EXTERIOR NOISE ANALYSIS REPORT

SOUTHVIEW EAST

Otay Mesa, CA

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1.0 INTRODUCTION

This report evaluates noise affecting and produced by the proposed "Southview East" multi-family residential condominium project in the western portion of the Otay Mesa community of the City of San Diego, California (Figure 1). The 21.174-acre project site is vacant and is situated east of Caliente Avenue, bounded on the north by California State Route (SR) 905, and bisected by the future east extension of Airway Road. The project would consist of 86 multi-family dwelling units in 19 three-story 3-, 4-, and 5-plex buildings.

Surrounding land uses include SR 905 to the north and vacant land in all other directions. The primary noise source affecting the project site is vehicular traffic on SR 905, Caliente Avenue, and Airway Road.

Future exterior roadway traffic noise levels on the project site, as designed with the project noise barrier described in Section 4.1, would range from below 50 dBA CNEL in the center of the southerly subdivision to approximately 65 dBA CNEL at the ground floor of the northeast corner of the northerly subdivision. Traffic noise levels at outdoor areas of frequent use would be 65 dBA CNEL or less. Traffic noise levels at project outdoor usable space would comply with the City of San Diego traffic noise significance threshold of 65 dBA CNEL.

Because future exterior traffic noise levels would exceed 60 dBA CNEL at the project building façades, interior noise levels in habitable rooms could exceed the California Code of Regulations, Title 24: Noise Insulation Standard and City of San Diego General Plan Noise Compatibility Guidelines requirement of 45 dBA CNEL. To avoid a potential interior noise impact, as a condition of project approval, an interior noise analysis would be required to be approved by the City's Building Inspection Department upon application for a building permit.

This interior noise analysis must identify the sound transmission loss requirements for building façade elements (windows, walls, doors, and exterior wall assemblies) necessary to limit interior noise in habitable rooms to 45 dBA CNEL or below. Upgraded windows and/or doors with Sound Transmission Class (STC) ratings of 30 or higher may be necessary. If the interior noise limit can be achieved only with the windows closed, the building design must include mechanical ventilation that meets California Building Code (CBC) requirements. Worst-case noise levels, either existing or future, must be used.

With the implementation of the findings of the interior noise analysis, interior noise levels in habitable rooms would be 45 dBA CNEL or below and comply with the California Code of Regulations, Title 24: Noise Insulation Standard City of San Diego General Plan Noise Compatibility Guidelines requirement. The project would result in a less than significant interior noise impact with project features incorporated in accordance with the interior noise analysis.

This noise analysis report satisfies OMCPU Final Program EIR mitigation measures NOI-1, NO-3, and NOI-4. The interior noise analysis will satisfy OMCPU Final Program EIR mitigation measure NOI-2.





The operational noise level at property lines within 40 feet of HVAC units could exceed the nighttime noise limit of 45 dBA Leq at City of San Diego multifamily residential property lines. Placing all HVAC units over 40 feet from project property lines, or specifying HVAC units producing a sound power level of 63 dBA Leq or below, would reduce property line noise levels to 45 dBA Leq or below. With this noise mitigation, project operational noise levels would comply with City of San Diego multifamily residential property line noise limits.

Project-generated traffic noise level increases along project roadway segments would be lower than the thresholds of significance for project-generated traffic-related noise. The impact is less than significant. No mitigation is necessary.

If residences are constructed and a certificate of occupancy has been granted on the properties adjacent to the project on the west during a time when grading is occurring within 315 feet of the west project property line, the construction noise level of 80 dBA Leq (12 hours) at the west project property line would exceed the City of San Diego construction noise limit of 75 dBA Leq (12 hours). Placement of a 10-foot-high noise barrier along the full west property line, or time restrictions on construction activity within 315 feet of the west property line, would reduce construction noise levels at the west project property line to 75 dBA Leq (12 hours) or below. With this noise mitigation, project construction noise levels would comply with City of San Diego construction noise limits.

Project construction noise would exceed the 60 dBA Leq noise limit at coastal California gnatcatcher habitat during the breeding season of March 1 through August 15, if and when the adjacent habitat is occupied. Project site grading and site development would occur outside the breeding season or while the habitat is unoccupied. With this restriction, project construction noise would comply with noise limits at noise-sensitive wildlife habitat.

1.1 NOISE BACKGROUND

Noise is generally defined as loud, unpleasant, unexpected, or undesired sound, typically associated with human activity and that interferes with or disrupts normal activities. The human environment is characterized by a certain consistent noise level which varies with each area. This is called ambient noise. Although exposure to high noise levels has been demonstrated to cause hearing loss, the principal human response to environmental noise is annoyance. The response of individuals to similar noise events is diverse and influenced by the type of noise, perceived importance of the noise and its appropriateness in the setting, time of day and type of activity during which the noise occurs, and sensitivity of the individual.

Sound is a physical phenomenon consisting of minute vibrations that travel through a medium, such as air, and are sensed by the human ear. Sound is generally characterized by several variables, including frequency and intensity. Frequency describes the sound's pitch and is measured in cycles per second, or hertz (Hz), whereas intensity describes the sound's loudness and is measured in decibels (dB). Decibels are measured using a logarithmic scale. A sound level of 0 dB is approximately the threshold of human hearing and is barely audible under extremely quiet listening conditions. Normal speech has a sound level of approximately 60 dB. Sound levels above about 120 dB begin to be felt inside the human ear as



discomfort and eventually as pain at still higher levels. The minimum change in the sound level of individual events that an average human ear can detect is about 3 dB. The average person perceives a change in sound level of about 10 dB as a doubling (or halving) of the sound's loudness; this relation holds true for sounds of any loudness. Sound levels of typical noise sources and environments are provided in Table 1.

Because of the logarithmic nature of the decibel unit, sound levels cannot be added or subtracted directly and are somewhat cumbersome to handle mathematically. A simple rule is useful, however, in dealing with sound levels. If a sound's intensity is doubled, the sound level increases by 3 dB, regardless of the initial sound level. Thus, for example, 60 dB + 60 dB = 63 dB, and 80 dB + 80 dB = 83 dB.

The normal human ear can detect sounds that range in frequency from about 20 Hz to 20,000 Hz. However, all sounds in this wide range of frequencies are not heard equally well by the human ear, which is most sensitive to frequencies in the range of 1,000 Hz to 4,000 Hz. This frequency dependence can be taken into account by applying a correction to each frequency range to approximate the human ear's sensitivity within each range. This is called A-weighting and is commonly used in measurements of community environmental noise. The A-weighted sound pressure level (abbreviated as dBA) is the sound level with the "A-weighting" frequency correction. In practice, the level of a noise source is conveniently measured using a sound level meter that includes a filter corresponding to the dBA curve.

Because community noise fluctuates over time, a single measure called the Equivalent Sound Level (Leq) is often used to describe the time-varying character of community noise. The Leq is the energy-averaged A-weighted sound level during a measured time interval, and is equal to the level of a continuous steady sound containing the same total acoustical energy over the averaging time period as the actual time-varying sound. The averaging time period used in this report is one hour unless otherwise specified.

Additionally, it is often desirable to know the acoustic range of the noise source being measured. This is accomplished through the Lmax and Lmin indicators, which represent the root-mean-square maximum and minimum noise levels obtained during the measurement interval. The Lmin value obtained for a particular monitoring location is often called the "acoustic floor" for that location.

To describe the time-varying character of environmental noise, the statistical noise descriptors L10, L50, and L90 are commonly used. They are the noise levels equaled or exceeded during 10, 50, and 90 percent of a stated time, respectively. Sound levels associated with L10 typically describe transient or short-term events, whereas levels associated with L90 describe the steady-state (or most prevalent) noise conditions.

Another sound measure known as the Community Noise Equivalent Level (CNEL) is an adjusted average A-weighted sound level for a 24-hour day. It is calculated by adding a 5-dB adjustment to sound levels during evening hours (7:00 p.m. to 10:00 p.m.) and a 10-dB adjustment to sound levels during nighttime hours (10:00 p.m. to 7:00 a.m.). These adjustments compensate for the increased sensitivity to noise during the typically quieter evening and nighttime hours. The CNEL is used by the State of California and the City to evaluate land-use compatibility with regard to noise.



Noise Source (at Given Distance)	Noise Environment	A-Weighted Sound Level	Human Judgment of Noise Loudness (Relative to Reference Loudness of 70 Decibels*)
Military Jet Takeoff with Afterburner (50 ft)	Carrier Flight Deck	140 Decibels	128 times as loud
Civil Defense Siren (100 ft)		130	64 times as loud
Commercial Jet Take-off (200 ft)		120	32 times as loud Threshold of Pain
Pile Driver (50 ft)	Rock Music Concert Inside Subway Station (New York)	110	16 times as loud
Ambulance Siren (100 ft) Newspaper Press (5 ft) Gas Lawn Mower (3 ft)		100	8 times as loud Very Loud
Food Blender (3 ft) Propeller Plane Flyover (1,000 ft) Diesel Truck (150 ft)	Boiler Room Printing Press Plant	90	4 times as loud
Garbage Disposal (3 ft)	Noisy Urban Daytime	80	2 times as loud
Passenger Car, 65 mph (25 ft) Living Room Stereo (15 ft) Vacuum Cleaner (10 ft)	Commercial Areas	70	Reference Loudness Moderately Loud
Normal Speech (5 ft) Air Conditioning Unit (100 ft)	Data Processing Center Department Store	60	1/2 as loud
Light Traffic (100 ft)	Large Business Office Quiet Urban Daytime	50	1/4 as loud
Bird Calls (distant)	Quiet Urban Nighttime	40	1/8 as loud Quiet
Soft Whisper (5 ft)	Library and Bedroom at Night Quiet Rural Nighttime	30	1/16 as loud
	Broadcast and Recording Studio	20	1/32 as loud Just Audible
		0	1/64 as loud Threshold of Hearing

Table 1. Sound Levels of Typical Noise Sources and Noise Environments

Source: Compiled by dBF Associates, Inc.



1.2 PROJECT DESCRIPTION

This project proposes two multi-family residential condominium subdivisions totaling 86 units. The project is located east of Caliente Avenue, adjacent to the Vista del Sur project (Lot 2 of the Southview project TM 25169) and the Tesoro project (Lot 1 of the Southview project TM 25169). The two subdivisions are separated by Airway Road.

North of Airway Road would be a continuation of the Tesoro project currently in process for a PDP. This northerly subdivision is a 46-unit multi-family condominium project consisting of 11 3-, 4-, and 5-plex building, all three stories (38 feet) in height. Each unit would have a ground floor private yard area. This project would share the main recreation area and other common area amenities with the adjacent Tesoro project, and would annex into the HOA for that project as well.

South of Airway Road would be a continuation of the Esperanza project currently approved as part of the adjacent Vista del Sur project. This southerly subdivision is a 40-unit multi-family condominium project consisting of 8 5-plex buildings, all three stories (38 feet) in height. Each unit would have a ground floor private yard area. This project would share the main recreation area and other common area amenities with the adjacent Vista del Sur project, and would annex into the HOA for that project as well.

The proposed project would require discretionary permits / approvals for the following:

- Planned Development Permit (PDP)
- Tentative Map

All 131,974 cubic yards (cy) of earthwork material would imported from adjacent projects Vista del Sur and Tesoro.

The project includes an 8-foot-high barrier along the north top of slope, from the northwest site boundary corner around the east end of the open area above the stormwater basin. The barrier would be of solid construction such masonry, wood, glass, Plexiglas (or similar materials with a mass of at least 3.5 pounds per squire foot). There would be no holes or gaps through or below the barrier.



2.0 APPLICABLE NOISE STANDARDS

2.1 CITY OF SAN DIEGO

2.1.1 General Plan

The City of San Diego requires new projects to meet exterior noise level standards as established in the Noise Element of the General Plan [City of San Diego 2008: Policy NE-A.2]. The Noise Compatibility Guidelines are presented in Table 2.

Sound levels up to 60 dBA CNEL are considered Compatible with outdoor areas of frequent use (patios, balconies, parks, swimming pools, etc.) in the Multiple Units land use category; sound levels up to 70 dBA CNEL are considered Conditionally Compatible.



Land Use	Category			Exte	rior (dl	Noise BA CN	Expos (EL)	sure
Land Use Category Exter Open Space and Parks and Recruitonal 60 Open Space and Parks and Recruitonal 60 Community & Neighborhood Parks, Passive Recreation 60 Regional Parks, Outdoor Spectator Sports, Golf Courses, Athletic Fields, Outdoor Spectator Sports, Water Recreational Tacilities, Hores Stables, Park Maint, Facilities 60 Animal Raising, Maintain & Keeping, Commercial Stables 60 60 Residential 60 60 60 Animal Raising, Maintain & Keeping, Commercial Stables 60 60 60 Raidential 60		65	5 70	75				
Open Space and	Huse Category Space and Parks and Recruitional munity & Neighborhood Parks, Passive Recreation mainity & Neighborhood Parks, Passive Recreation mainal Parks, Outdoor Spectator Sports, Colf Courses, Athletic Fields, Outdoor ator Sports, Water Recreational Facilities, Horse Stables, Park Maint. Facilities illural Raising & Farming, Aquaculture, Dairies, Horticulture Nurseries & Greenhouses, al Raising, Maintain & Keeping, Commercial Stables et units, Mobile Homes, Senior Housing ple Units, Mixed-Use Commercial/Residential, Live Work, Group Living mmodations "For use affectal by aircraft noise, rfør to Policis NE-D.2 & NE-D.3. tional itals, Nursing Facilities, Intermediate Care Facilities, Kindergarten through Grade tional a criticities, Libraries, Museums, Places of Worship, Child Care Facilities tional or Professional Educational Facilities, Higher Education Institution Facilities munity or Junior Colleges, Colleges, or Universities) iteries ng Supplies/Equipment, Food, Beverages & Groceries, Pets & Pet Supplies, Sundria nacceutical, & Convenience Sales, Wearing Apparel & Accessories recla Services ng Supplies/Equipment, Radio & Television Studios, Golf Course Support r Accommodations i ess & Professional, Covernment, Medical, Dental & Health Practitioner, Regional is orate Headquarters eand Vehical Equipment Surgers Maving & Storage Facilities, Warehouse, lesale Distribution sale, Distribution w Manufacturing, Lig							
Community	& Neighborhood Pa	rks; Passive Recre	eation					
Regional Parl Spectator Sp	ks; Out <mark>do</mark> or Spectat orts, Water Recreati	tor Sports, Golf C ional Facilities; H	Courses, Athletic Fields, Outdoor lorse Stables, Park Maint. Facilities					
Agricultural								
Crop Raising Animal Raising	; & Farming; Aquacu ng, Maintain & Keej	lture, Dairies; Ho ping; Commercia	orticulture Nurseries & Greenhouses; I Stables					
Residential								
Single Units;	Single Units, Mobile Homes, Senior Housing							
Multiple Uni Accommodat	its; Mixed-Use Com tions *For uses affected by	mercial/Resident y aircraft noise, refer to	ial, Live Work, Group Living Policies NE-D.2. & NE-D.3.		45	45*		
Institutional								
Hospitals; N Educational I	ursing Facilities; Inte Facilities; Libraries; I	ermediate Care Fa Museums; Places	acilities, Kindergarten through Grade 12 of Worship, Child Care Facilities		45			
Vocational o (Community	r Professional Educa or Junior Colleges,	tional Facilities; Colleges, or Uni	Higher Education Institution Facilities versities)		45	45		
Cemeteries								
Sales						- '		
Building Sup Pharmaceutic	plies/Equipment, Fo cal, & Convenience	od, Beverages & (Sales; Wearing A	Croceries, Pets & Pet Supplies, Sundries, pparel & Accessories			50	50	
Commercial Ser	vices							
Building Serv Assembly & I	rices; Business Supp Entertainment; Radio	ort, Eating & Drir o & Television St	nking; Financial Institutions; udios; Golf Course Support			50	50	
Visitor Accor	mmodations				45	45	45	
Offices								
Business & Pr Corporate H	ofessional, Governn eadquarters	nent; Medical, D	ental & Health Practitioner; Regional &			50	50	
Vehicle and Vel	hicular Equipment Sales	and Services Use			•			
Commercial Sales & Renta	or Personal Vehicle als; Vehicle Equipm	Repair & Mainte ent & Supplies Sa	nance; Commercial or Personal Vehicle les & Rentals; Vehicle Parking					
Wholesale, Dis	tribution, Storage Use (Category			,			
Equipment & Wholesale D	Materials Storage Vistribution	Yards; Moving &	Storage Facilities; Warehouse;					
Industrial								
Heavy Manu Terminals; N	facturing, Light Ma fining & Extractive I	nufacturing; Mar ndustries	ine Industry; Trucking & Transportation					
Research & D	Development						50	
	Compatible	Indoor Uses	Standard construction methods should a acceptable indoor noise level. Refer to S	ttenuate ection 1.	exter	ior nois	e to an	i
	Companiore	Outdoor Uses	Activities associated with the land use m	ay be car	rried (out.		
	Conditionally	Indoor Uses	Building structure must attenuate exterio indicated by the number for occupied an	r noise to eas. Refe	o the r to S	indoor ection	noise l I.	evel
	Compatible	Outdoor Uses	Feasible noise mitigation techniques sho make the outdoor activities acceptable. I	uld be an Refer to S	alyze Sectio	d and i n I.	ncorpo	orated
		Indoor Uses	New construction should not be underta	ken.				
	Incompatible	Outdoor Uses	Severe noise interference makes outdoor	activitie	s una	cceptal	ole.	

Table 2. Noise Compatibility Guidelines



2.1.2 CEQA Significance Thresholds

The Development Services Department's California Environmental Quality Act (CEQA) Significance Determination Thresholds [City of San Diego 2011] addresses traffic noise, as specified in Table K-2: Traffic Noise Significance Thresholds (dB(A) CNEL). Relevant portions are reproduced in Table 3.

Structure or Proposed Use that would be impacted by Traffic Noise	Interior Space	Exterior Useable Space [†]
Single-family detached	45 dB	65 dB
Multi-family, schools, libraries, hospitals, day care, hotels, motels, parks, convalescent homes	Development Services Department (DSD) ensures 45 dB pursuant to Title 24	65 dB
Offices, Churches, Business, Professional Uses	n/a	70 dB
Commercial, Retail, Industrial, Outdoor Spectator Sports Uses	n/a	75 dB

Table 3. City of San Diego Traffic Noise Significance Thresholds (dBA CNEL)

⁺ If a project is currently at or exceeds the significance thresholds for traffic noise described above and noise levels would result in less than a 3 dB increase, then the impact is not considered significant.

2.1.3 Otay Mesa Community Plan Update

The Otay Mesa Community Plan Update (OMCPU) Final Program Environmental Impact Report (EIR) [City of San Diego 2014] specifies noise mitigation measures for project within the Plan area. These measures are presented below.

NOI-1: Prior to the issuance of building permits, site-specific exterior noise analyses that demonstrate that the project would not place residential receptors in locations where the exterior existing or future noise levels would exceed the noise compatibility standards of the City's General Plan shall be required as part of the review of future residential development proposals. Noise reduction measures, including but not limited to building noise barriers, increased building setbacks, speed reductions on surrounding roadways, alternative pavement surfaces, or other relevant noise attenuation measures, may be used to achieve the noise compatibility standards. Exact noise mitigation measures and their effectiveness shall be determined by the site-specific exterior noise analyses.



- **NOI-2**: Prior to the issuance of building permits, site specific interior noise analyses demonstrating compliance with the interior noise compatibility standards of the City's General Plan and other applicable regulations shall be prepared for noise sensitive land uses located in areas where the exterior noise levels exceed the noise compatibility standards of the City's General Plan. Noise control measures, including but not limited to increasing roof, wall, window, and door sound attenuation ratings, placing HVAC in noise reducing enclosures, or designing buildings so that no windows face freeways or major roadways may be used to achieve the noise compatibility standards. Exact noise mitigation measures and their effectiveness shall be determined by the site specific exterior noise analyses.
- **NOI-3**: Prior to the issuance of a building permit, a site-specific acoustical/noise analysis of any on-site generated noise sources, including generators, mechanical equipment, and trucks, shall be prepared which identifies all noise-generating equipment, predicts noise levels at property lines from all identified equipment, and recommends mitigation to be implemented (e.g., enclosures, barriers, site orientation), to ensure compliance with the City's Noise Abatement and Control Ordinance. Noise reduction measures shall include building noise-attenuating walls, reducing noise at the source by requiring quieter machinery or limiting the hours of operation, or other attenuation measures. Additionally, future projects shall be required to buffer sensitive receptors from noise sources through the use of open space and other separation techniques as recommended after thorough analysis by a qualified acoustical engineer. Exact noise mitigation measures and their effectiveness shall be determined by the site specific noise analyses.
- NOI-4: For projects that exceed daily construction noise thresholds established by the City of San Diego, best construction management practices shall be used to reduce construction noise levels to comply with standards established by the Municipal Code in Chapter 5, Article 9.5, Noise Abatement and Control. Project applicant shall prepare and implement a Construction Noise Management Plan. Appropriate management practices shall be determined on a project-by-project basis, and are specific to the location. Control measures shall include:
 - a. Minimizing simultaneous operation of multiple construction equipment units;
 - b. Locating stationary equipment as far as reasonable from sensitive receptors;
 - c. Requiring all internal combustion-engine-driven equipment to be equipped with mufflers that are in good operating condition and appropriate for the equipment; and
 - d. Construction of temporary noise barriers around construction sites that block the line-of-sight to surrounding receptors.



2.1.4 Municipal Code

Operational noise within the City is governed by Municipal Code Section 59.5.401: Sound Level Limits.

(a) It shall be unlawful for any person to cause noise by any means to the extent that the one-hour average sound level exceeds the applicable limit given in the following table, at any location in the City of San Diego on or beyond the boundaries of the property on which the noise is produced. The noise subject to these limits is that part of the total noise at the specified location that is due solely to the action of said person.

	Land Use	Time of Day	One-Hour Average Sound Level (decibels)
1.	Single Family Residential	7 a.m. to 7 p.m.	50
		7 p.m. to 10 p.m.	45
		10 p.m. to 7 a.m.	40
2.	Multi-Family Residential	7 a.m. to 7 p.m.	55
	(up to a maximum density	7 p.m. to 10 p.m.	50
	of 1/2000)	10 p.m. to 7 a.m.	45
3.	All other Residential	7 a.m. to 7 p.m.	60
		7 p.m. to 10 p.m.	55
		10 p.m. to 7 a.m.	50
4.	Commercial	7 a.m. to 7 p.m.	65
		7 p.m. to 10 p.m.	60
		10 p.m. to 7 a.m.	60
5.	Industrial or Agricultural	any time	75

TABLE OF APPLICABLE LIMITS

(b) The sound level limit at a location on a boundary between two zoning districts is the arithmetic mean of the respective limits for the two districts. Permissible construction noise level limits shall be governed by Section 59.5.0404 of this article.

•••

(Amended 9-11-1989 by O-17337 N.S.)

(Amended 11-28-2005 by O-19446 N.S.; effective 2-9-2006.)



Construction noise within the City is governed by Municipal Code Section 59.5.0404: Construction Noise.

- (a) It shall be unlawful for any person, between the hours of 7:00 p.m. of any day and 7:00 a.m. of the following day, or on legal holidays as specified in Section 21.04 of the San Diego Municipal Code, with exception of Columbus Day and Washington's Birthday, or on Sundays, to erect, construct, demolish, excavate for, alter or repair any building or structure in such a manner as to create disturbing, excessive or offensive noise unless a permit has been applied for and granted beforehand by the Noise Abatement and Control Administrator. In granting such permit, the Administrator shall consider whether the construction noise in the vicinity of the proposed work site would be less objectionable at night than during the daytime because of different population densities or different neighboring activities; whether obstruction and interference with traffic particularly on streets of major importance, would be less objectionable at night than during the daytime; whether the type of work to be performed emits noises at such a low level as to not cause significant disturbances in the vicinity of the work site; the character and nature of the neighborhood of the proposed work site; whether great economic hardship would occur if the work were spread over a longer time; whether proposed night work is in the general public interest; and he shall prescribe such conditions, working times, types of construction equipment to be used, and permissible noise levels as he deems to be required in the public interest.
- (b) Except as provided in subsection C. hereof, it shall be unlawful for any person, including The City of San Diego, to conduct any construction activity so as to cause, at or beyond the property lines of any property zoned residential, an average sound level greater than 75 decibels during the 12-hour period from 7:00 a.m. to 7:00 p.m.
- (c) The provisions of subsection B. of this section shall not apply to construction equipment used in connection with emergency work, provided the Administrator is notified within 48 hours after commencement of work.

(Amended 1-3-1984 by O-16100 N.S.)



2.2 BIOLOGICAL RESOURCES

Diegan coastal sage scrub is a potential habitat for the federally threatened coastal California gnatcatcher. Elevated noise levels can potentially mask the song of the coastal California gnatcatcher, which is used to attract mates and to defend territories. The San Diego Association of Governments (SANDAG), in a 1990 study [SANDAG 1990], theoretically estimated that noise levels above 60 dBA Leq in least Bell's vireo breeding areas may impact the reproductive success of this species during their breeding season. The City of San Diego applies this criterion to the coastal California gnatcatcher as well. The report conclusions were unclear as to the specific interval of the Leq; for the purpose of this analysis, the interval is considered to be one hour. Therefore, construction noise is limited to an hourly noise level of 60 dBA Leq in areas with suitable and occupied Diegan coastal sage scrub during the coastal California gnatcatcher breeding season of March 1 through August 15 [Alden Environmental, Inc. 2014]. The limit is applied at the boundary of the habitat and all points within.



3.0 EXTERIOR NOISE ENVIRONMENT

The project site is vacant and is situated east of Caliente Avenue, is bounded on the north by SR 905, and bounded on the east, west, and south by vacant land. The property adjacent on the west is approved for development as a multifamily residential project, and would include a noise barrier The offsite noise barrier would extend west from the northwest corner of the Southview East noise barrier, approximately parallel to the SR 905 eastbound onramp. The primary noise source affecting the project site area is vehicular traffic on SR 905, Caliente Avenue, and Airway Road.

Brown Field Municipal Airport (SDM) is a general aviation airport in the City of San Diego, located over one mile east-northeast of the project site. The project site is located within the Brown Field Overflight Notification Area, but is outside of the 60-dBA CNEL noise contour [San Diego County Airport Land Use Commission (SDCALUC) 2010].

3.1 ROADWAY TRAFFIC

SR 905 is generally topographically at grade with the north side of the project site; the site grade lowers to the south. The eastbound SR 905 onramp and Caliente Avenue overpass partially block the direct line-of-sight northwest from the project site to the freeway. Caliente Avenue currently ends approximately 750 feet south of the intersection with Airway Road. Only local traffic associated with San Ysidro High School currently uses the southernmost segment of Caliente Avenue; all other traffic turns to/from Airway Road. Airway Road currently ends at the intersection with Caliente Avenue.

SR 905 carries an existing (year 2015) Average Daily Traffic (ADT) volume of 51,000 vehicles east of Caliente Avenue [KHA 2015]. The posted speed limit on SR 905 is 65 miles per hour (mph). SR 905 is classified by SANDAG as a six-lane Freeway. Based on vehicle classification counts conducted during the site visit, the estimated existing vehicle mix on SR 905 is 88 / 3 / 8 / 0 / 1 (% cars / medium trucks / heavy trucks / buses / motorcycles).

The eastbound SR 905 onramp carries an existing (A.M.) peak-hour volume of 157 vehicles [KHA 2015]. The vehicle speed on the onramp was assumed to increase from the traffic signal at Caliente Avenue to the freeway speed of 65 mph. The traffic mix on the onramp was estimated to be 90 / 2 / 4 / 3 / 1.

Caliente Avenue carries an existing (year 2015) ADT volume of 7,768 / 1,254 vehicles north / south of Airway Road [KHA 2105]. The posted speed limit on Caliente Avenue is 40 mph. Caliente Avenue currently functions as a five-lane Major Arterial / two-lane collector north / south of Airway Road. Based on vehicle classification counts conducted during the site visit, the estimated existing vehicle mix on Caliente Avenue is 89 / 2 / 0 / 9 / 0.

Airway Road carries an existing (year 2015) ADT volume of 6,694 vehicles west of Caliente Avenue [KHA 2105]. The posted speed limit on Airway Road is 25 mph. Airway Road currently functions as a three-lane Collector with a left-turn center lane west of Caliente Avenue. Based on vehicle classification counts conducted during the site visit, the estimated existing vehicle mix on Airway Road is 89/2/0/9/0.



Refer to Table 5 in Section 4.1 for a synopsis of existing traffic volumes, roadway classifications, speed limits, and traffic mixes.

3.1.1 Sound Level Measurements

Short-term (20-minute) sound level measurements were conducted during the afternoon peak traffic period of Thursday, December 12, 2013 to quantify the existing on-site acoustical environment. Agencies such as the City of San Diego and the U.S. Department of Housing and Urban Development (HUD) consider the peak-hour Leq to be reasonably equivalent to the CNEL for vehicular traffic.

A Larson Davis Model 824 American National Standards Institute (ANSI) Type 1 integrating sound level meter (SLM) was used as the data-collection device. The meter was mounted on a tripod approximately five feet above ground level to simulate the average height of the human ear. The sound level meter was calibrated before and after the measurement period.

The measurement results are summarized in Table 4 and correspond to the locations depicted on Figure 2. A review of the table shows that the measured sound level ranged from approximately 50 dBA Leq at Measurement Location 3 (ML3) to 65 dBA at ML1.

The primary noise source observed during the site visit was vehicular traffic on SR 905, Caliente Avenue, and Airway Road. Simultaneous vehicular traffic counts were conducted during the measurement periods as applicable. Other observed noise sources included occasional aircraft overflights and the San Ysidro High School public announcement (PA) system.

Measurement	Location	Time	Leq	Lmin	Lmax	L10	L50	L90	Traffic
ML1	35' from eastbound SR 905 onramp	15:40 - 16:00	65.0	57.7	71.6	67.3	64.4	61.5	1,670/52/60/0/4
ML2	50' from Caliente Ave centerline	16:35 - 16:55	59.7	51.8	74.7	62.0	57.5	54.2	230/4/0/24/0
ML3	Far field	17:00 - 17:20	49.9	46.7	57.4	51.6	49.0	47.7	Not counted

Table 4. Sound Level Measurements (dBA)

Notes:

Measurements conducted on Thursday, December 12, 2013.

Traffic reported in terms of cars / medium trucks / heavy trucks / buses / motorcycles.



Southview East Exterior Noise Analysis





FIGURE 2 Sound Level Measurement Locations

4.0 FUTURE NOISE ENVIRONMENT

The primary noise source affecting the project site area in the future would continue to be vehicular traffic on SR 905, Caliente Avenue, and Airway Road. No future noise level projections are available for Brown Field Municipal Airport; therefore, it was assumed that the project site would remain outside of the 60-dBA CNEL noise contour. Aircraft noise was not included in this analysis.

4.1 ROADWAY TRAFFIC

SR 905 is projected to carry a future (horizon year 2035 plus project) ADT volume of 137,200 vehicles east of Caliente Avenue [KHA 2015]. However, it was assumed that SR 905 has a maximum capacity of 1,800 vehicles per lane per hour at its design speed; a higher volume would result in slower speeds and lower noise levels. In the vicinity of the project, SR 905 has three main lanes in each direction and would carry a peak-hour traffic volume of 10,800 vehicles. The existing speed and traffic mix on SR 905 were assumed to remain constant in the future.

The eastbound SR 905 onramp is projected to carry a future (horizon year 2035 plus project) (A.M.) peak-hour traffic volume of 243 vehicles [KHA 2015]. The existing speed and traffic mix on the onramp was assumed to remain constant.

Caliente Avenue, planned to extend south, is projected to carry a future (horizon year 2035 plus project) ADT volume of 25,073 / 22,385 vehicles north / south of Airway Road [KHA 2015]. Upon extension, Caliente Avenue south of Airway Road would be a five-lane Major Arterial roadway with a speed limit of 30 mph. The traffic mix on future Caliente Avenue was estimated to be 93 / 2 / 1 / 4 / 0 | 96 / 2 / 1 / 1 / 0 north | south of Airway Road.

Airway Road, planned to extend east, is projected to carry a future (year 2035 plus project) ADT volume of 20,092 / 3,304 vehicles west / east of Caliente Avenue [KHA 2015]. Upon extension, Airway Road east and west of Caliente Avenue would be a four-lane Major Arterial roadway with a speed limit of 40 mph. The traffic mix on Airway Road west of Caliente Avenue was assumed to remain constant in the future; the traffic mix on Airway Road east of Caliente Avenue was estimated to be 96 / 2 / 1 / 1 / 0.

The Federal Highway Administration (FHWA) Traffic Noise Model (TNM) version 2.5 was used to calculate traffic noise levels. TNM is required by the FHWA and the California Department of Transportation (Caltrans) for roadway noise modeling. The modeling effort considered roadway alignments, project buildings, intervening topography, peak-hour traffic volume, estimated average vehicle speed, and estimated vehicle mix (i.e., percentage of cars, medium trucks, heavy trucks, buses, and motorcycles). The default ground type used in the model was "loose soil."

The model was calibrated using actual traffic counts and sound level measurements. The measured sound levels varied from the modeled sound levels by less than 2 dBA. Refer to Table 5 for a synopsis of modeled future traffic volumes, roadway classifications, speed limits, and traffic mixes. The vehicular traffic noise calculations are summarized in Appendix A.



			Existing (Year 2015)								Future (Horizo	n Year 2035 +	Project)			
Roadway	Segment	Traffic	Clossification	Speed		Tra	affic M	ix		Traffic	Classification	Speed	peed Traffic		affic M	c Mix	
		Volume	Classification	Limit	Cars	MT	ΗТ	Bus	MC	Volume	Classification	Limit	Cars	МТ	нт	Bus	MC
SR 905	East of Caliente Avenue	51,000 ADT	Six-lane Freeway	65 mph	88%	3%	8%	0%	1%	10,800 peak hour	Six-lane Freeway	65 mph	88%	3%	8%	0%	1%
Eastbound SR 905 Onramp	From Caliente Avenue	157 A.M peak hour	Two-lane onramp	0–65 mph	90%	2%	4%	3%	1%	243 A.M. peak hour	Two-lane onramp	0-65 mph	90%	2%	4%	3%	1%
Calianta Avanua	North of Airway Road	7,768 ADT	Five-lane Major Arterial	40 mph	89%	2%	0%	9%	0%	25,073 ADT	Five lane Maior Artorial	40 mph	93%	2%	1%	4%	0%
	South of Airway Road	1,254 ADT	Two-lane Collector	40 mph	89%	2%	0%	9%	0%	22,385 ADT		30 mph	96%	2%	1%	1%	0%
Airway Road	West of Caliente Avenue	6,694 ADT	Three-lane Collector with left-turn center lane	25 mph	89%	2%	0%	9%	0%	20,092 ADT	Four-lane Major Arterial	40 mph	89%	2%	0%	9%	0%
	East of Caliente Avenue	NA	NA	N/A	N⁄A	N⁄A	N⁄A	NA	N⁄A	3,304 ADT	-		96%	2%	1%	1%	0%

Table 5. Roadway Traffic Data

Notes:

MT = Medium Trucks, HT = Heavy Trucks, MC = Motorcycles



As shown on Figure 3, the project includes an 8-foot-high barrier along the north top of slope, from the northwest site boundary corner around the east end of the open area above the stormwater basin. The barrier would be of solid construction such masonry, wood, glass, Plexiglas (or similar materials with a mass of at least 3.5 pounds per squire foot). There would be no holes or gaps through or below the barrier.

This barrier would be effective to reduce traffic noise levels at outdoor areas of frequent use on the project site to 65 dBA CNEL or less.



Southview East Exterior Noise Analysis





Future Exterior Traffic Noise Levels With Project Design Noise Barrier (CNEL)

FIGURE 3

4.1.1 No Noise Barrier Scenario

Future exterior roadway traffic noise levels on the project site – without the noise barrier included in the project design or the alternate noise barrier scenario – would range from below 50 dBA CNEL in the center of the southerly subdivision to approximately 76 dBA CNEL at the northeast corner of the northerly subdivision, as shown on Figure 4. This scenario is not being considered as a development option, and is included only for reference.



Southview East Exterior Noise Analysis





Future Exterior Traffic Noise Levels Without Noise Barriers (CNEL)

5.0 OPERATION

5.1 ONSITE OPERATIONAL NOISE

The Datakustik Cadna/A industrial noise prediction model was used to estimate noise levels from noise sources on the project site, which are expected to include mechanical equipment.

Project mechanical equipment is expected to consist of one heating / ventilation / air conditioning (HVAC) unit for each dwelling unit. Each HVAC unit was assumed to be ground-mounted on the side of the building opposite the garages. Each HVAC unit was assumed to be a 2-ton Carrier model CA13NA024, which is approximately 3 feet in height and produces a sound power level of 72 dBA. Each HVAC unit was treated as a stationary point source and was assumed to be constantly operational.

Onsite operational noise levels at various points along the property lines – without noise mitigation – would range from below 35 dBA Leq at the east project property line to approximately 54 dBA Leq at the west project property line near Building 2 and Building 3. The composite noise level from a multi-HVAC unit grouping attenuates to 45 dBA Leq at a distance of approximately 40 feet.

The operational noise level at the west project property line, and several other locations where HVAC units would be within 40 feet of the project property line, would exceed the nighttime noise limit of 45 dBA Leq at City of San Diego multifamily residential property lines. The project operational noise level would exceed City of San Diego municipal code noise limits without mitigation.



5.2 OFFSITE TRAFFIC NOISE

An analysis was conducted of the project's effect on traffic noise conditions. Existing (year 2015) without-project traffic noise levels were compared to existing with-project traffic noise levels. Acoustical calculations were performed using the FHWA TNM version 2.5 to estimate sound levels at a general reference distance of 50 feet from the centerline of the nearest roadway. The modeling effort considered the peak-hour traffic volume, average estimated vehicle speed, and estimated vehicle mix, i.e., percentage of cars, medium trucks, heavy trucks, buses, and motorcycles.

Sound levels caused by line sources (i.e., variable or moving sound sources such as traffic) generally decrease at a rate of 3.0 to 4.5 dBA when the distance from the road is doubled, depending on the ground surface hardness between the source and the receiving property. The model assumed "loose soil" propagation conditions, which corresponds to a drop-off rate of approximately 3 dBA per doubling of distance. The actual sound level at any receptor location is dependent upon such factors as the source-to-receptor distance and the presence of intervening structures (walls and buildings), barriers, and topography. The noise attenuating effects of changes in elevation, topography, and intervening structures were not included in the model. Therefore, the modeling effort is considered a worst-case representation of the roadway noise.

The traffic volumes and average speeds on project roadway segments were obtained from the Traffic Impact Analysis (TIA) [KHA 2015]. An average existing vehicle mix of 95% cars, 2% medium (2-axle) trucks, 1% heavy (3- and 4-axle) trucks, and 2% buses was estimated from aggregation of classification counts during site visits. The project vehicle mix was assumed to be 100% cars.

Table 6 shows the posted vehicle speed, existing and project-generated ADT volume, and traffic noise levels – with and without the project – on each modeled roadway segment.

Project-generated traffic noise level increases along project roadway segments would be lower than the thresholds of significance for project-generated traffic-related noise. The impact is less than significant.



Roadway	Segment	Speed	Existing ADT Volume (vehicles)	Project- Generated ADT Volume (vehicles)	Existing Noise Level	Existing + Project Noise Level	Project- Generated Noise Increase	Threshold of Significance	Adjacent Noise- Sensitive Use?	Impact?
Ocean View Hills Parkway	North of Otay Mesa Road	40 mph	10,250	65	67 dBA CNEL	67 dBA CNEL	+0 dBA CNEL	65/+3dBACNEL	Yes	No
	Otay Mesa Road – SR 905 Westbound Ramps	40 mph	19,286	348	69 dBA CNEL	69 dBA CNEL	+0 dBA CNEL	65/+3dBACNEL	Yes	No
Caliente Avenue	SR 905 Eastbound Ramps – Airway Road	40 mph	7,768	947	65 dBA CNEL	66 dBA CNEL	+1 dBA CNEL	65/+3dBACNEL	Yes	No
	South of Airway Road	40 mph	1,254	0	58 dBA CNEL	58 dBA CNEL	+0 dBA CNEL	65/+3 dBA CNEL	Yes	No
Otay Mesa Road	East of Ocean View Hills Parkway / Caliente Avenue	50 mph	14,242	283	71 dBA CNEL	71 dBA CNEL	+0 dBA CNEL	65/+3 dBA CNEL	Yes	No
Airway Road	West of Caliente Avenue	25 mph	6,694	141	61 dBA CNEL	61 dBA CNEL	+0 dBA CNEL	65/+3dBACNEL	Yes	No
	East of Caliente Avenue	25 mph	0	1,088	51 dBA CNEL	54 dBA CNEL	+3 dBA CNEL	65/+3dBACNEL	Yes	No

 Table 6. Modeled Vehicle Speeds, ADT Volumes, and Traffic-Related Noise Levels along Project Roadways

Source: KHA 2015



6.0 CONSTRUCTION

Noise levels associated with the construction phase of the project were estimated based on information from the project developer for construction equipment requirements and schedule. It was assumed that construction of the project would require approximately 10 months to complete. All construction activity would occur between 7:00 a.m. and 7:00 p.m., Monday through Saturday.

The initial phase of construction would involve mass grading of the site, along with site development activities, including construction of internal roadways which involves fine grading, trenching, and paving activities. Following site preparation activities, the project would include construction of buildings.

The project would implement conventional construction techniques and equipment. Standard equipment such as scrapers, graders, backhoes, rollers, loaders, tractors, cranes, and miscellaneous trucks would be used for construction of most project facilities. Project construction would not require pile driving or onsite rock crushing.

Mass site grading is expected to produce the highest construction noise and vibration levels. Grading of the main site is estimated to require three graders, one dozer, one excavator, one water truck, three scrapers, and three tractor/loader/backhoes.

6.1 CONSTRUCTION NOISE

Project construction would result in a temporary increase in noise levels in the project vicinity. Construction noise varies depending on the construction process, type of equipment involved, location of the construction site with respect to sensitive receptors, the schedule proposed to carry out each task (e.g., hours and days of the week) and the duration of the construction work.

Noise levels of typical construction equipment range from approximately 65 dBA to 95 dBA at 50 feet from the source (U.S. Environmental Protection Agency [U.S. EPA] 1971). Typical noise sources and noise levels associated with site grading are shown in Figure 4.

Worst-case noise levels are typically associated with grading. Noise sources and levels associated with grading of the proposed project are shown in Table 7.

Noise Source	Noise Level	Number
Bulldozer	85 dBA at 50 feet	1
Scraper	85 dBA at 50 feet	1
Backhoe	85 dBA at 50 feet	1
Water Truck	85 dBA at 50 feet	1
Roller	75 dBA at 50 feet	1

Tahla 7	Crading	Noise	Sourco	G
rabic /.	Uraung	110150	Source.	D.



Southview East Exterior Noise Analysis

			NOISE LEVEL (dBA) at 50 Feet				
TYPES OF NOISE GENERATING EQUIPMENT 6			0 7	0 8	0 9	0 10)0 11(
EQUIPMENT POWERED INTERNAL COMBUSTION ENGINES	EARTH MOVING	Compacters (Rollers) Front Loaders Backhoes Tractors Scrapers, Graders Pavers Trucks					
	MATERIALS HANDLING	Concrete Mixers Concrete Pumps Cranes (Movable) Cranes (Derrick)					
	STATIONARY	Pumps Generators Compressors					
IMPACT EQUIPMENT		Pneumatic Wrenches Jack Hammers & Rock Drills Pile Drivers (Peaks)					
отнек		Vibrators Saws					



FIGURE 5 Typical Construction Equipment Noise Levels Acoustical calculations were performed to estimate noise from construction activity. It was assumed that one bulldozer, one scraper, one backhoe, one water truck, and one roller would operate continuously throughout the site. No correction was applied for downtime associated with equipment maintenance, breaks, or similar situations. The calculations assumed point source acoustical characteristics. A point source decays at a rate of 6.0 dBA per doubling of distance. This is a logarithmic relationship describing the acoustical spreading of a pure undisturbed spherical wave in the air.

6.1.1 Residential Land Use

The properties adjacent to the project site on the west are currently vacant, but are approved to be developed for multifamily residential use. The west project property line is approximately 180 feet from the centroid of construction activity on the project site. Using standard point source calculations, a combined level of 91 dBA at 50 feet would attenuate to approximately 80 dBA at 180 feet, and to 75 dBA at approximately 315 feet.

Without noise abatement, construction activity would generate approximately 80 dBA Leq (12 hours) at the residential property line to the west. Actual noise levels would be expected to be less than estimated because of downtime that typically occurs during construction.

If residences are constructed and a certificate of occupancy has been granted on the properties adjacent to the project on the west during a time when grading is occurring within 315 feet of the west project property line, the construction noise level at the west project property line would exceed the City of San Diego construction noise limit of 75 dBA Leq (12 hours). Project construction would occur during the hours allowed by the City of San Diego. Project construction would comply with San Diego Municipal Code Section 59.5.0404.

SR 905 is adjacent to the project site on the north, and the properties adjacent to the project site on the south and east are vacant; these land uses are not noise-sensitive, and the City of San Diego does not specify exterior noise limits for these land uses.

6.1.2 Biological Resources

Diegan coastal sage scrub, suitable habitat for and occupied by the coastal California gnatcatcher, is located between 15 feet and 840 feet from the limits of project construction. Project construction noise levels would range from approximately 67 dBA Leq to 102 dBA Leq at the coastal California gnatcatcher habitat. Project construction noise levels would exceed the 60 dBA Leq noise limit at coastal California gnatcatcher habitat.



7.0 FINDINGS AND MITIGATION

This section discusses the possible mitigation measures that can be implemented to either reduce or mitigate impacts to the proposed project or impacts generated by the proposed project.

7.1 TRAFFIC NOISE

7.1.1 Exterior

Future exterior roadway traffic noise levels on the project site, as designed with the project noise barrier described in Section 4.1 would range from below 50 dBA CNEL in the center of the southerly subdivision to approximately 65 dBA CNEL at the ground floor of the northeast corner of the northerly subdivision. Traffic noise levels at outdoor areas of frequent use would be 65 dBA CNEL or less. Traffic noise levels at project outdoor usable space would comply with the City of San Diego traffic noise significance threshold of 65 dBA CNEL.

This noise analysis report, in accordance with OMCPU Final Program EIR mitigation measure NOI-1, demonstrates that this project would not place residential receptors in locations where the exterior existing or future noise levels would exceed the noise compatibility standards of the City's General Plan.

7.1.2 Interior

Because future exterior transportation noise levels would be 60 dBA CNEL at the project building façades, interior noise levels in habitable rooms could exceed the California Code of Regulations, Title 24: Noise Insulation Standard and City of San Diego General Plan Noise Compatibility Guidelines requirement of 45 dBA CNEL. To avoid a potential interior noise impact, as a condition of project approval, an interior noise analysis would be required to be approved by the City's Building Inspection Department upon application for a building permit.

This interior noise analysis must identify the sound transmission loss requirements for building façade elements (windows, walls, doors, and exterior wall assemblies) necessary to limit interior noise in habitable rooms to 45 dBA CNEL or below. Upgraded windows and/or doors with Sound Transmission Class (STC) ratings of 30-38 or higher may be necessary. The interior noise level depends on the exterior noise level, the sound-absorption characteristics of the room, the surface area of each building element (wall, window, door, etc.), and the exterior-to-interior sound transmission loss qualities of each construction material. If the interior noise limit can be achieved only with the windows closed, the building design must include mechanical ventilation that meets California Building Code (CBC) requirements. Worst-case noise levels, either existing or future, must be used.

With the implementation of the findings of the interior noise analysis, interior noise levels in habitable rooms would be 45 dBA CNEL or below and comply with the California Code of Regulations, Title 24: Noise Insulation Standard City of San Diego General Plan Noise Compatibility Guidelines requirement. The project would result in a less than significant interior noise impact with project features incorporated in accordance with the interior noise analysis.



The interior noise analysis, in accordance with OMCPU Final Program EIR mitigation measure NOI-2, will demonstrate that this project will comply with the interior noise compatibility standards of the City's General Plan.

7.2 PROJECT OPERATION

7.2.1 Onsite Operational Noise

Operational noise levels at property lines within 40 feet of HVAC units would exceed the nighttime noise limit of 45 dBA Leq at City of San Diego multifamily residential property lines without mitigation.

Placing all HVAC units over 40 feet from project property lines would reduce operational noise levels to 45 dBA Leq or below. Alternatively, specification of an HVAC unit producing a sound power level of 63 dBA or below would reduce operational noise levels to 45 dBA Leq or below.

With this noise mitigation, project operation would generate less than 45 dBA Leq at all project property lines. Operational noise impacts as a result of the project would be less than significant.

This noise analysis report, in accordance with OMCPU Final Program EIR mitigation measure NOI-3, demonstrates that this project complies with the City's Noise Abatement and Control Ordinance.

7.2.2 Offsite Traffic Noise

No impacts were identified. No mitigation is necessary.

7.3 PROJECT CONSTRUCTION

If residences are constructed and a certificate of occupancy has been granted on the properties adjacent to the project on the west during a time when grading is occurring within 315 feet of the west project property line, the construction noise level at the west project property line would exceed the City of San Diego construction noise limit of 75 dBA Leq (12 hours). If residences are not constructed and/or a certificate of occupancy has not been granted, project construction would comply with City of San Diego construction noise limits without mitigation.

With the placement of a 10-foot-high noise barrier along the full west property line, construction activity would generate up to approximately 71 dBA Leq (12 hours) at the property to the west. The barrier can be plywood, mass-loaded vinyl, or any material with a minimum surface density of 3.5 pounds per square foot, and cannot have gaps or cracks through or below the barriers. Alternatively, limiting the duration of construction activity in areas near the west property line can reduce the construction noise level to 75 dBA Leq (12 hours) or below. Each halving of construction activity time corresponds to a 3 dBA Leq noise reduction.

During the time of the breeding season of March 1 through August 15 that the adjacent coastal California gnatcatcher habitat is occupied, project construction noise levels would exceed City of San Diego noise limit of 60 dBA Leq. Construction noise barriers and/or duration restrictions are not feasible to achieve



the level of noise reduction necessary to comply with this noise limit. Project site grading and site development must occur outside the breeding season of March 1 through August 15 or while the habitat is unoccupied.

With noise abatement (if necessary), project construction would generate less than 75 dBA Leq (12 hours) at all residential property lines. Project construction would occur during the hours allowed by the City of San Diego. Project construction would comply with San Diego Municipal Code Section 59.5.0404. Project site grading and site development would occur outside the coastal California gnatcatcher breeding season of March 1 through August 15, or while the adjacent habitat is unoccupied. Construction noise impacts as a result of the project would be less than significant.

This noise analysis report, in accordance with OMCPU Final Program EIR mitigation measure NOI-4, demonstrates that this project complies with standards established by the Municipal Code in Chapter 5, Article 9.5, Noise Abatement and Control.

Also, to avoid unnecessary annoyance from construction noise, the following construction noise control measures should be implemented:

- Perform all construction in a manner to minimize noise and vibration. The contractor should be required to select construction processes and techniques that create the lowest noise levels.
- Equip all internal combustion engines with a muffler of a type recommended by the manufacturer.
- Turn off idling equipment.
- Perform noisier operations during the times least sensitive to receptors.
- Implement a noise control monitoring program to limit the impacts.
- The construction contractor should be required by contract specification to comply with all local noise ordinances and obtain all necessary permits and variances.



8.0 REFERENCES

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9.0 LIST OF PREPARERS

Steve Fiedler, IN Principal

Associates, Inc.
INPUT: ROADWAYS

dBF Associates, Inc.					22 April 201	5					
SPF					TNM 2.5						
INPUT: ROADWAYS							Average	pavement typ	e shall be ι	used unles	,Si
PROJECT/CONTRACT:	Southvie	w East					a State hi	ghway agenc	y substant	iates the u	se
RUN:	Measure	t					of a differ	rent type with	the approv	al of FHW	A
Roadway		Points									
Name	Width	Name	No.	Coordinates	(pavement)		Flow Con	trol		Segment	
				X	Y	Z	Control	Speed	Percent	Pvmt	On
							Device	Constraint	Vehicles	Туре	Struct?
									Affected		
	ft			ft	ft	ft		mph	%		
SR 905	120.0	125	2	1 6,323,721.0	1,787,569.0	474.90)			Average	
		126	2	0 6,324,042.5	1,787,504.8	487.20)			Average	
		127	1	9 6,324,354.0	1,787,402.4	498.70				Average	
		128	18	8 6,324,658.0	1,787,278.6	506.90				Average	
		129	1	7 6,324,961.5	1,787,154.8	513.50				Average	
		130	1	6 6,325,265.5	1,787,031.0	515.10				Average	
		131	1	5 6,325,569.5	1,786,907.1	518.40				Average	
		132	14	4 6,325,873.5	1,786,783.6	518.40				Average	
		133	1	3 6,326,185.5	1,786,683.1	515.90				Average	
		134	1:	2 6,326,507.5	1,786,620.8	513.50				Average	
		135	1	1 6,326,834.5	1,786,597.6	510.20				Average	
		136	1	0 6,327,162.0	1,786,612.9	507.70				Average	
		137	9	9 6,327,489.0	1,786,639.6	505.20				Average	
		138		8 6,327,816.0	1,786,666.4	502.00				Average	
		139		7 6,328,143.0	1,786,693.1	499.50				Average	
		140		6 6,328,470.0	1,786,719.9	497.00				Average	
		141	:	5 6,328,797.0	1,786,743.5	493.80				Average	
		142		4 6,329,125.0	1,786,735.5	491.30				Average	
		143		3 6,329,449.5	1,786,689.0	492.90				Average	
		144		2 6,329,766.5	1,786,604.8	494.60				Average	
		145		1 6,330,071.0	1,786,484.0	496.20					
EB Offramp	12.0	10	3	1 6,324,981.0	1,787,058.9	511.80				Average	
		11	3	0 6,325,272.5	1,786,909.2	516.70				Average	
		12	2	9 6,325,564.5	1,786,759.6	524.90				Average	
		13	2	8 6,325,856.5	1,786,609.9	537.20				Average	

INPUT: ROADWAYS						Sou	uthview East		
		13+87	27	6,326,111.0	1,786,479.5	545.80			
WB Offramp	12.0	14	32	6,327,505.0	1,786,737.1	502.80		Average	
		13	33	6,327,177.0	1,786,738.2	509.40		Average	
		12	34	6,326,849.5	1,786,749.1	521.70		Average	
		11	35	6,326,527.5	1,786,809.6	534.00		Average	
		10	36	6,326,210.5	1,786,895.2	541.30			
Airway Road	48.0	15	47	6,324,624.5	1,786,914.5	521.70		Average	
		16	46	6,324,941.0	1,786,827.5	532.30		Average	
		17	45	6,325,256.0	1,786,736.8	542.20		Average	
		18	44	6,325,514.5	1,786,540.9	543.00		Average	
		19	43	6,325,667.5	1,786,252.0	539.70		Average	
		20	42	6,325,911.5	1,786,038.0	538.10			
EB Onramp	12.0	10	124	6,326,111.0	1,786,479.5	545.80		Average	
		11	26	6,326,438.5	1,786,459.1	536.40		Average	
		12	25	6,326,766.5	1,786,454.5	523.30		Average	
		13	24	6,327,091.5	1,786,496.6	511.00		Average	
		14	23	6,327,416.0	1,786,546.2	505.20		Average	
		15	22	6,327,741.5	1,786,585.9	501.10			
WB Onramp	12.0	14+85	125	6,326,210.5	1,786,895.2	541.30		Average	
		14	37	6,325,938.5	1,786,963.4	534.00		Average	
		13	38	6,325,620.0	1,787,043.0	521.70		Average	
		12	39	6,325,302.0	1,787,123.4	515.10		Average	
		11	40	6,324,990.5	1,787,225.6	511.80		Average	
		10	41	6,324,684.5	1,787,343.4	506.90			
Caliente Road	60.0	95+50	127	6,325,911.5	1,786,037.9	538.10		Average	
		96	70	6,325,991.0	1,786,186.8	540.50		Average	
		97	69	6,326,111.0	1,786,479.5	545.80		Average	Y
		98	68	6,326,196.0	1,786,807.9	543.00		Average	
		98+20	126	6,326,210.5	1,786,895.2	541.30		Average	
		99	67	6,326,233.5	1,787,133.5	532.30		Average	
		100	66	6,326,237.0	1,787,453.1	525.60			

INPUT: TRAFFIC FOR LAeq1h Volumes						So	uthview	East				
dBF Associates, Inc.				22 Apr	il 2015							
SPF				TNM 2	.5							
INPUT: TRAFFIC FOR LAeq1h Volumes		_										
PROJECT/CONTRACT:	Southview	East										
RUN:	Measured		1									
Roadway	Points											
Name	Name	No.	Segmen	t								
			Autos		MTruck	S	HTrucks	\$	Buses		Motorcy	cles
			V	S	V	S	V	S	V	S	V	S
			veh/hr	mph	veh/hr	mph	veh/hr	mph	veh/hr	mph	veh/hr	mph
SR 905	125	21	5010	65	156	65	180	65	0	0	12	65
	126	20	5010	65	156	65	180	65	0	0	12	65
	127	19	5010	65	156	65	180	65	0	0	12	65
	128	18	5010	65	156	65	180	65	0	0	12	65
	129	17	5010	65	156	65	180	65	0	0	12	65
	130	16	5010	65	156	65	180	65	0	0	12	65
	131	15	5010	65	156	65	180	65	0	0	12	65
	132	14	5010	65	156	65	180	65	0	0	12	65
	133	13	5010	65	156	65	180	65	0	0	12	65
	134	12	5010	65	156	65	180	65	0	0	12	65
	135	11	5010	65	156	65	180	65	0	0	12	65
	136	10	5010	65	156	65	180	65	0	0	12	65
	137	9	5010	65	156	65	180	65	0	0	12	65
	138	8	5010	65	156	65	180	65	0	0	12	65
	139	7	5010	65	156	65	180	65	0	0	12	65
	140	6	5010	65	156	65	180	65	0	0	12	65
	141	5	5010	65	156	65	180	65	0	0	12	65
	142	4	5010	65	156	65	180	65	0	0	12	65
	143	3	5010	65	156	65	180	65	0	0	12	65
	144	2	5010	65	156	65	180	65	0	0	12	65
	145	1										
EB Offramp	10	31	0	0	0	0	0	0	0	0	0	0
	11	30	0	0	0	0	0	0	0	0	0	0

INPUT: TRAFFIC FOR LAeq1h Volumes						So	uthview	East				
	12	29	0	0	0	0	0	0	0	0	0	0
	13	28	0	0	0	0	0	0	0	0	0	0
	13+87	27										
WB Offramp	14	32	0	0	0	0	0	0	0	0	0	0
	13	33	0	0	0	0	0	0	0	0	0	0
	12	34	0	0	0	0	0	0	0	0	0	0
	11	35	0	0	0	0	0	0	0	0	0	0
	10	36										
Airway Road	15	47	690	30	12	30	0	0	72	30	0	0
	16	46	690	30	12	30	0	0	72	30	0	0
	17	45	690	30	12	30	0	0	72	30	0	0
	18	44	690	30	12	30	0	0	72	30	0	0
	19	43	690	30	12	30	0	0	72	30	0	0
	20	42										
EB Onramp	10	124	0	0	0	0	0	0	0	0	0	0
	11	26	0	0	0	0	0	0	0	0	0	0
	12	25	0	0	0	0	0	0	0	0	0	0
	13	24	0	0	0	0	0	0	0	0	0	0
	14	23	0	0	0	0	0	0	0	0	0	0
	15	22										
WB Onramp	14+85	125	0	0	0	0	0	0	0	0	0	0
	14	37	0	0	0	0	0	0	0	0	0	0
	13	38	0	0	0	0	0	0	0	0	0	0
	12	39	0	0	0	0	0	0	0	0	0	0
	11	40	0	0	0	0	0	0	0	0	0	0
	10	41										
Caliente Road	95+50	127	690	30	12	30	0	0	72	30	0	0
	96	70	690	30	12	30	0	0	72	30	0	0
	97	69	690	30	12	30	0	0	72	30	0	0
	98	68	690	30	12	30	0	0	72	30	0	0
	98+20	126	690	30	12	30	0	0	72	30	0	0
	99	67	690	30	12	30	0	0	72	30	0	0
	100	66										

INPUT: RECEIVERS							9	Southview	East		
dBF Associates, Inc.						22 April 2	015				
SPF						TNM 2.5					
INPUT: RECEIVERS											
PROJECT/CONTRACT:	South	view E	ast	1	1						1
RUN:	Measu	ured									
Receiver											1
Name	No.	#DUs	Coordinates	(ground)		Height	Input Sou	nd Levels a	and Criteria	a	Active
			X	Y	Z	above	Existing	Impact Cr	iteria	NR	in
						Ground	LAeq1h	LAeq1h	Sub'l	Goal	Calc.
			ft	ft	ft	ft	dBA	dBA	dB	dB	
ML2	1	1	6,326,033.0	1,786,160.2	535.00	4.92	59.70	66	10.0	8.0	i Y
ML3	2	1	6,326,232.5	1,785,332.0	531.00	4.92	49.90	66	10.0	8.0) Y
ML1	51	1	6,326,403.5	1,786,347.5	532.40	4.92	65.00	66	10.0	8.0) Y

RESULTS: SOUND LEVELS		1	1	1	1	S	Southview	East			1	
dBF Associates. Inc.							22 April 2	015				
SPF							TNM 2.5					
							Calculate	d with TN	M 2.5			
RESULTS: SOUND LEVELS												
PROJECT/CONTRACT:		Southv	iew East	1								
RUN:		Measu	red									
BARRIER DESIGN:		INPUT	HEIGHTS					Average	pavement typ	e shall be use	ed unless	;
								a State h	ighway agenc	y substantiat	es the us	е
ATMOSPHERICS:		68 deg	F, 50% RH	ł		·		of a diffe	rent type with	approval of F	HWA.	
Receiver									-			
Name	No.	#DUs	Existing	No Barrier	1				With Barrier			
		İ	LAeq1h	LAeq1h		Increase over	existing	Туре	Calculated	Noise Reduc	ction	
				Calculated	Crit'n	Calculated	Crit'n	Impact	LAeq1h	Calculated	Goal	Calculated
2	ĺ						Sub'l Inc					minus
												Goal
			dBA	dBA	dBA	dB	dB		dBA	dB	dB	dB
ML2	1	1	59.7	64.2	2 6	6 4.5	5 10)	64.2	2 0.0)	8 -8.0
ML3	2	: 1	49.9	56.4	6	6.5	5 10)	56.4	4 0.0)	8 -8.0
ML1	51	1	65.0	64.4	6	6 -0.6	6 10)	64.4	4 0.0)	8 -8.0
Dwelling Units		# DUs	Noise Re	duction								
			Min	Avg	Max							
			dB	dB	dB							
All Selected		3	8 0.0	0.0	0 0	.0						
All Impacted		C	0.0	0.0	0 0	.0						
All that meet NR Goal		C	0.0	0.0	0 0	.0						

INPUT: ROADWAYS

dBF Associates, Inc.					4 January 20	016					
SPF					TNM 2.5						
INPUT: ROADWAYS							Average	pavement type	e shall be ι	used unles	S
PROJECT/CONTRACT:	Southvie	w East					a State hi	ghway agenc	y substant	iates the u	se
RUN:	Future						of a differ	ent type with	the approv	al of FHW	Α
Roadway		Points									-
Name	Width	Name	No.	Coordinates	(pavement)		Flow Con	trol		Segment	
				X	Y	Z	Control	Speed	Percent	Pvmt	On
							Device	Constraint	Vehicles	Туре	Struct?
									Affected		
	ft			ft	ft	ft		mph	%		
EB Offramp	12.0	10	31	6,324,981.0	1,787,058.9	511.80)			Average	
		11	30	6,325,272.5	1,786,909.2	2 516.70)			Average	
		12	29	6,325,564.5	1,786,759.6	524.90)			Average	
		13	28	6,325,856.5	1,786,609.9	537.20)			Average	
		13+87	27	6,326,111.0	1,786,479.5	545.80					
WB Offramp	12.0	14	32	6,327,505.0	1,786,737.1	502.80				Average	
		13	33	6,327,177.0	1,786,738.2	2 509.40				Average	
		12	34	6,326,849.5	1,786,749.1	521.70				Average	
		11	35	6,326,527.5	1,786,809.6	534.00				Average	
		10	36	6,326,210.5	1,786,895.2	2 541.30					
Airway Road W	48.0	15	47	6,324,624.5	1,786,914.5	521.70				Average	
		16	46	6,324,941.0	1,786,827.5	532.30				Average	
		17	45	6,325,256.0	1,786,736.8	542.20				Average	
		18	44	6,325,514.5	1,786,540.9	543.00				Average	
		19	43	6,325,667.5	1,786,252.0	539.70				Average	
		20	42	6,325,911.5	1,786,038.0	538.10					
Airway Road E	48.0	10	65	6,325,911.5	1,786,037.9	538.10				Average	
		11	64	6,325,995.5	1,785,983.9	538.10				Average	
		12	63	6,326,082.5	1,785,934.9	538.10				Average	
		13	62	6,326,172.0	1,785,890.4	538.10)			Average	
		14	61	6,326,264.0	1,785,850.6	538.10				Average	
		15	60	6,326,357.5	1,785,816.0	538.10				Average	
		16	59	6,326,453.0	1,785,786.5	538.10				Average	
		17	58	6,326,550.0	1,785,762.1	538.10				Average	
		18	57	6,326,648.5	1,785,743.0	538.10				Average	

56 6,326,747.5 1,785,729.2 538.10 19 Average 20 55 6,326,847.0 1,785,720.9 538.10 Average 21 54 6.326.947.0 1,785,717.9 538.10 Average 22 53 6,327,047.0 1,785,720.4 538.10 Average 23 52 6,327,146.5 1,785,728.1 538.10 Average 6,327,245.5 1,785,741.4 538.10 24 51 Average 1,785,759.9 25 50 6,327,344.0 538.10 Average 6,327,441.0 1,785,783.8 26 49 538.10 Average 6,327,536.5 1,785,812.8 27 48 538.10 125 6,326,210.5 1,786,895.2 12.0 14+85 541.30 WB Onramp Average 6,325,938.5 1,786,963.4 14 37 534.00 Average 38 6,325,620.0 13 1,787,043.0 521.70 Average 6.325.302.0 1,787,123.4 515.10 12 39 Average 1,787,225.6 11 40 6,324,990.5 511.80 Average 6,324,684.5 1,787,343.4 10 41 506.90 point173 1,786,466.5 EB Onramp 36.0 173 6,326,125.0 543.00 Onramp 0.00 100 Average 6,326,173.0 1,786,459.0 172 542.00 point172 Average 1,786,457.0 point171 171 6.326.217.5 541.00 Average 6,326,251.0 1,786,454.8 point170 170 540.00 Average 169 6,326,289.5 1,786,452.2 point169 539.00 Average 1,786,450.2 Average point168 168 6,326,321.0 538.00 6,326,349.0 1,786,448.4 point167 167 537.00 Average 1,786,446.4 point166 166 6,326,380.0 536.00 Average 6,326,413.5 1,786,444.1 point165 165 535.00 Average 6,326,438.5 1,786,442.5 164 534.00 Average point164 point163 163 6,326,465.5 1,786,440.9 533.00 Average 1,786,439.1 162 6,326,494.0 532.00 point162 Average 161 6,326,520.5 1,786,438.0 531.00 Average point161 6,326,544.5 1,786,437.1 530.00 point160 160 Average 159 6,326,568.0 1,786,436.2 529.00 point159 Average 6,326,593.0 1,786,435.6 528.00 point158 158 Average 157 6,326,617.5 1,786,435.2 527.00 Average point157 6,326,641.5 1,786,435.2 526.00 point156 156 Average 6,326,665.5 525.00 155 1,786,435.4 Average point155 6,326,688.5 1,786,436.0 point154 154 524.00 Average 6,326,712.0 1,786,436.8 point153 153 523.00 Average 152 6,326,736.0 1,786,438.0 522.00 Average point152 6,326,761.5 1,786,439.6 151 521.00 point151 Average

