APPENDIX A:
PUBLIC FACILITIES FINANCING PLAN (PFFP)

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CITY OF CHULA VISTA

UNIVERSITY AND INNOVATION DISTRICT

FINAL PUBLIC FACILITIES FINANCE PLAN

Prepared for:

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FINAL
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1.0 EXECUTIVE SUMMARY

1.1 OVERVIEW

This Public Facilities Finance Plan (PFFP) addresses the public facility needs associated with the University and Innovation District (UID) Sectional Planning Area (SPA) and is a component of the SPA document. The City-proposed project as described in the SPA Plan is referred to as the UID, UID SPA Plan, or Project in this PFFP. The PFFP also describes the various responsibilities of the project developer to provide the needed public facilities. The City of Chula Vista is the property owner and is currently the applicant for project entitlements and the project developer. The City may at a future date assign its interest in the project to another party. At that time the responsibilities regarding public facilities will transfer to the City's successor in interest. Hereafter the responsible party will be the "City of Chula Vista, or its successor in interest". The terms "developer" and "applicant" are both used to describe the City and the City's successor in interest.

GROWTH MANAGEMENT PROGRAM

The Chula Vista Growth Management Program (GMP) was first adopted by the City Council in 1991. The purpose of the GMP is to implement the City's General Plan and establish a mechanism which helps to ensure that development does not occur unless facilities and improvements are available to support that development. The GMP does this by identifying all facilities and improvements necessary to accommodate the land uses specified in the General Plan, by indicating where and when facilities fall short of threshold level of service standards established for each facility type, and by identifying the means by which additional facilities are to be provided. The GMP is implemented through the Growth Management Oversight Commission (GMOC) process. The GMOC monitors the impact of development on the City's ability to provide services. The thresholds monitored by the GMOC are as follows:

- Traffic
- Police
- Fire and Emergency Medical Services
- Schools
- Libraries
- Parks, Trails, and Open Space
- Water
- Sewer
- Drainage/Water Quality
- Civic Center
- Corporation Yard
- Air Quality

This PFFP for the University and Innovation District project has been prepared under the requirements of the City of Chula Vista's GMP and Chapter 9, Growth Management, of the Otay Ranch General Development Plan/Subregional Plan (GDP). Approximately 350 acres of the UID is within the Otay Ranch GDP and 30 acres within the Eastlake III GDP.

The preparation of the PFFP is required in conjunction with the preparation of the SPA Plan for the Project to ensure that the development is consistent with the overall goals and policies of the City's General Plan, the Growth Management Program, and the GDP. The GDP was originally adopted by the Chula Vista City Council on October 28, 1993, to ensure that development within Otay Ranch will not adversely impact the City's Quality of Life Standards.

This PFFP is based on the Project information that has been presented in the University and Innovation District Sectional Plan Area (SPA) dated June , 2017 prepared by William Hezmalhalch Architects, Inc. The PFFP analyzes the existing demand on facilities based on the demand from existing development and the specific facility demand of the Project. The PFFP also considers

those development projects in the region with various entitlements from 2016 through the year 2021.

Facility Thresholds

Facility thresholds are indicators of the capacity of a given facility to meet increasing demand from new development while remaining in compliance with the GMP Threshold Standards established for each facility category.[1] When the established thresholds for a specific facility are projected to be reached or exceeded based on the analysis of the Project's development, the PFFP identifies those facilities necessary for continued compliance with the GMP and, where appropriate, outlines conditions of approval that are applied to Project entitlements. The PFFP does not propose different development phasing from that proposed by the UID SPA Plan, but requires that the development be limited or reduced until certain actions are taken to guarantee public facilities will be available or provided to meet the Quality of Life Standards. Subsequent changes to the SPA Plan may require an amendment to this PFFP.

Performance of Threshold-Driven Actions

Typically, as an applicant receives each succeeding development approval, the applicant must perform a series of required actions intended to ensure that facilities will be provided concurrently with need. Failure to perform any required action will curtail a project's development approvals. The typical actions are listed below.

GDP

- Goals, objectives, and policies established
- Facility thresholds established
- Processing requirements established

SPA

- Facility financing refined and funding source identified consistent with GDP goals, objectives, and policies
- Facility demand and costs calculated consistent with adopted land uses and GDP-defined methodologies
- Specific facility financing and phasing analysis performed to ensure compliance with Growth Management Thresholds
- Facilities sited and zoning identified

Tentative Map

- Subdivision approval conditioned upon assurance of facility funding
- Subdivision approval conditioned upon payment of fees, or the dedication, reservation, or zoning of land for identified facilities
- Subdivision approval conditioned upon construction of certain facility improvements

[1] Also found in Section 19.09.040 of Chapter 19.09, Growth Management, of the Chula Vista Municipal Code.

Building Permit

- Impact fees paid as required

Role of the PFFP in the Entitlement Process

The critical link between the City's Quality of Life Standards and development entitlement is the PFFP. Part II, Chapter 9, Section C of the GDP/SPA Processing Requirements, General Development Plan Implementation, requires the preparation of a Public Facilities Finance Plan as a condition of approval of all Sectional Planning Areas. This PFFP satisfies the GDP requirement. The PFFP requires the preparation and approval of phasing schedules showing how and when facilities and improvements necessary to serve proposed development will be installed or financed to meet the threshold standards, including the following:

- An inventory of present and future requirements for each facility based on GMP standards
- A summary of estimated facilities costs
- A facility phasing schedule establishing the timing for installation or provision of facilities
- A financing plan identifying the method of funding for each facility required
- A fiscal impact report analyzing SPA consistency with the requirements and conclusions of the GDP

General Chula Vista Municipal Code PFFP Provisions Applicable to the SPA Plan

1) Section 19.09.080 of the Chula Vista Municipal Code (CVMC) provides that no SPA plan or tentative subdivision map shall be approved, or deemed to be approved, without an approved PFFP. Furthermore, "No final map[2] shall be approved until all the conditions of the PFFP, the water conservation plan and the air quality plan have been met, or the project applicant has provided adequate security to the city that said plans will be implemented." (CVMC Section 19.09.080.E)

2) No development shall occur in a PFFP area if the demand for any public facilities and services exceeds capacity and it is not feasible to increase capacity prior to completion of development unless means, schedule and financing for increasing the capacity is established through the execution of a binding agreement providing for installation and maintenance of such facilities or improvements in advance of the City's phasing schedule. (CVMC Section 19.09.080.H)

3) The Chula Vista Municipal Code provides that, if the City Manager determines facilities or improvements within a PFFP are inadequate to accommodate any further development within that area, the City Manager shall immediately report the deficiency to the City Council. If the City Council determines that such events or changed circumstances adversely affect the health, safety, or welfare of Chula Vista, the City may require amendment, modification, suspension, or termination of an approved PFFP.

[2] Since the City of Chula Vista is not required to approve a final map in order to subdivide property within its ownership, this requirement shall be implemented prior to the approval of any subdivision of land in the UID.

4) The PFFP shall be implemented in accordance with CVMC Section 19.09.120. Future amendments shall be in accordance with CVMC Section 19.09.130 and shall incorporate newly acquired data, to add conditions and update standards as determined necessary by the City through the required monitoring program.

PFFP Applicability and Compliance

This PFFP applies to all future projects within SPA Plan boundaries. Future projects will be reviewed for consistency with the SPA Plan, this PFFP, and the University and Innovation District Environmental Impact Report (EIR). Future projects that are determined to be inconsistent with the SPA Plan, the PFFP, and/or the EIR will require additional environmental review and may require amendments to the SPA Plan and the PFFP. The following also apply to the PFFP and the SPA Plan:

1) This PFFP analyzes the maximum allowable development potential for planning purposes only. The approval of this plan does not guarantee specific development densities.

2) The facilities and phasing requirements identified in this PFFP are based on the UID SPA Plan Site Utilization Plan.

3) The plan analysis is based on the non-sequential and conceptual phasing presented in the UID SPA Plan document.

4) Approval of this PFFP is contingent upon approval of the amendments to the General Plan and the General Development Plan, certification of the associated Supplemental EIR (SEIR 09-01), and the project-level UID EIR, by the City Council.

1.2 PUBLIC FACILITY COST AND DEVELOPMENT IMPACT FEE SUMMARY FOR THE UNIVERSITY AND INNOVATION DISTRICT SECTIONAL PLANNING AREA

Table 1.1 identifies and summarizes the various projected development impact fee (DIF) revenues associated with development of the Project. The facilities and their estimated costs are identified in detail in subsequent sections of this document. The UID project is comprised of land uses that will be treated differently with respect to payment of DIF. Except for sewer fees, all university-related land uses (Academic and Academic Support) including instructional space, staff offices, research facilities, on-campus student housing are exempt from payment of the public facility fees. Other land uses including the Innovation District, market-rate housing units, commercial and retail space will pay the public facility fees as indicated in Table 1.1. These land uses are described in Section 3--Land Use Assumptions

Table 1.2 describes the recommended timing for each public facility to be either constructed or secured and the action required to satisfy the UID project's obligation to provide the facility when needed. Public facility financing alternatives shall be based on current Chula Vista practices and policies as outlined in Section 4.14—Public Facility Financing. However, where another financing mechanism may be shown at a later date to be more effective, the City may implement such other mechanisms in accordance with City policies. This option will allow the City maximum flexibility in determining the best use of public financing to fund public infrastructure improvements.

TRANSPORTATION IMPROVEMENTS

A Traffic Impact Analysis for the UID project was prepared by LL&G Engineers, dated January 30, 2017 (TIA). The TIA identified on- and off-site road improvements that will be required in

connection with the development of the UID. The estimated costs of major street improvements needed by the Project are identified in Table 4.1.3 in Section 4.1, Traffic. In the event the City of Chula Vista, or its successor in interest, constructs a Transportation Development Impact Fee (TDIF) improvement, the cost of the improvement may be eligible for credit against payment of TDIF. The City of Chula Vista, or its successor in interest, as a project exaction, must complete all internal improvements as required for subdivision access and adjacent street frontage. Table 4.1.4 (see Section 4.1) lists both off-site and on-site street improvements that are required for access and frontage.

Transportation Development Impact Fees and traffic signal fees generated by the Project are identified in Table 1.1. Funding for street improvements may be accomplished through one or more possible funding alternatives such as:

- Construction of improvements by the City of Chula Vista, or its successor in interest, with credit toward Development Impact Fees (DIF) on building permits.
- Financing through assessment districts or Community Facility Districts (CFD).
- Expenditure of available DIF account funds.
- Construction of improvements by other developers.
- State and federal funds.

WASTEWATER, WATER, AND DRAINAGE

Certain off-site sewer, drainage, and water facilities are the responsibility of the City of Chula Vista, or its successor in interest, if the facility is needed to support the proposed development.

SCHOOLS

The proposed UID SPA Plan's 2,000 market-rate residential units will generate approximately 823, 238 and 426 elementary school students, middle school students, and high school students, respectively.[3] Currently, the University and Innovation District is in the Olympian High School attendance area; however, enrollment at that school is expected to exceed capacity before the UID has begun construction. Another high school is being planned at the intersection of Hunte Parkway and Eastlake Parkway. The City of Chula Vista, or its successor in interest, must satisfy its obligations to mitigate the Project's impacts on school facilities as required by state law.

OTHER PUBLIC FACILITIES

The Project will trigger development impact fees for libraries, police services, fire services, the Civic Center, the Corporation Yard, and other City public facilities. These facilities will be funded, in part, from revenues generated from the payment of Public Facilities Development Impact Fees (PFDIF) at building permit issuance.

The projected development impact fee revenues (including TDIF, traffic signal fees, and the PFDIF) at buildout of the Project are identified in Table 1.1 (an "X" indicates the development within this land use pays the applicable City of Chula Vista impact fee).

[3] Market-rate units refer to housing units that are not intended as student residences.

TABLE 1.1
SUMMARY OF ESTIMATED CITY-IMPOSED DEVELOPMENT IMPACT FEE REVENUES FROM THE UID

FACILITY	ACADEMIC AND ACADEMIC SUPPORT, INCLUDING ON-CAMPUS STUDENT HOUSING	INNOVATION DISTRICT	MARKET RATE HOUSING	TOTAL
Traffic (a)		X	X	$27,658,440
Traffic Signal (b)		X	X	$1,282,432
Salt Creek Interceptor	X	X	X	$4,552,775
Sewer Participation Fee (c)	X	X	X	$8,583,680
Drainage (d)				
Water (e)				
Schools (e)				
Ped Bridge (f)			X	$1,000,000
Park Land Acquisition(g)			X	$25,352,000
Parks (g)			X	$11,098,000
PFDIF Components(h)		X	X	
Police		X	X	$3,606,064
Fire		X	X	$2,975,104
Library(i)			X	$3,342,000
Recreation(i)			X	$2,538,000
Civic Center		X	X	$5,954,688
Corporation Yard		X	X	$1,125,680
Administration (j)		X	X	$1,294,624
PFDIF Total				$20,836,160
Grand Total				**$100,333,487**

Notes:

The costs contained in this PFFP are for illustrative purposes only and are based on estimates made at the time of preparation of this PFFP. The obligation of the City of Chula Vista, or its successor in interest, to provide such facilities is not based on the estimate of costs of such facilities as indicated herein.

a. *Eastern Area Transportation Development Impact Fee (TDIF).*

b. *Chula Vista city-wide Traffic Signal Fee, applied as a cost per each trip generated by the project*

c. *Sewer Participation fees for nonresidential development is based on fixture units for each building permit determined at the time of issuance. An estimate of 125 fixture units per acre is assumed for this estimate (approximately 6.6 EDU per acre).*

d. *No City-imposed DIF program in place for drainage improvements. The City of Chula Vista, or its successor in interest, is fully responsible for all stormwater management improvements in accordance with the Subdivision Ordinance and Storm Water Manual.*

e. *No City-imposed DIF program for water or school facilities. Water supply and capacity fees are assessed by the Otay Water District per the Project's Subarea Master Plan. All properties, including nonresidential, are assessed fees and/or, if a Mello-Roos district has been or was formed, a special tax to fully mitigate impacts on school facilities caused by the development.*

f. *Estimated 25% share of the cost of the Hunte Parkway Pedestrian Bridge fee program for the Project.*

g. *PAD fees are not applicable to nonresidential projects.*

h. *Facilities funded by Public Facilities Development Impact Fee.*

i. *Library and Recreation fee are not applicable to nonresidential projects*

j. *Fee for administration of PFDIF program.*

PFDIF and TDIF fees are based on the City of Chula Vista's Development Checklist for Municipal Code Requirements, Form 5509, revised September 27, 2016. Fees are subject to change as the ordinance is amended by the City Council from time to time, unless stated otherwise in a separate development agreement.

Table 1.2 specifies the timing and the obligation for each facility requirement. Construction of these facilities is timed so that they are in place concurrent with need. Timing is determined by applying the threshold standards of each facility to the need generated for that facility by the development. Along with other facilities, Table 1.2 lists only the major TDIF roadway improvements required to be constructed as mitigation for the direct Project impacts of either the UID or other development projects. See Section 4.1, Traffic, for the comprehensive list of all local roads necessary for Project access.

Roadway Improvements "Assumed to Be Constructed by Others"

The traffic impacts of the UID were analyzed under the assumption that certain future road improvements are likely to be constructed and in service because they are required to provide mitigation for the direct traffic impacts of other development projects in the Eastern Territories. These improvements are identified in Table 1.2 as: "assumed to be constructed by others." Since the traffic impact mitigations for the UID are predicated on these roadways being in service at specific points in the buildout of the University and Innovation District, these road improvements are also an obligation of the UID. In the event that an assumed roadway is not constructed when specified in Table 1.2, significant impacts would occur and one of the following "Alternate Protocols for Mitigation" steps shall be implemented to ensure that the UID does not proceed without the assumed road improvements:

Alternate Protocols for Mitigation

1. Development in the UID will stop until those assumed future roads are constructed by others; or

2. The Applicant shall determine the timing for the construction for the incomplete roadway segments. A number of factors, including changes to the tolling structure at SR-125, may affect the traffic patterns in the Otay Ranch. Additional traffic analysis of the roadway network and levels of service assessment may be necessary to determine if such improvements are necessary and the scope and timing of additional circulation improvements; or

3. The City of Chula Vista, or its successor in interest, shall construct the missing roadway links and receive transportation development impact fee (TDIF) credit for those improvements as applicable.; or

4. An alternative measure is selected by the City in accordance with the City of Chula Vista Growth Management Ordinance.

5. All measures selected shall be to the satisfaction of the City Engineer.

TABLE 1.2
TIMING AND OBLIGATION FOR FACILITIES

Facility	Obligation	Timing of Obligation in terms of UID Entitlements
Eastern Area transportation improvements [a]	City of Chula Vista, or its successor in interest, pays the TDIF in effect at the time	Prior to issuance of each building permit
Traffic signals [a]	City of Chula Vista, or its successor in interest, secures and agrees to construct traffic signals at the intersections of all internal Project streets and the major road improvements below that are the direct responsibility of the City of Chula Vista, or its successor in interest and/or pays the Traffic Signal fee in effect at the time	With associated street improvements when triggered below
Project Roadway Threshold Improvements[b]		
SR 125/I-905 interchange	Improvement assumed to be constructed by others by 2020 scenario. Alternative Protocols for Mitigation apply or: Secure and agree to construct.	Prior to issuance of subdivision of land containing the 1,360th EDU in the Project
Heritage Road.	Improvement assumed to be constructed by others by 2020 scenario. Alternative Protocols for Mitigation apply or: Secure and agree to construct as 6-lane prime south from Main Street to City of Chula Vista city limit.	Prior to issuance of the first subdivision of land containing the 1,360th EDU in the Project
Otay Lakes Road.	Improvement assumed to be constructed by others by 2020 scenario. Alternative Protocols for Mitigation apply or: Secure and agree to widen Otay Lakes Road between H Street and Telegraph Canyon Road from 4-lane major to 6-lane prime	Prior to issuance of first subdivision of land containing the 1,360th EDU in the Project
Main Street (continuous--including the bridge over SR-125 and Wolf Canyon)	Alternative Protocols for Mitigation apply or: Secure and agree to construct as 6-lane prime from Heritage Road to Eastlake Parkway.	Prior to the approval of first subdivision of land containing the 1,360th EDU in the Project
Discovery Falls Drive	Secure and agree to construct from current terminus to intersection with Campus Drive (Street "K")	Prior to the approval of first subdivision of land in the University and/or Innovation District
Proctor Valley Road/San Miguel Ranch Road	Alternative Protocols for Mitigation apply or: Secure and agree to construct full intersection signalization to County of San Diego standards	Prior to the approval of first subdivision of land containing the 1,360th EDU in the Project

TABLE 1.2
TIMING AND OBLIGATION FOR FACILITIES (CONTINUED)

Facility	Obligation	Timing of Obligation in Terms of UID Entitlements
Project Roadway Threshold Improvements[b]		
Avenida De Las Vista/Heritage Road intersection	Alternative Protocols for Mitigation apply or: Secure and agree to construct full intersection signalization and intersection realignment to City of San Diego standards	Prior to the approval of the first subdivision of land containing the 1,300th EDU in the Project
Palm Avenue/I-805 NB and SB Ramps	Alternative Protocols for Mitigation apply or: Secure and agree to construct ramps improvements to Caltrans standards	Prior to the approval of the first subdivision of land containing the 1,300th EDU in the Project
Eastlake Parkway	Secure and agree to construct modifications to the Eastlake Parkway/Hunte Parkway intersection to accommodate the southerly leg of the intersection.	Prior to the approval of the first subdivision of land in the University and/or Innovation District
Exploration Falls Road	Secure and agree to construct southerly leg of Exploration Falls Road/Hunte Parkway intersection	Prior to the approval of the first subdivision of land in the Eastern Tech Park
Campus Drive North (Street "K")	Secure and agree to construct from Discovery Falls Drive to Eastlake Parkway	Prior to the approval of the first subdivision of land in the University and/or Innovation District
Heritage Road	Improvement assumed to be constructed by others by 2025 scenario. Alternative Protocols for Mitigation apply or: Secure and agree to construct as 6-lane prime from Santa Victoria to Main Street.	Prior to the approval of the first subdivision of land containing the 1,361st EDU in the Project
Discovery Falls Drive	Secure and agree to construct as four-lane divided roadway from Campus Drive North to Campus Drive South.	Prior to the approval of the first subdivision of land containing the 1,361st EDU in the Project
Campus Drive South (aka Discovery Falls Drive)	Secure and agree to construct as four-lane divided roadway from Discovery Falls Drive to Orion Avenue.	Prior to the approval of the first subdivision of land containing the 1,361st EDU in the Project
Street "E"	Secure and agree to construct as two-lane divided roadway from Orion Avenue. (Street B") to Eastlake Parkway	Prior to the approval of the first subdivision of land containing the 1,361st EDU in the Project
Eastlake Parkway	Secure and agree to construct as Class II Collector (with Class 1 bike lanes) Hunte Parkway to Discovery Falls Drive (Campus Drive South)	Prior to the approval of the first subdivision of land containing the 1,361st EDU in the Project
Proctor Valley Road/San Miguel Road	Alternative Protocols for Mitigation apply or: Secure and agree to construct full intersection signalization to County of San Diego standards	Prior to the approval of the first subdivision of land containing 1,360th EDU

TABLE 1.2
TIMING AND OBLIGATION FOR FACILITIES (CONTINUED)

Facility	Obligation	Timing of Obligation in Terms of UID Entitlements
Project Roadway Threshold Improvements[b]		
Heritage Road/Otay Mesa Road	Alternative Protocols for Mitigation apply or: Secure and agree to construct WB right-turn overlap to City of San Diego standards	Prior to the approval of the first subdivision of land containing 1,300th EDU in the Project
Village 9 Street "B" (Orion Avenue) /Village 9 Street "C" intersection	Alternative Protocols for Mitigation apply or: Secure and agree to construct WB right-turn lane on Street "C"	Prior to the approval of the first subdivision of land containing 3,500th EDU
Main Street/SR-125 interchange	Alternative Protocols for Mitigation apply or: Secure and agree to construct Main Street NB and SB ramps to SR-125	Prior to the approval of the first subdivision of land containing 3,500th EDU
Otay Valley Road and Otay Valley Road/SR-125	Improvement assumed to be built by others by 2030 scenario. Alternative Protocols for Mitigation apply or: Secure and agree to construct Otay Valley Road La Media to Orion Avenue including SB ramp to SR-125	Prior to the approval of the first subdivision of land containing 3,500th EDU
Street "C"	Secure and agree to construct as two-lane collector from Street "B" (Orion Avenue) in Village 9 to Eastlake Parkway.	Prior to the approval of the first subdivision of land containing 3,500th EDU
Parks, Open Space and Trails		
Common open space parks and pedestrian walks	City of Chula Vista, or its successor in interest, shall dedicate proposed public park, open space and recreation facility and/or pay park development fees prior to issuance of a building permit for each dwelling unit. City of Chula Vista, or its successor in interest, shall agree to construct and secure public and private park improvements associated with each transect as described in Section 4.6 of this PFFP.	Prior to the approval of the first subdivision of land containing a lot for a market-rate residential unit the City of Chula Vista, or its successor in interest shall: • Record an irrevocable offer of dedication for the Project's public parks and open space land; • Pay the PAD fee in effect at the time for each market-rate unit unless an agreement between the City and its successor in interest, permits payment at issuance of each building permit for market-rate unit.
Otay Ranch Preserve Dedication	City of Chula Vista, or its successor in interest, shall dedicate the required Otay Ranch Preserve Open Space in accordance with the Project's Preserve Conveyance Obligation and the Otay Ranch Resource Management Plan	Prior to the approval of the first subdivision of land in the Project the City of Chula Vista, or its successor in interest shall: • Offer for dedication the required Preserve lands; • Annex the applicable Project area into the Otay Ranch Preserve Maintenance CFD.

TABLE 1.2
TIMING AND OBLIGATION FOR FACILITIES (CONTINUED)

Facility	Obligation	Timing of Obligation in Terms of UID Entitlements
Parks, Open Space and Trails		
Village pathway and pedestrian bridge over SR 125	City of Chula Vista, or its successor in interest, may bond and construct the entire bridge or create a funding mechanism to the satisfaction of the City Engineer, such as formation of a Ped Bridge DIF or incorporation into the existing Village 11 DIF	Prior to the approval of the subdivision of land containing the 3,566th EDU for the Project and/or payment of Pedestrian Bridge DIF in effect at the time (if any) prior to the issuance of each building permit
Public Facility Development Impact Fees (PFDIF)		
Recreation	City of Chula Vista, or its successor in interest, pays PFDIF.	Prior to issuance of each building permit
Civic Center	City of Chula Vista, or its successor in interest, pays PFDIF.	Prior to issuance of each building permit
Library	City of Chula Vista, or its successor in interest, pays PFDIF.	Prior to issuance of each building permit
Corporation Yard	City of Chula Vista, or its successor in interest, pays PFDIF.	Prior to issuance of each building permit
Police	City of Chula Vista, or its successor in interest, pays PFDIF.	Prior to issuance of each building permit
Fire	City of Chula Vista, or its successor in interest, pays PFDIF.	Prior to issuance of each building permit
Administration	City of Chula Vista, or its successor in interest, pays PFDIF.	Prior to issuance of each building permit
Sewer[c]		
On-site sewer	Developer builds as subdivision improvements per Subdivision Ordinance.	Concurrent with development
Off-site sewer (treatment capacity)	Developer pays sewer capacity fees.	Prior to issuance of each building permit
Connection to Salt Creek Sewer	Developer builds as subdivision improvements per Subdivision Ordinance.	Prior to the approval of the subdivision of land containing the first EDU
Salt Creek Interceptor Sewer	Developer pays Salt Creek Interceptor Impact Fee.	Prior to issuance of each building permit

TABLE 1.2
TIMING AND OBLIGATION FOR FACILITIES (CONTINUED)

Facility	Obligation	Timing of Obligation in Terms of UID Entitlements
Water[d]		
Sub Area Master Plan (SAMP)	City of Chula Vista, or its successor in interest, submits to and obtains the approval of the Otay Water District (OWD) a Project SAMP.	Prior to the approval of the subdivision of land containing the first EDU
On- and off-site water	City of Chula Vista, or its successor in interest, constructs and/or secures all required water improvements to the satisfaction of OWD and in accordance with the Project SAMP.	Prior to the approval of the subdivision of land containing the applicable EDU per the Project SAMP and the Fire Marshal
Drainage, Stormwater Quality Improvements and Hydromodification Plan	City of Chula Vista, or its successor in interest, constructs and/or secures all required drainage improvements in accordance with the Drainage Study and the Water Quality Technical Report (WQTR) and Hydromodification Plan for the UID by Rick Engineering dated Sept. 17, 2015; and the WQTR and Hydromodification Plan Memo dated June 20, 2016 by Rick Engineering.	Concurrent with development; prior to the acceptance of grading improvements.
Schools[e]	City of Chula Vista, or its successor in interest pays applicable fees of the Sweetwater Union High School District and the Chula Vista Union High School District.	Per Agreement for Community Facilities District (CFD) for School Facilities, or prior to building permit if paying fees

Notes: Payment of the TDIF, PFDIF, PAD Fee and Sewer DIF may be deferred until final inspection

All improvements shall be constructed per the adopted conditions of subdivision approval, or secured to the satisfaction of the City Engineer.

a) The City of Chula Vista, or its successor in interest, is obligated to pay with each building permit the Eastern Area Transportation Development Impact Fee (TDIF) and the Traffic Signal Fee in effect at the time of issuance of building permits. Construction by the City of Chula Vista, or its successor in interest, of one or more of the TDIF-eligible road improvements below may result in a credit against the fee, as determined by the City Engineer..

b) Project thresholds for roadway improvements are based on the UID Traffic Impact Analysis report dated January 30, 2017, by LL&G Engineers.

c) Development shall not occur without adequate sewer capacity as determined by the City Engineer. See Section 4.8, Sewer, for specific facility requirements.

d) See Section 4.7, Water, for specific facility requirements

e) The City of Chula Vista, or its successor in interest, shall comply with state law regarding mitigation of impacts to school facilities, including formation of a CFD (Mello-Roos district) for school facilities and/or payment and crediting of fees. Compliance with the mitigation requirements shall be demonstrated prior to the approval of each final map. (See Section 4.4, Schools.

2.0 INTRODUCTION

2.1 OVERVIEW

The City of Chula Vista looks comprehensively at the issues dealing with development and the additional impacts it places on public facilities and services. The approval of the Threshold Ordinance and the General Plan update were the first steps in the overall process of addressing growth-related issues. The second step in this process was the development and adoption of a specific Growth Management Element, which set the stage for the creation of the City's Growth Management Program.

The Chula Vista City Council adopted the Growth Management Program and Implementing Ordinance No. 2448 on May 28, 1991. These documents implement the Growth Management Element of the General Plan and establish a foundation for carrying out the City's development policies by directing and coordinating future growth in order to guarantee the timely provision of public facilities and services.

The Growth Management Ordinance requires a Public Facilities Finance Plan (PFFP) to be prepared for future development projects requiring a Sectional Planning Area (SPA) Plan or tentative map. The contents of the PFFP are governed by Section 19.09.090 of the Chula Vista Municipal Code, which requires that the plan show how and when the public facilities and services identified in the Growth Management Program will be installed or financed.

2.2 PURPOSE

The purpose of all Public Facilities Finance Plans in Chula Vista is to implement the City's Growth Management Program and to meet the General Plan goals and objectives, specifically those of the Growth Management Element. The Growth Management Program (GMP) ensures that development occurs only when the necessary public facilities and services exist or are provided concurrent with the demands of new development. The Growth Management Program requires that a PFFP be prepared for every new development project which requires either SPA Plan or tentative map approval. Similarly, amendments to a SPA Plan may require an amendment or a supplement to the PFFP.

The PFFP is intended to be a dynamic and flexible document. The goal of the PFFP is to ensure adequate levels of service are achieved for all public facilities impacted by a project. It is understood that assumed growth projections and related public facility needs are subject to a number of external factors, such as the state of the economy, the City's future land use approval decisions, etc. It is also understood that the funding sources specified herein may change due to financing programs available in the future or requirements of either state or federal law. It is intended that cost estimates contained herein are for illustrative purpose only, and it is expected that the actual costs of such improvements will vary over time. These cost changes are not considered revisions to the PFFP and may be handled administratively.

2.3 GROWTH MANAGEMENT THRESHOLD STANDARDS

City Council Resolution No. 13346 identified eleven public facilities and services with related threshold standards and implementation measures that are to be monitored under the GMP. These public facilities and services were listed in a policy statement dated November 17, 1987, and have subsequently been refined based on recommendations from the Growth Management Oversight Commission (GMOC).

The public facilities, services, and threshold standards that are monitored include:

- Traffic
- Police
- Fire and Emergency Medical Services
- Schools
- Libraries
- Water
- Sewer
- Drainage
- Air Quality
- Parks and Recreation

During development of the Growth Management Program, two new facilities were added to the list of facilities to be analyzed in the PFFP:

- Civic Facilities
- Corporation Yard

Threshold standards are used to identify when new or upgraded public facilities are needed to mitigate the impacts of new development. Development approvals will not be made unless compliance with these standards can be met. The threshold standards have been prepared to guarantee that public facilities or infrastructure improvements will keep pace with the demands of growth.

A. The threshold standards fall into three general categories:

1) *A performance standard measuring overall level of service* is established for police, fire and emergency medical services, sewers, drainage facilities, and traffic.

2) *A ratio of facilities to population* is established for park and recreation facilities and for libraries.

3) *A qualitative standard* is established for schools, water, air quality, and fiscal impacts.

The qualitative standard pertains to some services that are provided by agencies outside of the city—schools by the Chula Vista Elementary School District and the Sweetwater Union High School District, water service by either of two independent water districts (Otay Water District and Sweetwater Authority), and sewer service by the City of Chula Vista, which has an agreement with the City of San Diego to treat its wastewater. Finally, the air quality and fiscal threshold standards do not relate to specific public services but are intended to determine whether growth is having an adverse impact on two other measures of quality of life: the air quality within the region and the City's overall fiscal health.

B. The threshold standards are applied in three ways:

1) Many of the standards were used in the development and evaluation of the City's General Plan to ensure that quality-of-life objectives are met at the time of General Plan buildout during a 20- to 25-year period.

2) Certain standards are used in the evaluation of individual development projects to determine the possible impacts of the project and to apply appropriate conditions and requirements in order to mitigate those impacts.

3) All of the standards are monitored by the Growth Management Oversight Commission on an annual basis to ensure that the cumulative impacts of new growth do not result in a deterioration of quality of life, as measured by these standards.

2.4 THE PROJECT

The University and Innovation District (UID) is located in southwestern San Diego County approximately 4 miles east of downtown Chula Vista and 13 miles southeast of downtown San Diego. The UID is located in the southeasterly portion of the area of Chula Vista known as the Eastern Territories. This area has undergone substantial development over the last 20 years. Major development projects include the Villages of Otay Ranch, the Eastern Urban Center, Eastlake, and others. The UID is generally located east of State Route 125 and south of Hunte Parkway. The Project is surrounded by Eastlake Village 11 to the north, the Otay Ranch Preserve to the east, Otay Ranch Village 10 to the south, and Otay Ranch Village 9 East to the west. The Project area currently consists of undeveloped land. A second draft of the UID SPA Plan is dated December 13, 2015. The SPA Plan land use (including the "Lake Property" is described further in Section 3, Land Use Assumptions, of this PFFP.

2.5 PUBLIC FACILITIES FINANCE PLAN BOUNDARIES

The boundaries of the PFFP is established at the time a SPA Plan is submitted by the applicant. The boundaries are based on the impact created by the project on the existing and future need for facilities. The project boundaries will correlate the proposed development project with existing and future development proposed for the area of impact to provide for the economically efficient and timely installation of both on- and off-site facilities and improvements required by the development. In establishing the boundaries for the PFFP, the City is guided by the following considerations:

1) Service areas, drainage, sewer basins, and pressure zones that serve the project

2) Extent to which facilities or improvements are in place or available

3) Ownership of property

4) Project impact on public facilities relationships, especially the impact on the City's planned major circulation network

5) Special district service territories

6) Approved fire, drainage, sewer, or other facilities or improvement master plans

The PFFP for the Project addresses public facilities which are within the SPA Plan boundaries. However, the PFFP also addresses certain facilities (streets, drainage, sewer, police, fire, schools, etc.) that are impacted beyond the boundaries of the SPA Plan.

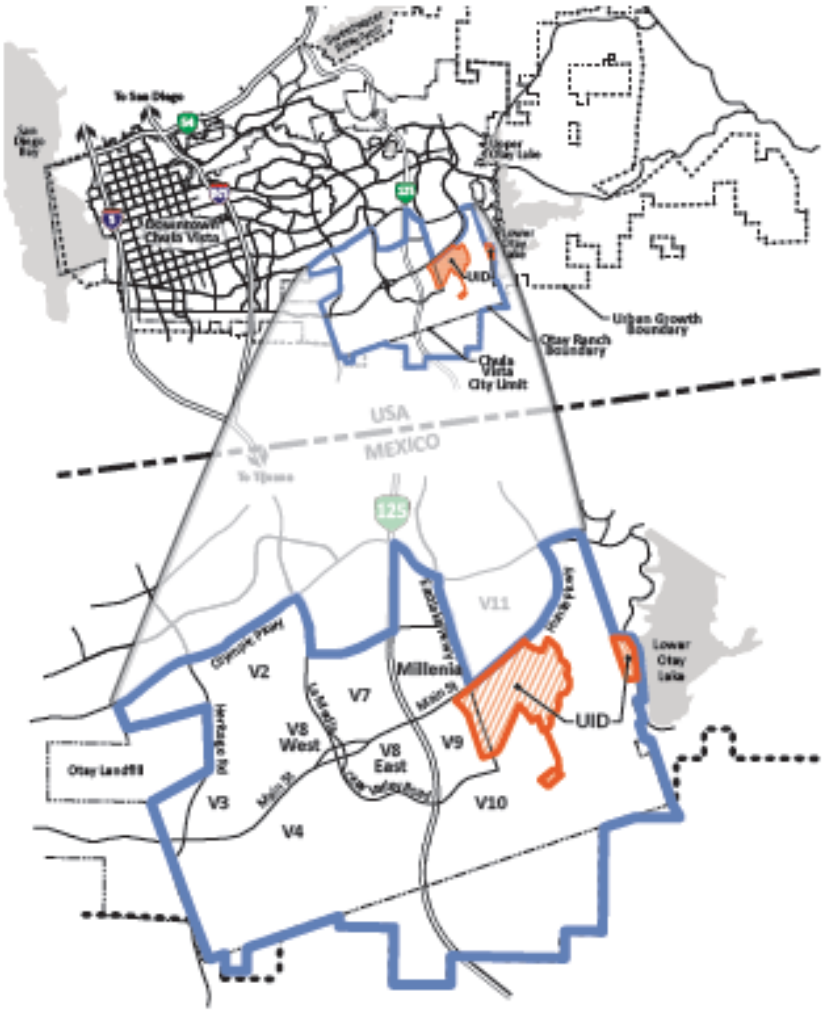

EXHIBIT 2.1: VICINITY MAP

Source: UID SPA Plan, Figure 1D, December 2015

3.0 LAND USE ASSUMPTIONS

3.1 PURPOSE

The purpose of this section is to quantify how the UID Sectional Planning Area (SPA) Plan (Project) will be analyzed in relationship to all other projects that are at some stage in the City's development process. The Growth Management Program addresses the issue of development phasing in relationship to location, timing, and fiscal/economic considerations.

Based on the overall elements to be considered when projecting the phasing of development and policies contained in the Growth Management Program, the City was able to forecast where and when development will take place and produced a 5-year Development Phasing Forecast. Subsequent to the approval of the Growth Management Program, the forecast development phasing has been updated periodically as facility improvements are made and the capacity for new development becomes available. The current update is summarized in Table 3.1.

The specific factors, which affect the development phasing forecast, include the status of development approvals and binding development agreements, as well as the need to address capacity issues for sewage treatment by the San Diego metropolitan area wastewater treatment system (Metro). These components were reviewed as part of this PFFP in conjunction with the requirement to provide facilities and services concurrent with the demand created by the Project to maintain compliance with the threshold standards.

The management of future growth requires coordination of activities of the various City departments as well as with both the Sweetwater Union High School District, the Chula Vista Elementary School District, and the Otay Water District that serve the City of Chula Vista. The development phasing forecast is a component of the City of Chula Vista's Growth Management Program. The Development Services Department prepares annual growth forecasts for two time frames: 18 months and a 5-year period. This information enables City departments and the other aforementioned service agencies to assess the probable impacts that growth may have on maintaining compliance with the City's facilities and service threshold standards. In addition, with this data, City departments and the other service agencies will be able to report potential impacts to the GMOC.

3.2 EXISTING DEVELOPMENT

As a starting point, the PFFP considers all existing development up to November 2015 as the base condition. This information is based on City of Chula Vista Development Services Department's growth management monitoring data. The City's population as of January 1, 2016, is estimated at 265,070.[1]

PROJECT POPULATION

For the purposes of projecting the Project's demand for public facilities, the student, faculty, staff, employee, and resident population is calculated in Table 3.1.

[1] Total population from the California Department of Finance, E-1 Population Estimates for Cities, Counties, and the State with Annual Percent Change — January 1, 2015 and 2016. Sacramento, May 2016. Note: The 2010 US Census shows Chula Vista's population as 243,916 (Population and Housing Occupancy – Status 2010 State-Place).

TABLE 3.1
ESTIMATED POPULATIONS BY LAND USE

Zones per Site Utilization Plan Exhibit 3.1	Number of Square Feet or Units	Average Occupancy*	Student, Faculty, Staff, Employee, and Resident Populations
Academic and Support	4,447,000 sq. ft.	N/A	26,000 faculty, staff, and student FTEs
On-Site Student Housing	1,600,000 sq. ft.	N/A	5,700 students in residence
Innovation District	2,000,000 sq. ft.	4 employees per 1,000 sq. ft.	8,000 employees
Market-Rate Housing	2,000	3 persons per dwelling unit	6,000 residents

* Average occupancies from the UID SPA

3.3 DEVELOPMENT PHASING FORECAST

A summary of the latest 5-year development phasing forecast for Chula Vista is shown in Table 3.2, which presents an estimate of the amount of development activity anticipated by the end of 2021. The estimated total number of dwelling units that could be permitted for Eastern Chula Vista by 2021 is approximately 7,152. It should be noted that these projections are estimates and are used for analytical purposes only. Unless a development agreement or other legal instrument guarantees facility capacity, some projects with varying levels of entitlement may not have committed capacity.[2]

TABLE 3.2
ESTIMATED 5-YEAR RESIDENTIAL UNIT GROWTH FORECAST 2016 THROUGH 2021

Project	Forecast of Units Permitted from August 2016 through June 2021 (does not include UID units)			Approximate Units Remaining After 2021
	Multi-family	Single family	Total	Total
Otay Ranch	5,056	2,030	7,086	12,540
Eastlake	0	0	0	0
Bonita Ridge Estates	0	14	14	0
Bella Lago	0	52	52	0
Subtotal	5,056	2,096	7,152	12,540
Population in Eastern Territory [a]	13,044	6,917	19,961	34,620
Western Chula Vista	1,257	20	1,277	5,728
Total Units	6,313	2,116	8,429	17,000
Total Citywide Population	16,288	6,983	23,270	56,700

Source: City of Chula Vista 2016 Annual Residential Growth Forecast
Household occupancies: multi-family: 2.58 persons per household, single-family: 3.30 persons per household, overall City-wide occupancy: 2.76 persons per household

[2] A year-to-year estimate of how many building permits will be issued has been developed for general planning purposes, but should not be relied upon for exactness. The total number of permits that will be issued over the next 5 years is the best estimate; however, many variables may and will affect the actual distribution.

3.4 UID SPA DEVELOPMENT SUMMARY

The UID SPA Plan is for an academic and research center designed to reflect a university campus ambiance based on pedestrian-friendly and transit-oriented planning principles as described in the 2005 Otay Ranch General Development Plan/Subregional Plan (GDP) for the University Focus Area. The proposed land uses, consisting of academic and academic support space, on-site student housing, a business innovation/research park, and commercial and retail space serving the UID community, are designed to provide a mixed-use environment that serves the needs of students, faculty, and employees. The SPA Plan also provides for 2,000 market-rate housing units, active recreation and open space, and structured parking. The overall concept focuses on promoting a walkable and bikeable community with less emphasis on automobile trips.

Eastlake Parkway and Hunte Parkway (Main Street west of Eastlake Parkway) are the major arterial access routes for the UID. Hunte Parkway/Main Street is a six-lane divided prime arterial that provides access to State Route (SR) 125 to the east. Eastlake Parkway is a six-lane major arterial providing north–south access. The UID's internal circulation system comprises backbone collector streets and local "B" streets with direct access to individual blocks. The circulation system also includes routes for pedestrians, bicycles, and local buses and connections to the regional bus rapid transit (BRT) system. The circulation system is designed to provide efficient multimodal access throughout the UID (see Exhibit 3.1). The UID comprises an area of 384 acres, and the SPA Plan proposes the following land uses:

- 4,447,000 square feet of academic and academic support space
- 1,600,000 square feet of on-site student housing, serving approximately 5,400 student residents at buildout;
- 2,000,000 square feet of business innovation, research, commercial and retail space providing goods and services to local businesses and residents;
- 2,000 market-rate residential dwelling units
- 52 acres of surface and structured parking
- 95 acres of common open space and pedestrian walkways

The UID SPA also includes the "Lake Property" (5.21 acres) located on the westerly shore of Lower Otay Lake along Wueste Road. The Lake Blocks are intended for limited, low-intensity development and infrequent satellite academic uses.

The Project's Site Utilization Plan (Exhibit 3.1) is organized into planning transects (Campus Vista, Campus Commons, Town Center, Urban Core, District Gateway), which are groups of blocks having common design characteristics of density, massing, building height, and land use. The Site Utilization Development Summary in Table 3.3 shows the estimated acreage within the transects. This PFFP is based on the land uses described in the SPA Site Utilization Development Summary.

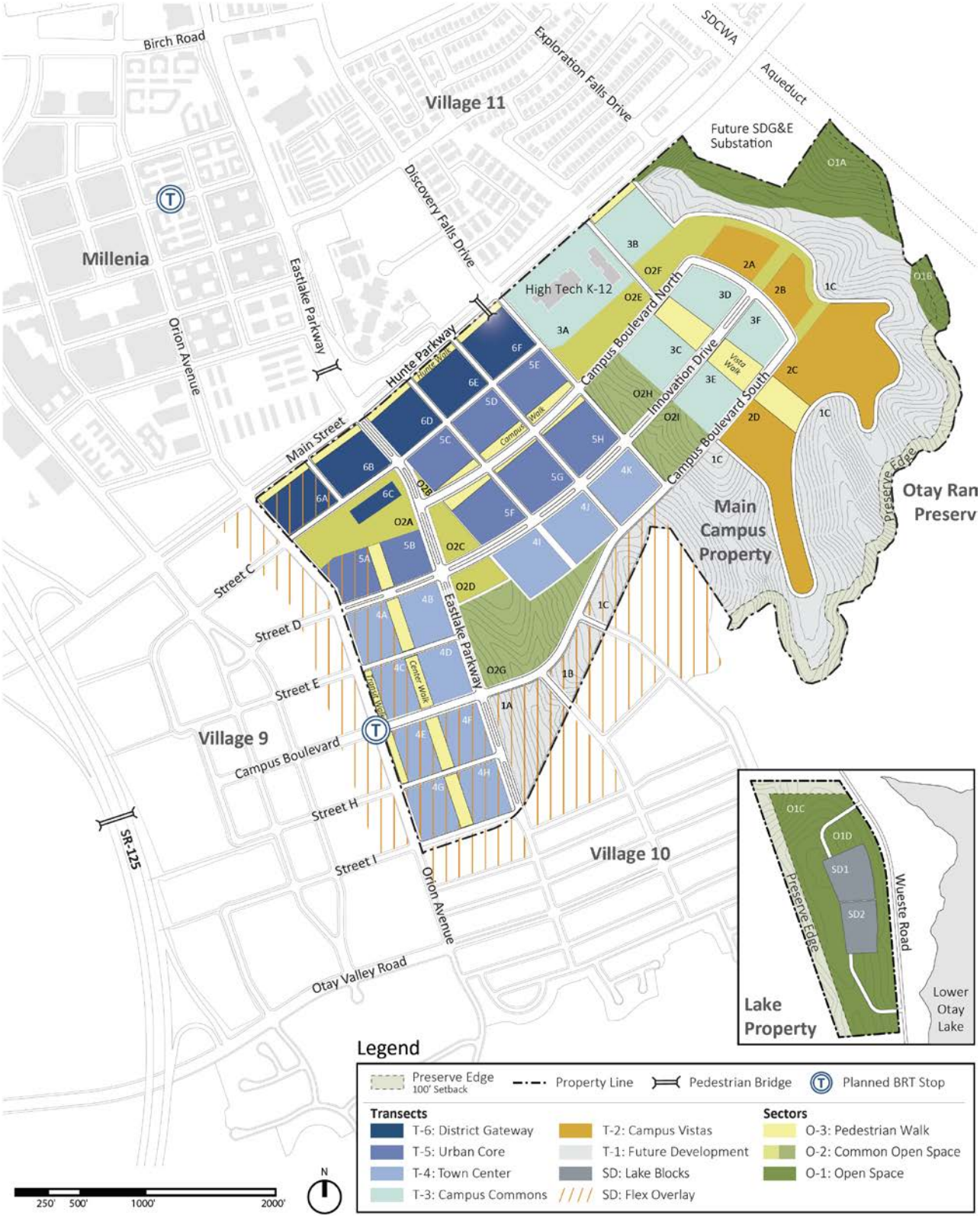

EXHIBIT 3.1: UID SITE UTILIZATION PLAN

Source: UID SPA Plan Figure 3B, Site Utilization Plan, November 2017

INTENSITY TRANSFER

The Project's development pattern and interior circulation arrangement are illustrated on the Project's Site Utilization Plan (Exhibit 3.1). The plan is intended to provide the general design intent of the Project; however, the SPA recognizes the need for flexibility in planning to accommodate future development constraints and market demands. That flexibility is provided through an "intensity transfer," which is an administrative process, conducted by the Zoning Administrator to ensure that the Project does not exceed the maximum levels of intensity. The intensity transfer process is described in detail in Section 10.8.2 of the SPA Plan and is summarized below.

Unless a proposed project is exactly consistent with the target intensity shown for that planning area on the Site Utilization Plan, an intensity transfer is required. Any transfer of intensity between transects within the same land use is permitted, provided the transfer is consistent with the SPA Plan, the circulation system, and the technical studies of the associated EIR as related to infrastructure and the intensity in Table 3.3. The Zoning Administrator may approve or deny the proposed intensity transfer subject to the following findings and conditions:

1) The overall SPA intensities shall not be exceeded.

2) The planned identity of the UID SPA Plan is preserved, including the creation of pedestrian-friendly and transit-oriented development.

3) The applicant has provided supporting technical studies, if necessary, to the satisfaction of the Zoning Administrator, which substantiate adequate infrastructure exists to support the intensity transfer.

4) Public facilities and infrastructure (including schools and parks, if applicable) shall be provided based on the final number of units, and the applicant shall agree to pay any additional fees resulting from said transfer. Preserve conveyance obligation shall be based on the final map development area.

INTENSITY TRANSFERS BETWEEN UID AND VILLAGES 9 AND 10

The UID SPA Plan identifies a Flex Overlay Special District between the UID and Village 9 to the west and Village 10 to the south (see Exhibit 3.1). The Flex Overlay Special District allows development intensity to be transferred between adjacent development in Villages 9 and 10 and the blocks adjacent to Orion Avenue in the District Gateway, Urban Core, and Town Center transects as permitted by the Zoning Administrator subject to the following conditions:

1) The overall development intensities between the two SPAs has not been exceeded.

2) The identity of the UID SPA Plan is preserved, including the creation of pedestrian-friendly and transit-oriented development.

3) The applicant has provided supporting technical studies, if necessary, to the satisfaction of the Zoning Administrator, which substantiate adequate infrastructure exists to support the intensity transfer.

4) Written agreement from each property owner has been received by the City.

3.5 DEVELOPMENT SUMMARY

The transect acreages and the gross floor areas identified in the UID SPA Plan are summarized in Table 3.3.

TABLE 3.3
UID LAND UTILIZATION DEVELOPMENT SUMMARY

Transect/Area	Acreage	Maximum Floor Area Ratio	Estimated Development (gross floor area)[a]
T-6: District Gateway	20.00	2.0	2.1 million
T-5: Urban Core	25.30	2.5	2.8 million
T-4: Town Center	33.60	2.0	3.0 million
T-3: Campus Commons	29.00	1.3	1.6 million
T-2: Campus Vista	26.40	0.5	575,600
T-1: Future Development	99.80	0.2	0
SD: Lake Blocks	5.20	0.2	47,600
O-3: Pedestrian Walk	14.50	0	0
O-2: Common Open Space	39.50	0	15,000
O-1: Open Space	41.10	0	0
ROW	49.30	0	0
UID Total (Excluding Residential)	**383.8**		**10.07 million**
Market-Rate Residential			2.0 million

Source: UID SPA Plan, Final Site Utilization Plan, April 22, 2016

a. Gross floor area excludes market-rate residential units and associated floor area.

4.0 FACILITY ANALYSIS

4.01 OVERVIEW

This portion of the PFFP contains 14 separate subsections, one for each of the 11 facilities and the Air Quality Improvement Plan addressed by this report and listed in Table 4.1; plus sections on GMOC Administration and Public Facility Financing. Of the 11 facilities, 9 have adopted threshold standards; the Civic Center and the Corporation Yard do not. Table 4.1 highlights the level of analysis for each facility.

TABLE 4.1
LEVEL OF ANALYSIS

Facility/Program	Citywide	East of I-805	Service Area Sub-basin	Special District
Traffic	X	X		
Police	X			
Fire/Emergency Medical Services	X		X	
Schools				X
Libraries	X			
Parks, Recreation, Trails & Open Space		X		
Water			X	X
Sewer			X	
Drainage			X	
Air Quality Improvement Plan	X			
Civic Center	X			
Corporation Yard	X			

Each subsection analyzes the impact of the UID Project based on the adopted Quality of Life Standards. The analysis is based on the specific goals, objectives, threshold standards, and implementation measures. The proposed UID SPA Plan is used to determine facility adequacy and is referenced in the facility subsection.

Each analysis is based on the specific project processing requirements for that facility, as adopted in the Growth Management Program. These indicate the requirements for evaluating the Project's consistency with the threshold ordinance at various stages (General Development Plan, SPA Plan/Public Facilities Finance Plan, tentative map, final map, and building permit) in the development review process.

A service analysis section is included that identifies the service provided by each facility. The existing plus forecast demands for the specific facility are identified in the subsection based on the adopted threshold standard.

Each facility subsection contains an adequacy analysis followed by a detailed discussion indicating how the facility is to be financed. The adequacy analysis determines whether or not the threshold standard is being met, and the finance section determines whether funds are available to guarantee the improvement. If the threshold standard is not being met, mitigation is recommended in the threshold compliance and recommendations subsection that proposes the appropriate conditions or mitigation to bring the facility into conformance with the threshold standard.

4.1 TRAFFIC

4.1.1 GMOC THRESHOLD STANDARD

This section of the PFFP summarizes level of service (LOS) standards by which the City of Chula Vista's arterial roads are to operate.

- Citywide: Maintain LOS C or better, as measured by observed average travel speed on all signalized arterial segments, except that during peak hours LOS D can occur for no more than any two hours of the day.

- West of Interstate 805: Those signalized intersections which do not meet the standard above may continue to operate at their current level of service, but shall not worsen.

4.1.1.1 GMOC LEVEL OF SERVICE STANDARDS FOR ARTERIAL ROADS

The following are notes to the Growth Management Oversight Commission (GMOC) threshold standards for arterial roads found in Chula Vista Municipal Code Chapter 19.09.040. There are no GMOC standards for local residential streets.

A. Arterial segment. LOS measurements shall be for the average weekday peak hours, excluding seasonal and special circumstance variations.

B. Urban and suburban arterials are defined as surface highways having signal spacing of less than 2 miles with average weekday traffic volumes greater than 10,000 vehicles per day.

C. Arterial segments are stratified into three classifications:

   i. Class I arterials are roads where free-flow traffic speeds range between 35 miles per hour (mph) and 45 mph and the number of signalized intersections per mile is less than four. There is no parking, and there is generally no access to abutting property.

   ii. Class II arterials are roads where free-flow traffic speeds range between 30 mph and 35 mph, and the number of signalized intersections per mile ranges between four and eight. There is some parking, and access to abutting properties is limited.

   iii. Class III arterials are roads where free-flow traffic speeds range between 25 mph and 35 mph, and the number of signalized intersections per mile is closely spaced. There is substantial parking, and access to abutting property is unrestricted.

D. The LOS measurement of arterial segments and freeway ramps shall be a growth management consideration in situations where proposed developments have a significant impact at interchanges.

E. Circulation improvements should be implemented prior to the anticipated deterioration of LOS below established standards.

F. The criteria for calculating arterial LOS and defining arterial lengths and classifications shall follow the procedures detailed in Chapter 11 of the Highway Capacity Manual (HCM) and shall be confirmed by the City Traffic Engineer.

G. During the conduct of future traffic monitoring program field surveys, intersections experiencing significant delays will be identified. The information generated by the field surveys will be used to determine possible signal timing changes and geometric and/or traffic operational improvements for the purpose of reducing intersection delay.

H. Level of service values for arterial segments shall be based on the following table:

TABLE 4.1.1
GMOC LEVEL OF SERVICE (LOS) DEFINITIONS

Level of Service	Average Travel Speed (mph)		
	Class I	Class II	Class III
A	>35	>30	>25
B	>28	>24	>19
C	>22	>18	>13
D	>17	>14	>9
E	>13	>10	>7
F	<13	<10	<7

Source: Transportation Research Board, Highway Capacity Manual (1994)

4.1.2 PROJECT PROCESSING REQUIREMENTS

The PFFP is required by the Growth Management Program to address the following issues for traffic facilities per Appendix C of the City's Growth Management Program Implementation Manual (CVMC 19.09.090):

a. Identify on-site and off-site impacts and improvements by phase of development; and

b. Provide cost estimates for improvements.

4.1.3 TRAFFIC IMPACT ANALYSIS AND METHODOLOGY

A. UNIVERSITY AND INNOVATION DISTRICT TRAFFIC IMPACT ANALYSIS

In conformance with requirements of the Congestion Management Program (CMP), an analysis of CMP freeways and arterials is required for any project that generates 2,400 daily or 200 peak-hour trips (as detailed in the 1991 Congestion Management Program). Linscott, Law and Greenspan Engineers (LL&G Engineers) prepared the Traffic Impact Analysis Report (Project TIA) for the University Park and Innovation District (UID) dated January 30, 2017, for the City of Chula Vista. The analysis and findings of the Project TIA are the basis of this Traffic section of the PFFP, and the Project TIA addresses both the existing and planned circulation system and land use conditions assumed for the years 2020, 2025, and 2030. The Project TIA also recommends traffic impact mitigation measures and outlines the incremental circulation improvements based on planned University and Innovation District phasing and land development estimated to occur in the Project TIA study area.

The Project TIA study area is generally bounded by Bonita Road and San Miguel Road to the north, Hunte Parkway and Wueste Road to the east, Interstate 905 to the south, and Interstate 805 (I-805) to the west (see Exhibit 4.1.1). Exhibit 4.1.1 shows the intersections, freeway interchanges, and arterial segments within this area which were analyzed under the 2020, 2025, and 2030 scenarios by LL&G Engineers (see Project TIA for scenario details).

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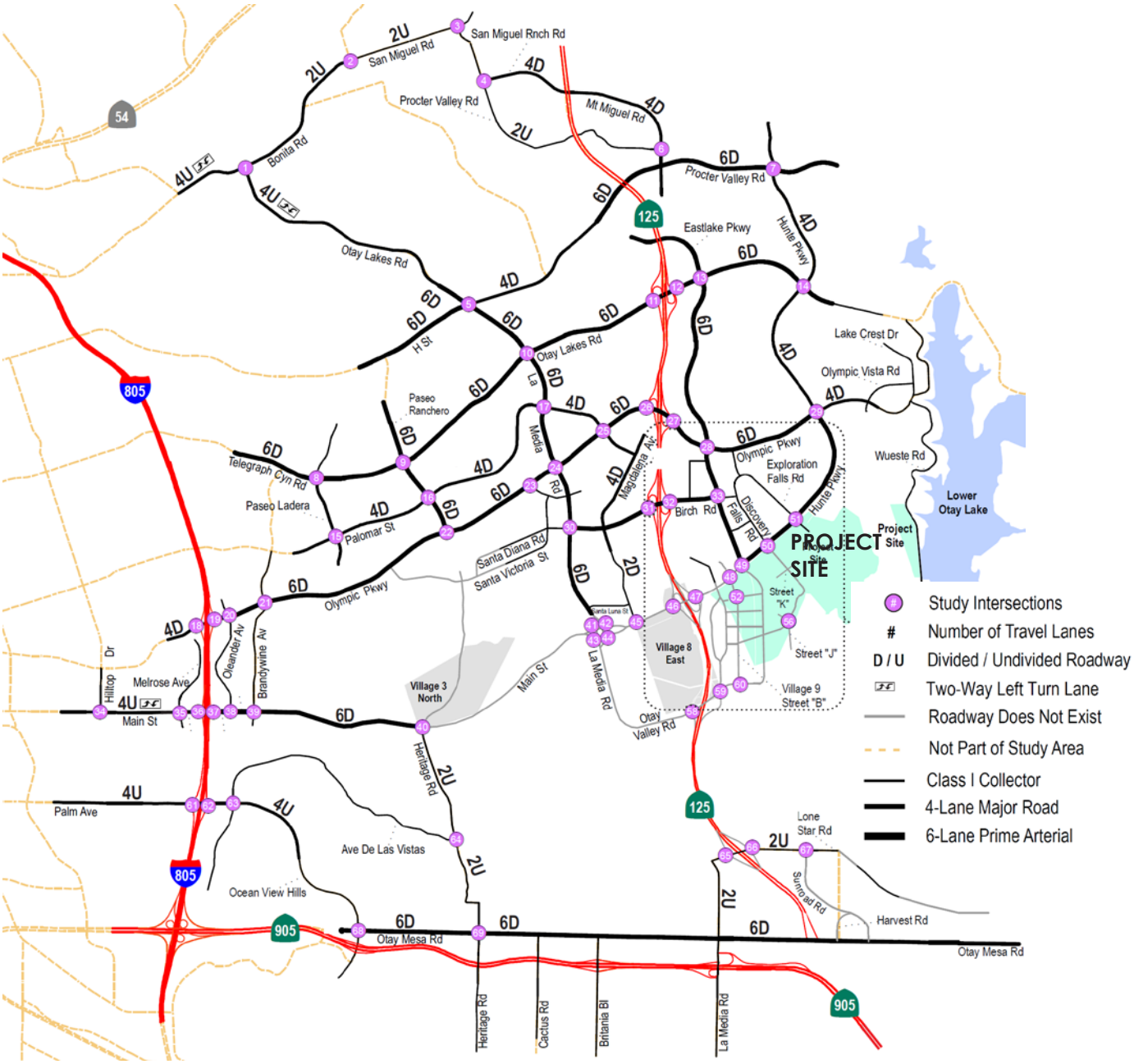

EXHIBIT 4.1.1: TRAFFIC IMPACT ANALYSIS STUDY AREA--EXISTING CONDITIONS

Source: UID TIA, Figure 3-1, January 2017

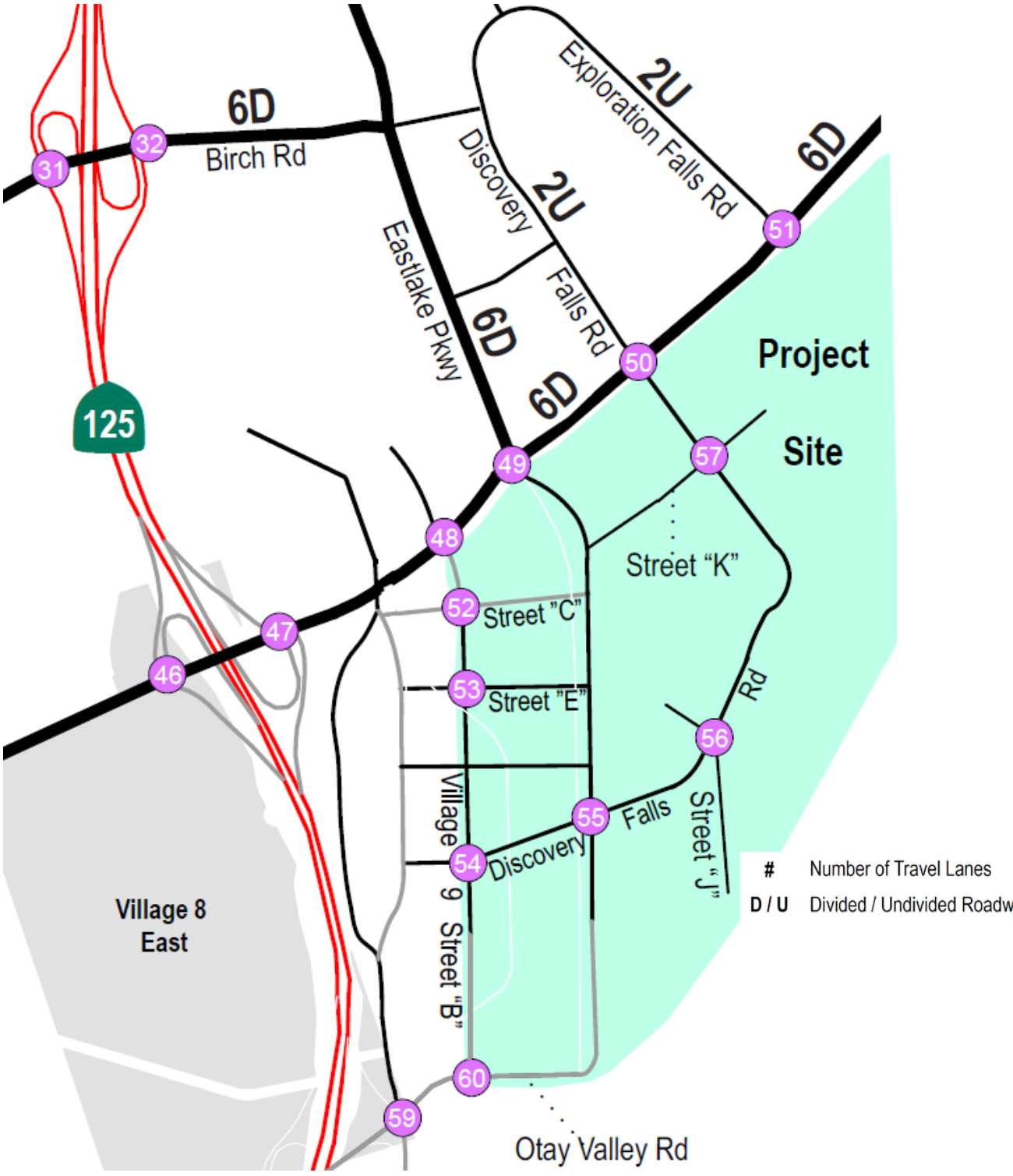

EXHIBIT 4.1.2: TRAFFIC IMPACT ANALYSIS PROJECT AREA – DETAIL OF PROJECT SITE WITH 2030 CONDITIONS

Source: UID TIA, Figure 3-1, January 2017

Study area traffic volumes for the analysis years 2020, 2025, and 2030 were forecast using the Series

11 South Bay Sub Area traffic model produced by the San Diego Association of Governments (SANDAG). In collaboration with City of Chula Vista staff and SANDAG, LL&G Engineers provided input regarding the land use and network assumptions for each scenario year used in each model run produced by SANDAG for each study year, beginning in 2020.

LLG Engineers obtained the most recent available peak hour and segment traffic volumes from the University Villages TIA, Otay Ranch Villages 3 North, 8 East and 10 traffic study (University Villages TIA) and supplemented those counts with new counts as needed. Table 3-1 of the TIA summarizes the traffic count data.

TIA Significance Criteria

City of Chula Vista Criteria

The Project TIA analyzed the UID's impacts to the study area intersections, road segments and freeway segments according the City of Chula Vista long-term GMOC significance criteria (study horizon 5 years and longer) based on the Project phasing presented in Table 4.1.2. The Project is not expected to be built-out within the next 5 years. The long-term threshold of significance criteria are as follows:

A. Intersections

1. Project-specific impact if both of the following criteria are met:
   (a) Level of service is LOS E or LOS F.
   (b) Project trips comprise 5% or more of entering volume.
2. Cumulative impact if only (a) above is met.

B. Street Segments

Use the planning analysis using the volume-to-capacity ratio methodology only.

1. Project direct impact if all three of the following criteria are met:
   (a) Level of service is LOS D, LOS E, or LOS F.
   (b) Project trips comprise 5% or more of total segment volume.
   (c) Project adds greater than 800 ADT to the segment.
2. Cumulative impact if only (a) above is met. However, if the intersections along a LOS D or LOS E segment all operate at LOS D or better, the segment impact is considered not significant since intersection analysis is more indicative of actual roadway system operations than street segment analysis. If segment level of service is LOS F, impact is significant regardless of intersection LOS.

C. Freeway Segments

1. Project direct impact if all of the following criteria are met:
   (a) Freeway segment is Level of service is LOS E or LOS F.
   (d) Project trips comprise 5% or more of total forecasted ADT on that freeway segment.
2. Cumulative impact if only (a) above is met.

City of San Diego and County of San Diego

The TIA analyzed intersections and road segments outside the City of Chula in accordance with City of San Diego and County of San Diego criteria; reference is made to the TIA for the discussion of those agencies' significance criteria.

B. TRAFFIC IMPACT ANALYSIS ASSUMPTIONS

The Project TIA makes assumptions regarding both land development and the constructed road network within the study area in 2020, 2025, and 2030. The assumptions for the constructed road network arise in three ways:

1. Road improvements are required for all development projects to comply with access and frontage requirements. The City of Chula Vista Subdivision Ordinance specifies that all land development projects must construct adjacent roadway and intersection improvements as a project exaction. The Subdivision Ordinance also specifies the maximum number of dwelling units that may take access from a local street without additional connections to collector or circulation element roads. Therefore, the completion of identified major roads and adjacent intersection improvements within the UID and other projects is necessary for the projects' compliance with the Subdivision Ordinance; the Project TIA assumes the UID and other projects will comply with all City policies and standards.

2. Improvements are recommended as a direct UID impact mitigation measure in a previous study year and become part of the "Mitigated Road Network" of a given study year.

3. Certain circulation element roads are assumed to be constructed by others as either access or frontage improvements, or are the direct impact mitigation measures for other projects in the study area. The Project TIA makes realistic assumptions regarding the future improvements to the roadway network that are needed to serve the projected development in the study area. The rationale for assuming that these roads will be constructed by others (and not by the UID itself) is reasonable given that all new development must comply with the City's GMOC policy that requires the construction of major infrastructure in conjunction with the need generated by new development.

If, however, future land development in the study area does not follow the phasing as assumed by the Project TIA and the assumed roads are not constructed and open for traffic by specified equivalent dwelling unit thresholds, the GMOC requirements and mitigation requirements for the UID provide a mechanism whereby development of the UID will cease until either the assumed roads are constructed or "Alternate Protocols for Mitigation", as described below, will be applied.

Nine major circulation element road improvements that are assumed in the Project TIA fall under one or more of the three assumptions described above:

- Construction of Heritage Road from Main Street south to Chula Vista city limit as 6-lane prime arterial (prior to year 2020 scenario Project development);

- Widening of Otay Lakes Road between H Street and Telegraph Canyon Road from a 4-lane major road to a 6-lane prime arterial (prior to year 2020 scenario Project development);

- La Media Road is assumed to be extended south from its current terminus to Main Street in Village 8 West (prior to year 2020 scenario Project development);

- Construction of Main Street between Heritage Road and SR 125 (prior to year 2020 scenario Project development);

- Construction of Heritage Road from Santa Victoria to Main Street as a 6-lane prime arterial road (prior to the year 2025 scenario Project development);

- Eastlake Parkway between Main Street/Hunte Parkway and Discovery Falls Road as a class II collector (prior to year 2025 scenario Project development)

- Construction of Main Street between SR 125 and Eastlake Parkway as 6-lane gateway street (prior to year 2030 scenario Project development);

- Otay Valley Road between State Route (SR) 125 and Eastlake Parkway;

- SR 125/Main Street interchange (prior to year 2030 scenario Project development);

- SR 125/Otay Valley Road half-interchange (south ramps only prior to year 2030 scenario Project development);

See the Project TIA for a complete discussion of the assumed timing of the above road segments.

Alternate Protocols for Mitigation

The following Alternate Protocols for Mitigation shall be implemented to ensure that the UID does not proceed without the assumed road improvements:

1. Development in the UID will stop until those assumed future roads are constructed by others; or

2. The Applicant shall determine the timing for the construction for the incomplete roadway segments. A number of factors, including changes to the tolling structure at SR-125, may affect the traffic patterns in the Otay Ranch. Additional traffic analysis of the roadway network and levels of service assessment may be necessary to determine if such improvements are necessary and the scope and timing of additional circulation improvements; or

3. The City of Chula Vista, or its successor in interest, shall construct the missing roadway links and receive transportation development impact fee (TDIF) credit for those improvements as applicable.; or

4. An alternative measure is selected by the City in accordance with the City of Chula Vista Growth Management Ordinance.

5. All measures selected shall be to the satisfaction of the City Engineer.

4.1.4 UID TRIP GENERATION AND PHASING

A. PROJECT TRIP GENERATION

The internal streets of the UID are designed as "complete" streets. Complete streets are designed, operated, and maintained to enable safe, convenient, and comfortable travel and access for users of all modes of transportation. Transportation modes can include walking, bicycling, driving automobiles, riding public transportation, or delivery vehicles.

The Series 11 regional travel model accounts for transit ridership and for "internal capture" generated by the mix of UID land use types, including retail and commercial services. Thus, the reduction in the Project's vehicular trips due to the use of transit and other alternative modes and the effect of mixed-use development are accounted for in the volumes output by the model.

B. PROJECT PHASING

The development of the UID will occur in phases and may not be fully constructed for up to 35 years. Therefore, the Project TIA includes an evaluation of three development phases: near-term by the year 2020, mid-term by 2025, and long-term (UID buildout) by 2030. The Project TIA assumes study area roadway conditions for each development phase. The phasing and trip generation assumptions of the TIA are reflected in Table 4.1.2. Approximately 26 percent of the project (in terms of trip generation) is assumed to be built by 2020. For purposes of the Project TIA, full buildout of the Project is assumed by 2030.

As shown in Table 4.1.2, the Project generates a total of approximately 13,600 ADT by 2020, 30,850 by 2025, and a net 51,642 ADT at buildout after reductions for internal capture and an overall 5% reduction for projected transit use in the UID.

4.1.5 THRESHOLD COMPLIANCE AND MITIGATION MEASURES

A. MAJOR ROADS AND INTERSECTIONS

This section of the PFFP is a discussion of the thresholds for project access and frontage requirements and for CEQA mitigation measures to be implemented by the UID or assumed to be constructed by other development in the study area.

The findings of the Project TIA show that GMOC thresholds will be met with the implementation of recommended mitigation measures for intersections and roadway segments, reducing the identified impacts to less than significant. The recommended mitigation measures for each analysis year—Existing Conditions with UID, 2020, 2025, and 2030—are summarized in the subsections that follow and are described in the identified tables and exhibits found in the Project TIA.

1. Existing Conditions plus UID Project Analysis

The Existing Conditions plus UID Project Analysis represents the traffic conditions of the existing street network shown on Exhibit 4.1.1 with the addition of UID trips at ultimate buildout (see Project TIA Tables 12.1 and 12.2 for the Existing plus UID intersection and roadway LOS summary, respectively). This scenario represents a hypothetical "snapshot" in time and does not account for changes in traffic volumes and roadway infrastructure unrelated to the UID which would occur over the long-term buildout of the Project. This scenario also does not reflect the fact that the UID is a phased project and is intended to be built-out over a period of 35 years or more.

Therefore, the Existing Conditions plus UID Project Analysis scenario is highly unlikely and is presented in the Project TIA to satisfy CEQA requirements.

TABLE 4.1.2
TRIP GENERATION SUMMARY

Land Use	Trips per Unit	Unit	2020 Near-Term		2025 Mid-Term		2030 (Buildout)	
			Units	ADT	Units	ADT	Units	Trips
University (Academic and Academic Support Space)	100	Acres	58.5	5,850	130	13,000	260	26,000
On-Site Living (Student Residence Halls)	3.2	Room	0	0	0	0	0	0
Innovation District)								
Research and Business Technology	8	1,000 sq. ft.	350	2,800	1,000	8,000	1,800	14,400
Internal Capture	10%			-280		-800		-1,440
Commercial/Retail	40	1,000 sq. ft.	100	4,000	150	6,000	200	8,000
Internal Capture	20%			-800		-1200		-1,600
Market-Rate Residential	6	Dwelling Units	450	2,700	1,300	7,800	2,000	12,000
Internal Capture	25%			-675		-1,950		-3,000
Total Project								**54,360**
Transit Reduction (cumulative)	5%							-2,718
Net Total after Transit Reduction				**13,595**		**30,850**		**51,642**

Source: UID Traffic Impact Analysis, LL&G Engineers, January 2017

Existing Conditions plus UID Project Analysis Impacts and Mitigation Measures

The results of the traffic impact analysis for the Existing Conditions plus Project Analysis show that 16 intersections are forecast to operate at a deficient level of service under these conditions. For each of the impacted intersections, listed below, the UID trips added to the intersections exceed the City of Chula Vista's threshold of significance. Therefore, these intersections are forecast to result in direct project impacts (LOS E or F):

- East Palomar/La Media, LOS E during AM peak hour
- Olympic Parkway/I-805 Southbound Ramps, LOS F during PM peak hour
- Olympic Parkway/I-805 and Northbound Ramps, LOS F during AM and PM peak hours
- Olympic Parkway/Oleander Avenue, LOS F during AM and PM peak hours
- Olympic Parkway/Brandywine Avenue, LOS F during AM and PM peak hours
- Olympic Parkway/Heritage Road, LOS F during AM and PM peak hours
- Olympic Parkway/Santa Venetia Street, LOS F during AM and PM peak hours
- Olympic Parkway/La Media Road LOS F during AM and PM peak hours
- Birch Road/La Media Road, LOS F during AM and PM peak hours
- Birch Road/Eastlake Parkway, LOS F during AM and PM peak hours
- Main Street/I-805 Southbound Ramps, LOS F during PM peak hour
- Main Street/I-805 Northbound Ramps, LOS E during AM peak hour
- Main Street (Hunte Parkway)/Eastlake Parkway, LOS E during PM peak hour
- Hunte Parkway/Discovery Falls Road, LOS E during AM and PM peak hours
- Palm Avenue/I-805 Southbound Ramps, LOS E during PM peak hour
- Palm Avenue/I-805 Northbound Ramps, LOS E during AM and PM peak hours

Eight roadway segments are forecast to operate at a deficient level of service (LOS D or worse) under Existing Conditions plus UID. The UID trips added to the deficient segments listed below exceed the City of Chula Vista's threshold of significance. Therefore, all four segments are forecast to be directly impacted by the UID:

- Otay Lakes Road: Bonita Road to East H Street, LOS D
- Olympic Parkway:
  - from I-805 Northbound Ramps to Oleander, LOS F
  - from Oleander to Brandywine, LOS F
  - from I-805 Northbound Ramps to Santa Venetia, LOS F
  - from Brandywine Avenue to Heritage Road, LOS F
  - from Heritage to Santa Venetia, LOS F
  - from Santa Venetia to La Media Road, LOS E
- Eastlake Parkway south of Hunte Parkway, LOS F

The improvements identified for the UID's 2020, 2025, and 2030 development scenarios are summarized below. These improvements would mitigate direct Project impacts including frontage and access requirements. The UID, however, is planned to be constructed in a series of phases over a period of 35 years or more. This phasing would not require construction of all the improvements at once. Rather, such improvements will be constructed as is needed to mitigate impacts of the phased development, all as described in the Project TIA.

2. 2020 Conditions

The 2020 conditions analysis includes land uses and traffic associated with development expected to occur in the near-term UID development and the study area as a whole (see Exhibit 4.1.3). The 2020 conditions include UID-generated trips associated with the construction of approximately 1,250,000 square feet of academic and academic support space; 450,000 in the Innovation District consisting of 350,000 square feet of research and business technology space, plus 100,000 square feet of commercial space; and 450 market-rate residential units. The 2020 UID development may be stated in terms of single family dwelling units that each generate ten trip per day. Therefore, the Project ADT divided by 10 daily trips equals the number of EDUs, or, 13,595/10 = 1,360 EDUs (rounded).

2020 Assumed Conditions and Mitigation Measures

The Project TIA assumes that the following improvements would be constructed by others and in place prior to the year 2020 scenario Project development:

- SR 125/I-905 interchange;
- Heritage Road from Main Street south to Chula Vista city limit as 6-lane prime arterial;
- Widening of Otay Lakes Road between H Street and Telegraph Canyon Road from a 4-lane major road to a 6-lane prime;

If any of the above improvements assumed to be constructed by others are not open to traffic prior to the approval of the first subdivision of land containing the 1,360th EDU of the Project, the Alternative Protocols for Mitigation shall apply.

The TIA finds that 16 study area intersections will operate below the threshold standards for intersections. For the intersection below, the UID trips added to the intersections will cause a direct project impact in 2020 (see Table 9-1 of the Project TIA for a complete listing of conditions on all study area intersections, including the Project's cumulative impacts).

- Birch Road/La Media Road, LOS E in AM peak hour and LOS F during PM peak hour

The Project TIA identified cumulative Project impacts to six road segments and no direct Project impacts to road segments (see Table 9-2 of the Project TIA for a complete listing of 2020 conditions on all study area road segments):

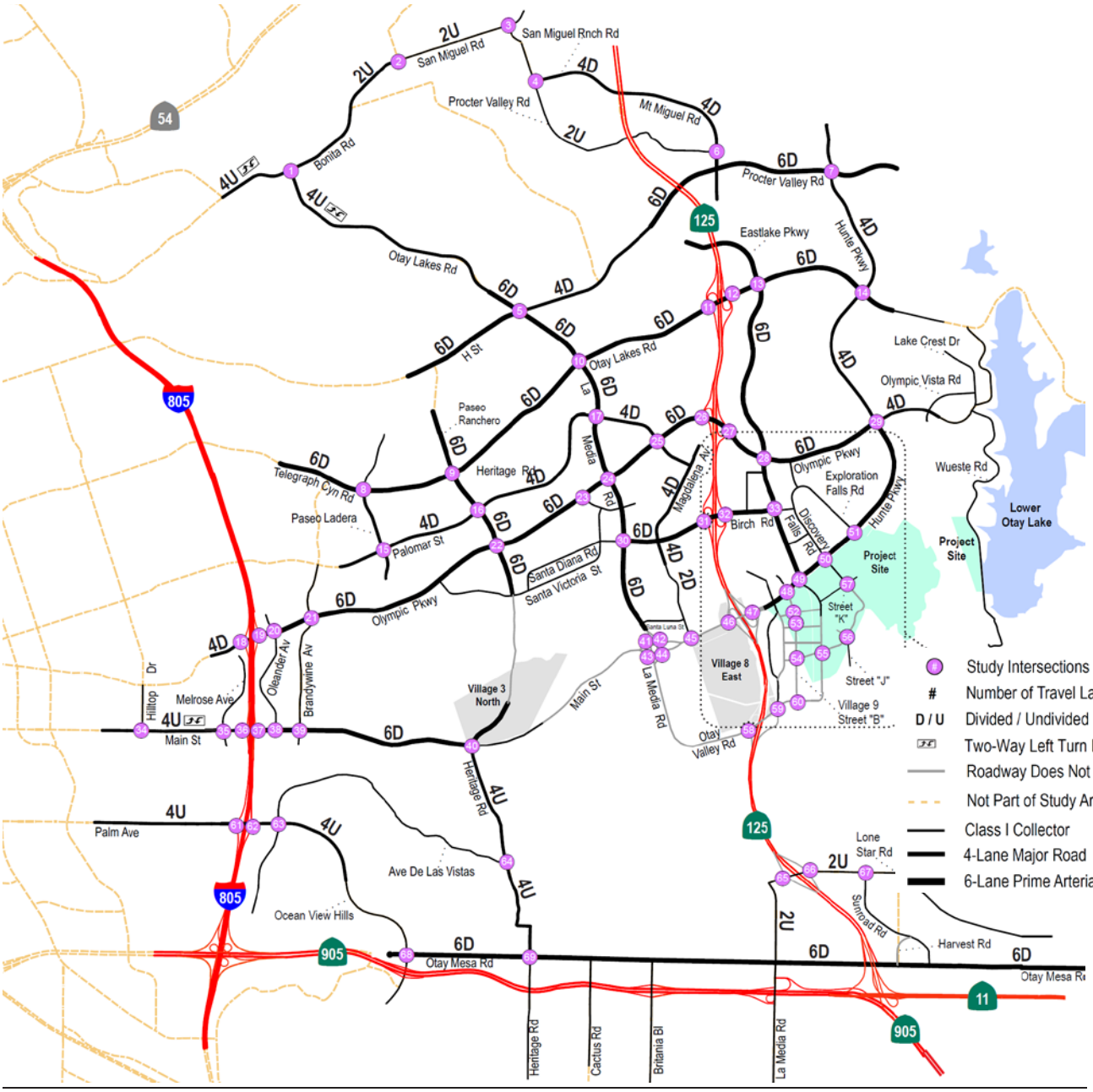

EXHIBIT 4.1.3: TRAFFIC IMPACT ANALYSIS PROJECT AREA – 2020 CONDITIONS

Source: UID TIA, Figure 9-1, January 2017

Direct Impact Mitigations

Construction of Main Street between Heritage Road and Eastlake Parkway will mitigate the Project's direct impact to the Birch Road/La Media intersection.

Cumulative Impact Mitigations

For cumulative impacts within the City of Chula Vista, the Innovation District portion of the project area (the research and business technology plus commercial space) and the market rate housing will pay the TDIF fees. The University-related TDIF share has been accounted for in the TDIF Ordinance and hence the cumulative impacts within the City of Chula Vista listed below are considered to be mitigated to a level below significance without any additional TDIF fee payments by the University portion of the project area.

Intersections mitigated by Chula Vista Eastern Territories TDIF program:

- Telegraph Canyon Road/Paseo Ranchero
- Telegraph Canyon Rd/Otay Lakes Rd/La Media Road
- East Palomar Road/Heritage Road
- East Palomar Road/La Media Road
- Olympic Parkway/I-805 SB Ramps
- Olympic Parkway/I-805 NB Ramps
- Olympic Parkway/Oleander Avenue
- Olympic Parkway/Brandywine Avenue
- Olympic Parkway/Heritage Road
- Main Street/Brandywine Avenue

Road Segments mitigated by Chula Vista Eastern Territories TDIF program:

- Telegraph Canyon Road segment: Paseo Ladera to Paseo Ranchero
- Otay Lakes Road segment: Bonita Road to East H Street
- Otay Lakes Road segment: East H Street to Telegraph Canyon Road
- Main Street segment: Hilltop Drive to Melrose Drive
- Main Street segment: Melrose Drive to I-805
- Eastlake Parkway segment: Otay Lakes Road to Olympic Parkway

Cumulative impacts to intersections and road segments that are not within the City of Chula Vista or in its jurisdiction would not be mitigated by the Eastern Territories TDIF Program and will require cooperation with other agencies as follows:

City of Chula Vista/Caltrans

- Main Street/I-805 SB Ramps intersection–-Improvements at this interchange are included in the Western TDIF program. Therefore, this impact is considered fully mitigated.
- Main Street/I-805 NB Ramps intersection–-Improvements at this interchange are included in the Western TDIF program. Therefore, this impact is considered fully mitigated.

County of San Diego

Proctor Valley Road/San Miguel Ranch Road intersection–-Installation of a traffic signal at this intersection will fully mitigate the corresponding impact to less than significant. If this improvement has not been built by others, prior to the construction of the project's 1,360th EDU the Developer will coordinate with San Diego County to implement this improvement.

City of San Diego/Caltrans

- Palm Avenue/I-805 SB Ramps intersection–-This project is included in the Facility Benefit Area (FBA) of the City of San Diego. If the City of San Diego does not complete this project prior to the construction of the Project's 1,300th EDU, the Developer will coordinate with the City of San Diego to implement this improvement.
- Palm Avenue/I-805 NB Ramps intersection–-This project is included in the Facility Benefit Area (FBA) of the City of San Diego. If the City of San Diego does not complete this improvement prior to the construction of the Project's 1,300th EDU, the Developer will coordinate with the City of San Diego to implement this improvement.

City of San Diego

Avenida De Las Vista/Heritage Road intersection–-Installation of a traffic signal and improvement to the intersection geometry will mitigate this impact. This project is included in the Facility Benefit Area (FBA) of the City of San Diego. If the City of San Diego does not complete this improvement prior to construction of the Project's 1,300th EDU, the Developer will coordinate with the City of San Diego to implement this improvement.

2020 UID Access and Frontage Requirements

The following improvements are required for access and subdivision frontage. Therefore, prior to the first subdivision of land containing a developable lot within the UID, the Developer shall have constructed the following improvements:

- Eastlake Parkway south of Hunte Parkway within the UID will provide primary access to the Project. Prior to approval of the first EDU in the University and or the Innovation District, and in accordance with City Ordinances, the Eastlake Parkway/Hunte Parkway (Main Street) intersection shall be fully improved by adding the third (south) leg of the intersection;
- Modifications to the traffic signal shall also be made to accommodate the south leg of the Eastlake Parkway/Hunte Parkway intersection, to the satisfaction of the City Engineer;
- Campus Boulevard ("Street K") shall be provided as a new, secondary access from Discovery Falls Drive. Discovery Falls Drive shall be extended south from its current terminus to the northerly leg of Campus Boulevard (Campus Boulevard North). The Campus Boulevard/Discovery Falls Drive intersection shall be fully improved, including a traffic signal installed to the satisfaction of the City Engineer. The secondary access improvements, including the signalization shall be provided prior to construction of the first EDU within the University Campus/Eastern Tech Park, in accordance with City standards;
- The Applicant shall construct the fourth (south) leg of the Hunte Parkway/Exploration Falls Road intersection and modify the signal as needed to accommodate the fourth leg prior to construction of the first building within the Eastern Tech Park, in accordance with City standards;
- Internal circulation roads shall be constructed on-site to City standards. The locations of internal circulation roads are shown on Exhibits 4.1.6-9.

3. 2025 Conditions

The 2025 conditions analysis includes land uses and traffic associated with development expected to occur in the mid-term UID development and the study area as a whole. The 2025 conditions include UID-generated trips associated with the construction of approximately 2,500,000 square feet of academic and academic support space, 1,000,000 square feet of

business technology space, 150,000 square feet of commercial space, and 1,300 market-rate residential units. The development of 2025 represents a cumulative total of 3,565 EDU's.

2025 Assumed Conditions and Mitigation Measures

The Project TIA assumes that, in addition to the SR 125/I-905 interchange, prior to the year 2025 scenario development the following would be constructed by others (see Exhibit 4.1.4):

- Heritage Road between Santa Victoria and Main Street as a 6-lane prime,

If the above improvement assumed to be constructed by others is not open to traffic by prior to the first subdivision of land containing the 3,565th EDU of the Project the Alternative Protocols for Mitigation shall apply.

The TIA finds that 24 study area intersections will operate below the threshold standards for intersections. For the intersections listed below, the UID trips added to the intersections will cause a direct Project impact in 2025 (see Table 10-1 of the Project TIA for a complete listing of 2025 conditions on all study area intersections, including the Project's cumulative impacts).

- Birch Road/La Media Road, LOS F in AM peak hour and LOS F during PM peak hour
- Birch Road/Eastlake Parkway, LOS F in AM peak hour and LOS F during PM peak hour
- Proctor Valley Road/San Miguel Ranch Road, LOS E during PM peak hour
- Proctor Valley Road/San Miguel Road, LOS F during PM peak hour

The Project TIA identified seven cumulative and three direct Project impacts to the study area road segments (see Table 10-2 of the Project TIA for a complete listing of 2025 conditions on all study area road segments). Project direct impacts segment are as follows:

- Olympic Parkway Heritage Road to Santa Venetia Street LOS D;
- Olympic Parkway East Palomar Street to SR 125 LOS D;
- Birch Road SR 125 to Eastlake Parkway LOS D.

