting *in: Full Agenda for the December 17, 2003 FCGMA Board Meeting.*

Response to Camarillo's Comment #2: The paragraph has been revised to reflect this comment, however we cannot agree with Camarillo's use of the term "Forebay" when discussing a possible unconfined area near the town of Somis at the northeastern corner of the Pleasant Valley Basin. There is at present, no comprehensive and conclusive evidence to support the concept that this area acts like a "Forebay" from a hydrogeologic standpoint. Further, the use of this term could be misleading when used in context with the rest of the FCGMA Management Plan where "Forebay" refers to the Oxnard Plain Forebay Groundwater Basin adjacent to the northern end of the Oxnard Plain Pressure Groundwater Basin.

3. ***Camarillo's Comment:*** *Page 17 (June 2006 Draft Plan) provides the following description of the Pleasant Valley Basin, "Despite the fault barrier to the west, the LAS is in hydrologic continuity with the adjacent southern portion of the Oxnard Plain Basin, which is the primary recharge source for the Pleasant Valley Basin."*
   Two paragraphs later, the following is stated, "At the northeast edge of the Pleasant Valley basin, where Arroyo Las Posas flows cross the basin boundary, increased flows in the arroyo have apparently percolated directly into the LAS, significantly raising groundwater levels in City of Camarillo wells. This recharge suggests that this portion of the Pleasant Valley Basin is unconfined, contrary to current understanding of the basin. "
   Recommended Action: Consider the following definition of the Pleasant Valley Basin and explanation of recharge sources for this basin:
   Historically it was assumed that the LAS of the Pleasant Valley Basin was relatively confined and received little overall recharge. This assumption was based on the understanding that the primary recharge source for this basin was from the adjacent Oxnard Plain Basin to the south and recharge potential between these basins was low due to the low permeability of the Pleasant Valley Basin aquifer in this region, as well as the presence of a fault barrier in the lower portions of the Oxnard Plain. However, since the early 1990s, water levels have begun to rise in the northern adjacent basins. The City of Camarillo has two existing wells in .the northeast portion of the Pleasant Valley Basin (hereafter called the Somis Area) and these wells confirm that rising water levels in northern adjacent basins directly impact recharge rates, water quality, and water levels in the Somis Area.
   The recharge in the Somis Area (Pleasant Valley Forebay) may be a result of the Saugus Formation being folded upward and subsequently eroding away in the Somis gap area covering the underlying bedrock with a predominantly sandy alluvial layer that allows rapid stream flow percolation. If this theory is correct, it is also likely true that the primary source of recharge for the Pleasant Valley Basin prior to the decline of the water levels in the adjacent northern basins was a forebay in the Pleasant Valley Basin and this primary recharge source is again prevalent due to the recent rise in water levels in the northern basins. It is recommended that additional monitoring and studies be conducted to determine if this theory is correct."
   Figure 1 illustrates the conceptual location of the Pleasant Valley Forebay.

Response to Camarillo's Comment #3: Much of this suggested language has been included in the final Plan (Section 3.0). Section 3.0 significantly revises the text to indicate the degree of uncertainty in this area with respect recharge and hydrogeology. There is agreement that the northern portion of the Pleasant Valley basin south of Somis needs to be better understood and there is significant recharge occurring in this area of the basin. The details of how this recharge impacts the main portion of the Pleasant Valley basin needs further evaluation, with the result of the study integrated into the conceptual geology of the Ventura Regional Groundwater Model.

The term "Pleasant Valley Forebay" is not used for the reasons cited in the response to the previous Camarillo's Comment #2.

4. ***Camarillo's Comment****: Page 58 (June 2006 Draft Plan) indicates the following, "Base flow from the Arroyo Las Posas has migrated completely across the South and East Las Posas Basins and into the northernmost Pleasant Valley Basin, providing a source of new recharge to this portion of the Pleasant Valley Basin. Coordination in pumping strategies between the sub-basins is recommended in order to avoid negatively impacting groundwater levels in the Fox Canyon Groundwater Basin." As stated in Camarillo's Comment #3, this may not be a "new" source of recharge but instead reestablishing of an old source of recharge to the Pleasant Valley Basin.*
   Recommended Action: Consider revising the text to indicate that the Somis Gap was potentially the primary recharge source for the Pleasant Valley Basin prior to pumping activities in the northern adjacent basins.

Response to Camarillo's Comment #4: See our response to Camarillo's Comment #3 above. Section 3.0 significantly revises the text to indicate the degree of uncertainty in this area with respect recharge and hydrogeology.

5. ***Camarillo's Comment:*** *The Draft GMP does not segregate the Pleasant Valley Basin into sub-basins, it only describes the basin as a whole. Furthermore, the last sentence of the second paragraph of page 17 (June 2006 Draft Plan) indicates a lack of current understanding of this basin.*
   Recommended Action: Please elaborate on the current understanding of the Pleasant Valley Basin and clarify how the basin is currently handled in the model. It is also recommended that the authors consider sub-dividing the Pleasant Valley Basin into sub-basins (Pleasant Valley Forebay and Pleasant Valley Basin) to assist in evaluating the different potential recharge sources for the basin.

Response to Camarillo's Comment #5: See responses to the previous two Camarillo's Comments.

6. ***Camarillo's Comment****: The second paragraph on page 33 (June 2006 Draft Plan) indicates groundwater levels in the LAS have consistently been below sea level in the Pleasant Valley Basin. This is not true across the entire basin.*
   Recommended Action: Clarify that water levels in the southern portion of Pleasant Valley Basin have historically been below sea level since the 1950's. However, water levels in the northeastern portion of the basin near the Somis gap have historically been above sea level and continue to rise along with levels in the adjacent northern basins.

Response to Camarillo's Comment #6: The text has been amended appropriately in the final Plan.

7. ***Camarillo's Comment****: The last sentence of the second paragraph on page 29 (June 2006 Draft Plan) states that: "It is too early to know whether chlorides in the Pleasant Valley Basin will escalate to a problem affecting local pumpers." This sentence is restated in the third sentence of the second paragraph on page 35. In both places it should be noted that two City of Camarillo wells (Wells A and B) have already been impacted by a rise in chlorides, which has prompted the City to discontinue use of Well A and to blend water from Well B with higher quality imported water to meet drinking water standards.*
   Recommended Action: Revise the referenced sentences to indicate that chloride levels in the southern portion of the basin have risen marginally from rising water levels, but due to limited data, the marginal rise of chloride levels could be much higher. However, as shown on Figure 14 of the draft GMP, sulfate and TDS levels in the northern portion of the Pleasant Valley Basin have been rising steadily and have already exceeded secondary drinking water standards. Available data also indicate that concentrations of iron and manganese are also

rising in response to basin recharge and have risen to levels that impair M&I uses.

Response to Camarillo's Comment #7: The text has been amended appropriately in the final Plan.

8. ***Camarillo's Comment****: Page 35 (June 2006 Draft Plan) provides discussion on increasing sulfate and chloride levels in the northern Pleasant Valley Basin and indicates water treatment will be needed for potable or irrigation use.*
   Recommended Action: Consider expanding the discussion to include the following text: "Camarillo has evaluated the feasibility of constructing a Groundwater Treatment Facility that would intercept a portion of the poorer water quality surge and remove salts from the aquifer system. This would help protect the water quality in the southern portion of the basin and preserve higher quality water for use by other pumpers in areas of major overdraft. Furthermore, by utilizing the water from the Groundwater Treatment Facility, Camarillo could curtail or eliminate pumping operations in the southern portion of the Pleasant Valley Basin, which would promote recovery of the depressed water table in that region. Further details of the project are provided in the Section titled, Development of Brackish Groundwater, Pleasant Valley Basin."

Response to Camarillo's Comment #8: Appropriate language has been added to Section 5.2.3 and Section 9.3 of the final Plan. Based on the data and analyses available at this time, it is not known whether a groundwater treatment facility in the northern half of the Pleasant Valley basin would necessarily help to protect water quality in the southern portion of the basin. There is also significant potential for increased pumping associated with a treatment facility to worsen water quality in the southern portion of the Pleasant Valley Basin. Given that there is limited study and data on the area and no quantitative analysis regarding such a system, any statements regarding its success or failure are speculative.

9. ***Camarillo's Comment****: The second sentence of the last paragraph on page 43 (June 2006 Draft Plan) indicates, "Basin Management Objectives (BMO's) for chloride concentrations in the Pleasant Valley Basin are currently being met, although chlorides are rising slowly in a few wells in the basin."*
   There are a number of wells that indicate that the BMO's are not being met. For example, County data indicate that well 01N/21W-01B04 screened from 820 to 1,150 feet has chloride greater than 200 mg/l, well 01N/21W-03C01 is screened from 956 to 1,216 feet has chloride greater than 260 mg/l, and well 01N/21W-01D02 is screened from 107 to 437 feet with chloride greater than 450 mg/l.
   Recommended Action: Consider revising the statement to indicate that BMO's are not currently being met throughout the entire Pleasant Valley Basin.

Response to Camarillo's Comment #9: The text has been amended appropriately in Section 6.2 of the final Plan.

10. ***Camarillo's Comment****: The first sentence of the last paragraph on page 58·(June 2006 Draft Plan) indicates, "Under current FCGMA policy, City of Camarillo pumping of poor-quality groundwater along Calleguas Creek would have to be pumped using existing allocations if the well was within the FCGMA boundary." The City of Camarillo understands that current FCGMA policy has evolved over time and has previously allowed unrestricted pumping of poorer quality shallow groundwater, with the semi-perched zone in the Oxnard Plain and the South Las Posas along the Arroyo being two examples.*
    Recommended Action: .Consider revising the last paragraph of page 58·(June 2006 Draft Plan) to say: "Previously, City of Camarillo pumping of poor-quality groundwater along Calleguas Creek would have to be pumped using existing allocations since the wells are within the FCGMA boundary. However, as FCGMA policy has evolved over time,

unrestricted pumping of poorer quality shallow groundwater has been allowed. For the Camarillo Project, a coordinated effort between the FCGMA and City of Camarillo should be undertaken to define the potential benefits of operating the City of Camarillo Groundwater Treatment Facility. Extractions of poor-quality water without allocations are discussed in more detail in the Section titled "Recommended Additions to FCGMA Policies."

Response to Camarillo's Comment #10: This comment is addressed in Section 9.3 of the final Plan. A formal written policy that includes criteria for these types of projects is recommended as an addition to FCGMA policies.

With regard to other as aspects of this comment, there are two points of clarification. First, no actual pumping of poor-quality shallow groundwater has been authorizes by the FCGMA to date without an existing allocation. Resolution No. 98-1 provides for construction dewatering without an established allocation since such work is typically short-lived and occurs in the shallow subsurface. Resolution No. 99-3 allowed for unrestricted pumping of "mounded groundwater" within the Oxnard Plain Forebay Basin without an allocation, but only under very specific terms and conditions that to date, have never been met or authorized. Second, the Board **has not**, in fact, approved any plan for pumping without allocation in the South Las Posas Basin although the Board is willing to consider the submittal of a plan. Specifically, Resolution No 2003-03 states that "an allocation for pumping from the South Las Posas Basin may be changed or altered to accommodate a responsible entity that submits a plan to render this groundwater usable"[*] To date, no specific plan has been approved through ordinance or resolution by the Board.

***11. Camarillo's Comment**: The last 3 paragraphs on page 23 (June 2006 Draft Plan) discuss groundwater extraction reduction. The numbers presented in the second paragraph in this Section indicates that the total reduction in pumping is about 22 to 23 percent. The next paragraph indicates that the largest decrease in pumping is from agricultural uses, while the last paragraph indicates that the first phase of the FCGMA enforced pumping reductions of 15 percent resulted in the reduction of 8,300 acre-feet of pumping by the M&I users. However, the discussion on the reduced pumping does not appear to reflect the transfer of allocation from agricultural uses to M&I service, or the fact that while some M&I providers are using all their allocation, others have been conserving them for conjunctive use with other sources. We believe that the apparent 15 percent reduction in pumping is somewhat coincidental and that the overall M&I allocation for groundwater use has increased substantially due to land use conversion.*

Recommended Action: This discussion should compare the changes in acreage irrigated and M&I acreage served over the same time period that pumping reduction has occurred. This may also be the place to discuss the likelihood that under recording meters, or agricultural wells with no meters at all, may be contributing to the apparent reduction in reported agricultural pumping.

Response to Camarillo's Comment #11: The discussion of groundwater extraction has been expanded significantly and is located in Section 4.0 of the final Plan. The issue of potential under-reporting of groundwater extractions is addressed in Section 10.1.6 and Section 11.3.9 of the final Plan. In addition, an additional modeling scenario was performed to address potential under-reporting of groundwater extractions. A discussion of the results is provided in Section A.2.2.2 of Appendix B.

[*] FCGMA, 2003. Item 4: Minutes of the October 22, 2003 Board Meeting *in: Full Agenda for the December 17, 2003 FCGMA Board Meeting.*

***12. Camarillo's Comment**: The second paragraph of page 52 (June 2006 Draft Plan) implies that there is a universal acceptance of the pumping reductions and the stiff penalty for over pumping. The City of Camarillo doesn't agree that there is a universal acceptance of the pumping reductions. It is the City's view, as well as other M&I users, that the reduction is not equitable and recommends that the efficiency policy be reviewed in conjunction with production meter testing activities.*

Recommended Action: Consider revising the text to indicate there may be general acceptance of the pumping reduction policies but not universal agreement. The reduction policies should consider equal distribution in sharing the burden in resolving water level deficits in the basins.

Response to Camarillo's Comment #12: The language has been revised to reflect general, but not universal, acceptance of mandated or scheduled Historical allocation reductions.

***13. Camarillo's Comment**: The third paragraph on page 59 (June 2006 Draft Plan) states that the baseline allocation is two acre-feet per acre. The City of Camarillo understands that the two acre-feet per acre may have been the historical allocation, not the baseline allocation. Baseline allocation is only one acre-foot of water per acre, and should be considered when analyzing the baseline allocation policies.*

Response to Camarillo's Comment #13: The baseline allocation number as stated has been corrected to one acre-foot per acre as provided by Section 5.6.1.1 of FCGMA Ordinance No. 8.1.

***14. Camarillo's Comment:** Page 63 (June 2006 Draft Plan) provides a discussion on the potential effectiveness of importing additional state water. Further clarification of this paragraph would be very helpful in understanding this potential strategy.*

Response to Camarillo's Comment #14: A discussion of the potential effectiveness of importing California State Water is provided in Section 10.2.2 of the final Plan. The potential effects of importing California State Water was also addressed as a model scenario using the VRGM and is discussed in Section A.2.2.7 of Appendix B.

***15. Camarillo's Comment:** Page 73 (June 2006 Draft Plan) provides a discussion on penalties used to purchase replacement water. It should be noted that a large percentage of overpumping is by agricultural users who have the ability to escape penalties by switching to irrigation efficiency and consequently the revenue from these fees has historically been very little. Therefore, using this revenue to purchase replenishment water may be of little benefit to the basins.*

Response to Camarillo's Comment #15: The comment is noted.

***16. Camarillo's Comment:** Page 79 (June 2006 Draft Plan) includes a Section on "Extractions of Poor-Quality Water Without an Allocation", which would be an addition to current FCGMA policy. The City of Camarillo supports such a strategy that allows projects that would benefit the overall aquifer system. The City of Camarillo would like to see this policy implemented and would appreciate the opportunity to review the draft policy.*

Response to Camarillo's Comment #16: Please see the response to Camarillo's Comment #10 above.

***17. Camarillo's Comment:** FCGMA has reduced pumping and approved projects that provide some benefit to some portion of aquifers within the agency boundaries. However, this does not promote the implementation of projects in critical areas of the basin that are just outside of agency boundaries. Before implementing the next stage of pumping reductions on M&I users, the City of Camarillo recommends that the FCGMA evaluate larger picture projects*

that could help solve groundwater impacts in the most critical areas and potentially provide solutions in-lieu of additional pumping reductions. Further pumping reductions could possibly be avoided if the current basin by basin management approach was revised and strategies were implemented based on the principal that downstream basins are impacted by upstream uses and that the impact is therefore created by both agricultural and M&I users who pump from all basins.

FCGMA could consider implementing a "mitigation fee" of approximately $10/AF that would be paid by all groundwater users in the FCGMA. This strategy would allow funding for agencies like UWCD, Oxnard, or Calleguas MWD to develop projects that would effectively improve the conditions of the basins as a whole by moving water to over pumped areas within FCGMA boundaries. This approach would help prevent basin by basin management which could inordinately impact users in downstream basins, like the City of Camarillo.

Response to Camarillo's Comment #17: Section 11.1 of the final Plan proposes that there be a dialog on strategic planning within the water community that would discuss specific projects and project proposals. FCGMA staff has proposed a Plan implementation strategy that not only provides for, but encourages, significant stakeholder contribution and input. There are some inherent limitations to the influence of the FCGMA. The enabling legislation for the FCGMA limits its ability to influence projects and conditions outside its boundary. The opportunity to expend FCGMA funds outside its boundary is also limited.

18. Camarillo's Comment: *The City of Camarillo is under the impression that there is a quantifiable amount of groundwater being exported outside the FCGMA boundary from Pleasant Valley and Las Posas Basins. The City of Camarillo would recommend that FCGMA pursue controlling the exportation of groundwater before additional pumping reductions are approved.*

Response to Camarillo's Comment #18: The exportation of groundwater outside the FCGMA boundary is addressed in Section 9.4.

19. Camarillo's Comment: *The Draft GMP indicates that FCGMA is considering expiring accumulated groundwater credits. It should be noted that M&I users conjunctively balance surface water and imported supplies with local groundwater thereby conserving groundwater for use when surface and imported supply is not available. Therefore, setting a time limit on credits works against this water supply management philosophy. Credit reduction is an issue that should be reviewed separately for M&I uses and agricultural uses. Similar to implementing 25 percent pumping reductions, credit reductions would only impact M&I agencies who conduct long-term planning, since agricultural users could go on efficiency allocation and would not be impacted by a loss of credits. M&I users do not have this option.*

In regards to agricultural credits, please note that UWCD surface water deliveries have in part allowed accumulation of credits by agricultural users that receive surface water for irrigation. Those who funded the Freeman Diversion have in part funded the accumulation of these credits when surface deliveries were annually increased. The credit reduction strategy is believed to be of very little benefit to the overall basins but would have a significant impact to M&I users. If there is a desire to eliminate the perceived "groundwater debt", agricultural credit reduction should be the first consideration.

Pages 71 and 72 (June 2006 Draft Plan) state that there are tens of thousands of acre-feet of accrued conservation credits. The credits that the City of Camarillo has accrued came at a high cost, when we purchase more expensive imported water. Poor quality groundwater has forced the City of Camarillo to blend groundwater with imported supplies, subsequently accruing groundwater credits. The City of Camarillo intends to retain its credits until such time they are needed to meet demands during a drought. Even though credits cannot be

sold, they have a value to M&I users that is equal to the over pumping surcharge. FCGMA should reconsider the proposed strategy of expiring/reducing M&I groundwater credits.

Response to Camarillo's Comment #19: The issue of M&I accrual of credits as well as the "shelf-life" for conservations credits is discussed in extensive detail in Section 10.1.13 of the final Plan.

20. Camarillo's Comment: *Page 73 discusses proper filling and capping of abandoned or leaking wells and states that FCGMA helps with the costs associated with well abandonment. The owner of the land that the well is on should be responsible for costs associated with destruction of well(s).*

Response to Camarillo's Comment #20: It is true the owner of the land is responsible for well destruction. Historically, the City of Oxnard, United Water, and the FCGMA have each provided funding to destroy wells for a variety of reasons including urgency, difficult access, threats to water supply, and inability to find former owners. The Ventura County Watershed Protection District - Groundwater Section has pursued the destruction of 40 to 50 abandoned wells per year over the last several years at the property owner's expense without FCGMA financial assistance.