150 6,326,786.0

1,786,441.8

520.00

C:\Dropbox (dBF Associates)\dBFA Team_TNM\Southview East\2015-12\Future

point150

INPUT: ROADWAYS

Average

INPUT: ROADWAYS						South	view East		
		point149	149	6,326,810.0	1,786,443.9	519.00		Average	
		point148	148	6,326,834.0	1,786,446.1	518.00		Average	
		point147	147	6,326,859.0	1,786,449.0	517.00		Average	
		point146	146	6,326,884.0	1,786,452.0	516.00		Average	
		point145	145	6,326,909.5	1,786,455.4	515.00		Average	
		point144	144	6,326,934.0	1,786,458.8	514.00		Average	
		point143	143	6,326,956.5	1,786,462.1	513.00		Average	
		point142	142	6,326,981.5	1,786,466.0	512.00		Average	
		point141	141	6,327,010.5	1,786,470.4	511.00		Average	
		point140	140	6,327,039.5	1,786,474.8	510.00		Average	
		point139	139	6,327,066.0	1,786,478.8	509.00		Average	
		point138	138	6,327,099.0	1,786,483.9	508.00		Average	
		point137	137	6,327,144.5	1,786,490.9	507.00		Average	
		point136	136	6,327,191.0	1,786,498.0	506.00		Average	
		point135	135	6,327,236.0	1,786,506.1	505.00		Average	
		point134	134	6,327,296.5	1,786,515.2	504.00		Average	
		point133	133	6,327,367.5	1,786,527.8	503.00		Average	
		point132	132	6,327,455.5	1,786,541.5	502.00		Average	
		point131	131	6,327,540.0	1,786,554.8	501.00		Average	
		point130	130	6,327,612.0	1,786,564.1	500.00		Average	
		point129	129	6,327,709.5	1,786,574.8	499.00			
SR 905 EB3	12.0	point194	194	6,323,709.0	1,787,508.2	474.90		Average	
		point193	193	6,324,026.5	1,787,444.8	487.20		Average	
		point192	192	6,324,332.5	1,787,344.1	498.70		Average	
		point191	191	6,324,634.5	1,787,221.1	506.90		Average	
		point190	190	6,324,938.5	1,787,097.4	513.50		Average	
		point189	189	6,325,242.0	1,786,973.6	515.10		Average	
		point188	188	6,325,546.0	1,786,849.8	518.40		Average	
		point187	187	6,325,852.0	1,786,725.4	518.40		Average	
		point186	186	6,326,170.0	1,786,623.0	515.90		Average	
		point185	185	6,326,499.0	1,786,559.2	513.10		Average	
		point184	184	6,326,833.5	1,786,535.5	510.20		Average	
		point183	183	6,327,166.0	1,786,551.0	506.50		Average	
		point182	182	6,327,494.0	1,786,577.9	502.00		Average	
		point181	181	6,327,821.0	1,786,604.6	499.00		Average	
		point180	180	6,328,148.0	1,786,631.4	499.50		Average	
		point179	179	6,328,474.5	1,786,658.0	497.00		Average	
		point178	178	6,328,798.5	1,786,681.5	493.80		Average	
		point177	177	6,329,119.5	1,786,673.6	491.30		Average	

INPUT: ROADWAYS							Southvie	ew East		
		point176	176	6,329,437.0	1,786,628.1	492.90			Average	
		point175	175	6,329,747.0	1,786,545.8	494.60			Average	
		point174	174	6,330,048.5	1,786,426.2	496.20				
SR 905 EB2	12.0	point215	215	6,323,711.0	1,787,520.0	474.90			Average	
		point214	214	6,324,030.0	1,787,456.4	487.20			Average	
		point213	213	6,324,337.0	1,787,355.4	498.70			Average	
		point212	212	6,324,639.0	1,787,232.2	506.90			Average	
		point211	211	6,324,943.0	1,787,108.5	513.50			Average	
		point210	210	6,325,246.5	1,786,984.6	515.10			Average	
		point209	209	6,325,550.5	1,786,860.9	518.40			Average	
		point208	208	6,325,856.0	1,786,736.6	518.40			Average	
		point207	207	6,326,173.0	1,786,634.6	515.90			Average	
		point206	206	6,326,501.0	1,786,571.1	512.60			Average	
		point205	205	6,326,834.0	1,786,547.6	509.70			Average	
		point204	204	6,327,165.0	1,786,563.0	506.40			Average	
		point203	203	6,327,493.0	1,786,589.8	502.00			Average	
		point202	202	6,327,820.0	1,786,616.5	499.00			Average	
		point201	201	6,328,147.0	1,786,643.2	499.50			Average	
		point200	200	6,328,474.0	1,786,670.0	497.00			Average	
		point199	199	6,328,798.5	1,786,693.5	493.80			Average	
		point198	198	6,329,120.5	1,786,685.5	491.30			Average	
		point197	197	6,329,439.5	1,786,639.9	492.90			Average	
		point196	196	6,329,750.5	1,786,557.2	494.60			Average	
		point195	195	6,330,053.0	1,786,437.5	496.20				
SR 905 EB1	12.0	point236	236	6,323,713.5	1,787,531.8	474.90			Average	
		point235	235	6,324,033.0	1,787,468.0	487.20			Average	
		point234	234	6,324,341.0	1,787,366.6	498.70			Average	
		point233	233	6,324,643.5	1,787,243.4	506.90			Average	
		point232	232	6,324,947.5	1,787,119.6	513.50			Average	
		point231	231	6,325,251.0	1,786,995.8	515.10			Average	
		point230	230	6,325,555.0	1,786,872.0	518.40			Average	
		point229	229	6,325,860.5	1,786,747.9	518.40			Average	
		point228	228	6,326,176.0	1,786,646.2	515.90			Average	
		point227	227	6,326,502.5	1,786,583.1	512.00			Average	
		point226	226	6,326,834.0	1,786,559.6	509.40			Average	
		point225	225	6,327,164.5	1,786,575.0	505.70			Average	
		point224	224	6,327,492.0	1,786,601.8	502.00			Average	
		point223	223	6,327,819.0	1,786,628.5	499.00			Average	
		point222	222	6,328,146.0	1,786,655.2	499.50			Average	

		point221	221 6,328,473.0	1,786,682.0	497.00		Average	
		point220	220 6,328,798.0	1,786,705.5	493.80		Average	
		point219	219 6,329,121.5	1,786,697.5	491.30		Average	
		point218	218 6,329,442.0	1,786,651.8	492.90		Average	
		point217	217 6,329,754.5	1,786,568.6	494.60		Average	
		point216	216 6,330,057.0	1,786,448.6	496.20			
SR 905 WB1	12.0	point237	237 6,330,085.0	1,786,519.2	496.20		Average	
		point238	238 6,329,778.5	1,786,640.9	494.60		Average	
		point239	239 6,329,457.0	1,786,726.2	492.90		Average	
		point240	240 6,329,128.0	1,786,773.4	491.30		Average	
		point241	241 6,328,796.0	1,786,781.5	493.80		Average	
		point242	242 6,328,467.0	1,786,757.8	497.00		Average	
		point243	243 6,328,140.0	1,786,731.0	499.50		Average	
		point244	244 6,327,813.0	1,786,704.2	499.00		Average	
		point245	245 6,327,486.0	1,786,677.5	501.00		Average	
		point246	246 6,327,159.5	1,786,650.8	504.00		Average	
		point247	247 6,326,835.0	1,786,635.8	510.20		Average	
		point248	248 6,326,512.5	1,786,658.5	513.50		Average	
		point249	249 6,326,195.0	1,786,720.0	515.90		Average	
		point250	250 6,325,886.5	1,786,819.4	518.40		Average	
		point251	251 6,325,583.5	1,786,942.4	518.40		Average	
		point252	252 6,325,280.0	1,787,066.1	515.10		Average	
		point253	253 6,324,976.0	1,787,190.0	513.50		Average	
		point254	254 6,324,672.0	1,787,313.8	506.90		Average	
		point255	255 6,324,367.0	1,787,438.0	498.70		Average	
		point256	256 6,324,052.5	1,787,541.6	487.20		Average	
		point257	257 6,323,728.5	1,787,606.2	474.90			
SR 905 WB2	12.0	point258	258 6,330,089.5	1,786,530.4	496.20		Average	
		point259	259 6,329,782.0	1,786,652.4	494.60		Average	
		point260	260 6,329,459.5	1,786,738.1	492.90		Average	
		point261	261 6,329,129.0	1,786,785.4	491.30		Average	
		point262	262 6,328,796.0	1,786,793.5	493.80		Average	
		point263	263 6,328,466.0	1,786,769.8	497.00		Average	
		point264	264 6,328,139.0	1,786,743.0	499.50		Average	
		point265	265 6,327,812.0	1,786,716.2	499.00		Average	
		point266	266 6,327,485.0	1,786,689.5	501.00		Average	
		point267	267 6,327,159.0	1,786,662.8	504.00		Average	
		point268	268 6,326,835.0	1,786,647.8	510.20		Average	
		point269	269 6,326,514.0	1,786,670.5	513.50		Average	

INPUT: ROADWAYS

INPUT: ROADWAYS							Southview	East		
		point270	270	6,326,198.0	1,786,731.6	515.90			Average	
		point271	271	6,325,890.5	1,786,830.6	518.40			Average	
		point272	272	6,325,588.0	1,786,953.5	518.40			Average	
		point273	273	6,325,284.5	1,787,077.2	515.10			Average	
		point274	274	6,324,980.5	1,787,201.1	513.50			Average	
		point275	275	6,324,676.5	1,787,324.9	506.90			Average	
		point276	276	6,324,371.5	1,787,449.2	498.70			Average	
		point277	277	6,324,055.5	1,787,553.2	487.20			Average	
		point278	278	6,323,731.0	1,787,618.1	474.90				
SR 905 WB3	12.0	point279	279	6,330,094.0	1,786,541.6	496.20			Average	
		point280	280	6,329,786.0	1,786,663.8	494.60			Average	
		point281	281	6,329,462.0	1,786,749.9	492.90			Average	
		point282	282	6,329,130.0	1,786,797.4	491.30			Average	
		point283	283	6,328,795.5	1,786,805.5	493.80			Average	
		point284	284	6,328,465.0	1,786,781.6	497.00			Average	
		point285	285	6,328,138.0	1,786,754.9	499.50			Average	
		point286	286	6,327,811.0	1,786,728.1	499.00			Average	
		point287	287	6,327,484.0	1,786,701.4	501.00			Average	
		point288	288	6,327,158.0	1,786,674.8	504.00			Average	
		point289	289	6,326,835.0	1,786,659.8	510.20			Average	
		point290	290	6,326,515.5	1,786,682.4	513.50			Average	
		point291	291	6,326,201.0	1,786,743.2	515.90			Average	
		point292	292	6,325,894.5	1,786,842.0	518.40			Average	
		point293	293	6,325,593.0	1,786,964.6	518.40			Average	
		point294	294	6,325,289.0	1,787,088.4	515.10			Average	
		point295	295	6,324,985.0	1,787,212.2	513.50			Average	
		point296	296	6,324,681.5	1,787,336.0	506.90			Average	
		point297	297	6,324,375.5	1,787,460.5	498.70			Average	
		point298	298	6,324,058.5	1,787,564.9	487.20			Average	
		point299	299	6,323,733.0	1,787,629.9	474.90				

INPUT: TRAFFIC FOR LAeq1h Volumes						So	outhview	East				
dBF Associates, Inc.				4 Janu	ary 2016	5						
SPF				TNM 2	.5							
DPO IECT/CONTRACT.	Southview	Fact										
	Future	Lasi										
	Delate											
Roadway	Points		0							<u> </u>		
Name	Name	NO.	Segmer	IT					_			
			Autos	0	MITUCK	s	HIRUCKS	5	Buses		Motorcy	
			V	S	V	S	V	S	V Vah/hr	S	V	S
			ven/nr	mpn	ven/nr	mpn	ven/nr	mpn	ven/nr	mpn	ven/nr	mpn
EB Offramp	10	31	0	0 0	0	0	0	0	0	0	0	0
	11	30	0	0 0	0	0	0	0	0	0	0	0
	12	29	0	0 0	0	0	0	0	0	0	0	0
	13	28	0	0 0	0	0	0	0	0	0	0	0
	13+87	27										
WB Offramp	14	32	0	0 0	0	0	0	0	0	0	0	0
	13	33	0	0 0	0	0	0	0	0	0	0	0
	12	34	0	0 0	0	0	0	0	0	0	0	0
	11	35	0	0 0	0	0	0	0	0	0	0	0
	10	36										
Airway Road W	15	47	1788	30	40	30	0	0	181	30	0	0
	16	46	1788	30	40	30	0	0	181	30	0	0
	17	45	1788	30	40	30	0	0	181	30	0	0
	18	44	1788	30	40	30	0	0	181	30	0	0
	19	43	1788	30	40	30	0	0	181	30	0	0
	20	42										
Airway Road E	10	65	317	30	7	30	3	30	3	30	0	0
	11	64	317	30	7	30	3	30	3	30	0	0
	12	63	317	30	7	30	3	30	3	30	0	0
	13	62	317	30	7	30	3	30	3	30	0	0
	14	61	317	30	7	30	3	30	3	30	0	0
	15	60	317	30	7	30	3	30	3	30	0	0
	16	59	317	30	7	30	3	30	3	30	0	0

INPUT: TRAFFIC FOR LAeq1h Volumes						So	uthview	East				
	17	58	317	30	7	30	3	30	3	30	0	0
	18	57	317	30	7	30	3	30	3	30	0	0
	19	56	317	30	7	30	3	30	3	30	0	0
	20	55	317	30	7	30	3	30	3	30	0	0
	21	54	317	30	7	30	3	30	3	30	0	0
	22	53	317	30	7	30	3	30	3	30	0	0
	23	52	317	30	7	30	3	30	3	30	0	0
	24	51	317	30	7	30	3	30	3	30	0	0
	25	50	317	30	7	30	3	30	3	30	0	0
	26	49	317	30	7	30	3	30	3	30	0	0
	27	48										
WB Onramp	14+85	125	0	0	0	0	0	0	0	0	0	0
	14	37	0	0	0	0	0	0	0	0	0	0
	13	38	0	0	0	0	0	0	0	0	0	0
	12	39	0	0	0	0	0	0	0	0	0	0
	11	40	0	0	0	0	0	0	0	0	0	0
	10	41										
EB Onramp	point173	173	219	65	5	65	10	65	7	65	2	65
	point172	172	219	65	5	65	10	65	7	65	2	65
	point171	171	219	65	5	65	10	65	7	65	2	65
	point170	170	219	65	5	65	10	65	7	65	2	65
	point169	169	219	65	5	65	10	65	7	65	2	65
	point168	168	219	65	5	65	10	65	7	65	2	65
	point167	167	219	65	5	65	10	65	7	65	2	65
	point166	166	219	65	5	65	10	65	7	65	2	65
	point165	165	219	65	5	65	10	65	7	65	2	65
	point164	164	219	65	5	65	10	65	7	65	2	65
	point163	163	219	65	5	65	10	65	7	65	2	65
	point162	162	219	65	5	65	10	65	7	65	2	65
	point161	161	219	65	5	65	10	65	7	65	2	65
	point160	160	219	65	5	65	10	65	7	65	2	65
	point159	159	219	65	5	65	10	65	7	65	2	65
	point158	158	219	65	5	65	10	65	7	65	2	65
	point157	157	219	65	5	65	10	65	7	65	2	65
	point156	156	219	65	5	65	10	65	7	65	2	65
	point155	155	219	65	5	65	10	65	7	65	2	65

INPUT: TRAFFIC FOR LAeq1h Volumes						So	uthview	East				
	point154	154	219	65	5	65	10	65	7	65	2	65
	point153	153	219	65	5	65	10	65	7	65	2	65
	point152	152	219	65	5	65	10	65	7	65	2	65
	point151	151	219	65	5	65	10	65	7	65	2	65
	point150	150	219	65	5	65	10	65	7	65	2	65
	point149	149	219	65	5	65	10	65	7	65	2	65
	point148	148	219	65	5	65	10	65	7	65	2	65
	point147	147	219	65	5	65	10	65	7	65	2	65
	point146	146	219	65	5	65	10	65	7	65	2	65
	point145	145	219	65	5	65	10	65	7	65	2	65
	point144	144	219	65	5	65	10	65	7	65	2	65
	point143	143	219	65	5	65	10	65	7	65	2	65
	point142	142	219	65	5	65	10	65	7	65	2	65
	point141	141	219	65	5	65	10	65	7	65	2	65
	point140	140	219	65	5	65	10	65	7	65	2	65
	point139	139	219	65	5	65	10	65	7	65	2	65
	point138	138	219	65	5	65	10	65	7	65	2	65
	point137	137	219	65	5	65	10	65	7	65	2	65
	point136	136	219	65	5	65	10	65	7	65	2	65
	point135	135	219	65	5	65	10	65	7	65	2	65
	point134	134	219	65	5	65	10	65	7	65	2	65
	point133	133	219	65	5	65	10	65	7	65	2	65
	point132	132	219	65	5	65	10	65	7	65	2	65
	point131	131	219	65	5	65	10	65	7	65	2	65
	point130	130	219	65	5	65	10	65	7	65	2	65
	point129	129										
SR 905 EB3	point194	194	1584	65	54	65	144	65	0	0	18	65
	point193	193	1584	65	54	65	144	65	0	0	18	65
	point192	192	1584	65	54	65	144	65	0	0	18	65
	point191	191	1584	65	54	65	144	65	0	0	18	65
	point190	190	1584	65	54	65	144	65	0	0	18	65
	point189	189	1584	65	54	65	144	65	0	0	18	65
	point188	188	1584	65	54	65	144	65	0	0	18	65
	point187	187	1584	65	54	65	144	65	0	0	18	65
	point186	186	1584	65	54	65	144	65	0	0	18	65
	point185	185	1584	65	54	65	144	65	0	0	18	65

INPUT: TRAFFIC FOR LAeq1h Volum	es					So	uthview	East				
	point184	184	1584	65	54	65	144	65	0	0	18	65
	point183	183	1584	65	54	65	144	65	0	0	18	65
	point182	182	1584	65	54	65	144	65	0	0	18	65
	point181	181	1584	65	54	65	144	65	0	0	18	65
	point180	180	1584	65	54	65	144	65	0	0	18	65
	point179	179	1584	65	54	65	144	65	0	0	18	65
	point178	178	1584	65	54	65	144	65	0	0	18	65
	point177	177	1584	65	54	65	144	65	0	0	18	65
	point176	176	1584	65	54	65	144	65	0	0	18	65
	point175	175	1584	65	54	65	144	65	0	0	18	65
	point174	174										
SR 905 EB2	point215	215	1584	65	54	65	144	65	0	0	18	65
	point214	214	1584	65	54	65	144	65	0	0	18	65
	point213	213	1584	65	54	65	144	65	0	0	18	65
	point212	212	1584	65	54	65	144	65	0	0	18	65
	point211	211	1584	65	54	65	144	65	0	0	18	65
	point210	210	1584	65	54	65	144	65	0	0	18	65
	point209	209	1584	65	54	65	144	65	0	0	18	65
	point208	208	1584	65	54	65	144	65	0	0	18	65
	point207	207	1584	65	54	65	144	65	0	0	18	65
	point206	206	1584	65	54	65	144	65	0	0	18	65
	point205	205	1584	65	54	65	144	65	0	0	18	65
	point204	204	1584	65	54	65	144	65	0	0	18	65
	point203	203	1584	65	54	65	144	65	0	0	18	65
	point202	202	1584	65	54	65	144	65	0	0	18	65
	point201	201	1584	65	54	65	144	65	0	0	18	65
	point200	200	1584	65	54	65	144	65	0	0	18	65
	point199	199	1584	65	54	65	144	65	0	0	18	65
	point198	198	1584	65	54	65	144	65	0	0	18	65
	point197	197	1584	65	54	65	144	65	0	0	18	65
	point196	196	1584	65	54	65	144	65	0	0	18	65
	point195	195										
SR 905 EB1	point236	236	1584	65	54	65	144	65	0	0	18	65
	point235	235	1584	65	54	65	144	65	0	0	18	65
	point234	234	1584	65	54	65	144	65	0	0	18	65
	point233	233	1584	65	54	65	144	65	0	0	18	65

INPUT: TRAFFIC FOR LAeq1h Volumes						So	uthview	East				
	point232	232	1584	65	54	65	144	65	0	0	18	65
	point231	231	1584	65	54	65	144	65	0	0	18	65
	point230	230	1584	65	54	65	144	65	0	0	18	65
	point229	229	1584	65	54	65	144	65	0	0	18	65
	point228	228	1584	65	54	65	144	65	0	0	18	65
	point227	227	1584	65	54	65	144	65	0	0	18	65
	point226	226	1584	65	54	65	144	65	0	0	18	65
	point225	225	1584	65	54	65	144	65	0	0	18	65
	point224	224	1584	65	54	65	144	65	0	0	18	65
	point223	223	1584	65	54	65	144	65	0	0	18	65
	point222	222	1584	65	54	65	144	65	0	0	18	65
	point221	221	1584	65	54	65	144	65	0	0	18	65
	point220	220	1584	65	54	65	144	65	0	0	18	65
	point219	219	1584	65	54	65	144	65	0	0	18	65
	point218	218	1584	65	54	65	144	65	0	0	18	65
	point217	217	1584	65	54	65	144	65	0	0	18	65
	point216	216										
SR 905 WB1	point237	237	1584	65	54	65	144	65	0	0	18	65
	point238	238	1584	65	54	65	144	65	0	0	18	65
	point239	239	1584	65	54	65	144	65	0	0	18	65
	point240	240	1584	65	54	65	144	65	0	0	18	65
	point241	241	1584	65	54	65	144	65	0	0	18	65
	point242	242	1584	65	54	65	144	65	0	0	18	65
	point243	243	1584	65	54	65	144	65	0	0	18	65
	point244	244	1584	65	54	65	144	65	0	0	18	65
	point245	245	1584	65	54	65	144	65	0	0	18	65
	point246	246	1584	65	54	65	144	65	0	0	18	65
	point247	247	1584	65	54	65	144	65	0	0	18	65
	point248	248	1584	65	54	65	144	65	0	0	18	65
	point249	249	1584	65	54	65	144	65	0	0	18	65
	point250	250	1584	65	54	65	144	65	0	0	18	65
	point251	251	1584	65	54	65	144	65	0	0	18	65
	point252	252	1584	65	54	65	144	65	0	0	18	65
	point253	253	1584	65	54	65	144	65	0	0	18	65
	point254	254	1584	65	54	65	144	65	0	0	18	65
	point255	255	1584	65	54	65	144	65	0	0	18	65

INPUT: TRAFFIC FOR LAeq1h Volumes	UT: TRAFFIC FOR LAeq1h Volumes						uthview	East				
	point256	256	1584	65	54	65	144	65	0	0	18	65
	point257	257										
SR 905 WB2	point258	258	1584	65	54	65	144	65	0	0	18	65
	point259	259	1584	65	54	65	144	65	0	0	18	65
	point260	260	1584	65	54	65	144	65	0	0	18	65
	point261	261	1584	65	54	65	144	65	0	0	18	65
	point262	262	1584	65	54	65	144	65	0	0	18	65
	point263	263	1584	65	54	65	144	65	0	0	18	65
	point264	264	1584	65	54	65	144	65	0	0	18	65
	point265	265	1584	65	54	65	144	65	0	0	18	65
	point266	266	1584	65	54	65	144	65	0	0	18	65
	point267	267	1584	65	54	65	144	65	0	0	18	65
	point268	268	1584	65	54	65	144	65	0	0	18	65
	point269	269	1584	65	54	65	144	65	0	0	18	65
	point270	270	1584	65	54	65	144	65	0	0	18	65
	point271	271	1584	65	54	65	144	65	0	0	18	65
	point272	272	1584	65	54	65	144	65	0	0	18	65
	point273	273	1584	65	54	65	144	65	0	0	18	65
	point274	274	1584	65	54	65	144	65	0	0	18	65
	point275	275	1584	65	54	65	144	65	0	0	18	65
	point276	276	1584	65	54	65	144	65	0	0	18	65
	point277	277	1584	65	54	65	144	65	0	0	18	65
	point278	278										
SR 905 WB3	point279	279	1584	65	54	65	144	65	0	0	18	65
	point280	280	1584	65	54	65	144	65	0	0	18	65
	point281	281	1584	65	54	65	144	65	0	0	18	65
	point282	282	1584	65	54	65	144	65	0	0	18	65
	point283	283	1584	65	54	65	144	65	0	0	18	65
	point284	284	1584	65	54	65	144	65	0	0	18	65
	point285	285	1584	65	54	65	144	65	0	0	18	65
	point286	286	1584	65	54	65	144	65	0	0	18	65
	point287	287	1584	65	54	65	144	65	0	0	18	65
	point288	288	1584	65	54	65	144	65	0	0	18	65
	point289	289	1584	65	54	65	144	65	0	0	18	65
	point290	290	1584	65	54	65	144	65	0	0	18	65
	point291	291	1584	65	54	65	144	65	0	0	18	65

INPUT: TRAFFIC FOR LAeq1h Volumes						So	uthview	East				
	point292	292	1584	65	54	65	144	65	0	0	18	65
	point293	293	1584	65	54	65	144	65	0	0	18	65
	point294	294	1584	65	54	65	144	65	0	0	18	65
	point295	295	1584	65	54	65	144	65	0	0	18	65
	point296	296	1584	65	54	65	144	65	0	0	18	65
	point297	297	1584	65	54	65	144	65	0	0	18	65
	point298	298	1584	65	54	65	144	65	0	0	18	65
	point299	299										

INPUT: RECEIVERS		1	1				1	5	Southview	East		1
dBF Associates, Inc.							4 January	2016				
SPF							TNM 2.5					
INPUT: RECEIVERS												
PROJECT/CONTRACT:	South	view E	ast									
RUN:	Future	•										
Receiver												
Name	No.	#DUs	Coordinates	(ground)			Height	Input Sou	nd Levels a	and Criteria	1	Active
			X	Y	Ζ		above	Existing	Impact Cr	iteria	NR	in
							Ground	LAeq1h	LAeq1h	Sub'l	Goal	Calc.
			ft	ft	ft		ft	dBA	dBA	dB	dB	
2 NW	58	1	6,326,665.0	1,786,319.9		530.00	5.00	0.00	66	10.0	8.0	Y
4 NW	59	1	6,326,771.5	1,786,310.1		528.90	5.00	0.00	66	10.0	8.0	Y
2 N - upper floor	61	1	6,326,685.0	1,786,318.4		530.10	30.00	0.00	66	10.0	8.0	
2 WN	67	1	6,326,664.5	1,786,288.1		530.10	5.00	0.00	66	10.0	8.0	
2 SW	68	1	6,326,658.0	1,786,209.4		529.90	5.00	0.00	66	10.0	8.0)
Open Area	69	1	6,326,890.0	1,786,272.0		530.00	5.00	0.00	66	10.0	8.0)
1 NW	70	1	6,326,636.0	1,786,125.8		529.00	5.00	0.00	66	10.0	8.0)
1 W	71	1	6,326,626.5	1,786,078.1		529.00	5.00	0.00	66	10.0	8.0	
1 SW	72	1	6,326,621.0	1,786,030.4		529.00	5.00	0.00	66	10.0	8.0	
3 NE	73	1	6,326,751.5	1,786,310.2		530.10	5.00	0.00	66	10.0	8.0	Y
Open Area	75	1	6,326,856.5	1,786,293.9		530.00	5.00	0.00	66	10.0	8.0	
4 WN	76	1	6,326,768.5	1,786,274.4		528.90	5.00	0.00	66	10.0	8.0	
5 NE	78	1	6,326,799.0	1,786,110.1		529.00	5.00	0.00	66	10.0	8.0	
6 NE	87	1	6,326,796.0	1,786,035.5		529.00	5.00	0.00	66	10.0	8.0	Y
7 NE	88	1	6,326,829.5	1,785,992.8		526.90	5.00	0.00	66	10.0	8.0	Y

INPUT: BARRIERS

dBF Associates, Inc.					4 Janua	ary 2016													
SPF					TNM 2.	5													
INPUT: BARRIERS																			
PROJECT/CONTRACT:	South	view Eas	st																
RUN:	Future) 																	
Barrier									Points										
Name	Туре	Height		If Wall	If Berm	1_		Add'tnl	Name	No.	Coordinates	(bottom)	_	Height	Segme	ent		-	
		Min	Мах	\$ per	\$ per	Тор	Run:Rise	\$ per			X	Y	Z	at	Seg Ht	Pertu	urbs	On	Important
				Unit	Unit	Width	1	Unit	ļļ					Point	Incre-	#Up	#Dn	Struct?	Reflec-
		#	#	Area	¢/ou vd	f4	4 .4	Length ¢/#			#	#	4	f4	ment				tions?
		n 	n 	ə/sq it	\$∕cu yu	n.		φ/1			n.	n.	n 	n 	п.				
Pad Edge	W	0.00	99.99	0.00				0.00	point457	457	6,326,661.5	1,786,337.4	530.00	6.00	1.00	8	0		
									point458	458	6,326,730.0	1,786,321.2	530.00	6.00	1.00	8	0		
									point459	459	6,326,885.0	1,786,305.4	530.00	6.00	1.00	8	0		
									point460	460	6,326,904.0	1,786,296.9	530.00	6.00	1.00	8	0		
									point461	461	6,326,914.5	1,786,283.1	530.00	6.00	1.00	8	0		
									point462	462	6,326,915.5	1,786,266.8	530.00	6.00	1.00	8	0		
									point463	403	6,320,912.5	1,700,240.2	530.00	6.00	1.00	0	0		
Building 2	\M/	0.00	00.00	0.00				0.00	point464	404	6 326 680 0	1,786,183,0	520.00	38.00	0.00	0	0		
	••	0.00	33.33	0.00				0.00	point405	405	6 326 697 5	1,786,313,8	530.10	38.00	0.00	0	0		
									point400	400	6 326 671 5	1,786,315.5	530.10	38.00	0.00	0	0		
									point468	468	6 326 663 0	1,786,190,1	529.90	38.00	0.00	0	0		
Building 3	W	0.00	90 90	0.00				0.00	point469	469	6 326 740 5	1,786,184,8	529.90	38.00	0.00	0	0		
		0.00	00.00	0.00				0.00	point470	470	6 326 749 5	1 786 310 1	530.10	38.00	0.00	0	0		
									point471	471	6.326.723.5	1.786.311.9	530.10	38.00	0.00	0	0		
									point472	472	6.326.714.5	1.786.182.0	529.90	38.00		-	-		
Building 4	W	0.00	99.99	0.00	1			0.00	point473	473	6,326,792.0	1,786,176.5	528.90	38.00	0.00	0	0		
									point474	474	6,326,801.0	1,786,306.4	528.90	38.00	0.00	0	0		
									point475	475	6,326,775.0	1,786,308.2	528.90	38.00	0.00	0	0		
									point476	476	6,326,766.5	1,786,183.0	528.90	38.00					
Building 1	W	0.00	99.99	0.00				0.00	point477	477	6,326,653.0	1,786,014.5	529.00	38.00	0.00	0	0		
									point478	478	6,326,670.0	1,786,122.9	529.00	38.00	0.00	0	0		
									point479	479	6,326,641.0	1,786,122.8	529.00	38.00	0.00	0	0		
									point480	480	6,326,628.0	1,786,023.1	529.00	38.00					
Building 5	W	0.00	99.99	0.00				0.00	point481	481	6,326,713.0	1,786,082.5	529.00	38.00	0.00	0	0		
									point482	482	6,326,797.5	1,786,076.6	529.00	38.00	0.00	0	0		
									point483	483	6,326,794.5	1,786,105.2	529.00	38.00	0.00	0	0		
									point484	484	6,326,719.5	1,786,108.1	529.00	38.00					
Building 6	W	0.00	99.99	0.00				0.00	point485	485	6,326,714.0	1,786,030.2	529.00	38.00	0.00	0	0		
									point486	486	6,326,789.0	1,786,022.8	529.00	38.00	0.00	0	0		
									point487	487	6,326,795.5	1,786,050.8	529.00	38.00	0.00	0	0		I
									point488	488	6,326,711.5	1,786,056.1	529.00	38.00					
Building 7	W	0.00	99.99	0.00				0.00	point489	489	6,326,706.5	1,785,968.4	527.10	38.00	0.00	0	0		
									point490	490	6,326,836.5	1,785,958.5	527.60	38.00	0.00	0	0		
									point491	491	6,326,838.0	1,785,983.4	527.60	38.00	0.00	0	0		

INPUT: BARRIERS							South	view East								
							point492	492	6,326,713.0	1,785,992.9	527.10	38.00				
Building 8	W	0.00	99.99	0.00		0.0	0 point493	493	6,326,682.0	1,785,813.4	528.60	38.00	0.00	0	0	
							point494	494	6,326,698.0	1,785,921.8	528.50	38.00	0.00	0	0	
							point495	495	6,326,672.0	1,785,921.0	528.50	38.00	0.00	0	0	
							point496	496	6,326,655.0	1,785,821.9	528.60	38.00				
Building 9	W	0.00	99.99	0.00		0.0	0 point497	497	6,326,737.0	1,785,810.5	528.60	38.00	0.00	0	0	
							point498	498	6,326,749.0	1,785,910.4	528.50	38.00	0.00	0	0	
							point499	499	6,326,724.0	1,785,918.6	528.50	38.00	0.00	0	0	
							point500	500	6,326,709.5	1,785,810.0	528.60	38.00				
Building 10	W	0.00	99.99	0.00		0.0	0 point501	501	6,326,796.5	1,785,798.5	527.00	38.00	0.00	0	0	
							point502	502	6,326,804.5	1,785,907.9	527.00	38.00	0.00	0	0	
							point503	503	6,326,778.5	1,785,905.2	527.00	38.00	0.00	0	0	
							point504	504	6,326,768.5	1,785,805.2	527.00	38.00				
Building 11	W	0.00	99.99	0.00		0.0	0 point505	505	6,326,851.0	1,785,801.6	527.10	38.00	0.00	0	0	
							point506	506	6,326,856.5	1,785,902.0	527.00	38.00	0.00	0	0	
							point507	507	6,326,831.0	1,785,908.5	527.00	38.00	0.00	0	0	
							point508	508	6,326,822.5	1,785,799.1	527.10	38.00				
Building 12	W	0.00	99.99	0.00		0.0	0 point509	509	6,327,016.5	1,785,503.5	531.60	38.00	0.00	0	0	
							point510	510	6,327,016.5	1,785,616.0	531.60	38.00	0.00	0	0	
							point511	511	6,326,984.5	1,785,616.0	531.60	38.00	0.00	0	0	
							point512	512	6,326,984.5	1,785,503.5	531.60	38.00				
Building 13	W	0.00	99.99	0.00		0.0	0 point513	513	6,327,078.5	1,785,505.1	531.60	38.00	0.00	0	0	
							point514	514	6,327,078.5	1,785,617.6	531.60	38.00	0.00	0	0	
							point515	515	6,327,046.5	1,785,617.6	531.60	38.00	0.00	0	0	
							point516	516	6,327,046.5	1,785,505.1	531.60	38.00			_	
Building 14	W	0.00	99.99	0.00		0.0	0 point517	517	6,327,140.0	1,785,505.9	532.70	38.00	0.00	0	0	
							point518	518	6,327,140.5	1,785,618.4	532.70	38.00	0.00	0	0	
							point519	519	6,327,108.5	1,785,618.4	532.70	38.00	0.00	0	0	
							point520	520	6,327,108.0	1,785,505.9	532.70	38.00				
Building 15	W	0.00	99.99	0.00		0.0	0 point521	521	6,327,202.5	1,785,504.8	532.70	38.00	0.00	0	0	
							point522	522	6,327,202.5	1,785,617.2	532.70	38.00	0.00	0	0	
							point523	523	6,327,170.5	1,785,617.2	532.70	38.00	0.00	0	0	
							point524	524	6,327,170.5	1,785,504.8	532.70	38.00				
Building 19	W	0.00	99.99	0.00		0.0	0 point525	525	6,326,938.5	1,785,331.8	530.90	38.00	0.00	0	0	
							point526	526	6,326,938.5	1,785,444.2	530.90	38.00	0.00	0	0	
							point527	527	6,326,906.5	1,785,444.2	530.90	38.00	0.00	0	0	
							point528	528	6,326,906.5	1,785,331.8	530.90	38.00				
Building 18	W	0.00	99.99	0.00		0.0	0 point529	529	6,327,000.5	1,785,330.8	530.90	38.00	0.00	0	0	
							point530	530	6,327,000.5	1,785,443.2	530.90	38.00	0.00	0	0	
							point531	531	6,326,968.5	1,785,443.2	530.90	38.00	0.00	0	0	
							point532	532	6,326,968.5	1,785,331.8	530.90	38.00				
Building 17	W	0.00	99.99	0.00		0.0	0 point533	533	6,327,062.5	1,785,331.5	532.00	38.00	0.00	0	0	
							point534	534	6,327,062.5	1,785,444.0	532.00	38.00	0.00	0	0	
							point535	535	6,327,030.5	1,785,444.0	532.00	38.00	0.00	0	0	
							point536	536	6,327,030.5	1,785,330.8	532.00	38.00				
Building 16	W	0.00	99.99	0.00		0.0	0 point537	537	6,327,124.5	1,785,326.4	532.00	38.00	0.00	0	0	
							point538	538	6,327,124.5	1,785,438.9	532.00	38.00	0.00	0	0	
							point539	539	6,327,092.5	1,785,438.9	532.00	38.00	0.00	0	0	
							point540	540	6,327,092.5	1,785,326.4	532.00	38.00				
C:\Dropbox (dBF Associates)\dBFA Tear	m\ TNN	//Southv	view East	2015-12	Future				2					4 J	anuary 20	16

4 January 2016

INPUT: BARRIERS						Southvie	w East								
Southview Lot 1 TOS	W	0.00	99.99	0.00	0.00	point541	541	6,326,218.0	1,786,360.0	533.00	4.00	0.00	0	0	
						point543	543	6,326,403.5	1,786,347.5	528.40	4.30	0.00	0	0	
						point544	544	6,326,532.0	1,786,339.5	523.50	8.10	0.00	0	0	
						point547	547	6,326,607.0	1,786,341.4	521.00	10.20	0.00	0	0	
						point551	551	6,326,663.5	1,786,343.1	518.00	13.20				
ROW	W	0.00	99.99	0.00	0.00	point452	452	6,326,663.5	1,786,343.1	518.00	0.00	0.00	0	0	
						point455	455	6,326,820.5	1,786,357.1	517.00	0.00	0.00	0	0	
						point445	445	6,326,892.0	1,786,368.9	516.50	0.00	0.00	0	0	
						point446	446	6,327,010.0	1,786,388.6	517.00	0.00	0.00	0	0	
						point447	447	6,327,115.5	1,786,406.1	517.00	0.00	0.00	0	0	
						point448	448	6,327,193.5	1,786,419.0	518.00	0.00	0.00	0	0	
						point449	449	6,327,311.5	1,786,438.6	518.00	0.00	0.00	0	0	
						point450	450	6,327,389.0	1,786,452.0	517.00	0.00	0.00	0	0	
						point451	451	6,327,549.0	1,786,480.5	517.00	0.00				
								.,.,.,.	,,						

INPUT: TERRAIN LINES

dBF Associates, Inc.			4 January 20	16
SPF			TNM 2.5	
INPUT: TERBAIN LINES				
PBOJECT/CONTRACT:	South	/iew Fast		
RUN:	Future			
Terrain Line	Points	6		
Name	No.	Coordinates	(ground)	
		X	Y	Z
		ft	ft	ft
Terrain Line9	24	6,327,329.0	1,786,536.4	504.00
	25	6,327,275.5	1,786,532.0	505.00
	26	6,327,207.5	1,786,525.0	506.00
	27	6,327,135.5	1,786,517.5	507.00
	28	6,327,062.5	1,786,510.4	508.00
	29	6,326,995.5	1,786,504.6	509.00
	30	6,326,932.0	1,786,500.8	510.00
	31	6,326,900.0	1,786,500.0	510.00
	32	6,326,811.0	1,786,498.2	511.00
	33	6,326,694.5	1,786,500.5	512.00
	34	6,326,589.0	1,786,507.9	513.00
	35	6,326,469.5	1,786,521.5	514.00
	36	6,326,333.0	1,786,543.8	515.00
	37	6,326,224.5	1,786,567.5	516.00
Terrain Line11	42	6,323,721.0	1,787,569.0	474.90
	44	6,324,042.5	1,787,504.8	487.20
	45	6,324,354.0	1,787,402.4	498.70
	46	6,324,658.0	1,787,278.6	506.90
	47	6,324,961.5	1,787,154.8	513.50
	48	6,325,265.5	1,787,031.0	515.10
	49	6,325,569.5	1,786,907.1	518.40
	50	6,325,873.5	1,786,783.6	518.40
	51	6,326,185.5	1,786,683.1	515.90
	52	6,326,507.5	1,786,620.8	513.50

INPUT: TERRAIN LINES

	53	6,326,834.5	1,786,597.6	510.20
	54	6,327,162.0	1,786,612.9	507.70
	55	6,327,489.0	1,786,639.6	505.20
	56	6,327,816.0	1,786,666.4	502.00
	57	6,328,143.0	1,786,693.1	499.50
	58	6,328,470.0	1,786,719.9	497.00
	59	6,328,797.0	1,786,743.5	493.80
	60	6,329,125.0	1,786,735.5	491.30
	61	6,329,449.5	1,786,689.0	492.90
	62	6,329,766.5	1,786,604.8	494.60
	43	6,330,071.0	1,786,484.0	496.20
Lot 1	63	6,326,216.0	1,786,354.2	533.00
	64	6,326,401.5	1,786,341.8	532.30
	65	6,326,530.0	1,786,333.8	531.60
	66	6,326,605.0	1,786,335.6	530.90
	67	6,326,661.5	1,786,337.4	530.00

RESULTS: BARRIER-SEGMENT DESCRIPTIONS

dBF Associates, Inc.										4 January 2016		
SPF		-								TNM 2.5		
RESULTS: BARRIER-SEGMEN	T DESCRIPTIO	NS										
PROJECT/CONTRACT:	South	view East										
RUN:	Future)										
BARRIER DESIGN:	65											
Barriers		Segments										
Name	Туре	Name	No.	Heights			Length	If Wall			If Berm	Cost
				First	Average	Second		Area	On	Important	Volume	1
				Point		Point			Struc?	Reflections?		
				ft	ft	ft	ft	sq ft			cu yd	\$
Pad Edge	W	point457	457	8.00	8.00	8.00	70	563				0
		point458	458	8.00	8.00	8.00	156	1246				0
		point459	459	8.00	8.00	8.00	21	167				0
		point460	460	8.00	8.00	8.00	17	138				0
		point461	461	8.00	8.00	8.00	16	131				0
		point462	462	8.00	8.00	8.00	19	150				0
		point463	463	0.00	0.00	0.00	0	0				0

RESULTS: SOUND LEVELS				,		S	Southview I	East				
dPE Associatos, Inc.							4 January	2016			_	
ODF							4 January	2010				
SPF							Calculate	d with TNA	125			
RESULTS: SOUND EVELS							Calculated		/1 2.3			
PROJECT/CONTRACT:		Southv	iew East									
BUN:		Future										
BABBIEB DESIGN:		65						Average	pavement type	shall be use	ed unless	l
								a State hi	chway agenc	v substantiat	es the us	e
ATMOSPHERICS:		68 deg	F, 50% RH					of a differ	ent type with	approval of F	HWA.	
Beceiver			-									
Name	No.	#DUs	Existing	No Barrier					With Barrier			
			LAeq1h	LAeq1h		Increase over	existing	Туре	Calculated	Noise Reduc	ction	
			-	Calculated	Crit'n	Calculated	Crit'n	Impact	LAeq1h	Calculated	Goal	Calculated
							Sub'l Inc					minus
											1	Goal
			dBA	dBA	dBA	dB	dB		dBA	dB	dB	dB
2 NW	58	1	0.0	71.7	7 66	6 71.7	10	Snd Lvl	67.7	4.0)	8 -4.0
4 NW	59	1	0.0	72.5	5 66	72.5	5 10	Snd Lvl	61.2	11.3	3	8 3.3
2 N - upper floor	61	1	0.0	75.8	66	5 75.8	3 10	Snd Lvl	75.8	0.0)	8 -8.0
2 WN	67	1	0.0	67.0	66	67.0	10	Snd Lvl	65.7	1.3	3	8 -6.7
2 SW	68	1	0.0	62.2	2 66	62.2	2 10		61.9	0.3	3	8 -7.7
Open Area	69	1	0.0	71.6	66	6 71.6	6 10	Snd Lvl	63.4	8.2	2	8 0.2
1 NW	70	1	0.0	59.7	66	59.7	' 10		59.7	0.0)	8 -8.0
1 W	71	1	0.0	57.8	3 66	57.8	8 10		57.8	0.0)	8 -8.0
1 SW	72	1	0.0	57.2	2 66	57.2	2 10		57.1	0.1	1	8 -7.9
3 NE	73	1	0.0	72.3	66	5 72.3	s 10	Snd Lvl	62.6	9.7	/	8 1.7
Open Area	75	1	0.0	72.5	5 66	5 72.5	5 10	Snd Lvl	63.5	9.0)	8 1.0
4 WN	76	1	0.0	65.1	66	65.1	10		56.7	8.4	1	8 0.4
5 NE	78	1	0.0	59.9	66	59.9	10		59.7	0.2	2	8 -7.8
6 NE	87	1	0.0	59.1	66	59.1	10		59.0	0.1	<u> </u>	8 -7.9
7 NE	88	1	0.0	58.7	66	58.7	10		58.6	0.1	<u> </u>	8 -7.9
Dwelling Units		# DUs	Noise Re	duction								
			Min	Avg	Max							
			dB	dB	dB							
All Selected		15	5 0.0	3.5	5 11.3	3						
All Impacted		7	0.0	6.2	2 11.3	3						
All that meet NR Goal		5	8.2	9.3	3 11.3	3						

Archaeological Survey and Evaluation Report for the Southview East Project within the Otay Mesa Community Planning Area, San Diego, California

Project Number: 371807 City of San Diego APN Numbers: 645-080-17 & 645-060-28

Prepared for:

Cornerstone Communities Corporation 4365 Executive Drive, Suite 600 San Diego, California 92121

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June 2016 ASM PN 22300 &22300.01 Rade is intentionally blank

NATIONAL ARCHAEOLOGICAL DATABASE INFORMATION

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Report Date:	June 2016
Report Title:	Archaeological Survey and Evaluation Report for the Southview East Project within the Otay Mesa Community Planning Area, San Diego, California
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Project number:	371807
Party submitted by:	Cornerstone Communities 4365 Executive Dr., Suite 600 San Diego, California 92121
USGS:	7.5-minute Quadrangle: Imperial Beach, California
Acreage:	21.2 acres
Parcel Numbers/APNs:	645-080-17 & 645-060-28
Keywords:	Southview East, Otay Mesa, Cultural Resources Survey, Evaluation, CA-SDI-9541 San Diego, California

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MANAGEMENT SUMMARY

ASM Affiliates, Inc. (ASM) was contracted to provide Cornerstone Communities Corporation with an updated cultural resources records search from the South Coastal Information Center (SCIC) of the California Historical Resources Information System (CHRIS) and to conduct an archaeological survey for the proposed Southview East Project (Project) within the Otay Mesa Community Planning Area, San Diego, California. ASM also requested a search of the Sacred Lands File from the Native American Heritage Commission (NAHC). The records search was requested from the SCIC on May 14, 2014. The archaeological survey was conducted on December 1, 2014. The results of the records search at the SCIC yielded information indicating that there are four previously recorded cultural resources located within the proposed project area of potential effects (APE), including SDI-6941 Locus J and portions of Loci K and L, and a portion of SDI-9541. There are 35 previously recorded cultural resources within a 0.5-mi. radius of the proposed project area. During the archaeological survey, two of the previously recorded cultural resources within the proposed project APE (SDI-6941 Locus K and SDI-9541) were relocated, and their condition was observed to be very similar to what they were at the time of their last recording. The two other previously recorded loci of SDI-6941 (Locus J and portion of Locus L) were not relocated during the survey. Previous testing of the other loci of that site has resulted in the determination that the site is not eligible for the National Register of Historic Places (NRHP) or the California Register of Historic Places (CRHR). SDI-6941, Locus K will not be impacted by the proposed project as it is primarily outside of the proposed project APE, and the portion of it that is within the APE is within an environmentally sensitive area that will be preserved by open space. Most of SDI-9541 is also outside of the proposed project APE and the portion of it within the proposed APE was redesigned after evaluation testing so that it is now within an area proposed to be preserved by open space.

Based upon the earlier project designs, a portion of SDI-9541 required significance testing. An evaluation of that portion of SDI-9541 was conducted on August 31, 2015. A series of shovel test pits (STPs) were excavated to determine the depth, extent, and potential significance of cultural deposits associated with that portion of SDI-9541. The results of the test excavations indicated that the portion of SDI-9541 that is within the proposed project APE did not possess significant cultural deposits, and that potential impacts to it associated with the proposed project would not be significant.

No further work is recommended for the non-significant portion of SDI-9541 that is within the proposed project APE, or for SDI-6941 Locus J and portions of Loci K and L, since they have previously been determined to not be significant portions of that site. ASM does recommend archaeological monitoring for the entire proposed project APE during ground disturbing activities associated with construction due to the potential for the presence of as yet unidentified subsurface cultural resources. This report presents the results of the records search, cultural resources survey, and the evaluation of the portion of SDI-9541 that is within the proposed project APE. The cultural resources survey and evaluation program was conducted in compliance with the California Environmental Quality Act (CEQA) and the City of San Diego Land Development Code, and the Program Environmental Impact Report (PEIR). All field notes, documentation, and artifacts are housed at ASM's Carlsbad office and will be transferred to the San Diego Archaeological Center for permanent curation.
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1. INTRODUCTION

This report presents the results of a records search, a cultural resources survey, and the evaluation of a portion of SDI-9541 for the Southview East Project (Project) within the Otay Mesa Community Planning Area, San Diego California (Figure 1). The study was conducted in compliance with the California Environmental Quality Act (CEQA) and the City of San Diego Land Development Code. There are 11 previous cultural resource reports whose study areas intersect the current Project area.

The Project location is shown on the USGS Imperial Beach 7.5-minute quadrangle in Township 18 South, Range 1 West, Sections 31 and 32 (Figure 2). The Project area is located south of State Route 905 and Otay Mesa Road, and east of Caliente Avenue (Figure 3). The Project area is part of the greater Otay Mesa Community Plan. The Project site is zoned RM-2-6. Currently the neighborhood surrounding the Project area is not fully developed. Immediately to the west is San Ysidro High School, an adjacent development.

The Project consists of sheet grading of approximately 21.2 acres to allow for the construction of a multifamily residential development including dedicated roadways. ASM Affiliates, Inc. (ASM) was contracted to provide an updated records search from the South Coastal Information Center (SCIC) of the California Historical Resources Information System (CHRIS), an archaeological survey with a Native American monitor, and an evaluation of the portion of SDI-9541 intersecting the proposed area of potential effects (APE). Mark S. Becker served as Principal Investigator for the survey and authored the report. Tony Quach and Kent Smolik conducted the fieldwork for the survey. James Daniels and Jason Kjolsing conducted the evaluation of the portion of SDI-9541 within the proposed project APE. Personnel qualifications may be found in Appendix A of this report. Ed Mercado from La Posta Band of Mission Indians served as the Native American monitor for the survey. Tuchon Phoenix served Native American monitor for the evaluation effort. The cultural resources survey was conducted on December 1, 2014.

Cultural resource investigations followed the procedures and guidelines set forth in the Program Environmental Impact Report (PEIR) for the Otay Mesa Community Plan Update (City of San Diego 2013). Under HIST-1: Prior to issuance of any permit for a future development project implemented in accordance with the CPU area that could directly affect an archaeological resource, the City shall require the following steps be taken to determine: (1) the presence of archaeological resources and (2) the appropriate mitigation for any significant resources which may be impact by a development activity. Under the initial determination, the environmental analyst will determine the likelihood for the project site to contain historical resources. This is typically performed through a records search and cultural resources survey of the property. Under Steps 1 and 2, if there is evidence that the project footprint contains historical resources, preparation of a historic evaluation is required, along with making a significance determination. Tribal representatives are requested to be involved during this phase of the process. Even if no significant resources are found, if the archaeological findings indicates there is still a potential for resources to be present on the property, then mitigation monitoring is required. The preferred mitigation for known historical resources is to avoid or minimize impacts through redesign whenever possible. Under Steps 4 and 5, the qualified archaeologist prepares an archaeological resource management report, and all cultural materials and data are permanently curated with an approved institution.



Figure 1. Southview East Project vicinity map.



Figure 2. Southview East Project location map.



Figure 3. Southview Project 1:800 scale City of San Diego engineering map.

2. SETTING

NATURAL SETTING

The current study area is located on Otay Mesa, a relatively flat mesa top cut by numerous small drainages, and within the Otay Mesa Community Planning area. Dennery Canyon lies to the north of the Project area; Moody Canyon lies to the west; and the Dilon and Spring Canyons are south of the project area and feed into the Tijuana River Valley. The location of the current Project area ranges in elevation from 520 feet to 540 feet above mean sea level.

The northern portion of the Project area consists of Quaternary alluvium and marine deposits while the southern portion of the Project area consists of Pliocene marine rocks including sandstone, siltstone, shale and conglomerate from the Pleistocene and Miocene. Located east of the current study area, the San Ysidro Mountains are composed of the Upper Jurassic-age Santiago Peak Volcanic formation. The Santiago Peak Volcanics consist of volcanic rock, predominately andesite, dacite, and rhyolite, that has been subjected to low-grade metamorphism (Jahns and Lance 1950). Cobbles of this material occur as float across the mesa top and in the drainages. These fine-grained materials were highly preferred by aboriginal inhabitants of the San Diego region due to their predictable conchoidal fracturing abilities.

Otay Mesa lies within a semi-arid climate zone, rainfall averages 10 inches per year, with most falling between November and April (Pryde 2004). Average daily maximum temperatures range from 40 to 45 degrees Fahrenheit in the winter to 75 to 80 degrees in the summer.

Prior to the introduction of agriculture and cattle ranching, the vegetation in and around the study area was predominately coastal sage scrub (Munz 1974). Typical species found within this community include California sagebrush (*Artimisia californica*), California buckwheat (*Eriogonum fasciculatum*), and white and black sage (*Salvia apiana* and *S. mellifea*). The entire Project area has been disked for agricultural purposes, so none of these native species were present in the current Project area.

The vegetation communities found on Otay Mesa support a variety of wildlife species, including over 50 bird species. Animal species include jackrabbit, brush rabbit, woodrat, and California ground squirrel. The riparian and marsh communities of the nearby river valleys provide habitats for a diversity of water fowl, while the San Diego Bay, a few miles to the northwest, supports abundant marine life.

CULTURAL SETTING

Archaeological investigations have documented human occupations in San Diego County that span at least the last 10,000 years. A variety of different chronological divisions and sets of terms have been used to sort the archaeological evidence into temporal and, to a lesser extent, geographical units. Some confusion has resulted from the mixing of analytical units that were defined on the basis of chronology with units defined by the contents of cultural assemblages or by inferred ethnicity. The present discussion is framed in terms of five main divisions: an early period, linking the late Pleistocene with the early Holocene, prior to about 6000 B.C.; a long middle Holocene period, stretching from about 6000 B.C. to about A.D. 500; a late Holocene period, between about A.D. 500 and A.D. 1769; a synchronic ethnographic present, representing cultural conditions as they existed just prior to European contact, as inferred from ethnographic studies; and the historical period, subsequent to A.D. 1769.

Late Pleistocene/Early Holocene

The antiquity of human occupation in the New World has been the subject of considerable debate over the last few decades. The most widely accepted model at present is that humans first entered the western

2. Setting

hemisphere between 13,000 and 10,000 B.C. Much earlier dates have also been proposed (Bada et al. 1974; Carter 1957, 1980). However, the amino acid racemization technique that was used to date some of the early sites has been discredited by more recent accelerator mass spectrometry (AMS) radiocarbon dating of early human remains along the California coast (Taylor et al. 1985). Despite intense interest and a long history of research, no widely accepted evidence of very early human occupation in the San Diego region has emerged.

The generally accepted record for the initial period of human occupation, prior to about 6000 B.C., includes archaeological manifestations that have variously been labeled as Clovis, Paleoindian, Lake Mojave, San Dieguito, Scraper Maker, and Western Pluvial Lakes, as well as some of the components that have been termed Archaic, La Jolla, or Encinitas.

Archaeological evidence assignable to the Clovis complex of the terminal Pleistocene (ca. 11,000 B.C.) is fairly well documented in North America, including several parts of California (Rondeau et al. 2007) and Baja California (Hyland 1997). The diagnostic Clovis artifacts are fluted projectile points. Such remains appear to be very scarce within San Diego County (but cf. Davis and Shutler 1969; Kline and Kline 2007; Rondeau et al. 2007).

The earliest widely recognized local archaeological pattern is the San Dieguito complex. Dates for the San Dieguito component at the C. W. Harris Site begin at 9,030 radiocarbon years before the present (RCYBP). Claude N. Warren has projected a starting date for the component at about 10,500 RCYBP (corresponding to ca. 10,500 B.C.) (Warren et al. 2008). Building on the discussion of North American cultural stages by Willey and Phillips (1958), some scholars have seen the San Dieguito pattern as representing a Lithic or Paleoindian stage, characterized by high mobility and an emphasis on big game hunting. Others have classified San Dieguito as belonging to the early Archaic stage, rooted in a more diversified and plant-oriented adaptation. Remains that have been considered to be characteristic of San Dieguito components include large stemmed projectile points (Lake Mojave and Silver Lake forms), crescents, heavy unifacial tools (scraper planes), a focused use of the local metavolcanic rock for flaking, a scarcity of milling tools, and little emphasis on shellfish harvesting.

According to a paleo-coastline reconstruction by Patricia Masters (1988), around 12,000-10,000 B.C., the Pacific coastline lay about 7 km west of its present location, and the ancestral Otay River merged with Sweetwater River before entering the sea. By 8000 B.C., the coastline was still about 3 km west of its present location, and Otay River entered it directly.

Middle Holocene

A long middle Holocene period (ca. 6000 B.C. to A.D. 500) encompasses most of the assemblages assigned to the Archaic (or Early Archaic, or Middle Archaic), La Jolla, Millingstone, Littoral, Shell Midden, Encinitas, Campbell, and Pauma analytical units. Such components are frequently characterized by shell middens, fairly abundant ground stone, generally simple flaked stone assemblages, and inhumation burial. Spanning six millennia or more, the middle Holocene pattern in western San Diego County is notable for its apparent continuity and conservatism, as compared with somewhat more dynamic contemporaneous patterns in other parts of southern California, including the Santa Barbara coast and the Mojave Desert. Several proposals have been made to subdivide the period locally into two or three separate chronological units (e.g., Harding 1951; Moriarty 1966; Rogers 1945; Sutton and Gardner 2006; Warren 1964; Warren et al. 2008). However, firm criteria to be used as a basis for such distinctions have not been identified, and even the general directions of cultural change during this period remain uncertain.

At inland San Diego County locations, sites dating from the middle Holocene period have sometimes been labeled as Pauma, Campbell, or Inland La Jolla. Most of the Pauma complex sites were identified either in

the San Luis Rey River valley upstream from Pala or else on the Valley Center plateau. Various relationships between middle Holocene coastal sites and the sparser contemporaneous manifestations inland have been suggested, including interpretations according to which coastal and inland sites were produced by the movements of members of a single population on a seasonal or episodic basis, by separate but related populations that complemented each other economically, or by ethnically distinct groups, with the inland and some of the coastal components perhaps having been produced by intruders who had migrated from the deserts to the east (True 1958, 1980; Warren 1968; Warren et al. 2008).

In Masters's (1988) paleo-coastal reconstruction, San Diego Bay formed around 4000 B.C., with sandy spits and barrier beaches closing off the Otay and Sweetwater rivers' direct access to the sea. By ca. 1500 B.C. to B.C./A.D., San Diego Bay had reached essentially its modern dimensions and habitats.

Late Holocene

The latest period of the region's prehistory is known by such labels as Late Prehistoric, Late Archaic, Yuman, Patayan, Hakataya, and Cuyamaca. Hallmarks of the period include the mortar and pestle, arrowsize projectile points, ceramics, and human cremation. The chronologies for the introduction or local innovation of these traits are only imprecisely known, and the new patterns probably arose at separate times, possibly extending over a period spanning as much as 1,500 years. In most inland areas of San Diego County, archaeological sites that are assignable to the late Holocene appear to be much more numerous than earlier sites (Christenson 1992), and there are suggestions of a decline in the use of coastal resources. However, the area around San Diego Bay has been suggested as an exception to that generalization.

Ethnographic Present

The project area is located in the ethnographic territory of the Kumeyaay. Early descriptions of the lifeways of this group were provided by missionaries, administrators, and other travelers, who gave attention primarily to the coastal populations (Fages 1937; Geiger and Meighan 1976; Laylander 2000). Subsequent ethnographers during the early twentieth century were able to provide much more objective, detailed, and penetrating accounts (Drucker 1937, 1941; DuBois 1908; Gifford 1918, 1931; Hohenthal 2001; Kroeber 1925; Spier 1923; Waterman 1910). In most cases, the later investigators described inland rather than coastal lifeways. Most of the ethnographers attempted to distinguish between observations of the customs of surviving Native Americans and orally transmitted or inferred information relating to the lifeways of native groups prior to European intrusion into the region.

The Kumeyaay or Diegueño language belongs to the Delta-California group within the Yuman family, with relatives to the east and south. Diegueño has sometimes been treated as a single language with various dialects, sometimes as two (Ipai, Tipai), three (Ipai, Kumeyaay, Tipai), or more closely related languages. The debatable technique of glottochronology and other linguistic methods of estimating time depths suggest that Diegueño diverged from Cocopa between 1,500 and 1,000 years ago (Laylander 2010; cf. Golla 2007, 2011).

Aboriginal subsistence in the region was largely or entirely based on the harvesting of natural plants and animals, rather than on agriculture. Acorns were a staple food source for the western groups, while agave and mesquite were staples for people living to the east of the Peninsular Range's crest. Numerous other plants were exploited for the food value of their seeds, fruit, roots, stalks, or greens, and a still larger number of species had known medicinal uses. Game animals included deer, first and foremost, but mountain sheep and pronghorn antelope were also present, as well as bears, mountain lions, bobcats, coyotes, badgers, and other medium-size mammals. Small mammals were probably as important as larger animals in aboriginal diets, and perhaps more so. Jackrabbits and cottontails were preeminent, but woodrats and other rodents were also commonly exploited. Various birds, reptiles, and amphibians were caught and eaten. Food taboos were few in number and inconsistently applied, to judge from the ethnographic record. The only pre-contact

domesticated animal was the dog. It is not clear whether marine fish and shellfish were a mainstay for some groups based on the coast, or whether marine resources served merely as supplemental foods used by groups whose primary focus was on terrestrial resources. Interregional exchange systems are known to have linked western San Diego County with areas to the east in particular (Davis 1961), but such exchange may have been motivated primarily by social and ceremonial objectives rather than to meet material needs.

The Kumeyaay had developed a varied material culture that functioned well, but it was not highly elaborated by worldwide standards. An array of tools was made from stone, wood, bone, and shell, and these served to procure and process the region's resources. Needs for shelter and clothing were minimal in the region's forgiving climate, but considerable attention was devoted to personal decoration in ornaments, painting, and tattooing. The local pottery was well made, although it was not elaborately decorated. The craft of basketry was particularly refined.

The Kumeyaay were subdivided into essentially sovereign local communities or tribelets. Community membership was generally inherited through the male line. However, in practice some degree of geographical intermixing of these patriclans was probably present during the historical period, and this may have reflected a degree of flexibility in community membership during prehistoric times as well. Later descriptions of the settlement systems were inconsistent, and there may have been considerable variability in practice (cf. Laylander 1997). In some areas, substantially permanent, year-round villages seem to have existed, with more remote resources beyond the daily foraging range being acquired by special task groups. In other areas, communities appear to have followed an annual circuit among seasonal settlements, or to have oscillated between summer and winter settlements, often with the community splitting up into its constituent families during certain seasons. Rights of ownership over the land and its various resources were vested both in individual families and in the clan or the community as a whole. Leadership within communities had at least a tendency to be hereditary, but it was relatively weak; authority was more ceremonial and advisory than administrative or judicial in character. Headmen had various formally designated assistants, and shamans exerted an important influence in community affairs, beyond their role in curing individual illness.

Historical Period

European activity began to impinge on the project vicinity as early as A.D. 1542, when Juan Rodríguez Cabrillo landed in San Diego Bay. Sebastián Vizcaíno returned in 1602, and it is possible that other contacts between local Native Americans and Europeans occurred during the next 150 years but went unrecorded. These brief encounters made the local native people aware of the existence of other cultures that were technologically and socially more complex than their own. Epidemic diseases may also have been introduced into the region at an early date, either through direct contacts with the infrequent European visitors or in waves of diffusion emanating from other native groups farther to the east or south. It is possible, but as yet unproven, that the precipitous demographic decline of native peoples had already begun prior to the arrival of Gaspar de Portolá and Junípero Serra in 1769. Any archaeological evidence concerning biological and cultural changes in the San Diego area during the protohistoric centuries between 1542 and 1769 would potentially hold considerable research interest.

Spanish colonial settlement began in 1769. Multiple expeditions arrived in San Diego by land and sea in that year. The land route took the colonizers to the southern end of San Diego Bay and on to San Diego proper. They then continued northward toward Monterey through the coastal plain. Initially, a military presidio and a mission were established at San Diego, in the region of the Kumeyaay and their close linguistic kin, the Ipai.

Further disruptions of native peoples in western San Diego County occurred in the early nineteenth century. These resulted from a growing number of private land grants, including Rancho de la Nación, northeast of

the project area; Mexico's separation from the Spanish Empire in 1821; and the secularization of the California missions in the 1830s. Some of the former mission neophytes were absorbed into the work forces on the ranchos, while others either drifted toward the urban centers at San Diego and Los Angeles or moved to the eastern portions of the county where they were able to join still largely autonomous native communities.

United States conquest and annexation of California, together with the gold rush in the northern part of the state, drew many additional outsiders into the region. Development in San Diego County during the late nineteenth and early twentieth centuries was fitful, undergoing cycles of economic boom and bust. Chula Vista was incorporated as a city in 1911, and Imperial Beach was incorporated in 1956. Immediately to the north of the project area lie salt evaporators, while to the south is the urban development of the community of South San Diego.

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3. METHODS AND REPORT OF FINDINGS

Prior to the commencement of cultural resources survey for the Project, a records search was conducted to determine if any archaeological sites had been recorded within or immediately surrounding the Project area and to determine what cultural resource investigations have been conducted within or immediately surrounding the Project area to date. Additionally, the Native American Heritage Commission was contacted and a request for a search of their Sacred Lands Files was made to determine if any Native American traditional sites/places were within or in the immediate area of the Project, as well as to obtain a list of tribal contacts who might have additional knowledge of cultural resources in or near the Project area.

The following sections summarize the results of the SCIC records search, NAHC consultation, and archaeological survey. The full results of the SCIC records search is located in Confidential Appendix A.

RECORDS SEARCH

Previous Cultural Resource Reports

A records search was requested by ASM Senior Archaeologist Ian Scharlotta from the SCIC on May 14, 2014. The requested search area included the Project area and a 0.5-mi. buffer surrounding the Project area. The results of the records search at the SCIC identified 11 previous cultural resource reports that addressed areas encompassing or intersecting the current project area (Table 1). However, the three reports by Robert Case (NADB #s 1128886, 1129478, and 1130312) appear to be different versions of the same report, as they have the same titles. The same can be said for the City of San Diego reports on the Otay Mesa Community Plan Update (NADB #s 1134368 and 1134714).