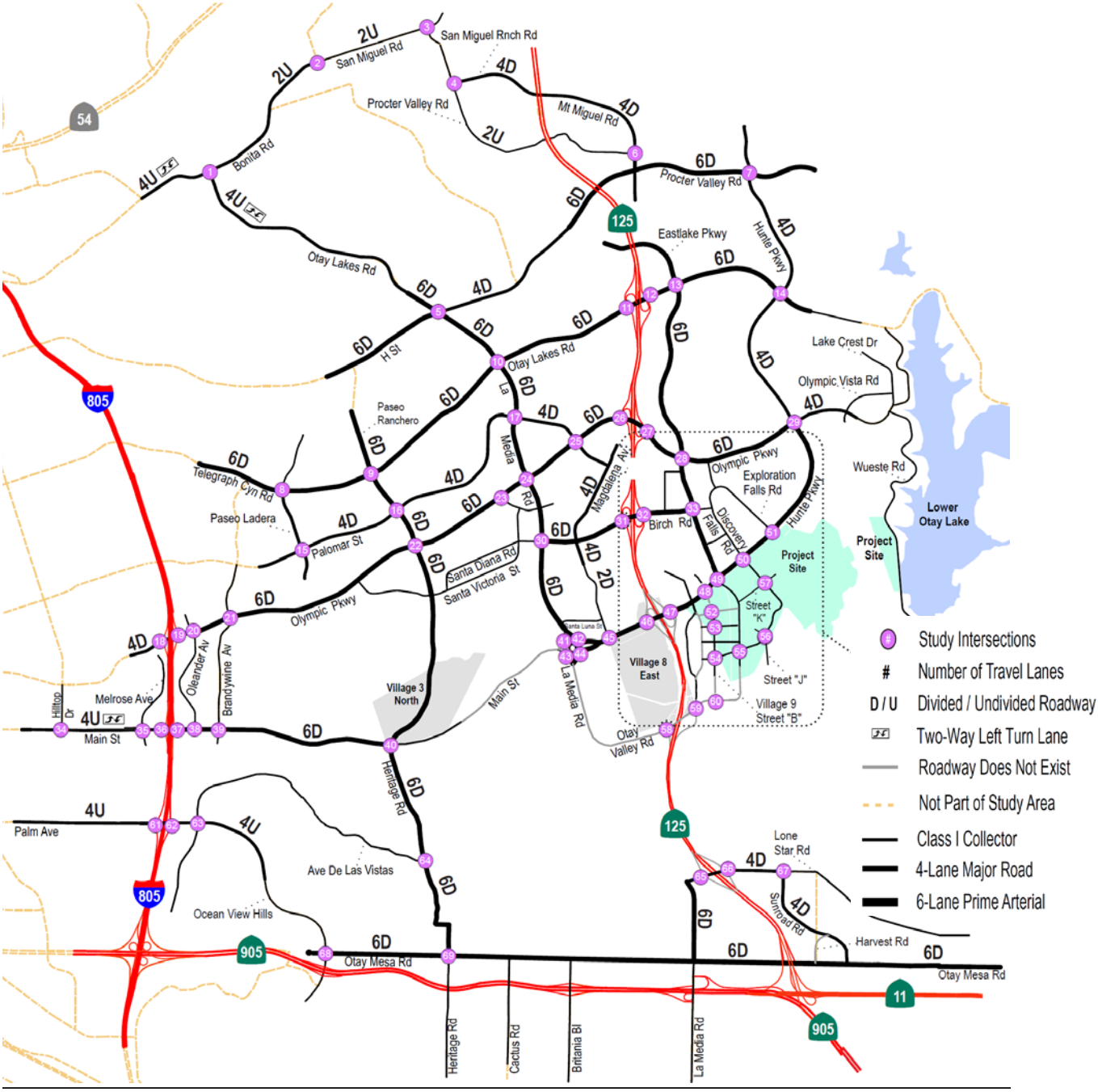

EXHIBIT 4.1.4: TRAFFIC IMPACT ANALYSIS PROJECT AREA – 2025 CONDITIONS

Source: UID TIA, Figure 10-1, January 2017

Direct Impact Mitigations

City of Chula Vista

Construction of the Main Street connection between Heritage Road and Eastlake Parkway will mitigate Project direct impacts to the above Birch Road intersections and the Olympic Parkway road segments to levels below significance. This connection will provide an important linkage and alleviate traffic congestion along Olympic Parkway and Birch Road. As a result, this impact would be reduced to less than significant. Since this improvement includes the construction of a major 6-lane road and a 6-lane bridge, it is beyond the scope of a single development project. If this improvement is not constructed prior to the year 2020 scenario Project development, the Alternate Protocols for Mitigation would apply.

San Diego County

The direct impact to the intersection of Proctor Valley Road/San Miguel Road may be mitigated by installing a traffic signal at this intersection, which will mitigate the corresponding impact to less than significant. The Developer will coordinate with San Diego County to implement this improvement if this improvement has not been built by others, prior to the construction of the project's 1,360th EDU.

The direct impact to Proctor Valley Road/San Miguel Ranch Road will be mitigated by the measure recommended in the Year 2020 (installation of a traffic signal).

Cumulative Impact Mitigations

For cumulative impacts within the City of Chula Vista, the Innovation District portion of the project area and the market-rate housing will pay TDIF fees. The University-related share of the TDIF has been accounted for in the TDIF Ordinance and hence the cumulative impacts within the City of Chula Vista listed below are considered to be mitigated to a level below significance without any additional TDIF fee payments by the University portion of the project area.

City of Chula Vista

Intersections mitigated by Chula Vista Eastern Territories TDIF program:

- Telegraph Canyon Road/Paseo Ladera
- Telegraph Canyon Road/Paseo Ranchero.
- Telegraph Canyon Rd/Otay Lakes Rd/La Media Road
- East Palomar Road/Heritage Road
- East Palomar Road/La Media Road
- Olympic Parkway/I-805 SB Ramps
- Olympic Parkway/I-805 NB Ramps
- Olympic Parkway/Oleander Avenue
- Olympic Parkway/Brandywine Avenue.
- Olympic Parkway/Heritage Road
- Olympic Parkway/La Media Road
- Main Street/Melrose Avenue
- Main Street/Brandywine Avenue

Road Segments mitigated by Chula Vista Eastern Territories TDIF program:

- Telegraph Canyon Road segment: Paseo Ladera to Paseo Ranchero
- Otay Lakes Road segment: Bonita Road to East H Street
- Otay Lakes Road segment: East H Street to Telegraph Canyon Road
- Main Street segment: Hilltop Drive to Melrose Drive
- Main Street segment: Melrose Drive to I-805
- Main Street segment: Oleander to Brandywine Avenue
- Eastlake Parkway segment: Otay Lakes Road to Olympic Parkway

Cumulative impacts to intersections and road segments that are not within the City of Chula Vista or in its jurisdiction would not be mitigated by the Eastern Territories TDIF Program and will require cooperation with other agencies as follows:

City of Chula Vista/Caltrans

- Main Street/I-805 SB Ramps intersection–-Improvements at this interchange are included in the Western TDIF program. Therefore, this impact is considered fully mitigated.
- Main Street/I-805 NB Ramps intersection–-Improvements at this interchange are included in the Western TDIF program. Therefore, this impact is considered fully mitigated.

City of San Diego/Caltrans

- Palm Avenue/I-805 SB Ramps intersection–-The mitigation measure recommended in the year 2020 scenario will mitigate this impact to below level of significance;
- Palm Avenue/I-805 NB Ramps intersection–- The mitigation measure recommended in the year 2020 scenario will mitigate this impact to below level of significance.

City of San Diego

Avenida De Las Vista/Heritage Road intersection–-impacts to this intersection will be mitigated by the improvements recommended for the year 2020 scenario (installation of a traffic signal and improvement to the intersection geometry). The mitigation measure is included in the City if San Diego's FBA program. If the City of San Diego does not complete the project prior to the construction of the UID's 1,300th EDU, the City of Chula Vista, or its successor in interest, shall coordinate with the City of San Diego to implement the project.

2025 UID Access and Frontage Requirements

The improvements to access and subdivision frontage listed for the 2020 conditions also apply to 2025. In addition, the Developer, prior to the construction of the 1,361st EDU within the University and/or Innovation District shall complete the following:

- Construct Street "E" between Village 9 Street "B" (Orion Avenue) and Eastlake Parkway, in accordance with City standards;
- Construct Eastlake Parkway between Main Street/Hunte Parkway and Discovery Falls Road as a Class II Collector with Class I Bike lanes;
- Discovery Falls Drive/Campus Boulevard southerly leg (Campus Boulevard South) between Hunte Parkway and Village 9 Street "B" (Orion Avenue)

Project Internal streets that provide access to the UID blocks will be constructed as indicated in Table 4.1.4. The locations of internal streets are shown on Exhibits 4.1.6-9.

4. 2030 Conditions

The 2030 conditions analysis includes forecast traffic volumes from land uses and traffic associated with land development expected to occur by 2030. In addition to the development and mitigations assumed through 2025, this scenario assumes buildout of the Project with approximately 4,600,000 square feet of academic space, 1,800,000 square feet of research and business technology, 200,000 of commercial space, and 2,000 units of market-rate residential. The development of 2030 represents a cumulative total of 5,164 EDU's.

2030 Conditions and Mitigation Measures

The following additional improvements were assumed to be constructed by others and in place for the 2030 (long-term, buildout conditions, see Exhibit 4.1.5):

- Main Street between SR 125 right of way and Eastlake Parkway as a 6-lane Gateway Street;
- The SR 125/Main Street interchange;
- Otay Valley Road from La Media to Street "B" in Village 9 (Orion Avenue), including the bridge over SR-125;
- The SR 125/Otay Valley Road half-interchange (south only);
- Street "B" in Village 9 (Orion Avenue);
- All internal streets in the Project.

Prior to the approval of the first subdivision of land containing the 5,164th EDU in the Project, if all of the above improvements are not constructed and open to traffic, then the Alternative Protocols for Mitigation shall apply. Where necessary, the Developer will make every effort to coordinate improvements outside of their jurisdiction with the appropriate agencies.

The Project TIA found eight study area intersections to be cumulatively impacted by the Project and the following four intersections to be directly impacted by the Project in 2030 (see TIA Table 11-1 for intersection conditions in 2030):

- Proctor Valley Road/San Miguel Ranch Road, LOS E during PM peak hour
- Proctor Valley/San Miguel Road, LOS E during PM peak hour
- Main Street/I 805 Northbound Ramps, LOS E during PM peak hour
- Village 9 Street "B"/Village 9 Street "C", LOS F during PM peak hour

The TIA found six road segment to be cumulatively impacted and the following two road segments to be directly impacted by the Project in 2030 (see TIA Table 11-2 for road segment conditions in 2030):

- Main Street: I-805 to Oleander Avenue, LOS E
- Main Street: Oleander Avenue to Brandywine Avenue, LOS F

Direct Impact Mitigations

City of Chula Vista

- Village 9 Street "B"/Village 9 Street "C" intersection–Installation of a westbound right-turn lane on Village 9 Street "C" will mitigate this impact to less than significant. If Village 9 or

others do not provide this improvement, it will be implemented by the City of Chula Vista or successor in interest, prior to the construction of the Project's 3,500th EDU.

- Main Street segment: I-805 to Oleander Avenue—Construction of the Main Street/SR-125 interchange would mitigate this impact to below a level of significance since it would reduce the demand on Main Street from I-805 to Oleander Avenue. Since this improvement includes the construction of a full interchange, it is beyond the scope of a single development project. If this improvement is not constructed prior to the approval containing the 3,500th EDU in the Project, the Alternate Protocols for Mitigation would apply.
- Main Street segment: Oleander Avenue to Brandywine Avenue–Construction of the Main Street/SR-125 interchange would also mitigate this impact to below a level of significance. If this improvement is not constructed, the Alternate Protocols for Mitigation would apply.

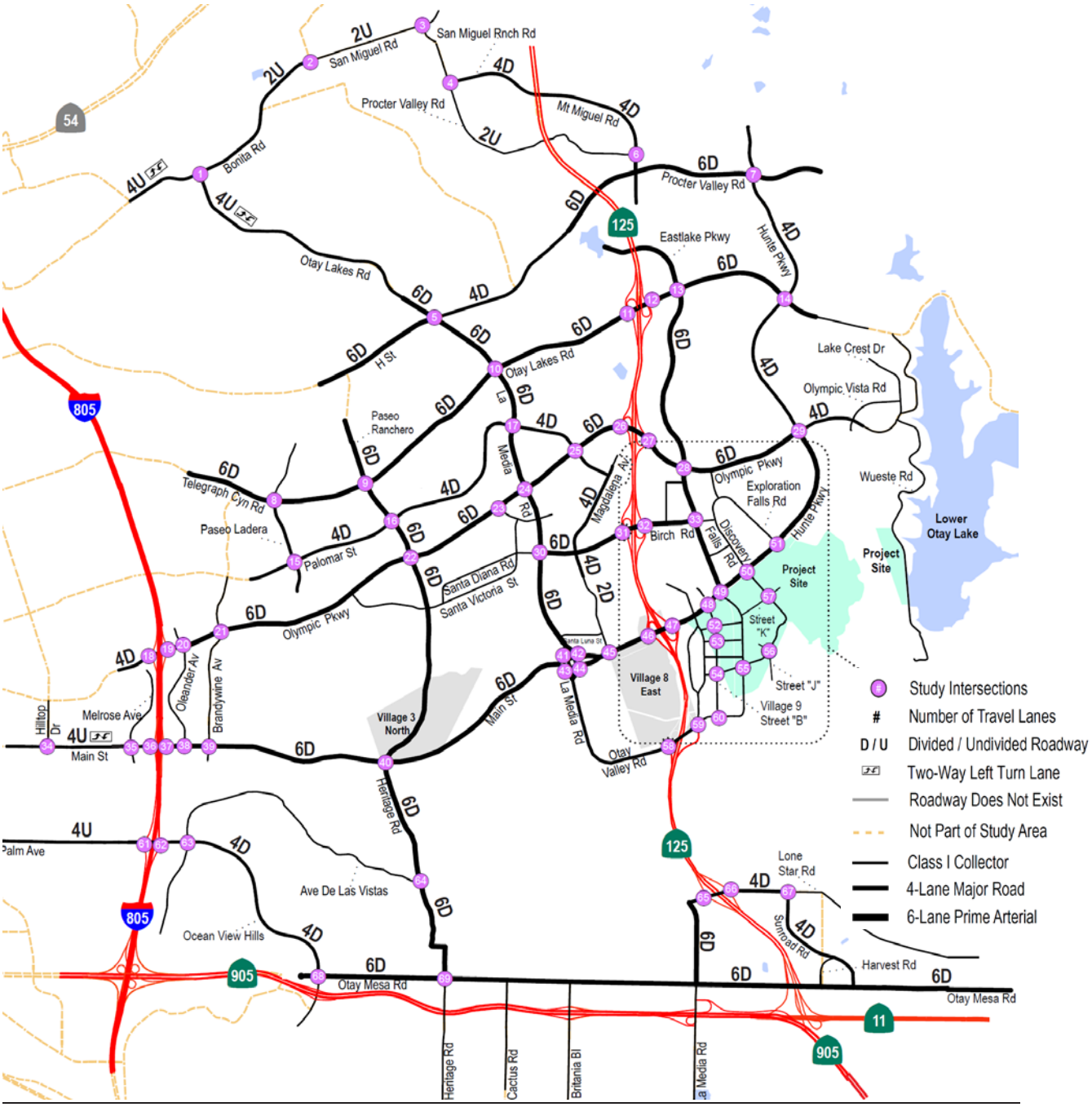

EXHIBIT 4.1.5: TRAFFIC IMPACT ANALYSIS PROJECT AREA – 2030 CONDITIONS

Source: UID TIA, Figure 11-1, January 2017

San Diego County

The direct Project impacts to the Proctor Valley Road/San Miguel Road intersection and Proctor Valley Road/San Miguel Ranch Road intersection will be mitigated by the measures recommended for 2025 and 2020, respectively.

City of Chula Vista/Caltrans

Main Street/I-805 NB Ramps Avenue intersection–Improvements at this interchange are included in the Western TDIF program. Therefore, this impact is considered fully mitigated.

Cumulative Impact Mitigations

For cumulative impacts within the City of Chula Vista, the Innovation District portion of the project area and the market-rate housing will pay TDIF fees. The University-related TDIF share has been accounted for in the TDIF Ordinance and hence the cumulative impacts within the City of Chula Vista listed below are considered to be mitigated to a level below significance without any additional TDIF fee payments by the University portion of the project area.

City of Chula Vista

Intersections mitigated by Chula Vista Eastern Territories TDIF program:

- Telegraph Canyon Road/Paseo Ranchero.
- Birch Road/La Media Road

Road Segments mitigated by Chula Vista Eastern Territories TDIF program:

- Telegraph Canyon Road segment: Paseo Ladera to Paseo Ranchero
- Otay Lakes Road segment: East H Street to Telegraph Canyon Road
- Main Street segment: Hilltop Drive to Melrose Drive
- Main Street segment: Melrose Drive to I-805
- Main Street segment: Brandywine Avenue to Heritage Road
- Eastlake Parkway segment: Otay Lakes Road to Olympic Parkway

San Diego County

Bonita Road/San Miguel Road intersection–-Payment of the San Diego County Traffic Impact Fee (TIF) will mitigate this cumulative impact.

Caltrans

Main Street/I-805 SB Ramps–-Improvements at this interchange are included in the Chula Vista Western TDIF program. Therefore, this impact is considered fully mitigated.

City of San Diego/Caltrans

Palm Avenue/I-805 SB and NB ramps–-The mitigation measure recommended in the year 2020 will mitigate this impact to below a level of significance.

City of San Diego

- Avenida De Las Vista/Heritage Road intersection–-impacts to this intersection will be mitigated by the improvements recommended for the year 2020 scenario (Installation of a traffic signal and improvement to the intersection geometry;

- Heritage Road/Otay Mesa Road–Installation of a WB right-turn overlap phase will mitigate this impact to less than significant. This improvement is included in the Facility Benefit Area (FBA), City of San Diego.

If the City of San Diego does not complete either of these improvements prior to the construction of the Project's 1,300th EDU, the Developer will coordinate with the City of San Diego to implement this improvements.

2030 UID Access and Frontage Requirements

The improvements to access and subdivision frontage listed for the 2020 conditions also apply to 2025. In addition, prior to the approval of the 3,500th EDU in the University and/or Innovation District, the Developer shall construct Project Street "C" between Village 9 Street "B" (Orion Avenue) and Eastlake Parkway.

In addition to the above road improvements required for access and frontage, internal UID streets shall also be constructed as development progresses. The phasing of internal streets is provided in Table 4.1.4.

In addition, the following improvement shall be constructed by the City, or its successor in interest, or others prior to the year 2030 scenario development, the 3,566th EDU:

- "Village Pathway" pedestrian/bicycle bridge: Construct over Hunte Parkway to provide non-motorized access between UID and Village 11

If any of the above assumed roads and improvements, including the Village Pathway bridge are not in place prior to the approval of the first subdivision of land containing the indicated EDU trigger, the Alternative Protocols for Mitigation shall apply.

Table 4.1.3 summarizes all direct impact mitigation measures and requirements for access and frontage for major roads for each of the Project TIA analysis scenarios.

TABLE 4.1.3
PROJECT DIRECT TRAFFIC IMPACT MITIGATION, ACCESS AND FRONTAGE THRESHOLD REQUIREMENTS

TIA Analysis Year	Improvement	Description[1]	Cumulative Project Threshold[2]	Why Required
2020 (UID near-term)	SR 125/I-905 interchange	Alternative Protocols for Mitigation apply or: Secure and agree to construct.	Prior to issuance of subdivision of land containing the 1,360th EDU in the Project	Improvement assumed to be constructed by others by 2020 scenario.
	Heritage Road.	Alternative Protocols for Mitigation apply or: Secure and agree to construct as 6-lane prime south from Main Street to City of Chula Vista city limit.	Prior to issuance of the first subdivision of land containing the 1,360th EDU in the Project	Improvement assumed to be constructed by others by 2020 scenario.
	Otay Lakes Road.	Alternative Protocols for Mitigation apply or: Secure and agree to widen Otay Lakes Road between H Street and Telegraph Canyon Road from from 4-lane major to 6-lane prime	Prior to issuance of first subdivision of land containing the 1,360th EDU in the Project	Improvement assumed to be constructed by others by 2020 scenario.

TABLE 4.1.3
PROJECT DIRECT TRAFFIC IMPACT MITIGATION, ACCESS AND FRONTAGE THRESHOLD REQUIREMENTS (CONTINUED)

TIA Analysis Year	Improvement	Description[1]	Cumulative Project Threshold[2]	Why Required
2020 (UID near-term, continued)	Main Street	Alternative Protocols for Mitigation apply or: Secure and agree to construct as 6-lane prime from Heritage Road to Eastlake Parkway.	Prior to the approval of first subdivision of land containing the 1,360th EDU in the Project	Mitigation for direct Project impacts to the Birch Road/La Media intersection in 2020 scenario and to Birch Road/Eastlake Parkway intersection, Olympic Parkway segments in 2025 and Birch Road segment in 2025 scenario
	Discovery Falls Drive	Secure and agree to construct from current terminus to intersection with Campus Boulevard (Street "K")	Prior to the approval of first subdivision of land in the University and/or Innovation District	Project access/frontage requirement
	Proctor Valley Road/San Miguel Ranch Road	Alternative Protocols for Mitigation apply or: Secure and agree to construct full intersection signalization to County of San Diego standards	Prior to the approval of first subdivision of land containing the 1,360th EDU in the Project	Mitigation for cumulative impact to County of San Diego intersection*
	Avenida De Las Vista/Heritage Road intersection	Alternative Protocols for Mitigation apply or: Secure and agree to construct full intersection signalization and intersection realignment to City of San Diego standards	Prior to the approval of the first subdivision of land containing the 1,300th EDU in the Project	Mitigation for cumulative impact to City of San Diego intersection**
	Palm Avenue/I-805 NB and SB Ramps	Alternative Protocols for Mitigation apply or: Secure and agree to construct ramps improvements to Caltrans standards	Prior to the approval of the first subdivision of land containing the 1,300th EDU in the Project	Mitigation for cumulative impact to City of San Diego/Caltrans interchange**
	Eastlake Parkway	Secure and agree to construct modifications to the Eastlake Parkway/Hunte Parkway intersection to accommodate the southerly leg of the intersection.	Prior to the approval of the first subdivision of land in the University and/or Innovation District	Project access/frontage requirement

**The cumulative impact is included in this table because Alternative Protocols for Mitigation may apply since no impact fee program exists for the County project*

***The cumulative impact is included because Alternative Protocols for Mitigation may apply if the City of Diego FBA program does not implement the City project.*

TABLE 4.1.3
PROJECT DIRECT TRAFFIC IMPACT MITIGATION, ACCESS AND FRONTAGE THRESHOLD REQUIREMENTS (CONTINUED)

TIA Analysis Year	Improvement	Description[1]	Cumulative Project Threshold[2]	Why Required
2020 Near-Term (continued)	Exploration Falls Road	Secure and agree to construct southerly leg of Exploration Falls Road/Hunte Parkway intersection	Prior to the approval of the first subdivision of land in the Eastern Tech Park	Project access/frontage requirement
	Campus Boulevard North (Street "K")	Secure and agree to construct from Discovery Falls Drive to Eastlake Parkway	Prior to the approval of the first subdivision of land in the University and/or Innovation District	Project access/frontage requirement
2025 (UID mid-term)	Heritage Road	Alternative Protocols for Mitigation apply or: Secure and agree to construct as 6-lane prime from Santa Victoria to Main Street.	Prior to the approval of the first subdivision of land containing the 1,361st EDU in the Project	Improvement assumed to be constructed by others by 2025 scenario.
	Discovery Falls Drive	Secure and agree to construct as four-lane divided roadway from Campus Boulevard North to Campus Boulevard South.	Prior to the approval of the first subdivision of land containing the 1,361st EDU in the Project	Project access/frontage requirement
	Campus Boulevard South (aka Discovery Falls Drive)	Secure and agree to construct as four-lane divided roadway from Discovery Falls Drive to Orion Avenue.	Prior to the approval of the first subdivision of land containing the 1,361st EDU in the Project	Project access/frontage requirement
	Street "E"	Secure and agree to construct as two-lane divided roadway from Orion Avenue. (Street B") to Eastlake Parkway	Prior to the approval of the first subdivision of land containing the 1,361st EDU in the Project	Project access/frontage requirement

TABLE 4.1.3
PROJECT DIRECT TRAFFIC IMPACT MITIGATION, ACCESS AND FRONTAGE THRESHOLD REQUIREMENTS (CONTINUED)

TIA Analysis Year	Improvement	Description[1]	Cumulative Project Threshold[2]	Why Required
2025 (UID mid-term)	Eastlake Parkway	Secure and agree to construct as Class II Collector (with Class 1 bike lanes) Hunte Parkway to Discovery Falls Drive (Campus Boulevard South)	Prior to the approval of the first subdivision of land containing the 1,361st EDU in the Project	Project access/frontage requirement
	Proctor Valley Road/San Miguel Road	Alternative Protocols for Mitigation apply or: Secure and agree to construct full intersection signalization to County of San Diego standards	Prior to the approval of the first subdivision of land containing 1,360th EDU	Mitigation for direct impact to County of San Diego intersection*
	Heritage Road/Otay Mesa Road	Alternative Protocols for Mitigation apply or: Secure and agree to construct WB right-turn overlap to City of San Diego standards	Prior to the approval of the first subdivision of land containing 1,300th EDU in the Project	Mitigation for cumulative impact to City of San Diego intersection**
2030 (UID buildout)	Village 9 Street "B" (Orion Avenue) /Village 9 Street "C" intersection	Alternative Protocols for Mitigation apply or: Secure and agree to construct WB right-turn lane on Street "C"	Prior to the approval of the first subdivision of land containing 3,500th EDU	Mitigation for direct impact to intersection
	Main Street/SR-125 interchange	Alternative Protocols for Mitigation apply or: Secure and agree to construct Main Street NB and SB ramps to SR-125	Prior to the approval of the first subdivision of land containing 3,500th EDU	Mitigation for direct Project impacts to Main Street segments between I-805 to Oleander Ave and Brandywine Avenue
	Otay Valley Road and Otay Valley Road/SR-125	Alternative Protocols for Mitigation apply or: Secure and agree to construct Otay Valley Road from La Media to Orion Avenue including the SB ramp to SR-125	Prior to the approval of the first subdivision of land containing 3,500th EDU	Improvement assumed to be built by others by 2030 scenario.
	Street "C"	Secure and agree to construct as two-lane collector from Street "B" (Orion Avenue) in Village 9 to Eastlake Parkway.	Prior to the approval of the first subdivision of land containing 3,500th EDU	Project access/frontage requirement

** The cumulative impact is included in this table because Alternative Protocols for Mitigation may apply since no impact fee program exists for the County project.*

***The cumulative impact is included because Alternative Protocols for Mitigation may apply if the City of Diego FBA program does not implement the City project.*

TABLE 4.1.3
PROJECT DIRECT TRAFFIC IMPACT MITIGATION, ACCESS AND FRONTAGE THRESHOLD REQUIREMENTS (CONTINUED)

TIA Analysis Year	Improvement	Description[1]	Cumulative Project Threshold[2]	Why Required
2030 (UID buildout)	Village Pathway Bridge	Secure and agree to construct Pedestrian bridge between Village 11 and UID	Prior to the approval of the first subdivision of land containing 3,566th EDU	Direct impact mitigation

[1] The obligation to secure and agree to construct the facilities includes the obligation to construct the roadway segments; the full intersection improvements including signalization where warranted or as directed by the City Engineer; including but not limited to: pavement, curb, gutter sidewalk, associated utilities: water, reclaimed water, dry utilities, sewer, storm water BMP's, storm drain, traffic signals, streetlights, and landscaping.

[2] Development patterns are subject to changes in market conditions. The Project's phasing may therefore change in response to the market, requiring the need to adjust thresholds for the street improvements. The City Engineer may amend any threshold based on a technical study submitted by the Developer demonstrating that providing alternative satisfaction of thresholds is achievable.

B. UID INTERNAL CIRCULATION THRESHOLDS

Table 4.1.4 summarizes the internal streets that need to be constructed for each block within the Project. For each block, the internal streets identified in Table 4.1.4 are required for access and frontage of the blocks within that transect. The internal streets are subject to further review by the City based on the specific evolution of the development patterns within the UID. The identified improvements for Eastlake Parkway, Discovery Falls Road, Orion Avenue and Campus Boulevard in Table 4.1.4 are triggered either by the first building permit in the block or the cumulative project EDU trigger for these improvements identified in Table 4.1.3, whichever comes first. The UID internal street system is shown in Exhibits 4.1.6-9.

Chula Vista Subdivision Street Standards

Level of service requirements do not apply to the local streets on Table 4.1.4 (all streets except for Hunte Parkway/Main Street and Eastlake Parkway). However, the City does impose minimum access requirements for subdivisions served by local streets. Section 3.403.2 of the Chula Vista Subdivision Manual requires that "residential" streets (a street with a classification lower than Collector III) may provide access to no more than 120 dwelling units. A second connection to a collector street or greater must be provided for any area of a subdivision that exceeds 120 dwelling units. For nonresidential development in the UID, the 120-unit threshold would be equivalent to approximately 1,200 average daily trips. Therefore for any UID block exceeding 1,200 trips per day, a second point of access is to be constructed. For example, this requirement would be satisfied for a block expected to generate more than 1,200 trips by constructing the internal streets as indicated for that block in Table 4.1.4 if at least two of the internal streets are connected to a completed arterial street or collector street (either Hunte Parkway/Main Street, Eastlake Parkway, Orion Avenue, Discovery Falls Drive, or Campus Boulevard).

TABLE 4.1.4
INTERNAL STREET IMPROVEMENTS

Transect	Blocks	Minimum Street Frontage and Access
Future Development	1A	Eastlake Parkway: Hunte Parkway to Campus Boulevard South Campus Boulevard South: Eastlake Parkway to Discovery Falls Drive Discovery Falls Drive: Terminus south of Hunte Parkway to Campus Boulevard South
	1B	Eastlake Parkway: Hunte Parkway to Campus Boulevard South Campus Boulevard: Eastlake Parkway to Discovery Falls Drive Discovery Falls Drive: Terminus to Campus Boulevard South
	1C	Eastlake Parkway: Hunte Parkway to Campus Boulevard South Campus Boulevard: Eastlake Parkway to Discovery Falls Drive Discovery Falls Drive: Terminus to Campus Boulevard South
Campus Vistas	2A	Discovery Falls Drive: Terminus to Campus Boulevard South Campus Boulevard North and Campus Boulevard South: between north and south intersections with Discovery Falls Drive
	2B	Discovery Falls Drive: Terminus to Campus Boulevard South Campus Boulevard North and Campus Boulevard South: between north and south intersections with Discovery Falls Drive
	2C	Discovery Falls Drive: Terminus to Campus Boulevard South Campus Boulevard North and Campus Boulevard South: between north and south intersections with Discovery Falls
	2D	Discovery Falls Drive: Terminus to Campus Boulevard South Campus Boulevard North and Campus Boulevard South: between north and south intersections with Discovery Falls Drive
Campus Commons	3A	High Tech High–no additional frontage requirements
	3B	High Tech High Street: Hunte Parkway to Campus Boulevard North
	3C	Discovery Falls Drive: Terminus to Campus Boulevard North Campus Boulevard North: intersection with Discovery Falls Drive to High Tech High Street High Tech High Street from Hunte Parkway to Campus Boulevard North
	3D	Discovery Falls Drive: Terminus to Campus Boulevard South Campus Boulevard North and Campus Boulevard South: between north and south intersections with Discovery Falls High Tech High Street from Hunte Parkway to Campus Boulevard North
	3E	Discovery Falls Drive: Terminus to Campus Boulevard South Campus Boulevard North and Campus Boulevard South: between north and south intersections with Discovery Falls High Tech High Street from Hunte Parkway to Campus Boulevard North
	3F	Discovery Falls Drive: Terminus to Campus Boulevard South Campus Boulevard North and Campus Boulevard South: between north and south intersections with Discovery Falls High Tech High Street from Hunte Parkway to Campus Boulevard North

Table notes:

a. *Threshold triggers for Eastlake Parkway, Main Street, Discovery Falls Road, and Campus Boulevard North and South given on this table and Table 4.1.3 do not supersede one another. The threshold requirement that occurs earlier always applies.*

b. *The trigger to construct the street improvements refers to the any subdivision of land or development permit within that block which contains the first developable lot within that block. Development patterns are subject to change in market conditions. The UID phasing may therefore change in response to the market, requiring the need to adjust thresholds for the above street improvements. The City Engineer may amend any threshold based on a technical study submitted by the Developer demonstrating that providing alternative satisfaction of thresholds is achievable.*

c. *UID access requirements also apply to the maximum number of vehicle trips that may take access from a single point of connection to a street with classification of collector or greater in substantial conformance with the Chula Vista Subdivision Manual Section 3-403.2. Additional points of connection may be required if more than the maximum number of trips take access from a single internal street which does not have a through connection.*

d. *The obligation to secure and agree to construct the above streets includes the obligation to construct the roadway segments, full intersection improvements, including signalization where warranted or as directed by the City Engineer, including but not limited to: pavement, curb, gutter sidewalk, associated utilities: water, reclaimed water, dry utilities, sewer, storm water BMP's, storm drain; traffic signals, streetlights, and landscaping.*

TABLE 4.1.4
INTERNAL STREET IMPROVEMENTS (CONTINUED)

Transect	Blocks	Minimum Street Frontage and Access
Town Center	4A	Orion Avenue: Main Street to Street "E" Innovation Drive (Street "D"): Orion Avenue to Eastlake Parkway
	4B	Eastlake Parkway: Main Street to Street "E" Orion Avenue: Main Street to Street "E" Innovation Drive (Street "D"): Orion Avenue to Eastlake Parkway
	4C	Orion Avenue: Main Street to Campus Boulevard Eastlake Parkway: Main Street to Campus Boulevard Street "E": Orion Avenue to Eastlake Parkway
	4D	Orion Avenue: Main Street to Campus Boulevard Eastlake Parkway: Main Street to Campus Boulevard Street "E": Orion Avenue to Eastlake Parkway
	4E	Orion Avenue: Main Street to Street "H" Eastlake Parkway: Main Street to Street "H" Campus Boulevard: Orion Avenue to Eastlake Parkway
	4F	Orion Avenue: Main Street to Street "H" Eastlake Parkway: Main Street to Street "H" Campus Boulevard: Orion Avenue to Eastlake Parkway
	4G	Orion Avenue: Main Street to Street "I" Eastlake Parkway: Main Street to Street "I" Street "I": Orion Avenue to Eastlake Parkway
	4H	Orion Avenue: Main Street to Street "I" Eastlake Parkway: Main Street to Street "I" Street "I": Orion Avenue to Eastlake Parkway
	4I	Eastlake Parkway: Hunte Parkway to Innovation Drive Innovation Drive: Eastlake Parkway to Discovery Falls Drive Discovery Falls Drive: Terminus to Innovation Drive
	4J	Eastlake Parkway: Hunte Parkway to Innovation Drive Innovation Drive: Eastlake Parkway to Discovery Falls Drive Discovery Falls Drive: Terminus to Innovation Drive The B street between 4J and 4K: Innovation Drive to Campus Boulevard South
	4K	Eastlake Parkway: Hunte Parkway to Innovation Drive Innovation Drive: Eastlake Parkway to Discovery Falls Drive Discovery Falls Drive: Terminus to Innovation Drive The B street between 4J and 4K: Innovation Drive to Campus Boulevard South

Table notes:

a. *Threshold triggers for Eastlake Parkway, Main Street, Discovery Falls Road, and Campus Boulevard given on this table and Table 4.1.3 do not supersede one another. The threshold requirement that occurs earlier always applies.*
b. *The trigger to construct the street improvements refers to any subdivision of land or development permit within that block which contains the first developable lot within that block. Development patterns are subject to change in market conditions. The UID phasing may therefore change in response to the market, requiring the need to adjust thresholds for the above street improvements. The City Engineer may amend any threshold based on a technical study submitted by the Developer demonstrating that providing alternative satisfaction of thresholds is achievable.*
c. *UID access requirements also apply to the maximum number of vehicle trips that may take access from a single point of connection to a street with classification of collector or greater in substantial conformance with the Chula Vista Subdivision Manual Section 3-403.2. Additional points of connection may be required if more than the maximum number of trips take access from a single internal street which does not have a through connection.*
d. *The obligation to secure and agree to construct the above streets includes the obligation to construct the roadway segments, full intersection improvements, including signalization where warranted or as directed by the City Engineer, including but not limited to: pavement, curb, gutter sidewalk; associated utilities water, reclaimed water, dry utilities, sewer, storm water BMP's, storm drain; traffic signals, streetlights, and landscaping.*

TABLE 4.1.4
INTERNAL STREET IMPROVEMENTS (CONTINUED)

Transect	Blocks	Minimum Street Frontage and Access
Urban Core	5A	Orion Avenue: Main Street to Innovation Drive Innovation Drive: Orion Avenue to Eastlake Parkway Eastlake Parkway: Main Street to Innovation Drive
	5B	Orion Avenue: Main Street to Innovation Drive Innovation Drive: Orion Avenue to Eastlake Parkway Eastlake Parkway: Main Street to Innovation Drive
	5C	Eastlake Parkway: Main Street to Street "C" Street "C": Eastlake Parkway to Discovery Falls Drive the B street between 5C and 5D: Street "C" to Campus Boulevard North Campus Boulevard North: Eastlake Parkway to Discovery Falls Drive Discovery Falls: Terminus to Campus Boulevard North
	5D	Eastlake Parkway: Main Street to Street "C" Street "C": Eastlake Parkway to Discovery Falls Drive the B street between 5C and 5D: Street "C" to Campus Boulevard North the B street between 5D and 5E: Street "C" to Campus Boulevard North Campus Boulevard North: Eastlake Parkway to Discovery Falls Drive Discovery Falls: Terminus to Campus Boulevard North
	5E	Eastlake Parkway: Main Street to Street "C" Street "C": Eastlake Parkway to Discovery Falls Drive the B street between 5D and 5E: Street "C" to Campus Boulevard North Campus Boulevard North: Eastlake Parkway to Discovery Falls Drive Discovery Falls: Terminus to Campus Boulevard North
	5F	Eastlake Parkway: Main Street to Innovation Drive Innovation Drive: Eastlake Parkway to Discovery Falls Drive the B street between 5F and 5G: Campus Boulevard North to Innovation Drive Campus Boulevard North: Eastlake Parkway to Discovery Falls Drive Discovery Falls: Terminus to Innovation Drive
	5G	Eastlake Parkway: Main Street to Innovation Drive Innovation Drive: Eastlake Parkway to Discovery Falls Drive the B street between 5F and 5G: Campus Boulevard North to Innovation Drive the B street between 5G and 5H: Campus Boulevard North to Innovation Drive Campus Boulevard North: Eastlake Parkway to Discovery Falls Drive Discovery Falls: Terminus to Innovation Drive
	5H	Eastlake Parkway: Main Street to Innovation Drive Innovation Drive: Eastlake Parkway to Discovery Falls Drive the B street between 5G and 5H: Campus Boulevard North to Innovation Drive Campus Boulevard North: Eastlake Parkway to Discovery Falls Drive Discovery Falls: Terminus to Innovation Drive

Table notes:

a. *Threshold triggers for Eastlake Parkway, Main Street, Discovery Falls Road, and Campus Boulevard given on this table and Table 4.1.3 do not supersede one another. The threshold requirement that occurs earlier always applies.*

b. *The trigger to construct the street improvements refers to any subdivision of land or development permit within that block which contains the first developable lot within that block. Development patterns are subject to change in market conditions. The UID phasing may therefore change in response to the market, requiring the need to adjust thresholds for the above street improvements. The City Engineer may amend any threshold based on a technical study submitted by the Developer demonstrating that providing alternative satisfaction of thresholds is achievable.*

c. *UID access requirements also apply to the maximum number of vehicle trips that may take access from a single point of connection to a street with classification of collector or greater in substantial conformance with the Chula Vista Subdivision Manual Section 3-403.2. Additional points of connection may be required if more than the maximum number of trips take access from a single internal street which does not have a through connection.*

d. *The obligation to secure and agree to construct the above streets includes the obligation to construct the roadway segments, full intersection improvements, including signalization where warranted or as directed by the City Engineer, including but not limited to: pavement, curb, gutter sidewalk; associated utilities: water, reclaimed water, dry utilities, sewer, storm water BMP's, storm drain; traffic signals, streetlights, and landscaping.*

TABLE 4.1.4
INTERNAL STREET IMPROVEMENTS (CONTINUED)

Transect	Blocks	Minimum Street Frontage and Access
District Gateway	6A	Main Street: Orion Avenue to Eastlake Parkway The B street between 6A and 6B: Main Street to Street "C" Street "C": Orion Avenue to Eastlake Parkway Eastlake Parkway: Hunte Parkway to Street "C"
	6B	Main Street: Orion Avenue to Eastlake Parkway The B street between 6A and 6B: Main Street to Street "C" Street "C": Orion Avenue to Eastlake Parkway Eastlake Parkway: Hunte Parkway to Street "C"
	6C	Main Street: Orion Avenue to Eastlake Parkway The B street between 6A and 6B: Main Street to Street "C" Street "C": Orion Avenue to Eastlake Parkway Eastlake Parkway: Hunte Parkway to Campus Boulevard North
	6D	Eastlake Parkway: Hunte Parkway to Street "C" Street "C": Eastlake Parkway to Discovery Falls Drive The B street between 6D and 6E: Hunte Parkway to Street "C"
	6E	Eastlake Parkway: Hunte Parkway to Street "C" Street "C": Eastlake Parkway to Discovery Falls Drive The B street between 6D and 6E: Hunte Parkway to Street "C" The B street between 6E and 6F: Hunte Parkway to Street "C"
	6F	Eastlake Parkway: Hunte Parkway to Street "C" Street "C": Eastlake Parkway to Discovery Falls Drive The B street between 6E and 6F: Hunte Parkway to Street "C"
Lake Front Property	SD1	The B street from northerly the intersection with Wueste Rd to the southerly intersection
	SD2	The B street from the northerly intersection with Wueste Rd to the southerly intersection

Table notes:

a. *Threshold triggers for Eastlake Parkway, Main Street, Discovery Falls Road, and Campus Boulevard given on this table and Table 4.1.3 do not supersede one another. The threshold requirement that occurs earlier always applies.*

b. *The trigger to construct the street improvements refers to any subdivision of land or development permit within that block which contains the first developable lot within that block. Development patterns are subject to change in market conditions. The UID phasing may therefore change in response to the market, requiring the need to adjust thresholds for the above street improvements. The City Engineer may amend any threshold based on a technical study submitted by the Developer demonstrating that providing alternative satisfaction of thresholds is achievable.*

c. *UID access requirements also apply to the maximum number of vehicle trips that may take access from a single point of connection to a street with classification of collector or greater in substantial conformance with the Chula Vista Subdivision Manual Section 3-403.2. Additional points of connection may be required if more than the maximum number of trips take access from a single internal street which does not have a through connection.*

d. *The obligation to secure and agree to construct the above streets includes the obligation to construct the roadway segments, full intersection improvements, including signalization where warranted or as directed by the City Engineer, including but not limited to: pavement, curb, gutter sidewalk; associated utilities: water, reclaimed water, dry utilities, sewer, storm water BMP's, storm drain; traffic signals, streetlights, and landscaping.*

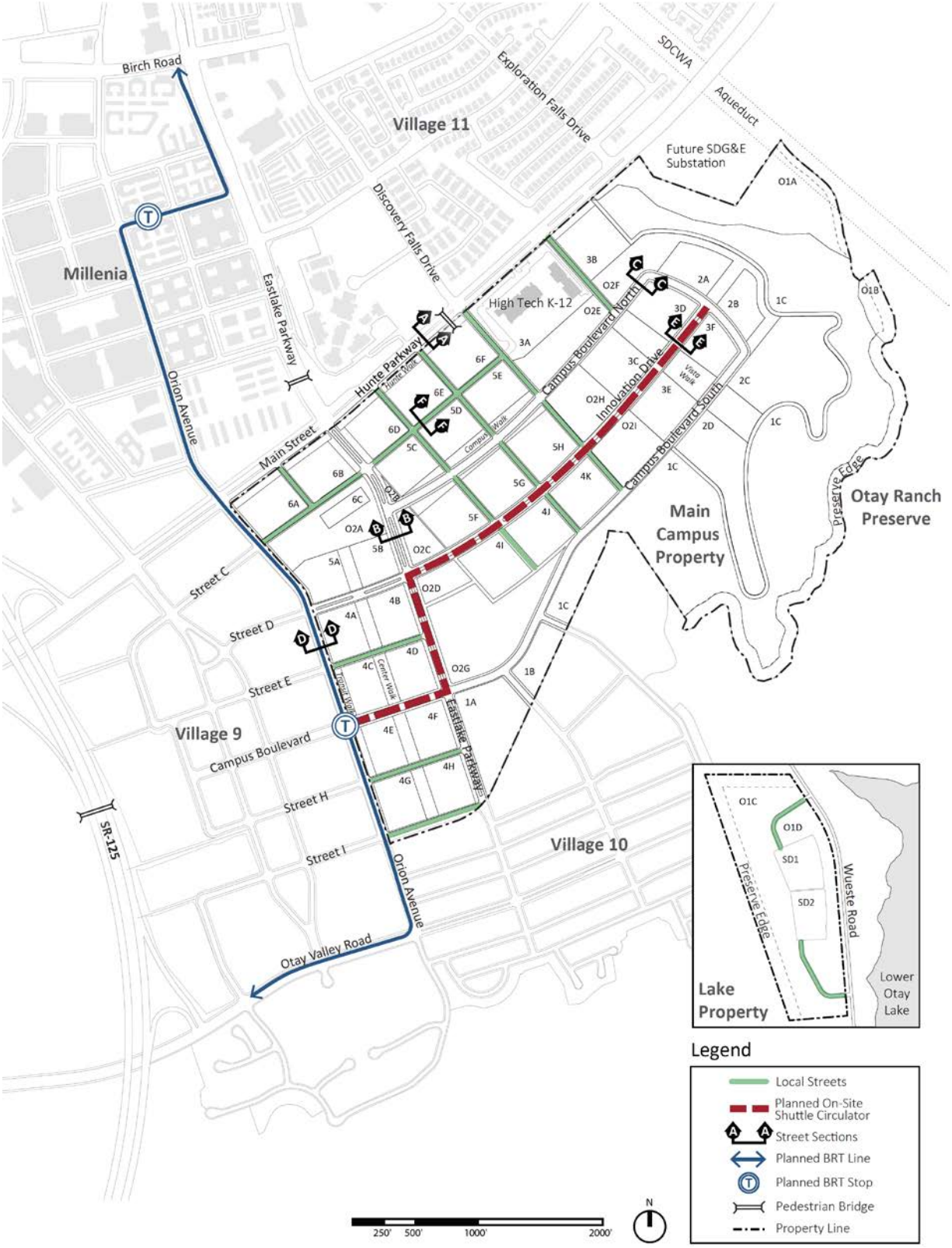

EXHIBIT 4.1.6: UID STREET MAP

(Source: UID SPA Plan, Figure 4G: Motor Vehicle Circulation Plan, November 2017)

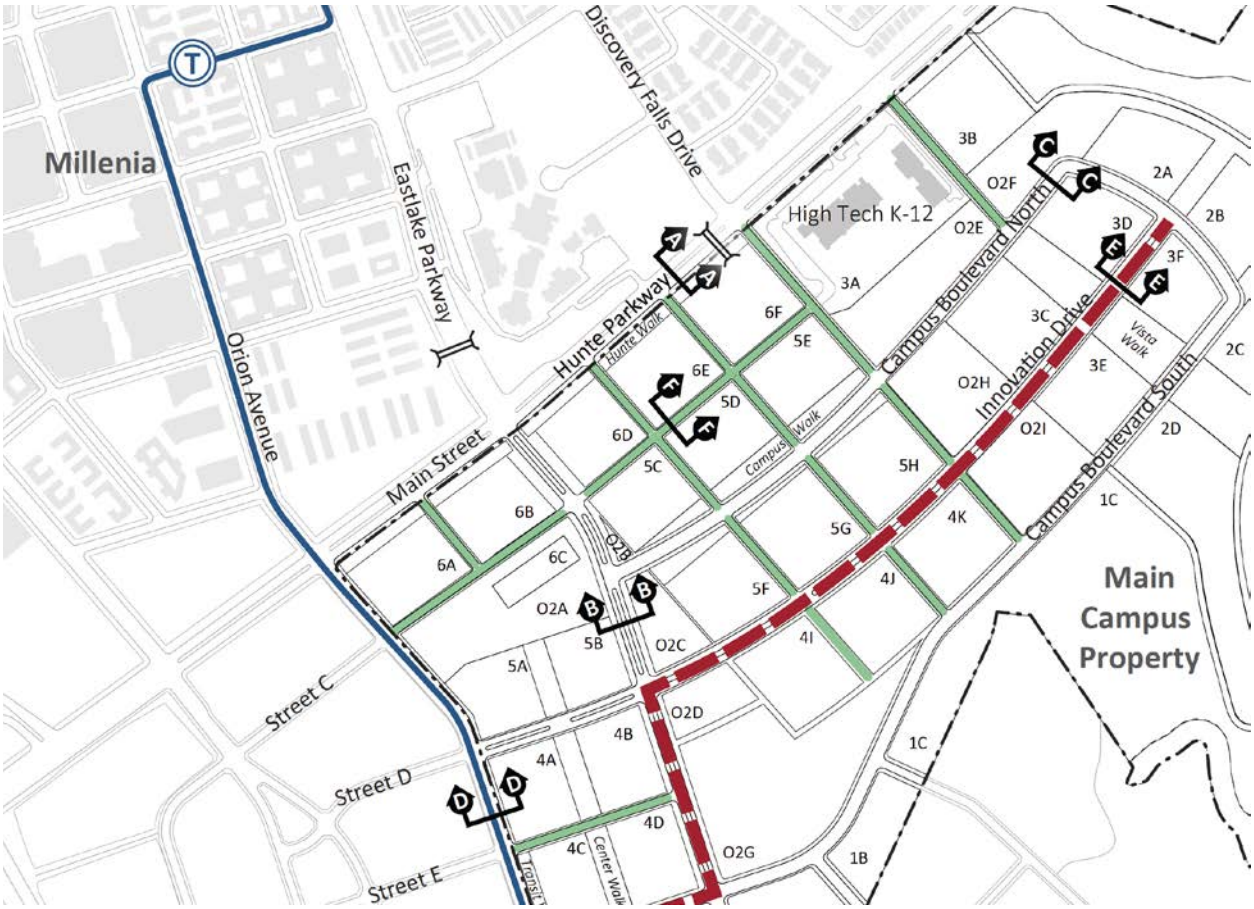

EXHIBIT 4.1.7: UID STREET MAP (DETAIL)

(Source: UID SPA Plan, November 2017 Figure 4G)

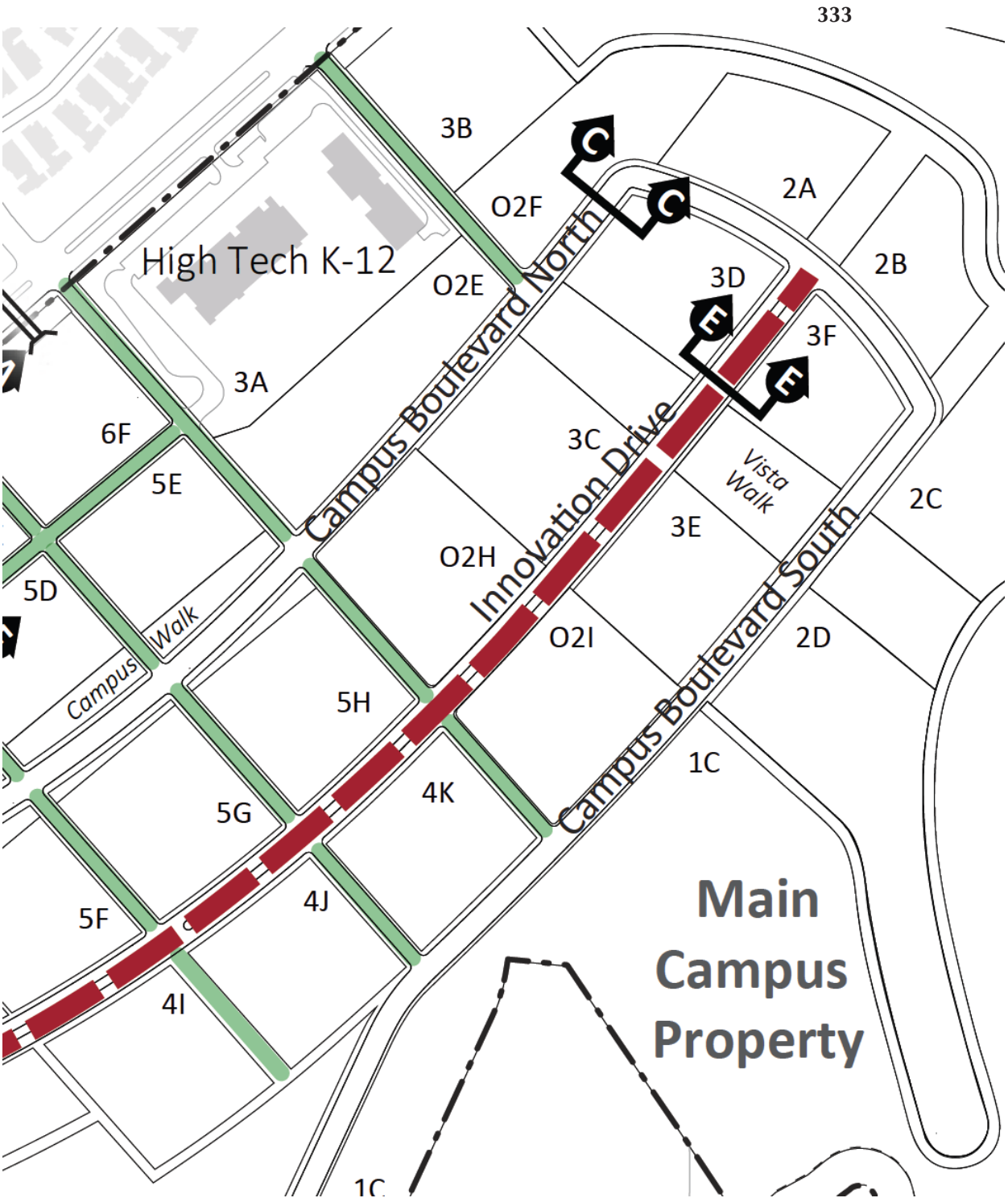

EXHIBIT 4.1.8: UID STREET MAP (DETAIL)

(Source: UID SPA Plan, November 2017 Figure 4G)

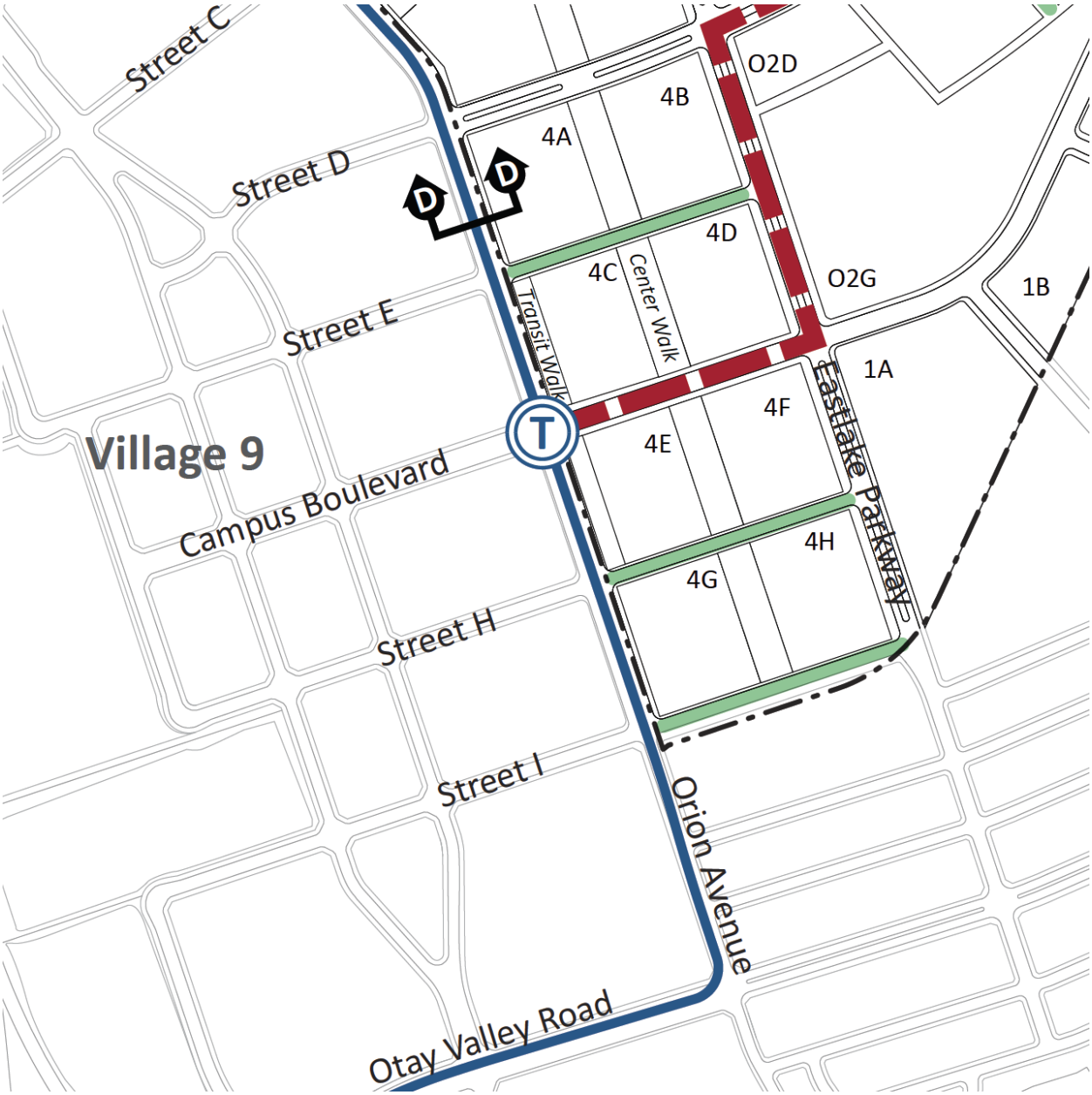

EXHIBIT 4.1.9: UID STREET MAP (DETAIL)

(Source: UID SPA Plan, November 2017 Figure 4G)

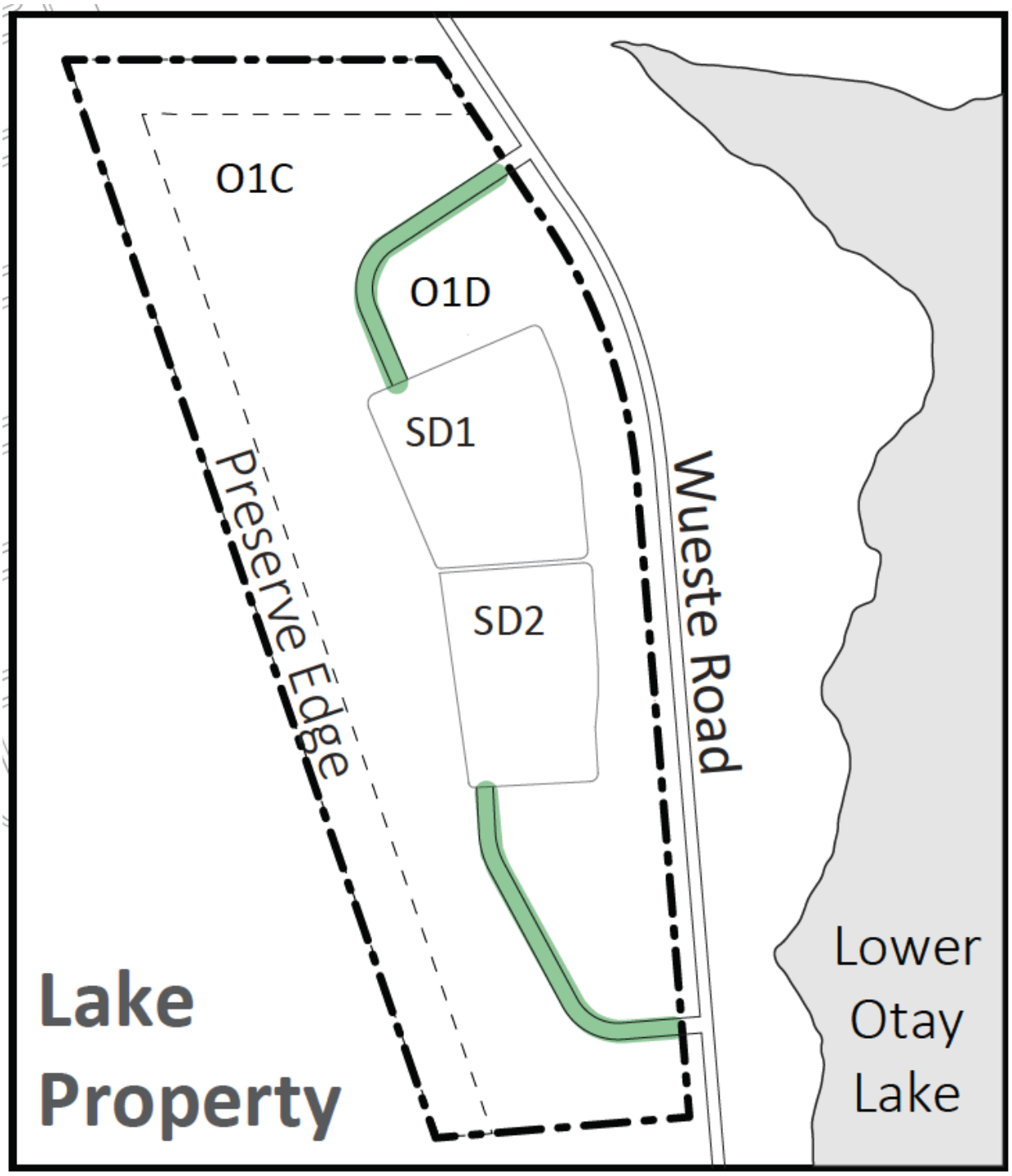

EXHIBIT 4.1.10: UID STREET MAP (DETAIL)

(Source: UID SPA Plan, November 2017, Figure 4G)

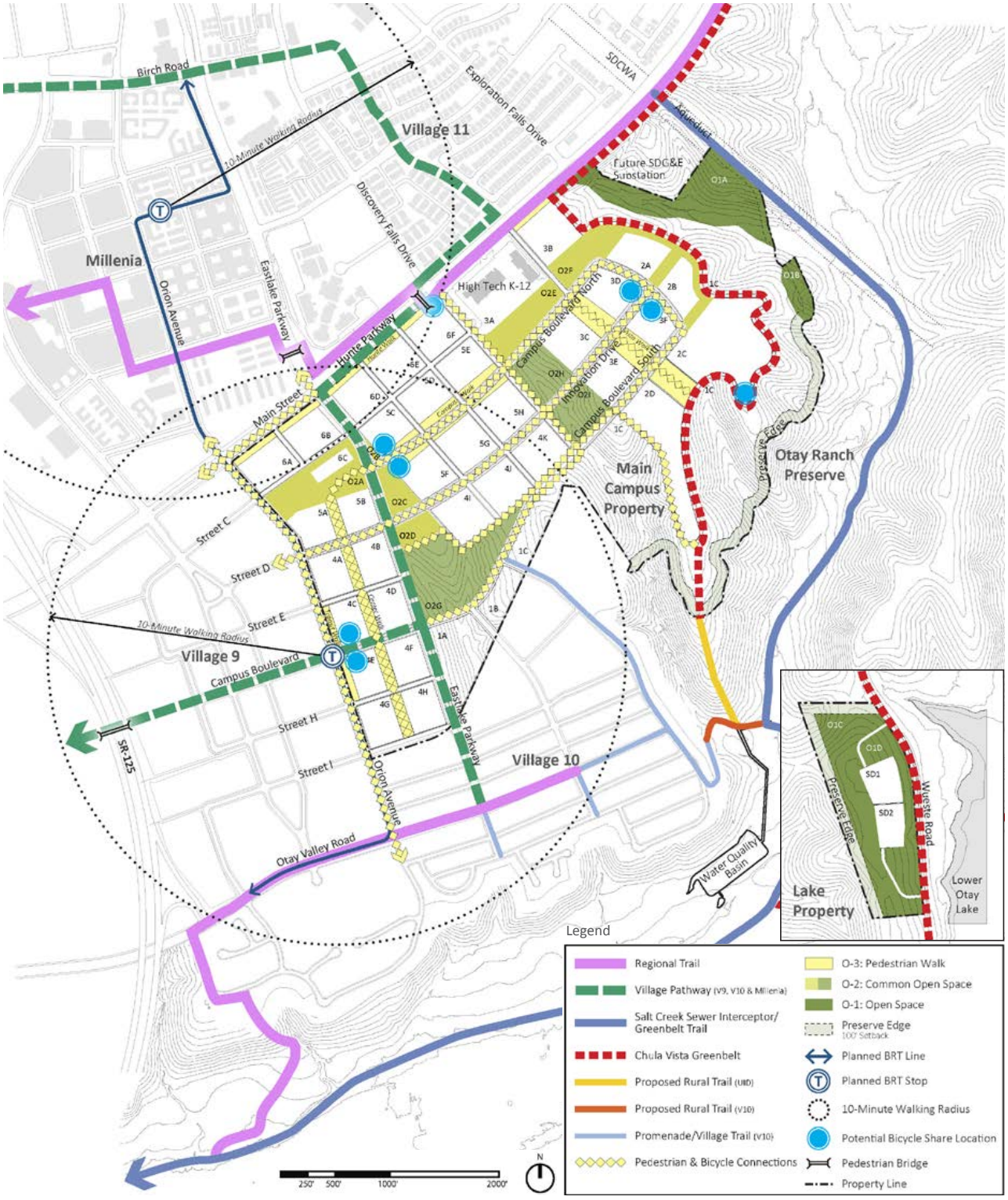

EXHIBIT 4.1.11: UID ON-SITE PEDESTRIAN AND BICYCLE PLAN

(Source: UID SPA Plan, July 2018, Figure 4F)

As is typical with development projects, the UID will develop in response to market conditions, with certain areas or certain land uses developing faster than others. Therefore, the interim year construction of boundary intersections and internal roads is not fully certain at this time. The City recommends that boundary intersections be constructed to their full proposed buildout geometry (curb-to-curb) when the connecting internal links are constructed. Future assessment may be required to determine when these connections need to be made, and the boundary intersections constructed, based on the UID's development pattern or as directed by the City Engineer. Due to the uncertainties related to the timing and location of the development in each respective phase, the City Engineer will determine if and when additional studies may be needed to update the assumptions and validate the PFFP EDU triggers. In addition, the City Engineer may amend the PFFP EDU triggers at his/her discretion unless stated otherwise in a development agreement.

The Developer shall construct or enter into an agreement to construct and secure, in accordance with Section 18.16.180 of the Municipal Code, the required street improvements, including traffic signals, prior to approval of the applicable subdivision of land that contains the cumulative PFFP EDU trigger.

C. TRANSIT FACILITIES

The Project will be served by a local bus system and the regional Bus Rapid Transit (BRT) system. The BRT is proposed to operate along Orion Avenue on the western edge of the UID Project. A BRT stop is proposed at the intersection of Orion Avenue and Campus Boulevard. The BRT will have traffic signal priority at all intersections. Construction of the transit lanes and the stop is the responsibility of the UID Developer and will be completed with the improvements to Orion Avenue and Campus Boulevard as those streets are triggered in Table 4.1.4.

D. THRESHOLD REQUIREMENTS

1. Threshold compliance will continue to be monitored through the annual Transportation Monitoring Program of the GMOC.

2. The Project shall be conditioned to pay Transportation Impact Fees and Traffic Signal Fees at the rate in effect at the time building permits are issued.

3. The Project shall be conditioned to complete or secure the completion of the transportation facilities (street segments and signalized intersections) according to the thresholds as described in Table 4.1.3 and the internal streets as described in Table 4.1.4 and shown on Exhibit 4.1.2, all to the satisfaction of the City Engineer.

Notwithstanding any threshold requirement stated above, the following general Project requirements shall apply:

1. The UID Developer shall dedicate the Bus Rapid Transit right-of-way and construct BRT lanes within the UID and dedicated right-of-way. Developer shall provide approved designs for the bus shelters with street improvement plans, and construct the shelters concurrently with the street improvements. Alternatively, the Developer may provide the City with a deposit in an amount for the design and construction cost for all shelters to be determined by the City Engineer.

2. The Developer shall build all roads surrounding open space and park sites.

3. The Developer shall secure and agree to construct all roads to their full-width cross section as described in the City of Chula Vista Subdivision Manual unless as previously noted.

4.1.6 COST AND FINANCING PROJECT TRAFFIC IMPROVEMENTS

A. STREET IMPROVEMENTS

Table 4.1.7 summarizes the various traffic improvements and cost of improvements either assumed to be constructed by others, recommended as Project direct impact mitigation measures, or are TDIF-eligible roads required for Project access or frontage requirements. Except for the Village Pathway pedestrian/bike bridge and Eastlake Parkway Hunte Parkway to Street I, these facilities are included in Chula Vista's Eastern Territories Transportation Development Impact Fee (TDIF) program.

TABLE 4.1.7
ESTIMATED COST OF MAJOR TRANSPORTATION IMPROVEMENTS

Facility	Improvement Description	Estimated Cost [a]
Heritage Road	Main Street south to City Limits (including bridge over Otay River)	$30,000,000
Heritage Road	Santa Victoria (Village 2) to Main Street as a six-lane Prime	$25,600,000
Main Street	Heritage Road to SR-125 as a six-lane Prime (including Wolf Canyon Bridge)	$77,800,000
Main Street	Construct from SR-125 to Eastlake Parkway as a six-lane Gateway	$5,500,000
SR 125 at Main Street	Construct bridge over SR-125 northbound and southbound interchange ramps	$31,400,000
Otay Valley Road	Construct from SR-125 to Orion Street as a four-lane Major	$5,000,000
SR-125 at Otay Valley Road	Construct bridge over SR-125 northbound and southbound interchange ramps	$25,700,000
Discovery Falls Drive	Construct from Hunte Parkway to Village 9 Street "B" as 4-lane collector transitioning to 2-lane collector	$9,600,000
Orion Avenue (Street "B")	Main Street to Otay Valley Road as Town Center Street (2-lane plus 2 lanes for BRT)	$5,000,000
Facility	**Improvement Description**	**Estimated Cost**
Village Pathway Pedestrian/Bike Bridge	Construct between UID and Eastlake Village 11	$4,000,000
Eastlake Parkway	Construct from Hunte Parkway Street to Street "I" as 2-lane collector	$4,000,000
Total		**$223,600,000**

a. *The amounts shown are estimates for illustrative purposes only and do not have any effect on the requirement to build the improvements. If necessary, for the continued issuance of building permits for the Project, the Developer may be required to build the improvements irrespective of the actual costs being higher or lower than the estimated cost given. Except for Village Pathway Bridge and Eastlake Parkway, all costs are derived from the September 2014 Eastern Territories TDIF report.*

B. TRANSPORTATION DEVELOPMENT IMPACT FEE (TDIF)

The UID is within the boundaries of the Eastern Territories TDIF program. As such, the UID development is subject to the payment of the fees at the rates in effect at the time building permits are issued. However, the improvements identified in Table 4.1.7 are required to be

constructed or bonded pursuant to the identified thresholds. A requirement to construct the facilities as a mitigation measure for a direct Project impact cannot be satisfied by paying the TDIF. The Developer's total fee obligation is based on the TDIF rates in effect at the time of issuance of building permits. Eligible construction costs in excess of the TDIF obligation may be credited against the Developer's future TDIF obligations pursuant to an audit. Table 4.1.8 presents the current TDIF fee schedule. The fee schedule may change from time to time as the City updates the TDIF program or approves cost escalation factors as provided in the program.

The TDIF program includes transportation facilities required to serve the UID. The TDIF included the EDU's for an 85-acre "Innovation District" portion of the Project which were anticipated to pay the TDIF and are included in the TDIF calculations updated in September 2014. However, the new TDIF fee calculations exclude the EDU's contained within the proposed "University" portion of the Project, which will not pay the TDIF. The 2014 TDIF update added Discovery Falls Drive/Campus Boulevard and Orion Avenue (Street "B") to the TDIF program.

TABLE 4.1.8
TRANSPORTATION IMPACT FEE SCHEDULE

Land Use Classification	Typical Land Use Density	TDIF Rate	
Residential (Low) (per DU)	0–6 dwelling units per gross acre	$13,541	per DU
Residential (Medium) (0.8 EDU/DU)	6.1–18 dwelling units per gross acre	$10,832	per DU
Residential (High) (0.6 EDU/DU)	>18.1 dwelling units per gross acre	$8,142	per DU
Senior housing (8 EDU/acre)	>18 dwelling units per gross acre	$5,416	per DU
Residential mixed use (0.4 EDU/DU)	>18 dwelling units per gross acre	$5,416	per DU
Commercial mixed use	16 EDU/20 ksf	$216,656	per 20,000 sq. ft.
General commercial (per gross acre)	<5 stories in height (16 EDU/acre)	$216,656	per acre
Regional commercial (per gross acre)	>60 acres or 800 ksf (11 EDU/acre)	$148,951	per acre
High rise commercial (per gross acre)	>5 stories in height (28 EDU/acre)	$379,148	per acre
Office (per acre)	<5 stories in height (9 EDU/acre)	$121,869	per acre
Regional technology park (per gross acre)	8 EDU/acre	$108,328	per gross acre
Medical center (per gross acre)	65 EDU/acre	$880,165	per gross acre

Fees in effect September 27, 2016.

Table 4.1.9 summarizes the estimated TDIF revenues based on the UID's proposed development that is assumed would pay the TDIF according to the TDIF's September 2014 update. The table is provided to give a rough estimate of the revenues that may be expected from the UID Project for the TDIF program. The fee revenues may change depending on the actual number and type of market-rate dwelling units, the actual acreage for commercial and office land uses, and the TDIF rates in effect at issuance of building permits, which are subject to change on an annual basis to reflect construction cost indices and from program revisions resulting from the 5-year updates. Final fee calculations will be known at the time building permits are applied for. Table 4.1.9 presents the TDIF at full buildout of the Project. Payment of the TDIF may be deferred until final inspection.

TABLE 4.1.9
ESTIMATED TDIF REVENUES

Development Type and Density of Residential	TDIF Rate	Unit	Number of Units [a]	Fee
Academic & Academic Support	$0	per acre	60	$0
On-site living (residential mixed-use)	$0	per DU	2,700 [b]	$0
Business Innovation (Regional Technology Park)	$108,328	per acre	85	$9,207,880
Commercial Mixed Use	$216,656	per 20,000 sq. ft.	10	$2,166,560
Market-Rate Housing assuming high density, over18 DU per acre	$8,124	per DU	2,000	$16,284,000
			TOTAL	**$27,658,440**

Estimated TDIF is based on the Development Checklist (Form 5509) revised 9/27/16 and subject to adjustment.

a. Acreages based on UID Final Site Utilization Plan, April 2016.

b. Student housing units based on 20,000 FTE students at buildout, 27% in residence, and assuming two students per unit. On-site student housing considered as "University portion" for purposes of the TDIF.

C. CREDIT FOR TDIF STREETS

The following road improvements that are required as mitigation for access and frontage direct impacts are eligible TDIF improvements and the construction of these improvements will accrue an Eastern Territories TDIF credit in accordance with City policy:

- Main Street from SR 125 to Eastlake Parkway
- Orion Avenue from Main Street to Otay Valley Road
- Discovery Falls Drive/Campus Boulevard from Hunte Parkway to Orion Avenue.

D. TRAFFIC SIGNAL FEE

Future development within the Project will be required to pay Traffic Signal Fees in accordance with Chula Vista Council Policy No. 475-01. The estimated total fee is shown in Table 4.1.10 and is calculated based on the current fee of $37.28 (per the Development Checklist dated September 27, 2016) per vehicle trip generated per day for various land use categories. The fee rate in effect at the time that building permits are issued will be the rate charged. The total fee may change depending on the actual number dwelling units, commercial land uses, and the fee rate in effect, which is subject to change due to program updates based on the changes in planned signal improvements and cost data for actual signal improvements. Final calculations will be known at time building permits are applied for.

TABLE 4.1.10
ESTIMATED TRAFFIC SIGNAL FEE REVENUE

Land Use	UID Gross Trips [a]	Traffic Signal Fee @ $37.28 per Trip
Research and Business Technology	14,400	$536,832
Commercial	12,000	$447,360
Market Rate Housing	8,000	$298,240
	34,400	**$1,282,432**

a. Not reduced by internal capture or transit trips.

Estimated fees are based on Development Checklist (Form 5509) revised 9/27/2016 and subject to adjustment from time to time.

All internal intersections will be constructed with signal conduits so that traffic signals can be constructed at a later date if warranted.

E. NON-TDIF STREETS AND SIGNALS

Signals located at the intersection of two non-TDIF public streets are not eligible for development impact fee credit and pursuant to City policy, will be funded by the development. Traffic signals installed at the intersection of a non-TDIF street and a TDIF street are eligible for a partial Traffic Signal Fee credit of up to 50% of the cost of the signal system. The partial fee credit would apply to traffic signals at the following UID intersections:

- Eastlake Parkway and Innovation Drive
- Eastlake Parkway and Campus Boulevard (2 intersections)

4.2 POLICE

4.2.1 THRESHOLD STANDARD

Threshold standards for police apply to response times to calls for service (CFS) of two priority levels. The following are the threshold standards that were newly adopted in 2015 for Priority 1 and Priority 2 calls.

Priority 1: Emergency Response: Emergency calls are life-threatening calls, felony in progress, probability of injury (crime or accident), robbery or panic alarms, or urgent cover calls from officers. Response: Immediate response by two officers from any source or assignment; immediate response by paramedics/fire if injuries are believed to have occurred.

Standard: Properly equipped and staffed police units shall respond to 81% of Priority 1 emergency calls throughout the city within 7 minutes 30 seconds and shall maintain an average response time to all Priority 1 emergency calls of 6 minutes or less (measured annually).

Priority 2: Urgent Response: Urgent calls are misdemeanor in progress, possibility of injury, or serious non-routine calls (domestic violence or other disturbances with potential for violence). Response: Immediate response by one or more officers from clear units or those on interruptible activities (traffic calls, field interviews, etc.).

Standard: Properly equipped and staffed police units shall respond to all Priority 2 urgent calls throughout the city within 12 minutes.

Note: For growth management purposes, response time includes dispatch and travel time to the building or site address, otherwise referred to as "received to arrive."

The adopted modifications involve the following changes in calculating and reporting response times:

- Calculating response time from the time the call was received in the Communications Center to the time that the first unit arrived on scene, or the "received-to-arrive" time.
- Elimination of the normalization adjustments of response times for CFS from the Eastern Territories which was used to account for geographic and land use conditions that tend to extend response times relative to times in the older areas of the city.
- Include false burglary alarms CFS in Priority 2 calculation.
- Increase the average response time threshold for Priority 1 CFS to 6 minutes.
- Increase the average response time threshold for Priority 2 CFS to 12 minutes.

4.2.2 SERVICE ANALYSIS

Chula Vista Police Department (CVPD) provides municipal law enforcement services in the city. The purpose of the threshold standard is to maintain or improve the current level of police services throughout the city by ensuring that adequate levels of staff and equipment are provided. Police threshold performance was first analyzed in the Report on Police Threshold Performance 1990–1999, completed April 13, 2000, and the original Growth Management Oversight Commission (GMOC) threshold standards were adopted. In response to CVPD and GMOC concerns, Police Department began a "top-to-bottom" review of the threshold standards for response times in 2013 and amended the threshold standards for police emergency response for the 2015 GMOC report.

4.2.3 PROJECT PROCESSING REQUIREMENTS

The PFFP is required by the Growth Management Program to address the following issues for police services:

1) Services reviewed must be consistent with the proposed phasing of the development project.

2) The project is able to demonstrate conformance with the Master Plan for the Chula Vista Civic Center dated May 8, 1989, as the Master Plan relates to police facilities, as amended unless stated otherwise in a development agreement.

4.2.4 EXISTING CONDITIONS

The CVPD provides law enforcement services to the area encompassing the University Innovation District. The department is located in its headquarters building at the corner of 4th Avenue and F Street in Chula Vista. This facility was completed in 2002 and is expected to be adequate through the buildout of Chula Vista. The UID is within CVPD Sector 3 patrol beat 32 (second beat in Sector 3). Generally, the CVPD Patrol Operations Division attempts to deploy one beat patrol unit to each of the 10 beats in the three CVPD sectors per shift.

POLICE FACILITY INVENTORY

- Police headquarters at 4th Avenue and F Street
- Storefront in Otay Ranch Town Center

4.2.5 ADEQUACY ANALYSIS

According to the Growth Management Oversight Commission (GMOC) Annual Report dated May 5, 2016, the response thresholds for Priority 1 CFS were not met during the threshold review period from July 1, 2014, to June 30, 2015 (see Table 4.2.1). The CVPD fell short of the Priority 1 CFS by 9.8%. The threshold for Priority 2 CFS during the same period was also not met. The Priority 2 threshold has not been met for 18 consecutive years (see Table 4.2.2; note: the table shows only data for 11 years).

According to the GMOC report, police response time is just one measure of how effective law enforcement services are in keeping pace with growth. The City has implemented measures in an attempt to improve police response times. These measures include better education and communication within the CVPD regarding the GMOC threshold standards, as well as utilization of technological advances. Two measures that relate to the ability of the CVPD to maintain the quality of life and which are growth related are maintaining adequate staffing and reducing false alarms.

As Table 4.2.1 indicates, until the current threshold review period, the CVPD had made progress in reducing Priority 1 response times since FY 2004–05. Although the CVPD has engaged in several initiatives to extend the reduction in response times, the department reported to the GMOC that the drop below the threshold is due to chronic low staffing in the Patrol Division.

TABLE 4.2.1
HISTORIC RESPONSE TIMES
PRIORITY 1 -- EMERGENCY RESPONSE, CALLS FOR SERVICE

	Call Volume	Percentage of Call Response within 7:30 Minutes	Average Response Time (old methodology)*	Average Response Time (new methodology)
Threshold Standard		**81.0%**	**5:30**	**6:00**
FY 2014–15	675 of 64,008	71.2%	5:17	6:49
		Percentage of Call Response within 7 Minutes	**Average Response Time (old methodology)**	**Average Response Time (new methodology)**
Threshold Standard		**81.0%**	**5:30**	**6:00**
FY 2013–14	711 of 65,645	79.3%	4:57	6:45
FY 2012–13	738 of 65,741	81.5%	4:57	6:42
FY 2011–12	726 of 64,386	78.4%	5:01	6:31
FY 2010–11	657 of 64,695	85.7%	4:40	6:03
FY 2009–10	673 of 68,145	85.1%	4:28	5:50
FY 2008–09	788 of 70,051	84.6%	4:26	5:58
FY 2007–08	1,006 of 74,192	87.9%	4:19	6:13
FY 2006–07	976 of 74,277	84.5%	4:59	5:52
FY 2005–06	1,068 of 73,075	82.3%	4:51	6:19
FY 2004–05	1,289 of 74,106	80.0%	5:11	6:37

** Old methodology criteria: Calculated from "route to arrive" rather than "received to arrived"*

Source: GMOC 2016 Annual Report for threshold review period 7/1/14 to 6/30/15

For the eighteenth consecutive year, the threshold standard for Priority 2 urgent response has not been met; this occurred even after the change in methodology. The CVPD attributes the increase in Priority 2 response times to low staffing in the Patrol Division.

The CVPD asserts that adequate staffing levels are crucial to meeting the existing Priority 2 threshold standard. Although this is a potential area of concern, this PFFP addresses facility threshold issues, not Police Department operations. As such, the cumulative mitigation measure for the Project's impacts on police facilities is payment of the Public Facility Development Impact Fee (PFDIF; see subsection 4.2.6). Pursuant to state law, the proceeds of the PFDIF may not be used for staffing or operations. The fee revenues may, however, be applied to capital improvements that serve to enhance operations and enable efficiencies that might mitigate staffing shortfalls to some extent.

TABLE 4.2.2
HISTORIC RESPONSE TIMES
PRIORITY 2 – URGENT RESPONSE, CALLS FOR SERVICE

	Call Volume	Average Response Time (old methodology)	Average Response Time (new methodology)
Threshold		**7:30**	**12:00**
FY 2014–15	17,976 of 64,008	11:35	13:50
FY 2013–14	17,817 of 65,645	11:26	13:36
FY 2012–13	18,505 of 65,741	11:37	13:44
FY 2011–12	22,121 of 64,695	11:54	14:20
FY 2010–11	21,500 of 64,695	10:06	12:52
FY 2009–10	22,240 of 68,145	9:55	12:40
FY 2008–09	22,686 of 70,051	9:16	12:00
FY 2007–08	23,955 of 74,192	9:18	12:07
FY 2006–07	24,407 of 74,277	11:18	14:21
FY 2005–06	24,876 of 73,075	12:33	15:28
FY 2004–05	24,923 of 74,106	11:40	14:38

Source: GMOC 2016 Annual Report, Annual Report for threshold review period 7/1/14 to 6/30/15

To further address response time and other police level of service issues, the CVPD retained the Matrix Consulting Group in February 2012 to undertake a comprehensive analysis of the department's staffing, workload, and best practices. A Phase One report that focuses on operational and staffing issues of the Patrol Division was completed in April 2012; the department is implementing the recommendations in the Phase One report. A first draft report of Phase Two of the study was submitted in October 2012, which covers the department's other divisions. One of the study's general findings is that the department should avoid an overemphasis on response times. CVPD response is strictly a measure of the department's ability to react, whereas the department should instead focus on increasing "proactive" patrol time in the community through appropriate changes in staffing and operational practices.

The CVPD indicated in the 2012 GMOC report that its current facilities, equipment, and staff are not able to accommodate citywide forecast growth and meet the threshold standards for the next 12 to 18 months. The department cited the elimination of the vehicle replacement fund as a factor that would impact the department's ability to fund other police programs. One-time funding was used to replace aging patrol vehicles and will be unavailable in the future. The department also indicated a lack of funding for needed upgrades to its computer-aided dispatch system and an inability to fund in-car video cameras and replacements for its mobile data computing system. Currently, the CVPD finds that it must divert funds from policing services in order to maintain its equipment. While operational and staffing costs are not eligible uses of development impact fee revenue, capital investments in equipment, vehicles, and technology are. The cost of these mission-critical elements should be fully evaluated in a future update of the Public Facilities Development Impact Fee (PFDIF).

The CVPD storefront office in the Otay Town Center Mall was opened in 2015. However, funding for the storefront is not ensured for every year. A permanent police facility in the Eastern Territories was first evaluated in 2005. There is currently no available funding source for such a facility. A major update to the PFDIF would be required in order to include the facility in the impact fee program.

4.2.6 FINANCING POLICE FACILITIES

The Public Facilities Development Impact Fee was updated and revised by the Chula Vista City Council on September 27, 2016. The PFDIF is adjusted approximately every October 1 pursuant to Ordinance 3050. The police component of the fee is shown in Table 4.2.3. The PFDIF is applied to the market-rate residential and the Innovation District development in the UID Project. This fee amount is subject to change as it is amended from time to time. The Project's final PFDIF obligation will be subject to the payment of the fee at the rate in effect at the time building permits are issued. At the current fee rate, the project police fee obligation at Project buildout is $3,606,064.

TABLE 4.2.3
UID PUBLIC FACILITIES FEES FOR POLICE

Market-rate (units)	Innovation District (acres)	Single-Family $1,760 per DU	Nonresidential $1,793 per Acre	Total
2,000	48	$3,520,000	$86,064	$3,606,064

Fee based on Form 5509 dated 9/27/2016. Actual fee may be different and will be determined by the City of Chula Vista at the time of building permit issuance. The PFDIF is subject to change as it is amended from time to time. Changes in the number of dwelling units or the amount of commercial acreage may affect the estimated fee.

4.2.7 THRESHOLD COMPLIANCE AND REQUIREMENTS

Police response time thresholds for Priority 1 and Priority 2 calls for service were not met during the most recent GMOC threshold review period. However, response times to Priority 2 calls alone are not the only indicator of the CVPD's capacity to provide adequate services. Notwithstanding the department's effort to reduce response times and increase proactive patrol time, the Project developers and the CVPD must comply with the following requirements:

1) Prior to the approval of each building permit, unless stated otherwise in a development agreement, the City of Chula Vista, or its successors in interest, shall pay Public Facilities Development Impact Fees (PFDIF) for police facilities at the rate in effect at the time building permits are issued.

2) The City will continue to monitor police responses to calls for service in both the emergency (Priority 1) and urgent (Priority 2) categories and report the results to the GMOC on an annual basis.

3) Prior to approval of each design review permit, site plans shall be reviewed by the CVPD (or their designee) to ensure the incorporation of crime prevention through environmental design (CPTED) features and other recommendations of the CVPD, including, but not limited to, including controlled access points to parking lots and buildings; maximizing the visibility along building fronts, sidewalks, pedestrian walks, and public parks and private open space; and providing adequate street, parking lot, and parking structure lighting.

4.3 FIRE AND EMERGENCY MEDICAL SERVICES

4.3.1 THRESHOLD STANDARD

The Chula Vista Growth Management Program quality of life threshold standards for fire and emergency medical services are found in Chula Vista Municipal Code Section 19.09.040.B: "Emergency response: Properly equipped and staffed fire and medical units shall respond to calls throughout the City within seven minutes in at least 80 percent of the cases."

4.3.2 SERVICE ANALYSIS

The Chula Vista Fire Department (CVFD) provides fire and emergency medical services (EMS). EMS is provided on a contract basis by American Medical Response. The City also has countywide mutual and automatic aid agreements with surrounding agencies, should the need arise for their assistance. The purpose of the threshold standard and the monitoring of response times is to maintain and improve the current level of fire protection and EMS in the city. The Chula Vista City Council adopted a Fire Facility, Equipment, and Deployment Master Plan on January 28, 2014. The plan recommended locations, staffing levels, and equipment for proposed new stations in Chula Vista's Eastern Territories.

4.3.3 PROJECT PROCESSING REQUIREMENTS

The City, at its sole discretion unless stated otherwise in a development agreement, determines when a new fire station is required in order to achieve threshold service levels, meet specific project guidelines, or maintain general operational needs of the CVFD.

The requirement to pay for fire station construction and related equipment to serve new development projects in general is the responsibility of the developers of said projects. For any given project, construction and equipping of a specific fire station may be a direct impact requiring mitigation, depending on the extent of the impact. A project that would cause response times to exceed threshold standards may be obligated to construct a station or dedicate land. The City may require the developer to enter into an agreement that guarantees the completion of the obligations.

The City of Chula Vista requires all SPA Plans to address fire/EMS and the facilities needed to provide these services. The following are some of the issues that must be addressed relative to fire/EMS facility needs:

1) Specific siting of the needed facilities takes place in conformance with adopted Fire Master Plans or as stated in a development agreement

2) Equipment needs

3) Methods of financing equipment and facilities

4) Timing of construction consistent with the threshold service levels (may require a "trigger analysis" to be performed by a third-party expert to dictate and justify the timing for the requisite fire facilities)

5) Specific project guidelines and/or general operational needs of the CVFD

4.3.4 EXISTING CONDITIONS

Nine fire stations currently serve the City of Chula Vista. The existing station network is listed in Table 4.3.1.

TABLE 4.3.1
CURRENT AND PLANNED FIRE STATION FACILITIES

Station	Location	Equipment	Staffing
Current		**Fire Station Facilities**	
Station 1	447 F Street Chula Vista, CA 91910	Engine 51/Truck 51 Battalion 51	Assigned: 24 On Duty: 8
Station 2	80 East J Street Chula Vista, CA 91910	Engine 52/Reserve 52	Assigned: 9 On Duty: 3
Station 3	1410 Brandywine Avenue Chula Vista, CA 91911	Urban Search and Rescue unit (USAR) 53/ USAR Tender & Trailer	Assigned: 12 On Duty: 4
Station 4	850 Paseo Ranchero Chula Vista, CA 91910	Engine 54	Assigned: 9 On Duty: 3
Station 5	391 Oxford Street Chula Vista, CA 91911	Engine 55/Reserve 53	Assigned: 9 On Duty: 3
Station 6	605 Mt. Miguel Road Chula Vista, CA 91914	Engine 56/Brush Engine 56	Assigned: 9 On Duty: 3
Station 7	1640 Santa Venetia Road Chula Vista, CA 91913	Engine 57/Ladder Truck 57 Battalion 52	Assigned: 24 On Duty: 8
Station 8	1180 Woods Drive Chula Vista, CA, 91914	Engine 58	Assigned: 9 On Duty: 3
Station 9	266 E. Oneida Street Chula Vista, CA 91911	Engine 59	Assigned: 9 On Duty: 3
Planned [a]		**Fire Station Facilities**	
Station 10	Eastern Urban Center Hunte Parkway/ Eastlake Parkway	EUC Engine/EUC Truck	TBD
Station 11[b]	Chula Vista Bayfront: Bay Blvd. & J Street	Bayfront Engine/Bayfront Truck	TBD
Station 12	Village 8 West: La Media/Main Street	Village Engine	

Source: CVFD website, accessed on 11/6/2016

a. *Facilities planned and recommended in the adopted CVFD Facilities, Equipment, and Deployment Master Plan.*

b. Chula Vista Bayfront Master Plan and Port Master Plan Amendment Revised Draft EIR SCH#2005081077 (Station 11).