21. Camarillo's Comment*: Page 75 (June 2006 Draft Plan) provides a discussion of additional reductions in pumping allocations. It is recommended that further reductions not be implemented until after the meter testing effort is complete. Perhaps FCGMA should require an initial testing of all meters within one year. This would be very beneficial to the modeling effort because the model will only be as accurate as the information used to develop it.*

Response to Camarillo's Comment #21: The groundwater management strategy of reducing extraction allocations is discussed in extensive detail in Sections 9.5, 10.4.1, 11.2.1, 11.3.10, and Appendix Section A.2.2.3 of the final Plan. The verification of extraction reporting is discussed in detail in Sections, 10.1.6, 11.3.9, and in Appendix Section A.2.2.2. Many different and independent analyses performed over the last four years as well as years of historic documentation demonstrate nearly all of the aquifers of the FCGMA are in a state of overdraft. Two FCGMA Staff reports prepared since October 2006, the *FCGMA 2005 Annual Report*, the output of the VRGM (Appendix B to the final Plan), and the UWCD's *2003 Coastal Saline Intrusion Report, Oxnard Plain Ventura County, California* universally identify extraction of groundwater beyond a level the resource can support as the sole reason for depressed groundwater elevations, seawater intrusion, and water quality degradation throughout the FCGMA. Thus, there is an urgent need to implement strategies that both limit use of the resource and provide additional sources of acceptable recharge. While the increased accuracy of extraction reporting may indirectly contribute to better management of the groundwater resource, the overwhelming body of data and analysis supports the conclusion the resource as whole is over-allocated and overused. Delaying the implementation of any strategy that either reduces overuse of the resource or limits the acquisition of additional recharge does not serve either the FCGMA or its stakeholders. Nevertheless, further extraction reduction will be considered in conjunction with other management strategies described in the Plan with the overarching purpose of comprehensively managing the groundwater resource.

FCGMA responses to written comments provided by:
Mr. Lawrence (Larry) Fuller
Land Owner/Well Operator in the FCGMA
Somis, CA

1. ***Fuller's Comment:*** *Examining the FCGMA Management Plan in light of the case CITY OF BARSTOW et al, v. MOJAVE WATER AGENCY (21 August 2000), I believe this case clarifies the California Supreme Court's position on water rights. It is my understanding that the FCGMA used the "equitable" (physical) concept for allocation pumping to all of the Fox Canyon aquifer pumpers. This method of allocation is clearly a violation of the law, if I understand the ruling cited above. The three levels of priority, as stated in the case law, are 1st priority Overlying Owners, 2nd in priority are Appropriators, and 3rd are Exporters. Thus, while the rights of all overlying owners in a groundwater basin are correlative, and subject to cutbacks when the basin is overdrafted, overlying rights are superior to appropriative rights. It is my request that the FCGMA Board of Directors NOT make any further pumping reductions until these legal issues can be resolved. Small water users, Co-ops, and small M&I agricultural systems are not addressed specifically in the Management Plan. In addition, the FCGMA Board has no small operation representative to ensure that their interests and concerns will be heard.*

Response to Fuller's Comment #1: The history and responsibilities of the FCGMA are summarized in Section 2.0 of the final Plan.

The Agency was created by the State Legislature in 1982 [AB 2995] and granted with certain powers and authority to manage groundwater resources. Included in its enabling legislation (now codified as California Water Code Appendix Chapter 121) is the directive to develop, adopt, and implement a plan to control groundwater extractions (Sect 601). It was also granted the power to "Control extractions by regulating, limiting, or suspending extractions form extraction facilities…" [Ch. 121 Sect. 701 (b)]; and the power to "Impose reasonable operating regulations on extraction facilities…"[Ch. 121 Sect. 701(c)]. SB 747 (1991) amended AB 2995 and authorized the FCGMA Board to establish extraction allocations and levy charges for groundwater extraction. Neither the final Plan nor the FCGMA Ordinance No. 8.1 address the issue of water rights, which is beyond the scope of the FCGMA.

The final Plan was prepared to address the future management of the groundwater resource with respect to the needs of all of the FCGMA stakeholders, regardless of size. Since the operational impacts of larger users have a greater impact on the common resource, some priority has necessarily been placed on strategies that effect large-scale extraction or recharge operations. However, almost all of the proposed groundwater management strategies either directly or indirectly affect all users.

With respect to the comment regarding representation, two of the five FCGMA Board positions are established to represent agricultural operators and small water districts.

2. ***Fuller's Comment:*** *According to my understanding, the Calleguas Municipal Water District (CMWD) has been allowed to acquire Fox Canyon aquifer prescriptive pumping rights. The Board has already allowed the injection wells to be drilled and injection of imported water is progressing. It is imperative that CMWD be restricted in writing that they will not be allowed to extract water outside of their injection field.*

Response to Fuller's Comment #2: A discussion of the Las Posas Basin ASR project as well as other proposed aquifer storage projects, a preliminary set of proposed conditions is provided in Section 9.1 and Section 10.1.10 of the final Plan. Specific aspects of the East Las Posas Basin ASR (formerly Identified as the North Las Posas Basin ASR) are provided in Appendix Section A.3.1 of the final Plan.

The FCGMA has no authority in either its enabling legislation or through its Ordinance code to grant prescriptive rights. When the FCGMA Board authorized and approved the East Las Posas Aquifer Storage and Recovery Project (or ASR Program) proposed by CMWD back in February 1994, certain restrictions were placed on both the operational limitations and the water quality alterations that could result. A written list of conditions was attached to the general injection permit authorized by the FCGMA that included but were not limited to volume reporting, monthly water quality reports, water quality restrictions for both imported water and extracted water, total storage limitations, vicinity groundwater conditions reporting requirements, as well as other standards and condition-dependent response actions (Appendix Section A.3.1 of the final Plan). A copy of these standards or conditions is available and included in an official policy sheet entitled "GMA Adoption of Water Quality Standards."

3. ***Fuller's Comment:*** *A gallon for gallon or acre-foot for acre-foot of water injected for water extracted allowance associated with the CMWD ASR field should take into account the wetting factor of the dry sands and the drift factor of the water moving through the aquifer. Fluid losses can be substantial due to wetting of a dry formation and losses via underflow out of the basin or injection area. The FCGMA should not be providing free water to CMWD.*

Response to Fuller's Comment #3: The comment regarding the equity of credits for injected water compared to extracted water is addressed in Section 9.1 and Section 10.1.10 of the final Plan. This is one of the many issues to be considered as part of implementation of all FCGMA groundwater management strategies.

4. ***Fuller's Comment:*** *The court cases cited should be discussed in detail and rights of prescription should be examined as they might apply or effect FCGMA ordinances, processes or procedures especially in light of recent rulings by the court.*

Response to Fuller's Comment #4: The Agency Counsel, supplied to the FCGMA under contract with the County of Ventura, reviews and provides legal counsel to the Staff and the Board for all decisions, Ordinances, and resolutions with respect to County, State, and Federal Codes. Historically, the Agency has also contracted external legal services to provide advice on both policy and legal issues.

Folder: GMP

Comments Received

HATCH & PARENT
A Law Corporation

21 East Carrillo Street
Santa Barbara, CA 93101
Telephone: (805) 963-7000
Fax: (805) 965-4333

Robert J. Saperstein
(805) 882-1417
RSaperstein@HatchParent.com

June 22, 2006

Via Electronic Mail

Fox Canyon Groundwater Management Agency
c/o Dr. Steve Bachman
800 South Victoria Avenue, L#1600
Ventura, CA 93009

Re: Comments on Draft Groundwater Management Plan

Dear Steve:

These comments are provided on behalf of the cities of Oxnard and Camarillo, and Crestview Mutual Water Company. Many members of the GMA's M&I Providers Group have also reviewed these comments, but given the short time available, this letter has not been endorsed by any entities other than those listed above.

The M&I Providers group is committed to working with all the interested parties in ensuring that the final, updated GMA Groundwater Management Plan is well-done. The product must be comprehensive, technically well-grounded, and accessible to all the various GMA constituents. This is not a simple task.

GMA staff is also aware that the M&I Provider's Group has hired Curtis Hopkins to provide a peer review of the Management Plan. Curtis and Steve Bachman have already discussed ways in which they might collaborate in making the product meet all our expectations.

The first rough draft presented on June 12, 2006, provides an excellent starting point. Given that this initial draft does not contain the results of the modeling work, these comments are purposely general. When the modeling effort yields results, and the Management Plan is then crafted with more specific recommendations, more specific comments will be provided.

The M&I Providers Group also wanted to express its appreciation for the first workshop conducted on June 15, 2006. It is clear that Steve and the GMA staff have a good plan to ensure that the GMA constituents who chose to be involved will have ample opportunity to influence the content of the plan.

In no particular order of importance, please consider the following observations and comments regarding the first draft of the Management Plan and the process in getting it completed:

1. GMA Board attendance at the workshops. While we understand the time commitment is extensive, this update to the Management Plan is very important. It will guide GMA policy and decision-making for years to come. We are not sure how the GMA Board can obtain adequate familiarity with all the issues and the constituents' concerns without some attendance at the workshops. No board members attended the first workshop.

2. Executive Summary. This section is written as part introduction and part summary. An Executive Summary is normally drafted when the remainder of the document is complete. Given the length and technical nature of the material, the Executive Summary will be the most important section of the Plan. It may be the only portion of the document many individuals read. It should summarize the purpose, issues and recommendations, once all of the technical work is complete.

3. Acknowledgements. Throughout the document, there is repetitive recognition of United and Calleguas as the two entities who contribute to the GMA. This recognition is limited almost exclusively to these two entities. Either this self-congratulatory language should be eliminated, or there should be proper acknowledgement of the work of all the individuals and agencies who have and continue to contribute to the GMA's success.

4. Modeling. There needs to be a distinct section that better describes the model details used for the technical analysis. This section need not be long, but it should include mention of the software, construction, assumptions and details of the model construct. It ought to give enough information for the technically capable reader to understand its basics.

5. Organization and Redundancy. There is tremendous redundancy in the report. Perhaps with different organization, it could be slimmed down significantly. You might describe the water quality and quantity issues generally applicable to all areas, along with the general concept of basin management objectives. Then discuss all the issues comprehensively, separated for each basin or in some cases regions with multiple basins. As an alternative, some of the nonessential background and detailed technical information might be moved to appendices.

6. Management Strategies: Organization. In a fashion, the Management Plan is really several separate management plans. Perhaps it should be organized by basin for the three content subjects: strategies under development, future strategies and actions to attain BMO's. There may need to be one more general section that addresses those strategies that cross basin boundaries. You may be able to combine all the basin specific discussions in one section for each basin. A couple different organizational approaches might be tested, with the goal of reducing redundancy and volume of text.

Fox Canyon Groundwater Management Agency
June 22, 2006
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7. Specific strategy: Forebay priorities. The potential over-reliance on the Forebay under certain conditions is acknowledged in the document. However, there is no mention of the importance, from a policy perspective, to establish some hierarchy for use of the Forebay. There will be increasing reliance on the Forebay. To the extent access to the Forebay may be limited under certain conditions; the GMA board must consider limiting certain uses before others.

8. Specific strategy: Transfers across basins. There is no direct mention that transfers (of allocation or credits) from challenged areas to areas of abundance may be the simplest method of mitigating problems. This has been a policy not favored in the past. However, this is an appropriate time to reconsider this question, particularly if the technical analysis suggests that a surgical approach is required to solve certain problem areas.

9. Specific strategy: Ag recycled water use. The draft Plan acknowledges (assumes) that larger volumes of recycled water will be available for Ag use in the future. The assumption is correct that highly purified recycled water will be available and recycled water use could be a very efficient method of solving several regional problems. However, there is some resistance in the Ag community to take direct use of recycled water. The resistance is not over the quality of the recycled water, but over the required reporting to distributors and product buyers that the crop was grown with recycled water. As long as there is the Ag industry perception that recycled water use may harm the user's competitiveness, recycled water will not be widely accepted. The Board may be able to help influence certain industry groups to alter the current reporting requirements that create these problems for individual users.

10. Analytic methodology. There appears to be no intent to model the expected (inevitable) conversion of Ag use to M&I use over the period of the modeling run. Without this detail, the modeling exercise may provide very misleading results. For example, there are several significant Ag to M&I projects that are in the planning stages located in the south Oxnard Plain area, nearby the City's wastewater treatment plant and the military bases. The result of these conversions will be a shift in groundwater use from wells in a highly sensitive area, to City and United wells located far from the coast (and imported water). If the model does not take into account these expected transitions, it will predict a materially different future than that which will occur. In this fashion, the modeling results may be very misleading.

11. Water quality. It is somewhat troubling that the cornerstone of the Plan is the setting of Basin Management Objectives, some of which are water quality objectives. However, the model has no capability to predict water quality changes. Thus, we need to be very careful in how we set and monitor compliance with the Basin Management Objectives.

12. Periodic update. Either as a component of the Plan, or as a Board measure in adopting the Plan, there should be a built in requirement to update the Plan no less than every 5 years. This should not be so difficult if the model proves to be as useful a tool as is expected.

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June 22, 2006
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13. A few detail comments (there are several other nits in the document that we assume will be fixed in future drafts):

a. Pg. 12. There is no such thing as "in-lieu" credits. Ordinance 8 only defines storage and conservation credits. There are special credit transfer agreements/programs the GMA has approved that amount to "in-lieu" transfer of credits, but the term has no meaning in Ordinance 8.

b. Pg. 12. Ordinance 8 requires Ag to demonstrate 80% efficiency, based on the individual crops grown. The Plan does not propose tightening the efficiency percentage as a potential method of reducing water use. Also, the current reporting requirements are not clear in requiring that the efficiency calculation is to be based on irrigated acreage, not total owned property. In some cases, the irrigated acreage may be materially smaller than the property footprint. In that circumstance, the user gets a substantial benefit in reporting efficiency based on the property footprint instead of the irrigated acreage.

c. Pgs. 13, 16. There is no mention of M&I return flows as a source of recharge.

d. Pg. 20. Two different definitions of basin yield are used and overdraft is not defined.

e. Pg. 23. The discussion of the decreasing trend of extractions is incomplete and therefore misleading. As to the Ag side: (1) there is no quantification of the reduction of Ag pumping resulting from reduced acreage in production over the past two decades, and (2) there is no recognition that the initial period against which we are measuring reduced usage was a very dry period. During dry periods, Ag groundwater use tends to be greatest. Since those early years, we have been in a generally wet period. Thus, we would expect a natural reduction in Ag groundwater use simply based on the historical hydrology.

As to the M&I side, there is no quantification of the increase in municipal demand as a result of conversion of Ag use to M&I use. There is no discussion of the relative efficiencies of use of water prior to the imposition of the cutback goals. The implication of the current discussion in the Plan is that Ag has done more than its share and M&I has not. There is insufficient information or analysis for this conclusion or implication. This discussion should either be made complete and correct, or eliminated, especially if policy decisions might be influenced by it.

f. Pg. 29. The discussion of increasing salt concentrations in the Las Posas basins is somewhat conclusory and incomplete. It might help to actually provide the POTW discharge water quality for TDS and chlorides, so that it would be more clear to the reader that the problem is, in fact, generating from aquifer conditions, not discharge water quality.

Fox Canyon Groundwater Management Agency
June 22, 2006
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The M&I Provider's Group and Curtis Hopkins will continue to be very actively involved in finalizing the Plan. We appreciate the Board's instructions to develop the Plan in an open and interactive environment. Thank you for your consideration of these comments and those that are certain to follow.

Best Regards,

Robert J. Saperstein
For HATCH & PARENT
A Law Corporation

ROB:olr

cc: Board of Directors of Fox Canyon Groundwater Management Agency
Jeff Pratt
David Paparo
M&I Provider's Group

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PUBLIC WORKS DEPARTMENT
Water Division
251 South Hayes Avenue • Oxnard, CA 93030-6058
(805) 385-8136 • Fax (805) 385-8137

AUG 2006
Received
Fox Canyon
GMA

16 August 2006

Transmitted Via Electronic Mail

Fox Canyon Groundwater Management Agency
c/o Dr. Steve Bachman
800 South Victoria Avenue, L#1600
Ventura CA 93009

Subject: Additional Interim Comments on Draft Groundwater Management Plan

Dear Dr. Bachman:

This letter sets forth additional interim general comments on the Draft Fox Canyon Groundwater Management Agency ("FCGMA") Groundwater Management Plan ("Plan") and the current planning process by the City of Oxnard. A draft of this letter and the substantive comments herein were also discussed at the Municipal & Industrial ("M&I") Providers Group meeting on 15 August 2006. Those in attendance expressed their general support for the recommendations set forth below. We will provide more specific comments when the results of the basin model become available. We understand that the modeling results will be available by the end of this month, and that the draft Plan will be amended to include specific recommendations based upon the results. The M&I Provider's Group and its consultant, Hopkins Groundwater Consultants, will need sufficient time to review the model results and the revised draft Plan when available, so that we can provide meaningful comments.

As an interim effort, we are submitting these additional comments to supplement the comments provided by the City of Oxnard and others by letter, dated 22 June 2006. Our additional interim comments are as follows:

1. At the last workshop on the draft Plan, the group discussed the potential that incorrect assumptions about the quantity of groundwater production could result in erroneous outcomes from the model. Indeed, there is substantial anecdotal evidence that groundwater production reporting may be materially incorrect because of inaccurate meters or other faulty reporting mechanisms. For this reason, we recommend that the model be run to assume a band of uncertainty relating to the quantity of groundwater production within FCGMA. Such sensitivity analysis will help verify the integrity of the model results.

Fox Canyon Groundwater Management Agency
16 August 2006
Page 2

2. As a related matter, the FCGMA will pursue an aggressive review of meter calibrations over the next several years. However, this process is not scheduled to start until 2007 and it will take three years to complete the first cycle. We recommend that the model be periodically rerun and updated with this new, more accurate production data when it becomes available. In the interim, we recommend that FCGMA staff review suspect accounts and perform a preliminary audit of groundwater production reporting to determine the scope of potential discrepancies.

3. The Draft Plan sets forth several potential future management strategies that should be further explored for their potential effectiveness in addressing seawater intrusion and other adverse hydrogeologic conditions. We recommend that the next draft of the Plan prioritize these potential future strategies in terms of their potential effectiveness. We further recommend that the FCGMA develop procedure to apply a cost/benefit analysis to determine which of the prioritized strategies should be implemented.

4. As a general matter, we also encourage the FCGMA to consider more dynamic use of aquifers with dewatered storage space as a potential resource for future conjunctive use programs. Other basins, such as the Chino and Orange County basins, are currently planning and using available dewatered storage space for local and regional conjunctive use programs that yield better water supply reliability and financial benefits to support other necessary basin management programs. The FCGMA could pursue similar programs. There are numerous hydrogeologic and policy matters that must be resolved to implement a large scale groundwater storage program. Still, we recommend that the Plan include additional and more detailed discussion of potential opportunities for active conjunctive use programs within the FCGMA area.

We look forward to viewing the model results and the next iteration of the draft Plan so that we may provide more specific comments. As we noted in our prior letter, we appreciate the open and interactive environment in which this planning effort is being conducted. Thank you for your consideration of these additional interim comments.

Sincerely,

Anthony A. Emmert
Water Resources Manager

cc: Board of Directors, Fox Canyon Groundwater Management Agency
Jeff Pratt
Gerhardt Hubner
David Panaro
M & I Providers Group

[illegible]

ARNOLD, BLEUEL, LAROCHELLE, MATHEWS & ZIRBEL, LLP
ATTORNEYS AT LAW

ATTORNEYS
GARY D. ARNOLD
BARTLEY S. BLEUEL
DENNIS LAROCHELLE
JOHN M. MATHEWS
MARK A. ZIRBEL
DENNIS P. MCNULTY
KENDALL A. VAN CONAS
AMBER A. EISENBREY
PETER D. LEMMON
OF COUNSEL
SUSAN L. MCCARTHY

300 ESPLANADE DRIVE, SUITE 2100
OXNARD, CALIFORNIA 93036
TELEPHONE 805.988.9886
FAX: 805.988.1937
www.atozlaw.com

WRITER'S E-MAIL
jmathews@atozlaw.com

August 16, 2006

Mr. David Panaro
Fox Canyon Groundwater
Management Agency
800 S. Victoria Avenue
Ventura, CA 93009

Re: Draft Goundwater Management Plan

Dear David:

Pleasant Valley County Water District ("PVCWD") has reviewed the Fox Canyon Groundwater Management Agency (GMA) Draft Groundwater Management Plan. The staff of the GMA and their consultants are to be congratulated on their efforts in drafting this comprehensive document. We continue to believe that the best way to address our groundwater issues in Ventura County is the consensus building approach that the GMA has always embraced. In our review we have several initial comments. Our comments are made sequentially based upon the GMA draft.

1. On page 23, under the section "*Groundwater Extractions*", in the third paragraph it refers to increased agricultural efficiencies. We believe that somewhere in this paragraph reference should be made to the fact that extractions from the groundwater may have also decreased because increased yields from the Freeman diversion and the Conejo Creek project.