NADB No.	SHPO ID	Title	Author(s)	Year
1120087	Apple 03	An Archaeological Reconnaissance of Candlelight Park, San Diego California	Stephen A. Apple and Keith R. Olmo	1980
1122192	MSA 11	Candlelight Park Units 1-6 Otay Mesa East Community Plan Area City of San Diego EAD #80-06-52	Multi Systems, Inc.	1980
1126369	Gallego259	Historic Property Survey Report for the State Route 905	Dennis Gallegos	1999
1127374	CookJ32	Archaeological Testing and Significance Evaluation Program for the Santee Investigations Precise Plan.	John Cook	1988
1128886	Case49	Cultural Resources Survey of the Proposed Otay Mesa Southview Subdivision, City of San Diego, California	Robert P. Case	2003
1129402	Kyle278	Cultural Resources Survey and Testing Report for the Otay Mesa Road Widening Project	Carolyn Kyle, Roxana Phillips, Adella Schroth, Sinead Ni Ghablain, Dennis Gallegos	1996
1129449	CitySD1062	Draft Environmental Impact Report for the Otay Mesa Trunk Sewer Project	City of San Diego	2005
1129478	Case63	Cultural Resources Survey of the Proposed Otay Mesa Southview Subdivision, City of San Diego, California	Robert P. Case	2003
1130312	Case75	Cultural Resources Survey of the Proposed Otay Mesa Southview Subdivision City of San Diego, California	Robert P. Case	2005
1134368	CitySD1119	Draft Program Environmental Impact Report for the Otay Mesa Community Plan Update, City of San Diego Project Number 20220/204032	City of San Diego	2013
1134714	CitySD1134	Final Program Environmental Impact Report for the Otay Mesa Community Plan Update, City of San Diego	City of San Diego	2013

 Table 1.
 Previous Cultural Resource Studies within the Southview East Project Area.

Based on the shapefiles provided by the SCIC, the most recent survey of the current Project area was conducted by Robert P. Case of Mooney & Associates in 2001 (Case 2005). The survey was conducted for a previous and larger proposed development project. The survey identified seven small lithic scatters that were considered associated with the "Otay Mesa Smear" of lithic material. This smear is better thought of as a natural pavement of metavolcanic cobbles which attracted prehistoric flintknappers searching for suitable materials for tool manufacture over thousands of years (Gallegos et al. 1998). Gallegos et al. (1998) suggest that that the traditional definition of a site used by California Office of Historic Preservation of three or more artifacts within 50 m of each other should not be applied in Otay Mesa as it may unintentionally record essentially random lithic artifacts that may or may not be "associated" (produced at the same time) and that have little research potential; instead, Gallegos et al. (1998:3-29;3-37) recommended that the criterion be increased to a minimum of four contiguous 10-by-10-m units each containing a minimum of three associated artifacts to qualify as a site. Artifact densities failing to meet this criterion would be considered "non-sites," with any diagnostic artifacts recorded as isolates while the debitage would be ignored (Gallegos et al. 1998:4-33). Gallegos's revised site definition for Otay Mesa was adopted by Case (2005) during the previous survey of the area.

Previously Recorded Cultural Resources

The results from the records search at the SCIC identified two previously recorded cultural resources within the Project area, and 35 cultural resources within the 0.5-mi. buffer surrounding the Project area (Table 2).

Designation			
P-37-	CA-SDI-	Resource Attributes	Recorder, Date
001077	1077	Scraper	King 1960
006941	6941*	AP2 Lithic scatter; AP15 Habitation debris	Carrillo 1979; Van Wormer 1983; Robbins- Wade 1987; Kyle and Tift 1995
007604	7604	AP2 Lithic scatter; AP15 Habitation debris	Riggan 1979; Winterrowd and Van Wormer 1983; Robbins-Wade 1987; Kyle and Tift 1995
008640	8640	AP2 Lithic scatter	Apple 1980; Joines, Serr and Robbins Wade 1984; ASM 1987; Robbins-Wade 1987
008641	8641	AP2 Lithic scatter	Apple 1980
008642	8642	AP2 Lithic scatter;	Apple 1980; Cook 1990; Guerrero and Gallegos 2003
008643	8643	AP2 Lithic scatter	Apple 1980; Cook 1990
008644	8644	AP2 Lithic scatter	Apple 1980; Cook 1990; Guerrero and Gallegos 2003
008645	8645	AP2 Lithic scatter	Apple 1980; Cook 1990; Guerrero and Gallegos 2003
009541	9541*	AP2 Lithic scatter; AP15 Habitation debris	Thesken 1982
010190	10190	AP2 Lithic scatter; AP15 Habitation debris	Van Wormer and Winterrowd 1983; Robbins- Wade 1987
010192	10192	AP2 Lithic scatter; AP15 Habitation debris	Van Wormer and Winterrowd 1983; Robbins- Wade 1987
010197	10197	AP2 Lithic scatter	Van Wormer and Winterrowd 1983; Robbins- Wade 1987; Guerrero and Gallegos 2003
010198	10198	AP2 Lithic scatter; AP15 Habitation debris	Van Wormer and Winterrowd 1983; Robbins- Wade 1987
010208	10208	AP2 Lithic scatter	Joines, Serr, and Robbins-Wade 1984; Robbins-Wade 1987
010515	10515	AP2 Lithic scatter	Peter 1985

Table 2.Recorded Cultural Resources within a 0.5-mi. Radius around the
Southview East Project Area.

Designation			
P-37-	CA-SDI-	Resource Attributes	Recorder, Date
010516	10516	AP2 Lithic scatter	Peter 1985; Guerrero and Gallegos 2003
010522	10522	AP2 Lithic scatter	Peter 1985; Cook 1990
010523	10523	AP2 Lithic scatter	Peter 1985; Guerrero and Gallegos 2003
010524	10524	AP2 Lithic scatter; AP15 Habitation debris	Peter 1985; Bouscaren 2005
011680	11680	AP2 Lithic scatter	Cook 1990
014284	14083	AP2 Lithic scatter	Tift, Briggs, and Sabio 1995; Guerrero and Gallegos 2003
014285	14084	AP2 Lithic scatter	Tift, Briggs, and Sabio 1995; Guerrero and Gallegos 2003
014286	14085	AP2 Lithic scatter; HP33 Farm/ranch	Kyle, Ghabhlain, and Tift 1995; Tift, Briggs, and Sabio 1995
014287	14086	AP2 Lithic scatter; AH4 Trash scatter	Tift, Briggs, and Sabio 1995
014292	14091	AP2 Lithic scatter; AP15 Habitation debris	Tift, Briggs, and Sabio 1995
014297		Isolate flake	Tift, Briggs, and Sabio 1995
014924		Two isolate flakes	Cook 1989
014926		One core and one scraper	Cook 1989
014966		Isolate flake	Cook 1990
014967		Isolate flake	Cook 1990
014968		Isolate core and flake	Cook 1990
014970		Isolate core and mano	Cook 1990
025140	16652	AP2 Lithic scatter	Kyle and Tift 1995
025212	16704	AP2 Lithic scatter	Tift and Guerrero 2003
025213	16705	AP2 Lithic scatter	Tift and Guerrero 2003
031491		AH7 Historic Otay Mesa Road	Robbins-Wade 2010; Gunderman 2010

*cultural resources within the project area.

Of the 37 previously identified sites from the records search, only SDI-6941 and SDI-9541 intersect the project area. Kyle et al. (1997) indicate that various loci of SDI-6941 were previously tested, with the site being found as not significant. Hence, there is only one known resource (SDI-9541) within the project area that needed to be relocated and assessed for a potential evaluation.

Native American Consultation

On May 14, 2014, ASM Senior Archaeologist contacted David Singleton of the Native American Heritage Commission (NAHC) to request a search of the NAHC Sacred Lands Inventory to determine whether cultural resources of special Native American concern are within or in close proximity to the APE and to obtain a list of tribal contacts who might have additional knowledge of cultural resources in the area. ASM received a response from Dave Singleton of the NAHC that the search "failed to indicate the presence of Native American traditional sites/places of the Project site(s) or 'areas of Potential effect' (APE)" (Appendix B). Mr. Singleton also provided a list of Native American tribes, Native American individuals, and organizations that may have additional information or knowledge of cultural resources in or near the Project area should the City of San Diego wish to contact them. The NAHC Sacred Lands Inventory search request and response letter is located in Appendix B.

Pedestrian Survey Methods

The project area was subjected to a full coverage survey done at 15-m transect intervals. Full coverage survey, as it relates to this survey, is best defined as a 100 percent coverage involving systematic

examination of blocks of terrain at a uniform level of intensity. Standard global positioning systems (GPS) aided in navigation and a differential, post-processed, decimeter-level GPS unit was to record the location of any newly discovered sites. GPS systems offer precise site location data that can be easily and accurately integrated into a GIS archaeological database.

Survey efforts concentrated on both relocating previously documented sites and searching for undocumented cultural resources. This survey design called for the collection of only time sensitive diagnostic artifacts (e.g., projectile points) or highly unique artifacts subject to illicit collecting. Archaeologists recorded non-collected artifacts in the field to facilitate interpretations of site character. ASM was to record any new prehistoric and historic sites associated with the project. Sites in San Diego County are often defined as any concentration of three or more artifacts in a 25-m² area, with site boundaries being defined when not more than 50 m of open space separates artifact scatters. Isolated artifacts are defined as fewer than three artifacts in a 25-m² area. However, as identified by Gallegos et al. (1998), Otay Mesa presents a challenge for defining sites due to the presence of lag material commonly found throughout the mesa. Hence, using a standard definition results in large, sparsely defined sites that can stretch for kilometers. That is, the mesa contains a background noise of artifactual materials. A typical solution when examining sites within lag deposits or quarry locations is to simply increase the ratio so that artifacts concentrations stand out against the background, such as around the Coso Volcanic fields near China Lake which also produces extensive background noise for defining archaeological sites (Epsilon Systems Solutions 2003; Becker 2005). Gallegos et al. (1998:3-29;3-37) solution was to propose a minimum of four contiguous 10-by-10-m units each containing a minimum of three associated artifacts to qualify as a site, which translates to fewer than three artifacts in a 20-m² area with not more than 40 m of separation. ASM was to assign all new cultural resources that meet the definition of archaeological sites with temporary site numbers.

Site recording was to include definition of site boundaries and documentation of features and formed artifacts. Detailed maps would then demonstrate the relationship of the sites' location to topographic features and other landmarks. Site forms would contain detailed information on environmental context, artifact content and density, cultural affiliation, and function. ASM was to complete California State Department of Parks and Recreation (DPR) 523 site forms for submittal to the South Coastal Information Center for assignment of primary numbers and site trinomials to newly discovered sites and will submit a site update form for the previously recorded sites located within the project area. Recordation efforts were to include the plotting of each new site on USGS 7.5-minute quad maps. Digital photographs documented the environmental associations and the specific features of all sites, as well as the general character of each survey area.

Site Evaluation Methods

Evaluation methods are essentially sampling methods geared toward recovering a reasonably-sized assemblage to estimate the density and diversity of the cultural deposit, and to expose enough of the site deposit to determine integrity, with the ultimate goal of depleting the research potential of the cultural deposit. The methods employed during the current investigation of SDI-9541 are described below, from surface inspection and collection, to subsurface investigation.

The first step in for the evaluation was to relocate artifact concentrations, features, and landforms noted on previous site visits to SDI-9541. The next step was to conduct regular-interval transects of the site surface intersecting the proposed APE and pin-flag artifacts to establish a real-time visual perspective of site properties.

After the site was defined with pin-flags, the distribution of artifacts was compared to the previously defined site boundaries using a Trimble GPS unit loaded with site boundary shapefiles. An excavation strategy was then determined to ensure that the previously defined boundaries of the site as well as the current distribution of artifacts were adequately delineated.

Eight STPs were excavated to delineate the site boundary and determine the horizontal extent and potential depth of cultural deposits within the portion of SDI-9541 intersecting the APE. STPs are small, 0.5 x 0.25 m, exploratory units excavated in 20-cm increments to depths of no more than 100 cm, and typically spaced at 10-m intervals or subjectively placed. STPs are typically used to explore the edges of cultural deposits, providing a positive-negative indication for the presence of subsurface cultural material.

All excavated matrix was screened through 1/8-in (3 mm) mesh. The eight STPs excavated during this evaluation were excavated to depths between 20 and 40 cm below surface (cmbs). Small soil samples were taken for Munsell color and constituent classification.

The locations of surface artifacts and STPs were recorded using a Trimble Pathfinder GPS receiver with real-time correction capabilities and down to 10 cm accuracy. After the locations of surface artifacts were recorded, they were collected to be assess in the lab. A series of overview photographs were taken to show the site landscape situation. All field notes and documentation are housed at the ASM office in Carlsbad, California.

REPORT OF FINDINGS

Survey Results

The cultural resources survey of the proposed project APE took place on December 1, 2014 and covered approximately 21.2 acres (Figure 4). Tony Quach and Kent Smolik conducted the cultural resources survey. Ed Mercado from La Posta Band of Mission Indians served as the Native American monitor. During the survey, the portions of SDI-9541 and SDI-6941 Locus K previously recorded within the proposed project APE were both relocated. The portions of both sites were observed to be in relatively similar condition as they were when last recorded, and the site boundaries identified within the proposed project APE also appear to match those on the original site record maps. The portion of SDI-9541 within the proposed project APE that was surveyed as part of this project was noted to contain 11 pieces of debitage, four flake tools, and one core, all of which were located in the area proposed to be designated as open space. Within the portion of SDI-6941 Locus K within the proposed project APE, six flakes and one core were observed by the archaeologists. Both loci J and L of SDI-6941 were previously noted to contain surface artifacts, with five and seven flaked artifacts respectively. However, none of the previously recorded artifacts were identified during the current survey, and as a result SDI-6941 Locus J and the portion of Locus L within the proposed project APE were not relocated.



Figure 4. An overview of the Southview East Project survey area looking east.

SDI-9541 Evaluation Results

The evaluation of the portion of SDI-9541 intersecting the proposed project APE that is not within the area proposed to be preserved by open space was conducted on August 31, 2015. James Daniels and Jason Kjolsing conducted the evaluation. Tuchon Phoenix of Redtail Monitoring and Research Inc. served as the Native American monitor. Prior to excavation, the entire portion of the site area intersecting the proposed project APE was resurveyed in an effort to identify and record any surface artifacts in that portion of the site. During the initial survey phase in July, the surface artifacts associated within the boundary of SDI-9541 were identified and recorded in the portion of SDI-9541 that has the potential to be affected by the proposed project development. During the evaluation phase, two flakes of Santiago Peak volcanic material were identified and recorded on the ground surface within the potentially affected portion of SDI-9541 within the proposed project APE. Other pieces of Santiago Peak material were identified on the ground surface within the portion of SDI-9541 within the portion of SDI-9541 within the portion of SDI-9541 within the proposed project APE. Other pieces of Santiago Peak material were identified on the ground surface within the portion of SDI-9541 within the portion of SDI-9541 within the proposed project APE. Other pieces of Santiago Peak material were identified on the ground surface within the portion of SDI-9541 within the proposed project APE.

The eight STPs excavated to test the significance of the potentially affected portion of SDI-9541 within the proposed project APE were positioned approximately 10 m apart, both within and just outside the portion of the site that is within the proposed project APE. Confidential Figure 6 shows the location of the excavated STPs and the two flakes identified on the surface as well as the artifacts identified on the surface during the initial survey phase. The only unit to yield an artifact was STP-2, on the northwest boundary of SDI-9541. One single volcanic interior flake was recovered in the first 20 cm of deposit. One large volcanic secondary flake was identified on the ground surface near STP-6. One other volcanic secondary flake was identified on the ground surface secondary of SDI-9541. Table 3 provides a summary of the depths of excavation, the artifacts recovered, and the soils documented during excavation of each of the STPs. A site record update submitted to the SCIC is included in Confidential Appendix E, and the catalog for the artifacts recovered during the evaluation excavation is provided in Appendix F.

STP	Max Depth	Artifacts	Soil Description
1	20	none	Compact brown (10YR 4/3) clayey sand
2	30	one flake	Pale brown (10YR 6/3) to brown (10YR 4/3) clayey sand
3	30	none	Compact brown (10YR 4/3) clayey sand
4	20	none	Compact brown (10YR 4/3) clayey sand
5	20	none	Compact brown (10YR 4/3) clayey sand
6	40	one flake near surface	Dark brown (10YR 3/3) clayey sand to brown (10YR 4/3) sandy clay with caliche
7	20	none	Compact brown (10YR 4/3) clayey sand
8	40	none	Dark brown (10YR 3/3) clayey sand to brown (10YR 4/3) sandy clay with caliche

Table 3. Results of STP Excavations at SDI-9541

The results from the evaluation resurvey and excavations indicate that the portion of SDI-9541 that is within the currently proposed APE but outside of the area proposed to be preserved by open space for the Southview East Project consists of an extremely sparse archaeological component with no apparent depth.

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4. CONCLUSIONS AND MANAGEMENT RECOMMENDATIONS

This study presents the results of a record and archival search, cultural resources survey, and the archaeological evaluation of a portion of SDI-9541 conducted in support of the Southview East Project within the Otay Mesa Community Planning Area, San Diego California. The cultural resource investigation was conducted in compliance with the California Environmental Quality Act (CEQA), the City of San Diego Land Development Code, and was conducted and documented in accordance with the City's Historical Resources Guidelines (City of San Diego 2001) and Program Environmental Impact Report (City of San Diego 2013).

During the archaeological survey, two of the previously recorded cultural resources within the proposed project APE (SDI-6941 Locus K and SDI-9541) were relocated, and their condition was observed to be very similar to what it was at the time of their last recording. The two other previously recorded loci of SDI-6941 (Locus J and portion of Locus L) were not relocated during the survey. Previous testing of the other loci of that site has resulted in the determination that the site is not eligible for the NRHP or the CRHR. SDI-6941, Locus K will not be impacted by the proposed project as it is primarily outside of the proposed project APE, and the portion of it that is within the APE is within an environmentally sensitive area that will be preserved by open space. Most of SDI-9541 is also outside of the proposed project APE and the portion of it within the proposed APE was redesigned after evaluation testing so that it is now within an area proposed to be preserved by open space.

SIGNIFICANCE ASSESSMENT

CEQA requires that all private and public activities not specifically exempted be evaluated against the potential for environmental damage, including effects to historical resources. Historical resources are recognized as part of the environment under CEQA, and are defined as "any object, building, structure, site, area, or place that is historically significant in the architectural, engineering, scientific, economic, agricultural, educational, social, political, military, or cultural annals of California" (Division I, Public Resources Code, Section 5021.1(b)).

Lead agencies have a responsibility to evaluate historical resources against California Register of Historic Resources (CRHR) criteria prior to making a finding as to a proposed project's impacts to historical resources. Mitigation of adverse impacts is required if the proposed project will cause substantial adverse change; substantial adverse change includes demolition, destruction, relocation, or alteration such that the significance of an historical resource would be impaired. The CEQA guidelines provide that a project that demolishes or alters those physical characteristics of an historical resource that convey its historical significance (i.e., its character-defining features) can be considered to materially impair the resource's significance.

The CRHR is used in the consideration of historic resources relative to significance for purposes of CEQA. The CRHR includes resources listed in, or formally determined eligible for listing in, the National Register of Historic Places, as well as some California State Landmarks and Points of Historical Interest. Properties of local significance that have been designated under a local preservation ordinance (local landmarks or landmark districts), or that have been identified in a local historical resources inventory may be eligible for listing in the CRHR and are presumed to be significant resources for purposes of CEQA unless a preponderance of evidence indicates otherwise.

Generally, a resource shall be considered by the lead agency to be "historically significant" if the resource meets the criteria for listing on the CRHR (Pub. Res. Code SS5024.1, Title 14 CCR, Section 4852) consisting of the following:

- A. It is associated with events that have made a significant contribution to the broad patterns of local or regional history, or the cultural heritage of California or the United States;
- B. It is associated with the lives of persons important to local, California, or national history;
- C. It embodies the distinctive characteristics of a type, period, region, or method of construction, or represents the work of a master, or possesses high artistic values; or
- D. It has yielded, or has the potential to yield, information important to the prehistory or history of the local area, California, or the nation [California Environmental Quality Act, as amended 1998, Section 15064.5.a3].

MANAGEMENT RECOMMENDATIONS

Archaeological sites are typically evaluated for CRHR eligibility under Criterion D but may also be eligible under Criterion A if they are associated with important events such as a migration, cultural adaptations, or trade routes and trails. Due to its lack of association with important events such as a migration, cultural adaptations, or trade routes and trails, the evaluated portion of site SDI-9541 is not eligible for the CRHR under Criterion A. Due to the generally sparse nature of the subsurface archaeological component and its associated limited sample diversity, it is also unlikely to be useful in addressing substantive research questions (Criterion D).

As a result, the test excavations conducted in the portion of SDI-9541 that is within the proposed project APE but within the area proposed to be preserved by open space indicates that that portion of the site does not possess significant cultural deposits that are eligible for the CRHR or considered significant under CEQA. Therefore, potential impacts to it associated with the proposed project would be less than significant. No further work is recommended for the non-significant portion of SDI-9541 that is within the proposed project APE, but this portion of the site will also be preserved as open space with no impacts.

The portion of SDI-6941 Locus K that is within the proposed project APE will not be impacted by the proposed project as it is within an environmentally sensitive area that will be preserved by open space. SDI-6941 Loci J and L were previously determined to be part of a non-significant site and potential impacts to them associated with the proposed project would be less than significant. As a result, no further work is recommended for SDI-6941 Locus J or the portions of Locus K or L that are within the proposed project APE. ASM does recommend archaeological monitoring for the entire proposed project APE during ground disturbing activities associated with construction due to the potential for the presence of as yet unidentified subsurface cultural resources within the proposed project APE. Additional cultural resources work may be required at these sites if future modifications are made to the boundaries of the proposed project or the areas proposed for open space easement that would affect the size or location of the proposed project APE.

ASM does recommend archaeological monitoring for the entire proposed project APE during ground disturbing activities associated with construction due to the potential for the presence of as yet unidentified subsurface cultural resources.

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APPENDICES

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APPENDIX A

Personnel Qualifications

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Mark S. Becker, Ph.D., RPA Principal and Laboratory Manager

Firm Name: ASM Affiliates, Inc., Carlsbad, California

Total Years of Experience: 27

Employment History:

2011	Principal/Laboratory Manager, ASM Affiliates, Inc., Carlsbad, California
2007	Principal/Laboratory Director, ASM Affiliates, Inc., Carlsbad, California
2002-2007	Senior Archaeologist/Laboratory Director, ASM Affiliates, Inc., Carlsbad,
	California
2001-2002	Fellow, American School of Archaeology, Jerusalem, Israel
2000-2001	Lithic Analyst, Science Applications International Corp., Santa Barbara,
	California
1999-2000	Co-Project Director, TRC Garrow, Chapel Hill, North Carolina

Education:

Ph.D.	1999/Anthropology/University of Colorado, Boulder
M.A.	1990/Anthropology/University of Illinois, Chicago
B.A.	1986/Anthropology/Ohio State University

Registrations:

1999 Register of Professional Archaeologists

References:

Douglas B. Bamforth, Professor, Department of Anthropology, University of Colorado, (303) 492-7586

Lawrence H. Keeley, Professor, Department of Anthropology, University of Illinois, (312) 413-3732

Steve L. Harvey, Program Manager, Cleveland National Forest, San Diego, California, (858) 674-2973

Professional Profile:

Dr. Becker has over 25 years of professional and academic experience in archaeological fieldwork, research, and publication in the American Midwest, Mid-Atlantic, Upper South, Southeast, Plains, Rocky Mountains, Great Basin, southern California, southwest Asia, and northern Africa. He earned his Ph.D. in Anthropology with and emphasis in archaeology, hunter-gatherers, methodology, and lithic analysis. His ongoing research focuses on prehistoric settlement systems and how mobility is reconstructed from the archaeological record through an examination of technology, function, and spatial analysis. Since 1989, Dr. Becker has specialized

in lithic use-wear, refitting, and spatial analysis. In conjunction with other classes of data, such as features and faunal remains, he has used his skills in lithic analysis to reconstruct site function and prehistoric behavior.

Dr. Becker has directed or participated in archaeological artifact analysis, field survey, testing, and data recovery projects in Arizona, California, Colorado, Illinois, Indiana, Kentucky, Nebraska, Nevada, North Carolina, Ohio, Pennsylvania, Utah, Washington, West Virginia, Wyoming, Sinai, the Egyptian Nile and Sahara, and Jordan. He has expertise with the analysis of ceramics, ground stone, faunal remains, human osteology, and historic materials. Since joining ASM as Laboratory Director in 2002, Dr. Becker has processed and analyzed artifacts from the Great Basin and California coastal and desert projects. He has also authored more than 100 project reports and specialized studies. Dr. Becker currently serves as ASM's Program Manager for ASM's Department of Defense contracts for cultural resource studies throughout the West, including Multiple Award Services Contracts for NAVFAC Southwest and the Army Environmental Center. In this role, he is responsible for oversight of technical studies, project budgets, and the preparation of deliverables per contract terms.

Selected Project Experience:

Moonlight State Beach Archaeological Monitoring Project, City of Encinitas, Encinitas, San Diego County, California, 2012. As Principal Investigator and Project Manager, supervised archaeological monitoring within a known prehistoric site during replacement of a concession stand at Moonlight State Beach. Currently managing analysis of artifacts recovered during the project.

Silver Strand State Park Survey and Testing, State of California Department of Parks and Recreation, San Diego, California, 2012. As Project Manager, oversaw fieldwork, data analysis, technical reports, and client coordination for improvements to the park.

Archaeological Survey of Deteriorated Poles, Southern California Edison, Riverside County, California, 2012. As Project Manager, oversaw all aspects of a survey program for six deteriorated transmission line poles that included an archaeological inventory, a letter report, and client coordination.

Archaeological Survey of the AFA-17 Training Area, NAVFAC Southwest, MCB Camp Pendleton, San Diego County, California, 2011-2012. As Project Manager, oversaw all aspects of this survey for the AFA-17 Training Area that included preparation of a work plan, accident prevention plan, fieldwork, data analysis, technical report, and client coordination.

Archaeological Monitoring for the P-116 Project, NAVFAC Southwest, MCAS Camp Pendleton, San Diego County, California, 2011-2012. As Project Manager, oversaw all aspects of an archaeological monitoring program on the MCAS Camp Pendleton airfield that included a work plan, fieldwork, technical report, and client coordination.

Archaeological Survey for the Ysidora Basin Treatment Pond Maintenance Project, NAVFAC Southwest, MCAS Camp Pendleton, San Diego County, California, 2011-2012. As Project Manager, oversaw all aspects of this survey for treatment pond maintenance that included a work

plan, accident prevention plan, fieldwork, data analysis, technical report, and client coordination.

Archaeological Survey of the P-214 KD Training Area, Cardno TEC, MCB Camp Pendleton, San Diego County, California, 2011-2012. As Project Manager, oversaw a full analysis and completion of archaeological survey for improvements to two training ranges on Camp Pendleton, and performed all client coordination.

MCB Camp Pendleton Basewide Historic Context Study, MCB Camp Pendleton, San Diego County, California, 2010-2011. As Project Manager, oversaw completion of basewide revision to historic context study, and coordinated with installation cultural resources personnel.

El Camino Real Evaluation, MCB Camp Pendleton, San Diego County, California, 2010-2011. As Project Manager, oversaw an archaeological survey of the portion of this historic route located on MCB Camp Pendleton, and coordinated with installation cultural resources personnel.

Archaeological Condition Assessment, Site Monitoring, and Effects Treatment Plan (CASMET), MCB Camp Pendleton, San Diego County, California, 2010-2011. As Project Manager, oversaw client coordination, completion of fieldwork, and preparation of a technical report.

SDI-12100 and SDI-19406 Additional Evaluations, MCB Camp Pendleton, San Diego County, California, 2010-2011. As Project Manager, oversaw all aspects of the project, including client coordination, preparation of a work plan, fieldwork, data analysis, and preparation of a technical report for two Archaic period sites located on Camp Pendleton.

Limited Data Recovery at Archaeological Sites SDI-12100 and SDI-19406, MCB Camp Pendleton, San Diego County, California, 2010-2011. As Project Manager, oversaw all aspects of the project including client coordination, preparation of a work plan, fieldwork, data analysis, and preparation of a technical report for two Archaic period sites on Camp Pendleton.

Archaeological Evaluation of LaPozz No. 5 Load Claim, Enviroscientists, Kern County, California, 2011. As Project Manager, oversaw archaeological evaluation of three prehistoric sites including a large lithic quarry for the BLM. Produced a work plan, conducted onsite lithic analysis for the quarry material, performed laboratory analysis on the artifacts, and produced a technical report.

Archaeological Investigations for the GWOT Sierra Geomorphology Study, NAVFAC Southwest, MCB Camp Pendleton, San Diego County, California, 2007-2011. As Principal Investigator, supervised geomorphological study of the site settings, geophysical study, and archaeological investigation around two NRHP-eligible sites located in the project area. Produced proposal and work plan, supervised field effort, prepared technical report, and coordinated with Base Archaeologist.

Archaeological Survey for the Santa Margarita Conjunctive Use Project, Cardno TEC, MCB Camp Pendleton, San Diego County, California, 2008-2011. As Principal Investigator for an archaeological survey of a proposed water pipeline running from the coast of Camp Pendleton to City of Fallbrook. Produced work plan, supervised field effort, literature search, and historical

documentation, report author, and coordination with client and Base Archaeologist.

GPR Survey of Los Angeles State Historic Park, State of California Department of Parks and Recreation, Los Angeles, California, 2008. As GPR specialist, conducted a two-phase GPR survey of a historic railroad depot.

Archaeological Evaluation of 27 Sites on MCB Camp Pendleton, NAVFAC Southwest, MCB Camp Pendleton, San Diego County, California, 2007-2011. As Principal Investigator and Laboratory Director, managed Phase II testing of 27 prehistoric sites in the central portion of MCB Camp Pendleton. Coordinated the examination of artifacts and ecofacts to investigate site function and subsistence-settlement patterning along Las Flores, Las Pulgas, and Aliso creeks. Prepared a synthesis of this data within a regional context. Supervised field effort and coordinated with Base Archaeologist. Prepared technical report.

GPR Survey of Stonewall Historic Mine, State of California Department of Parks and Recreation, Lake Cuyamaca, San Diego County, California, 2007. As GPR specialist, conducted a two-day GPR survey of a historic mine.

GPR Survey at Naval Base Point Loma Quarters A, Shaw Environmental (for Commander, Navy Region Southwest), Naval Base Point Loma, San Diego California, 2007. As GPR specialist, conducted a two-day GPR survey of a potential historic site on Naval Base Point Loma.

GPR Survey for the Fallbrook LDS Project, Robert F. Tuttle Architects, Fallbrook, San Diego County, California, 2007. Conducted a GPR survey to investigate the possibility of a California Indian cemetery.

GPR Survey for the NAWS Survivability Project, Naval Air Weapons Station China Lake, San Bernardino County, California, 2007. As GPR specialist, conducted the GPR survey, analysis, and reporting for two Paleoindian sites and one historic graveyard.

GPR Survey of the Yuma Pivot Point, Yuma Crossing National Heritage Area, Yuma, Yuma County, Arizona, 2006. Conducted a GPR survey to locate buried portions of a historic railroad bridge that once spanned the Colorado River.

Data Recovery of Archaeological Site SDI-10723, NAVFAC Southwest, MCB Camp Pendleton, San Diego County, California, 2005-2007. As Principal Investigator and Laboratory Director, managed data recovery at a multi-component prehistoric site dating between 8400-300 B.P. Supervised GPR survey, fieldwork, lab analysis, curation, and a technical report, and coordination with Base Archaeologists. The project relied on special methods to recover the Early Archaic material remains, and used innovative spatial analysis techniques to help interpret the data.

James T. Daniels, Jr., M.A., RPA Senior Archaeologist

Firm Name: ASM Affiliates, Inc. Carlsbad, California

ASM Hire Date: August 21, 2008

Total Years of Experience: 9

Employment History

2012-Present	Graduate Teaching Assistant University of California San Diego
2008-Present	Senior Archaeologist, ASM Affiliates, Inc., Carlsbad, California
2007-2008	Research Assistant and IIRMES Lab Technician, CSULB, Long Beach,
	California
2006-2007	Graduate Assistant, California State University Long Beach, California
2005-2006	Field and Lab Tech., TRC Garrow, Chapel Hill, North Carolina

Education:

Ph.D.	In Progress/Anthropology/University of California, San Diego
M.A.	2009/Anthropology/California State University Long Beach
B.A.	2004/Anthropology/North Carolina State University

Additional Training:

- 2010 Training in the operation of the Bruker portable X-ray fluorescence (XRF) for the chemical analysis of artifacts and materials.
- 2008 Professional training workshop for GPR Slice software. Training in the use of geophysical instruments including instruments associated with ground penetrating radar (GPR), magnetometry, conductivity, and resistivity. Training in the use of materials and chemical analysis instrumentation including the GBC Optimass orthogonal TOF ICP-MS and New Wave 213 LUV Laser Ablation System and the FEI Quanta 200 Analytical Environmental Scanning Electron Microscope.

Registrations:

2009 Register of Professional Archaeologists

References:

Steve Wragg, Vice President, Planning Division, RBF Consulting, (858) 614-5059

Barbara Arroyo, Center for Archaeological and Anthropological Research of the Universidad del Valle de Guatemala, arroyobarbara2003@yahoo.com

Carl P. Lipo, Associate Professor, Anthropology, Archaeology, and IIRMES, (562) 985-2393

Hector Neff, Professor of Anthropology and Research Scientist, IIRMES, CSU Long Beach, (562) 985-4468

Tracy Millis, Principal Investigator, TRC Garrow, (919) 821-3197

Professional Profile:

Mr. Daniels has eight years of experience in Cultural Resource Management and two years of experience in academic lab and field research. After completing his Bachelor's degree, he volunteered at the North Carolina Office of State Archaeology until acquiring a permanent position with a cultural resources consulting firm located in Chapel Hill, North Carolina. Mr. Daniels worked as both a lab and field technician under the supervision of Tracy Millis. His duties included the management and curation of all site collections from MCB Camp Lejeune, contributing site descriptions and artifact assemblage tables for project reports, maintaining and updating site records for the sites located on Camp Lejeune, and Phase I and II fieldwork.

In 2006, Mr. Daniels enrolled in the Master's program in Archaeological Science at California State University, Long Beach where he had the opportunity to participate in archaeological fieldwork in the Pacific Coastal region of Guatemala, Easter Island, and the Mojave Desert. In addition to traditional field experience such as excavation and surface survey, Mr. Daniels participated in multiple geophysical surveys in these regions becoming proficient in the operation of GSSI's SRI 3000 ground penetrating radar (GPR) and Geometric's 858 Magmapper magnetometer/gradiometer. His Master's thesis involves the integration of geophysical data, soil chemistry, and the spatial distribution of surface artifacts collected at the site of El Baul in Cotzumalguapa, Guatemala into GIS software to determine function of subsurface structures and features.

In 2008, Mr. Daniels began working for ASM and continues to employ his knowledge of archaeogeophysics as a Senior Archaeologist for ASM. He has performed geophysical surveys of a historic cabin on Caples Lake, an ethnohistoric settlement associated with the San Luis Rey Mission, the historic roadside Carl Inn in Yosemite National Park, and multiple prehistoric sites on MCB Camp Pendleton. Mr. Daniels has also refined previously collected data and written detailed analytical reports on the results of previous geophysical investigation projects. Mr. Daniels also employs portable X-ray fluorescence (pXRF) in ceramic sourcing projects, soil analyses, and analyses of groundstone artifacts.

In 2012, Mr. Daniels enrolled in a Ph.D program at the University of California, San Diego. He has employed his expertise in geophysics and pXRF analysis at the Mayan site of Nim li Punit in southern Belize and has two publications from his work there.

Selected Project Experience:

Ibarra Family Health Center Pedestrian Survey, Family Health Centers of San Diego, San Diego County, California, 2013. As Principal Investigator, managed the pedestrian survey for a proposed Health Center facility. Authored the resulting report to the client.

Ocean Park Villas Monitoring, Clark Realty LLC, San Diego County, California, 2013. As Principal Investigator, coordinated the scheduling of monitoring for the demolition and subsequent grading for the development of a new residential development in Ocean Beach. Was responsible for conducting the record search and coordination with client and city mitigation monitoring coordinator. Prepared the resulting report for the client.

Millenia Archaeological Monitoring, McMillin Companies, San Diego County, California, 2013. As Project Manager and Principal Investigator, attended preconstruction meeting. Secured records of previously conducted work in the project area from City of Chula Vista. Coordinated the scheduling of archaeological monitoring during grading. Supervised and managed the archaeological monitor for the project. Collected all daily field notes and GPS records and prepared the archaeological monitoring results report for client.

Adobe Estates Monitoring, San Diego Natural History Museum, Vista, San Diego County, California, 2013. As Principal Investigator, attended preconstruction meeting for the proposed grading of a new residential development in Vista, CA. Coordinated the scheduling of archaeological monitoring for the project. Managed the collection and organization of all archaeological field notes, and prepared the archaeological monitoring report for the client.

Home Avenue Lift Station, City of Carlsbad, San Diego County, California, 2013-2014. As Project Manager, coordinated the archaeological monitoring of grading and excavation of a sewer pump station and sewage main in downtown Carlsbad. Conducted a records search for the project area, managed the scheduling of archaeological monitors, and authored the monitoring report.

City of Carlsbad CIP Projects, Helix Environmental Planning, Inc., San Diego County California, 2013. As Co-Principal Investigator, conducted a records search and NAHC consultation for the proposed Phase III Recycled Water Project in the city of Carlsbad. Authored the archaeological resource management report submitted to the client

Archaeological Evaluations of 42 Sites for the Rugged Solar Project, Dudek, San Diego County, California, 2012. As Co-Principal Investigator coordinated the synthesis of data collected in the field from 42 evaluated prehistoric and historic sites. Co-authored the technical report. Coordinated with client and county archaeologist regarding project and report details.

Archaeological Evaluations for the Tierra Del Sol Project, Dudek, San Diego County, California, 2012. As Co-Principal Investigator coordinated the synthesis of data collected in the field during the evaluation of 42 prehistoric and historic sites. Co-authored the technical report. Coordinated with client and county archaeologist regarding project and report details.
Cultural Resource Inventory for Eight Bridge Repairs on MCB Camp Pendleton, Cardno TEC, MCB Camp Pendleton, San Diego County, California, 2012. As Principal Investigator organized and conducted a survey of eight bridge repair locations and their associated impact footprint to determine if any previously identified or newly encountered sites would be impacted by the proposed bridge repairs. An assessment of the historic nature of each bridge was also made by an accompanied historian. Authored the preliminary report of findings document.

Archaeological Survey of the Ysidora Basin, NAVFAC Southwest, MCAS Camp Pendleton, California, 2011-2012. As Principal Investigator (PI), coordinated the survey for treatment pond maintenance. As Field Director, conducted the pedestrian survey of the impact area. As PI and report author, conducted data analysis, generated report maps, and authored the technical report.

Archaeological Evaluation of SDI-13077H and Data Recovery at SDI-13078 for the Rhodes Crossing Project, Sea Breeze Properties, San Diego County, California, 2011-2012. As Principal Investigator, conducted prefield coordination, planning, and research on sites. Organized and supervised a field crew of six in performing the evaluation of historic site SDI-13077H and the data recovery at an Archaic period site, SDI-13078. Converted recorded GPS data into ArcGIS shapefiles to produce report quality maps. Co-authored the technical report.

Cultural Resources Inventory for the Sol Orchard San Diego 5 LLC Project, RBF Consulting, San Diego County, California, 2011-2012. As Principal Investigator coordinated field work for Phase I inventory of four properties in different parts of the county to be developed for concentrated photovoltaic solar panels. Responsible for report preparation, coordination with client, and maintaining a dialog with the county archaeologist regarding project and report details.

Archaeological Data Recovery at SDI-12100 and SDI-19406, MCB Camp Pendleton, San Diego County, California, 2010-2011. As Principal Investigator and Field Director, coordinated and completed Phase III fieldwork for two Archaic period sites. Employed additional GPR surveys to determine optimal placement for data recovery units. Processed and analyzed both GPR and GIS information collected in the field. Co-author of the technical report.

Archaeological Evaluations of SDI-12100 and SDI-19406, MCB Camp Pendleton, San Diego County, California, 2010-2011. As Principal Investigator and Field Director, coordinated and completed Phase II fieldwork for two Archaic period sites including GPR survey, systematic shovel test pits, and control units. Processed and analyzed both GPR and GIS information collected in the field. Co-author of the technical report.

Archaeological Site Condition Assessment, Site Monitoring, and Effects Treatment Plan (CASMET), MCB Camp Pendleton, San Diego County, California, 2011. As Principal Investigator and Field Director, coordinated and completed the CASMET fieldwork and authored the technical report detailing the condition of 118 selected cultural resources, prehistoric and historic, through field checks.

Tony Cuong Tri Quach Associate Archaeologist

Firm Name: ASM Affiliates, Inc. Carlsbad, California

ASM Hire Date: October 2009

Total Years of Experience: 5

Employment History:

2009-Present	Associate and Lab Director, ASM Affiliates, Inc., Carlsbad, California
2008-2009	Lab Assistant, California State University Long Beach, California
2007-2008	Pollen Lab Assistant, Washington State University, Pullman Washington
2007-2007	Repatriation Field Technician, SRI, Redlands, California
2006-2008	Graduate Assistant, California State University Long Beach, California

Education:

M.A.	In Progress/Anthropology/California State University Long Beach
B.A.	2006/Anthropology/California State University Long Beach

References:

Carl P. Lipo, Associate Professor, Anthropology, Archaeology, and IIRMES, California State University Long Beach, (562) 985-2393

Hector Neff, Professor of Anthropology and Research Scientist, IIRMES, California State University Long Beach, (562) 985-4468

John G. Jones, Professor of Anthropology and Research Scientist, Palynology Laboratory, Washington State University, (509) 339-5848

Professional Profile:

Mr. Quach has four years of experience in Cultural Resource Management and academic research. After completing his Bachelor's degree, he enrolled in the Master's program in Archaeological Science at CSU, Long Beach where he participated in archaeological and Anthropological fieldwork in Guatemala, Belize, El Salvador, Easter Island, Washington, China, and Southern California. Mr. Quach has extensive experience in pedestrian survey and excavation techniques, as well as the operation of chemical characterization instruments and interpretation of the data derived from these analyses. Mr. Quach utilized elemental data as a proxy for mineralogical changes that may be indicative of chemical weathering, as an alternative to conventional functions of chemical characterization traditionally applied towards material proveniencing.

Mr. Quach gained broad level experience in coring, extracting, and identifying pollen taxons and applying interpretive methods to reconstruct paleoenvironments, while under the direction of Dr. John Jones, a palynologist with a broad background in neotropical and North American pollen. Mr. Quach's Master's thesis involves analyzing and interpreting pollen, bulk chemical elements, and carbon and nitrogen isotopes to interpret the environmental conditions that preceded the collapse of the complex societies on the Coastal Guatemalan Plain. He was also instrumental in the development of a palynological analysis facility at California State University Long Beach utilizing the techniques and protocols he learned at Washington State University, Pullman.

Mr. Quach has also become familiar with the operation of ground penetrating radar, magnetometer/gradiometer, conductivity, resistivity, and aerially blimp photography among other remote sensing techniques, such as the manipulation and use of satellite imagery, while conducting geophysical survey in the Mojave Desert, El Salvador, Guatemala and Easter Island. He has applied ARCGIS towards the study of surface artifact distribution of a subsection of the Mojave dunes in a pilot study of the taphonomic processes that creates slope gradients key towards the exposure of previously buried artifacts, as well as conducting geophysical survey of MCB Camp Pendleton to identify subsurface archaeological deposits.

Selected Project Experience:

Sorrento to Miramar Doubletrack, Testing, Data Recovery, and Monitoring 2013. As an Interim Lab Supervisor oversaw the completion of lab processing and conducted a quality assurance review of the materials collected from the evaluations of the ethnographic village of Ystagua.

Mission San Diego de Alcala Monitoring 2013. As archaeological monitor oversaw the trenching of an electrical line for San Diego Mission de Alcala. Also oversaw and supervised the lab processing of the artifacts recovered.

New River Improvement Plan Project, Calexico, California 2013. As Field Supervisor conducted a survey of the New River Basin for a proposed bikeway and ancillary facilities as well as preparing the report.

Imperial Wells Geothermal Exploration Survey, Niland, California 2013. As Field Supervisor conducted a survey of five parcels for a proposed geothermal exploration project as well as serving as report co-author.

Seville Solar Project, Ocotillo Wells, California 2013. As Field Supervisor conducted a survey of Allegretti Farms for a proposed solar power farm. Additional duties also include the preparation of site forms and report writing.

Rancho Guejito Remedial Forensic Evaluation, Rancho Guejito, California. As Field Supervisor conducted a survey of a recently graded roadway to ascertain the potential effect of the recent construction on existing or unrecorded cultural resources.

El Dorado Parkway Evaluation, El Cajon. As Lab Supervisor oversaw the lab processing of the items recovered during evaluation.

Star Ranch Evaluations, Campo, California 2013. As a field technician assisted in the evaluation of three prehistoric sites. Duties included the digging of STP units and surficial survey mapping.

Moonlight Beach Monitoring and Lab Analysis, Encinitas, California 2013. As archaeological monitor oversaw the utility trenching of SDI-17402. As Laboratory Director also oversaw the processing of the items recovered from monitoring discoveries. Additional duties included charcoal analysis and section write-up for the charcoal fragments recovered from hearth features.

Sunrise Powerlink Long Term Monitoring 2012. As field supervisor conducted a facility survey and overview to document the potential long term effects of project construction on extent archaeological resources within proximity to access roads, towers, and other associated infrastructure within the transmission line right of way.

ECO Substation Ground Penetrating Radar Study, Jacumba, California 2012. As Ground Penetrating Radar Technician conducted a geophysical study of various portions of the proposed project area to ascertain the potential for buried feature and deposits prior to data recovery and additional construction.

Ocotillo Buried Site Testing, Ocotillo, California 2012. As a an Assistant Field Supervisor oversaw and directed limited survey and testing of proposed wind turbine locations in Ocotillo to examine the potential for intact deposits of buried cultural resources.

Highway 80- Pine Valley Road Survey, Pine Valley, San Diego County, California 2012. As Field Director, surveyed an adjoining land parcel in Pine Valley to assess the effect of a proposed road widening project.

Stuart Mesa Ponds Survey, NAVFAC Southwest, MCB Camp Pendleton, San Diego County, California 2012. As Field Director, surveyed the Stuart Mesa Ponds Ecosystem

Canyon Estates Survey, Arcadia, California 2012. As Field Director surveyed an undeveloped parcel in Arcadia, California as well as co-authored the technical report of findings.

SCE Dever Palo Verde Collection Update, Riverside County, California 2012. As Lab Director oversaw the update of the 1980's Devers to Palo Verde line collection to current curatorial standards which entailed the digital archiving of the paper catalog into an electronic one as well as assessing the overall condition of the collection.

La Rosita Substation Fielding, El Centro, California 2012. As an Archaeological Monitor and Consultant, accompanied various contractors, and engineers of SDG&E during a field condition assessment for logistical planning purposes, of proposed pole installation upgrades of the La Rosita Substation.

State Route 76 Expansion, Towline Fencing and Construction Monitoring, Bonsall, California 2012. As cultural resource monitor supervised grading, trenching, and potholing for construction activities related to the expansion of State Route 76.

Palomar North Horse Ranch Creek Road Testing, Monitoring, and Data Recovery, Fallbrook, California 2012. As Interim Field Director and Field Lab Supervisor oversaw the subsurface testing, wet screening, extraction, cleaning, sorting, classification, and cataloging of cultural materials recovered from monitoring and subsurface assays.

Pendleton P-214 Range Development Survey, NAVFAC Southwest, MCB Camp Pendleton, San Diego County, California 2011-2012. As Field Director, conducted a pedestrian survey of the P-214 Range to examine for potential impacts of proposed construction activities.

AFA-17 Survey, MCB Camp Pendleton, California 2011-2012. As Field Director, conducted a pedestrian survey of the AFA-17 Training Area to examine the potential for impacts to existing cultural resources by proposed facility maintenancing and upgrades.

El Camino Real Evaluation, NAVFAC Southwest, MCB Camp Pendleton, San Diego County, California 2011. As Field Director, systematically surveyed portions of the hypothesized alignment of historic El Camino Real on Camp Pendleton.

San Marcos High School Evaluation and Monitoring. As an Archaeological Field Technician, aided in the testing and evaluation of an intact archaeological deposit encountered during construction activities.

Additional Archaeological Evaluation of SDI-9824, MCB Camp Pendleton, San Diego County, California. As the X-ray Fluorescence Technician, utilized a portable x-ray fluorescence instrument to assess the potential applications of this instrument to non-destructively characterize the geochemical composition of an ochre rock art panel in-situ at SDI-9824.

SDI-12100 and SDI-19406 Limited Evaluations and Data Recovery, MCB Camp Pendleton, San Diego County, California 2011. As Laboratory Director and Interim Field Director, oversaw and directed the subsurface testing and laboratory processing for two Archaic period sites on Camp Pendleton.

SDG&E Tie Line 637 Pole Fielding, San Diego Gas & Electric Company, eastern San Diego County, California 2011. As an Archaeological Monitor and Consultant, accompanied various contractors, and engineers of SDG&E during a field condition assessment for logistical planning purposes, of various portions of tie line 637, and provided recommendations and comments in cases where project activities may affect the cultural resources in an area.

Rock Art Documentation at CA-TUL-2871, Tulare County, California 2011. As the X-ray Fluorescence Technician, utilized a portable x-ray fluorescence instrument to assess the potential of utilizing a portable x-ray fluresence instrument to non-destructively characterize the geochemical composition of an ochre rock art panel in-situ.

Supplemental Archaeological Survey for P-113 CERS Project, TEC, Inc., MCB Camp Pendleton, California 2011. As Field Director, surveyed various land parcels on Camp Pendleton that are proposed as staging and construction areas of the construction of a water treatment pipeline.

APPENDIX B

NAHC Consultation

Dave Singleton California Native American Heritage Commission 915 Capitol Mall, Room 364 Sacramento, CA 95814 Via fax: (916) 657-5390

Re: Archaeological Monitoring for the Southview Project in Otay Mesa, San Diego, California

Dear Mr. Singleton,

ASM Affiliates is conducting cultural resources monitoring for the Southview Project in Otay Mesa, San Diego, California. This study is being undertaken in accordance with City of San Diego's California Environmental Quality Act (CEQA) requirements. This study will be conducted to provide supporting information for documentation concerning development plans for the proposed project area.

The search should include the project area and a one-half-mile radius surrounding it. The project area is located on the U.S. Geological Survey 7.5' Imperial Beach, California Quadrangle Map in western portion of Township 18S, Range 1W. Our investigation will include direct consultation with local tribal entities in a manner that ensures complete confidentiality. To facilitate this dialogue I would like to make a request for a listing of the appropriate individuals to contact for this project. You can reply to me at the ASM Carlsbad office, listed above or through any of the other means of contact listed below. Feel free to call, write, Fax, or e-mail if you have any questions. Attached to this request is a map of the project area for your records and to put on file.

Sincerely,

Tan Shaldton

Ian Scharlotta

Senior Archaeologist ASM Affiliates Inc., 2034 Corte Del Nogal Carlsbad, CA 92011 (760) 804-5757 ischarlotta@asmaffiliates.com

Attachment: Form 1. NAHC Sacred Lands Request Figure 1. Location map of the project area.

Sacred Lands File & Native American Contacts List Request

NATIVE AMERICAN HERITAGE COMMISSION

915 Capitol Mall, RM 364 Sacramento, CA 95814 (916) 653-4082 (916) 657-5390 – Fax <u>nahc@nahc.ca.gov</u>

Information Below is Required for a Sacred Lands File Search

Project:	Southview
County:	San Diego County
USGS Quadrangle:	7.5 Minute USGS Quadrangle
Quad Name:	Imperial Beach
Township: 18S Range: 1W	Section(s):
Company/Firm/Agency:	ASM Affiliates Inc.
Contact Person:	Ian Scharlotta
Street Address:	2034 Corte del Nogal
City:	Carlsbad, CA 92011
Phone:	760-804-5757
Fax:	<u>760-804-5755</u>
Email:	ischarlotta@asmaffiliates.com

Project Description: ASM is conducting cultural resources monitoring for the Southview Project in Otay Mesa, San Diego, California. The client is planning to develop the property into approximately 480 housing units. Proposed activities include grading and the installation of a utilities.

Additional Location Information

5353 Airway Rd, San Diego, CA 92154 (Airway Rd and Caliente Ave)

Central UTM Point (NAD83): UTMs 498673 m E 3602947 m N

STATE OF CALIFORNIA

Edmund G. Brown, Jr., .Governor

NATIVE AMERICAN HERITAGE COMMISSION 1550 Harbor Boulevard, Suite 100 West Sacramento, CA 95691 (916) 373-3715 Fax (916) 373-5471 Web Site <u>www.nahc.ca.gov</u> Ds_nahc@pacbell.net



May 22, 2014

Dr. Ian Scharlotta, Ph.D., Senior Archaeologist **ASM Affiliates, Inc.** 2034 Corte del Nogal Carlsbad, CA 92011

Sent by FAX to: No. of Pages: 760-804-5755 5

RE: Sacred Lands File Search and Native American Contacts list for the **"Southview Project;"** located in the Otay Mesa area of San Diego County, California

Dear Dr. Scharlotta:

A record search of the NAHC Sacred Lands Inventory **failed to indicate** the presence of Native American traditional sites/places of the Project site(s) or 'areas of Potential effect' (APE), submitted to this office. However, there are are native American cultural resources in close proximity to the APE. Note also that the absence of archaeological resources does not preclude their existence at the subsurface level.

In the 1985 Appellate Court decision (170 Cal App 3rd 604), the Court held that the NAHC has jurisdiction and special expertise, as a state agency, over affected Native American resources impacted by proposed projects, including archaeological places of religious significance to Native Americans, and to Native American burial sites.

When the project becomes public, please inform the Native American contacts as to the nature of the project (e.g. residential, renewable energy, infrastructure or other appropriate type). Attached is a list of Native American tribes, Native American individuals or organizations that may have knowledge of cultural resources in or near the proposed project area (APE). As part of the consultation process, the NAHC recommends that local government and project developers contact the tribal governments and Native American individuals on the list in order to determine if the proposed action might impact any cultural places or sacred sites. If a response from those listed on the attachment is not received in two weeks of notification, the NAHC recommends that a follow-up telephone call be made to ensure the project information has been received.

California Government Code Sections 65040.12(e) defines 'environmental justice' to provide "fair treatment of people...with respect to the development, adoption, implementation, and enforcement of environmental laws, regulations and policies." Also, Executive Order B-10-11 requires that state agencies "consult with Native American

tribes, their elected officials and other representatives of tribal governments in order to provide meaningful input into...the development of legislation, regulations, rules and policies on matter that may affect tribal communities."

If you have any questions or need additional information, please contact me at (916) 373-3715.

Sincerely, Dave Singleton Program Analyst

Attachments

Native American Contacts San Diego County California May 22, 2014

Sycuan Band of the Kumeyaay Nation Daniel Tucker, Chairperson 5459 Sycuan Road , CA 92019 El Cajon

Diegueno/Kumeyaay

Barona Group of the Capitan Grande Clifford LaChappa, Chairperson 1095 Barona Road Diequeno Lakeside , CA 92040 sue@barona-nsn.gov (619) 443-6612 619-443-0681

La Posta Band of Mission Indians Gwendolyn Parada, Chairperson 8 Crestwood Road **Diegueno/Kumeyaay** , CA 91905 Boulevard gparada@lapostacasino. (619) 478-2113 619-478-2125

Manzanita Band of Kumeyaay Nation Leroy J. Elliott, Chairperson PO Box 1302 Diegueno/Kumeyaay Boulevard , CA 91905 libirdsinger@aol.com (619) 766-4930 (619) 766-4957 Fax

San Pasqual Band of Mission Indians Allen E. Lawson, Chairperson PO Box 365 Diegueno Valley Center, CA 92082 allenl@sanpasqualband.com (760) 749-3200 (760) 749-3876 Fax

ssilva@sycuan-nsn.gov 619 445-2613

619 445-1927 Fax

Viejas Band of Kumeyaay Indians Anthony R. Pico, Chairperson PO Box 908 Diegueno/Kumeyaay Alpine , CA 91903 jhagen@viejas-nsn.gov (619) 445-3810 (619) 445-5337 Fax

Kumeyaay Cultural Historic Committee Ron Christman 56 Viejas Grade Road , CA 92001 Alpine (619) 445-0385

Diegueno/Kumeyaay

Campo Band of Mission Indians Ralph Goff, Chairperson 36190 Church Road, Suite 1 Diegueno/Kumeyaay Campo , CA 91906 chairgoff@aol.com (619) 478-9046 (619) 478-5818 Fax

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

Distribution of this list does not relieve any person of the statutory responsibility as defined in Section 7050.5 of the Health and Safety Code, Section 5097.94 of the Public Resources Code and Section 5097.98 of the Public Resources Code.

This list s only applicable for contacting locative Americans with regard to cultural resources for the proposed Southview Project; located in the Otay Mesa area of southwestern San Diego County, California for which a Sacred Lands File search and Native American Contacts list were requested.

Native American Contacts San Diego County California May 22, 2014

Jamul Indian Village Raymond Hunter, Chairperson P.O. Box 612 Diegueno/Kumeyaay Jamul , CA 91935 jamulrez@sctdv.net (619) 669-4785 (619) 669-48178 - Fax

Mesa Grande Band of Mission Indians Mark Romero, Chairperson P.O Box 270 Diegueno Santa Ysabel, CA 92070 mesagrandeband@msn.com (760) 782-3818 (760) 782-9092 Fax

Kwaaymii Laguna Band of Mission Indians Carmen Lucas P.O. Box 775 Diegueno -Pine Valley , CA 91962 (619) 709-4207

Inaja Band of Mission Indians Rebecca Osuna, Chairman 2005 S. Escondido Blvd. Diegueno Escondido , CA 92025 (760) 737-7628 (760) 747-8568 Fax Kumeyaay Cultural Repatriation Committee Steve Banegas, Spokesperson 1095 Barona Road Diegueno/Kumeyaay Lakeside , CA 92040 sbenegas50@gmail.com (619) 742-5587 (619) 443-0681 FAX

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

Distribution of this list does not relieve any person of the statutory responsibility as defined in Section 7050.5 of the Health and Safety Code, Section 5097.94 of the Public Resources Code and Section 5097.98 of the Public Resources Code.

This list s only applicable for contacting locative Americans with regard to cultural resources for the proposed Southview Project; located in the Otay Mesa area of southwestern San Diego County, California for which a Sacred Lands File search and Native American Contacts list were requested.

Native American Contacts San Diego County California May 22, 2014

Kumeyaay Diegueno Land Conservancy Mr. Kim Bactad, Executive Director 2 Kwaaypaay Court Diegueno/Kumeyaay El Cajon CA 91919 (619) 445-0238 - FAX (619) 659-1008 - Office kimbactad@gmail.com

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Kumeyaay Cultural Repatriation Committee Bernice Paipa, Vice Spokesperson P.O. 937 Diegueno/Kumeyaay Boulevard CA 91905 bernicepaipa@gmail.com (KCRC is a Coalituon of 12 Kumeyaay Governments)

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

Distribution of this list does not relieve any person of the statutory responsibility as defined in Section 7050.5 of the Health and Safety Code, Section 5097.94 of the Public Resources Code and Section 5097.98 of the Public Resources Code.

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CONFIDENTIAL APPENDIX C

SCIC Records Search Results



South Coastal Information Center 4283 El Cajon Blvd., Suite 250 San Diego, CA 92105 Office: (619) 594-5682 Fax: (619) 594-4483 www.scic.org nick@scic.org

CALIFORNIA HISTORICAL RESOURCES INFORMATION SYSTEM RECORDS SEARCH

Company:	ASM Affiliates				
Company Representative:	Ian Scharlotta				
Date Processed:	6/14/2014				
Project Identification:	Southview				
Search Radius:	1/2 mile				
Historical Resources:		YES			
Trinomial and Primary site maps boundaries and the specified rac site record forms have been incl	have been reviewed. All sites within the project dius of the project area have been plotted. Copies of the uded for all recorded sites.				
Previous Survey Report Bo	undaries:	YES			
Project boundary maps have be citations for reports within the pr project area have been included	en reviewed. National Archaeological Database (NADB) oject boundaries and within the specified radius of the				
Historic Addresses:		YES			
A map and database of historic properties (formerly Geofinder) has been included.					
Historic Maps:					
The historic maps on file at the S and copies have been included.	South Coastal Information Center have been reviewed,				

Summary of SHRC Approved CHRIS IC Records Search Elements					
RSID:	835				
RUSH:	no				
Hours: 1					
Spatial Features: 72					
Address-Mapped Shapes: no					
Digital Database Records: 0					
Quads: 1					
Aerial Photos: 0					
PDFs: Yes					
PDF Pages: 306					

CONFIDENITAL APPENDIX D

Confidential Figures

CONFIDENITAL APPENDIX E

Site Record Updates

APPENDIX F

Artifact Catalog

Southview East Evaluation of SDI-9541 Master Catalog PN 22300.01 ASM Affiliates

Cat. #	Site	Recovery Type	Unit Type	Unit#	Easting	Northing	Top Level	Bottom Level	Screen	Class	Subclass	Type Subtype	Material	Ct.	Wt.(g)	Comments
1	SDI-9541	STP	other	2	499024	3602825	0	20	1/8" dry	Debitage	Interior		Volcanic/basalt	1	0.2	
2	SDI-9541	STP	other	6	499035	3602816	0	0	1/8" dry	Debitage	Secondary		Volcanic/basalt	1	82.4	
3	SDI-9541	General surface		4	499026	3602814	0	0	none	Debitage	Secondary		Volcanic/basalt	1	14.3	

Biological Technical Report for the Southview East Project

First Submittal June 2016 Second Submittal September 2016

Prepared for:

Cornerstone Communities

4365 Executive Drive, Suite 600 San Diego, CA 92121

Prepared by:

Alden Environmental, Inc. 3245 University Avenue, #1188 San Diego, CA 92104



Biological Technical Report for the Southview East Project

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1.0 INTRODUCTION

This report describes existing biological conditions on the Southview East project site and provides the U.S. Fish and Wildlife Service (USFWS), U.S. Army Corps of Engineers (Corps), California Department of Fish and Wildlife (CDFW), City of San Diego (City), and project applicant with information necessary to assess impacts to biological resources under the California Environmental Quality Act (CEQA) and City, State, and Federal regulations.

1.1 PROJECT LOCATION

The approximately 21-acre Southview East project site is located within the Otay Mesa Community Plan boundaries, south of State Route 905 (SR 905) and east of Caliente Avenue in the City. The project site is situated east of San Ysidro High School, and undeveloped lands occur to the east and to the south (Figures 1 and 2). Construction is currently taking place immediately to the west (i.e., the Southview West project consisting of Tesoro [Lot 1] and Vista del Sur [Lot 2] of TM 25169).

1.2 PROJECT DESCRIPTION

The Southview East project would construct two multi-family residential condominium subdivisions totaling 86 units. While not a part of the Southview East subdivision project, the future extension of Airway Road across the project site is also being analyzed in this report.

The two proposed condominium subdivisions would be separated by Airway Road. The subdivision project would require an amendment to the previous site development permit. It would also require a Planned Development Permit and Tentative Map.

Development north of Airway Road would be a 46-unit multi-family condominium complex consisting of 11 three-, four-, and five-plex buildings which are all three stories in height. South of Airway Road would be a 40-unit multi-family condominium complex consisting of eight, five-plex buildings—all three stories in height.

Proposed improvements to the project site for the subdivisions include private street and driveway improvements and privately maintained water quality basins designed to handle storm water/runoff needs for the subdivisions. Each subdivision would have all landscape common areas planted, irrigated, and maintained by the Homeowners' Association (HOA).

The Irrevocable Offer to Dedicate (IOD) the future extension of Airway Road would occur from its current terminus to the west off site, onto the project site, and east until the eastern property line.

2.0 METHODS AND SURVEY LIMITATIONS

2.1 LITERATURE REVIEW

Prior to conducting updated field investigations, Alden Environmental, Inc. (Alden) performed a review of existing literature, including previously prepared Biological Survey Reports for the area (Mooney Jones and Stokes [MJS] 2006 and Merkel 1999) and the Final Comprehensive



Fairy Shrimp Survey Report from Ecological Restoration Service (ERS; 2008). Alden also performed a search of CDFW's California Natural Diversity Database and the California Native Plant Society (CNPS) online database for information regarding sensitive species known to occur within the project site vicinity. Additional sources of information include those compiled as part of the Multiple Species Conservation Program (MSCP; City 1997a).

2.2 BIOLOGICAL SURVEYS

MJS oversaw a full range of biological field surveys between 2001 and 2005 on the project site, the results of which are presented in the previous Biological Survey Report (MJS 2006). MJS conducted the following field surveys: vegetation mapping, sensitive plant surveys, a jurisdictional delineation, and burrowing owl (BUOW; *Athene cunicularia*) and Quino checkerspot butterfly (QCB; *Euphydryas editha quino*) surveys. ERS conducted USFWS protocol-level presence/absence surveys for San Diego fairy shrimp (*Branchinecta sandiegonensis*) and Riverside fairy shrimp (*Streptocephalus woottoni*) in 2001, 2004, and 2005 (ERS 2008). O'Farrell Biological Consulting conducted a small mammal trapping program in 2003 to determine whether the Pacific pocket mouse (*Perognathus longimembris pacificus*) was present on the project site.

A full range of biological field surveys was also conducted in 2014 and 2015 by Alden (Appendix A) and its subcontractors (Table 1). In all, eight types of field surveys were conducted: vernal pool mapping, coastal California gnatcatcher (CAGN; *Polioptila californica californica*) survey, BUOW survey, vegetation mapping, jurisdictional delineation, dry season fairy shrimp survey, sensitive plant survey, and QCB survey. During the surveys, incidental plant and animal observations were noted. During the sensitive plant survey, special attention was given to MSCP Narrow Endemic species potentially occurring on site. More detailed information about the surveys can be found in the protocol survey reports (Alden 2014a through d). Table 1 lists the survey dates, types, personnel, and time/weather conditions (if applicable). The survey methods used are presented in the sections following Table 1.