4.3.5 ADEQUACY ANALYSIS

The Chula Vista Fire Department currently serves areas within the city's boundaries. The CVFD stations closest to the UID SPA Plan site are:

- Fire Station 6, located at 605 Mt. Miguel Road in San Miguel Ranch
- Fire Station 7, located at 1640 Santa Venetia Road in Village 2
- Fire Station 8, located at 1180 Woods Drive in Eastlake III
- Planned Fire Station 10 in the Eastern Urban Center
- Planned Fire Station 12 in Village 8 West

The fire/EMS response time threshold of 80% of call responses at or below 7 minutes was not met for the latest Growth Management Oversight Commission (GMOC) report dated May 2016 for the threshold review period from July 1, 2014, to June 30, 2015. The threshold hasn't been met for five consecutive periods, although the percentage of calls responded to within 7 minutes has increased over the last 3 years.

The CVFD reports that its aging reserve engine fleet is beginning to hinder the department's performance capabilities. The older fleet has smaller engines, older suspension, and smaller brakes, all of which may reduce the department's ability to respond adequately.

American Medical Response (AMR) currently provides emergency medical services to the Project site on a contract basis for the City of Chula Vista. The GMOC report states that the AMR overall response times are slower than CVFD response times.

TABLE 4.3.2
FIRE/EMS – EMERGENCY RESPONSE TIMES

Review Period	Call Volume	Percentage of All Call Response within 7 minutes (GMOC threshold: 80%)	Average Response Time for All Calls	Average Travel Time
FY 2014–15	12,561	78.3%	6:14	3:51
FY 2013–14	11,721	76.5%	6:02	3:34
FY 2012–13	12,316	75.7%	6:02	3:48
FY 2011–12	11,132	76.4%	5:59	3:43
FY 2010–11	9,916	78.1%	6:46	3:41
FY 2009–10	10,296	85.0%	5:09	3:40
FY 2008–09	9,363	84.0%	4:46	3:33
FY 2007–08	9,883	86.9%	6:31	3:17
FY 2006–07	10,020	88.1%	6:24	3:30
FY 2005–06	10,390	85.2%	6:43	3:36
FY 2004–05	9,907	81.6%	7:05	3:31
FY 2003–04	8,420	72.9%	7:38	3:32
FY 2002–03	8,088	75.5%	7:35	3:43
FY 2001–02	7,626	69.7%	7:53	3:39
FY 2000–01	7,128	80.8%	7:02	3:18

Source: GMOC 2016 Annual Report for the 7/1/2014 to 6/30/2015 reporting period

The response times performance for just the Eastern Territories is markedly slower than for the city as a whole as shown in Table 4.3.3.

TABLE 4.3.3
FIRE/EMS – EMERGENCY RESPONSE TIMES IN EASTERN CHULA VISTA

Review Period	Call Volume	Percentage of All Call Response Within 7 Minutes (GMOC Threshold: 80%)	Average Response Time for All Calls	Average Travel Time
FY 2014–15	2,014	58.4%	7:48	4:53
FY 2013–14	1,890	52.7%	7:15	4:33
FY 2012–13	1,976	54.3%	7:06	4:48

Locating the new stations as planned in the Eastern Urban Center and/or in Village 8 West would significantly improve response times to the Project.

4.3.6 FINANCING FIRE SERVICE FACILITIES

The Public Facilities Development Impact Fee (PFDIF) was last updated by the Chula Vista City Council on September 27, 2016. The PFDIF is adjusted approximately every October 1 pursuant to Ordinance 3050. The Project will be subject to the payment of the fee at the rate in effect at the time building permits are issued. At the current fee rate, the project fire fee obligation at Project buildout is $2,975,104.

TABLE 4.3.4
UID PUBLIC FACILITIES FEES FOR FIRE/EMS FACILITIES

Market-rate (units)	Innovation District (acres)	Fire/EMS Component Fee		
		Single-Family $1,469 per DU	Nonresidential $773 per Acre	Total
2,000	48	$2,938,000	$37,104	$2,975,104

Estimates based on Form 5509 dated 9/27/16. Fees are subject to change depending on rate in effect at the time of issuance of building permits, number of dwelling units, and nonresidential acreage.

Table 4.3.4 is an estimate; actual fees may be different. Public Facilities Development Impact Fees are subject to change depending on City Council actions and/or developer actions that change residential densities and nonresidential acreages. The final obligation for the PFDIF will be subject to the rates in effect at the time building permits are issued.

4.3.7 THRESHOLD COMPLIANCE AND RECOMMENDATIONS

1) The Project shall comply with the approved Fire Protection Plan
2) Offsite construction, staffing and operation of planned fire facilities shall be completed to meet: (1) GMOC and (2) Chula Vista Fire Department Response Time Thresholds.
3) Based upon the Fire Protection Plan (FPP) modelling, Fire Station Seven can serve a small portion of the UID within five minutes for the Initial Attack Force (IAF). Further, the Effective Firefighting Force (EFF) can't be met without the addition of the Millenia Fire Facility. It is anticipated that the Millenia Fire Facility will be built and operating prior to UID development. In the case that the Millenia Fire Facility isn't built/ operational (and due to not being able to meet the EFF), UID development can only occur on the parcel(s) that Fire Station Seven can respond to within five minutes (until the Millenia Fire Facility is built/ operational)
4) The City will continue to monitor Fire Department responses to emergency fire and medical calls and report the results to the GMOC on an annual basis.

5) The City of Chula Vista, or its successors in interest, shall pay public facilities fees at the rate in effect at the time building permits are issued.

6) Fire Code Compliance: Prior to the approval of each building permit and to the satisfaction of the City of Chula Vista Fire Marshal, the Project shall meet the provisions of the current City-adopted California Fire Code and GMOC ordinance. In meeting said provisions, the Project shall meet the minimum fire flow requirements based on construction type and square footage. The Project's water utilities and appurtenances shall provide the fire flow requirements of the California Fire Code and City of Chula Vista Municipal Code.

7) The Fire Marshal shall have the sole discretion to grant exceptions to the Fire Code based on adequate alternative means and materials. Such alternatives may require third-party technical review at the Project permit phase.

8) The City shall review the PFDIF for fire/EMS to ensure that new development is funding its fair share of these facilities.

4.4 SCHOOLS

4.4.1 THRESHOLD STANDARD

The City annually provides the Chula Vista Elementary School District and the Sweetwater Union High School District with a 12- to 18-month development forecast and requests an evaluation of the districts' ability to accommodate the forecast and continuing growth. The districts' replies should address the following:

1) Amount of current capacity now used or committed.

2) Ability to absorb forecast growth in affected facilities.

3) Evaluation of funding and site availability for projected new facilities.

4) Other relevant information the districts desire to communicate to the City and the Growth Management Oversight Commission (GMOC).

4.4.2 SERVICE ANALYSIS

The Chula Vista Elementary School District (CVESD) administers education for kindergarten through sixth grade. The Sweetwater Union High School District (SUHSD) administers education for the junior/middle and senior high schools in a large area, which includes Chula Vista and National City. The purpose of the threshold standard for schools is to ensure that the districts have the necessary school sites and funds to meet the needs of students in newly developing areas in a timely manner and to prevent the negative impacts of overcrowding on existing schools. Through the provision of development forecasts, school district personnel can plan and implement school facility construction and program allocation in line with development.

On November 3, 1998, California voters approved Proposition 1A, the Class Size Reduction Kindergarten-University Public Education Facilities Bond Act of 1998. Prior to the passage of Proposition 1A, school districts relied on statutory school fees established by Assembly Bill 2926 (School Fee Legislation), which was adopted in 1986, as well as judicial authority (i.e., Mira-Hart-Murrieta court decisions) to mitigate the impacts of new residential development. In a post–Proposition 1A environment, the statutory fees (Level I school fees) provided for in the School Fee Legislation remain in effect, and any mitigation requirements or conditions of approval not memorialized in a mitigation agreement prior to July 23, 2000, have been replaced by an Alternative Fee schedule (also referred to as Level II and Level III fees). The Level I fees are currently $3.39 per square foot for new residential construction and $0.55 per square foot for new commercial and industrial construction. These fees were published by the State Allocation Board on February 25, 2016. Pursuant to Government Code Section 65995(b)(3), the State Allocation Board is required to increase Level I fees every even year according to an established inflation adjustment. The Level I fees are shared between the CVESD and the SUHSD through a fee-sharing agreement.

The CVESD uses its most recent School Facilities Needs Analysis (SFNA) dated June 2011, to quantify, for the next 5-year period, the impacts of new residential development on the district's school facilities and to calculate the permissible Alternative Fees to be collected from such new residential development. To ensure the timely construction of school facilities to house students from the residential development in the University Innovation District, alternative fees or implementation of a Mello-Roos Community Facilities District (CFD) will be necessary.

In compliance with California Government Code Section 65995(c) et seq., the SFNA determines the eligibility for and the calculation of a Level II fee. The formula for calculating the Level II fee can be generally described as the number of unhoused students identified in the SFNA, multiplied by the per pupil grant amount, plus 50% of the sum of site acquisition and development costs, less surplus property or proceeds thereon, if any, less local funds dedicated for facilities construction, divided by the projected total square footage of residential units anticipated to be constructed during the next 5 years. A corresponding Level III fee can generally be described as being equal to twice the Level II fee plus the full amount of local funds dedicated by the district to provide school facilities to accommodate students generated from new growth, including any commercial and industrial fees collected.

The SUHSD uses its current Long Range Comprehensive Master Plan (LRCMP, similar to a SFNA) dated July 20, 2004 to anticipate and locate future school facilities, plan for land acquisition and capital improvements. Implementation of the SUHSD's LRCMP is ongoing and has resulted in the identification of older schools to be upgraded and in the accommodation of continuing growth. In recognition of the impact on school facilities from new development, the SUHSD and the development community have entered into various mitigation agreements in order to ensure the timely construction of school facilities to house students from such new development. The primary financing mechanism authorized in these mitigation agreements is the formation of CFDs. For this reason, developments that have been mitigated by the formation of a Community Facilities District have been excluded from the projections contained in the LRCMP dated March 11, 2011.

4.4.3 PROJECT PROCESSING REQUIREMENTS

The PFFP is required by the Growth Management Program to address the following issues for School Services:

1) Identify student generation by phase of development.
2) Site proposed school facilities in conformance with the Sweetwater Union High School District's Long Range Comprehensive Master Plan, July 2004, and the Chula Vista Elementary School District's Standards and Criteria.
3) Reserve school sites, if necessary, or coordinate with the district for additional school classrooms.
4) Provide cost estimates for facilities.
5) Identify facilities consistent with proposed phasing.
6) Demonstrate the ability to provide adequate facilities to access public schools in conjunction with the construction of water and sewer facilities.
7) Secure financing.

4.4.4 EXISTING CONDITIONS

SCHOOL FACILITIES INVENTORY, CHULA VISTA ELEMENTARY SCHOOL DISTRICT

Currently, the CVESD's inventory consists of 45 elementary schools, including 6 charter schools. Exhibit A-2 of the district's SFNA lists available capacity in May 2011 as 28,268 students. Capacity using existing facilities is approximately 29,212. Projected enrollment for October 2010 was 27,484. Generally, there is sufficient capacity throughout the district at this time to accommodate additional students.

SCHOOL FACILITIES INVENTORY, SWEETWATER UNION HIGH SCHOOL DISTRICT

The SUHSD currently administers 1 junior high, 10 middle schools, 12 comprehensive high schools, 1 continuation high school, 7 alternative education academies, and 4 adult education centers.

District-wide student enrollment is stable. According to the district, the UID is within the attendance areas for Eastlake Middle School and the Olympian High School.

4.4.5 SCHOOL SIZING AND LOCATION

The UID Project proposes 2,000 market-rate dwelling units at buildout.[1] The proposed Project would generate approximately 1,706 students using the following student generation factors:

Elementary School	0.4114 students per dwelling unit of attached cluster and detached single-family[2]
Middle School (7–8)	0.1188 students per dwelling unit of attached, cluster, and detached single-family
High School (9–12)	0.2132 students per dwelling unit of attached, cluster, and detached single-family

By phase and school category, the high-density plan is expected to generate students as shown in Table 4.4.1.

TABLE 4.4.1
STUDENT GENERATION

Elementary School (K–6)	Middle School (7–8)	High School (9–12)	Total Students
823	238	426	1,487

SCHOOL SIZE STANDARDS

- Elementary school: 750–1,000 students
- Middle school: 1,200 students
- High school: 2,400 students

Chula Vista Elementary School District

The Project will generate an estimated 823 elementary school students. Two elementary school sites have been reserved in the adjacent Village 9 development, which is projected to generate 890 elementary school students. To fulfill the elementary school space needs of both Village 9 and the University Innovation District, both Village 9 school sites may be developed at the discretion of the CVESD. Each site is large enough to accommodate approximately 750 students. The decision on which site, if either, to acquire and commence construction is solely the district's. Until such time that the schools are completed, any students residing in the UID may attend schools in Eastlake Village 11 and/or the planned elementary school in the Eastern Urban Center (Millenia).

[1] For purposes of elementary and secondary student generation, the UID student residential units are not considered.
[2] Includes apartment and condominium units.

The CVESD relies heavily on local funding to finance the construction of school facilities. In the last several years, the district has been deemed ineligible to receive any monies from the State to construct new schools. Based on the projected development set forth in the GMOC forecast and current eligibility determinations by the Office of Public School Construction, the district does not anticipate that additional state funding will be forthcoming for at least the next 3–5 years. With state funding in doubt, in addition to the increased costs associated with school construction and land acquisition, the future will be difficult insofar as new school construction projects are concerned. The City of Chula Vista, or its successor in interest, will satisfy its obligation to mitigate the Project's impact on school facilities through the payment of statutory school fees as required under state law.

Sweetwater Union High School District

The maximum capacity of a middle school is approximately 1,200 students. It is anticipated that the approximately 238 middle school students generated by the UID will likely attend either the planned middle schools located in Eastlake Village 11 or in Otay Ranch Village 8 West, scheduled to open in July 2019.

The UID will generate an estimated 426 high school students. These students will likely attend Olympian High School, located in Village 7 less than one-half mile from the Project. The district is beginning construction of high school No. 14 at the northeast corner of Eastlake Parkway and Hunte Parkway, which when completed, will be the home school for the UID. Also located within the Project site is the High Tech High Charter School, which represents potential capacity for high school students. Overall, the district has identified the need to acquire a 25- to 50-acre site to accommodate all projected future growth.

4.4.6 FINANCING SCHOOL FACILITIES

California Government Code Section 65995 et seq. and Education Code Section 17620 et seq. authorize school districts to impose facility mitigation exactions on new development as a way to address increasing enrollment caused by that development.

Although the collection of school fees is one method available to defray the cost of new development, it is not a complete solution since the maximum amount that could be collected by law typically represents less than one-fourth the cost to construct schools. The SUHSD is unable to meet the needs of projected development in the area with its current high school facilities and it is unable to construct new facilities to meet the anticipated impacts of the UID and other projects through reliance on Level I fees. In recognition of this funding deficiency, it is the policy of each district to fully mitigate the facility impacts caused by large-scale residential development via the creation of Mello-Roos CFDs. Formation of or annexation to a CFD is typically accomplished prior to recordation of a final map. The use of CFDs as a mechanism to meet a project's school mitigation requirement is strictly optional on the part of the project's developer and may not be made a condition of approval. The following Mello-Roos districts have been created by each district:

TABLE 4.4.2
COMMUNITY FACILITY DISTRICT BY DEVELOPMENT

SUHSD	
CFD Number	**Location**
1	Eastlake
2	Bonita Long Canyon
3	Rancho del Rey
4	Sunbow
5	Annexable
6	Otay Ranch
7	Rolling Hills Estate
8	Coral Gate (Otay Mesa)
9	Ocean View Hills
10	Remington Hills/Annexable
11	Lomas Verdes
12	Otay Ranch (Village 1 West)
13	San Miguel Ranch
14	Otay Ranch Village 11

CVESD	
CFD Number	**Location**
1	Eastlake
2	Bonita Long Canyon
3	Rancho del Rey
4	Sunbow
5	Annexable
6	Otay Ranch
10	Annexable for future annexations
11	Otay Ranch (Lomas Verde)
12	Otay Ranch (Village 1, West)
13	San Miguel Ranch
14	Otay Ranch Village 11 (Brookfield/Shea)
15	Otay Ranch Village 6 (ORC)

Based on data found in the CVESD's SFNA or SUHSD's LRCMP, an estimate of costs for the construction of school facilities on a per student basis is provided below. Both districts follow state standards for determining the costs for and size of school construction.

Elementary School Cost

- 800 students × $27,300 per student excluding land cost $21,800,000
- 800 students × $36,500 per student including land cost $29,150,000

Middle School Cost

- 1,500 students × $29,900 per student excluding land cost $44,900,000
- 1,500 students × $40,300 per student including land cost $60,485,000

High School Cost

- 2,400 students × $33,300 per student excluding land cost $79,900,000
- 2,400 students × $46,400 per student including land cost $111,400,000

4.4.7 THRESHOLD COMPLIANCE AND RECOMMENDATIONS

Prior to the issuance of each building permit, the City of Chula Vista, or its successor in interest, shall obtain evidence of certification by the CVESD and the SUHSD that any fee, charge, dedication, or other mitigation measure, including establishment of an acceptable school financing mechanism, has been complied with, or that the districts have determined that the fee, charge, dedication, or other measure does not apply to the proposed construction for which the permit is being issued.

4.5 LIBRARIES

4.5.1 THRESHOLD STANDARD

In the area east of Interstate 805, the City is to construct, by buildout (approximately the year 2030), 60,000 gross square feet (GSF) of library space beyond the citywide GSF total in June 30, 2000. The construction of these facilities will be phased such that the City will not fall below the Growth Management Oversight Commission (GMOC) threshold standard ratio of 500 GSF per 1,000 residents.[1] Library facilities are to be adequately equipped and staffed.

4.5.2 SERVICE ANALYSIS

The City of Chula Vista Library Department provides library facilities.

4.5.3 PROJECT PROCESSING REQUIREMENTS

The PFFP is required by the Growth Management Program (GMP) to address the following issues for library services:

1) Identify phased demands in conjunction with the construction of streets and water and sewer facilities.

2) Identify specific facility sites in conformance with the Chula Vista Library Master Plan.

4.5.4 EXISTING CONDITIONS

The City provides library services through the Chula Vista Public Library at Fourth Avenue and F Street (Civic Center), the South Chula Vista Library in the Montgomery/Otay planning area, and the Otay Ranch Town Center site. The Castle Park and Woodlawn branch libraries and the public library operation at Eastlake High School have been closed. The current libraries are listed in Table 4.5.1.

TABLE 4.5.1
CURRENT LIBRARY FACILITIES

Current Libraries	Square Footage
Civic Center Branch	55,000
South Chula Vista Branch	37,000
Otay Ranch Town Center	3,412
Total Existing Square Feet	**95,412**

[1] The GMOC threshold of 500 gross square feet per 1,000 residents is stated in the Chula Vista Municipal Code (Section 19.09.040.C). Construction of library space is to be phased such that the city does not fall below this threshold. However, the Chula Vista Public Facilities Development Impact Fee program uses a "service standard" of 600 GSF per 1,000, which is the target or desired standard to be achieved at buildout of the city. The Library Strategic Vision Plan recommends a range of 500 to 700 gross square feet.

4.5.5 ADEQUACY ANALYSIS

The 1998 Chula Vista Library Master Plan update addressed such topics as library siting and phasing, the impacts of new technologies on library usage, and floor space needs. The plan called for the construction of a full-service regional library of approximately 30,000 square feet in the Rancho del Rey area and the construction of a second full-service regional library of similar size in the Otay Ranch Eastern Urban Center (EUC). The City submitted applications for grant funding for the Rancho del Rey library in all three rounds of the highly competitive State Library Bond Act of 2000 administered by the California State Library (aka Proposition 14), but the City did not receive an award. The Rancho del Rey branch library was subsequently put on hold.

The City completed a Library Strategic Vision Plan dated February 2014. The plan recommended that adding a third destination library, to be located in eastern Chula Vista, would be the most cost-effective way to meet the threshold standard for library space in the city from the standpoint of both capital and operating costs. The plan indicates that a new destination library should be located convenient to State Route (SR) 125, preferably on the east side of the freeway. In addition to sufficient capacity for the library building and parking, characteristics of a successful library site include a high profile location along a well-traveled route, close to other community amenities and accessible by public transit. A single new destination library could also be developed in phases, which would provide the ability to begin project implementation sooner, rather than waiting until funding accrues for the full project.[2]

Table 4.5.2 highlights existing plus forecast project demands for library space as compared to existing and currently planned library space. These calculations show that there will be a deficit of library space even after the new facilities are opened.

TABLE 4.5.2
FORECAST LIBRARY SPACE DEMAND VS. SUPPLY

	Population [a]	Demand Square Footage [b]	Existing and Planned Supply Square Footage	Above/(Below) Standard
Estimated Existing Citywide Population	265,100	132,600	95,412	(37,188)
Planned expansion of Otay Town Center Branch			2,000	
Future Branch Library (Phase 1)			30,000	
Future Branch Library (Phase 2)			10,000	
Forecast Population to 2021	22,800	14,000		
Projected in 2021	**287,900**	**146,000**	**137,412**	**(8,588)**

a. California Department of Finance estimate, January 1, 2016

b. Based on 500 gross square feet per 1,000 residents

[2] The City has an agreement with McMillin Companies to operate a branch library in a 30,000-square-foot space in the 210-acre mixed-use Millenia development. The development timeline for the phase that includes the proposed library has not yet been confirmed.

The 2016 Annual GMOC Report points out that, for the twelfth consecutive year, the City has not complied with the threshold standard of providing 500 gross square feet of library facilities per 1,000 residents. The existing gross library floor area service ratio is 360 square feet per 1,000 residents. The ratio is projected to fall to 331 square feet per 1,000 residents in fiscal year 2021, if the planned facilities in Table 4.5.2 are not brought online. If all planned facilities are opened, the ratio improves to 477 square feet per 1,000 but is still deficient.

The Library Threshold Standard Implementation Measure requires that the City Council "formally adopt and fund tactics to bring the library system into conformance, and that construction, or another actual solution, shall be scheduled to commence within 3 years of the threshold not being satisfied." The deficiency of total library space is only one indicator of more pressing constraints that have been identified in GMOC reports and the adopted Library Strategic Vision Plan, including but not limited to the following:

- Lack of conveniently located facilities to serve the east side of Chula Vista (the most significant influencing factor on library use is proximity of the facility to the user)
- Reduction in library hours as the result of budget cutbacks
- Adequate computer facilities, both equipment and infrastructure quality at the Civic Branch, and the number of stations, as well as speed of connection at all library facilities

Not only is the library system experiencing significant issues due to a lack of available square footage (i.e., a failure to meet the threshold), the city's libraries are experiencing customer service issues directly related to branch locations, hours, and equipment availability and quality.

Based on a population projection of 6,000[3] the Project will generate a demand for 3,000 gross square feet of additional library space. This space need, if not mitigated in the UID, will add to the projected library services deficit.

4.5.6 FINANCING LIBRARY FACILITIES

The Public Facilities Development Impact Fee (PFDIF) was last updated by the Chula Vista City Council on September, 27, 2016. The PFDIF is adjusted approximately every October 1 pursuant to Ordinance 3050. The library component of the fee for both single-family and multi-family development is $1,671 per residential unit.[4] This amount is subject to change as it is amended from time to time. The Project will be subject to the payment of the fee at the rate in effect at the time building permits are issued. At the current fee rate, the estimated library fee obligation at UID buildout is $3,342,000.

TABLE 4.5.3
LIBRARY FEE FOR UID

Market-Rate Units	Library Fee at $1,671 per Dwelling Unit
2,000	$3,342,000

The projected fee per dwelling unit illustrated in Table 4.5.3 is the current rate, and may be subject to change by action of the City Council by the time building permits are pulled. The total fee revenue is dependent on final residential densities and density transfers, if any.

[3] Projection based on 3.0 persons per household for the proposed 2,000 units of market-rate housing.
[4] Fee based on Form 5509 dated September 27, 2016. The actual fee at the time of building permit issuance may be different. The applicant should verify the fee prior to obtaining building permits.

4.5.7 THRESHOLD COMPLIANCE AND RECOMMENDATIONS

In its 2016 Annual Report, the GMOC noted several initiatives to bring about compliance with the threshold. These initiatives include pursuing a doubling of the size of the proposed EUC branch library, converting the basement in the Civic Center main branch to usable space, and constructing a view-deck addition and other renovations to the main branch to maximize use of available space.

Based on the analysis in this section, the City's current library facilities (approximately 95,412 square feet) are currently approximately 37,188 square feet below the threshold standard (see Table 4.5.2).

Prior to the issuance of each building permit for residential dwelling units, unless stated otherwise in a development agreement, the City of Chula Vista, or its successor in interest, shall pay the PFDIF for library facilities at the rate in effect at the time of building permit issuance.

4.6 PARKS, TRAILS, AND OPEN SPACE

4.6.1 PARK THRESHOLD STANDARD

Three acres of neighborhood and community parkland with appropriate facilities are to be provided per 1,000 residents east of Interstate 805 (this standard is also specified in Section 17.10.040 of the Chula Vista Municipal Code).

4.6.2 SERVICE ANALYSIS

The City of Chula Vista provides public park and recreational facilities and programs through the Public Works and Recreation departments, which are responsible for the acquisition and development of parkland. All park development plans are reviewed by City staff and presented to the Parks and Recreation Commission for review. The commission then makes recommendations to the City Council.

The City Council adopted the Otay Ranch Parks and Recreation Facility Implementation Plan on October 28, 1993. This plan identifies the parks facility improvement standards for Otay Ranch.

The City Council approved the Chula Vista Parks and Recreation Master Plan in November 2002. The plan provides guidance for planning, siting, and implementation of neighborhood and community parks.

4.6.3 PROJECT PROCESSING REQUIREMENTS

1) Identify phased demands in conformance with the number of dwelling units constructed, street improvements, and in coordination with the construction of water and sewer facilities.

2) Identify specific facility sites in conformance with Chapter 5 of the UID SPA Plan: "Recreation and Open Space".

3) Provide irrevocable offer of dedication for park purposes for sites within the project.

4) Comply with the Otay Ranch Resource Management Plan.

5) Comply with the Chula Vista Greenbelt, Bikeway and Pedestrian Master Plans.

4.6.4 EXISTING CONDITIONS

The existing and future parks as depicted in the Public Facilities Services Element of the Chula Vista General Plan and as updated by the inclusion of more recent information are contained in the City's draft Parks and Recreation Master Plan dated December 2010.

4.6.5 PROJECT PARK REQUIREMENTS

COMPLIANCE WITH PUBLIC PARK STANDARDS

The UID will generate an estimated non-student residential population of 6,000.[1] To meet the City threshold requirements, the amount of parkland dedicated is based on a standard of 3 acres per 1,000 residents (see Table 4.6.1). The standard is based on California Government Code Section 66477, also known as the Quimby Act, which allows a city to require, by ordinance, the dedication of land or payment of fees for park or recreational purposes or a combination of both.

TABLE 4.6.1
QUIMBY ACT PARKLAND REQUIREMENTS

UID SPA Population	Standard	Parkland Acres Required
Market-Rate Residential: 6,000	3 acres per 1,000 residents	18

All new development in Chula Vista is subject to the requirements contained in the City's Parkland Dedication Ordinance in Municipal Code Chapter 17.10. The ordinance establishes fees for parkland acquisition and development (PAD fees), sets standards for dedication, and establishes criteria for acceptance of parks and open space. Fees vary depending on the type of dwelling unit proposed. There are four types of housing identified in Section 17.10.040: single-family dwelling units (defined as all types of single-family detached housing and condominiums), multi-family dwelling units (defined as all types of attached housing including townhouses, attached condominiums, duplexes, triplexes, and apartments), and mobile homes. Multi-family housing is defined as any freestanding structure that contains two or more residential units.

The Parkland Dedication Ordinance (PDO) specifies a square foot of land area to be dedicated for each unit depending on type—single-family or multi-family as shown in Table 4.6.2. The PDO method is a slightly different approach to calculating the park acreage obligation than in the Quimby Act requirement in Table 4.6.1. The actual composition of housing in the UID is unknown at this time, but will likely be a combination of mixed-use/multi-family with some smaller detached and attached single-family units. Therefore, the parkland dedication requirement is based on 3.0 household occupancy factor, which splits the difference between the single-family and multi-family prototypes identified in the PDO.

TABLE 4.6.2
CITY OF CHULA VISTA PARKLAND DEDICATION REQUIREMENTS BASED ON PARKLAND DEDICATION ORDINANCE STANDARDS

Dwelling Unit Type	Land Dedication per Unit	UID Park Dedication Requirement for 2000 units
Single-Family	431 sq. ft.	20
Multi-family	337 sq. ft.	15.5

[1] This population is based on an assumed average household occupancy of 3.0 persons per household factor. The factors used by the Department of Development Services are: 3.30 per single-family residence, 3.1 per unit for mixed use (10 to 27 units per acre), and 2.58 per multi-family unit.

The Project's market rate residential units are transferred from Villages 9 and/or 10. The PDO acreages for those Villages have been identified and satisfy the park dedication obligation of the transferred units. Notwithstanding the transfer of units and the park acres to be dedicated for those units in Village 9 and/or 10, the PDO obligation of the UID Project's market rate units is identified herein. Whether the UID parkland obligation is satisfied within the UID Project or within Village 9 or 10, the required park acreage pertaining to the UID Project's units must be offered for dedication prior to the approval of each subdivision or final map containing the units.

The UID SPA Plan does not propose formal active parks that are fully equipped with all the usual amenities of a neighborhood park in the Otay Ranch area. The UID Site Utilization Plan (Exhibit 3.1) identifies 40.4 acres in six separate common open spaces (blocks O-2 A–F), which the SPA Plan in Chapter 5 describes as flexible areas that may contain play areas, seating areas, public plazas, academic sports facilities, dog parks, open areas, and water features. The common open space areas are composed of social space and sloped areas. Typically, only relatively flat space qualifies for park credit; therefore, the O-2 area is given 50% credit. The pedestrian walks (O-3, 14.5 acres) are described as providing more traditional park amenities suitable for permanent (non-student) residents, and the open space areas (O-1, 35.4 acres) also provide recreational amenities. Assignment of park credit for open space will be determined by the City's Parks Division.

COMMON OPEN SPACE AREA CONSTRUCTION

The acreages of the three areas—common open spaces, pedestrian walks, and open space—are summarized in Table 4.6.3, along with the percentages of applicable park credit. Improvements to these areas will be constructed by the City of Chula Vista, or its successor in interest, in accordance with plans approved by the Director of Public Works. The timing of construction should be concurrent with the need for completed park acreage in accordance with the Otay Ranch General Development Plan/Subregional Plan (GDP) and the Parkland Dedication Ordinance: 3 acres per 1,000 residents. Therefore, the required portion of the first common open space area and/or pedestrian walk would be completed prior to the issuance of a certificate of occupancy for the first market-rate housing unit. Construction and completion of subsequent common open space areas would proceed as additional market-rate housing units are approved for occupancy.

TABLE 4.6.3
UID SPA PLAN PARK ACRES AND ELIGIBLE CREDITS

Park/Eligible Open Space Identification	Net Acres	Percentage Proposed Credit	Eligible Credit Acres
Common Open Space (O-2)	39.5	76.5%*	30.2
Pedestrian Walks (O-3)	14.5	100%	14.5
Open Space (O-1)	41.1	0%	0
Total	95.1		44.7

** Sloped Common Open Spaces O2G, O2H, and O2I given only 50% credit.*

4.6.6 PARK ADEQUACY ANALYSIS

Table 4.6.4 is a comparison of park acreage demands and supply east of Interstate 805 (I-805) for existing, approved projects, as well as the UID. A review of the existing and approved park demands for Chula Vista east of I-805 including the UID indicates a projected 2020 demand of

approximately 486 acres of neighborhood and community parks. The 2020 projected park acreage supply east of I-805 is 457, which assumes construction of 39 park acres in various development projects in Otay Ranch and Eastlake, for a net projected park deficit of 29 acres in 2020. The proposed parks in Village 9 (23 acres, not included in the future park projection in Table 4.6.4) and the park credit-eligible UID common open space, pedestrian walk, and open space acreage (44.7 acres total) would provide up to 67.7 additional acres, creating a surplus of up to 38.7 acres over projected demand.

TABLE 4.6.4
ESTIMATED PARK ACREAGE DEMAND COMPARED TO SUPPLY EAST OF INTERSTATE 805

	Population East of I-805 [a]	Park Demand [b]	Existing and Future Park Acres [c]	Net Acres +/-Standard
Existing	142,547	428	418	-10
Forecast Projects 2015 to 2020	19,226	58	39 [c]	-19
Total	**161,773**	**486**	**457**	**-29**

a. Current and projected population figures and park acreages are from the 2016 GMOC Annual Report.
b. Based on City park threshold requirement of 3 acres of neighborhood and community parkland per 1,000 residents east of I-805.
c. Future park acreage assumes completed parks in Villages 2, 3, 8 West, 8 East, and the Eastern Urban Center (Millenia).

TABLE 4.6.5
UID SPA PARK DEMAND AND SUPPLY BY TRANSECT

Transect	Market-Rate Units	Park Demand Acres	Park Area	Eligible Park Supply Net Acres	Net Acres +/- Standard	Project Cumulative
District Gateway			District Walk, O2A	7.06	+7.06	+7.06
Urban Core			Innovation Walk, O2B, O2C	4.61	+4.61	+11.67
Town Center			Center Walk, Transit Walk, O2D, O2G	11.94	+11.94	+23.61
Campus Commons	1,000	9	portion of Campus Walk, O2E, O2H, O2I	12.73	+3.73	+27.43
Campus Vistas	1,000	9	portion of Campus Walk, O2F	8.32	-0.68	26.66
Total	**2,000**	**18**		**44.66**	**+26.66**	

The proposed development of the UID requires approximately 18 acres of net usable park space or park "demand acres" per the City's Parkland Dedication Ordinance for public parkland (see Table 4.6.2). As shown in Table 4.6.3, the UID will provide approximately 44.7 net acres of eligible

parkland, or "supply acres," indicating a surplus of 26.66 acres. The actual net acreage of eligible parkland will be determined by the City's Parks Division.

If, after final determination of net park acreage requirements, a deficit is shown to exist, the City of Chula Vista, and its successor in interest, shall develop a plan specifying how the deficit will be eliminated. The method by which the Project's parkland obligation is met must consider, in addition to the dedication of acreage, the development of additional usable park acres, whether by payment of fees, construction of park facilities, or a combination of both, in order to meet the total UID obligation.

4.6.7 PARKLAND, OPEN SPACE, AND TRAILS

The Otay Ranch GDP established a four-tiered system of parks to be provided throughout the community to meet its goals and thresholds. The four tiers are (1) park amenities in town square or pedestrian parks; (2) active play facilities in neighborhood parks; (3) community-level playing fields in community parks; and (4) region-wide active and passive recreational areas in designated regional parks. Open space and community and regional parks are designated at the GDP level.

The GDP park and open space policies state that parks will be established at the SPA Plan level. The amount of parkland required by the local park code (Municipal Code Chapter 17.10) and the amount provided are indicated in Tables 4.6.1 and 4.6.3 respectively.

A. REQUIRED PARKLAND AND IMPROVEMENTS

New development is required to provide public parkland, improved to City standards, and dedicated to the City and/or pay in-lieu fees, based on the City's Parkland Dedication Ordinance. The dedication requirements implement Municipal Code Chapter 17.10. In addition to the construction of eligible park improvements, the provision of land, and the creation of specialized recreational facilities, the payment of in-lieu fees may be credited against the parkland requirement on a per-acre basis. The projected dedication and/or fee requirement (park demand acres) for the Project, based on the proposed target number of units and the assumed product types, is 18 acres as detailed in Table and 4.6.3. Compliance with the park dedication requirements will be monitored for each applicable subdivision of land and building permit within the Project.

B. OPEN SPACE

The Project shall provide an estimated 155.6 acres of open space habitat preserve for conveyance into the Otay Ranch Preserve (see section D below) and 41 acres of open space including preserve edge open space (see Exhibit 4.6.1). Additional open space areas in the form of manufactured slopes will occur throughout the SPA adjacent to roadways and between planning areas.

C. PARK AND OPEN SPACE IMPLEMENTATION

All of the open space and public parks will be controlled through open space easements and/or dedication to the City, or via a special maintenance district established for that purpose. Maintenance of the common open space and pedestrian walk parks will be funded through the establishment of a property-based business improvement district or other mechanism acceptable to the Director of Recreation. Community Facility, Open Space, and/or Landscape Maintenance Districts may be established to ensure proper management, maintenance, and

operation of the pedestrian parks and public right-of-way improvements. Private open space areas and slopes in "common interest" residential projects will be designated common areas and maintained by homeowners associations. Similar property owners associations may be established for nonresidential projects that include common areas requiring ongoing maintenance.

The phasing of park facilities will include offering eligible parkland for dedication at the first subdivision of land within each transect and construction of park improvements in satisfaction of the park dedication and improvements requirements set forth in Table 4.6.5. Eligible park facilities are to be available for use when the corresponding number of occupied new dwelling units requiring said park acreage is sufficient to equal the size of one or more of the Project's planned common open spaces or pedestrian walks. Park facilities, if constructed by the City of Chula Vista, or its successor in interest, will be financed with park development impact fees and/or park dedication in-lieu fees. Park acquisition and development fees (PAD fees) are to be paid prior to issuance of permits for market-rate residential units. Park facilities that are constructed by parties other than the City of Chula Vista, or its successor in interest, as "turnkey" facilities are required to be completed according to the acreage thresholds in Table 4.6.5. Upon successful completion of these parks, as determined by the Director of Recreation, the City may allow PAD fee credits. The amount of said credits is subject to approval by the Director of Recreation.

D. OTAY RANCH RESOURCE MANAGEMENT PLAN

In accordance with the Otay Ranch Resource Management Plan (RMP), the development of Otay Ranch requires an open space contribution of 1.188 acres of habitat to the Otay Ranch Preserve for each acre of development, in accordance with existing conveyance agreements. The UID contribution is based on a development land area of approximately 383.78 acres less land area designated as public uses, common open space, pedestrian walks, open space, and road right-of-way. At 1.188 acres of conveyance per developed acre, the total conveyance obligation is estimated to be approximately 155.6 acres. The Project's preserve conveyance acreage is calculated in Table 4.6.6. The acreages are estimates only; actual acreages may be different when calculated prior to recordation of each first final map for the Project.

TABLE 4.6.6
UID PRESERVE CONVEYANCE OBLIGATION

Development		Acreage
Total Land Uses		**383.78**
Public and Common Uses Not Calculated as Part of the Conveyance Obligation	Land affiliated with the University and campus support uses: academic space and supporting uses, physical education/recreation/athletics uses, student support space, campus housing, parking lots/structures and open space	*-252.78*
Total Developable Acreage (minus acreage for common uses)		**131.00**
Per Acre Conveyance		1.188
Estimated Total Conveyance Acreage		**155.63***

** Final conveyance acreage will be determined at the time of recordation of each final map.*

The Project's preserve obligation will be fulfilled in accordance with the Project's conveyance agreement. The preserve edge open space is not applicable to the Project's conveyance obligation.

E. TRAILS

The UID SPA Plan provides segments of the Otay Ranch Village Pathway, regional trails, and local and pedestrian linkages within and beyond the University and Innovation District (see Exhibit 4.6.2). Within the Project, the common open space areas and the pedestrian walks are accessed by a network of sidewalks. The major trail segments within the UID are as follows:

- **Village Pathway and Pedestrian Bridge.** The Village Pathway connects the Eastern Urban Center (Millenia) and Village 11 with Village 9 and other points west. The Village Pathway extends through the UID on two branches: along Discovery Falls Drive and Eastlake Parkway joining at Campus Drive. The Village Pathway then proceeds westerly into Village 9 along Campus Boulevard. The pathway crosses Hunte Parkway from Village 11 via a pedestrian bridge at Discovery Falls Drive. The westerly crossing of Hunte Parkway from Millenia at Eastlake Parkway is at grade.

- **Regional Trails.** Two regional trails cross the UID property: the Salt Creek Sewer Greenbelt Trail and the Chula Vista Greenbelt Trail. Both of these trails provide a connection to the Otay Valley Regional Park and Regional Trail to the southwest. The Chula Vista Greenbelt Trail is located along the boundary of future development area 1C and the Campus Vistas transect (see Exhibit 4.6.2).

- **UID Internal Trails.** Local trails, promenades, and pedestrian paths occur along and within common open space areas and along slopes, connecting adjacent transects, and where steep slopes prevent direct roadway connections. The intent of these trails is to promote walkability by creating shorter pedestrian travel distances between the transects.

4.6.8 RECREATION

The Otay Ranch Parks and Recreation Facility Implementation Plan (adopted by the City Council on October 28, 1993) identifies the park facility improvement standards for Otay Ranch. The Chula Vista Development Services Department conducted subsequent facilities needs assessments and assessed proposed citywide modifications to parks and recreation facilities. The proposed modifications for Otay Ranch area parks are included in the City's Parks and Recreation Master Plan, dated December 2010. The proposed types, quantities, and locations of the facilities provided at each park site are included in the UID SPA Plan.

4.6.9 FINANCING PARK FACILITIES

Chapter 17.10 of the Chula Vista Municipal Code, as amended, unless stated otherwise in a parks or development agreement, governs the financing of parkland and improvements. Included as part of the regulations are Park Acquisition and Development (PAD) fees established for the purpose of providing neighborhood and community parks. The ordinance requires that fees be paid to the City prior to approval of a final subdivision map, or in the case of a residential development that is not required to submit a subdivision of land, at the time of the final building permit application.

Municipal Code Section 17.10.070 allows the City to deem that a combination of dedication of parkland and the payment of in-lieu fees would better serve the public and the park and recreation needs of future residents of the project if, in the judgment of the City, suitable land does not exist. Furthermore, the code states that the amount and location of the land or in-lieu fees, or combination thereof, must bear a reasonable relationship to the use of the park and recreational facilities by the future inhabitants of the subdivision.

Table 4.6.7 identifies the fees calculated for the development component of the PAD fees, while Table 4.6.8 identifies the fees calculated for the parkland acquisition component of the PAD fees. These fees are estimates only; actual fees will be based on PAD fee rates in effect at the time of payment and are dependent on the actual numbers of residential units filed on the subdivision of lands. Fees are also subject to change by the City Council. Multi-family dwelling units are defined as all types of attached housing including townhouses, attached condominiums, duplexes, and apartments. The development in-lieu fees may be used by the City to construct public parks or to satisfy the Project's full parkland obligation.

Tables 4.6.7 and 4.6.8 indicate the current PAD fees for the development and the acquisition components, respectively. PAD fees and acreage obligations are subject to periodic annual increases. In the event that the City of Chula Vista, or its successor in interest, offers for dedication land that conforms to the Municipal Code for use as parkland, the City of Chula Vista, or its successor in interest is eligible to receive parkland acquisition fee credits at the discretion of the Director of Recreation.

TABLE 4.6.7
PARK DEVELOPMENT COMPONENT FEES (DEVELOPMENT IN-LIEU COMPONENT ONLY)

Land Use	Units	Development Component of PAD Fees per Dwelling Unit
		Single Family Fee @ $5,549
Market-Rate Residential	2,000	$11,098,000

TABLE 4.6.8
PARK ACQUISITION COMPONENT FEES
(ACQUISITION IN-LIEU COMPONENT ONLY)

Land Use	Units	Acquisition Component of PAD Fees per Dwelling Unit
		Single Family Fee @ $12,676
Market-Rate Residential	2,000	$25,352,000

Note: Actual fee obligation calculation to be based on the fees in effect at the time of payment and the implementing ordinance definition of dwelling unit type irrespective of underlying zoning district containing said dwelling unit unless stated otherwise in a separate development agreement. Definitions of dwelling unit type used for calculating park obligations are based upon from the City's Parkland Dedication Ordinance (Municipal Code Chapter 17.10). These definitions differ from the way unit types are defined from a planning, land use, and zoning perspective that uses unit density per acre to categorize the type of unit. Chapter 17.10 uses product type to categorize the type of unit, distinguishing between attached and detached units. Consequently, the figures in this table are illustrative estimates and shall be recalculated at the time when the obligations are due as determined by Municipal Code Chapter 17.10 unless stated otherwise in a separate parks or development agreement. The current Park Acquisition and Development fees are found in the City of Chula Vista's Development Checklist for Municipal Code Requirements, Form 5509, and revised September 27, 2016.

Chapter 17.10 of the Chula Vista Municipal Code, first adopted in 1971, details requirements for parkland dedication, park improvements, and the collection of in-lieu fees (i.e., PAD fees) from developers of residential housing in subdivisions or in divisions created by parcel maps, both east and west of I-805. It is the developer's responsibility to dedicate land for parks and develop all or

a portion of the land as a neighborhood or community park. All parks must be designed and constructed to the City's regulations and to the satisfaction of the Director of Recreation and the Director of Public Works. Improvements that may be required by the City include the following:

- Drainage systems
- Lighted parking lots
- Concrete circulation systems
- Security lighting
- Park fixtures (drinking fountains, trash receptacles, bicycle racks, etc.)
- Landscaping (including disabled-accessible surfacing)
- Irrigation systems
- Restrooms and maintenance storage
- Play areas (tot lots, etc.)
- Picnic shelters, tables, benches
- Utilities
- Outdoor sports venues (tennis courts, baseball/softball fields, basketball courts, multipurpose sports fields, skateboard and roller blade venues)

4.6.10 FINANCING RECREATION FACILITIES

City of Chula Vista Ordinance 2887 amended Chapter 3.50 of the Municipal Code, as detailed in the Public Facilities DIF, November 2002 Amendment, adding a recreation component to the Public Facilities Development Impact Fee (PFDIF), updating the impact fee structure, and increasing the overall fee. In addition to parks-related items, Ordinance 2887 called for the dedication, within community parks, of major recreation facilities to serve newly developing communities throughout the city, including the following:

- Community centers
- Gymnasiums
- Swimming pools
- Senior and teen centers

The institution of a separate fee component for recreation facilities was warranted because the PAD fee had not been sufficient to fund major recreation facilities. Since demand for these facilities is created by residential development, facilities costs are not spread to nonresidential development. Table 4.6.9 provides an estimate of the recreational component of the PFDIF for the UID. These fees are estimates only; actual fees will be based on fee rates in effect at the time of payment and are dependent on the actual numbers of units created by subdivision of land in the Project.

TABLE 4.6.9
UID SPA PUBLIC FACILITIES FEES FOR RECREATION [a]

Land Use	Dwelling Units	Recreation Fee
		$1,269 per Dwelling Unit
Market-Rate Housing	2,000	$2,538,000

a. The recreation facilities component of the PFDIF is subject to change as it is amended from time to time. The fee for recreation is based on the City of Chula Vista's Development Checklist for Municipal Code Requirements, Form 5509, and revised September 27, 2016. The total number of dwelling units filed on the subdivision of land or for which building permits are required shall determine the actual fee amount. Unless stated otherwise in a separate parks or development agreement, the City of Chula Vista, or its successor in interest shall pay the PFDIF in effect at the time building permits are issued.

4.6.11 THRESHOLD COMPLIANCE AND RECOMMENDATIONS

1) Based on the analysis contained in this section of the PFFP, the parks standard for both neighborhood and community parks is projected to be met at the completion of the Project subject to City of Chula Vista's, or its successor in interest's, compliance with the park conditions as described herein, including the dedication of parkland and the payment of PAD fees.

2) Prior to approval of the first subdivision of land for the Project, the site of any park facilities designated to be public, if not already held in fee by or offered to the City of Chula Vista by an irrevocable offer of dedication, shall be offered to the City by an irrevocable offer of dedication. The site of all other public parkland identified in the Project's approved SPA Plan, including the access roads needed to access said parks, shall be offered free and clear of all encumbrances unless otherwise approved by the City. Privately owned park sites, identified as being required to meet the Project's overall park obligation, shall be identified on the first subdivision of land for the Project and shall be accessible to the public, all as approved by the Director of Recreation.

3) Prior to the approval of each subdivision of land for the Project, or for any residential development project within the Project that does not require a subdivision of land, prior to building permit approval, the City of Chula Vista, or its successor in interest, shall pay Park Acquisition and Development in-lieu fees for the area covered by the subdivision of land(s). The payment of in-lieu fees shall be in accordance with the City's Park Acquisition and Development Fee Ordinance or as otherwise defined in a parks or development agreement.

4) Prior to issuance of each building permit for any residential dwelling units, the City of Chula Vista, or its successor in interest, shall pay Recreation Facility Development Impact Fees (part of the Public Facilities Development Impact Fee) in accordance with the fees in effect at the time of building permit issuance.

5) Prior to approval of each subdivision of land for the Project, the City of Chula Vista, or its successor in interest shall offer for dedication all public trails, easements, or rights-of-way for the trails, free and clear of all encumbrances unless otherwise approved by the City, contained in said map.

6) Prior to the approval of the first subdivision of land for the Project, a Maintenance Landscape Master Plan and Responsibility Map will submitted to the City for approval by the Director of Development Services. The master plan will contain a table indicating which landscaping improvements will be maintained with general funds and which will require a separate, identified funding mechanism.

7) Prior to the approval of the first subdivision of land for the Project, a Community Facilities District, or other funding mechanism to the satisfaction of the Director of Public Works, shall be established for landscaping and streetscape maintenance within the public right-of-way and maintenance of public open space.

8) Prior to the approval of the first building permit for the Project, the Project shall annex into the Otay Ranch Preserve Maintenance CFD.

9) Prior to approval of each final map for the Project, the City of Chula Vista, or its successor in interest, shall convey or shall have conveyed at least 1.118 acres of habitat for each acre of development area within the map area as defined in the Resource Management Plan (RMP) (an estimated total of approximately 155.6 acres) to the Otay Ranch Preserve pursuant to the Otay Ranch RMP. Conveyance of the habitat meets the City's threshold standard for conveyance obligation of preserve open space. The actual number of acres to be conveyed with each final map will be determined during review of the final map.

10) Prior to the issuance of a building permit for the 1000th unit of market-rate residential unit in the Project, approved park improvements totaling nine (9) acres located in Common Open Space O2A, O2B, O2C, O2D, O2E, O2F, O2G, O2H, O2I and/or pedestrian walks (campus walks, innovation walk) shall be completed to the satisfaction of the Director of Recreation. The approved park facility improvements shall be completed such that the parkland obligation is met prior to the planned occupancy of the residential units.

11) Prior to the issuance of a building permit for the 2,000th unit of market-rate residential units in the Project, a total of 18 acres of approved park improvements located in the pedestrian walk areas adjacent to blocks 3C, 3D, 3E, and 3F in the Campus Commons and/or in blocks O2E, O2F in Campus Vistas (the northeasterly campus walks) shall be completed to the satisfaction of the Director of Recreation.

12) Prior to the approval of the first subdivision of land for the Project, and to the satisfaction of the Directors of Public Works and Recreation, the City of Chula Vista, or its successor in interest, shall provide for the following: dedication of public park sites, payment of PAD fees and the Village Pathway Pedestrian Bridge DIF, if applicable (see 14) below), and submittal of a schedule for completion of improvements, including utilities, and streets adjacent to the park sites. Under the current method for delivery of new parks, the City will award a design-build contract for the Project's public park facilities. The agreement will include provisions that in the event the City chooses not go forward with a design-build contract, the City of Chula Vista, or its successor in interest will be obligated to fully comply with the Parkland Dedication Ordinance and park threshold standards by constructing the parks in accordance with all City standards and under a time schedule as specified in the agreement.

13) Prior to the first subdivision of land for the Project, the City of Chula Vista, or its successor in interest shall fund the processing of a Village Pathway Pedestrian Bridge Development Impact Fee Ordinance (which will be applied to the UID) for the cost of constructing a

Village Pathway pedestrian and bicycle bridge, between the Project and Village 11 in Eastlake, including but not limited to conceptual plans, environmental review, final plans, approach ramps, abutments, encroachment permits, rights-of-way, grading, paving, walls, lighting, and all line items necessary for the complete construction of said improvement on a pro rata basis, in order to comply with the UID SPA and the Otay Ranch GDP. The City of Chula Vista, or its successor in interest shall agree not to protest the amount of the fee established by said ordinance.

14) The UID Project's is obligated to participate in the funding and construction of the Village Pathway Bridge. The obligation to fund the bridge shall encumber the Project's market-rate residential development through the payment of the Village Pathway Bridge impact fee or other funding mechanism to the satisfaction of the City Engineer. Prior to the subdivision of land for the Project containing the first market-rate residential unit in the Project, the Village Pathway, including the pedestrian bridge between the Project and Village 11 in Eastlake, shall have been constructed and in service. If these facilities are not constructed and in service, then one of the following steps shall be taken as determined by and to the satisfaction of the City Engineer:

    a) Development in the UID shall not proceed until the Village Pathway pedestrian and bicycle bridge is constructed.

    b) The City of Chula Vista, or its successor in interest, shall determine whether revised timing of the facilities is appropriate. A number of factors, including the progress of development of the UID and changes to the assumed land uses, may affect the timing and location of the facilities.

    c) The City of Chula Vista, or its successor in interest, shall construct the facilities and be eligible for reimbursement from the Village Pathway Bridge Development Impact Fee fund for total expenditures in excess of 25% of the total cost of the facilities.

    d) The applicable Project land uses including the market-rate residential development shall be annexed into the Village Pathway Pedestrian Bridge DIF benefit area, or a Village Pathway Bridge financing district/benefit area shall be formed to the satisfaction of the City Engineer.

15) Notwithstanding item 14 above, prior to the issuance of each residential building permit for the market-rate dwelling units in the Project, the City of Chula Vista, or its successor in interest, shall pay the Pedestrian Bridge Development Impact Fee for Village 11 in effect at the time of issuance of the building permit. The City of Chula Vista, or its successor in interest, shall be eligible for credit against the Village 11 Pedestrian Bridge Fee for improvements constructed by the City of Chula Vista, or its successor in interest, as determined by the City Engineer.

16) Prior to approval of the first subdivision of land for the Project, the City of Chula Vista, or its successor in interest, shall offer for dedication the alignment of the Salt Creek Sewer Greenbelt Trail and the Chula Vista Greenbelt Trail through the Project, free and clear of all encumbrances, unless otherwise approved by the City.

17) Prior to the approval of the first subdivision of land containing the Project's 1,000 market-rate residential unit, the City of Chula Vista, or its successor in interest, shall construct the Village Pathway, the Salt Creek Sewer Greenbelt Trail, and the Chula Vista Greenbelt Trail through the Project to the satisfaction of the Directors of Public Works and Recreation.

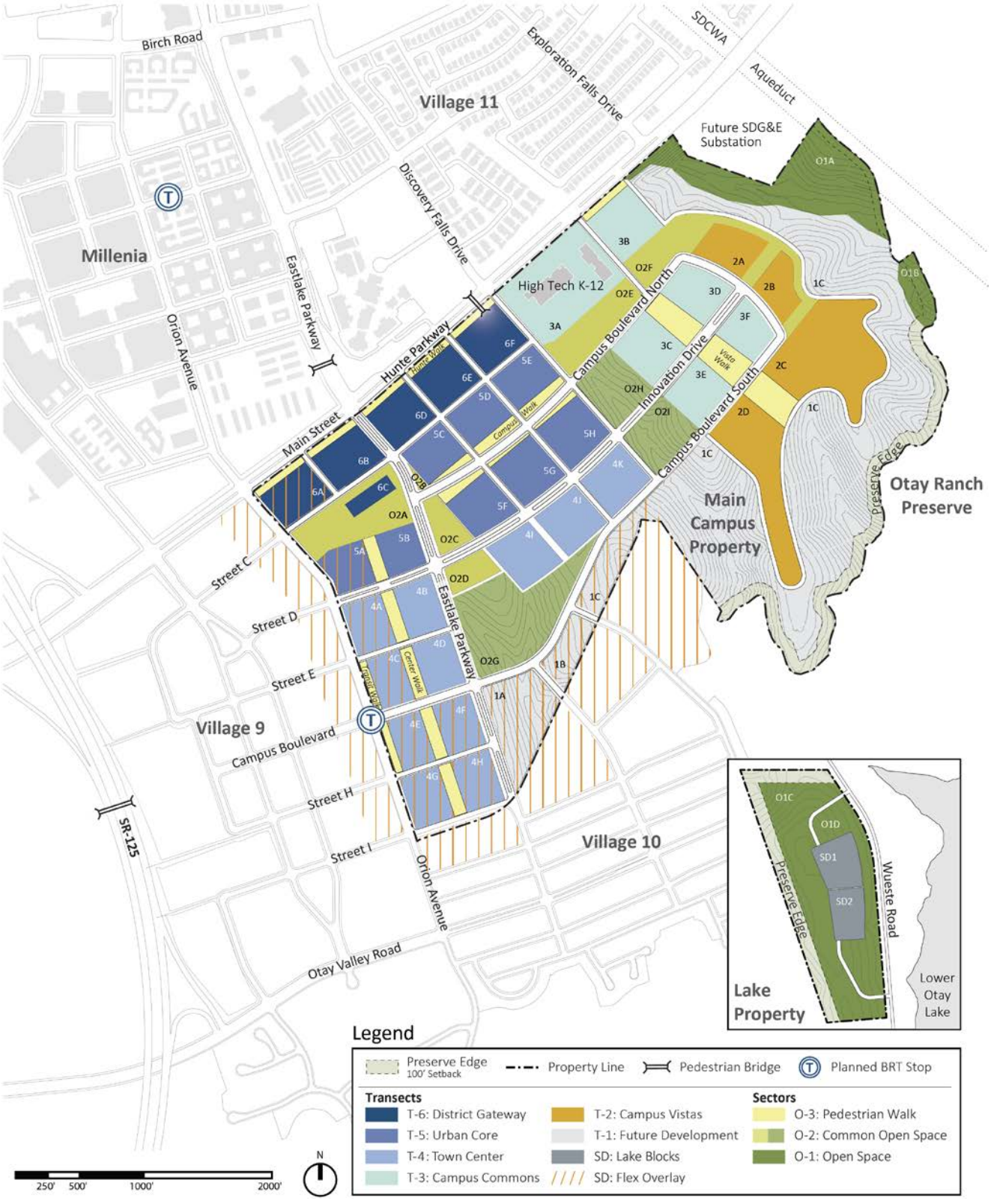

EXHIBIT 4.6.1: OPEN SPACE PLAN

Source: UID SPA Plan, Figure 3B, November 2017

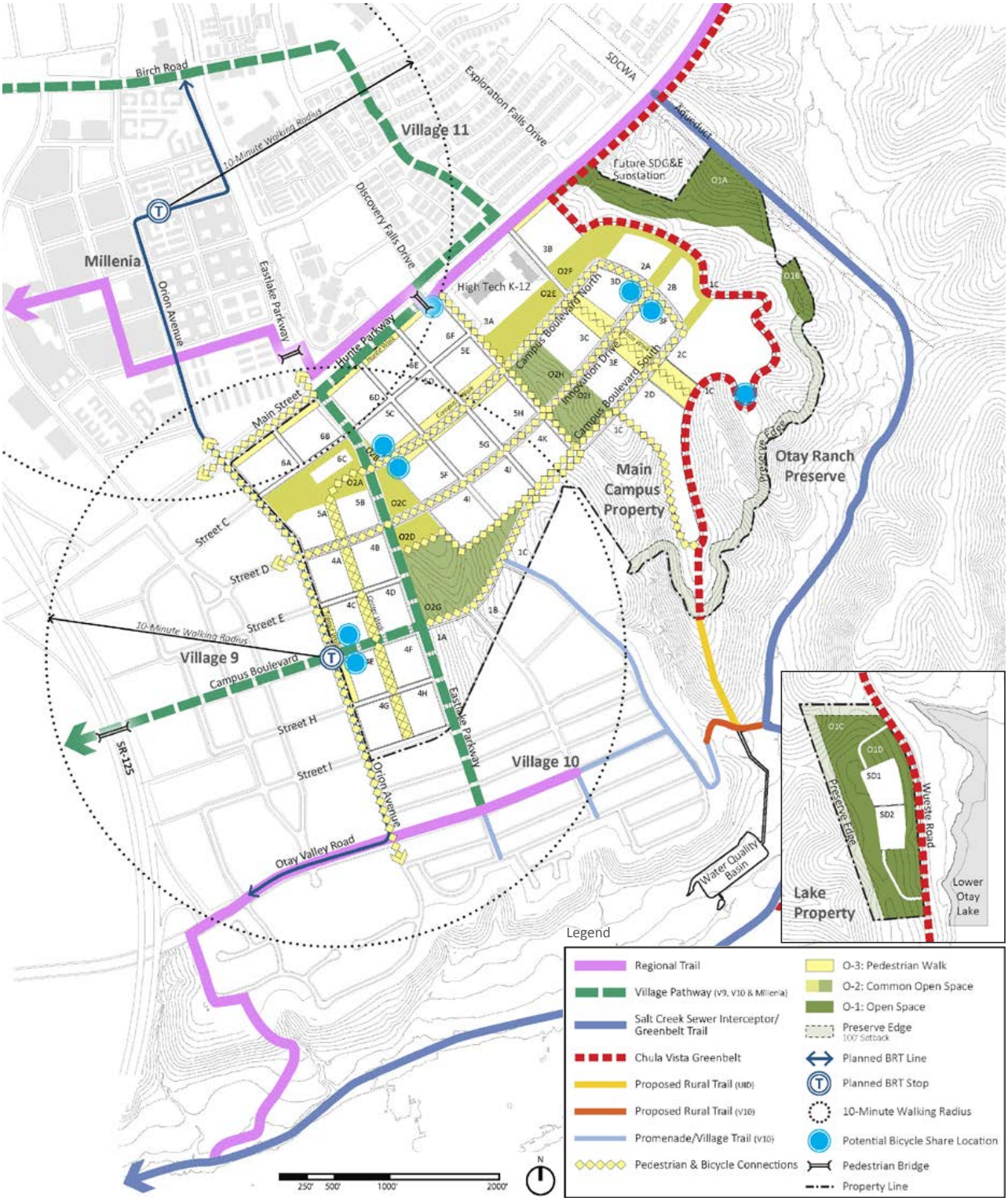

EXHIBIT 4.6.2: REGIONAL TRAILS

(Source: UID SPA Plan, July 2018, Figure 4F)

4.7 WATER

4.7.1 THRESHOLD STANDARD

1) The City of Chula Vista, or its successor in interest, will request and deliver to the City a service availability letter from the applicable water district for each project, as defined by the City.

2) The City annually provides the San Diego County Water Authority, the Sweetwater Authority, and the Otay Water District (OWD) with a 12- to 18-month development forecast and requests an evaluation of their ability to accommodate the forecast and continuing growth. The districts' replies should address the following:

   a) Water availability to the city and planning area, considering both short- and long-term perspectives

   b) Amount of current capacity, including storage capacity, now used or committed

   c) Ability of affected facilities to absorb forecast growth

   d) Evaluation of funding and site availability for projected new facilities

   e) Other relevant information which OWD desires to communicate to the City and the Growth Management Oversight Commission (GMOC)

The growth forecast and all OWD response letters must be provided to the GMOC for inclusion in its review.

4.7.2 SERVICE ANALYSIS

The OWD will provide potable and recycled water service for the UID SPA Plan area. OWD has existing and planned facilities in the vicinity of the Project site. Expansion of the existing system can provide water service to the Project (see Exhibits 4.7.1 and 4.7.2).

The Overview of Water Service or the City of Chula Vista University and Innovation District, dated July, 2016, by Dexter Wilson Engineering (Overview of Water Service) and the OWD Water Supply Assessment and Verification Report for the UID (WSA&V) dated August 2016 and adopted by the OWD Board of Directors on September 15, 2016, are the basis of the analysis for this section of this PFFP. The Overview of Water Service recommends improvements that are needed to provide potable and recycled water service to the Project. The WSA&V identifies existing water supply entitlements, water rights, water service contracts, or agreements relevant to the identified water supply needs for the Project. Prior to the approval of the first subdivision of land for the Project, the City of Chula Vista, or its successor in interest, must also prepare a potable and recycled water Subarea Water Master Plan (SAMP), which will identify all water and recycled water facilities needed to serve the Project, both on and off the Project site. The SAMP will also identify the party responsible for the funding and construction of the identified improvements. In addition, no permits for the Project will be approved until the needed on- and off-site facilities have been identified, secured, and/or constructed, as approved by OWD and the City.

The City of Chula Vista, or its successor in interest, will be required to provide all facilities needed to serve the Project when constructed without relying on the phased construction of

adjacent projects that are planned to provide improvements. The SAMP will be reviewed by the City of Chula Vista, the City's Fire Marshal, and OWD prior to the approval of the first subdivision of land or the issuance of the first grading or building permit for the Project. The SAMP will provide more detailed information on the Project such as project phasing, recycled water system improvements, processing requirements, and computer modeling to justify recommended pipe sizes. OWD will not approve final engineering improvement plans until a SAMP has been approved for the Project.

The design criteria implemented to evaluate the potable and recycled water systems for the Project are in accordance with the updated OWD 2015 Urban Water Master Plan (UWMP), adopted in June 2106. The design criteria are used for analysis of the existing water system as well as for design and sizing of proposed improvements and expansions to the existing system to accommodate demands in the study area.

The Otay Water District prepared the WSA&V for the University and Innovation District at the request of the City of Chula Vista. The WSA&V identifies that the water demand projections for the Project are included in the water demand and supply forecasts of the current OWD Urban Water Management Plan and other water resources planning documents of OWD, the San Diego County Water Authority (SDCWA), and the Metropolitan Water District of Southern California (MWD).[1] Water supplies necessary to serve the demands of the Project, along with existing and other projected future users, as well as the actions necessary to develop these supplies, have been identified in the water supply planning documents of OWD, the SDCWA, and the MWD. Further, the WSA&V demonstrates and verifies that sufficient water supplies are to be available over a 20-year planning horizon and in single- and multiple-dry years to meet the projected demand of the Project and the existing and other planned development projects in the OWD service area.

Senate Bill (SB) 610 (Chapter 643, Statutes of 2001) and Senate Bill 221 (Chapter 642, Statutes of 2001) amended state law effective July 1, 2002, to improve the link between information on water supply availability and certain land use decisions made by cities and counties. SB-610 and SB-221 are companion measures that seek to promote more collaborative planning between local water suppliers and cities and counties. Both statutes require detailed information regarding water availability to be provided to city and county decision-makers prior to approval of specified large development projects. Both statutes also require this detailed information be included in the administrative record that serves as the evidentiary basis for an approval action by a city or county on such projects. Both measures recognize local control and decision-making regarding the availability of water for projects and the approval of projects. The OWD Board of Directors made the finding that the Water Supply Assessment and Verification Report for the UID meets the requirements of both Senate Bills.

4.7.3 PROJECT PROCESSING REQUIREMENTS

The SPA Plan and this PFFP are required by the Growth Management Program to address the following issues for water services.

1) Identify phased demands in conformance with street improvements and in coordination with the construction of water and recycled water facilities.

[1] The 2015 Urban Water Management Plan was used in the evaluation of the UID.

2) Identify location of facilities for on- and offsite improvements in conformance with the master plan of the water district serving the Project.

3) Provide cost estimates and proposed financing responsibilities.

4) Identify financing methods.

A Water Conservation Plan is required for all major development projects (50 dwelling units or greater, or commercial and industrial projects with 50 EDUs of water demand or greater). The applicant must submit a water conservation plan along with the SPA Plan Application.

4.7.4 EXISTING CONDITIONS

Most of the water used in the San Diego County Water Authority area is imported from the MWD, which receives its water supply through the State Water Project and the Colorado River Aqueduct. The SDCWA conveys water from the MWD to local purveyors in San Diego County.

The Project is within the OWD Central Service Area. Potable water is delivered to the Central Service Area via the Second San Diego Aqueduct. The Project will be served by expansions of the 624 pressure zone (PZ) and the 711 PZ. The Project will need to expand the existing distribution system piping within these pressure zones to receive potable water service. The improvements needed will be consistent with OWD's established criteria for determining pressure zones. The criteria address minimum and maximum allowable pressures and maximum velocity thresholds in the distribution system piping under specific system operating conditions.

Pipelines in the vicinity of Project include a 20-inch (711 PZ) line in Eastlake Parkway and 16-inch lines (711 PZ) in Hunte Parkway. The 20-inch 711 zone water line will be extended to serve the Project (see Exhibits 4.7.1 and 4.7.2).

The northern portions of the Project will be served by 711 zone pipes. The OWD Master Plan identifies a 624 PZ distribution main that will be extended from Heritage Road to the west and a line from Otay Valley Road to the east that will ultimately supply the southern portion of the Project area.[2] If these OWD improvements are not constructed, or if they are affected by circulation element changes, the Overview of Water Service recommends that two temporary 711/624 PZ pressure-reducing station be installed to supply water to the southerly 624 PZ portions of the Project until these ultimate pipelines or their functional equivalents are constructed. The off-site improvements through the Project, connecting to the 624 PZ system, are needed in the Project's southern portion unless the Project constructs temporary on-site improvements to meet OWD redundancy requirements subject to City and OWD approval.

Based on the projected demands and system looping, on-site potable water facilities will likely range from 8 to 16 inches in diameter, pending final land use and fire flow requirements.

The expected demand for the Project is approximately 840,000 gallons per day (mgd) according to the Overview of Water Service and reported in the WSA&V. The WSA&V further demonstrates and documents that sufficient water supplies are planned and are intended to be available over a 20-year planning horizon, under normal conditions and in single- and

[2] The OWD Water Resources Master Plan (November 2010) indicates a proposed 12-inch 711 line along Main Street and a 16-inch 624 line along the Otay Valley Road alignments between Heritage Road and Village 9 and the UID (see Exhibit 4.7.1).

multiple-dry years, to meet the projected demand of the Project and the existing and other planned development projects within OWD, including Otay Ranch Villages 8 East, 8 West, 9 and 10.

Additional review of water demand and availability will occur with preparation of a Subarea Master Plan (SAMP) for the Project, and approval by the OWD, to ensure that sufficient supplies are planned to be available as demand is generated by the Project.

Current OWD policies regarding new development require the use of recycled water where available. Consistent with the Otay Ranch General Development Plan/Subregional Plan (GDP), it is anticipated that recycled water will be used to irrigate street parkway landscaping, common open space lots, public parks, and manufactured slopes along the southerly edge of the Project. Landscaped areas of mixed-use and multi-family sites may also receive recycled water in accordance with OWD and City policy. Recycled water is currently available to the Otay Ranch area from the 1.3 mgd capacity Ralph W. Chapman Water Recycling Facility located near the intersection of Singer Lane and State Route 94.

Recycled water will be delivered to the Project by an existing 12-inch 680 PZ line in Hunte Parkway. A proposed 8-inch 680 PZ line will loop through the Project and connect with a proposed 8-inch line in Otay Valley Road. If the Otay Valley Road line is not in service when needed to complete the loop, the Project's system will connect to a proposed 8-inch 815 PZ line in Village 9 at a potential interim pressure-reducing (see Exhibit 4.7.3).

The Project will be required to provide all recycled water improvements needed to serve the Project when constructed without relying on the phased construction of adjacent projects that are planned to provide improvements.

4.7.5 ADEQUACY ANALYSIS

A. WATER CONSERVATION PLAN

A Water Conservation Plan is required for all major development projects (50 dwelling units or greater, or commercial and industrial projects with 50 EDUs of water demand or greater). This plan is required at the Sectional Planning Area (SPA) plan level or equivalent for projects which are not processed through a Planned Community Zone. The City has adopted guidelines for the preparation and implementation of Water Conservation Plans.

Appendix G of the UID SPA Plan contains the Project's Water Conservation Plan, which provides an analysis of water usage requirements of the Project. It also includes a detailed plan of proposed measures for water conservation, use of recycled water, and other means of reducing per capita water consumption from the Project, as well as defining a program to monitor compliance.

B. UID WATER DEMAND

Table 4.7.1 shows the potable water demands within the Project. Ultimate average potable water demand for the Project, based on current land use planning, is approximately 1.31 million gallons per day or about 1,400 acre-feet per year. The demand rate for each land use is also shown.

TABLE 4.7.1
POTABLE WATER DEMANDS

Land Use	Quantity	Unit Demands		Total Demand (gpd)
University, Academic and Research	108 acres	1,428	gpd/acre	154,224
Students in Residence	6,000	50	gpd/student	300,000
Faculty in Residence	1,200	100	Gpd/faculty	120,000
Market-Rate Housing	2,000 units	300	gpd/unit	600,000
Lake Property	5.2	1,785	gpd/acre	9,282
Open Space/Parks	54.1 acres	1,428	gpd/acre	77,255
TOTAL				**1,260,761**

Note: Parks will be irrigated with recycled water. Nominal potable water use anticipated drinking fountains and comfort stations; potable water demand is based on a fixture unit study. See Overview of Water Service.

The water demand summarized in Table 4.7.1 is about 50 percent higher than the estimate given for the UID in the Overview of Water Service and the approved SB 610/221 Water Supply Assessment and Verification Report. The WSA&V and the Overview of Water Service estimate 840,688 gallons per day as the total potable water demand for the Project. The differential is partly due to the exclusion of the 2,000 units of market-rate housing from the Overview of Water Service water demand analysis, which accounts for 600,000 gallons per day. The Overview of Water Service states that the market-rate housing in the UID would be transferred from Villages 9 and/or 10. Therefore, the water demand for these units has been accounted for in the demand analysis for those Villages. The net result is that the Overview of Water Service (and the WSA&V) demand is actually higher than what is shown in Table 4.7.1 by about 180,000 gpd. This smaller difference is due to the Overview of Water Service applying the acreage water use factor of 1,428 acres to the gross acreages of each UID transect--about 234 acres total, rather than to only the four transects that comprise the University, Academic Support and the Innovation District's 108 acres and applying a gallons per unit or gallons per person factor to the specific land uses.

Based on the UID site utilization plan, Table 4.7.2 summarizes the expected potable water demands for each of the transects.

TABLE 4.7.2
POTABLE WATER DEMANDS BY TRANSECT

District Gateway				
Land Use	**Quantity**	**Unit Demand**		**Total Demand (gpd)**
University, Academic and Research	20	1,428	gpd/acre	28,560
Student in Residence	1,500	50	gpd/student	75,000
Faculty in Residence	300	100	gpd/faculty	30,000
Open Space/Parks	7.1	1,000	gpd/acre	10,139
Subtotal				**143,699**
Urban Core				
Land Use	**Quantity**	**Unit Demand**		**Total Demand (gpd)**
University, Academic and Research	25.3	1,428	gpd/acre	36,218
Student in Residence	1,500	50	gpd/student	75,000
Faculty in Residence	300	100	gpd/faculty	30,000
Open Space/Parks	8.0	1,428	gpd/acre	11,424
Subtotal				**152,552**
Town Center				
Land Use	**Quantity**	**Unit Demand**		**Total Demand (gpd)**
University, Academic and Research	33.6	1,428	gpd/acre	47,981
Student in Residence	1,500	50	gpd/student	75,000
Faculty in Residence	300	100	gpd/faculty	30,000
Open Space/Parks	13.0	1,428	gpd/acre	18,564
Subtotal				**171,545**
Campus Commons				
Land Use	**Quantity**	**Unit Demand**		**Total Demand (gpd)**
University, Academic and Research	29.00	1,428	gpd/acre	41,412
Student in Residence	1,500	50	gpd/student	75,000
Faculty in Residence	300	100	gpd/faculty	30,000
Open Space/Parks	14.0	1,428	gpd/acre	19,992
Subtotal				**166,404**
Campus Vistas				
Land Use	**Quantity**	**Unit Demand**		**Total Demand (gpd)**
Market-Rate Housing	2,000	300	gpd/unit	600,000
Open Space/Parks	12.0	1,428	gpd/acre	17,136
Subtotal				**617,136**
Lake Property				
Lake Blocks (SD1 and SD2)	5.2	1,785	gpd/acre	9,282
TOTAL				**1,260,618**

Source: UID SPA Site Utilization Plan, April 22, 2016

Units and acreages may shift between transects as provided in the density and intensity transfer provisions of the SPA, but the total water demand will remain the same.

RECYCLED WATER

Current land use planning results in an average day demand of 137,274 gallons per day (gpd) for the Project. The most prevalent recycled water use within the Project will be for landscape irrigation, such as watering medians, parks, open space, and common areas. The recycled water demands are presented in Table 4.7.3.

The total recycled water demand for the Project in the Overview of Water Service is cited as 159,255 gallons per day.

TABLE 4.7.3
AVERAGE RECYCLED WATER DEMAND BY LAND USE

Land Use	Area (acres)	Percentage to Be Irrigated	Irrigated Acreage	Recycled Water Irrigation Factor (gpd/ac)	Average Recycled Water Demand (gpd)
Transect Areas[1]	108	20%	21.6	2,155	46,548
Active Parks	44.6	50%	22.3	2,155	48,057
Future Development	99	20%	19.8	2,155	42,669
Open Space	41.1	0%	0	0	0
TOTAL					**137,274**

Sources: UID Site Utilization Plan, April 22, 2016

[1] District Gateway, Urban Core, Town Center and Campus Commons, Campus Vistas is assumed residential with little or no recycled water use.

Units and acreages may shift between phases as provided in the density and intensity transfer provisions of the SPA, but the total water demand shall remain the same.

4.7.6 EXISTING WATER FACILITIES

POTABLE WATER

The Otay Water District will supply the potable water to the UID. The district currently relies solely on the San Diego County Water Authority (SDCWA) for water supply. OWD has several connections to SDCWA Pipeline No. 4, which delivers filtered water from the Metropolitan Water District's filtration plant at Lake Skinner in Riverside County. OWD also has a connection to the La Mesa-Sweetwater Extension Pipeline, which delivers filtered water from the R.M. Levy Water Treatment Plant in the Helix Water District. Currently, this connection supplies water to the north portion of the Otay Water District only. OWD has a connection to the City of San Diego's water system in Telegraph Canyon Road and has an agreement that allows the district to receive water from the Lower Otay Filtration Plant.

Fire flow within the Project was evaluated as part of the Overview of Water Service. The fire flow requirements for each building within the Project will be a function of building design, including height and structure type. As part of the building permit process, the Chula Vista Fire Department will evaluate fire flow requirements. The applicant is required to prepare a final Subarea Master Plan (SAMP) prior to the issuance of first grading permit for the Project. The SAMP will be approved by OWD and the City of Chula Vista. Among other topics, the SAMP will identify existing on- and off-site pipeline locations, size, and capacity and the City of Chula Vista's fire flow requirements (flow rate, duration, hydrant spacing, etc.). The Project's on-site system would meet a fire flow of between 1,500 and 5,000 gallons per minute, depending on land use.

RECYCLED WATER

Existing recycled water distribution mains in the area will be extended to serve the Project, including an existing 8-inch main (680 PZ) to the north in Hunte Parkway. On-site recycled water pipelines would most likely be sized at an 8-inch diameter, unless otherwise directed by OWD. The proposed recycled water system layout is shown on Exhibit 4.7.3.

4.7.7 PROPOSED FACILITIES

A. POTABLE WATER

The Overview of Water Service determined that the projected water demands of the Project, the system looping, and on-site potable water facilities will likely range from 8 to 16 inches in diameter pending final land use and fire flow requirements. A network of looped distribution mains is planned to serve the Project. The potable water on-site distribution network is shown on Exhibit 4.7.2. The water distribution system improvements required for each phase and the planning units within each phase are listed in Table 4.7.4 and shown on Exhibit 4.7.2.

B. RECYCLED WATER

Exhibit 4.7.3 illustrates the recommended the on-site distribution network for recycled water and potential recycled water use areas within the Project.

4.7.8 FINANCING WATER FACILITIES

The financing and construction of potable water facilities is provided by three methods:

CAPACITY FEES

In conjunction with its Capital Improvement Program (CIP), the Otay Water District facilitates design and construction of facilities and collects an appropriate share of the cost from City of Chula Vista, or its successor in interest, through collection of capacity fees charged to water meter purchases. Capital improvement projects typically include supply sources, pumping facilities, operational storage, terminal storage, and transmission mains.

WATER SUPPLY FEES

To offset the costs of bringing new water supplies to the district's service areas and for the district-wide water infrastructure, OWD charges water supply and water capacity fees; the current fees are effective October 2016. The fees are charged according to water meter size. The water supply fee ranges from $2,573 for a 1-inch meter (typical for a single-family home) to $118,380 for a 10-inch meter for a major commercial or industrial development. The water capacity fee ranges from $20,775 for a 1-inch meter to $955,657 for a 10-inch meter. Project City of Chula Vista, or its successor in interest, may partially offset these fees by providing new water supply or constructing eligible water distribution facilities which are included in the district's Capital Improvement Program. The current fee schedule may be found online in the OWD Code of Ordinances (Code No 28.01 B2, Appendix A).

EXACTION

The City of Chula Vista, or its successor in interest, is required to finance, construct, and dedicate to OWD potable water and recycled water facilities that serve only the UID Project.

TABLE 4.7.4
POTABLE WATER FACILITIES BY DISTRICT

District	Water Improvements
District Gateway	• 12-inch 711 zone line in Main Street from SR-125 to Eastlake Parkway connecting to the existing 12-inch 711 zone line in Eastlake Parkway • 12-inch 711 zone loop in Eastlake Park, Main Street to Street; in Street C from Eastlake Parkway to Discovery Falls Drive then connecting to the existing 12-inch 711 in Hunte Parkway
Urban Core	• The improvements for District Gateway plus: • the 12-inch 711 zone loop in Orion Ave., Main Street to Innovation Drive; Innovation Drive, Orion Ave. to Discovery Falls Drive then connecting to Hunte Parkway
Town Center	• 12-inch 711 zone loop in Village 9 and the 16-inch 624 zone line in Otay Lakes Road from SR-125 to Orion Ave. assumed to be completed • The improvements for District Gateway and Urban Core plus: • 12-inch 711 zone line in Orion Drive, Innovation Drive to connection with 16-inch 624 zone line in Orion Ave. • 711/624 pressure-reducing station in Orion Avenue • 711/624 pressure-reducing station in Campus Boulevard South • 16-inch 624 zone line in Campus Boulevard South between pressure reducing station and Eastlake Parkway16-16-inch 624 zone lines in Orion Ave., Streets H and Eastlake Parkway
Campus Commons	• District Gateway, Urban Core and Town Center improvements plus: • 12-inch 711 zone line in Discovery Falls Drive from Innovation Drive to Campus Boulevard southerly leg: • 12-inch 711 zone loop in Campus Boulevard from Discovery Falls Drive north and south intersections
Campus Vistas	• Campus Commons improvements
Lake Front Property	• 20-inch 711 line connecting to the existing 24-inch in Wueste Rd. north of property, branching to 12 inch 711 zone line in Wueste Road to SD2and 12-inch along west edge of the property to SD1 (see Exhibit 4.7.2)

Source: Overview of Water Service, Table 5-1

POTABLE WATER IMPROVEMENT COSTS

The total capital cost for potable water facilities will be determined at the time the system is designed and the SAMP is approved. In accordance with District Policy No. 26, OWD may provide reimbursement for construction and design costs associated with development of these improvements.

TABLE 4.7.5
RECYCLED WATER FACILITIES BY DISTRICT

District	Recycled Water Improvements
District Gateway	• 8-inch 680 zone line in Discovery Falls Drive from existing 8-inch line in Hunte Parkway to Campus Boulevard
Urban Core	• The improvements for District Gateway
Town Center	• The improvements for District Gateway and Urban Core plus: • 8-inch 680 zone line in Campus Boulevard North and South, then via Campus Boulevard to Orion Ave and connecting to Village 9 680 zone line • 680/815 pressure-reducing station, if necessary, if Otay Valley Road 680 8-inch line is not in service.nch 624 zone lines in Orion Ave., Streets H and Eastlake Parkway
Campus Commons	• District Gateway, Urban Core and Town Center improvements.
Campus Vistas	• District Gateway, Urban Core and Town Center improvements.
Lake Front Property	• No recycled water improvements indicated

Source: Overview of Water Service, Table 5-1

RECYCLED WATER IMPROVEMENT COSTS

The total capital cost for recycled water facilities will be determined at the time the system is designed and the SAMP is approved. The district may provide reimbursement for construction and design costs associated with development of these improvements.

4.7.9 THRESHOLD COMPLIANCE AND RECOMMENDATIONS

Pursuant to SB 221, the City of Chula Vista, or its successor in interest, will request from the OWD written verification of water supply prior to the approval of the subdivision of land for the Project or issuance of a the first grading or building permit for the Project, whichever occurs first.

This PFFP was prepared prior to the completion of the recycled and potable SAMP. Facility requirements may change based on the SAMP findings, including reservoir requirements, pipe sizes, and distribution alignments.

1) Prior to the approval of the first subdivision of land for the Project or issuance of the first grading or building permit for the Project, whichever occurs first, the City of Chula Vista, or its successor in interest, shall obtain the approval of the SAMP from the Otay Water District and the City of Chula Vista. Any on-site and/or off-site potable and recycled water improvements identified in the Subarea Master Plan required to serve any area of approved development shall be secured and/or constructed on-site and/or off-site in accordance with the fees and phasing in the SAMP approved by the Otay Water District. The Subarea Master Plan shall include but not be limited to the following:

    a) Existing pipeline locations, size, and capacity

b) The proposed points of connection and system

c) The estimated potable and recycled water demand calculations

d) The governing fire department's flow requirements (flow rate, duration, hydrant spacing, etc.)

e) Water Agency Master Plan

f) Water Agency's planning criteria (see Sections 4.1 through 4.3 of the Water Agencies Standards)

g) Water quality maintenance

h) Size of the system and number of lots to be served

2) The City of Chula Vista, or its successor in interest, shall construct all facilities needed for the Project as determined by the approved SAMP including but not limited to water facilities within the State Route (SR)-125 overcrossings at Main Street and Otay Valley Road, and any upsizing of or additional potable or recycled facilities above and beyond what the potable and recycled water technical reports have determined. In the event the Project planning areas that rely on the waterlines crossing SR-125 develop prior to construction of the SR-125 overcrossings, the City of Chula Vista, or its successor in interest, shall construct alternative potable waterlines and/or other facilities necessary to serve said planning areas to the satisfaction of the Otay Water District and the City.

3) The City of Chula Vista, or its successor in interest, is responsible for construction and funding of the Project improvements required by OWD if the improvements are not covered by a funded OWD capital improvement program (CIP).

5) The City of Chula Vista, or its successor in interest, shall extend recycled water mains to all parks and large open space areas as shown on SPA Figure 3B – Site Utilization Plan.

6) Prior to the approval of any intensity transfer resulting in an increase of either residential dwelling units or commercial floor area in a planning area in excess of the units or floor areas assumed in the Overview of Water Service for the Project, a revised study of the proposed internal water distribution system serving that planning area shall be submitted for review and approval by the Development Services Department to verify that the planned capacity of local water mains is available to accommodate the increased demand for those services.

7) The City of Chula Vista, or its successor in interest, shall comply with the Chula Vista Landscape Water Conservation Ordinance. The City of Chula Vista, or its successor in interest, shall prepare and submit for approval by the Director of Development Services a Water Conservation Plan and submit landscaping plans that indicate the use of recycled water where appropriate to reduce water demand.

8). The Project's water utilities and appurtenances shall provide the fire flow requirements of the California Fire Code and City of Chula Vista Municipal Code.