2. On page 43, in the section entitled "*Assessment of Basin Management Objectives*", in the second paragraph it refers to BMOs for groundwater levels in the Pleasant Valley basin. In table 3, it makes reference to Basin Management Objectives in the Pleasant Valley area, but does not set forth what the current levels are, it would be helpful to state the groundwater BMOs.

3. On page 48, under the section "*Contingency Plan for LAS Seawater Intrusion*", it states that the GMA staff has developed a contingency plan to address the intrusion of seawater into the LAS. It would be helpful if drafts of that Contingency Plan could be made available for public review.

Mr. David Pantaro
Fox Canyon Groundwater
Management Agency
Re: Draft Goundwater Management Plan
August 16, 2006
Page 2

4. On page 50, under the section "*Conejo Creek Diversion Project*", the last sentence references that over the "net 20 years" that the yield of the diversion might decrease. There obviously is a spelling error there in that the word "net" should be "next". Furthermore, input should be sought from Camrosa Water District to determine whether or not their proposed plans will in fact reduce yield to Pleasant Valley. In discussions with Richard Hajas, it is our understanding that Camrosa's intent is to continue to provide current levels of diverted water to Pleasant Valley and in fact yields may be increased.

5. On page 55, under the section "*Great Project (Recycled Water)*", the first paragraph makes reference to the delivery of recycled water to the Pleasant Valley area. Pleasant Valley has continued to express their concerns to the City of Oxnard about the suitability of the recycled water for agricultural use. In particular, Pleasant Valley is concerned about the "stigma" that recycled water has in the market place. Many growers are now required to provide information on the source of their irrigation water. In the event that recycled water is used, the agricultural produce is often downgraded.

   Also, Pleasant Valley has concern about the injection of recycled water into the LAS. Injection into the LAS is discussed on pages 65 and 66. Because the LAS is the only groundwater source for the Pleasant Valley County Water District, Pleasant Valley will closely scrutinize any injection of recycled water into the LAS.

   We feel that a better alternative to injection would be the transportation of the recycled water to the spreading grounds. This would enhance recharge and remove concerns relative to injection.

6. On page 59, under the section "*Non-Export of FCGMA Water*", the last paragraph on that page states "It appears that current ordinances and policies of the FCGMA are sufficient to deal with its export issue." In light of recent issues, the ordinances of the GMA should be reviewed again to make sure that they are adequate to address the export issues. In particular, the enforcement provisions relating to export of "GMA" water should be closely reviewed.

7. On page 63, under the section "*Increase Diversions from Santa Clara River, Potential Effectiveness*", the first sentence states "The Santa Clara River remains a primary recharge source for the Oxnard Plain and Pleasant Valley basins." Based upon our understandings of various studies, it is a little misleading to suggest that the Pleasant Valley basin gets much recharge from the Santa Clara River. Although there may be some recharge, even that is disputed, it is clear that the amount of recharge is minimal at best.

Mr. David Pantaro
Fox Canyon Groundwater
Management Agency
Re: Draft Goundwater Management Plan
August 16, 2006
Page 3

8. Beginning on page 71, under the section "*Shelf Life for Conservation Credits*", it is Pleasant Valley's opinion that at the present time there is no need for "sunsetting" of conservation credits. While conservation credits have been built up by not only Pleasant Valley, but other entities, it was the very purpose of allowing for conservation credits so that the credits could be retained and used for future needs. Pleasant Valley sees no present need to "sunset" the conservation credits. Credits would only be used when there was inadequate surface water from the Freeman Diversion and the Conejo Creek Project, and pumping from our wells were insufficient to meet our needs. Putting a shelf life on credits seems to suggest that Pleasant Valley would utilize their credits to over pump and waste water.

   It is also our opinion that putting a shelf life on credits, will also remove incentives to look for creative water solutions. For example, much of the impetus for Pleasant Valley to participate in the Conejo Creek Project, was the fact that credits would be generated.

We appreciate the opportunity to provide our comments concerning the draft, and look forward to the further development of the plan.

Very truly yours,

ARNOLD, BLEUEL, LAROCHELLE,
MATHEWS & ZIRBEL, LLP

John M. Mathews

JMM/ksvk
cc: PVCWD
S:\USER\SHARE\P\PVCWD\Correspondence\Pantaro 8-16-06.wpd

August 17, 2006

Fox Canyon Ground Water Management Agency
Ventura County Government Center Administration Building
800 South Victoria Avenue
Ventura, California 93009-1600

Attention: Mr. Lynn E. Maulhardt, Chair

Subject: Comments on the Public Review Draft Updated Management Plan dated June, 2006

Dear Mr. Maulhardt:

Saticoy Country Club (SCC) has a vested interest in the proposed changes to the current Fox Canyon Groundwater Management Agency Management Plan (Management Plan Update) but we have not been able to complete our comments in time for the August 21, 2006 deadline for comments. While this letter presents our early thoughts on several issues in the draft Management Plan Update, we intend to continue our effort to prepare comments. Our goal is to have our completed comments shortly after the next FCGMA Groundwater Management Plan Workshop on August 31, 2006. With this schedule we trust our comments will be considered for incorporation in the Final Management Plan Update.

SCC has significantly reduced our water usage through a reduction in irrigated acreage and increased our efficiencies through infrastructure improvements and our water management practices including the following:

- Hired a golf architect to provide a plan to reduce our irrigated acreage from about 117 acres to 95 acres.
- Implemented the 95 acre plan.
- Hired a landscape architect to prepare a drought resistant landscape plan.
- We are in the process implementing the landscape plan.
- Converted many sprinkler heads to more efficient one half head models along the edges of the fairways.
- Rewired each of our sprinkler heads and installed new sprinkler controls for improved individual run time controls.
- We have on-going turf grass studies for additional efficiency improvement.
- A complete irrigation system upgrade evaluation is planned within the next few years.

For the draft Management Plan Update we have identified two areas so far that warrant comments. Those are:

Continuation Of 25% Pumping Reduction

SCC supports all efforts to bring the basins into safe yield and we not only have committed to reduce our overall pumping but we also have committed significant capital resources to increase our efficiencies. As briefly described above we have made a significant efficiency effort already through our infrastructure alterations and water management practices and will continue that effort in the future. As such it is our opinion that to continue the phased reductions to the full 25% reduction (with possible further reductions) only to M&I users is unfair and that the Draft Management Plan Update should either include provisions to reward increases in efficiencies by M&I users and/or to implement additional productive measures to also reduce agricultural pumping.

SATICOY COUNTRY CLUB

4450 NORTH CLUBHOUSE DRIVE
SOMIS, CALIFORNIA 93066
(805) 485-4956
FAX (805) 647-1158

Agricultural users consume far more of the resource and it is completely unfair to place the burden of balancing the basin on the M&I users.

Shelf Life For Conservation Credits

We understand the potential concerns of accumulating Conservation Credits with no expiration date and that this accumulation effectively has left a large theoretical pumping debt on the aquifers. Sunset provisions may be warranted in many cases. Our initial concerns with this proposed provision alteration is how it may impact different size users and also the potential for removal of credits earned through our continued efficiency improvements.

We look forward to discussions on both of these issues in the workshops.

Sincerely,

John R. Powell, RG, CEG
For the Water Committee

City of Camarillo

601 Carmen Drive • P.O. Box 248 • Camarillo, CA 93011-024

Public Works
(805) 388-5380

August 25, 2006

Mr. Jeff Pratt, P.E.
Executive Officer
Fox Canyon Groundwater Management Agency
800 South Victoria Avenue
Ventura, CA 93009

Subject: Comments to Fox Canyon Groundwater Management Agency Draft Groundwater Management Plan (June 2006)

Dear Jeff,

The City of Camarillo, and its consultants, Black & Veatch and Hopkins Groundwater Consultants, Inc., have reviewed the June 2006 Draft Groundwater Management Plan (Draft GMP) prepared by your agency, and attended two Agency workshops. Based on these interactions, we offer the following comments and recommended actions.

Comments Regarding Development of Brackish Groundwater

The Draft GMP provides discussion in several locations regarding the potential feasibility of the development of the brackish groundwater supply in the northern portion of the Pleasant Valley Basin. The following comments are in regards to this subject.

1. Comment: Page 58 indicates the following, *"the City of Camarillo is considering a strategy to move some of its current pumping from the area of the LAS pumping depression beneath Pleasant Valley to this area of poorer-quality rising groundwater. Under this plan, the poorer-quality water would be extracted and desalted in a similar manner to the South Las Posas Basin project approved by the FCGMA."*

   Recommended Action: Consider replacing this text with the following, *"The City of Camarillo has assessed the feasibility of constructing a Groundwater Treatment Facility that*

would be located in the Somis Gap area of the Pleasant Valley Basin (Black & Veatch, August 2005). The study determined the project to be technically feasible and would allow Camarillo to halt pumping from an area of the LAS with depressed groundwater levels and instead pump in an area of rising groundwater levels. This plan is similar in nature to the South Las Posas Basin project, which was previously approved by the FCGMA Board and consistent with policy to move pumping to areas of known substantial recharge (i.e., Oxnard Forebay) which will create more storage space for future recharge events. The City of Camarillo proposes to coordinate pumping strategies between various stakeholders in the neighboring sub-basins in order maintain replenishment of the Pleasant Valley Basin."

2. Comment: The majority of the discussion on page 58 focuses on the development of brackish groundwater in the LAS of the Pleasant Valley Basin by means of Camarillo's Groundwater Treatment Facility project. However, the third paragraph awkwardly mixes in a brief discussion of an alternate subject in an area of the Pleasant Valley Basin that is far away from the observed recharge in the forebay.

   Recommended Action: Please elaborate on the significance of this paragraph to Camarillo's Groundwater Treatment Facility Project or relocate this paragraph to an alternate location to maintain the continuity of the discussion regarding Camarillo's Groundwater Treatment Facility project which is in the forebay.

3. Comment: Page 17 provides the following description of the Pleasant Valley Basin, *"Despite the fault barrier to the west, the LAS is in hydrologic continuity with the adjacent southern portion of the Oxnard Plain Basin, which is the primary recharge source for the Pleasant Valley Basin."*

   Two paragraphs later, the following is stated, *"At the northeast edge of the Pleasant Valley basin, where Arroyo Las Posas flows cross the basin boundary, increased flows in the arroyo have apparently percolated directly into the LAS, significantly raising groundwater levels in City of Camarillo wells. This recharge suggests that this portion of the Pleasant Valley Basin is unconfined, contrary to current understanding of the basin."*

   Recommended Action: Consider the following definition of the Pleasant Valley Basin and explanation of recharge sources for this basin:

   "Historically it was assumed that the LAS of the Pleasant Valley Basin was relatively confined and received little overall recharge. This assumption was based on the understanding that the primary recharge source for this basin was from the adjacent Oxnard Plain Basin to the south and recharge potential between these basins was low due to the low permeability of the Pleasant Valley Basin aquifer in this region, as well as the presence of a fault barrier in the lower portions of the Oxnard Plain. However, since the early 1990's, water levels have begun to rise in the northern adjacent basins. The City of Camarillo has two existing wells in the northeast portion of the Pleasant Valley Basin (hereafter called the Somis Area) and these wells confirm that rising water levels in northern adjacent basins directly impact recharge rates, water quality, and water levels in the Somis Area.

The recharge in the Somis Area (Pleasant Valley Forebay) may be a result of the Saugus Formation being folded upward and subsequently eroding away in the Somis gap area covering the underlying bedrock with a predominantly sandy alluvial layer that allows rapid stream flow percolation. If this theory is correct, it is also likely true that the primary source of recharge for the Pleasant Valley Basin prior to the decline of the water levels in the adjacent northern basins was a forebay in the Pleasant Valley Basin and this primary recharge source is again prevalent due to the recent rise in water levels in the northern basins. It is recommended that additional monitoring and studies be conducted to determine if this theory is correct."

Figure 1 illustrates the conceptual location of the Pleasant Valley Forebay.

4. Comment: Page 58 indicates the following, *"Base flow from the Arroyo Las Posas has migrated completely across the South and East Las Posas Basins and into the northernmost Pleasant Valley Basin, providing a source of <u>new</u> recharge to this portion of the Pleasant Valley Basin. Coordination in pumping strategies between the sub-basins is recommended in order to avoid negatively impacting groundwater levels in the Fox Canyon Groundwater Basin."* As stated in Comment #3, this may not be a "new" source of recharge but instead reestablishing of an old source of recharge to the Pleasant Valley Basin.

   Recommended Action: Consider revising the text to indicate that the Somis Gap was potentially the primary recharge source for the Pleasant Valley Basin prior to pumping activities in the northern adjacent basins.

5. Comment: The Draft GMP does not segregate the Pleasant Valley Basin into sub-basins, it only describes the basin as a whole. Furthermore, the last sentence of the second paragraph of page 17 indicates a lack of current understanding of this basin.

   Recommended Action: Please elaborate on the current understanding of the Pleasant Valley Basin and clarify how the basin is currently handled in the model. It is also recommended that the authors consider sub-dividing the Pleasant Valley Basin into sub-basins (Pleasant Valley Forebay and Pleasant Valley Basin) to assist in evaluating the different potential recharge sources for the basin.

6. Comment: The second paragraph on page 33 indicates groundwater levels in the LAS have consistently been below sea level in the Pleasant Valley Basin. This is not true across the entire basin.

   Recommended Action: Clarify that water levels in the southern portion of Pleasant Valley Basin have historically been below sea level since the 1950's. However, water levels in the northeastern portion of the basin near the Somis gap have historically been above sea level and continue to rise along with levels in the adjacent northern basins.

7. Comment: The last sentence of the second paragraph on page 29 states that: *"It is too early to know whether chlorides in the Pleasant Valley Basin will escalate to a problem affecting local pumpers."* This sentence is restated in the third sentence of the second paragraph on page 35. In both places it should be noted that two City of Camarillo wells (Wells A and B) have already been impacted by a rise in chlorides, which has prompted the City to discontinue use of Well A and to blend water from Well B with higher quality imported water to meet drinking water standards.

   Recommended Action: Revise the referenced sentences to indicate that chloride levels in the southern portion of the basin have risen marginally from rising water levels, but due to limited data, the marginal rise of chloride levels could be much higher. However, as shown on Figure 14 of the draft GMP, sulfate and TDS levels in the northern portion of the Pleasant Valley Basin have been rising steadily and have already exceeded secondary drinking water standards. Available data also indicate that concentrations of iron and manganese are also rising in response to basin recharge and have risen to levels that impair M&I uses.

8. Comment: Page 35 provides discussion on increasing sulfate and chloride levels in the northern Pleasant Valley Basin and indicates water treatment will be needed for potable or irrigation use.

   Recommended Action: Consider expanding the discussion to include the following text: *"Camarillo has evaluated the feasibility of constructing a Groundwater Treatment Facility that would intercept a portion of the poorer water quality surge and remove salts from the aquifer system. This would help protect the water quality in the southern portion of the basin and preserve higher quality water for use by other pumpers in areas of major overdraft. Furthermore, by utilizing the water from the Groundwater Treatment Facility, Camarillo could curtail or eliminate pumping operations in the southern portion of the Pleasant Valley Basin, which would promote recovery of the depressed water table in that region. Further details of the project are provided in the section titled, Development of Brackish Groundwater, Pleasant Valley Basin."*

9. Comment: The second sentence of the last paragraph on page 43 indicates, *"Basin Management Objectives (BMOs) for chloride concentrations in the Pleasant Valley Basin are currently being met, although chlorides are rising slowly in a few wells in the basin."*

   There are a number of wells that indicate that the BMOs are not being met. For example, County data indicate that 1N/21W-1B04 screened 820 to 1150 feet has chloride greater than 200 mg/l, 1N/21W-3C01 screened 956 to 1216 feet has chloride greater than 260 mg/l, and 1N/21W-1D02 screened 107 to 437 feet has chloride greater than 450 mg/l.

   Recommended Action: Consider revising the statement to indicate that BMOs are not currently being met throughout the entire Pleasant Valley Basin.

10. Comment: The first sentence of the last paragraph on page 58 indicates, *"Under current FCGMA policy, City of Camarillo pumping of poor-quality groundwater along Calleguas*

Creek would have to be pumped using existing allocations if the well was within the FCGMA boundary." The City of Camarillo understands that current FCGMA policy has evolved over time and has previously allowed unrestricted pumping of poorer quality shallow groundwater, with the semi-perched zone in the Oxnard Plain and the South Las Posas along the Arroyo being two examples.

Recommended Action: Consider revising the last paragraph of page 58 to say: *"Previously, City of Camarillo pumping of poor-quality groundwater along Calleguas Creek would have to be pumped using existing allocations since the wells are within the FCGMA boundary. However, as FCGMA policy has evolved over time, unrestricted pumping of poorer quality shallow groundwater has been allowed. For the Camarillo Project, a coordinated effort between the FCGMA and City of Camarillo should be undertaken to define the potential benefits of operating the City of Camarillo Groundwater Treatment Facility. Extractions of poor-quality water without allocations are discussed in more detail in the section titled "Recommended Additions to FCGMA Policies."*

Comments Regarding Further Pumping Reduction Strategies

The Draft GMP includes discussions on the continuation of 25 percent pumping reductions. The M&I users are impacted by reduction strategies while agricultural users are impacted by irrigation efficiency strategies. The actual benefit of the 25 percent pumping reduction is limited because the M&I component of groundwater use (about 30 percent) is significantly less than agricultural uses (about 70 percent) as illustrated in Figures 4 and 5 of the GMP. As a result, this strategy will only ensure a minor reduction in the overall pumping, which will be from the M&I users. This conserved amount could easily be negated by inefficient agricultural practices. Therefore, it is recommended that the 25 percent (or greater) reduction strategies should be reviewed in conjunction with agricultural efficiency calculations. In addition, FCGMA should consider more restrictive crop efficiencies and consider a replenishment fee to be paid by all users.

Specific comments related to pumping reduction strategies are:

11. Comment: The last 3 paragraphs on page 23 discuss groundwater extraction reduction. The numbers presented in the second paragraph in this section indicates that the total reduction in pumping is about 22 to 23 percent. The next paragraph indicates that the largest decrease in pumping is from agricultural uses, while the last paragraph indicates that the first phase of the FCGMA enforced pumping reductions of 15 percent resulted in the reduction of 8,300 acre-feet of pumping by the M&I users. However, the discussion on the reduced pumping does not appear to reflect the transfer of allocation from agricultural uses to M&I service, or the fact that while some M&I providers are using all their allocation, others have been conserving them for conjunctive use with other sources. We believe that the apparent 15 percent reduction in pumping is somewhat coincidental and that the overall M&I allocation for groundwater use has increased substantially due to land use conversion.

Recommended Action: This discussion should compare the changes in acreage irrigated and

M&I acreage served over the same time period that pumping reduction has occurred. This may also be the place to discuss the likelihood that under recording meters, or agricultural wells with no meters at all, may be contributing to the apparent reduction in reported agricultural pumping.

12. Comment: The second paragraph of page 52 implies that there is a universal acceptance of the pumping reductions and the stiff penalty for over pumping. The City of Camarillo doesn't agree that there is a universal acceptance of the pumping reductions. It is the City's view, as well as other M&I users, that the reduction is not equitable and recommends that the efficiency policy be reviewed in conjunction with production meter testing activities.

    Recommended Action: Consider revising the text to indicate there may be general acceptance of the pumping reduction policies but not universal agreement. The reduction policies should consider equal distribution in sharing the burden in resolving water level deficits in the basins..

General Comments on the Draft GMP

The following comments and recommendations are more general in nature:

13. The third paragraph on page 59 states that the baseline allocation is two acre-feet per acre. The City of Camarillo understands that the two acre-feet per acre may have been the historical allocation, not the baseline allocation. Baseline allocation is only one acre-foot of water per acre, and should be considered when analyzing the baseline allocation policies.

14. Page 63 provides a discussion on the potential effectiveness of importing additional state water. Further clarification of this paragraph would be very helpful in understanding this potential strategy.

15. Page 73 provides a discussion on penalties used to purchase replacement water. It should be noted that a large percentage of overpumping is by agricultural users who have the ability to escape penalties by switching to irrigation efficiency and consequently the revenue from these fees has historically been very little. Therefore, using this revenue to purchase replenishment water may be of little benefit to the basins.