Table 1 SURVEY INFORMATION									
Date	Survey Type Personnel Time/Weather Condition								
2015 Surveys									
4/4/15	Vernal pool mapping	Greg Mason	N/A						
2/5/15	Vernal pool mapping	Greg Mason	N/A						
	2014 Surveys								
12/3/14	Vernal pool mapping	Greg Mason	N/A						
10/3/14	Vernal pool mapping	Greg Mason	N/A						
8/7/14	Coastal California gnatcatcher	Jim Rocks ¹	0640-0900; sky cover 100%- 50%; wind 0-2 to1-3 miles per hour (mph); 66-71 °F						
7/30/14	Coastal California gnatcatcher	Jim Rocks	0620-0900; sky cover 100%-20% hazy; wind 0-1 to 2-6 mph; 67-79°F						






Table 1 (continued) SURVEY INFORMATION			
Survey Date	Survey Type	Personnel	Time/Weather Conditions
		2014 Surveys	
7/23/14	Coastal California gnatcatcher	Jim Rocks	0600-0845; sky cover 0%; wind 0-1 mph; 64-80°F
7/13/14	Burrowing owl	Brant Primrose ²	0550-1115; partly cloudy; wind 0-1 to 5-7 mph; 68-73°F
6/17/14	Burrowing owl	Brant Primrose	0545-1100; overcast; wind 0-1 to 4-6 mph; 65-72°F
5/25/14	Vegetation map/JD	Greg Mason ³	N/A
5/25/14	Dry season fairy shrimp	Greg Mason	N/A
5/20/14	Sensitive plant	Brant Primrose	N/A
5/15/14	Burrowing owl	Brant Primrose	0545-1100; partly cloudy-clear; wind 0-3 to 5-7 mph; 65-79 °F
5/4/14	Quino checkerspot butterfly	Brant Primrose	0900-1230; partly cloudy; wind 3-4 mph; 65-70°F
4/30/14	Quino checkerspot butterfly	Brant Primrose	1000-1300; clear; wind 5-8 mph; 65- 77°F
4/26/14	Quino checkerspot butterfly	Brant Primrose	0945-1300; clear; wind 1-2 to 3-4 mph; 62-69°F
4/19/14	Quino checkerspot butterfly	Brant Primrose	0930-1330; partly cloudy; wind 2-3 mph; 62-70°F
4/16/14	Burrowing owl	Brant Primrose	0600-1100; overcast; wind 0-1 mph; 63-67°F
4/10/14	Quino checkerspot butterfly	Brant Primrose	0900-1300; clear; wind 1-2 to 3-4 mph; 65-72°F
4/3/14	Quino checkerspot butterfly	Brant Primrose	0930-1230; partly cloudy; wind 2-3 to 1-2 mph; 62-70°F
3/30/14	Quino checkerspot butterfly	Brant Primrose	0945-1300; partly cloudy; wind 2-3 to 3-7 mph; 65-68°F
3/23/14	Quino checkerspot butterfly	Brant Primrose	0915-1230; clear to cloudy; wind 1-3 to 2-5 mph; 62-69°F
3/17/14	Quino checkerspot butterfly	Brant Primrose	0945-1300; clear to cloudy; wind 1-3 to 2-5 mph; 66-70°F
3/13/14	Burrowing owl	Brant Primrose	0700-1200; partly cloudy; wind 0-1 mph; 64-65°F
3/12/14	Quino checkerspot butterfly	Brant Primrose	0900-1230; partly cloudy-clear; wind 2-3 to 4-5 mph; 63-67°F
3/8/14	Quino checkerspot butterfly	Brant Primrose	1000-1300; clear; wind 1-2 to 3-4 mph; 69-81°F
2/26/14	Quino checkerspot butterfly	Brant Primrose	0930-1230; partly cloudy; wind 2-3 mph; 64-67°F

- 1 Jim Rocks Permit TE# 063230-4 2 Brant Primrose Permit TE# 1343370 3 Greg Mason Permit TE#58862A-0



2.2.1 Vegetation Mapping Update and Vernal Pool Mapping Confirmation

General biological surveys and vegetation mapping were conducted by MJS in 2001. Vernal pool and road pool mapping were conducted during the 2004 rainy season and again by Alden in 2014 and 2015. A global positioning system (GPS) with sub-meter horizontal accuracy was used to record the locations of vernal pools, road pools, and other sensitive resources on site during the 2004 fieldwork. Vegetation mapping was updated in May 2014 by Alden to reflect changes that have occurred since the previous efforts. A jurisdictional delineation was also performed at that time. Vegetation communities were mapped according to Holland (1986) or Oberbauer et al. (2008) classifications. All plant and animal species detected during the site visits were recorded. Additional basins identified during 2014 dry season fairy shrimp sampling were also added to the vegetation map.

2.2.2 Jurisdictional Delineation

A delineation of jurisdictional areas on the project site was performed by Alden on May 25, 2014 (Table 1). All on-site areas with depressions or drainage channels were evaluated for the presence of Federal, State, and City wetlands as well as non-wetland Waters of the U.S. (Corps jurisdiction) and non-wetland Waters of the State (i.e., streambeds; CDFW jurisdiction) in accordance with current wetland delineation guidelines. The presence of wetland Waters of the U.S. was evaluated using the criteria described in the Wetlands Delineation Manual (Environmental Laboratory 1987) and the Arid West Supplement (Corps 2008). The presence of non-wetland Waters of the U.S. was determined by the presence of bed and bank within unvegetated drainage courses. The presence of wetland Waters of the State was determined by the presence of wetland/riparian vegetation. The presence of non-wetland Waters of the State was determined by the presence of streambeds lacking wetland/riparian vegetation.

City Wetlands, specifically, are defined by the City Municipal Code (Chapter 11, Article 3, Division 1) as areas that are characterized by any of the following summarized conditions.

- 1. All areas persistently or periodically containing naturally occurring wetland vegetation communities;
- 2. Areas that have hydric soils or wetland hydrology and lack naturally occurring wetland vegetation communities; and/or
- 3. Areas lacking wetland vegetation communities, hydric soils, and wetland hydrology due to non-permitted filling of previously existing wetlands.

The definition of City Wetlands, however, is intended to differentiate uplands (terrestrial areas) from wetlands and, furthermore, to differentiate naturally occurring wetland areas from those created by human activities. Except for areas created for the purposes of wetland habitat or resulting from human actions to create open waters or from the alteration of natural stream courses, it is not the intent of the City to regulate artificially created wetlands in historically non-wetland areas unless they have been delineated as wetlands by the Corps and/or CDFW. Therefore, artificially created wetland features on site that are not Corps and CDFW wetlands are also not considered City Wetlands.



2.2.3 Sensitive Species

Sensitive species are those that are considered Federal, State, or CNPS rare, threatened, or endangered; MSCP Narrow Endemics; or MSCP Covered Species. For simplicity, "sensitive" may be used throughout this document to refer to any of these categories.

Plant Species

The results of previous surveys for sensitive plant species have been incorporated herein. A spring sensitive plant survey also was conducted on the Southview East project site on May 20, 2014 (Table 1).

Fairy Shrimp

MJS conducted USFWS protocol wet and dry season surveys for Federal listed endangered San Diego and Riverside fairy shrimp (MJS 2006) in 2001. ERS conducted surveys in 2004 and 2005 (MJS 2006 and ERS 2008). An updated dry season survey was conducted by Alden in May 2014 (Alden 2014a). Previous and recent surveys are included in this report as Appendices B and C. All fairy shrimp surveys were conducted in accordance with the USFWS Listed Vernal Pool Branchiopods protocol (1996). Wet season surveys were conducted every two weeks throughout the rainy season. Each water-holding basin was sampled (including areas that did not contain vegetation indicative of vernal pools) until either the pools were dry or shrimp were found. Mesh dip nets were used to survey the basins. All netted shrimp species were identified to species in the field and immediately returned to their basin of origin. During the dry surveys, soil was processed by wetting, sieving, and dispersing the final sieve material in a brine solution. Organic material (fairy shrimp cysts) was separated from inorganic material; the organic material was dried, and the cysts were identified to the genus level.

Coastal California Gnatcatcher

A USFWS protocol survey for the CAGN was performed in July and August of 2014 (Alden 2014b). Survey methods followed the USFWS presence/absence protocol (1997) including three site visits at least one week apart (Table 1). During each site visit, potential CAGN habitat (i.e., maritime succulent scrub) was surveyed. Taped vocalizations were used to elicit a response and were ceased being played upon hearing or seeing a CAGN. The CAGN survey report is included as Appendix D.

Quino Checkerspot Butterfly

Protocol surveys for the QCB were conducted by MJS in 2002, 2003, and 2004. An additional QCB protocol survey was performed by Alden in 2014 (Table 1). All surveys were conducted in accordance with current protocol (for Alden, that is the Year 2014 Quino Checkerspot Butterfly Survey Protocol [USFWS 2014]). The 2014 QCB survey report (Alden 2014c) is included as Appendix E.



Burrowing Owl

A BUOW survey was conducted by MJS in April 2005. A total of five additional site visits to conduct another survey were made in 2014 by Brant Primrose (Table 1). All surveys were conducted in accordance with the Staff Report on Burrowing Owl Mitigation (California Department of Fish and Game 2012). The surveys focused on, but were not limited to areas that had potential to contain burrows or to be used by the BUOW as foraging habitat. Areas in the project vicinity that contain potential BUOW habitat include grasslands and disturbed habitat along earthen berms where vegetation is sufficiently open to support burrows. Suitable habitat was examined by visual inspection while walking approximately parallel transects, with particular attention to any areas along the berms and where rodent activity was suspected. The 2014 BUOW survey report (Alden 2014d) is included as Appendix F.

2.2.4 Survey Limitations

While precipitation in the fall/winter of 2013/2014 was low, sensitive annual plant species were still detectable in spring 2014 when the sensitive plant survey was conducted. For example, Palmer's grapplinghook (*Harpagonella palmeri*), a sensitive annual herb, was observed on site. Despite the low rainfall, it is expected, therefore, that all sensitive plant species with potential to occur on site would have been found.

2.2.5 <u>Nomenclature</u>

Nomenclature used in this report is from the following sources: City Biology Guidelines (City 2012) and the City's MSCP Subarea Plan (City 1997a); Holland (1986); Oberbauer et al. (2008); Hickman, ed. (1993); CNPS (2015); Jepson Flora Project (2015); Crother (2008); The American Ornithologists' Union (2014); Jones, et al. (1992); and CDFW (2015).

3.0 REGULATORY CONTEXT

3.1 REGULATORY ISSUES

Biological resources that would be impacted on the project site are subject to regulatory administration by the Federal government, State of California, and City as follows.

3.1.1 <u>Federal</u>

Endangered Species Act

The Federal Endangered Species Act (FESA) designates threatened and endangered animals and plants and provides measures for their protection and recovery. "Take" of listed animal species and of listed plant species in areas under Federal jurisdiction is prohibited without obtaining a Federal permit. Take is defined as "to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or attempt to engage in any such conduct." Harm includes any act that actually kills or injures fish or wildlife, including significant habitat modification or degradation that significantly impairs essential behavioral patterns of fish or wildlife. Activities that damage the habitat of (i.e., harm) listed wildlife species require approval from the USFWS for terrestrial



species. The FESA also generally requires determination of Critical Habitat for listed species. If a project would involve a Federal action potentially affecting Critical Habitat, the Federal agency would be required to consult with USFWS. As noted below in Section 5.5.3, *Sensitive Animal Species*, three Federal listed species (San Diego fairy shrimp, Riverside fairy shrimp, and CAGN) have been found on or adjacent to the project site, and USFWS Critical Habitat for the San Diego fairy shrimp and Riverside fairy shrimp has been designated across the eastern portion of the project site co-occurring with the MHPA (Figure 3).

FESA Section 7 and Section 10 provide two pathways for obtaining authority to take listed species. Under Section 7 of the FESA, a Federal agency that authorizes, funds, or carries out a project that "may affect" a listed species or its Critical Habitat must consult with USFWS. Under Section 10 of the FESA, private parties with no Federal nexus (i.e., no Federal agency will authorize, fund, or carry out the project) may obtain an Incidental Take Permit to harm listed species incidental to the lawful operation of a project. Given that the project is not proposing impacts to Corps jurisdictional features, there would be no need for a permit, and there is no clear Section 7 nexus. As such, take authorization under Section 10 of the ESA is anticipated to be required through the USFWS for the future Airway Road extension impacts to San Diego fairy shrimp (the subdivisions would not impact Federal listed species or designated Critical Habitat).

Although San Diego fairy shrimp is identified in the City's MSCP Subarea Plan as a Covered Species, a 2006 Federal district court ruling determined that the City's Subarea Plan does not provide adequate protection for Riverside fairy shrimp. The City surrendered permit coverage for seven vernal pool species on April 20, 2010 including Riverside and San Diego fairy shrimp. The USFWS subsequently cancelled the Incidental Take Permit as it applied to those seven species on May 14, 2010 (USFWS 2011).

Currently the City is in the process of completing a new vernal pool Habitat Conservation Plan in order to enter into another Implementing Agreement for a new Federal Incidental Take Permit for those seven species. Until that time, development involving take of any of the seven vernal pool species requires authorization from the USFWS through the Federal Incidental Take process. Section 7 consultation with the USFWS would be required to address impacts to San Diego fairy shrimp that exist within the four road pools that would be impacted by the future extension Airway Road unless a new Federal Incidental Take Permit is obtained in the interim.

Neither the subdivision project nor the future extension of Airway Road would impact Riverside fairy shrimp or the CAGN (although the CAGN is an MSCP Covered Species)

Migratory Bird Treaty Act

The Migratory Bird Treaty Act (MBTA; 16 U.S. Code Sections 703-711) includes provisions for protection of migratory birds, including the non-permitted take of migratory birds. The MBTA regulates or prohibits taking, killing, possession of, or harm to migratory bird species listed in Title 50 Code of Federal Regulations Section 10.13. Migratory birds include geese, ducks, shorebirds, raptors, songbirds, and many others. Disturbance that causes nest abandonment and/or loss of reproductive effort (killing or abandonment of eggs or young) is considered a "take." The MBTA is an international treaty for the conservation and management of bird species that migrate through more than one country, and is enforced in the United States by the



USFWS. The MBTA was amended in 1972 to include protection for migratory birds of prey (raptors). Avian species protected by the MBTA are present on the project site.

3.1.2 State of California

California Environmental Quality Act

Primary environmental legislation in California is found in the CEQA and its implementing guidelines (State CEQA Guidelines), requiring that projects with potential adverse effects or impacts on the environment undergo environmental review. Adverse impacts to the environment are typically mitigated as a result of the environmental review process in accordance with existing laws and regulations. The City is the Lead Agency under the CEQA for the proposed projects, and this report is part of that environmental review process.

California Fish and Game Code

Pursuant to California Fish and Game Code Section 3503, it is unlawful to take, possess, or needlessly destroy the nest or eggs of any bird, except as otherwise provided by this code or any regulation made pursuant thereto. Raptors and owls and their active nests are protected by California Fish and Game Code Section 3503.5, which states that it is unlawful to take, possess, or destroy any birds of prey or to take, possess, or destroy the nest or eggs of any such bird unless authorized by the CDFW. Section 3513 states that it is unlawful to take or possess any migratory non-game bird as designated in the MBTA. These regulations could require that construction activities (particularly vegetation removal or construction near nests) be reduced or eliminated during critical phases of the nesting cycle unless surveys by a qualified biologist demonstrate that nests, eggs, or nesting birds will not be disturbed, subject to approval by CDFW and/or USFWS. Avian species protected by California Fish and Game Code are present on the project site.

3.1.3 City of San Diego Environmentally Sensitive Lands Regulations

Mitigation requirements for sensitive biological resources follow the requirements of the City's Biology Guidelines (2012) as outlined in the City's Municipal Code Environmentally Sensitive Lands (ESL) Regulations (Chapter 14, Article 3, Division 1). ESL include sensitive biological resources, steep hillsides, coastal beaches, sensitive coastal bluffs and 100-year floodplains (San Diego Municipal Code [SDMC] 143.0110).

The ESL regulations also specify development requirements inside and outside of the MHPA. Inside the MHPA, development must be located in the least sensitive portion of a given site; outside of the MHPA, development must avoid wetlands and non-MSCP Covered Species (City 2012). The ESL regulations further require that impacts to sensitive biological resources must be assessed and mitigation provided where necessary, as required by Section III of the City's biology guidelines. The MHPA is further discussed in Section 4.0, *Regional Context*.







Biology Guidelines

The City's Biology Guidelines (2012) have been formulated by the Development Services Department to aid in the implementation and interpretation of the ESL Regulations; San Diego Land Development Code, Chapter 14, Division 1, Section 143.0101 et seq; and the Open Space Residential (OR-1-2) Zone, Chapter 13, Division 2, Section 131.0201 et seq. Section III of the Biology Guidelines (Biological Impact Analysis and Mitigation Procedures) also serves as standards for the determination of impact and mitigation under CEQA. The Biology Guidelines are the baseline biological standards for processing permits issued pursuant to ESL Regulations.

4.0 REGIONAL CONTEXT

4.1 MULTIPLE SPECIES CONSERVATION PROGRAM SUBAREA PLAN

The City, USFWS, CDFW, and other local jurisdictions joined together in the late 1990s to develop the MSCP, a comprehensive program to preserve a network of habitat and open space in the region and ensure the viability of (generally) upland habitat and species, while still permitting some level of continued development. The City's MSCP Subarea Plan (1997a) was prepared pursuant to the outline developed by USFWS and CDFW to meet the requirements of the State Natural Communities Conservation Planning (NCCP) Act of 1992. Adopted by the City in March 1997, the City's Subarea Plan forms the basis for the MSCP Implementing Agreement, which is the contract between the City, USFWS, and CDFW (City 1997b). The Implementing Agreement ensures implementation of the City's Subarea Plan and thereby allows the City to issue "take" permits under the FESA and State Endangered Species Act to address impacts at the local level. Under the FESA, an Incidental Take Permit is required when non-Federal activities would result in "take" of a threatened or endangered species. A Habitat Conservation Plan, such as the City's Subarea Plan, must accompany an application for a Federal Incidental Take Permit. In July 1997, the USFWS, CDFW, and City entered into the 50-year MSCP Implementing Agreement, wherein the City received its FESA Section 10(a) Incidental Take Permit (City 1997b).

Pursuant to its MSCP permit issued under Section 10(a), the City has incidental "take" authority over 85 rare, threatened, and endangered species including regionally sensitive species that it aims to conserve (i.e., "MSCP Covered Species"). "MSCP Covered" refers to species that are covered by the City's Federal Incidental Take Permit and considered to be adequately protected within the City's Preserve, the MHPA. Special conditions apply to Covered Species that would be potentially impacted including, for example, designing a project to avoid impacts to Covered Species in the MHPA where feasible. Outside the MHPA, projects must incorporate measures (i.e., Area Specific Management Directives) for the protection of Covered Species as identified in Appendix A of the City's Subarea Plan.

In addition to identifying preserve areas within the City (and guiding implementation of the MSCP within its corporate boundaries), the City's Subarea Plan also regulates effects on natural communities throughout the City. Additional discussion of the MHPA as it relates to the project site is provided in Section 4.1.1, *Multi-habitat Planning Area*.



4.1.1 <u>Multi-habitat Planning Area</u>

The MHPA was developed by the City in cooperation with the USFWS, CDFW, property owners, developers, and environmental groups using the Preserve Design Criteria contained in the MSCP Plan, and the City Council-adopted criteria for the creation of the MHPA.

MHPA lands are large blocks of native habitat that have the ability to support a diversity of plant and animal life and, therefore, have been included within the City's Subarea Plan for conservation. The MHPA also delineates core biological resource areas and corridors targeted for conservation as these lands have been determined to provide the necessary habitat quality, quantity, and connectivity to sustain the unique biodiversity of the San Diego region. Approximately five acres of the project site occurs within the MHPA. The area of the project site within the MHPA supports maritime succulent scrub, vernal pools, road pools, non-native grassland, and disturbed habitat. In addition, land immediately east and southeast of the site is also within the MHPA (Figure 4). MHPA lands are intended to be mostly void of development activities; however, development is allowed in the MHPA subject to the requirements of the MSCP Plan.

Section 1.5.3 of the City's MSCP Subarea Plan contains requirements and goals for all the MHPA areas within Otay Mesa. There is one policy that could be relevant to the project site as follows:

Priority 1:

1. No unauthorized motorized vehicles except Border Patrol, MHPA (preserve) managers, maintenance personnel, or emergency vehicles will be allowed on any trails or off-trail in the MHPA. The Border Patrol should restrict use to the existing access roads as much as feasible to avoid disturbance of habitat.

The Southview East subdivision project would include a permanent barrier (fence/wall) to deter public access from the MHPA, and barriers would be required as mitigation for the future extension of Airway Road. See Section, 6.2.4, *Public Access*, for more information.

4.1.2 Land Use Adjacency Guidelines

Development adjacent to the MHPA must ensure that indirect impacts to the MHPA are minimized. Section 1.4.3 of the City's Subarea Plan outlines the requirements to address indirect effects related to drainage and toxics, lighting, noise, public access, invasive plant species, brush management, and grading/land development. Because the project includes development adjacent to the MHPA, conformance with the adjacency guidelines would be required as discussed in Section 6.2, *Indirect Impacts*, and Section 7.3, *Mitigation for Indirect Impacts*.







5.0 SURVEY RESULTS

5.1 PHYSICAL CHARACTERISTICS

The project site is primarily flat and irregularly shaped, consisting entirely of undeveloped land. A tributary to Spring Canyon occurs in the northeastern portion of the site (Figure 3). Elevation on site ranges from 475 to 530 feet above mean sea level (amsl). The soil types on site consist of Stockpen gravelly clay loam (two to five percent slopes) and Olivenhain cobbly loam (two to nine and 30 to 50 percent slopes; Bowman 1973). Previous uses of the site consist of agriculture and recreational off-highway vehicle (OHV) activity. The site is bounded to the east and south by large, constructed, earthen berms and to the north by SR 905. New residential development (Southview West) is located to the west.

5.2 VEGETATION COMMUNITIES

Eight vegetation communities (three wetland/riparian, three upland, and two other) occur on the project site (Figure 4). While not technically wetlands on this site, vernal pool and road pool have been included under the heading for wetland/riparian (see Vernal Pool and Road Pool in Section 5.2.1, *Wetland/Riparian Vegetation Communities*, for more information). Table 2 presents a list of these communities and their respective acreage totals on site.

Table 2 EXISTING VEGETATION COMMUNITIES			
Vegetation Communities	Inside MHPA ¹	Outside MHPA	Total
Wetlands/ Riparian			
Vernal pool ²	0.02		0.02
Road pool ²	0.01	0.05	0.06
Freshwater marsh		0.08	0.08
Southern willow scrub		0.04	0.04
Upland ³			
Maritime succulent scrub (Tier I)	1.0		1.0
Non-native grassland (Tier IIIB)	3.7	13.6	17.3
Other Areas			
Disturbed habitat (Tier IV)	0.3	1.2	1.5
Developed (N/A)		1.1	1.1
TOTAL	5.0	16.1	21.1

¹Upland habitats are rounded to the nearest 0.1 acre, while wetland/riparian habitats are rounded to the nearest 0.01; thus, totals reflect rounding.

²Technically, not considered wetlands on this site. See Vernal Pool and Road Pool in Section 5.2.1, *Wetland/Riparian Vegetation Communities*.

³Upland vegetation communities and some other areas within the MSCP study area have been divided into tiers of sensitivity. Tier I = rare upland. Tier IIIB = common upland. Tier IV = other upland (City 2012).



5.2.1 <u>Wetland/Riparian Vegetation Communities</u>

Vernal Pool

Vernal pools are a highly specialized habitat supporting a unique flora and fauna. Natural vernal pools are normally associated with two important physical conditions: a subsurface hardpan or claypan that inhibits the downward percolation of water and topography characterized by a series of low hummocks (mima mounds) and depressions (vernal pools). These two physical conditions allow water to collect in the depressions during the rainy season. As this water evaporates, a gradient of low soil water availability to high soil water availability is created from the periphery of the pool to the center of the pool. The chemical composition of the remaining pool water becomes more concentrated as the pool water evaporates, creating a gradient of low ion concentration at the pool edge to high ion concentration at the pool center. A temporal succession of vernal pool plant species occurs at the receding pool margins, depending upon the physical and chemical characteristics of the pool. Vernal pools in a wet year will have a high proportion of native species that are endemic to this habitat. During these years, the exotic species characteristic of non-native grasslands will not invade these pools as they are unable to tolerate the physiological conditions. In years of scarce rainfall insufficient to saturate create a surface pool, native endemic flora may not germinate, and the pool may be invaded by exotic species.

Three vernal pools (pools 5, 14, and 15 on Figure 4) with a total surface area of approximately 0.02 acre (949 square feet [sq ft]) and associated watersheds were mapped on site in 2014. Biological maps of the study area produced by MJS in 2001 and 2004 were reviewed at this time, as well. The vernal pools are highly degraded and of low quality. The pools are a result of earthen berm construction along the eastern project site boundary. Machinery used to form the berm left behind shallow depressions that hold water during the rainy season.

Vernal pools on site have been degraded by erosion, OHV use, and agricultural activities. The vernal pools are dominated by non-native grasses and forbs and generally support only one or two vernal pool indicator plant species. Vernal pool indicator plant species cover is less than one percent for all of the vernal pools. Indicator plant species observed on site include dwarf woollyheads (*Psilocarphus brevissimus*) and adobe popcorn flower (*Plagiobothrys acanthocarpus*).

Per the City's Biology Guidelines (2012), water-holding basins that support at least one vernal pool indicator plant species (Corps Special Public Notice, Regional General Conditions to the Nationwide Permits, November 25, 1997) are considered vernal pools. However, the guidelines also state that the City's wetland definition is intended to differentiate naturally occurring wetland from those created through human activity, and it is not the City's intent to regulate artificially created wetlands in historically non-wetland areas. Due to their artificially created nature (and they are not Corps or CDFW wetlands), the vernal pools on site are not considered City Wetlands.

Road Pool

Road pools are unvegetated, water-holding basins that, on site, support San Diego fairy shrimp. Road pools are distinguished from vernal pools by their absence of vernal pool indicator plant species (City 2012). These pools are located along roads and trails in areas of heavy OHV activity. OHV activity has created or enhanced depressions and compacted the soil, making it very difficult for native vegetation to become established. This compaction allows water to pond



readily, even in a dry year when most natural vernal pools remain dry. Despite their low quality and lack of vegetation, the road pools on site support San Diego fairy shrimp and are, therefore, considered sensitive. However, due to their artificially created nature, the road pools are not considered City Wetlands. Thirteen unvegetated water-holding basins were mapped on site as road pools in 2014 (pools 1 through 4, 6 through 13, and 16 on Figure 4) with an overall surface area of approximately 0.06 acre (2,733 sq ft). Four of the road pools (1 through 4 on Figure 4) occur within the future Airway Road right-of-way.

Freshwater Marsh

Freshwater marsh is dominated by perennial, emergent monocots, which can reach a height of 12 to 15 feet. This vegetation type occurs along the coast and in coastal valleys near river mouths and around the margins of lakes and springs. The dominant plant species in this community on site is cattail (*Typha latifolia*.). This community occupies approximately 0.08 acre of the site (Figure 4).

Southern Willow Scrub

Southern willow scrub on site is dominated by arroyo willow (*Salix lasiolepis*) and mule fat (*Baccharis salicifolia*). This community occurs on loose, sandy, or fine gravely alluvium deposited near stream channels during flood flows. The herbaceous understory on site includes curly dock (*Rumex crispus*) and western ragweed (*Ambrosia psilostachya*). Southern willow scrub occupies approximately 0.04 acre of the site (Figure 4).

5.2.2 Upland Vegetation Communities

Maritime Succulent Scrub

Maritime succulent scrub is a low, open scrub community dominated by a mixture of stem and leaf succulent and drought-deciduous species that occur within sage scrub communities. This plant association occurs on thin rocky or sandy soils, on steep slopes of coastal headlands, and bluffs. Maritime succulent scrub is restricted to within a few miles of the coast from about Torrey Pines to Baja California, Mexico and on San Clemente and Catalina islands. Maritime succulent scrub is considered a sensitive habitat by several wildlife agencies, including the CDFW and City. Maritime succulent scrub occupies the City's highest level of sensitivity (Tier I) for upland habitats.

Approximately 1.1 acres of maritime succulent scrub occurs on site (Figure 4). Plant species observed within this community include cliff spurge (*Euphorbia misera*), coast prickly pear cactus (*Opuntia littoralis*), and San Diego bur-sage (*Ambrosia chenopodiifolia*). The maritime succulent scrub on site also supports common Diegan coastal sage scrub species including California sagebrush (*Artemisia californica*), lemonadeberry (*Rhus integrifolia*), and California buckwheat (*Eriogonum fasciculatum*).



Non-Native Grassland

Non-native grassland is a dense to sparse cover of non-native grasses, sometimes associated with species of showy-flowered, native, annual forbs (Holland 1986). This community characteristically occurs on gradual slopes with deep, fine-textured, usually clay soils. Characteristic species include oats (*Avena* spp.), filaree (*Erodium* spp.), red brome (*Bromus madritensis* ssp. *rubens*), ripgut grass (*Bromus diandrus*), perennial ryegrass (*Festuca perennis*), and mustard (*Brassica* sp.). Most of the annual, introduced species that comprise the majority of species and biomass within non-native grassland originated from the Mediterranean region, an area with a long history of agriculture and a climate similar to California. These two factors, in addition to intensive grazing and agricultural practices in conjunction with droughts, contributed to the successful invasion and establishment of these species. These grasslands are common throughout San Diego County and serve as valuable raptor foraging habitat. Non-native grasslands are recognized as a Tier IIIB upland habitat (common upland) by the City. Approximately 17.3 acres of non-native grassland occur on site (Figure 4).

5.2.3 Other Uplands

Disturbed Habitat

Disturbed habitat includes land cleared of vegetation, land containing a preponderance of nonnative plant species, or land showing signs of past or present usage that no longer provides viable wildlife habitat. Such areas include dirt roads, graded areas, and dump sites where no native or naturalized species remain. Approximately 1.6 acres of disturbed habitat occurs on site (Figure 4). Some of the non-native species of disturbed habitat on site include weedy tumble weed (*Salsola tragus*), pineapple weed (*Matricaria discoidea*), and tocalote (*Centaurea melitensis*). Disturbed habitat is considered Tier IV (other uplands) by the City.

Developed

Developed land is, for example, where permanent structures and/or pavement have been placed, which prevents the growth of vegetation, or where landscaping is clearly tended and maintained. Developed land on site (approximately 1.1 acres) occurs where slopes, remedial grading, and stormwater outfalls associated with the approved Southview West project have occurred on the Southview East site.

5.3 PLANT SPECIES OBSERVED

Eighty-one species of plants have been observed on site during all surveys to date. A list of these plant species is presented in Appendix G.

5.4 ANIMAL SPECIES OBSERVED OR DETECTED

Fifty species of animals have been observed or detected on site during all surveys to date. A list these animal species is presented in Appendix H.



5.5 SENSITIVE BIOLOGICAL RESOURCES

According to City Municipal Code (Chapter 11, Article 3, Division 1) and the City's Biology Guidelines (City 2012), sensitive biological resources refers to upland and/or wetland areas that meet any one of the following criteria:

- (a) Lands that have been included in the City's MSCP Preserve (i.e., the MHPA);
- (b) Wetlands;
- (c) Lands outside the MHPA that contain Tier I, Tier II, Tier IIIA, or Tier IIIB habitats;
- (d) Lands supporting species or subspecies listed as rare, endangered, or threatened under Section 670.2 or 670.5, Title 14, California Code of Regulations, or the FESA, Title 50, Code of Federal Regulations, Section 17.11 or 17.12, or candidate species under the California Code of Regulations;
- (e) Lands containing habitats with MSCP Narrow Endemic species as listed in the Biology Guidelines (City 2012); or
- (f) Lands containing habitats of MSCP Covered Species as listed in the Biology Guidelines (City 2012).

5.5.1 <u>Sensitive Vegetation Communities</u>

Additionally, sensitive vegetation communities are those considered rare within the region or sensitive by CDFW (Holland 1986) and/or the City. These communities, in any form (e.g., disturbed), are considered sensitive because they have been historically depleted, are naturally uncommon, or support sensitive species. The project site supports five sensitive vegetation communities: vernal pool, southern willow scrub, freshwater marsh, maritime succulent scrub, and non-native grassland. Road pools are not generally considered a sensitive community (City 2012); however, they are on the project site because they support San Diego fairy shrimp.

5.5.2 <u>Sensitive Plant Species</u>

Sensitive plant species are those that are considered Federal, State, or CNPS rare, threatened, or endangered; MSCP Covered Species; or MSCP Narrow Endemic species (Appendix I). More specifically, if a species is designated with any of the following statuses (a-c below), it is considered sensitive per City Municipal Code (Chapter 11, Article 3, Division 1):

- (a) A species or subspecies is listed as rare, endangered, or threatened under Section 670.2 or 670.5, Title 14, California Code of Regulations, or the FESA, Title 50, Code of Federal Regulations, Section 17.11 or 17.12, or candidate species under the California Code of Regulations;
- (b) A species is a Narrow Endemic as listed in the Biology Guidelines in the Land Development Manual (City 2012); and/or
- (c) A species is a Covered Species as listed in the Biology Guidelines in the Land Development Manual (City 2012).



A species may also be considered sensitive if it is included in the CNPS Inventory of Rare and Endangered Plants (CNPS 2015). California Rare Plant Rank 1 includes plants that are rare, threatened or endangered in California. California Rare Plant Rank 2 includes plants that are rare, threatened or endangered in California but more common elsewhere. California Rare Plant Rank 3 includes plants that are eligible for State listing as rare, threatened or endangered. California Rare Plant Rank 4 plants are locally significant but few, if any, are eligible for State listing.

Sensitive plant status is often based on one or more of three distributional attributes: geographic range, habitat specificity, and/or population size. A species that exhibits a small or restricted geographic range (such as those endemic to the region) is geographically rare. A species may be more or less abundant but occur only in very specific habitats. Lastly, a species may be widespread but exists naturally in small populations.

Six sensitive plant species were observed on site: ashy spike-moss (*Selaginella cinerascens*), San Diego bur-sage (*Ambrosia chenopodiifolia*), Palmer's grapplinghook (*Harpagonella palmeri*), San Diego barrel cactus (*Ferocactus viridescens*), San Diego County viguiera (*Bahiopsis laciniata*), and seaside calandrinia (*Cistanthe maritima*; Figure 4).

Ashy spike-moss (Selaginella cinerascens)

Sensitivity: CNPS Rare Plant Rank 4.1 (see Appendix I for an explanation of sensitivity)
Distribution: Orange and San Diego counties; northwestern Baja California, Mexico.
Habitat(s): Open areas on flat mesas in coastal sage scrub and chaparral.
Presence on site: Ashy spike-moss was found in disturbed habitat/maritime succulent scrub on site.

San Diego bur-sage (Ambrosia chenopodiifolia)

Sensitivity: CNPS Rare Plant Rank 2B.1

Distribution: Southwestern San Diego County, Arizona, and Mexico below 600 feet in elevation.

Habitat(s): Dry, sunny hillsides in coastal sage scrub and maritime succulent scrub. **Presence on site**: Two individuals of San Diego bur-sage were found in maritime succulent scrub on site.

Palmer's grapplinghook (Harpagonella palmeri)

Sensitivity: CNPS Rare Plant Rank List 4.2

Distribution: Coastal southern California and Baja California, Mexico.

Habitat(s): Clay soils in grassland, chaparral, and sage scrub habitats.

Presence on site: Fifty individuals of Palmer's grapplinghook were found in disturbed habitat on site.

San Diego barrel cactus (Ferocactus viridescens)

Sensitivity: CNPS Rare Plant Rank 2B.1; MSCP Covered Species

Distribution: San Diego County and Baja California, Mexico.

Habitat(s): Dry slopes in sage scrub habitats.

Presence on site: Fifty San Diego barrel cacti were found in disturbed habitat/maritime succulent scrub on site.



San Diego County viguiera (Bahiopsis laciniata)

Sensitivity: CNPS Rare Plant Rank 4.2

Distribution: Southern coastal and foothill San Diego County and Baja California, Mexico. **Habitat(s)**: Open coastal sage scrub and maritime succulent scrub on a variety of soil types. **Presence on site**: Sixty individuals of San Diego County viguiera were found in non-native grassland/freshwater marsh/southern willow scrub on site.

Seaside calandrinia (Cistanthe maritima)

Sensitivity: CNPS Rare Plant Rank 4.2

Distribution: Coastal southern California and Baja, California, Mexico

Habitat(s): Chaparral and sage scrub habitats.

Presence on site: Thirty individuals of seaside calandrinia were found in disturbed habitat on site.

Sensitive plant species that were not observed but may have potential to occur on site (based on, for example, habitat types and soils present) are listed in Table 3.

Table 3			
SENSITIVE PLANT SPECIES NOT OBSERVED			
AND THEIR POTENTIAL TO OCCUR			
SPECIES	SENSITIVITY ¹	POTENTIAL TO OCCUR	
San Diego County needlegrass (Achnatherum diegoense)	CNPS RPR 4.2	Low. Known from project vicinity but site is too disturbed.	
Southcoast saltscale (<i>Atriplex pacifica</i>)	CNPS RPR 1B.2	Low. Occurs west of the project site on the southern slopes of Moody canyon. Would have been observed on site if present.	
Orcutt's brodiaea (Brodiaea orcuttii)	CNPS RPR 1B.1	Low. Found in non-native grassland areas; would have been observed on site if present.	
Orcutt's dudleya (Dudleya attenuata var. attenuata)	CNPS RPR 2B.1	Low. Found in coastal bluff scrub, chaparral and coastal sage scrub. Would have been observed on site if present.	
Palmer's goldenbush (Ericameria palmeri var. palmeri)	CNPS RPR 1B.1	Low. A perennial, evergreen shrub that would have been observed on site if present.	
San Diego goldenstar (<i>Bloomeria clevelandii</i>)	CNPS RPR 1B.1	Low. Occurs in chaparral, coastal scrub, grassland and vernal pools. Would have been observed on site if present.	
Little mousetail (<i>Myosurus minimus</i> ssp. <i>apus</i>)	CNPS RPR 3.1	Low. A vernal pool species that occurs in project vicinity. Would have been observed on site if present.	
Short-lobed broom-rape (<i>Orobanche parishii</i> ssp. <i>brachyloba</i>)	CNPS RPR 4.2	Not expected. Occurs on sandy soils not present on site.	
Parry's tetracoccus (<i>Tetracoccus dioicus</i>)	CNPS RPR 1B.2	Low. A perennial shrub that would have been observed on site if present.	

¹Refer to Appendix I for an explanation of sensitivity codes.



Table 4 lists MSCP Narrow Endemic species and their potential to occur on site. Narrow Endemic species are a subset of MSCP Covered Species (defined in Section 4.1, *Multiple Species Conservation Program [MSCP] Subarea Plan*). The City specifies additional conservation measures in its MSCP Subarea Plan to ensure impacts to Narrow Endemic species are avoided to the maximum extent practicable. No Narrow Endemic plant species were observed on site.

Table 4				
MSCP NARROW ENDEMIC PLANT SPECIES				
AND THEIR POTENTIAL TO OCCUR				
SPECIES	SENSITIVITY ¹	POTENTIAL TO OCCUR		
San Diego thorn-mint	FT/SE	Low in grassland within clay soil. Would have		
(Acanthomintha ilicifolia)	CNPS RPR 1B.1	been observed on site if present.		
Shaw's agave	CNPS RPR 2B.1	Very low. Would have been observed if present.		
(Agave shawii)				
San Diego ambrosia	FE	Not expected. Not known from project vicinity.		
(Ambrosia pumila)	CNPS RPR 1B.1			
Aphanisma	CNPS RPR 1B.2	Not expected. No known populations in MSCP		
(Aphanisma blitoides)		Plan Area.		
Coastal dunes milk vetch	FE/SE	Not expected. Occurs in sandy places along the		
(Astragalus tener var. titi)	CNPS RPR 1B.1	coast, including coastal dunes. Not known from project vicinity.		
Encinitas baccharis	FT/SE	Not expected. Not known from near the project		
(Baccharis vanessae)	CNPS RPR 1B.1	vicinity.		
Otay tarplant	FT/SE	Low. Known to occur in project vicinity but		
(Deinandra conjugens)	CNPS RPR 1B.1	would have been observed on site if present.		
Short-leaved dudleya	SE	Not expected. Occurs on dry, sandstone bluffs		
(Dudleya brevifolia)	CNPS RPR 1B.1	in chamise chaparral that do not occur on site.		
Variegated dudleva	CNPS RPR 1B 2	Low Could occur along canyon rim in maritime		
(Dudleva variegata)		succulent scrub but would have been observed		
(on site if present.		
San Diego button-celery	FE/SE	Low. A vernal pool species that occurs in		
(Eryngium aristulatum var.	CNPS RPR 1B.1	project vicinity. Would have been observed on		
parishii)		site if present.		
Prostrate navarretia	FT	Low. A vernal pool species that occurs in		
(Navarretia prostrata)	CNPS RPR 1B.1	project vicinity. Would have been observed on		
		site if present.		
Snake cholla	CNPS RPR 1B.1	Low. Known to occur in project vicinity (Otay		
(Cylindropuntia californica		Mesa) but would have been observed on site if		
var. <i>californica</i>)		present.		
California Orcutt grass	FE/SE	Low. A vernal pool species that has been		
(Orcuttia californica)	CNPS RPR 1B.1	reported in the project vicinity. Would have		
		been observed on site if present.		
San Diego mesa mint	FE/SE	Not expected. Project site is outside the species'		
(Pogogyne abramsii)	CNPS RPR 1B.1	range.		
Otay Mesa mint	FE/SE	Low. A vernal pool species that occurs in		
(Pogogyne nudiuscula)	CNPS RPR 1B.1	project vicinity. Would have been observed on		
		site if present.		

¹Refer to Appendix I for an explanation of sensitivity codes.



5.5.3 <u>Sensitive Animal Species</u>

Sensitive animal species are those that are considered Federal or State threatened or endangered; MSCP Covered Species; or MSCP Narrow Endemic species (Appendix I). More specifically, if a species is designated with any of the following statuses (a-c below), it is considered sensitive per City Municipal Code (Chapter 11, Article 3, Division 1):

- (a) A species or subspecies is listed as endangered or threatened under Section 670.2 or 670.5, Title 14, California Code of Regulations, or the FESA, Title 50, Code of Federal Regulations, Section 17.11 or 17.12, or candidate species under the California Code of Regulations;
- (b) A species is a Narrow Endemic as listed in the Biology Guidelines in the Land Development Manual (City 2012); and/or
- (c) A species is a Covered Species as listed in the Biology Guidelines in the Land Development Manual (City 2012).

A species may also be considered sensitive if it is included on the CDFW Special Animals List (CDFW Natural Diversity Database 2015) as a State Species of Special Concern, State Watch List species, State Fully Protected species, or Federal Bird of Conservation Concern (Appendix I).

Generally, the principal reason an individual taxon (species or subspecies) is considered sensitive is the documented or perceived decline or limitations of its population size or geographical extent and/or distribution, resulting in most cases from habitat loss.

Seven sensitive animal species were observed or detected on site as described below and shown on Figure 4.

San Diego fairy shrimp (Branchinecta sandiegonensis)

Sensitivity: Federal Listed Endangered

Distribution: San Diego County

Habitat(s): Seasonally astatic pools that occur in tectonic swales or earth slump basins and other areas of shallow standing water, often in patches of grassland and agriculture interspersed in coastal sage scrub and chaparral.

Presence on site: San Diego fairy shrimp were found in all three vernal pools and all 13 road pools on site.

Riverside fairy shrimp (Streptocephalus woottoni)

Sensitivity: Federal Listed Endangered

Distribution: Riverside, Orange, and San Diego counties; northern Baja California, Mexico. **Habitat(s)**: Vernal pools and other ephemeral pools of at least six to 12 inches deep. **Presence on site**: Riverside fairy shrimp was found in one vernal on site (pool 5 on Figure 4).



Northern harrier (*Circus cyaneus*)

Sensitivity: State Species of Special Concern; MSCP Covered

Distribution: Widespread throughout the temperate regions of North America and Eurasia. Winters and migrates throughout California from below sea level in Death Valley to an elevation of 9,800 feet amsl.

Habitat(s): Coastal, salt, and freshwater marshlands, grasslands, and prairies.

Presence on site: The northern harrier was observed flying over the site and hunting. This species also has potential to nest on site in non-native grassland. Northern harrier nests are placed on the ground.

San Diego black-tailed jackrabbit (Lepus californicus bennettii)

Sensitivity: State Species of Special Concern

Distribution: Southern Santa Barbara County south on coastal slope to vicinity of San Quintin, Baja California, Mexico. Localities on eastern edge of its range include Jacumba and San Felipe Valley in San Diego County.

Habitat(s): Occurs primarily in open habitats including coastal sage scrub, chaparral, grasslands, croplands, and open disturbed areas if there is at least some shrub cover present. Shrubs are used for hiding, nesting, and thermal cover. Shrub-grasslands and grasslands are used for foraging.

Presence on site: This jackrabbit was observed in non-native grassland and maritime succulent scrub on site.

Coastal California gnatcatcher (Polioptila californica californica)

Sensitivity: Federal Listed Threatened; State Species of Special Concern; MSCP Covered **Distribution:** Southern Los Angeles, Orange, western Riverside, and San Diego counties south into Baja California, Mexico.

Habitat(s): Prefers open sage scrub.

Presence on site: A pair of CAGN was observed just off site to the east. No CAGN were observed on site. However, the CAGN is likely utilize the maritime succulent scrub on site.

Southern California rufous-crowned sparrow (Aimophila ruficeps canescens)

Sensitivity: State Watch List; MSCP CoveredDistribution: Observed throughout coastal lowlands and foothills of San Diego County.Habitat(s): Coastal sage scrub and open chaparral as well as shrubby grasslands.Presence on site: Observed in maritime succulent scrub on site.

White-tailed kite (Elanus leucurus)

Sensitivity: State Fully Protected

Distribution: Breeds in the Pacific U.S., and winters to South America—as far south as Chile. **Habitat(s)**: Nesting typically occurs in riparian or oak woodlands adjacent to grasslands where small mammals are hunted.

Presence on site: Two white-tailed kites were observed flying over the site and hunting.



Northwestern San Diego pocket mouse (*Chaetodipus fallax fallax*)

Listing: State Species of Special Concern

Distribution: Los Angeles and southern San Bernardino counties south into west-central Baja California, Mexico.

Habitat(s): Open areas of coastal sage scrub and weedy growth, often on sandy substrates. **Presence on site**: One dead northwestern San Diego pocket mouse was found in non-native grassland on site (but not mapped). This individual may not have come from the site as the soils

on site are not sandy, but it could have been dropped on site by a bird of prey.

Sensitive animal species that were not observed or detected on site but that may have potential to occur (based on, for example, the presence of potential habitat) are listed in Table 5.

Table 5 SENSITIVE ANIMAL SPECIES NOT OBSERVED OR DETECTED			
AND THEIR POTENTIAL TO OCCUR			
SPECIES	SENSITIVITY*	POTENTIAL TO OCCUR	
INVERTEBRATES			
Quino checkerspot butterfly	FE	Low. No host plants present on site. Not	
(Euphydryas editha quino)		known from immediate area, and not detected during USFWS protocol QCB surveys conducted on site.	
Hermes copper butterfly	FC	Not expected. Host plant spiny redberry	
(Lycaena hermes)		(Rhamnus crocea) does not occur on site.	
	VERTEBR	ATES	
Reptiles			
Red-diamond rattlesnake	SSC	Moderate within maritime succulent scrub	
(Crotalus exsul)		on site.	
San Diego horned lizard	SSC	Moderate within maritime succulent scrub	
(Phrynosoma coronatum	MSCP Covered	on site.	
blainvillei)			
Silvery legless lizard	SSC	Low. Prefers loose soil with some	
(Anniella pulchra pulchra)		vegetation, but can be found in leaf litter.	
Birds			
Bell's sage sparrow	BCC/SSC	Low in maritime succulent scrub. Would	
(Amphispiza belli belli)		have been detected during CAGN surveys if present.	
Cactus wren	BCC/SSC	Low in maritime succulent scrub. Would	
(Campylorhynchus	MSCP Covered	have been detected during CAGN surveys if	
brunneicapillus		present.	
sandiegensis)			
Burrowing owl	SSC	Moderate; however, focused survey for	
(Athene cunicularia)	MSCP Covered	BUOW was negative.	
California horned lark	SSC	Moderate. Prefers grasslands, fallow	
(Eremophila alpestris actia)		agricultural fields, and other open grassy areas.	



Table 5 (continued)SENSITIVE ANIMAL SPECIES NOT OBSERVED OR DETECTEDAND THEIR POTENTIAL TO OCCUR			
SPECIES	SENSITIVITY*	POTENTIAL TO OCCUR	
VERTEBRATES			
Mammals			
Pallid bat (Antrozous pallidus pacificus)	SSC	Low. Generally found in xeric sage scrub, chaparral, or grassland communities and requires undisturbed rocky areas for roosting.	
Dulzura pocket mouse (<i>Chaetodipus californicus</i> <i>femoralis</i>)	SSC	Low. Primarily associated with mature chaparral not present on site.	
Western mastiff bat (<i>Eumops perotis californicus</i>)	SSC	Low. Foraging habitat includes chaparral, sage scrub, and woodland habitats. Requires crevices in cliffs, trees, or buildings for roosting.	
San Diego desert woodrat (Neotoma lepida intermedia)	SSC	Low. Suitable habitat exists on eastern edge of site. Nests or indirect signs would likely have been observed if present.	
Southern grasshopper mouse (Onychomys torridus ramona)	SSC	Low. Believed to inhabit flat, sandy, valley floor habitats (Collins 1998) not present on site.	
Pacific pocket mouse (Perognathus longimembris pacificus)	FE/SSC	Very low. Not found during a focused trapping survey on site.	

*Refer to Appendix I for an explanation of sensitivity codes.

5.5.4 Waters of the U.S., Waters of the State, and City Wetlands

Waters of the U.S. and Waters of the State encompass wetlands but also may include ephemeral and intermittent streams that may or may not be vegetated. Generally, wetlands are lands where saturation with water is the dominant factor determining the nature of soil development and the types of plant and animal communities living in the soil and on its surface. Wetlands vary widely because of regional and local differences in soils, topography, climate, hydrology, water chemistry, vegetation, and other factors (Environmental Protection Agency 2013). Waters of the U.S., Waters of the State, and City Wetlands are sensitive as they are regulated by the Corps, CDFW, and City, respectively. See Section 2.2.2, *Jurisdictional Delineation*, for more detail.

Waters of the U.S.

Wetlands

Southern willow scrub and freshwater marsh located in the northern portion of the project site meet the three Corps wetland criteria. Corps jurisdictional freshwater marsh occurs on

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approximately 0.04 acre of the project site, while southern willow scrub occurs on approximately 0.01 acre of the site (Figure 5; Table 6). These wetlands occur in the bottom the canyon and are completely avoided by the subdivision project and the future extension of Airway Road.

Table 6 CORPS JURISDICTIONAL FEATURES (acre) ¹		
Habitat	Total	
Wetlands		
Freshwater marsh	0.04	
Southern willow scrub	0.01	
Non-wetland Waters of the U.S.		
Ephemeral drainage	0.02	
TOTAL	0.07	

¹Totals reflect rounding

The vernal pools on site show no clear connection (stream or sheet flow, etc.) to any Corps jurisdictional drainage or wetland feature and are, therefore, considered to be isolated. Given the lack of connectivity, these isolated pools are not considered to be Corps jurisdictional.

Non-wetland Waters of the U.S.

Non-wetland Waters of the U.S. occur in the unvegetated portion of the drainage in the northern portion of the site (Figure 5). The unvegetated portion of the drainage does not support wetland vegetation and, therefore, does not meet the Corps wetland criteria. The drainage does show signs of occasional water passing through (bed and bank) and is, therefore, characterized as a drainage, covering approximately 0.02 acre. In total, the non-wetland Waters of the U.S. drainage is approximately 383 feet in length and varies from one to two feet in width.

Thirteen unvegetated road pools (pools 1 through 4, 6 through 13, and 16 on Figure 4) occur on site with a total surface area of approximately 0.06 acre (2,733 sq ft). As with the vernal pools described above, these road pools show no direct connection to Waters of the U.S. and, therefore, are not considered to be Corps jurisdictional.

Waters of the State

Wetlands

CDFW jurisdictional wetlands on site include 0.04 acre of southern willow scrub and 0.08 acre of freshwater marsh (Figure 6; Table 7).



Table 7 CDFW JURISDICTIONAL FEATURES (acre) ¹		
Habitat	Total	
Wetlands		
Freshwater marsh	0.08	
Southern willow scrub	0.04	
Non-wetland Waters of the State		
Streambed	0.02	
TOTAL	0.14	

¹Totals reflect rounding

The CDFW does not regulate isolated features, including vernal pools and road pools; therefore, the vernal pools and road pools on site are not CDFW jurisdictional. In total, 0.12 acre of CDFW jurisdictional wetlands occurs on site.

Non-wetland Waters of the State

Approximately 0.02 acre of unvegetated streambed occurs on site that is also under CDFW jurisdiction as non-wetland Waters of the State (Figure 6; Table 7).

City Wetlands

The Corps and CDFW jurisdictional non-wetland Waters of the U.S./Waters of the State discussed above do not meet the City's wetland definition. According to the City's Land Development Code Biology Guidelines (City 2012), seasonal drainage patterns (i.e., ephemeral/intermittent drainages and streambeds), would not satisfy City's wetland definition unless wetland dependent vegetation is either present in the drainage or lacking due to past human activities. The non-wetland waters on site lack wetland vegetation and, therefore, are not City Wetlands.

As stated in the Environmentally Sensitive Lands (ESL) Regulations and Biology Guidelines, the City's wetland definition is intended to differentiate uplands from wetlands and naturally occurring wetlands from those created through human activity. It is not the intent of the City to regulate artificially created wetlands in historically non-wetland areas unless they have been delineated as wetlands by the Corps and/or CDFW (City 2012). According to the Biology Guidelines, artificially created wetlands consist of the following: wetland vegetation growing in brow ditches and similar drainage structures outside of natural drainage courses, wastewater treatment ponds, stock watering, desiltation and retention basins, water ponding on landfill surfaces, road ruts created by vehicles, and artificially irrigated areas which would revert to uplands if the irrigation ceased.

None of the mapped vernal pools or road pools are Corps or CDFW jurisdictional. As described in Section 5.2.1, *Wetland/Riparian Vegetation Communities*, the three vernal pools (5, 14, and 15) and one road pool (13) along the eastern boundary of the project site were created by human activity (earthen berm construction) and are non-historic. The remaining 12 road pools on site all consist of tire ruts created by OHV activity. Given that the vernal pools and road pools are not







Federal or State jurisdictional as described above, and that they are the result of human activity, they are not City Wetlands.

City Wetlands on site do, however, include 0.08 acre of freshwater marsh and 0.04 acre of southern willow scrub (Figure 7; Table 8). This is the same area as that considered to be jurisdictional wetland by the Corps and CDFW.

Table 8 CITY WETLANDS (acre) ¹		
Habitat	Total	
Wetlands		
Freshwater marsh	0.08	
Southern willow scrub	0.04	
TOTAL	0.12	

¹Totals reflect rounding

5.5.5 <u>Wildlife Corridors</u>

Wildlife corridors can be local or regional in scale; their functions may vary temporally and spatially based on conditions and species presence. Wildlife corridors represent areas where wildlife movement is concentrated due to natural or anthropogenic constraints. Local corridors provide access to resources such as food, water, and shelter. Animals use these corridors, which are often hillsides or tributary drainages, to move between different habitats areas. Regional corridors provide these functions and link two or more large habitat areas. Regional corridors provide avenues for wildlife dispersal, migration, and contact between otherwise distinct populations.

The MHPA includes core biological resource areas and corridors targeted for conservation that preserve local and regional corridor functions. The easternmost portion of the site is within the MHPA. The MHPA in this portion of Otay Mesa is at the upper end of a canyon that is a tributary to Spring Canyon and represents the northwestern edge of the MHPA south of State Route 905 (Figure 3).





6.0 PROJECT IMPACT ANALYSIS

This section analyzes project effects on sensitive biological resources. The City's CEQA Significance Determination Thresholds (City 2012) are used to establish whether or not there is a significant effect. A significant effect is defined as a "substantial or potentially substantial adverse change in the environment." The CEQA Guidelines (i.e., Appendix G of the CEQA Guidelines) further indicate that there may be a significant effect on biological resources if a project will trigger the following criteria:

- A. Substantially affect an endangered, rare, or threatened species of animal or plant or the habitat of the species;
- B. Interfere substantially with the movement of any resident or migratory fish or wildlife species; or
- C. Substantially diminish habitat for fish, wildlife, or plants.

Impacts to biological resources are evaluated by City staff through the CEQA review process, the ESL Regulations and City's Biology Guidelines, and through the review of a project's consistency with the City's MSCP Subarea Plan. According to the ESL Regulations, Site Development Permits are required for impacts to wetlands and listed species habitat. Both the subdivision project and the future extension of Airway Road would be required to obtain all applicable Federal and State permits prior to the issuance of any discretionary permit by the City. Prior to the issuance of any construction permit(s), the project applicant must provide a copy of the permit, authorization letter, or other official mode of communication from the Federal and State permitting agencies to the City.

For projects within the City or carried out by the City which may affect sensitive biological resources, potential impacts to such sensitive biological resources must be evaluated using the following significance criteria:

- 1. Would the project result in substantial adverse impacts, either directly or through habitat modifications, to any species identified as a candidate, sensitive or special status species in the MSCP or other local or regional plans, policies or regulations, or by the CDFW or USFWS?
- 2. Would the project result in a substantial adverse impacts on any Tier I, Tier II, Tier IIIA or Tier IIIB habitats as identified in the Biology Guidelines or other sensitive natural community identified in local or regional plans, policies, regulations or by the CDFW or USFWS?
- 3. Would the project result in a substantial adverse impact on wetlands (including, but not limited to, marsh, vernal pools, riparian areas, etc.) through direct removal, filling, hydrological interruption, or other means?
- 4. Would the project substantially interfere with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, including linkages identified in the MSCP Plan, or impede the use of native wildlife nursery sites?




- 5. Would the project conflict with the provisions of an adopted Habitat Conservation Plan, NCCP, or other approved local, regional or state habitat conservation plan, either within the MSCP plan area or in the surrounding region? Neither the subdivision project nor the future extension of Airway Road would conflict with any such plan as each would be consistent with the City's MSCP Subarea Plan either through project design and/or implemented mitigation.
- 6. Would the project introduce a land use within an area adjacent to the MHPA that would result in adverse edge effects?
- 7. Would the project conflict with any local policies or ordinances protecting biological resources?
- 8. Would the project introduce invasive species of plants in to natural open space?

6.1 DIRECT IMPACTS

Direct impacts immediately alter the affected biological resources such that those resources are eliminated temporarily or permanently. The removal of vegetation would be considered a direct impact. All direct impacts associated with the project and the future extension of Airway Road would be permanent.

6.1.1 Direct Impacts to Vegetation Communities

Approximately 8.3 total acres would be impacted by the subdivision project and approximately 2.0 total acres would be impacted by the future extension of Airway Road (Figure 4; Table 9). All Zone 1 and Zone 2 brush management for the subdivision project would occur within the development footprint (i.e., the areas graded to build the project). Therefore, no native or naturalized vegetation would be impacted by brush management. Furthermore, no impacts would occur from brush management for Airway Road because brush management is not required for the road. See Section 6.2.6, *Brush Management*, for more information.



Direct Impacts to Upland Vegetation Communities

Table 9 DIRECT IMPACTS TO VEGETATION COMMUNITIES (acres) ¹					
Vegetation Community	Total Acreage On Site	Southview East Subdivision Project ²	Future Airway Road IOD Outside the MHPA ³	Future Airway Road IOD Inside the MHPA ³	Total Impacts
Wetland/Riparian	-				
Vernal pool	0.02				
Road pool	0.06		0.01 (476 sq ft; four pools)		0.01 (476 sq ft; 4 pools)
Freshwater marsh	0.08				
Southern willow scrub	0.04				
Upland					
Maritime succulent scrub (Tier I)	1.0			0.01	0.01
Non-native grassland (Tier IIIB)	17.3	6.9	1.1	0.8	8.8
Other Upland	•				
Disturbed habitat (Tier IV)	1.5	0.3	<0.1	0.1	0.4
Developed	1.1	1.1			1.1
TOTAL	21.1	8.3	1.11	0.91	10.32

¹Rounded to the nearest 0.1 acre except for wetland/riparian and maritime succulent scrub (impacts).

²All brush management for the subdivision project would occur within the impact footprint. See Section 6.2.6, *Brush Management*, for more information.

³Brush management is not required for the future extension of Airway Road. See Section 6.2.6, *Brush Management*, for more information.

Direct Impacts to Wetland/Riparian Vegetation Communities

There would be no direct impacts to wetland/riparian vegetation communities from the project. The future extension of Airway Road would directly impact four road pools with a total surface area of 0.01 acre (476 sq ft; Table 9). Vernal pools and road pools on site are not technically wetlands. See Vernal Pool and Road Pool in Section 5.2.1, *Wetland/Riparian Vegetation Communities*, for an explanation.

Analysis of Significance of Impacts to Vegetation Communities

<u>Upland Vegetation Communities</u>. Impacts to Tier I maritime succulent scrub and Tier IIIB nonnative grassland would be significant according to the significance criteria described previously in Section 6.0, *Project Impact Analysis* (see below). Mitigation for these impacts would be



required. Impacts to Tier IV disturbed habitat would be less than significant as the impacts would not meet criteria for significance described in Section 6.0, *Project Impact Analysis*. Thus, no mitigation would be required.

Significance Criterion C: A project would substantially diminish habitat for fish, wildlife, or plants. The subdivision project would replace 6.9 acres of non-native grassland, which provides habitat for plants and animals, with urban development. Since the City considers any impact to one acre more of non-native grassland that is not completely surrounded by existing urban development to be significant, this impact would be substantial. The future extension of Airway Road would also replace 1.9 acres of non-native grassland (0.8 acre of which is in the MHPA) and 0.01 acre of maritime succulent scrub in the MHPA (that is likely used by the CAGN) with roadway development, which would also be substantial. Mitigation would be required for all of these impacts.

Significance Criterion 2: A project would result in a substantial adverse impact on any Tier I, Tier II, Tier IIIA or Tier IIIB habitat as identified in the Biology Guidelines or other sensitive natural community identified in local or regional plans, policies, regulations, or by the CDFW or USFWS. As stated above under Significance Criterion C, impacts would occur to Tier I maritime succulent scrub and Tier IIIB non-native grassland that would be considered substantial and adverse; mitigation would be required.

<u>Wetland/Riparian Vegetation Communities</u>. Impacts to four road pools from the future extension of Airway Road would be significant according to the following significance criteria listed in Section 6.0, *Project Impact Analysis*. Mitigation for these impacts would be required.

Significance Criterion A: A project would substantially affect an endangered, rare, or threatened species of animal or plant or the habitat of the species. The future Airway Road extension would impact the Federal listed endangered San Diego fairy shrimp that occurs in the four road pools in the road right-of-way.

Significance Criterion C: A project would substantially diminish habitat for fish, wildlife, or plants. The future Airway Road extension would replace habitat that supports San Diego fairy shrimp, which would be substantial because this species is Federal listed endangered.

Significance Criterion 1: A project would result in substantial adverse impacts, either directly or through habitat modifications, to any species identified as a candidate, sensitive or special status species in the MSCP or other local or regional plans, policies or regulations, or by the CDFW or USFWS. The future Airway Road extension would directly impact the Federal listed endangered San Diego fairy shrimp associated with road pool habitat that would be impacted resulting in a substantial, adverse effect.

Significance Criterion 2: A project would result in a substantial adverse impact on sensitive natural communities identified in local or regional plans, policies, regulations, or by the CDFW or USFWS. As presented in Table 9 in Section 6.1.1, *Direct Impacts to Vegetation Communities*, the future Airway Road extension would directly impact road pools that support San Diego fairy shrimp, which is Federal listed endangered. Therefore, the impact is considered substantial and adverse.



6.1.2 Direct Impacts to Sensitive Plant Species

Neither the subdivision project nor the future extension of Airway Road would directly impact sensitive plant species. No mitigation would be required.

6.1.3 Direct Impacts to Sensitive Animal Species

There would be no direct impacts to Riverside fairy shrimp from the subdivision project or from the future extension of Airway Road since the vernal pool habitat of this species would not be directly impacted. No mitigation would be required.

San Diego Fairy Shrimp

The future extension of Airway Road would directly impact four road pools that support San Diego fairy shrimp. The impacts to the fairy shrimp would occur from clearing/grubbing/grading activities, which would cause mortality of the fairy shrimp that would be significant according to Significance Criterion A (substantially affect an endangered species) and Significance Criterion 1 (direct impacts to a species identified as special status by the USFWS). Mitigation would be required. Neither the subdivision project nor the future extension of Airway Road would impact San Diego (or Riverside) fairy shrimp designated Critical Habitat, however.

Although San Diego fairy shrimp is identified in the City's MSCP Subarea Plan as a Covered Species, a 2006 Federal district court ruling determined that the City's Subarea Plan does not provide adequate protection for Riverside fairy shrimp. The City surrendered permit coverage for seven vernal pool species on April 20, 2010 including the San Diego fairy shrimp. The USFWS subsequently cancelled the Incidental Take Permit as it applied to those seven species on May 14, 2010 (USFWS 2011).

Currently the City is in the process of completing a new vernal pool Habitat Conservation Plan in order to enter into another Implementing Agreement for a new Federal Incidental Take Permit for those seven species. Until that time, development involving take of any of the seven vernal pool species requires authorization from the USFWS through the Federal Incidental Take process. Section 7 consultation with the USFWS would be required to address impacts to San Diego fairy shrimp that exist within the four road pools that would be impacted by the future extension Airway Road unless a new Federal Incidental Take Permit is obtained in the interim.

Coastal California Gnatcatcher

The future extension of Airway Road would directly impact 0.01 acre (one percent) of maritime succulent scrub on site. A pair of CAGN was observed just off site to the east of this habitat to be impacted. The CAGN is likely to utilize the maritime succulent scrub on site. The CAGN is Federal listed endangered, a State Species of Special Concern, and is an MSCP Covered Species. The impact to the CAGN would occur from habitat removal, which would be significant according to Significance Criterion A (substantially affect a threatened species) and Significance Criterion 1 (direct impacts to a species identified as special status in the MSCP and by the USFWS and CDFW). Mitigation would be required.



MSCP Area Specific Management Directives for the CAGN must include measures to reduce edge effects and minimize disturbance during the nesting period, fire protection measures to reduce the potential for habitat degradation due to unplanned fire, and management measures to maintain or improve habitat quality including vegetation structure.

Project construction would reduce edge effects and minimize disturbance during the nesting season through required mitigation for noise (see Section 7.3.1, *Mitigation for Indirect Impacts Associated with MHPA Land Use Adjacency and Raptor Nesting*; Subsection 1.G., *Noise*). The subdivision project would also include barriers to prevent public access to the MHPA where the CAGN occurs, and the future extension of Airway Road would be required to provide such barriers (see Section 6.2.4, *Public Access*). Preventing human intrusion into the MHPA would protect the CAGN from unplanned fire and would maintain the quality of the maritime succulent scrub habitat.

Southern California Rufous-crowned Sparrow

The future extension of Airway Road would directly impact 0.01 acre (one percent) of maritime succulent scrub on site. The southern California rufous-crowned sparrow was observed in maritime succulent scrub on site north of this habitat to be impacted. The impact to this sparrow would occur from habitat removal, which would be significant according to Significance Criterion 1 (direct impacts to a species identified as special status in the MSCP and by CDFW). Mitigation would be required.

MSCP Area Specific Management Directives for the southern California rufous-crowned sparrow must include maintenance of dynamic processes, such as fire, to perpetuate some open phases of coastal sage scrub with herbaceous components. The Southview East project site supports maritime succulent scrub rather than (Diegan) coastal sage scrub. Maritime succulent scrub a "low (knee to waist high), open (25-75% cover) scrub dominated by drought deciduous...shrubs with...stem and leaf succulents. The ground is more or less bare between the shrubs" (Oberbauer et al. 2008). The maritime succulent scrub habitat on site is already an open community. The barriers around the subdivision project and for Airway Road would protect the maritime succulent scrub from public access and fire and would maintain the quality of the habitat.

San Diego Black-tailed Jackrabbit

The San Diego black-tailed jackrabbit was observed in non-native grassland on site. Impacts to this species would occur from habitat removal and potential injury or mortality to very young jackrabbit litters that may be immobile, although it is more likely that nesting would occur in habitats on site with shrubs, such as maritime succulent scrub. The San Diego black-tailed jackrabbit is a State Species of Special Concern; it is not an MSCP Covered Species. Impacts to this species would be significant according to Significance Criterion 1 due to the acreage of lost habitat and potential injury and mortality from construction of the subdivision project and future extension of Airway Road. Mitigation would be required.



Raptor Foraging Habitat

Loss of non-native grassland due to the subdivision project and future Airway Road extension would result in a loss of raptor foraging habitat (Tier III B non-native grassland). The sensitive northern harrier (State Species of Special Concern and MSCP Covered Species) and white-tailed kite (State Fully Protected) have been observed hunting on site. The loss of raptor foraging habitat would be significant according to Significance Criterion 1 (substantial adverse impacts, either directly or through habitat modifications, to [sensitive] species) and Significance Criterion 2 (substantial adverse impact on sensitive natural communities). Mitigation would be required.

Birds Protected by the Migratory Bird Treaty Act and California Fish and Game Code

Potential direct impacts to nesting birds protected by the Migratory Bird Treaty Act and California Fish and Game Code could result if clearing of vegetation or construction occurs during the breeding season (generally February 1 through September 15; see Section 3.1.1, *Federal, Migratory Bird Treaty Act*, and Section 3.1.2, *State of California, California Fish and Game Code*). Clearing of vegetation or construction activities could cause destruction or abandonment of active nests or mortality of adults, young, or eggs.

Impacts to nesting birds protected by the MBTA and California Fish and Game Code would be considered significant according to Significance Criterion 1 (substantial adverse impacts, either directly or through habitat modifications, to [MBTA- and California Fish and Game Code-protected] species), and mitigation would be required.