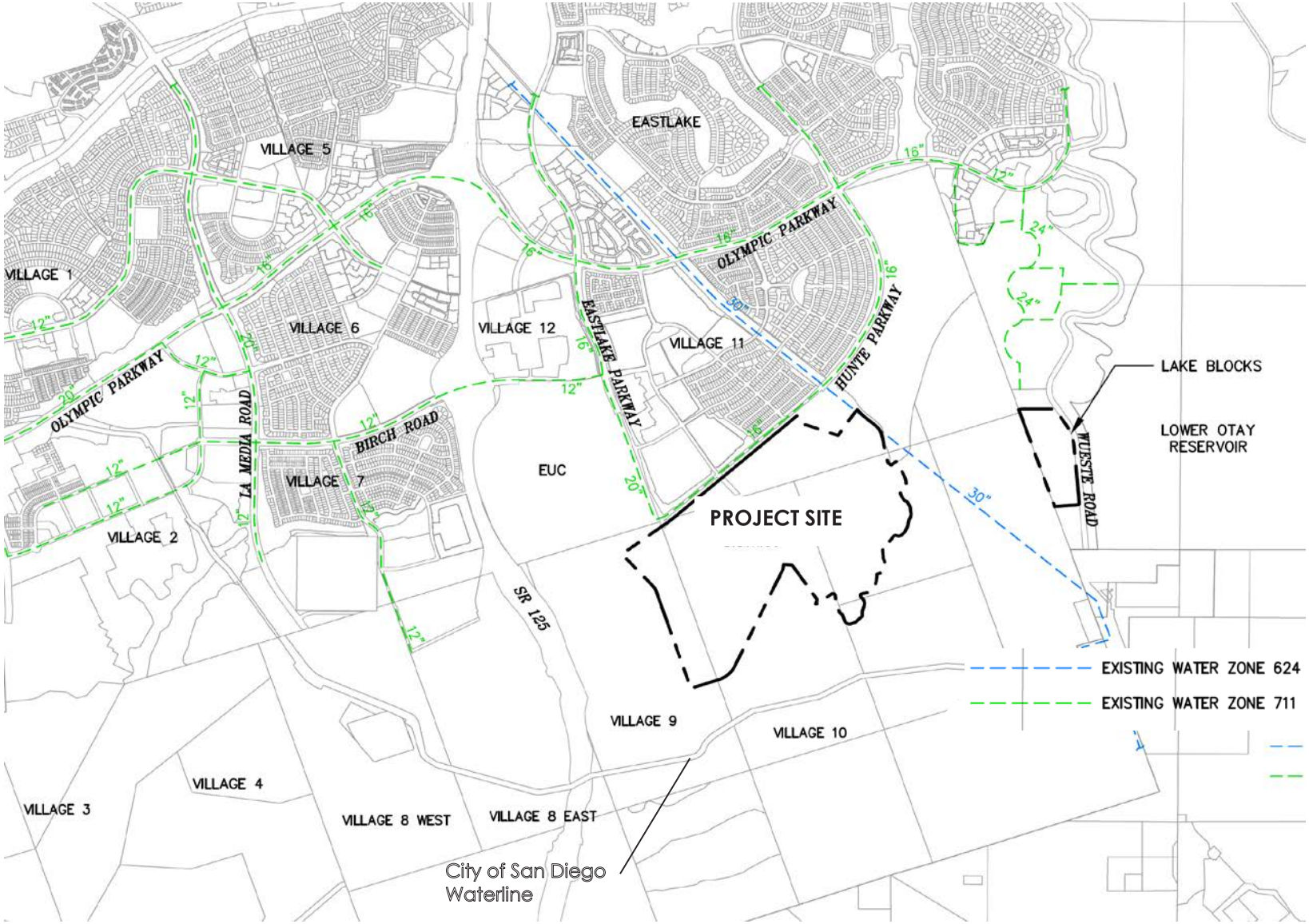

EXHIBIT 4.7.1: EXISTING OFF-SITE POTABLE WATER FACILITIES

Source: Overview of Water Service, Figure 3-1

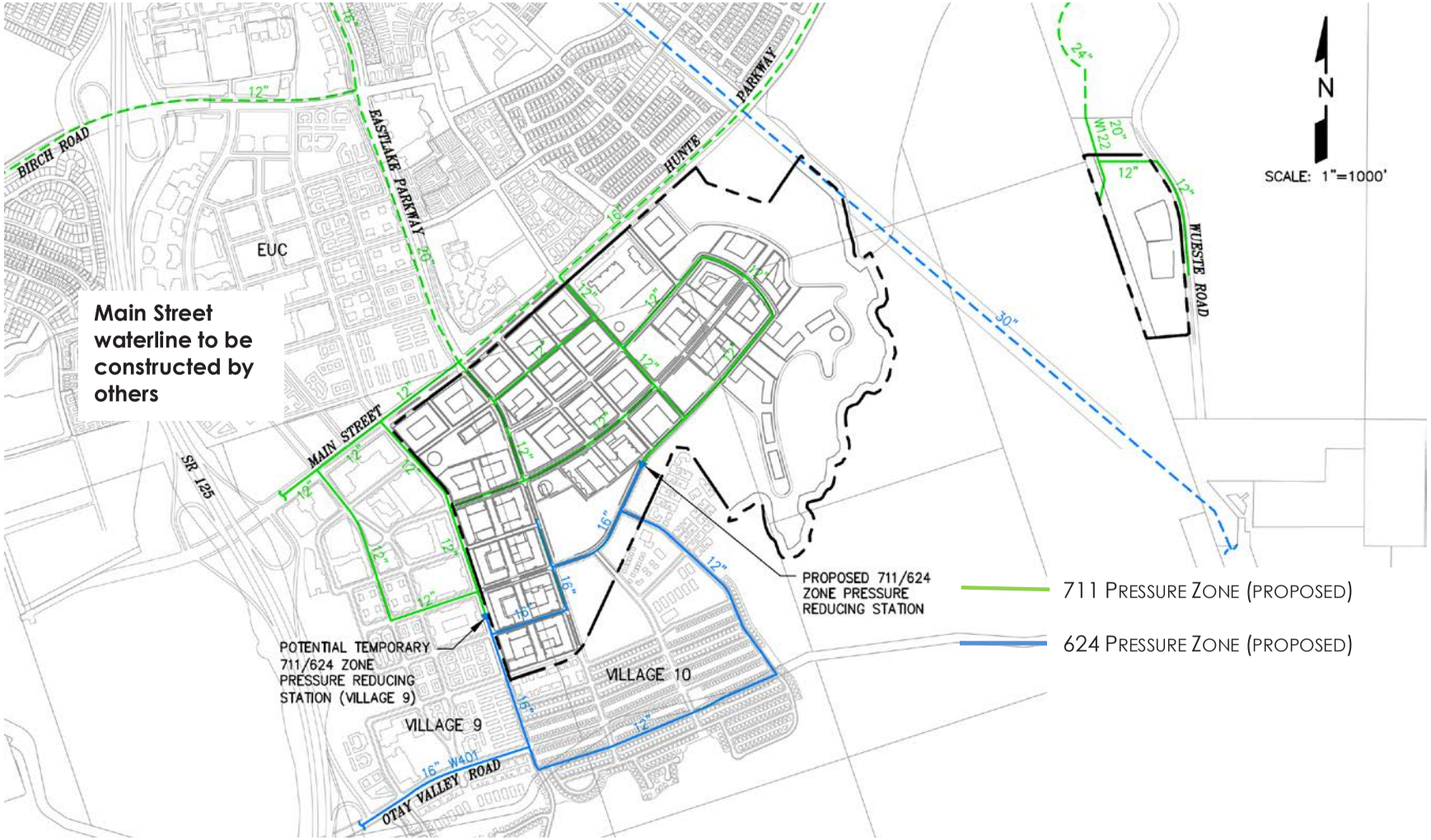

EXHIBIT 4.7.2: ON-SITE POTABLE WATER FACILITIES

Source: Overview of Water Service, Figure 4-1

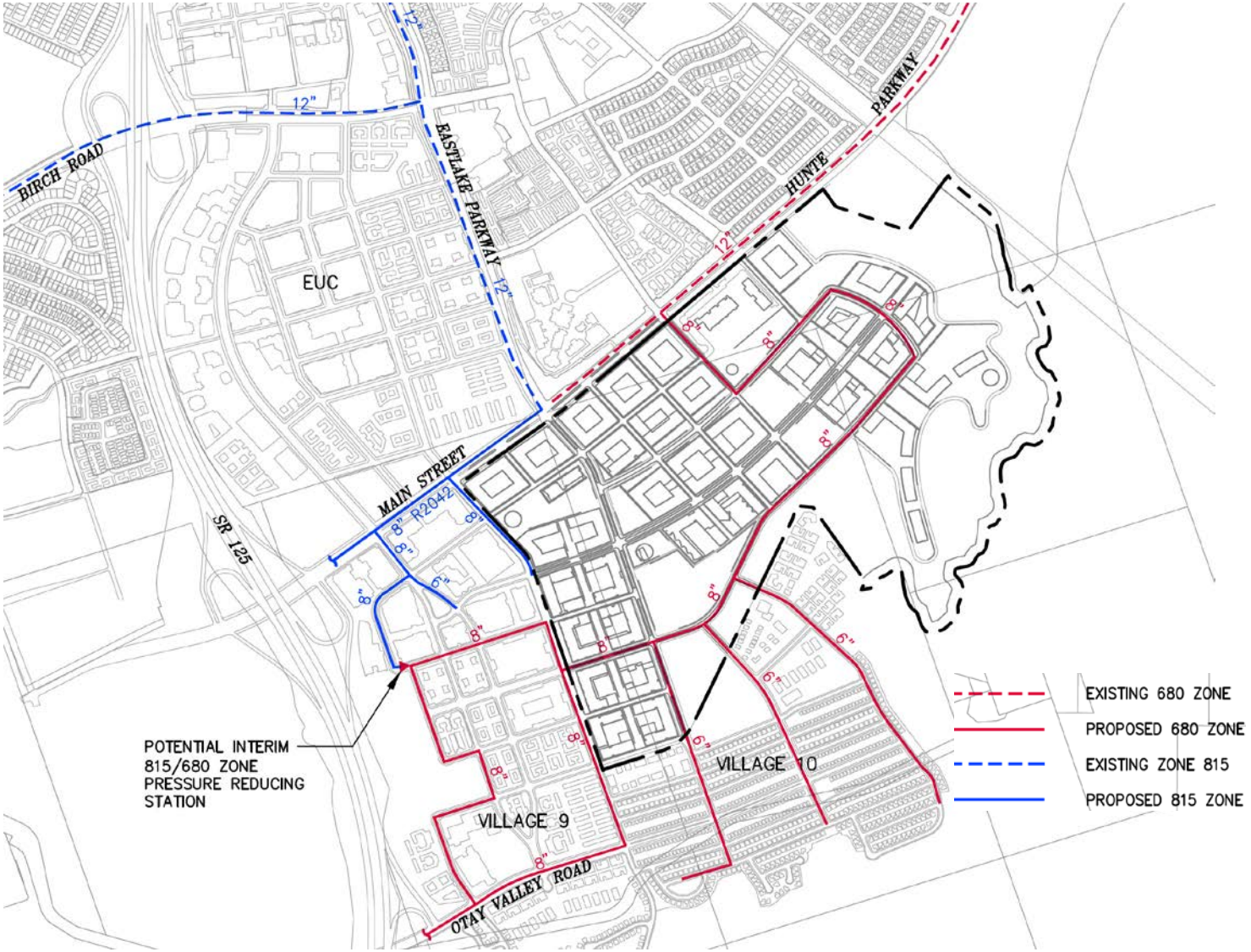

EXHIBIT 4.7.3: ON-SITE RECYCLED WATER FACILITIES

Source: Overview of Water Service, Figure 5-2

4.8 SEWER

4.8.1 THRESHOLD STANDARD

Sewage flows and volumes in pipes may not exceed City Engineering Standards as set forth in the City of Chula Vista Subdivision Manual as may be amended from time to time.

The City will annually provide the Metropolitan Wastewater Joint Powers Authority[1] (Metro) with a 12- to 18-month development forecast and request confirmation that the projection is within the City's purchased capacity rights and an evaluation of Metro's ability to accommodate the forecast and continuing growth, or City of Chula Vista Public Works Department staff will gather the necessary data.

The information provided to the Growth Management Oversight Commission (GMOC) must include the following:

- Amount of current capacity now used or committed
- Ability of affected facilities to absorb forecast growth
- Evaluation of funding and site availability for projected new facilities
- Other relevant information

4.8.2 SERVICE ANALYSIS

The City of Chula Vista currently purchases capacity for wastewater treatment through the Metro system. Chula Vista oversees the construction, maintenance, and operation of the sewer collection facilities. The City Engineer is responsible for reviewing proposed developments and ensuring that the necessary sewer facilities are provided with each development project.

The sewer threshold standard was developed to maintain healthful, sanitary sewer collection and disposal systems for Chula Vista. Individual projects are required to provide necessary improvements consistent with the Chula Vista Wastewater Master Plan dated May 2014 and to comply with all City engineering standards.

The source of information regarding the existing and recommended sewer facilities is the Sewer Study for the University and Innovation District, dated April 7, 2017, by Rick Engineering, Inc. This study is referred to as the UID Sewer Study throughout this section of the PFFP.

4.8.3 PROJECT PROCESSING REQUIREMENTS

The SPA Plan and the PFFP are required by the Growth Management Program to address the following issues for sewer services:

1) Identify phased demands for all sewer trunk lines in conformance with the street improvements and in coordination with the construction of water facilities.

[1] The Metropolitan Wastewater Joint Powers Authority operates the Metropolitan Sewerage Sub-System which treats the wastewater generated by the City of San Diego and 15 other cities and districts, including the City of Chula Vista (called Participating Agencies). The Metro service area comprises 450 square miles with a population of over 2.2 million.

2) Identify location of sewer facilities for on-site and off-site improvements, in conformance with the UID Sewer Study.

3) Provide cost estimates for all facilities and proposed financing responsibilities.

4) Identify financing methods.

4.8.4 EXISTING AND PROPOSED CONDITIONS

Sanitary sewer service for the Project will be provided by the City of Chula Vista. The City operates and maintains its own sanitary collection system that connects to the Metro wastewater treatment system. All wastewater generated within the Project will be conveyed to the Salt Creek Interceptor that discharges into the Metro system. The wastewater is ultimately treated by the City of San Diego at the Point Loma Wastewater Treatment Facility.

SALT CREEK SEWER INTERCEPTOR

There are no existing sewer facilities in the Project. A 12-inch sewer trunk line currently exists in Eastlake Parkway north of Main Street and along the Project's northerly boundary in Hunte Parkway. The trunk line flows to the east into the Salt Creek Interceptor, which crosses through the northeastern portion of the UID. However the UID Sewer Study shows that the Project will not connect to the Hunte Parkway trunk line. On-site 8-inch and 12-inch backbone sewer mains located in Discovery Falls Drive (Line B) and Eastlake Parkway (Line A) will collect flows from local sewer mains within the UID. The Project sewage will be carried by these mains off-site to a proposed 15-inch main in Orion Avenue between the Project and Village 9. From there, flows travel southerly to the 30-inch Salt Creek Interceptor, which flows west as it passes approximately 1,800 feet south of the Project. The Salt Creek Interceptor conveys flows westerly to a point of connection with the Metro system. See Exhibit 4.8.1 for a schematic diagram of the sewer facilities existing in the vicinity of the Project.

4.8.5 ADEQUACY ANALYSIS

Sewer flows generated by the Project were estimated in the UID Sewer Study. The estimates were based on current City of Chula Vista engineering criteria for permanent and interim on-site sewer system conditions. These estimated flows are the basis for design of new sewer facilities and the evaluation of existing facilities that will serve the Project.

A. WASTEWATER TREATMENT

The Metro system provides sewer treatment services for the City of Chula Vista and 14 other participating agencies in accordance with the terms of a multi-agency agreement (Metro Agreement). The City's agreement with Metro is on a 5-year cycle.

The City of Chula Vista's wastewater treatment capacity rights in the Metro system total 20.9 million gallons per day (mgd). According to the UID Sewer Study, Chula Vista generates an average flow to the Metro system of approximately 16.2, mgd. Therefore, the City's current reserve capacity is approximately 4.7 mgd. However per the 2016 GMOC report, as a result of densification in the 2005 General Plan update, the buildout flow for the preferred General Plan alternative is estimated at 29.9 mgd. Therefore, the City would need to acquire capacity rights for an additional 9 mgd to accommodate the projected buildout of Chula Vista General Plan.

The GMOC report indicates that for the immediate future, the City has adequate capacity rights in the Metro system until approximately 2027. PBS&J (now Atkins) prepared a study as a

supporting document to the Village 8 West and Village 9 Program EIR,[2] analyzing treatment plant capacity relative to land uses in the adopted 2005 General Plan, including the increased densities of Village 8 West and Village 9. The study also served to assess the need to acquire additional treatment plant capacity. The PBS&J study includes the potential increased flows from development of the Bayfront Redevelopment project and indicates that the total future treatment capacity required in the cumulative condition may be as high as 32.5 mgd, leaving the City 11.6 mgd more than its present allocation.

Theoretically, there is regional sewer treatment capacity available for purchase. However, the City does not wish to buy more capacity than is actually needed to meet projected demands. The City will either purchase capacity as needed or suspend the issuance of building permits until the needed capacity is acquired. The estimated balance of the Trunk Sewer Capital Reserve Fund on June 30, 2017 (Fund 413, is the source for the purchase of treatment capacity rights) is $56,695,532.[3] An estimated rate of $22.70 per gallon per day translates into 2.5 mgd of additional capacity that could be purchased.[4] The City is evaluating the benefits of paying the City of San Diego for treatment or providing for treatment in alternative ways.

To finance the City's treatment capacity needed to accommodate the Project's demand, the City of Chula Vista, or its successor in interest, is required to pay Sewer Participation fees prior to building permit issuance. Development may not occur without adequate sewer capacity as determined by the City Engineer. Building permits will not be issued if the City Engineer has determined that adequate sewer capacity does not exist. All development must comply with the Chula Vista Municipal Code, specifically Sections 19.09.040.E.3 and 13.14.030.

B. WASTEWATER GENERATION

In accordance with the City of Chula Vista's Subdivision Manual, the UID Sewer Study used the City's sewage generation rates to estimate the total annual average wastewater flows produced from the Project. These estimated flows form the basis for design of the UID sewer facilities and evaluation of existing facilities that will serve the Project. Table 4.8.1 summarizes the criteria based on the City's Subdivision Manual.

[2] Salt Creek Interceptor Technical Sewer Study for the South Otay Ranch (Village 8 West and Village 9), October 2010.
[3] Estimated available balance on June 30, 2016.
[4] Based on estimated price of Metro capacity of $18 per gallon per day given in the Chula Vista Wastewater Master Plan Financial Analysis 2005 and annual inflation at 2%. Note that Fund 413 is used: (1) to repair, replace, or enlarge trunk sewer facilities; (2) to enhance efficiency of utilization and/or adequacy of capacity; or (3) to plan and/or evaluate any future proposals for area-wide sewage treatment and/or water reclamation systems and facilities. Seventy-two percent (72%) of Fund 413 may be expected to be used to fund the purchase of treatment capacity.

TABLE 4.8.1
CHULA VISTA SUBDIVISION MANUAL DESIGN CRITERIA

Item	Subdivision Manual Criteria
Residential Sewage Generation	230 gallons per day per equivalent single family dwelling unit (EDU)
	1 single family (SF) DU = 1 EDU
	1 multi-family unit (MF) = 0.75 EDU
Commercial Sewage Generation	2,500 gallons per day per acre (10.9 EDU)
Park Sewage Generation	500 gallons per day per acre (2.2 EDU)
Roughness Coefficient for polyvinyl chloride (PVC) sewer pipe, n	0.012
Depth/diameter ratio (d/D) for proposed sewer pipe	0.5 for pipes ≤12 inches
	0.75 for pipes >12 inches

The approximately 384-acre University and Innovation District consists of academic and academic support development, student housing, research and business technology and innovation center, market-rate housing, active recreation, open space and future development area. Table 4.8.2 summarizes the Project's various land uses and projected sewage flow rates. However, final land uses, acreages, and location of certain land uses may vary.

The UID Sewer Study estimated the total sewage flow from the Project to be approximately 1.34 million gallons per day, which was based on 265 gallons per day per EDU. Table 4.8.2 shows a similar, if somewhat lower number, for the sewage flow rate based on the new assumed flow rate of 230 gallons per day per EDU. Table 4.8.3 presents the sewage generation within each of the UID transects. Note that the UID Sewer Study assumed 600 fewer students-in-residence than did the Water Study.

TABLE 4.8.2
LAND USE SUMMARY AND SEWAGE GENERATION

Land Use	Gross Acres	Maximum Units	Unit Flow		Total Flow (gpd)
Student Residential Units		2,700	100	gpd/unit	270,000
Market-Rate Residential		2,000	230	gpd/unit	460,000
Academic & Academic Support	60		2,500	gpd/acre	150,000
Business Innovation and Commercial	48		2,500	gpd/acre	120,000
Active Common Open Space/Pedestrian Walks	44.64		500	gpd/acre	22,320
Lake Property	5		2,500	gpd/acre	12,500
Total Acres (not including open space and future development area)/Total Units	**157.64**	**4,700**			**1,034,820**

TABLE 4.8.3
SEWAGE GENERATION BY TRANSECT LAND USES

District Gateway				
Land Use	**Quantity**	**Unit Demand**		**Total Demand (gpd)**
University, Academic and Research	20	2,500	gpd/acre	50,000
Students in Residence	1,350	50	gpd/student	67,500
Commercial	0.5	2,500	gpd/acre.	1,250
Active park space	7.1	500	gpd/acre	3,550
Subtotal				**122,300**
Urban Core				
Land Use	**Quantity**	**Unit Demand**		**Total Demand (gpd)**
University, Academic and Research	24	2,500	gpd/acre	60,000
Students in Residence	1,350	50	gpd/student	67,500
Commercial	0.5	2,500	gpd/acre.	1,250
Active park space	4.6	500	gpd/acre	2,300
Subtotal				**131,050**
Town Center				
Land Use	**Quantity**	**Unit Demand**		**Total Demand (gpd)**
University, Academic and Research	33	2,500	gpd/acre	82,500
Students in Residence	1,350	50	gpd/student	67,500
Commercial	0.5	2,500	gpd/acre.	1,250
Active park space	11.94	500	gpd/acre	5,970
Subtotal				**157,220**
Campus Commons				
Land Use	**Quantity**	**Unit Demand**		**Total Demand (gpd)**
University, Academic and Research	29.00	2,500	gpd/acre	72,500
Students in Residence	1,350	50	gpd/student	67,500
Commercial	0.5	2,500	gpd/acre.	1,250
Active park space	12.7	500	gpd/acre	6,350
Subtotal				**147,600**
Campus Vistas				
Land Use	**Quantity**	**Unit Demand**		**Total Demand (gpd**
Market Rate Housing	2,000	230	gpd/unit	460,000
Active Park Space	8.3	500	gpd/acre	4,150
Subtotal				**464,150**
Lake Property	5	2,500	gpd/acre	**12,500**
TOTAL				**1,034,820**

Source: UID SPA Site Utilization Summary, June 2017; UID Sewer Study, April 2017

Note: Units and acreages may change as provided in the density and intensity transfer provisions of the UID SPA, but the total sewage flow rate will remain approximately the same.

On- and off-site collection, trunk, and interceptor facilities proposed for the Project were evaluated based on this sewage flow. In addition, the City's design criteria were used for analysis of the existing sewer system as well as for design and sizing of proposed improvements to accommodate the flows anticipated to be generated by the Project.

C. ON-SITE SEWER COLLECTION

The UID Sewer Study analyzed the on-site sewer system using the maximum allowable densities to determine the desired pipe sizes and slopes to meet the City's design criteria. Detailed calculations for the on-site sewer system are provided in the UID Sewer Study.

The on-site sewer collection system is expected to range from 8 to 12 inches in diameter, depending on the projected flows, available grade, and anticipated land use. The on-site sewer system was sized to accommodate density transfers as outlined in the Land Offer Agreement (Document No. 28-0218696 recorded in the County of San Diego on April 24, 2008) between Otay Land Company and the City, which allows up to 15% of the units within a village to be transferred to another planning area within the village, provided that the total units allocated to the project are not exceeded.

The Village 9 sewer system design indicates an 8-inch sewer main stub to be extended easterly within Otay Valley Road to serve the UID. When final site development plans for the UID are submitted, an analysis of impacts on the Village 9 sewer system and the Salt Creek Interceptor will be conducted.

D. UPSTREAM OFF-SITE FLOWS

There are no upstream flows into the UID sewer system.

E. OFF-SITE PIPELINE CAPACITY

As with other properties in the area, the intensity of the proposed development of the Project has increased from that proposed in the original Otay Ranch General Development Plan. The previously referenced study by PBS&J specifically analyzed the impact that the increased residential densities in Village 8 West and Village 9 and other projects would have on the Salt Creek Interceptor.[5] The PBS&J study determined that certain segments of the Salt Creek Interceptor upstream of the proposed Village 9/UID connection may require improvement before buildout of the Project.

4.8.6 RECOMMENDED SEWERAGE FACILITIES

Main Campus

The sewer facility improvements required to serve the Main Campus area of the Project include on- and off-site gravity sewer lines to convey the flows from the Project to the Salt Creek Interceptor. It is assumed that a 15-inch off-site gravity sewer will be constructed in Orion Avenue Village 9 from Street I in Village 9 to the Salt Creek Interceptor. If the UID Project goes online before Village 9, the City of Chula Vista, or its successor in interest, will be responsible for all

[5] The City analyzed the Salt Creek Interceptor in its 2005 Wastewater Master Plan, which was completed before adoption of the 2005 General Plan update. The PBS&J study therefore includes all land use changes that have occurred since completion of the 2005 Master Plan, including the 2005 General Plan, Village 8 West, and Village 9, including the Land Offer Agreement (University Site) units from JBP.

downstream connections. The sizing of sewer lines in the UID Sewer Study are considered preliminary and will be verified during the improvement plan preparation process when slopes and alignments for sewer lines have been better established. Exhibit 4.8.1 shows major existing sewer facilities located in the vicinity of the Project and the proposed UID sewer lines.

If the 15-inch gravity sewer in Orion Avenue is not constructed and connected to the Salt Creek Interceptor, the UID Sewer Study proposes an alternative interim solution that would require the construction of a sewer force main to pump flows back up to the gravity sewer in Main Street. The pump station for the UID would be located at the future connection of Line A with the future 15-inch line in Orion Avenue (see Exhibit 4.8.1).

Lake Property

The UID Sewer Study describes three alternatives for the Lake Property: The recommended option is a 4,100 foot gravity flow line connecting directly to the Salt Creek Sewer Interceptor westerly along an existing open space trail. The second alternative includes a force main that discharges to the Olympic Training Center sewer system to the north on Wueste Road. This alternative requires 1,400 feet of gravity sewer and 700 feet of force main. Alternative three is modified alignment of the force main connection to the Olympic Training Center. Alternative one is recommended due to lower maintenance and operations cost.

The recommended on-site sewer lines internal to the Project will range from 8- to 12-inch gravity sewers. Exhibit 4.8.1 illustrates the recommended backbone sewer mains for the Main Campus area of the Project. Three backbone sewer mains are indicated: Line A for Main Campus grading Phase 1; Line B for grading Phase 2 and the northerly portion of grading Phase 3; and Line C, the southerly portion of Phase 3. Lines A and B are shown to connect with the Orion Avenue main leading to the Salt Creek Interceptor; Line C will connect directly to the Salt Creek Interceptor upstream of the Village 9/Orion Avenue connection.

SALT CREEK SEWER BASIN

The Project lies within the Salt Creek Sewer Basin. Project sewage will ultimately flow southerly and westerly to the Salt Creek Interceptor (see Exhibit 4.8.1).

ON-SITE SEWER LINES

Development of the UID is expected to occur sequentially beginning with development adjacent to the proposed backbone sewer mains located in Eastlake Parkway and Discovery Falls Drive. The sewerage infrastructure will be extended as the UID internal street network is constructed.

4.8.7 FINANCING SEWERAGE FACILITIES

To fund the necessary improvements to the Salt Creek Interceptor, the City of Chula Vista established the Salt Creek Sewer Impact Fee program. The required fees are discussed in the following subsections A and B.

A. SALT CREEK SEWER BASIN IMPACT FEES

The November 1994 Salt Creek Basin Report prepared by Wilson Engineering established a fee to fund future improvements to the Salt Creek Interceptor System. In August 2004, the City of Chula Vista updated the Salt Creek Sewer Basin Plan with the primary goal of ensuring that fees are more fairly and equitably distributed among the remaining properties in the sewer basin and

that sufficient funding will be available to complete the required improvements to the interceptor system. This fee is required to be paid by all future developments in the Salt Creek Sewer Basin to fund improvements required to serve ultimate development within the basin. Since the 2004 update, changes in land use density and distribution have altered the basin's sewer system requirements. Therefore, developers are required to participate in an update of the Salt Creek Sewer Basin Plan and the impact fee program by funding a fair-share portion of a study to determine the effects that the Village 9 SPA and other projects will have on the Salt Creek Interceptor's area of benefit and the equitable distribution of its costs among all contributors to the system.

City of Chula Vista Ordinance Number 2974 updated the fee to be paid for future development within the Salt Creek Sewer Basin that connects to the existing system. Table 4.8.4 summarizes the fees to be paid by each land use type. The fees are collected upon issuance of building permits at the fee rates in effect at that time unless stated otherwise in a development agreement. The projected estimate of the total Salt Creek Sewer Basin fee revenue is $2.77 million based on the maximum number of allowable EDUs and the current fee of $1,381 per EDU. The actual fee revenue depends on the final number of EDUs, changes in acreages, and/or fee revisions by the City Council.

TABLE 4.8.4
SALT CREEK SEWER BASIN IMPACT FEES FOR UID PROJECT

Land Use	Units/ Acres	EDU Factor	EDUs	Fee $1,381 per EDU
Single-Family	2,000	1.00 EDU/unit	2,000	$2,762,000
Student Units		Included in Academic and Support		
Academic and Academic Support	60	10.9 EDU/ac	654	$903,174
Innovation District	48	10.9 EDU/ac	523	$722,263
Active Parks/Recreation	44.6	2.2 EDU/ac	98	$135,338
Total			**3,275**	**$4,522,775**

Fee is subject to change by the City Council.

B. SEWERAGE PARTICIPATION (TREATMENT CAPACITY) FEE

The City of Chula Vista collects a Sewerage Participation Fee to aid in the cost of processing sewage generated within the City. The fee is collected at the time of connection to the public sewer for new development. Existing buildings are subject to the fee when plumbing fixtures are added. For residential development, the current fee is $3,584 per EDU. Nonresidential projects are prorated based on the number of Equivalent Fixture Units (EFU). Table 4.8.6 summarizes the estimated City Sewerage Participation Fee for the Project. The Project's nonresidential land uses will be calculated for each specific development proposal. The Sewerage Participation Fees for all projects will be calculated prior to the issuance of building permits. The fee shown is as currently adopted and is subject to change by the City Council.

TABLE 4.8.5
RESIDENTIAL SEWERAGE PARTICIPATION FEE

	Units/Acres	EDUs	Fee $3,584 per EDU
Market-Rate Units	2,000	2,000	$7,168,000
Student Units	Included in Academic and Academic Support		
Academic, Academic Support and Innovation District	108	711	$2,548,224
	Total	**2,711**	**$8,583,680**

Fees is subject to change by the City Council. University and Innovation District fee based on an estimate of equivalent fixture units: assuming 125 fixture units per gross acre, 12.1 GPD per fixture unit and 230 gallons per EDU

4.8.8 THRESHOLD COMPLIANCE AND RECOMMENDATIONS

1) Facilities to accommodate sewer flows have been identified in the UID Sewer Study. The construction of new sewer lines shall be completed before the construction of streets.

2) All gravity sewers shall be designed to convey peak wet weather flow. For pipes with diameter of 12 inches and smaller, the sewers will be designed to convey this flow when flowing half full. For pipes of diameter larger than 12 inches, the sewers shall be designed to convey peak wet weather flow when flowing at three-fourths of the pipe depth. All new sewers shall be designed to maintain a minimum velocity of 2 feet per second at design capacity to prevent the deposition of solids.

3) Prior to the approval of the first subdivision of land for the Project, unless stated otherwise in a development agreement, as related to any uses within the Project, and to the satisfaction of the City Engineer, the City of Chula Vista, or its successor in interest, shall:

   a) Obtain approval for the improvement plans and any necessary environmental permits for the construction of the off-site sewer through the Multiple Species Conservation Program (MSCP) area to the Salt Creek Interceptor and prior to the first final "B" map, unless otherwise approved by the City Engineer.

   b) Commence and complete construction of the off-site sewer connection to the Salt Creek Interceptor prior to issuance of the first building permit.

   c) Participate in an update of the Salt Creek Sewer Basin Plan and the Impact Fee program by funding a fair-share portion of a study to determine the effects the UID SPA and other projects will have on the Salt Creek Basin Impact Fee's area of benefit and determine an equitable distribution of the system's costs among all its contributors.

4) The City of Chula Vista, or its successor in interest, shall:

a) At the request of the City Engineer, contribute a fair-share portion of the cost of all studies, reports, and updates to current plans required to analyze the impacts of increased sewer flows to existing sewer lines.

b) Assume the capital cost of all sewer lines, connections, and other improvements as may be required by the City Engineer, as identified within the UID Sewer Study and in any updates thereto.

c) Pay all current sewer fees required by the City of Chula Vista.

d) Comply with Section 3-303 of the City of Chula Vista Subdivision Manual.

e) Construct off-site connections as required by the City Engineer.

f) Prior to the approval of any density transfer resulting in an increase of either residential dwelling units or nonresidential floor area in a planning area in excess of the units or floor areas assumed in the UID Sewer Study for the Project, submit for review and approval by the Development Services Department a revised study of the proposed internal sewer collection system serving that planning area to verify that planned capacity of local sewer mains is available to accommodate the increased demand for those services.

g) Unless alternatives acceptable to the City Engineer are implemented that allow development of UID Phases 1, 2 and the northerly area of Phase 3 to proceed prior to construction of the Village 9 gravity sewer connection to the Salt Creek Interceptor in Orion Avenue, the City of Chula Vista, or its successor in interest, shall construct the pump station at the foot of proposed Line A and an interim force main along Eastlake Parkway from the pump station to the existing Main Street/Hunte Parkway sewer main. After the Village 9 connection to the Salt Creek Interceptor is constructed and in service the City of Chula Vista, or its successor in interest, shall remove the pump station and abandon the interim force main in Eastlake Parkway and connect Line A to the 15-inch in Orion Avenue.

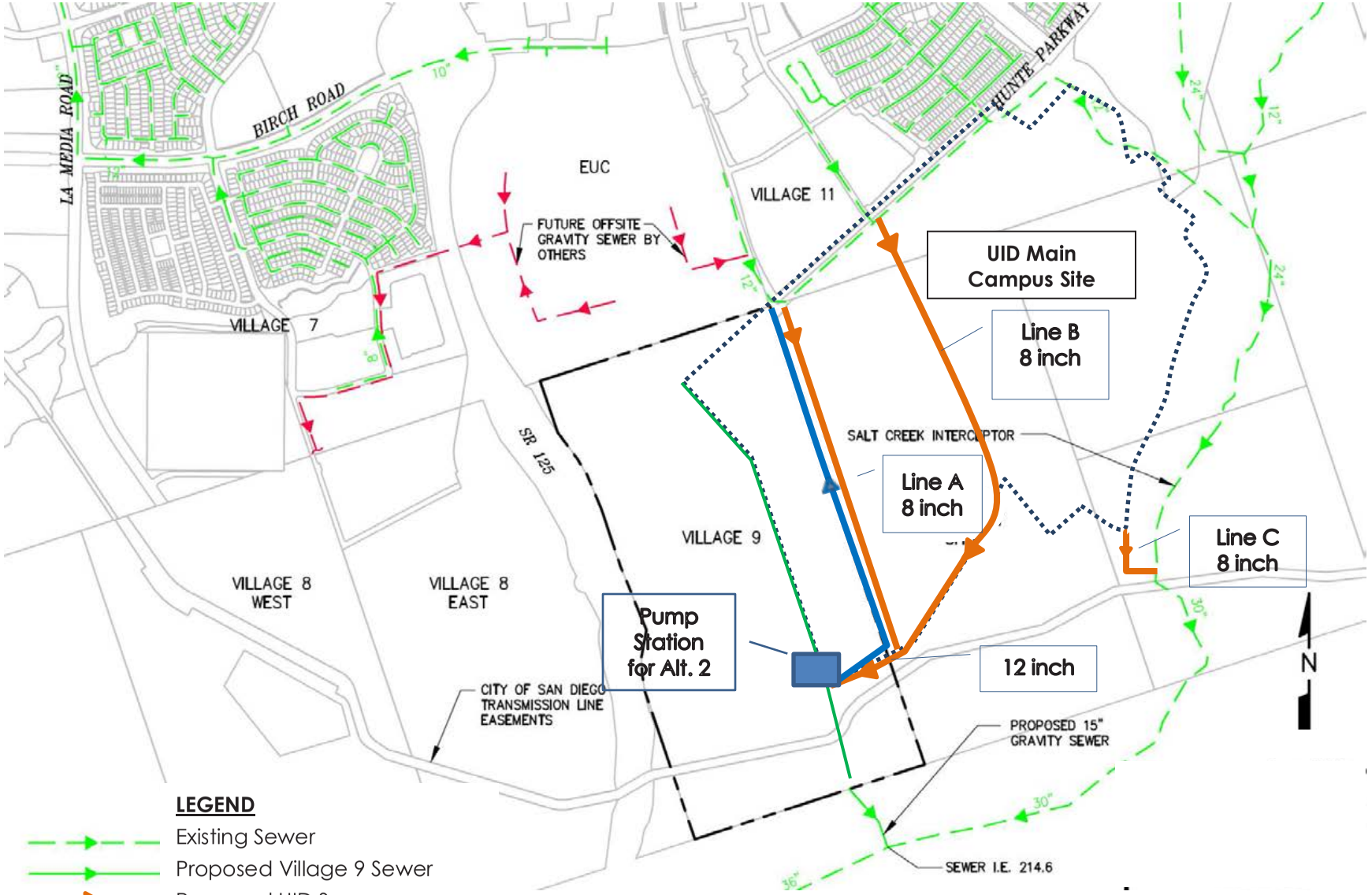

EXHIBIT 4.8.1: ALTERNATIVES 1 AND 2 OFF-SITE AND PROPOSED SEWER FACILITIES

Sources: UID Sewer Study and Village 9 Sewer Study, Figure 3-1, Wilson Engineers

4.9 DRAINAGE

4.9.1 THRESHOLD STANDARD

1. Storm water flows and volumes shall not exceed City Engineering Standards as set forth in the Chula Vista Subdivision Manual adopted by City Council, as may be amended from time to time by Resolution of the City Council.

2. The GMOC shall annually review the performance of the City's storm drainage system to determine its ability to meet the City's goals and objectives above.

4.9.2 SERVICE ANALYSIS

The City of Chula Vista Public Works Department is responsible for ensuring that safe and efficient storm water drainage systems are provided concurrent with development in order to protect the residents and property within the City. City staff is required to review individual projects to ensure that improvements are provided which are consistent with the drainage master plan(s) and that the project complies with all City engineering drainage standards.

The UID drainage improvements are identified in the *University Park and Innovation Conceptual Drainage Study, September 17, 2015* prepared by Rick Engineering Company (Drainage Study). The Drainage Study was prepared to assess the existing and developed drainage conditions for the UID. A schematic of the Project and its drainage system is shown in Exhibit 4.9.1.

The Drainage Study was prepared in support of the conceptual drainage design shown in the SPA plan and shown on Exhibit 4.9.1. The Drainage Study is consistent with the criteria set forth in the *County of San Diego Hydrology Manual* (June, 2003 edition). The Drainage Study provides the calculations required for the design of the proposed backbone storm drain system including hydrologic models to quantify existing and developed site runoff to the Otay River.

The Drainage Study relied upon the following documents and studies:

1. *City of Chula Vista Subdivision Manual dared March 13,* 2012;
2. *City of Chula Vista Best Management Practices Design Manual, December 2015, approved by City Council on February 16, 2016 Resolution No. 2016-003* (hereinafter referred to as the Development Storm Water Manual);
3. *San Diego Bay Watershed Management Area Water Quality Improvement Plan dated February 2016*
4. *Addendum to Rough Grading Hydrology Study for Otay Ranch Village 11, by Hunsaker and Associates, June 27, 2005;*
5. *Tentative Map Drainage Study for Otay Ranch Village 10, by Hunsaker and Associates, March 7, 2014;*
6. *"Drainage Study for High Tech High University Park Chula Vista Campus –Phase 2" by RBF Consulting, August 16, 2010;*
7. *Water Quality Technical Report (WQTR) and Hydromodification Management Plan for University and Innovation District (Conceptual)," by Rick Engineering Company, September 17, 2015;*
8. *Conceptual WQTR and Hydromodification Management Plan memo by Rick Engineering dated 6/20/2016*

The Project is under the jurisdiction of the San Diego Regional Water Quality Control Board (SDRWQCB). The Project is subject to the National Pollutant Discharge Elimination System (NPDES) requirements both during and after construction. NPDES requirements stem from the Federal Clean Water Act and are enforced either by the State Water Resources Control Board (SWRCB) or the San Diego Regional Water Quality Control Board (SDRWQCB). Storm water runoff pollution prevention and control measures for the Project are identified in the *Water Quality Technical Report and Hydromodification Management Plan for the UID*.

4.9.3 PROJECT PROCESSING REQUIREMENTS

The SPA Plan and the PFFP are required to address the following drainage issues:

- Identify phased demands for drainage improvements;
- Identify locations of facilities for on-site and off-site improvements;
- Provide cost estimates; and
- Identify financing methods.

4.9.4 EXISTING CONDITIONS

The Project area currently drains to natural watercourses and finger canyons that lead southerly and easterly to the Salt Creek and Otay Rivers (see Exhibit 4.9.2).

4.9.5 PROPOSED FACILITIES

A. STORM DRAINAGE

The development of the Project includes the development of higher-education academic, technological research, student housing, market-0rate residential units, athletic facilities, arterial roadways and local streets.

In the pre-developed condition, the Project site is divided into 10 pre-project natural drainage basins. Basins 100 and 200 drain into separate tributary watercourses to the Otay River. Drainage Basins 300, 400, 500, 600, and 700, flow southerly and easterly to the Salt Creek River upstream of its confluence with the Otay River as shown on Exhibit 4.9.2. The basins of the Lake Property: 1000, 1100 and 1200 drain into the Lower Otay Reservoir.

In the post-developed condition, the UID Campus site is composed of Phase I and II, which ultimately outlet to the Otay River at "point-of-interest" (POI) 1, and Phase III, which outlets to POI 2 in the Salt Creek; the Lake Property is Phase IV. Nearly the entire developed Project area (approximately 95%) will ultimately drain to the Otay River. Runoff from the northeasterly portion of the Project--Phase III—will be conveyed by a proposed 72-inch storm drain pipe. This pipe will extend through a finger canyon and discharge to a water quality basin located off the Salt Creek River upstream of its confluence with the Otay River (see Exhibit 4.9.3). Runoff from Phases I and II will enter into the Otay Ranch Village 10 storm drain system and be conveyed through that system before being discharged into proposed water quality basins located above the Otay River. The Village 10 water quality basins are drained by a pipe which outlets at POI 1 in the Otay River.

In prior studies of Otay Ranch projects with drainage directed to the Otay River (Villages 8 and 9), the storm water that would flow directly to the Otay River channel were exempt from hydromodification requirements. Currently, such storm water flows are no longer exempt and hydromodification mitigation measures now apply to the Otay River. However, the City of Chula Vista has applied for a renewal of the exemptions from the hyromodification requirements. Until the exemption is approved, portions of Phase I, II and III, which will ultimately discharge directly to the Otay River (via Village 10 storm drains), shall be subject to the requirements. If the exemption is not granted prior to the issuance of the first grading permit for areas that will drain to the affected reach of the Otay River, the grading plan shall be the analyzed for hydromodification impacts and the hydromodification impact mitigation measures shall be implemented until the exemption is granted. The measures that are currently applicable to the Project are discussed in "B. Storm Water Quality" below.

Pre and post project development areas and 100-year storm event flows for each basin are summarized in Table4.9.1:

TABLE 4.9.1
PRE & POST-DEVELOPMENT STORM WATER FLOWS

Point of Interest (POI)	Drainage Basin	Phase	Project Condition	Area, A (acres)	Weighted Runoff Coefficient, C_W	Time of Concentration, t_c (minutes)	Peak Flow Rate, Q_{100} (cfs [1])	ΔQ_{100} (cfs [1])
POI 1	100	Phase I	Pre	24.9	0.35	17.7	25.4	+306.2
			Post	75.3	0.85	7.3	331.6	
	200	Phase II	Pre [2]	166.5	0.35	14.9	240.1	+232.4
			Post [2]	137.7	0.85	9.2	472.5	
POI 2	300	Phase III	Pre [2]	116.2	0.35	27.0	89.4	+144.1
			Post [2]	80.9	0.85	11.9	233.5	
	400		Pre	29.7	0.35	11.7	39.5	+39.8
			Post	27.6	0.85	14.1	79.3	
	500		Pre	7.6	0.35	9.8	11.4	+15.5
			Post	5.8	0.85	6.7	26.9	
	600		Pre	8.2	0.35	10.9	11.4	+18.8
			Post	7.8	0.85	8.9	30.2	
	700		Pre [2]	404.0	0.35	14.4	982.5	n/a
			Post [3]	31.5	0.85	11.9	100.7	
POI 3	1000	Phase IV	Pre	4.8	0.35	11.2	6.7	-2.2
			Post	1.7	0.47	6.6	4.5	
	1100		Pre	12.3	0.36	10.6	14.4	+11.0
			Post	12.0	0.42	5.2	25.0	
	1200		Pre	4.5	0.35	10.5	6.5	+17.4
			Post	7.9	0.56	6.9	23.9	

[1] "cfs" - cubic feet per second

[2] Basins 200, 300 and 700 convey off-site flows. Refer to Table 4.9.2 for a summary of off-site source flows.

[3]The pre-project Basin 700 off-site areas (Eastlake Village 11) are excluded from the post-project condition. The natural channel, into which the off-site flow is conveyed to the Salt Creek, is outside the post-project boundaries. Runoff from Phase III (a majority of the areas that currently sheet-flows in a southeasterly direction towards Salt Creek) will be conveyed in a southwesterly direction and will discharge into water quality basin adjacent to the Salt Creek upstream of POI 2.

TABLE 4.9.2
OFF-SITE PRE & POST-DEVELOPMENT STORM WATER FLOWS

Off-site Source Flows	Project Condition	Drainage Node #	Area, A (acres)	Time of Concentration, t_c (minutes)	Peak Flow Rate, Q_{100} (cfs [1])	ΔQ_{100} (cfs [1])
A portion of existing Otay Ranch Village 11 (including a portion of currently developed Millenia (EUC))	Pre-project	206	53.2	8.9	155	0
	Post-project	203	53.2	8.9	155	
Existing High Tech High and adjacent slope (west)	Pre-project	300	22.5	18.9	21	-13.6
	Post-project	303	11.0	18.0	7.4	
An existing slope, located east of existing High Tech High	Pre-project	703	4.7	13.8	7	n/a
	Post-project	N/A – This area is anticipated to be developed as part of the project and will be part of Basin 300 and Basin 700. Refer to the Basin 300 and Basin 700 hydrologic analyses.				
A portion of existing Otay Ranch Village 11	Pre-project	700	336.0	11.8	923	n/a
	Post-project	N/A – The same off-site flow is expected at this point in the post-project condition; however, a majority of Basin 700 will be conveyed in a southerly direction via a network of proposed storm drain system for Phase III; therefore, this off-site hydrologic analysis is not relevant.				

B. STORM WATER QUALITY

1. Regulations: The Project is subject to National Pollutant Discharge Elimination System (NPDES) requirements. NPDES requirements are contained in Section 402(p) of the Federal Clean Water Act, which established a framework for regulating storm water discharges from municipal, industrial, and construction activities. These requirements are implemented through permits issued by the State Water Resources Control Board (SWRCB) or the local Regional Water Quality Control Board in which the Project is located. In San Diego County the local board is the California Regional Water Quality Control Board San Diego Region, herein (SDRWQCB). Further, the requirements are implemented through the City of Chula Vista, which is the governing municipality for the Project.

The WQTR summarizes post-construction storm water quality protection requirements for the Project and the results of the hydromodification analyses (if required) of the Phase I, II and III storm water discharges to the Otay River system (Section 4.4 of the WQTR). The Project is located in the Otay Valley Hydrologic Area within the Otay Hydrologic Unit. The corresponding number designation is 910.20 (Region '9', Hydrologic Unit '10', and Hydrologic Area '2').

For the purposes of post-construction storm water quality management, the Project will follow the guidelines and requirements set forth in the Development Storm Water Manual which contains the City of Chula Vista's Standard Water Mitigation Plan (SUSMP) requirements and SDRWQCB Order No. R9-2007-0001 (adopted by the SDRWQCB on January 24, 2007) and R9-2013-0001. Order No. R9-2013-0001 is a pending renewal of National Pollutant Discharge Elimination System (NPDES) Permit No. CAS0108758, "Waste Discharge Requirements for Discharges of Urban Runoff from the Municipal Separate Storm Sewer Systems (MS4s) Draining the Watersheds of the County of San Diego, the Incorporated Cities of San Diego County, the San Diego Unified Port District, and the San Diego County Regional Airport Authority" ("Municipal Storm Water Permit"),. The UID Project WQTR states: "While the intent of the project is to comply with the current 2007 MS4 Permit

(Order No. R9-2007-0001), the Project acknowledges that the 2013 MS4 Permit (Order No. R9-2013-0001) may apply to the Project, pending timing of approvals and the final guidelines for Prior Lawful Approval".

The City of Chula Vista Development Storm Water Manual provides guidance for new development and redevelopment projects to achieve compliance with the City of Chula Vista's SUSMP. The City of Chula Vista's current SUSMP and Development Storm Water Manual requirements are based on the new Municipal Storm Water Permit adopted by the SDRWQCB, Order Nos. R9-2007-0001 and R9-2013-0001.

Compliance with the Development Storm Water Manual requires that the Project design must incorporate Low Impact Development (LID) and Integrated Management Practices (IMPs) to address storm water quality management and flow control including the Hydromodification Management Plan, if required, in addition to storm water treatment for runoff before leaving the site.

Order Nos. R9-2007-0001 and R9-2013-0001 includes several changes to requirements for post-construction storm water management and has resulted in the modification of the SUSMP and changes to the standards for post-construction storm water management practices. Specific changes that directly affect the design of the Project include:

- ***Low Impact Development (LID) Best Management Practices (BMP) Requirements:*** Project applicants with Priority Development Projects will be required to implement LID BMP's which will collectively minimize directly connected impervious areas and promote infiltration (Section D.1.d.(4) of Order Nos. R9-2007-0001 and R9-2013-0001).

- ***Hydromodification — Limitations on Increases of Runoff Discharge Rates and Durations:*** Under Section D.1.g of Order Nos. R9-2007-0001 and R9-2013-0001, the Co-permittees may be required to prepare a Hydromodification Management Plan (HMP) and incorporate its requirements into their SUSMP's. Hydromodification refers to changes in a watershed's runoff characteristics resulting from development, together with associated morphological changes to channels receiving the runoff, such as changes in sediment transport characteristics and the hydraulic geometry (width, depth and slope) of channels. These changes result in stream bank erosion and sedimentation, leading to habitat degradation due to loss of overhead cover and loss of in-stream habitat structures.

  The Project will incorporate requirements for LID and hydromodification design elements in effect at the time development plans for the Project are prepared. All development within the Project will be subject to the City of Chula Vista's SUSMP at the time of grading permit issuance.

2. Surrounding Villages in Otay Ranch: The Project is part of the larger Otay Ranch development. Therefore drainage from land outside the Project boundaries will be conducted through the Project's drainage system. Drainage from a portion of the EUC will enter the Project's storm drainage systems at the northern Project boundary. A 54-inch diameter underground drain pipe that conducts flows from the intersection of Eastlake and Hunte Parkways, at the northeast corner of the Project currently outlets into a natural channel running from north to south through westerly edge of the UID site (see Exhibit 4.9.2). Otay Ranch Village 9 was required to conduct a hydromodification analysis to evaluate the effect of the discharge on the natural channel. However, this 54-inch drain pipe will be undergrounded in Orion Avenue and will enter the future Village 10 drainage system.

3. Stormwater Pollution: Based on the Development Storm Water Manual, the Project as a whole can be expected to generate the following pollutants:

- sediment
- nutrients
- heavy metals
- organic compounds
- trash and debris
- oxygen demanding substances
- oil and grease
- bacteria and viruses
- and pesticides

The Project includes the following priority project categories highlighted in Table 4.9.3 : Detached and Attached Residential Development, Development of 10 or more housing units, Commercial Development (greater than one acre), Restaurants, Hillside Development, Parking Lots, and "Streets, Highways & Freeways".

The WQTR for the Project recommends specific site design, treatment and source control BMPs for the priority project categories. For priority projects where no primary pollutants of concern exist, those pollutants identified through the use of Table 4.9.2 shall be considered secondary pollutants of concern. For the Project as a whole, this will include every pollutant that is listed on Table 4.9.2.

All individual development applications within the Project will trigger separate, or supplemental, WQTRs proposing appropriate on-site LID BMPs. Lot-specific structural BMPs for the commercial sites, attached residential development, parks, CPF sites and schools shall be implemented as these lots are developed and shall meet the numeric sizing standards set forth in the Development Storm Water Manual.

4. Treatment Control BMP's: The Project WQTR focuses on Bio-retention features, as described in Section 4.3 "Treatment Control BMP's" of the Project's WQTR, and site design LID principles, described in Section 4.1 for post-construction storm water management throughout the Project. The treatment control BMP is described as bio-retention tree wells and grass swales, typically consisting of a sand bed, ponding area, organic layer planting soil and plants. Detention and slow filtration through biologically active soil in the tree wells and swales will provide treatment as well as managing discharge rates and durations. As development plans for individual parcels are prepared, the same procedures described in the WQTR shall be followed to design LID BMP's within the parcel. All development within the Project will be subject to the City of Chula Vista's SUSMP at the time of grading permit issuance.

Depending on whether the WQTR is grandfathered under the 2007 MS4 permit, the WQTR may need to be updated to current standards for a PDP-SWQMP. An updated WQTR may provide the opportunity to waive hydromodification requirements in the right-of-way through the

implementation of Green Streets measures in accordance with the latest co-permittee guidance.

TABLE 4.9.3
ANTICIPATED AND POTENTIAL POLLUTANTS GENERATED BY LAND USE TYPE

General Pollutant Categories									
Priority Project Categories	**Sediment**	**Nutrients**	**Heavy Metals**	**Organic Compounds**	**Trash & Debris**	**Oxygen Demanding Substances**	**Oil & Grease**	**Bacteria & Viruses**	**Pesticides**
Detached Residential Development	X	X			X	X	X	X	X
Attached Residential Development*.	X	X			X	P(1)	P(2)	P	X
Development. of 10 Housing units or more	X	X			X	P(1)	P(2)	p	X
Commercial Development. over one acre**	P(1)	P(1)		P(2)	X	P(5)	X	P(3)	P(5)
Auto Repair Shops			X	X(4) (5)	X		X		
Restaurants					X	X	X	X	
Hillside Development. >5,000 sq. ft. (2)	X	X			X	X	X		X
Parking Lots	P(1)	P(1)	X		X	P (1)	X		P(1)
Retail Gasoline Outlets			X	X	X	X	X		
Streets, Highways & Freeways	X	P(1)	X	X(4)	X	P(5)	X		

X = anticipated P = potential
(1) A potential pollutant if landscaping exists on-site
(2) A potential pollutant if the project includes uncovered parking areas.
(3) A potential pollutant if land use involves food or animal waste products
(4) Including petroleum hydrocarbons.
(5) Including solvents

Source: City of Chula Vista "Development and Redevelopment Projects Storm Water Standards Requirements Manual, June, 2015, Table 3.1.

Note that "Attached Residential Development" is subject to be updated to "a development of 10 housing units or more based on, Order No. R9-2007-0001/R9-2013-0001

*** Note that "Commercial Development >100,000 ft^2" is subject to be updated to "greater than one acre" based on Order No. R92007-0001.*

5. Source Control BMPs: WQTR Section 4.2 describes typical source control BMPs which will be implemented with subsequent individual priority projects within the UID.

6. Treatment Control BMPs: WQTR Section 4.3 describes typical treatment control BMPs which will be implemented with subsequent individual priority projects within the UID.

7. Hydromodification BMPs: WQTR Section 4.4 describes the exemption of hydromodification management plan requirements. As stated above, the exemption is currently no longer in effect

for the Otay River. The City of Chula Vista has applied for a renewal and pending approval, the Project may need to comply with hydromodification management plan requirements for the Project's storm water discharge to natural channels.

8. Operation and Maintenance Plans (O&M Plans): The WQTR Section 5 outlines maintenance responsibilities and mechanisms. In general, operations and management (O&M) plans will be prepared to identify the designated responsible parties to manage the bio-retention, LID and other BMP's. O&M plans will also describe training requirements, operating schedule, maintenance frequency, routine service schedule, specific maintenance activities, copies of resource agency permits (if applicable), record keeping requirements, and any other necessary activities required by the SUSMP. There may be one or more O&M plans for the Project as needed, depending on the delegation of maintenance responsibilities. For example, a separate maintenance plan would be required for BMPs located within the public right-of-way and others for BMPs within commercial areas or common interest developments. The maintenance responsibilities for all BMPs will be the subject of agreements between the City and future landowners, leaseholders and/or operators of priority projects that shall specify the obligation to maintain BMPs through recorded covenants and easements running with land.

4.9.6 FINANCING DRAINAGE FACILITIES

A. ON-SITE FACILITIES

City policy requires that all master planned developments provide for the conveyance of storm waters throughout the Project to City engineering standards. The Project will be required to construct, or secure the construction of, all on-site facilities, as well as those that have not yet been identified, through the processing of a subdivision map.

In newly developing areas east of I-805, it is the City's policy that development projects assume the burden of funding all maintenance activities associated with water quality facilities. As such, the City will enter into an agreement with the Project applicant(s) whereby maintenance of water quality facilities will be assured by one of the following funding methods:

1. A property owner's association that would raise funds through fees paid by each property owner; or

2. A Community Facilities District (CFD) established over the entire Project to raise funds through the creation of a special tax for maintenance of public drainage facilities.

B. OFF-SITE FACILITIES

Off-site drainage facilities required for the Project include the following:

1. The proposed storm drain pipe from the southerly Project site to an approved outfall at the Otay River bottom, terminating in an appropriate energy dissipater, and;

2. All facilities required by the Chula Vista SUSMP in conjunction with any off-site road construction that the Project is responsible for as mitigation of direct impacts, or roadways assumed in the Project's Traffic Impact Analysis "to be built by others" that the developer must construct in order to continue development of the Project.

4.9.7 THRESHOLD COMPLIANCE

A. The development of the Project, if conducted in accordance with proposed mitigation measures, will not adversely impact the existing natural drainage conditions.

B. Prior to issuance of any grading permit for the Project, or any land development permit, including clearing and grading, the City of Chula Vista, or its successor in interest, shall submit a Notice of Intent (NOI) and obtain coverage under the National Pollutant Discharge Elimination System (NPDES) permit for Construction Activity from the State Water Resources Control Board (SWRCB). The permit requires development of a Storm Water Pollution Prevention Plan (SWPPP) and Monitoring Plan that shall be submitted to the City Engineer and the Director of Public Works. The SWPPP shall be incorporated into the grading and drainage plans and shall provide for implementation of construction and post-construction Best Management Practices (BMPs) on site to reduce the amount of sediments and pollutants in construction and post-construction surface runoff before it is discharged into off-site storm water facilities. The grading plans shall note the conditions requiring a SWPPP and Monitoring Plans.

C. Prior to issuance of each grading permit, a detailed drainage system design study shall be prepared in accordance with the City of Chula Vista's standards and shall be reviewed and approved by the City Engineer.

D. Permanent treatment controls BMP's shall be included as part of the Project in accordance with Section 3c of the City of Chula Vista SUSMP, the City of Chula Vista Best Management Practices (BMP) Design, February, 2016, and the Project's final WQTR to the satisfaction of the City Engineer.

E. Except for individual single family lots, plans for development of individual parcels such as attached residential, retail, commercial and/or parks shall include a supplemental WQTR submitted to for approval by the City Engineer. The supplemental WQTR shall: include on-site storm water management measures to be implemented with the development of each parcel, verify numeric sizing of structural control BMP's to the satisfaction of the City Engineer and reference the Project's final WQTR for information relevant to the overall Project's design concepts (e.g., downstream conditions of concern and LID BMP principles) to the satisfaction of the City Engineer. Currently a separate WQTR is not required for individual single family lots, however each lot is required to have individual storm water BMP's. For single family residential storm water management measures (such as individual bio-retention IMPs, if proposed) specific calculations for typical single family lots shall be provided with the appropriate precise grading or design review plans for approval by the City Engineer. Notwithstanding the above all planning areas, including those comprised entirely of single family lots shall meet the Storm Water Manual's requirements at the time of issuance of a grading permit.

F. Prior to the approval of the first Grading permit for the Project, Drainage Management Areas (DMA) shall be delineated for all land uses and/or planning areas of the Project. The DMAs will include not only streets within the parcel, but also buildings, parking lots or structures, and other areas. As each DMA would either drain to a designated LID BMP(s) features, or be designed to treat and/or retain storm water within the DMA, the specific design of bio-retention IMPs, including their proximity to structures and how runoff would be collected, retained and/or discharged from them shall be subject to approval by the geotechnical engineer for the Project. The evaluation shall be conducted on a lot-by-lot basis after rough grading is completed and prior to constructing any improvements or

structures. All development within the project shall be subject to the City of Chula Vista's SUSMP (Section 3 of the Development Storm Water Manual) at the time of grading permit issuance unless otherwise addressed in a development agreement.

G. Any Applicant for a development permit within the Project shall monitor and mitigate any erosion in downstream locations that may occur as a result of on-site development.

H. Any Applicant for a development permit within the Project shall comply with the City of Chula Vista Development Storm Water Manual Limitation of Grading requirements, which limit the area that can be cleared or graded and left exposed at one time to amount of acreage that the owner/contractor can adequately protect prior to a predicted rainstorm, but in no event greater than 100 acres, unless expansion of a disturbed area is specifically approved by the Director of Public Works. Soil stabilization and sediment control materials shall be maintained on-site sufficient to protect the disturbed soil areas. Under this requirement, grading shall be phased at larger sites. For example, it may be necessary to deploy and maintain soil stabilization, erosion and sediment control BMPs in areas that are not completed, but are not actively being worked, before the additional grading is done or the next phase of grading is begun.

I. As a result of the NPDES Municipal Permit, Order No. R9-2007-0001, and phasing of the Project development, the City of Chula Vista, or its successor in interest, shall comply with the City's Hydromodification Criteria or Hydrograph Modification Management Plan, as applicable, addressed regionally at the Project's SPA Plan level concurrent with Grading and Improvement Plans for major streets.

J. Prior to the issuance of any building permit resulting in an increase in permanent impermeable area, each application for a permit to develop within the Project is required to design and implement a post-construction SUSMP and implement BMP's in accordance with the most recent regulations at the time of grading or building permit issuance, unless otherwise addressed in a development agreement. In particular, all land development projects are required to comply with the requirements of the NPDES Municipal Permit, Order No. R9-2013-0001, and the City of Chula Vista *Development Storm Water Manual* dated February, 2016 or any re-issuances thereof. Specifically, the projects shall incorporate into the proposed project design, structural on-site design features to address Site Design and Treatment Control (BMP's) as well as LID and HMP requirements. Any of said requirements may be waived if the City of Chula Vista, or its successors in interest demonstrates, to the satisfaction of the City Engineer, that regional facilities exist to address such requirements.

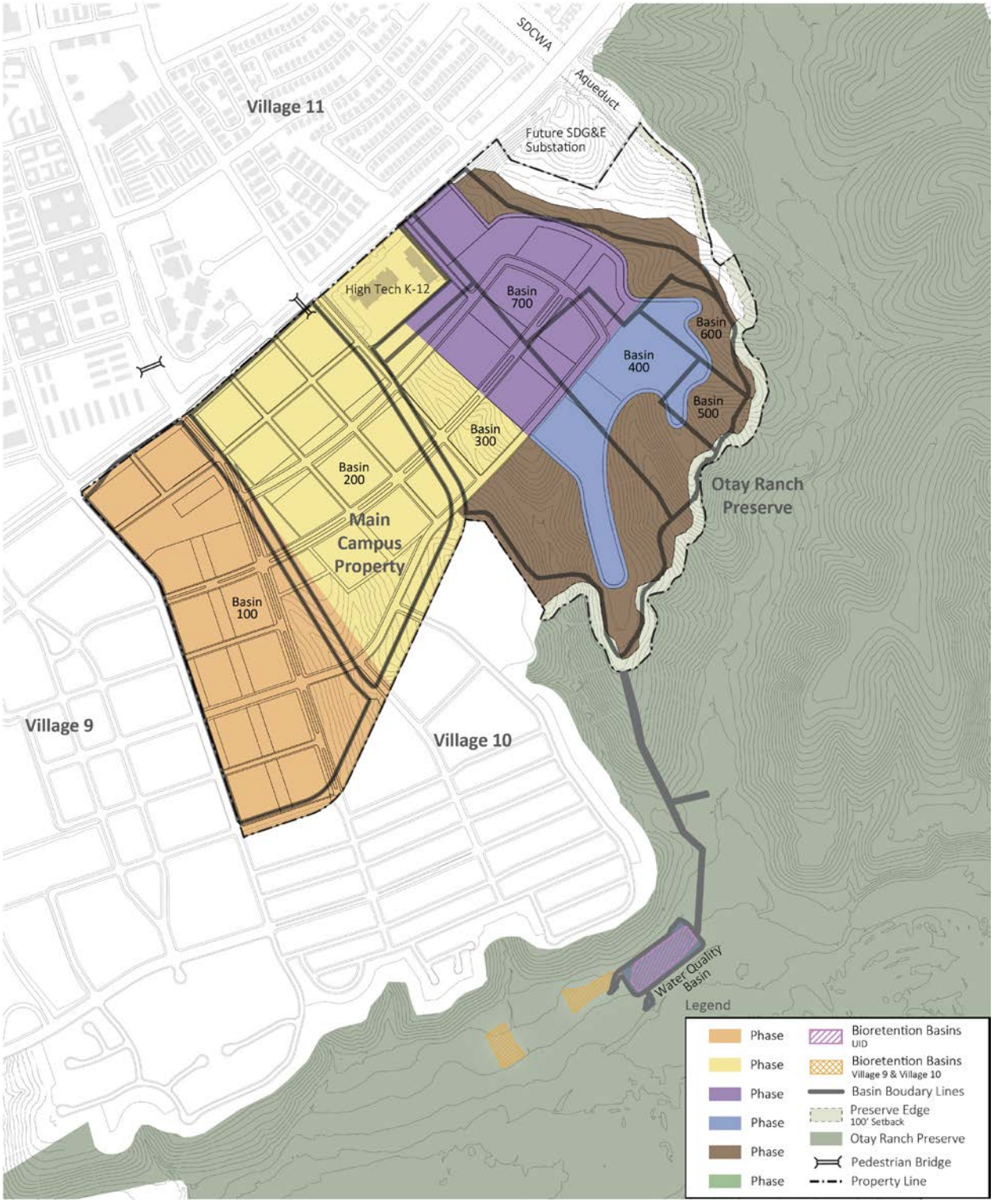

EXHIBIT 4.9.1 STORM DRAINAGE DESIGN

(Source: UID SPA Plan Figure 9F, November, 2017)

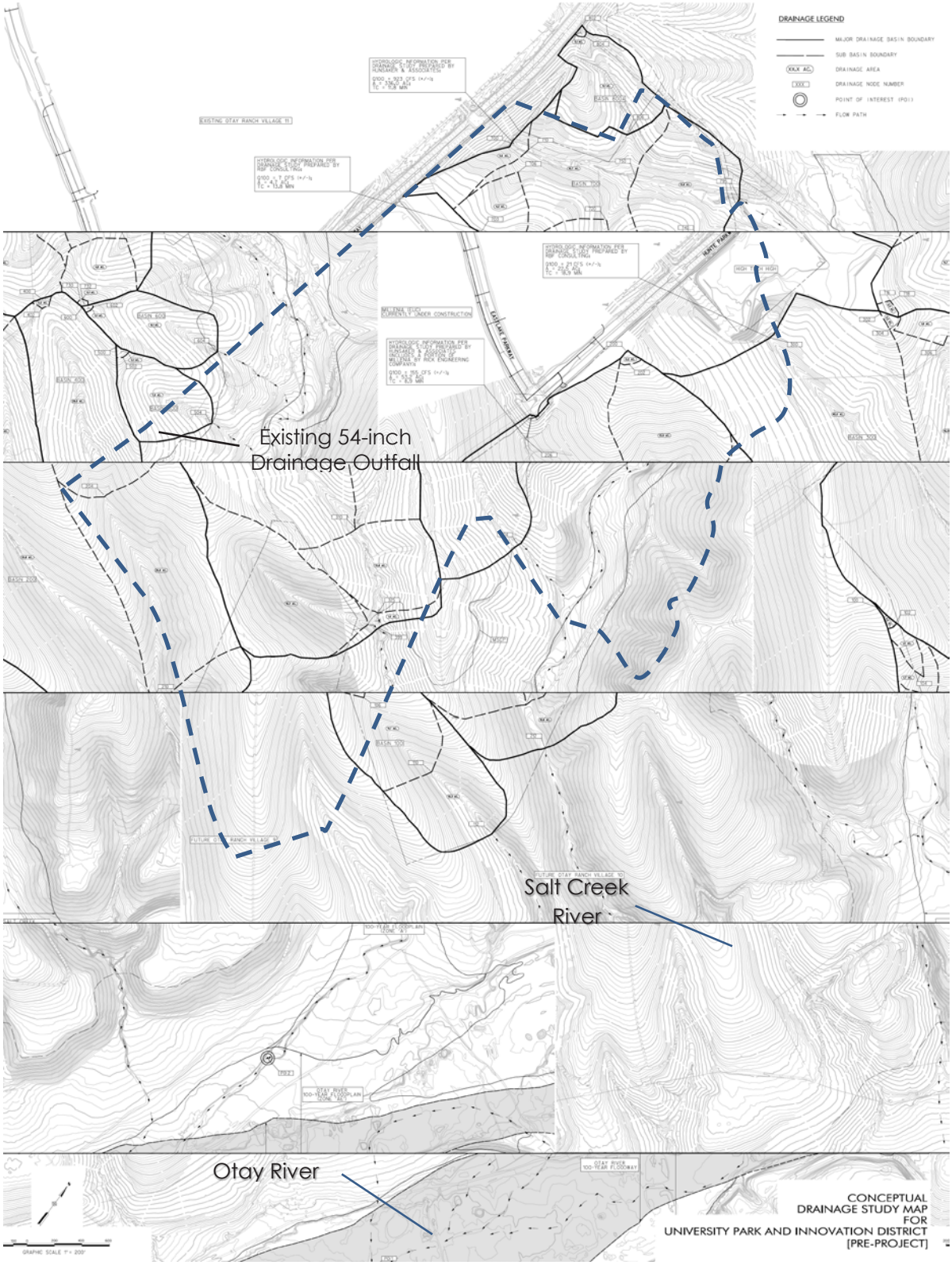

EXHIBIT 4.9.2 PRE-DEVELOPED DRAINAGE CONDITION

(Source: Drainage Study Map 1, October, 2016)

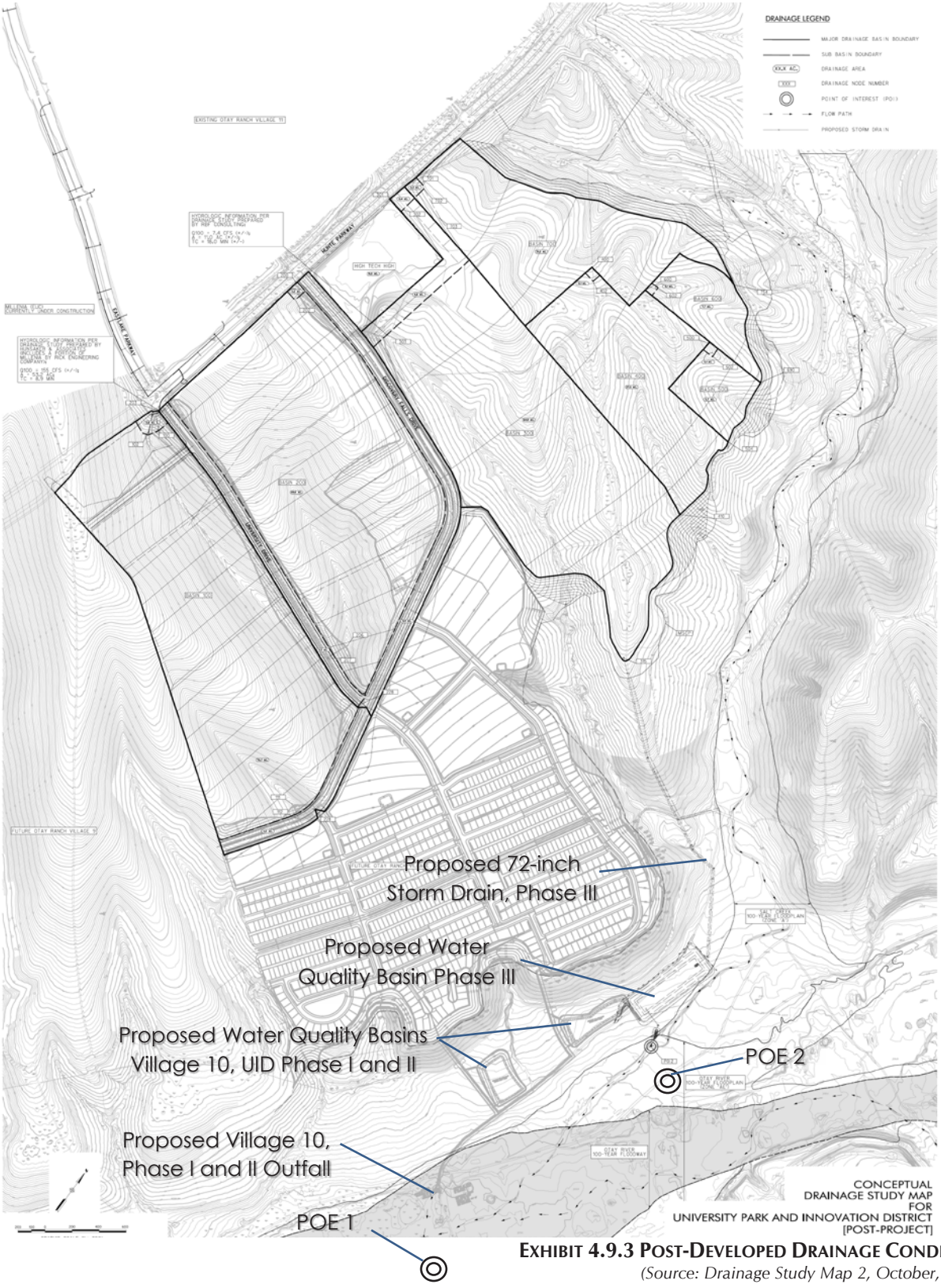

EXHIBIT 4.9.3 POST-DEVELOPED DRAINAGE CONDITION
(Source: Drainage Study Map 2, October, 2016)

EXHIBIT 4.9.4 LAKE PROPERTY PRE-DEVELOPED DRAINAGE CONDITION
(Source: Drainage Study Map 2, October, 2016)

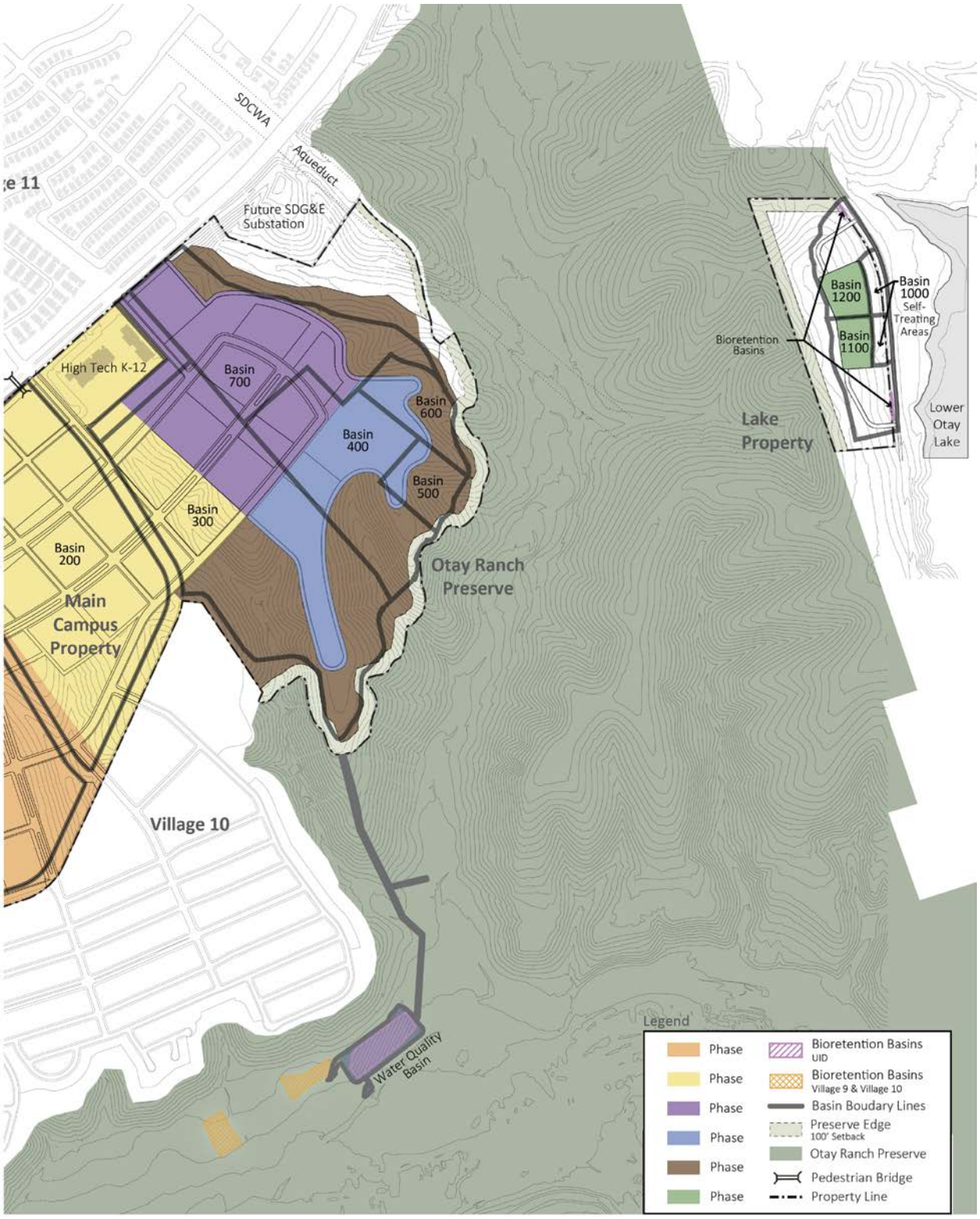

EXHIBIT 4.9.5 LAKE PROPERTY POST-DEVELOPED DRAINAGE CONDITION

(Source: UID SPA Plan Figure 9F, November 2017)

4.10 AIR QUALITY

4.10.1 THRESHOLD STANDARD

The Growth Management Oversight Commission (GMOC) is to be provided with an annual report which:

1) Provides an overview and evaluation of local development projects approved during the prior year to determine to what extent they implemented measures designed to foster air quality improvement pursuant to relevant regional and local air quality improvement strategies.

2) Identifies whether the City's development regulations, policies, and procedures relate to, and/or are consistent with, current applicable federal, state, and regional air quality regulations and programs.

3) Identifies non-development-specific activities being undertaken by the City toward compliance with relevant federal, state, and local regulations regarding air quality, and whether the City has achieved compliance.

The City will provide a copy of the annual report to the San Diego Air Pollution Control District (APCD) for review and comment. In addition, the APCD reports on overall regional and local air quality conditions, the status of regional air quality improvement implementation efforts under the regional air quality strategy and related federal and state programs, and the effect of those efforts/programs on the City of Chula Vista and local planning and development activities.

The City also provides the APCD with an annual 12- to 18-month development forecast and requests an evaluation of its impact on current and future air quality management programs, along with recent air quality data. The growth forecast and APCD response letters are provided to the GMOC for inclusion in its annual review.

4.10.2 SERVICE ANALYSIS

AIR QUALITY IMPROVEMENT PLAN

The City of Chula Vista has a Growth Management Element (GME) in its General Plan. One of the stated objectives of the GME is to be proactive in planning to meet federal and state air quality standards. This objective is incorporated into the element's action program. Although adopted in 1989, the GME has remained current by requiring not only air pollution reduction measures identified in 1989 but also "measures developed in the future."

To implement the GME, the Chula Vista City Council adopted the Growth Management Program that requires air quality improvement plans (AQIP) for major development projects (50 residential units or commercial/industrial projects with equivalent air quality impacts). Title 19 (Section 19.09.080.B) of the Chula Vista Municipal Code requires that a SPA submittal contain an AQIP, which is to include an assessment of how a project has been designed to reduce emissions as well as identify mitigation measures.

The Chula Vista City Council adopted the Carbon Dioxide (CO_2) Reduction Plan on November 14, 2000. The plan included implementing measures regarding transportation and energy-efficient land use planning and building construction measures for new development. In this plan, it was recognized that the City's efforts to reduce carbon dioxide emissions from new

development are directly related to energy conservation and air quality efforts. As a result, the City initiated a pilot study to identify and evaluate the relative effectiveness and costs of applying various design and energy conservation features in new development projects. The original CO_2 Reduction Plan was revised to incorporate new climate mitigation (2008) and adaptation (2011) measures to strengthen the City's climate action efforts and to facilitate numerous community co-benefits such as utility savings, better air quality, reduced traffic congestion, local economic development, and improved quality of life.

AIR QUALITY MODELING

Based on the pilot study and other data, the City developed guidelines for AQIPs. These guidelines required that a project be evaluated using the Chula Vista CO_2 INDEX model, or an approved alternative modeling software. The City's revised AQIP Guidelines listed 16 key indicators and threshold values for each indicator that are evaluated by the CO_2 INDEX model.

As an alternative modeling software, the UID SPA Plan Appendix B: Air Quality Improvement Plan proposes to apply LEED-ND criteria which it considers to be more appropriate than the INDEX model used to evaluate previous SPA plans. The following justifications are given in the UID SPA AQMP for selection of the LEED-ND equivalency analysis:

- INDEX indicators and thresholds were originally developed using residential pilot projects in contrast to the mixed uses in the UID Project.
- INDEX indicators are primarily internal-focused, whereas the UID Project AQIP value derives in large part from surrounding uses that will interact with UID Project uses. LEED-ND criteria measure these benefits to a greater and more accurate extent.
- The INDEX approach uses only 16 indicators, whereas LEED-ND has 56 indicators that are able to characterize a project much more comprehensively and thoroughly, and ultimately capture more contributors to GHG emission reductions.
- The underlying basics of the INDEX approach are nearly 15 years old, in contrast to LEED-ND's latest update in April of 2016.
- Consequently, current best practices in urban design, green infrastructure, and resilient neighborhoods are not addressed by INDEX indicators, but are covered by LEED-ND criteria.
- The California Energy Code and Green building Standards have been updated since the INDEX approach was established.
- The UID Project will be a zero net energy facility.
- The INDEX model is no longer being used

The UID Project scores the equivalent of 36 points under the LEED-ND rating system. Overall, the ND credits double or triple the depth and extent of measurements compared to INDEX indicators. Table 4.10.1: LEED Equivalency Scorecard provides a description of the project attributes that were considered from the LEED-ND rating system. The base ND certification of 36 points is the functional equivalent of INDEX indicator thresholds.

TABLE 4.10.1
LEED EQUIVALENCY SCORECARD (SELECTED OPTIONS)

LEED-ND Credit	Options	Possible Points	UID Equivalency Points
Smart Location and Linkage			
Preferred Locations	Location Type	1-5	0
	Connectivity	1-5	0
	High Priority Locations	3	0
Access to Quality Transit	Existing/planned Transit	1-7	3
Bicycle Facilities	Bicycle Storage and		
	Bicycle Location, or	1	
	Bicycle Network	1	1
Housing and Jobs Proximity	Affordable Housing	3	
	30% of total single-family or number of jobs within ½-mile of housing	2	2
	Infill project with nonresidential component	1	0
Steep Slope Protection		1	1
Restoration of Habitat or Wetlands and Water Bodies		1	
Long-Term Conservation Management of Habitat or Wetlands and Water Bodies		1	
Site Design for Habitat or Wetland and Water Body Conservation	Sites without significant habitat or wetlands	1	
	Sites with significant habitat or wetlands	1	
Neighborhood Pattern and Design			
Walkable Streets	25-foot setback (80%)	1	1
	18 foot setback (50%)	1	1
	Off-street parking provided both sides on 70% of streets	1	1
	Continuous sidewalks (10 feet wide in mixed-use blocks	1	1
	25 mph limit on mixed-use streets	1	1
	Driveways Limited	1	1

TABLE 4.10.1
LEED EQUIVALENCY SCORECARD (SELECTED OPTIONS) (CONTINUED)

LEED-ND Credit	Options	Possible Points	UID Equivalency Points
Compact Development	Density/acre	1-6	N/A
Mixed-Use Development	Number of uses within ¼-mile walking distance	1-4	1
Reduced Parking Footprint	All off-street parking at side or rear	1	
Transit Facilities		1	1
Housing Types and Affordability	Diverse housing types	1-7	1
	Affordable housing	1-3	
Transportation Demand Management	Transit passes	1-2 1 point for every 2 options	2
	Developer-sponsored transit passes		
	Vehicle sharing		
	Unbundling of parking/fees		
	Guaranteed ride home		
	Flexible work arrangements		
Access to Civic and Public Space	90% of units and nonresidential use entrances within ¼-mile of 1 civic and passive open space	1	1
Access to Recreation Facilities	1 Recreation facility of 1 acer within ½-mile	1	1
Visitability and Universal Design	20% of dwellings are a visitable unit	1	
	At least 5 universal design features	1	1
	Kitchen features	1	
	Bedroom/bathroom features	1	
Community Outreach and Involvement	Community outreach	1	
	Charette	2	2
	Endorsement program	2	
Neighborhood Schools	Neighborhood school within ½-mile	1	1

TABLE 4.10.1
LEED EQUIVALENCY SCORECARD (SELECTED OPTIONS) (CONTINUED)

LEED-ND Credit	Options	Possible Points	UID Equivalency Points
Tree-lined and Shaded Streetscapes	Trees planted 50 feet on center on at least 60% of streets	1	1
	Shaded sidewalks on 40% of sidewalks within 10 years	1	1
	Certification from landscape architect that trees are planted properly and are not invasive	1	1
Green Infrastructure and Buildings			
Certified Green Buildings	12% above ASHRAE or 20% ASHRAE	1-2	1
Optimize Building Energy Performance	ASHRAE 50% advanced energy design	2	
Indoor Water Use Reduction	Reduce water use 40% nonresidential	1	1
	90% of residential buildings would earn 4 points under LEED v4	1	1
Outdoor Water Use Reduction	No irrigation	2	
	Reduced irrigation 30%: 1 point; 50%: 2	1-2	2
Rainwater Management	Manage runoff on-site 80th percentile: 1 point; 85th percentile: 2 points; 90th percentile: 3 points 95th percentile: 4 points	1-4	
Renewable Energy Production	Renewable energy production 5%: 1 point; 12.5%: 2 points; 20%: 3 points	1-3	3
Infrastructure Energy Efficiency	Infrastructure to be 15% annual energy reduction	1	1
LEED Accredited Professional		1	1

The UID Project scores the equivalent of 36 points under the LEED-ND rating system. The base ND certification of 36 points is the functional equivalent of INDEX indicator thresholds.

The Project's performance in comparison with the LEED-ND equivalency model relies on the following aspects of its physical design and operation:

Land Use

- Compact development – minimizes sprawl, reduces number and shortens length of vehicle trips;
- Density – intensity of land use, particularly near the transit corridor and main Campus areas, to encourage walking;
- Diversity – mix and variety of land uses, also encourages walking;
- Orientation toward pedestrian and bicycles;
- Orientation toward transit

Buildings & Landscaping

- Energy-efficient building construction – reduces energy use by exceeding Title 24 building standards;
- Energy efficient landscaping;
- Solar use – solar thermal applications and power generation;
- Vegetation – uptakes air pollutants and greenhouse gases and provides shading to reduce temperatures

Transportation and Transportation Demand Management

Important components of transportation action measures including a dense street network based on complete street principles, sidewalks and/or pedestrian paths on all streets, and direct routes to activity nodes via pathways through common open spaces.

- Pedestrian facilities – circulation design and improvements for pedestrian use, enhanced pedestrian connections to transit;
- Bicycle facilities – integrated system design and improvements to encourage bicycle use, bicycle paths, lanes and routes;
- Transit facilities – transit system design and improvements to circulation system;
- Student transit subsidy;
- Telecommuting and telecenters;
- Employee trip reductions;
- Reduced commercial parking requirements

Infrastructure and Operations

- Water use – land planning that reduces water consumption (see Water Conservation Plan, Appendix G of SPA Plan, for details);
- Municipal and private clean-fuel vehicle purchases and clean fuel demonstration project;
- Solar pool heating;
- Municipal life-cycle purchasing standards

Since the land use mix and project design features, which meet the AQIP requirements, are intrinsic to the Project, air quality improvements that are associated with the design features such as lower energy use and vehicle emissions due to land use proximity will require that the Project be developed in substantial conformance with the Project's approved SPA Plan. The City of Chula Vista will continually review development plans at each stage of design and construction approval. These reviews will ensure that the project is developed in a manner consistent with the SPA Plan and meets the AQIP requirements.

Energy Efficiency

The Chula Vista City Council adopted the California Energy Code 2016 Edition effective January 1, 2017. The 2016 Building Energy Efficiency Standards are more efficient than previous standards for residential construction and nonresidential construction. The new energy efficiency standards are designed toward the zero-net energy (ZNE) goal for new homes by 2020 and commercial buildings by 2030. The ZNE goal means that new buildings must use a combination of improved efficiency and distributed renewable generation to meet 100% of the annual energy need.

4.10.3 THRESHOLD COMPLIANCE AND RECOMMENDATIONS

The City continues to provide a development forecast to the APCD in conformance with the threshold standard. The SPA Plan AQIP includes measures to enhance air quality including but not limited to achieving the following, which are verified during building permit or site plan review. Refer to the UID SPA Plan Draft EIR and the AQIP for complete air quality impact mitigation measures.

4.11 CIVIC CENTER

4.11.1 CITY THRESHOLD STANDARDS

There are no adopted threshold standards for Civic Center facilities; therefore, no service analysis is required. The purpose of this section is to describe provide information on facility funding through the collection of the Public Facility Development Impact Fee (PFDIF).

4.11.2 EXISTING CONDITIONS

Major renovations and expansion of the Civic Center complex in accordance with the Civic Center Master Plan were completed in 2008, consisting of a new Council Chambers and City Hall, and Public Service Buildings North and South. The majority of the funding for the Civic Center complex renovation and expansion was from the Civic Center component of PFDIF revenues.

4.11.3 ADEQUACY ANALYSIS

The need for the Civic Center cannot be easily related to population figures or acres of commercial and industrial land that will be developed in the future. The original Civic Center buildings were inadequate due to an overall lack of space and poor space utilization. This condition worsened as employee numbers and their workloads increased in response to demands for services generated in part by new development. Phases I and II of the Civic Center complex expansion are complete. City Hall facilities have been renovated and now include a new state-of-the-art Council Chambers. Other work included conversion of the former Police Station as additional office space and the complete remodeling of the Public Services Building. The Master Plan calls for further expansions in Phases III and IV, which are expected to keep pace with demand for additional work space as the city continues to grow.

4.11.4 FINANCING CIVIC CENTER FACILITIES

The PFDIF was last updated by the Chula Vista City Council on September 27, 2016. The PFDIF amount is adjusted approximately every October 1 pursuant to Ordinance 3050, which was adopted by the City Council on November 7, 2006. The PFDIF amount is subject to change as it is amended from time to time.

The UID will be subject to the payment of the PFDIF at the rates in effect at the time building permits are issued. At the current fee rate, the Civic Center component of the fee obligation at Project buildout is calculated in Table 4.11.1. In the table, the market-rate units are assigned the rate for single-family units and the Innovation District is assigned the acreage rate for industrial.

TABLE 4.11.1
UID PUBLIC FACILITIES FEES FOR CIVIC CENTER

Market-Rate (units)	Innovation District (acres)	Civic Center Fee		Total Fee
		Market Rate $2,907 per DU	Nonresidential $2,931 per Acre	
2,000	48	$5,814,000	$140,688	$5,954,688

Fees are based on Form 5509 dated 9/27/2016. The PFDIF is subject to change as it is amended from time to time; verify with the City of Chula Vista at the time of building permit.

The project fee in the above table is only an estimate; actual total fees may be different. Fees are subject to change depending on City Council actions and/or developer actions that change residential units or university acreage.

4.11.5 THRESHOLD COMPLIANCE AND RECOMMENDATIONS

Continuing debt service for the Civic Center complex expansion will be funded through the payment of the public facilities fees in effect at the time building permits are issued. The fees shall be paid prior to the issuance of building permits unless stated otherwise in a development agreement.

4.12 CORPORATION YARD

4.12.1 THRESHOLD STANDARDS

There is no adopted threshold standard for Corporation Yard facilities; therefore, no service analysis is required. The purpose of this section is to provide information on facility funding through the collection of the Public Facility Development Impact Fee (PFDIF).

4.12.2 EXISTING CONDITIONS

The current Corporation Yard was previously a San Diego Gas & Electric equipment and repair facility that the City acquired in 2000. The City renovated the facility and added new improvements for the maintenance and repair of City-owned equipment. This facility consists of a renovated building that serves as the administration building for the Public Works Department. Existing shop buildings have been renovated, and new shops and a maintenance building have been added. The Corporation Yard includes parking for employees, City-owned vehicles, and equipment. In addition, a bus wash, compressed natural gas refueling island, and associated equipment for servicing Chula Vista Transit vehicles have been added to the facility.

4.12.3 ADEQUACY ANALYSIS

The need for expansion of the Corporation Yard is indirectly related to the growth in population and the expansion of developed areas in Chula Vista. The increase in street miles, sewer mains, storm drainage systems, additional police cars and fire apparatus, and new parks and public buildings all require more equipment and maintenance space. Additional administration, employee breakroom, meeting space, and storage space to accommodate the increased number of Public Works employees. The need for the larger Corporation Yard was specifically related to projected new development in the city. While there are no immediate plans for further expansion of the Corporation Yard, the City has ongoing debt service obligations due to the acquisition and renovation of the facility. A portion of the Corporation Yard component of the PFDIF revenues is allocated to this debt service.

4.12.4 FINANCING CORPORATION YARD FACILITIES

The PFDIF was last updated by the Chula Vista City Council on September 27, 2106. The PFDIF amounts are adjusted on or before October 1 of every year pursuant to Ordinance 3050.