16. Page 79 includes a section on *"Extractions of Poor-Quality Water Without An Allocation"*, which would be an addition to current FCGMA policy. The City of Camarillo supports such a strategy that allows projects that would benefit the overall aquifer system. The City of Camarillo would like to see this policy implemented and would appreciate the opportunity to review and comment on the draft policy.

17. FCGMA has reduced pumping and approved projects that provide some benefit to some portion of aquifers within the agency boundaries. However, this does not promote the implementation of projects in critical areas of the basin that are just outside of agency boundaries.

Before implementing the next stage of pumping reductions on M&I users, the City of Camarillo recommends that the FCGMA evaluate larger picture projects that could help solve groundwater impacts in the most critical areas and potentially provide solutions in-lieu of additional pumping reductions.

Further pumping reductions could possibly be avoided if the current basin by basin management approach was revised and strategies were implemented based on the principal that downstream basins are impacted by upstream uses and that the impact is therefore created by both agricultural and M&I users who pump from all basins.

FCGMA could consider implementing a "mitigation fee" of approximately $10/AF that would be paid by all groundwater users in the FCGMA. This strategy would allow funding for agencies like UWCD, Oxnard, or Calleguas MWD to develop projects that would effectively improve the conditions of the basins as a whole by moving water to over pumped areas within FCGMA boundaries. This approach would help prevent basin by basin management which could inordinately impact users in downstream basins, like the City of Camarillo.

18. The City of Camarillo is under the impression that there is a quantifiable amount of groundwater being exported outside the FCGMA boundary from Pleasant Valley and Las Posas Basins. The City of Camarillo would recommend that FCGMA pursue controlling the exportation of groundwater before additional pumping reductions are approved.

19. The Draft GMP indicates that FCGMA is considering expiring accumulated groundwater credits. It should be noted that M&I users conjunctively balance surface water and imported supplies with local groundwater thereby conserving groundwater for use when surface and imported supply is not available. Therefore, setting a time limit on credits works against this water supply management philosophy.

    Credit reduction is an issue that should be reviewed separately for M&I uses and agricultural uses. Similar to implementing 25 percent pumping reductions, credit reductions would only impact M&I agencies who conduct long-term planning, since agricultural users could go on efficiency allocation and would not be impacted by a loss of credits. M&I users do not have this option.

    In regards to agricultural credits, please note that UWCD surface water deliveries have in part allowed accumulation of credits by agricultural users that receive surface water for irrigation. Those who funded the Freeman Diversion have in part funded the accumulation of these credits when surface deliveries were annually increased.

    The credit reduction strategy is believed to be of very little benefit to the overall basins but would have a significant impact to M&I users. If there is a desire to eliminate the perceived "groundwater debt", agricultural credit reduction should be the first consideration.

Pages 71 and 72 state that there are tens of thousands of acre-feet of accrued conservation credits. The credits that the City of Camarillo has accrued came at a high cost, when we purchase more expensive imported water. Poor quality groundwater has forced the City of Camarillo to blend groundwater with imported supplies, subsequently accruing groundwater credits. The City of Camarillo intends to retain its credits until such time they are needed to meet demands during a drought. Even though credits cannot be sold, they have a value to M&I users that is equal to the over pumping surcharge.

FCGMA should reconsider the proposed strategy of expiring/reducing M&I groundwater credits .

20. Page 73 discusses proper filling and capping of abandoned or leaking wells and states that FCGMA helps with the costs associated with well abandonment. The owner of the land that the well is on should be responsible for costs associated with destruction of well(s).

21. Page 75 provides a discussion of additional reductions in pumping allocations. It is recommended that further reductions not be implemented until after the meter testing effort is complete. Perhaps FCGMA should require an initial testing of all meters within one year. This would be very beneficial to the modeling effort because the model will only be as accurate as the information used to develop it.

The City of Camarillo requests the opportunity to provide additional comments once the groundwater modeling effort for the GMP is available for review. The City believes it would be valuable if the GMP provided more quantifiable measures regarding water level deficits and anticipated impacts each FCGMA strategy would contribute towards reducing those deficits. However, the City recognizes that those quantifiable measures would much easier to identify once the modeling results are available.

Please contact me at (805) 388-5334 if you have any questions or need additional information.

Very truly yours,

City of Camarillo

Lucia McGovern
Deputy Director of Public Works

Attachment – Figure of Pleasant Valley Forebay

Figure 1

Pleasant Valley Forebay Map

City of Camarillo Comments on June 2006 Draft GMP
August 25, 2006

cc:
Tom Smith – City of Camarillo
Curtis Hopkins – Hopkins Consultants
Randy Krueger – Black & Veatch
Tony Emmert – City of Oxnard
Jim Kentosh – UCWD
Jim Passanisi – City of Ventura
Carrie Mattingly – City of Port Hueneme
Steve Bachman, PhD – UCWD
Don Kendall, PhD – Calleguas MWD

J&V Project 143568.200
J&V File A

May 2007

Lawrence (Larry) Fuller
7935 Dusty Lane
Somis, CA 93066
805-386 –4086

September 26, 2006

Fox Canyon Groundwater Management Agency
800 S. Victoria Ave.
Ventura, CA 93009

Attn: David Panaro, Jeff Pratt & Steve Bachman

Subj: Comments and concerns on the FCGWMA Management Plan

Hi David,

I told you that I would put in writing some of my thoughts and concerns expressed in the 1st workshop. My research has led me to look at the management plan in the light of the State of California water case law especially the case CITY OF BARSTOW et al., v. MOJAVE WATER AGENCY (S071728) 21 August 2000. This case clarifies the Supreme Court of California's position on water rights. A summery of the Courts decisions can be found in Downey Brand Attorneys LLP document titled California Water Law & Policy Reporter- October 2000.

It is my understanding that the FCGWMA used the "equitable" (physical) concept for allocating pumping to all of the Fox Canyon aquifer pumpers. This method of allocation is clearly a violation of the law, if I understand the California Supreme Court ruling cited above. The three levels of priority, as stated in the case law, are 1st Priority Overlying Owners, 2nd in priority are appropriators and 3rd are exporters (water transferred out of the immediate pumping area).

The clearest statement of this fact is found on page 29 starting with line 3. "We repeat the guiding principle: 'Under California law, "[p]roper overlying use,...is paramount, and the right of an **appropriator**, being limited to the amount of **surplus**, must yield to that of the overlying owner in the event of a shortage unless the appropriator has gained prescriptive rights through the taking of nonsurplus waters." [Citation.]' (*Hi-Desert County Water Dist. V. Blue Skies Country Club, Inc., supra*, 23 Cal.App.4th 1723-1731, Thus, while the rights of all overlying owners in a ground water basin are correlative, and subject to cutbacks when the basin is over drafted, **overlying rights are superior to appropriative rights**. Here, the trial court did not attempt to determine the priority of water rights, and merely allocated pumping rights based on prior production. This approach elevates the rights of appropriators and those producing without any claim of right to the same status as the rights of riparins and overlying owners. The trial court erred in doing so."

It is my request that the FCGWMA board of directors DO NOT make any further pumping reductions until these legal issues can be resolved. The case law sited states that only the Court has the right to restrict our pumping. A little caution now could prevent law suits caused by not following the law. (page 54,61) The original allocation system did not take into consideration efficient use of water and therefore it was/is flawed. **The allocation should also consider the number of water sources available to a given property**. Some properties have water available via pipelines from major water suppliers while many properties are dependent on their wells as the only source of water. Small users, Coops and small M &I/Agriculture systems are not addressed specifically in Management Plan. In addition to this the FCGWMA board has no small operation representative on the board to insure that their interests and concerns will be heard.

Another issue that I talked about in the workshop was the FCGWMA's Board approval of CMWD application for injection/storage facilities in North Las Posas Groundwater Basin.

According to my understanding this letter opens the door for CMWD to acquire Fox Canyon Aquifer **prescriptive** pumping rights. The Board has already allowed the injection wells to be drilled and injection of imported water is progressing. It is imperative that CMWD be restricted **IN WRITING** that they will not be allowed to extract water outside of their injection field. The Board can not by letter change the California water laws regarding prescriptive water rights that can and will be developed if pumping is allowed outside of the injection site boundaries. See page two paragraph 4. end of 1st sentence....**OR IN THE NEAR VICINITY**. What constitutes "near"? One mile, five miles? It is a known fact that CMWD wants to pump Fox Canyon water to blend with their imported water. Overlying owner priority rights will be affected if this issue is not addressed before any extraction is started out side their injection field.

Another problem area with CMWD that was discussed, concerned the One for One or gallon for gallon of water pumped to be extracted. When I addressed this issue your engineer made light of my comments concerning both the wetting factor of the dry sands and the drift factor of the water moving through the aquifer. I have friends that are very knowledgeable in the field of both hydrology and geology. They state that anyone who knows anything about the Fox Canyon aquifer knows about the drift out through Hueneme Canyon and the losses of fluid due to wetting of a dry formation. I can only assume that CMWD is injecting into an area that is dry—water does not compress. David this is right down your alley. I know with your training you can do the calculations for both the wetting and the transfer function even if your engineer can't. The FCGWMA should not be providing free water to CMWD.

The Court case sited discussed in detail the effect of allowing a right by prescription to be developed. Please look into all of the FCGWM ordinances in the light of the rulings by the Court.

Sincerely,

Larry Fuller

Encl: Copies for Mr. Jeff Pratt
Mr. Steve Bachman

Appendix C

City of Oxnard 2019 Consumer Confidence Report

Tim Flynn
Mayor

Carmen Ramírez, *Esq.*
Mayor Pro Tem, District 2

Bert E. Perello
Councilmember, District 1

Oscar Madrigal
Councilmember, District 3

Bryan A. MacDonald
Councilmember, District 4

Gabriela Basua
Councilmember, District 5

Vianey Lopez
Councilmember, District 6

City Council Office
300 West Third Street, Oxnard, CA 93030

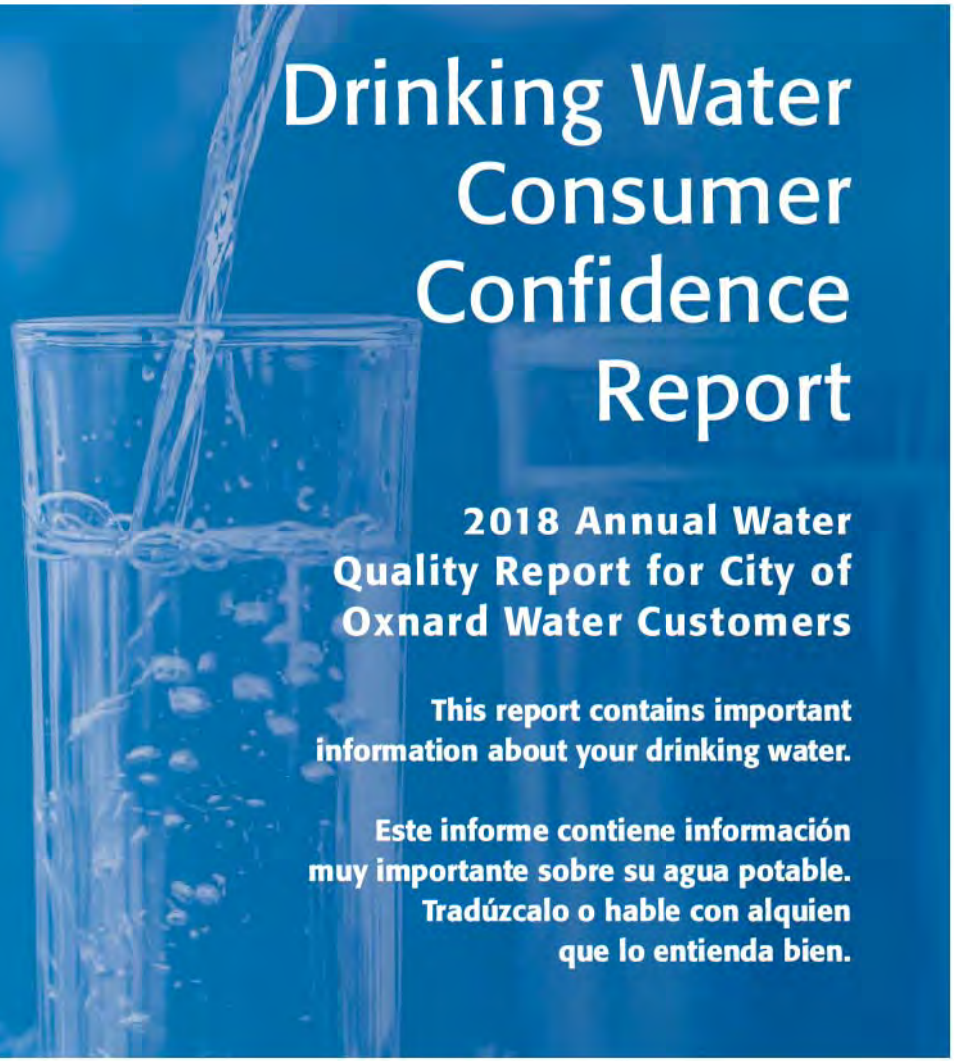
Public Information
You are invited to attend any of the regularly scheduled City Council meetings:

When:
Tuesdays at 6:00 PM (twice a month)

Where:
City Council Chambers
305 West Third Street, Oxnard, CA 93030

For more information:
visit www.Oxnard.org/CCR or call (805) 385-8136

For additional information: Environmental Protection Agency Safe Drinking Water Hotline: (800) 426-4791



Drinking Water Consumer Confidence Report

2018 Annual Water Quality Report for City of Oxnard Water Customers

This report contains important information about your drinking water.

Este informe contiene información muy importante sobre su agua potable. Tradúzcalo o hable con alquien que lo entienda bien.

Drinking Water Consumer Confidence Report 2018

Please share this information with others at your location by posting this notice in a public place or common area. This Drinking Water Consumer Confidence Report is available in English and Spanish (Español) on the City's website at www.oxnard.org/CCR. For any questions about this report, please contact the Water Division Manager, Omar Castro, at (805) 385-8136.

Dear Valued Customer,

I am pleased to share the 2018 Drinking Water Consumer Confidence Report. Oxnard's water team is dedicated to delivering reliable, high-quality drinking water at the lowest possible cost that meets or exceeds all water quality standards, each and every day.

This report contains important water quality testing results, background on our water resources, and information about our continued investment in water infrastructure and supplies. We invite you to partner with us to support Oxnard's health and vitality today and into the future.

Sincerely,

Omar Castro
Water Division Manager

DRINKING WATER SOURCES AND TREATMENT

Oxnard's water supplies include imported water from the Calleguas Municipal Water District (Calleguas), regional water purchased from the United Water Conservation District (United), and water from City groundwater wells.

IMPORTED WATER: CALLEGUAS MUNICIPAL WATER DISTRICT (45% OF SUPPLY)

Calleguas is a member agency of the Metropolitan Water District of Southern California (Metropolitan), the major water importer and wholesale agency for Southern California. Water supplied to Oxnard from Calleguas originates in Northern California via the State Water Project: a system of reservoirs, aqueducts and pump stations. This water is treated either by Metropolitan's Jensen Water Treatment Plant or by Calleguas' Lake Bard Water Filtration Plant. Both Metropolitan and Calleguas perform routine watershed surveys, source water quality sampling and analyses, and operational and treatment activities to ensure the water supplied maintains a high quality.

GROUNDWATER: UNITED WATER CONSERVATION DISTRICT (25% OF SUPPLY)

United manages, stores and may periodically release water from Lake Piru into the Santa Clara River. During high flows and after storms, United may also divert Santa Clara River water into spreading ponds near El Rio, capturing water that would have otherwise been lost to the ocean. This river water infiltrates and recharges the Oxnard Plain groundwater aquifer. Later the groundwater is extracted, treated, and delivered to several retail water agencies in the region including Oxnard. United performs regular watershed surveys as well as routine sampling and water quality analyses to ensure that water stored, treated, and delivered to its customers maintains a consistent quality.

GROUNDWATER: OXNARD (30% OF SUPPLY)

Oxnard Water operates ten groundwater wells that are tested and monitored on a regular basis to meet all drinking water standards. To produce an aesthetically pleasing drinking water quality, City well water is either blended with water from Calleguas or United well water or treated water from the City's Groundwater Desalter Treatment Facility. The Desalter, fed by City wells, improves water quality by using reverse osmosis treatment to remove dissolved minerals and is capable of processing up to 7.5 million gallons of water per day.

Oxnard Water also conducts routine source water assessments in order to detect potential contaminants in the groundwater before they become a problem. This includes possible contaminants from local gas stations, private septic systems, drainage from agriculture, and industrial facilities such as chemical and petroleum processing and storage facilities, dry cleaners, metal plating, finishing and fabricating facilities.

REASON FOR THIS REPORT

Oxnard Water is committed to informing City residents about the sources and quality of their drinking water. The City is proud to have successfully met strict water quality guidelines set by the California Division of Drinking Water (CDDW) and the US Environmental Protection Agency (USEPA). This report is a summary of water quality monitoring results from January through December 2018.

WATER QUALITY MONITORING

All of the monitoring conducted is necessary to ensure that your water is safe to drink and also aesthetically pleasing. Monitoring is a result of prescribed regulations from the USEPA as well as the CDDW. These regulations limit the amount of certain health-based and aesthetic contaminants in water provided by all public water systems. Many of the monitoring, treatment, and water quality requirements that are placed upon local drinking water supplies are actually more stringent than for bottled water.

Here is some additional information that may provide assistance in interpreting information in the 2018 Water Quality Tables:

- Some of the parameters measured will change very infrequently in their environment. For these parameters, the State allows the City to monitor them less than once a year. Therefore, some of the City's data - although representative - is more than one year old.
- Unregulated contaminant monitoring is conducted in order to assist USEPA and CDDW to determine where certain contaminants occur and whether the contaminants need to be regulated. There are many more contaminants that were monitored than what is reported in the included water quality table; however, they were never detected in your drinking water so they are not listed.
- The sources of drinking water (both tap and bottled water) include rivers, lakes, streams, ponds, reservoirs, springs and wells. As water travels over the surface of the land or through the ground, it dissolves naturally-occurring minerals and, in some cases, radioactive materials, and can pick up substances resulting from the presence of animals or from human activity.
- Contaminants that may be present in source water include:
    - Microbial contaminants, such as viruses and bacteria, which may come from sewage treatment plants, septic systems, agricultural livestock operations, and wildlife.
    - Inorganic contaminants, such as salts and metals, that can be naturally-occurring or result from urban stormwater runoff, industrial or domestic wastewater discharges, oil and gas production, mining, or farming.
    - Pesticides and herbicides that may come from a variety of sources such as agriculture, urban stormwater runoff, and residential uses.
    - Organic chemical contaminants, including synthetic and volatile organic chemicals, which are byproducts of industrial processes and petroleum production, and can also come from gas stations, urban stormwater runoff, agricultural application, and septic systems.
    - Radioactive contaminants that can be naturally-occurring or be the result of oil and gas production and mining activities.
- In order to ensure that tap water is safe to drink, the USEPA and State Water Resources Control Board prescribe regulations that limit the amount of certain contaminants in water provided by public water systems. State Board regulations also establish limits for contaminants in bottled water that provide the same protection for public health.
- Drinking water, including bottled water, may reasonably be expected to contain small amounts of some contaminants. The presence of contaminants does not necessarily indicate that water poses a health risk. More information about contaminants and potential health effects can be obtained by calling the USEPA's Safe Drinking Water Hotline (1-800-426-4791).
- Your drinking water comes from a blend of sources. The water quality data presented in this report is based on the blended water supply that is delivered through the water distribution system.

IMPORTANT HEALTH INFORMATION

Some people may be more vulnerable to contaminants in drinking water than the general population. Immuno-compromised persons such as persons with cancer undergoing chemotherapy, persons who have undergone organ transplants, people with HIV/AIDS or other immune system disorders, some elderly, and infants can be particularly at risk from infections. These people should seek advice about drinking water from their health care providers. USEPA/Centers for Disease Control (CDC) guidelines on appropriate means to lessen the risk of infection by Cryptosporidium and other microbial contaminants are available from the Safe Drinking Water Hotline (1-800-426-4791).