Analysis of Significance of Impacts to Sensitive Animal Species

Direct impacts to San Diego fairy shrimp, CAGN, southern California rufous-crowned sparrow, San Diego black-tailed jackrabbit, raptor foraging habitat, and nesting birds would be significant according to the significance criteria described previously in Section 6.0, *Project Impact Analysis*. See below. Mitigation for these impacts would be required.

Significance Criterion A: A project would substantially affect an endangered, rare, or threatened species of animal or plant or the habitat of the species. The future extension of Airway Road would impact the Federal listed endangered San Diego fairy shrimp that occurs in the four road pools in the road right-of-way and the CAGN that likely utilizes 0.01 acre of maritime succulent scrub that would be removed.

Significance Criterion C: A project would substantially diminish habitat for fish, wildlife, or plants. The future extension of Airway Road would replace road pool habitat that supports the Federal listed endangered San Diego fairy shrimp, which would be substantial because this species is Federal listed endangered. The loss of non-native grassland foraging habitat from the subdivision project and the future Airway Road extension would substantially diminish habitat for raptors. The City considers any impact to one acre or more of non-native grassland that is not completely surrounded by existing urban development to be significant.



Significance Criterion 1: A project would result in substantial adverse impacts, either directly or through habitat modifications, to any species identified as a candidate, sensitive or special status species in the MSCP or other local or regional plans, policies or regulations, or by the CDFW or USFWS. The future extension of Airway Road would directly impact San Diego fairy shrimp associated with road pool habitat that would be impacted resulting in a substantial, adverse effect on this Federal listed endangered species. The future extension of Airway Road would also impact the CAGN and southern California rufous-crowned sparrow through removal of 0.01 acre of maritime succulent scrub habitat for these species. The loss of non-native grassland from the subdivision project and the future roadway extension would cause substantial adverse impacts to sensitive raptors (northern harrier and white-tailed kite) through the loss of foraging habitat.

Significance Criterion 2: A project would result in a substantial adverse impact on sensitive natural communities identified in local or regional plans, policies, regulations, or by the CDFW or USFWS. As presented in Table 9 in Section 6.1.1, *Direct Impacts to Vegetation Communities*, the future extension of Airway Road would directly impact road pools, which support San Diego fairy shrimp, and non-native grassland, which is a Tier IIIB habitat. The subdivision project would also result in the loss of non-native grassland. These impacts are considered substantial and adverse due to the sensitivity of these resources.

6.1.4 Direct Impacts to Sensitive Plant and Animal Species with Potential to Occur

Tables 3 and 4 presented lists of the sensitive and MSCP Narrow Endemic plant species not observed during surveys and their potential to occur on site. All of these species have low potential to occur or are not expected to occur based on the location of the site, the habitats present, and/or because none of these species was found during site surveys. Therefore, impacts to these species are not anticipated, and no mitigation would be required.

Table 5 presented a list of sensitive animal species not observed or detected and their potential to occur on site. All of these species with two exceptions are either: 1) not expected to occur; 2) have low potential to occur; 3) or they would occur in habitats that would not be impacted (or that would be minimally impacted—that is, in maritime succulent scrub, for which only 0.01 acre [one percent] of that on site would be directly affected). Since impacts to these species are not expected, mitigation would not be required.

There is moderate potential for the BUOW and California horned lark to occur on site in grassland habitat to be impacted. The BUOW is a State Species of Special Concern, but it is also an MSCP Covered Species with special conditions for its coverage prescribed in Appendix A of the City's Subarea Plan. The California horned lark is a State Species of Special Concern; it is not an MSCP Covered Species.

Conditions for Coverage under the MSCP for the BUOW require that during the environmental analysis of proposed projects, burrowing owl surveys (using appropriate protocols) be conducted in suitable habitat to determine if this species is present and the location of active burrows. As explained in Section 2.2.3, *Sensitive Species*, burrowing owl surveys were conducted on site in 2005 and 2014. While the BUOW was not found, the Southview East project site still has potential to be occupied by BUOW. Therefore, the City requires mitigation that includes additional surveys and, if necessary, impact avoidance in accordance with the Conditions for Coverage (see Section 7.2.2, *Mitigation for Direct Impacts to Sensitive Animal Species*).

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The Conditions for Coverage also require mitigation for loss of occupied habitat through the conservation of occupied BUOW habitat, or conservation of lands appropriate for restoration, management, and enhancement of BUOW nesting and foraging requirements. This report includes mitigation for the loss of potential BUOW non-native grassland habitat under two scenarios: not occupied by BUOW and occupied by BUOW (as determined by the pre-construction survey in Section 7.2.2, *Mitigation for Direct Impacts to Sensitive Animal Species*). Section 7.2.1, *Mitigation for Direct Impacts to Upland Vegetation Communities*, presents the two mitigation scenarios.

Direct impacts to the non-native grassland habitat of BUOW and California horned lark should they be present would be significant according to Significance Criterion 1 (substantial adverse impacts to sensitive species). Additionally, clearing of vegetation or construction activities could cause destruction or abandonment of active BUOW burrows or California horned lark nests or mortality of adults, young, or eggs should these species be present. These direct impacts would also be considered significant according to Significance Criterion 1 (substantial adverse impacts, either directly or through habitat modifications, to [MBTA- and California Fish and Game Codeprotected] species). Mitigation would be required.

6.1.5 Direct Impacts to Waters of the U.S., Waters of the State, and City Wetlands

Neither the subdivision project nor the future extension of Airway Road directly impacts Waters of the U.S., Waters of the State, and City Wetlands (Figures 5 through 7). Therefore, no mitigation would be required.

6.1.6 Wildlife Corridors

The subdivision project and the future extension of Airway Road would not substantially impact the MHPA on site and would, therefore, not significantly alter wildlife movement (Significance Criterion 4).

6.2 INDIRECT IMPACTS

Indirect impacts consist of secondary effects of a project that can occur during construction or from a project once built. Indirect effects listed in the City's Subarea Plan include those from drainage and toxics, lighting, noise, public access, invasive plant species, brush management, and grading/land development as addressed by the Land Use Adjacency Guidelines specifically for indirect impacts to the MHPA from residential, active recreation, commercial, industrial, agricultural, landfill, and extractive uses but that may also affect sensitive biological resources outside the MHPA and during construction. Furthermore, indirect impacts to raptor nesting in the MHPA are addressed by the Biology Guidelines (City 2012). Other indirect impacts of a project can also include fugitive dust from construction. The magnitude of an indirect impact can be the same as a direct impact, but the effect usually takes a longer time to become apparent.



6.2.1 Drainage and Toxics

The storage and use of hazardous or toxic chemicals during construction of projects has the potential for leakage that could impact the adjacent MHPA and nearby sensitive plant and animal species. Most species locations are more than 100 feet from both the subdivision project and future extension of Airway Road, however, so these impacts are not expected to occur. Sediment transport during construction also has the potential to fill in pools with fairy shrimp and wetlands on site thereby adversely affecting Federal listed species and Federal, State, and City wetlands. Again, pool watersheds and wetlands are more than 100 feet away from both projects, so these impacts are not anticipated to occur. Impacts could be significant, however, for some species that could be closer (e.g., San Diego black-tailed jackrabbit or BUOW [which has moderate potential to occur]), so mitigation would be required for both the subdivision project and the future roadway extension.

Hardscape and landscape irrigation associated with the built subdivisions would result in runoff. Runoff can be associated with erosion, sedimentation, and pollution, which could significantly impact water quality in the adjacent MHPA and nearby sensitive plant and animal species. Potential impacts due to runoff would be minimized through the use of water quality basins that would collect and treat all water from the subdivisions, however, before it is discharged through outfalls with rip-rap energy dissipators, and none of the discharges would occur directly into the MHPA per the Land Use Adjacency Guidelines (Figure 4). Additionally, none of the water would be discharged within 100 feet of vernal pool/road pool watersheds (100 feet is a buffer distance the City typically requires to protect wetlands from indirect effects; City 2012) or known sensitive plant or animal locations (even so, the water would be treated). Therefore, drainage and toxics impacts from the built subdivision project would be minimized to less-thansignificant levels, and no mitigation would be required.

The future extension of Airway Road has not been designed; therefore, runoff from the built roadway extension could have significant drainage and toxics impacts to the adjacent MHPA and nearby sensitive plant and animal species. Mitigation would be required.

6.2.2 Lighting

Night lighting exposes wildlife to an unnatural light regime that may adversely affect foraging patterns, increase predation risk, cause biological clock disruptions, and result in a loss of species diversity in habitat adjacent to project sites. The Land Use Adjacency Guidelines specifically require that all developed areas adjacent to the MHPA direct lighting away from the MHPA.

Unless appropriate measures, such as directing and shielding lights, are taken to prevent dispersion of light, lighting effects on sensitive species and the MHPA adjacent to the built subdivision project and the built future extension of Airway Road (and from construction if lighting is used) could be significant according to Significance Criterion A (substantially affect listed species habitat), Significance Criterion C (substantially diminish habitat), and Significance Criterion 6 (result in adverse effects to the MHPA). Mitigation would be required.



6.2.3 <u>Noise</u>

Construction-related noise from such sources as clearing, grading, and construction vehicular traffic could result in significant, temporary noise-related impacts to wildlife in undeveloped habitat adjacent to the subdivision project and future extension of Airway Road. These noise impacts would be significant for the CAGN, which is sensitive to noise.

Construction-related noise from such sources as clearing, grading, and construction vehicular traffic could result in significant, temporary noise-related impacts to the CAGN. These noise-related impacts would be considered significant according to Significance Criteria A and 1 (substantially affect listed or sensitive species) and Significance Criterion 6 (result in adverse edge effects to the MHPA). A pair of CAGN was observed just off site to the east in the MHPA. No CAGN were observed on site. However, the CAGN is likely to utilize the maritime succulent scrub on site, which is in the MHPA. Indirect noise impacts to the CAGN could occur during construction of the subdivision project and the future extension of Airway Road; mitigation would be required.

The Land Use Adjacency Guidelines require that uses in or adjacent to the MHPA be designed to minimize noise impacts that could impact or interfere with wildlife utilization of the MHPA. Specifically, berms or walls should be constructed adjacent to commercial areas, recreational areas, and any other use that may introduce noises that could impact or interfere with wildlife utilization of the MHPA. Excessively noisy uses or activities adjacent to breeding areas must incorporate noise reduction measures and be curtailed during the breeding season of sensitive species.

Noise associated with the subdivision residences is not expected to be of sufficient volume or duration to impact or interfere with wildlife utilization of adjacent habitat or the MHPA (the CAGN was observed in the MHPA). In accordance with the Land Use Adjacency Guidelines, the future extension of Airway Road must be designed to minimize noise impacts to the MHPA from operational use of the road.

6.2.4 Public Access

The Land Use Adjacency Guidelines state that new development adjacent to the MHPA may be required to provide barriers (e.g., non-invasive vegetation, rocks/boulders, fences, walls, and/or signage) along the MHPA boundaries to direct public access to appropriate locations and to reduce domestic animal predation. Public access from occupied projects can result in such impacts as trails being created, trash being dumped, habitat degradation, and wildland fire. Residential projects also have the potential for domestic animals to impact native wildlife. In particular, free-roaming cats are known to harm native rodent and bird populations in locations where they have access to natural areas such as the MHPA. These activities, should they occur, would be significant (Significance Criterion 6, result in adverse edge effects to the MHPA).

The subdivision project includes a barrier around the subdivision and along the western site boundary where the future extension of Airway Road would enter the site (Figure 4). The barrier would consist of a six-foot-high chain link fence and/or block wall (or similar) that would deter public and domestic animal access to the MHPA. Therefore, potential impacts from the occupied subdivisions would be less than significant, and no mitigation would be required.

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Airway Road has been identified as a major east-west corridor on Otay Mesa and serves as the principal community transportation and activity corridor (City 2015) and is, therefore, "considered conditionally compatible with the biological objectives of the MSCP and allowed within the City's MHPA" (City 1997). Since the roadway has not yet been designed, however, it assumed herein that the potential for significant public access impacts to the MHPA and undeveloped habitat exists (Significance Criterion 6 [result in adverse effects to the MHPA]), and mitigation would be required.

6.2.5 <u>Invasive Plant Species</u>

Invasive, non-native plants can colonize areas disturbed by construction and potentially spread and impact the adjacent MHPA and nearby sensitive plant and animal species. Such invasions could displace native plant species, reduce diversity, increase flammability and fire frequency, change ground and surface water levels, and adversely affect the native wildlife that are dependent on native or naturalized vegetation. This impact can also occur if invasive, non-native plant species are included in a project's landscaping.

The MSCP Land Use Adjacency Guidelines require that no invasive, non-native plant species be introduced into areas adjacent to the MHPA for residential, active recreation, commercial, industrial, agricultural, landfill, and extractive uses. Furthermore, no invasive or potentially invasive species identified in the California Invasive Plant Inventory prepared by the California Invasive Plant Council (2006) are allowed by the City within 100 feet of the MHPA. Since landscaping for the subdivision project and the future extension of Airway Road must comply with these requirements, no impacts to the MHPA would occur from the built projects, and no mitigation would be required. Additionally, since no landscaping would occur within 100 feet of sensitive plant species locations on site and vernal pools/road pools on site outside the MHPA, the potential impact would be considered less than significant, and no mitigation would be required.

During construction, however, invasive, non-native plants transported to the site on construction equipment or vehicles (e.g., seeds on undercarriages) could colonize areas disturbed by construction activities, and those species could potentially spread into the MHPA or otherwise undeveloped habitat adjacent to the subdivision project or future extension of Airway Road where sensitive plant and animal species occur. Invasion by non-native plants caused by construction of the subdivision project or by the future extension of Airway Road would be considered a significant impact according to Significance Criterion 8 (introduction of invasive plant species), and mitigation would be required.

6.2.6 Brush Management

The Land Use Adjacency Guidelines require that new development located adjacent to and topographically above the MHPA (e.g., along canyon edges) be set back from slope edges to incorporate Zone 1 brush management areas on the development pad and outside the existing MHPA, while Zone 2 is considered "impact neutral" and may be located in the MHPA provided the Zone 2 management will be the responsibility of an HOA or other private entity, except where narrow wildlife corridors require it to be located outside of the MHPA. Zone 2 located within the MHPA, however, cannot be used as mitigation.



The City's Municipal Code (§142.0412) states that brush management is required in all base zones on publicly or privately owned premises that are within 100 feet of a structure and contain native or naturalized vegetation. Furthermore, brush management zones shall not be greater in size than currently required by the City's regulations. Initial thinning of woody vegetation shall not exceed 50 percent coverage of the existing vegetation prior to implementation of brush management activities. Additional thinning and pruning shall be done consistent with City standards to obtain minimum vertical and horizontal clearances and shall avoid/minimize impacts to covered species to the maximum extent possible. Vegetation clearing shall be prohibited within native coastal sage scrub, maritime succulent scrub, and coastal sage-chaparral habitats from March 1 through August 15, except where documented to the satisfaction of the City Manager that the thinning would be consistent with conditions of species coverage described in the City's MSCP Subarea Plan.

All required Zone 1 and Zone 2 brush management for the subdivision project would occur entirely within the project impact footprint (Figure 4), so there would be no native or naturalized habitats subject to brush management because they will have been removed during project grading. Furthermore, the subdivision project impact footprint is entirely outside the MHPA, so none of the MHPA would be subject to brush management, and no brush management areas would be used as mitigation.

The Zone 1 width for the subdivision project would be 35 feet. Where the outside edge of Zone 1 would be less than 35 feet from structures, alternative compliance measures would be implemented including the installation of dual tempered/dual glazed, double pane windows. The Zone 2 width for the subdivision project ranges from 17 feet to 74 feet. All brush management would be the responsibility of the subdivision project's HOA. Since the brush management would comply with the Land Use Adjacency Guidelines, no mitigation would be required. Brush management is required for structures; therefore, no brush management would be required for the future extension of Airway Road.

6.2.7 Grading/Land Development

The Land Use Adjacency Guidelines require that manufactured slopes associated with development be included within the development footprint within or adjacent to the MHPA.

The subdivision project and future extension of Airway Road include all slopes within the impact footprints. However, because there are times that errant construction activities can occur (e.g., construction equipment becomes disabled [stuck on a slope] and needs assistance to get out resulting in ground disturbance outside the footprint), the impact could be significant if it impacts the MHPA (Significance Criterion 7 [conflict with local policies protecting biological resources]) and/or additional non-native grassland (Significance Criterion 2 [adversely affect sensitive habitat]). Mitigation would be required.



6.2.8 Other Indirect Impacts

Fugitive Dust

Fugitive dust produced by construction could disperse onto adjacent vegetation and into vernal pools and road pools supporting fairy shrimp outside and inside the MHPA. A continual cover of dust may reduce the overall vigor of individual plants by reducing their photosynthetic capabilities and increasing their susceptibility to pests or disease. This, in turn, could affect animals dependent on these plants (e.g., seed-eating rodents). Fugitive dust also may make plants unsuitable as habitat for insects and birds and can alter water temperature required by the San Diego fairy shrimp adversely affecting its ability to mature and reproduce (USFWS 2012).

Construction of the subdivision project and future extension of Airway Road will adhere to applicable construction dust control measures prescribed by the City. These measures include, for example, reduced driving speeds on unpaved roads and regular watering of dirt surfaces. Potential impacts from fugitive dust would be less than significant and, therefore, would not require mitigation.

Raptor Nesting

Indirect impacts to nesting raptors could occur if any construction occurs near the MHPA within the raptor breeding season (generally February 1 to September 15). The northern harrier was observed flying over the site and has potential to nest on site in the MHPA. While the BUOW was not observed, it has moderate potential to occur on site in the MHPA in non-native grassland. The Biology Guidelines (City 2012) require an impact avoidance area of 900 feet from any northern harrier nesting site and 300 feet from any occupied burrowing owl burrow that occurs in the MHPA (these are MSCP Area Specific Management Directives for these species).

If any construction would occur during the raptor breeding season, there is potential for impacts to raptor nesting that would be significant according to Significance Criterion 1 (substantial adverse impacts, either directly or through habitat modifications, to [sensitive] species) and Significance Criterion 7 (conflict with local policies). Mitigation would be required.

6.3 MSCP EVALUATION

In addition to compliance with the MSCP Land Use Adjacency Guidelines that require an analysis of potential indirect impacts from a project, the City's Subarea Plan provides additional policies and guidelines that require project compliance. These policies/guidelines are summarized below followed by a brief description of project compliance.

6.3.1 General Planning Policies and Design Guidelines

Section 1.4.2 of the City's Subarea Plan includes general planning policies and design guidelines that have been applied in the review and approval of development projects within or adjacent to the MHPA.



Roads and Utilities – Construction and Maintenance Policies

This section of the Subarea Plan includes eight guidelines/policies. Each is summarized below along with an explanation describing how the future extension of Airway Road complies with the guidelines/policies where it occurs adjacent to the MHPA.

1. All proposed utility lines should be designed to avoid or minimize intrusion into the MHPA.

The roadway extension and, therefore, any associated utility lines would intrude into the MHPA. However, Airway Road has been identified as a major east-west corridor on Otay Mesa and serves as the principal community transportation and activity corridor (City 2015) and is, therefore, "considered conditionally compatible with the biological objectives of the MSCP and allowed within the City's MHPA" (City 1997).

2. All new development for utilities and facilities within or crossing the MHPA shall be planned, designed, located, and constructed to minimize environmental impacts. If avoidance is infeasible, mitigation would be required.

Airway Road has been identified as a major east-west corridor on Otay Mesa and serves as the principal community transportation and activity corridor (City 2015). Therefore, avoidance of the MHPA is infeasible, and mitigation is proposed per the City's MSCP Subarea Plan, Biology Guidelines, and ESL Regulations.

3. Temporary construction areas and roads, staging areas, or permanent access roads must not disturb existing habitat unless determined to be unavoidable.

Mitigation for the roadway extension requires that no parking or other construction/development-related material/activities shall be allowed outside any approved construction limits (see Section 7.3.1, *Mitigation for Indirect Impacts Associated with MHPA Land Use Adjacency*).

4. Construction and maintenance activities in wildlife corridors must avoid significant disruption of corridor usage.

The roadway extension would not significantly impact wildlife usage of the MHPA. See Section 6.1.6, *Wildlife Corridors*.

5. Roads in the MHPA will be limited to those identified in Community Plan Circulation Elements, essential collector streets, and necessary maintenance/emergency access roads.

Airway Road is identified in the Otay Mesa Community Plan Update (City 2015) as a major east-west corridor that serves as the principal community transportation and activity corridor on Otay Mesa.

6. Development of roads in canyon bottoms should be avoided whenever feasible. If an alternative location outside the MHPA is not feasible, then the road must be designed to cross the shortest length possible, and if a road crosses the MHPA, it should provide for fully-functional wildlife movement capability.



The roadway extension does not occur in a canyon bottom on site.

7. Where possible, roads within the MHPA should be narrowed from existing design standards to minimize habitat fragmentation and disruption of wildlife movement and breeding areas. Roads must be located in lower quality habitat or disturbed areas to the extent possible.

The roadway extension would not significantly impact wildlife usage of the MHPA. See Number 4 above. The roadway extension on site is located almost entirely in Tier IIIB non-native grassland.

8. Existing roads and utility lines are usually considered a compatible use in the MHPA.

The roadway extension does not yet exist.

Fencing, Lighting, and Signage

This section of the Subarea Plan includes three guidelines/policies. Each is summarized below along with an explanation as to how the subdivision project and future Airway Road extension comply where they occur adjacent to the MHPA.

1. Fencing or other barriers will be used where it is determined to be the best method to achieve conservation goals and adjacent to land uses incompatible with the MHPA.

There are no incompatible land uses adjacent to the MHPA associated with the subdivision project or roadway extension. However, unauthorized public access from occupied projects could result in impacts (trails and trash within the MHPA). The subdivision project includes a fence/wall and mitigation requires barriers around the future roadway extension (see Section 7.3.1, *Mitigation for Indirect Impacts Associated with MHPA Land Use Adjacency*). The barriers would deter public access to the MHPA.

2. Lighting shall be designed to avoid intrusion in the MHPA.

Mitigation for the subdivision project and roadway extension requires that lighting adjacent to the MHPA be directed away/shielded from the MHPA and be subject to City Outdoor Lighting Regulations per LDC Section 142.0740 (see Section 7.3.1, *Mitigation for Indirect Impacts Associated with MHPA Land Use Adjacency*).

3. Signage will be limited to access, litter control, and educational purposes.

Project signage for the subdivision project and future roadway extension has not yet been determined but will comply with this policy.

Materials Storage

Storage of materials (e.g., hazardous or toxic chemicals, equipment, etc.) will not be located within the MHPA, and proper storage of such materials is required per applicable regulations in any areas that may impact the MHPA, especially due to potential leakage.



Mitigation for the subdivision project and roadway extension requires that storage of materials not be located adjacent to the MHPA and that no equipment maintenance be conducted adjacent to the MHPA. Furthermore, no trash, oil, parking, or other construction/development-related material/activities shall be allowed outside any approved construction limits. See Section 7.3.1, *Mitigation for Indirect Impacts Associated with MHPA Land Use Adjacency* for more information.

6.3.2 General Management Directives

The following summarized, general management directives for all areas of the City's MSCP Subarea Plan are applicable to the subdivision project and future extension of Airway Road. Those directives not applicable include Adjacency Management Issues (except public access; see Section 6.2.4, *Public Access*), Invasives Exotics Control and Removal (except Invasive Plant Species; see Section 6.2.5, *Invasive Plant Species*), and Flood Control (since there are no flood control channels).

1. Mitigation shall be performed in accordance with ESL Regulations and the City's Biology Guidelines.

The mitigation measures in Section 7.0, *Mitigation Measures*, of this report have been formulated to satisfy the requirements of the City's MSCP Subarea Plan, Biology Guidelines, and ESL Regulations.

2. Restoration or revegetation undertaken in the MHPA shall be performed in a manner acceptable to the City.

Potential enhancement and/or restoration of San Diego fairy shrimp habitat in the MHPA for impacts from the future extension of Airway Road could occur as described in the provided conceptual mitigation plan (Alden, 2016b). The final mitigation, however, would be determined by the City and USFWS and may include utilizing the City's Vernal Pool Habitat Conservation Plan if it is approved.

3. Public Access, Trails, and Recreation. This directive includes requirements for trail signage, type, location, design, and use.

There are no trails associated with the subdivision project or roadway extension.

4. Litter/Trash and Materials Storage. This directive includes requirements for trash removal and permanent materials storage in the MHPA.

Litter, trash, and materials storage associated with construction would be addressed through required mitigation measures for potential indirect impacts (see Section 7.3.1, *Mitigation for Indirect Impacts Associated with MHPA Land Use Adjacency*). There would be no permanent storage of any kind in the MHPA associated with the subdivision project or roadway extension.



7.0 MITIGATION MEASURES

The subdivision project and future extension of Airway Road would impact sensitive vegetation and sensitive animal species. The following measures are proposed to mitigate the direct and indirect impacts to these resources that are significant. Successful implementation of the mitigation measures in this section would reduce each impact to a less-than-significant level. These measures are consistent with applicable mitigation measures from the Final Environmental Impact Report for the Otay Mesa Community Plan (FEIR).

7.1 BIOLOGICAL RESOURCE PROTECTION DURING CONSTRUCTION INCLUDING GENERAL AVIAN PROTECTION

This section applies to both the subdivision project and the future extension of Airway Road.

I. Prior to Construction

- A. **Biologist Verification:** The owner/permittee shall provide a letter to the City's MMC Section stating that a Project Biologist (Qualified Biologist), as defined in the City of San Diego's Biological Guidelines (2012), has been retained to implement the project's biological monitoring program. The letter shall include the names and contact information of all persons involved in the biological monitoring of the project.
- B. **Pre-construction Meeting:** The Qualified Biologist shall attend a preconstruction meeting, discuss the project's biological monitoring program, and arrange to perform any follow up mitigation measures and reporting including site-specific monitoring, restoration or revegetation, and additional fauna/flora surveys/salvage.
- C. **Biological Documents:** The Qualified Biologist shall submit all required documentation to Mitigation Monitoring Coordination verifying that any special mitigation reports including but not limited to, maps, plans, surveys, survey timelines, or buffers are completed or scheduled per City Biology Guidelines, MSCP, ESL Ordinance, project permit conditions; CEQA; endangered species acts; and/or other local, State or Federal requirements.
- D. Biological Construction Mitigation/Monitoring Exhibit: The Qualified Biologist shall present a Biological Construction Mitigation/Monitoring Exhibit which includes the biological documents in C, above. In addition, include: restoration/revegetation plans, plant salvage/relocation requirements, avian or other wildlife surveys/survey schedules (including general avian nesting and USFWS protocol), timing of surveys, wetland buffers, avian construction avoidance areas/noise buffers/ barriers, other impact avoidance areas, and any subsequent requirements determined by the Qualified Biologist and the City Assistant Deputy Director/MMC. The Biological Construction Mitigation/Monitoring Exhibit shall include a site plan, written and graphic depiction of the project's biological mitigation/monitoring program, and a



schedule. The Biological Construction Mitigation/Monitoring Exhibit shall be approved by MMC and referenced in the construction documents.

- E. Avian Protection Requirements: Mitigation Measure BIO-2 from the FEIR requires implementation of mitigation to comply with the FESA, MBTA, Bald and Golden Eagle Protection Act, California Fish and Game Code, and/or the ESL Regulations. To avoid any direct impacts to raptors and/or any native/migratory birds, removal of habitat that supports active nests in the proposed area of disturbance should occur outside of the breeding season for these species (February 1 to September 15). If removal of habitat in the proposed area of disturbance must occur (based on construction timing) during the breeding season, the Qualified Biologist shall conduct a pre-construction survey to determine the presence or absence of nesting birds on the proposed area of disturbance. The pre-construction survey shall be conducted within 10 calendar days prior to the start of construction activities (including removal of vegetation). The applicant shall submit the results of the pre-construction survey to City Development Services Department for review and approval prior to initiating any construction activities. If nesting birds are detected, a letter report or mitigation plan in conformance with the City's Biology Guidelines and applicable State and Federal law (i.e., appropriate follow up surveys, monitoring schedules, construction and noise barriers/buffers, etc.) shall be prepared and include proposed measures to be implemented to ensure that take of birds or eggs or disturbance of breeding activities is avoided. The report or mitigation plan shall be submitted to the City Development Services Department for review and approval and implemented to the satisfaction of the City. The City's MMC Section or Resident Engineer, and Qualified Biologist shall verify and approve that all measures identified in the report or mitigation plan are in place prior to and/or during construction. If nesting birds are not detected during the preconstruction survey, no further mitigation is required.
- F. **Resource Delineation:** Prior to construction activities, the Qualified Biologist shall supervise the placement of silt and orange construction fencing or equivalent along the limits of disturbance and verify compliance with any other project conditions as shown on the Biological Construction Mitigation/Monitoring Exhibit. This phase shall include, as applicable, flagging plant specimens and delimiting buffers to protect sensitive biological resources (e.g., habitats/flora and fauna species, including nesting birds) during construction. Appropriate steps/care should be taken to minimize attraction of nest predators to the site.
- G. **Education:** Prior to commencement of construction activities, the Qualified Biologist shall meet with the owner/permittee or designee and the construction crew and conduct an on-site educational session regarding the need to avoid impacts outside of the approved construction area and to protect sensitive flora and fauna (e.g., explain the avian buffers and clarify acceptable access routes/methods and staging areas, etc.).



II. During Construction

A. **Monitoring:** All construction (including access/staging areas) shall be restricted to areas previously identified, proposed for development/staging, or previously disturbed as shown on "Exhibit A" and/or the Biological Construction Mitigation/Monitoring Exhibit. The Qualified Biologist shall monitor construction activities as needed to ensure that construction activities do not encroach into biologically sensitive areas, or cause other similar damage, and that the work plan has been amended to accommodate any sensitive species located during the preconstruction surveys. In addition, the Qualified Biologist shall document field activity via the Consultant Site Visit Record. The Consultant Site Visit Record shall be e-mailed to Mitigation Monitoring Coordination on the 1st day of monitoring, the 1st week of each month, the last day of monitoring, and immediately in the case of any undocumented condition or discovery.

The Qualified Biologist shall monitor, as is feasible, for the presence of sensitive animals species and shall, if practicable, direct or move these animals out of harm's way (i.e., to a location of suitable habitat outside the impact footprint).

B. **Subsequent Resource Identification:** The Qualified Biologist shall note/act to prevent any new disturbances to habitat, flora, and/or fauna on site (e.g., flag plant specimens for avoidance during access, etc). If active nests or other previously unknown sensitive resources are detected, all project activities that directly impact the resource shall be delayed until species specific local, State or Federal regulations have been determined and applied by the Qualified Biologist.

III. Post Construction

In the event that impacts exceed previously allowed amounts, additional impacts shall be mitigated in accordance with City Biology Guidelines, ESL Ordinance and MSCP, CEQA, and other applicable local, State and Federal laws. The Qualified Biologist shall submit a final Biological Construction Mitigation/Monitoring Exhibit /report to the satisfaction of the City Assistant Deputy Director /MMC within 30 days of construction completion.

7.2 MITIGATION FOR DIRECT IMPACTS

Mitigation Measure BIO-1 from the FEIR requires that projects resulting in impacts to sensitive upland Tier I, II, IIIA, or IIIB habitats implement mitigation in accordance with the City's Biology Guidelines.

The following mitigation measures have been formulated to satisfy the requirements of the City's MSCP Subarea Plan and Biology Guidelines. The mitigation ratios used in this report follow the City's ESL Regulations five-tier system for impacts to sensitive upland vegetation/habitat communities (there are no impacts to wetlands). The ratios used in this report are as follows.



- **Tier I**: Southern foredunes, Torrey pines forest, coastal bluff scrub, maritime succulent scrub, maritime chaparral, scrub oak chaparral, native grasslands and oak woodlands (mitigation ratios range from 1:1 to 2:1).
- **Tier II**: Coastal sage scrub (1:1 to 2:1) and coastal sage scrub/chaparral ecotone (1:1 to 1.5:1). There are no Tier II habitats on site.
- **Tier IIIA**: Mixed chaparral and chamise chaparral (0.5:1 to 1:1). There are no Tier IIIA habitats on site.
- **Tier IIIB**: Non-native grasslands (0.5:1 for impacts outside the MHPA and mitigation inside the MHPA. 1:1 for impacts and mitigation both outside the MHPA)
- **Tier IV**: Disturbed, agricultural, and eucalyptus (0:1)

Any errant construction impacts (i.e., any that were to occur outside an impact footprint; see Section 6.2.7, *Grading/Land Development*) shall be mitigated in accordance with the requirements of Section 7.2, *Mitigation for Direct Impacts*.

7.2.1 <u>Mitigation for Direct Impacts to Upland Vegetation Communities</u>

The project will meet all required upland habitat mitigation through on-site preservation. Prior to the issuance of any construction permits, project upland impacts shall be mitigated in accordance with the City's LDC Biology Guidelines through placement of a covenant of easement (in favor of the City, CDFW, and USFWS) over the preserved mitigation land on-site, as presented in Table 10. This table presents the mitigation for significant, direct impacts to maritime succulent scrub (Tier I) and non-native grassland (Tier IIIB). The lands on-site proposed for mitigation are already in the MHPA. Therefore, the ratios presented in Table 10 are consistent with all mitigation occurring in the MHPA, as listed in the Biology Guidelines.



Table 10 MITIGATION FOR SIGNIFICANT, DIRECT IMPACTS TO VEGETATION COMMUNITIES ¹					
Vegetation Community	Existing (Inside/Outside MHPA)	Impacts (Inside/Outside MHPA)	Mitigation Ratio	Required Mitigation (Inside/Outside MHPA)	Remaining On Site (Inside/Outside MHPA) ³
Maritime succulent scrub (Tier I)	1.0/	0.01/	2:1/	0.02/	0.97/
Non-native grassland (Tier IIIB)	3.7/13.6	0.8/8.0	1:1/0.5:1 ²	0.8/4.0 [Total 4.8]	2.1/1.6 [Total 3.7]
TOTAL	4.7/13.6	0.81/8.0		0.82/4.0 [Total 4.82]	3.07/1.6 [Total 4.67]

¹Impacts and mitigation presented in acres.

²If the burrowing owl is found to be present during the pre-construction/take avoidance surveys (see Section 7.2.2, *Mitigation for Direct Impacts to Sensitive Animal Species*), the 0.5:1 ratio would increase to 1:1 resulting in a shortage of 0.3 acre of available non-native grassland mitigation on site. If this was to occur, it is proposed that 0.3 acre of what would be a total of approximately 10.8 acres remaining on site (21.1 acres minus total impacts of 10.32 acres = 10.78 acres) would be used for this mitigation.

³This is surplus preserved land not used as mitigation for the subdivision project and future extension of Airway Road.



Direct impacts to 0.01 acre of maritime succulent scrub from the future Airway Road extension are proposed to be mitigated through the preservation of 0.02 acre of maritime succulent scrub in the MHPA on site. There would be 0.97 acre of surplus Tier I maritime succulent scrub preserved.

Direct impacts to 8.8 acres of non-native grassland (6.9 acres from the subdivision project and 1.9 acres from the future extension of Airway Road) are proposed to be mitigated through the preservation of 4.8 acres of non-native grassland on site. The preservation would include 0.8 acre that is already in the MHPA. Under this scenario (i.e., the burrowing owl is absent), there would be 3.7 acres of non-native grassland not required for mitigation that would be preserved as surplus. Should the burrowing owl be found during the pre-construction/take avoidance surveys, however, (see Section 7.2.2, *Mitigation for Direct Impacts to Sensitive Animal Species*), the required mitigation for impacts to non-native grassland outside the MHPA would double. Therefore, the total required mitigation could be 8.8 acres, which would be 0.3 acre less than the available non-native grassland on site. If this was to occur, it is proposed that 0.3 acre of disturbed habitat on site would be used to satisfy this mitigation.

Prior to certificate of occupancy, the applicant shall identify a Habitat Manager pursuant to the Southview East Project Habitat Management Plan (HMP; Alden 2016a), to be approved by the City of San Diego, and submit evidence that a funding source has been secured to fully implement the HMP in perpetuity. Management of the land will be performed by the approved Habitat Manager, as directed by the HMP. The purpose of the HMP is to identify methods and means necessary to maintain and enhance habitat (and related wildlife) values of the preserved land in perpetuity. Table 11 lists the surplus preserved land by vegetation community based on the absence or presence of the burrowing owl.

Table 11 SURPLUS LAND ON SITE				
Vegetation Community	Tier	Surplus Acreage if Burrowing Owl is Absent	Surplus Acreage if Burrowing Owl is Present	
Vernal pool		0.02	0.02	
Road pool		0.05	0.05	
Freshwater marsh		0.08	0.08	
Southern willow scrub		0.04	0.04	
Maritime succulent scrub	Ι	0.97	0.97	
Non-native grassland	IIIB	3.70	0.00	
Disturbed habitat	IV	1.10	0.80	
Developed		0.00	0.00	
TOTAL 5.96 1.96				



7.2.2 <u>Mitigation for Direct Impacts to Sensitive Animal Species</u>

San Diego Fairy Shrimp

Mitigation Measure BIO-4 from the FEIR states that impacts to fairy shrimp shall require either a section 10(a)1(A) permit or Section 7 consultation Biological Opinion from USFWS. If the vernal pool Habitat Conservation Plan is adopted, the City will receive take authorization for the seven vernal pool species.

Mitigation for direct impacts to four road pools (0.01 acre, 476 sq ft) supporting San Diego fairy shrimp from the future extension of Airway Road could include on-site or off-site (or a combination thereof) enhancement of existing pools as well as restoration of additional pools capable of supporting San Diego fairy shrimp. The mitigation shall include a five-year maintenance and monitoring period as well as a long-term habitat management plan. A conceptual vernal pool mitigation plan has been prepared (Alden 2016b) that provides a potential on site mitigation solution for impacts to road pools with San Diego fairy shrimp. The final mitigation will be determined if/when the roadway extension project moves forward through either the USFWS consultation process or through the City, if it implements the vernal pool Habitat Conservation Plan and enters into an Implementing Agreement for a new Federal Incidental Take Permit that covers the San Diego fairy shrimp. Implementation of this plan is not a requirement of the subdivision project.

San Diego Black-tailed Jackrabbit, Raptor Foraging, and California Horned Lark

Direct impacts to San Diego black-tailed jackrabbit, raptor foraging, and California horned lark nonnative grassland habitat from the subdivision project and future extension of Airway Road shall be mitigated through the on-site preservation of habitat as described in Section 7.2.1, *Mitigation for Direct Impacts to Upland Vegetation Communities*.

Burrowing Owl

Mitigation Measure BIO-1 from the FEIR requires that site-specific avoidance and mitigation measures shall be developed in accordance with the protocol established in the Staff Report on Burrowing Owl Mitigation (CDFG 2012).

In accordance with the FEIR, potential direct impacts to the BUOW from the subdivision project and future extension of Airway Road shall be mitigated as follows (also see Table 10 in Section 7.2.1, *Mitigation for Direct Impacts to Upland Vegetation Communities*, for non-native grassland occupied by BUOW).



Preconstruction Survey Element

Prior to Permit or Notice to Proceed Issuance:

1. As this project site has been determined to be BUOW occupied or to have BUOW occupation potential, the Permit Holder shall submit evidence to the Assistant Deputy Director of Entitlements verifying that a Biologist possessing qualifications pursuant "Staff Report on Burrowing Owl Mitigation, State of California Natural Resources Agency Department of Fish and Game. March 7, 2012 (hereafter referred as CDFG 2012, Staff Report), has been retained to implement a burrowing owl construction impact avoidance program.

2. The Qualified BUOW Biologist (or their designated biological representative) shall attend the pre-construction meeting to inform construction personnel about the City's BUOW requirements and subsequent survey schedule.

Prior to Start of Construction:

1. The Permit Holder and Qualified Biologist must ensure that initial preconstruction/take avoidance surveys of the project "site" are completed between 14 and 30 days before initial construction activities, including brushing, clearing, grubbing, or grading regardless of the time of the year. "Site" means the project site and the area within a radius of 450 feet of the project site. The report shall be submitted and approved by the Wildlife Agencies (WAs) and/or City MSCP staff prior to construction or BUOW eviction(s) and shall include maps of the project site and BUOW locations on aerial photos.

2. The pre-construction survey shall follow the methods described in CDFG 2012, Staff Report -Appendix D (please note, in 2013, CDFG became California Department of Fish and Wildlife).

3. 24 hours prior to commencement of ground disturbing activities, the Qualified Biologist shall verify results of pre-construction/take avoidance surveys. Verification shall be provided to the City's Mitigation Monitoring and Coordination (MMC) Section. If results of the pre-construction surveys have changed and BUOW are present in areas not previously identified, immediate notification to the City and WAs shall be provided prior to ground disturbing activities.

During Construction:

1. **Best Management Practices shall be employed** as BUOWs are known to use open pipes, culverts, excavated holes, and other burrow-like structures at construction sites. Legally permitted active construction projects which are BUOW occupied and have followed all protocol in this mitigation section, or sites within 450 feet of occupied BUOW areas, should undertake measures to discourage BUOWs from re-colonizing previously occupied areas or colonizing new portions of the site. Such measures include,



but are not limited to, ensuring that the ends of all pipes and culverts are covered when they are not being worked on, and covering rubble piles, dirt piles, ditches, and berms.

2. **On-going BUOW Detection** - If BUOWs or active burrows are not detected during the pre-construction surveys, Section "A" below shall be followed. If BUOWs or burrows are detected during the pre-construction surveys, Section "B" shall be followed. Neither the MSCP subarea plan nor this mitigation section allows for any BUOWs to be injured or killed outside or within the MHPA; in addition, impacts to BUOWs within the MHPA must be avoided.

A. Post Survey Follow-Up if BUOW and/or Signs of Active Natural or Artificial Burrows Are Not Detected During the Initial Pre-Construction Survey

Monitoring the site for new burrows is required using Appendix D protocol for the period following the initial pre-construction survey until construction is scheduled to be complete and is complete (*NOTE - Using a projected completion date [that is amended if needed] will allow development of a monitoring schedule which adheres to the required number of surveys in the detection protocol*)

1) If no active burrows are found but BUOWs are observed to occasionally (1-3 sightings) use the site for roosting or foraging, they should be allowed to do so with no changes in the construction or construction schedule.

2) If no active burrows are found but BUOWs are observed during follow-up monitoring to repeatedly (4 or more sightings) use the site for roosting or foraging, the City's MMC Section shall be notified, and any portion of the site where owls have been observed and that has not been graded or otherwise disturbed shall be avoided until further notice.

3) If a BUOW begins using a burrow on the site at any time after the initial preconstruction survey, procedures described in Section B must be followed.

4) Any actions other than these require the approval of the City and the WAs.

B. Post Survey Follow-Up if BUOWs and/or Active Natural or Artificial Burrows are detected during the Initial Pre-Construction Survey

Monitoring the site for new burrows is required using the Appendix D CDFG 2012 Staff Report for the period following the initial pre-construction survey until construction is scheduled to be complete and is complete (*NOTE - Using a projected completion date [that is amended if needed] will allow development of a monitoring schedule which adheres to the required number of surveys in the detection protocol*).

1) This section (B) applies only to sites (including biologically defined territory) wholly outside of the MHPA – all direct and indirect impacts to BUOWs within the MHPA SHALL be avoided.



2) If one or more BUOWs are using any burrows (including pipes, culverts, debris piles *etc.*) on or within 300 feet of the proposed construction area, the City's MMC Section shall be contacted. The City's MMC Section shall contact the WAs regarding eviction/collapsing burrows and shall enlist appropriate City biologist for on-going coordination with the WAs and the Qualified BUOW Biologist. No construction shall occur within 300 feet of an active burrow without written concurrence from the WAs. This distance may increase or decrease, depending on the burrow's location in relation to the site's topography and other physical and biological characteristics.

a) **Outside the Breeding Season** - If the BUOW is using a burrow on site outside the breeding season (i.e., September 1 – January 31), the BUOW may be evicted after the qualified BUOW biologist has determined via fiber optic camera or other appropriate device, that no eggs, young, or adults are in the burrow and written concurrence from the WAs for eviction is obtained prior to implementation.

b) **During Breeding Season** - If a BUOW is using a burrow on site during the breeding season (February 1– August 31), construction shall not occur within 300 feet of the burrow until the young have fledged and are no longer dependent on the burrow, at which time the BUOWs can be evicted. Eviction requires written concurrence from the WAs prior to implementation.

3. Survey Reporting During Construction - Details of construction surveys and evictions (if applicable) carried out shall be immediately (within 5 working days or sooner) reported to the City's MMC Section and the WAs and must be provided in writing (as by e-mail) and acknowledged to have been received by the required agencies and Development Services Department Staff member(s).

Post Construction:

1. Details of the all surveys and actions undertaken on site with respect to BUOWs (i.e., occupation, eviction, locations, etc.) shall be reported to the City's MMC Section and the WAs within 21 days post-construction and prior to the release of any grading bonds. This report must include summaries off all previous reports for the site, maps of the project site, and BUOW locations on aerial photos.

Avian Protection

Mitigation Measure BIO-2 from the FEIR requires implementation of mitigation to comply with the FESA, MBTA, Bald and Golden Eagle Protection Act, California Fish and Game Code, and/or the ESL Regulations. To protect nesting birds, vegetation clearing for the subdivision project and future extension of Airway Road shall take place outside the general avian breeding season (which generally occurs from February 1 through September 15). See Section 7.1, *Biological Resources Protection...Avian Protection*, Subsection I.E, *Avian Protection Requirements*, for more details.



7.3 MITIGATION FOR INDIRECT IMPACTS

7.3.1 <u>Mitigation for Indirect Impacts Associated with MHPA Land Use Adjacency and</u> <u>Raptor Nesting</u>

Mitigation Measure LU-2 from the FEIR requires that projects adjacent to the MHPA comply with the Land Use Adjacency Guidelines of the MSCP. Therefore, to mitigate for significant edge effect impacts due to grading/land development, drainage, toxics, lighting, public access, invasive plant species, and noise, the following measures shall be required. While these measures are meant to protect the MHPA, they are also required to vernal pools and road pools that support fairy shrimp and nesting raptors (potentially northern harrier and BUOW) in the MHPA.

Mitigation for drainage and toxics impacts is required for construction of the Southview East subdivision project. Mitigation for drainage and toxics is required for construction and operation of the future extension of Airway Road.

Mitigation for lighting impacts is required for construction and operation of the subdivision project and the future extension of Airway Road.

Mitigation (barriers) for public access impacts is required for the operation of the future extension of Airway Road.

Mitigation for noise, invasive plant species, grading/land development, and raptor nesting impacts is required for construction of both the subdivision project and the future extension of Airway Road.

- I. Prior to issuance of any construction permit or notice to proceed, Development Services Department /Land Development Review, and/or MSCP staff shall verify the applicant has accurately represented the project's design in or on the Construction Documents (CDs/CDs consist of Construction Plan Sets for Private Projects and Contract Specifications for Public Projects) are in conformance with the associated discretionary permit conditions and Exhibit "A," and also the City's MSCP MHPA Land Use Adjacency Guidelines. The applicant shall provide an implementing plan and include references on/in CDs of the following:
 - A. **Grading/Land Development/MHPA Boundaries**: MHPA boundaries on site and adjacent properties shall be delineated on the CDs. DSD Planning and/or MSCP staff shall ensure that all grading is included within the development footprint, specifically manufactured slopes, disturbance, and development within or adjacent to the MHPA. For projects within or adjacent to the MHPA, all manufactured slopes associated with site development shall be included within the development footprint.
 - B. **Drainage:** The use of structural and non-structural Best Management Practices, Best Available Technology, and use of sediment catchment devices downstream of paving activities shall be used to reduce potential impacts associated with construction. The Project design shall comply with the Standard Urban Stormwater



Management Plan and Municipal Stormwater Permit criteria of the State Water Resources Control Board and City.

Natural drainage patterns shall be maintained as much as possible during construction. Erosion control techniques, including the use of sandbags, hay bales, and/or installation of sediment traps, shall be used to control erosion and deter drainage during construction activities into the MHPA, vernal pools, and road pools

C. **Toxics/Project Staging Areas/Equipment Storage:** No trash, oil, parking, or other construction/development-related material/activities shall be allowed outside any approved construction limits. Provide a note in/on the CDs that states: *"All construction related activity that may have potential for leakage or intrusion shall be monitored by the Qualified Biologist/Owners Representative or Resident Engineer to ensure there is no impact to the MHPA."*

No staging/storage areas for equipment and materials shall be located within or adjacent to the MHPA, vernal pools, or road pools.

No trash, oil, parking, or other construction related activities shall be allowed outside the established limits of grading. All construction related debris shall be removed off site to an approved disposal facility.

- D. **Lighting:** Lighting within or adjacent to the MHPA shall be directed away/shielded and be subject to City Outdoor Lighting Regulations per LDC Section 142.0740.
- E. **Barriers:** New development within or adjacent to the MHPA shall be required to provide barriers (e.g., non-invasive vegetation; rocks/boulders; 6-foot high, vinyl-coated chain link or equivalent fences/walls; and/or signage) along the MHPA boundaries to direct public access to appropriate locations, reduce domestic animal predation, protect wildlife in the preserve, and provide adequate noise reduction where needed.
- F. **Invasive Plant Species:** No invasive, non-native plant species shall be introduced to the site during construction (e.g., on the undercarriages of vehicles). Vehicles and equipment brought to the site shall be washed at an appropriate off-site location/facility prior to entering the site.
- G. **Noise:** Due to the site's location adjacent to or within the MHPA where the Qualified Biologist has identified potential nesting habitat for listed avian species, construction noise that exceeds the maximum levels allowed shall be avoided during the breeding seasons for the coastal California Gnatcatcher (March 1 through August 15). If construction is proposed during the breeding season for the species, USFWS protocol surveys shall be required in order to determine species presence/absence. If protocol surveys are not conducted in suitable habitat during the breeding season for the aforementioned listed species, presence shall be assumed with implementation of noise attenuation and biological monitoring.



When applicable (i.e., habitat is occupied or if presence of the Covered Species is assumed), adequate noise reduction measures shall be incorporated as follows:

<u>COASTAL CALIFORNIA GNATCATCHER (Federally Threatened)</u> Prior to the issuance of any grading permit the City Manager (or appointed designee) shall verify that the MHPA boundaries and the following project requirements regarding the coastal California gnatcatcher are shown on the construction plans:

No clearing, grubbing, grading, or other construction activities shall occur within 500 feet of the MHPA between March 1 and August 15 (gnatcatcher breeding season) until the following requirements have been met to the satisfaction of the City Manager:

- A. A qualified biologist (possessing a valid FESA Section 10(a)(1)(A) Recovery Permit) shall survey appropriate habitat (coastal sage scrub) areas within the MHPA that lie within 500 feet of the project footprint and would be subject to construction noise levels exceeding 60 dB hourly average for the presence of the gnatcatcher. If no appropriate habitat is present then the surveys will not be required. If appropriate habitat is present, gnatcatcher surveys shall be conducted pursuant to USFWS protocol survey guidelines within the breeding season prior to commencement of any construction. If gnatcatchers are present within the MHPA, the following conditions must be met:
 - I. Between March 1 and August 15, no clearing, grubbing, or grading of occupied gnatcatcher habitat shall be permitted within the MHPA. Areas restricted from such activities shall be staked or fenced under the supervision of a qualified biologist; and
 - II. Between March 1 and August 15, no construction activities shall occur within any portion of the site where construction activities would result in noise levels exceeding 60 dB hourly average at the edge of occupied gnatcatcher habitat within the MHPA. An analysis showing that noise generated by construction activities would not exceed 60 dB hourly average at the edge of occupied habitat must be completed by a qualified acoustician (possessing current noise engineer license or registration with monitoring noise level experience with listed animal species) and approved by the City Manager at least two weeks prior to the commencement of construction activities. Prior to commencement of construction activities during the breeding season, areas restricted from such activities shall be staked or fenced under supervision of a qualified biologist; or
 - III. At least two weeks prior to commencement of construction activities and under direction of a qualified acoustician, noise attenuation measures (e.g., berms, walls) shall be implemented to ensure that noise levels resulting from construction activities will not exceed 60 dB hourly average at the edge of habitat (within the MHPA) occupied by the gnatcatcher.



Concurrent with commencement of construction activities and construction of necessary noise attenuation facilities, noise monitoring* shall be conducted at the edge of occupied habitat area within the MHPA to ensure that noise levels do not exceed 60 dB hourly average. If the noise attenuation techniques implemented are determined to be inadequate by the qualified acoustician or biologist, then the associated construction activities shall cease until such time that adequate noise attenuation is achieved or until the end of the breeding season (August 16).

- * Construction noise shall continue to be monitored at least twice weekly on varying days, or more frequently depending on the construction activity to verify that noise levels at the edge of occupied habitat within the MHPA are maintained below 60 dB hourly average or to the ambient noise level if it already exceeds 60 dB hourly average. If not, other measures shall be implemented in consultation with the biologist and the City Manager, as necessary, to reduce noise levels within occupied MHPA habitat to below 60 dB hourly average. Such measures may include but are not limited to limitations on the placement of construction equipment and the simultaneous use of equipment.
- B. If gnatcatchers are not detected within the MHPA during the protocol survey, the qualified biologist shall submit substantial evidence to the City Manager and applicable wildlife agencies which demonstrates whether or not mitigation measures such as noise walls are necessary between March 1 and August 15 as follows:
 - I. If evidence indicates high potential for gnatcatcher presence based on historical records or site conditions, Condition A.III shall be adhered to as specified above.
 - II. If evidence concludes that no impacts to this species are anticipated, no mitigation measures would be necessary.
- H. **Raptor Nesting:** Due to the potential for the northern harrier and BUOW to nest in the MHPA, a 900-foot impact avoidance area shall be maintained for any active northern harrier nest, and a 300-foot impact avoidance area shall be maintained for any active BUOW burrow in the MHPA. See Section 7.1, *Biological Resources Protection...Avian Protection*, Subsection I.E, *Avian Protection Requirements* and Section 7.2.2, *Mitigation for Direct Impacts to Sensitive Animal Species, Burrowing Owl.*





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DETENTION BASIN DESIGN REPORT

FOR

SOUTHVIEW EAST

City of San Diego TM/SDP IO No.24004729 / Project No.371807

IN

COUNTY OF SAN DIEGO

Prepared for:

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Allen P. Butcher PE 47107 EXP. 12/31/2017

F 4.0 Third Submittal

May 6, 2016

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APPENDIX

SELECTED <u>CITY OF SAN DIEGO</u> DRAINAGE DESIGN MANUAL EXCERPTS SELECTED <u>COUNTY OF SAN DIEGO</u> HYDROLOGY MANUAL EXCERPTS COUNTY OF SAN DIEGO HYDROLOGY MANUAL CHAPTER 6

SCOPE OF REPORT

The project is located in the Otay Mesa Community, which is tributary to the Tijuana River Valley (911.12). In accordance with City of San Diego (City) policy for Otay Mesa, post-development peak flow rates may not exceed pre-development conditions for storms ranging from the 2-year up to the 50-year return frequency. The purpose of this report is to document the volume of storage required to mitigate post-development runoff increases.

The project proposes to use biofiltration basins for treatment, followed by detention facilities for combined HMP control and storm attenuation. Details and calculations related to water quality treatment and HMP compliance are contained in a separate Water Quality Technical Report for the project.

The Southview East project will be an extension of the adjacent Southview development, and will remove the most easterly water quality, HMP and detention facilities in the Southview development. Similar to the Southview development, the Southview East project is split north and south of Airway, with drainage facilities for each side of the street.

The Southview East development located north of Airway, will construct replacement basins (treatment and HMP/Detention basins in series) for both projects immediately east of the development limits, for the entire area north of Airway Road.. The Southview East area, located south of Airway Road, will remove only the most easterly water quality facility and provide a replacement biofiltration basin along with a HMP/detention tank.

Since the proposed development will remove the existing detention facilities, the postdevelopment peak flow rates will be compared to existing tributary areas of the same size.

EXISTING SITE

The existing site is situated in the eastern portion the Otay Mesa Community Plan of the City of San Diego, located approximately 1.5 miles east of the Interstate 805 Freeway, 1 mile west of Brown Field Airport, and 1 mile north of the Mexico International Border. The site is located east of the intersection of Caliente Avenue and Airway Road.

Although the site is undeveloped, past disturbances include dirt trails. Runoff from the site is trends southwest to northeast. All of the site runoff is tributary to the canyon located east of the site, then southerly toward the Tijuana River. Topography is mild with slopes ranging from 1% up to 5%. Vegetation is primarily long grasses in poor condition. Surficial soils are finely grained and include some clay. Infiltration rates are expected to be poor, consistent with Type D soils.

See Map Pocket # 1 for a Drainage Map of the Existing Condition
PROJECT DESCRIPTION

The Southview East project is approximately 8 acres, split north and south of Airway Road. Product type is Residential / Multifamily with private drives. Post development drainage patterns will generally continue the west to east trend. Discharge will be at 2 primary locations, north of Airway, and near the southeastern development limits.

The Southview East project will remove the Southview Lot 1 combination basin (biofiltration, HMP mitigation and detention basin located north of Airway Road), and the most easterly Southview Lot 2 combination basin.

<u>A Site Exhibit depicting the development plan, street patterns, storm drain systems and combination/detention basin locations is provided in Map Pocket #2.</u>

RATIONAL METHOD HYDROLOGY -

In accordance with the <u>City</u> of San Diego Drainage Manual, the rational method was used to estimate peak flow rates for the current conditions. Selected City of San Diego Drainage Design Manual excerpts may be found in the Appendix.

Rational Method Runoff Coefficients for un-developed conditions are not provided in Table 2. A runoff coefficient of 0.40 was selected for the pre-development condition. The existing conditions are disturbed, runoff patterns are generally sheet flow, with average flow lengths in excess of 500 feet, and land slopes slightly greater than 1%. These conditions are more closely related to urban conditions rather than "natural watershed". Based upon the Urban Area Overland Time of Concentration Nomograph, these times of concentration are as follows;

Basin	North (including Lot 1)	South
Overland Distance (ft.)	1,050	600
C factor	0.4	0.4
Slope (%)	2	3
Time of Concentration (min)	32.4	21.4

The peak rainfall intensity is then estimated from the Rainfall IDF Curve, which yields the following runoff estimates;

North + Lot 1 Existing

Tc=32.4 min C=0.4 Area=11.99 ac

Frequency	City - Intensity	Peak Discharge
(year)	(in/hr)	(cfs)
2	0.93	4.44
5	1.19	5.69
10	1.40	6.71
25	1.66	8.15
50	1.82	8.75
100	1.95	9.35

South Existing

Tc=21.4 min C=0.4 Area=5.33 ac

Frequency	City - Intensity	Peak Discharge
(year)	(in/hr)	(cfs)
2	1.09	2.33
	1.40	2.99
10	1.65	3.52
25	1.96	4.18
50	2.15	4.59
100	2.30	4.90

Post Development (City)

The post development drainage patterns will maintain the general west-to-east trend. The post development imperviousness of 66% indicates a C-factor of 0.75. The areas tributary to the northerly basin include undeveloped areas northwest of Southview (overland flow path) and gutter flows from Caliente (north of the Airway intersection) leading to a much longer time of concentration. The detailed hydraulic calculations for storm drain design in Southview Lot 1 estimated the time of concentration at 17.5 minutes. The development intensity for multifamily residential results in short overland flow lengths, with longer travel distances in gutters and pipe segments. In order to provide conservative peak flow estimates for the preliminary phase, a minimum time of concentration of 5 minutes was used for the Southerly development areas. A peak flow comparison is summarized below;

101 m + 101 I - 1000 m + 10000 m + 1000 m + 1000 m + 10000 m + 100000 m + 100000 m + 1000000 m + 100000000000000000000000000000000000	North + Lot I - Developed	1c=1/.5 mm	C=0.75	Area=11.99	ac
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Frequency (year)	City -Intensity (in/hr)	Peak Discharge (cfs)	Pre-Development (cfs)
2	1.35	12.14	4.44
5	1.65	14.84	5.69
10	1.95	17.54	6.71
25	2.30	20.68	8.15
50	2.50	22.48	8.75
100	2.76	24.82	9.35

South - Developed

Tc=5.0 min C=0.75 Area=5.33 ac

Frequency	Intensity	Peak Discharge	Pre-Development
(year)	(in/hr)	(cfs)	(cfs)
2	2.23	8.93	2.33
5	2.86	11.44	2.99
10	3.37	13.49	3.52
25	4.00	16.00	4.18
50	4.40	17.58	4.59
100	4.70	18.79	4.90

As expected, the comparison confirms significant peak flow increases over pre-development conditions. <u>Rational Method calculations (City) are provided in Exhibit A</u>

RATIONAL METHOD HYDROGRAPH METHODOLOGY

The City of San Diego Drainage Design Manual provides for peak runoff rates for small drainage basins using a Rational Method. The procedure is based upon the City of San Diego Intensity-Duration-Frequency (IDF) Nomograph to determine peak rainfall intensity using a time of concentration (event duration).

In order to model the effects of a detention basin, a runoff time series must be available. The <u>County</u> of San Diego Hydrology Manual includes a similar Rational Method, but also includes a procedure to develop a time based runoff series. The methodology assumes a simple triangular hydrograph, the 6-hour rainfall total, and Rational Method input variables. The methodology provides runoff values at time intervals equal to multiples of the time of concentration. Details related to the procedure to develop the hydrograph are provided in Chapter 6 of the County of San Diego Hydrology Manual (See Appendix).

Peak flow rates for the post-development interim conditions were calculated using the <u>County</u> Rational Method, with an estimated time of concentration, and runoff coefficients identical to the City calculations. <u>See Exhibit B for County Rational Method calculations</u>.

Frequency	County _ Intensity	Peak Discharge	Pre-Development
(year)	(in/hr)	(cfs)	(cfs)
2	1.10	9.85	3.60
5	1.50	13.48	4.92
10	1.73	15.56	5.68
25	1.90	17.11	6.25
50	2.08	18.67	6.81
100	2.31	20.74	7.57

North + Lot 1 - Developed Tc=18 min C=0.75 Area=11.99 ac

South Developed

Tc=5 min C=0.75 Area=5.33 ac

Frequency	County-Intensity	Peak Discharge	Pre-Development
(year)	(in/hr)	(cfs)	(cfs)
2	2.50	10.01	1.83
5	3.43	13.69	2.50
10	3.95	15.80	2.89
25	4.35	17.38	3.17
50	4.74	18.96	3.46
100	5.27	21.06	3.85

Using the County peak flow rates, post development hydrographs were developed.

A copy of the hydrographs for the 2, 5, 10, 25, 50 and 100-year storms are provided in Exhibit B.

DETENTION BASINS -

For purposes of detention basin routing, the attenuation effects of the biofiltration basins are ignored. The detention model will be based upon the HMP controls and volumes. The north basin volumes include the upper volume of the adjacent biofiltration basin. Elevation-storagedischarge rating tables were prepared using the incremental volumes and corresponding outflows. Discharge values for the basins were estimated using standard weir and orifice flow equations. An iterative process was utilized to determine the number, size and elevation of the discharge control openings. The detention basins were modeled using the following data;

North Detention Storage (includes part of Biofiltration) = 2.58 ac-ft.

Elevation	Description	Opening Size	Comment
510.5	Bottom of Basin	3.5"	Lower Drain
515.0	Biofiltration	Spillway entry	
515.0	Rectangular Weir	48" wide x 6"high	Upper Drain
515.5	Grated Top of Structure	12" Round Grate	Overflow
516.0	Top of Detention Basin		Earth Berm

South Detention Storage (Tank only) = 0.48 ac-ft.

Elevation	Description	Opening Size	Comment
512.0	Bottom of Tank	34' x 110'	5.5' tall
512.0	Round Opening	3.5"	Lower Drain
516.0	Weir – Vertical Slot	4" wide x 18" tall	Upper Drain
517.5	Top of Tank	,,	

The Storage Indication Tables for the basins are provided in Exhibits C and D, respectively.

DETENTION ANALYSES

The range of storm hydrographs were routed through the detention basins, including the 2-, 5-, 10-, 25-, 50- and 100-year events. A review of the results indicates that the combined composite basins will attenuate post-development peak flow rates to less than pre-development levels.

Frequency	Post	Pre-	Basin
(year)	Development	Development	Outflow
	(cfs)	(cfs)	(cfs)
2	9.85	3.60	0.43
5	13.48	4.92	0.51
10	15.56	5.68	0.54
25	17.11	6.25	0.58
50	18.67	6.81	0.60
	20.74	- 7.57 - 1	0.63

Peak Basin Outflow - North

<u> Peak Basin Outflow – South</u>

Frequency	Post	Pre-	Basin
(year)	Development	Development	Outflow
	(cfs)	(cfs)	(cfs)
2	10.01	1.83	0.19
5	13.69	2.50	0.23
10	15.80	2.89	0.50
25	17.38	3.17	0.85
50	18.96	3.46	1.14.
100	21.06	3.85	1.80

The 100-year storage depth for the North basin is 3.3 feet of the 5.5 feet maximum basin depth. The 100-year storage depth for the South basin is 5.3 feet of the 5.5 feet maximum tank height.

Summary results are provided in Exhibit E, with individual basins detailed in Exhibits F &G.

DRAIN TIME CALCULATION

The design procedure for storm drain facilities includes a recommended maximum drain time of 96 hours to avoid vector concerns. The time series for the 10-year analyses were extended to verify the drain time.

The basin storage volumes are based upon the combination of the above and below grade volumes. Since the below grade volumes are inaccessible void spaces, the water surface must be below the surface of the bio-retention basin in order to demonstrate compliance. The following is a summary of the 10-year time to drain for the basins;

10-year	Storage Depth	Time
drain time	(feet)	(hrs)
North Basin	3.0	60.9
South Tank	4.4	47.0

Drain time simulations for the 10-year storms are provided in Exhibit H.

CONCLUSION

This study and the calculations presented herein demonstrate the adequacy of the bioretention basins to attenuate post-development peak flow rates for the applicable range of storms, including the 2-, 5-, 10-, 25-, 50- and 100-year events.