The UID will be subject to the payment of the fee at the rate in effect at the time building permits are issued. At the current fee rate, the Corporation Yard component of the fee obligation at Project buildout is calculated in Table 4.12.1. In the table, the market-rate units are assigned the rate for single-family units, the Innovation District is assigned the acreage rate for industrial.

TABLE 4.12.1
UID PUBLIC FACILITIES FEES FOR CORPORATION YARD

Market-Rate (units)	Innovation District (acres)	Corporation Yard Component Fee		Total Fee
		Market Rate $472 per DU	Nonresidential $3,785 per Acre	
2,000	488	$944,000	$181,680	$1,125,680

Fee is based on Form 5509 dated 9/27/2016. The PFDIF is subject to change as it is amended from time to time; verify with the City of Chula Vista at the time of building permit.

The projected fee illustrated in the above table is an estimate only; the actual fees may be different. Fees are subject to change depending on City Council actions and/or developer actions that change residential units or university acreage.

4.12.5 THRESHOLD COMPLIANCE

Corporation Yard facilities and associated debt service continue to be funded through the payment of the PFDIF. The fees shall be paid prior to the issuance of building permits unless stated otherwise in a development agreement, at the rate in effect at building permit issuance.

4.13 ADMINISTRATION

4.13.1 THRESHOLD STANDARD

The Administration function includes the operation of the Growth Management Program and preparation of the annual Growth Management Report, development projections, and growth monitoring activities. The Administration component of the Public Facilities Development Impact Fee (PFDIF) funds these activities and the administration of the PFDIF program. There is no adopted threshold standard for Administration.

4.13.2 SERVICE ANALYSIS

Several other City management assets were individually addressed as part of the original adopted PFDIF. These include the geographic information system (GIS), computer systems, telecommunications, and the records management system, as well as the administration of the Growth Management and PFDIF programs.

4.13.3 EXISTING CONDITIONS

The City continues to collect funds from building permit issuance through the PFDIF program for deposit to an account associated with Administration costs. The costs are associated with the PFDIF program itself and with the Growth Management Oversight Commission (GMOC) process. The PFDIF is not currently collected for records management, telecommunications, computer systems, and GIS. Funding of capital improvements in these areas needed to serve new development is currently incorporated into the PFDIF components of the various services that would use the specific improvements: Civic Center, Police, Fire, Corporation Yard, Recreation Facilities, and Library.

4.13.4 FINANCING ADMINISTRATION FACILITIES

The PFDIF rates are adjusted approximately every October 1 pursuant to Ordinance 3050 and were most recently updated on September 27, 2016. The PFDIF amount is subject to change as it is amended from time to time.

The UID will be subject to the payment of the fee at the rate in effect at the time building permits are issued. At the current fee rate, the Administration component of the fee obligation at Project buildout is calculated in Table 4.13.1. In the table, the market-rate units are assigned the rate for single-family units, the Innovation District is assigned the acreage rate for industrial.

TABLE 4.13.1
UID PUBLIC FACILITIES FEES FOR ADMINISTRATION

Market-Rate (units)	Innovation District (acres)	Administration Fee		Total Fee
		Market Rate $632 per DU	Nonresidential $638 per Acre	
2,000	48	$1,264,000	$30,624	$1,294,624

Fees based on Form 5509 dated 9/27/2016. The PFDIF is subject to change as it is amended from time to time. Actual fees may be different; verify with the City of Chula Vista at the time of building permit.

The projected fee in Table 4.13.1 is only an estimate. Actual fees may be different. Changes in the number of market-rate or student dwelling units or university acreage may affect the estimated fee. PFDIF amounts are subject to change depending on City Council actions and/or developer actions that change the number of residential units, residential densities, and/or nonresidential acreages.

4.13.5 THRESHOLD COMPLIANCE AND RECOMMENDATIONS

PFDIF program administration costs and GMOC costs will be funded through the payment of public facility fees. The fees shall be paid prior to the issuance of building permits unless stated otherwise in a development agreement, at the rate in effect at the time of building permit.

4.14 PUBLIC FACILITY FINANCE

4.14.1 OVERVIEW

The City will ensure the appropriate public facilities financing mechanisms are used to fund the acquisition, construction, and maintenance of public facilities required to support the planned development of the University Innovation District (UID) Sectional Planning Area (SPA) (Project) in compliance with the City's Growth Management Program.

Public facilities are generally provided or financed in one of the following three ways:

1. Subdivision Exaction: Constructed and financed by a developer as a condition of project approval.

2. Development Impact Fees: Constructed by a public agency, using Development Impact Fee revenues, or constructed by the developer with a reimbursement or credit against specific impact fees.

3. Debt Financing: Funded using one of several debt finance mechanisms. Facilities may be constructed by the public agency or a developer.

It is anticipated that all three methods will be utilized by the Project developer(s) to construct and finance public facilities.

4.14.2 SUBDIVISION EXACTIONS

Neighborhood-level public improvements will be developed simultaneously with related residential and nonresidential subdivisions. Per the Subdivision Map Act, it is the developer's responsibility to provide for all local street, utility, and park and recreation improvements. The use of subdivision conditions and exactions, where appropriate, will ensure that the construction of neighborhood facilities is timed with actual development.

The imposition of subdivision conditions and exactions does not preclude the use of other public facilities financing mechanisms to finance the public improvement, when appropriate.

4.14.3 DEVELOPMENT IMPACT FEE PROGRAMS

Development Impact Fees are imposed by various governmental agencies, consistent with state law, to contribute to the financing of capital facilities improvements within their jurisdictions. The distinguishing feature of a subdivision exaction and impact fee is that exactions are requested of a specific developer for a specific project, whereas fees are levied on all development projects throughout the city or benefit area pursuant to an established formula and in compliance with state law.

The UID project, through policy decisions of the City of Chula Vista and other governing agencies, is subject to fees established to help defray the cost of facilities that benefit the Project and areas beyond it. These fees may include but not be limited to:

1. Eastern Chula Vista Transportation Development Impact Fee. The fee is established to provide financing for circulation element road projects of regional significance in the areas of the city east of Interstate 805.

2. Traffic Signal Fee. The City adopted a traffic signal installation program for participation by private developers. In accordance with Chula Vista Municipal Code Chapter 15.51, developers must install required traffic signals associated with circulation element streets or pay the traffic signal fees in lieu of such construction.

3. Public Facilities Development Impact Fee. The fee is established to collect funds for Civic Center facilities, police facilities, the Corporation Yard, libraries, and fire protection.

4. Park Acquisition and Development Fee. The fee was established to pay for the acquisition and development of park facilities in accordance with Municipal Code Chapter 17.10.

5. Salt Creek Basin Development Impact Fee. The fee was established to pay for the construction of sewer improvements within the Salt Creek basin, primarily the Salt Creek Sewer Interceptor.

6. Otay Water District Fees. The district's water supply and water capacity fees pay for new water supplies and water treatment, storage, and backbone distribution system. It should be noted that the water district may require the formation of or annexation to an existing improvement district or creation of some other finance mechanism which may result in specific fees being waived.

7. Sweetwater Unified High School District and Chula Vista Elementary School District. The State of California legislates school fees and authorizes school districts to impose facility mitigation exactions on new development as a way to address increasing enrollment caused by that development.

4.14.4 DEBT FINANCE PROGRAMS

The City's preferred land-based debt finance mechanism is community facilities districts (Mello-Roos districts), or CFDs. The City has used CFD bond financing extensively in the Eastern Territories, primarily for major road improvements. Both school districts and the Otay Water District have implemented Mello-Roos Community Facilities Districts to finance their respective facilities.

MELLO-ROOS COMMUNITY FACILITIES ACT

The Mello-Roos Community Facilities Act of 1982 authorizes formation of community facilities districts, which impose special taxes to provide the financing of certain public facilities or services. Facilities that can be provided under the act include the purchase, construction, expansion, or rehabilitation of the following:

1. Local park, recreation, or parkway facilities

2. Elementary and secondary school sites and structures

3. Libraries

4. Any other governmental facilities that legislative bodies are authorized to construct, own, or operate, including certain improvements to private property

4.14.5 OTHER METHODS USED TO FINANCE FACILITIES

GENERAL FUND

The City of Chula Vista's General Fund pays for many public services throughout the city. Those facilities and services identified as being funded by General Fund sources represent those that will benefit not only the residents of the proposed project but also Chula Vista residents throughout the city. In most cases, other financing mechanisms are available to initially construct or provide the facility or service.

ENHANCED INFRASTRUCTURE FINANCING DISTRICTS

Enhanced Infrastructure Financing Districts (EIFDs) use a form of property tax increment financing intended to replace the tax increment financing of the repealed Redevelopment Act. Senate Bill 628 (Government Code Section 53395, et seq.) was signed by the governor on September 29, 2014, and authorizes the legislative body of a city or county to establish an EIFD, adopt an infrastructure financing plan, and issue bonds to finance public capital projects and other specific projects of community-wide significance. A popular vote is not required to form an EIFD. The legislative body is required to hold a public hearing before passing a resolution that adopts the infrastructure financing plan, and in turn, a resolution of formation creating the EIFD. Bonds may be issued upon approval of 55% of the qualified electors of the proposed EIFD. Financing through an EIFD may be used to fund public improvements, in accordance with the infrastructure financing plan and with the agreement of affected taxing entities.

STATE AND FEDERAL FUNDING

Although rarely available to fund an entire project, federal and state financial and technical assistance programs have been available to public agencies, in particular, public school districts.

DEDICATIONS

Dedication of sites by developers for public capital facilities is a common financing tool used by many cities. In the case of the Project, the following public sites are proposed to be dedicated:

1. Public streets
2. Public parks
3. Public open space and trails

HOMEOWNERS ASSOCIATIONS

While not a public facility financing method per se, one or more community homeowners associations may be established by the developer, or its successor in interest, to manage, operate, and maintain private facilities and common areas within the Project.

DEVELOPER REIMBURSEMENT AGREEMENTS

Certain facilities that are outside Project boundaries and/or provide regional benefits may be constructed in conjunction with the development of the Project. In such instances, developer reimbursement agreements will be executed to provide for future reimbursement to the developer for the additional cost of these facilities. Future developments are required to pay their fair-share of the costs for the shared facility when development occurs.

SPECIAL AGREEMENTS/DEVELOPMENT AGREEMENT

This category includes special development programs for financing construction of public facilities. It also includes any other special arrangements between the City and the developer such as credits against fees, waiver of fees, timing for payment of fees, or charges for the construction of specific facilities.

A development agreement can play an essential role in the implementation of the Public Facilities Financing Plan. The Public Facilities Financing Plan clearly details all public facility responsibilities and ensures that the construction of all necessary public improvements will be appropriately phased with actual development, while the development agreement identifies the obligations and requirements of both the City and the developer.

ASSESSMENT AND SPECIAL TAX DISTRICTS FOR MAINTENANCE AND OPERATIONS

Assessment and Mello-Roos special tax districts may also be formed to finance the maintenance and operation of public facilities in the UID Project including:

- Parks, open space and trails maintenance
- Public safety operations (police and fire protection)
- Maintenance of local streets
- Lighting and landscaping in public rights-of-way
- Storm water management

Assessment districts, such as Lighting and Landscape Maintenance Districts, Property Based Business Improvement Districts and Fire Protection Districts, require that assessments are based on a parcel-specific assignment of benefit. Assessment district elections are one vote per dollar of assessment and require a simple majority of property owners for approval. Mello-Roos special tax districts (Community Facilities Districts) are based on the provision of special benefits to the district as a whole and are not parcel-specific. Community Facility Districts require a two-thirds vote of the district electorate, unless less than 12 registered voters reside in the district in which case the vote may be by the district's property owners only.

The City of Chula Vista has extensive experience in both assessment districts and CFD's for maintenance purposes including monitoring, operations and management of the Otay Ranch Multi-Species Habitat Preserve, Open Space Maintenance Districts throughout the Otay Ranch and maintenance of storm water quality facilities. The UID Project may benefit from the establishment of one or more districts to provide financial support for the on-going costs of public facilities in the UID.

4.14.6 PUBLIC FACILITY FINANCE POLICIES

The following finance policies were included and approved with the Growth Management Program to maintain a financial management system that will be implemented consistently when considering future development applications. These policies will enable the City to effectively manage its fiscal resources in response to the demands placed on the City by future growth.

1. Prior to receiving final approval, developers shall demonstrate and guarantee that compliance is maintained with the City's adopted threshold standards.

2. The City's Capital Improvement Program (CIP) budget will be consistent with the goals and objectives of the Growth Management Program. The CIP budget establishes the timing for funding of all fee-related public improvements.

3. The priority and timing of public facility improvements identified in the various City fee programs shall be made at the sole discretion of the City Council.

4. Priority for funding from the City's various fee programs shall be given to those projects which facilitate the logical extension or provision of public facilities as defined in the Growth Management Program.

5. Fee credits, reimbursement agreements, developer agreements, or public financing mechanisms shall be considered only when it is in the public interest to use them, or these financing methods are needed to rectify an existing facility threshold deficiency. Such action shall not induce growth by prematurely extending or upgrading public facilities.

6. All fee credit arrangements or reimbursement agreements will be made based on the City's plans for the timing and funding of public facilities contained in the CIP budget.

7. Public facility improvements made ahead of the City's plans to construct the facilities will result in the need for additional operating and maintenance funds. Therefore, all such costs associated with the facilities' construction and maintenance shall become the responsibility of the developer until that time occurs when the City had previously planned for the facility improvements to be in service.

4.14.7 CUMULATIVE DEBT

The City of Chula Vista has an established policy limiting the maximum debt (that may be financed by a special tax or assessment) to be placed on a residential dwelling unit to an additional 1 percent above the property tax. This policy was restated in the adopted Growth Management Program.

Like many other cities, the City of Chula Vista has long understood that it is not the only agency that can utilize public finance mechanisms and therefore cannot always guarantee that the total debt will remain at or below a maximum of 2 percent of the valuation of for-sale residential property. As a result, the City makes an effort to coordinate its debt finance programs with the other special districts (school and water), which provide service to the residents of Chula Vista, to ensure that the cumulative debt does not become excessive. Coordination is also necessary to guarantee all public facilities needed to support a development can be financed and constructed as needed.

4.14.8 MAINTENANCE DISTRICTS

According to the City's Growth Management Policy, the limit on annual special tax and assessment debt service of 2 percent of a property's assessed valuation applies only to residential property and for bonded debt and does not count special taxes or assessments used for the purpose of maintaining public facilities or providing public services. In reality, the levying of taxes or assessments for maintenance of public facilities is an encumbrance against property that is superior to bonded debt and therefore must be disclosed in any issuance of bonds for

financing of facilities. The resulting effect of such an encumbrance, which places an added burden on the property owners' ability to meet their debt obligations, may lead to an increase in the cost of bonded debt through higher interest rates, which in turn will reduce the net bond proceeds. These factors should be considered if the UID is conditioned to form or be annexed into one or more maintenance districts for parks, open space, and storm water management or other purposes.

4.14.9 LIFE CYCLE COST ANALYSIS

Section 19.09.060, Analysis, subsection F(2) of the Growth Management Ordinance requires the following:

> *...The inventory shall include Life Cycle Cost ("LCC") projections for each element in 19.09.060(E)...as they pertain to City fiscal responsibility. The LCC projections shall be for estimated life cycle for each element analyzed. The model used shall be able to identify and estimate initial and recurring life cycle costs for the elements...*

BACKGROUND

The following material presents information on the general aspects of life cycle cost analysis as well as its specific application to City of Chula Vista operations. The discussion regarding the general benefits and process of life cycle cost is meant to provide a common base of understanding upon which further analysis can take place.

Life cycle costing (LCC) is a method of calculating the total cost of asset ownership over the life span of the asset. Initial costs and all subsequent expected costs of significance are included in the life cycle cost analysis, as well as disposal value and any other quantifiable benefits to be derived as a result of owning the asset. Operation and maintenance costs over the life of an asset oftentimes far exceed initial costs and must be factored into the (decision) process.

Life cycle cost analysis should not be used in each and every purchase of an asset. The process itself carries a cost and therefore can add to the cost of the asset. LCC analysis can be justified only in those cases in which the cost of the analysis can be more than offset by the savings derived through the purchase of the asset.

Four major factors which may influence the economic feasibility of applying LCC analysis are:

1. Energy Intensiveness. LCC should be considered when the anticipated energy costs of the purchase are expected to be large throughout its life.

2. Life Expectancy. For assets with long lives (i.e., greater than 5 years), costs other than purchase price take on added importance. For assets with short lives, the initial costs become a more important factor.

3. Efficiency. The efficiency of operation and maintenance can have a significant impact on overall costs. LCC is beneficial when savings can be achieved through reduction of maintenance costs.

4. Investment Cost. As a general rule, the larger the investment, the more important LCC analysis becomes.

The four major factors listed above are not, however, necessary ingredients for life cycle cost analysis. A quick test to determine whether life cycle costing would apply to a purchase is to ask whether there are any post-purchase costs associated with it. Life cycle costs are a combination of initial and post-purchase costs.

APPLICATIONS FOR LCC ANALYSIS

The City of Chula Vista uses the concepts of life cycle cost analysis in its Asset Management Planning process, in determining the most cost-effective purchase of capital equipment as well as in the determination of replacement costs for a variety of rolling stock. City staff uses LCC techniques in the preparation of the City's 5-Year CIP and in the Capital Outlay sections of the annual Operating Budget.

The City's Municipal Life-Cycle purchasing standards are identified as an air quality action measure in UID Air Quality Improvement Plan.

In addition to these existing processes, the City should require the use of LCC analysis prior to or concurrent with the design of public facilities required by new development. Such a requirement will assist in the determination of the most cost-effective selection of public facilities.

CODE COMPLIANCE

In compliance with MC chapter 19.09.060, the City of Chula Vista, or its successor in interest, shall conduct appropriate LCC analysis prior to the approval of the design of any major public investment including:

- Arterial roads, including landscaping and streetscaping.
- Trunk sewer lines and pump stations
- Major drainage systems, including permanent retention and water quality basins
- Major buildings (fire stations, library, police sub-stations)
- Major equipment purchases
- Parks and Recreation Facilities
- Common Open Space

GENERAL FUND RISK AVOIDANCE

In keeping with good fiscal management, to avoid risk to the General Fund and in accordance with City policies, the City of Chula Vista, or its successor in interest shall evaluate the annexation of the UID into existing assessment or special tax districts, or the formation of new districts for the purpose of financing on-going operations and maintenance activities within the UID.

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APPENDIX B:
AIR QUALITY IMPROVEMENT PLAN (AQIP)

UNIVERSITY
INNOVATION DISTRICT

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1. Executive Summary

A. Intent of the AQIP

This Air Quality Improvement Plan (AQIP) has been prepared in conjunction with the UI District Sectional Planning Area (SPA) and Environmental Impact Report (EIR) that allows for an University and Research and Innovation Campus with institutional and corporate partners.

The AQIP provides an analysis of air pollution impacts which would result from the proposed development and demonstrates the best available design to reduce vehicle trips, maintain or improve traffic flow, reduce vehicle miles traveled, and reduce Greenhouse Gas (GHG) direct or indirect emissions. This AQIP also demonstrates how the UI District has been designed consistent with the City's Energy and Water Conservation Regulations (CVMC Chapter 20.04) and Landscape Water Conservation Regulations (CVMC Chapter 20.12) and represents the best available design in terms of improving energy efficiency and reducing GHG emissions. GHG emissions include gases such as CO2, Methane (CH4), and Nitrous Dioxide (N02). They occur both naturally, and are produced by human activities, such as by automobile emissions and emissions from production of electricity to provide power to homes and businesses. These gases prevent heat from escaping the earth's atmosphere, while allowing in sunlight, which has the effect of warming the air temperature. Applicable action measures contained in the City's CO2 Reduction Plan are also addressed.

B. UI District Objectives

The UI District objectives include the following:

- Provide higher education opportunities for Chula Vista residents and the broader San Diego-Tijuana region, serving the shifting demographics of the San Diego region, and the United States in general.
- Prepare students for post-university careers that allow for lasting personal and professional growth.
- Develop into a financially viable university entity that incorporates the newest educational delivery models.
- Attract a wide range of educational, research, and industry partners regionally, nationally, and internationally.
- Assist in developing creative solutions to critical environmental, social, and economic issues facing the world and the community.

- Serve as an economic engine that contributes to the growth of the city and region, thereby enhancing the quality of life for South Bay residents.
- Provide a source of high-quality jobs and contribute to diversifying the City's economy.
- Become an integral part of the fabric of the community, fostering arts and cultural enrichment for residents of Chula Vista and the region.
- Develop a flexible campus that allows for on-going growth and innovation, is physically well integrated and connected to the surrounding neighborhood and region.
- Maximize accessibility to the Campus by providing multi-modal streets, access to transit and trails, and amenities that support and encourage alternative modes.

C. Planning Features

The UI District SPA Plan includes the following design concepts for a sustainable development.

Flexible and Mixed-Use Urban Streets

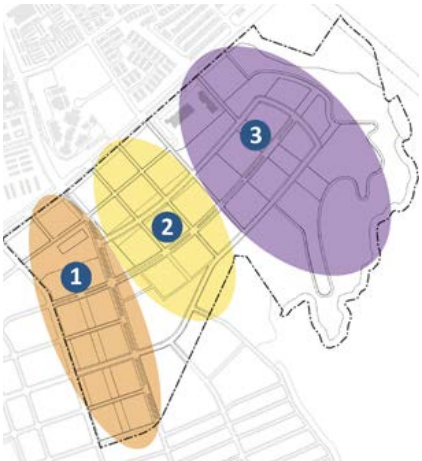
Given the UI District strives to create an authentic urban environment, the street grid will accommodate a wide range of 2- to 5-story buildings encompassing several use types. These will include academic, research, commercial, and residential with street-level retail. Unlike conventional academic environments many educational users will share building spaces with other users—and the overall character of the district will be established through a coherent urban design approach.

Source: iStock

Example of Mixed-use Urban Streets

Multi-Institutional Platform–with Dedicated Micro-Campus Zones

An urban design approach mixing use types will also allow multiple institutions to incubate and grow the UI District without the costs and constraints of conventional campus developments. However, institutions looking for a more traditional campus environment can find discreet, potential campus zones embedded in the broader Plan. Three such zones are identified with the southeastern quadrant of the Plan envisioned as a signature campus site in the event that a single institution is looking for a particularly compelling campus site.



Potential Micro-Campus Zones

Source: Ayers Saint Gross

Example of Public Spaces at Howard Community College

Site Aerial

Flex District Locations

Key Public Spaces and Amenities–Parks + Squares

Great urban areas are defined by great streetscapes and open spaces—this Plan offers a range of formal and informal natural landscapes to structure and enhance the overall District. Each quadrant of the Plan features a central green space and collectively, all of these landscape form an integrated network of smaller linear parks and gardens. The UI District's open space network feeds southward to the canyon overlooking the Otay Ranch Preserve.

A Network of Trails, Open Spaces and Landscapes Overlook the Otay Ranch Preserve

The centerpiece of the public space network is the series of landscape spaces overlooking the Otay Ranch Preserve. Conceived as a rim trail linking three existing canyons, this open space area will be unique in the Otay development—providing opportunities for building sites that frame views to the mountains and Mexico beyond. Buildings along this trail are intended to open out to the Otay Ranch Preserve—animating this area with academic-innovation programs.

Enhanced Pedestrian and Bike Mobility—Minimize Cars

The UI District Plan is conceived to encourage bicycle and pedestrian use. Urban complete streets, trails and open spaces will all provide a compelling, sustainable network of spaces to walk. Both the proposed mix of uses along with a compact, integrated urban design will provide a unique, walkable environment where cars are not the primary-default mobility option.

Integration with Adjacent Villages

Typically adjacent developments in the Otay Ranch focus inward with little emphasis on connectivity between Villages. Here there will be a key integration of the UI District with Village 9 Town and Village 10. The Flex Overlay will ensure that both sides of adjacent streets will operate as a coherent district, featuring comparable FARs and building characters. The blocks in Village 9 west of Orion Avenue will be developed to complement the overall land use patterns in the UI District—particularly, market rate housing and retail for the projected workers and students coming to the Universities. Similarly Village 10 blocks adjacent to the UI District will be developed complementarily.

Non-traditional Residential Units

Universities and innovation districts typically feature non-traditional housing typologies not currently found in the Otay Ranch. These include undergraduate and graduate dormitories and other mixed-use student housing projects that differ

from the single- and multi-family housing stock seen in most of the existing Otay Ranch Villages. Offering student housing and residential amenities to prospective University partners is key to attracting future institutional anchors. The UI District's focus on innovation will also drive residential capacity as today's startups and technology workers often prefer living in urban mixed use areas to traditional detached residential neighborhoods.

In addition, Section 4 Project Design Features, lists additional land use features, building design elements and mitigation measures that will reduce the development's impacts on air quality.

D. Modeled Effectiveness of Community Design

With implementation of the proposed site design features, the UI District is consistent with the City of Chula Vista Index CO2 model requirements, as shown in Table 11: LEED Equivalency Scorecard which describe the LEED-ND Equivalency Analysis (LEA) prepared for the UI District.

2. Introduction

A. Need for an AQIP

The objective of this AQIP is to fulfill the City of Chula Vista's Growth Management policy to improve air quality from existing conditions. As the result of rapid development not keeping pace with the demand for facilities and improvements, the City Council adopted Growth Management policy measures that would prohibit new development to occur unless adequate public facilities, improvements and environmental quality of life standards were put in place. The purpose of City of Chula Vista's Growth Management ordinance (CVMC Chapter 19.09) is to provide the following:

1. Provide quality housing opportunities for all economic sections of the community;
2. Provide a balanced community with adequate commercial, industrial, recreational and open space areas to support the residential areas of the City;
3. Provide that public facilities, services and improvements meeting City standards exist or become available concurrent with the need created by new development;
4. Balance the housing needs of the region against the public service needs of Chula Vista residents and available fiscal and environmental resources;
5. Provide that all development is consistent with the Chula Vista General Plan (GP);

6. Prevent growth unless adequate public facilities and improvements are provided in a phased and logical fashion as required by the GP;
7. Control the timing and location of development by tying the pace of development to the provision of public facilities and improvements to conform to the City's threshold standards and to meet the goals and objectives of the growth management program;
8. Provide that the air quality of the City of Chula Vista improves from existing conditions; and
9. Provide that the City of Chula Vista conserves water so that an adequate supply be maintained to serve the needs of current and future residents.

This AQIP is provided in accordance with CVMC 19.09.050B. The Growth Management Ordinance requires that no application for a SPA or Tentative Map shall be deemed complete or accepted for review unless an AQIP is provided and approved as part of the approval of the SPA or Tentative Map by the City.

B. AQIP as Tool for Implementation of Ordinances

This AQIP has been prepared based on the best available design practices and also serves to implement several of the key aspects of the City's CO2 Reduction Plan, Energy and Water Conservation Regulations (CVMC Chapter 20.04) and Landscape Water Conservation Regulations (CVMC Chapter 20.12).

C. Intent of the AQIP

The AQIP provides an analysis of air pollution impacts which would result from the proposed development and demonstrates the best available design to reduce vehicle trips, maintain or improve traffic flow, reduce vehicle miles traveled, and reduce GHG direct or indirect emissions. This AQIP also demonstrates how the UI District has been designed consistent with the City's Energy and Water Conservation Regulations (CVMC Chapter 20.04) and Landscape Water Conservation Regulations (CVMC Chapter 20.12) and represents the best available design in terms of improving energy efficiency and reducing GHG emissions. GHG emissions include gases such as CO2, CH4, and N02. They occur both naturally, and are produced by

human activities, such as by automobile emissions and emissions from production of electricity to provide power to homes and businesses. These gases prevent heat from escaping the earth's atmosphere, while allowing in sunlight, which has the effect of warming the air temperature. Applicable action measures contained in the City's CO2 Reduction Plan are also addressed.

D. Regulatory Framework

There are a number of actions that Federal, State and Local jurisdictions have taken to improve air quality, increase energy efficiency, and reduce GHG emissions. This section summarizes those actions.

Air quality is defined by ambient air concentrations of specific pollutants determined by the Environmental Protection Agency (EPA) to be of concern with respect to the health and welfare of the public. The subject pollutants monitored by the EPA include the following:

- Carbon Monoxide (CO),
- Sulfur Dioxide (SO2),
- Nitrogen Dioxide (NO2),
- Nitrogen Oxides (NOx),
- Ozone (O3),
- Respirable 10- and 2.5-micron particulate matter (PM10 and PM2.5),
- Volatile Organic Compounds (VOC),
- Reactive Organic Gasses (ROG),
- Hydrogen Sulfide (H2S),
- Sulfates,
- Lead (Pb),
- Vinyl Chloride, and
- Visibility Reducing Particles (VRP).

1. Federal

Clean Air Act (CAA)

Air quality is defined by ambient air concentrations of specific pollutants identified by the EPA to be of concern with respect to health and welfare of the general public. The EPA is responsible for enforcing the Federal CAA of 1970 and its 1977 and 1990 Amendments. The CAA required the EPA to establish National Ambient Air Quality Standards (NAAQS), which identify concentrations of pollutants in the ambient air below which no adverse effects on the public health and welfare are anticipated. In response, the EPA established both primary and secondary standards for several criteria pollutants, which are introduced above. Table 1: Ambient Air Quality Standards shows the federal and state ambient air quality standards for these pollutants.

The CAA allows states to adopt ambient air quality standards and other regulations provided they are at least as stringent as federal standards. California Air Resources Board (CARB) has established the more stringent California Ambient Air Quality Standards (CAAQS) for the six criteria pollutants through the California Clean Air Act of 1988 (CCAA), and also has established CAAQS for additional pollutants, including sulfates, hydrogen sulfide (H2S), vinyl chloride, and visibility-reducing particles. Areas that do not meet the NAAQS or the CAAQS for a particular pollutant are considered to be "nonattainment areas" for that pollutant. On April 30, 2012, the San Diego Air Basin (SDAB) was classified as a marginal nonattainment area for the 8-hour NAAQS for ozone. The SDAB is an attainment area under the NAAQS for all other criteria pollutants. The SDAB currently falls under a national "maintenance plan" for CO, following a 1998 re-designation as a CO attainment area (SDAPCD 2010). The SDAB is currently classified as a nonattainment area under the CAAQS for ozone (serious nonattainment), PM10, and PM2.5.

The U.S. Supreme Court ruled on April 2, 2007, in Massachusetts v. U.S. Environmental Protection Agency that CO2 is an air pollutant, as defined under the CAA, and that the EPA has the authority to regulate emissions of GHGs. The EPA announced that GHGs (including CO2, CH4, N2O, HFC, PFC, and SF6) threaten the public health and welfare of the American people. This action was a prerequisite to finalizing the EPA's GHG emissions standards for light-duty vehicles, which were jointly proposed by the EPA and the United States Department of Transportation's National Highway Traffic Safety Administration (NHTSA). The standards were established on April 1, 2010, for 2012 through 2016 model year vehicles and on October 15, 2012, for 2017 through 2025 model year vehicles (EPA 2011; EPA and NHTSA 2012).

Light-Duty Vehicle Greenhouse Gas Emissions Standards and Corporate Average Fuel Economy Standards

The EPA and the NHTSA have been working together on developing a national program of regulations to reduce GHG emissions and to improve fuel economy of light-duty vehicles. The EPA is finalizing the first-ever national GHG emissions standards under the CAA, and the NHTSA is finalizing Corporate Average Fuel Economy (CAFE) standards under the Energy Policy and Conservation Act. On April 1, 2010, the EPA and NHTSA announced a joint Final Rulemaking that established standards for 2012 through 2016 model year vehicles. This was followed up on October 15, 2012, when the agencies issued a Final Rulemaking with standards for model years 2017 through 2025. The rules require these vehicles to meet an estimated combined average emissions level of 250 grams per mile by 2016, decreasing to an average industry fleet-wide level of 163 grams per mile in model year 2025. The 2016 standard is equivalent to 35.5 miles per gallon (mpg), and the 2025 standard is equivalent to 54.5 mpg if the levels were achieved solely through improvements in fuel efficiency. The agencies expect, however, that a portion of these improvements

Table 1: Ambient Air Quality Standards

Pollutant	Averaging Time	California Standards	Federal Standards	
			Primary[a]	Secondary[b]
O_3	1 Hour	0.09 ppm (180 µg/m^3)	–	–
	8 Hour	0.070 ppm (137 µg/m^3)	0.070 ppm (137 µg/m^3)	Same as Primary
PM10	24 Hour	50 µg/m^3	150 µg/m^3	Same as Primary
	AAM	20 µg/m^3	–	Same as Primary
PM2.5	24 Hour	–	35 µg/m^3	Same as Primary
	AAM	12 µg/m^3	12.0 µg/m^3	15 µg/m^3
CO	1 Hour	20 ppm (23 mg/m^3)	35 ppm (40 mg/m^3)	–
	8 Hour	9.0 ppm (10 mg/m^3)	9 ppm (10 mg/m^3)	–
	8 Hour (Lake Tahoe)	6 ppm (7 mg/m^3)	–	–
NO_2	AAM	0.030 ppm (57 µg/m^3)	0.053 ppm (100 µg/m^3)	Same as Primary
	1 Hour	0.18 ppm (339 µg/m^3)	0.100 ppm (188 µg/m^3)	–
SO_2	24 Hour	0.04 ppm (105 µg/m^3)	–	–
	3 Hour	–	–	0.5 ppm (1,300 µg/m^3)
	1 Hour	0.25 ppm (655 µg/m^3)	0.075 ppm (196 µg/m^3)	–
Lead	30-day Avg.	1.5 µg/m^3	–	–
	Calendar Quarter	–	1.5 µg/m^3	Same as Primary
	Rolling 3-month Avg.	–	0.15 µg/m^3	
Visibility Reducing Particles	8 hour	Extinction coefficient of 0.23 per km – visibility ≥ 10 miles (0.07 per km – ≥30 miles for Lake Tahoe)	**No Federal Standards**	
Sulfates	24 Hour	25 µg/m^3		
Hydrogen Sulfide	1 Hour	0.03 ppm (42 µg/m^3)		
Vinyl Chloride	24 Hour	0.01 ppm (26 µg/m^3)		

Source: CARB 2015b.

O_3: ozone; ppm: parts per million; µg/m^3: micrograms per cubic meter; PM10: large particulate matter; AAM: Annual Arithmetic Mean; PM2.5: fine particulate matter; CO: carbon monoxide; mg/m^3: milligrams per cubic meter; NO_2: nitrogen dioxide; SO_2: sulfur dioxide; km: kilometer; –: No Standard.

[a] National Primary Standards: The levels of air quality necessary, within an adequate margin of safety, to protect the public health.

[b] National Secondary Standards: The levels of air quality necessary to protect the public welfare from any known or anticipated adverse effects of a pollutant.

Note: More detailed information in the data presented in this table can be found at the CARB website (www.arb.ca.gov).

Source: Helix Environmental Planning June 2016

will be made through improvements in air conditioning leakage and the use of alternative refrigerants that would not contribute to fuel economy. These standards would cut GHG emissions by an estimated 2 billion metric tons (MT) and 4 billion barrels of oil over the lifetime of the vehicles sold under the program (model years 2017–2025). The combined EPA GHG standards and NHTSA CAFE standards resolve previously conflicting requirements under both federal programs and the standards of the State of California and other states that have adopted the California standards (EPA 2011; EPA and NHTSA 2012).

San Diego Air Pollution Control District (SDAPCD) is the local agency responsible for the administration and enforcement of air quality regulations for the County. The SDAPCD and San Diego Association of Governments (SANDAG) are responsible for developing and implementing the clean air plan for attainment and maintenance of the ambient air quality standards in the SDAB. The County's Regional Air Quality Strategies (RAQS) was initially adopted in 1991, and is updated on a triennial basis. The most recent version of the RAQS was adopted by the SDAPCD in 2009. The local RAQS, in combination with those from all other California nonattainment areas with serious (or worse) air quality problems, is submitted to CARB, which develops the California State Implementation Plan (SIP). The SIP relies on the same information from SANDAG to develop emission inventories and emission reduction strategies that are included in the attainment demonstration for the air basin. The current federal and state attainment status for San Diego County is presented in Table 2: Federal and State Air Quality Designation for the San Diego Air Basin.

Table 2: Federal and State Air Quality Designation for the San Diego Air Basin

Criteria Pollutant	Federal Designation	State Designation
O_3 (1-hour)	(No federal standard)	Nonattainment
O_3 (8-hour)	Marginal Nonattainment	Nonattainment
CO	Maintenance	Attainment
PM_{10}	Unclassifiable	Nonattainment
$PM_{2.5}$	Attainment	Nonattainment
NO_2	Attainment	Attainment
SO_2	Attainment	Attainment
Lead	Attainment	Attainment
Sulfates	(No federal standard)	Attainment
Hydrogen Sulfide	(No federal standard)	Unclassifiable
Visibility	(No federal standard)	Unclassifiable

Source: CARB 2016a

Source: Helix Environmental Planning June 2016

As stated above, the SDAPCD is responsible for planning, implementing, and enforcing federal and state ambient standards. The following rules and regulations apply to all sources in the jurisdiction of SDAPCD:

SDAPCD Regulation IV Prohibitions; Rule 51: Prohibits the discharge from any source such quantities of air contaminants or other materials that cause or have a tendency to cause injury, detriment, nuisance, annoyance to people and/or the public, or damage to any business or property.

SDAPCD Regulation IV: Prohibitions Rule 55: Fugitive Dust Regulates fugitive dust emissions from any commercial construction or demolition activity capable of generating fugitive dust emissions, including active operations, open storage piles, and inactive disturbed areas, as well as track-out and carry-out onto paved roads beyond a project site.

SDAPCD Regulation IV Prohibitions; Rule 67.0: Architectural Coatings: Requires manufacturers, distributors, and end users of architectural and industrial maintenance coatings to reduce VOC emissions from the use of these coatings, primarily by placing limits on the VOC content of various coating categories.

2. State of California

Toxic Air Contaminants

Toxic Air Contaminants (TACs) are a category of air pollutants that have been shown to have an impact on human health but are not classified as criteria pollutants. Examples include certain aromatic and chlorinated hydrocarbons, certain metals, and asbestos. Air toxics are generated by a number of sources, including stationary ones such as dry cleaners, gas stations, combustion sources, and laboratories; mobile ones such as automobiles; and area sources such as farms, landfills, construction sites, and residential areas. Adverse health effects of TACs can be carcinogenic (cancer-causing), short-term (acute) noncarcinogenic, and long-term (chronic) noncarcinogenic. Public exposure to TACs is a significant environmental health issue in California.

California's air toxics control program began in 1983 with the passage of the Toxic Air Contaminant Identification and Control Act, better known as AB 1807 or the Tanner Bill. When a compound becomes listed as a TAC under the Tanner process, the CARB normally establishes minimum statewide emission control measures to be adopted by local air pollution control districts (APCDs). Later legislative amendments (AB 2728) required the CARB to incorporate all 189 federal hazardous air pollutants (HAPs) into the state list of TACs.

Supplementing the Tanner process, AB 2588 the Air Toxics "Hot Spots" Information and Assessment Act of 1987 currently regulates over 600 air compounds, including all of the Tanner-designated TACs. Under AB 2588, specified facilities must quantify emissions of regulated air toxics and report them to the local APCD. If the APCD determines that a potentially significant public health risk is posed by a given facility, the facility is required to perform a health risk assessment (HRA) and notify the public in the affected area if the calculated risks exceed specified criteria.

On August 27, 1998, CARB formally identified PM emitted in both gaseous and particulate forms by diesel-fueled engines as a TAC. The particles emitted by diesel engines are coated with chemicals, many of which have been identified by the EPA as HAPs and by CARB as TACs. CARB's Scientific Advisory Committee has recommended a unit risk factor (URF) of 300 in 1 million over a 70-year exposure period for diesel particulate. In September 2000, the CARB approved the Risk Reduction Plan to Reduce Particulate Matter Emissions from Diesel-Fueled Engines and Vehicles (Diesel Risk Reduction Plan; CARB 2000). The Diesel Risk Reduction Plan outlined a comprehensive and ambitious program that included the development of numerous new control measures over the next several years aimed at substantially reducing emissions from new and existing on-road vehicles (e.g., heavy-duty trucks and buses), off road equipment (e.g., graders, tractors, forklifts, sweepers, and boats), portable equipment (e.g., pumps), and stationary engines (e.g., stand-by power generators). These requirements are now in force on a state-wide basis.

California Greenhouse Gas Regulations

There are numerous State plans, policies, regulations, and laws related to GHGs and global climate change. Following is a discussion of some of these plans, policies, and regulations that (1) establish overall State policies and GHG reduction targets; (2) require State or local actions that result in direct or indirect GHG emission reductions for the proposed Project; and (3) require CEQA analysis of GHG emissions.

California Code of Regulations, Title 24, Part 6

California Code of Regulations Title 24 Part 6: California's Energy Efficiency Standards for Residential and Nonresidential Buildings were first established in 1978 in response to a legislative mandate to reduce California's energy consumption. Energy-efficient buildings require less electricity, natural gas, and other fuels. Electricity production from fossil fuels and on-site fuel combustion (typically for water heating) results in GHG emissions.

The Title 24 standards are updated approximately every three years to allow consideration and possible incorporation of new energy efficiency technologies and methods. The latest update to the Title 24 standards occurred in 2016 and went into effect July 2017.

California Green Building Standards Code

The California Green Building Standards Code (24 California Code of Regulations [CCR], Part 11) is a code with mandatory requirements for new residential and nonresidential buildings (including buildings for retail, office, public schools and hospitals) throughout California. The current version of the code went into effect on January 1, 2017. The code is Part 11 of the California Building Standards Code in Title 24 of the California Code of Regulations and is also known as the CALGreen Building Standards Code (California Building Standards Code [CBSC] 2014a).

The development of the CALGreen Code is intended to (1) cause a reduction in GHG emissions from buildings; (2) promote environmentally responsible, cost-effective, healthier places to live and work; (3) reduce energy and water consumption; and (4) respond to the directives by the Governor. In short, the code is established to reduce construction waste; make buildings more efficient in the use of materials and energy; and reduce environmental impact during and after construction.

The CALGreen Code contains requirements for storm water control during construction; construction waste reduction; indoor water use reduction; material selection; natural resource conservation; site irrigation conservation; and more. The code provides for design options allowing the designer to determine how best to achieve compliance for a given site or building condition. The code also requires building commissioning, which is a process for the verification that all building systems, like heating and cooling equipment and lighting systems, are functioning at their maximum efficiency.

Executive Order S-3-05

On June 1, 2005, Executive Order (EO) S-3-05 proclaimed that California is vulnerable to climate change impacts. It declared that increased temperatures could reduce snowpack in the Sierra Nevada, further exacerbate California's air quality problems, and potentially cause a rise in sea levels. In an effort to avoid or reduce climate change impacts, EO S-3-05 calls for a reduction in GHG emissions to the year 2000 level by 2010, to year 1990 levels by 2020, and to 80 percent below 1990 levels by 2050.

AB 32 – Global Warming Solution Act of 2006

The California Global Warming Solutions Act of 2006, widely known as AB 32, requires that the CARB develop and enforce regulations for the reporting and verification of statewide GHG emissions. CARB is directed to set a GHG emission limit, based on 1990 levels, to be achieved by 2020. The bill requires CARB to adopt rules and regulations in an open public process to achieve the maximum technologically feasible and cost-effective GHG reductions.

Executive Order B-30-15

On April 29, 2015, EO B-30-15 established a California GHG reduction target of 40 percent below 1990 levels by 2030. The EO aligns California's GHG reduction targets with those of leading international governments, including the 28 nation European Union. California is on track to meet or exceed the target of reducing greenhouse gas emissions to 1990 levels by 2020, as established in AB 32. California's new emission reduction target of 40 percent below 1990 levels by 2030 will make it possible to reach the ultimate goal established by EO S-3-05 of reducing emissions 80 percent under 1990 levels by 2050.

AB 1493 – Vehicular Emissions of Greenhouse Gases

AB 1493 (Pavley) requires that CARB develop and adopt regulations that achieve "the maximum feasible reduction of GHGs emitted by passenger vehicles and light-duty truck and other vehicles determined by CARB to be vehicles whose primary use is noncommercial personal transportation in the State." On September 24, 2009, CARB adopted amendments to the Pavley regulations that intend to reduce GHG emissions in new passenger vehicles from 2009 through 2016. The amendments bind California's enforcement of AB 1493 (starting in 2009), while providing vehicle manufacturers with new compliance flexibility. The amendments also prepare California to merge its rules with the federal CAFE rules for passenger vehicles (CARB 2013). In January 2012, CARB approved a new emissions-control program for model years 2017 through 2025. The program combines the control of smog, soot, and global warming gases and requirements for greater numbers of zero-emission vehicles into a single packet of standards called Advanced Clean Cars (CARB 2013).

AB 341

In 2011, the State legislature enacted AB 341 (California Public Resource Code § 42649.2), increasing the diversion target to 75 percent statewide. AB 341 also requires the provision of recycling service to commercial and residential facilities that generate four cubic yards or more of solid waste per week.

Executive Order S-01-07

This EO, signed by Governor Schwarzenegger on January 18, 2007, directs that a statewide goal be established to reduce the carbon intensity of California's transportation fuels by at least 10 percent by the year 2020. It orders that a Low Carbon Fuel Standard (LCFS) for transportation fuels be established for California and directs the CARB to determine whether a LCFS can be adopted as a discrete early action measure pursuant to AB 32. CARB approved the LCFS as a discrete early action item with a regulation adopted and implemented in April 2010. Although challenged in 2011, the Ninth Circuit reversed the District Court's opinion and rejected arguments that implementing LCFS violates the interstate commerce clause in September 2013. CARB is therefore continuing to implement the LCFS statewide.

Senate Bill (SB)375

SB 375 aligns regional transportation planning efforts, regional GHG reduction targets, and affordable housing allocations. Metropolitan Planning Organizations (MPOs) are required to adopt a Sustainable Communities Strategy (SCS), which allocates land uses in the MPO's Regional Transportation Plan (RTP). Qualified projects consistent with an approved SCS or Alternative Planning Strategy categorized as "transit priority projects" would receive incentives to streamline CEQA processing.

CARB: Scoping Plan

On December 11, 2008, the CARB adopted the Scoping Plan (CARB 2008) as directed by AB 32. The Scoping Plan proposes a set of actions designed to reduce overall GHG emissions in California to the levels required by AB 32. Measures applicable to development projects include those related to energy-efficiency building and appliance standards, the use of renewable sources for electricity generation, regional transportation targets, and green building strategy. Relative to transportation, the Scoping Plan includes nine measures or recommended actions related to reducing vehicle miles traveled and vehicle GHGs through fuel and efficiency measures. These measures would be implemented statewide rather than on a project by project basis.

The CARB released the First Update to the Climate Change Scoping Plan in May 2014, to provide information on the development of measure-specific regulations and to adjust projections in consideration of the economic recession (CARB 2014a). To determine the amount of GHG emission reductions needed to achieve the goal of AB 32 (i.e., 1990 levels by 2020) CARB developed a forecast of the AB 32 Baseline 2020 emissions, which is an estimate of the emissions expected to occur in the year 2020 if none of the foreseeable measures included in the Scoping Plan were implemented. CARB estimated the AB 32 Baseline 2020 to be 509 million metric tons (MMT) of CO2e. The Scoping Plan's current estimate of the necessary GHG emission reductions is 78 MMT CO2e (CARB 2014b). This represents an approximately 15.32 percent reduction. The CARB is forecasting that this

would be achieved through the following reductions by sector: 25 MMT CO2e for energy, 23 MMT CO2e for transportation, 5 MMT CO2e for high-GWP GHGs, and 2 MMT CO2e for waste. The remaining 23 MMT CO2e would be achieved through Cap-and-Trade Program reductions. This reduction is flexible—if CARB receives new information and changes the other sectors' reductions to be less than expected, the agency can increase the Cap-and-Trade reduction (and vice versa).

3. Regional

SANDAG Regional Plan

The Regional Plan (RP) (SANDAG 2015) is the long-range planning document developed to address the region's housing, economic, transportation, environmental, and overall quality-of-life needs. The RP establishes a planning framework and implementation actions that increase the region's sustainability and encourage "smart growth while preserving natural resources and limiting urban sprawl." The RP encourages the regions and the County to increase residential and employment concentrations in areas with the best existing and future transit connections, and to preserve important open spaces. The focus is on implementation of basic smart growth principles designed to strengthen the integration of land use and transportation. General urban form goals, policies, and objectives are summarized as follows:

- Mix compatible uses.
- Take advantage of compact building design.
- Create a range of housing opportunities and choices.
- Create walkable neighborhoods.
- Foster distinctive, attractive communities with a strong sense of place.
- Otay Ranch Preserve open space, natural beauty, and critical environmental areas.
- Strengthen and direct development towards existing communities.
- Provide a variety of transportation choices.
- Make development decisions predictable, fair, and cost-effective.
- Encourage community and stakeholder collaboration in development decisions.

The RP also addresses border issues, providing an important UI District guideline for communities that have borders with Mexico. In this case, the goal is to create a regional community where San Diego, its neighboring counties, tribal governments, and northern Baja California mutually benefit from San Diego's varied resources and international location.

4. City of Chula Vista

City of Chula Vista Climate Action Plan

Since 2000, Chula Vista has been implementing a Climate Action Plan (CAP) to address the threat of climate change to the local community. The original Carbon Dioxide Reduction Plan was revised to incorporate new climate mitigation and adaptation measures to strengthen the City's climate action efforts and to facilitate the numerous community co-benefits such as utility savings, better air quality, reduced traffic congestion, local economic development, and improved quality of life. To help guide implementation of the CAP, the City regularly conducts GHG emission inventories. The City's CAP was updated in 2008, 2010 and 2017.

Municipal Codes

The Chula Vista City Council adopted the California Energy Code 2016 effective January 1, 2017. The 2016 Building Energy Efficiency Standards are more efficient than previous standards. These energy efficiency standards are designed toward the "Zero Net Energy" (ZNE) goal for new homes by 2020 and commercial buildings by 2030. The ZNE goal means that new buildings must use a combination of improved efficiency and distributed renewable generation to meet 100 percent of the annual energy need.

Per CVMC § 15.24.045, each store in a store building, each flat in a flat building, and each building used as a dwelling shall be so wired that each store, apartment, flat or dwelling shall have separate lighting and/or power distribution panels. Such panels shall not serve other portions of the building. Hotels, motels, hotel apartments and similar types of buildings may be wired from one or more distribution panels.

Per CVMC § 20.04.040, all new residential units shall include electrical conduit specifically designed to allow the later installation of a photovoltaic (PV) system which utilizes solar energy as a means to provide electricity. No building permit shall be issued unless the requirements of this section and the Chula Vista Photovoltaic Pre-Wiring Installation Requirements are incorporated into the approved building plans.

Additionally, per CVMC § 20.04.040, all new residential units shall include plumbing specifically designed to allow the later installation of a system which utilizes solar energy as the primary means of heating domestic potable water.

Finally, per CVMC § 20.04.040, commercial businesses are required to participate in a free resource and energy evaluation of their facilities when they obtain a new business license and every five years thereafter.

The City of Chula Vista has developed a number of strategies and plans aimed at improving air quality. The City is a part of the Cities for Climate Protection Program, which is headed by the International Council of Local Environmental Initiatives (ICLEI). In November 2002, Chula Vista adopted the CO2 Reduction Plan to lower the community's major GHG emissions, strengthen the local economy, and improve the global environment. The CO2 Reduction Plan focuses on reducing fossil fuel consumption and decreasing reliance on power generated by fossil fuels, which would have a corollary effect in the reduction of air pollutant emissions into the atmosphere. The following 20 action measures have been proposed within the Plan in order to achieve this goal:

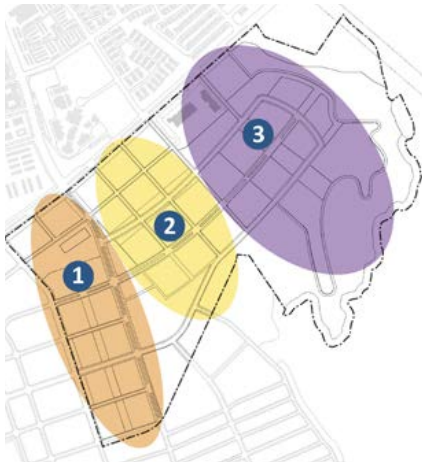
1. Municipal clean fuel vehicle purchases
2. Private fleet clean fuel vehicle purchases
3. Municipal clean fuel demonstration project
4. Telecommuting and telecenters
5. Municipal building upgrades and employee trip reduction
6. Enhanced pedestrian connections to transit
7. Increased housing density near transit
8. Site design with transit orientation
9. Increased land use mix
10. Reduced commercial parking requirements
11. Site design with pedestrian/bicycle orientation
12. Bicycle integration with transit and employment
13. Bicycle lanes, paths, and routes
14. Energy efficient landscaping
15. Solar pool heating
16. Traffic signal and system upgrades
17. Student transit subsidy
18. Energy efficient building program
19. Municipal life-cycle purchasing standards
20. Increased employment density near transit.

3. Project Description

The UI District SPA Plan includes the following planning features to achieve the community site design goals.

Source: iStock

Example of Mixed-use Urban Streets



Potential Micro-Campus Zones

Source: Ayers Saint Gross

Example of Public Spaces at Howard Community College

Flexible and Mixed-Use Urban Streets

Given the UI District strives to create an authentic urban environment, the street grid will accommodate a wide range of 2- to 5-story buildings encompassing several use types. These will include academic, research, commercial, and residential with street-level retail. Unlike conventional academic environments many educational users will share building spaces with other users—and the overall character of the district will be established through a coherent urban design approach.

Multi-Institutional Platform–with Dedicated Micro-Campus Zones

An urban design approach mixing use types will also allow multiple institutions to incubate and grow the UI District without the costs and constraints of conventional campus developments. However, institutions looking for a more traditional campus environment can find discreet, potential campus zones embedded in the broader Plan. Three such zones are identified with the southeastern quadrant of the Plan envisioned as a signature campus site in the event that a single institution is looking for a particularly compelling campus site.

Key Public Spaces and Amenities–Parks + Squares

Great urban areas are defined by great streetscapes and open spaces—this Plan offers a range of formal and informal natural landscapes to structure and enhance the overall District. Each quadrant of the Plan features a central green space and collectively, all of these landscape form an integrated network of smaller linear parks and gardens. The UI District's open space network feeds southward to the canyon overlooking the Otay Ranch Preserve.

A Network of Trails, Open Spaces and Landscapes Overlook the Otay Ranch Preserve

The centerpiece of the public space network is the series of landscape spaces overlooking the Otay Ranch Preserve. Conceived as a rim trail linking three existing canyons, this open space area will be unique in the Otay development—providing opportunities for building sites that frame views to the mountains and Mexico beyond. Buildings along this trail are intended to open out to the Otay Ranch Preserve—animating this area with academic-innovation programs.

Site Aerial

Enhanced Pedestrian and Bike Mobility—Minimize Cars

The UI District Plan is conceived to encourage bicycle and pedestrian use. Urban complete streets, trails and open spaces will all provide a compelling, sustainable network of spaces to walk. Both the proposed mix of uses along with a compact, integrated urban design will provide a unique, walkable environment where cars are not the primary-default mobility option.

Flex District Locations

Integration with Adjacent Villages

Typically adjacent developments in the Otay Ranch focus inward with little emphasis on connectivity between Villages. Here there will be a key integration of the UI District with Village 9 Town and Village 10. The Flex Overlay will ensure that both sides of adjacent streets will operate as a coherent district, featuring comparable FARs and building characters. The blocks in Village 9 west of Orion Avenue will be developed to complement the overall land use patterns in the UI District—particularly, market rate housing and retail for the projected workers and students coming to the Universities. Similarly Village 10 blocks adjacent to the UI District will be developed complementarily.

Non-traditional Residential Units

Universities and innovation districts typically feature non-traditional housing typologies not currently found in the Otay Ranch. These include undergraduate and graduate dormitories and other mixed-use student housing projects that differ from the single- and multi-family housing stock seen in most of the existing Otay Ranch Villages. Offering student housing and residential amenities to prospective University partners is key to attracting future institutional anchors. The UI District's focus on innovation will also drive residential capacity as today's startups and technology workers often prefer living in urban mixed use areas to traditional detached residential neighborhoods.

Figure 1: UI District Site Utilization Plan and Table 3: Site Utilization Development Summary implement the form-based development plan contemplated by the Otay Ranch GDP; maximum development utilization is established by Transect.

The UI District is strategically designed to focus urban development within the T-6 through T-2 Transects, allowing for development flexibility at low intensities in the T-1 Transects, SD Lake Blocks, and O-2 and O-3 Open Space Sectors. Development square footage, land use percentage, and specific building locations may be altered or transferred between Transects pursuant to Chapter 10 Administration and Implementation.

Table 3: Site Utilization Development Summary

Transect/Area	Acres	Max FAR	Estimated GSF of Development[1]
T-6: District Gateway	20.0	2.0	2,098,000
T-5: Urban Core	25.3	2.5	2,757,700 [2]
T-4: Town Center	33.6	2.0	2,929,900
T-3: Campus Commons	29.0	1.3	1,642,400
T-2: Campus Vista	26.4	0.5	575,600
T-1: Future Development [3]	99.8	0.2	0 [3]
SD: Lake Blocks	5.2	0.2	47,600
O-3: Pedestrian Walk	14.5	0.0	0
O-2: Common Open Space	39.5	0.0	15,000 [4]
O-1: Open Space	41.1	0.0	0
ROW	49.3	0.0	- -
UI District Total	383.8	- -	10,066,200 [1]

(1) Gross Square Footage (GSF) excludes area dedicated to parking and parking structures; see Table 3M: Land Use Ratios for gross square footage limitations by land use category.
(2) The Signature Tower has a maximum GSF assigned and does not have a FAR.
(3) Development is encouraged to be focused in Transects T-2 through T-6; a maximum of 10% of the total developed GSF within the other transects may be permitted here subject to § 3.4.7. T-1: Future Development
(4) Up to 15,000 GSF is permitted in the Common Open Space for pavilions.

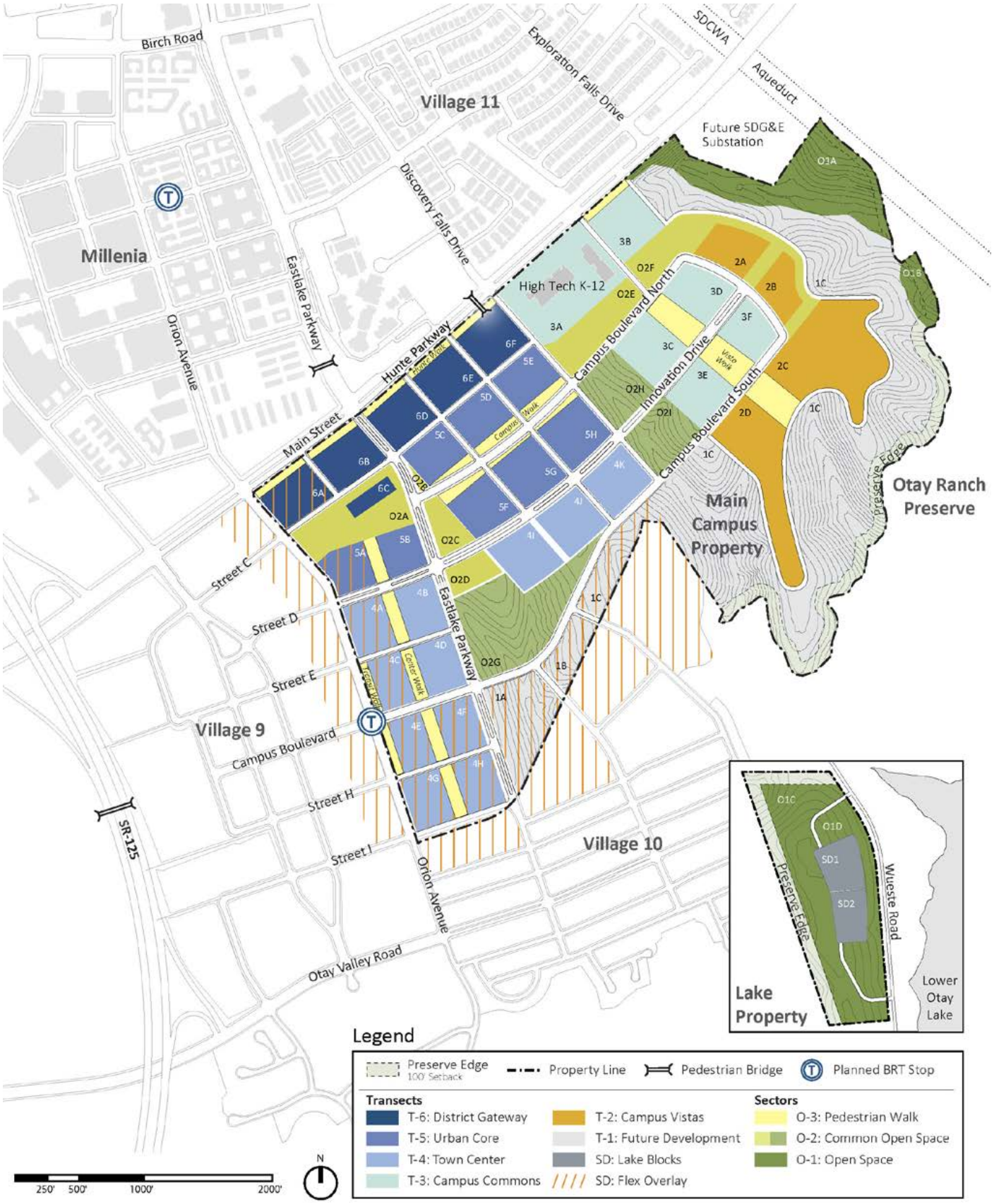


Figure 1: UI District Site Utilization Plan

4. Project Design Features

The UI District includes the following elements and conservation plans as part of the project's design and long-term operation.

A. Conservation Plans

1. The Water Conservation Plan

The purpose of the Water Conservation Plan (WCP) is to respond to the Growth Management policies of the City of Chula Vista, which are intended to address the long-term need to conserve water in new developments, to address short-term emergency measures, and to establish standards for water conservation.

2. Energy Conservation Plan

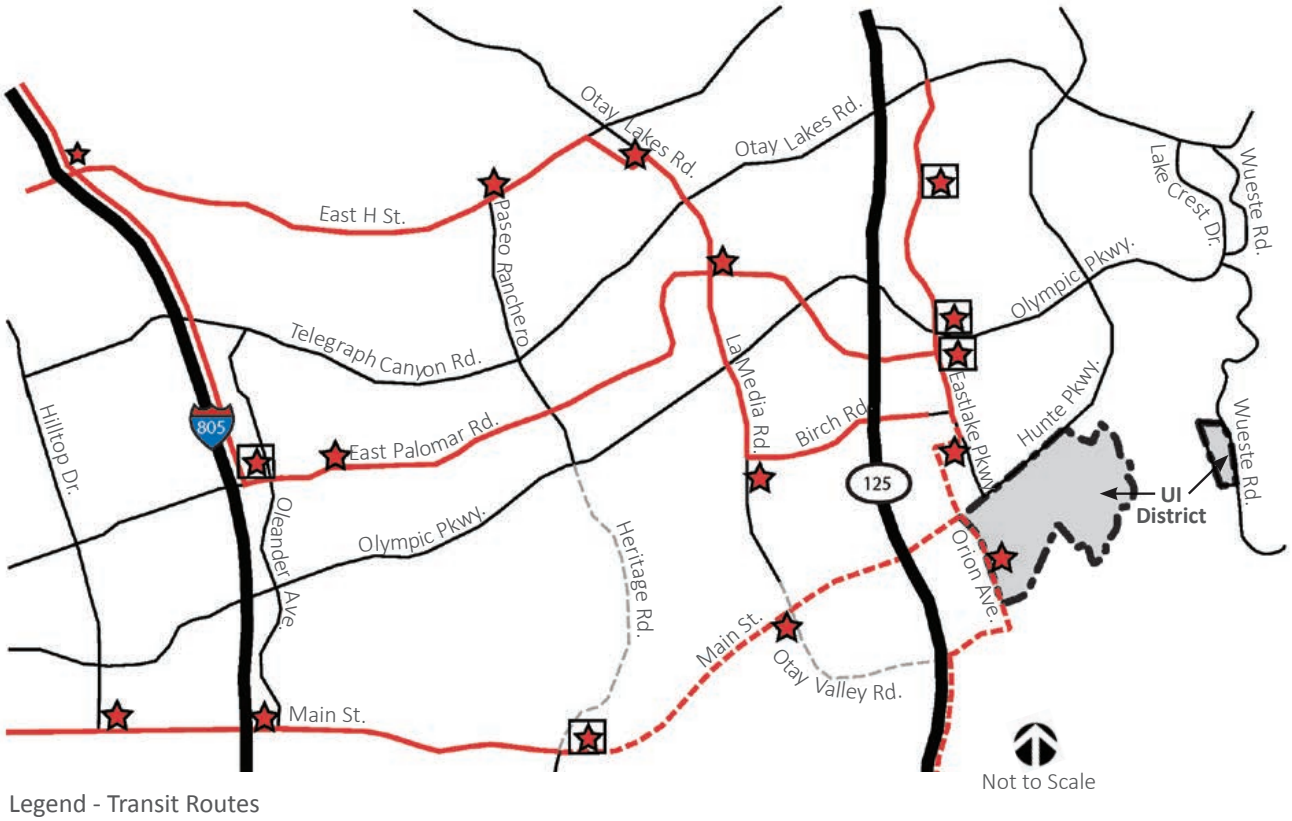
The Otay Ranch GDP requires that all SPA Plans prepare a Non Renewable Energy Conservation Plan. This Plan identifies measures to reduce the use of non-renewable energy resources through, but not limited to transportation, building design and use, lighting, recycling, and alternative energy sources.

B. Transit Planning Principles

Public transportation is an integral part of the Otay Ranch Community. The design of the Plan area promotes access to public transit and locates land uses in proximity to proposed transit stations. Chula Vista Transit (CVT) provides bus service through the Eastern Territories of the City that can be extended to serve the SPA Plan areas. Regional transit plans also provide for commuter lines to serve villages in Otay Ranch.

Two future transit stops are located adjacent to the UI District (refer to Figure 2: Planned Transit) based on the following principles:

- Locate transit stops where there are a number of major pedestrian generators.
- Locate transit stops and pedestrian walkways to provide access while respecting the privacy of residential areas.
- At the intersection of two or more transit routes, locate bus stops to minimize walking distance between transfer stations.
- Locate bus turn-outs on the far side of the intersections to avoid conflicts between transit vehicles and automobile traffic, permitting right-turning vehicles to continue turning movements or provide a queue jumper phase.
- Transit stops should be provided with adequate walkway lighting and well designated shelters.
- Walkway ramps should be provided at transit stops to ensure accessibility.



Legend - Transit Routes

- Freeway/Toll Road
- Existing Roadway
- Proposed Roadway
- Proposed Transit Route Along Existing Roadway
- Proposed Transit Route Along Proposed Roadway or exclusive BRT ROW
- Proposed Stop/Station
- Proposed Stop with Park and Ride

Figure 2: Planned Transit

C. Bicycle Routes and Pedestrian Trails

All UI District streets and sidewalks are designed to facilitate pedestrian, bicycle and low-speed electric vehicle travel. Bicycles and low-speed electric vehicles may travel on all UI District streets with speed limits of 35 miles per hour.

The Otay Ranch GDP provides for a Village Pathway to be located through Otay Ranch, specifically through the villages to connect open spaces. The UI District provides connections to the Village Pathway.

Pedestrian Walks

Pedestrian Walks allow circulation throughout the SPA.

Streets

Streets are designed to promote pedestrian, bicycle and low-speed electric vehicle travel. Sidewalks are provided on all streets. The preferred design for provides for minimum 10-foot wide sidewalks separated from the roadway by landscaped parkways.

Greenbelt and OVRP Trails

The Chula Vista Greenbelt Master Plan provides for a Greenbelt to be located through Otay Ranch. The Plan provides connections to the Greenbelt Master Plan. The OVRP Concept Plan identifies a multi-use trail system through the Otay River Valley. The Plan provides connections to the OVRP trail.

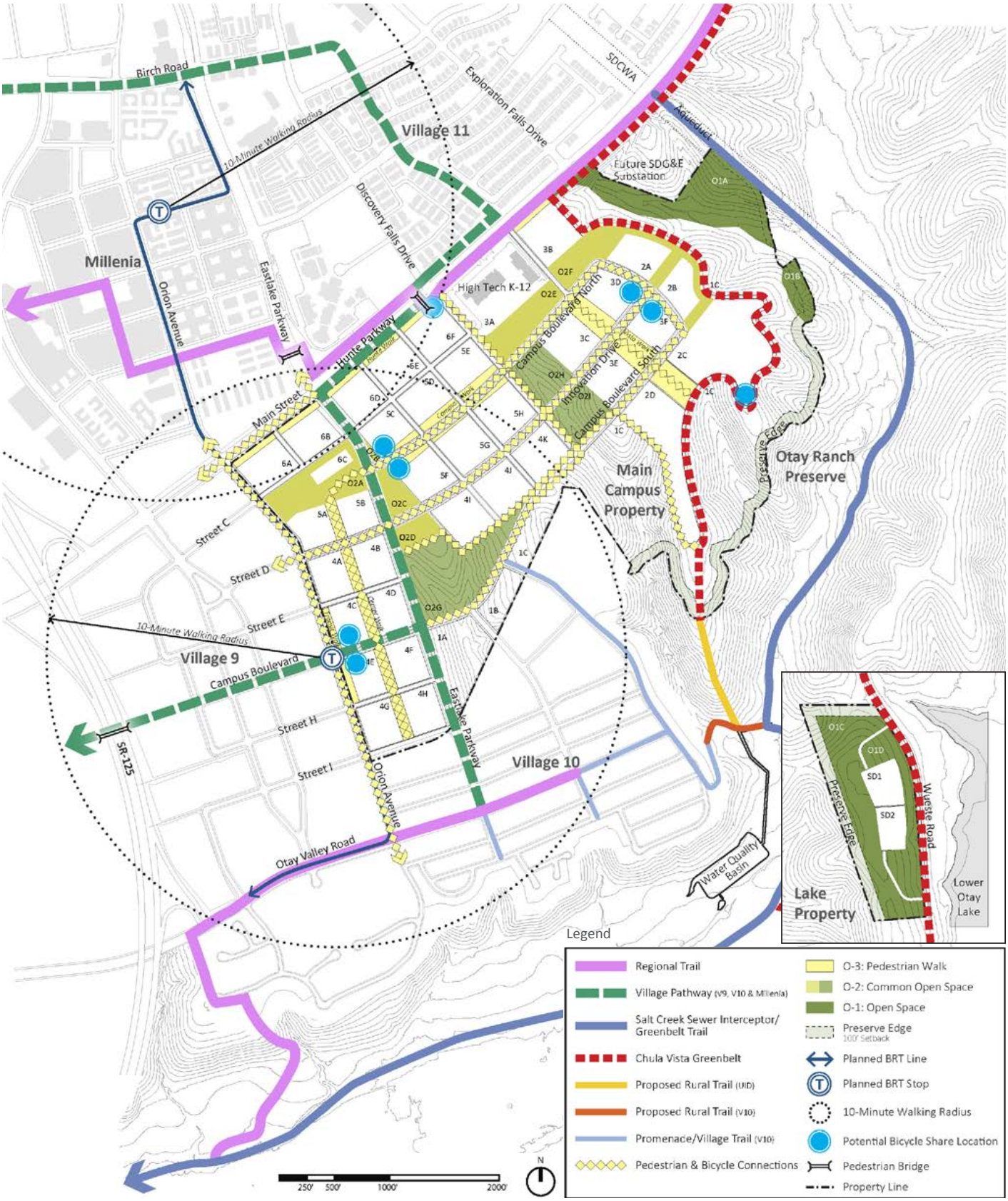


Figure 3: On-Site Pedestrian & Bicycle Circulation Plan

D. Additional Design Features that Reduce Emissions

The UI District SPA Plan incorporates several additional features into the site design that promote alternative transportation use, reduce traffic congestion, encourage energy efficiency, and reduce area source pollutants.

LUT-1 Increase Density

The UI District allows for an increase in employment density (14,000 jobs on a 384-acre site results in 36.55 jobs per acre). Increased densities affect the distance people travel and provide greater options for the mode of travel they choose. The percent increase in employment is based on a 20 jobs per acre baseline.

LUT-3 Increase Diversity

The UI District includes multiple land use types. Having different types of land uses near one another can decrease vehicle miles traveled (VMT) since trips between land use types are shorter and may be accommodated by non-auto modes of transport.

LUT-5 Increase Transit Accessibility

Locating a project with high density near transit will facilitate the use of transit by people traveling to or from the project. The use of transit results in a mode shift and therefore reduced VMT.

LUT-9 Improve Walkability Design

The Project will include improved design elements to enhance walkability and connectivity.

SDT-1 Improve Pedestrian Network

Providing a pedestrian access network to link areas of a project site encourages people to walk instead of drive. This mode shift results in people driving less and thus a reduction in VMT.

Energy Efficiencies

Development would be constructed as a zero net energy facility, incorporating sustainable design and energy reduction measures (such as photovoltaic panels) to completely offset the UI District ’s annual energy use.

New development under the SPA requirements would be designed to meet Title 24 energy efficiency standards at the time of development.

Water Conservation Strategies

All development will meet mandatory CALGreen requirements related to indoor and outdoor water use. Reclaimed water will be used for outdoor landscaped areas on the Main Campus Property.

Reduce Particulate Matter

No wood burning fireplaces would be permitted.

Solid Waste Reduction

At least 75 percent of operational waste would be diverted from landfills through reuse and recycling in accordance with AB 341.

TACs

Since it is not currently known if any of the proposed academic or support uses would include any new sources of TACs, such as laboratory buildings. MM AQ-3 requires that subsequent projects containing such uses analyze specific operation-related TAC impacts to ensure that emissions will remain below SDAPCD thresholds.

> AQ-3 Health Risk Assessment. Prior to the issuance of building permits for any new facility that would have the potential to emit TACs, in accordance with AB 2588, an emissions inventory and health risk assessment shall be prepared. Building permits shall only be issued for facilities that demonstrate TAC emissions below the standards listed in Table 4: TAC Emissions Significance Threshold (excess cancer risk of 1 in 1 million or 10 in 1 million with Toxics-Best Available Control Technology (T-BACT) and non-cancer hazard index of 1.0).

Table 4: TAC Emissions Significance Threshold

Pollutant	Construction Emissions (pounds/day)	Operational Emissions (pounds/day)
Oxides of Nitrogen (NO_X)	100	55
Volatile Organic Compounds (VOC)	75	55
Respirable Particulate Matter (PM_{10})	150	150
Fine Particulate Matter ($PM_{2.5}$)	55	55
Oxides of Sulfur (SO_X)	150	150
Carbon Monoxide (CO)	550	550
Lead and Lead Compounds	3	3
Toxic Air Contaminants		
Excess Cancer Risk	1 in 1 million 10 in 1 million with T-BACT	
Non-Cancer Hazard	1.0	

Source: SCAQMD 2015.
T-BACT = Toxics-Best Available Control Technology
Source: Helix Environmental Planning June 2016

E. Construction Emissions Control Best Management Practices (BMPs)

AQ-1 Air Quality-Related BMPs.

The control measures listed below will be implemented during project construction to reduce dust and VOC emissions:

- A minimum of two applications of water during grading between dozer/scraper passes.
- Paving, chip sealing, or chemical stabilization of internal roadways after completion of grading.
- Termination of grading if winds exceed 25 miles per hour (mph).
- Ensure that all exposed surfaces maintain a minimum soil moisture of 12 percent.
- Stabilization of dirt storage piles by chemical binders, tarps, fencing, or other erosion control.
- Use of "Super Compliant" architectural coatings with a VOC content of 50 grams per liter or less.

AQ-2 Use of Tier 4 Final Off-Road Equipment.

To reduce construction emissions of NOX, all off-road diesel-powered construction equipment greater than 50 horsepower (HP) used during each building construction phase shall meet EPA Tier 4 off-road emissions standards. A copy of each unit's certified Tier specification shall be provided to the City of Chula Vista Development Services Department at the time of mobilization of each applicable unit of equipment.

The Project would also incorporate BMPs during construction to reduce emissions of fugitive dust. SDAPCD Rule 55 Fugitive Dust Control states that no dust and/or dirt shall leave the property line. Rule 55 requires the following:

1. Airborne Dust Beyond the Property Line: No person shall engage in construction or demolition activity subject to this rule in a manner that discharges visible dust emissions into the atmosphere beyond the property line for a period or periods aggregating more than 3 minutes in any 60 minute period.
2. Track-Out/Carry-Out: Visible roadway dust as a result of active operations, spillage from transport trucks, erosion, or track-out/carry-out shall:
    - Be minimized by the use of any of the following or equally effective track-out/carry-out and erosion control measures that apply to the Project or operation:
        - Track-out grates or gravel beds at each egress point,
        - Wheel-washing at each egress during muddy conditions, soil binders, chemical soil stabilizers, geotextiles, mulching, or seeding; and for outbound transport trucks;
        - Using secured tarps or cargo covering, watering, or treating of transported material; and
    - Be removed at the conclusion of each work day when active operations cease, or every 24 hours for continuous operations.
    - If a street sweeper is used to remove any track-out/carry-out, only PM10-efficient (particulate matter less than 10 microns) street sweepers certified to meet the most current South Coast Air Quality Management District (SCAQMD) Rule 1186 requirements shall be used. The use of blowers for removal of track-out/carry-out is prohibited under any circumstances.

5. Effect of Project on Local/Regional Air Quality

A. Potential Short and Long Term Effects on Local and Regional Air Quality

Criteria pollutant and GHG emissions were calculated using the California Emissions Estimator Model (CalEEMod), Version 2013.2.2 (SCAQMD 2013). CalEEMod is a computer model used to estimate criteria air pollutant and GHG emissions resulting from land development projects throughout the state of California. CalEEMod was developed by the SCAMQD with the input of several air quality management and pollution control districts.

In brief, CalEEMod is a computer model that estimates criteria air pollutant and greenhouse gas emissions from mobile (i.e., vehicular) sources, area sources (fireplaces, woodstoves, and landscape maintenance equipment), energy use (electricity and natural gas used in space heating, ventilation, and cooling; lighting; and plug-in appliances), water use and wastewater generation, and solid waste disposal. Emissions are estimated based on land use information input to the model by the user.

1. Construction Emissions

Construction of the proposed project would result in a temporary addition of pollutants to the local air-shed caused by soil disturbance, fugitive dust emissions, and combustion pollutants from on-site construction equipment, as well as from off-site trucks hauling construction materials. Construction emissions can vary substantially from day to day, depending on the level of activity, the specific type of operation and, for dust, the prevailing weather conditions. Therefore, such emission levels can only be approximately estimated with a corresponding uncertainty in precise ambient air quality impacts.

Peak daily criteria pollutant emissions were estimated using CalEEMod. In the absence of project-specific construction information for the UI District, equipment types needed for all phases of construction are estimated by CalEEMod based on the size and subtypes of the land uses entered in the land use module. For “worst-case” modeling purposes, construction is assumed to begin in January 2017 and be completed in May 2030. If construction is delayed or occurs over a longer time period, emissions could be reduced because of (1) a more modern and cleaner-burning construction equipment fleet mix than incorporated in the CalEEMod, and/or (2) a less intensive build-out schedule (i.e., fewer daily emissions occurring over a longer time interval). Details of phasing, selection of construction equipment, and other input parameters, including CalEEMod data, are included in Appendix A of the *University Innovation District Air Quality and Greenhouse Gas Emissions Technical Report* prepared by Helix Environmental Planning.

All development is subject to all construction related requirements listed under E. Construction Emissions Control Best Management Practices (BMPs).

As shown in Table 5: Estimated Daily Construction Emissions (pounds/day), with implementation of MM AQ-2, NOX emissions would be reduced to a level that is less than the SCAQMD significance threshold. Thus, construction impacts would be less than significant with mitigation.

TABLE 5: ESTIMATED DAILY CONSTRUCTION EMISSIONS (POUNDS/DAY)

Phase	Pollutant Emissions (pounds per day)					
	ROG	NO_X	CO	SO_X	PM_{10}	$PM_{2.5}$
Site Preparation	5	52	40	<0.5	11	7
Grading	6	70	48	<0.5	8	5
Building Construction	21	87	271	1	39	12
Paving	1	8	15	<0.5	1	<0.5
Architectural Coatings	19	3	17	<0.5	6	2
Maximum Daily Emissions	**21**	**87**	**271**	**1**	**39**	**12**
Thresholds	*75*	*100*	*550*	*150*	*150*	*55*
Significant Impact?	***No***	***No***	***No***	***No***	***No***	***No***

Source: Helix Environmental Planning June 2016

2. Operational Emissions

Operational impacts were estimated using CalEEMod. Operational sources of emissions include area, energy, transportation, water use, and solid waste. Operational emissions from area sources include the combustion of natural gas for heating and hot water, engine emissions from landscape maintenance equipment, and VOC emissions from repainting of buildings.

Operational emissions from mobile source emissions are associated with Project-related vehicle trip generation. Based on the Traffic Impact Analysis (Linscott, Law and Greenspan Engineers [LLG] 2016), at full build-out the Project would generate 54,360 average daily trips (ADTs). Default vehicle speeds, trip lengths, trip purpose, and trip type percentages for each land use subtype were used. Model output data sheets are included in Appendix A of the *University Innovation District Air Quality and Greenhouse Gas Emissions Technical Report* prepared by Helix Environmental Planning.

Operational emission estimates for the UI District assume that measures as described in the California Air Pollution Control Officers Association (CAPCOA) *Quantifying Greenhouse Gas Mitigation Measures* as listed in D. Additional Design Features that Reduce Emissions are implemented.

To estimate the most conservative estimate for operational air quality emissions, the Project assumptions for the full build-out year (2030) were used in the analysis. The full build-out condition represents the greatest amount of vehicle trips and land use development. The major source of long-term operational air quality impacts from the proposed Project would be emissions produced from project-generated vehicle trips. Vehicle trip generation is based on the Project traffic study, which was prepared by LLG Engineers (2016). The projected Average Daily Trips (ADT) rate for the proposed Project is 54,360 trips. The vehicle trip emissions account for internal capture from mixed-use development and the reduction in vehicle trips compared to similar

developments that do not provide access to transit. A BRT station is identified at the intersection of Campus Boulevard and Orion Avenue that would serve the project site and nearby off-site residential and commercial areas. The projected ADT and vehicle trip length also take into account the Transportation Demand Management (TDM) program included in the UI District SPA Plan. The TDM includes strategies to reduce vehicle trips and miles traveled and to design a multi-modal transportation system, and establishes a Transportation Management Association to provide transportation services in a particular area to reduce vehicle miles and implement other TDM strategies. Pollutant emissions from vehicles were calculated using CalEEMod.

In addition to vehicle trips, the proposed project would emit pollutants from on-site area sources, such as landscape maintenance equipment; consumer products; and periodic repainting of interior and exterior surfaces (architectural coatings). Energy source emissions would be generated by the on-site burning of natural gas for space and water heating. The energy source assumptions include 25 percent increased efficiency beyond the CalEEMod default Title 24 standards (2008) to reflect the 2016 Title 24 standards (CEC 2012). This reduction was only applied to the portion of energy consumption regulated by Title 24.

The vehicular and area source emissions associated with operation of the proposed project are summarized in Table 6: Estimated Daily Operational Emissions – 2030 (pounds/day). As shown therein, the proposed Project would exceed the daily regional thresholds for CO, VOCs, NOX, and PM10 during operation of development in the UI District. Emissions are attributable primarily to vehicular trips, which would exceed the thresholds for VOCs, NOX, and CO. However, area sources would also result in significant emissions of VOCs from consumer products and landscaping. Energy source emissions would combine with mobile source emissions to result in significant emissions of PM10. Therefore, a significant impact would occur. The air quality technical report for the GPA/GDPA estimated emissions that would result from the increase in building potential accommodated by the GPA/GDPA compared to the previous GDP, including the increase in building potential in the UI District. The findings in this report are consistent with the GPA/GDPA conclusion that significant impacts would occur.

Table 6: Estimated Daily Operational Emissions – 2030 (pounds/day)

Emission Source	Pollutant Emissions (pounds/day)					
	VOC	NO_X	CO	SO_X	PM_{10}	$PM_{2.5}$
Area	180	2	167	<1	1	1
Energy	4	40	31	<1	3	3
Mobile	105	124	784	2	147	41
TOTAL	**290**	**166**	**983**	**2**	**151**	**45**
Thresholds	*55*	*55*	*550*	*150*	*150*	*55*
Significant Impact?	***Yes***	***Yes***	***Yes***	***No***	***Yes***	***No***

Source: Helix Environmental Planning June 2016

The Otay Ranch GDP Final Program EIR includes land use policies, siting/design policies, and transportation-related management actions to mitigate operational emissions (Ogden 1992). All applicable measures have already been incorporated into the UI District SPA Plan, such as provision of bike lanes, providing services near residences, and providing transit support facilities such as bus stops. There are no other feasible mitigation measures available at the this level to reduce vehicular emissions other than reducing vehicle trips. The Project trip generation rates account for the reduction in vehicle trips that would occur as a result of the mixed-use areas, transit use, and availability of pedestrian and bicycle facilities proposed as part of the UI District SPA Plan. In addition, future vehicular emissions may be lower than estimated due to increasingly stringent California fuel efficiency requirements. Some measures cannot be implemented at the SPA level, such as providing video-conference facilities in work places or requiring flexible work schedules. Additionally, there are no feasible mitigation measures currently available to reduce area sources of emissions without regulating the purchases of individual consumers. Operational emissions of VOCs, NOX, CO, and PM10 would be significant and unavoidable.

B. Potential Short-term and Long-term Effects on Global Climate Change

1. Construction Emissions

Project construction GHG emissions were estimated using the CalEEMod model as described on page B-32. Emissions of GHGs related to the construction of the UI District would be temporary. As shown in Table 7: Estimated Construction GHG Emissions (metric tons/year), total GHG emissions associated with construction of all land uses proposed under the UI District are estimated at 55,423 MT of CO2e. For construction emissions, City guidance recommends that the emissions be amortized (i.e., averaged) over 30 years and added to operational emissions. Averaged over 30 years, the proposed construction activities would contribute approximately 1,847 MT CO2e emissions per year.

Table 7: Estimated Construction GHG Emissions (metric tons/year)

Year	Emissions ($MT CO_2e$)
2017	513
2018	758
2019	746
2020	4,673
2021	6,264
2022	6,188
2023	6,137
2024	6,144
2025	6,087
2026	6,058
2027	6,033
2028	4,604
2029	845
2030	373
TOTAL[1]	**55,423**
Amortized Construction Emissions[2]	1,847

[1] The total presented is the sum of the unrounded values.
[2] Construction emissions are amortized over 30 years in accordance with City guidance.

Source: Helix Environmental Planning June 2016

2. Operational Emissions

Operational sources of GHG emissions include: (1) energy use (electricity and natural gas) and area sources (landscaping equipment); (2) vehicle use; (3) solid waste generation; and (4) water conveyance and treatment.

Energy Use

Development within the UI District would be constructed as a zero net energy facility, incorporating sustainable design and energy reduction measures (such as PV panels) to completely offset the UI District's annual electricity use. Energy sources also include the on-site burning of natural gas for space and water heating. The natural gas consumption assumptions include 25 percent increased efficiency beyond the CalEEMod default Title 24 standards (2008) to reflect the 2016 Title 24 standards. This reduction was only applied to the portion of energy consumption regulated by Title 24. Applying a 25 percent increase in Title 24 regulated energy consumption results in an overall 19 percent reduction in natural gas emissions. The annual GHG emissions from energy usage, comprised exclusively of natural gas usage, are estimated to be 8,117 MT CO2e per year.

Area Sources

A relatively small amount of GHGs, approximately 25 MT CO2e per year, would result from area sources (primarily landscaping equipment

Vehicular (Mobile) Sources

Mobile-source GHG emissions were based on vehicle trip generation provided in the Project traffic study, which was prepared by LLG (2016). The projected ADT rate for the proposed Project is 54,360 trips. The vehicle trip emissions account for the design features listed in D. Additional Design Features that Reduce Emissions. Using CalEEMod defaults for trip type, distribution, and length, the total annual VMT associated with the UI District was estimated to be 55.9 million miles, and vehicle-related GHG emissions were estimated to be 20,342 MT CO2e per year.

Solid Waste Sources

Solid waste generated by the Project would also contribute to GHG emissions. Treatment and disposal of solid waste produces significant amounts of methane. Through mandatory compliance with AB 341, the Project would achieve an average 75 percent diversion of waste during operations. Applying this reduction to CalEEMod defaults, GHG emissions from Project-related solid waste would be 559 MT CO2e per year.

Water Sources

Water-related GHG emissions are from the conveyance and treatment of water. The California Energy Commission's 2006 Refining Estimates of Water-Related Energy Use in California defines average energy values for water in Southern California. These values are used in CalEEMod to establish default water-related emission factors. The Project would implement water conservation features to increase water use efficiency as listed in D. Additional Design Features that Reduce Emissions. Applying these reductions to the CalEEMod defaults, the Project's estimated GHG emissions related to water treatment and conveyance would be 5,064 MT CO2e per year.

Other GHG Emission Sources

Ozone is also a GHG; however, unlike other GHGs, ozone in the troposphere is relatively short lived and therefore is not global in nature. According to CARB, it is difficult to make an accurate determination of the contribution of ozone precursors (NOX and VOCs) to global warming (CARB 2004). Therefore, it is assumed that emission of ozone precursors associated with the Project would not significantly contribute to climate change.

At present, there is a federal ban on chlorofluorocarbons (CFCs); therefore, it is assumed that the Project would not generate emissions of this GHG. Implementation of the Project may emit a small amount of HFC emissions from leakage, service of, and from disposal at the end of the life of refrigeration and air conditioning equipment. However, these emissions are not quantifiable and are assumed to be negligible. PFCs and sulfur hexafluoride are typically used in heavy-duty industrial applications. The proposed Project would not include heavy-duty industrial applications. Therefore, it is not anticipated that the Project would contribute significant emissions of these GHGs.

As illustrated in Table 8: Estimated Operational GHG Emissions (metric tons/year), full buildout of the UI District would result in 35,954 MT CO2e per year.

Table 8: Estimated Operational GHG Emissions (metric tons/year)

Emission Sources	Emissions (MT CO_2e/year)
Area Sources	25
Energy Sources	8,117
Vehicular (Mobile) Sources	20,342
Solid Waste Sources	559
Water Sources	5,064
Operational Subtotal	34,107
Construction (Annualized over 30 years)	1,847
TOTAL PROJECT	**35,954**

Source: CalEEMod output data is provided in Appendix A

Source: Helix Environmental Planning June 2016

C. Assessment of GHG Impacts

Project emissions are compared to the reduction target set by EO B-30-15 with the use of an efficiency threshold. As detailed in § 3.2.2, the efficiency threshold was calculated by dividing the City's 2030 emissions goal consistent with EO B-30-15 by the City's 2030 service population. The result is an efficiency threshold of 1.30 MT CO2e/SP per year. The Project's service population is the sum of all the Project's employees and residents. As shown in Table 9: UI District Service Population the service population for the UI District is 34,000 persons.

Table 9: UI District Service Population

Person Type	Number of Persons
University Students (Full-Time)	20,000
University Faculty/Staff	6,000
Innovation District Employees	8,000
TOTAL SERVICE POPULATION	**34,000**

Source: ASG 2015

Source: Helix Environmental Planning June 2016

The results of the GHG calculations for full development of the UI District are shown in Table 10: GHG Emissions Determination. The data are presented in terms of emissions per service population for comparison with the efficiency threshold. At full buildout of the UI District would result in 1.06 MT CO2e/SP/yr. This value can be compared to, and is less than the efficiency threshold established for the City in compliance with EO B-30-15. Impacts due to GHG emissions would be less than significant.