Nitrate (as Nitrogen) in drinking water at levels above 10 mg/L is a health risk for infants of less than six months of age. Such nitrate levels in drinking water can interfere with the capacity of the infant's blood to carry oxygen, resulting in a serious illness; symptoms include shortness of breath and blueness of the skin. Nitrate (as Nitrogen) levels above 10 mg/L may also affect the ability of the blood to carry oxygen in other individuals, such as pregnant women and those with certain specific enzyme deficiencies. If you are caring for an infant, or you are pregnant, you should ask advice from your health care provider.

The City's water supply has been tested for lead. Lead sampling shows levels are below regulatory limits. In addition, the City conducted lead sampling at 33 schools under the "Lead Sampling in Schools" program in 2018-19. If present, elevated levels of lead can cause serious health problems, especially for pregnant women and young children. Lead in drinking water is primarily from materials and components associated with service lines, water meters and home plumbing. Oxnard Water is responsible for providing high quality drinking water, but cannot control the variety of materials used in plumbing components. When your water has been sitting for several hours, you can minimize the potential for lead exposure by flushing your tap for 30 seconds to 2 minutes before using water for drinking or cooking. If you are concerned about lead in your water, you may wish to have your water tested. Information on lead in drinking water, testing methods, and steps you can take to minimize exposure is available from the Safe Drinking Water Hotline or at http://www.epa.gov/safewater/lead.

Be Water Wise

Help conserve our precious water supplies and save money…

Switch to high-efficiency toilets, washing machines and irrigation devices. Fix leaks right away. Change your thirsty lawn to a beautiful, water-saving California Friendly® Landscape.

Learn more and apply for rebates at

bewaterwise.com®

City of Oxnard Summary of Water Quality Results / *Summary of Water Quality Results For 2018*

The water quality tables describe the parameters measured in the various water supply sources and the results of those measurements during 2018. Please note that the summary tables represent a blend of water quality which is delivered to customers throughout the City.

Parameter	MCL [MRDL]	PHG (MCLG) [MRDLG]	Range	Average	Year Tested	Major Sources in Drinking Water
PRIMARY DRINKING WATER STANDARDS - Mandatory Health-Related Standards						
INORGANIC CHEMICALS						
Arsenic (ppb)	10	0.004	0.85 - 1.3	1.08	2018	Erosion of natural deposits, orchard runoff
Fluoride (ppm)	2.0	1.0	0.38 - 0.58	0.5	2018	Water additive that promotes strong teeth
Nitrate (as N) (ppm)	10	10	2.1 - 4.0	2.87	2018	Runoff & leaching from fertilizer & sewage
Selenium (ppb)	50	30	2.2 - 6.1	4.12	2018	Erosion of natural deposits; discharge from refineries
RADIOLOGICALS (a) (b)						
Gross Alpha Particle Activity (pCi/L)	15	0	1.67 - 5.24	3.62	2018	Erosion of natural deposits
Gross Beta Particle Activity (pCi/L)	50	0	2.1 - 3.9	3.42	2018	Decay of natural and manmade deposits
Uranium (pCi/L)	20	0.43	2.2 - 4.4	3.17	2018	Erosion of natural deposits

City of Oxnard Summary of Water Quality Results / *Summary of Water Quality Results For 2018*

Parameter	Secondary MCL	Notification Level	Range	Average	Year Tested	Major Sources in Drinking Water
SECONDARY DRINKING WATER STANDARDS - Aesthetic Standards						
Aluminum (ppb)	200		6.8 - 23.0	15.4	2018	Erosion of natural deposits, residual from water treatment process
Chloride (ppm)	500		47 - 78	63.7	2018	Runoff and leaching from natural deposits; seawater influence
Iron (ppb)	300		ND - 4	3.5	2018	Leaching from natural deposits; industrial waste
Manganese (ppb)	50	500	ND - 5.6	3.8	2018	Leaching from natural deposits
Odor Threshold (Units)	3.0		1.0 - 1.0	1.0	2018	Naturally-occurring organic materials
Specific Conductance (µS/cm)	1,600		900 - 1,100	1,000	2018	Substances that form ions when in water, seawater influence
Sulfate (ppm)	500		170 - 280	220	2018	Runoff and leaching from natural deposits
Total Dissolved Solids (ppm)	1,000		470 - 700	570	2018	Runoff and leaching from natural deposits
Turbidity (NTU)	5.0		ND	ND	2018	Soil runoff
ADDITIONAL PARAMETERS (Unregulated)						
Alkalinity (ppm)	NS	NS	130 - 160	142.5	2018	Erosion of natural material
Calcium (ppm)	NS	NS	64.9 - 97.7	80.2	2018	Erosion of natural material
Hardness (Total Hardness) (ppm)	NS	NS	264 - 382	319.7	2018	Erosion of natural material
Magnesium (ppm)	NS	NS	24.8 - 33.6	29	2018	Erosion of natural material
pH (pH Units)	NS	NS	7.39 - 7.96	7.6	2018	--
Potassium (ppm)	NS	NS	3.5 - 4.0	3.8	2018	Erosion of natural material
Sodium (ppm)	NS	NS	72.0 - 83.0	77.2	2018	Erosion of natural material; Seawater influence
ADDITIONAL PARAMETERS (Unregulated) noted in the source water prior to blending.						
Boron (ppm)	NS	1	0.35 - 0.62	0.44	2018	Naturally present in the environment
Chlorate (ppb)	NS	800	6.0 - 95.0	37.7	2018	By-product of water disinfection
Total Organic Carbon (ppm)	NS	50	0.96 - 2.0	1.59	2018	Various natural and manmade sources

City of Oxnard Summary of Water Quality Results / *Summary of Water Quality Results For 2018*

Parameter	State MCL [MRDL]	PHG (MCLG) [MRDLG]	Range	Average	Greatest RAA	Major Sources in Drinking Water
DISINFECTION RELATED MONITORING						
Disinfectant Residual Total chlorine, as residual (ppm)	[4.0]	[4.0]	0.03 - 2.8	1.52	1.65	Disinfectant added to control microbiological parameters
Disinfection By-Products Haloacetic acids (HAA5) (ppb)	60	N/A	ND - 13	6.16	7	Byproducts of drinking water disinfection using chlorine
Total trihalomethanes (TTHM) (ppb)	80	N/A	1.4 - 38	26.75	22.5	Byproducts of drinking water disinfection using chlorine
DISINFECTION-RELATED MONITORING noted in source water prior to blending.						
Bromate (ppb) (c)	10	0.1	2.2 - 3.7	3.13		Byproduct of drinking water disinfection
LEAD AND COPPER MONITORING 2018						
Copper (d) (ppb)	1,300 (AL)	300	90th percentile value		580	Erosion of natural materials and corrosion of household plumbing fixtures
			No. of sites sampled		52	
			Sites exceeding AL		0	
Lead (d) (ppb)	15 (AL)	0.2	90th percentile value		6.1	Erosion of natural materials and corrosion of household plumbing fixtures
			No. of sites sampled		52	
			Sites exceeding AL		3	

Abbreviations and Definitions

AL	Federal Regulatory Action Level
DDW	Department of Drinking Water
MCL	Maximum Contaminant Level
MCLG	Maximum Contaminant Level Goal
MRDL	Maximum Residual Disinfectant Level
MRDLG	Maximum Residual Disinfecant Level Goal
NA	Not Applicable
ND	Not Detected
NS	No Standard
NTU	Nephelometric turbidity units
pCi/L	picoCuries per liter
PHG	Public Health Goal
ppb	Parts per billion = Micrograms per liter (ug/l)
ppm	Parts per million =Milligrams per liter (mg/l)
RAA	Running Annual Average
SWRCB	State Water Resources Control Board
uS/cm	microSiemen per centimeter.

a - SWRCB DDW considers 50 pCi/L to be the level of concern for beta particles; the gross beta particle activity MCL is 4 millirem/year annual dose equivalent to the total body or any internal organ.

b - Radionuclides are sampled over a range from throughout a given year to every 6 years.

c - Compliance for treatment plants that use ozone is based on a running annual average of monthly samples.

d - Lead and Copper Monitoring was last conducted throughout the City's distribution system in 2018 and is scheduled to be sampled again in 2021.

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Water is Life, Infrastructure Makes It Happen

Water reliability is important to the quality of life and economic vitality of our community. Capital projects that replace, renew and upgrade our water system pipelines, wells and treatment facilities keep our infrastructure healthy and working for the coming decades. Here's some highlights from recent projects:

GROUNDWATER WELL REHABILITATION

Oxnard's system includes 10 groundwater wells that pump about 30% of the water supply. Well equipment and components must be inspected, maintained and replaced to keep them operating efficiently. Two wells were rehabilitated in 2018 which helps to improve our overall well operations.

PIPE REPLACEMENT

Water system pipelines made of cast iron become brittle and are prone to breaks as they become older. Oxnard has a schedule to systematically replace these aging pipes. In 2018 the City replaced approximately 12,000 feet of cast iron water main with polyvinyl chloride (PVC) pipes, which can last up to 100 years.

DESALTER TREATMENT FACILITY MEMBRANE REPLACEMENT

The Desalter Facility cleans groundwater that otherwise could not be used as a water source. It uses reverse osmosis technology to remove dissolved minerals but over time, the membrane cartridges that filter the minerals exceed their useful life. To keep this treatment facility running smoothly, the Water Division purchased 996 new reverse osmosis membranes to replace two of the three membrane trains.

RECYCLED WATER EXPANDED USE

In 2016, Oxnard's Advanced Water Purification Facility (AWPF) began delivering recycled water after years of planning and investment. The largest water treatment facility of its kind in our area, the AWPF currently supplies highly-purified water to agriculture, landscaping and industry. In 2014, new regulations were adopted that allows the injection of recycled water into groundwater aquifers. Following a rigorous regulatory and testing program, the water can be pumped out (recovered) after 3-4 months, treated again, and distributed as potable water. This is known as "indirect potable reuse" or IPR.

Oxnard is making progress in demonstrating this option's viability for our community. To date, the Aquifer Storage and Recovery (ASR) well test system includes one ASR well, three monitoring wells, and pumping equipment. The Los Angeles Regional Water Quality Control Board is expected to approve the project in 2019, which is required to begin the yearlong testing phase. Currently in design, the remaining well equipment is projected to be constructed within 18 months to two years. While there are additional tasks and phases which may delay the schedule, recycled water is targeted to be added as a water source by 2022. This important project will help reduce reliance on costly imported water, protect our groundwater resources, and create a beneficial reuse of a scarce resource that would otherwise be lost to the ocean.

City of Oxnard
Water Division
251 S. Hayes Avenue
Oxnard, CA 93030

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Please share this information with others at your location by posting this notice in a public place or common area. This Drinking Water Consumer Confidence Report is available in English and Spanish (Español) on the City's website at www.oxnard.org/CCR. For any questions about this report, please contact the Water Division Manager, Omar Castro, at (805) 385-8136.

To All Postal Customers

Appendix K

Teal Club Development Infrastructure Review

Kennedy/Jenks Consultants

1000 Hill Road, Suite 200
Ventura, California 93003
805-658-0607
805-650-1522 (Fax)

Teal Club Development Infrastructure Review

May 2007

Prepared for

City of Oxnard
251 S. Hayes Avenue
Oxnard, CA 93030

K/J Project No. 0689075

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Section 1: Background and Purpose

1.1 Background

The Teal Club project consists of approximately 175.14 acres located in the City of Oxnard. The proposed Specific Plan development is bounded by Doris Road and Teal Club Drive to the North and South, respectively, and by Ventura Road and Patterson Road to the East and West, respectively. Figure 1-1 provides the location of the Teal Club development. Approximately 33.23 acres of the total site will be dedicated Park and Open Space. The project developer is SunCal Companies and as currently proposed, the project consists of:

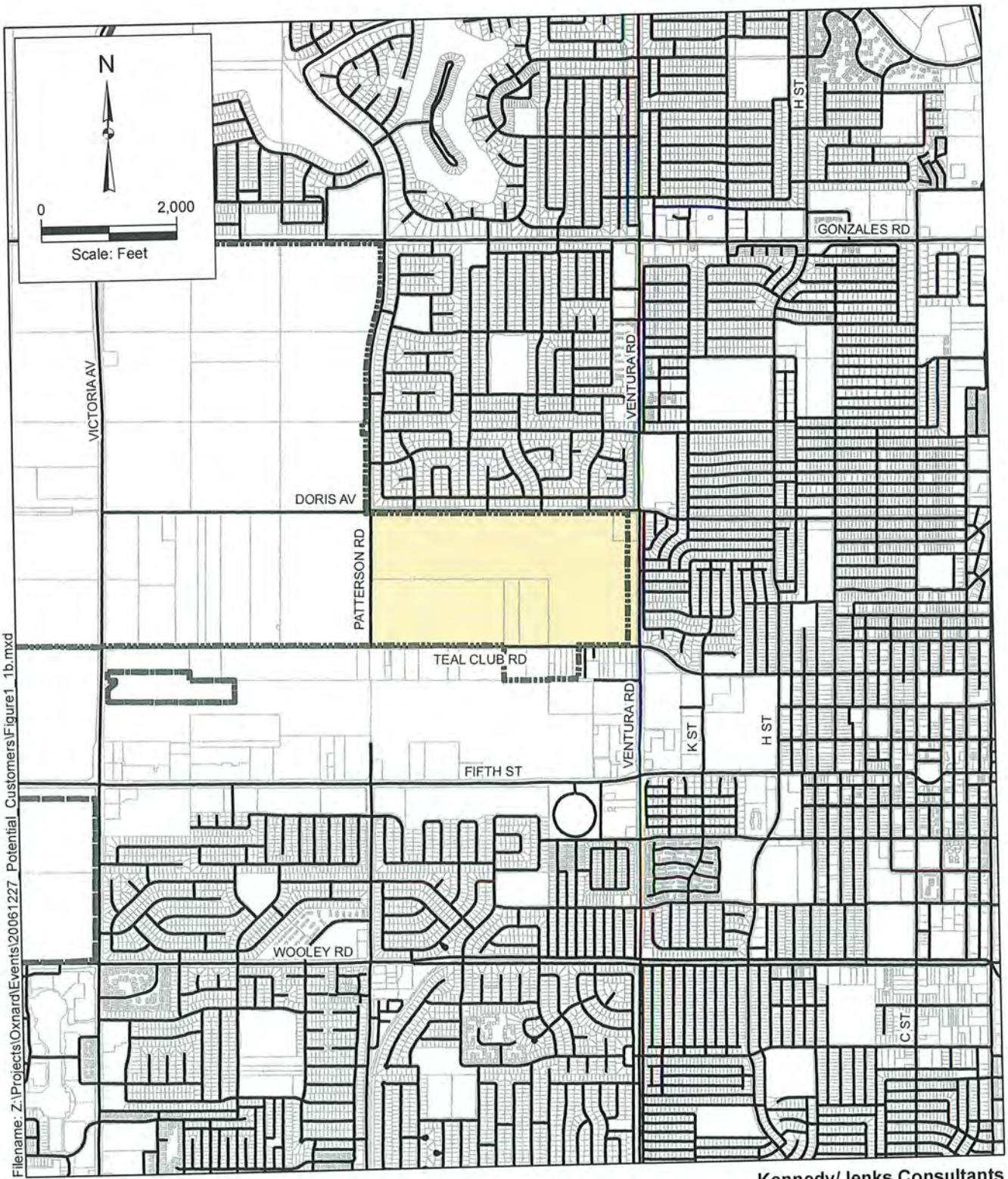
- Up to 261 single family residential units, including 60 feet, 50 feet and 40 feet wide lots;
- Up to 895 multi-family residential units, including courtyard, patio, cottage, and town home styles;
- 28.33 acres of landscaped park and open space;
- 7.76 acres for a school;
- 1.74 acres for a firehouse; and
- 2.75 acres of commercial space

The project conceptual land use plan is shown on Figure 1-2. Figure 1-3 shows the conceptual open space conceptual plan.

If approved, and as indicated by the developer, build-out of the project will take approximately five (5) years from the approval (portion controlled by the developer), with the first units projected for occupancy within a year. There is approximately one-third of the development that is within the Specific Plan but not controlled by SunCal and the development schedule for that portion may be more extended.

A Specific Plan Environmental Impact Report (EIR) has been prepared and was under public review in September 2005. Currently, the project is being "proposed" to the City's Planning Department.

The City of Oxnard will provide water and wastewater services from existing backbone/trunk systems. There also is the expectation that the City will provide recycled water from a backbone system to be developed in the future.



Kennedy/Jenks Consultants

City of Oxnard
Teal Club Infrastructure Report
Oxnard, California

Development Location

KJ 0689075
May 2007

Figure 1-1

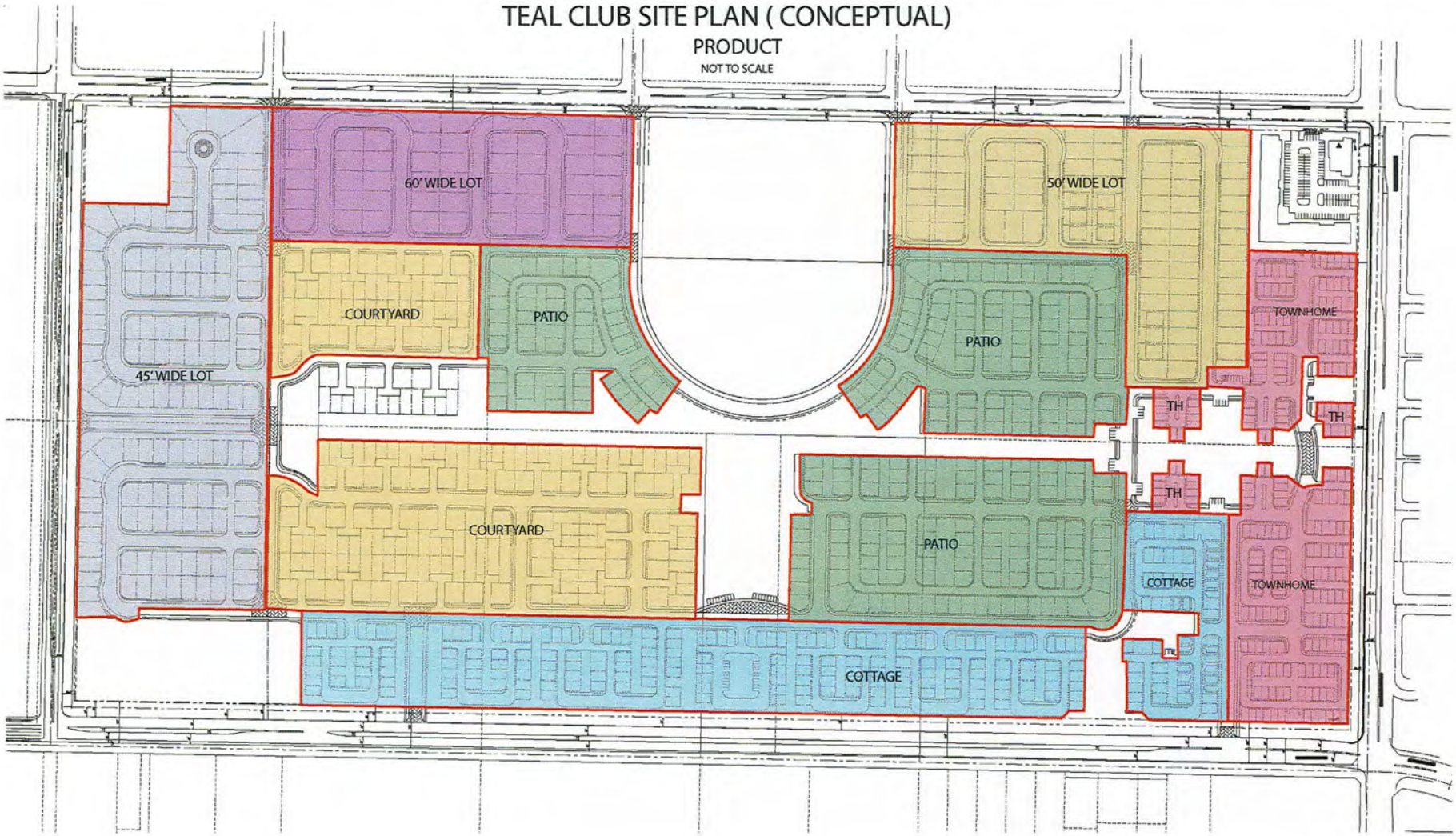
Legend

- City Limits
- Streets
- Parcel Boundary
- Teal Club Development

TEAL CLUB SITE PLAN (CONCEPTUAL)

PRODUCT

NOT TO SCALE



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CITY OF OXNARD
TEAL CLUB DEVELOPMENT
INFRASTRUCTURE REVIEW

TEAL CLUB LAND USE

K/J 0689075
JANUARY 2007

FIGURE 1-2

TEAL CLUB SITE PLAN (CONCEPTUAL)

PARK & OPEN SPACE

NOT TO SCALE

Kennedy/Jenks Consultants

CITY OF OXNARD
TEAL CLUB DEVELOPMENT
INFRASTRUCTURE REVIEW

TEAL CLUB OPEN SPACE

K/J 0689075
JANUARY 2007

FIGURE 1-3

1.2 Technical Memorandum Purpose

The purpose of this Technical Memorandum (TM) is to evaluate the ability of the City's existing and/or planned water, wastewater, and recycled water systems to accommodate the planned development of the Teal Club Specific Plan area as well as to provide specific connection and/or system extension requirements.