EXHIBIT A

RATIONAL METHOD CALCULATIONS

CITY OF SAN DIEGO

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Southview East - North

5/06/2016

Pre-Development Condition

Rational Method Calculations

City of San Diego Drainage Manual

E-North (SV East + Lot 1 SV)

A =	11.99 ac
Lo =	1050 ft
C =	0.4 Table 2
S =	2 %
Tc =	32.4 min

Storm (year)	Intensity (in/hr)	Q (cfs)			
2 5	0.93 - 1.19	- 4.44			
10	1.40	6.71			
25	1.70	8.15			
50	1.82	8.75			
100	1.95	9.35			

Southview East - North

5/06/2016

Post Development Condition

Rational Method Calculations

City of San Diego Drainage Manual

North (SV East + Lot 1 SV)

A = C =	11.99 a 0.75 l	67%	
Tc =	17.5 r	nin	
Storm (year)	Intensity (in/hr)	Q (cfs)	
2 5 	1.35 1.65 - 1.95 2.30 2.50 2.76	12.14 14.84 - 17.54 20.68 22.48 24.82	

Southview East

Pre-Development Condition

Rational Method Calculations

City of San Diego Drainage Manual

E-South					
A = Lo =	5.33 600	ac ft			
C =	0.4	Table 2			
Tc =	3 21.4	min			
Storm (year)	Intensity (in/hr)	Q (cfs)			
2	- 1.09	2.33			
5	1.40	2.99			
10	1.65	3.52			
25	1.96	4.18			
50	2.15	4.59			
100	2.3	4.90			

Southview East

Post Development Condition

Rational Method Calculations

City of San Diego Drainage Manual

Southvew East - Southern A = 5.33 ac C = 0.75 Imperv = 67% Tc = 5.0 min Storm Intensity Q (year) (in/hr) (cfs) 2 2.23 8.93 -2.86 - - 11.44 10 3.37 13.49 25 4.00 16.00 50 4.40 17.58 100 4.70 18.79

EXHIBIT B

RATIONAL METHOD HYDROGRAPHS

COUNTY OF SAN DIEGO

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South SV E Nor	view Ea th + SV Lot	st - North 1 + Airway/Calie	nte	Final Design 5/06/2016					
Rational I	Method Unit	Hydrograph	6	Ultimate 6 hr Storm					
County of San Diego Hydrology Manual - Ch 6 SV E North + SV Lot 1									
Area C Tc=	11.99 ac 0.75 17.5	Imperv 67%	P6 Storm	0.95 i 2 y	n year	P24	1.46		
Tc= Qpeak =	18 minu 9.85 cfs	utes	l= Vol	1.10 i 31,011	n/hr	7.44 P6	Tc ^-0.645		
N=	21 Num	ber of Precipitati	on Blocks	30,935 (76) -0.24%	0.713				

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Southview East - North

SV E North + SV Lot 1 + Airway/Caliente

Qn = 60 C A Pn/Tc Pt(n) = 0.124 P6 (n Tc)^0.355 Pn = Pt(n) - Pt(n-1)

County of San Diego - Rational Method Hydrograph Procedure

N	Pt(n)	Pn	Q(n)	Q(n)
1	0.22	0.00	0.05	0.05
	0.33	0.33	9.85	9.85
2	0.42	0.09	2.75	2.75
3	0.49	0.07	1.95	1.95
4	0.54	0.05	1.56	1.56
5	0.58	0.04	1.33	1.33
6	0.62	0.04	1.17	1.17
7	0.66	0.03	1.05	1.05
8	0.69	0.03	0.95	0.95
9	0.72	0.03	0.88	0.88
10	0.74	0.03	0.82	0.82
11	0.77	0.03	0.77	0.77
12	0.79	0.02	0.72	0.72
13	0.82	0.02	0.69	0.69
14	0.84	0.02	0.65	0.65
15	0.86	0.02	0.62	0.62
16	0.88	0.02	0.60	0.60
17 -	- 0.90 -	-0:02	0.57	0.57
18	0.92	0.02	0.55	0.55
19	0.93	0.02	0.53	0.53
20	0.95	0.02	0.51	0.51
21	0.97	0.02	0.50	0.50

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Q(n)	N	Time	Time	Qn	Ν	Time	Time	Qn	
		(min)	(hrs)	(cfs)		(min)	(hrs)	(cfs)	
9.85				• •		,	(()	
2.75	1	258	4.30	9.85	4	276	4.60	1.56	
1.95	2	240	4.00	2.75	7	294	4.90	1.05	
1.56	3	222	3.70	1.95	10	312	5.20	0.82	
1.33	5	204	3.40	1.33	13	330	5.50	0.69	
1.17	6	186	3.10	1.17	16	348	5.80	0.60	
1.05	8	168	2.80	0.95	19	366	6.10	0.53	
0.95	9	150	2.50	0.88	22	384	6.40	0.00	
0.88	11	132	2.20	0.77					
0.82	12	114	1.90	0.72					
0.77	14	96	1.60	0.65					
0.72	15	78	1.30	0.62					
0.69	17	60	1.00	0.57					
0.65	18	42	0.70	0.55					
0.62	20	24	0,40	0.51					
0.60	21	6	0.10	0.50					
0.57									
0.55									
0.53									

Southview East - North SV E North + SV Lot 1 + Airway/Caliente

Final Design Ultimate

5/06/2016

Post Development Hydrographs - 6 Hour Rational Method

Time (min)	Qn (cfs)	Time (min)	Time (hrs)	9.85 2 Year Qn (cfs)	Vol (cf)	Ratio X/2 P6 Pre-Deve Peak Return /Year Time (hrs)	0.95 3.60 9.85 2 Q(n)	1.37 1.30 4.92 13.48 5 Q(n)	1.58 1.50 5.68 15.56 10 Q(n)	1.74 1.65 6.25 17.11 25 Q(n)	1.89 1.80 6.81 18.67 50 Q(n)	2.11 2.00 7.57 20.74 100 Q(n)
18	0.499	0	0.00	0.000	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00
36	0.515	18	0.30	0.499	135	0.08	0.50	0.68	0.79	0.87	0.00	1.05
54	0.552	36	0.60	0.515	547	0.17	0.51	0.70	0.81	0.89	0.98	1.00
72	0.574	54	0.90	0.552	576	0.25	0.55	0.76	0.87	0.96	1.05	1 16
90	0.623	72	1.20	0.574	608	0.33	0.57	0.78	0.91	1.00	1.09	1.21
108	0.653	90	1.50	0.623	646	0.42	0.62	0.85	0.98	1.08	1.18	1.31
126	0.724	108	1.80	0.653	689	0.50	0.65	0.89	1.03	1.13	1.24	1.37
144	0.768	126	2.10	0.724	743	0.58	0.72	0.99	1.14	1.26	1.37	1.52
162	0.880	144	2.40	0.768	806	0.67	0.77	1.05	1.21	1.33	1.45	1.62
180	0.954	162	2.70	0.880	890	0.75	0.88	1.20	1,39	1.53	1.67	1.85
198	1.166	180	3.00	0.954	991	0.83	0.95	1.31	1.51	1.66	1.81	2.01
216	1.329	198	3.30	1.166	1,145	0.92	1.17	1.60	1.84	2.03	2.21	2.46
234	1.951	216	3.60	1.329	1,347	1.00	1.33	1.82	2.10	2.31	2.52	2.80
252	2.749	234	3.90	1.951	1,771	1.08	1.95	2.67	3.08	3.39	3.70	4.11
270 -	9.852	-252	- 4:20 -	2.749	-2,538	1.17	2.75	3.76	4.34	4.77	5.21	5.79
288	1.565	270	4.50	9.852	6,804	1.25	9.85	13.48	15.56	17.11	18.67	20.74
306	1.047	288	4.80	1.565	6,165	1.33	1.56	2.14	2.47	2.72	2.96	3.29
324	0.819	306	5.10	1.047	1,410	1.42	1.05	1.43	1.65	1.82	1.98	2.20
342	0.686	324	5.40	0.819	1,008	1.50	0.82	1.12	1.29	1.42	1.55	1.72
360	0.597	342	5.70	0.686	813	1.58	0.69	0.94	1.08	1.19	1.30	1.44
378	0.533	360	6.00	0.597	693	1.67	0.60	0.82	0.94	1.04	1.13	1.26
		378	6.30	0.533	610	1.75	0.53	0.73	0.84	0.93	1.01	1.12

Southview East

Final Design 5/6/2016

South Basin

Rational Method Unit Hydrograph	6 hr Storm
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County of San Diego Hydrology Manual - Chapter 6

Area	5.33 ac	P6	0.95	in	P24	1.46
С	0.75	Storm	2	year		
Tc=	5			•		
Tc=	5 min	=	2.50	in/hr	7.44 P6 Tc	^-0.645
Qpeak =	10.01 cfs	Vol	13,785			01010
N=	72 Number of Precipitatio	n Blocks	13,959 174 1.26%	0.7125		

Qn = 60 C A Pn/Tc

Pt(n) = 0.124 P6 (n Tc)^0.355

Pn = Pt(n) - Pt(n-1)

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Southview East

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County of San Diego Rational Method Hydrographs

Ν	Pt(n)	Pn	Q(n)	Q(n)	Ν	Time (min)	Time (hrs)	Qn (cfs)	N	Time (min)	Time (hrs)	Qn (cfs)	N	Time (hrs)	Qn (cfs)
1	0.21	0.21	10.01	10.01							. ,			((112)
2	0.27	0.06	2.79	2.79	1	245	4.08	10.01	4	250	4.17	1.59	72	5	0.226
3	0.31	0.04	1.98	1.98	2	240	4.00	2.79	7	255	4.25	1.06	71	10	0.228
4	0.34	0.03	1.59	1.59	-3	235	3.92	1.98	10	260	4.33	0.83	69	15	0.233
5	0.37	0.03	1.35	1.35	5	230	3.83	1.35	13	265	4.42	0.70	68	20	0.235
6	0.39	0.02	1.18	1.18	6	225	3.75	1.18	16	270	4.50	0.61	66	25	0.239
7	0.42	0.02	1.06	1.06	8	220	3.67	0.97	19	275	4.58	0.54	65	30	0.242
8	0.44	0.02	0.97	0.97	9	215	3.58	0.89	22	280	4.67	0.49	63	35	0.247
9	0.46	0.02	0.89	0.89	11	210	3.50	0.78	25	285	4.75	0.45	62	40	0.249
10	0.47	0.02	0.83	0.83	12	205	3.42	0.74	28	290	4.83	0.42	60	45	0.255
10	0.49	0.02	0.78	0.78	14	200	3,33	0.66	31	295	4.92	0.39	59	50	0.257
13	0.50	0.02	0.74	0.74	15	195	3.25	0.63	34	300	5.00	0.37	57	55	0.263
14	0.52	0.01	0.70	0.70	17	190	3.17	0.58	37	305	5.08	0.35	56	60	0.266
15	0.55	0.01	0.00	0.00	10	100	3.08	0.56	40	310	5.17	0.33	54	65	0.273
16	0.56	0.01	0.60	0.60	20	175	2.00	0.52	43	315	5.25	0.32	53	70	0.276
17	0.57	0.01	0.58	0.58	23	170	2.82	0.01	40	320	5.33	0.30	51	75	0.283
18	0.58	0.01	0.56	0.56	24	165	2.05	0.46	49	320	0.4Z	0.29	50	80	0.287
19	0.59	0.01	0.54	0.54	26	160	2.67	0.44	55	335	5.58	0.20	48	00	0.294
20	0.60	0.01	0.52	0.52	27	155	2.58	0.43	58	340	5.67	0.27	47	90	0.299
21	0.61	0.01	0.51	0.51	29	150	2.50	0.41	61	345	5 75	0.20	40	100	0.307
22	0.62	0.01	0.49	0.49	30	145	2.42	0.40	64	350	5.83	0.24	42	105	0.321
23-	- 0.63	- 0.01	- 0.48	- 0.48 -	32	- 140	- 2.33 -	0.38	67	355	5.92	0.24	41	110	0.326
24	0.64	0.01	0.46	0.46	33	135	2.25	0.38	70	360	6.00	0.23	39	115	0.337
25	0.65	0.01	0.45	0.45	35	130	2.17	0.36	73	365	6.08	0.23	38	120	0.343
26	0.66	0.01	0.44	0.44	36	125	2.08	0.36					36	125	0.355
27	0.67	0.01	0.43	0.43	38	120	2.00	0.34					35	130	0.362
28	0.68	0.01	0.42	0.42	39	115	1.92	0.34					33	135	0.376
29	0.69	0.01	0.41	0.41	41	110	1.83	0.33					32	140	0.384
30	0.70	0.01	0.40	0.40	42	105	1.75	0.32					30	145	0.400
32	0.71	0.01	0.39	0.39	44	100	1.67	0.31					29	150	0.409
33	0.72	0.01	0.30	0.30	40	95	1.58	0.31					27	155	0.429
34	0.73	0.01	0.37	0.37	47	85	1.00	0.30					26	160	0.440
35	0.74	0.01	0.36	0.36	50	80	1.33	0.29					24	165	0.464
36	0.74	0.01	0.36	0.36	51	.75	1.25	0.28					23	170	0.477
37	0.75	0.01	0.35	0.35	53	70	1.17	0.28					20	1/0	0.506
38	0.76	0.01	0.34	0.34	54	65	1.08	0.27					18	185	0.525
39	0.77	0.01	0.34	0.34	56	60	1.00	0.27					17	190	0.501
40	0.77	0.01	0.33	0.33	57	55	0.92	0.26					15	195	0.633
41	0.78	0.01	0.33	0.33	59	50	0.83	0.26					14	200	0.663
42	0.79	0.01	0.32	0.32	60	45	0.75	0.25					12	205	0,735
43	0.79	0.01	0.32	0.32	62	40	0.67	0.25					11	210	0.780
44	0.80	0.01	0.31	0.31	63	35	0.58	0.25					9	215	0.894
40	0.01	0.01	0.31	0.31	65	30	0.50	0.24					8	220	0.969
40	0.01	0.01	0.30	0.30	00	20	0.42	0.24					6	225	1.185
48	0.82	0.01	0.29	0.00	60	15	0.33	0.23					5	230	1.349
49	0.83	0.01	0.29	0.29	71	10	0.20	0.23					3	235	1.981
50	0.84	0.01	0.29	0.29	72	.5.	0.08	0.23					2	240	2.791
51	0.84	0.01	0.28	0.28		•	0,00	0.20					4	240 250	1 620
52	0.85	0,01	0.28	0,28									7	255	1.000
53	0.85	0.01	0.28	0.28									10	260	0.832
54	0.86	0.01	0.27	0.27									13	265	0.697
55	0.87	0.01	0.27	0.27									16	270	0.606
56	0.87	0.01	0.27	0.27									19	275	0.541
50	0.88	0.01	0.26	0.26									22	280	0.491
00 50	0.88	0.01	0.26	0.26									25	285	0.451
60	0.89	0.01	0.20	0.26									28	290	0.419
61	0.09	0.01	0.20	0.20									31	295	0.392
62	0.90	0.01	0.20	0.20									34	300	0.369
63	0.91	0.01	0.25	0.25									37	305	0.349
64	0,91	0.01	0.24	0.24									40	310	0.332
65	0.92	0.01	0.24	0.24									43 16	315	0.316
66	0.92	0.00	0.24	0.24									40 ⊿0	320	0.303
67	0.93	0.00	0.24	0.24									52	330	0.270
68	0.93	0.00	0.23	0.23									55	335	0.269
69	0.94	0.00	0.23	0.23									58	340	0.260
70	0.94	0.00	0.23	0.23									61	345	0.252
71	0.95	0.00	0.23	0.23									64	350	0.244
72	0.95	0.00	0.23	0.23									67	355	0.237
		0.05											70	360	0.230
		0.00											73	365	0.226

Southview	
South Basin	

5/6/2016

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Final Design

Post Development Hydrographs - 6 Hour Rational Method (County)

Time (min)	Time (hrs)	10.01 2 Year Qn (cfs)	Vol (cf)	Intensity Ratio X/2 P6 Pre-Deve Peak Return /Year Time (hrs)	2.50 0.95 1.83 10.01 2 Q(n)	3.43 1.37 2.50 13.69 5 Q(n)	3.95 1.58 1.50 2.89 15.80 10 Q(n)	4.35 1.74 1.65 3.17 17.38 25 Q(n)	4.74 1.89 1.80 3.46 18.96 50 Q(n)	5.27 2.11 2.00 3.85 21.06 100 Q(n)	
0	0.00	0.000	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
5 10	0.08	0.226	34 68	0.08	0.23	0.31	0.36	0.39	0.43	0.48	
15	0.25	0.233	69	0.25	0.23	0.32	0.37	0.40	0.43	0.48	
20	0.33	0.235	70	0.33	0.23	0.32	0.37	0.41	0.44	0.49	
20 30	0.42	0.239	71	0.42	0.24	0.33	0.38	0.42	0.45	0.50	
35	0.58	0.247	73	0.58	0.25	0.34	0.38	0.42	0.46	0.51	
40	0.67	0.249	74	0.67	0.25	0.34	0.39	0.43	0.47	0.52	
50	0.83	0.255	76	0.75	0.25	0.35	0.40	0.44	0.48	0.54	
55	0,92	0.263	78	0.92	0.26	0.36	0.42	0.46	0.50	0.54	
60 65	1.00	0.266	79	1.00	0.27	0.36	0.42	0.46	0.50	0.56	
70	1.17	0.276	82	1.17	0.27	0.37	0.43	0.47	0.52	0.57	
75	1.25	0.283	84	1.25	0.28	0.39	0.45	0.49	0.54	0.60	
85	1.33	0.207	85	1.33	0.29	0.39	0.45	0.50	0.54	0.60	
90	1.50	0.299	89	1.50	0.30	0.41	0.40	0.52	0.56	0.62	
95 100	1.58	0.307	91	1.58	0.31	0.42	0.48	0.53	0.58	0.65	
105	1.75	0.321	93 . 95	1.75	0.32	0.43	0.49 0.51		0.59	0.66 -	
110	1.83	0.326	97	1.83	0.33	0.45	0.52	0.57	0.62	0.69	
120	2.00	0.343	100	1.92	0.34	0.46	0.53	0.59	0.64	0.71	
125	2.08	0.355	105	2.08	0.36	0.49	0.56	0.62	0.65	0.72	
130 135	2.17	0.362	108	2.17	0.36	0.50	0.57	0.63	0.69	0.76	
140	2.33	0.384	114	2.23	0.38	0.51	0.69	0.65	0.71	0.79 0.81	
145 150	2.42	0.400	118	2.42	0.40	0.55	0.63	0.70	0.76	0.84	
155	2.58	0.409	121	2.50	0.41	0.56	0.65	0.71	0.78	0.86	
160	2.67	0.440	130	2.67	0.44	0.60	0.69	0.76	0.83	0.93	
165 170	2.75	0.464	136	2.75	0.46	0.63	0.73	0.81	0.88	0,98	
175	2.92	0.506	147	2.92	0.48	0.65	0.75	0.83	0.90	1.00	
180	3.00	0.523	154	3.00	0.52	0.72	0.83	0.91	0.99	1.10	
190	3.08	0.561	163 171	3.08	0.56	0.77	0.89	0.97	1.06	1.18	
195	3.25	0.633	182	3.25	0.63	0.87	1.00	1.10	1.10	1.23	
200 205	3.33	0.663	194	3.33	0.66	0.91	1.05	1.15	1.26	1.40	
210	3.50	0.780	227	3.42	0.74	1.01	1.16	1.28	1.39 1.48	1.55 1.64	
215	3.58	0.894	251	3.58	0.89	1.22	1.41	1.55	1.69	1.88	
225	3.07	1.185	323	3.67	0.97	1.33	1.53 1.87	1.68	1.84	2.04	
230	3.83	1.349	380	3.83	1.35	1.85	2.13	2.34	2.56	2.49	
235 240	3.92 4.00	1.981	500 716	3.92	1.98	2.71	3.13	3.44	3.75	4.17	
245	4.08	10.006	1,920	4.08	10.01	13.69	15.80	4.65	5.∠9 18.96	5.88 21.06	
250 255	4.17	1.589	1,739	4.17	1.59	2.17	2.51	2.76	3.01	3.35	
260	4.33	0.832	284	4.33	0.83	1.45	1.68	1.85 1.44	2.01 1.58	2.24	
265	4.42	0.697	229	4.42	0.70	0.95	1.10	1.21	1.32	1.47	
275	4.50 4.58	0.606	195 172	4.50 4.58	0.61	0.83	0.96	1.05	1.15	1.28	
280	4.67	0.491	155	4.67	0.49	0.67	0.00	0.94	0.93	1.14	
285	4.75	0.451	141	4.75	0.45	0.62	0.71	0.78	0.86	0.95	
295	4.92	0.392	122	4.83	0.42	0.57	0.66	0.73	0.79	0.88	
300	5.00	0.369	114	5.00	0.37	0.50	0.58	0,64	0.70	0.78	
305	5.08 5.17	0.349	108 102	5.08 5.17	0.35	0.48	0.55	0.61	0.66	0.73	
315	5.25	0.316	97	5.25	0.32	0.43	0.50	0.55	0.60	0.70	
320 325	5.33 5.42	0.303	93 80	5.33 5.42	0.30	0.41	0.48	0.53	0.57	0.64	
330	5.50	0.279	86	5.50	0.28	0.40	0.40	0.50	0.55	0.61 0.59	
335	5.58	0.269	82	5.58	0,27	0.37	0.43	0.47	0.51	0.57	
340 345	5.75	0.260	79 77	5.67 5.75	0.26 0.25	0.36	0.41 0.40	0.45	0.49	0.55	
350	5.83	0.244	74	5.83	0.24	0.33	0.39	0.42	0.46	0.53	
355 360	5.92 6.00	0.237	72 70	5.92	0.24	0.32	0.37	0.41	0.45	0.50	
365	6.08	0.226	68	6.08	0.23	0.32	0.36	0.40	0.44	0.48 0.48	

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EXHIBIT C

NORTH BASIN

STORAGE INDCATION TABLES & RATING CURVES

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SV East ~ North Detention Basin								3.5		4 60		
			Base	510,5		0	cf		Subdrain	Round	Notch	Overflow
			Тор	516.00		112,400	cf	2.580355	3.5		6	60
		Storage	@ Overflow	515.50		96,180	cf				48	Round
Basin S	torage Vo	lumes		116.86%		dT=	18		510.50		515	515.50
DEDTU			<u>.</u>		Effective				Subdrain			
	ELEV		Storage	(ater Qual	STORAGE	2S/dT	2S/dT +	O OUTFLOW	#1	#2	#3	Overflow
	540.50	(5F)	(CF)		(CF)	(CFS)	(CFS)	(CFS)	(CFS)	(CFS)	(CFS)	(CFS)
0.00	510.50	14,920	4 400		0	0.00	0.00	0.0000	0.0000			
0.10	510.00	15 165	3,008		1,498	2.11	2.80	0.0249	0.0249			
0.20	510.80	15,105	1 531		3,008	0.57	5.64	0.0704	0.0704			
0.40	510.90	15 410	6,066		4,001	0,09	0.02	0.1294	0.1294			
0.50	511.00	15.532	7.613		7.613	14 10	14.31	0.1765	0.1763			
0.60	511.10	15,654	9,172		9,172	16.99	17 22	0.2384	0.2100			
0.70	511.20	15,777	10,744		10,744	19.90	20.16	0.2633	0.2633			
0.80	511.30	15,899	12,328		12,328	22.83	23.12	0.2861	0.2861			
0.90	511.40	16,022	13,924		13,924	25.78	26.09	0.3072	0.3072			
1.00	511.50	16,144	15,532		15,532	28.76	29.09	0.3269	0.3269			
1.10	511.60	16,270	17,153		17,153	31.76	32.11	0.3455	0.3455			
1.20	511.70	16,397	18,786		18,786	34.79	35.15	0.3632	0.3632			
1.30	511.80	16,523	20,432		20,432	37.84	38.22	0.3800	0.3800			
1.40	511.90	16,650	22,091		22,091	40.91	41.30	0.3961	0.3961			
1.50	512.00	16,776	23,762		23,762	44.00	44.42	0.4116	0.4116			
1.00	512.10	17,902	25,446		25,446	47.12	47.55	0.4265	0.4265			
1.80	512.20	17,029	27,142		27,142	50.26	50.70	0.4410	0.4410			
1.90	512.30	17,100	30,574		20,002	56.62	53.88	0.4549	0.4549			
2.00	512.50	17,408	- 32.308		32 308	50.02	60.31	0.4000	0.4946			
2.10	512.60	17,537	34.055		34,055	63.07	63.56	0.4810	0.4010			
2.20	512.70	17,667	35,815		35,815	66.32	66.83	0.5070	0.4040			
2.30	512.80	17,796	37,589		37,589	69.61	70.13	0.5191	0.5191			
2.40	512,90	17,926	39,375		39,375	72.92	73.45	0.5311	0.5311			
2.50	513.00	18,055	41,174		41,174	76.25	76.79	0.5427	0.5427			
2.60	513.10	18,184	42,986		42,986	79.60	80.16	0.5541	0.5541			
2.70	513.20	18,314	44,811		44,811	82.98	83.55	0.5653	0.5653			
2.80	513.30	18,443	46,648		46,648	86.39	86.96	0.5763	0.5763			
2.90	513.40	18,573	48,499		48,499	89.81	90.40	0.5870	0.5870			
3.00	513.60	18,702	50,363 52,240		50,363	93.26	93.86	0.5976	0.5976			
3.20	513 70	18,000	5/ 130		52,240 54 120	90.74	97.35	0.6079	0.6079			
3.30	513.80	19,103	56 034		56 034	100.24	100.80	0.6182	0.6182			
3.40	513.90	19,236	57,951		57 951	107.32	104.39	0.0202	0.0282			
3.50	514.00	19,370	59,881		59.881	110.89	111.54	0.6478	0.0301			
3.60	514.10	19,503	61,825		61,825	114.49	115.15	0.6574	0.0470			
3.70	514.20	19,637	63,781		63,781	118.11	118.78	0.6668	0.6668			
3.80	514.30	19,770	65,752		65,752	121.76	122.44	0.6761	0.6761			
3.90	514.40	19,904	67,735		67,735	125.44	126.12	0.6853	0.6853			
4.00	514.50	20,037	69,733		69,733	129.13	129.83	0.6944	0.6944			
4.10	514.60	20,173	71,743		71,743	132.86	133.56	0.7034	0.7034			
4.20	514.70	20,309	73,767		73,767	136.61	137.32	0.7122	0.7122			
4.30	514.60	20,440	75,805		75,805	140.38	141.10	0.7209	0.7209			
4.40	514.90	20,002	77,000		77,856	144.18	144.91	0.7296	0.7296			
4.50	515.00	31 125	00,429 83 520		80,429	148.94	149.68	0.7381	0.7381			
4.70	515.20	31,376	86.654		86 654	104,00	100.43	0.7465	0.7465		0.0000	
4.80	515.30	31.627	89.804		89,804	166.30	168.26	1.1704	U.1040 0 7624		0.4216	
4.90	515.40	31,878	92,979		92,979	172.18	175 15	2 9619	0.7031		1.1920	
5.00	515.50	32,129	96,180		96,180	178,11	182.26	4,1521	0.7793		3 3728	0.0000
5.10	515.60	32,227	99,398		99,398	184.07	189.91	5.8424	0.7873		4.7136	0.3415
5.20	515.70	32,325	102,625		102,625	190.05	198.00	7,9573	0.7952		6.1962	0.9660
5.30	515.80	32,424	105,863		105,863	196.04	205.72	9.6803	0.8030		7.1027	1.7746
5.40	515.90	32,522	109,110		109,110	202.06	213.45	11.3953	0.8108		7.8523	2.7322
0.50	00.016	33,284	112,400		112,400	208.15	221.32	13.1732	0.8185		8.5363	3.8184

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EXHIBIT D

SOUTH BASIN

STORAGE INDCATION TABLES & RATING CURVES

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		Southv	view Eas	st Dete	ntion Ba	sin - So	outh					
			Floor	512.0			0 cf			Unner		
			Тор	517.5		21,11	4 cf	0.484711	Subdrain	1.5	(Round
		Storage @	Overflow	515.0		11,33	9 cf		2	0.333	(
Basin S	torage Vo	olumes		186.21%		dT	= 10		512.00	516.0	0	0.0
DEPTH			Storago	Void	OTODA OF	00/47	00/17 . 0					
(FT)		(SF)	(CF)	void	STORAGE (CE)	25/01 (CES)	2S/d + 0	OUTFLOW	#1	#2	#3	Overflow
0.00	512.00	3.910	0	0	0					(CFS)	(CFS)	(CFS)
0.10	512.10	3.910	391	10	391	1 30	1.32	0.00	0.00			
0.20	512.20	3,910	391	1.0	782	2.61	2.65	0.01	0.01			
0.30	512.30	3,910	391	1.0	1,173	3.91	3.96	0.04	0.04			
0.40	512.40	3,910	391	1.0	1,564	5.21	5.28	0.06	0.05			
0.50	512.50	3,910	391	1.0	1,955	6.52	6.59	0.07	0.00			
0,60	512.60	3,910	391	1.0	2,346	7.82	7.90	0.08	0.08			
0.70	512.70	3,910	391	1.0	2,737	9.12	9.21	0.09	0.09			
0.80	512.80	3,910	391	1.0	3,128	10.43	10.52	0.10	0.10			
0.90	512.90	3,910	391	1.0	3,519	11.73	11.83	0.10	0.10			
1.00	513.00	3,910	391	1.0	3,910	13.03	13.14	0.11	0.11			
1.10	513.10	3,910	391	1.0	4,301	14.34	14.45	0.12	0.12			
1.20	513.20	3,910	391	1.0	4,692	15.64	15.76	0.12	0.12			
1.30	513.30	3,910	391	1.0	5,083	16.94	17.07	0.13	0.13			
1.40	513.40	3,910	391	1.0	5,474	18.25	18.38	0.13	0.13			
1.50	513.50	3,910	391	1.0	5,865	19.55	19.69	0.14	0.14			
1.60	513.60	3,910	391	1.0	6,256	20.85	21.00	0.14	0.14			
1.70	513.70	3,910	391	1.0	6,647	22.16	22.30	0.15	0.15			
1.80	513.80	3,910	391	1.0	7,038	23.46	23.61	0.15	0.15			
1.90	_013.90	_3,910	_391	_1.0_	7,429 -	24.76	- 24.92	016 -	0.16			
2.00	514.00	3,910	391	1.0	7,820	26.07	26.23	0.16	0.16			
2.10	514.10	3,910	391	1.0	8,211	27.37	27.53	0.16	0.16			
2.20	514.20	3,910	201	1.0	8,602	28.67	28.84	0.17	0.17			
2.00	514.00	3,910	201	1.0	8,993	29.98	30.15	0.17	0.17			
2.50	514 50	3,910	301	1.0	9,304	31.28	31.46	0.18	0.18			
2.60	514.60	3,910	301	1.0	10 166	32.00	32.70	0.18	0.18			
2.70	514.70	3,910	391	1.0	10,100	35.09	34.07	0.18	0.18			
2.80	514.80	3,910	391	1.0	10,007	36.40	30.30	0.19	0.19			
2.90	514.90	3.910	391	1.0	11 339	37.80	37.00	0.19	0.19			
3.00	515.00	3,910	391	1.0	11,730	39.10	39 30	0.19	0.19			
3.10	515.10	3,910	391	1.0	12.121	40.40	40.60	0.20	0.20			
3.20	515.20	3,910	391	1.0	12,512	41.71	41.91	0.20	0.20			
3.30	515.30	3,910	391	1.0	12,903	43.01	43.22	0.21	0.20			
3.40	515.40	3,910	391	1.0	13,294	44.31	44.52	0.21	0.21			
3.50	515.50	3,910	391	1.0	13,685	45.62	45.83	0.21	0.21			
3.60	515.60	3,910	391	1.0	14,076	46.92	47.14	0.22	0.22			
3.70	515.70	3,910	391	1.0	14,467	48.22	48.44	0.22	0.22			
3.80	515.80	3,910	391	1.0	14,858	49.53	49.75	0.22	0.22			
3.90	515.90	3,910	391	1.0	15,249	50.83	51.06	0.23	0.23			
4.00	516.00	3,910	391	1.0	15,640	52.13	52.36	0.23	0.23	0.0000		
4.10	516.10	3,910	391	1.0	16,031	53.44	53.70	0.26	0.23	0.0327		
4.20	516.20	3,910	391	1,0	16,422	54.74	55.07	0.33	0.23	0.0924		
4.30	516.30	3,910	391	1.0	16,813	56.04	56.45	0.41	0.24	0.1698		
4.40	510.40	3,910	391	1.0	17,204	57.35	57.85	0.50	0.24	0.2614		
4.50	516.60	3,910	391	1.0	17,595	58.65	59.26	0.61	0.24	0.3653		
4.00	516 70	3,910	391	1.0	17,986	59.95	60.68	0.73	0.25	0.4802		
4 80	516.80	3,910	301	1.0	18,377	61.26	62.11	0.85	0.25	0.6052		
4 90	516.00	3,910	201	1.0	10,700	62.56	63.55	0.99	0.25	0.7394		
5.00	517.00	3 910	301 301	1.0	19,109	03.00	65.00	1.14	0.25	0.8823		
5.10	517.00	3,010	301	1.0	19,000	00.17	65.46	1.29	0.26	1.0333		
5.20	517 20	3,910	301	1.0	10,041	67 77	07.92	1.45	0.26	1.1921		
5.30	517.30	3,910	391	1.0	20,002	69.09	70 97	1.02	0.26	1.3584		
5.40	517.40	3,910	391	1.0	20,720	70.38	72 26	1.00	0.26	1.5316		
5.50	517.50	3,910	391	1.0	21.505	71.68	73.75	1.90 2.07	0.27	1./117		
					- 1,000		10.10	2.01	0.21	1.0004		



EXHIBIT E

SUMMARY OF DETENTION ANALYSES

NORTH & SOUTH BASINS

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				Allway
Tributary Area SV Lot 1 + SVE Nort Basins + Slope	h 10.2	3 ac	Final Design	5/06/2016
Offsite (West)	0.56	<u>6-Ho</u>	ur Rational Method Hy	/drograph
Total Area 1	1.99 ac			
		Ele	v Storage (cf)	Storage (ac-ft)
Btm Storage		510.	.50 0	0.00
Floor of Basin	0.00	510.	.50 0	0.00
Overflow	5.00	515.	50 96,180	2.21
Top Of Basin	5.50	516.	00 112,400	2.58
Storm Frequency	Qexist (cfs)	Qir (cfs	n Qout s) (cfs)	WSEL (ft)
2 YEAR	3.60	9.8	5 0.43	512.10
5 YEAR	4.92	13.4	18 0.51	512.70
10 YEAR	5.68	15.5	6 0.54	513.00
25 YEAR	6.25	17.1	1 0.58	513.30
50 YEAR	6.81	18.6	0.60	513.50
100 YEAR	7.57	20.7	<i>'</i> 4 0.63	513.80
Top of Detention Bas	Length (ft) in	Widt (ft)	th Area (sf)	Area (ac)
Outlet Control Structu	ire Use 4' x 4	' structure (Inside	DImension)	
Opening Elevation Width (in) Height (in)	#1 510.5 3.50 3.50	#2 0.0 0 0	#3 Not Used 48 6	Overflow - Grate 515.50
Outlet Dia Flowline Top of Structure	12 506.00 515.50	in		

1

SV East ~ North Detention Basin Airway

Southview East Detention Basin - South

Tributary Area	5.33 ac	Fina	al Design	6-May-16	
Street / Offsite	5.33 0	<u>6-Hour Ratio</u>	nal Method Hydro	graph	
Total Area	5.33 ac	Flev	Storage	Storage	
Floor of Basin		512.00	(cf)	(ac-ft) 0.00	
			, , , , , , , , , , , , , , , , , , ,		
Overflow	3.00	515.00	11,339	0.26	
Top Of Basin	5.50	517.50	21,114	0.48	
Storm Frequency	Qexist (cfs)	Qin (cfs)	Qout (cfs)	WSEL (ft)	
2 YEAR	1.83	6.40	0.19	514.90	
5 YEAR	2.50	8.76	0.23	516.00	
10 YEAR	2.89	10.10	0.50	516.40	
25 YEAR	3.17	11.11	0.85	516.70	
50 YEAR	3.46	12.12	1.14	516.90	
100 YEAR	3.85	13.47	1.80	517.30	

Opening Elevation Width (in) Height (in)	Round #1 512.0 2.00 2.00	Rect Vert Weir #2 516.0 4.0 18.0	#3 0.0 0 0	Overflow 0.00
Outlet Dia Flowline Top of Structure	18 in 512.00 0.00			

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EXHIBIT F

DETENTION BASIN STORM ROUTING

NORTH BASIN

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9.85

DETENTION BASIN ROUTING

3.60 0.43

18 Interval	Minutes T (HRS)	Q IN (CFS)	2S/dT+O	2S/dT-O (CFS)	O (CFS)	512.10 Basin WSEL
1	0.30	0.499	0.00	0.00	0.00	510.50
2	0.60	0.515	1.01	1.01	0.00	510.50
3	0.90	0.552	2.08	2.08	0.00	510.50
4	1.20	0.574	3.21	3.16	0.02	510,60
5	1.50	0.623	4.35	4.30	0.02	510.60
6	1.80	0.653	5.58	5.53	0.02	510.60
7	2.10	0.724	6.91	6.77	0.07	510.70
8	2.40	0.768	8.26	8.12	0.07	510.70
9	2.70	0.880	9.76	9.51	0.13	510.80
10	3.00	0.954	11.34	11.08	0.13	510.80
11	3.30	1.166	13.20	12.85	0.18	510.90
12.	- 3.60	- 1.329	-15.34 -	- 14.92	-0.21-	511.00
13	3.90	1.951	18.20	17.72	0.24	511.10
14	4.20	2.749	22.42	21.90	0.26	511.20
15	4.50	9.852	34.50	33.80	0.35	511.60
16	4.80	1.565	45.22	44.40	0.41	512.00
17	5.10	1.047	47.01	46.19	0.41	512.00
18	5.40	0.819	48.05	47.20	0.43	512.10
19	5.70	0.686	48.70	47.85	0.43	512.10
20	6.00	0.597	49.13	48.28	0.43	512.10
21	6.30	0.533	49.41	48.56	0.43	512.10
22	6.60	0.000	49.09	48.24	0.43	512.10
23	6.90	0.000	48.24	47.38	0.43	512.10
24	7.20	0.000	47.38	46.56	0.41	512.00
25	7.50	0.000	46.56	45.74	0.41	512.00
26	7.80	0.000	45.74	44.92	0.41	512.00
27	8.10	0.000	44.92	44.09	0.41	512.00
28	8.40	0.000	44.09	43.30	0.40	511.90
29	8.70	0.000	43.30	42.51	0.40	511.90
30	9.00	0.000	42.51	41.72	0.40	511.90
31	9.30	0.000	41.72	40.92	0.40	511.90
32	9.60	0.000	40.92	40.16	0.38	511.80
33	9.90	0.000	40.16	39.40	0.38	511.80
34	10.20	0.000	39.40	38.64	0.38	511.80
35	10.50	0.000	38.64	37.88	0.38	511.80
30 27	10,80	0.000	37.88	37.16	0.36	511.70
31 20	11.10	0.000	37.16	36.43	0.36	511.70
30 20	11.40	0.000	36.43	35.70	0.36	511.70
39 40	11.70	0.000	35.70	34.98	0.36	511.70
40	12.00	0.000	34.98	34.29	0.35	511.60

13.48

DETENTION BASIN ROUTING

4.92 0.51

		5 YEAR	EVENT	~ 6 Houi	⁻ STORM	
18 Interval	Minutes T	Q IN	2S/dT+O	2S/dT-O	ο	512.70 Basin
	(HRS)	(CFS)		(CFS)	(CFS)	WSEL
					. ,	
1	0.30	0.682	0.00	0.00	0.00	510.50
2	0.60	0.705	1.39	1.39	0.00	510.50
3	0.90	0.756	2.85	2.80	0.02	510.60
4	1.20	0.785	4.34	4.29	0.02	510.60
5	1.50	0.853	5.93	5.78	0.07	510.70
6	1.80	0.893	7.53	7.39	0.07	510.70
(2.10	0.991	9.27	9.02	0.13	510.80
8	2.40	1.051	11.06	10.80	0.13	510.80
9	2.70	1.204	13.05	12.70	0.18	510.90
10	3.00	1.306	15.21	14.79	0.21	511.00
11	3.30	1.596	17.69	17.21	0.24	511.10
- 12	- 3.60		20.63 -	- 20.10	0:26	511.20
13	3.90	2.669	24.59	24.01	0.29	511.30
14	4.20	3.761	30.44	29.79	0.33	511.50
15	4.50	13.482	47.03	46.21	0.41	512.00
16	4.80	2.141	61.83	60.87	0.48	512.50
17	5.10	1.433	64.44	63.46	0.49	512,60
18	5.40	1.121	66.01	65.02	0.49	512.60
19	5,70	0.939	67.08	66.07	0.51	512.70
20	6.00	0.817	67.82	66.81	0.51	512.70
21	6.30	0.729	68.35	67.34	0.51	512.70
22	6.60	0.000	68.07	67.05	0.51	512.70
23	6.90	0.000	67.05	66.04	0.51	512.70
24	7.20	0.000	66.04	65.05	0.49	512.60
25	7.50	0.000	65.05	64.06	0.49	512.60
26	7.80	0.000	64.06	63.07	0.49	512.60
27	8.10	0.000	63.07	62.11	0.48	512.50
28	8.40	0.000	62.11	61.15	0.48	512.50
29	8.70	0.000	61.15	60.18	0.48	512.50
30	9.00	0.000	60.18	59.25	0.47	512.40
31	9.30	0.000	59.25	58.31	0.47	512.40
32	9.60	0.000	58.31	57.37	0.47	512.40
33	9.90	0.000	57.37	56.44	0.47	512.40
34	10.20	0.000	56.44	55.53	0.45	512.30
35	10.50	0.000	55.53	54.62	0.45	512.30
36	10.80	0.000	54.62	53.71	0.45	512.30
37	11.10	0.000	53.71	52.82	0.44	512.20
38	11.40	0.000	52.82	51.94	0.44	512.20
39	11.70	0.000	51.94	51.06	0.44	512.20
40	12.00	0.000	51.06	50.18	0.44	512.20

15.56

DETENTION BASIN ROUTING

5.68 0.54

18	Minutes					512.00
Interval	Т	Q IN	2S/dT+O	28/dT-0	0	DID.00
	(HRS)	(CFS)	20/41/0	(CES)	(CES)	MCEI
		()		(0, 0)	(0/0)	VVOLL
1	0.30	0.787	0.00	0.00	0.00	510 50
2	0.60	0.813	1.60	1.60	0.00	510.50
3	0.90	0.872	3.29	3.24	0.02	510.60
4	1.20	0.906	5.01	4.96	0.02	510.60
5	1.50	0.984	6.85	6.71	0.07	510 70
6	1.80	1.031	8.73	8.47	0.13	510.80
7	2.10	1.143	10.64	10.38	0.13	510.80
8	2.40	1.212	12.74	12.38	0.18	510.90
9	2.70	1.390	14.98	14.56	0.21	511.00
10	3.00	1.507	17.46	16.98	0.24	511.10
11	3.30	1.842	20.33	19.80	0.26	511.20
-12	3.60	2.098	23.74	23.17	0.29	511.30
13	3.90	3.080	28.35	27.74	0.31	511.40
14	4.20	4.340	35.16	34.43	0.36	511.70
15	4.50	15.556	54.33	53.42	0.45	512.30
16	4.80	2.470	71.44	70.40	0.52	512.80
17	5.10	1.653	74.53	73.46	0.53	512.90
18	5.40	1.293	76.41	75.35	0.53	512.90
19	5.70	1.083	77.73	76.64	0.54	513.00
20	6.00	0.943	78.67	77.58	0.54	513.00
21	6.30	0.841	79.36	78.28	0.54	513.00
22	6.60	0.000	79.12	78.03	0.54	513.00
23	6.90	0.000	78.03	76.95	0.54	513.00
24	7.20	0.000	76.95	75.86	0.54	513.00
25	7.50	0.000	75.86	74.80	0.53	512.90
26	7.80	0.000	74.80	73.74	0.53	512.90
27	8.10	0.000	73.74	72.68	0.53	512.90
28	8.40	0.000	72.68	71.64	0.52	512.80
29	8.70	0.000	71.64	70.60	0.52	512.80
30	9.00	0.000	70.60	69.56	0.52	512.80
31	9.30	0.000	69.56	68.55	0.51	512.70
32	9.60	0.000	68.55	67.53	0.51	512.70
33	9.90	0.000	67.53	66.52	0.51	512.70
34	10.20	0.000	66.52	65.53	0.49	512.60
35	10.50	0.000	65.53	64.54	0.49	512.60
36	10.80	0.000	64.54	63.55	0.49	512.60
37	11.10	0.000	63.55	62.59	0.48	512.50
38	11.40	0.000	62.59	61.63	0.48	512.50
39	11.70	0.000	61.63	60.66	0.48	512.50
40	12.00	0.000	60.66	59.70	0.48	512.50

10

N 4 ·

DETENTION BASIN ROUTING

6.25 0.58

Interval	T (HRS)	Q IN (CFS)	2S/dT+O	2S/dT-O (CFS)	O (CFS)	513.30 Basin WSEL
1	0.30	0.866	0.00	0.00	0.00	510.50
2	0.60	0.894	1.76	1.76	0.00	510.50
3	0.90	0.959	3.61	3.56	0.02	510.60
4	1.20	0.996	5.52	5.47	0.02	510.60
5	1.50	1.083	7.55	7.41	0.07	510.70
6	1.80	1.134	9.62	9.36	0.13	510.80
7	2.10	1.258	11.76	11.40	0.18	510.90
8	2.40	1.334	13.99	13.63	0.18	510.90
9	2.70	1.529	16.50	16.08	0.21	511.00
10	3.00	1.657	19.26	18.78	0.24	511.10
11	3.30	2.026	22.47	21.94	0.26	511.20
1-2	3.60	- 2:308-	26.27 -	25:66	- 0.31	 - 511.40-
13	3.90	3.388	31.36	30.70	0.33	511.50
14	4.20	4.774	38.86	38.10	0.38	511.80
15	4.50	17.111	59.99	59.05	0.47	512.40
16	4.80	2.718	78.88	77.80	0.54	513.00
17	5.10	1.818	82.33	81.22	0.55	513.10
18	5.40	1.423	84.46	83.33	0.57	513.20
19	5.70	1.192	85.95	84.82	0.57	513.20
20	6.00	1.037	87.05	85.89	0.58	513.30
21	6.30	0.925	87.86	86.70	0.58	513.30
22	6.60	0.000	87.63	86.48	0.58	513.30
23	6.90	0.000	86.48	85.35	0.57	513.20
24	7.20	0.000	85.35	84.22	0.57	513.20
25	7.50	0.000	84.22	83.08	0.57	513.20
26	7.80	0.000	83.08	81.98	0.55	513.10
27	8.10	0.000	81.98	80.87	0.55	513.10
28	8.40	0.000	80.87	79.76	0.55	513.10
29	8.70	0.000	79.76	78.67	0.54	513.00
30	9.00	0.000	78.67	77.59	0.54	513.00
31	9.30	0.000	77.59	76.50	0.54	513.00
32	9.60	0.000	76.50	75.44	0.53	512.90
33	9.90	0.000	75.44	74.38	0.53	512.90
34	10.20	0.000	74.38	73.32	0.53	512.90
35	10.50	0.000	73.32	72.28	0.52	512.80
36	10.80	0.000	72.28	71.24	0.52	512.80
37	11.10	0.000	71.24	70.20	0.52	512.80
38	11.40	0.000	70.20	69.16	0.52	512.80
39	11.70	0.000	69.16	68.15	0.51	512.70
40	12.00	0.000	68.15	67.14	0.51	512.70

18.67

DETENTION BASIN ROUTING

6.81 0.60

18	Min					513 50
Interval	Т	Q IN	2S/dT+O	2S/dT-O	0	Basin
	(HRS)	(CFS)		(CFS)	(CFS)	WSEI
		()		(0.0)	(010)	WOLL
1	0.30	0.945	0.00	0.00	0.00	510.50
2	0.60	0.976	1.92	1.92	0.00	510.50
3	0.90	1.046	3.94	3.89	0.02	510.60
4	1.20	1.087	6.03	5.88	0.07	510.70
5	1.50	1.181	8.15	8.01	0.07	510.70
6	1.80	1.237	10.43	10.17	0.13	510.80
7	2.10	1.372	12.78	12.42	0.18	510.90
8	2.40	1.455	15.25	14.83	0.21	511.00
9	2.70	1.668	17.95	17.47	0.24	511.10
10	3.00	1.808	20.95	20.42	0.26	511.20
11	3.30	2.210	24.44	23.87	0.29	511.30
 	3.60	2.517	28.60	- 27.98 -	0.31	511.40
13	3.90	3.696	34.20	33.50	0.35	511.60
14	4.20	5.208	42.41	41.62	0.40	511.90
15	4.50	18.667	65.49	64.50	0.49	512.60
16	4.80	2.965	86.13	85.00	0.57	513.20
17	5.10	1.983	89.95	88.80	0.58	513.30
18	5.40	1.552	92.33	91.16	0.59	513.40
19	5.70	1.300	94.01	92.82	0.60	513.50
20	6.00	1.131	95.25	94.05	0.60	513.50
21	6.30	1.009	96.19	95.00	0.60	513.50
22	6.60	0.000	96.01	94.81	0.60	513.50
23	6.90	0.000	94.81	93.62	0.60	513.50
24	7.20	0.000	93.62	92.44	0.59	513.40
25	7.50	0.000	92.44	91.27	0.59	513.40
26	7.80	0.000	91.27	90.10	0.59	513.40
27	8.10	0.000	90.10	88.94	0.58	513.30
28	8.40	0.000	88.94	87.79	0.58	513.30
29	8.70	0.000	87.79	86.64	0.58	513.30
30	9.00	0.000	86.64	85.51	0.57	513.20
31	9.30	0.000	85.51	84.38	0.57	513.20
32	9.60	0.000	84.38	83.25	0.57	513.20
33	9.90	0.000	83.25	82.14	0.55	513.10
34	10.20	0.000	82.14	81.03	0.55	513.10
35	10.50	0.000	81.03	79.92	0.55	513.10
36	10.80	0.000	79.92	78.84	0.54	513.00
37	11.10	0.000	78.84	77.75	0.54	513.00
38	11.40	0.000	(1.75	76.67	0.54	513.00
39	11.70	0.000	76.67	75.60	0.53	512.90
40	12.00	0.000	75.60	74.54	0.53	512.90

18

Interval

20.74

Q IN

Min

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DETENTION BASIN ROUTING

7.57 0.63

100 YEAR EVENT ~ 6 Hour STORM

2S/dT+O 2S/dT-O

513.80 0 Basin (CFS) WSEL

	(HRS)	(CFS)		(CFS)	(CFS)	WSEL
1	0.30	1.050	0.00	0.00	0.00	510.50
2	0.60	1.084	2.13	2.13	0.00	510.50
3	0.90	1.162	4.38	4.33	0.02	510.60
4	1.20	1.207	6.70	6.56	0.07	510.70
5	1.50	1.312	9.08	8.82	0.13	510.80
6	1.80	1.374	11.51	11.15	0.18	510.90
7	2.10	1.524	14.05	13.69	0.18	510.90
8	2.40	1.616	16.83	16.41	0.21	511.00
9	2.70	1.853	19.88	19.40	0.24	511.10
10	3.00	2.009	23.27	22.69	0.29	511.30
11	3.30	2.456	27.16	26.54	0.31	511.40
- 12	3,60 -	- 2.797	31:80	- 31.14 -	0.33	-511.50
13	3.90	4.107	38.05	37.32	0.36	511.70
14	4.20	5.786	47.21	46.39	0.41	512.00
15	4.50	20.741	72.92	71.88	0.52	512.80
16	4.80	3.294	95.92	94.72	0.60	513.50
17	5.10	2.204	100.22	99.00	0.61	513.60
18	5.40	1.724	102.93	101.69	0.62	513.70
19	5.70	1.444	104.86	103.61	0.63	513.80
20	6.00	1.257	106.31	105.05	0.63	513.80
21	6.30	1.121	107.43	106.17	0.63	513.80
22	6.60	0.000	107.30	106.04	0.63	513.80
23	6.90	0.000	106.04	104.78	0.63	513.80
24	7.20	0.000	104.78	103.53	0.63	513.80
25	7.50	0.000	103.53	102.29	0.62	513.70
26	7.80	0.000	102.29	101.05	0.62	513.70
27	8.10	0.000	101.05	99.82	0.62	513.70
28	8.40	0.000	99.82	98.60	0.61	513.60
29	8.70	0.000	98.60	97.39	0.61	513.60
30	9.00	0.000	97.39	96.17	0.61	513.60
31	9.30	0.000	96.17	94.97	0.60	513.50
32	9.60	0.000	94.97	93.78	0.60	513.50
33	9.90	0.000	93.78	92.61	0.59	513,40
34	10,20	0.000	92.61	91.43	0.59	513.40
35	10.50	0.000	91.43	90.26	0.59	513.40
30 27	10.80	0.000	90.26	89.11	0.58	513.30
3/ 20	11.10	0.000	89.11	87.95	0.58	513.30
30 20	11.40	0.000	87.95 86.00	80.80	0.58	513.30
39 40	11.70	0.000	80.80 05.67	85.67	0.57	513.20
40	12.00	0.000	85.67	84.54	0.57	513.20

EXHIBIT G

DETENTION BASIN STORM ROUTING

SOUTH BASIN

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D:\70912 Southview East\Reports\Hydrology\20160506 Final Detention Report F4.doc

South

6.40

DETENTION BASIN ROUTING

1.83 0.19

10	Minutes					514.00
Interval	Т	Q IN	2S/dT+0	28/dT-0	0	514.90 Regin
inter rea	(HRS)	(CES)	20/01.0	20/01-0 (CES)		MOEL
	(1110)	(0,0)		(010)	(0-3)	WSEL
1	0.17	0.227	0.00	0.00	0.00	512.00
2	0.33	0.231	0.46	0.46	0.00	512.00
3	0.50	0 241	0.93	0.40	0.00	512.00
4	0.67	0 245	1 42	1 30	0.00	512.00
5	0.83	0.256	1.42	1.86	0.01	512.10
6	1.00	0.262	2 38	2 35	0.01	512.10
7	1.00	0.202	2.00	2.00	0.01	512.10
8	1.33	0.281	3 36	2.00	0.04	512.20
g	1.00	0.201	3.86	3.20	0.04	512.20
10	1.67	0.200	1 38	J.70 4 27	0.04	512.20
11	1.07	0.000	4.00	4.27	0.05	512.30
-12	- 2-00	- 0-3-3 <i>4</i>	- 5 45	4.19	0.05	 512.30
13	2.00	0.350	6.02	0.32	0.06	512.40
14	2.17	0.309	6.62	0.09	0.06	512.40
15	2.00	0.372	7.02	0.47	0.07	512.50
16	2.50	0.400	7.24	7.10	0.07	512.50
17	2.07	0.424	7.92	7.70	0.08	512.60
18	2.00	0.470	0.00	0.49	0.08	512.60
10	3.00	0.488	9.40	9.27	0.09	512.70
20	3 33	0.072	11.34	10.16	0.09	512.70
20	3.50	0.020	12.50	10.00	0.10	512.80
21	3.50	0.700	12.04	12.33	0.10	512.90
22	2 82	1 267	15.95	15.75	0.11	513.00
20	0.00 / 00	1.207	10.00	10.01	0.12	513.20
25	4.00	6 300	26.59	10.40	0.13	513.40
26	4.17	0.099	20.00	20.20	0.16	514.00
20	4.55	0.680	33.00	33.3Z	0.18	514.50
28	4.50	0.000	35.02	34.05	0.18	514.60
20	4.07	0.002	35.60	35.49	0.19	514.70
30	4 .00	0.440	36.02	30.09	0.19	514.70
31	5.17	0.346	37.28	30.04	0.19	514.80
32	5 33	0.340	37.56	30.90	0.19	514.80
33	5.50	0.280	37.30	37.10	0.19	514.80
34	5.67	0.209	37.05	37.40	0.19	514.80
35	5.83	0.200	38.00	37.37	0.19	514.80
36	6.00	0.236	38 10	37.80	0.19	514.90
37	6.17	0.200	38.04	37.60	0.19	514.90
38	6.33	0.000	37.65	37.00	0.19	514.90
39	6.50	0.000	37.00	36.80	0.19	514.80
40	6.67	0.000	36.80	36.51	0.19	514.80
41	6.83	0.000	36 51	36.17	0.19	014.0U
42	7.00	0.000	36.17	35 76	0.19	014.70
43	7 17	0.000	35 76	35 20	0.19	014.70 E14.70
44	7.33	0.000	35 30	35.09	0.19	014.7U
1 F	1.00	0.000	00.08	00.01	0.19	014.70
45	7.50	0.000	35.01	34.65	0.18	514.60
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46	7.67	0.000	34.65	34.28	0.18	514.60
47	7.83	0.000	34.28	33.92	0.18	514.60
48	8.00	0.000	33.92	33.56	0.18	514.50
49	8.17	0.000	33.56	33.20	0.18	514.50
50	8.33	0.000	33.20	32.84	0.18	514 50
51	8.50	0.000	32.84	32.48	0.18	514 50
52	8.67	0.000	32.48	32.13	0.18	514 40
53	8.83	0.000	32.13	31.78	0.18	514 40
54	9.00	0.000	31.78	31.42	0.18	514 40
55	9.17	0.000	31.42	31.08	0.17	514.30
56	9.33	0.000	31.08	30.74	0.17	514.30
57	9.50	0.000	30.74	30.39	0.17	514.30
58	9.67	0.000	30.39	30.05	0.17	514.30
59	9.83	0.000	30.05	29.71	0.17	514 20
60	10.00	0.000	29.71	29.38	0.17	514 20
61	10.17	0.000	29.38	29.04	0.17	514 20
62	10.33	0.000	29.04	28 70	0.17	514 20
63	10.50	0.000	28 70	28.38	0.16	514.20
64	10.67	- 0.000 -	28.38	28.00	0.10	 514.10
65	10.83	0.000	28.05	20.00	0.10	514.10
66	11 00	0,000	27 72	27.72	0.10	514.10
67	11 17	0.000	27 30	27.03	0.10	514.10
68	11.33	0.000	27.03	21.01	0.10	514.00
69	11.50	0.000	26.75	20.75	0.10	514.00
70	11.67	0.000	26.73	20.45	0.10	514.00
71	11.83	0.000	20.40	25.80	0.10	514.00
72	12.00	0.000	25.80	25.00	0.10	513.90
73	12.00	0.000	25.00	20.49	0.10	513.90
74	12.17	0.000	25.49	20.10	0.16	513.90
75	12.50	0.000	20.10	24.07	0.16	513.90
76	12.00	0.000	24.07	24.00	0.15	513.80
77	12.07	0.000	24.00	24.20	0.15	513.80
78	12.00	0.000	24.20	23.90	0.15	513.80
70	12.00	0.000	23.90	23.00	0.15	513.80
20 20	10.17	0.000	23.00	23.35	0.15	513.80
Q1	12.00	0.000	23.35	23.00	0.15	513.70
01 02	12.00	0.000	23.06	22.11	0.15	513.70
02	10.07	0.000	22.11	22.47	0.15	513.70
00 Q/	14.00	0.000	22.47	22.18	0.15	513.70
04	14.00	0.000	22.10	21.90	0.14	513.60
00	14.17	0.000	21.90	21.61	0.14	513.60
00 07	14.00	0.000	21.01	21.33	0.14	513.60
01	14.50	0.000	21.33	21.04	0.14	513.60
00	14.07	0.000	21.04	20.76	0.14	513.60
09	14.83	0.000	20.76	20.48	0.14	513.50
90	15.00	0.000	20.48	20.21	0.14	513.50
91	15.17	0.000	20.21	19.93	0.14	513.50
92	15.33	0.000	19.93	19.66	0.14	513.50
93	15.50	0.000	19.66	19.39	0.13	513.40
94 07	15.67	0.000	19.39	19.13	0.13	513.40
95	15.83	0.000	19.13	18.86	0.13	513.40
96	16.00	0.000	18.86	18.60	0.13	513.40

8.76

DETENTION BASIN ROUTING

2.50 0.23

5 YEAR EVENT	~ 6 Hour	STORM
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10	Minutes						516 00
Informal	T	O IN		D Th/SC	0	D	Dio.00
morvar			20/01/0	20/01-0			
	(11(3)	(010)		(0-3)	(053)	v	VOEL
1	0.17	0.311	0.00	0.00	0.00		512 00
2	0.33	0.317	0.63	0.63	0.00		512.00
3	0.50	0.329	1.27	1.27	0.00		512.00
4	0.67	0.336	1.94	1.91	0.01		512.10
5	0.83	0.350	2.59	2.57	0.01		512.10
6	1.00	0.358	3.27	3.19	0.04		512 20
7	1.17	0.375	3.93	3.85	0.04		512 20
8	1.33	0.385	4.61	4.50	0.05		512 30
9	1.50	0.406	5.29	5.16	0.06		512.00
10	1.67	0.417	5.99	5.86	0.06		512 40
11	1.83	0.443	6.72	6.57	0.07		512.50
- 12 -	2:00 -	0.458	- 7.47-	- 7.32	- 0.07 -		512.50
13	2.17	0.491	8.27	8.10	0.08		512.60
14	2.33	0.510	9.10	8.94	0.08		512.60
15	2.50	0.554	10.00	9.82	0.09		512.70
16	2.67	0.580	10.95	10.76	0.10		512.80
17	2.83	0.643	11.98	11.77	0.10		512.90
18	3.00	0.682	13.10	12.89	0.10		512.90
19	3.17	0.782	14.35	14.13	0.11		513.00
20	3.33	0.848	15.76	15.52	0.12	:	513.20
21	3.50	1.037	17.40	17.15	0.13	:	513.30
22	3.67	1.181	19.37	19.10	0.13		513.40
23	3.83	1.734	22.02	21.73	0.14	3	513.60
24	4.00	2.443	25.91	25.60	0.16		513.90
25	4.17	8.756	36.79	36.41	0.19		514.80
26	4.33	1.391	46.56	46.13	0.21		515.50
27	4.50	0.930	48.45	48.02	0.22		515.70
28	4.67	0.728	49.67	49.23	0.22		515.70
29	4.83	0.610	50.57	50.13	0.22	1	515.80
30	5.00	0.531	51.27	50.82	0.23	ł	515.90
31	5.17	0,473	51.82	51.37	0.23	ł	515.90
32	5.33	0.430	52.27	51.82	0.23	ł	515.90
33	5.50	0.395	52.65	52.19	0.23	ł	516.00
34	5.67	0.367	52.95	52.49	0.23	ł	516.00
35	5.83	0.343	53.20	52.74	0.23	Ę	516.00
36	6.00	0.323	53.41	52.95	0.23	ţ	516.00
37	6.17	0.000	53.28	52.82	0.23	ŧ	516.00
38	6.33	0.000	52.82	52.36	0.23	ŧ	516.00
39	6.50	0.000	52.36	51.91	0.23	Ę	515.90
40	6.67	0.000	51.91	51.46	0.23	Ę	515.90
41	6.83	0.000	51.46	51.01	0.23	Ę	515.90
42	7.00	0.000	51.01	50.56	0.22	Ę	515.80
43	7.17	0.000	50.56	50.12	0.22	Ę	515.80
44	7.33	0.000	50.12	49.67	0.22	Ę	515.80

45	7.50	0.000	49.67	49.23	0.22	515.70
46	7.67	0.000	49.23	48.79	0.22	515.70
47	7.83	0.000	48.79	48.35	0.22	515.70
48	8.00	0.000	48.35	47.92	0.22	515.60
49	8.17	0.000	47.92	47.49	0.22	515.60
50	8.33	0.000	47.49	47.05	0.22	515.60
51	8.50	0.000	47.05	46.63	0.21	515.50
52	8.67	0.000	46.63	46.20	0.21	515.50
53	8.83	0.000	46.20	45.77	0.21	515.50
54	9.00	0.000	45.77	45.35	0.21	515.40
55	9.17	0.000	45.35	44.93	0.21	515.40
56	9.33	0.000	44.93	44.51	0.21	515.40
57	9.50	0.000	44.51	44.10	0.21	515.30
58	9.67	0.000	44.10	43.68	0.21	515.30
59	9.83	0.000	43.68	43.27	0.21	515.30
60	10.00	0.000	43.27	42.85	0.21	515.30
61	10.17	0.000	42.85	42.45	0.20	515.20
62	10.33	0.000	42.45	42,04	0.20	515.20
63	10.50	0.000	42.04	41.63	0.20	515.20
64	10.67	0.000	41.63	41.23	0.20	515 10
65	10.83	0.000	41.23	40.83	0.20	515 10
66	11.00	0.000	40.83	40.43	0.20	515.10
67	11.17	0.000	40.43	40.03	0.20	515.00
68	11.33	0.000	40.03	39.64	0.20	515.00
69	11.50	0.000	39.64	39.24	0.20	515.00
70	11.67	0.000	39.24	38.86	0.20	514.90
71	11.83	0.000	38.86	38 47	0.19	514.90
72	12.00	0.000	38.47	38.08	0.10	514 90
73	12.17	0.000	38.08	37.69	0.10	514.90
74	12.33	0.000	37.69	37.31	0.10	514.80
75	12.50	0.000	37.31	36.93	0.10	51/ 80
76	12.67	0.000	36.93	36.55	0.10	514.80
77	12.83	0.000	36.55	36.18	0.10	514.70
78	13.00	0.000	36.18	35.80	0.10	514.70
79	13 17	0.000	35.80	35.43	0.10	514 70
80	13.33	0.000	35.43	35.06	0.10	514.70
81	13.50	0.000	35.06	34.69	0.18	514.00
82	13.67	0.000	34.69	34.32	0.10	514.60
83	13.83	0.000	34.32	33.06	0.10	514.60
84	14.00	0.000	33.96	33.60	0.10	514.00
85	14 17	0.000	33.60	33.24	0.10	514.50
86	14.33	0.000	33.24	32.88	0.10	514.50
87	14 50	0,000	32.88	32.50	0.10	514.50
88	14.67	0.000	32.50	32.02	0.10	514.50
89	14.83	0.000	32.02	31.82	0.10	514.40
90	15.00	0.000	31.82	31.02	0.10	514.40
Q1	15.00	0.000	31 /7	31.47	0.10	514.40
92	15.33	0.000	31.47	30.77	0.10	014.4U
93	15.50	0.000	30.77	30.11	0.17	014.00 E14.00
94	15.67	0.000	30.77	30.43 30.09	0.17	014.0U
95	15.83	0.000	30.43 30.08	20.00	0.17	014.30
96	16.00	0.000	20.00	29.10	0.17	514.20
00	10.00	0.000	20.10	LJ.41	U.17	014.ZU

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10.10

DETENTION BASIN ROUTING

2.89 0.50

10 Interval	Minutes T	Q IN	2S/dT+O	2S/dT-O	0	516.40 Basin
	(HRS)	(CFS)		(CFS)	(CFS)	WSEL
1	0.17	0.359	0.00	0.00	0.00	512.00
2	0.33	0.365	0.72	0.72	0.00	512.00
3	0.50	0.380	1.47	1.44	0.01	512.10
4	0.67	0.388	2.21	2.18	0.01	512.10
5	0.83	0.404	2.97	2.89	0.04	512.20
6	1.00	0.413	3.71	3.63	0.04	512.20
7	1.17	0.433	4.48	4.37	0.05	512.30
8	1.33	0.444	5.25	5.14	0.05	512.30
9	1.50	0.468	6.05	5.92	0.06	512.40
10	1.67	0.481	6.87	6.72	0.07	512.50
11	1.83	0.511	7.71	7.56	0.07	512.50
- 12	2.00 -	- 0.528	- 8.60 -	8.44	0.08	512.60
13	2.17	0.566	9.53	9.35	0.09	512.70
14	2.33	0.588	10.50	10.32	0.09	512.70
15	2.50	0.639	11.55	11.35	0.10	512.80
16	2.67	0.669	12.66	12.45	0.10	512.90
17	2.83	0.742	13.87	13.65	0.11	513.00
18	3.00	0.787	15.18	14.94	0.12	513.10
19	3.17	0.903	16.63	16.39	0.12	513.20
20	3.33	0.979	18.27	18.01	0.13	513.30
21	3.50	1.196	20.19	19.91	0.14	513.50
22	3.67	1.362	22.47	22.18	0.15	513.70
23	3.83	2.000	25.54	25.23	0.16	513.90
24	4.00	2.819	30.05	29.71	0.17	514.20
25	4.17	10.103	42.64	42.23	0.20	515.20
26	4.33	1.604	53.94	53.41	0.26	516.10
27	4.50	1.074	56.09	55.43	0.33	516.20
28	4.67	0.840	57.35	56.53	0.41	516.30
29	4.83	0.704	58.07	57.07	0.50	516.40
30	5.00	0.612	58.39	57.39	0.50	516.40
31	5.17	0.546	58.54	57.54	0.50	516.40
32	5.33	0.496	58.58	57.58	0.50	516.40
33	5.50	0.456	58.53	57.53	0.50	516.40
34	5.67	0.423	58.41	57.40	0.50	516.40
35	5.83	0.396	58.22	57.22	0.50	516.40
36	6.00	0.372	57.99	56.99	0.50	516.40
37	6.17	0.000	57.36	56.54	0.41	516.30
38	6.33	0.000	56.54	55.73	0.41	516.30
39	6.50	0.000	55.73	55.08	0.33	516.20
40	6.67	0.000	55.08	54.42	0.33	516.20
41	6.83	0.000	54.42	53.90	0.26	516.10
42	7.00	0.000	53.90	53.37	0.26	516.10
43	7.17	0.000	53.37	52.91	0.23	516.00
44	7.33	0.000	52.91	52.45	0.23	516.00