TABLE 10: GHG EMISSIONS DETERMINATION

Category	Value
Total UID Emissions (Table 12)	35,954 MT CO_2e
UID Service Population (Table 13)	34,000 Persons
UID Emissions per Service Population	**1.06 MT CO_2e/SP/yr**
Efficiency Threshold	*1.30 MT CO_2e/SP/yr*
Significant Impact?	***No***

Source: Helix Environmental Planning June 2016

6. Quantitative Project Evaluation

A quantitative analysis for UI District using Option Two: Alternative Modeling Programs, specifically LEED-ND equivalency analysis was conducted. LEED-ND criteria are proposed as being more appropriate than INDEX indicators for the UI District for the following reasons:

- INDEX indicators and thresholds were originally developed using residential pilot projects in contrast to the mix of uses in the UI District.
- INDEX indicators are primarily internal-focused, whereas the UI District AQIP value derives in large part from surrounding uses that will interact with UI District uses. LEED-ND criteria measure these benefits to a greater and more accurate extent.
- The INDEX approach uses only 16 indicators, whereas LEED-ND has 56 indicators that are able to characterize a project much more comprehensively and thoroughly, and ultimately capture more contributors to GHG emission reductions.
- The underlying basics of the INDEX approach are nearly 15 years old, in contrast to LEED-ND's latest update in April of 2016. Consequently, current best practices in urban design, green infrastructure, and resilient neighborhoods are not addressed by INDEX indicators, but are covered by LEED-ND criteria.
- The California Energy Code and Green building Standards have been updated since the INDEX approach was established.
- The UI District will be a zero net energy facility.
- The INDEX model is no longer being used.

Overall, the ND credits double or triple the depth and extent of measurements compared to INDEX indicators. The UI District scores the equivalent of 36 points under the LEED-ND rating system. Table 11: LEED Equivalency Scorecard provides a description of the project attributes that were considered from the LEED-ND rating system. The base ND certification of 36 points is the functional equivalent of INDEX indicator thresholds.

Table 11: LEED Equivalency Scorecard

LEED-NDv4 Credit		Options	Possible Points	UI District Equivalency Points	Notes
Smart Location & Linkage					
SLLc1	Preferred Locations	Location Type	1-5	0	
		Connectivity	1-5	0	
		High Priority Locations	3	0	
SLLc2	Brownfield Remediation	Brownfield Site	1	0	
		High Priorty Redevelopment Area	2	0	
SLLc3	Access to Quality Transit	Existing/Planned Transit	1-7	3	Weighted allocation of points based on 179 weekday trips & 46 weekend daily trips (inclusive of BRT) per PA12-FC North
SLLc4	Bicycle Facilities	Bicycle Storage AND			Will have a bike storage but doesn't necessarily meet requirements
		Bicycle Location OR	1		
		Bicycle Network	1	1	Existing bicycle network of at least 3 continuous miles
SLLc5	Housing and Jobs Proximity	Affordable housing	3		
		30% of total SF residential OR # of jobs within 1/2 mile = # of housing	2	2	Need to justify
		Infill project with nonresidential component	1		
SLLc6	Steep Slope Protection		1	1	Slopes over 15% are less than 60% of site
SLLc7	Site Design for Habitat or Wetland and Water Body Conservation	Sites w/o Significant habitat or wetlands	1		
		Sites with habitat or wetlands	1		
SLLc8	Restoration of Habitat or Wetlands and Water Bodies		1		
SLLc9	Long-Term Conservation Management of Habitat or Wetlands and Water Bodies		1		
Neighborhood Pattern & Design					
NPDc1	Walkable Streets	25' setback (80%	1	1	
		18' setback (50%)	1	1	
		1' setback for nonresidential (50%)	1		
		Functional entries every 75 feet	1		
		Function entries every 30 feet	1		
		Glass on 60% of facades	1		
		No blank walls 40% of sidewalk	1		
		Ground-level retail, services must be unshuttered at night	1		
		Off-street parking provided both sides on 70% of streets	1	1	
		Continuous sidewalks (10' wide on mixed-use blocks	1	1	
		Ground-floor residential units at least 24 inches above grade	1		Not sure how this works on a slope?
		Ground floor retail in multi-stores	1		
		Building height-street width	1		
		20 mph residential streets	1		Possible point; not sure how to justify 20 mph compared to 30 mph
		25 mph mixed use street	1	1	
		Driveways limited	1	1	

Table 11: LEED Equivalency Scorecard (Continued)

LEED-NDv4 Credit		Options	Possible Points	UI District Equivalency Points	Notes
NPDc2	Compact Development	Density/acre	1-6		Calculation doesn't work for project
NPDc3	Mixed-Use Neighborhoods	Uses with 1/4 mile walking distances	1-4	1	Uses not determined yet
NPDc4	Housing Types and Affordability	Diverse housing types	1-7		Too early to determine diverse housing types
		Affordable housing	1-3		
		Additional diverse housing types			
NPDc5	Reduced Parking Footprint	All off-street parking at side or rear	1		Temporary parking won't meet criteria
NPDc6	Connected and Open Community	Intersections/mile 300-400+	1-3		76 intersections/Sq mi.
NPDc7	Transit Facilities		1	1	BRT station
NPDc8	Transportation Demand Management	Transit Passes	1-2 1 pt for every 2 options	2	Will have TDM management
		Developer-sponsored transit			
		Vehicle sharing			
		Unbundling of parking/fees			
		Guaranteed ride home			
		Flexible work arrangements			
NPDc9	Access to Civic & Public Space	90% of units and non residential use entrances within 1/4 mile of 1 civic and passive use space	1	1	
NPDc10	Access to Recreation Facilities	1 Rec facility of 1 acre within 1/2	1	1	
NPDc11	Visitability and Universal Design	20% of dwellings are a visitable unit	1		
		At least 5 Universal Design Features	1	1	
		Kitchen features	1		
		Bedroom/Bathroom features	1		
NPDc12	Community Outreach and Involvement	Community outreach	1		
		Charrette	2	2	Held several workshops
		Endorsement Program	2		
NPDc13	Local Food Production	Neighborhood gardens	1		Allow for these items but don't require them
		Community supported agriculture	1		
		Farmers Market within 1/2 mile walking distance	1		
NPDc14	Tree-Lined and Shaded Streetscapes	Trees planted 50 oc on at least 60% of streets	1	1	
		Shaded sidewalks on 40% of sidewalks within 10 years	1	1	
		Certification from landscape architect that trees are planted properly and not invasive	1	1	
NPDc15	Neighborhood Schools	Neighborhood school within 1/2 mile	1	1	

Table 11: LEED Equivalency Scorecard (Continued)

LEED-NDv4 Credit		Options	Possible Points	UI District Equivalency Points	Notes
Green Infrastructure & Buildings					
GIBc1	Certified Green Buildings	Number of buildings certified under LEED OR other green building rating system 10-20% 1 point; 20-30% 2 points; 30-40% 3 points, 40-50% 4 points; +50% 5 points	1-5		
GIBc2	Optimize Building Energy Performance	12% above ASHRAE; OR 20% ASHRAE	1-2	1	California Energy Code equates to LEED v4 level of energy savings
		ASHRAE 50% Advanced Energy Design	2		
GIBc3	Indoor Water Use Reduction	Reduce water use 40% non-residential	1	1	CALgreen exceeds requirement
		90% of residential buildings would earn 4 points under LEED v4	1	1	CALgreen exceeds requirement
GIBc4	Outdoor Water Use Reduction	No irrigation	2		
		Reduced irrigation 30% 1 point; 50% 2 points	1-2	2	California Code exceeds requirements
GIBc5	Building Reuse	N/A	1		
GIBc6	Historic Resource Preservation and Adaptive Reuse	N/A			
GIBc7	Minimized Site Disturbance		1		SPA plan allows for development over total site
GIBc8	Rainwater Management	Manage runoff on site 80th percentile 1 point; 85th 2 points; 90th 3 points; 95th 4 points	1-4		
GIBc9	Heat Island Reduction	Non-roof measures	1		
		High-reflectance and vegetated roofs	1		
		Mixed non-roof & roof measures	1		
GIBc10	Solar Orientation	Block orientation	1		Blocks are not correctly oriented
		Building orientation	1		Too specific to require
GIBc11	Renewable Energy Production	Renewable energy production 5% 1 point, 12.5% 2 points; 20% 3 points	1-3	3	
GIBc12	District Heating and Cooling	Needs to be 80% of projects annual heating and/cooling			
GIBc13	Infrastructure Energy Efficiency	Infrastructure to be 15% annual energy reduction	1	1	15% gain assumed
GIBc14	Wastewater Management	25% of wastewater is reused on-site 1 point; 50% 2 points	1-2		Not determined yet

Table 11: LEED Equivalency Scorecard (Continued)

LEED-NDv4 Credit		Options	Possible Points	UI District Equivalency Points	Notes
GIBc15	Recycled and Reused Infrastructure		1		
GIBc16	Solid Waste Management		1		
GIBc17	Light Pollution Reduction		1		
Innovation & Design Process					
IDCPc1	Innovation				More than 50% renewable energy
IDCPc2	LEED® Accredited Professional		1	1	
Regional Priority Credits					
	Regional Priority Credit: Region Defined				
	Regional Priority Credit: Region Defined				
	Regional Priority Credit: Region Defined				
	Regional Priority Credit: Region Defined				
Total points				36	

7. Community Design and Site Planning Features

Table 12: Community Design and Site Planning Features below provides an overview of the Community Design and Site Planning Features, as well as building and landscape features, which have been integrated into the UI District SPA Plan to create a sustainable community.

Table 12: Community Design and Site Planning Features

Transportation-Related Measures
Increased employment density (14,000 jobs on a 384-acre site results in 36.55 jobs per acre). Increased densities affect the distance people travel and provide greater options for the mode of travel they choose. The percent increase in employment is based on a 20 jobs per acre baseline.
Multiple land use types. Having different types of land uses near one another can decrease vehicle miles traveled (VMT) since trips between land use types are shorter and may be accommodated by non-auto modes of transport.
Locating a project with high density near transit will facilitate the use of transit by people traveling to or from the project. The use of transit results in a mode shift and therefore reduced VMT.
Improved design elements to enhance walkability and connectivity.
Providing a pedestrian access network to link areas of a project site encourages people to walk instead of drive. This mode shift results in people driving less and thus a reduction in VMT.
Higher density uses support walking as distances are reduced, which results in lower GHG emissions from vehicles.
Bike lanes and bike racks will be provided through the project.
LSVs may travel on all internal streets with a maximum travel speed of 35 miles per hour.
At least 75 percent of operational waste would be diverted from landfills through reuse and recycling (AB 341).
Building setbacks are less than 18.’
On-street parking is provided on both sides of the street for at least 70% of the streets.
Continuous sidewalks at least 10 feet wide are provided on mixed-use blocks.
Driveways crossings are limited.
A Transportation Demand Management program will be created.
Energy-Conservation Related Measures
All buildings will be designed and constructed to meet the California Title 24 Part 6 Energy Code.
Development would be constructed as a zero net energy facility, incorporating sustainable design and energy reduction measures (such as photovoltaic panels) to completely offset the UI District ’s annual energy use.
All development will meet the CALGreen requirements including electric car plug-in facilities/stations will be pre-wired.
Each store in a store building, each flat in a flat building, and each building used as a dwelling shall be so wired that each store, apartment, flat or dwelling shall have separate lighting and/or power distribution panels. Such panels shall not serve other portions of the building. Hotels, motels, hotel apartments and similar types of buildings may be wired from one or more distribution panels (CVMC § 15.24.045).
All new residential units shall include electrical conduit specifically designed to allow the later installation of a photovoltaic (PV) system which utilizes solar energy as a means to provide electricity. No building permit shall be issued unless the requirements of this section and the Chula Vista Photovoltaic Pre-Wiring Installation Requirements are incorporated into the approved building plans (CVMC § 15.24.065).
All new residential units shall include plumbing specifically designed to allow the later installation of a system which utilizes solar energy as the primary means of heating domestic potable water (CVMC § 15.28.015).
Energy efficient lighting for streets, parks, and other public spaces will be required. Private developers will use energy efficient lighting and design.

Table 12: Community Design and Site Planning Features

All development (except Laboratories) will be part of the local utility demand response program to limit peak energy usage for cooling.
Trees will be planted 50 feet on center on at least 60% of the streets.
Landscape architect will certify that trees are planted properly and are not invasive.
Compliance with the City's Shade Tree Policy for parking lot design to achieve 50% shade over in five to fifteen years through tree canopies, shade structures, or light colored "cool" paving.
Water Related Measures to Reduce GHGs
All buildings will be constructed to CALGreen requirements related to indoor water use: installation of low-flow water fixtures.
All landscape shall comply with CVMC Chapter 20.12 Landscape Water Conservation Requirements.
Reclaimed water would be used for all outdoor landscaped areas on the Main Campus Property.
Drought tolerant, low-water usage native vegetation will be planted in public and private landscaped areas.
Natural turf in residential development will be limited to no more than 30% of the outdoor open space.
Construction Related Measures to Improve Air Quality
A minimum of two applications of water during grading between dozer/scraper passes.
Paving, chip sealing, or chemical stabilization of internal roadways after completion of grading.
Termination of grading if winds exceed 25 miles per hour (mph).
Ensure that all exposed surfaces maintain a minimum soil moisture of 12 percent.
Stabilization of dirt storage piles by chemical binders, tarps, fencing, or other erosion control.
Use of "Super Compliant" architectural coatings with a VOC content of 50 grams per liter or less.
To reduce construction emissions of NOX: All off-road diesel-powered construction equipment greater than 50 horsepower (HP) used during each building construction phase shall meet EPA Tier 4 off-road emissions standards.
No discharges of visible dust emissions into the atmosphere beyond the property line for a period or periods aggregating more than 3 minutes in any 60 minute period.
Visible roadway dust shall be minimized by the following or equally effective track-out/carry-out and erosion control measures that apply to the Project or operation: track-out grates or gravel beds at each egress point; wheel-washing at each egress during muddy conditions, soil binders, chemical soil stabilizers, geotextiles, mulching, or seeding; and for outbound transport trucks; using secured tarps or cargo covering, watering, or treating of transported material; and shall be removed at the conclusion of each work day when active operations cease, or every 24 hours for continuous operations. If a street sweeper is used to remove any track-out/carry-out, only PM10-efficient (particulate matter less than 10 microns) street sweepers certified to meet the most current SCAQMD Rule 1186 requirements shall be used.
Other Measures to Improve Air Quality
Prior to the issuance of building permits for any new facility that would have the potential to emit TACs, in accordance with AB 2588, an emissions inventory and health risk assessment shall be prepared. Building permits shall only be issued for facilities that demonstrate TAC emissions below the standards listed in (excess cancer risk of 1 in 1 million or 10 in 1 million with Toxics-Best Available Control Technology (T-BACT) and non-cancer hazard index of 1.0).
No wood burning fireplaces are permitted.

8. Chula Vista CO2 Reduction Plan

This section provides a comparative evaluation between the community/site design features and the energy efficiency emission reduction action measures contained in the City's CO2 Reduction Plan Appendix C.

The City of Chula Vista original CO2 Reduction Plan adopted in November 2000, was intended to reduce GHG emissions by 20% below 1990 levels. The CO2 Reduction Plan outlined steps for Chula Vista to reduce energy consumption, promote alternative transportation and design transit-friendly, walkable communities.

The City staff conducted a 2005 GHG emissions inventory to evaluate the City's progress in reaching its emissions goals. The 2005 inventory indicated that Chula Vista's annual citywide GHG levels had increased by 35% since 1990 due primarily to residential growth. During the same period, the City made significant progress in reducing annual per capita emissions by 17% and avoiding nearly 200,00 tons of GHG emissions annually. In addition, GHG emissions from municipal sources decreased by 18% mainly due to traffic signal energy-efficiency improvements. As a result of the 2005 Greenhouse Gas Emissions Inventory Report, in 2008, the City Council directed the re-evaluated of the program and convened a Climate Change Working Group (CCWG) to develop recommendations to reduce the community's greenhouse gas emissions or "carbon footprint" in order to meet the City's greenhouse gas emissions reduction targets.

The City adopted a new CAP in 2017.

Table 13: Consistency with CO2 Reduction Action Measures includes a summary of the action measures identified in the CO2 Reduction Plan and must be included in each AQIP to demonstrate how the project has been designed to help implement the action measures listed in the City's CO2 Reduction Plan, as required in the AQIP guidelines (August 2011).

Table 13: Consistency with CO2 Reduction Action Measures

Action Measure	Project/Community Design Features	Describe How Project Design Will Implement CO2 Reduction Action Measures
Measure 6 (Enhanced Pedestrian connections to Transit): Installation of walkways and crossings between bus stops and surrounding land uses.	BRT transit stops Pedestrian Circulation Plan Regional Trails Connection	Reduces VMTs that in turn reduces the GHG emissions.
Measure 7 (Increased Housing Density near Transit): General increase in land use and zoning designations to reach an average of at least 14-18 dwelling units per net acre within ¼ mile of major transit facilities.	The Plan implements design features to include housing density near transit.	Reduces VMTs that in turn reduces the GHG emissions.
Measure 8 (Site Design with Transit Orientation): Placement of buildings and circulation routes to emphasize transit rather than auto access; also includes bus turn-outs and other transit stop amenities.	The mixed-use nature of the project encourages pedestrian and bicycle travel as an alternative to the automobile. Streets are designed to accommodate bicycle travel	Reduces VMTs that in turn reduces the GHG emissions.
Measure 9 (Increased Land Use Mix): Provide a greater dispersion/variety of land uses such as siting of neighborhood commercial uses in residential areas and inclusion of housing in commercial and light industrial areas.	The mixed-use nature of the project encourages pedestrian and bicycle travel as an alternative to the automobile. Streets are designed to accommodate bicycle travel. Pedestrian pathways and trails accommodate pedestrian movement.	Reduces VMTs that in turn reduces the GHG emissions.
Measure 10 (Reduced Commercial Parking Requirements): Lower parking space requirements; allowance for shared lots and shared parking; allowance for on-street spaces.	The project has reduced parking requirements and shared parking. The Plan provides for a managed parking system.	Promotes alternatives to vehicle use thereby reducing VMTs that in turn reduces the GHG emissions.
Measure 11 (Site Design with Pedestrian/ Bicycle Orientation): Placement of buildings and circulation routes to emphasize pedestrian and bicycle access without excluding autos; includes pedestrian benches, bike paths, and bike racks.	Building and site design anticipates and accommodates pedestrian and vehicle circulation to reduce traffic impacts on neighboring streets and jointly optimize pedestrians and vehicles. Buildings are oriented toward sidewalks. Bike parking is required for all uses.	Promotes alternatives to vehicle use thereby reducing VMTs that in turn reduces the GHG emissions.
Measure 12 (Bicycle Integration with Transit and Employment): Provide storage at major transit stops and employment areas. Encourage employers to provide showers at the place of employment near major transit nodes.	All buildings will meet CALGreen requirements.	Promotes alternatives to vehicle use thereby reducing VMTs that in turn reduces the GHG emissions.

Table 13: Consistency with CO2 Reduction Action Measures

Action Measure	Project/Community Design Features	Describe How Project Design Will Implement CO2 Reduction Action Measures
Measure 13 (Bike Lanes, paths, and Routes): Continued implementation of the City's bicycle master plan. Emphasis is to be given to separate bike paths as opposed to striping bike lanes on streets.	Bicycle master plan implemented.	Promotes alternatives to vehicle use thereby reducing VMTs that in turn reduces the GHG emissions.
Measure 14 (Energy Efficient Landscaping): Installation of shade trees for new single-family homes as part of an overall city-wide tree planting effort to reduce ambient temperatures, smog formation, energy use, and CO2.	The land use plan includes landscape medians and parkways to reduce paving. Street trees will be planted to reduce heat build-up and demand for air conditioning.	Reduces energy consumption that reduces GHG emissions.
Measure 15 (Solar Pool Heating): Mandatory building code requirement for solar heating of new pools or optional motorized insulated pool cover.	Compliance with Municipal Code.	Reduces energy consumption that reduces GHG emissions.
Measure 16 (Traffic Signal & System Upgrades): Provide high-efficiency LED lamps or similar as approved by the City Engineer.	Compliance with City Program.	Reduces energy consumption that reduces GHG emissions.
Measure 18 (Energy Efficient Building Recognition Program): Reducing CO2 emissions by applying building standards that exceed current Title 24 Energy Code requirements.	Compliance with Municipal Code.	Reduces energy consumption that reduces GHG emissions.
Measure 20 (Increased Employment Density Near Transit): General increase in land-use and zoning designations to focus employment-generating land-uses within ¼ mile of major transit stops throughout the City.	The project contains a mix of land uses that include employment-generating land uses near the potential transit stops.	Reduces vehicle-miles traveled that in turn reduces the GHG emissions

9. Credit Towards Increased Minimum Energy Efficiency Standards

Note: Detailed provisions related to the calculation and application of credits are currently under development and subject to subsequent review and approval of City Council.

10. Compliance Monitoring

Table 14: UI District AQIP Compliance Monitoring Checklist summarizes the project design features and mitigation measures that have been identified to reduce the development's effects on air quality and improve energy efficiency.

Table 14: UI District AQIP Compliance Monitoring Checklist

AQIP Project Design Features/Principles	Method of Verification[1]	Timing of Verification	Responsible Party[2]	Project Consistency & Compliance Documentation
Increased employment density	Plan Review	Precise Plan	City of Chula Vista	
Multiple land use types	Plan Review	Precise Plan	City of Chula Vista	
Development near BRT	Plan Review	Precise Plan	City of Chula Vista	
Enhanced walkability	Plan Review	Precise Plan	City of Chula Vista	
Pedestrian access network	Plan Review	Precise Plan	City of Chula Vista	
Higher density	Plan Review	Precise Plan	City of Chula Vista	
Bicycle facilities	Plan Check	Tentative Tract Final Map, Improvement Plans	City of Chula Vista	
LSVs permitted on internal roads	Plan Review	Tentative Tract Final Map, Improvement Plans	City of Chula Vista	
75% of operational waste diverted	Plan Review	Tentative Tract Final Map, Improvement Plans	City of Chula Vista	
Pedestrian friendly building setbacks	Plan Review	Precise Plan	City of Chula Vista	
On-street parking on both sides of streets	Plan Review	Precise Plan	City of Chula Vista	
Continuous sidewalks at least 10 feet wide	Plan Review	Precise Plan	City of Chula Vista	
Limited driveway crossing	Plan Review	Precise Plan	City of Chula Vista	
Transportation Demand Management program	Plan Review	Precise Plan	City of Chula Vista	
Air Quality Mitigation Measures				
Construction related emissions	Permit Review	Grading Permit	City of Chula Vista	
Siting of sensitive land uses	Permit Review	Building Permit	City of Chula Vista	
TAC Emission Compliance	Permit Review	Building Permit	City of Chula Vista	
BUILDING				
New Construction Recycling Plan	Waste Management Report Review	Construction or demolition permit	City of Chula Vista	
Project wide recycling	Plan Check	Tentative Tract OR Building Permit	San Diego County	
Energy Efficiency Standards				
Compliance with California Energy Code	Plan Check	Building Permit/Title 24 Energy Report	City of Chula Vista	

Table 14: UI District AQIP Compliance Monitoring Checklist

AQIP Project Design Features/Principles	Method of Verification[1]	Timing of Verification	Responsible Party[2]	Project Consistency & Compliance Documentation
Compliance with Zero-net energy construction	Plan Check	Building Permit/Title 24 Energy Report	City of Chula Vista	
Compliance with CalGreen requirements	Plan Check	Building Permit	City of Chula Vista	
Compliance with City lighting and power distribution panels	Plan Check	Building Permit	City of Chula Vista	
Installation of solar photovoltaic prewiring	Plan Check	Building Permit	City of Chula Vista	
Installation of solar water heater preplumbing	Plan Check	Building Permit	City of Chula Vista	
Energy efficient lighting of streets, parks and public spaces	Plan Check	Building Permit	City of Chula Vista	
Participation in a Utility Demand Response program	Plan Check	Building Permit	City of Chula Vista	
Landscape medians and parkways with street trees	Plan Review	Precise Plan	City of Chula Vista	
Landscape is planted properly and not invasive	Plan Review	Precise Plan	City of Chula Vista	
Compliance with the City's Shade Tree Policy for parking lots	Plan Review	Precise Plan	City of Chula Vista	
Water Related Measures to Improve Air Quality				
Compliance with CALGreen Indoor Water Use requirements	Plan Check	Plumbing Permit	City of Chula Vista	
Compliance with CALGreen Outdoor Water Use requirements	Plan Check	Landscape Plan	City of Chula Vista	
Reclaimed water for landscape areas on Main Campus Property	Plan Check	Landscape Plan	City of Chula Vista	
Water efficient vegetation	Plan Check	Landscape Plan	City of Chula Vista	
Use of turf is limited to 30% of outdoor open space	Plan Check	Landscape Plan	City of Chula Vista	

Notes:

1. Method of verification may include, but is not limited to, plan check, permit review, site inspection.

2. Identify the party responsible for ensuring compliance (City of Chula Vista, San Diego APCD, Other)

3. This column shall include all pertinent information necessary to confirm compliance including document type, date of completion, plan/permit number, special notes/comments, and contact information.

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APPENDIX C:
NON-RENEWABLE ENERGY CONSERVATION PLAN

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The Otay Ranch GDP requires the preparation of an Energy Conservation Plan to identify feasible methods to reduce the consumption of non-renewable energy sources, including but not limited to, transportation, building design and use, lighting, recycling, alternative energy sources and land use.

Fossil fuels provide the majority of non-renewable energy sources in the San Diego region. These fuels are directly consumed in the form of gasoline, diesel fuel and natural gas, and indirectly consumed as electricity generated from these fuels. The goals, objectives and policies of the GDP provide for the long-range increase in conservation and reduction of consumption of non-renewable energy sources.

On November 14, 2000, the City Council adopted the CO2 Reduction Plan, which included implementing measures regarding transportation and energy efficient land use planning and building construction measures for new development. In this Plan, it was recognized that the City's efforts to reduce CO2 emissions from new development are directly related to energy conservation and air quality efforts. As a result, the City initiated a pilot study to develop a program to update the guidelines for preparation of required Air Quality Improvement Plans (AQIP). The pilot study involved the development of a computer model to evaluate the relative effectiveness of applying various site design and energy conservation features in new development projects. The results of the pilot study confirmed that the application of the Otay Ranch village design concept supports the City's energy conservation goals.

Opportunities for energy conservation in new development fall into three categories: the arrangement and intensity of land uses; mass transit and alternative transportation modes; and building siting, design and construction. The greatest opportunities for significant conservation are transportation related. The planning of Otay Ranch and its villages maximizes these opportunities by concentrating intensity of development around new transit facilities, providing for a regional transit-way and encouraging pedestrian, bicycle and Low Speed Electric Vehicle travel as an alternative to the automobile. The UI District (has been designed in accordance with these energy conservation principles.

1. Land Use & Community Design

Land use and community design that encourages energy conservation include:

A. Multi-Modal Transportation Focused Development

The Otay Ranch GDP policies promote a multi-modal transportation focused development between the UI District, the EUC, Village 9 and Village 10. A BRT station is planned on Orion Avenue at the western side of the UI District. The development Code and Design Guidelines ensure a pedestrian-oriented environment. At the regional level, the UI District and adjacent Villages accommodate a BRT as well as Rapid Bus Service with higher density housing and a mix of uses.

Within the UI District, the pedestrian sidewalks and bike lanes connect uses within the UI District to transit stops, activity areas and the future Pedestrian/Bicycle Bridges at SR-125 (through Village 9) and across Hunte Parkway. By design, the intensified land use help reduce the dependence on the passenger vehicle and encourage the use of transit, walking and biking.

B. Street Widths, Pavement & Street Trees

Otay Ranch street sections are narrower than typical standards. Narrow streets and a reduction in asphalt pavement reduce the "urban heat-island effect" by limiting the amount of reflective surfaces and the demand for air conditioning. Street trees provide shade which further reduces heat-gain. Street and parking lot tree planting shall comply with the City of Chula Vista Shade Tree Policy Number 576-19 (May 22, 2012). The objective is to maximize shade cover to the greatest extent possible. Shade trees shall be provided for all new parking lots that will achieve 50% canopy cover over the parking stall areas five to 15 years after planting.

2. Transit Facilities & Alternative Transportation Modes

The UI District is designed to accommodate public transportation and alternative travel modes to reduce energy consumption:

A. Public Transportation

BRT service is planned along Orion Avenue with a BRT Transit Station planned on Orion Avenue. In addition, Local Bus service can be accommodated through the UI District.

B. Alternative Travel Modes

The UI District has a designated for bicycle and pedestrian plan for traversing the District. Additional measures to promote alternative transportation use or reduce traffic congestions include:

- Provision of shower and locker facilities per CALGreen
- Parking Management Requirements Plan

3. Building Siting & Construction

All new buildings will also meet the requirements of CALGreen, the California Green Building Standards Code which addresses the following:

- Energy efficiency
- Pollutant control
- Interior moisture control
- Improved indoor air quality and exhaust
- Indoor water conservation
- Storm water management
- Construction waste reduction, disposal and recycling

A. Energy Efficiency

All new buildings in the UI District will be built to exceed the energy efficiency requirements in the California Building Code.

B. Solar Access

Passive solar design and building orientation can take advantage of the sun in the winter for heating and reduce heat gain and cooling needs during the summer. Buildings within the UI District will also comply with the City of Chula Vista's "Solar Ready" Ordinance which requires solar hot water pre-plumbing (CVMC § 15.28.015) and photovoltaic pre-wiring in all new homes (CVMC 15.24.065). These requirements facilitate future installation of solar hot water systems and roof top photovoltaic panels.

C. Lighting

Energy efficient LED lighting will be used to light streets, parks and other public spaces. All buildings will be encouraged to use energy efficient lighting in commercial and residential development.

D. Water Efficiency

The UI District SPA Plan includes a Water Conservation Plan which outlines water conservation requirements that includes meeting mandatory CALGreen requirements for indoor and outdoor water use. Reclaimed water will be used for outdoor landscape areas on the Main Campus Property.

E. Construction Waste Reduction, Disposal & Recycling

CVMC requires recycling or diversion of 100% of inert debris—such as concrete, brick, soil, rock—and a minimum of 65 percent of all other nonhazardous construction and demolition debris.

Each project is required to submit a Waste Management Report (WMR) from stating what types of materials they will be recycling and submit a performance deposit. Upon completion of the project, each project will resubmit their WMR and copies of receipts demonstrating how they achieved their recycling goals. Upon review of the WMR, if the goals are met, the deposit will be refunded. If the goals are not met, the deposit will be prorated by the amount disposed and kept by the City for non-compliance. If there is a significant volume of a particular material type for which there is no market, the recycling requirements may be amended, with prior consultation with City staff.

The waste stream leaving the site will be managed through the development of recycling, composting and material re-use programs. To reduce the demand for raw materials required for building construction, the use of recycled-content, salvaged, refurbished, reusable, durable and rapidly-renewable materials will be encouraged for building and landscape construction.

F. Non-Residential & Residential Recycling

CVMC § 8.23-25 requires all commercial and industrial establishments that recycle with a third party recycler to submit recycling tonnage documentation on an annual basis to the City's conservation coordinator, due on or before January 31st, for the previous year. This requirement promotes recycling of materials. Third party recycling can only occur when the materials are being sold and there is no charge for collection or hauling. If there is a collection or hauling charge, the City's franchised hauler is to provide the service. Those establishments recycling with a franchised hauler do not need to report because the hauler does the reporting to the City.

The City of Chula Vista's Recycling and Solid Waste Planning Manual, adopted by City Council, provides information for adequate space allocated to recycling and solid waste within individual projects, based upon the type of project and collection service needed. The enclosures must be large enough to house all collection services containers including trash, recycling materials, yard waste or organic materials, and any other ancillary service, such as grease rendering

Additionally, the City of Chula Vista encourages the use of compost materials to be incorporated into the soil of all new construction projects to improve soil health, water retention, less water run-off, and filtration of water run-off prior to entering storm drains and creeks on the way to San Diego Bay. The yard trimmings collected in Chula Vista are composted at the Otay Landfill and may be available for purchase.

APPENDIX D:
PRESERVE EDGE PLAN

UNIVERSITY
INNOVATION DISTRICT

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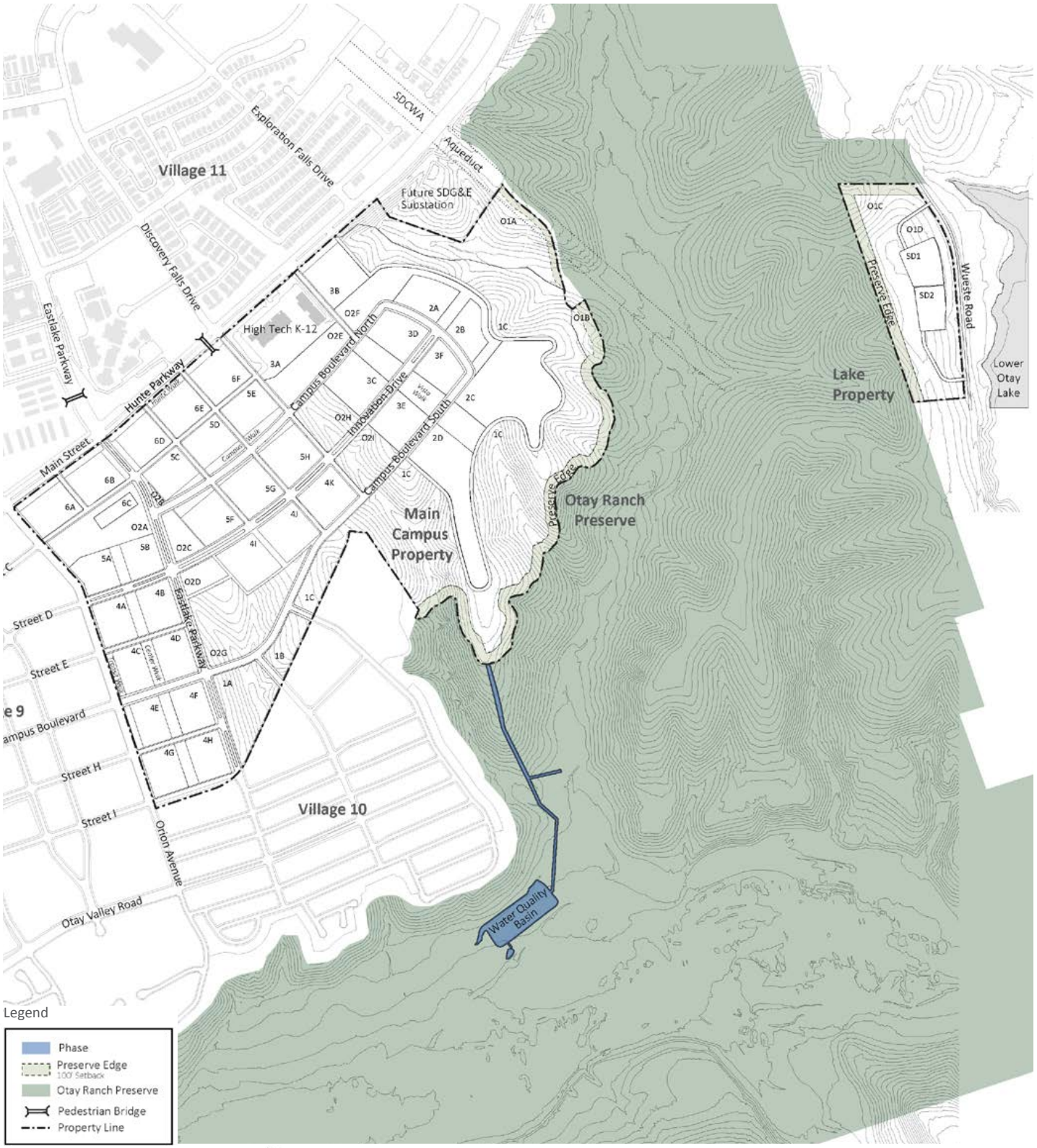
List of Exhibits

1. Introduction

The purpose of the Preserve Edge Plan is to identify allowable uses within appropriate land use designations for areas adjacent to the Otay Ranch Preserve (Preserve). In accordance with GDP Chapter 10, Section B Resource Preserve Policy 7.2, a Preserve Edge Plan is to be developed for all SPA Plans that contain areas adjacent to the Preserve. The Preserve Edge is a 100-foot wide wide strip of land adjacent to the Preserve.

Areas subject to the Preserve Edge Plan and facilities proposed within the Preserve are depicted on Figure 1: Areas Subject to the Preserve Edge Plan and Facilities Proposed in the Preserve and are described in Section 2. Facilities & Improvements Proposed within the Preserve. Planning efforts in Villages 9 and 10 have identified storm drain and sewer facilities that will be located in the Preserve area. These facilities have also been planned to accommodate some of the flows from the UI District.

To provide further guidance relating to the content of the Preserve Edge Plan, the Chula Vista Multiple Species Conservation Program (MSCP) Subarea Plan contains policies related to land use adjacency. Otay Ranch GDP, RMP, and MSCP policies are summarized and evaluated in Chapter 11: GDP Compliance.



Sewer connections south of Village 9 are addressed in the Village 9 SPA Plan and Tentative Map.
Drainage through (and south of) Village 10 is addressed in the Village 10 SPA Plan and Tentative Map.

Figure 1: Areas Subject to the Preserve Edge Plan and Facilities Proposed in the Preserve

2. Facilities & Improvements Proposed within the Preserve

The facilities described below are proposed within the Preserve and are not subject to this Preserve Edge Plan, but rather are discussed for context purposes only. Per the MSCP Subarea Plan, certain infrastructure and roads planned in conjunction with development will be allowed to be constructed, operated and maintained within the Preserve. The Subarea Plan anticipated these "Planned" and "Future" facilities and requires compliance with the siting criteria identified in § 6.3.3.4 of the Subarea Plan. The *UI District Biological Technical Report* dated November 18, 2014 prepared by Helix Environmental Planning Inc. provides the siting criteria analysis.

There are existing maintenance roads associated with Salt Creek Sewer, SDCWA Aqueduct, SDG&E transmission lines and City of San Diego waterlines. Where possible these existing roads will be used to access UI District facilities. Facilities proposed within the Preserve include:

A. Sewer

According to the *Sewer Study for the University and Innovation District* dated March 17, 2016 prepared by Rick Engineering Company, the existing Salt Creek interceptor sewer line starts in Hunte Parkway and heads south in and along Salt Creek within the Preserve. The interceptor line then turns westerly and follows the Otay River to the City of San Diego Metropolitan Sewer system where it will be treated at the Point Loma Wastewater Treatment Plant. Refer to Figure 2: Conceptual Proposed Main Campus Property Sewer Flows and Figure 3: Conceptual Proposed Lake Property Sewer Flows Alternatives 1 and 2 for more information.

Main Campus Property Alternative 1

For the Main Campus Property, the sewer system for the Orange, Yellow and Purple phases would flow to the proposed Village 9 sewer system and then to the Salt Creek Interceptor sewer. A portion of the Village 9 sewer system will have to be up-sized from the recommendations identified in the report titled *Final Overview of Sewer Service for Otay Ranch Village 9*. The Blue and Brown phases will require a separate gravity sewer line that will follow an existing trail to the Salt Creek Interceptor sewer. This connection will be located upstream of Village 9. The elevations of the Blue and Brown phases are lower than the Purple phase and cannot flow into the rest of the main campus sewer system without a pump system. This alternative requires fewer linear feet of sewer pipe and no sewage lift station

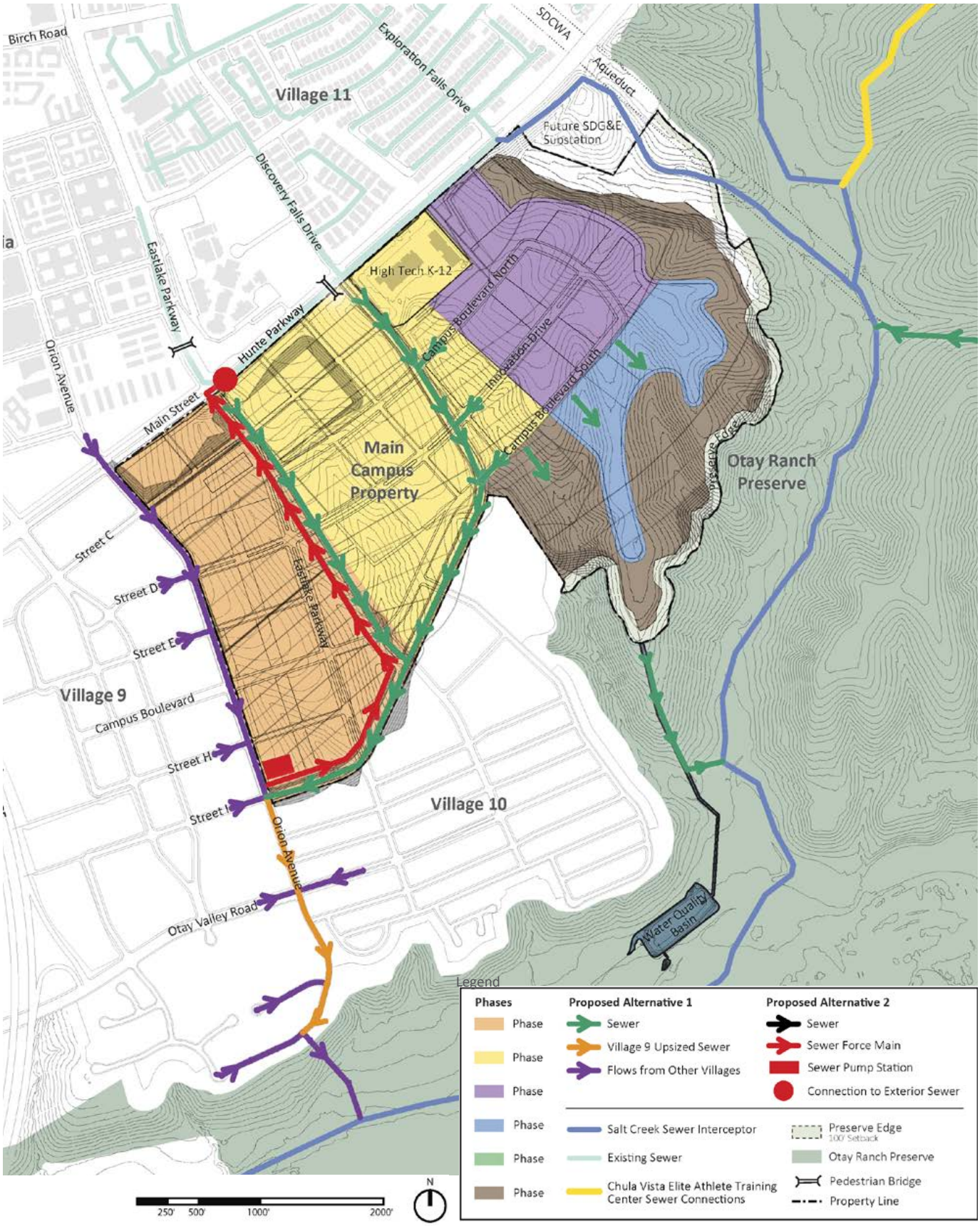


Figure 2: Conceptual Proposed Main Campus Property Sewer Flows

Main Campus Property Alternative 2

Alternative 2 includes a sewage lift station to pump the sewer flow to the existing Hunte Parkway sewer system. This system involves adding a pump station with dual systems producing the capacity for approximately 110' of static head and an additional 4,400 linear feet of 8-inch force main sewer.

Lake Property Alternative 1

For the Lake Property, a new gravity sewer line south of the parcel could connect to the Salt Creek Interceptor west of the site. The terrain in this area provides enough elevation change for a gravity sewer connection, but the surrounding habitat is considered environmentally sensitive area and will potentially lead to construction limitations. Also the sewer line would have to cross a County Water Authority pipeline and property. There would be a need for 4,100 linear feet of gravity sewer pipe in with this option. See Figure 3: Conceptual Proposed Lake Property Sewer Flows Alternatives 1 and 2 for the proposed alignment.

Lake Property Alternative 2

Alternative 2 proposed the sewer to go north with the assistance of a sewage lift station and connect to the existing Chula Vista Elite Athlete Training Center sewer system. The existing Chula Vista Elite Athlete Training Center connects to the salt creek sewer via a gravity sewer line.

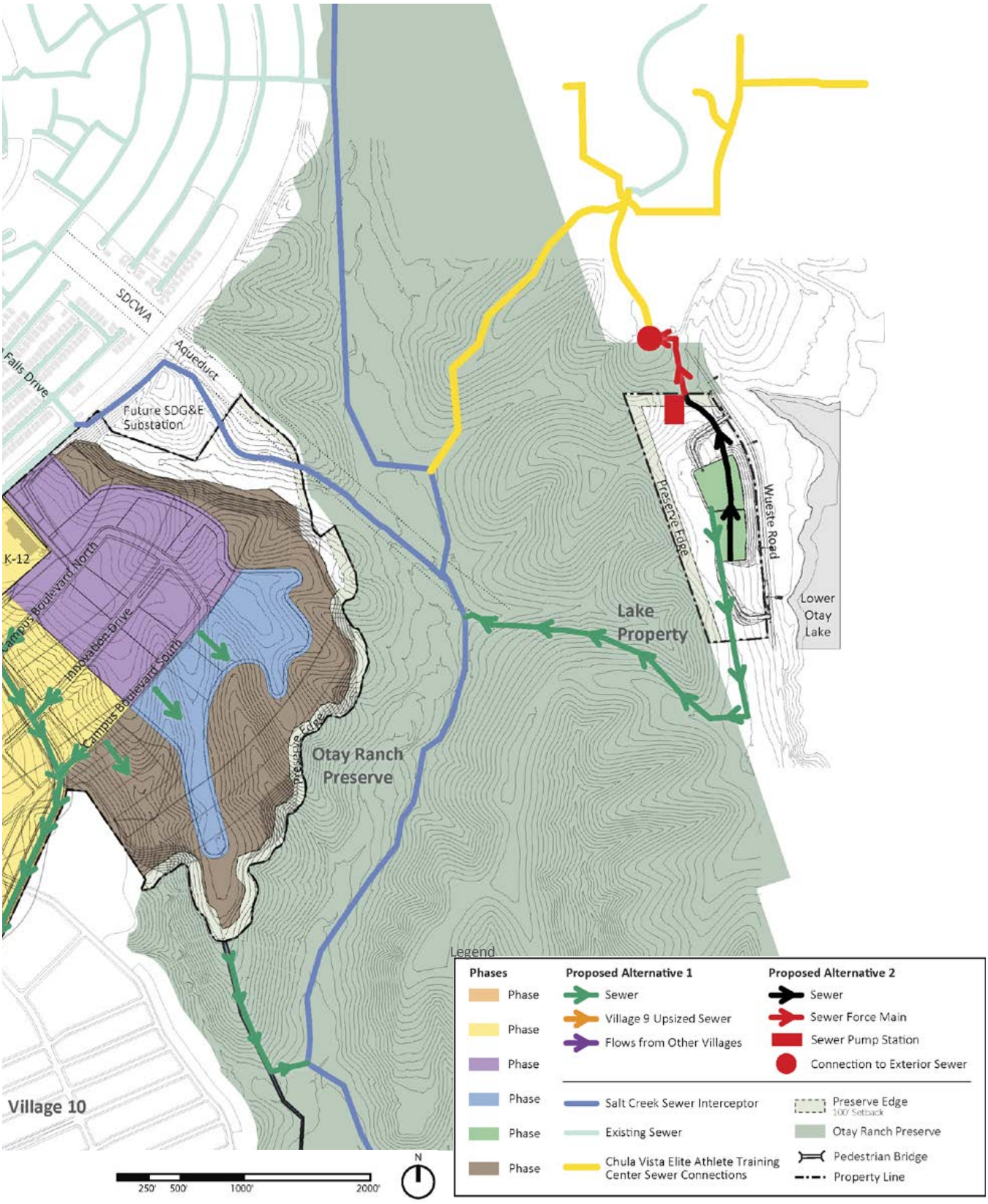


Figure 3: Conceptual Proposed Lake Property Sewer Flows Alternatives 1 and 2

B. Storm Drains

Below is a summary of the planned storm drains as described in *Water Quality Technical Report and Hydromodification Management Plan for the University Park and Innovation District* dated September 17, 2015 prepared by Rick Engineering Company.

Main Campus Property

For the Main Campus Property, run-off from Basins 100 and 200 will be conveyed in the southerly direction via a network of the on-site proposed storm drain systems, which will connect to the proposed storm drain system that is part of the future Village 10 development and directly discharge into Otay River. Run-off from Basins 300, 400, 500, 600, and 700 will be conveyed in a southwesterly direction via a network of on-site proposed storm drain systems and a proposed storm drain system through an off-site easement that will outlet into a proposed storm water management feature (i.e. – bioretention basin) located northwest of the confluence of Salt Creek and Otay River and discharge directly into Otay River.

Lake Property

For the Lake Property, run-off from Basins 1000, 1100, and 1200 will be conveyed in an easterly direction via a network of on-site proposed storm drain systems towards the proposed storm water management features (i.e. – bioretention basins) for Basins 1100 and 1200 (except Basin 1000 will be a self-treating area) and outlet into Lower Otay Reservoir via three proposed culvert crossings in the future that will replace the three existing culvert crossings beneath Wueste Road.

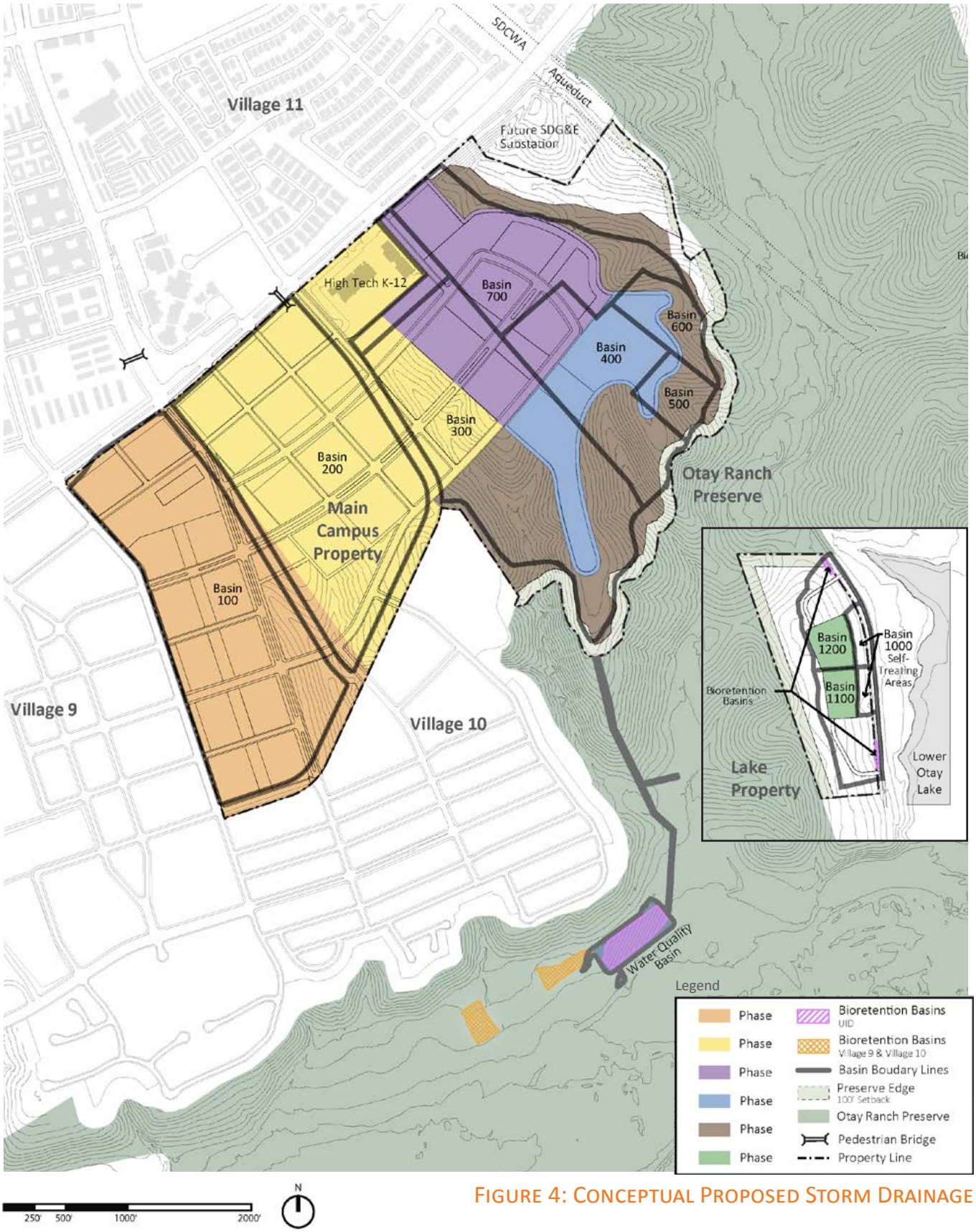


Figure 4: Conceptual Proposed Storm Drainage

C. Access Road/Trail

Access to the off-site facilities listed above will be provided by an existing access road that extends from the existing access road for the Salt Creek Interceptor. The existing access road will require minor improvements to accommodate widths of up to 20 feet. This sewer access road will allow a connection to the Chula Vista Greenbelt Trail/Otay Valley Regional Park Trail as designated in the Chula Vista General Plan, the Chula Vista MSCP Subarea Plan, the Chula Vista Greenbelt Master Plan and the Otay Valley Regional Park Concept Plan. This trail is located within the existing Salt Creek Sewer Easement south of the UI District. Per the MSCP Subarea Plan, trails designated in the OVRP Concept Plan are "Planned Facilities," subject to MSCP Subarea Plan § 7.5 and 7.6.3. Proposed trail improvements within the existing Salt Creek Sewer Easement include post and rail fencing and signage per the Chula Vista Greenbelt Master Plan and the Otay Valley Regional Park Trails Plan. Physical implementation of this trail facility would not create any additional impacts on the MSCP Preserve. Refer to the *Biological Report* dated November 18, 2014 prepared by HELIX Environmental Planning Inc. for the MSCP adjacency analysis.

D. Rural Trail

The UI District designates an existing 8-foot wide dirt road within the Preserve as a link between the trails within the UI District and the Greenbelt Trail. This linkage has been identified pursuant to the MSCP Subarea Plan that establishes "*Priority 1 3. Locate trails, view overlooks, and staging areas in the least sensitive areas of the Preserve. Locate trails along the edges of urban land uses adjacent to the Preserve, or the seam between land uses and follow existing dirt roads as much as possible…"* [emphasis added] (See Figures 6: Trail Sections). Pursuant to the Chula Vista Greenbelt Master Plan Trail Standards (Table 1), the existing native soil surface treatment on the existing dirt road will ultimately meet the Rural Trail standards. Proposed trail improvements include post and rail fencing and trail signage. Wire fencing and signage, may be provided along the trail where adjacent to native or sensitive habitat. Erosion control measures may be implemented within the disturbed area, where appropriate. The Rural Trail is subject to MSCP siting criteria.

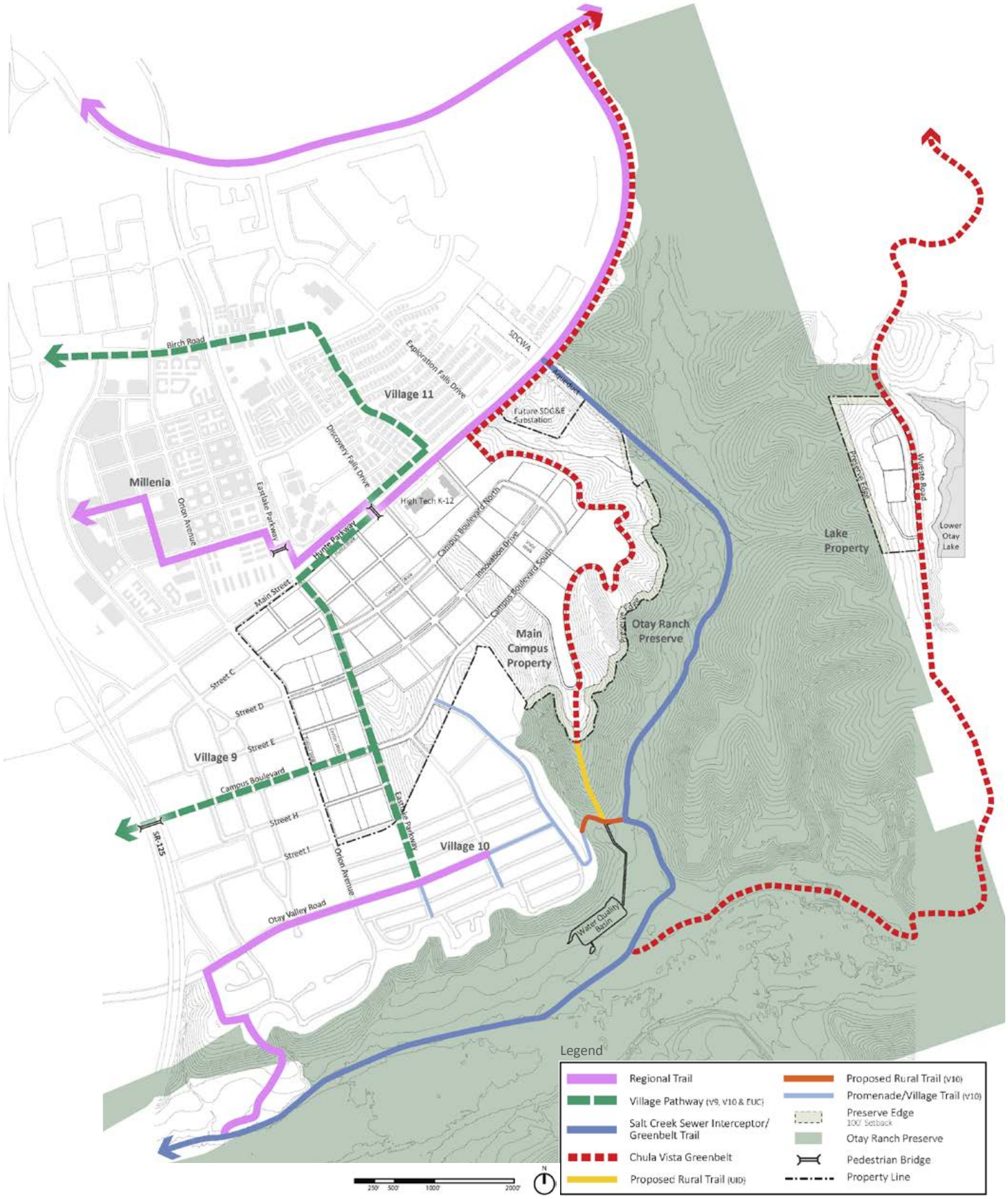
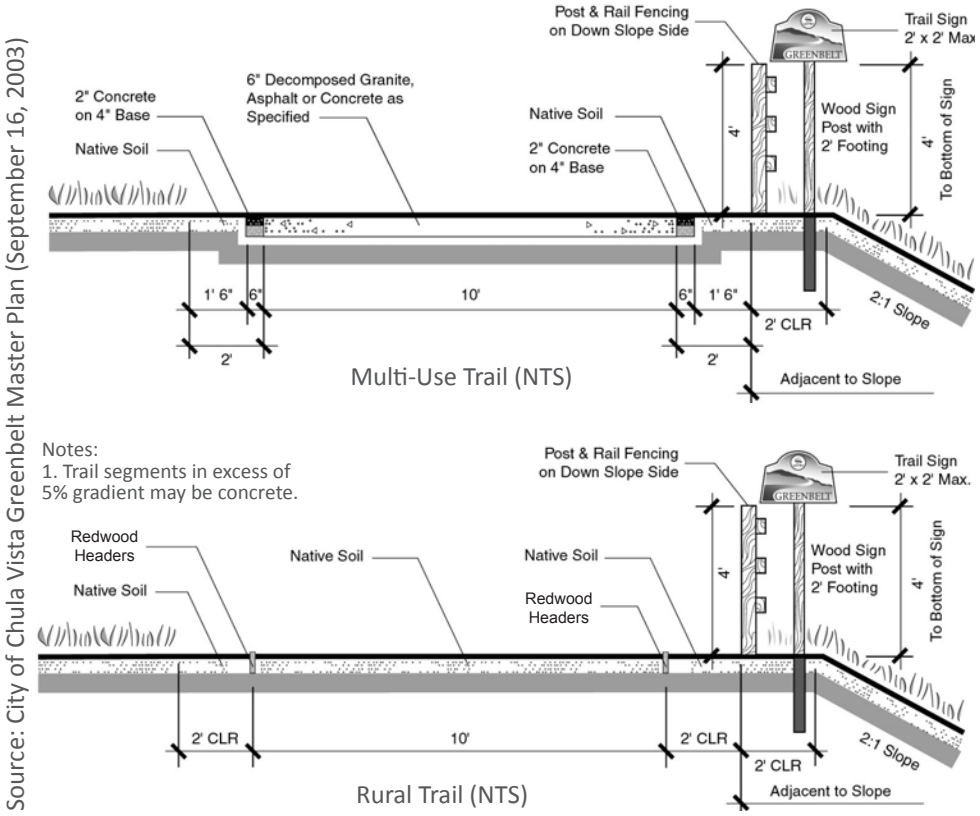


Figure 5: UI District Trails Plan



Source: City of Chula Vista Greenbelt Master Plan (September 16, 2003)

FIGURES 6: TRAIL SECTIONS

3. Facilities Proposed within the 100-Foot Wide Preserve Edge

No structures other than fencing shall be allowed within 100-foot wide Preserve Edge as depicted in Figure 1: Areas Subject to the Preserve Edge Plan and Facilities Proposed in the Preserve. Perimeter fences within the 100-foot wide Preserve Edge shall be built and landscaped to minimize visual impacts on the Preserve and the Otay Valley Regional Park. Landscape plans for areas adjacent to the MSCP Preserve must be consistent with Appendices E and F of the FPP (Appendix F) and the Preserve Edge Plan landscaping and irrigation requirements. Any proposed fence or storm drain within the Preserve Edge shall be subject to review and approval of the Deputy City Manager/Development Services Director.

A. Storm Drain Systems

Water will be conveyed through the Preserve Edge to the proposed storm water described earlier in Section 2. Facilities & Improvements Proposed within the Preserve. These storm drain systems will follow the guidelines set forth in the Chula Vista BMP Design Manual, dated December 2015.

4. Compliance with RMP/MSCP Subarea Plan Policies

The following discussion provides a description of policies identified in the Chula Vista MSCP Subarea Plan, the RMP, as well as compliance measures to be carried out by the various components of the SPA Plan.

A. Drainage

MSCP Policy

"All developed and paved areas must prevent the release of toxins, chemicals, petroleum products, exotic plant materials and other elements that might degrade or harm the natural environment or ecosystem processes within the Preserve. This can be accomplished using a variety of methods including natural detention basins, grass swales or mechanical trapping devices. These systems should be maintained approximately once a year, or as often as needed, to ensure proper functioning. Maintenance should include dredging out sediments if needed, removing exotic plant materials, and adding chemical-neutralizing compounds (e.g., clay compounds) when necessary and appropriate." (Page 7-25)

Compliance

The Drainage Study For University Park and Innovation District and the *Water Quality Technical Report and Hydromodification Management Plan for University Park and Innovation District* dated September 17, 2015, and prepared by Rick Engineering Company assessed the existing and developed drainage and water quality conditions in the SPA Plan. In conformance with the GDP and SPA requirements, these reports provide the necessary hydrological studies, analysis and design solutions to provide appropriate urban runoff and water quality for the UI District. Key elements of the Drainage Plan and Water Quality Plan are described below and depicted on Figure 4: Conceptual Proposed Storm Drainage.

All pre-development and post-development runoff from UI District is within the Otay River Valley watershed. Runoff from UI District is conveyed via a public storm drain system, treated within the water quality (bioretention) basins located within the Preserve south of Village 10 and outlets directly into the Otay River. Bioretention basin regular maintenance activities are anticipated four times a year (February, May, September and December). Rainy season (February and December) and pre-rainy season (September) maintenance activities include removal of trash, debris and excess sediment, clear clogged riser orifices and perform basin area repairs. Post-rainy season maintenance

includes full silt removal from the dry weather storage area, vegetation removal, annual inspections by a registered civil engineer, removal of trash, debris and excess sediment above the dry weather zone, clear clogged riser orifices and perform basin area repairs. Additional maintenance may be required following major rainfall events unless the next regularly scheduled maintenance dates are within one month of the rain event. Access to the bioretention basin is provided via the Sewer & Storm Drain Easement.

B. Urban Runoff

The development of the SPA Plan will implement all necessary requirements for water quality as specified by the State and local agencies. The development will meet the requirements of the City's Standard Urban Storm Water Mitigation Plan (SUSMP), the Jurisdictional Urban Runoff Management Plan and the Storm Water Management and Discharge Ordinance (as specified in the City of Chula Vista Development and Redevelopment Storm Water Management Standards/Requirements Manual).

For the Main Campus Property, a total of three bioretention basins are proposed including two bioretention basins to be constructed as part of the adjacent Village 10 that will treat the Orange and Yellow Phases, one large bioretention basin that will treat Purple, Blue and Brown Phases. Flows from the Main Campus Property will outlet directly to the Otay River.

The Otay River is a USGS blue line stream, which makes it a waterway of the United States under the Clean Water Act (CWA). All development in excess of five acres must incorporate urban run-off planning, which will be detailed at the Tentative Tract Map level. The conceptual grading and storm water control plan for the SPA Plan provides for water quality control facilities to ensure protection for the Otay River. At this time it is unknown if the Otay River will remain an exempt receiving water for Hydromodification Management Plan purposes. Development will meet the requirements at the time of application for permit.

The Lower Otay Reservoir is a drinking water reservoir owned and operated by the City of San Diego Water Department. To protect reservoirs, the City of San Diego Water Department prepared a document titled, *Source Water Protection Guidelines for New Developments*, dated January 2004, to guide future activities within the San Diego County watersheds which drain into drinking water reservoirs.

For the Lake Property, BMPs ensure a high level of treatment for storm water runoff in order to protect Lower Otay Reservoir with a total of two proposed bioretention basins designed to treat storm water runoff before it enters the Lower Otay Reservoir.

In addition to the permanent drainage facilities, temporary desiltation basins to control construction related water quality impacts will be constructed within the SPA Plan with each grading phase to control sedimentation during construction. The interim desiltation basins will be designed to prevent discharge of sediment from the project grading operations into the natural drainage channel and will be detailed in the Storm Water Pollution Prevention Plans (SWPPP) as required by the Construction General Permit from the State Water Resources Control Board. The exact size, location and component elements of these interim basins would be identified on the grading plans and SWPPP. Temporary, interim measures will occur within the development area.

C. Toxic Substances

MSCP Policy

"All agricultural uses, including animal-keeping activities, and recreational uses that use chemicals or general by-products such as manure, potentially toxic or impactive to wildlife, sensitive species, habitat, or water quality need to incorporate methods on their site to reduce impacts caused by the application and/or drainage of such materials into the Preserve. Methods shall be consistent with requirements requested by the Regional Water Quality Control Board (RWQCB) and National Pollution Discharge Elimination System Permit (NPDES)." (Page 7-26)

Compliance

There are no agricultural activities currently occurring on the site. The SPA Plan phases out agricultural uses adjacent to the Preserve, consistent with the SPA Plan Agricultural Plan. However, University-related crop production (research and small-scale production) activities may be allowed with the following requirements:

- Use of pesticides shall comply with federal, state and local regulations.
- In those areas where pesticides are to be applied, vegetation shall be utilized to shield adjacent urban development (within 400 feet) from agricultural activities.
- The applicant shall notify adjacent property owners of potential pesticide application through advertisements in newspapers of general circulation.
- Where necessary to ensure the safety of area residents, appropriate fencing shall be utilized.

As described in greater detail in the Storm Water Quality Management Plans (SWQMP) for UI District, prepared by Rick Engineering, the combination of proposed construction and permanent BMPs will reduce, to the maximum extent practicable, the expected project pollutants and will not adversely impact the beneficial uses of the receiving waters.

Anticipated pollutants from the project site may include sediments, nutrients, heavy metals, organic compounds, trash and debris, oxygen demanding substances, oil and grease, bacteria and viruses and pesticides. Runoff from the UI District will be transmitted via public storm drain to water quality basins located south of Village 10. Storm Water pollutants are removed through physical and biological processes, including adsorption, filtration, plant uptake, microbial activity, decomposition, sedimentation and volatilization (EPA 1999). Adsorption is the process whereby particulate pollutants attach to soil (e.g., clay) or vegetation surfaces. Pollutants removed by adsorption include metals, phosphorus, and hydrocarbons. Filtration occurs as runoff passes through the bioretention area media, such as the sand bed, ground cover, and planting soil. Treated water is released into the Otay River within 72 hours of capture. This system ensures that, to the greatest extent practicable, Preserve areas adjacent to the UI District will not be impacted from toxic substances that may be generated from the UI District project site.

D. Lighting

MSCP Policy

"Lighting of all developed areas adjacent to the Preserve should be directed away from the Preserve, wherever feasible and consistent with public safety. Where necessary, development should provide adequate shielding with non¬invasive plant materials (preferably native), berming, and/or other methods to protect the Preserve and sensitive species from night lighting. Consideration should be given to the use of low-pressure sodium lighting." (Page 7-26)

Compliance

The UI District Design Plan includes criteria for the design of lighting for the District, including the 100-foot wide Preserve Edge. Improvement plans for the areas within the 100-foot wide Preserve Edge will include shielded lighting designs that avoid spillover light in the Preserve. Lighting Plans and a photometric analysis shall be prepared to illustrate the location of proposed lighting standards and type of shielding measures.

Lighting Plans and accompanying photometric analyses must be prepared in conjunction with improvement plans for any improvements within the 100-foot wide Preserve Edge to identify the location of proposed lighting fixtures and the type of light shielding measures. The Lighting Plan must demonstrate that light spillage into the Preserve is avoided to the greatest extent possible. City of Chula Vista updated street lighting standards require installation of energy saving LED lamps on all City streets.

E. Noise

MSCP Policy

"Uses in or adjacent to the Preserve should be designed to minimize noise impacts. Berms or walls should be constructed adjacent to commercial areas and any other use that may introduce noises that could impact or interfere with wildlife utilization of the Preserve. Excessively noisy uses or activities adjacent to breeding areas, including temporary grading activities, must incorporate noise reduction measures or be curtailed during the breeding season of sensitive bird species."

Where noise associated with clearing, grading or grubbing will negatively impact an occupied nest for the least Bell's vireo during the breeding season from March 15 to September 15, noise levels should not exceed 60 CNEL. However, on a case by case basis, if warranted, a more restrictive standard may be used. If an occupied Least Bell's Vireo nest is identified in a pre-construction survey, noise reduction techniques, such as temporary noise walls or berms, shall be incorporated into the construction plans to reduce noise levels below 60 CNEL.

Where noise associated with clearing, grubbing or grading will negatively impact, an occupied nest for raptors between January 15 to July 31 or the California gnatcatcher between February 15 and August 15 (during the breeding season), clearing, grubbing or grading activities will be modified if necessary, to prevent noise from negatively impacting the breeding success of the pair. If an occupied raptor or California gnatcatcher nest is identified in a pre-construction survey, noise reduction techniques shall be incorporated into the construction plans. Outside the bird breeding season(s) no restrictions shall be placed on temporary construction, noise." (Page 7-26)

Compliance

The project includes Mitigation Measures requiring pre-grading surveys for gnatcatchers, vireos and nesting raptors. Based on those surveys and locations of nesting birds in the year of grading, if it is determined that the noise impact thresholds established in the Chula Vista MSCP Subarea Plan would be exceeded, the applicant would be required to reduce the impact below the designated threshold through either modification of construction activities (such as berming) or avoiding clearing, grubbing, grading or construction activities within 300 feet of an occupied nest site.

In addition, the UI District land uses within the 100-foot wide Preserve Edge are low noise generating uses, comprised of landscaping and a trail connection.

F. Invasives

MSCP Policy

"*No invasive non-native plant species shall be introduced into areas immediately adjacent to the Preserve. All slopes immediately adjacent to the Preserve should be planted with native species that reflect the adjacent native habitat. The plant list contained in the "Wildland / Urban Interface: Fuel Modification Standards," and provided as Appendix L of the Subarea Plan, must be reviewed and utilized to the maximum extent practicable when developing landscaping plans in areas adjacent to the Preserve*." (Page 7-27)

Compliance

Landscape plans adjacent to the Preserve will not contain any invasive species, as determined by the City of Chula Vista and identified in the MSCP Subarea Plan, Appendices N, List of Invasive Species and the Cal-IPC and SDMMP invasive plant lists. Landscape areas within the 100-foot Preserve Edge including, but not limited to, manufactured slopes, street-adjacent landscaping and Village Trail features must comply with these approved plant lists. These lists also meet the requirements outlined in the UI District Fire Protection Plan as these manufactured slopes are also within the 100-foot Brush Management Zone required by the MSCP Subarea Plan. Any changes to these approved plant lists must be approved by the Development Services Director or the Director's designee. The area may be planted with container stock (liners) or a hydroseed mix.

G. Buffers

MSCP Policy

"*There shall be no requirements for buffers outside the Preserve, except as may be required for wetlands pursuant to Federal and/or State permits, or by local agency CEQA mitigation conditions. All open space requirements for the Preserve shall be incorporated into the Preserve. Fuel modification zones must be consistent with § 7.4.4 of the Subarea Plan.*"

Compliance - Brush Management Zones

Brush Management zones have been incorporated into the proposed development areas of the SPA Plan pursuant to the requirements of the Subarea Plan. Where appropriate, graded landscaped slope areas will be maintained pursuant to Fire Department requirements and will be outside of the Preserve. The UI District FFP provides specific fuel modification requirements for the entire SPA. Consistent with the Chula Vista MSCP requirements, a 150-foot Brush Management Zone has been established that extends from the Preserve Edge boundary inward over the entire Preserve Edge and an additional 50 feet.

5. Compliance with Otay Ranch GDP

Objective: *Identify allowable uses within appropriate land use designations for areas adjacent to the Preserve.*

Policy: *All development plans adjacent to the edge of the Preserve shall be subject to review and comment by the Preserve Owner/Manager, the City of Chula Vista, and the County of San Diego to assure consistency with resource protection objectives and policies.*

Policy: *"Edge Plans" shall be developed for all SPAs that contain areas adjacent to the Preserve. The "edge" of the Preserve is a strip of land 100 feet wide that surrounds the perimeter of the Preserve. It is not a part of the Preserve, it is a privately or publicly owned area included in lots within the urban portion of Otay Ranch immediately adjacent to the Preserve.*

Compliance

The preparation of this UI District Preserve Edge Plan fulfills the requirement to develop an "Edge Plan" for any SPA Plan adjacent to the Preserve and is subject to review and comment by the Preserve Owner/Manager, City of Chula Vista and County of San Diego. Uses within the 100-foot wide Preserve Edge are either privately or publicly owned and maintained. Only the uses discussed in Section 3. Facilities within the 100-foot wide Preserve Edge are proposed within and adjacent to the buffer.

A. MSCP Adjacency Guidelines

All new development must adhere to the Adjacency Guidelines for drainage found on Page 7-25 of the Subarea Plan. In summary, the guidelines state that:

1. *All developed areas must prevent the release of toxins, chemicals, petroleum products, exotic plant materials and other elements that might degrade or harm the natural environment or ecosystem processes within the Preserve.*
2. *Develop and implement urban runoff and drainage plans which will create the least impact practicable for all development adjacent to the Preserve.*
3. *All development located within or directly adjacent to or discharging directly to an environmentally sensitive area are required to implement site design, source control, and treatment control Best Management Practices (BMPs).*

Compliance

To adhere to these MSCP guidelines, excessive runoff into the Otay Ranch Preserve from adjacent irrigated slopes must be prevented. Erosion control BMPs must be installed prior to planting and watering to prevent siltation into the Preserve. The irrigation system installed on any adjacent slopes shall have an automatic shutoff valve to prevent erosion in the event the pipes break. Irrigation schedules for the slopes adjacent to the Preserve must be evaluated and tested in the field to determine the appropriate water duration and adjusted, as necessary, to prevent excessive runoff.

Detailed irrigation plans will be prepared in conjunction with any slope improvement plans. In addition, a manual weeding program or the focused application of glyphosate shall be implemented on any manufactured slopes adjacent to the Preserve to control weeds that are likely to be encouraged by irrigation. Weed control efforts should occur quarterly or as needed, to prevent weeds on the manufactured slopes from moving into the adjacent Preserve. A qualified monitor shall check the irrigated slopes during plant establishment to verify that excessive runoff does not occur and that any weed infestations are controlled.

B. Restrict Access

Both the Otay Ranch RMP and Chula Vista MSCP Subarea Plan contain policies that restrict or limit access into the Preserve. These policies are discussed below:

Otay Ranch RMP Policy 6.5

"*Identify restricted use areas within the Preserve.*"

Standard: *Public access may be restricted within and adjacent to wetlands, vernal pools, restoration areas, and sensitive wildlife habitat (e.g., during breeding season) at the discretion of the Preserve Owner/Manager.*

Guidelines: *1. The Preserve Owner/Manager shall be responsible for identifying and designating restricted areas based on biological sensitivity..."*

MSCP Policy: *"The public access to finger canyons will be limited through subdivision design, fencing or other appropriate barriers, and signage."*

"Install barriers (fencing, rocks/boulders, appropriate vegetation) and/or signage in new communities where necessary to direct public access to appropriate locations."

Compliance

Pursuant to the requirements of the MSCP Subarea Plan and RMP, the land plan has been designed to provide access to the preserve areas at designated locations, directing pedestrians to developed public trails within the Otay River Valley and Salt Creek via designated public trails and roadways. The SPA Plan provides view fencing along the Preserve Edge will be provided outside the Preserve, within the Brush Management Zone and will create a barrier between development and the Preserve. This property will be maintained by the City of Chula Vista, with maintenance funded through an Community Facilities District (CFD) and/or Landscape Maintenance District.

Access to the Brush Management Zone will be provided via locked gates for maintenance and fire protection activities only. The exact location and type of all proposed fencing will be depicted on the overall UI District Landscape Master Plan and will be subject to review and approval by the Development Service Director. Signage, identifying the MSCP Preserve and notifying the public of access restrictions, will be provided at key locations along the Preserve edge, and Rural Trail Trailhead. A detailed sign program for trails will be provided on the UI District Landscape Master Plan and will be subject to review and approval by the Development Services Director, and the Director of General Services or designee.

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APPENDIX E:
AGRICULTURE PLAN

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The 1993 Otay Ranch Program EIR requires the preparation of an Agriculture Plan concurrent with the approval of any SPA affecting on-site agricultural resources. The Findings of Fact state that the Agricultural Plan shall indicate the type of agriculture activity being allowed as an interim use including buffering guidelines designed to prevent potential land use interface impacts related to noise, odors, dust, insects, rodents and chemicals that may accompany agricultural activities and operations.

1. Current Agricultural Use

The Main Campus Property was used historically for agriculture as evidenced by large areas of furrowed non native grassland in the western and central portions. The eastern portion of this parcel includes primarily disturbed and undisturbed areas of native habitat (e.g., Diegan coastal sage scrub), and has apparently not been used for agricultural activities in recent years. Current disturbances on the Main Campus Property include discing in the extreme west end, portions of an electrical transmission line right-of-way including several metal lattice towers and an access road, a series of storm water/drainage facilities, and recreational traffic by pedestrians and bicyclists. There is no farming or cattle grazing located on the site. All vehicle access points on the Main Campus Property are currently gated and locked.

The Lake Property currently supports a predominance of native habitat and is not reported as being been farmed in the past. Current disturbances in this parcel include vehicle traffic on unpaved utility roads, and recreational traffic by pedestrians and bicyclists. There is an un-gated access point on Wueste Road allowing vehicles to enter the Lake Property.

2. Permitted Agricultural Use

Consistent with the GDP the following agricultural standards will be employed for all educational crop production activities:

- A 200-foot distance buffer shall be maintained between developed property and any ongoing agricultural operations.
- Use of pesticides shall comply with federal, state and local regulations.

- In those areas where pesticides are to be applied, vegetation shall be utilized to shield adjacent urban development (within 400 feet) from agricultural activities.
- The applicant shall notify adjacent property owners of potential pesticide application through advertisements in newspapers of general circulation.
- Where necessary to ensure the safety of area residents, appropriate fencing shall be utilized.

No agricultural use or cattle grazing activities are permitted in the UI District. The following University-related crop production (research and small-scale production) activities may be allowed subject to the standards listed below:

- Horticulture nurseries.
- Greenhouses.
- Raising/harvesting of crops.
- Aquaculture.
- Agricultural processing.
- On-site sales.
- Keeping of small animals (no meat production).

These University-related crop production shall employ the following standards:

- A 200-foot distance buffer shall be maintained between developed property and any University-related crop production.
- Use of pesticides shall comply with federal, state and local regulations.
- In those areas where pesticides are to be applied, vegetation shall be utilized to shield adjacent urban development (within 400 feet) from agricultural activities.
- The applicant shall notify adjacent property owners of potential pesticide application through advertisements in newspapers of general circulation.
- Where necessary to ensure the safety of area residents, appropriate fencing shall be utilized.

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APPENDIX F:
FIRE PROTECTION PLAN

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FIRE PROTECTION PLAN
University Innovation District

Prepared for:

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APRIL 2017

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EXECUTIVE SUMMARY

This document addresses fire protection for the University Innovation District (UID) Project (proposed project) in the City of Chula Vista (City), San Diego County, California. The proposed project includes a total of approximately 383.8 acres of undeveloped land in the southeastern portion of the City. The proposed project includes development of two parcels within the Otay Ranch and Eastlake Developments. The two parcels are referred to as the Main Campus Property and Lake Property. On-site project improvements include a university campus and supporting academic uses, student housing, a research and development park, and public infrastructure (e.g., streets and utilities) to serve the proposed project.

This Fire Protection Plan (FPP) provides measures for fire protection that meet City Fire and Building Codes or provide the Chula Vista Fire Department (CVFD) the option of accepting equivalent protections where the code cannot be strictly achieved. Fire protection measures are provided based on code requirements and the analyzed fire risk associated with the Project's proposed land uses. The fire risk analysis forms the basis for identifying fuel modification, building design and construction and other pertinent development infrastructure criteria for fire protection. The primary focus of this FPP is providing an implementable framework for suitable protection of the planned project's structures and inhabitants. Tasks completed in the preparation of this FPP include data review, code review, site fire risk analysis, land use review, fire behavior modeling, and site-specific recommendations.

Ignition Resistant Buildings

This FPP provides details regarding site-specific policies and implementation measures concerning fire protection. Further, the FPP outlines a "systems approach" to fire prevention, protection, suppression, and emergency relocation to ensure proposed improvements and uses would reduce potential risks associated with fire hazard. The structures in this development would include ignition resistant materials per the latest (2016) California Fire and Building Codes. Structure protection would be complemented by a system of improved water availability, capacity and delivery; fire department access; monitored defensible space/fuel modification; interior fire sprinkler systems in all structures, monitored interior sprinklers in applicable structures; and other components to provide properly equipped and maintained structures with a high level of fire ignition resistance. Most of these features are required by code, but are specifically included because they address vulnerabilities noted in recent mega-fires in San Diego County and elsewhere. Structures built to the current fire and building codes are substantially less likely to be affected by fire and typically suffer less damage from fire than structures built under less–stringent codes.

Fire Behavior and Fuel Modification

The site fire risk analysis conducted for this project resulted in the determination that wildfire may occur in the open space preserve areas adjacent to the proposed project, and would be expected to have moderate overall intensity based on fuels and terrain. The modeling and fire risk analysis conducted for the Project site helps assess its unique fire risk and fire behavior, and this process helped determine that a 150-foot wide fuel modification zone adjacent to Preserve land would be suitable for the anticipated wildfire intensity. The fuel modification zones perform as designed if they are maintained to original specifications; therefore, the fuel modification zones would be maintained in perpetuity by a a funded entity, ensuring the required inspections and fuel reduction work occur annually.

Emergency Response

The City's current threshold for fire emergency response is 5 minutes travel time, 90% of responses and does not include dispatch and turnout time, which are commonly provided 1 minute each (resulting in a 7 minute total response time). The City's Fire Facility, Equipment, and Deployment Master Plan (FFMP) analyzes the need for new fire stations and the most efficient response coverage (City 2012). As the FFMP is implemented over the next 15 years, three new fire stations are to be constructed as funding becomes available. The anticipated population and number of commercial structures associated with the UID Project and the corresponding calculated medical and fire calls, would affect the response capabilities of CVFD's nearest existing stations. However, the Project is located in an area with nearby existing fire stations that can respond to portions of the UID Project within the City's travel time standards and once construction of two planned fire stations (EUC/Millenia station and Village 8 West) is completed, the entire main campus site will be within 2 to 5 minutes travel and the Lake site in just over the 5 minute travel standard.

The Project must comply with the approved Chula Vista FFMP (2012), as approved by the Chula Vista City Council. With the two proposed fire stations, construction of which will be supported on a fair share basis by the Project through property tax and payment of the Chula Vista Public Facility Development Impact Fee, the City's goal of 5 minutes driving time to 90% of all structure fires and medical emergency calls will be substantially conforming. An appropriate trigger will be negotiated and included in the projec'ts Public Facilities Finance Plan with regard to fair-share funding and commencement of any fire station necessary to serve the project. The Project's construction and occupancy schedules will align with the construction and staffing of the EUC/Millenia and Village 8 West fire stations, or an alternative for fire service, potentially a temporary station to CVFD's specifications, will be provided. In the case that the Millenia Fire Facility is not built/operational (and due to the project not meeting the Effective Firefighting Force response time), UID development can only occur on the parcel(s) that Fire Station 7 can respond to within five minutes, unil the Millenia Fire Facility is on-line.

1 INTRODUCTION

This Fire Protection Plan (FPP) was prepared for the University Innovation District (UID Project) and provides specific measures for fire protection which meet Chula Vista Fire Department (CVFD) Fire and ignition resistant Building Codes. It also identifies the fire risk associated with proposed land uses, and identifies requirements for fuel modification, building design and construction and other pertinent development infrastructure criteria for fire protection. The primary focus of this FPP is providing an implementable framework for suitable protection of the planned structures and the people living within and utilizing them.

The purpose of an FPP, as described in the International Code Council: Urban-Wildland Interface Code (Section 202) is:

> Fire Protection Plan: *A document prepared for a specific project or development proposed for the urban-wildland interface area. It describes ways to minimize and mitigate the fire problems created by the project or development, with the purpose of reducing impact on the community's fire protection delivery system.*

This FPP utilizes a "systems approach" for specifying fire protection measures. The measures consist of the components of fuel modification, passive and active structural protection, water supply, fire protection systems, access (ingress/egress), and emergency response. This FPP also provides additional details regarding wildfire risk assessment, fire history, fire behavior modeling, and construction and fire protection features that would be provided within this community.

1.1 Fire Protection Plan Summary

This FPP would guide the design, construction, and management of project-related improvements in compliance with applicable fire codes. When properly implemented and managed, the requirements and recommendations detailed herein are designed to result in fire hazard risk reduction and minimize the impact on the CVFD's fire protection system. To that end, preparation of this FPP reflects completion of the following tasks:

1. On-site risk assessment
2. Fire history analysis
3. Fire behavior modeling
4. Review of project site land use plans
5. Review of Chula Vista Fire Department's 2012 FFMP
6. Review and incorporation of 2016 California Fire Code (CFC) and 2016 California Building (CBC), as applicable

7. Emergency Response Travel Time Analysis
8. Generation of project-specific requirements and alternatives for fire protection.

1.2 Intent

The intent of this FPP is to provide management guidance and requirements for reducing fire risk and demand for fire protection services associated with the proposed project. To that end, the fire protection "system" detailed in this FPP includes a redundant layering of measures including: pre-planning, fire prevention, fire protection, passive and active suppression and related measures proven to reduce fire risk. The fire safety system that would be enacted by the proposed Project has proven through real-life wildfire encroachment examples to significantly reduce the fire risk associated with this type of project.

1.3 Fire History

Fire history is an important component of FPPs. Fire history information can provide an understanding of fire frequency, fire type, most vulnerable areas, and significant ignition sources. In turn, this understanding of why fires occur in an area and how they typically behave can be used for pre-planning and designing defensible communities or commercial developments. *Appendix B –the University Innovation District Project Vicinity Fire History* exhibit presents a graphical view of the project area's recorded fire history by California Department of Forestry and Fire Protection (CAL FIRE) in their Fire and Resource Assessment Program (FRAP) database (CAL FIRE FRAP 2016)[1]. As presented in the exhibit, The Main Campus property has been subject to one wildfire during the recorded fire history period. An un-named fire in 1979 burned in the northern portion of the property. No recorded wildfires have burned through the Lake property. In addition to the one fire burning on the Main Campus property, Appendix D illustrates that the majority of other large wildfires historically start east of the Project area and are typically contained east of Lower Otay Lake.

The lack of recent fire history does not indicate that fire cannot occur in the vegetation that would be adjacent to the proposed project. It is expected that fires have not consistently spread into the Project area due to two factors: 1) the position of urban development to the north which is newer and ignition resistant and acts as a fire break, and 2) the position of Lower Otay Lake to the east, presenting a very wide fire break.

[1] Based on polygon GIS data from CAL FIRE's FRAP, which includes data from CAL FIRE, USDA Forest Service Region 5, BLM, NPS, Contract Counties and other agencies. The data set is a comprehensive fire perimeter GIS layer for public and private lands throughout the state and covers fires 10 acres and greater between 1878–2016.

1.4 Applicable Codes/Existing Regulations

This FPP demonstrates compliance with 2016 Chula Vista Fire Code requirements, namely Title 15 – Building and Construction, Sections 15.34 (Fire Zones), 15.36 (Fire Code adopting by reference the 2016 CFC), and 15.38 (Urban Wildland Interface Code adopting the 2000 Urban Wildland Interface Code) and Section 15.08 adopting the 2016 CBC, specifically, Chapter 7A for development in WUI areas. Additionally, this FPP is consistent with the Chula Vista Fire Department's Fire Prevention Division's Fire Engineering Safety Detail and Specification Sheets. Lastly, this FPP conforms to the City's MSCP Subarea Plan Brush Management Guidelines and Resource Management Plan Preserve Edge Requirements. The project would comply with the applicable adopted codes in place at the time of construction. The majority of the UID property lies within the local responsibility area (LRA) Very HighFire Hazard Severity Zone (FHSZ), as designated by the CVFD and California Department of Forestry and Fire Protection (CAL FIRE 2016). The proposed fire protection measures for the Project would meet or under certain circumstances, exceed all applicable fire and building codes requirements.

1.5 Project Summary

1.5.1 Project Location

As depicted in Figure 1, *Regional Location Map* and Figure 2, *Project Vicinity*, the UID project site is located in the UID Planning Area of the City, approximately 13 miles southeast of downtown San Diego and 3.7 miles north of the U.S./Mexico International border. The UID project site consists of approximately 383.8 acres of land which has been divided into the Main Campus Property (353.8-acre parcel) and the Lake Property (30-acre parcel). The Main Campus Property is located north of future Village 10 development and Otay River Valley, east of future Village 9 development and south of the Millenia and Village 11 developments. The South Bay Expressway (SR-125) is located approximately 0.4 mile west of the Main Campus Property. Its northern boundary is south of Hunte Parkway roughly between Eastlake Parkway and Exploration Falls Drive. Eastlake Parkway and Hunte Parkway, which currently terminate at the northwestern boundary of the project site, provide access to the northern part of the Main Campus Property.