This review is part of the orderly development of properties within the City of Oxnard and is precedent to the development of specific conditions of development. The findings and recommendations are based upon current understanding of the capabilities of the existing and/or planned systems. There is no specific representation as to the actual conditions in the future beyond those based on the best available information.

1.3 Prior and Current Supporting Reports

The key documents used in this evaluation are:

A. 2003 Water Master Plan, Kennedy/Jenks Consultants (Kennedy/Jenks). This plan examined the capabilities and requirements for the City's water system. Analysis was for both current and ultimate development of properties within the City.

B. 2005 Urban Water Management Plan (UWMP by Kennedy/Jenks). This plan, submitted per State Guidelines addresses overall water supply for the period 2005 through 2030 available to meet water demand projections for that same period of time. The significance is that all anticipated land uses were included in the analysis, including the specific plan areas, and therefore findings have application to a variety of projects.

C. 2005 Water Supply Assessment for Teal Club (Kennedy/Jenks). This assessment takes the base information from the 2005 UWMP and provides specific findings of long-term supply adequacy for domestic water purposes. It doesn't address specific pipeline infrastructure to and within the Teal Club.

D. 2006 Wastewater Master Plan (Draft, Kennedy/Jenks). This plan, which is well underway, examines the capabilities and requirements for the City's wastewater trunk sewer pipelines. Analysis was for both current and ultimate development of properties within the City. It reports the overall capabilities of the City's Oxnard Wastewater Treatment Plant, but does not perform any evaluation of that component.

E. 2007 Recycled Water Facilities Plan (Draft, Kennedy/Jenks). This plan, which has been submitted to the State of California examines at a concept level the planned recycled water system (city-wide and outside the City). Discussed in greater detail is the "Recycled Water Backbone System" which extends from the Advanced Water Purification Facility (AWPF) adjacent to the Oxnard Wastewater Treatment Plant (OWTP) generally northerly along Ventura Road to the immediately north of the 101 Freeway.

F. 2007 Water Master Plan (Draft, Kennedy/Jenks). This plan addresses changes in the Water Master Plan since the 2003 Master Plan report. Most important is the incorporation of the GREAT (Groundwater Recovery, Enhancement and Treatment) Program and its impact on water facilities, particularly the blending stations and two desalters. .

Section 2: Description of the Project

2.1 Description of Development

Planned for the Teal Club Specific Plan area are the land uses described in Section 1.1.

2.2 Ownership/Developers

The developer of the Teal Club property is:

The Developer name and address is:
LBREP/L-SunCal Patterson Ranch, LLC
(SunCal Companies)
25152 Springfield Court, Suite 300
Santa Clarita, CA 91355

SunCal does not own the property at this point; the ownership of 113 acres of the site is maintained by the Borchard family. There are three additional separate ownerships that make up the balance of the 175 acres.

2.3 Phasing and Schedule

The developers of the Teal Club have indicated that the entitlement process will be completed in 2008 and development will begin in 2009. Because the developers control approximately two-thirds of the property with the other one-third being under ownership by others, the development schedule is only reasonably known for the former, projected to be over a five (5) year period. It is likely that the development of the remainder will extend beyond that point.

Section 3: Evaluation of Potable Water Facilities

3.1 Demand Requirements

Table 3-1 presents an estimate of the demand of the Teal Club Development as indicated in the Water Supply Assessment report prepared by Kennedy/Jenks.

TABLE 3-1
DEMAND ESTIMATE FOR THE TEAL CLUB DEVELOPMENT

Sector	Acres or No. of Students	Demand[(a)] (gpad)	Demand Total (AFY)
Single Family Residences	41.04	2,100	97
Multi-Family Residences	73.7	2,800	232
Elementary School	650	20	15
Commercial	2.75	1,500	5
Total Potable Water Demand			**347**
Landscape[(b)]	33.23	3,124	117
Total Recycled Water Demand [(b)]			**117**
Total AFY			**464**

Notes:
(a) Unit demands for the school and for landscaping are as provided in the 2005 UWMP all others are from Table 3-6 of the 2005 Draft Wastewater Master Plan.
(b) Recycled water will not be available until late 2009/early 2010 at the earliest. Therefore, the developer will need to plan for landscaping to be served by domestic water up to the time when recycled water is available.

The total demand of approximately 465 acre-feet per year (AFY) for the Teal Club Development can be compared to the current (2005) demand of approximately 30,800 AFY and the projected 2030 demand of approximately 44,570 AFY for the City's total service area. Therefore in approximate numbers, The Teal Club development project represents approximately 1 percent of the 2030 projected demand and approximately 3 percent of the anticipated increased demand in the City. Although the total demand number varies slightly with the original estimate of 400 AFY it would not change the findings of the 2005 UWMP since the difference in the demands for The Teal Club Development represents approximately 1 percent of the total build-out demand and is thus well within the contingency allowances in the demand projections.

The key numbers for the City (2005) are:

- Current Water Demand (FY 2005) - Approximately 30,800 AFY.
- Projected Water Demand (2030) with the Teal Club Project - Approximately 44,570 AFY.
- Projected Demand – Teal Club Project - Approximately 465 AFY.

- Percentage of 2030 Demand for the Teal Club Project - Approximately 1 percent.

- Percentage of Demand Increase for the Teal Club Project – Approximately 3 percent.

The total water demand in terms of maximum day and peak hour usage is summarized in Table 3-2. The approach is slightly different than that taken in the Water Supply Assessment as noted in the footnotes below the table. To obtain these values, the following peaking factors are taken from the current draft Water Master Plan Update:

- Maximum day demand or MDD (ratio of the average of the maximum day demand to the yearly average day demand) equals 1.5.

- Peak hour demand or PHD (ratio of the peak hour demand to the yearly average day demand equals 2.84 (set at 1.67 times the MDD).

TABLE 3-2
POTABLE WATER DEMANDS – PROPOSED DEVELOPMENT
(gpm unless otherwise indicated)

Land Use Type	Annual (AFY)	Maximum Day	Peak Hour	Comment
261 Single Family Residential Units	103 AFY	105 gpm	175 gpm	(a)
895 Multi-Family Residential Units	280 AFY	260 gpm	435 gpm	(b)
School (7.8 acres)	18 AFY	20 gpm	30 gpm	(c)
Fire House (1.7 acre)	3 AFY	3 gpm	20 gpm	(d)
Commercial (2.7 acres)	9 AFY	9 gpm	15 gpm	(e)
Subtotal				
Landscape and Open Space (28.3 acres)	70 AFY	65 gpm	110 gpm	(f)
Total	**483 AFY**	**460 gpm**	**800 gpm**	

Notes:

(a) Assuming 3.2 persons per unit and 110 gpcd on average, recognizing that this type of development will have relatively low amounts of exterior water use aside from the common areas that are separately reported. The result is as shown. The total use is close to that reported in the Water Supply Assessment report.

(b) Assuming 2.8 persons per unit and 100 gpcd on average, recognizing that this type of development will have relatively low amounts of exterior water use aside from the common areas that are separately reported. The result is as shown. The total use is somewhat higher than that reported in the Water Supply Assessment report, which is acceptable from the standpoint of sizing facilities.

(c) Assuming 650 students and 20 gpd/student and 9 months = 10.9 AFY and add 3 acres for turf/landscaping at 2.5 AFY/Acre = 7.5 AFY. Total is 18.4 AFY which is a relatively close match to that in the Water Supply Assessment report.

(d) Reasonable assumptions

(e) Reasonable assumptions

(f) Based on 2.5 AFY/Acre. This is perhaps on the low side of the potential range. The upper end may be on the order of 90 AFY.

3.2 Design Criteria

The water service pressure requirements used in the 2003 Water Master Plan are as follows:

- Minimum allowable pressure at peak hour demand: 40 psi*
- Minimum allowable pressure at maximum day with fire flow: 20 psi**
- Maximum allowable service pressure: 125 psi

To avoid excessive velocity and headloss within the distribution system, the following pipeline design criteria is also recommended:

- Maximum allowable velocity at maximum day with fire flow: 15 ft/s
- Maximum allowable headloss: 15 ft/1000 ft
- Hazen-Williams C factor: 130

* While listed as a minimum criteria, it is recognized that pressures at or near to 40 psi are quite marginal.
** As required by the Fire Department.

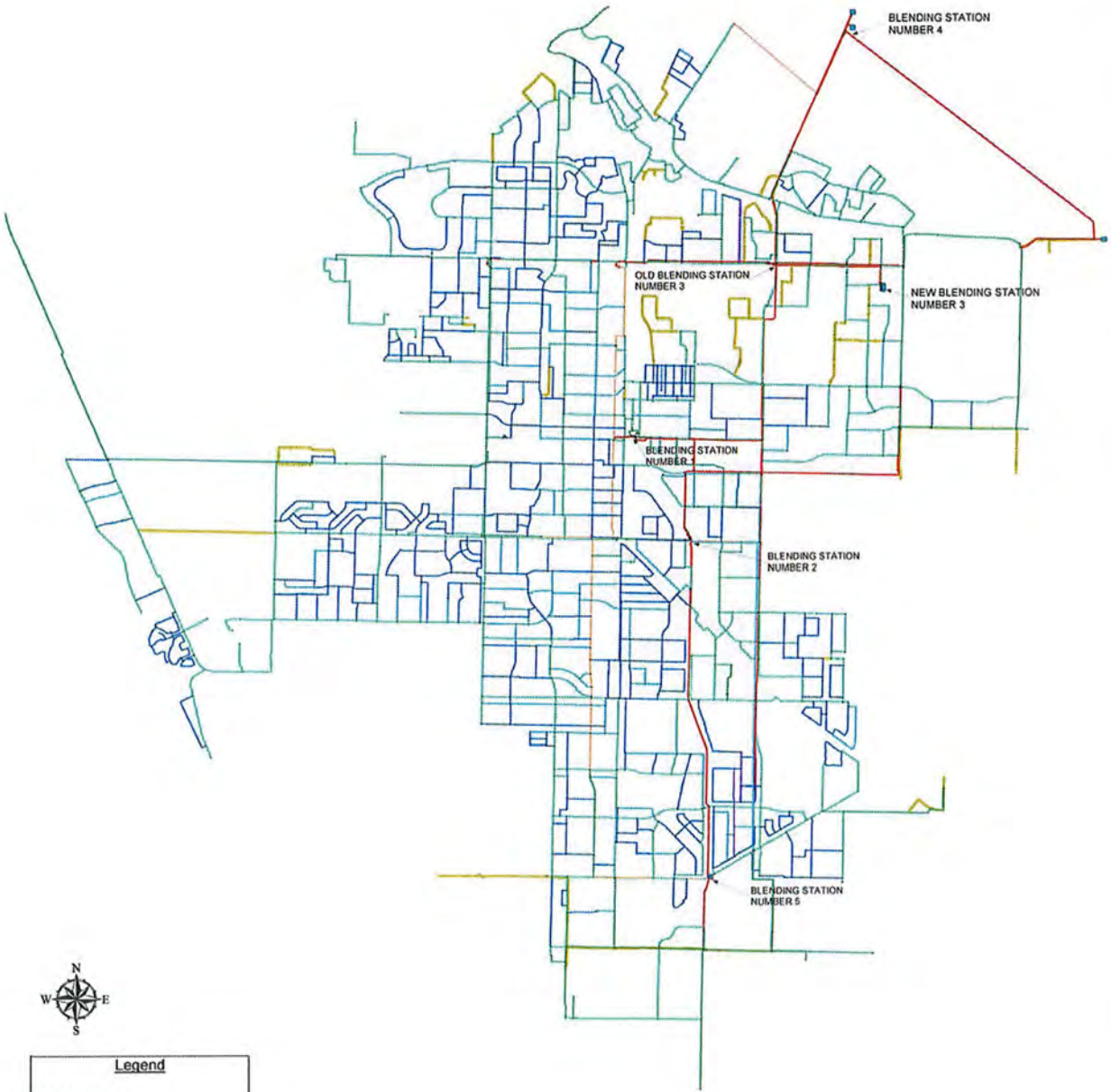
3.3 Water Infrastructure

The Teal Club is surrounded by the following streets:

- Ventura Road – With a 16-inch pipelines and a 10-inch pipeline
- Teal Club Road – With a 12-inch pipeline
- Doris Avenue – With a 12-inch pipeline

The primary sources of water will be Blending Station Nos. 1 and 3, located to the east. The east-west pipelines that will serve the Teal Club and shall include the 36-inch pipeline in Gonzales Road.

Figure 3-1 shows an overview of City Water Facilities. Figure 3-2 illustrates the immediately adjacent pipelines.



G:\PROJECTS\2005\05890142005UWMP\FIGURES FOR REPORT\FIGURE2-1.PPT

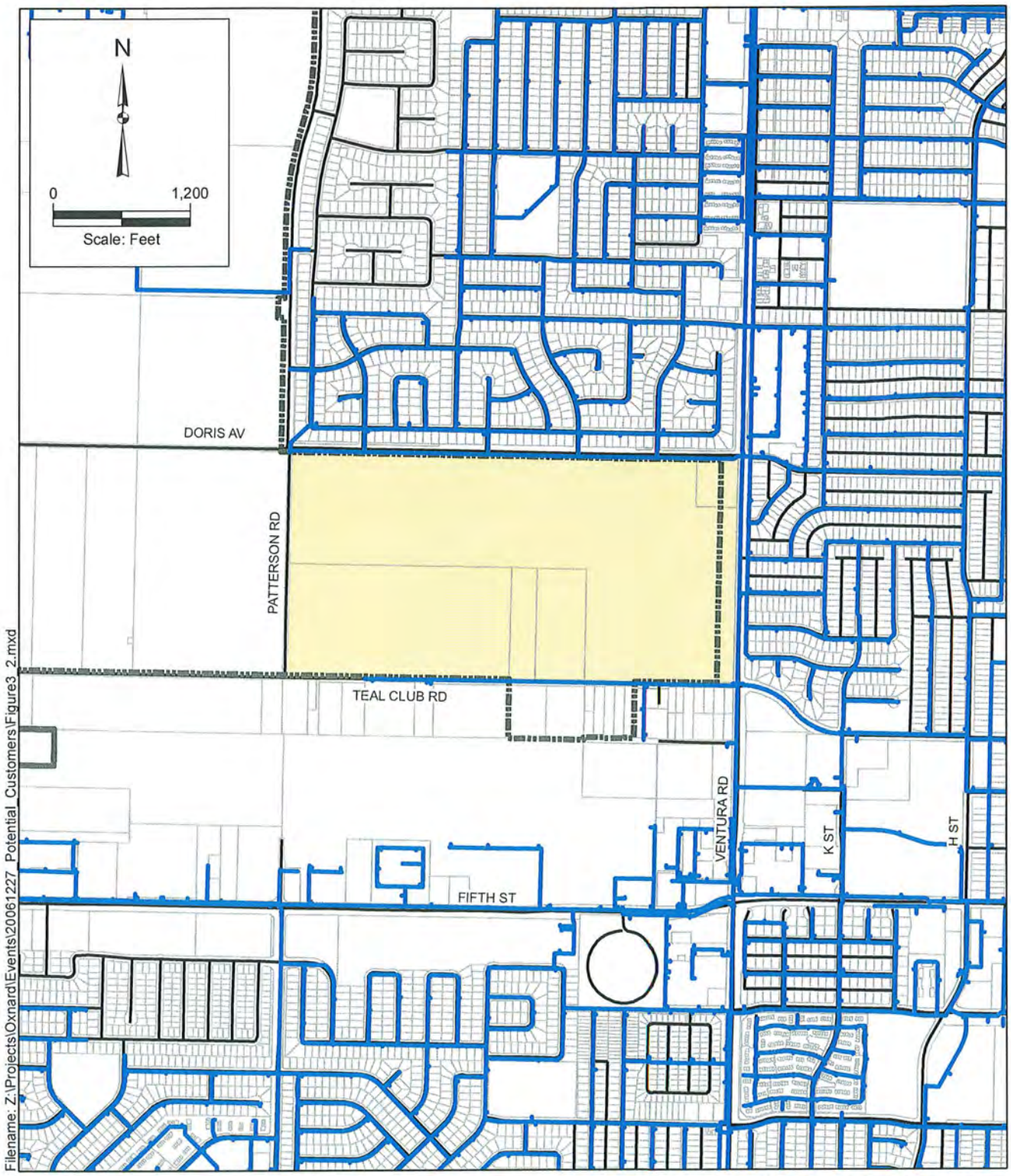
Kennedy/Jenks Consultants

CITY OF OXNARD
Teal Club Develop
Infrastructure Review

OVERVIEW OF CITY AND
REGIONAL WATER FACILITIES

K/J 0689075
MAY 2007

FIGURE 3-1



Kennedy/Jenks Consultants

City of Oxnard
Teal Club Infrastructure Report
Oxnard, California

Current Water System

KJ 0689075
May 2007

Figure 3-2

Legend

- Water Pipeline
- City Limits
- Streets
- Parcel Boundary
- Teal Club Development

3.4 City Water Supply and Backbone Facilities – Other Than Fire Flow

As part of the current water master plan, a computer model has been created for the purposes of simulating water system performance under varying conditions. Aside from the fire flow scenario, the most significant conditions are the following:

- Maximum day demand or the average demand conditions during the single day of the year with the maximum demand.
- Peak hour demand or the average demand during the single highest demand period of the year.

The most significant condition is the performance at ultimate build-out conditions, which for purposes of the water model is assumed to be in the period 2025 through 2030.

As part of this review, Kennedy/Jenks has determined through the existing water model that normal flows are available as indicated in Table 3-3.

TABLE 3-3
DOMESTIC WATER AVAILABILITY TO TEAL CLUB[(a)]

Condition	Assumed Teal Club Flow, gpm	Pressure, psi[(b)]
Existing System		
- Maximum day	460 gpm	
- Peak Hour	800 gpm	
Ultimate System		
- Maximum Day	460 gpm	58 psi
- Peak Hour	800 gpm	39-43 psi

Notes:
(a) Along Ventura Road adjacent to the proposed the Teal Club Development.
(b) Pressure at ground line. Pressures within the project will be slightly less due to pipeline, meter and service line losses. Also pressures within individual structures on upper floors will be slightly less due to the elevation difference.

From Table 3-3 it is noted that under the ultimate condition, domestic pressures during the peak hour drop to approximately 40 psi. While this meets the minimum standard established by the Public Utilities Commission, it may lead to complaints of water pressure, particularly in multi-story buildings. There are two mitigation measures:

- The developer may desire to oversize service lines and meters to reduce the on-site pressure losses.
- The City will be considering pipeline improvements as part of the to-be-released Water Master Plan. These should improve the projected low pressures.

- The developer may desire to install an on-site booster pump to increase pressures within the development. Such an installation would allow fire flows to enter through a check valve.

3.5 Fire Flow Requirement and Capabilities

It is critical that fire flow requirements be met under the maximum day condition.

The City's Standard Plans for Public Works Construction 1988 Edition delineate minimum hydrant and water flow requirements. These standards are typical of smaller communities and should be adequate for future planning conditions. The requirements for residential and industrial/commercial areas are summarized below:

- Residential – Fire flow of 2,500 gpm @ 20 psi. Five-hundred (500)-feet fire hydrant spacing for single family residential with no structure more than 300-feet from a hydrant. 300-feet fire hydrant spacing for multi-family residential with no structure more than 200-feet from a hydrant.

- Industrial/commercial – Fire flow of 4,500 gpm @ 20 psi. Three-hundred (300) -feet fire hydrant spacing for single family residential with no structure more than 150-feet from multiple hydrants (On-site included).