45	7.50	0.000	52.45	52.00	0.23	516.00
46	7.67	0.000	52.00	51.54	0.23	515.90
47	7.83	0.000	51.54	51.09	0.23	515.90
48	8.00	0.000	51.09	50.64	0.23	515.90
49	8.17	0.000	50.64	50.20	0.22	515.80
50	8,33	0.000	50.20	49.75	0.22	515.80
51	8.50	0.000	49.75	49.31	0.22	515.80
52	8.67	0.000	49.31	48.87	0.22	515.70
53	8.83	0.000	48.87	48.43	0.22	515.70
54	9.00	0.000	48.43	47.99	0.22	515.60
55	9.17	0.000	47.99	47.56	0.22	515.60
56	9.33	0.000	47.56	47.13	0.22	515.60
57	9.50	0.000	47.13	46.70	0.21	515.50
58	9.67	0.000	46.70	46.27	0.21	515.50
59	9.83	0.000	46.27	45.85	0.21	515.50
60	10.00	0.000	45.85	45.42	0.21	515.50
61	10.17	0.000	45.42	45.00	0.21	515.40
62	10.33	0.000	45.00	44.58	0.21	515.40
63	10.50	0.000	44.58	44.16	0.21	515.40
64	10.67	0.000	44.16	43.74	0.21	515.30
65	10.83	0.000	43.74	43.33	0.21	515.30
66	11.00	0.000	43.33	42.91	0.21	515.30
67	11.17	0.000	42.91	42.51	0.20	515.20
68	11.33	0.000	42.51	42.10	0.20	515.20
69	11.50	0.000	42.10	41.69	0.20	515.20
70	11.67	0.000	41.69	41.29	0.20	515.10
71	11.83	0.000	41.29	40.89	0.20	515.10
72	12.00	0.000	40.89	40.49	0.20	515.10
73	12.17	0.000	40.49	40.09	0.20	515.00
74	12.33	0.000	40.09	39.70	0.20	515.00
75	12.50	0.000	39.70	39.30	0.20	515.00
76	12.67	0.000	39.30	38.91	0.20	515.00
77	12.83	0.000	38.91	38.52	0.19	514.90
78	13.00	0.000	38.52	38.13	0.19	514.90
79	13.17	0.000	38.13	37.75	0.19	514.90
80	13.33	0.000	37.75	37.37	0.19	514.80
81	13.50	0.000	37.37	36.99	0.19	514.80
82	13.67	0.000	36.99	36.60	0.19	514.80
83	13.83	0.000	36.60	36.23	0.19	514.70
84	14.00	0.000	36.23	35.86	0.19	514,70

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11.11

DETENTION BASIN ROUTING

3.17 0.85

10	Min					E16 70
Interval	Т	O IN	25/dT+0	28/dT 0	0	Desir
morvar	(HRS)		20/01-0	20/01-0 (CEQ)		Basin
	(11(0)	(010)		(053)	(CFS)	WSEL
1	0.17	0.395	0.00	0.00	0.00	512.00
2	0.33	0.402	0.80	0.80	0.00	512.00
3	0.50	0.418	1.62	1 59	0.00	512.00
4	0.67	0 426	2 43	2 40	0.01	512.10
5	0.83	0 445	3.27	3 10	0.01	512.10
6	1 00	0.455	4 09	3 98	0.04	512.20
7	1.00	0.477	4.00	1 81	0.05	512.30
8	1.33	0.489	5 77	5.67	0.05	512.30
ğ	1.50	0.400	6.65	6.50	0.00	512.40
10	1.00	0.010	7.54	7.20	0.07	512.50
11	1.83	0.500	8.40	1.08	0.07	512,50
1-2	-2.00-	- 0.581	- 0.49 - 0.46 - 1	- 0.02 - 0.29	0.00	512.60
13	2.00	0.001	10 / 8	9.20 10.30	0.09	512.70
14	2.17	0.647	11 57	11.30	0.09	512.70
15	2.50	0.047	10.72	10.00	0.10	512.80
16	2.00	0.703	12.75	12.02	0.10	512.90
17	2.07	0.730	15.90	15.74	0.11	513.00
18	2.00	0.017	10.29	10.00	0.12	513.10
10	3.00	0.000	10.74	10.50	0.12	513.20
20	3 22	0.993	10.30	10.10	0.13	513.30
20	0.00 2 EO	1.070	20.17	19.89	0.14	513.50
21	3.00	1.310	22.29	22.00	0.14	513.60
22	2.07	1.499	24.02	24.51	0.15	513.80
20	4.00	2.201	20.21	27.89	0.16	514.10
2 4 25	4.00	3,100	33.19	32.83	0.18	514.50
20	4.17	1705	47.04	46.61	0.21	515.50
20	4.33	1.705	59.49	58.28	0.61	516.50
21	4.50	1,181	61.22	59.77	0.73	516.60
20	4.07	0.924	01.88	60.42	0.73	516.60
29	4.83	0.774	62.12	60.42	0.85	516.70
21	5.00 E 47	0.674	61.86	60.41	0.73	516.60
<u>১</u> । ১০	5.17	0.601	61.69	60.23	0.73	516.60
32 33	5.33 E E O	0.545	61.38	59.93	0.73	516.60
33 24	5.50	0.501	60.98	59.52	0.73	516.60
34	5.67	0.465	60.49	59.28	0.61	516.50
30	5.83	0.435	60.18	58.96	0.61	516.50
30	0.00	0.410	59.80	58.59	0.61	516.50
37	6.17	0.000	59.00	58.00	0.50	516.40
38	6.33	0.000	58.00	56.99	0.50	516,40
39	6.50	0.000	56.99	56.18	0.41	516.30
40	0.07	0.000	56.18	55.52	0.33	516.20
41	0.83	0.000	55.52	54.87	0.33	516.20
42	7.00	0.000	54.87	54.34	0.26	516.10
43	7.17	0.000	54.34	53.81	0.26	516.10
44	7.33	0.000	53.81	53.29	0.26	516.10

12.12

DETENTION BASIN ROUTING

3.46 1.14

10	Min					516.90
Interval	Т	Q IN	2S/dT+O	2S/dT-O	0	Basin
	(HRS)	(CFS)		(CFS)	(CFS)	WSEL
				. ,	· · ·	
1	0.17	0.431	0.00	0.00	0.00	512.00
2	0.33	0.439	0.87	0.87	0.00	512.00
3	0.50	0.456	1.76	1.73	0.01	512.10
4	0.67	0.465	2.65	2.58	0.04	512.20
5	0.83	0.485	3.53	3.45	0.04	512.20
6	1.00	0.496	4.43	4.32	0.05	512.30
7	1.17	0.520	5.34	5.21	0.06	512.40
8	1.33	0.533	6.26	6.13	0.06	512.40
9	1.50	0.562	7.22	7.07	0.07	512.50
10	1.67	0.578	8.21	8.05	0.08	512.60
11	1.83	0.614	9.24	9.06	0.09	512.70
1-2 -	2.00	0.634-	10.31	-10.12	0.09	512.70
13	2.17	0.679	11.44	11.24	0.10	512.80
14	2.33	0.706	12.63	12.42	0.10	512.00
15	2.50	0.767	13.89	13.67	0.11	513.00
16	2.67	0.803	15.24	15.01	0.12	513.10
17	2.83	0.891	16.70	16.46	0.12	513.20
18	3.00	0.945	18.29	18.04	0.13	513.30
19	3.17	1.083	20.07	19 79	0.14	513 50
20	3.33	1.174	22.05	21 76	0.14	513.60
21	3.50	1.435	24.37	24.07	0.15	513.80
22	3.67	1.635	27.14	26.82	0.16	514.00
23	3.83	2.401	30.86	30.51	0.17	514 30
24	4.00	3.382	36.30	35.92	0.19	514 70
25	4.17	12.124	51.43	50.98	0.23	515.00
26	4.33	1.925	65.03	62 75	1 14	516.00
27	4.50	1.288	65.97	63 70	1 1 4	516.90
28	4.67	1.008	65.99	63.72	1.14	516.00
29	4.83	0.844	65 57	63 30	1 1 4	516.90
30	5.00	0.735	64 88	62.90	0.99	516.80
31	5.17	0.656	64 29	62.31	0.00	516.80
32	5.33	0.595	63 56	61.58	0.00	516.80
33	5.50	0.547	62 72	61.00	0.85	516 70
34	5.67	0.508	62.07	60.62	0.00	516.60
35	5.83	0.475	61 60	60.15	0.73	516.60
36	6.00	0 447	61.07	59.62	0.73	516.60
37	6.17	0.000	60.07	58.85	0.61	516 50
38	6.33	0.000	58 85	57.85	0.50	516.00
39	6.50	0.000	57.85	56.85	0.50	516.40
40	6.67	0.000	56 85	56.03	0.00	516 30
41	6.83	0.000	56.03	55.38	0.33	516.00
42	7.00	0.000	55.38	54 72	0.33	516.20
43	7.17	0.000	54.72	54.20	0.26	516 10
44	7.33	0.000	54.20	53.67	0.26	516 10
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45	7.50	0.000	53.67	53.21	0.23	516.00
46	7.67	0.000	53.21	52.75	0.23	516.00
47	7.83	0.000	52.75	52.30	0.23	516.00
48	8.00	0.000	52.30	51.85	0.23	515.90
49	8.17	0.000	51.85	51.39	0.23	515.90
50	8.33	0.000	51.39	50.94	0,23	515.90
51	8.50	0.000	50.94	50.50	0.22	515.80
52	8.67	0.000	50.50	50.05	0.22	515.80
53	8.83	0.000	50.05	49.61	0.22	515.80
54	9.00	0.000	49.61	49.17	0.22	515.70
55	9.17	0.000	49.17	48.73	0.22	515.70
56	9.33	0.000	48.73	48.29	0.22	515.70
57	9.50	0.000	48.29	47.86	0.22	515.60
58	9.67	0.000	47.86	47.42	0.22	515.60
59	9.83	0.000	47.42	46.99	0.22	515.60
60	10.00	0.000	46.99	46.56	0.21	515.50
61	10.17	0.000	46.56	46.14	0.21	515.50
62	10.33	0.000	46.14	45.71	0.21	515.50
63	10.50	0.000	45.71	45.29	0.21	515.40
64	10.67	0.000	45.29	44.87	0.21	 515.40
65	10.83	0.000	44.87	44.45	0.21	515.40
66	11.00	0.000	44.45	44.03	0.21	515.30
67	11.17	0.000	44.03	43.62	0.21	515.30
68	11.33	0.000	43.62	43.20	0.21	515.30
69	11.50	0.000	43.20	42.80	0.20	515.20
70	11.67	0.000	42.80	42.39	0.20	515.20
71	11.83	0.000	42.39	41.98	0.20	515.20
72	12.00	0.000	41.98	41.57	0.20	515.20
73	12.17	0.000	41.57	41.17	0.20	515.10
74	12.33	0.000	41.17	40.77	0.20	515.10
75	12.50	0.000	40.77	40.37	0.20	515.10
76	12.67	0.000	40.37	39.97	0.20	515.00
77	12.83	0.000	39.97	39.58	0.20	515.00
78	13.00	0.000	39.58	39.18	0.20	515.00
79	13.17	0.000	39.18	38.80	0.19	514.90
80	13.33	0.000	38.80	38.41	0.19	514.90
81	13.50	0.000	38.41	38.02	0.19	514.90
82	13.67	0.000	38.02	37.63	0.19	514.90
83	13.83	0.000	37.63	37.25	0.19	514.80
84	14.00	0.000	37.25	36.87	0.19	514.80

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13.47

DETENTION BASIN ROUTING

3.85 1.80

10	Min					517.30
Interval	Т	Q IN	2S/dT+O	2S/dT-O	0	Basin
	(HRS)	(CFS)		(CFS)	(CFS)	WSEL
				. ,	. ,	
1	0.17	0.478	0.00	0.00	0.00	512.00
2	0.33	0.487	0.97	0.97	0.00	512.00
3	0.50	0.506	1.96	1.93	0.01	512.10
4	0.67	0.517	2.95	2.87	0.04	512.20
5	0.83	0.539	3.93	3.85	0.04	512.20
6	1.00	0.551	4.94	4.83	0.05	512.30
7	1.17	0.578	5.96	5.83	0.06	512.40
8	1.33	0.592	7.00	6.85	0.07	512 50
9	1.50	0.624	8.07	7.90	0.08	512.60
10	1.67	0.642	9.17	9.00	0.08	512.60
11	1.83	0.682	10.33	10.15	0.09	512.70
12 -	2:00 -	- 0.704 -	- 11.53 -	11:34	- 0.10	
13	2.17	0.755	12,79	12 59	0.10	512.00
14	2.33	0.784	14.12	13.90	0.11	513.00
15	2.50	0.852	15 54	15.31	0.12	513.00
16	2.67	0.893	17.05	16.81	0.12	513.10
17	2.83	0.990	18.69	18.43	0.12	513.20
18	3.00	1 050	20.47	20.10	0.13	513.40
19	3 17	1.000	20.47	20.10	0.14	513.30
20	3.33	1.305	24.66	24.36	0.15	513.70
21	3 50	1.505	27.26	24.00	0.16	513.80
22	3.67	1.000	30.35	20.04	0.10	514.00
23	3.83	2 667	34.49	34.12	0.17	514.30
24	4 00	3 758	40 55	40 15	0.10	515.00
25	4 17	13 471	57.38	56 57	0.20	516:30
26	4.33	2 1 3 9	72 18	68 50	1.80	517.30
27	4 50	1 431	72.10	68 57	1.80	517.30
28	4 67	1 120	71.10	67 53	1.80	517.30
29	4.83	0.938	69 58	66 34	1.60	517.30
30	5.00	0.816	68 10	65.20	1.02	517.20
31	5 17	0.728	66.74	6/ 16	1.40	517.10
32	5.33	0.720	65 55	63.28	1.2.9	517.00
33	5.50	0.001	64 55	62 57	0.00	516.90
34	5.67	0.000	63 74	61 76	0.99	510.00
35	5.83	0.004	62.85	61 15	0.99	510.00
36	6.00	0.020	62.00	60.46	0.85	510.70
37	6.17	0.437	60.06	50.40	0.00	516.70
38	633	0.000	50.51	59.01	0.73	510.60
30	6.50	0.000	58.20	57.29	0.01	516.50
40	6.67	0.000	57 20	57.29	0.50	516.40
- 1 0 /11	6.82	0.000	56.40	00.40 55.66	0.41	516.30
-+ I 10	7.00	0.000	00.40 55.60	00.00 EE 04	0.41	516.30
42 12	7.00	0.000	00.00 55.04	00.UT	0.33	516.20
40	7.11	0.000	00.UT	54.48 52.05	0.26	516.10
44	1.00	0.000	04.48	53.95	0.26	516.10

45	7 50	0 000	53 05	53 12	0.26	E16 10
46	7 67	0.000	53 42	52.07	0.20	510.10
47	7.83	0.000	52.07	52.51	0.20	516.00
48	8.00	0.000	52.91	52.01	0.23	516.00
40 70	0.00 9.17	0.000	52.51	52.05	0.23	516.00
-+0 50	0.17	0.000	52.05	01.00	0.23	515.90
50	0.33	0.000	51.60	51.15	0.23	515.90
51	8.50	0.000	51.15	50.70	0.23	515.90
52	8.67	0.000	50.70	50.25	0.22	515.80
53	8.83	0.000	50.25	49.81	0.22	515.80
54	9.00	0.000	49.81	49.36	0.22	515.80
55	9.17	0.000	49.36	48.92	0.22	515.70
56	9.33	0.000	48.92	48.48	0.22	515.70
57	9.50	0.000	48.48	48.04	0.22	515.70
58	9.67	0.000	48.04	47.61	0.22	515.60
59	9.83	0.000	47.61	47.18	0.22	515.60
60	10.00	0.000	47.18	46.74	0.22	515.60
61	10.17	0.000	46.74	46.32	0.21	515.50
62	10.33	0.000	46.32	45.89	0.21	515 50
63	10.50	0.000	45.89	45.46	0.21	515 50
64	-10.67	0.000	45.46	45.04	0.21	 515.00
65	10.83	0.000	45.04	44 62	0.21	515 40
66	11.00	0.000	44 62	44.20	0.21	515.40
67	11 17	0.000	44 20	13 70	0.21	515.40
68	11.33	0.000	13 70	43.73	0.21	515.30
69	11.50	0.000	43.79	40.07	0.21	515.30
70	11.67	0.000	43.37	42.90	0.21	515.30
70	11.07	0.000	42.90	42.55	0.20	515.20
70	11.00	0.000	42.55	42.14	0.20	515.20
12	12.00	0.000	42.14	41.73	0.20	515.20
73	12.17	0.000	41.73	41.33	0.20	515.10
74	12.33	0.000	41.33	40.93	0.20	515.10
75	12.50	0.000	40.93	40.53	0.20	515.10
76	12.67	0.000	40.53	40.14	0.20	515.00
//	12.83	0.000	40.14	39.74	0.20	515.00
78	13.00	0.000	39.74	39.35	0.20	515.00
79	13.17	0.000	39.35	38.95	0.20	515.00
80	13.33	0.000	38.95	38.57	0.19	514.90
81	13.50	0.000	38.57	38.18	0.19	514.90
82	13.67	0.000	38.18	37.79	0.19	514.90
83	13.83	0.000	37.79	37.41	0.19	514.80
84	14.00	0.000	37.41	37.03	0.19	514.80
85	14.17	0.000	37.03	36.65	0.19	514.80
86	14.33	0.000	36.65	36.27	0.19	514.70
87	14.50	0.000	36.27	35.90	0.19	514.70
88	14.67	0.000	35.90	35.53	0.19	514 70
89	14.83	0.000	35.53	35.15	0.19	514 70
90	15.00	0.000	35.15	34.79	0.18	514 60
91	15.17	0.000	34.79	34.42	0.18	514 60
92	15.33	0.000	34.42	34.05	0.18	51/ 60
93	15.50	0.000	34.05	33 70	0.18	51/ 50
94	15.67	0.000	33 70	33.34	0.10	514.00
95	15.83	0.000	33.34	32.02	0.10	514.50
96	16.00	0.000	32.02	32 62	0.10	514.50
		0.000	02.30	UZ.UZ	0.10	514.50

EXHIBIT H

DETENTION BASIN STORM ROUTING

10-Year Drain Time Calculations – North & South

D:\70912 Southview East\Reports\Hydrology\20160506 Final Detention Report F4.doc

North

15.56

DETENTION BASIN ROUTING

5.68 0.54

18	Minutes					512.00
Interval	T	O IN	2S/dT+0	28/dT_0	0	513.00 Regin
inter var	(HRS)	(CES)	20/01/0	20/01-0 (CES)		Dasin
	(11(0)	(0,0)		(01-3)	(0-3)	VVSEL
1	0.30	0.787	0.00	0.00	0.00	510 50
2	0.60	0.813	1.60	1.60	0.00	510.50
3	0.90	0.872	3 29	3 24	0.00	510.60
4	1 20	0.906	5.01	1 96	0.02	510.00
5	1.50	0.984	6.85	6 71	0.02	510.00
6	1.80	1 031	8.73	8.47	0.07	510.70
7	2 10	1 1 4 3	10.64	10.38	0.13	510.00
8	2.10	1.140	10.04	10.00	0.10	510.00
q	2.40	1 300	1/ 08	12.50	0.10	510.90
10	3.00	1.000	17.46	14.00	0.21	511.00
11	3 30	1.007	20.33	10.90	0.24	511.10
1-2	-3.60 -	- 2 008 -			0.20	511.20
13	3 00	2.080	20.74	23.17	0.29	511.30
14	4.20	1 340	20.00	21.14	0.31	511.40
15	4.50	15 556	54.33	52 43	0.30	511.70
16	4.80	2 470	71 14	70.40	0.45	512.30
17	4.00 5.10	2.470	7452	70.40	0.52	512.80
18	5.10	1.000	74.00	75.40	0.53	512.90
10	5.40	1.290	70.41	75.35	0.53	512.90
20	5.70	0.042	7967	70.04	0.54	513.00
20	0.00	0.943	70.07	77.58	0.54	513.00
21	0.30	0.041	79.30	78,28	0.54	513.00
22	0.00	0.000	79.12	78.03	0.54	513.00
23	0.90	0.000	78.03	76.95	0.54	513.00
24	7.20	0.000	76.95	75.86	0.54	513.00
20	7.50	0.000	75.86	74.80	0.53	512.90
20	7.00	0.000	74.80	73.74	0.53	512.90
21	8.10	0.000	73.74	72.68	0.53	512.90
20	8.40 8.70	0.000	72.68	71.64	0.52	512.80
29	8.70	0.000	71.64	70.60	0.52	512.80
30	9.00	0.000	70.60	69.56	0.52	512.80
31	9.30	0.000	69.56	68.55	0.51	512.70
32	9.60	0.000	68.55	67.53	0.51	512.70
33	9.90	0.000	67.53	66.52	0.51	512.70
34	10.20	0.000	66.52	65.53	0.49	512.60
35	10.50	0.000	65.53	64.54	0.49	512.60
30	10.80	0.000	64.54	63.55	0.49	512.60
37	11.10	0.000	63.55	62.59	0.48	512.50
38	11.40	0.000	62.59	61.63	0.48	512.50
39	11.70	0.000	61.63	60.66	0.48	512.50
40	12.00	0.000	60.66	59.70	0.48	512.50
41 40	12.30	0.000	59.70	58.76	0.47	512.40
42	12.60	0.000	58.76	57.83	0.47	512.40
43	12.90	0.000	57.83	56.89	0.47	512.40
44	13.20	0.000	56.89	55.98	0.45	512.30

15	40 50	0 000	55 00			
45	13.50	0.000	55.98	55.07	0.45	512.30
46	13.80	0.000	55.07	54.16	0.45	512.30
47	14.10	0.000	54.16	53.25	0.45	512.30
48	14.40	0.000	53.25	52.37	0.44	512.20
49	14.70	0.000	52.37	51 49	0 44	512.20
50	15.00	0.000	51 / 9	50.61	0.44	512.20
-51	15 30	0.000	50.61	40.75	0.44	512.20
50	15.00	0.000	40.75	49.70	0.43	512.10
52	15.00	0.000	49.75	48.90	0.43	512.10
53	15.90	0.000	48.90	48.05	0.43	512.10
54	16.20	0.000	48.05	47.19	0.43	512.10
55	16.50	0.000	47.19	46.37	0.41	512.00
56	16.80	0.000	46.37	45.55	0.41	512.00
57	17.10	0.000	45.55	44.72	0.41	512.00
58	17.40	0.000	44.72	43.90	0.41	512.00
59	17.70	0.000	43.90	43.11	0.40	511.90
60	18.00	0.000	43 11	42.32	0.40	511.00
61	18.30	0.000	42 32	41 52	0.10	511.00
62	18.60	0.000	11 52	40.73	0.40	511.90
63	18.00	0.000	40.72	40.73	0.40	511.90
64	- 10.30		40.73	39.97	0.30	511.80
04	19.20	0.000	39.97	39.21	0.38	511.80
00	19.50	0.000	39.21	38.45	0.38	511.80
66	19.80	0.000	38.45	37.69	0.38	511.80
67	20.10	0.000	37.69	36.96	0.36	511.70
68	20.40	0.000	36.96	36.24	0.36	511.70
69	20.70	0.000	36.24	35.51	0.36	511.70
70	21.00	0.000	35.51	34.79	0.36	511.70
71	21.30	0.000	34.79	34.09	0.35	511.60
72	21.60	0.000	34.09	33,40	0.35	511.60
73	21.90	0.000	33.40	32 71	0.35	511.60
74	22.20	0.000	32 71	32.02	0.00	511.00
75	22 50	0.000	32.02	31 37	0.00	511.00
76	22.00	0.000	31 37	20.71	0.00	511.50
77	22.00	0.000	20.74	30.71	0.33	511.50
70	23.10	0.000	30.71	30.06	0.33	511.50
10	23.40	0.000	30.06	29.41	0.33	511.50
79	23.70	0.000	29.41	28.75	0.33	511.50
80	24.00	0.000	28.75	28.14	0.31	511.40
81	24.30	0.000	28.14	27.52	0.31	511.40
82	24.60	0.000	27.52	26.91	0.31	511.40
83	24.90	0.000	26.91	26,30	0.31	511.40
84	25.20	0.000	26.30	25.68	0.31	511.40
85	25.50	0.000	25.68	25.11	0.29	511.30
86	25.80	0.000	25.11	24.54	0.29	511.30
87	26.10	0.000	24.54	23.96	0.29	511.30
88	26.40	0,000	23.96	23.30	0.20	511.30
80	26.70	0.000	23.30	20.00	0.29	511.30
00	27.00	0.000	20.08	22.02	0.29	511.30
90	27.00	0.000	22.82	22.29	0.26	511.20
91	27.30	0.000	22.29	21.//	0.26	511.20
92	27.60	0.000	21.77	21.24	0.26	511.20
93	27.90	0.000	21.24	20.71	0.26	511.20
94	28.20	0.000	20.71	20.19	0.26	511.20
95	28.50	0.000	20.19	19.66	0.26	511.20
96	28.80	0.000	19.66	19.18	0.24	511.10

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97	29.10	0.000	19.18	18.71	0.24	511.10
98	29.40	0.000	18.71	18.23	0.24	511.10
99	29.70	0.000	18.23	17.75	0.24	511.10
100	30.00	0.000	17.75	17.28	0.24	511.10
101	30.30	0.000	17.28	16.80	0.24	511.10
102	30.60	0.000	16.80	16.38	0.21	511.00
103	30.90	0.000	16.38	15.96	0.21	511.00
104	31.20	0.000	15.96	15.54	0.21	511.00
105	31.50	0.000	15.54	15.12	0.21	511.00
106	31.80	0.000	15.12	14.69	0.21	511.00
107	32.10	0.000	14.69	14.27	0.21	511.00
108	32.40	0.000	14.27	13.92	0.18	510.90
109	32.70	0.000	13.92	13.56	0.18	510.90
110	33.00	0.000	13.56	13.20	0.18	510.90
111	33.30	0.000	13.20	12.85	0.18	510.90
112	33.60	0.000	12.85	12.49	0.18	510.90
113	33,90	0.000	12.49	12.13	0.18	510.90
114	34.20	0.000	12.13	11 78	0.18	510.00
115	34.50	0.000	11.78	11 42	0.18	510.90
116	34.80	- 0.000	11 42	11.06	0.18	510.00
117	35.10	0.000	11.06	10.81	0.10	510.80
118	35.40	0.000	10.81	10.55	0.10	510.80
119	35.70	0.000	10.55	10.00	0.13	510.80
120	36.00	0.000	10.00	10.20	0.10	510.00
121	36.30	0.000	10.20	9 77	0.13	510.00
122	36.60	0.000	0.00 0.77	9.77	0.13	510.60
123	36.90	0.000	0.51	0.25	0.13	510.60
124	37.20	0.000	0.25	9.20	0.13	510.60
125	37.50	0.000	8.00	0.99	0.13	510.60
126	37.80	0.000	0.88	0.75	0.13	510.80
120	38.10	0.000	0.70 8.48	0.40	0.13	510.80
128	38.40	0.000	0.40 8 3/	0.34 9.10	0.07	510.70
120	39.70	0.000	0.04	0.19	0.07	510.70
120	30.70	0.000	0.19	0.00	0.07	510.70
130	30.30	0.000	0.00	7.91	0.07	510.70
131	39.30	0.000	7.91	7.77	0.07	510.70
132	39.00	0.000	7.62	7.03	0.07	510.70
124	40.20	0.000	7.03	7.49	0.07	510.70
104	40.20	0.000	7.49	7.35	0.07	510.70
126	40.50	0.000	7.35	7.21	0.07	510.70
100	40.00	0.000	7.21	7.07	0.07	510.70
107	41.10	0.000	7.07	6.93	0.07	510.70
130	41.40	0.000	0.93	6.79	0.07	510.70
139	41.70	0.000	6.79	6.64	0.07	510.70
140	42.00	0.000	6.64	6.50	0.07	510.70
141	42.30	0.000	6.50	6.36	0.07	510.70
142	42.60	0.000	6.36	6.22	0.07	510.70
143	42.90	0.000	6.22	6.08	0.07	510.70
144	43.20	0.000	6.08	5.94	0.07	510.70
145	43.50	0.000	5.94	5.80	0.07	510.70
146	43.80	0.000	5.80	5.66	0.07	510.70
147	44.10	0.000	5.66	5.52	0.07	510.70
148	44.40	0.000	5.52	5.47	0.02	510.60

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149	44.70	0.000	5.47	5.42	0.02	510.60
150	45.00	0.000	5.42	5.37	0.02	510.60
151	45.30	0.000	5.37	5.32	0.02	510.60
152	45.60	0.000	5.32	5.27	0.02	510.60
153	45.90	0.000	5.27	5.22	0.02	510.60
154	46.20	0.000	5.22	5.17	0.02	510.60
155	46.50	0.000	5.17	5.12	0.02	510.60
156	46.80	0.000	5.12	5.07	0.02	510.60
157	47.10	0.000	5.07	5.02	0.02	510.60
158	47.40	0.000	5.02	4.97	0.02	510.60
159	47.70	0.000	4.97	4.92	0.02	510.60
160	48.00	0.000	4.92	4.87	0.02	510.60
161	48.30	0.000	4.87	4.82	0.02	510.60
162	48.60	0.000	4.82	4.77	0.02	510.60
163	48.90	0.000	4.77	4.72	0.02	510.60
164	49.20	0.000	4.72	4.67	0.02	510.60
165	49.50	0.000	4.67	4.62	0.02	510.60
166	49.80	0.000	4.62	4.57	0.02	510.60
167	50.10	0.000	4.57	4.52	0.02	510.60
168	50.40	0.000	4.52	4.47	0.02	510.60
169	50,70	0.000	4.47	4.42	0.02	510.60
170	51.00	0.000	4.42	4.37	0.02	510.60
171	51.30	0.000	4.37	4.32	0.02	510.60
172	51.60	0.000	4.32	4.27	0.02	510.60
173	51.90	0.000	4.27	4.22	0.02	510.60
174	52.20	0.000	4.22	4.17	0.02	510.60
175	52.50	0.000	4.17	4.12	0.02	510.60
176	52.80	0.000	4.12	4.07	0.02	510.60
177	53.10	0.000	4.07	4.02	0.02	510.60
178	53.40	0.000	4.02	3.97	0.02	510.60
179	53.70	0.000	3.97	3.92	0.02	510.60
180	54.00	0.000	3.92	3.87	0.02	510.60
181	54.30	0.000	3.87	3.82	0.02	510.60
182	54.60	0.000	3.82	3.77	0.02	510.60
183	54.90	0.000	3.77	3.72	0.02	510.60
184	55.20	0.000	3.72	3.67	0.02	510.60
185	55.50	0.000	3.67	3.63	0.02	510.60
186	55.80	0.000	3.63	3.58	0.02	510.60
187	56.10	0.000	3.58	3.53	0.02	510.60
188	56.40	0.000	3.53	3.48	0.02	510.60
189	56.70	0.000	3.48	3.43	0.02	510.60
190	57.00	0.000	3.43	3.38	0.02	510.60
191	57.30	0.000	3.38	3.33	0.02	510.60
192	57.60	0.000	3.33	3.28	0.02	510.60
193	57.90	0.000	3.28	3.23	0.02	510.60
194	58.20	0.000	3.23	3.18	0.02	510.60
195	58.50	0.000	3.18	3.13	0.02	510.60
196	58.80	0.000	3.13	3.08	0.02	510.60
197	59.10	0.000	3.08	3.03	0.02	510.60
198	59.40	0.000	3.03	2.98	0.02	510.60
199	59.70	0.000	2.98	2.93	0.02	510.60
200	60.00	0.000	2.93	2.88	0.02	510.60
			-		~ . ~	010.00

201	60.30	0.000	2.88	2.83	0.02	510.60
202	60.60	0.000	2.83	2.78	0,02	510.60
203	60.90	0.000	2.78	2.78	0.00	510.50

10.10

DETENTION BASIN ROUTING

2.89 0.50

10	Minutes					516,40
Interval	Т	Q IN	2S/dT+O	2S/dT-O	0	Basin
	(HRS)	(CFS)		(CFS)	(CFS)	WSEL
					. ,	
1	0.17	0.359	0.00	0.00	0.00	512.00
2	0.33	0.365	0.72	0.72	0.00	512.00
3	0.50	0.380	1.47	1.44	0.01	512.10
4	0.67	0.388	2.21	2.18	0.01	512.10
5	0.83	0.404	2.97	2.89	0.04	512.20
6	1.00	0.413	3.71	3.63	0.04	512.20
7	1.17	0.433	4.48	4.37	0.05	512.30
8	1.33	0.444	5.25	5.14	0.05	512.30
9	1.50	0.468	6.05	5.92	0.06	512.40
10	1.67	0.481	6.87	6.72	0.07	512.50
11	1.83	0.511	7.71	7.56	0.07	512.50
12 -	2.00 -	0.528	8.60	8.44	- 0.08	
13	2.17	0.566	9.53	9.35	0.09	512.70
14	2.33	0.588	10.50	10.32	0.09	512.70
15	2.50	0.639	11.55	11.35	0.10	512.80
16	2.67	0.669	12.66	12.45	0.10	512.90
17	2.83	0.742	13.87	13.65	0.11	513.00
18	3.00	0.787	15.18	14.94	0.12	513.10
19	3.17	0.903	16.63	16.39	0.12	513.20
20	3.33	0.979	18.27	18.01	0.13	513.30
21	3.50	1.196	20.19	19.91	0.14	513.50
22	3.67	1.362	22.47	22.18	0.15	513.70
23	3.83	2.000	25.54	25.23	0.16	513.90
24	4.00	2.819	30.05	29.71	0.17	514.20
25	4.17	10.103	42.64	42.23	0.20	515.20
26	4.33	1.604	53.94	53.41	0.26	516.10
27	4.50	1.074	56.09	55.43	0.33	516.20
28	4.67	0.840	57.35	56.53	0.41	516.30
29	4.83	0.704	58.07	57.07	0.50	516.40
30	5.00	0.612	58,39	57.39	0.50	516.40
31	5.17	0.546	58.54	57.54	0.50	516.40
32	5.33	0.496	58.58	57.58	0.50	516.40
33	5.50	0.456	58.53	57.53	0.50	516.40
34	5.67	0.423	58.41	57.40	0.50	516.40
35	5.83	0.396	58.22	57.22	0.50	516.40
36	6.00	0.372	57.99	56.99	0.50	516.40
37	6.17	0.000	57.36	56.54	0.41	516.30
38	6.33	0.000	56.54	55.73	0.41	516.30
39	6.50	0.000	55.73	55.08	0.33	516.20
40	6.67	0.000	55.08	54.42	0.33	516.20
41	6.83	0.000	54.42	53.90	0.26	516.10
42	7.00	0.000	53.90	53.37	0.26	516.10
43	7.17	0.000	53.37	52.91	0.23	516.00
44	7.33	0.000	52.91	52.45	0.23	516.00

15	7 50	0.000	E0 4E	50.00	0.00	540.00
40	7.00	0.000	52.45	52.00	0.23	516.00
40	7.07	0.000	52.00	51.54	0.23	515.90
47	7.83	0.000	51.54	51.09	0.23	515.90
48	8.00	0.000	51.09	50.64	0.23	515.90
49	8.17	0.000	50.64	50.20	0.22	515.80
50	8.33	0.000	50.20	49.75	0.22	515.80
51	8.50	0.000	49.75	49.31	0.22	515.80
52	8.67	0.000	49.31	48.87	0.22	515,70
53	8.83	0.000	48.87	48.43	0.22	515.70
54	9.00	0.000	48.43	47.99	0.22	515.60
55	9.17	0.000	47.99	47.56	0.22	515.60
56	9.33	0.000	47.56	47.13	0.22	515.60
57	9.50	0.000	47.13	46.70	0.21	515 50
58	9.67	0.000	46.70	46.27	0.21	515 50
59	9.83	0.000	46.27	45.85	0.21	515 50
60	10.00	0.000	45.85	45.42	0.21	515 50
61	10.17	0,000	45 42	45.00	0.21	515.00
62	10.33	0.000	45.00	40.00	0.21	515.40
63	10.50	0.000	40.00	44.16	0.21	515.40
64 -	10.67	- 0.000	4416	- 13 77	0.21	515.40
65	10.83	0.000	43.70	43 33	0.21	515.30
66	11.00	0.000	13 33	43.00	0.21	515.30
67	11.00	0.000	40.00	42.51	0.21	515.30
68	11.33	0.000	12:51	42.01	0.20	515.20
60	11.50	0.000	42.01	42.10	0.20	515.20
70	11.00	0.000	42.10	41.09	0.20	515.20
71	11.07	0.000	41.09	41.29	0.20	515.10
72	12:00	0.000	40.80	40.09	0.20	515.10
73	12.00	0.000	40.09	40.49	0.20	515.10
74	12.17	0.000	40.49	40.09	0.20	515.00
75	12.50	0.000	40.09	39.70	0.20	515.00
76	12.50	0.000	20.20	39.30	0.20	515.00
70	12.07	0.000	39.30	30.91	0.20	515.00
79	12.00	0.000	30.91	38.52	0.19	514.90
70	12.00	0.000	30.32	30.13	0.19	514.90
19	10.17	0.000	38.13	37.75	0.19	514.90
00	10.00	0.000	37.75	37.37	0.19	514.80
01	13.50	0.000	37.37	36.99	0.19	514.80
82	13.67	0.000	36.99	36.60	0.19	514.80
83	13.83	0.000	36.60	36.23	0.19	514.70
84	14.00	0.000	36.23	35.86	0.19	514.70
85	14.17	0.000	35.86	35.48	0.19	514.70
80	14.33	0.000	35.48	35.11	0.19	514.70
87	14.50	0.000	35.11	34.74	0.18	514.60
88	14.67	0.000	34.74	34.38	0.18	514.60
89	14.83	0.000	34.38	34.01	0.18	514.60
90	15.00	0.000	34.01	33.65	0.18	514.50
91	15.17	0.000	33.65	33.29	0.18	514.50
92	15.33	0.000	33.29	32.93	0.18	514.50
93	15.50	0.000	32.93	32.57	0.18	514.50
94	15.67	0.000	32.57	32.22	0.18	514.40
95	15.83	0.000	32.22	31.87	0.18	514.40
96	16.00	0.000	31.87	31.52	0.18	514.40

97	16 17	0.000	31.52	31 17	0.40	E4 4 40
08	16.33	0.000	21.02	20.02	0.10	514.40
00	16.50	0.000	20.00	30.62	0.17	514.30
100	16.50	0.000	30.62	30.48	0.17	514.30
100	10.07	0.000	30.48	30.14	0.17	514.30
101	10.03	0.000	30.14	29.80	0.17	514.20
102	17.00	0.000	29.80	29.46	0.17	514.20
103	17.17	0.000	29.46	29.13	0.17	514.20
104	17.33	0.000	29.13	28.79	0.17	514.20
105	17.50	0.000	28.79	28.46	0.16	514.10
106	17.67	0.000	28.46	28.14	0.16	514.10
107	17.83	0.000	28.14	27.81	0.16	514.10
108	18.00	0.000	27.81	27.48	0.16	514.10
109	18.17	0.000	27.48	27.16	0.16	514.00
110	18.33	0.000	27.16	26.84	0.16	514.00
111	18.50	0.000	26.84	26.52	0.16	514.00
112	18.67	0.000	26.52	26.20	0.16	514.00
113	18.83	0.000	26.20	25.89	0.16	513.90
114	19.00	0.000	25.89	25.58	0.16	513.90
115	19.17	0.000	25.58	25.27	0.16	513.90
- 116	⁻ 19.33	0.000	25.27	24.96	0.16	 513.90
117	19.50	0.000	24.96	24.64	0.16	513.90
118	19.67	0.000	24.64	24.34	0.15	513 80
119	19.83	0.000	24.34	24.04	0.15	513.80
120	20.00	0.000	24.04	23.74	0.15	513.80
121	20.17	0.000	23.74	23.43	0.15	513.80
122	20.33	0.000	23.43	23,14	0.15	513.70
123	20.50	0.000	23.14	22.85	0.15	513 70
124	20.67	0.000	22.85	22.55	0.15	513 70
125	20.83	0.000	22.55	22.26	0.15	513.70
126	21.00	0.000	22.26	21.97	0.14	513.60
127	21,17	0.000	21.97	21.69	0.14	513.60
128	21.33	0.000	21.69	21.40	0.14	513.60
129	21.50	0.000	21.40	21.12	0.14	513.60
130	21.67	0.000	21.12	20.84	0.14	513 60
131	21.83	0.000	20.84	20.56	0.14	513.50
132	22.00	0.000	20.56	20.29	0.14	513.50
133	22.17	0.000	20.29	20.01	0.14	513.50
134	22.33	0.000	20.01	19.74	0.14	513.50
135	22.50	0.000	19.74	19.46	0.14	513.50
136	22.67	0.000	19.46	19.20	0.13	513.40
137	22.83	0.000	19.20	18.93	0.13	513.40
138	23.00	0.000	18.93	18.67	0.13	513.40
139	23.17	0.000	18.67	18.40	0.13	513.40
140	23.33	0.000	18.40	18.14	0.13	513.40
141	23.50	0.000	18.14	17.88	0.13	513.30
142	23.67	0.000	17.88	17.63	0.13	513.30
143	23.83	0.000	17.63	17.37	0.13	513.30
144	24.00	0.000	17.37	17.12	0.13	513.30
145	24.17	0.000	17.12	16.86	0.13	513.30
146	24.33	0.000	16.86	16.62	0.12	513.20
147	24.50	0.000	16.62	16.37	0.12	513.20
148	24.67	0.000	16.37	16.13	0.12	513.20

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149	24.83	0.000	16.13	15.89	0.12	513,20
150	25.00	0.000	15.89	15.64	0.12	513.20
151	25.17	0.000	15.64	15.41	0.12	513.10
152	25.33	0.000	15.41	15.18	0.12	513.10
153	25.50	0.000	15.18	14.94	0.12	513.10
154	25.67	0.000	14.94	14.71	0.12	513.10
155	25.83	0.000	14.71	14.48	0.12	513.10
156	26.00	0.000	14.48	14.24	0.12	513.10
157	26.17	0.000	14.24	14.02	0.11	513.00
158	26.33	0.000	14.02	13.80	0.11	513.00
159	26.50	0.000	13.80	13.58	0.11	513.00
160	26.67	0.000	13.58	13.36	0.11	513.00
161	26.83	0.000	13.36	13.14	0.11	513.00
162	27.00	0.000	13.14	12.93	0.10	512.90
163	27.17	0.000	12.93	12.72	0.10	512.90
164	27.33	0.000	12.72	12.51	0.10	512.90
165	27.50	0.000	12.51	12.30	0.10	512.90
166	27.67	0.000	12.30	12.09	0.10	512.90
167	27.83	0.000	12.09	11.89	0.10	512.90
-168	28.00	- 0.000	11.89	11.68	0.10	512.90
169	28.17	0.000	11.68	11.48	0.10	512.80
170	28.33	0.000	11.48	11.29	0.10	512.80
171	28.50	0.000	11.29	11.09	0.10	512.80
172	28.67	0.000	11.09	10.89	0.10	512.80
173	28.83	0.000	10.89	10.70	0.10	512.80
174	29.00	0.000	10.70	10.50	0.10	512.80
175	29.17	0.000	10.50	10.32	0.09	512.70
176	29.33	0.000	10.32	10.14	0.09	512.70
177	29.50	0.000	10.14	9.96	0.09	512 70
178	29.67	0.000	9.96	9.78	0.09	512 70
179	29.83	0.000	9.78	9.60	0.09	512 70
180	30.00	0.000	9.60	9.42	0.09	512 70
181	30.17	0.000	9.42	9.23	0.09	512 70
182	30.33	0.000	9.23	9.05	0.09	512.70
183	30.50	0.000	9.05	8.89	0.08	512.60
184	30.67	0.000	8.89	8.72	0.08	512.60
185	30.83	0.000	8.72	8.55	0.08	512.60
186	31.00	0.000	8.55	8.39	0.08	512.60
187	31.17	0.000	8.39	8.22	0.08	512.60
188	31.33	0.000	8.22	8.06	0.08	512.60
189	31.50	0.000	8.06	7.89	0.08	512.60
190	31.67	0.000	7.89	7.74	0.07	512.50
191	31.83	0.000	7.74	7.59	0.07	512 50
192	32.00	0.000	7.59	7.44	0.07	512.50
193	32.17	0.000	7.44	7.29	0.07	512.50
194	32.33	0.000	7.29	7.14	0.07	512.50
195	32.50	0.000	7.14	7.00	0.07	512 50
196	32.67	0.000	7.00	6.85	0.07	512.50
197	32.83	0.000	6.85	6.70	0.07	512 50
198	33.00	0.000	6.70	6.55	0.07	512 50
199	33.17	0.000	6.55	6.42	0.06	512.00
200	33.33	0.000	6.42	6.29	0.06	512.40
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201	33.50	0.000	6.29	6.16	0.06	512.40
202	33.67	0.000	6.16	6.03	0.06	512.40
203	33.83	0.000	6.03	5.90	0.06	512.40
204	34.00	0.000	5.90	5.77	0.06	512.40
205	34.17	0.000	5.77	5.64	0.06	512.40
206	34.33	0.000	5.64	5.51	0.06	512.40
207	34.50	0.000	5.51	5.38	0.06	512.40
208	34.67	0.000	5.38	5.25	0.06	512.40
209	34.83	0.000	5.25	5.14	0.05	512.30
210	35.00	0.000	5.14	5.03	0.05	512.30
211	35.17	0.000	5.03	4.93	0.05	512.30
212	35.33	0.000	4.93	4.82	0.05	512.30
213	35.50	0.000	4.82	4.71	0.05	512.30
214	35.67	0.000	4.71	4.60	0.05	512.30
215	35.83	0.000	4.60	4.50	0.05	512.30
216	36.00	0.000	4.50	4.39	0.05	512.30
217	36.17	0.000	4.39	4.28	0.05	512.30
218	36.33	0.000	4.28	4.17	0.05	512.30
219	36.50	0.000	4.17	4.07	0.05	512.30
220	36.67	0.000	4.07	3.96	0.05	512.30
221	36.83	0.000	3.96	3.88	0.04	512.20
222	37.00	0.000	3.88	3.80	0.04	512.20
223	37.17	0.000	3.80	3.72	0.04	512.20
224	37.33	0.000	3.72	3.64	0.04	512.20
225	37.50	0.000	3.64	3.56	0.04	512.20
226	37.67	0.000	3.56	3.48	0.04	512.20
227	37.83	0.000	3.48	3.41	0.04	512.20
228	38.00	0.000	3.41	3.33	0.04	512.20
229	38.17	0.000	3.33	3.25	0.04	512.20
230	38.33	0.000	3.25	3.17	0.04	512.20
231	38.50	0.000	3.17	3.09	0.04	512.20
232	38.67	0.000	3.09	3.01	0.04	512.20
233	38.83	0.000	3.01	2.93	0.04	512.20
234	39.00	0.000	2.93	2.85	0.04	512.20
235	39.17	0.000	2.85	2.77	0.04	512.20
236	39.33	0.000	2.77	2.70	0.04	512.20
237	39.50	0.000	2.70	2.62	0.04	512.20
238	39.67	0.000	2.62	2.59	0.01	512.10
239	39.83	0.000	2.59	2.56	0.01	512 10
240	40.00	0.000	2.56	2.53	0.01	512.10
241	40.17	0.000	2.53	2.50	0.01	512 10
242	40.33	0.000	2.50	2.47	0.01	512.10
243	40.50	0.000	2.47	2,44	0.01	512 10
244	40.67	0.000	2.44	2.41	0.01	512.10
245	40.83	0.000	2.41	2.38	0.01	512.10
246	41.00	0.000	2.38	2.35	0.01	512.10
247	41.17	0.000	2.35	2.32	0.01	512.10
248	41.33	0.000	2.32	2.29	0.01	512.10
249	41.50	0.000	2.29	2.26	0.01	512.10
250	41.67	0.000	2,26	2.23	0.01	512.10
251	41.83	0.000	2.23	2.20	0.01	512.10
252	42.00	0.000	2.20	2.17	0.01	512.10

253	42.17	0.000	2.17	2.14	0.01	512.10
254	42.33	0.000	2.14	2.11	0.01	512.10
255	42.50	0.000	2.11	2.08	0.01	512,10
256	42.67	0.000	2.08	2.05	0.01	512.10
257	42.83	0.000	2.05	2.02	0.01	512.10
258	43.00	0.000	2.02	1.99	0.01	512.10
259	43.17	0.000	1.99	1.96	0.01	512.10
260	43.33	0.000	1.96	1.93	0.01	512.10
261	43.50	0.000	1.93	1.90	0.01	512.10
262	43.67	0.000	1.90	1.87	0.01	512.10
263	43.83	0.000	1.87	1.84	0.01	512.10
264	44.00	0.000	1.84	1.81	0.01	512.10
265	44.17	0.000	1.81	1.78	0.01	512.10
266	44.33	0.000	1.78	1.75	0.01	512.10
267	44.50	0.000	1.75	1.72	0.01	512.10
268	44.67	0.000	1.72	1.69	0.01	512.10
269	44.83	0.000	1.69	1.66	0.01	512.10
270	45.00	0.000	1.66	1.63	0.01	512.10
271	45.17	0.000	1.63	1.60	0.01	512,10
272-	- 45.33	0.000	1,60	1.57	0.01	512.10
273	45.50	0.000	1.57	1.54	0.01	512.10
274	45.67	0.000	1.54	1.51	0.01	512,10
275	45.83	0.000	1.51	1.48	0.01	512.10
276	46.00	0.000	1.48	1.45	0.01	512.10
277	46.17	0.000	1.45	1.42	0.01	512.10
278	46.33	0.000	1.42	1.39	0.01	512.10
279	46.50	0.000	1.39	1.36	0.01	512.10
280	46.67	0.000	1.36	1.33	0.01	512.10
281	46.83	0.000	1.33	1.30	0.01	512.10
282	47.00	0.000	1.30	1.30	0.00	512.00

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APPENDIX

CITY OF SAN DIEGO DRAINAGE DESGN MANUAL EXCERPTS

CITY OF SAN DIEGO RATIONAL METHOD

COUNTY OF SAN DIEGO HYDROLOGY MANUAL EXCEPTS

CHAPTER 3 – RATIONAL METHOD CHAPTER 6 – RATIONAL METHOD HYDROGRAPHS 6-HOUR ISOPLUVIAL MAPS

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TABLE 2

RUNOFF COEFFICIENTS (RATIONAL METHOD)

DEVELOPED AREAS (URBAN)

Land Use	<u>Coefficient, C</u> Soll Type (1)
Residential:	D
Single Family	.55
Multi-Units	.70
Mobile Homes	.65
Rural (lots greater than 1/2 acre)	.45
Commercial (2) 80% Impervious	•85 ·
Industrial (2) 90% Impervious	.95

NOTES:

(1) Type D soil to be used for all areas.

(2) Where actual conditions deviate significantly from the tabulated imperviousness values of 80% or 90%, the values given for coefficient C, may be revised by multiplying 80% or 90% by the ratio of actual imperviousness to the tabulated imperviousness. However, in no case shall the final coefficient be less than 0.50. For example: Consider commercial property on D soil.

Actual Impe	rviou	sness			Ħ	50%
Tabulated in	nperv	lousne	ŝs		H	80%
Revised C	=	<u>50</u> 80	x	0.85	1	0,53





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	Ta RUNOFF COEFFICIE	ble 3-1 NTS FOR URBA	N AREAS			
La	and Use			noff Coefficient	ĘĊ,	
				Soil	Type	
NRCS Elements	County Elements	% IMPER	A	В	υ	
Undisturbed Natural Terrain (Natural)	Permanent Open Space	*0	0.20	0.25	0.30	0.35
LOW DERSITY RESIDENTIAL (LDR)	Residential, 1.0 DU/A or less	10	0.27	0.32	036	0.41
Low Density Residential (LDR)	Residential, 2.0 DU/A or less	20	0.34	0.38	0.42	0 46
Low Density Residential (LDR)	Residential, 2.9 DU/A or less	25	0.38	0.41	0.45	0.40
Medium Density Residential (MDR)	Residential, 4.3 DU/A or less	30	0,41	0.45	0.48	0.57
Medium Density Residential (MDR)	Residential, 7.3 DU/A or less	40	0.48	0.51	0.54	200
Medium Density Residential (MDR)	Residential, 10.9 DU/A or less	45	0.52	0.54	0.57	17-0
Medium Density Residential (MDR)	Residential, 14.5 DU/A or less	50	0.55	0.50		0.00
High Density Residential (HDR)	Residential, 24.0 DU/A or less	<u>.</u>	77.0 9990	0C-0	0.00	0.63
High Density Residential (HDR)	Residential, 43.0 DU/A or less	80	0.76	10-0 TT	40.U	0.70
Commercial/Industrial (N. Com)	Neighborhood Commercial	80	0.76	0 77	0.78	01.0
Commercial/Industrial (G. Com)	General Commercial	85	0.80	0.80	0.81	67-0 68 0
Commercial/Industrial (O.P. Com)	Office Professional/Commercial	06	0.83	0.84	0.84	0.95
Commercial/Industrial (Limited I.)	Limited Industrial	6	0.83	0.84	0.84	0.85
Commercial/Industrial (General I.)	General Industrial	95	0.87	0.87	0.87	0.87

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DU/A = dwelling units per acre NRCS = National Resources Conservation Service 3-6

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Note that the Initial Time of Concentration should be reflective of the general land-use at the upstream end of a drainage basin. A single lot with an area of two or less acres does not have a significant effect where the drainage basin area is 20 to 600 acres.

Table 3-2 provides limits of the length (Maximum Length (L_M)) of sheet flow to be used in hydrology studies. Initial T_i values based on average C values for the Land Use Element are also included. These values can be used in planning and design applications as described below. Exceptions may be approved by the "Regulating Agency" when submitted with a detailed study.

& INITIAL TIME OF CONCENTRATION (T _i)													
Element*	DU/		5%	1	%	2	2%	3	%	5	%	10)%
	Acre	L _M	Ti	L _M	T _i	L _M	Ti						
Natural		50	13.2	70	12.5	85	10.9	100	10.3	100	8.7	100	6.9
LDR	1	50	12.2	70	11.5	85	10.0	100	9.5	100	8.0	100	6.4
LDR	2	50	11.3	70	10.5	85	9.2	100	8.8	100	7.4	100	5.8
LDR	2.9	50	10.7	70	10.0	85	8.8	95	8.1	100	7.0	100	5.6
MDR	4.3	50	10.2	70	9.6	80	8.1	95	7.8	100	6.7	100	5.3
MDR	7.3	50	9.2	65	8,4	80	7.4	95	7.0	100	6.0	100	4.8
MDR	10.9	50	8.7	65	7.9	80	6.9	90	6.4	100	5.7	100	4.5
MDR	14.5	50	8.2	65	7.4	80	6.5	90	6.0	100	5.4	100	4.3
HDR	24	50	6.7	65	6.1	75	5.1	90	4.9	95	4.3	100	3.5
HDR	43	50	5.3	65	4.7	75	4.0	85	3.8	95	3.4	100	2.7
N. Com		50	5.3	60	4.5	75	4.0	85	3.8	95	3.4	100	2.7
G. Com		50	4.7	60	4.1	75	3.6	85	3.4	90	2.9	100	2.4
O.P./Com		50	4.2	60	3.7	70	3.1	80	2.9	90	2.6	100	2.2
Limited I.		50	4.2	_60	3.7	70	3.1	80	2.9	90	2.6	100	2.2
General I.		50	3.7	60	3.2	70	2.7	80	2.6	90	2.3	100	1.9

MAXIMUM OVERLAND FLOW LENGTH (L_M) & INITIAL TIME OF CONCENTRATION (T_i)

-T-able-3-2-

*See Table 3-1 for more detailed description


















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SECTION 6 RATIONAL METHOD HYDROGRAPH PROCEDURE

6.1 INTRODUCTION

The procedures in this section are for the development of hydrographs from RM study results for study areas up to approximately 1 square mile in size. The RM, discussed in Section 3, is a mathematical formula used to determine the maximum runoff rate from a given rainfall. It has particular application in urban storm drainage, where it is used to estimate peak-runoff rates from small urban and rural watersheds for the design of storm drains and small drainage structures. However, in some instances such as for design of detention basins, the peak runoff rate is insufficient information for the design, and a hydrograph is needed. Unlike the NRCS hydrologic method (discussed in Section 4), the RM itself does not create hydrographs. The procedures for detention basin design based on RM study results were first developed as part of the East Otay Mesa Drainage Study. Rick Engineering Company performed this study under the direction of County Flood Control. The procedures in this section may be used for the development of hydrographs from RM study results for study areas up to approximately 1 square mile in size.

6.2 HYDROGRAPH DEVELOPMENT

The concept of this hydrograph procedure is based on the RM formula:

Q = C I A

Where: Q = peak discharge, in cubic feet per second (cfs).

C = runoff coefficient, proportion of the rainfall that runs off the surface (no units)

- I = average rainfall intensity for a duration equal to the T_o for the area, in inches per hour
- A = drainage area contributing to the design location, in acres

The RM formula is discussed in more detail in Section 3.

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6-1

An assumption of the RM is that discharge increases linearly over the T_o for the drainage area until reaching the peak discharge as defined by the RM formula, and then decreases linearly. A linear hydrograph can be developed for the peak flow occurring over the T_o as shown in Figure 6-1. However, for designs that are dependent on the total storm volume, it is not sufficient to consider a single hydrograph for peak flow occurring over the T_c at the beginning of a 6-hour storm event because the hydrograph does not account for the entire volume of runoff from the storm event. The volume under the hydrograph shown in Figure 6-1 is equal to the rainfall intensity multiplied by the duration for which that intensity occurs (T_o), the drainage area (A) contributing to the design location, and the runoff coefficient (C) for the drainage area. For designs that are dependent on the total storm volume, a hydrograph must be generated to account for the entire volume of runoff from the 6-hour storm event. The hydrograph for the entire 6-hour storm event is generated by creating a rainfall distribution consisting of blocks of rain, creating an incremental hydrograph for each block of rain, and adding the hydrographs from each block of rain. This process creates a hydrograph that contains runoff from all the blocks of rain and accounts for the entire volume of runoff from the 6-hour storm event. The total volume under the resulting hydrograph is equal to the following equation:

$VOL = CP_6A$

(Eq. 6-1)

Where:

VOL = volume of runoff (acre-inches)

 $P_6 = 6$ -hour rainfall (inches) C = runoff coefficient

A = area of the watershed (acres)



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6.2.1 Rainfall Distribution

Figure 6-2 shows a 6-hour rainfall distribution consisting of blocks of rain over increments of time equal to T_0 . The number of blocks is determined by rounding T_0 to the nearest whole number of minutes, dividing 360 minutes (6 hours) by T_0 , and rounding again to the nearest whole number. The blocks are distributed using a (2/3, 1/3) distribution in which the peak rainfall block is placed at the 4-hour time within the 6-hour rainfall duration. The additional blocks are distributed in a sequence alternating two blocks to the left and one block to the right of the 4-hour time (see Figure 6-2). The total amount of rainfall ($P_{T(N)}$) for any given block (N) is determined as follows:

$$P_{T(N)} = (I_{T(N)} T_{T(N)}) / 60$$

Where: $P_{T(N)} = \text{total amount of rainfall for any given block (N)}$

 $I_{T(N)} = \text{average rainfall intensity for a duration equal to } T_{T(N)} \text{ in inches per hour}$ $T_{T(N)} = NT_o \text{ in minutes (N is an integer representing the given block number of rainfall)}$

Intensity is calculated using the following equation (described in detail in Section 3):

$I = 7.44 P_6 D^{-0.645}$

Where: I = average rainfall intensity for a duration equal to D in inches per hour P_6 = adjusted 6-hour storm rainfall

D = duration in minutes



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Substituting the equation for I in the equation above for $P_{T(N)}$ and setting the duration (D) equal to $T_{T(N)}$ yields:

 $P_{T(N)} = [(7.44 P_6/T_{T(N)}^{0.645})(T_{T(N)})] / 60$ $P_{T(N)} = 0.124 P_6 T_{T(N)}^{0.355}$

Substituting NT_o for T_T (where N equals the block number of rainfall) in the equation above yields:

$$P_{T(N)} = 0.124 P_6 (NT_c)^{0.355}$$
 (Eq. 6-2)

Equation 6-2 represents the total rainfall amount for a rainfall block with a time base equal to $T_{T(N)}$ (NT_o). The actual time base of each rainfall block in the rainfall distribution is T_o, as shown in Figure 6-2. The actual rainfall amount (P_N) for each block of rain is equal to P_T at N (P_{T(N)}) minus the previous P_T at N-1 (P_{T(N-1)}) at any given multiple of T_o (any NT_o). For example, the rainfall for block 2 is equal to P_{T(N)} at T_{T(N)} = 2T_o minus the P_{T(N)} at T_{T(N)} = 1T_o, and the rainfall for block 3 equals P_{T(N)} at T_{T(N)} = 3T_o minus the P_{T(N)} at T_{T(N)} = 2T_o, or P_N can be represented by the following equation:

$$P_{\rm N} = P_{\rm T(N)} - P_{\rm T(N-1)} \tag{Eq. 6-3}$$

For the rainfall distribution, the rainfall at block N = 1, $(1T_o)$, is centered at 4 hours, the rainfall at block N = 2, $(2T_o)$, is centered at 4 hours $- 1T_o$, the rainfall at block N = 3, $(3T_o)$, is centered at 4 hours $- 2T_o$, and the rainfall at at block N = 4, $(4T_o)$, is centered at 4 hours $+ 1T_o$. The sequence continues alternating two blocks to the left and one block to the right (see Figure 6-2).

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6.2.2 Construction of Incremental Hydrographs

Figure 6-1 shows the relationship of a single block of rain to a single hydrograph. Figure 6-3 shows the relationship of the rainfall distribution to the overall hydrograph for the storm event. The peak flow amount from each block of rain is determined by the RM formula, Q = CIA, where I equals I_N (the actual rainfall intensity for the rainfall block). I_N is determined by dividing P_N by the actual time base of the block, T_o . The following equation shows this relationship:

$$I_N = 60 P_N / T_o$$

(Eq. 6-4)

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Where: $I_N =$ average rainfall intensity for a duration equal to T_o in inches per hour $P_N =$ rainfall amount for the block in inches $T_o =$ time of concentration in minutes

By substituting equation 6-4 into the rational equation, the following relationship is obtained:

$$Q_{\rm N} = 60 \, \rm CAP_{\rm N}/T_{\rm o} \, (cfs) \tag{Eq. 6-5}$$

Finally, the overall hydrograph for the storm event is determined by adding all the hydrographs from each block of rain. Since the peak flow amount for each incremental hydrograph corresponds to a zero flow amount from the previous and proceeding hydrographs, as shown in Figure 6-3, the inflow hydrograph can be plotted by connecting the peak flow amounts (see the dashed line in Figure 6-3).

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6.3 GENERATING A HYDROGRAPH USING RATHYDRO

The rainfall distribution and related hydrographs can be developed using the RATHYDRO computer program provided to the County by Rick Engineering Company. A copy of this program is available at no cost from the County. The output from this computer program may be used with HEC-1 or other software for routing purposes.

The design storm pattern used by the RATHYDRO program is based on the (2/3, 1/3) distribution described in Sections 4.1.1 and 6.2.1. The ordinates on the hydrograph are calculated based on the County of San Diego Intensity-Duration Design Chart (Figure 3-1), which uses the intensity equation described in Sections 3.1.3 and 6.2.1 to relate the intensity (I) of the storm to T_0 , I = 7.44 P₆D^{-0.645}. The computer program uses equations 6-2 and 6-3 described above and calculates I_N directly. The intensity at any given multiple of T₀ is calculated by the following equation:

$$I_{N} = [(I_{T(N)}) (T_{T(N)}) - (I_{T(N-1)}) (T_{T(N-1)})] / T_{e}$$
(Eq. 6-6)

Where:

N = number of rainfall blocks

 $T_{T(N)}$ = time of concentration at rainfall block N in minutes (equal to NT_{o})

 $I_N =$ actual rainfall intensity at rainfall block N in inches per hour

 $I_{T(N)}$ = rainfall intensity at time of concentration $T_{T(N)}$ in inches per hour

Figure 6-2 shows the rainfall distribution used in the RM hydrograph, computed at multiples of T_o . The rainfall at block N = 1, $(1T_o)$, is centered at 4 hours, the rainfall at block N = 2, $(2T_o)$, is centered at 4 hours – $1T_o$, the rainfall at block N = 3, $(3T_o)$, is centered at 4 hours – $2T_o$, and the rainfall at at block N = 4, $(4T_o)$, is centered at 4 hours + $1T_o$. The sequence continues alternating two blocks to the left and one block to the right (see Figure 6-2).

As described in Section 6.2.2, the peak discharge (Q_N) of the hydrograph for any given rainfall block (N) is determined by the RM formula Q = CIA, where $I = I_N =$ the actual

rainfall intensity for the rainfall block. The RATHYDRO program substitutes equation 6-6 into the RM formula to determine Q_N yielding the following equation:

$$Q_{N} = [(I_{T(N)}) (T_{T(N)}) - (I_{T(N-1)}) (T_{T(N-1)})] CA / T_{o}$$
(Eq. 6-7)

Where:

e: $Q_N = peak$ discharge for rainfall block N in cubic feet per second (cfs) N = number of rainfall blocks

 $T_{T(N)}$ = time of concentration at rainfall block N in minutes (equal to NT_c) $I_{T(N)}$ = rainfall intensity at time of concentration $T_{T(N)}$ in inches per hour C = RM runoff coefficient

A = area of the watershed (acros)

To develop the hydrograph for the 6-hour design storm, a series of triangular hydrographs with ordinates at multiples of the given T_0 are created and added to create the hydrograph. This hydrograph has its peak at 4 hours plus ½ of the T_0 . The total volume under the hydrograph is equal to the following equation (equation 6-1):

$VOL = CP_6A$

Where:

VOL = volume of runoff (acre-inches) $P_6 = 6$ -hour rainfall (inches)

C = runoff coefficient

A = area of the watershed (acres)





Global Climate Change Evaluation

for the

Southview East Project

Submitted To:

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Appendix A Greenhouse Gas Emission Calculations

List of Acronyms

APCD	Air Pollution Control District
AB	Assembly Bill
AB 32	Assembly Bill 32, Global Warming Solutions Act of 2006
ARB	Air Resources Board
CalEEMod	California Emissions Estimator Model
CAPCOA	California Air Pollution Control Officers Association
CCAP	Center for Clean Air Policy
CCAR	California Climate Action Registry
CEC	California Energy Commission
CEQA	California Environmental Quality Act
CH4	Methane
CO ₂	Carbon Dioxide
CO ₂ e	Carbon Dioxide Equivalent
DWR	Department of Water Resources
EPA	U.S. Environmental Protection Agency
GCC	Global Climate Change
GHG	Greenhouse Gas
GWP	Global Warming Potential
HFCs	Hydrofluorocarbons
IPCC	Intergovernmental Panel on Climate Change
LCFS	Low Carbon Fuel Standard
LEED	Leadership in Energy and Environmental Design
MMT	Million Metric Tons
MW	Megawatts
N ₂ O	Nitrous Oxide
OPR	State Office of Planning and Research
PFCs	Perfluorocarbons
RPS	Renewable Portfolio Standards
SB	Senate Bill
SDCGHGI	San Diego County Greenhouse Gas Inventory
UNFCCC	United Nations Framework Convention on Climate Change
USBGC	U.S. Green Building Council
VMT	Vehicle Miles Traveled

1.0 INTRODUCTION

This report presents an assessment of potential greenhouse gas impacts associated with the Southview East Condominium Project in the Otay Mesa community of the City of San Diego. The Southview East Project site is located on the north and south sides of Airway Road, south of Interstate 905 and east of Caliente Avenue in the Otay Mesa area. The project site is currently undeveloped.

The Southview East project is located on an approximately 21-acre parcel in the Otay Mesa area of San Diego. The Project would subdivide the property into two multi-family residential condominium subdivisions totaling 86 units and one open space/habitat preserve area totaling approximately 9 acres. The project is located east of Caliente Avenue, adjacent to the Vista del Sur project (lot 2 of the Southview project, TM 25169) and the Tesoro project (lot 1 of the Southview project, TM 25169). The two subdivisions are separated by Airway Road. The Project will require an amendment to the previous site development permit.

Development north of Airway Road will be a 46-unit multi-family condominium project consisting of 11 3-, 4-, and 5-plex buildings which are all three stories in height. South of Airway road will be a 40-unit multi-family condominium project consisting of 8 5-plex buildings, all three stories in height.