The Lake Property is located about 0.5 mile east of the Main Campus site along Wueste Road, just west of Lower Otay Lake and south of the U.S. Olympic Training Center. The Lake Property is accessed off Wueste Road near the Lower Otay Lake, City of San Diego Water Utilities Department boat ramp area.

The proposed project lies within the unsectioned lands of Township 18 South, Range 1 West, on the U's. Geological Survey (USGS) 7.5-minute Otay Mesa quadrangle.

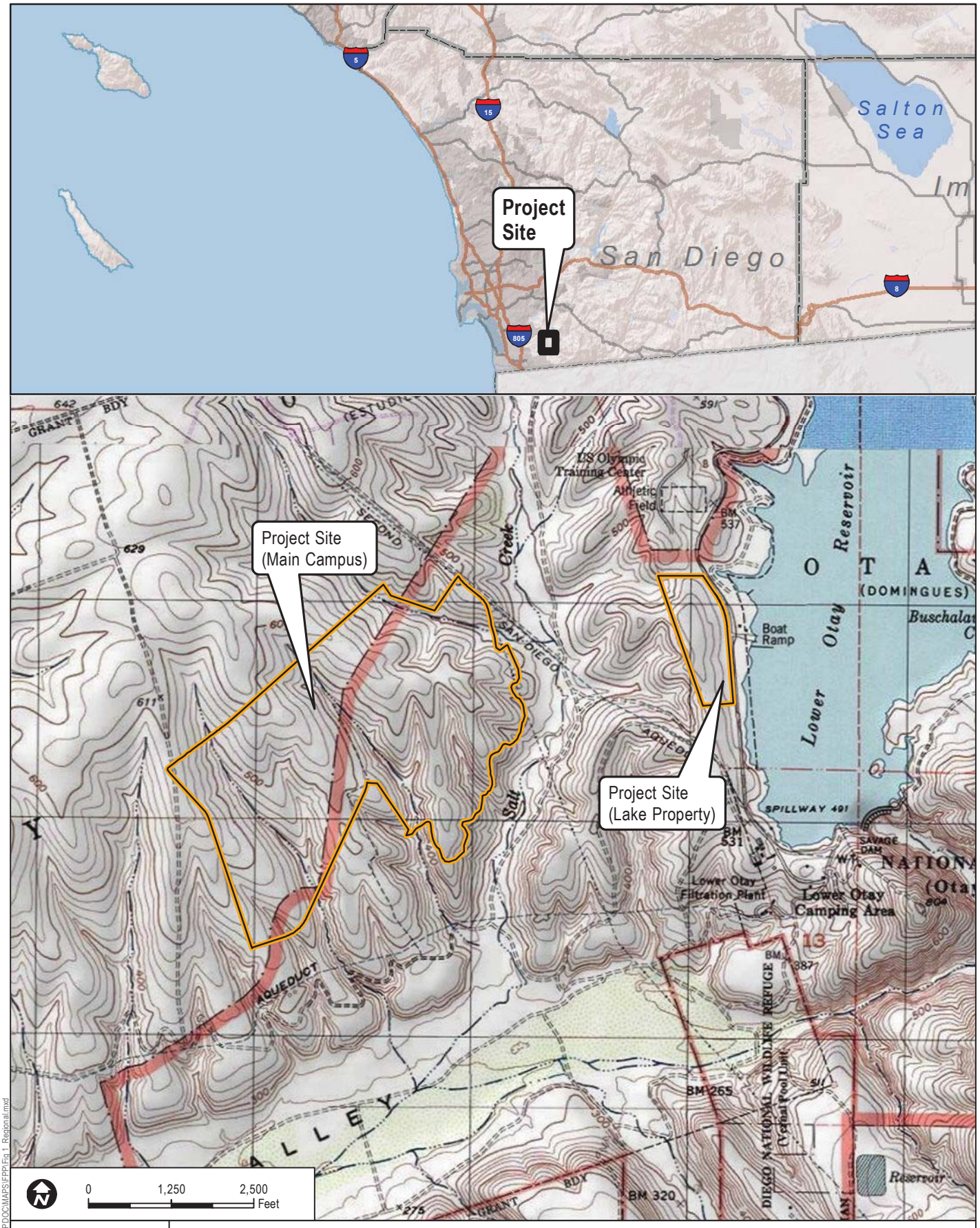
The UID project site is located on portions of the following Assessor Parcel Numbers:

643-040-06-00, 643-070-16-00, 644-070-10-00, 644-080-09-00, 644-080-15-00, 644-080-18-00, and 644-080-20-00.

1.5.2 Project Description

The UID Project proposes phased development of two parcels, the Main Campus Property and the Lake Property. The Project is a part of the Otay Ranch UID SPA Plan, which is consistent with the Otay Ranch General Development Plan. The UID SPA Plan is comprised of a mixed-use community of academic/university, office, hotel, retail, residential (including student housing and market-rate housing), recreational and open space/conservation uses through the year 2045. As illustrated in Figure 3, *Site Utilization Plan*, the university-related uses are could be located anywhere in the UID, but generally in the eastern half of the Main Campus Property with a transition into open space and habitat conservation areas around the campus edges. The western half of the Main Campus Property includes mixed-use development (residential, commercial, and office) that would relate and transition into the adjacent mixed-use Villages 9, 10, and Millenia development areas. The Proposed maximum development area for the UID is 10,066,200 square feet that would support a total of 34,000 people including a mix of students, faculty, staff, residents, and office/retail workers (City 2016b). The university is assumed to include up to 20,000 full-time students with approximately 6,000 campus faculty and staff. The innovation portion of the project, which includes a mix of offices, laboratories, and retail uses, would support up to 8,000 employees. Residents on the Main Campus site are anticipated to include up to 5,400 students and 2,000 employees.

The 30-acre Lake Property is characterized mostly by open space and habitat conservation. Development within this parcel would be limited to satellite academic uses with low or infrequent use, and could include a Chancellor's residence and/or Conference Center.



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SOURCE: USGS 7.5 Minute Series Topographic Maps

FIGURE 1
Vicinity Map

University Innovation District Fire Protection Plan

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SOURCE: AERIAL-SANDAG IMAGERY 2014

FIGURE 2
Project Vicinity

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University Innovation District Fire Protection Plan

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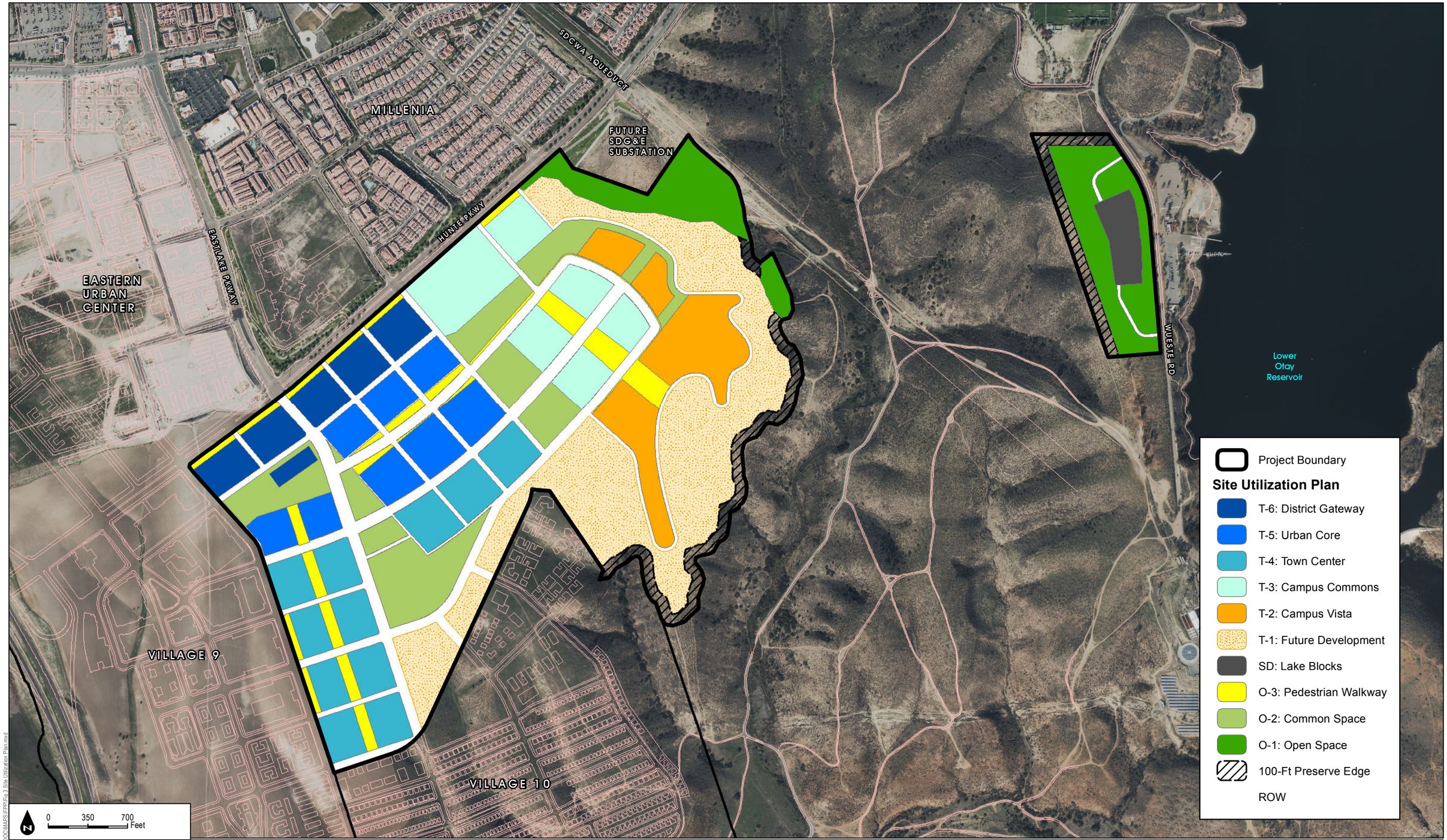

Path: Z:\Projects\06-90101\MAPDOC\MAPS\FPP\Fig 3 Site Utilization Plan.mxd

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SOURCE: Bing Maps 2014, City of Chula Vista 2017

FIGURE 3

Site Utilization Plan

University Innovation District Fire Protection Plan

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1.5.2.1 Development Infrastructure

The circulation system would consist of public roads consistent with the Otay Ranch GDP. Main Street/Hunte Parkway and Eastlake Parkway would serve as the primary entrances for the Main Campus Property. These main arterial roads also provide access to adjoining Villages 9, 10, 11 and Millenia development from SR-125 via two freeway access ramps. Main Street is proposed for a six-lane gateway road that would connect SR-125 and Villages 8 East to existing Hunte Parkway. A series of connector roadways are proposed within the Main Campus Property which would be designed to maximize connectivity within the site and to the primary arterial roads. Olympic Parkway and Wueste Road are the primary access roads for the Lake Property.

Water utilities would include a connection to the existing Otay Water District (OWD) water system. Current OWD policies regarding new development require the use of recycled water. The primary source of recycled water to the project site would be the South Bay Water Reclamation Facility. Consistent with the Otay Ranch GPD, landscaping, including fuel modification zone B, would be irrigated with recycled water, where available. Sanitary Sewer service for the project site would be provided by the City of Chula Vista and includes connection to the San Diego Metropolitan Sewerage System. Other utilities that are currently available to the site and that would be installed are gas, electrical, cable and phone service.

The proposed project would be required to complete off-site improvements. One off-site storm water conveyance line and detention basin is proposed south of the Main Campus Property in the Otay River Valley. Two off-site sewer conveyance lines are proposed to connect the Main Campus Property and the Lake Property to the Salt Creek Interceptor, Access to off-site facilities would be provided by an existing access road. Additionally, off-site storm water and sewer facilities are proposed to the east of the Lake Property within the City of San Diego's limits.

1.5.2.2 Additional Amenities

The project would include extensive pedestrian walk and trail system interconnected to squares, plazas, common spaces, natural areas, and recreation amenities. The project's trails would mostly follow roadways within the development footprint, but two trails cross open space: The Chula Vista Greenbelt and the Salt Creek Sewer interceptor /Greenbelt trail. Both trails follow existing roads. Multi-use trails would include existing dirt roads and paved utility access ways. The project would include access points to trail systems to facilitate emergency response. Trails would be managed and maintained by approved City-approved, funded entity.

The project would preserve approximately 41.09 acres of land as habitat conservation. These land areas are located in the northeastern corner of the Main Campus Property and the majority of the Lake Property area.

2 RISK ANALYSIS METHODS

2.1 Field Assessment

Field assessments of the proposed project area were conducted during August 2016 to document existing site conditions and for gathering necessary information to support overall fire risk evaluation. Assessments of the area's topography, natural vegetation and fuel loading, available setback areas, and general susceptibility to wildfire formed the basis of the site risk assessment.

Site photographs were collected (Appendix A) and fuel conditions were mapped using 100-scale aerial images. Field observations were utilized to augment existing site data in generating the fire behavior models and formulating the requirements provided in this FPP.

2.2 Site Characteristics and Fire Environment

2.2.1 Topography

Topography for the Main Campus property consists of a series of north-south trending mesa and drainage features that primarily drain to the south towards the Otay River Valley (Figure 2). Three unnamed drainage features traverse this parcel, of which two are tributaries to Salt Creek and one is a tributary to the Otay River. Elevations range from approximately 620 feet above mean sea level (amsl) at the north-central parcel boundary near Hunte Parkway to 360 amsl in the southwestern end of the project. Overall gradients are inclined up to 3% on mesa tops with drainages sloping at 17% in local sections.

The Lake Property is characterized by a narrow, generally flat-topped ridgeline extending north to south through the parcel. Elevations range from 500 to 570 feet amsl with a roughly 2% gradient trending north to south. Drainage within the parcel varies along the ridgetop, with flows eventually entering Lower Otay Reservoir to the east or the Otay River via Salt Creek to south.

2.2.2 Existing/Vicinity Land Use

Both parcels are mostly undeveloped. The Main Campus Property includes an approximately 10-acre K-12 charter school (High Tech Chula Vista) along Hunte Parkway near the north-central portion of the property. The remainder of the property includes extensive areas of previously cleared and farmed (e.g., tilled) land and undisturbed open space areas. On-site vegetation includes large areas of non-native grassland, primarily in the western and central portions of the parcel, diegan coastal sage scrub in the eastern and southwestern areas, and small patches of riparian habitat in portions of the canyon and drainages within the parcel. A number of dirt roads and trails are present that currently provide access within the parcel, including service roads for the existing transmission line in the northeastern portion of the parcel. The adjacent areas surrounding the Main Campus Property consist of portions of Otay Ranch and Eastlake developments to the north and northwest; undeveloped open

space areas to the south and west, which includes the future Otay Ranch Villages 9 and 10; and undeveloped areas to the east (habitat preserve land) (See Figure 3).

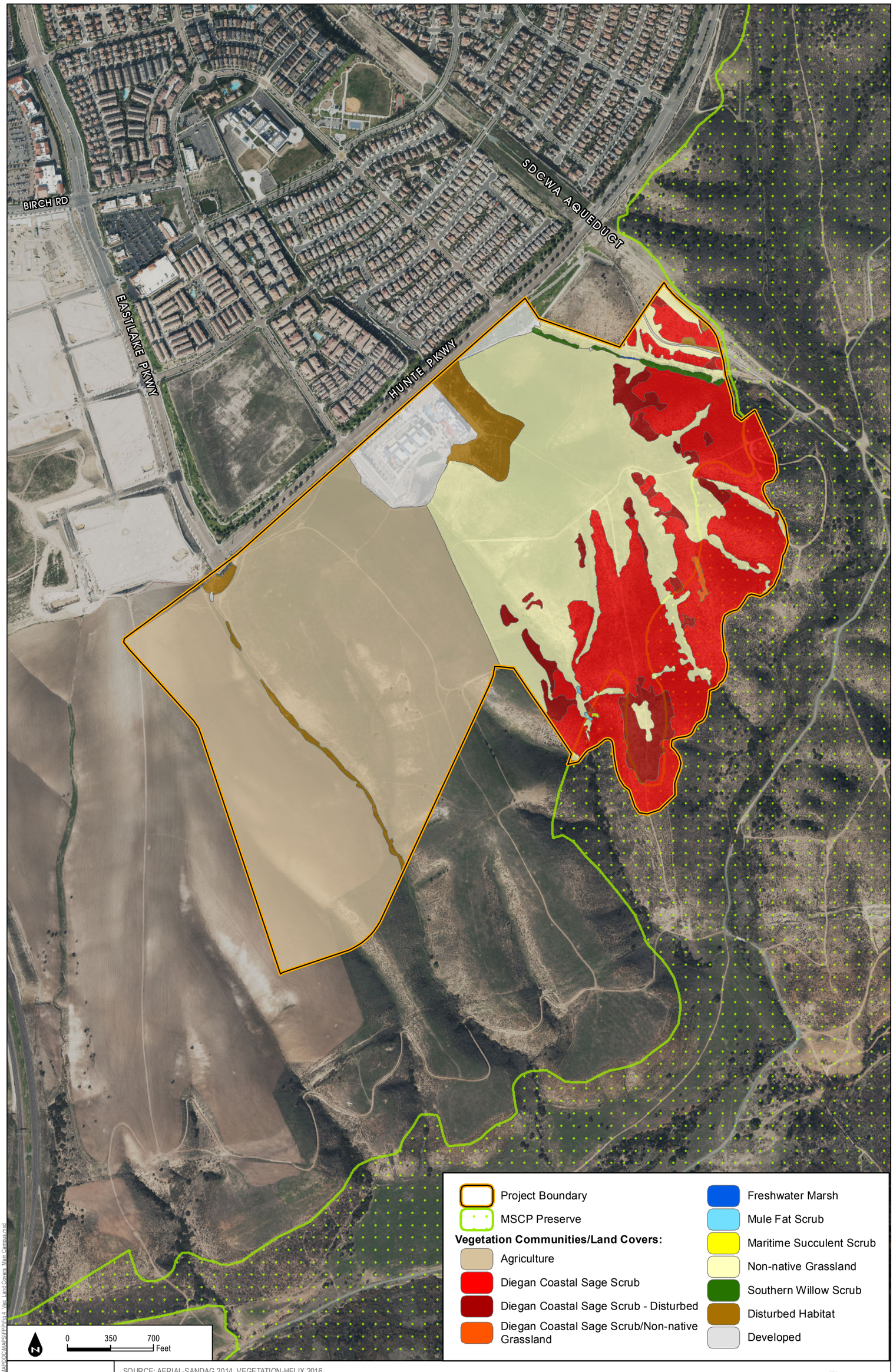
The Lake Property currently supports Diegan coastal sage scrub, non-native grasslands, and small groves of eucalyptus trees. There is no record of farming occurring on the property. Over the years, portions of the property have been used for various unauthorized land uses, including hiking, mountain biking, off-roading, and motorcycling. Existing land uses surrounding the Lake Property include the U.S. Olympic Training Center to the north, open space to the west (Salt Creek Canyon) and south, and Lower Otay Reservoir to the east.

2.2.3 Climate

Throughout Southern California, including at the project site, climate has a large influence on fire risk. The local climate is typical of a Mediterranean area, with warm, dry summers and wetter winters. Precipitation typically occurs between December and March. The prevailing wind is an on-shore flow from the Pacific Ocean, which is approximately 10.0 miles to the west, Santa Ana winds, which typically occur in the fall, from the northeast can gust to 50 miles per hour (mph) or higher. Drying vegetation (fuel moisture of less than 5% for 1-hour fuels is possible) during the summer months becomes fuel available to advancing flames should an ignition occur. Extreme conditions, used in fire modeling for this site, include 92°F temperatures in summer and winds of up to 50 mph during the fall. Relative humidity of 12% or less is possible during fire season. The site is within the coastal influence area and would be expected to, on average, include higher humidity and resulting plant moisture, than more inland areas.

2.2.4 Fuels (Vegetation)

The UID Project site (Main Campus and Lake properties) is currently undeveloped with eight native or naturalized vegetation communities that were mapped on the site by Helix Environmental Planning (City of Chula Vista 2016). Extensive vegetation type mapping is useful for fire planning because it enables each vegetation community to be assigned a fuel model, which is used by a software program to predict fire characteristics, as discussed in Section 2.4 and Appendix C. There are three dominant vegetation types mapped on the Main Campus property (Figure 4), including Diegan coastal sage scrub, non-native grasslands, and agriculture (fallow) which encompass approximately 22.2%, 25.5%, and 44.5% of the property, respectively. The Lake property consists primarily of Diegan coastal sage scrub (91%) as presented on Figure 5. Smaller pockets of eucalyptus woodland, Southern willow scrub, maritime succulent scrub, mulefat scrub, freshwater marsh, and vernal pool vegetation types are also present on the site. More detailed information regarding the site's plant communities is provided in the Biological Resources Technical Report for the University Innovation District Project (Helix Environmental Planning 2016).



SOURCE: AERIAL-SANDAG 2014, VEGETATION-HELIX 2016

Figure 4

Vegetation and Land Cover Map - Main Campus

University Innovation District Fire Protection Plan

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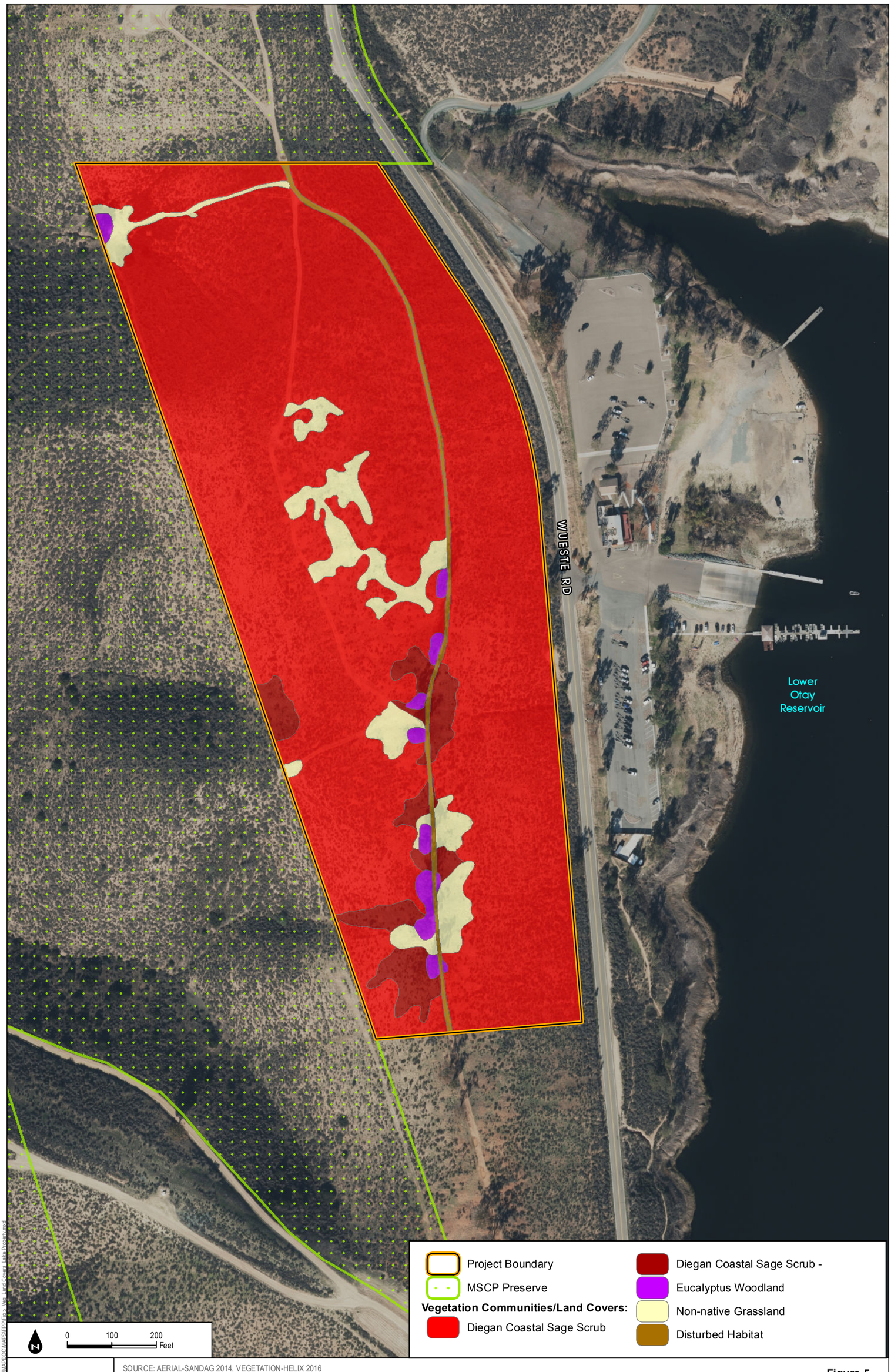

SOURCE: AERIAL-SANDAG 2014, VEGETATION-HELIX 2016

Figure 5

Vegetation and Land Cover Map - Lake Property

UNIVERSITY INNOVATION DISTRICT PROTECTION PLAN

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The area proposed for development would be converted to roads, structures, and landscape vegetation following the proposed project's completion. Any native vegetative fuels within fuel modification zones would also be modified as a result of development, altering their current densities, distributions, and species composition. Areas within the sphere of influence for direct fire affects (approximately 300 feet outside the proposed development footprint) and fuel modification zones would continue to be dominated by Diegan coastal sage scrub and non-native grassland fuel beds. These vegetation types were confirmed by Dudek fire protection planners in the field and assigned fuel models for use during fire behavior modeling (see section 2.3.1). These fuels are anticipated to remain in the areas adjacent to the project footprint (just outside the fuel modification zones), but have been planned and compensated for through a system of fire protection described throughout this FPP. Appendix A provides photographs of the site and adjacent vegetation.

2.2.5 Vegetation Dynamics

Variations in vegetative cover type and species composition have a direct effect on fire behavior. Some plant communities and their associated plant species have increased flammability based on plant physiology (resin content), biological function (flowering, retention of dead plant material), physical structure (bark thickness, leaf size, branching patterns), and overall fuel loading. For example, the native shrub species that compose the sage scrub communities in the Project vicinity would exhibit higher potential hazard (higher intensity heat and flame length) than grass dominated plant communities (fast moving, but lower intensity) if ignition occurred. The corresponding fuel models for each of these vegetation types are designed to capture these differences. Additionally, vegetative cover influences fire suppression efforts through its effect on fire behavior. For example, while fires burning in the non-native grasslands may exhibit lower flame lengths and heat outputs than those burning in native shrub habitats, fire spread rates in grasslands are often more rapid.

As described, vegetation plays a significant role in fire behavior, and is an important component to the fire behavior models discussed in this report. A critical factor to consider is the dynamic nature of vegetation communities. Fire presence and absence at varying cycles or regimes disrupts plant succession, setting plant communities to an earlier state where less fuel is present for a period of time as the plant community begins its succession again. In summary, high frequency fires tend to convert shrublands to grasslands or maintain grasslands, while fire exclusion tends to convert grasslands to shrublands, over time as shrubs sprout back or establish and are not disturbed by repeated fires. In general, biomass and associated fuel loading would increase over time, assuming that disturbance (fire, grazing, or disking) or fuel reduction efforts are not diligently implemented. It is possible to alter successional pathways for varying plant communities through manual alteration. This concept is a key component in the overall

establishment and maintenance of the proposed fuel modification zones on site. The fuel modification zones on this site would consist of irrigated and maintained landscapes as well as thinned native fuel zones that would be subject to regular "disturbance" in the form of maintenance and would not be allowed to accumulate excessive biomass over time, which results in reduced fire ignition, spread rates, and intensity.

Conditions adjacent to the Proposed Project's footprint (outside the fuel modification zones), where the wildfire threat would exist post-development, are currently classified as low to moderate fuel loads due to the higher percentage of non-native grasslands intermixed with stands of coastal sage scrub fuels. However, climax vegetation state (undisturbed brush stands that are not disturbed for an extended period 50 years or more) includes more uniform and dense stands of grasslands and sage scrub fuels, which were employed for a conservative modeling approach to represent worst-case (i.e., maximum fuels) wildfire scenarios around the perimeter of the Project.

2.3 Anticipated Fire Behavior

2.3.1 Fire Behavior Modeling

Following field data collection efforts and available data analysis, fire behavior modeling was conducted to document the type and intensity of fire that would be expected adjacent to the proposed project given characteristic site features such as topography, vegetation, and weather. The BehavePlus (version 5.0.5) fire behavior modeling software package, the latest version of the industry standard fire behavior prediction software, was utilized in evaluating anticipated fire behavior adjacent to proposed fuel modification zones for the perimeter of the proposed project's developed areas. Results are provided below and a more detailed presentation of the BehavePlus modeling and analysis, including fuel moisture and weather input variables, is provided in Appendix C.

2.3.2 BehavePlus Fire Behavior Modeling Effort

Fuel Models are tools to help fire behavior analysts estimate fire behavior for a given vegetation type. Fuel models are selected by their vegetation type; fuel stratum most likely to carry the fire; and depth and compactness of the fuels. Fire behavior modeling was conducted for vegetative types that occur within the open space areas adjacent to the UID site. The vegetation types are represented primarily by two fuel models: FM 1 (non-native grasslands) and SCAL 18 (coastal sage scrub). Other fuel models may exist, but not at quantities that significantly influence fire behavior in and around the site. Fuel models were selected from either Anderson's 13 standard fire behavior fuel models (Anderson 1982) or the *Standard Fire Behavior Fuel Models: a Comprehensive Set for Use with Rothermel's Surface Fire Spread Model* (Scott and Burgan 2005).

2.3.3 Fire Behavior Modeling Results

Three focused fire behavior scenarios were completed on the UID site. The locations of the BehavePlus modeling scenarios are provided in Figure 6. The modeling effort included an analysis of potential fire behavior under two weather scenarios, 50th percentile, which mimics typical conditions, and 97th percentile, which mimics an extreme Santa Ana wind condition. The results of the modeling effort included anticipated values for surface fires (flame length (feet), rate of spread (mph), and fire line intensity (Btu/ft/s)). Modeled fire behavior outputs derived from the BehavePlus modeling efforts are presented in Table 1.

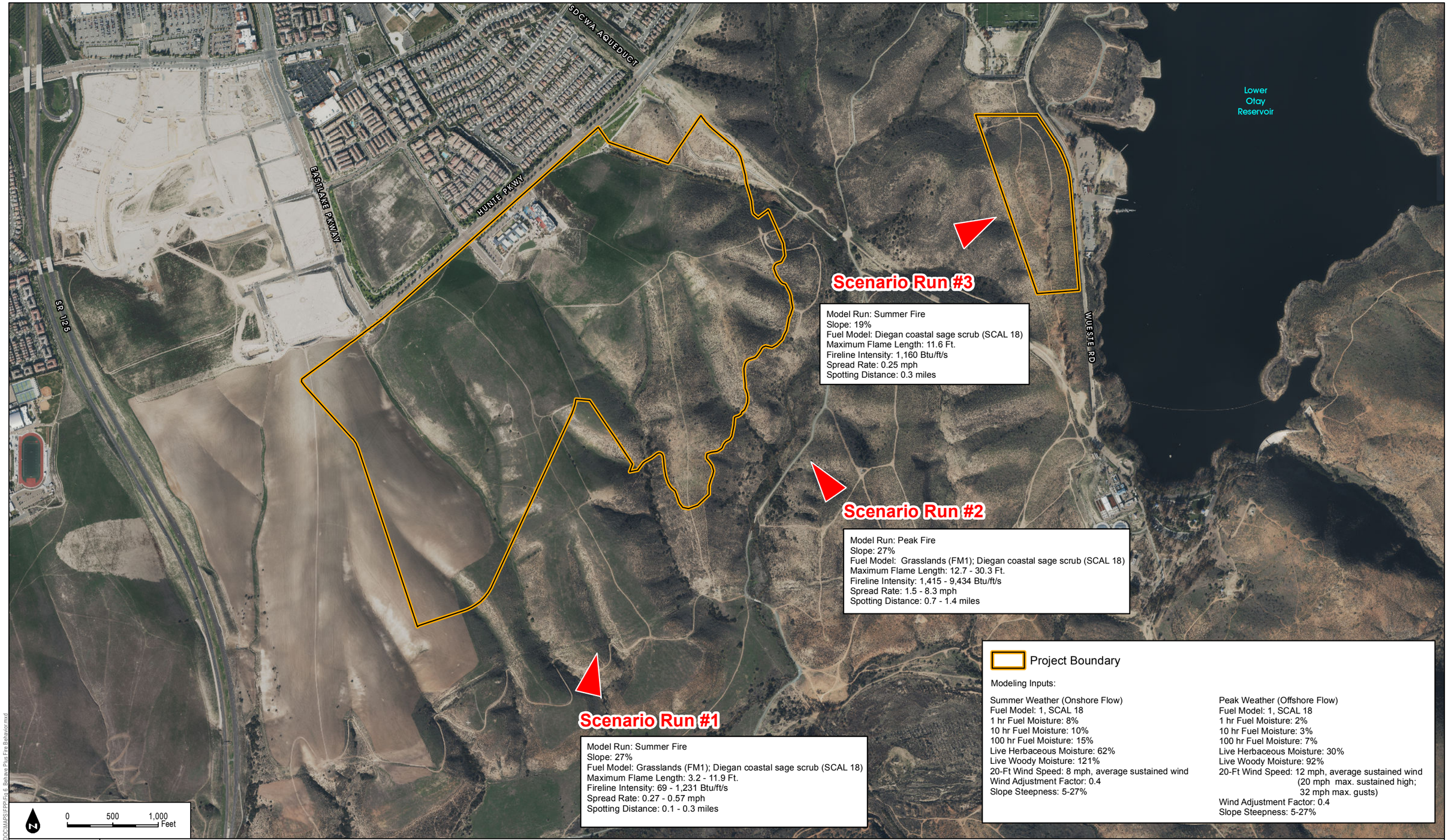
Table 1
University Innovation District BehavePlus Fire Behavior Model Results

Scenario	Flame Length (feet)	Fireline Intensity (BTU/feet/second)	Spread Rate (mph)	Spotting Distance (miles)
Scenario 1: 50th percentile weather conditions (8 mph) on south-facing, 27% slope				
Grasslands (FM 1)	3.2	69	0.57	0.1
Diegan coastal sage scrub (SCAL 18)	11.9	1,231	0.27	0.3
Scenario 2: 97th percentile weather conditions (32 mph gusts) on southeast-facing, 27% slope				
Grasslands (FM 1)	12.7	1,415	8.3	0.7
Diegan coastal sage scrub (SCAL 18)	30.3	9,434	1.5	1.4
Scenario 3: 50th percentile weather conditions (8 mph) on west-facing, 19% slope				
Diegan coastal sage scrub (SCAL 18)	11.6	1,160	0.25	0.3

Based on the results of BehavePlus analysis, wildfires with the highest fire intensity would occur during off-shore wind patterns and are expected to be of moderate to high severity. Worst-case fire behavior is expected in Diegan sage scrub-non-native grasslands along the eastern edge of the Main Campus Property. Under extreme weather conditions (97th percentile), flame lengths range from 12 to 30 feet, depending on the fuel type. Although the sage scrub fuel types can produce higher heat intensity and higher flame lengths under strong, dry wind patterns, they typically do not ignite as easily or spread as quickly as the light, flashy grass fuels. Wildfires occurring in grass-sage scrub fuels during on-shore wind patterns (50th percentile) are expected to be of low intensity with flame lengths of 3 to 11 feet and slower spread rates (less than 1.0 mph) due to higher fuel moisture content and reduced wind speeds.

The results presented in Table 1 depict values based on inputs to the BehavePlus software at the specified model locations and are not intended to capture changing fire behavior as it moves across a landscape. Changes in slope, weather, or pockets of different fuel types are not accounted for in this analysis. For planning purposes, the averaged worst-case fire behavior is the most useful data for informing analysis of acceptable setbacks and implementation of conservative fuel modification design.

The results from this modeling effort were utilized to augment site observations and available data for determining which portions of UID site include risk levels where a 150-foot wide fuel modification zone is recommended and areas where the potential fire risk is low or moderate and reduced fuel modification zones would be appropriate for an interim fuel modification area until development occurs adjacent to the proposed project site.



Path: Z:\Projects\9898\MAPDOC\MAPS\FPP Fig 6 Behave Plus Fire Behavior.mxd

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AERIAL SOURCE: SANDAG IMAGERY 2014

FIGURE 6

Behave Plus Fire Behavior Analysis

University Innovation District Fire Protection Plan

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3 FIRE RESPONSE CAPABILITIES

The analysis that follows examines the ability of the existing fire stations as well as fire stations planned in the approved Chula Vista FFMP to serve both the Main Campus and Lake Properties. Response times were evaluated using build-out conditions. It was assumed that phased construction would include access roads to the newly constructed buildings and that the shortest access route to those structures would be utilized.

3.1 Emergency Response

The UID Project Site is located within the City of Chula Vista Fire Department (CVFD) jurisdictional area. CVFD services 52 square miles and a population of approximately 267,500[2] in the City of Chula Vista. CVFD currently operates nine Fire Stations with 114 uniformed fire personnel (City of Chula Vista 2016a). For additional support, CVFD relies on numerous Automatic Aid agreements with jurisdictions adjoining the City.

Based on current Fire Station distribution, Fire Stations 7 and 8 are most likely to provide initial response. However, all stations within the CVFD are available to service the UID site, if necessary. Additionally, there are planned fire stations (Eastern Urban Core (EUC)/Millenia and Village 8 West) close to the Main Campus Property that would respond to emergency calls at UID. Figure 7 illustrates the location of these fire stations along with the planned EUC/Millenia and Village 8 West stations. Table 2 provides fire station information for existing CVFD stations 7 and 8 which are proximal to the UID Project Site.

As depicted in Table 2, CVFD Fire Station No. 7, located at 1640 Santa Venetia is the closest station that services the Main Campus Property. Station 7 is located 3.0 miles from the most northeastern portion of the property. Fire Station 8, as presented in Table 3, located at 1180 Woods Drive, is the closest station that services the Lake Property. It is located 2.8 miles from the most southern boundary of the parcel.

Dudek conducted GIS based emergency response modeling from existing and planned fire stations to the project to determine potential response coverage. The modeling utilized CVFD input variables that are consistent with the FFMP, but used an ESRI network response area model assuming 35 mph as standard speed and impedances (slowdowns) at each intersection for consistency with the Insurance Services Office (ISO) formula (T= 0.65 + 1.7 D, where D= travel distance). Emergency travel time for first arriving engines from each station to the Main Campus and Lake Properties are provided in Tables 2 and 3. Automatic and/or Mutual Aid agreements with surrounding fire departments are in place and would potentially result in additional resources that are not analyzed in this FPP.

[2] Source: Population data, Stefanie Balchak, Public Safety Analyst, Chula Vista Fire Department, March 9, 2017.

Table 2
CVFD Emergency Response Analysis for the Main Campus Property

Chula Vista Fire Department Station No.**	Total Mileage to Furthest Extent on Parcel	Estimated Response Travel Time	Firefighting Resources
6	5.2 miles	9 min., 25 sec.****	Engine 56; Brush 56 (*3 personnel/shift)*
7	3.0 miles	5 min., 53 sec.****	Engine 57; Truck 57: Battalion 52 *8 personnel/shift)*
8	4.5 miles	8 min, 20 sec.****	Engine 58 (*3 personnel/shift)*
Proposed Village 8 West (future road network)	2.2 miles	4 min., 20 sec.****	*Engine (4 personnel/shift)*
Approved EUC/Millenia*** (future road network)	1.7 miles	3 min. 32 sec.	Engine *(4 personnel/shift)*

Notes:

* Table 2 presents results of response travel time utilized the ISO formula (T=.65+1.7D) that discounts speed to account for slowing along the response route. Response times are to the furthest extent for the Main Campus Property.

** Response times for Stations 6, 7, and 8 are the same for existing and future road networks.

*** Note that the EUC/Millenia station was used for modeling since it was determined to be the optimal location for a new fire station (FFMP 2012)

**** The Effective Firefighting Force could include responses from all five stations with a best case assembly travel time of just under 6 minutes for future conditions and up to 9 minutes 25 seconds for current conditions.

Table 3
CVFD Emergency Response Analysis for the Lake Property

Chula Vista Fire Department Station No.**	Total Mileage to Furthest Extent on Parcel	Estimated Response Travel Time	Firefighting Resources
6	6.6 miles	11 min. 56 sec.****	Engine 56; Brush 56 (*3 personnel/shift)*
7	5.3 miles	9 min. 35 sec.****	Engine 57; Truck 57: Battalion 52 *(8 personnel/shift)*
8	2.8 miles	5 min. 28 sec.****	*Engine 58* (3 personnel/shift)
Proposed Village 8 West (future road network)	*5.4 miles*	*9 min. 51 sec.***	*Engine (4 personnel/shift)*
Approved EUC/Millenia *** (future road network)	4.4 miles	8 min. 8 sec.****	Engine *(4 personnel/shift)*

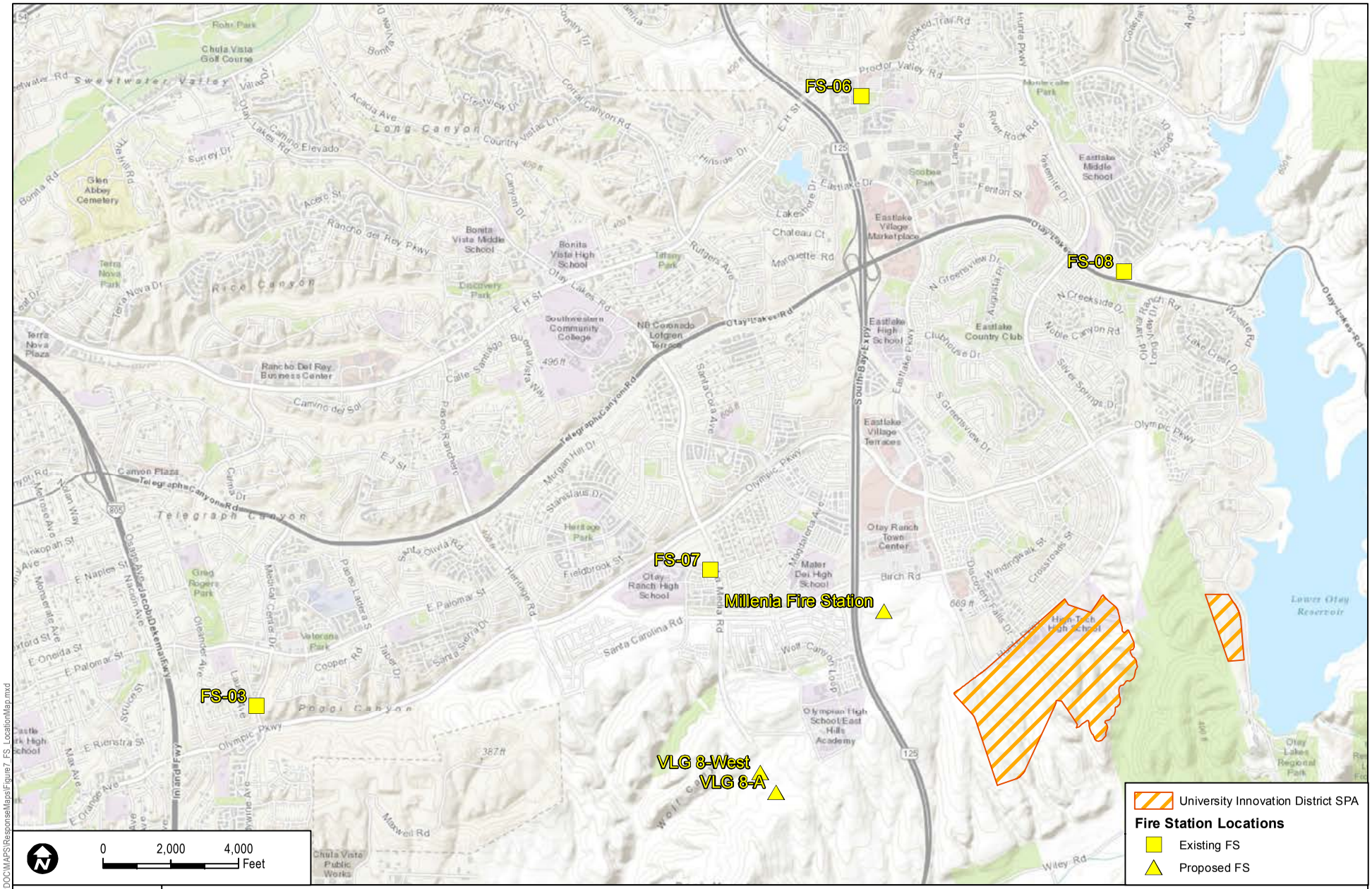
Notes:

* Table 3 presents results of response travel time utilized the ISO formula (T=.65+1.7D) that discounts speed to account for slowing along the response route. Response times are to the furthest extent for the Lake Property.

** Response times for Stations 6, 7, and 8 are the same for existing and future road networks.

*** Note that the EUC/Millenia station was used for modeling since it was determined to be the optimal location for a new fire station (FFMP 2012)

**** The Effective Firefighting Force could include responses from all five stations with a best case assembly travel time of 9 minutes 35 seconds for futre conditions and up to 12 minutesf or current conditions.



SOURCE: ESRI 2017, SanGIS 2016, Hunsaker 2016

FIGURE 7

Fire Station Location Map

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As indicated in Table 2 and Figures 8 through 12 , the first arriving engine from Station 7 with four firefighters onboard achieves a 5-minute 53 second travel time throughout the Main Campus development footprint. This first arriving response is approximately 53 seconds over the stated 5 minute travel time goal. Approximately 60% of the site's parcels would be over 5 minutes travel, but less than 6 minutes travel. The City's Occupational Safety and Health Administration (OSHA) two-in and two-out standard would however be met. If available to respond to an incident, Truck 57 with its complement of firefighters could respond to the Main Campus site within six minutes and provide additional manpower to comply with the OSHA staffing standard.

As indicated in Table 2, the current Effective Fighting Force (EFF) or first 3 engines, 1 truck and battalion chief for a total of 14 firefighters could be on-scene within roughly 9 minutes 25 seconds travel time from three existing stations. In this case, the proposed EUC/Millenia and Village 8 West stations (to the furthest Main Campus Property extent) would be approximately 2 minutes and 10 seconds and 4 minutes 20 seconds, respectively. Both new fire stations provide significant time savings, as both first arriving and EFF responses are within 5 minutes and under the 8-minute travel time goal.

The Lake Property as presented in Table 3 and Figures 8 through 12 would be served by existing Fire Station 8 with the first arriving engine achieving a 5-minute 28 second travel time to the southern portion of the parcel. This first arriving response substantially conforms with the approved response goal of 5 minutes 90% of the time, and it satisfies the OSHA two-in and two-out standard.

The EFF, including fire stations 6, 7, and 8, could be on-scene within roughly 11 minutes 56 seconds travel time. Once the EUC/Millenia station is built, the EFF response time improves to 9 minutes 35 seconds to the furthest Lake Property extent.

3.2 Estimated Calls and Demand for Service

The UID on-site population varies by time of year, week, and day. For purposes for this call volume analysis, the Project is evaluated using the maximum dwelling unit yield and gross square footage (SF) permitted by the SPA Plan. The proposed maximum development area for the UID is 10,066,200 SF that would support a total of 34,000 people including a mix of students, faculty, staff, residents, and retail/office workers. Data from the Chula Vista UID SPA EIR (City 2016b) indicates approximately 20,000 student enrollment and an additional 6,000 academic and staff employees. The approximate resident population is 5,400 students and 2,000 employees. Innovation uses would support up to 8,000 jobs. The calculated total of 34,000 people is an aggregate total, which combines all phases and all uses together and assumes they are all on the UID site at one time.

For this study's analysis, the closest fire station (Station 7) is evaluated as it provides perspective for the potential impacts from build out of the Main Campus Property, where the majority of the population would reside. Engine 57 responded to 1,512 calls and Truck 57 responded to 393 calls during 2016, primarily medical emergencies (67.8%) (City 2017). This calculates as 4 calls per day for Engine 57 and 1.1 calls per day for Truck 57. Construction of planned fire stations in the area would shift calls for a better balance among the UID proximal stations.

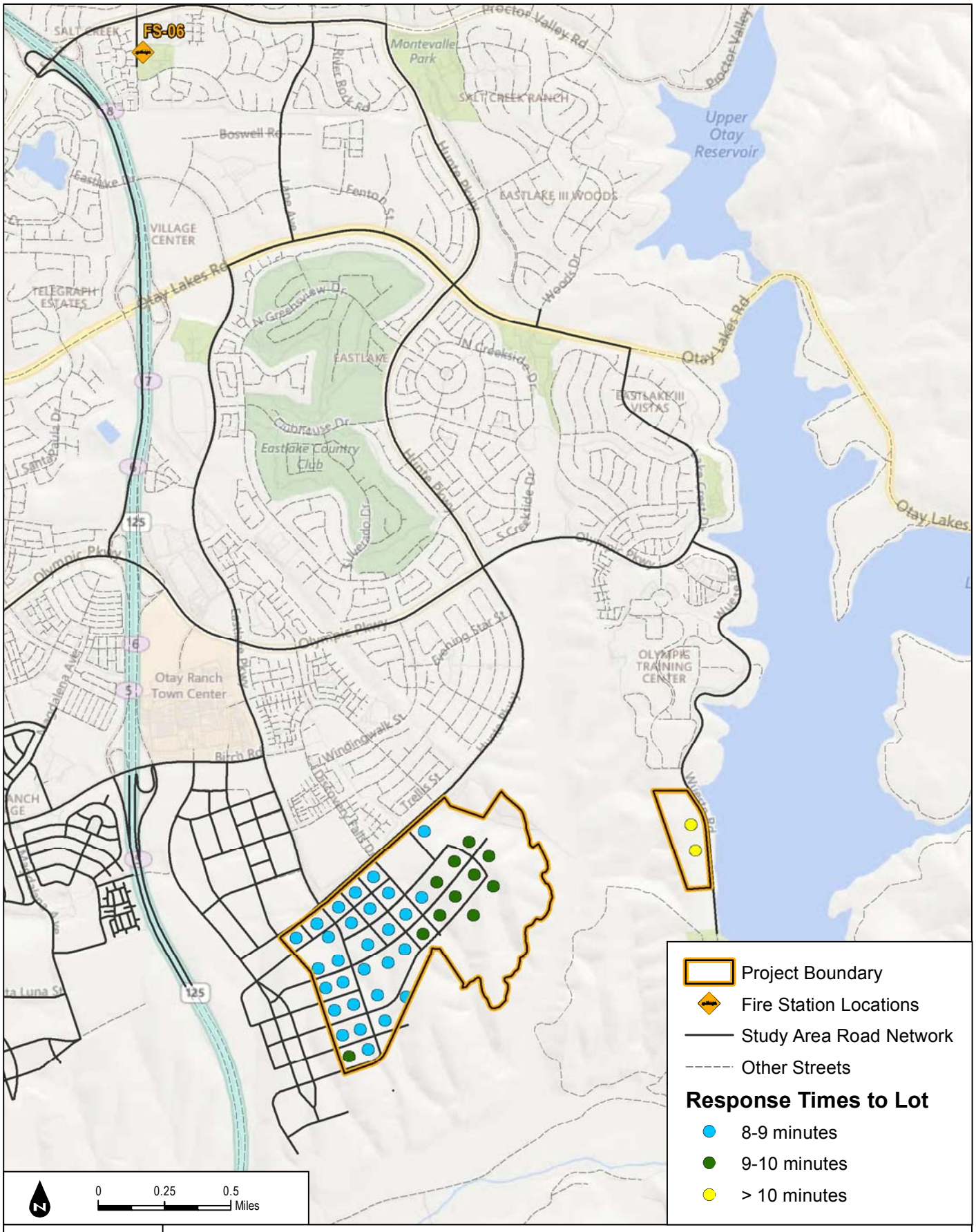
Determining the potential impact associated with the UID population increase is required in order to compare how many additional calls may be realized and determine what effects they may have on the available response resources. The estimated incident call volume of UID site implementation is based on a conservatively calculated estimate from the maximum potential number of additional persons that would be expected on site. As mentioned, there is expected to be an aggregate total of 34,000 people on site. This analysis indicates the "worst-case" scenario as calculated call volumes utilize the potential maximum population, even though a large portion of the population would not be on site during evening, night, and early morning hours.

As summarized in Table 4, using the CVFD estimate of 74 annual calls per 1,000 population[3,4], the Project's estimated 34,000 people would generate a very conservatively calculated 2,516 calls per year (about 6.9 calls per day), roughly 68% of which (1,705 call per day) is expected to be medical emergencies, based on past call statistics.

Table 4
Calculated Call Volume Associated with UID Project

Emergency Calls per 1,000 (2015 CVFD Incident Data)	Estimated Population	Avg. No. Calls per Year (34,000\1,000)x74	Avg. No. Calls per Day (2,516/365)
74	34,000	2,516	6.9
Type of call	**Per capita call generation factor**		**Number of estimated annual calls**
Total Calls	**100%**		**2,516**
Total Fires	**1.9%**		**47.8**
Total EMS Calls	**67.8%**		**1,705.8**
Total Rescue Calls	**0.33%**		**8.3**
Total Other Calls	**29.97%**		**754**

[3] City of Chula Vista estimated total population of 267,500 people (City of Chula Vista 2017).
[4] Chula Vista Fire Department 2016 Annual Stats Report: Total number of Incidents = 19,892



SOURCE: BING MAPPING SERVICE 2016

FIGURE 8

FS-06 Existing Fire Station Response Times

University Innovation District Fire Protection Plan

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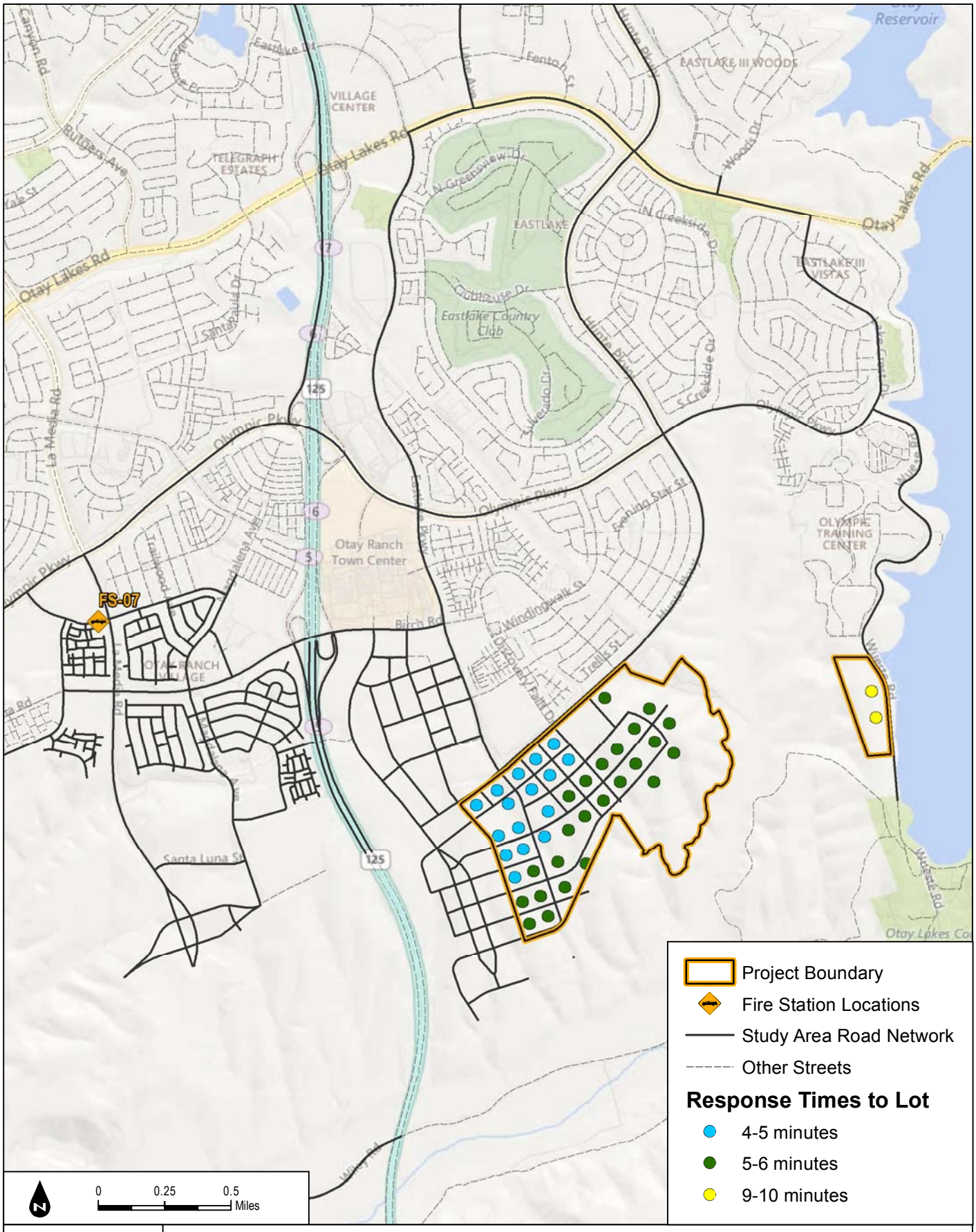

SOURCE: BING MAPPING SERVICE 2016

FIGURE 9

FS-07 Existing Fire Station Response Times

University Innovation District Fire Protection Plan

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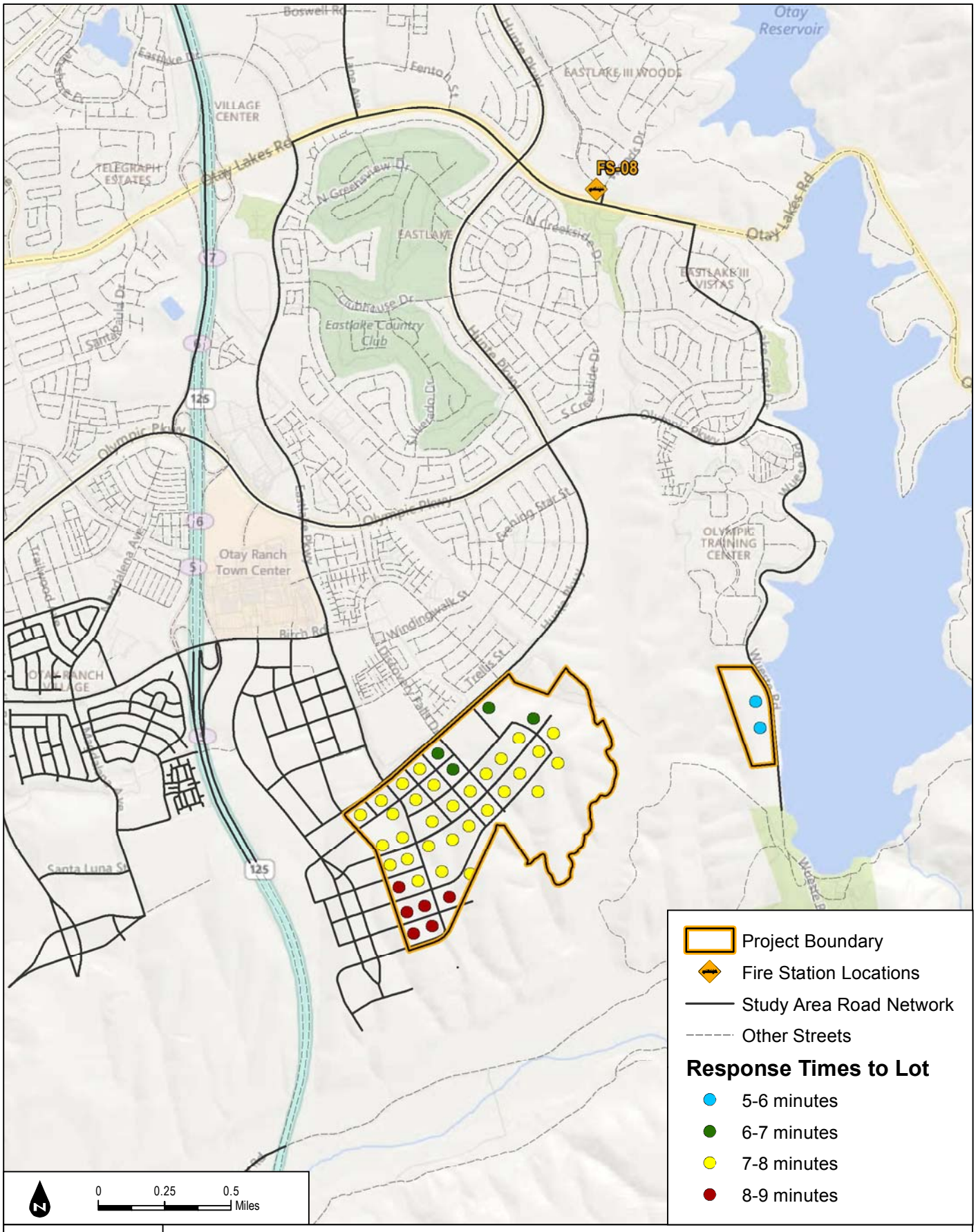

SOURCE: BING MAPPING SERVICE 2016

FIGURE 10

FS-08 Existing Fire Station Response Times

University Innovation District Fire Protection Plan

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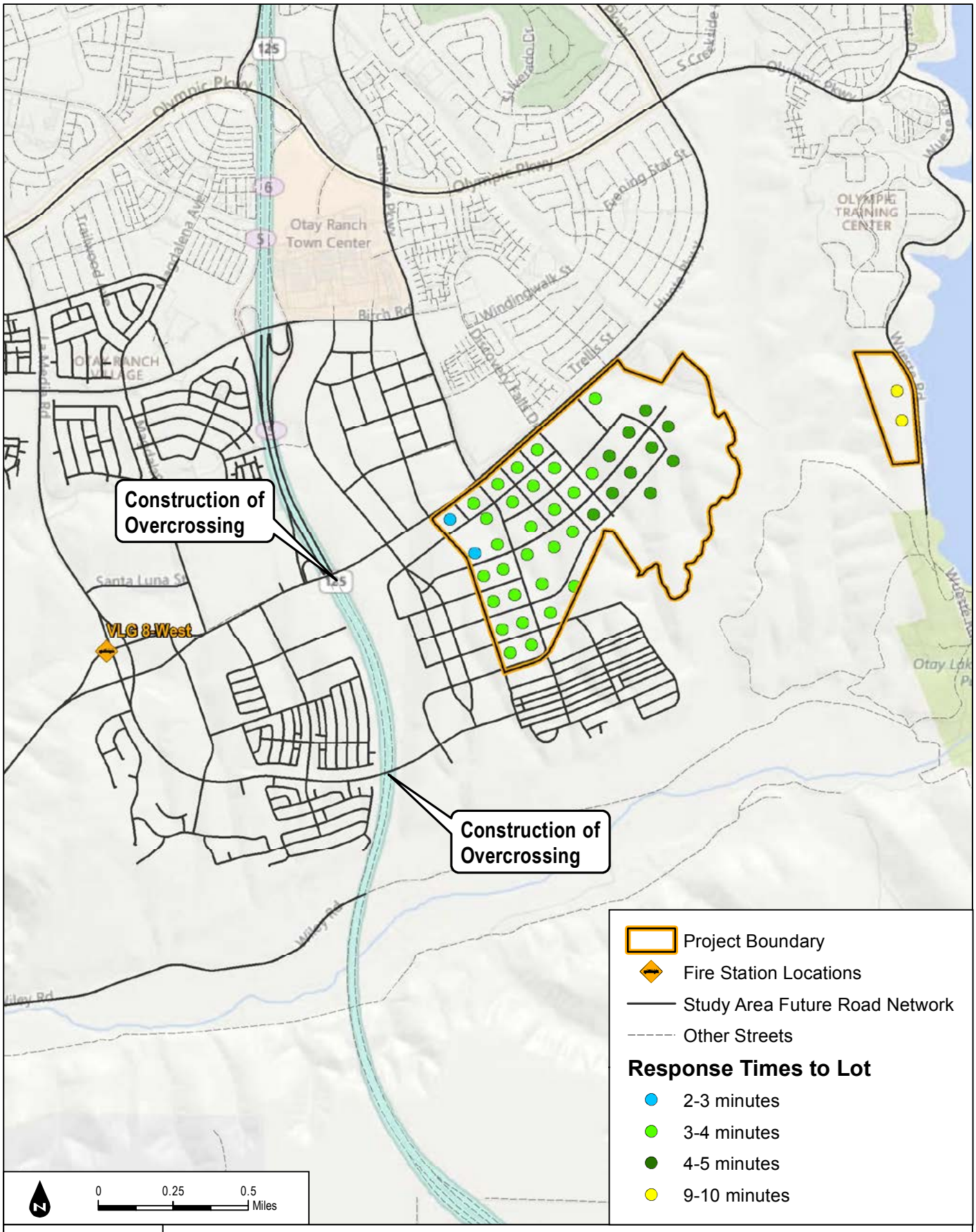

SOURCE: BING MAPPING SERVICE 2016

FIGURE 11

New Fire Station 8 West - Proposed Road Network - Response Times

University Innovation District Fire Protection Plan

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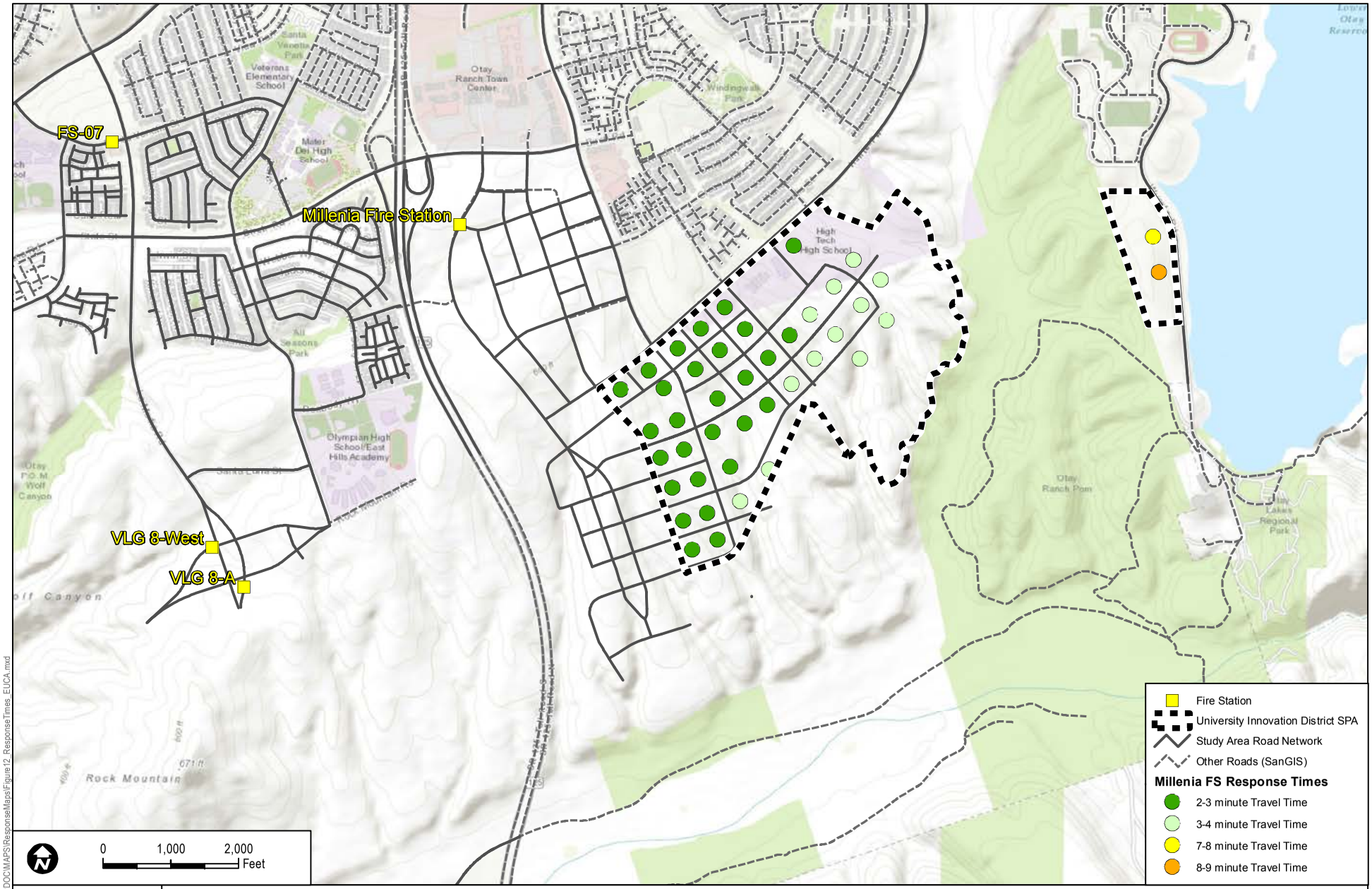

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SOURCE: ESRI 2016, SanGIS 2016, Hunsaker 2016

FIGURE 12

Millenia Fire Station Response Times

FIRE PROTECTION PLAN - UNIVERSITY INNOVATION DISTRICT SPA

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The addition of nearly 7 calls per day to a Fire Station that currently responds to approximately 5.1 calls per day is significant. Given that the actual call volume is estimated to be lower than 6.9 due to the 26,600 persons who would not be on-site during nighttime hours, and the additional fire response resources associated with planned new Fire Stations, it is anticipated that the UID calls can be absorbed and will not require additional fire station resources beyond existing and planned fire stations and ambulance coverage. With the addition of two planned fire stations in the area, as described herein, and the currently low call volume at Station 7, the additional calls associated with build out can be absorbed and still result in acceptable emergency response.

Station 7 is currently considered approximately average based on their roughly five or fewer calls per day. For perspective, a typical station averages around five calls per day and a busy station responds to about ten calls per day. Table 5 presents estimated call volume increases based on the demand from UID.

Table 5
Calculated Call Volume Increase Per Station Associated with UID Project

Chula Vista Fire Station	Current Daily Call Volume	Estimated Daily Call Volume Increase	Estimated Total Daily Call Volumes with proposed Project[1]
7	4.0 (engine) + 1.1 (truck)	Less than 6.9	Less than 12.0
8	3.0 (engine)2	Less than 6.9	Less than 10.0
EUC/Millenia	N/A	Up to 6.9	Greater than 6.9
Village 8 West	N/A	Less than 6.9	Greater than 6.9

Notes:
1 Estimated total daily call volume is based on existing volume in addition to the conservatively calculated 6.9 calls per day from UID. For Stations 7 and 8, it is assumed that the 6.9 calls per day associated with UID are maximum numbers that will not likely be experienced. For EUC/Millenia and Village 8 West stations, it is unkown what the call volume generated from their respective coverage areas will be at the time of this FPPs preparation.
2 Fire Station 8 responded to a total of 1,090 emergency calls in 2016 (City of Chula Vista 2017).

If based only on call volume, the existing stations would appear to be able to respond to UID call volume increases, although existing stations could see call volumes increase to busy levels. However, response times and the weight of response to Chula Vista's developing areas must also be considered when determining whether existing resources are adequate, or whether additional resources are necessary.

3.3 Impacts and Mitigation

3.3.1 Fire Response

The UID Project includes an increased number of new buildings and up to 34,000 people, although many of those people would not be on-site during at least 50% of time each day.

Service level requirements could, in the absence of additional fire facilities and resources improvements, cause a decline in the CVFD response times and capabilities. The requirements described in this FPP are intended to aid fire-fighting personnel and minimize the demand placed on the existing emergency service system.

Cumulative impacts from this type of project can cause fire response service decline and must be analyzed for each project. The UID Project represents a substantial increase in service demand due to the types of structures and land uses and the number of people living in or using the community and university. Based on the calculations presented in the preceding sections, and the estimated calls per day generated by the project, the UID Project is anticipated to have a significant impact on the response capability of the existing CVFD Fire Stations.

A second potential impact resulting from development in a WUI setting is related to the potential for increased exposure of residents to wildland fire. More people in a given area results in more opportunity for fire starts and subsequent exposure to dangerous conditions. The inclusion of homes adjacent to preserved open space areas and the potential for wildfire indicates the need for measures to minimize the likelihood of fire ignition and specialized wildland firefighting apparatus nearby should wildland fire occur.

The potential impacts to the firefighting and response resources and to the residents residing within this area are considered insignificant with respect to wildland fire. The project's inclusion of the most recent fire safety codes and a layered fire protection system, designed to reduce demands placed on the fire responders while minimizing exposure of humans to potentially harmful fire environments, would result in wildfire exposure levels that are below the significant threshold.

Features which are required and are therefore typically not considered mitigation, but that are relatively new Code requirements and play a critical role in minimizing structure ignition are; ignition resistant construction including roofs, walls and decks, vent restrictions, interior fire sprinklers, windows (dual pane/tempered), and fuel reduction areas. Although fire agencies do not provide "credit" for these features since they are required in the code, they do provide measureable safety improvements when used and are in the Code because they are so effective. Among other features that provide fire protection to the UID Project are:

1. Specialized firefighting apparatus within the CVFD fleet for wildland and structure fires along with highly trained firefighters;
2. Customized fuel modification zones that would be managed and maintained throughout the year; The term "customized fuel mod zone" refers to fuel modification zones that are customized to this project based on results of fire behavior, ignition sources, weather, and fire risk.

3. Highly restrictive Fire and Building Codes for both residential and commercial/industrial buildings; and
4. Robust mutual and automatic aid agreements that provide a large arsenal of firefighters, and ground- and aerial- based firefighting apparatus.

Even with these fire protection features, the project and the Otay Ranch Subarea would require construction, staffing and equipping of the two proposed fire stations discussed above to meet the demands created by build out of the Otay Ranch and enable CVFD to respond within the CVFD goal of 5-minute travel timeframe to 90% of incidents (first unit) and to assemble an EFF within 8 minutes. Overall phasing of the project and nearby projects (which all provide funding to these stations on a fair-share basis) would determine when additional fire stations are constructed. The Project must comply with the approved Chula Vista FFMP (2012), including fire facility siting, as approved by the Chula Vista City Council. With the two proposed fire stations within the Otay Ranch Subarea, construction of which would be supported on a fair share basis by the UID and residential portions of this Project through property tax and payment of the Chula Vista Public Facility Development Impact Fee, the City's goal of 5 minutes driving time to 90% of all structure fires and medical emergency calls would be conforming.

Fire Station 7 can respond to approximately 40% of the UID project within the 5 minute travel time. Areas that cannot be reached by Fire Station 7 within the 5 minutes travel time would depend on the EUC/Millenia Fire Station for conforming response. Timing of the Project's construction in relation to the operational availability of the EUC/Millenia Fire Station would determine the UID construction schedule. At the time of this FPPs preparation, it is estimated that the EUC/Millenia station will be operational by late 2018 or early 2019[5]. Should the EUC/Millenia fire station be operational prior to construction of the project exceeding the 5 minute travel time, then no additional measures would be necessary as there would be two responding engines, a truck, and a battalion chief that can provide under 5 minutes travel time response to all structures in the project and result in 13 firefighters on scene, meeting the OSHA two-in, two-out standard and almost achieve the EFF (14 firefighters). In the case that the Millenia Fire Facility is not built/operational, the Project is restricted by the CVFD to only develop parcel(s) that Fire Station 7 can respond to within five minutes, until the Millenia Fire Facility is on-line.

3.3.2 Medical Response

The number of estimated EMS calls per day represents a significant impact on current response capabilities and to the people who could require fast medical response for a variety of emergency

[5] Personal communication on December 7, 2016 with Justin Gipson, Deputy Fire Chief/Fire Marshal, CVFD

medical situations. Response times would increase, given the potential for up to 4.7 calls per day associated with UID and especially with build-out of the university, without additional resources. The combination of two additional fire stations with paramedic units, as proposed by CVFD, along with ambulance service unit increases is anticipated to result in sufficient resources to respond throughout the Otay Ranch Sub Area, including UID at build out.

Medical emergency response times cannot be mitigated for the most serious medical emergencies such as cardiac related emergencies. Advanced life support provided by paramedics on responding engines must arrive as quickly as possible, within 5.5–6 minutes to improve survivability (8 minutes if basic life support can be provided sooner). Six minutes includes the time to notify 911, for 911 to dispatch the closest engine, for the firefighters to "turnout", travel to the incident, locate the victim and engage medical treatments. It is common to require 60–90 seconds for dispatch and another 60–90 seconds for turnout. Travel times vary, but for UID, would be less than 6 minutes with the existing station 7 and approximately 2 minutes, once EUC/Millenia station is in operation, resulting in good response coverage and anticipated minimal impacts on the CVFD and emergency medical response provisions.

4 FIRE SAFETY REQUIREMENTS- DEFENSIBLE SPACE, INFRASTRUCTURE, AND BUILDING IGNITION RESISTANCE

The Chula Vista area experiences periodic conditions that can result in wildfire and there are dedicated preserve areas that provide wildland fuels adjacent to the UID site. Although the UID site has not burned since 1979, it is expected that wildfire could burn or spot onto the site because there will exist a wildland urban interface during and following project build-out. Additionally, structural fires and medical emergencies occur in urbanized areas and require response. As such, this FPP provides a summary of proposed and required infrastructure and special measures to provide fire protection.

4.1 Fuel Modification

WUI fire protection requires a systems approach, which includes the components of infrastructure and water, structural safeguards, and adequate fuel modification areas. This section provides FMZ requirements pursuant to the 2016 CFC and Section 7.4.4. Brush Management of the City's MSCP Subarea Plan.

4.1.1 Fuel Modification Zone Requirements

Definition

Fuel Modification Zone: A brush management area that is measured on a horizontal plane from the perimeter structures extending outwards towards Preserve land. All brush management zones and related fuel modification activities shall occur outside of the Preserve. Fuel modification zones (FMZ) shall be a minimum of 100 feet in width consisting of Zone 1 (0'-60') and a Zone 2 (61' to 100'). A 150-foot-wide FMZ would be installed for structures abutting designated Preserve Lands. The 150-foot FMZ would comprised of a 60-foot Zone 1 and a 61 to 150-foot wide Zone 2. To ensure long-term maintenance, each respective FMZ shall be identified by a permanent marker system meeting the approval of CVFD.

The goal of fuel modification zones is to eliminate highly flammable vegetation and replace it with fire resistant species with low BTU producing fire effects. Highly flammable species often include resins, chemicals, accumulation of litter like bark, leaves, and fine dead wood.

General Criteria

1. Vegetation included on the Prohibited Plant List (Appendix F) is prohibited in any Fuel Modification Zone.

2. All plant and seed material in Zones 2 to be locally sourced to the greatest extent possible to avoid genetically compromising the existing Preserve vegetation.
3. Plant 50%–70% of the overall fuel modification zone with deep rooting plant material.
4. Maintain all plant material in irrigated zones in a hydrated condition.
5. Remove debris and trimmings produced by thinning and pruning from the site, except for larger woody debris that may be chipped and left on site for weed and erosion control. Chips or mulch depth shall not exceed 4-inches and mulch chips should not be smaller than approximately 4- to 6-inches. Chipping/mulching of invasive species is prohibited. Dispose of cuttings and deadwood not chipped/mulched by hauling it to a local landfill.
6. There shall be no shrub plantings forming hedges (i.e., creating a "wick" effect) so that they do not form a means of rapidly transmitting fire from the native growth to the structures.
7. All mature trees must be limbed to ten feet or 3x the height of understory plants, whichever is greater.
8. Plant shrubs in clusters not exceeding a total of 400 square feet.
9. Prune vegetation to provide a minimum horizontal clearance between each shrub cluster that equals three times (3X) the height of the plant material or 20- feet, whichever is greater.
10. Provide "Avenues" devoid of shrubs a minimum width of 6 feet and spaced a distance of 200 linear feet on center to provide a clear access route from toe of slope to top of slope.
11. Combustible materials, including chipped biomass, bark, wood chips, should be no closer than 5 feet to structures unless of size and type shown to reduce potential ignitions.
12. Provide a minimum 30-foot distance between mature tree canopies for perimeter landscape areas adjacent to the urban wildland interface.
13. Thinning of any existing vegetation to remain shall be employed to reduce overall vegetative biomass by 30%-50%. Site specific conditions will dictate thinning percentages in relation to structures, building construction characteristics, topography, and vegetation type.
14. Remove non-native and invasive plants from the fuel modification zone to eliminate highly flammable species and reduce overall biomass levels. In some areas, removal of exotic species may be all that is required to meet thinning objectives.
15. Provide fire department access to FMZ every 1,000 lineal feet along portioins of the development adjacent to the WUI.

Zone 1 (0–60 feet from rear of structure)

Zone 1 – Definition:

All public and private areas located between a structure's edge and 60 feet outward. These areas may be located on public slopes, private open-space lots, or public streets, as illustrated on the landscape fuel modification exhibits.

Zone 1 – Specific Criteria:

1. Provide a permanent irrigation system within this irrigated wet zone.
2. Only those trees on the Approved Plant List (Appendix E) and those approved by the Director of Development Services as not being invasive are permitted within this zone.
3. Tree limbs shall not encroach within 10 feet of a structure or chimney, including outside barbecues or fireplaces.
4. Limit 75% of all groundcover and sprawling vine masses to a maximum height of 18 inches.
5. 25% of all groundcover and sprawling vine masses may reach a maximum height of 24 inches. Ground covers must be of high-leaf moisture content.
6. Shrubs shall be less than 2 feet tall and planted on 5-foot centers.
7. Randomly place approved succulent type plant material may exceed the height requirements, provided that they are spaced in groups of no more than three and a minimum of five feet away from described "clear access routes."
8. Vegetation/Landscape Plans shall be in compliance with this FPP.

Zone 2 (61–100 feet from structure or 61 to 150 feet from structure adjacent to Designated Preserve Lands)

Zone 2 – Definition:

All public and private areas located between the outside edge of Zone 1 and outward to 100 feet, per this FPP. These areas may be located on public slopes, private open-space lots, public streets, as defined in the landscape fuel management exhibits.

Exception: Combustible structures adjacent to Preserve lands require up to a 90 foot wide Zone 2 (from 61- to 150-foot) : sofor a total of 150 feet of fuel modification between the combustible structures and Preserve open space areas.

Zone 2 – Specific Criteria:

1. Utilize temporary irrigation to ensure the establishment of vegetation intended to stabilize the slopes and minimize erosion.
2. Trees may be located within this zone, provided they are planted in clusters of no more than three and provide a minimum of 30-foot distance between mature tree canopies.

   Only those trees on the Approved Plant List (Appendix E) and those approved by the Director of Development Services as not being invasive shall be permitted within this zone.
3. 100% of all groundcover and sprawling vine masses shall be limited to a maximum height of 36 inches.
4. Provide "Avenue" devoid of shrubs a minimum width of 6 feet and spaced a distance of 200 linear feet on center to provide a clear access route from toe of slope to tope of slope.
5. Shrubs may be planted in clusters not exceeding a total of 400 sq. ft.
6. Shrub clusters should occur as a "mosaic" in a "staggered" pattern for a more natural look. The mosaic of shrub cluster shall occur between the "avenues" devoid of shrubs.
7. When shrubs or other plants are planted underneath trees, the tree canopy shall be maintained at a height no less than three times the shrub or other plant's mature height (break up any fire laddering effect).

UID Site Specific FMZ Criteria

Fuel modification for the Main Campus Property and Lake Property provides at least 100 feet of defensible space adjacent to non-Preserve areas and 150 feet adjacent to Preserve areas, as required (Appendices D-1 and D-2). In addition, the fuel modification zones adjacent to many of the site's structures would consist of non-traditional, but effective placement of low-flammability land uses that function as fuel modification (e.g., parking, irrigated green space, or roadways) on the perimeter of the development footprint.

Main Campus Property FMZ Details follow:

1. Fuel modification would include at least 100 feet of modified fuels with a Zone 1 consisting of at least 60 feet of irrigated and restricted planting zone, and Zone 2, consisting of at least 40 feet of temporary irrigation reduced fuel and planting.
2. Fuel modification adjacent to Designated Preserve Lands (Appendix D-1) which occur along the eastern and southeastern edges of Main Campus Property development footprint would be at least 150 feet wide, consisting of at least 60 feet wide Zone 1 and at least 90 feet wide Zone 2.

Note: If future development as depicted on Figure 3 does occur along the eastern and southeastern edges of the Main Campus Property, a 150-foot wide FMZ will start at the Preserve edge and go back towards the buildings.

3. Fuel modification to the west of the Main Campus Property would tie into existing/proposed development area landscaping for Otay Ranch Village 9.
4. Fuel modification along the south edge of the Main Campus Property would tie into proposed development area landscaping for Otay Ranch Village 10 and a 85-foot wide street Right of Way with an additional 65 feet wide FMZs Zone 1 and 2.
5. The Main Campus Property is bordered by residential development to the north. No formal FMZ is needed.
6. The Project must comply with the landscape and fuel modification plant palette contained in Appendix E, Suggested Plant List for a Defensible Space.
7. **Interim Fuel Modification**:
    a. A minimum 100 feet of Zone 2 FMZ or mowing of grasses to maintain a four-inch stubble height would be required during interim period of construction of west or southwest edge of UID site development, depending on the timing of Villages 9 and 10 construction. At build out of Villages 9 and 10, the Main Campus Property would be bounded by residential development on the west and southwest sides as shown in Appendix D-1. Based on this final condition, no formal FMZ would be needed.
    b. Because development within UID may not proceed in a sequential pattern, and there may be areas under construction that are adjacent to native/natural fuels that will eventually be surrounded by development, interim fuel modification may be provided at these sites. Interim fuel modification would consist of a 100 foot wide Zone 2 or if grass, then the area would be mowed to maintain a maximum four-inch stubble height. The 100 foot wide zone would extend from the building outward, or at the periphery of the active construction area until the structure(s) is/are constructed.

Lake Property FMZ Details follow:

1. Fuel modification adjacent to Designated Preserve Lands (Appendix D-2), which occur along the northern, western and southern edges of the Lake Property development footprint, would be at least 150 feet wide, consisting of at least 60 feet wide Zone 1 and at least 90 feet wide Zone 2.

2. The proposed FMZ for the eastern boundary of the proposed Lake Property development consists of a 60-foot wide Zone 1 and 35 to 55 feet Zone 2. In addition, the development footprint would be bordered by a 24 feet wide paved road (Wueste Road), a parking lot, and the Otay Reservoir to the east.

4.1.2 Other Vegetation Management

A. Construction Phase Vegetation Management

Vegetation management requirements would be implemented at commencement and throughout the construction phases or individual projects. Vegetation management would be performed pursuant to CVFD requirements on all lots or areas prior to the start of work and prior to any import of combustible construction materials. Adequate, interim fuel reductions would occur through thinning, mowing, or blading around all grading, site work, and other construction activities in areas where there is flammable vegetation. These interim FMZs shall be at a minimum 100 feet in width around the perimeter of all structures that abut natural vegetation.

In addition to the requirements outlined above, phased projects would comply with the following important risk reducing vegetation management guidelines:

1. All new power lines would be underground, for fire safety during high wind conditions or during fires on a right-of-way which can expose aboveground power lines. Temporary overhead power/utility lines are permitted within construction zones.
2. Fuel modification zones would not extend into biological open space or other sensitive biological areas, or other areas controlled by the City and/or resource agencies.
3. Caution must be used to avoid erosion or ground (including slope) instability or water runoff due to vegetation removal, vegetation management, maintenance, landscaping, or irrigation. No uprooting of treated plants is necessary.
4. Vegetation management activities associated with facilities under construction within the MSCP Preserve shall be limited to the impact area identified and analyzed in the University Innovation District EIR. No vegetation management activities are permitted within the Preserve. Emergency brush management activities within the MSCP Preserve must comply with the Chula Vista MSCP Subarea Plan, Section 7.4.4.3 Emergency Brush Management.
5. All structures would be in strict, ongoing compliance with all Fire and Building Code requirements.

B. Roadside Fuel Modification Zones (Including Driveways)

1. High BTU producing flammable vegetation including shrubs and trees shall be 50% thinned or removed and replanted with approved fire resistive plant material within the roadside FMZs. All plants listed in the Prohibite Plant List (Appendix F) and any invasive species shall also be cleared and prohibited.
2. Tree and shrub canopies shall be spaced such that interruptions of tree crowns occur and horizontal spacing of 20 feet between mature canopies of trees or tree groups is maintained.
3. Mow/trim grass to 4 inches.
4. Single tree specimens, fire resistive shrubs, or cultivated ground cover such as green grass, succulents or similar plants used as ground covers may be used, provided they do not form a means of readily transmitting fire.
5. All fire access roadways s in the development will have the following FMZs widths as follows:
    a. Fire Access Roads – 30 feet from edge of pavement, but not within MSCP Preserve.
    b. New roads/driveways – 30 feet from edge of pavement, but not within MSCP Preserve.
    c. Existing roads/driveways – 20 feet from edge of pavement, but not within MSCP Preserve.
6. Trees are permitted within the Roadside Vegetation Management Zones, subject to following criteria:
    a. Provide 10 feet between mature tree canopies on slopes less than 40% (30 feet if adjacent to a slope steeper than 41%).
    b. Limb mature trees up to one-third the height of mature tree or 6 feet, whichever is greater.
    c. Tree canopies lower than 13 feet 6 inches are prohibited over roadways.
    d. Tree trunks may not intrude into roadway width.
    e. Comply with the Prohibited Plant List (Appendix F).
    f. Remove flammable understory beneath trees.
    g. Maintain vegetation under trees to 2 feet in height or below, and no more than one third the height of the lowest limb/branch on a mature tree, in order to keep the area fire resistive.

C. Open Space, Parks, etc.

1. Parks, if applicable, and open space landscape areas must comply with the guidelines in this FPP.

2. Remove flammable vegetation.
3. Maintain and mow/trim grasses to 4 inches.
4. Trees, plants, and shrubs must comply with the criteria in the FPP and the Suggested Plant List for a Defensible Space (Appendix E).
5. Comply with the Prohibited Plant List (Appendix F).
6. Remove down and dead vegetation as observed.
7. Properly plant and maintain trees consistent with this FPP.

D. Vacant Parcels and Lots

1. Vegetation management would not be required on vacant lots until construction begins. However, perimeter Vegetation Management Zones must be implemented prior to commencement of construction utilizing combustible materials.
2. Vacant lots adjacent to active construction areas/lots would be required to implement vegetation management if they are within 30 feet of the active construction area. Perimeter areas of the vacant lot shall be maintained as a Vegetation Management Zone extending 30 feet from roadways and adjacent construction areas.
3. Prior to issuance of a permit for any construction, grading, digging, installation of fences, etc., the 30 feet at the perimeter of the lot is to be maintained as a Vegetation Management Zone. However, this 30-foot vegetation management zone may not extend into the MSCP Preserve.
4. In addition to the establishment of a 30-foot-wide vegetation management zone prior to combustible materials being brought on site, existing vegetation on the lot shall be reduced by at least 60% upon commencement of construction.
5. Dead fuel, ladder fuel[6], and downed fuels shall be removed and trees/shrubs shall be properly limbed, pruned and spaced per this plan.

E. Preserve Areas

At the time of this FPP, there is no anticipated need to conduct vegetation management within adjacent Preserve areas. However, should conditions arise due to unforeseen or uncontrollable circumstances that leads to unsafe conditions, emergency brush management activities within the MSCP Preserve must comply with the Chula Vista MSCP Subarea Plan, Section 7.4.4.3 Emergency Brush Management.

[6] Plant material that can carry a fire burning in low-growing vegetation to taller vegetation is called ladder fuel. Examples of ladder fuels include low-lying tree branches and shrubs, climbing vines, and tree-form shrubs underneath the canopy of a large tree.