In preparing the 2006/07 Water Master Plan Update, it was noted that the above criteria didn't have a sufficient number of categories to represent the varied types of property uses. Further, as a result there were pipelines that were in the "deficiency" category in terms of fire flow due to what was thought to be unusually high fire flow demands. Therefore, in cooperation with the Oxnard Fire Department, the following criteria were established (see Table 3-4).

TABLE 3-4
FIRE FLOW REQUIREMENTS[a]

	Use Type	Flow, gpm	Pressure, psi
SF1	Single Family 1	1,500	20 psi
SF2	Single Family 2	2,500	20 psi
GC	General Commercial	2,500	20 psi
HC	Heavy Commercial	3,500	20 psi
MF	Multi Family	3,000	20 psi
CBD	Commercial Business District[b]	4,000	20 psi
M/I	Manufacturing/Industry	4,500	20 psi

Notes:
(a) To be used in the 2006/07 Water Master Plan.
(b) Reserved for the downtown Oxnard area.

The developers have noted that some of the attached project may be 3 stories. This, however, isn't sufficiently high to cause the fire flow demand to increase above the multi-family category.

The Fire Department has indicated that the fire flow for the school should be 3,000 gpm.

Based on the type of development within Teal Club, the fire flow requirement has been established as 3,000 gpm. This flow must be available under maximum day conditions with a residual of 20 psi. That means that with fire hydrant(s) flowing the pressure must not drop below 20 psi, a requirement established by the Fire Department. The 3,000 gpm figure is based on the multi-family units and assumes that flow will satisfy the needs for the school. The Fire Department has indicated that 3,000 gpm will be acceptable providing that the no building at the school is larger than 25,000 square feet. While no specific plans are available for the school, it is believed that no building will be larger than 25,000 square feet; therefore, 3,000 gpm is assumed as the fire flow requirement.

From the computer model, it has been determined that under fire flow conditions (fire flow under maximum day conditions and assuming flow along Ventura Road (see Table 3-5) :

TABLE 3-5
FIRE FLOW AVAILABILITY TO TEAL CLUB[(a)]

Condition	Flow Available
Existing	4,500 gpm
Ultimate	4,000 gpm

Note: (a) Along Ventura Road adjacent to the proposed Teal Club Development.

Of course, the fire flow requirements must be met within the Teal Club development. The developer's engineer will be required to design the interior pipeline system such that required fire flows are met including pressure losses within the interior-development piping.

3.6 Improvements and Changes to the City's Water System

The City's water system is and/or will be undergoing changes, including the following:

A. Desalter Projects. Desalters will be installed at Blending Station Nos. 1 and 3. These are required as a part of the GREAT implementation program. That program will increase groundwater pumping and because the groundwater quality is less that that of the Calleguas Municipal Water District and les than that desired for the overall blended quality, the increase in groundwater pumping must include treating a portion of the groundwater pumping to a level such that when blended with other groundwater will meet water quality objectives.

   Impact to the Teal Club: No change in the available flows – either for domestic and fire flow purposes. If there is any impact, it may be improvements in water quality from current conditions.

B. Implementation of the Recycled Water Backbone System. This project, as discussed in Section 5, will make recycled water available to the Teal Club as well as others in the northwest portion of the City.

Impact to Teal Club: Recycled water will be available. There will be a decrease in domestic water demands (mostly parks and schools), improving flow to the Teal Club.

C. Implementation of Other Recycled Water Projects. These include other M&I (municipal and industrial) and agricultural customers as well as groundwater injection (for domestic pumping or the Seawater Intrusion Barrier).

   Impact to Teal Club: All of these projects improve the overall water supply. Only the other M&I portion, however, reduces existing domestic water demands.

D. Water System Improvements. To meet both existing and ultimate water demands, the 2006/07 Water Master Plan will recommend a series of pipeline projects as part of the City's capital improvement program. It is not anticipated that any will be the direct responsibility of the Teal Club. It also is not anticipated that the normal development process of the Teal Club will be delayed because of delays in the City's capital improvement program.

3.7 Extension and Connection Requirements

To serve the Teal Club, the City has an existing 16-inch waterline within Ventura Road. This is considered as a main transmission pipeline. Computer simulation indicates available flow as indicated in Tables 3-4 and 3-5.

Teal Club will be responsible for:

Connection to the City's system at a location to be approved by the City, but generally located on either Ventura Road, Teal Club Road and/or Doris Avenue. The on-site system shall include:

a. At least two connections to the domestic water system, providing for looping through the development. One connection shall be along Ventura Road or within 200 feet of Ventura Road.

b. Separate water meters to all single family dwellings. This will necessitate a "public water system" within the development.

c. Separate water meters for the multi-family units, commercial businesses, and school.

d. Separate water meter (1) for the common landscape areas that will be connected to the future recycled water system.

e. An internal water system designed to provide for the higher of: maximum day plus fire or peak hour demand.

Payment of capital improvement/connection fees and all related "installation fees."

Verification of actual fire flow availability through field testing in accordance with City Building and Safety Department requirements.

3.8 Suggested Conditions

See Section 6.2 for suggested conditions of development.

Section 4: Evaluation of Wastewater Facilities

4.1 Flow Generation

4.1.1 Teal Club Flows Developed in Oxnard Wastewater Master Plan

The 2005 Water Supply Assessment for Teal Club (2005 WSATC) was being developed concurrently with the pipeline deficiencies identification phase of the 2005 Draft Oxnard Wastewater Master Plan Update (2005 DWWMPU). The flows in the wastewater model were developed using future land uses for the parcels contained within the proposed Teal Club boundaries as specified in the 2020 General Plan since the specific plan land uses were not yet finalized. These parcels also drained to two separate sewer basins resulting in the use of different return-to-sewer ratios for similar land uses. Furthermore, 50 percent more acreage was multi-family residential under the 2020 General Plan land uses compared to what is currently presented in the Teal Club specific plan. The end result was an average day flow of 270 gpm, which was used in the model and presented in 2005 DWWMPU. In light of the current land use acreages, this average day flow appears high. Such differences are expected which is why the model is designed to be updated as new development information becomes available.

4.1.2 Teal Club Flows Developed for this Infrastructure Review

Table 4-1 updates the wastewater flows for Teal Club using the values given in the 2005 WSATC:

TABLE 4-1
WASTEWATER FLOWS

Land Use Type	Acreage	Wastewater Duty Factor (gpad)	Wastewater Flow (gpd)	Wastewater Flow (gpm)
Single Family Residential	41.04	1365	56,020	38.9
Multi-Family Residential	73.70	2380	175,410	121.8
School	7.76	1500	11,640	8.1
Fire Station	1.74	600	1,040	0.7
Commercial	2.75	1350	3,710	2.6
Total Average Day Flow			247,820	**172**
Total Peak Dry Weather Flow (PDWF = 1.81)			449,370	**312**
RDI/I	175.14	600	105,080	73
Total Peak Wet Weather Flow			554,450	**385**

The peak dry weather factor is calculated using the following equation as given in the 2005 DWWMPU:

$$\text{Peak Dry Weather Factor} = 1.73 \times (\text{Average Dry Weather Flow Rate})^{-0.0337}$$

The above results in a Peak Dry Weather Factor of 1.81 for the average day flow resulting in a Peak Dry Weather Flow of 312 gpm. The Rainfall Dependent Inflow/Infiltration (RDI/I) was calculated for the entire 175 acre project area using a value of 600 gpad. Therefore, the RDI/I is 73 gpm and the Peak Wet Weather Flow (PWWF) is 385 gpm.

Flows are based on 'return to sewer' ratios as indicated in the 2005 Draft Wastewater Master Plan – 0.65 for single family residential, 0.85 for multi-family residential, and 0.9 for commercial/industrial.

4.2 Collection System Design Criteria

The design criteria were developed and utilized for the 2005 DWWMPU. These criteria are presented as follows:

4.2.1 Gravity Main Criteria

Gravity sewers were evaluated through the use of a static sewer model for the purposes of the 2005 DWWMPU. Sanitary sewer overflows (SSO) identification and pipeline sizing were based on the Manning's equation and the following criteria:

- Pipes 10-inches in diameter and smaller: ½ full at peak wet flow
- Pipes over 10-inches in diameter: 2/3 full at peak wet flow
- Minimum velocity: 2 feet per second
- Maximum velocity: 10 feet per second
- Manning's n value: 0.0135
- Minimum Slope requirements: See Table 4-2 below
- Pipelines identified to remediate hydraulic deficiencies shall be conservatively based on full replacement for pipe diameter and costs.

TABLE 4-2
MINIMUM SLOPE REQUIREMENTS

Sewer Size (in)	Grade (ft/ft)
8 inch	0.0040
10 inch	0.0028
12 inch	0.0020
15 inch	0.0016
16 inch	0.0016
18 inch	0.0016
21 inch	0.0012
24 inch	0.0012
27 inch	0.0012
30 inch	0.0012
33 inch	0.0012
36 inch	0.0012
42 inch	0.0012
48 inch	0.0012
54 inch	0.0012
60 inch	0.0012
66 inch	0.0012

4.2.2 Force Main Criteria

The following pertain:

- Minimum Force Main Diameter: 4 inches
- Minimum Velocity: 3 feet per second
- Maximum Velocity: 5 feet per second
- Maximum allowable headloss: 10 feet/1,000 feet of pipeline
- Maximum desirable headloss: 5 feet/1,000 feet of pipeline
- Hazen-Williams C factor: 120

4.2.3 Pump Station Criteria

Pump stations should be sized for the peak wet weather flow rate plus an additional 20 percent capacity to account for condition deterioration over time, miscellaneous debris, etc. that may reduce pumping performance. Pump stations should be capable of meeting the following criteria with the largest capacity pump serving as standby:

- Manufacturers recommended cycling times for pumping equipment.
- 60 percent pump efficiency is assumed, except where other information is available.
- 90 percent motor efficiency is assumed, except where other information is available.

4.3 City Wastewater Trunk Sewer/Treatment Facilities

The Oxnard Wastewater Treatment Plant (OWTP) has a current capacity of 31.7 million gallons per day (mgd) with average daily flows of approximately 24.0 mgd. The City anticipates expansion of the plant to 39.7 mgd by 2020. There is and will be sufficient capacity to accommodate the flows from the Teal Club as well as from other planned developments.

Teal Club is surrounded by the 21-inch Western Trunk Sewer that flows southerly along Patterson Road then west along Teal Club Road and by the 42-inch Redwood Trunk Sewer than flows southerly along Ventura Road.

4.4 City Wastewater Pipeline Capacity and Pump Station Facilities

As part of the 2005 DWWMPU, a computer model was created for the purpose of simulating wastewater system performance and identifying deficiencies under various peak flow scenarios. The two scenarios used for design were peak wet weather flows under existing and ultimate build-out conditions.

Build-out conditions for the wastewater model was assumed to be 2020 which is the time frame of the current "Save Our Agricultural Resources" (SOAR) boundary which limits the extent of urban growth, or rather the extent of urban infrastructure such as wastewater and water services.

Redwood Trunk Sewer was designed to relieve the former Ventura Trunk Sewer and to open up capacity along the Central Trunk Sewer. It was also designed to accept flows from future growth and anticipated specific plans.

The Western Trunk Sewer approaches design capacity without including flows generated on the parcels that comprise Teal Club. The 27-inch diameter reach of the trunk sewer is shown to be over design capacity using peak wet weather flows under ultimate conditions. Replacement pipes ranging from 30-inch to 33-inch diameter are indicated without the Teal Club development. However, by adding Teal Club flows to the Western Trunk Sewer, the entire pipeline south of Manhole AY+01 at intersection of Patterson and Teal Club roads is over design capacity. Teal Club flows also exacerbate the conditions along the 27-inch diameter reach necessitating even larger pipes along this section - in the range of 33-inch to 36-inch diameter. The replacement diameters for the Ult-2 project listed in the 2005 DWWMPU assume Teal Club flows going to the Western Trunk Sewer.

4.5 Extension and Connection Requirements

Several gravity flow drainage scenarios were explored. They consisted of the following:

- Western Trunk Option: Drain all flows to Manhole AY+01 of the Western Trunk Sewer at the intersection of Patterson and Teal Club roads near the southwest corner of the Teal Club property.

- Redwood Trunk Option: Drain all flows to Manhole AAA+061 of the Redwood Trunk Sewer at the intersection of Ventura and Teal Club roads near the southeast corner of the Teal Club property.

- Flow Split Option: Split the flows to both Redwood and Western trunk sewers as originally developed in the 2005 DWWMPU per existing wastewater drainage basins. It is noted that the plan assumed that approximately 50 percent of the flow would flow easterly and approximately 50 percent westerly. This approximation has been confirmed by the developer.

- Relief Sewer Option: Drain all flows to Manhole AY+01 along Patterson and then divert all flows along the Western Trunk Sewer upstream of Manhole AY+01 to a proposed relief sewer along Teal Club Road that connects to the Redwood Trunk Sewer at Manhole AAA+061.

Although the Redwood Trunk Sewer has the capacity to absorb flows from Teal Club, topography and hydraulics appear unsuitable for gravity flow. Teal Club developers have stated that the property drains to the southwest which would deliver flows to Manhole AY+01 of the Western Trunk Sewer. The rim elevation of this manhole is 31.4 feet while the sump elevation is 16 feet. Manhole AAA+061 along the Redwood Trunk Sewer has a rim elevation of 40.9 feet and a sump elevation of 27.8 feet. Conveying wastewater flows to the Redwood Trunk Sewer would require a pump station. As such, the following options appear hydraulically feasible:

- Alternative 1 - Western Trunk Option: Drain all flows by gravity to Manhole AY+01 and assess the difference in the pipeline replacement requirements (above existing design capacity) caused by Teal Club flows.

- Alternative 2 - Teal Club Pump Relief Sewer and Pump Station Option: Pump all Teal Club flows along Teal Club Road to Manhole AAA+061 along the Redwood Trunk Sewer. If this option were selected, the City should evaluate financial and operational responsibilities of the Teal Club with respect to the pump station and force main serving only the development.

- Alternative 3 - Regional Relief Sewer and Pump Station Option: Pump all flows upstream of Manhole AY+01 along Western Trunk Sewer including Teal Club flows to Manhole AAA+061 along Redwood Trunk Sewer. Verify that this will eliminate need to upsize pipes along Western Trunk Sewer south of Manhole AY+01. This option requires a more intricate cost analysis involving elimination of gravity pipes and addition of force mains as well as a pump station.

- Alternative 4 - Flow Split Option: Determine if hydraulically possible and feasible to convey portion of Teal Club flows to Redwood Trunk Sewer by gravity. Teal Club would be responsible for the connection to Redwood Trunk Sewer and the City would need to evaluate any financial obligations for the upsized pipe diameters along Western Trunk Sewer (due to that portion) draining to the Western Trunk Sewer.

It is noted that the above discussion indicates feasible alternatives. In a meeting with the City and developer's representatives, it was concluded that:

- Options involving the installation of a pumping station are not preferable. Such 'lift' stations can cause operational problems as well as odor problems. That eliminates alternatives 2 and 3 above.

- At a meeting held with the developer's representatives, they were asked to evaluate for themselves Alternative 4 feasibility. In response, they report that:

  - "Given the requirements for minimum sewer main slope and required sewer lateral cover and slope, approximately 250 units could be sewered to Ventura Boulevard. The remainder of the site, 900 units will flow to Patterson. Providing sewer service to the 250 units at Ventura Road will require lowering the existing stub."

  - "The project EIR should determine if there are impacts to the existing infrastructure given the site constraints above."

- As a cautionary note, City staff desired to avoid over-committing the Redwood Trunk Sewer.

For Alternative 1, the approximate difference in capital costs with and without the Teal Club development is $3,245,000 based on the information presented in Table 4-3.

Table 4-4 presents similar information assuming that 50 percent of the Teal Club property drains to the Redwood Trunk Sewer – Alternative 4. The flows from Teal Club represent a marginal contribution to the expected ultimate flows in the Redwood Trunk Sewer which were calculated using the land use designations from the 2020 General Plan. Western Trunk Sewer wastewater flows are pumped via Lift Station No. 29 to Manhole AAA+039 of the Redwood Trunk Sewer at the intersection of Redwood Street and Ventura Road. With all these considerations, Redwood Trunk Sewer was designed to handle expected ultimate (build-out) peak wet weather flows; and therefore, will require no upsizing. It should be noted that this is true under the following two conditions: (1) land use designations presented in the 2020 General Plan and (2) SOAR (urban services limit) boundary expiring at the end of calendar year 2020. Any changes to either one of these two factors may affect wastewater flow contributions to Redwood Trunk Sewer. Therefore, only the Western Trunk Sewer will require replacement pipes due to Teal Club flows. For Alternative 4, the approximate difference in capital costs with and without the Teal Club development is $845,000 based on the information presented in Table 4-4.

For information, the costs are based on the 2005 Draft Wastewater Master Plan updated values (2005 ENR-CC) updated to March 2007 ENR-CC).

TABLE 4-3
ALTERNATIVE 1 (All Flow to Patterson)
CAPITAL COSTS

Sewer Segment	Existing Diameter Inches	Ultimate Diameter w/o Teal Club	Ultimate Diameter w/Teal Club	Capital Cost w/o Teal Club	Capital Cost w/Teal Club
Western Trunk					
1	21 inch	21 inch	21 inch	$0	$0
2	21 inch	21 inch	24 inch	$0	$213,200
3	21 inch	21 inch	24 inch	$0	$214,400
4	21 inch	21 inch	24 inch	$0	$216,300
5	21 inch	21 inch	24 inch	$0	$215,400
6	21 inch	21 inch	24 inch	$0	$215,500
7	21 inch	21 inch	24 inch	$0	$212,800
8	21 inch	21 inch	24 inch	$0	$211,500
9	21 inch	21 inch	24 inch	$0	$212,800
10	21 inch	21 inch	24 inch	$0	$154,500
11	21 inch	21 inch	24 inch	$0	$59,400
12	21 inch	21 inch	24 inch	$0	$225,000
13	21 inch	21 inch	24 inch	$0	$209,000
14	21 inch	21 inch	24 inch	$0	$215,900
15	21 inch	21 inch	24 inch	$0	$204,400
16	21 inch	21 inch	24 inch	$0	$217,600
17	21 inch	24 inch	24 inch	$231,600	$231,600
18	21 inch	24 inch	24 inch	$146,100	$146,100
19	21 inch	24 inch	24 inch	$85,200	$85,200
20	24 inch	24 inch	24 inch	$0	$0
21	24 inch	24 inch	24 inch	$0	$0
22	24 inch	24 inch	24 inch	$0	$0
23	24 inch	24 inch	27 inch	$0	$249,100
24	24 inch	27 inch	27 inch	$242,800	$242,800
25	27 inch	30 inch	30 inch	$205,700	$205,700
26	27 inch	33 inch	33 inch	$95,300	$95,300
27	27 inch	33 inch	33 inch	$122,600	$122,600
28	27 inch	33 inch	33 inch	$86,900	$86,900
29	27 inch	33 inch	33 inch	$123,900	$123,900
30	27 inch	33 inch	33 inch	$264,700	$264,700
31	27 inch	36 inch	36 inch	$240,200	$240,200
32	27 inch	36 inch	36 inch	$271,100	$271,100
33	27 inch	36 inch	36 inch	$126,500	$126,500
34	27 inch	36 inch	36 inch	$150,700	$150,700
35	27 inch	36 inch	36 inch	$264,300	$264,300
36	27 inch	36 inch	36 inch	$284,100	$284,100
37	27 inch	36 inch	36 inch	$11,300	$11,300
Total				$2,953,000	$6,200,000
Difference Compared to "No Teal Club" Scenario					$3,245000

TABLE 4-4
ALTERNATIVE 4 (50% of Flow to Ventura and 50% to Patterson)
CAPITAL COSTS

Sewer Segment	Existing Diameter Inches	Ultimate Diameter w/o Teal Club	Ultimate Diameter w/Teal Club	Capital Cost w/o Teal Club	Capital Cost w/Teal Club
Western Trunk					
1	21 inch	21 inch	21 inch	$0	$0
2	21 inch	21 inch	21 inch	$0	$0
3	21 inch	21 inch	21 inch	$0	$0
4	21 inch	21 inch	21 inch	$0	$0
5	21 inch	21 inch	21 inch	$0	$0
6	21 inch	21 inch	21 inch	$0	$0
7	21 inch	21 inch	21 inch	$0	$0
8	21 inch	21 inch	21 inch	$0	$0
9	21 inch	21 inch	21 inch	$0	$0
10	21 inch	21 inch	21 inch	$0	$0
11	21 inch	21 inch	21 inch	$0	$0
12	21 inch	21 inch	21 inch	$0	$0
13	21 inch	21 inch	24 inch	$0	$209,000
14	21 inch	21 inch	24 inch	$0	$215,900
15	21 inch	21 inch	24 inch	$0	$204,400
16	21 inch	21 inch	24 inch	$0	$217,600
17	21 inch	24 inch	24 inch	$231,600	$231,600
18	21 inch	24 inch	24 inch	$146,100	$146,100
19	21 inch	24 inch	24 inch	$85,200	$85,200
20	24 inch	24 inch	24 inch	$0	$0
21	24 inch	24 inch	24 inch	$0	$0
22	24 inch	24 inch	24 inch	$0	$0
23	24 inch	24 inch	24 inch	$0	$0
24	24 inch	27 inch	27 inch	$242,800	$242,800
25	27 inch	30 inch	30 inch	$205,700	$205,700
26	27 inch	33 inch	33 inch	$95,300	$95,300
27	27 inch	33 inch	33 inch	$122,600	$122,600
28	27 inch	33 inch	33 inch	$86,900	$86,900
29	27 inch	33 inch	33 inch	$123,900	$123,900
30	27 inch	33 inch	33 inch	$264,700	$264,700
31	27 inch	36 inch	36 inch	$240,200	$240,200
32	27 inch	36 inch	36 inch	$271,100	$271,100
33	27 inch	36 inch	36 inch	$126,500	$126,500
34	27 inch	36 inch	36 inch	$150,700	$150,700
35	27 inch	36 inch	36 inch	$264,300	$264,300
36	27 inch	36 inch	36 inch	$284,100	$284,100
37	27 inch	36 inch	36 inch	$11,300	$11,300
			Total	$2,955,000	$3,800,000
			Difference Compared to "No Teal Club" Scenario		$845,000

For reference, Table 4-5 provides the Western Trunk Sewer segments affected along with the upstream and downstream manholes, pipe lengths, and existing pipe diameters.

TABLE 4-5
WESTERN TRUNK SEWER CHARACTERISTICS

Sewer Segment	Upstream Manhole	Downstream Manhole	Pipe Length Feet	Existing Diameter Inches
1	AY+01	AV+10	351.62	21 inch
2	AV+10	AV+09	398.01	21 inch
3	AV+09	AV+08	400.27	21 inch
4	AV+08	AV+07	403.89	21 inch
5	AV+07	AV+06	402.18	21 inch
6	AV+06	AV+05	402.38	21 inch
7	AV+05	AV+04	397.35	21 inch
8	AV+04	AV+03	394.81	21 inch
9	AV+03	AV+02	397.32	21 inch
10	AV+02	AV+01	288.50	21 inch
11	AV+01	AN+24	110.91	21 inch
12	AN+24	AN+23	420.01	21 inch
13	AN+23	AN+22	390.21	21 inch
14	AN+22	AN+21	403.01	21 inch
15	AN+21	AN+20	381.58	21 inch
16	AN+20	AN+19	406.19	21 inch
17	AN+19	AN+18	432.47	21 inch
18	AN+18	ANF34	272.71	21 inch
19	ANF34	AN+17	159.15	21 inch
20	AN+17	ANF17	293.47	24 inch
21	ANF17	AN+16	142.40	24 inch
22	AN+16	AN+15	458.95	24 inch
23	AN+15	AN+14	447.81	24 inch
24	AN+14	AN+13	436.48	24 inch
25	AN+13	AN+12	341.10	27 inch
26	AN+12	AN+25	147.910	27 inch
27	AN+25	AN+11	190.30	27 inch
28	AN+11	AN+10	134.85	27 inch
29	AN+10	AN+09	192.21	27 inch
30	AN+09	AN+08	410.74	27 inch
31	AN+08	AN+07	329.60	27 inch
32	AN+07	AN+06	372.12	27 inch
33	AN+06	AN+05	173.67	27 inch
34	AN+05	AN+04	206.86	27 inch
35	AN+04	AN+03	362.75	27 inch
36	AN+03	AN+02	389.93	27 inch
37	AN+02	AN+01	15.45	27 inch

See Section 6 for findings and recommendations.

4.6 Suggested Conditions

See Section 6.2 for suggested conditions of development.

Section 5: Evaluation of Recycled Water Facilities

5.1 Introduction

The City as part of its GREAT Program anticipates a major recycled water system consisting of:

An Advanced Water Purification Facility (AWPF) located adjacent to the OWTP and including advanced treatment processes, including reverse osmosis, to create recycled water that exceeds the State Title 22 water quality requirement and is suitable for all allowed uses of recycled water.

A distribution system for municipal and industrial purposes that includes the "Recycled Water Backbone System (RWBS)" as shown in Figure 5-1. This system is designed to deliver up to approximately 1,300 AFY to recycled water customers, including the Teal Club property.

Other potential "customers" including an expanded municipal and industrial system, agricultural and groundwater injection such that the total use at build-out is approximately 17,500 AFY.

Based on proximity to the RWBS, it has been assumed that the Teal Club will connect to the recycled water system for the purposes of receiving water for irrigation purposes.

5.2 Potential Demand and Design Criteria

Based on Table 3-2, which is from the Water Supply Assessment, it is estimated that the demand for recycled water will be approximately 90 AFY, which is somewhat less than one-quarter of the total water demand. It is noted that the developer has indicated a volume somewhat higher than reported above. This could be accommodated with the Recycled Water Backbone System.

Design Criteria is presented both in the Recycled Water Backbone System Study and the "Recycled Water Facilities Plan" or RWFP which has been submitted to the State of California.

Table 5-1 presents the various peaking factors that are used in prior reports.

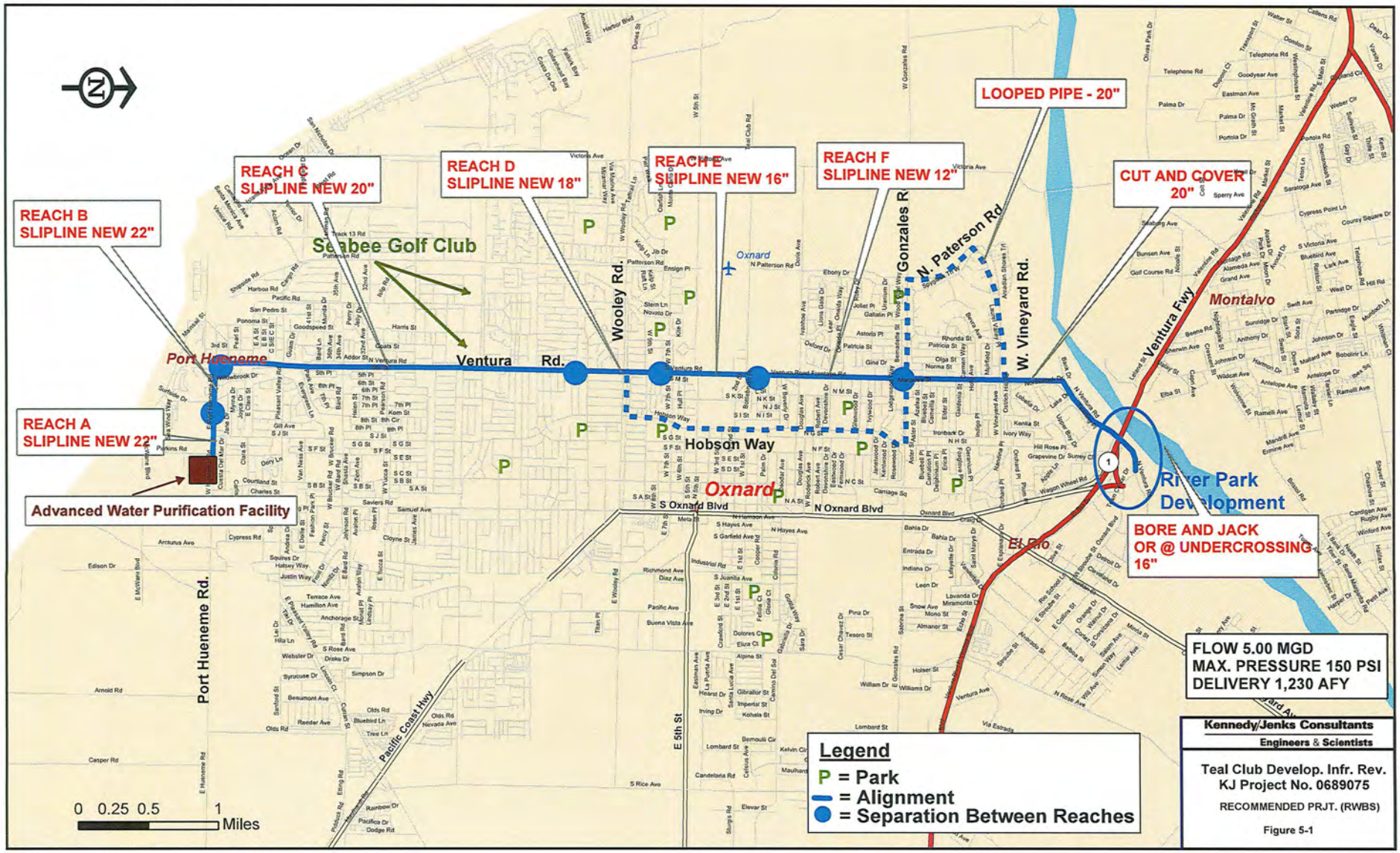

REACH A
SLIPLINE NEW 22"
REACH B
SLIPLINE NEW 22"
REACH C
SLIPLINE NEW 20"
REACH D
SLIPLINE NEW 18"
REACH E
SLIPLINE NEW 16"
REACH F
SLIPLINE NEW 12"
LOOPED PIPE - 20"
CUT AND COVER
20"
BORE AND JACK
OR @ UNDERCROSSING
16"
Advanced Water Purification Facility
Seabee Golf Club
Port Hueneme
Ventura
Rd.
Oxnard
Hobson Way
Montalvo
El Rio
River Park
Development
Wooley Rd.
N. Paterson Rd
W. Vineyard Rd.
Gonzales R
Ventura Fwy
Port Hueneme Rd.
Pacific Coast Hwy
E 5th St
S Oxnard Blvd
N Oxnard Blvd
FLOW 5.00 MGD
MAX. PRESSURE 150 PSI
DELIVERY 1,230 AFY
Legend
P = Park
= Alignment
= Separation Between Reaches
0 0.25 0.5 1
Miles
Kennedy/Jenks Consultants
Engineers & Scientists
Teal Club Develop. Infr. Rev.
KJ Project No. 0689075
RECOMMENDED PRJT. (RWBS)
Figure 5-1

TABLE 5-1
DEMAND FACTORS
(All with respect to average annual demand)

Factor	M&I	Agricultural	Groundwater Injection
Average Day	1.0	1.0	
Maximum Month[a]	1.6	1.4	[d]
Maximum Day[b]	2.0	2.2	[d]
Peak Hour[c]	7.0	6.4	[d]

Notes:

(a) Maximum month factors are predominantly for information. They are not used in the sizing of pipelines.

(b) Maximum day demands tend to be during the maximum month, but not necessarily. For the domestic water system, records indicate that the maximum day demand factor is approximately 2.0 for Oxnard.

(c) The peak hour factor for M&I assume that it is essentially irrigation based during the 8-hour irrigation period of 10:00 p.m. until 8:00 a.m. Further, it is assumed that the use is even during that period, which experience indicates will not be the case. However, arguing for lower factors is the fact that some irrigation demand may be during the day (i.e., the River Ridge Golf Course) however, arguing for a higher factor is the tendency for irrigation to be more concentrated in the 3:00 a.m. to 6:00 a.m. period than the remainder of the 8-hour irrigation period. On balance, it is reasonable to assume an 8-hour irrigation period which causes a demand factor 3 times the maximum day factor. To this must be added a factor to account for some variation in demand.
The peak hour factor for agriculture assumes irrigation between 6:00 a.m. and 5:00 p.m. During summer the irrigation is extended and during the winter it is somewhat shorter. The corresponding 11 hours would result in a peak hour factor of 2.18 when compared to the maximum day. However, this must recognize some variability and therefore the assumed factor is 2.9 times the maximum day factor.

The demand factors for groundwater injection, whether for the purposes of recovery for domestic water purposes or for the purpose of the seawater barrier injection project are, in essence, the reverse of the M&I and Agricultural sectors being low when those uses are high and vice-versa.

5.3 City Recycled Water Facilities

From Figure 5-1 (which is Figure 1-2 from the Recycled Water Backbone System Study), it can be seen that the City is preliminarily planning on installing a recycled water pipeline along Ventura Road from approximately the 101 Freeway to Port Hueneme Road and then easterly to the Advanced Water Purification Facility (AWPF) which is now under design. For the portion of the new recycled water pipeline southerly of Gonzales Road, it will be sliplined inside the Redwood Trunk Sewer, which has been abandoned (due to its needing to be replaced with a larger facility). It is this sliplined facility that will serve the Teal Club development.

Recycled water from the AWPF, as distributed by the RWBS is planned to be available in late 2009 or early 2010; that date may be delayed depending on financing, permitting and the significant nature of the project. It is anticipated that the RWBS facilities will be constructed substantially in advance of the AWPF facilities.

When available, the Teal Club development must connection to the domestic water system. Until that time, the Teal Club irrigation system shall be connected to the domestic system.

5.4 Extension and Connection Requirements

The Teal Club will be responsible for:

The extension of the pipeline from the mainline in Ventura Road to the property (either to construct the line or to reimburse the City if as part of the RWBS project, a line is extended to the Teal Club property). This will include a single recycled water meter along Ventura Road. Construction will be per normal City requirements and fees.

Assuming an annual demand of 90 AFY, night-irrigation, and a peak hour factor of 7.0 (see Table 5-1), the resulting flow is approximately 390 gpm. A 6-inch service pipeline would be appropriate for that flow. Inherent in the above numbers is that the Teal Club irrigation systems will be designed such that the demand is relatively constant throughout the irrigation period of 10:00 p.m. to 6:00 a.m. If it isn't, then the peaking factor will be larger.

Provision of an irrigation system for all common areas that is to the maximum extent possible: (1) separated from the domestic water system, (2) constructed per the City's Recycled Water Construction Standards (being developed), including night irrigation and (3) has proper signage. It should be noted that installation of the signage may be deferred until recycled water is available.

Until the recycled water system is operational, the common area irrigation system will be connected to the domestic system. Once recycled water is available, and connection to the recycled water system is made, the developer shall remove the connection to the domestic water system. No domestic water back-up is needed, since the City will provide such back-up including an appropriate air gap facility as part of the City's system.

Payment of the Recycled Water Connection Fee (being developed) or the water connection fee, whichever is greater for facilities constructed prior to the availability of recycled water.

The developer shall be responsible for appropriate CCR's dealing with the use of recycled water on the Teal Club property.

5.5 Suggested Conditions

See Section 6.2 for suggested conditions of development.

Section 6: Findings & Suggested Conditions

6.1 Findings

As an overview:

A. For domestic water, the City's water system is sufficient, with the recommended improvements for ultimate development, to meet both domestic and fire flow requirements. Teal Club will be required to connect to the existing surrounding system.

B. For wastewater service, the City's system can accommodate the Teal Club development with improvements to the Western Trunk Sewer. The impact of the Teal Club is approximately $3.3 million as discussed in section 4 if all flow is to the Western Trunk Sewer. That impact could be significantly reduced by taking a portion of the flow to Ventura Road. Alternative 4 provides analysis for a 50/50 percent split with a net increase in the capital need for the Western Trunk Sewer of approximately $0.9 million. However, the developer has noted that only about 20 percent of the development can flow by gravity to Ventura Road. Without performing a specific analysis on this percentage, it is noted that the impact of the Teal Club on the Western Trunk Sewer assuming it accepts 80 percent of the flow will probably be on the order of $ 2.0 to 2.5 million.

C. For recycled water service, the City is planning on the development of a major recycling water program including the extension of a system northerly on Ventura Road, passing the Teal Club, which will be required to connect when that system is available. Until that time, the irrigation system will be required to be connected to the domestic water system in a completely separate system.

6.2 Suggested Conditions

Note: The following are suggested conditions of development as offered as part of this infrastructure review. The actual suggested conditions through the City's entitlement process may vary.

Water:

(a) The domestic water connection shall connect to the City's system in at least two (2) locations as approved by the City, generally located along the eastern side of the property (Ventura Road) and along either the north or southern side of the development away from Ventura Road. There shall be an on-site looped main transmission system through the development.

(b) The on-site domestic water system shall include:

1. Public pipeline systems which feed into separate water meters for each ownership. In addition, there shall be separate water meters for each multi-family unit – townhouses, but not apartments.

2. Separate water meter (1) for the common landscape areas that will be connected to the future recycled water system.

3. An internal water system designed to provide for the higher of: maximum day plus fire or peak hour demand.

(c) All domestic water pipelines shall adhere to DOHS requirements for separation between water and recycled water/wastewater pipelines.

(d) Fire flow requirements shall be met through the public pipeline system without allowance for any internal development pumping system.

(e) The developer shall be responsible for payment of capital improvement/connection fees (currently being reviewed), including all related "installation fees."

(f) The developer shall verify actual fire flow availability through field testing in accordance with City Building and Safety Department requirements. However, field testing shall supplement and not replace verified adequacy through computer simulation.

Recycled Water:

(a) The developer will be responsible for the pipeline extension from the mainline in Ventura Road to the property.

(b) The developer shall be responsible for the design and construction of the recycled water main pipeline system within the development. The mainline shall be a public system with meters, as appropriate, to recycled water customers. Construction will be per City standard requirements with applicable fees. The design must allow for connection to the domestic water system until the time when recycled water is available. At that time the system will be switched from domestic water to recycled water.

(c) The developer shall provide a recycled water system that serves all practical irrigated areas and which is: (1) separated from the domestic water system, (2) constructed per the City's Recycled Water Construction Standards (being developed), (3) irrigated at night and (3) properly signed. Installation of recycled water signage may be deferred until recycled water is available.

(d) The portion of the irrigation intended for the future recycled water system shall be separately metered from that portion of the system that will not be connected to the future recycled water system, if any.

(e) Until the recycled water system is operational, the common area irrigation system shall be connected to the domestic system. Once recycled water is available, and

connection to the recycled water system is made, the developer shall remove the connection to the domestic water system. No domestic water back-up is needed, since the City will provide such back-up including an appropriate air gap facility as part of the City's system.

(f) The developer shall be responsible for payment of the Recycled Water Connection Fee (being developed) or the water connection fee, whichever is greater for facilities constructed prior to the availability of recycled water.

(g) At such time as recycled water is available, the developer shall be responsible for all costs involved with the re-connection of the applicable portions of the irrigation system to the public recycled water system, including appropriate signage. Credits for connection fees shall be given by the City based on the size of the meter(s). Under no circumstance will there be a refund of water connection fees already paid.

(h) The developer shall be responsible for appropriate CCR's covering the use of recycled water within the property and for proper disclosures.

Wastewater:

(a) The development shall connect all units and buildings having sewer facilities to the public sewer system.

(b) Prior to the submission of subdivision improvement plans for wastewater (sewer) lines, the developer shall submit a letter report indicating the split between units draining to Ventura Road and those draining to the west to Patterson Road and the Western Trunk Sewer. Preliminarily, the developer has indicated that no more than approximately 20 percent of the total wastewater load for the development would drain easterly towards Ventura Road and the Redwood Trunk Sewer.

(c) The developer shall be responsible for payment of the Wastewater Connection Fee based on the value of that fee at the time that payment is made, unless otherwise agreed to in writing with the City.

(d) The developer shall be responsible for the costs involved with the City's providing capacity in the Western Trunk Sewer, i.e. system capacity increase. The precise fee shall be determined by the City based on the submittal of a letter report indicating the projection of flows to the Western Trunk Sewer.

(e) The City shall be responsible for the improvements to the Western Trunk Sewer and occupancy for developer's units must await the completion of the project to increase capacity of the Western Trunk Sewer. Should the City not be able to construct said improvements in a manner timely for the developer's project, then the City may consider having the developer install such improvements subject to a reimbursement agreement for those costs that are considered as a City responsibility.

(f) Lift stations for sewer purposes aren't approved for this project.