F. Alternative Methods

As fire protection technology continues to evolve and application of fire protection and suppression systems, materials, and methods become acceptable to fire agencies, this FPP provides an alternate means of providing defensible space. Builders or private lot owners may submit a site specific risk assessment and detailed Vegetation Management Plan (VMP) with an Alternative Materials and Methods justification, to the CVFD proposing alternative methods of fire protection and providing justification for any variance from the recommended vegetation management zones, if there is a practical difficulty, or environmental constraint, in providing the entire size of the necessary vegetation management zone detailed herein. The VMP would need to fully justify any alternative means and methods/mitigation measures proposed for reductions in the fuel modification areas and the CVFD Fire Marshal shall have full authority to approve or deny the requested variance.

G. Private Lots

This FPP provides direction for selecting lower flammability plant material along with planting and maintenance requirements. The 100 or 150 feet fuel modification zones are required to use low flammability plantings consistent with this FPP. In addition, it is recommended that none of the plant materials listed in the "Prohibited Plant List" (Appendix F) in this plan or otherwise known to be especially flammable be planted on private lots. This FPP or a summary of its key points would be provided to all buyers in a private property owner's guide to living in a fire environment. Deed restrictions would be recorded indicating the fuel modification zones on each private lot, as appropriate. Deed restrictions shall run with the land and be conveyed to any subsequent owner of the private lot. In addition, the project Codes, Covenants, and Regulations (CC&Rs) shall include a reference to the FPP to ensure compliance with the FPP.

All subsequent landscape plans and associated plant pallets prepared for areas located adjacent to the preserve are subject to the review and approval of the MSCP Section of the Development Services Department.

4.1.3 Maintenance

Vegetation management shall be completed annually by May 1 of each year and more often as needed for fire safety, as determined by the CVFD. Pruning and vegetation removal shall be limited to only those measures required to maintain the applicable requirements of the fuel modification zones. Homeowners and private lot owners shall be responsible for all vegetation management on their lots, in compliance with this FPP which is consistent with CVFD requirements. The "Approved Maintenance Entity" shall be responsible for and shall have the

authority to ensure long term funding, ongoing compliance with all provisions of this FPP, including vegetation planting, fuel modification, vegetation management, and maintenance requirements on all private lots, residences, parks, common areas, roadsides, and open space under their control (if not considered biological open space). Any water quality basins, flood control basins, channels, and waterways should be kept clear of flammable vegetation, subject to Section 4.1.2.D. The Approved Maintenance Entity shall obtain an inspection and report from a CVFD–authorized Wildland Fire Safety Inspector, in May of each year, certifying that vegetation management activities throughout the Project Site have been performed pursuant to this FPP and CVFD standards. This report would be funded by the Approved Maintenance Entity and submitted to CVFD Fire Marshal for approval.

Note: Maintenance activities in any environmentally sensitive areas that contain sensitive habitat including jurisdictional waters/wetlands are subject to the prior review and approval of the City and appropriate resource agency (i.e., California Department of Fish and Game, U.S. Fish and Wildlife Service, Army Corps of Engineers).

4.2 Infrastructure

4.2.1 Access

Site access, including fire lane, driveway, and entrance road widths, primary and secondary access, gates, turnarounds, turning radius, dead end lengths, signage, aerial fire apparatus access, surface, and other requirements would comply with the requirements of the 2016 California Fire Code and Appendices B and Cand CVFD Standards for fire accesswill be reviewed and approved by CVFD.

Regional vehicular access to the Main Campus Property is currently provided from SR-125 via Olympic Parkway to Eastlake Parkway. Eastlake Parkway currently terminates at its intersection with Hunte Parkway, which is located at the proposed gateway of the UID. Hunte Parkway is planned to extend westerly through Village 9 as Main Street and a new access ramp would connect Hunte Parkway/Main Street to Sr-125. This would provide direct access to the UID. A future access ramp would connect the Future Otay Valley Road to Sr-125, providing secondary access from the south through the future Village 10.

4.2.2 Roads

1. Primary access to the Main Campus site would be provided via Innovation Drive and Campus Drive to Eastlake Parkway. The Lake Property would be accessed from Wueste Road via Olympic Parkway. There would be no internal road directly connecting the Main Campus Property to the Lake Property.

2. Interior circulation roads include all roadways that are considered common or primary roadways for traffic flow through the site and for fire department access and serving in excess of two structures. Any dead-end roads serving new buildings that are longer than 150 feet shall have approved provisions for fire apparatus turnaround.
3. Cul-de-sac bulbs are required on dead-end roads in residential areas where roadways serve more than two residences and per City standards.
4. Road infrastructure improvements shall accommodate fire department apparatus turning capabilities per CVFD's Auto Turn detail, which can be downloaded at http://www.chulavista.ca.gov/home/showdocument?id=2844.
5. Roadways, driveways or firelanes would provide fire department access to within 150 feet of all portions of the exterior walls of the first floor of each structure, or as approved by CVFD.
6. Two means of access would be provided for buildings exceeding 30 feet in height measured from the grade plane and the highest roof surface. These access roads would be 26 feet wide and would be located between 15 and 30 feet from the building so that an aerial fire apparatus is positioned parallel to one entire side of the building, or to the approval of the CVFD.
7. Roadway design features (e.g., speed bumps, humps, speed control dips, planters, fountains) that could interfere with emergency apparatus response speeds and required unobstructed access road widths would not be installed or allowed to remain on roadways (CVFC). Traffic Calming features (i.e., raised intersections, intersection neck downs, roundabouts and parallel bay parking with landscape pop-outs) shall be allowed, subject to approval by the CVFD.
8. Vertical clearance of vegetation along roadways would be maintained at 13 feet, 6 inches. Vertical clearance in the commercial, school, and multi-family structure areas to be clear to the sky to allow aerial ladder truck operation. There shall be no power or utility lines over roadway at build out.
9. Angle of driveway/roadway approach/departure would not exceed 7° (12%) per CVFD.
10. Road grades would not exceed 10%, unless approved by the Fire Chief.
11. Developer would provide information illustrating the new roads, hydrants, and new structures in a format compatible with the City's current department mapping services.
12. Any roads that have traffic lights shall have Fire District–approved traffic preemption devices (Opticom) compatible with devices on the Fire Apparatus.

13. Fire Lanes would be identified by signs, curb painting or striping (with no curb) in accordance with Caltrans/FHWA standard (R26F) and/or CVFD design standards.

4.2.3 Gates

Access gates would comply with CVFC requirements applicable at the time of building plan approval.

4.2.4 Driveways

Any structure that is 150 feet or more from a common road in the development shall have a paved driveway meeting CVFC requirements as follows:

1. Grades 10% or less with surfacing and sub-base consistent with CVFC.
2. Driveways serving two houses or fewer would be 20 feet wide unobstructed with a fire apparatus turnaround. Driveways serving more than two houses would be a minimum 24 feet wide, unobstructed.
3. Lighted house addresses shall be posted at the entrance to each driveway if house numbers are not visible from the street.

4.2.5 Premises Identification

Identification of roads and structures would comply with CVFC and Fire Prevention Division Standards, as follows:

1. All structures required to be identified by street address numbers at the structure. Numbers to be minimum 6 inches high with 1-inch stroke (0 to 50 feet from face of curb), 10-inches high with 1.5-inch stroke (51 to 150 feet from face of curb), or 16 inches with 2-inch stroke (greater than 150 feet from face of curb). Numbers would contrast with background.
2. Multiple structures located off common driveways would include posting addresses on structures, on the entrance to individual driveways, and at the entrance to the common driveway for faster emergency response.
3. Proposed roads within the development would be named, with the proper signage installed at intersections to satisfaction of the CVFD and the Department of Public Works.
4. Streets would have street names posted on non-combustible street signposts. Letters/numbers would be 4 inches high, reflective, on a 6-inch-high backing. Signage would be 7 feet above grade. There would be street signs at the entrances to the development, all intersections, and elsewhere as needed subject to approval of the Fire Chief.

5. Access roads to private lots to be completed and paved prior to issuance of building permits and prior to the occurrence of combustible construction.

4.2.6 Illuminated Directory

The project shall provide a Lighted Directory Map within the development, near the main entry in a location that is approved by the CVFD. The Directory shall be designed and built to CVFD specifications (Chapter 19.60 of the City's Municipal Code) and City's Design Guidelines.

4.2.7 Knox Box/Vault

All commercial (single tenant or multi-tenant) and multi-family residential buildings would have knox box or vault. The location and number of knox boxes or vaults would be approved by CVFD's Fire Marshal.

4.3 Ignition Resistant Construction

All new structures within UID Project would be constructed to CVFD Fire Code standards. Each of the proposed buildings would comply with the enhanced ignition-resistant construction standards of the 2016 CBC (Chapter 7A) and Chapter 5 of the Urban-Wildland Interface code. These requirements address roofs, eaves, exterior walls, vents, appendages, windows, and doors and result in hardened structures that have been proven to perform at high levels (resist ignition) during the typically short duration of exposure to burning vegetation from wildfires.

While these standards would provide a high level of protection to structures in this development, and should reduce the potential for ordering evacuations in a wildfire, there is no guarantee that compliance with these standards would prevent damage or destruction of structures by fire in all cases.

4.3.1 Additional Requirements and Recommendations Based on Occupancy Type

All CFC and CBC requirements for higher occupancy structures would be provided to UID buildings that include higher occupancies. Included in the high occupancy category are multi-family residences over three units, attached condominiums, and multi-story buildings over two stories.

4.4 Fire Protection System Requirements

4.4.1 Water Supply

Water service would be provided by the Otay Water District. Water supply requirements specified in the Chula Vista Fire Code (Section 404 of the Wildland-Urban Interface Code and Appendix B – Fire Flow Requirements for Buildings, Appendix C – Fire Hydrant Locations and Distribution {Chula Vista revisions – Sections 15.36.055 and 15.36.065}) including for hydrants and interior sprinklers would be provided for UID site.

Hydrants shall be located along fire access roadways and cul-de-sacs as determined by the CVFD Fire Marshal to meet operational needs. Hydrants would be consistent with Section 15.36.065 of Chule Vista Fire Code and Table C102.1 of the 2016 CFC. Fire hydrants, Fire Department Connections (FDC) and Post indicating Values (PIV) would be protected by 4-inch diameter galvanized steel pot (1/4-inch wall) filled with concrete. A blue reflective marker would be placed per CVFD standard to identify fire hydrant location. PIVs and FDCs would be identified by a sign meeting CVFD signage standards.

4.4.2 Fire Sprinklers

All structures within UID project site would include interior sprinklers, per code requirements (Section R313.3 of the 2016 California Residential Code, Chapter 9, Section 903 of the 2016 CFC, and Section 602 of the Urban-Wildland Interface Code). Sprinklers would be specific to each occupancy type and based on the most recent NFPA 13, 13R, or 13D, requirements.

5 FIRE SAFETY AND EVACUATION AWARENESS

UID outreach to the university campus and resident population regarding fire safety and general evacuation procedures is important. There are aspects of fire safety and evacuation that require a significant level of awareness by the populace and emergency services in order to reduce and/or avoid problems with an effective evacuation. Avoiding potential impediments to successful evacuations requires focused and repeated information through a strong educational outreach program. UID can engage the populace through a variety of methods. This evacuation plan, or portions thereof, could be provided on-line via a university Website to augment the building pre-evacuation plans. Annual reminder notices should be provided to the student body, staff and faculty encouraging them to review the plan and be familiar with evacuation protocols. It is recommended that the university's campus Fire Marshal and/or Emergency Response personnel engage in annual fire safety and evacuation preparedness outreach efforts. One focus of this outreach should be on the importance of each person to prepare and be familiar with their own "Ready, Set, Go!" evacuation plan. The "Ready, Set, Go!" program is defined at: http://www.chulavistaca.gov/departments/fire-department/ready-set-go and information about preparing an individual Action Plan is provided in Appendix G.

The focus of the "Ready, Set, Go!" program is on public awareness and preparedness, especially for those students, staff and faculty living or working in the campus wildland-urban interface (WUI) areas. The program is designed to incorporate the local fire protection agency (CVFD) as part of the training and education process in order to ensure that evacuation preparedness information is disseminated to those subject to the potential impact from a wildfire. There are three components to the program:

- ***"READY"*** – Preparing for the Fire Threat: Take personal responsibility and prepare long before the threat of a wildfire so you and your landscape are ready when a wildfire occurs. Create defensible space by providing managed fuel modification zones (not brush clearing) as detailed within this FPP. Use only fire-resistant landscaping and maintain its ignition resistance. Assemble emergency supplies and belongings in a safe spot. Confirm registration with Reverse 911. Make sure all residents within the building are familiar with evacuation plan and escape routes.
- ***"SET"*** – Situational Awareness When a Fire Starts: If a wildfire occurs and there is potential for it to threaten portions of the university or UID site, pack important items and be ready to leave the area on-foot or by vehicle. Stay aware of the latest news from local media and your local fire department for updated information on the fire. If uncomfortable, leave the area.

- ***"GO!"*** – Leave Early! Following your Action Plan provides you with knowledge of the situation and how one would approach evacuation. Leaving early, well before a wildfire is directly threatening, provides you with the least delay and results in a situation where, if a majority of people also leave early, firefighters are now able to better maneuver, protect and defend structures, evacuate other residents who couldn't leave early, and focus on human safety.

"READY! SET! GO!" is predicated on the fact that being unprepared and attempting to flee an impending fire late (such as when the fire is physically close to your community) is dangerous and exacerbates an already confusing situation. This UID FPP provides key information that can be integrated into the individual Action Plans.

6 MAINTENANCE AND LIMITATIONS

In order to ensure that the proposed improvements and uses are provided suitable fire protection that would minimize risks associated with fire, all components of the fire protection system must be maintained and in place. This FPP, when approved, provides the direction and nexus for that maintenance to occur. Specifically, the HOA for residential areas or other funded management entity for the campus areas would be funded and authorized to ensure that at least annual inspections of the fuel modification areas, construction features, fire protection systems, and infrastructure to ensure that they meet the requirements specified in this FPP.

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7 CONCLUSION

This FPP for the proposed UID Project complies with the requirements of Chula Vista Fire Department and its adopted Fire Codes (2016 California Fire Code (with Appendices B and C) and 2000 Urban-Wildland Interface Code) and Building Codes (2016 CBC, Chapter 7A).

This FPP utilizes a "systems approach" for specifying fire protection measures. The measures consist of the components of fuel modification, structural protection, water supply, fire protection systems, access (ingress/egress), and well-planned emergency response. This FPP provides details regarding the general fire protection features as well as the site specific, restrictive policies that would govern the UID Project with regards to fire protection. In addition, this FPP incorporates and relies on the proposed fire station locations outlined in the 2014 Council-approved, Chula Vista FFMP. UID must comply with this plan.

The requirements and recommendations provided in this FPP have been designed specifically for the proposed improvements adjacent to the wildland urban interface zone at UID.

Ultimately, it is the intent of this FPP to guide the fire protection efforts for the UID in a comprehensive manner. Implementation of the measures detailed in this FPP would reduce the risk of wildfire at this site, would improve the ability to safely relocate people from the area during wildfire events or temporarily shelter them under emergency conditions, and would improve the ability to fight fires on the properties and protect property and neighboring resources irrespective of the cause or location of ignition.

It must be noted that during extreme fire conditions, there are no guarantees that a given structure would not burn. Precautions and minimizing actions identified in this report are designed to reduce the likelihood that fire would impinge upon UID assets or threaten its residents or visitors. Additionally, there are no guarantees that fire would not occur in the area or that fire would not damage property or cause harm to persons or their property. Implementation of the required enhanced construction features provided by the applicable codes and the fuel modification requirements provided in this FPP would reduce the site's vulnerability to wildfire. It would also help accomplish the goal of this FPP to assist firefighters in their efforts to defend existing structures and reduce overall fire risk.

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8 REFERENCES

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APPENDIX A

Photograph Log

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APPENDIX A
University Innovation District Photographs

Photograph 1. Panoramic view looking southwest of agriculture (dry crop) farming occurring in the western half of main campus property.

Photograph 2. Closer view of dry crop farming within the western portion of property. Photograph is taken looking south.

Photograph 3. Natural Diegan coastal sage covered slopes on southeast portion of main campus property. Non-native grasslands –sage scrub habitat is in foreground of picture.

Photograph 4. Close-up view of coastal sage scrub and non-native grasslands. Photograph is taken looking southeast.

APPENDIX B

Fire History

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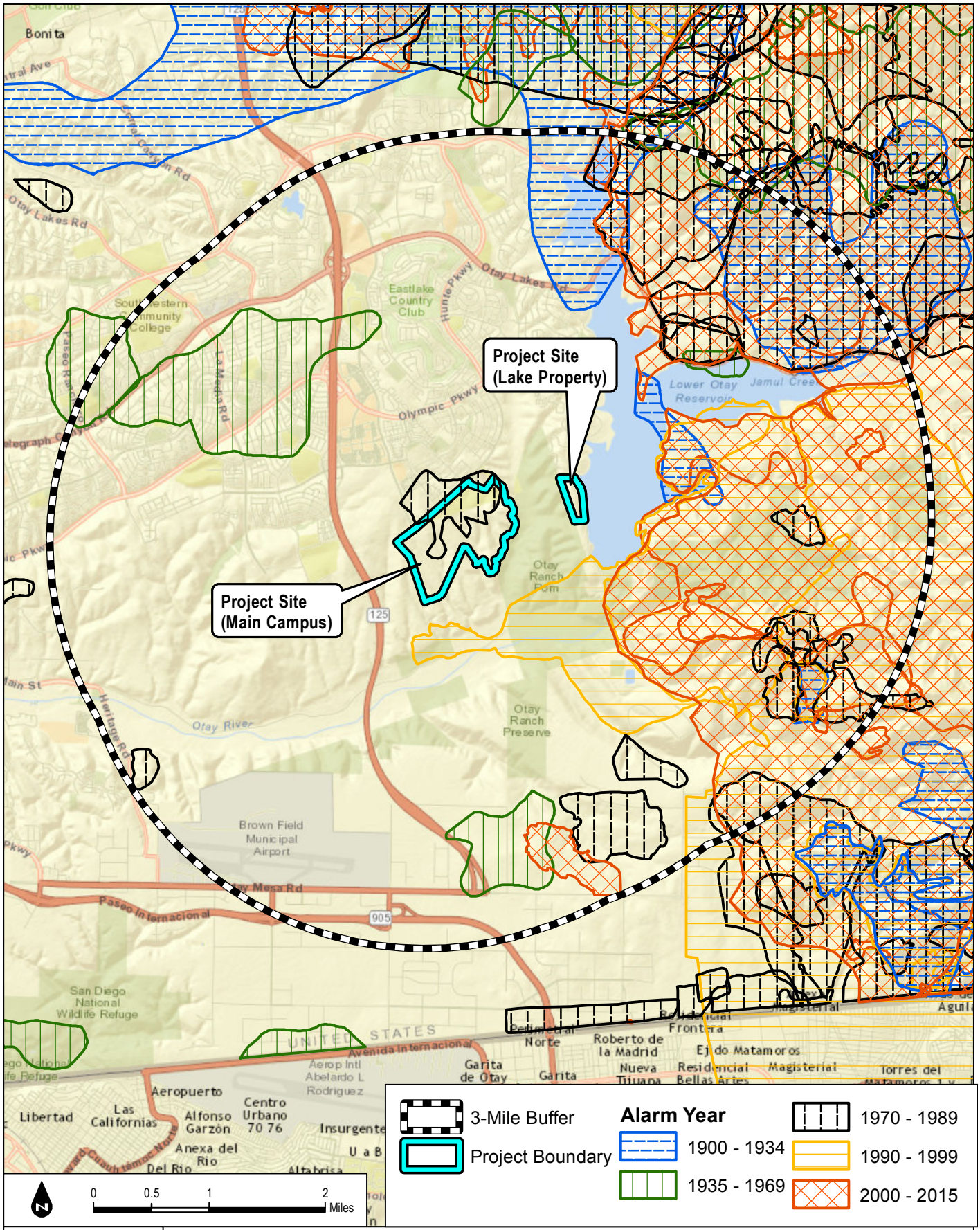

SOURCE: ESRI; Cal Fire 2015

Appendix B

Fire History Exhibit

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University Innovation District Fire Protection Plan

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APPENDIX C

Fire Behavior Modeling Technical Analysis

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APPENDIX C
Fire Behavior Modeling Technical Analysis
University Innovation District

BEHAVEPLUS FIRE BEHAVIOR MODELING

Fire behavior modeling includes a high level of analysis and information detail to arrive at reasonably accurate representations of how wildfire would move through available fuels on a given site. Fire behavior calculations are based on site-specific fuel characteristics supported by fire science research that analyzes heat transfer related to specific fire behavior. To objectively predict flame lengths, spread rates, and fireline intensities, the BehavePlus 5.0.5 fire behavior modeling system was applied using predominant fuel characteristics, slope percentages, and two representative fuel models observed on the University Innovation District (UID) site, which includes the Main Campus Property and Lake Property.

Predicting wildland fire behavior is not an exact science. As such, the movement of a fire will likely never be fully predictable, especially considering the variations in weather and the limits of weather forecasting. Nevertheless, practiced and experienced judgment, coupled with a validated fire behavior modeling system, results in useful and accurate fire prevention planning information.

To be used effectively, the basic assumptions and limitations of BehavePlus must be understood.

- First, it must be realized that the fire model describes fire behavior only in the flaming front. The primary driving force in the predictive calculations is dead fuels less than one-quarter inch in diameter. These are the fine fuels that carry fire. Fuels greater than one inch have little effect while fuels greater than three inches have no effect on fire behavior.
- Second, the model bases calculations and descriptions on a wildfire spreading through surface fuels that are within six feet of the ground and contiguous to the ground. Surface fuels are often classified as grass, brush, litter, or slash.
- Third, the software assumes that weather and topography are uniform. However, because wildfires almost always burn under non-uniform conditions, length of projection period and choice of fuel model must be carefully considered to obtain useful predictions.
- Fourth, the BehavePlus fire behavior computer modeling system was not intended for determining sufficient fuel modification zone widths. However, it does provide the average length of the flames, which is a key element for determining “defensible space” distances for minimizing structure ignition.

Although BehavePlus has some limitations, it can still provide valuable fire behavior predictions which can be used as a tool in the decision-making process. In order to make reliable estimates of fire behavior, one must understand the relationship of fuels to the fire environment and be able

to recognize the variations in these fuels. Natural fuels are made up of the various components of vegetation, both live and dead, that occur on a site. The type and quantity will depend upon the soil, climate, geographic features, and the fire history of the site. The major fuel groups of grass, shrub, trees, and slash are defined by their constituent types and quantities of litter and duff layers, dead woody material, grasses and forbs, shrubs, regeneration, and trees. Fire behavior can be predicted largely by analyzing the characteristics of these fuels. Fire behavior is affected by seven principal fuel characteristics: fuel loading, size and shape, compactness, horizontal continuity, vertical arrangement, moisture content, and chemical properties.

The seven fuel characteristics help define the 13 standard fire behavior fuel models[1] and the more recent custom fuel models developed for Southern California[2]. According to the model classifications, fuel models used in BehavePlus have been classified into four groups, based upon fuel loading (tons/acre), fuel height, and surface to volume ratio. Observation of the fuels in the field (on site) determines which fuel models should be applied in BehavePlus. The following describes the distribution of fuel models among general vegetation types for the standard 13 fuel models and the custom Southern California fuel models:

- Grasses Fuel Models 1 through 3
- Brush Fuel Models 4 through 7, SCAL 14 through 18
- Timber Fuel Models 8 through 10
- Logging Slash Fuel Models 11 through 13

In addition, the aforementioned fuel characteristics were utilized in the recent development of 40 new fire behavior fuel models[3] developed for use in BehavePlus modeling efforts. These new models attempt to improve the accuracy of the standard 13 fuel models outside of severe fire season conditions, and to allow for the simulation of fuel treatment prescriptions. The following describes the distribution of fuel models among general vegetation types for the new 40 fuel models:

- Non-Burnable Models NB1, NB2, NB3, NB8, NB9
- Grass Models GR1 through GR9
- Grass-shrub Models GS1 through GS4
- Shrub Models SH1 through SH9

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1 Anderson, Hal E. 1982. Aids to Determining Fuel Models for Estimating Fire Behavior. USDA Forest Service Gen. Tech. Report INT-122. Intermountain Forest and Range Experiment Station, Ogden, UT.

2 Weise, D.R. and J. Regelbrugge. 1997. Recent chaparral fuel modeling efforts. Prescribed Fire and Effects Research Unit, Riverside Fire Laboratory, Pacific Southwest Research Station. 5p.

3 Scott, Joe H. and Robert E. Burgan. 2005. Standard fire behavior fuel models: a comprehensive set for use with Rothermel's surface fire spread model. Gen. Tech. Rep. RMRS-GTR-153. Fort Collins, CO: U.S. Department of Agriculture, Forest Service, Rocky Mountain Research Station. 72 p.

- Timber-understory Models TU1 through TU5
- Timber litter Models TL1 through TL9
- Slash blowdown Models SB1 through SB4

BehavePlus software was used in the development of this fire protection plan (FPP) in order to evaluate potential fire behavior for the Project Site. Existing site conditions were evaluated, and local weather data was incorporated into the BehavePlus modeling runs.

BEHAVEPLUS FUEL MODEL INPUTS

Dudek utilized BehavePlus software to evaluate fire behavior potential for the UID site. Two weather scenarios were evaluated, including a summer, onshore weather condition (50th percentile) and a more extreme fall, offshore weather condition (97th percentile). BehavePlus software requires site-specific variables for surface fire spread analysis, including fuel type, fuel moisture, wind speed, and slope data. The following provides a description of the input variables used in processing the BehavePlus models for the site. In addition, data sources are cited and any assumptions made during the modeling process are described.

Vegetation/Fuel Models

Vegetation types, which were derived from vegetation mapping data[4] for the project site, were classified into a fuel model. Vegetation mapping data was utilized in field assessment efforts to classify vegetation cover type with an appropriate fuel model. Table 1 provides a description of the fuel model(s) observed on the UID site and their corresponding vegetation classification. This value was used in the modeling analysis for the fuel type on and adjacent to the UID site. Further, while past disturbances (fire and farming) have altered fuel beds on the Main Campus Property, modeling efforts presented herein assume sage scrublands to more mature stand conditions. As such, fuel models representing mature Diegan coastal sage scrubland non-native grasslands were used for fire scenarios.

Table 1
Existing Fuel Model Characteristics

Fuel Model	Description	Tons/acre; Btu/lb	Fuel Bed Depth (Feet)
1	Short, Dry Climate Grass	0.74 tons/acre; 8,000 Btu/lb.	1.0 ft.
SCAL 18	Dry Climate Shrub (sagebrush/buckwheat)	6.4 tons/acre; 9,200 Btu/lb.	3.0 ft.

[4] University Innovation District Biological Technical Report,City of Chula Vista, San Diego County, California, Prepared byHelix Environmental Planning, Inc., April 29, 2016.

Topography

Slope is a measure of angle in degrees from horizontal and can be presented in units of degrees or percent. Slope is important in fire behavior analysis as it affects the exposure of fuel beds. Additionally, fire burning uphill spreads faster than those burning on flat terrain or downhill as uphill vegetation is pre-heated and dried in advance of the flaming front, resulting in faster ignition rates. Slope values were calculated from Google Earth images and are presented in units of percent. Upslope gradients ranged from 5% to 27%.

Weather and Wind Analysis

Historical fuel moisture and wind speed data for the region was utilized in determining appropriate fire behavior modeling inputs for the project site. Specifically, 50th and 97th percentile values derived from the San Miguel Remote Automated Weather Station (RAWS) were determined and utilized in the fire behavior modeling efforts conducted in support of this FPP. RAWS fuel moisture and wind data were processed utilizing the FireFamily Plus software package (v. 4.1) to determine typical onshore air flow conditions (50th percentile) and atypical offshore/Santa Ana fire weather conditions (97th percentile). The San Miguel RAWS[5] is located at approximately 4.5 miles north of the UID site in a similar geographical setting. Data from the San Miguel RAWS was evaluated from May 1 through November 30 for each year between 2002 and 2015.

Wind speed values derived from RAWS data represent 20-foot wind speeds. As such, a wind adjustment factor of 0.4 was utilized to account for vertical differences in wind speed from the 20-foot recording height to mid-flame height prior to BehavePlus modeling efforts. Standard RAWS setup places the anemometer at 20 feet above ground, while wind affecting surface fire spread is that found at mid-flame height. A conservative wind adjustment factor of 0.4 indicates a fuel bed that is unsheltered from the wind with a fuel bed depth roughly 3.0 feet or higher. It should be noted that mid-flame wind speeds may be only 10% of the wind speeds recorded or predicted at 20 feet. Table 2 summarizes the weather and wind input variables used in the BehavePlus modeling efforts.

Table 2
BehavePlus Fire Behavior Model Variables

Variable	Summer Weather (Onshore Flow) 50th Percentile	Peak Weather (Offshore Flow) 97th Percentile
Fire Scenario	1 and 3	2
Fuel Model	1, SCAL 18	1, SCAL 18

[5] San Miguel RAWS: Latitude: 32.68611; Longitude: -116.97833; Elevation 425 feet amsl

Table 2
BehavePlus Fire Behavior Model Variables

Variable	Summer Weather (Onshore Flow) 50th Percentile	Peak Weather (Offshore Flow) 97th Percentile
1h Moisture	8%	2%
10h Moisture	10%	3%
100h Moisture	15%	7%
Live Herbaceous Moisture	62%	30%
Live Woody Moisture	121%	92%
20-ft Wind Speed	8 mph, average sustained wind	12 mph, average sustained wind (20 mph max. sustained high; 32 mph max. gusts)
Wind Adjustment Factor (BehavePlus)	0.4	0.4
Slope Steepness	5% to 27%	5% to 27%

Fire Modeling Scenarios

Focused fire behavior modeling utilizing BehavePlus 5.0.5 was conducted for the Project area. Fuel model typing was completed in the field concurrent with site hazard evaluations. Based on field analysis, three different fire modeling scenarios were evaluated for UID site.

- **Scenario 1:** Typical fire weather with on-shore wind (50th percentile weather conditions) and fire burning in preserved open space upslope from Otay Valley onto mesa top towards the southwestern portion of the Main Campus Property. This fire scenario will no longer exist after future Village 10 is built out.
- **Scenario 2:** Extreme fire weather with off-shore, Santa Ana winds (97th percentile weather conditions) and fire burning in the preserve open space in Salt Creek Canyon towards in southeastern edge of the Main Campus Property.
- **Scenario 3:** Fire weather with on-shore wind (50th percentile weather conditions) and fire burning in preserve open space along the western boundary of the Lake Property. The eastern border of this parcel is bound by Wueste Road and Lower Otay Lake.

FIRE BEHAVIOR MODELING OUTPUTS

As mentioned, the BehavePlus fire behavior modeling software package was utilized in evaluating anticipated fire behavior adjacent to proposed fuel modification zones for the UID Project site. Three focused analyses were completed in existing site conditions during Summer (50th percentile) and Peak (97th percentile) weather scenarios for average sustained and maximum wind speeds and gusts. Four fire behavior variables were selected as outputs from the

BehavePlus analysis conducted for the UID site, and include flame length (feet), rate of spread (mph), fireline intensity (BTU/feet/second), and spotting distance (miles). The aforementioned fire behavior variables are an important component in understanding fire risk and fire agency response capabilities. Flame length, the length of the flame of a spreading surface fire within the flaming front, is measured from midway in the active flaming combustion zone to the average tip of the flames[6]. It is a somewhat subjective and non-scientific measure of fire behavior, is extremely important to fireline personnel in evaluating fireline intensity, and is worth considering as an important fire variable[7]. The information in Table 3 presents an interpretation of flame length and its relationship to fire suppression efforts. Fireline intensity is a measure of heat output from the flaming front, and also affects the potential for a surface fire to transition to a crown fire. Fire spread rate represents the speed at which the fire progresses through surface fuels and is another important variable in initial attack and fire suppression efforts. Spotting fire distance is the distance a firebrand could potentially travel to a receptive fuel bed. The results of fire behavior modeling efforts are presented in Table 4. Identification of modeling run locations is presented graphically in Figure 5 of the FPP.

Table 3
Fire Suppression Interpretation

Flame Length (ft)	Fireline Intensity (Btu/ft/s)	Interpretations
Under 4 feet	Under 100 BTU/ft/s	Fires can generally be attacked at the head or flanks by persons using hand tools. Hand line should hold the fire.
4 to 8 feet	100-500 BTU/ft/s	Fires are too intense for direct attack on the head by persons using hand tools. Hand line cannot be relied on to hold the fire. Equipment such as dozers, pumpers, and retardant aircraft can be effective.
8 to 11 feet	500-1000 BTU/ft/s	Fires may present serious control problems -- torching out, crowning, and spotting. Control efforts at the fire head will probably be ineffective.
Over 11 feet	Over 1000 BTU/ft/s	Crowning, spotting, and major fire runs are probable. Control efforts at head of fire are ineffective.

Source: Based on: Roussopoulos, Peter J.and Von J. Johnson. Help in Making Fuel Management Decisions. Res. Pap. NC-112. St. Paul, MN: U.S. Department of Agriculture, Forest Service, North Central Forest Experiment Station; 1975. 16 p.

[6] Andrews, Patricia L., Collin D. Bevins, and Robert C. Seli. 2008. BehavePlus fire modeling system, version 3.0: User's Guide. Gen. Tech. Rep. RMRS-GTR-106 Ogden, Utah: Department of Agriculture, Forest Service, Rocky Mountain Research Station. 132p.

[7] Rothermel, R.C. 1983. How to Predict the Spread and Intensity of Forest and Range Fires. USDA Forest Service Gen. Tech. Report INT-143. Intermountain Forest and Range Experiment, Ogden, Utah.

Table 4
University Innovation District
BehavePlus Fire Behavior Model Results

Scenario	Flame Length (feet)	Fireline Intensity (BTU/feet/second)	Spread Rate (mph)	Spotting Distance (miles)
Scenario 1: 50th percentile weather conditions (8 mph) on south-facing, 27% slope				
Grasslands (FM 1)	3.2	69	0.57	0.1
Diegan coastal sage scrub (SCAL 18)	11.9	1,231	0.27	0.3
Scenario 2: 97th percentile weather conditions (32 mph gusts) on southeast-facing, 27% slope				
Grasslands (FM 1)	12.7	1,415	8.3	0.7
Diegan coastal sage scrub (SCAL 18)	30.3	9,434	1.5	1.4
Scenario 3: 50th percentile weather conditions (8 mph) on west-facing, 19% slope				
Diegan coastal sage scrub (SCAL 18)	11.6	1,160	0.25	0.3

Note: It should be noted that the results presented in Table 4 depict values based on inputs to the BehavePlus software. Changes in slope, weather, or pockets of different fuel types are not accounted for in this analysis. Further, this modeling analysis assumes a correlation between the project site vegetation and fuel model characteristics. Model results should be used as a basis for planning only, as actual fire behavior for a given location will be affected by many factors, including unique weather patterns, small-scale topographic variations, or changing vegetation patterns.

As presented in Table 4, worst-case fire behavior is expected in sage scrub fuels (Fuel Model SCAL 18) along the eastern edge of the proposed Main Campus Property during a strong (Santa Ana) wind-driven fire event (32 mph wind speed). Under such extreme weather conditions, flame lengths in the sage scrub/grassland fuel bed will vary from 12 to 30 feet with fire spread rates up to 8 mph due to high winds and very low fuel moistures. On the contrary, wildfires occurring during onshore wind patterns (Summer condition) with average wind speeds of 8 mph are expected to be of low to moderate severity with flames lengths reaching 11.9 feet for sage scrub fuels and 3.2 feet for grass fuels. Slower, fire spread rates (less than 1.0 mph) are a result of higher fuel moisture content and reduced wind speeds.

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APPENDIX D-1

Main Campus Property Fuel Modification Plan

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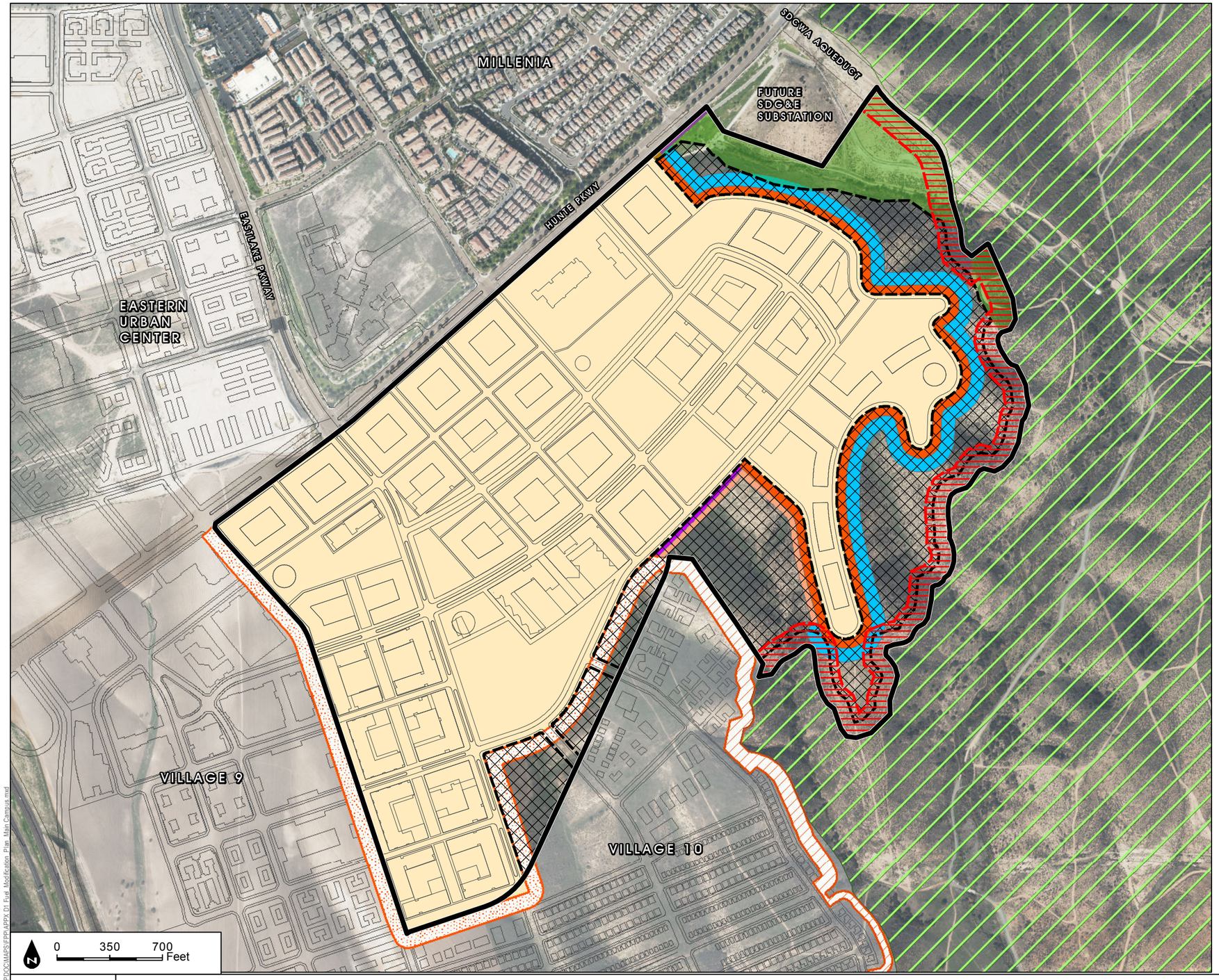

Project Site

Proposed Development

Open Space

Future Development

MSCP Preserve

Fuel Modification Zones (FMZ)

Proposed Village 10 FMZ

150-Ft FMZ Preserve Edge if Future Development Occurs

Roadway Zone (30-Ft Main Campus Property)

Interim FMZ

Zone 1 (irrigated 0'-60')

Zone 2 not adjacent to Preserve (thinned 61'-100')

Zone 2 adjacent to Preserve (thinned 61'-150')

FMZ between Project Site and Villages 9 & 10 (cut grasses)

0 350 700 1,400 Feet

Path: Z:\Projects\9696\01\MAPDOC\MAPS\FPP\APPX D1 Fuel_Modification_Plan_Main Campus.mxd

DUDEK

SOURCE: SANDAG IMAGERY 2014

APPENDIX D-1

Main Campus Property Fuel Modification Plan

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APPENDIX D-2

Lake Property Fuel Modification Plan

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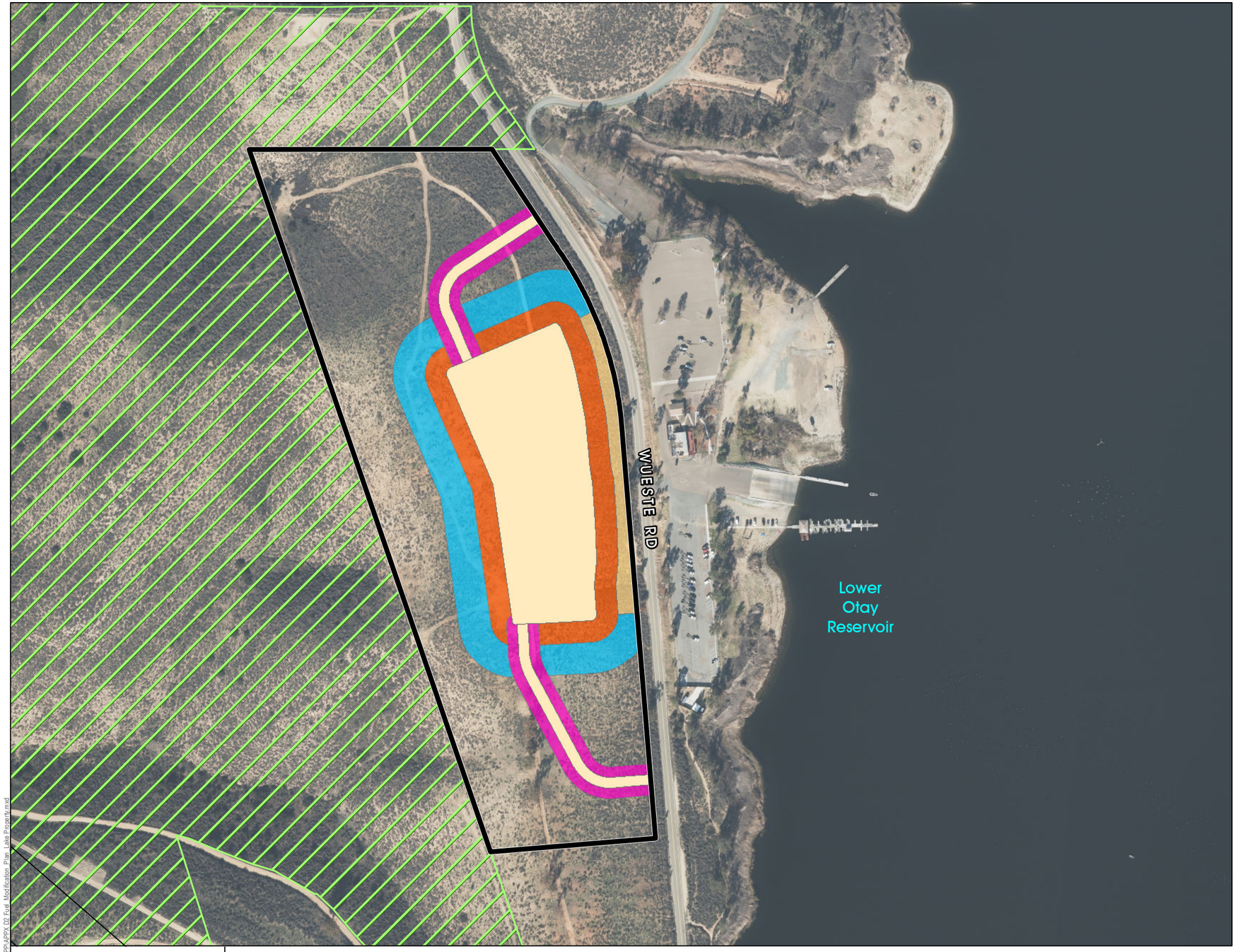

Project Site

Proposed Development

MSCP Preserve

Fuel Modification Zones

Zone 1 (irrigated 0'-60')

Zone 2 not adjacent to Preserve (thinned 61'-100')

Zone 2 adjacent to Preserve (thinned 61'-150')

Roadway Zone (30-Ft Lake Property)

N

0 150 300 600 Feet

SOURCE: SANDAG IMAGERY 2014

DUDEK

APPENDIX D-2

Lake Property Fuel Modification Plan

University Innovation District Fire Protection Plan

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APPENDIX E

Suggested Plant List for Defensible Space

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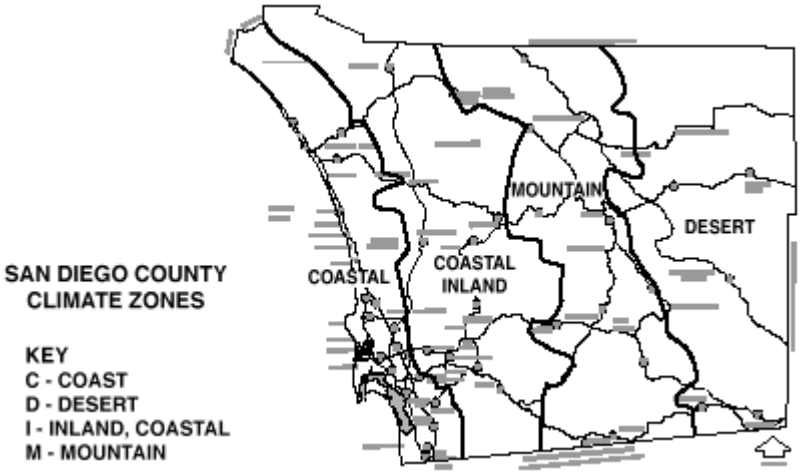
SUGGESTED PLANT LIST FOR ZONES 1 AND 2 [1]

All plants on the following list are considered drought-tolerant in the climate zone indicated. Remember, however, that no plant is totally fire resistant. Drought- tolerant plants are trees, shrubs, groundcovers, and other vegetation that can grow and reproduce with only natural moisture such as rainfall. Occasional irrigation is necessary only in extreme drought situations.



Plants that are indicated by the **"R"** are the least drought-tolerant plants on the list. These plants grow best in riparian areas. Riparian areas can be described as areas where the water table is very near the surface of the ground. Although the ground may be dry, the plants growing there will be green and lush all year around.

When first planting drought-tolerant plants, you need to water deeply to encourage the roots to find natural moisture in the soil. This type of watering needs to continue for at least three years. More water should be provided in summer and less (if any) in the winter. After three years, you should be watering the plants less and depending more on the natural rainfall to provide moisture.

Plants on the list which are noted with ** are San Diego County native or naturalizing plant species. These are types of plants native to or brought into the San Diego County area. These plants are able to grow and reproduce in the local climate and the natural rainfall is enough moisture.

[1] Source: County of San Diego, Department of Planning and Land Use, Building Division. *Fire, Plants, Defensible Space and You*.

BOTANICAL NAME	COMMON NAME	Climate Zone
TREES		
Acer		
platanoides	Norway Maple	M
rubrum	Red Maple	M
saccharinum	Silver Maple	M
saccarum	Sugar Maple	M
macrophyllum	Big Leaf Maple	C/ (R)
Alnus rhombifolia	White Alder	C/I/M (R)
Arbutus		
unedo	Strawberry Tree	All zones
Archontophoenix		
cunninghamiana	King Palm	C
Arctostaphylos spp.**	Manzanita	C/I/D
Brahea		
armata	Blue Hesper Palm	C/D
edulis	Guadalupe Palm	C/D
Ceratonia siliqua	Carob	C/I/D
Cerdidium floridum	Blue Palo Verde	D
Cercis occidentalis**	Western Redbud	C/I/M
Cornus		
nuttallii	Mountain Dogwood	I/M
stolonifera	Redtwig Dogwood	I/M
Eriobotrya		
japonica	Loquat	C/I/D
Erythrina caffra	Kaffirboom Coral Tree	C
Gingko biloba "Fairmount"	Fairmount Maidenhair Tree	I/M
Gleditisia triacanthos	Honey Locust	I/D/M
Juglans		
californica	California Walnut	I
hindsii	California Black Walnut	C/I
Lagerstroemia indica	Crape Myrtle	I/D/M
Ligustrum lucidum	Glossy Privet	I
Liquidambar styraciflua	Sweet Gum	C/I/M
Liriodendron tulipifera	Tulip Tree	I
Melaleuca spp.	Melaleuca	C/I/D
Parkinsonia aculeate	Mexican Palo Verde	C/I
Pistacia		
Chinensis	Chinese Pistache	C/I/D
Vera	Pistachio Nut	I

Pittosporum		
phillyraeoides	Willow Pittosporum	C/I/D
viridiflorum	Cape Pittosporum	C/I
Platanus		
acerifolia	London Plane Tree	All zones
racemosa**	California Sycamore	C/I/M
Populus		
alba	White Poplar	D/M
fremontii**	Western Cottonwood	I
trichocarpa	Black Cottonwood	I/M
Prunus		
xblireiana	Flowering Plum	M
ilicifolia**	Cherry Hollyleaf	C
serrulata 'Kwanzan'	Flowering Cherry	M
yedoensis 'Akebono'	Akebono Flowering Cherry	M
Quercus		
agrifolia**	Coast Live Oak	C/I
engelmannii	Engelmann Oak	I
Rhus		
lancea**	African Sumac	C/I/D
Salix spp.**	Willow	All zones (R)
Tristania conferta	Brisbane Box	C/I
Ulmus		
parvifolia	Chinese Elm	I/D
pumila	Siberian Elm	C/M
Umbellularia californica**	California Bay Laurel	C/I

SHRUBS		
Agave		
americana	Century Plant	D
deserti	Century Plant	D
shawi**	Shawis Century Plant	D
Amorpha fruticosa**	False Indigobush	I
Baccharis**		
glutinosa	Mule Fat	C/I
Carissa grandiflora	Natal Plum	C/I
Ceanothus spp.**	California Lilac	C/I/M
Cistus spp.	Rockrose	C/I/D
Cneoridium dumosum**	Bushrue	C
Comarostaphylis**		
diversifolia	Summer Holly	C
Convolvulus cneorum	Bush Morning Glory	C/I/M
Dalea		
orcuttii	Orcutt's Delea	D
spinosa**	Smoke Tree	I/D
Elaeagnus		
pungens	Silverberry	C/I/M
Encelia**		
californica	Coast Sunflower	C/I
farinose	White Brittlebush	D/I
Eriobotrya		
deflexa	Bronze Loquat	C/I
Eriophyllum		
confertiflorum**	Golden Yarrow	C/I
staechadifolium	Lizard Tail	C
Escallonia spp.	Escallonia	C/I
Feijoa sellowiana	Pineapple Guava	C/I/D
Fouqueria splendens	Ocotillo	D
Galvezia		
juncea	Baja Bush-Snapdragon	C
speciosa	Island Bush-Snapdragon	C
Garrya		
elliptica	Coast Silktassel	C/I
flavescens**	Ashy Silktassel	I/M

Heteromeles arbutifolia**	Toyon	C/I/M
Lantana spp.	Lantana	C/I/D
Lotus scoparius	Deerweed	C/I
Malacothamnus		
clementinus	San Clemente Island Bush Mallow	C
fasciculatus**	Mesa Bushmallow	C/I
Melaleuca spp.	Melaleuca	C/I/D
Mimulus spp.**	Monkeyflower	C/I (R)
Nolina		
parryi	Parry's Nolina	I
parryi ssp. wolfii	Wolf's Bear Grass	D
Photinia spp.	Photinia	All Zones
Pittosporum		
crassifolium		C/I
rhombifolium	Queensland Pittosporum	C/I
tobira 'Wheeleri'	Wheeler's Dwarf	C/I/D
viridiflorum	Cape Pittosporum	C/I
Plumbago auriculata	Cape Plumbago	C/I/D
Prunus		
caroliniana	Carolina Laurel Cherry	C
ilicifolia**	Hollyleaf Cherry	C
lyonii**	Catalina Cherry	C
Puncia granatum	Pomegranate	C/I/D
Pyracantha spp.	Firethorn	All Zones
Quercus		
dumosa**	Scrub Oak	C/I
Rhamus		
californica*	Coffeeberry	C/I/M
Rhaphiolepis spp.	Rhaphiolepis	C/I/D
Rhus		
integrifolia**	Lemonade Berry	C/I
ovata**	Sugarbush	I/M
trilobata**	Squawbush	I
Ribes		
viburnifolium	Evergreen Currant	C/I
speciosum**	Fuschia-Flowering Gooseberry	C/I/D
Rosa		
californica**	California Wild Rose	C/I
minutifolia	Baja California Wild Rose	C/I

	Sambucus spp.**	Elderberry	C/I/M
	Symphoricarpos mollis**	Creeping Snowberry	C/I
	Syringa vulgaris	Lilac	M
	Teucrium fruticans	Bush Germander	C/I
	Xylosma congestum	Shiny Xylosma	C/I

GROUNDCOVERS		
Aptenia cordifolia	Apteria	C
Ceanothus spp.**	California Lilac	C/I/M
Cerastium tomentosum	Snow-in-Summer	All Zones
Cotoneaster spp.	Redberry	All Zones
Drosanthemum hispidum	Rosea Ice Plant	C/I
Dudleya		
brittonii	Brittonis Chalk Dudleya	C
pulverulenta**	Chalk Dudleya	C/I
virens	Island Live Fore-ever	C
Eschscholzia californica**	California Poppy	All Zones
Euonymus fortunei		
'Carrierei'	Glossy Winter Creeper	M
'Coloratus'	Purple-Leaf Winter Creeper	M
Ferocactus viridescens**	Coast Barrel Cactus	C
Helianthemum spp.**	Sunrose	All Zones
Lantana spp.	Lantana	C/I/D
Lasthenia		
californica**	Common Goldfields	I
glabrata	Coastal Goldfields	C
Lupinus spp.**	Lupine	C/I/M
Myoporum spp.	Myoporum	C/I
Pyracantha spp.	Firethorn	All zones
Rosmarinus officinalis	Rosemary	C/I/D
Santolina		
chamaecyparissus	Lavender Cotton	All Zones
virens	Santolina	All Zones
Viguiera laciniata**	San Diego Sunflower	C/I

VINES		
Antigonon leptopus	San Miguel Coral Vine	C/I
Distictis buccinatoria	Blood-Red Trumpet Vine	C/I/D
Keckiella cordifolia**	Heart-Leaved Penstemon	C/I
Lonicera subspicata**	Chaparral Honeysuckle	C/I
Solanum jasminoides	Potato Vine	C/I/D

PERENNIALS		
Coreopsis gigantean	Giant Coreopsis	C
Coreopsis grandiflora	Coreopsis	All Zones
Coreopsis maritime	Sea Dahlia	C
Coreopsis verticillata	Coreopsis	C/I
Heuchera maxima	Island Coral Bells	C/I
Iris douglasiana**	Douglas Iris	C/M
Iva hayesiana**	Poverty Weed	C/I
Kniphofia uvaria	Red-Hot Poker	C/M
Lavandula spp.	Lavender	All Zones
Limonium californicum var. mexicanum	Coastal Statice	C
Oenothera spp.	Primrose	C/I/M
Satureja douglasii	Yerba Buena	C/I
Sisyrinchium bellum	Blue-Eyed Grass	C/I
Sisyrinchium californicum	Golden-Eyed Grass	C
Zauschneria** californica	California Fuschia Hoary	C/I
Zauschneria** cana	California Fuschia	C/I
Zauschneria** ‘Catalina’	Catalina Fuschia	C/I

ANNUALS		
Lupinus spp.**	Lupine	C/I/M

APPENDIX F

Prohibited Plant List

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APPENDIX F
Prohibited Plant List

Prohibited Trees

Botanical Name	Common Name	Resource
Abies species	Fir trees	S
Acacia species	Acacia	HS
Agonis juniperina	Juniper myrtle	S
Araucaria species	Norfolk island Pine	S
Callistemon species	Bottlebrush	H
Cedrus species	Cedar	HS
Chamaecyparis species	False cypress	S
Cinnamomum camphora	Camphor tree	H
Conifers	Evergreen trees	H
Cryptomeria japonica	Japanese cryptomeria	S
Cupressocyparis leylandii	Leylandii cypress	S
Cupressus forbesii	Tecate cypress	S
Cupressus glabra	Arizona cypress	S
Cupressus sempervirens	Italian cypress	S
Cupressus species	Cypress	H
Eucalyptus species	Eucalyptus	HS
Eucalyptus	Eucalyptus species	K
Juniperus species	Juniper	H
Larix species	Larch	S
Olea europea	Olive tree	H
Palmae species	Palms	HS
Parkinsonia aculeata	Mexican palo verde	K
Pinus species	Pine	HS
Pittosporum undulatum	Victorian box	K
Podocarpus species	Fern pine	S
Prunus caroliniana	Carolina cherry laurel	K
Prunus lyonil	Catalina cherry	K
Pseudotsuga menziesii	Douglas fir	S
Quercus engelmannii	Engelmann oak	K
Quercus suber	Cork Oak	K
Schinus molle	California Pepper Tree	H
Tamarix species	Tamarix	C
Taxodium species	Cypress	S
Taxus species	Yew	S
Tsuga species	Hemlock	S
Washingtonia filifera	California Fan Palm	H

Prohibited Groundcovers, Shrubs, and Vines

Botanical Name	Common Name	Resource
Acacia species	Acacia	HS
Achillea millefolium	Common yarrow	K
Adenostoma fasciculatum	Chamise	HS
Adenostoma sparsifolium	Red shanks	HS
Aeonium decorum	Aeonium	K
Aeonium simsii	NCN	K
Ajuga reptans	Carpet bugle	K
Anthemis cotula	Mayweed	H
Aptenia cordifolia x 'red apple'	Red apple	K
Arbutus menziesii	Madrone	H
Arctostaphylos species	Manzanita	H
Artemisia pycnocephala	Beach sagewort	K
Artemisia californica	California sagebrush	HS
Artemisia caucasica	Caucasica artemisia	H
Artemisia pycnocephala	Sandhill sage	H
Artemisia species	Sages	H
Arundo donax	Giant cane	C
Atriplex species	Saltbush	H
Atriplex canescens	Four-wing saltbush	K
Atriplex lentiformis ssp. *breweri*	Brewer saltbush	K
Baccharis pilularis consanguinea	Chaparral bloom	H
Baccharis pilularis var. *pilularis*	Twin peaks	K
Baccharis species	Coyote bush	H
Bambusa species	Bamboo	S
Bougainvillea species	Bougainvillea	H
Brassica nigra	Black mustard	H
Brassica rapa	Yellow mustard	H
Cardaria draba	Hoary cress, perennial peppergrass	H
Carpobrotus species	Ice plant, hottentot fig	H
Carpobrotus chilensis	Sea fig ice plant	K
Chrysanthemum leucanthemum	Oxeye daisy	K
Cirsium vulgare	Wild artichoke	H
Conyza canadensis	Horseweed	H
Coprosma pumila	Prostrate coprosma	S
Cortaderia selloana	Pampas grass	HC
Crassula lactea	NCN	K
Crassula multicava	NCN	K
Crassula ovata	Jade tree	K
Crassula tetragona	NCN	K
Cytisus spp.	Scotch broom, French broom, etc.	HC
Delosperma 'alba'	White trailing ice plant	K

Prohibited Groundcovers, Shrubs, and Vines

Botanical Name	Common Name	Resource
Dodonaea viscosa	Hopseed bush	S
Drosanthemum floribundum	Rosea ice plant	K
Drosanthemum hispidum	NCN	K
Drosanthemum speciosum	Dewflower	K
Eriogonum fasciculatum	Common buckwheat	H
Eriogonum species	Common buckwheat	HS
Eschscholzia mexicana	Mexican poppy	K
Fremontodendron species	Flannel bush	H
Gaillardia x grandiflora	Blanketflower	K
Gazania hybrids	South African daisy	K
Gazania rigens leucolaena	Trailing gazania	K
Hedera helix	English ivy	H
Helix canariensis	English ivy	K
Heterotheca grandiflora	Telegraph plant	HS
Hypericum calycinum	Aaron's beard	K
Juniperus species	Juniper	S
Lactuca serriola	Prickly lettuce	H
Lampranthus aurantiacus	Bush ice plant	K
Lampranthus filicaulis	Redondo creeper	K
Lampranthus spectabilis	Trailing ice plant	K
Limonium pectinatum	NCN	K
Limonium perezii	Sea lavender	K
Lonicera japonica	Japanese honeysuckle	S
Lonicera japonica 'halliana'	Hall's Japanese honeysuckle	K
Lotus corniculatus	Bird's foot trefoil	K
Mahonia species	Mahonia	H
Malephora luteola	Trailing ice plant	K
Miscanthus species	Eulalie grass	S
Muhlenbergia species	Deer grass	S
Nerium oleander	Oleander	K
Nicotania bigelovii	Indian tobacco	H
Nicotania glauca	Tree tobacco	H
Ophiopogon japonicus	Mondo grass	K
Osteospermum fruticosum	Trailing African daisy	K
Penstemon spectabilis	Beard tongue	K
Pennisetum setaceum	Fountain grass	C
Perovskia atriplicifolia	Russian sage	H
Pickeringia 'montana'	Chaparral pea	S
Plantago sempervirens	Evergreen plantain	K
Portulacaria afra	Elephant's food	K
Potentilla tabernaemontani	Spring cinquefoil	K

Prohibited Groundcovers, Shrubs, and Vines

Botanical Name	Common Name	Resource
Rhamnus alaternus	Italian buckhorn	K
Rhus diversiloba	Poison oak (worker/firefighter safety)	H
Rhus laurina	Laurel sumac	H
Rhus lentii	Pink flowering sumac	H
Ricinus communis	Castor bean	H
Romneya coulteri 'white cloud'	White cloud matilija poppy	K
Rosmarinus species	Rosemary	S
Salsola australis	Russian thistle	H
Salvia mellifera	Black sage	S
Salvia species	Sage	H
Sedum acre	Goldmoss sedum	K
Sedum album	Green stonecrop	K
Sedum confusum	NCN	K
Sedum lineare	NCN	K
Sedum x rubrotinctum	Pork and beans	K
Senecio serpens	NCN	K
Solanum xantii	Purple nightshade (toxic)	H
Silybum marianum	Milk thistle	H
Tamarix spp.	Tamarisk	K
Tecomaria capensis	Cape honeysuckle	K
Thuja species	Arborvitae	S
Trifolium hirtum 'hyron'	Hyron rose clover	K
Trifolium fragiferum 'o'connor's	O'Connor's legume	K
Urtica urens	Burning nettle	S
Verbena species	Verbena	K
Vinca major	Periwinkle	H
Vinca minor	Dwarf periwinkle	K
Vulpia myuros 'zorro'	Zorro annual fescue	K
Yucca species	Yucca	K

Exceptions:

1. The use of palm trees is prohibited within any Vegetation Management Zones, however Palm trees may be permitted within the interior of the development (in moderation), with prior approval from the CVFD. Proper spacing, irrigation and maintenance required.
2. Bougainvillea species may be used in certain interior areas (in very moderate amounts), with prior approval from the CVFD.

Notes:

1. Various documents are referenced as sources for plant material information in this list of prohibited plant material. The titles of some of those reference documents suggest that some of the plant materials may be somewhat "Fire Retardant." It must be understood that under various fire conditions, all plant materials will burn. Accordingly, some seemingly "Fire Retardant" plants appear in this Prohibited Plant List.
2. Plant species included on this Prohibited Plant List that also occur on the Landscape Concept Plan may be used in limited quantities in interior locations, with approval of the CVFD."Fire Resistant." Others are documented as "High Fire Risk." Notwithstanding any other descriptors, the preparers of this document have determined that plants in this Prohibited Plant List shall not be used within the Brush Management Zones within this project.
3. All vegetation used in Vegetation Management Zones and elsewhere in this development shall be subject to approval of the CVFD's Fire Marshal.
4. Any deviations from the Prohibited Plant List must be submitted to the CVFD's Fire Marshal for approval

Sources:

C: City of Chula Vista, Fire Retardant and/or Drought Tolerant Plant List, Landscape Manual, November 1994
H: Hunt Research Corporation Report, Otay Ranch, Village 7/2 - Fire Protection Plan, June 14, 2005
S: County of San Diego, Suggested Plant List for Defensible Space, http://www.sdcounty.ca.gov/dplu/dos/UndesirablePlants.pdf
K: Appendix K, City of Chula Vista MSCP Subarea Plan: San Diego County Fire Chief's Association Fuel Modification Zone Plant List, July 15, 1997

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APPENDIX G

Ready, Set, Go! Action Plan

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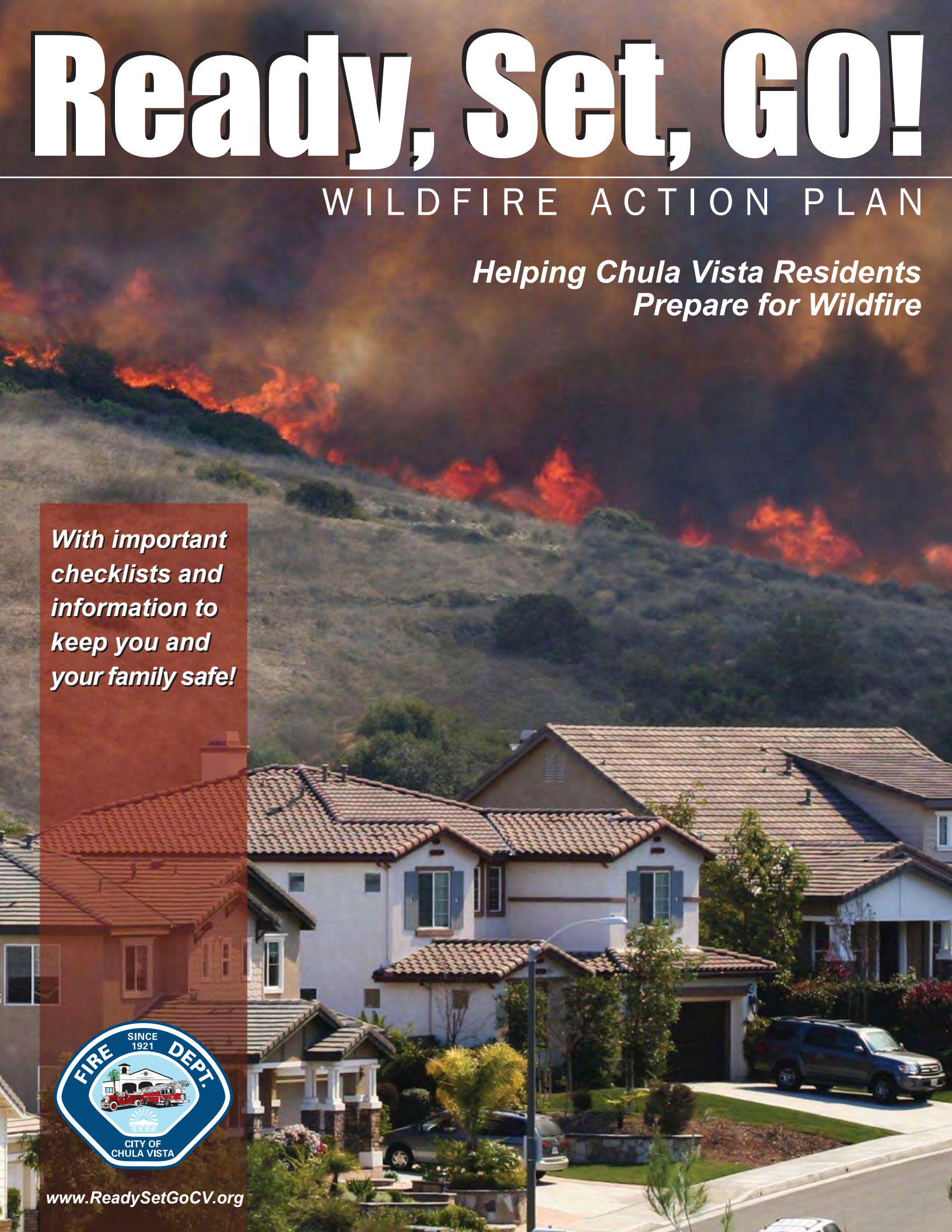
Ready, Set, GO!

WILDFIRE ACTION PLAN

Helping Chula Vista Residents Prepare for Wildfire



With important checklists and information to keep you and your family safe!

SINCE 1921
FIRE DEPT.
CITY OF CHULA VISTA

www.ReadySetGoCV.org

Ready, Set, GO!

WILDFIRE ACTION PLAN

Helping Chula Vista Residents Prepare for Wildfire

Dear Resident,

Chula Vista is a beautiful place to live, but it doesn't come without its risks. Fire season is now a year-round reality, requiring firefighters and residents to constantly be on heightened alert for the threat of wildfire.

Wildland fire, fueled by dry vegetation and driven by hot dry winds, are extremely dangerous and impossible to control. Many homes have been built and landscaped without a full understanding of the impact a fire could have on them. Very few people have adequately prepared their families for a quick evacuation, and many don't realize the potential consequences of choosing to ignore an evacuation order until it is too late.

It's not a question of "if" but "when" the next major wildfire will occur in San Diego County. The Chula Vista Fire Department (CVFD) takes every precaution to help protect you and your property from wildfire. However, in a major wildfire, there will not be enough fire engines or firefighters to defend every home in the early stages of the incident. That's why the most important person in protecting your life and property is not the firefighter, but you. Through advanced planning and preparation, we can all be ready for wildfire.

This guide will give you what you need to successfully plan ahead for a wildfire. To prepare your home, you'll find tips on retrofitting with fire resistant features and creating the necessary defensible space. To prepare you and your family, this guide will provide the checklists and information you need so you can evacuate before the wildfire gets too close. The CVFD always recommends that you comply with evacuation orders resulting from wildfire. When it happens, you'll be ready!

I hope you find this guide to be helpful in creating a heightened awareness and a more fire-safe environment for you and your family.

Justin Gipson
Deputy Fire Chief / Fire Marshal

INSIDE

CITY OF CHULA VISTA

Living in the Wildland Urban Interface and the Ember Zone

If you live next to a natural area, the **Wildland Urban Interface**, you should provide firefighters with the defensible space they need to protect your home. The buffer zone you create by removing weeds, brush, and other vegetation helps keep the fire away from your home and reduces the risk from flying embers.

A home within one mile of a natural area is in the **Ember Zone**. Wind-driven embers can attack and destroy homes or neighborhoods far from the actual flame front of the wildland fire. You and your home must be prepared well before a fire occurs.

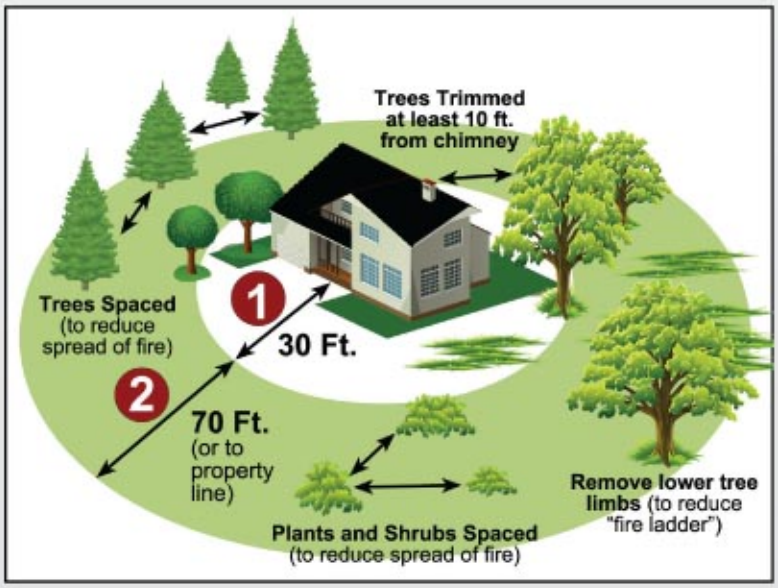
Get Ready

Create a Defensible Home

A defensible home has the greatest potential for survivability in the event of a wildfire during average wind conditions. Defensible homes are those that are in compliance with defensible space requirements or a fuel modification program and have been hardened in accordance with Chapter 7A of the California Building Code.

What is Defensible Space ?

Defensible space is the required distance between a structure and the wildland area that, under normal conditions, creates a sufficient buffer to slow or halt the spread of wildfire to a structure. It protects the home from igniting due to direct flame impingement and radiant heat. Compliance is essential for structure survivability during wildfire conditions. Defensible space requirements apply to all structures regardless of the year built.



ZONE 1

Extends 30 feet out from buildings, structures, decks, etc.

- Remove all dead or dying vegetation.
- Trim tree canopies regularly to keep their branches a minimum of 10 feet from structures and other trees.
- Remove leaf litter (dry leaves and pine needles) from yard, roof, and rain gutters.
- Relocate woodpiles or other combustible materials into Zone 2.
- Remove combustible material and vegetation from around and under decks.
- Remove or prune vegetation near windows.
- Remove "ladder fuels" (low-level vegetation that allows the fire to spread from the ground to the tree canopy). Create a separation between low-level vegetation and tree branches. This can be done by reducing the height of low-level vegetation and/or trimming low tree branches.
- Keep plants and shrubs below 18 inches high.

ZONE 2

Extends 30-100 feet out from buildings, structures, and decks.

Reduce the continuity of fuels by removing dead material and removing/thinning vegetation. Minimum spacing between vegetation is 3 times the dimension of the plant.

- Remove "ladder fuels."
- Cut or mow annual grass down to a maximum height of 4 inches.
- Trim tree canopies regularly to keep their branches a minimum of 10 feet from other trees.

Note: If your property line is less than 100 feet from your home and you cannot maintain 100 feet of defensible space, your home may not be defensible. You are only responsible for defensible space on your own property.

What is a hardened home?

Construction materials and the quality of the defensible space surrounding a home are what give it the best chance to survive a wildfire. Embers from a wildfire will find the weak link in your home's fire protection scheme and gain the upper hand because of a small, overlooked or seemingly inconsequential factor. However, there are measures you can take to safeguard your home from wildfire. While you may not be able to accomplish all the measures listed below, each will increase your home's, and possibly your family's safety and survival during a wildfire.

ROOFS

Roofs are the most vulnerable surface where embers land because they can lodge and start a fire. Roof valleys, open ends of barrel tiles, and rain gutters are all a point of entry.

EAVES

Embers gather under open eaves and ignite exposed wood or other combustible material.

VENTS

Embers enter the attic or other concealed spaces and ignite combustible materials. Vents in eaves and cornices are particularly vulnerable, as are any unscreened vents.

WALLS

Combustible siding and other combustible or overlapping materials provide a surface and crevice for embers to nestle and ignite.

WINDOWS & DOORS

Embers can enter gaps in doors, including garage doors. Plants or combustible storage near windows can be ignited from embers and generate heat that can break windows and/or melt combustible frames.

BALCONIES & DECKS

Embers collect in or on combustible surfaces or undersides of decks and balconies, ignite the material, and enter the home through walls or windows.

To harden your home even further, consider protecting your homes with a residential fire sprinkler system. In addition to extinguishing a fire started by an ember that enters your home, it also protects you and your family 24/7, year-round, from any fire that may start in your home.

Tour Wildfire-Ready Homes

Address:
Make sure your address is clearly visible from the street.

Home Site and Yard:
Ensure you have at least a 100-foot radius of defensible space (cleared vegetation) around your home. Note that even more clearance may be needed for homes in severe hazard areas. This means looking past what you own to determine the impact a common slope or neighbor's yard will have on your property during a wildfire.

Cut dry weeds and grass before noon when temperatures are cooler to reduce the chance of sparking a fire.

Landscape with fire-resistant plants that have a high moisture content and are low-growing.

Keep woodpiles, propane tanks and combustible materials away from your home and other structures such as garages and sheds.

Ensure that trees are far away from power lines.

Inside:
Keep working fire extinguishers on hand.

Install smoke alarms on each level of your home and within bedrooms. Test them monthly and change the batteries twice a year.

Roof:
Your roof is the most vulnerable part of your home because it can easily catch fire from windblown embers. Homes with wood-shake or shingle roofs are at a higher risk of being destroyed during a wildfire than homes with fire-resistant roofs.

Build your roof or re-roof with fire-resistant materials that include composition, metal or tile. Block any spaces between roof decking and covering to prevent ember intrusion.

Cut any tree branches within ten feet of your roof.

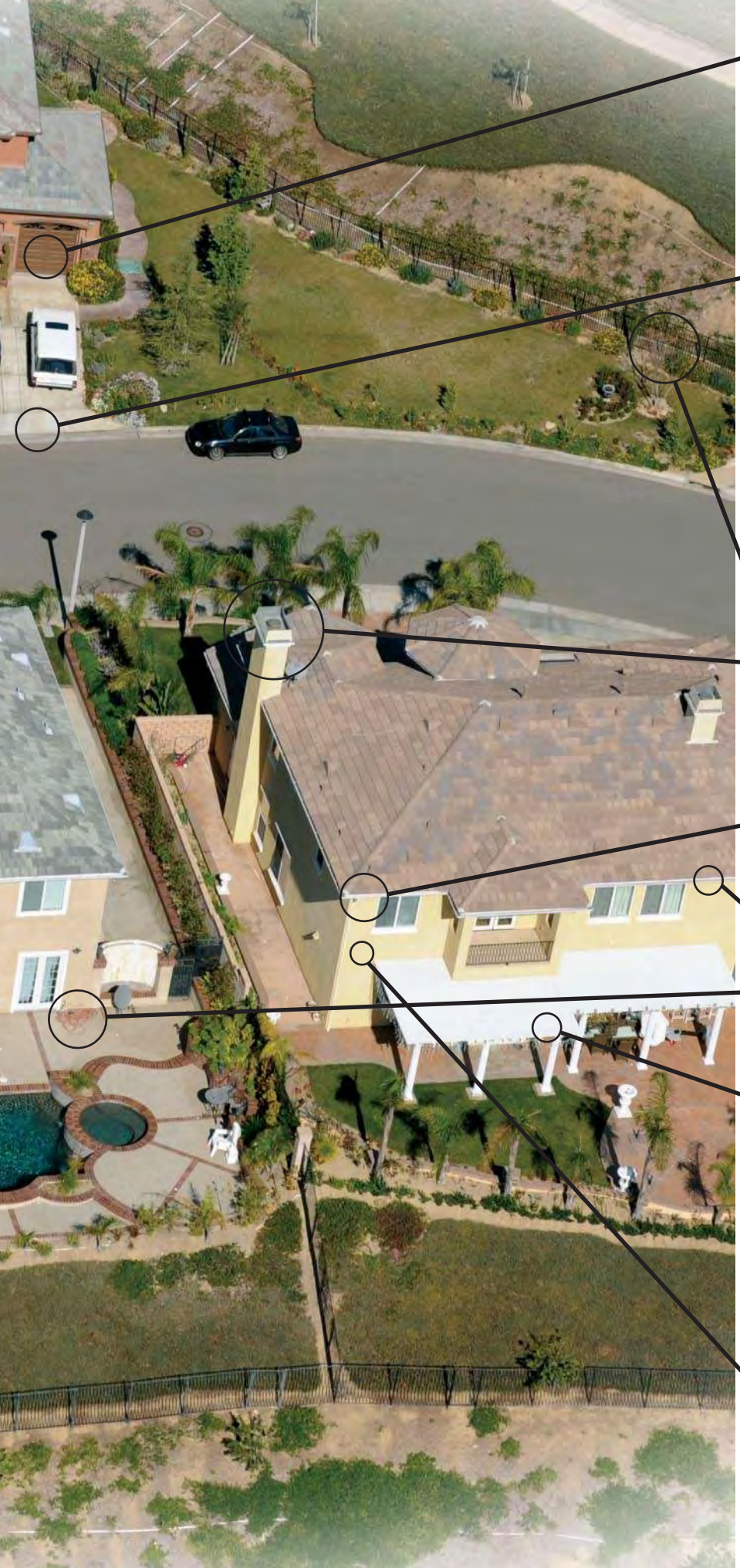
Vents:
Vents on homes are particularly vulnerable to flying embers. All vent openings should be covered with 1⁄8-inch metal mesh. Do not use fiberglass or plastic mesh because they can melt and burn.

Attic vents in eaves or cornices should be baffled or otherwise protected to prevent ember intrusion (mesh is not enough).

Windows:
Heat from a wildland fire can cause windows to break even before the home ignites. This allows burning embers to enter and start internal fires. Single-paned and large windows are particularly vulnerable.

Install dual-paned windows, with the exterior pane of tempered glass, to reduce the chance of breakage in a fire.

Limit the size and number of windows in your home that face large areas of vegetation.



Garage:
Have a fire extinguisher and tools such as a shovel, rake, bucket and hoe available for fire emergencies.

Install a solid door with self-closing hinges between living areas and the garage. Install weather stripping around and under doors to prevent ember intrusion.

Store all combustibles and flammable liquids away from ignition sources.

Driveways and Access Roads:
Driveways should be designed to allow fire and emergency vehicles and equipment to reach your house.

Access roads should have a minimum 10-foot clearance on either side of the traveled section of the roadway and should allow for two-way traffic.

Ensure that all gates open inward and are wide enough to accommodate emergency equipment.

Trim trees and shrubs overhanging the road to a minimum of 13 1⁄2 feet to allow emergency vehicles to pass.

Non-Combustible Fencing:
Make sure to use non-combustible fencing to protect your home during a wildland fire.

Chimney:
Cover your chimney outlet with a non-flammable screen of 1⁄4-inch wire mesh or smaller to prevent embers from escaping and igniting a fire.

Make sure that your chimney is at least 10 feet away from any tree branches.

Non-Combustible Boxed In Eaves:
Box in eaves with non-combustible materials to prevent accumulation of embers.

Rain Gutters:
Screen or enclose rain gutters to prevent accumulation of plant debris. If not screened, keep gutters clear of debris.

Water Supply:
Have multiple garden hoses that are long enough to reach any area of your home and other structures on your property.

Deck/Patio Cover:
Use heavy timber or non-flammable construction material for decks and patio covers.

Enclose the underside of balconies and decks with fire-resistant materials to prevent embers from blowing underneath, lodging and starting a fire.

Keep your deck clear of combustible items, such as baskets, dried flower arrangements and other debris.

The decking surface must be ignition resistant if it's within 10 feet of the home.

Walls:
Wood products, such as boards, panels or shingles, are common siding materials. However, they are combustible and not safe choices for fire-prone areas.

Build or remodel with fire-resistant building materials, such as brick, cement, masonry or stucco.

Be sure to extend materials from foundation to roof.

Get Set

Prepare Your Family: Create your own Action Plan

Now that you've done everything you can to protect your house, its time to prepare your family. Use these checklists to prepare your Wildfire Action Plan. Each family's plan will be different, depending on the situation. Once you finish your plan, rehearse it regularly with your family and keep it in a safe and accessible place for quick implementation.

For more information on property and home preparedness before a fire threat, review the preparedness checklist on the Firewise Communities website at www.firewise.org.

Get Set: Checklists

Before the Fire Starts

- ☐ Create a Personal Wildfire Evacuation Plan that includes meeting locations and communication plans and rehearse it regularly. Include the evacuation of large animals such as horses if applicable. (See page 10 for worksheet.)
- ☐ Have fire extinguishers on hand and train your family how to use them.
- ☐ Ensure that your family knows where your gas, electric, and water main shut-off controls are and how to use them.
- ☐ Plan several different escape routes.
- ☐ Designate an emergency meeting location outside the fire hazard area.
- ☐ Appoint an out-of-area friend or relative as a point of contact so you can communicate with family members who have relocated.
- ☐ Maintain a list of emergency contact numbers posted near your phone and in your emergency supply kit (see page 10).
- ☐ Have a portable radio or scanner so you can stay updated on the fire.
- ☐ Register with Alert San Diego. You can include your cell phone number and/or your email address to receive Reverse 9-1-1 notifications. In an emergency, this system automatically calls and emails registered users with updates and emergency information.
  Register at www.ReadySanDiego.org
- ☐ ***Tell your neighbors about Ready, Set, GO! and your Wildfire Action Plan.***

Create an Emergency Supply Kit

The American Red Cross recommends every family have an emergency supply kit assembled long before a wildland fire or other emergency occurs. Use the checklist below to help assemble yours. For more information on emergency supplies, visit the American Red Cross Web site at www.redcross.org.

- ☐ Three-day supply of water (one gallon per person per day)
- ☐ Non-perishable food for all family members and pets (three-day supply)
- ☐ First aid kit
- ☐ Flashlight, battery-powered radio, and extra batteries
- ☐ An extra set of car keys
- ☐ Cash or traveler's checks
- ☐ Sanitation supplies
- ☐ Extra eyeglasses or contact lenses
- ☐ Important contact numbers (see page 10)
- ☐ Map marked with evacuation routes
- ☐ Extra prescriptions or special medications
- ☐ Disks or devices that contain back-up information from computers or hard drives
- ☐ Chargers for cell phones, laptops, etc.
- ☐ *Keep a pair of old shoes and a flashlight handy in case of a sudden evacuation at night.*
- ☐ *Keep an extra Emergency Supply Kit in your car in case you can't get to your home because of fire.*

As the Fire Approaches:

☐ *Grab your Emergency Supply Kit*

(See page 8 for checklist.)

- ☐ Locate other items of value that you may want to bring (that are not in your kit, such as important documents, family photos, irreplaceable items, and easily carried valuables). Put your kit and all other items in a place where you can grab them in a hurry.

- ☐ Keep the six "Ps" ready, in case an immediate evacuation is required (those not included in your kit):
  - ☐ People and pets
  - ☐ Papers, phone numbers, and important documents
  - ☐ Prescriptions, vitamins, and eyeglasses
  - ☐ Pictures and irreplaceable memorabilia
  - ☐ Personal computers (hard drive and disks)
  - ☐ "Plastic" (credit cards, ATM cards) and cash

☐ *Alert Family and Neighbors*

(See page 10 for worksheet.)

☐ *Get Prepared to Leave*

- ☐ Dress in appropriate clothing (clothing made from natural fibers, such as cotton, and work boots). Have goggles and a dry bandana or particle mask handy.

- ☐ Stay tuned to your TV or local radio stations for updates, or check the City of Chula Vista's website at ***www.chulavistaca.gov***. In an emergency, the website will continually have updates.

- ☐ Remain close to your house, drink plenty of water and know where your family and pets are at all times.

☐ *Evacuate if asked to do so or if the threat is close to you.*

- ☐ Follow your Personal Wildfire Evacuation Plan so everyone in your family knows where to go to find each other. (See page 10 for worksheet.)

☐ *OUTSIDE CHECKLIST*

- ☐ Gather up flammable items from the exterior of the house and bring them inside (patio furniture, children's toys, door mats, etc.) or place them in your pool.

- ☐ Turn off propane tanks.

- ☐ Connect garden hoses to outside taps.

- ☐ Don't leave sprinklers on or water running, they can waste critical water pressure.

- ☐ Leave exterior lights on.

- ☐ Back your car into the garage. Shut doors and roll up windows.

- ☐ Have a ladder available.

- ☐ Patrol your property and extinguish all small fires.

- ☐ Seal attic and ground vents with pre-cut plywood or commercial seals.

☐ *INSIDE CHECKLIST*

- ☐ Shut all windows and doors.

- ☐ Remove flammable window shades and curtains and close metal shutters.

- ☐ Remove lightweight curtains.

- ☐ Move flammable furniture to the center of the room, away from windows and doors.

- ☐ Shut off gas at the meter. Turn off pilot lights.

- ☐ Leave your lights on so firefighters can see your house under smoky conditions.

- ☐ Shut off the air conditioning.

Personal Wildfire Evacuation Plan

Write up your Personal Wildfire Evacuation Plan and post it in a location where every member of your family can see it. Rehearse it with your family.

During high fire danger days in your area, monitor your local media for information and be ready to implement your plan. Hot, dry, and windy conditions create the perfect environment for a wildfire.

Emergency Contacts:

9-1-1 EMERGENCY	***619-691-5151*** POLICE (NON-EMERGENCY)	***619-691-5029*** FIRE (NON-EMERGENCY)	***619-397-6000*** PUBLIC WORKS (NON-EMERGENCY)
NEAREST HOSPITAL	PHONE	NAME	PHONE
NAME	PHONE	NAME	PHONE

School Contacts:

NAME	PHONE	NAME	PHONE

Family Contacts:

NAME	PHONE	NAME	PHONE
NAME	PHONE	NAME	PHONE

Friends or Neighbors:

NAME	PHONE	NAME	PHONE

WHEN to go:

_____

WHERE to go (meeting location for all family members):

_____

HOW to get there:

_____

_____

WHAT to bring *(insurance papers, important documents, photos, prescriptions, etc.)**:***

_____

_____

WHO to tell (before leaving and after arrival to new location):

_____

Leave Early

By leaving early, you give your family the best chance of surviving a wildfire. You also help firefighters by keeping roads clear of congestion, enabling them to move more freely and do their job.

WHEN TO LEAVE

Leave early enough to avoid being caught in fire, smoke or road congestion. Don't wait to be told by authorities to leave. In an intense wildfire, they may not have time to knock on every door. If you are advised to leave, don't hesitate!

WHERE TO GO

Leave to a predetermined location (it should be a low-risk area, such as a well-prepared neighbor or relative's house, a Red Cross shelter or evacuation center, motel, etc.)

HOW TO GET THERE

Have several travel routes in case one route is blocked by the fire or by emergency vehicles and equipment. Choose an escape route away from the fire.

WHAT TO TAKE

Take your Emergency Supply Kit containing your family and pet's necessary items, such as cash, water, clothing, food, first aid kits, and medications. Also, don't forget valuables such as your computer, photos and important documents.

Organize your family members and make arrangements for your pets.

If you are trapped: Survival Tips

- Shelter away from outside walls.
- Wear long sleeves and long pants made of natural fibers such as cotton.
- Stay hydrated.
- Ensure you can exit the home if it catches fire (remember if it's hot inside the house, it is four to five times hotter outside).
- After the fire has passed, check your roof and extinguish any fires, sparks or embers.
- Check inside the attic for hidden embers.
- Patrol your property and extinguish small fires.
  If there are fires that you cannot extinguish with a small amount of water or in a short period of time, call 9-1-1.

Residential Safety Checklist

BE PREPARED.

Tips to Help Your Family and Property Survive During a Wildland Fire

HOME

YES	NO	
☐	☐	Does your home have a metal, composition, or tile (or other non-combustible) roof with capped ends and covered fascia?
☐	☐	Are the rain gutters and roof free of leaves, needles and branches?
☐	☐	Are all vent openings screened with 1/8 inch (or smaller) mesh metal screen?
☐	☐	Does the house have non-combustible siding material?
☐	☐	Are the eaves “boxed in” and the decks enclosed?
☐	☐	Are the windows made of at least double-paned or tempered glass?
☐	☐	Are the decks, porches and other similar areas made of non-combustible material and free of easily combustible material (e.g. plastic furniture)?
☐	☐	Is all firewood at least 30 feet from the house?
☐	☐	Are approved spark arrestors on chimneys?

DEFENSIBLE SPACE

YES	NO	
☐	☐	Is dead vegetation cleared to the recommended defensible space area? (Consider adding distance due to slope of property.)
☐	☐	Is there separation between shrubs?
☐	☐	Are ladder fuels removed?
☐	☐	Is there a clean and green area extending at least 30 feet from the house?
☐	☐	Is there a non-combustible area within five feet of the house?
☐	☐	Is there separation between tree limbs and undergrowth?

EMERGENCY ACCESS

YES	NO	
☐	☐	Is the home address visible from the street?
☐	☐	Is the home address made of fire-resistant materials?
☐	☐	Are street signs present at every intersection leading to the house?
☐	☐	Are street signs made of fire-resistant materials?
☐	☐	Is flammable vegetation cleared within 10 feet of the driveway and are overhanging obstructions removed?
☐	☐	If a long driveway is present, does it have a suitable turnaround area?

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CITY OF CHULA VISTA

Chula Vista Fire Department
276 Fourth Avenue
Chula Vista, CA 91910