This greenhouse gas (GHG) analysis includes an evaluation of existing conditions in the project vicinity, an assessment of potential greenhouse gas emissions associated with project construction and operations, and project design features and other regulatory actions that will reduce greenhouse gas emissions.

1.1 General Principles and Existing Conditions

Global Climate Change (GCC) refers to changes in average climatic conditions on Earth as a whole, including temperature, wind patterns, precipitation and storms. GCC may result from natural factors, natural processes, and/or human activities that change the composition of the

atmosphere and alter the surface and features of land. Historical records indicate that global climate changes have occurred in the past due to natural phenomena (such as during previous ice ages). Some data indicate that the current global conditions differ from past climate changes in rate and magnitude.

Global temperatures are moderated by naturally occurring atmospheric gases, including water vapor, carbon dioxide (CO₂), methane (CH₄) and nitrous oxide (N₂O), which are known as greenhouse gases (GHGs). These gases allow solar radiation (sunlight) into the Earth's atmosphere, but prevent radiative heat from escaping, thus warming the Earth's atmosphere, much like a greenhouse. GHGs are emitted by both natural processes and human activities. Without these natural GHGs, the Earth's temperature would be about 61° Fahrenheit cooler (California Environmental Protection Agency 2006). Emissions from human activities, such as electricity production and vehicle use, have elevated the concentration of these gases in the atmosphere. For example, data from ice cores indicate that CO₂ concentrations remained steady prior to the current period for approximately 10,000 years; however, concentrations of CO₂ have increased in the atmosphere since the industrial revolution.

GCC and GHGs have been at the center of a widely contested political, economic, and scientific debate. Although the conceptual existence of GCC is generally accepted, the extent to which GHGs generally and anthropogenic-induced GHGs (mainly CO₂, CH₄ and N₂O) contribute to it remains a source of debate. The State of California has been at the forefront of developing solutions to address GCC.

The United Nations Intergovernmental Panel on Climate Change (IPCC) constructed several emission trajectories of GHGs needed to stabilize global temperatures and climate change impacts. The IPCC concluded that a stabilization of GHGs at 400 to 450 ppm CO₂ equivalent concentration is required to keep global mean warming below 3.6° Fahrenheit (2° Celsius), which is assumed to be necessary to avoid dangerous climate change (Association of Environmental Professionals 2007).

State law defines greenhouse gases as any of the following compounds: carbon dioxide (CO₂), methane (CH₄), nitrous oxide (N₂O), hydrofluorocarbons (HFCs), perfluorocarbons (PFCs), sulfur hexafluoride (SF₆), and nitrogen trifluoride (NF₃) (California Health and Safety Code Section 38505(g).) CO₂, followed by CH₄ and N₂O, are the most common GHGs that result from human activity.

1.2 Sources and Global Warming Potentials of GHG

Anthropogenic sources of CO₂ include combustion of fossil fuels (coal, oil, natural gas, gasoline and wood). CH₄ is the main component of natural gas and also arises naturally from anaerobic decay of organic matter. Accordingly, anthropogenic sources of CH₄ include landfills, fermentation of manure and cattle farming. Anthropogenic sources of N₂O include combustion of fossil fuels and industrial processes such as nylon production and production of nitric acid. Other GHGs are present in trace amounts in the atmosphere and are generated from various industrial or other uses.

GHGs have varying global warming potential (GWP). The GWP is the potential of a gas or aerosol to trap heat in the atmosphere; it is the "cumulative radiative forcing effect of a gas over a specified time horizon resulting from the emission of a unit mass of gas relative to a reference gas" (USEPA 2006). The reference gas for GWP is CO₂; therefore, CO₂ has a GWP of 1. The other main greenhouse gases that have been attributed to human activity include CH₄, which has a GWP of 28, and N₂O, which has a GWP of 265. Table 1 presents the GWP and atmospheric lifetimes of common GHGs. In order to account for each GHG's respective GWP, all types of GHG emissions are expressed in terms of CO₂ equivalents (CO₂e) and are typically quantified in metric tons (MT) or millions of metric tons (MMT).

Table 1 Global Warming Potentials and Atmospheric Lifetimes of GHGs						
GHG	Formula	100-Year Global Warming Potential	Atmospheric Lifetime (Years)			
Carbon Dioxide	CO ₂	1	Variable			
Methane	CH4	28	12			
Nitrous Oxide	N ₂ O	265	121			
Sulfur Hexafluoride	SF ₆	23,500	3,200			
Hydrofluorocarbons	HFCs	100 to 12,000	1 to 100			
Perfluorocarbons	PFCs	7,000 to 11,000	3.000 to 50,000			
Nitrogen Trifluoride	NF ₃	16,100	500			
Source: First Update to the Climate Change Scoping Plan, ARB 2014						

The California Air Resources Board (ARB) compiled a statewide inventory of anthropogenic GHG emissions and sinks that includes estimates for CO₂, CH₄, N₂O, SF₆, HFCs, and PFCs. The current inventory covers the years 1990 to 2012, and is summarized in Table 2. Data sources used to calculate this GHG inventory include California and federal agencies, international organizations, and industry associations. The calculation methodologies are consistent with guidance from the IPCC. The 1990 emissions level is the sum total of sources and sinks from all sectors and categories in the inventory. The inventory is divided into seven broad sectors and categories in the inventory. These sectors include: Agriculture; Commercial; Electricity Generation; Forestry; Industrial; Residential; and Transportation.

Table 2 State of California GHG Emissions by Sector							
Sector	Total 1990 Emissions (MMTCO2e)	Percent of Total 1990 Emissions	Total 2012 Emissions (MMTCO ₂ e)	Percent of Total 2012 Emissions			
Agriculture	23.4	5%	37.86	8%			
Commercial	14.4	3%	14.20	3%			
Electricity	110.6	26%	95.09				
Generation				21%			
Forestry (excluding sinks)	0.2	<1%					
Industrial	103.0	24%	89.16	19%			
Residential	29.7	7%	28.09	6%			
Transportation	150.7	35%	167.38	36%			
Recycling and Waste			8.49	2%			
High GWP Gases			18.41	4%			
Forestry Sinks	(6.7)						

In addition to the statewide GHG inventory prepared by the ARB, a GHG inventory was prepared by the University of San Diego School of Law Energy Policy Initiative Center (EPIC) for the San Diego region (University of San Diego 2008). The San Diego County Greenhouse Gas Inventory (SDCGHGI) takes into account the unique characteristics of the region when estimating emissions, and estimated emissions for years 1990, 2006, and 2020. Based on this inventory and the emission projections for the region, EPIC found that GHG emissions must be reduced by 33 percent below business as usual conditions for year 2020 in order for San Diego County to return to 1990 emission levels. "Business as usual" is defined as the emissions that would occur without any greenhouse gas reduction measures¹. For example, construction of buildings using 2005 Title 24 building standards, and not subsequently enacted more rigorous standards, would create "business as usual" emissions.

¹ As defined in the California Air Resources Board's *Climate Change Proposed Scoping Plan*, October 2008, page 11.

Areas where feasible reductions could occur and the strategies for achieving those reductions are outlined in the SDCGHGI. A summary of the various sectors that contribute GHG emissions in San Diego County for year 2006 is provided in Table 3. Total GHGs in San Diego County are estimated at 34 MMTCO₂e.

Table 3San Diego County 2006 GHG Emissions by Category					
Sector	Total Emissions (MMTCO ₂ e)	Percent of Total Emissions			
On-Road Transportation	16	46%			
Electricity	9	25%			
Natural Gas Consumption	3	9%			
Civil Aviation	1.7	5%			
Industrial Processes & Products	1.6	5%			
Other Fuels/Other	1.1	4%			
Off-Road Equipment & Vehicles	1.3	4%			
Waste	0.7	2%			
Agriculture/Forestry/Land Use	0.7	2%			
Rail	0.3	1%			
Water-Born Navigation	0.13	0.4%			
Source: EPIC's SDCGHGI, 2008.					

According to the SDCGHGI, a majority of the region's emissions are attributable to on-road transportation, with the next largest source of GHG emissions attributable to electricity generation. The SDCGHGI states that emission reductions from on-road transportation will be achieved in a variety of ways, including through regulations aimed at increasing fuel efficiency standards and decreasing vehicle emissions. These regulations are outside the control of project applicants for land use development. The SDCGHGI also indicates that emission reductions from electricity generation will be achieved in a variety of ways, including through a 10 percent reduction in electricity consumption, implementation of the renewable portfolio standard (RPS), cleaner electricity purchases by San Diego Gas & Electric, replacement of the Boardman Contract (which allows the purchase of electricity from coal-fired power plants), and implementation of 400 MW of photovoltaics. Many of these measures are also outside the control of project applicants.

In its Draft Climate Action Plan (City of San Diego 2015), the City identified the 2010 baseline for GHG emissions of 13,091,591 MT CO2e. Based on the community-wide emissions inventory, 55% of the baseline emissions are attributable to transportation, 23% are attributable to electricity use, 17% are attributable to natural gas use, and 5% are attributable to solid waste and wastewater handling and treatment.

1.3 Regulatory Framework

All levels of government have some responsibility for the protection of air quality, and each level (Federal, State, and regional/local) has specific responsibilities relating to air quality regulation. GHG emissions and the regulation of GHGs is a relatively new component of this air quality regulatory framework.

1.3.1 National and International Efforts

In 1988, the United Nations and the World Meteorological Organization established the IPCC to assess the scientific, technical, and socioeconomic information relevant to understanding the scientific basis for human-induced climate change, its potential impacts, and options for adaptation and mitigation. The most recent reports of the IPCC have emphasized the scientific consensus that real and measurable changes to the climate are occurring, that they are caused by human activity, and that significant adverse impacts on the environment, the economy, and human health and welfare are unavoidable.

On March 21, 1994, the United States joined a number of countries around the world in signing the United Nations Framework Convention on Climate Change. Under the Convention, governments agreed to gather and share information on GHG emissions, national policies, and best practices; launch national strategies for addressing GHG emissions and adapting to expected impacts, including the provision of financial and technological support to developing countries; and cooperate in preparing for adaptation to the impacts of global climate change. The U.S. Supreme Court rules in *Massachusetts v. Environmental Protection Agency*, 549 U.S. 497 (2007),

that USEPA has the ability to regulate GHG emissions. In addition to the national and international efforts described above, many local jurisdictions have adopted climate change policies and programs.

On December 7, 2009, the USEPA Administrator signed two distinct findings regarding GHGs under section 202(a) of the federal CAA:

Endangerment Finding: USEPA found that the current and projected concentrations of the six key well-mixed GHGs (CO₂, CH₄, N₂O, HFCs, PFCs, and SF₆) in the atmosphere threaten the public health and welfare of current and future generations.

<u>Cause or Contribute Finding:</u> USEPA found that the combined emissions of these well-mixed GHGs from new motor vehicles and new motor vehicle engines contribute to the GHG pollution which threatens public health and welfare.

These findings do not themselves impose any requirements on industry or other entities. However, this action was a prerequisite to finalizing the EPA's proposed greenhouse gas emission standards for light-duty vehicles, which were jointly proposed by EPA and the Department of Transportation's National Highway Safety Administration on September 15, 2009 and adopted on April 1, 2010. As finalized in April 2010, the emissions standards rule for vehicles will improve average fuel economy standards to 35.5 miles per gallon by 2016. In addition, the rule will require model year 2016 vehicles to meet an estimated combined average emission level of 250 grams of carbon dioxide per mile.

Mandatory GHG Reporting Rule. On March 10, 2009, in response to the FY2008 Consolidated Appropriations Act (H.R. 2764; Public Law 110–161), the EPA proposed a rule that requires mandatory reporting of greenhouse gas (GHG) emissions from large sources in the United States. On September 22, 2009, the Final Mandatory Reporting of Greenhouse Gases Rule was signed, and was published in the Federal Register on October 30, 2009. The rule became effective on December 29, 2009. The rule will collect accurate and comprehensive emissions data to inform future policy decisions.

The EPA is requiring suppliers of fossil fuels or industrial greenhouse gases, manufacturers of vehicles and engines, and facilities that emit 25,000 metric tons or more per year of GHG emissions to submit annual reports to EPA. The gases covered by the proposed rule are carbon dioxide (CO₂), methane (CH₄), nitrous oxide (N₂O), hydrofluorocarbons (HFC), perfluorocarbons (PFC), sulfur hexafluoride (SF₆), and other fluorinated gases, including nitrogen trifluoride (NF₃) and hydrofluorinated ethers (HFE).

1.3.2 State Regulations and Standards

The following subsections describe regulations and standards that have been adopted by the State of California to address GCC issues.

Assembly Bill 32, the California Global Warming Solutions Act of 2006. In September 2006, Governor Schwarzenegger signed AB 32 into law. AB 32 directed the ARB to do the following:

- Make publicly available a list of discrete early action GHG emission reduction measures that can be implemented prior to the adoption of the statewide GHG limit and the measures required to achieve compliance with the statewide limit.
- Make publicly available a GHG inventory for the year 1990 and determine target levels for 2020.
- On or before January 1, 2010, adopt regulations to implement the early action GHG emission reduction measures.
- On or before January 1, 2011, adopt quantifiable, verifiable, and enforceable emission reduction measures by regulation that will achieve the statewide GHG emissions limit by 2020, to become operative on January 1, 2012, at the latest. The emission reduction measures may include direct emission reduction measures, alternative compliance mechanisms, and potential monetary and non-monetary incentives that reduce GHG emissions from any sources or categories of sources that ARB finds necessary to achieve the statewide GHG emissions limit.

• Monitor compliance with and enforce any emission reduction measure adopted pursuant to AB 32.

AB 32 required that, by January 1, 2008, the ARB determine what the statewide GHG emissions level was in 1990, and approve a statewide GHG emissions limit that is equivalent to that level, to be achieved by 2020. The ARB adopted its Scoping Plan in December 2008 (ARB 2008a), which provided estimates of the 1990 GHG emissions level and identified sectors for the reduction of GHG emissions. The ARB estimated that the 1990 GHG emissions level was 427 MMT net CO₂e (ARB 2007). The ARB estimates that a reduction of 173 MMT net CO₂e emissions below business-as-usual would be required by 2020 to meet the 1990 levels. This amounts to roughly a 28.35 percent reduction from projected business-as-usual levels in 2020. In 2011, the ARB developed a supplement to the AB 32 Scoping Plan (ARB 2011). The Supplement updated the emissions inventory based on current projections for "business as usual" emissions to 506.8 metric tons of CO₂e. The updated projection included adopted measures (Pavley 1 fuel efficiency standards, 20% Renewable Portfolio Standard requirement), and estimated that an additional 16 percent reduction below the estimated "business as usual" levels would be necessary to return to 1990 levels by 2020.

In 2014, the ARB published its First Update to the Climate Change Scoping Plan (ARB 2014). The Update indicates that the State is on target to meet the goal of reducing GHG emissions to 1990 level by 2020. The First Update tracks progress in achieving the goals of AB 32, and lays out a new set of actions that will move the State further along the path to achieving the 2050 goal of reducing emissions to 80% below 1990 levels. While the Update discusses setting a mid-term target, the plan does not yet set a quantifiable target toward meeting the 2050 goal.

Senate Bill 97. Senate Bill (SB) 97, enacted in 2007, amends the CEQA statute to clearly establish that GHG emissions and the effects of GHG emissions are appropriate subjects for CEQA analysis. SB 97 directed the Governor's Office of Planning and Research (OPR) to develop draft CEQA guidelines "for the mitigation of greenhouse gas emissions or the effects of greenhouse gas emissions" by July 1, 2009, and directed the California Natural Resources Agency (CNRA) to certify and adopt the CEQA guidelines by January 1, 2010.

OPR published a technical advisory on CEQA and climate change on June 19, 2008. The guidance did not include a suggested threshold, but stated that the OPR had asked the ARB to "recommend a method for setting thresholds which will encourage consistency and uniformity in the CEQA analysis of greenhouse gas emissions throughout the state." The OPR technical advisory does recommend that CEQA analyses include the following components:

- Identification of greenhouse gas emissions;
- Determination of significance; and
- Mitigation of impacts, as needed and as feasible.

On December 31, 2009, the CNRA adopted the proposed amendments to the State CEQA Guidelines. These amendments became effective on March 18, 2010.

Executive Order S-3-05. Executive Order S-3-05, signed by Governor Schwarzenegger on June 1, 2005, calls for a reduction in GHG emissions to 1990 levels by 2020 and for an 80 percent reduction in GHG emissions below 1990 levels by 2050. Executive Order S-3-05 also calls for the California EPA (CalEPA) to prepare biennial science reports on the potential impact of continued GCC on certain sectors of the California economy. The first of these reports, "Our Changing Climate: Assessing Risks to California", and its supporting document "Scenarios of Climate Change in California: An Overview" were published by the California Climate Change Center in 2006.

Executive Order S-21-09. Executive Order S-21-09 was enacted by the Governor on September 15, 2009. Executive Order S-21-09 requires that the ARB, under its AB 32 authority, adopt a regulation by July 31, 2010 that sets a 33 percent renewable energy target. Under Executive Order S-21-09, the ARB will work with the Public Utilities Commission and California Energy Commission to encourage the creation and use of renewable energy sources, and will regulate all California utilities. The ARB will also consult with the Independent System Operator and other load balancing authorities on the impacts on reliability, renewable integration requirements, and

interactions with wholesale power markets in carrying out the provisions of the Executive Order. The order requires the ARB to establish highest priority for those resources that provide the greatest environmental benefits with the least environmental costs and impacts on public health.

California Code of Regulations Title 24. Although not originally intended to reduce greenhouse gas emissions, Title 24 of the California Code of Regulations, 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. The standards are updated periodically to allow for the consideration and possible incorporation of new energy efficiency technologies and methods. 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 greenhouse gas emissions. Therefore, increased energy efficiency results in decreased greenhouse gas emissions.

The GHG emission inventory was based on Title 24 standards as of October 2005; however, Title 24 has been updated as of 2008 and 2013. The 2013 standards require buildings to be 15% more energy-efficient than 2008 standards.

Senate Bill 1078, Senate Bill 107, and Executive Order S-14-08. SB 1078 initially set a target of 20% of energy to be sold from renewable sources by the year 2017. The schedule for implementation of the RPS was accelerated in 2006 with the Governor's signing of SB 107, which accelerated the 20% RPS goal from 2017 to 2010. On November 17, 2008, the Governor signed Executive Order S-14-08, which requires all retail sellers of electricity to serve 33 percent of their load with renewable energy by 2020. The Governor signed Executive Order S-21-09 on September 15, 2009, which directed ARB to implement a regulation consistent with the 2020 33% renewable energy target by July 31, 2010. The 33% RPS was adopted in 2010.

State Standards Addressing Vehicular Emissions. California Assembly Bill 1493 (Pavley) enacted on July 22, 2002, required the ARB to develop and adopt regulations that reduce greenhouse gases emitted by passenger vehicles and light duty trucks. Regulations adopted by

ARB would apply to 2009 and later model year vehicles. ARB estimated that the regulation would reduce climate change emissions from light duty passenger vehicle fleet by an estimated 18% in 2020 and by 27% in 2030 (AEP 2007). Once implemented, emissions from new light-duty vehicles are expected to be reduced in San Diego County by up to 21 percent by 2020².

The ARB has adopted amendments to the Pavley regulations that reduce GHG emissions in new passenger vehicles from 2009 through 2016. The amendments, approved by the ARB Board on September 24, 2009, are part of California's commitment toward a nation-wide program to reduce new passenger vehicle GHGs from 2012 through 2016, and prepare California to harmonize its rules with the federal rules for passenger vehicles.

Executive Order S-01-07. Executive Order S-01-07 was enacted by the Governor on January 18, 2007, and mandates that: 1) a statewide goal be established to reduce the carbon intensity of California's transportation fuels by at least 10 percent by 2020; and 2) a Low Carbon Fuel Standard ("LCFS") for transportation fuels be established for California. According to the SDCGHGI, the effects of the LCFS would be a 10% reduction in GHG emissions from fuel use by 2020³. On April 23, 2009, the ARB adopted regulations to implement the LCFS.

Senate Bill 375. SB 375 finds that GHG from autos and light trucks can be substantially reduced by new vehicle technology, but even so "it will be necessary to achieve significant additional greenhouse gas reductions from changed land use patterns and improved transportation. Without improved land use and transportation policy, California will not be able to achieve the goals of AB 32." Therefore, SB 375 requires that regions with metropolitan planning organizations adopt sustainable communities strategies, as part of their regional transportation plans, which are designed to achieve certain goals for the reduction of GHG emissions from mobile sources.

SB 375 also includes CEQA streamlining provisions for "transit priority projects" that are consistent with an adopted sustainable communities strategy. As defined in SB 375, a "transit

² SDCGHGI, An Analysis of Regional Emissions and Strategies to Achieve AB 32 Targets, On-Road Transportation Report. Sean Tanaka, Tanaka Research and Consulting, September 2008, Page 7.

³ SDCGHGI, An Analysis of Regional Emissions and Strategies to Achieve AB 32 Targets, On-Road Transportation Report. Sean Tanaka, Tanaka Research and Consulting, September 2008, Page 7.

priority project" shall: (1) contain at least 50 percent residential use, based on total building square footage and, if the project contains between 26 and 50 percent nonresidential uses, a floor area ratio of not less than 0.75; (2) provide a maximum net density of at least 20 dwelling units per acre; and (3) be within 0.5 mile of a major transit stop or high quality transit corridor.

Executive Order B-30-15. Executive Order B-30-15 was enacted by the Governor on April 29, 2015. Executive Order B-30-15 establishes an interim GHG emission reduction goal for the state of California to reduce GHG emissions to 40 percent below 1990 levels by the year 2030. This Executive Order directs all state agencies with jurisdiction over GHG-emitting sources to implement measures designed to achieve the new interim 2030 goal, as well as the pre-existing, long-term 2050 goal identified in Executive Order S-3-05 to reduce GHG emissions to 80 percent below 1990 levels by the year 2050. The Executive Order directs ARB to update its Scoping Plan to address the 2030 goal. It is anticipated that ARB will develop statewide inventory projection data for 2030 and commence efforts to identify reduction strategies capable of securing emission reductions that allow for achievement of the new interim goal for 2030.

1.3.3 Local Regulations and Standards

The City of San Diego adopted a Climate Protection Action Plan (City of San Diego 2005) that identified early goals for the reduction of GHG emissions for City facilities. The plan did not address City development, but rather focused on how the City itself could reduce emissions through implementing policies such as recycling, energy efficiency and alternative energy programs, and transportation programs. The City has also adopted guidance for evaluating GHG impacts in its *Memorandum: UPDATED – Addressing Greenhouse Gas Emissions from Projects subject to CEQA* (City of San Diego 2010). Although the City of San Diego has not formally adopted thresholds of significance or guidance in determining the significance of GHG emissions, the City is currently utilizing an interim GHG emission threshold for commercial and residential land use development projects subject to CEQA. This interim threshold is based on the 900 MT screening threshold in the California Air Pollution Control Officers Association (CAPCOA) report "CEQA & Climate Change" (CAPCOA 2008) and serves as a conservative screening threshold for requiring further analysis for projects subject to CEQA.

In March 2015 the City of San Diego released its Draft Climate Action Plan (CAP) to the public for review and comment. The CAP established a baseline for 2010, sets goals for GHG reductions for the milestone years 2020 and 2035, and details the implementation actions and phasing for achieving the goals. To implement the state's goals of reducing emissions to 15% below 2010 levels by 2020, and 49% below 2010 levels by 2035, the City would be required to implement strategies that would reduce emissions to approximately 10.6 MMT CO2e by 2020 and to 6.4 MMT CO2e by 2035. The CAP determined that, with implementation of the measures identified therein, the City would exceed the state's targets for 2020 and 2035. The CAP was approved in December 2015.

The City of San Diego has adopted policies in their Conservation Element (City of San Diego 2008) that address state and federal efforts to reduce GHG emissions. The policies that are applicable to the project include the following:

- Policy CE-A.2 Reduce the City's carbon footprint. Develop and adopt new or amended regulations, programs, and incentives as appropriate to implement the goals and policies set forth in the General Plan.
- Policy CE-A.5 Employ sustainable or "green" building techniques for the construction and operation of buildings.
 - (a) Develop and implement sustainable building standards for new and significant remodels of residential and commercial buildings to maximize energy efficiency, and to achieve overall net zero energy consumption by 2020 for new residential buildings and 2030 for new commercial buildings. This can be accomplished through factors including, but not limited to:
 - Designing mechanical and electrical systems that achieve greater energy efficiency with currently available technology;
 - Minimizing energy use through innovative site design and building orientation that addresses factors such as sun-shade patterns, prevailing winds, landscape, and sun-screens;
 - Employing self generation of energy using renewable technologies;
- Combining energy efficient measures that have longer payback periods with measures that have shorter payback periods;
- Reducing levels of non-essential lighting, heating and cooling; and
- Using energy efficient appliances and lighting.
- (b) Provide technical services for "green" buildings in partnership with other agencies and organizations.
- Policy CE-A-7 Construct and operate buildings using materials, methods, and mechanical and electrical systems that ensure a healthful indoor air quality. Avoid contamination by carcinogens, volatile organic compounds, fungi, molds, bacteria, and other known toxins.
 - (a) Eliminate the use of chlorofluorocarbon-based refrigerants in newly constructed facilities and major building renovations and retrofits for all heating, ventilation, air conditioning, and refrigerant-based building systems.
 - (b) Reduce the quantity of indoor air contaminants that are odorous or potentially irritating to protect installers and occupants' health and comfort. Where feasible, select low-emitting adhesives, paints, coatings, carpet systems, composite wood, agri-fiber products, and others.
- Policy CE-A.8 Reduce construction and demolition waste in accordance with Public Facilities Element, Policy PF-I.2, or be renovating or adding on to existing buildings, rather than constructing new buildings.
- Policy CE-A.9 Reuse building materials, use materials that have recycled content, or use materials that are derived from sustainable or rapidly renewable sources to the extent possible, through factors including:
 - Scheduling time for deconstruction and recycling activities to take place during project demolition and construction phases;
 - Using life cycle costing in decision making for materials and construction techniques. Life cycle costing analyzes the costs and benefits over the life of a particular product, technology, or system;
 - Removing code obstacles to using recycled materials and for construction; and
 - Implementing effective economic incentives to recycle construction and demolition debris.

- Policy CE-A.10 Include features in buildings to facilitate recycling of waste generated by building occupants and associated refuse storage areas.
 - Provide permanent, adequate, and convenient space for individual building occupants to collect refuse and recyclable material.
 - Provide a recyclables collection area that serves the entire building or project. The space should allow for the separation, collection and storage of paper, glass, plastic, metals, yard waste, and other materials as needed.

Policy CE-A.11 Implement sustainable landscape design and maintenance.

- (a) Use integrated pest management techniques, where feasible, to delay, reduce, or eliminate dependence on the use of pesticides, herbicides, and synthetic fertilizers.
- (b) Encourage composting efforts through education, incentives, and other activities.
- (c) Decrease the amount of impervious surfaces in developments, especially where public places, plazas and amenities are proposed to serve as recreation opportunities.
- (d) Strategically plant deciduous shade trees, evergreen trees, and drought tolerant native vegetation, as appropriate, to contribute to sustainable development goals.
- (e) Reduce use of lawn types that require high levels of irrigation.
- (f) Strive to incorporate existing mature trees and native vegetation into site designs.
- (g) Minimize the use of landscape equipment powered by fossil fuels.
- (h) Implement water conservation measures in site/building design and landscaping.
- (i) Encourage the use of high efficiency irrigation technology, and recycled site water to reduce the use of potable water for irrigation. Use recycled water to meet the needs of development projects to the maximum extent feasible.

2.0 POTENTIAL CLIMATE CHANGE IMPACTS TO PROJECT SITE

2.1 Existing Conditions

The site is currently vacant and undeveloped. The site is currently unoccupied and undeveloped. As it exists, the site is not a source of GHG emissions.

2.2 Typical Adverse Effects

The Climate Scenarios Report (CCCC 2006), uses a range of emissions scenarios developed by the IPCC to project a series of potential warming ranges (i.e., temperature increases) that may occur in California during the 21st century. Three warming ranges were identified: Lower warming range (3.0 to 5.5 degrees Fahrenheit (°F)); medium warming range (5.5 to 8.0 °F); and higher warming range (8.0 to 10.5 °F). The Climate Scenarios Report then presents an analysis of the future projected climate changes in California under each warming range scenario.

According to the report, substantial temperature increases would result in a variety of impacts to the people, economy, and environment of California. These impacts would result from a projected increase in extreme conditions, with the severity of the impacts depending upon actual future emissions of GHGs and associated warming. These impacts are described below.

Public Health. Higher temperatures are expected to increase the frequency, duration, and intensity of conditions conducive to air pollution formation. For example, days with weather conducive to O₃ formation are projected to increase by 25 to 35 percent under the lower warming range and 75 to 85 percent under the medium warming range. In addition, if global background O₃ levels increase as is predicted in some scenarios, it may become impossible to meet local air quality standards. An increase in wildfires could also occur, and the corresponding increase in the release of pollutants including PM_{2.5} could further compromise air quality. The Climate Scenarios Report indicates that large wildfires could become up to 55 percent more frequent of GHG emissions are not significantly reduced.

Potential health effects from GCC may arise from temperature increases, climate-sensitive diseases, extreme events, and air quality. There may be direct temperature effects through increases in average temperature leading to more extreme heat waves and less extreme cold spells. Those living in warmer climates are likely to experience more stress and heat-related problems (e.g., heat rash and heat stroke). In addition, climate sensitive diseases (such as malaria, dengue fever, yellow fever, and encephalitis) may increase, such as those spread by mosquitoes and other disease-carrying insects.

Water Resources. A vast network of reservoirs and aqueducts capture and transport water throughout the State from northern California rivers and the Colorado River. The current distribution system relies on Sierra Nevada mountain snowpack to supply water during the dry spring and summer months. Rising temperatures, potentially compounded by decreases in precipitation, could severely reduce spring snowpack, increasing the risk of summer water shortages. In addition, if temperatures continue to rise more precipitation would fall as rain instead of snow, further reducing the Sierra Nevada spring snowpack by as much as 70 to 90 percent. The State's water resources are also at risk from rising sea levels. An influx of seawater would degrade California's estuaries, wetlands, and groundwater aquifers.

Agriculture. Increased GHG and associated increases in temperature are expected to cause widespread changes to the agricultural industry, reducing the quantity and quality of agricultural products statewide. Significant reductions in available water supply to support agriculture would also impact production. Crop growth and development will change as will the intensity and frequency of pests and diseases.

Ecosystems/Habitats. Continued global warming will likely shift the ranges of existing invasive plants and weeds, thus alternating competition patterns with native plants. Range expansion is expected in many species while range contractions are less likely in rapidly evolving species with significant populations already established. Continued global warming is also likely to increase the populations of and types of pests. Continued global warming would also affect natural ecosystems and biological habitats throughout the State.

Wildland Fires. Global warming is expected to increase the risk of wildfire and alter the distribution and character of natural vegetation. If temperatures rise into the medium warming range, the risk of large wildfires in California could increase by as much as 55 percent, which is almost twice the increase expected if temperatures stay in the lower warming range. However, since wildfire risk is determined by a combination of factors including precipitation, winds, temperature, and landscape and vegetation conditions, future risks will not be uniform throughout the State.

Rising Sea Levels. Rising sea levels, more intense coastal storms, and warmer water temperatures will increasing threaten the State's coastal regions. Under the high warming scenario, sea level is anticipated to rise 22 to 35 inches by 2100. A sea level risk of this magnitude would inundate coastal areas with salt water, accelerate coastal erosion, threaten levees and inland water systems, and disrupt wetlands and natural habitats.

Sea levels rose approximately 7 inches during the last century (IPCC 2007) and the State of California predicts an additional rise of 10 to 17 inches by 2050 and a rise of 31–69 inches by 2100, depending on the future levels of GHG emissions (State of California 2010). If this occurs, resultant effects could include increased coastal flooding. Sea level rise adaptation strategies include strategies that involve construction of hard structures as barriers, such as seawalls and levees; soft structure strategies such as wetland enhancement, detention basins, and other natural strategies; accommodation strategies that include grade elevations, elevated structures, and other building design options; and withdrawal strategies that limit development to areas unaffected by sea level rise.

Compliance with IBMC Section 15.50.160, Flood Hazard Reduction Standards, would require development within coastal high hazard areas to be elevated above the base flood level and be adequately anchored to resist flotation, collapse, and lateral movement as detailed in the regulatory setting section. The Project is not within the coastal high hazard area, and is therefore not subject to the standards. It is not anticipated that the levels of sea level rise predicted for the area would affect the project.

3.0 CLIMATE CHANGE SIGNIFICANCE CRITERIA

According to the California Natural Resources Agency⁴, "due to the global nature of GHG emissions and their potential effects, GHG emissions will typically be addressed in a cumulative impacts analysis." According to Appendix G of the CEQA Guidelines, the following criteria may be considered to establish the significance of GCC emissions:

Would the project:

- Generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment?
- Conflict with an applicable plan, policy, or regulation adopted for the purpose of reducing the emissions of greenhouse gases?

As discussed in Section 15064.4 of the CEQA Guidelines, the determination of the significance of greenhouse gas emissions calls for a careful judgment by the lead agency, consistent with the provisions in Section 15064. Section 15064.4 further provides that a lead agency should make a good-faith effort, based to the extent possible on scientific and factual data, to describe, calculate or estimate the amount of GHG emissions resulting from a project. A lead agency shall have discretion to determine, in the context of a particular project, whether to:

(1) Use a model or methodology to quantify greenhouse gas emissions resulting from a project, and which model or methodology to use. The lead agency has discretion to select the model or methodology it considers most appropriate provided it supports its decision with substantial evidence. The lead agency should explain the limitations of the particular model or methodology selected for use; and/or

(2) Rely on a qualitative analysis or performance based standards.

Section 15064.4 also advises a lead agency to consider the following factors, among others, when assessing the significance of impacts from greenhouse gas emissions on the environment:

⁴ California Natural Resources Agency, Initial Statement of Reasons for Regulatory Action, Proposed Amendments to the State CEQA Guidelines Addressing Analysis and Mitigation of Greenhouse Gases Pursuant to SB 97. July 2009.

(1) The extent to which the project may increase or reduce greenhouse gas emissions as compared to the existing environmental setting;

(2) Whether the project emissions exceed a threshold of significance that the lead agency determines applies to the project; and

(3) The extent to which the project complies with regulations or requirements adopted to implement a statewide, regional, or local plan for the reduction or mitigation of greenhouse gas emissions.

The California Air Pollution Control Officers Association proposed a screening threshold of 900 metric tons of CO₂e to evaluate whether a project requires further analysis. As stated in Section 1.3.3, the City of San Diego has not adopted GHG significance thresholds; therefore, the analysis is based on recommendations of the California Air Pollution Control Officers Association (CAPCOA 2008) and the ARB's Scoping Plan (ARB 2008). The 900 metric ton level is a screening threshold to determine if further analysis is required. This threshold has been used to evaluate the impacts from the project.

4.0 GREENHOUSE GAS INVENTORY

GHG emissions associated with the Southview East Project were estimated separately for five categories of emissions: (1) construction; (2) energy use, including electricity and natural gas usage; (3) water consumption; (4) solid waste handling; and (5) transportation. The analysis includes a baseline estimate assuming Title 24-compliant buildings, which is considered business as usual for the Project. Emissions were estimated based on emission factors from the California Climate Action Registry General Reporting Protocol (CCAR 2009). This inventory presents emissions based on "business as usual" assumptions.

4.1 Existing Conditions

As discussed in Section 2.0, the project site is currently undeveloped and is not a source of GHG emissions.

4.2 **Project Emissions**

Project emissions were calculated using the CalEEMod Model (ENVIRON 2013). The emissions for each emission source are discussed below.

4.2.1 Construction Greenhouse Gas Emissions

Construction GHG emissions include emissions from heavy construction equipment, truck traffic, and worker trips. Emissions were calculated using the CalEEMod Model (ENVIRON 2013). CalEEMod contains emission factors from the OFFROAD model for heavy construction equipment, and from the EMFAC2011 model for on-road vehicles. Table 4 presents the construction-related emissions associated with construction of the project.

The City of San Diego recommends that construction emissions be amortized over a 30-year period to account for the contribution of construction emissions over the lifetime of the project. These emissions are added to operational emissions to account for the contribution of construction to GHG emissions for the lifetime of the project.

Table 4 Construction GHG Emissions Metric tons/year										
Scenario	CO2e Emissions, metric tons	Amortized CO ₂ e Emissions, metric tons/year								
Construction Emissions	3,220	107								

4.2.2 Operational Greenhouse Gas Emissions

Operational GHG emissions for the project were estimated for five categories of emissions: (1) area sources; (2) energy use, including electricity and natural gas usage; (3) water consumption; (4) solid waste management, and (5) transportation. Emissions were estimated for each of the development scenarios using the methodologies described below.

4.2.2.1 Area Sources

Area sources include minor sources such as landscaping activities and maintenance activities. GHG emissions predicated by the CalEEMod Model for these sources are minor.

4.2.2.2 Energy Use

Electricity usage rates for the residential units was calculated as a function of kWh per square foot based on average performance for southern California residences. The default energy use estimates in the CalEEMod Model represent current state-wide average uses for all land uses, assuming the uses are are compliant with 2008 Title 24 standards.

Reductions attributable to California's RPS (SB 1078; 2002) were included in the emission calculations for electricity use. SB 1078 initially set a target of 20% of energy to be sold from renewable sources by the year 2017. The schedule for implementation of the RPS was accelerated in 2006 with the Governor's signing of SB 107, which accelerated the 20% RPS goal from 2017

to 2010. On November 17, 2008, the Governor signed Executive Order S-14-08, which requires all retail sellers of electricity to serve 33 percent of their load with renewable energy by 2020. The Governor signed Executive Order S-21-09 on September 15, 2009, which directs ARB to implement a regulation consistent with the 2020 33% renewable energy target by July 31, 2010. As of September 23, 2010, the ARB has adopted the regulation that implements the 33% renewable energy standard.

According to the SDCGHGI, implementation of the 20% RPS goal by 2010 would reduce GHG emissions by a further 14% from 2006 levels; the inventory estimated that San Diego Gas and Electric was providing 6% of its electricity from renewable resource in 2006. To account for the implementation of the 20% RPS, a 14% reduction in GHG emissions was assumed. Implementation of Executive Order S-21-09 (i.e., the 33% RPS) will result in additional GHG reductions of 27% below 2006 levels.

Implementation of the Title 24 standards as of 2013 will reduce energy use from multi-family residential projects by an additional 23.3% for electricity use and 3.8% for natural gas use (CEC 2013). These reductions were considered in calculating GHG emissions. Implementation of Title 24 as of 2016 is estimated to reduce energy demand by an additional 25% for residential structures; however, this reduction was not included in the analysis.

4.2.2.3 Water Usage

GHG emissions were calculated on the basis of the embodied energy of water. Water usage was estimated based on the water use calculated by the CalEEMod Model (ENVIRON 2013) for indoor and outdoor water use based on the development scenarios. The project will implement water conservation measures, including use of low-flow fixtures and use of water-efficient irrigation. Water conservation measures were assumed to reduce both indoor and outdoor water use, and were taken into account in the estimated water use with conservation measures from the CalEEMod Model.

Total annual water use for the project uses was estimated at 4,482,600 gallons for indoor uses and 3,317,000 gallons for outdoor uses for a total of 7,796,700 gallons.

4.2.2.4 Vehicle Emissions

Mobile source greenhouse gas emissions were estimated based on the projected ADTs from the Traffic Impact Analysis (Kimley-Horn and Associates 2014). Based on the analysis, the trip generation rate would be 8 average daily trips per unit (ADT). Emissions from vehicles were estimated using the ARB's emission factors without considering the effects of state and federal measures to reduce GHG emissions from EMFAC2011 (ARB 2011), using the vehicle miles traveled (VMT) calculated by the CalEEMod Model. Emission factors within the CalEEMod Model from the EMFAC2011 model were used with the San Joaquin Valley Air Pollution Control District's vehicle mix for residential development. This vehicle mix was considered the best representation of the vehicle mix that would travel to the residential development. Residential developments do not generate substantial heavy-duty truck trips, and the default vehicle mix within the EMFAC2011 model represents both light- and heavy-duty vehicles traveling throughout the County. The vehicle mix does include some trips for medium- and heavy-duty trucks.

Vehicle GHG emission factors were adjusted by 3% to account for the Advanced Clean Cars regulation, which is not included in the CalEEMod Model factors.

4.2.2.5 Solid Waste

Solid waste generation rates were estimated based on the CalEEMod Model. The CalEEMod Model calculated a solid waste generation rate of 40 tons per year for the project. Solid waste GHG emissions were calculated based on the CalEEMod Model.

⁵ SJVAPCD. 2009. Accepted URBEMIS Default Values.

4.2.2.6 Operational Emissions Summary

The results of the inventory for operational emissions for business as usual are presented in Table 5. These include GHG emissions associated with buildings (natural gas, purchased electricity), water consumption (energy embodied in potable water), solid waste management (including transport and landfill gas generation), and vehicles. Table 5 summarizes projected emissions using the methodologies noted above. As shown in Table 5, the GHG emissions increase associated with the Southview East Project will be 892 metric tons of CO₂e, which is less than the 900 metric ton screening threshold proposed by CAPCOA. Accordingly, the Southview East Project will meet the goals of AB 32 and would not result in cumulatively considerable significant global climate impacts.

Table 5 SUMMARY OF ESTIMATED OPERATIONAL GREENHOUSE GAS EMISSIONS													
Emission Source		Annual Emissions (Metric tons/year)											
	CO ₂	CH ₄	N ₂ O	CO ₂ e									
0	perational Er	nissions											
Area Sources	1	0.0010	0.0000	1									
Electricity Use	85	0.0035	0.0010	85									
Natural Gas Use	54	0.0010	0.0010	54									
Water Use	24	0.1470	0.0037	29									
Solid Waste Management	4	0.2373	0.0000	11									
Vehicle Emissions	604	0.0277	0.0000	605									
Amortized Construction Emissions	107	0.0000	0.0000	107									
Total	879	0.4175	0.0057	892									
Global Warming Potential Factor	1	28	265										
CO ₂ Equivalent Emissions	879 11 2 892												
TOTAL CO ₂ Equivalent													
Emissions	892												

4.3 Consistency with General Plan Conservation Measures

The project will meet the goals of the City's Conservation Element, and will therefore be consistent with the City's GHG reduction plans and policies. The following policies will be adopted for the Southview East Project:

- Policy CE-A.2 Reduce the City's carbon footprint. Develop and adopt new or amended regulations, programs, and incentives as appropriate to implement the goals and policies set forth in the General Plan. The Southview East will be consistent with the City's goals in that it (a) provides a sustainable and efficient land use that provides local recreation opportunities and reduces VMT; is located in an area with access to alternative modes of transportation, including bus routes; will be constructed to the most up-to-date energy efficiency standards; employs sustainable designand building practices; will encourage solid waste recycling; and will be constructed to meet water efficiency requirements.
- Policy CE-A.5 Employ sustainable or "green" building techniques for the construction and operation of buildings.
 - (a) Develop and implement sustainable building standards for new and significant remodels of residential and commercial buildings to maximize energy efficiency, and to achieve overall net zero energy consumption by 2020 for new residential buildings and 2030 for new commercial buildings. This can be accomplished through factors including, but not limited to:
 - Designing mechanical and electrical systems that achieve greater energy efficiency with currently available technology;
 - Minimizing energy use through innovative site design and building orientation that addresses factors such as sun-shade patterns, prevailing winds, landscape, and sun-screens;
 - Employing self generation of energy using renewable technologies;
 - Combining energy efficient measures that have longer payback periods with measures that have shorter payback periods;
 - Reducing levels of non-essential lighting, heating and cooling; and

• Using energy efficient appliances and lighting.

The Southview East Project will meet the most recent 2013 Title 24 energy efficiency standards, which are estimated to exceed Title 24 standards as of 2008 by 15%. The project is therefore employing sustainable building development practices to maximize energy efficiency. This includes designing the buildings to achieve the energy efficiency standards of Title 24 as of 2013, minimizing energy use through building design, and installation of energy-efficient appliances that meet EnergyStar requirements.

- Policy CE-A-7 Construct and operate buildings using materials, methods, and mechanical and electrical systems that ensure a healthful indoor air quality. Avoid contamination by carcinogens, volatile organic compounds, fungi, molds, bacteria, and other known toxins.
 - (a) Eliminate the use of chlorofluorocarbon-based refrigerants in newly constructed facilities and major building renovations and retrofits for all heating, ventilation, air conditioning, and refrigerant-based building systems.
 - (b) Reduce the quantity of indoor air contaminants that are odorous or potentially irritating to protect installers and occupants' health and comfort. Where feasible, select low-emitting adhesives, paints, coatings, carpet systems, composite wood, agri-fiber products, and others.

The Southview East Project will be constructed in a manner that will ensure healthful indoor air quality. The construction of the buildings will meet Title 24 standards as of 2013, which require energy efficiency and design of HVAC systems to meet standards. Also, the products used for construction must meet California requirements for low-VOCs in various types of construction materials.

Policy CE-A.8 Reduce construction and demolition waste in accordance with Public Facilities Element, Policy PF-I.2, or by renovating or adding on to existing buildings, rather than constructing new buildings.

The Southview East Project will reduce construction and demolition waste to the extent feasible.

Policy CE-A.9 Reuse building materials, use materials that have recycled content, or use materials that are derived from sustainable or rapidly renewable sources to the extent possible, through factors including:

- Scheduling time for deconstruction and recycling activities to take place during project demolition and construction phases;
- Using life cycle costing in decision making for materials and construction techniques. Life cycle costing analyzes the costs and benefits over the life of a particular product, technology, or system;
- Removing code obstacles to using recycled materials and for construction; and
- Implementing effective economic incentives to recycle construction and demolition debris.

The Southview East Project will use recycled/sustainable materials for construction and during operation to the extent feasible. The project will recycle construction and demolition debris as appropriate.

- Policy CE-A.10 Include features in buildings to facilitate recycling of waste generated by building occupants and associated refuse storage areas.
 - Provide permanent, adequate, and convenient space for individual building occupants to collect refuse and recyclable material.
 - Provide a recyclables collection area that serves the entire building or project. The space should allow for the separation, collection and storage of paper, glass, plastic, metals, yard waste, and other materials as needed.

The Southview East Project will provide space for individual building occupants to implement recycling practices within their buildings.

Policy CE-A.11 Implement sustainable landscape design and maintenance.
(a) Use integrated pest management techniques, where feasible, to delay, reduce, or eliminate dependence on the use of pesticides, herbicides, and synthetic fertilizers.
(b) Encourage composting efforts through education, incentives, and other activities.
(c) Decrease the amount of impervious surfaces in developments, especially where public places, plazas and amenities are proposed to serve as recreation opportunities.

- (d) Strategically plant deciduous shade trees, evergreen trees, and drought tolerant native vegetation, as appropriate, to contribute to sustainable development goals.
- (e) Reduce use of lawn types that require high levels of irrigation.
- (f) Strive to incorporate existing mature trees and native vegetation into site designs.
- (g) Minimize the use of landscape equipment powered by fossil fuels.
- (h) Implement water conservation measures in site/building design and landscaping.
- (i) Encourage the use of high efficiency irrigation technology, and recycled site water to reduce the use of potable water for irrigation. Use recycled water to meet the needs of development projects to the maximum extent feasible.

The Southview East Project will use landscaping that minimizes water use, utilizes efficient irrigation practices, and reduces the use of pesticides. The project includes water-efficient landscaping and water conservation measures in the building, including the use of low-flow fixtures as required by Title 24 as of 2013.

Through implementation of these practices, the Southview East Project will not conflict with an applicable plan, policy, or regulation adopted for the purpose of reducing the emissions of greenhouse gases.

5.0 CONCLUSIONS

Emissions of GHGs were quantified for both construction and operation of the Southview East Project. Operational emissions were calculated with GHG reduction measures. Based on the analysis, the project's net GHG emissions increase would be below the CAPCOA screening threshold of 900 metric tons of CO₂e. In addition, the project would be consistent with the City's General Plan Conservation Element. The project would therefore not:

- Generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment.
- Conflict with an applicable plan, policy, or regulation adopted for the purpose of reducing the emissions of greenhouse gases.

The Southview East Project will be consistent with the goals of AB 32, and would not result in a significant global climate change impact.

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Appendix A

Greenhouse Gas Emission Calculations

Southview East

San Diego Air Basin, Annual

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Other Asphalt Surfaces	1.94	Acre	1.94 г	84,506.40	0
Condo/Townhouse	86.00	Dwelling Unit	19.24	86,000.00	246

1.2 Other Project Characteristics

Urbanization	Urban	Wind Speed (m/s)	2.6	Precipitation Freq (Days)	40
Climate Zone	13			Operational Year	2020
Utility Company					
CO2 Intensity (Ib/MWhr)	528.61	CH4 Intensity (Ib/MWhr)	0.022	N2O Intensity 0 (Ib/MWhr)	0.006

1.3 User Entered Comments & Non-Default Data

Construction Phase - Based on construction schedule and assumptions

Off-road Equipment - Based on project size

Off-road Equipment -

Off-road Equipment -

Table Name	Column Name	Default Value	New Value
tblArchitecturalCoating	ConstArea_Residential_Exterior	58,050.00	91,800.00
tblArchitecturalCoating	ConstArea_Residential_Interior	174,150.00	275,400.00
tblArchitecturalCoating	EF_Nonresidential_Exterior	250.00	150.00
tblArchitecturalCoating	EF_Nonresidential_Interior	250.00	100.00
tblArchitecturalCoating	EF_Residential_Exterior	250.00	150.00

tblArchitecturalCoating	EF_Residential_Interior	250.00	100.00
tblAreaCoating	Area_EF_Nonresidential_Exterior	250	150
tblAreaCoating	Area_Residential_Exterior	58050	91800
tblAreaCoating	Area_Residential_Interior	174150	275400
tblAreaMitigation	UseLowVOCPaintNonresidentialExterio	150	0
tblAreaMitigation		250	0
tblAreaMitigation	UseLowVOCPaintResidentialExteriorVa	250	0
tblAreaMitigation	UseLowVOCPaintResidentialInteriorVal	250	0
tblConstructionPhase	NumDays	20.00	110.00
tblConstructionPhase	NumDays	370.00	694.00
tblConstructionPhase	NumDays	35.00	110.00
tblConstructionPhase	NumDays	20.00	109.00
tblConstructionPhase	PhaseEndDate	6/2/2017	8/31/2019
tblConstructionPhase	PhaseEndDate	3/29/2019	3/31/2019
tblConstructionPhase	PhaseEndDate	8/29/2019	12/31/2016
tblConstructionPhase	PhaseStartDate	1/1/2017	4/1/2019
tblConstructionPhase	PhaseStartDate	4/1/2019	8/2/2016
tblEnergyUse	T24E	206.69	158.53
tblEnergyUse	T24NG	10,789.48	10,379.48
tblFireplaces	NumberGas	47.30	0.00
tblFireplaces	NumberNoFireplace	8.60	136.00
tblFireplaces	NumberWood	30.10	0.00
tblGrading	AcresOfGrading	550.00	21.17
tblGrading	MaterialImported	0.00	111,387.00
tblLandUse	LotAcreage	5.38	19.24
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	2.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	4.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	4.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	2.00

tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	2.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	4.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	4.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	4.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	2.00
tblProjectCharacteristics	OperationalYear	2014	2020
tblTripsAndVMT	VendorTripNumber	23.00	28.00
tblTripsAndVMT	VendorTripNumber	0.00	10.00
tblTripsAndVMT	WorkerTripNumber	97.00	133.00
tblTripsAndVMT	WorkerTripNumber	15.00	30.00
tblTripsAndVMT	WorkerTripNumber	19.00	27.00
tblVehicleEF	HHD	0.03	0.02
tblVehicleEF	HHD	0.01	9.9580e-003
tblVehicleEF	HHD	528.33	475.49
tblVehicleEF	HHD	1,547.78	1,501.35
tblVehicleEF	HHD	50.38	45.34
tblVehicleEF	HHD	0.02	5.0000e-003
tblVehicleEF	LDA	0.01	0.01
tblVehicleEF	LDA	244.25	236.93
tblVehicleEF	LDA	52.29	47.06
tblVehicleEF	LDA	0.51	0.51
tblVehicleEF	LDT1	0.02	0.02
tblVehicleEF	LDT1	297.79	288.86
tblVehicleEF	LDT1	63.53	57.18
tblVehicleEF	LDT1	0.07	0.23
tblVehicleEF	LDT2	0.01	0.01
tblVehicleEF	LDT2	364.72	353.78
tblVehicleEF	LDT2	77.49	69.75
tblVehicleEF	LDT2	0.19	0.16
tblVehicleEF	LHD1	1.1720e-003	1.0550e-003

tblVehicleEF	LHD1	0.02	0.02
tblVehicleEF	LHD1	7.98	7.18
tblVehicleEF	LHD1	734.00	711.98
tblVehicleEF	LHD1	36.60	32.94
tblVehicleEF	LHD1	0.04	2.0000e-003
tblVehicleEF	LHD2	8.7100e-004	7.8400e-004
tblVehicleEF	LHD2	0.01	0.01
tblVehicleEF	LHD2	8.84	7.95
tblVehicleEF	LHD2	623.36	604.66
tblVehicleEF	LHD2	22.28	20.05
tblVehicleEF	LHD2	5.1400e-003	1.0000e-003
tblVehicleEF	MCY	156.52	151.82
tblVehicleEF	MCY	38.51	34.66
tblVehicleEF	MCY	6.5640e-003	0.01
tblVehicleEF	MDV	0.02	0.02
tblVehicleEF	MDV	489.56	474.87
tblVehicleEF	MDV	103.31	92.98
tblVehicleEF	MDV	0.13	0.06
tblVehicleEF	 MH	681.06	660.63
tblVehicleEF	MH	28.25	25.43
tblVehicleEF	MH	3.4460e-003	7.0000e-003
tblVehicleEF	MHD	7.6150e-003	6.8540e-003
tblVehicleEF	MHD	5.1900e-003	5.0340e-003
tblVehicleEF	MHD	572.06	514.85
tblVehicleEF	MHD	995.11	965.26
tblVehicleEF	MHD	49.80	44.82
tblVehicleEF	MHD	0.01	7.0000e-003
tblVehicleEF	OBUS	0.02	0.02
tblVehicleEF	OBUS	2.8860e-003	2.7990e-003
tblVehicleEF	OBUS	534.88	481.39

tblVehicleEF	OBUS	1,037.87	1,006.74
tblVehicleEF	OBUS	32.81	29.53
tblVehicleEF	OBUS	1.8710e-003	0.00
tblVehicleEF	SBUS	4.4530e-003	4.0080e-003
tblVehicleEF	SBUS	5.3930e-003	5.2310e-003
tblVehicleEF	SBUS	547.00	492.30
tblVehicleEF	SBUS	1,024.49	993.76
tblVehicleEF	SBUS	116.73	105.06
tblVehicleEF	SBUS	5.8600e-004	1.0000e-003
tblVehicleEF	UBUS	1,981.57	1,922.12
tblVehicleEF	UBUS	22.78	20.50
tblVehicleEF	UBUS	2.0620e-003	1.0000e-003
tblVehicleTrips	ST_TR	7.16	8.00
tblVehicleTrips	SU_TR	6.07	8.00
tblVehicleTrips	WD_TR	6.59	8.00
tblWoodstoves	NumberCatalytic	4.30	0.00
tblWoodstoves	NumberNoncatalytic	4.30	0.00

2.0 Emissions Summary

2.1 Overall Construction

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr												MT	/yr		
2016	1.3506	14.3073	10.2898	0.0173	0.9026	0.6661	1.5687	0.4266	0.6170	1.0436	0.0000	1,577.940 7	1,577.9407	0.2881	0.0000	1,583.9897
2017	0.7713	6.0872	4.9881	8.4400e- 003	0.1623	0.3774	0.5398	0.0436	0.3562	0.3998	0.0000	721.5273	721.5273	0.1287	0.0000	724.2304
2018	0.6740	5.4129	4.7892	8.4600e- 003	0.1630	0.3199	0.4829	0.0438	0.3022	0.3460	0.0000	712.9382	712.9382	0.1262	0.0000	715.5882

I	2019	 1.5631	 1.3046	1.2833	2.3	3900e- I 003 I	0.0519	0.0748	0.1267	0.0139	0.0711	0.0850	0.0000	196.0884	196.0884	0.0319	0.0000	196.7581
	Total	4.3590	27.1121	21.350	3 0.	0.0365	1.2798	1.4383	2.7180	0.5279	1.3464	1.8743	0.0000	3,208.494 5	3,208.4945	0.5749	0.0000	3,220.5664

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year					ton		MT/yr									
2016	1.3506	14.3073	10.2898	0.0173	0.4869	0.6661	1.1530	0.2030	0.6170	0.8200	0.0000	1,577.939 5	1,577.9395	0.2881	0.0000	1,583.9886
2017	0.7713	6.0872	4.9881	8.4400e- 003	0.1623	0.3774	0.5398	0.0436	0.3562	0.3998	0.0000	721.5266	721.5266	0.1287	0.0000	724.2298
2018	0.6740	5.4129	4.7892	8.4600e- 003	0.1630	0.3199	0.4829	0.0438	0.3022	0.3460	0.0000	712.9376	712.9376	0.1262	0.0000	715.5875
2019	1.5631	1.3046	1.2833	2.3900e- 003	0.0519	0.0748	0.1267	0.0139	0.0711	0.0850	0.0000	196.0882	196.0882	0.0319	0.0000	196.7579
Total	4.3590	27.1121	21.3503	0.0365	0.8641	1.4383	2.3023	0.3043	1.3464	1.6507	0.0000	3,208.491 9	3,208.4919	0.5749	0.0000	3,220.5638
	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	0.00	0.00	0.00	0.00	32.48	0.00	15.29	42.35	0.00	11.93	0.00	0.00	0.00	0.00	0.00	0.00

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category					ton	s/yr							MT	/yr		
Area	0.9863	7.4100e- 003	0.6407	3.0000e- 005		3.5200e- 003	3.5200e- 003		3.5200e- 003	3.5200e- 003	0.0000	1.0431	1.0431	1.0200e- 003	0.0000	1.0645

Energy	6.2100e- 003	0.0530	0.0226	3.4000e- 004	 	4.2900e- 003	4.2900e- 003		4.2900e- 003	4.2900e- 003	0.0000	149.7899	149.7899	4.8600e- 003	2.1300e- 003	150.5518
Mobile	0.4043	0.5074	3.9173	9.4200e- 003	0.7331	7.8200e- 003	0.7409	0.1954	7.2300e- 003	0.2026	0.0000	604.4313	604.4313	0.0277	0.0000	605.0130
Waste	 U U					0.0000	0.0000		0.0000	0.0000	8.0303	0.0000	8.0303	0.4746	0.0000	17.9965
Water	 N N					0.0000	0.0000		0.0000	0.0000	1.7777	26.9040	28.6816	0.1837	4.6200e- 003	33.9705
Total	1.3969	0.5679	4.5806	9.7900e- 003	0.7331	0.0156	0.7487	0.1954	0.0150	0.2104	9.8080	782.1683	791.9762	0.6919	6.7500e- 003	808.5962

Mitigated Operational

	ROG	NOx	СО	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category					ton	s/yr							MT	/yr		
Area	0.9863	7.4100e- 003	0.6407	3.0000e- 005	1	3.5200e- 003	3.5200e- 003	1	3.5200e- 003	3.5200e- 003	0.0000	1.0431	1.0431	1.0200e- 003	0.0000	1.0645
Energy	5.4800e- 003	0.0469	0.0199	3.0000e- 004	r = = = = 	3.7900e- 003	3.7900e- 003	 	3.7900e- 003	3.7900e- 003	0.0000	139.1524	139.1524	4.5700e- 003	1.9600e- 003	139.8555
Mobile	0.4044	0.5075	3.9177	9.4200e- 003	0.7332	7.8200e- 003	0.7410	0.1954	7.2300e- 003	0.2026	0.0000	604.4953	604.4953	0.0277	0.0000	605.0771
Waste	h — — — — - H H				r	0.0000	0.0000	 	0.0000	0.0000	4.0152	0.0000	4.0152	0.2373	0.0000	8.9982
Water						0.0000	0.0000		0.0000	0.0000	1.4221	22.8312	24.2533	0.1470	3.7000e- 003	28.4880
Total	1.3961	0.5618	4.5783	9.7500e- 003	0.7332	0.0151	0.7483	0.1954	0.0145	0.2100	5.4373	767.5220	772.9593	0.4176	5.6600e- 003	783.4833

	ROG	NOx	СО	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	0.05	1.08	0.05	0.41	-0.01	3.20	0.06	-0.01	3.32	0.23	44.56	1.87	2.40	39.64	16.15	3.11

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
Number					WOOK		
1	Grading	Grading	3/1/2016	8/1/2016	5	110	
2	Building Construction	Building Construction	8/2/2016	3/31/2019	5	694	
3	Paving	Paving	8/2/2016	12/31/2016	5	109	
4	Architectural Coating	Architectural Coating	4/1/2019	8/31/2019	5	110	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 21.17

Acres of Paving: 0

Residential Indoor: 275,400; Residential Outdoor: 91,800; Non-Residential Indoor: 126,760; Non-Residential Outdoor: 42,253

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Grading	Excavators	4	8.00	162	0.38
Grading	Graders	2	8.00	174	0.41
Grading	Rubber Tired Dozers	2	8.00	255	0.40
Grading	Scrapers	4	8.00	361	0.48
Grading	Tractors/Loaders/Backhoes	4	8.00	97	0.37
Building Construction	Cranes	2	7.00	226	0.29
Building Construction	Forklifts	4	8.00	89	0.20
Building Construction	Generator Sets	2	8.00	84	0.74
Building Construction	Tractors/Loaders/Backhoes	4	7.00	97	0.37
Building Construction	Welders	2	8.00	46	0.45
Paving	Pavers	2	8.00	125	0.42
Paving	Paving Equipment	' 	8.00	130	0.36
Paving	Rollers	2	8.00	80	0.38
Architectural Coating	Air Compressors	1	6.00	78	0.48

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Grading	16	40.00	0.00	13,923.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction	14	133.00	28.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Paving	6	30.00	10.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Architectural Coating	1	27.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Water Exposed Area

Reduce Vehicle Speed on Unpaved Roads

3.2 Grading - 2016

Unmitigated Construction On-Site

	ROG	NOx	СО	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category					ton	s/yr							MT	/yr		
Fugitive Dust			1 1 1		0.6815	0.0000	0.6815	0.3665	0.0000	0.3665	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.7127	8.2295	5.4051	6.7900e- 003		0.3943	0.3943		0.3627	0.3627	0.0000	640.1530	640.1530	0.1931	0.0000	644.2079
Total	0.7127	8.2295	5.4051	6.7900e- 003	0.6815	0.3943	1.0758	0.3665	0.3627	0.7293	0.0000	640.1530	640.1530	0.1931	0.0000	644.2079

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category					ton	s/yr							МТ	/yr		

Hauling		0.1458	2.0214	1.6655	5.2100e-	0.1188	0.0267	0.1455	0.0326	0.0246	0.0571	0.0000	475.5060	475.5060	3.4100e-	0.0000	475.5776
		 	 	I L	003		 /	 	I I	I I	 	I L	 J	I L	003	 	I L
Vendor		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
	ا لا ــــــ	 /	 	 	 		 /	 	! '	! 4	 	! �		 	 	 	
Worker		7.5500e-	9.9700e-	0.0950	2.2000e-	0.0176	1.4000e-	0.0178	4.6900e-	1.2000e-	4.8100e-	0.0000	16.4408	16.4408	8.7000e-	0.0000	16.4591
		003	003	1	004		004	-	003	004	003	l -	1	l	004	-	l
Total		0.1533	2.0314	1.7605	5.4300e-	0.1364	0.0268	0.1632	0.0373	0.0247	0.0620	0.0000	491.9469	491.9469	4.2800e-	0.0000	492.0366
					003										003		

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category					ton	s/yr							MT	⁻/yr		
Fugitive Dust		 	I I		0.2658	0.0000	0.2658	0.1429	0.0000	0.1429	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.7127	8.2295	5.4051	6.7900e- 003		0.3943	0.3943		0.3627	0.3627	0.0000	640.1522	640.1522	0.1931	0.0000	644.2072
Total	0.7127	8.2295	5.4051	6.7900e- 003	0.2658	0.3943	0.6601	0.1429	0.3627	0.5057	0.0000	640.1522	640.1522	0.1931	0.0000	644.2072

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category					ton	s/yr							MT	ſ/yr		
Hauling	0.1458	2.0214	1.6655	5.2100e- 003	0.1188	0.0267	0.1455	0.0326	0.0246	0.0571	0.0000	475.5060	475.5060	3.4100e- 003	0.0000	475.5776
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	7.5500e- 003	9.9700e- 003	0.0950	2.2000e- 004	0.0176	1.4000e- 004	0.0178	4.6900e- 003	1.2000e- 004	4.8100e- 003	0.0000	16.4408	16.4408	8.7000e- 004	0.0000	16.4591
Total	0.1533	2.0314	1.7605	5.4300e- 003	0.1364	0.0268	0.1632	0.0373	0.0247	0.0620	0.0000	491.9469	491.9469	4.2800e- 003	0.0000	492.0366

3.3 Building Construction - 2016 Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category					ton	s/yr							ΜT	ſ/yr		
Off-Road	0.3141	2.5838	1.6495	2.4600e- 003		0.1727	0.1727		0.1631	0.1631	0.0000	220.2470	220.2470	0.0523	0.0000	221.3450
Total	0.3141	2.5838	1.6495	2.4600e- 003		0.1727	0.1727		0.1631	0.1631	0.0000	220.2470	220.2470	0.0523	0.0000	221.3450

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category					ton	ns/yr							MT	Г/yr		
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0174	0.1491	0.2089	3.6000e- 004	9.9300e- 003	2.2000e- 003	0.0121	2.8400e- 003	2.0200e- 003	4.8600e- 003	0.0000	32.9230	32.9230	2.6000e- 004	0.0000	32.9284
Worker	0.0249	0.0328	0.3131	7.2000e- 004	0.0581	4.5000e- 004	0.0586	0.0155	4.1000e- 004	0.0159	0.0000	54.1688	54.1688	2.8600e- 003	0.0000	54.2289
Total	0.0422	0.1819	0.5219	1.0800e- 003	0.0681	2.6500e- 003	0.0707	0.0183	2.4300e- 003	0.0207	0.0000	87.0918	87.0918	3.1200e- 003	0.0000	87.1573

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category					ton	s/yr							MT	ſ/yr		
Off-Road	∎ 0.3141 ∎	2.5838	1.6495	2.4600e- 003	1	0.1727	0.1727	1	0.1631	0.1631	0.0000	220.2468	220.2468	0.0523	0.0000	221.3447
Total	0.3141	2.5838	1.6495	2.4600e- 003		0.1727	0.1727		0.1631	0.1631	0.0000	220.2468	220.2468	0.0523	0.0000	221.3447

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category					ton	s/yr							MT	ſ/yr		
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0174	0.1491	0.2089	3.6000e- 004	9.9300e- 003	2.2000e- 003	0.0121	2.8400e- 003	2.0200e- 003	4.8600e- 003	0.0000	32.9230	32.9230	2.6000e- 004	0.0000	32.9284
Worker	0.0249	0.0328	0.3131	7.2000e- 004	0.0581	4.5000e- 004	0.0586	0.0155	4.1000e- 004	0.0159	0.0000	54.1688	54.1688	2.8600e- 003	0.0000	54.2289
Total	0.0422	0.1819	0.5219	1.0800e- 003	0.0681	2.6500e- 003	0.0707	0.0183	2.4300e- 003	0.0207	0.0000	87.0918	87.0918	3.1200e- 003	0.0000	87.1573

3.3 Building Construction - 2017

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category					ton	s/yr							МТ	/yr		
Off-Road	0.6797	5.6981	3.8442	5.8700e- 003		0.3719	0.3719		0.3510	0.3510	0.0000	520.1052	520.1052	0.1218	0.0000	522.6636

Total	0.6797	5.6981	3.8442	5.8700e-	0.3719	0.3719	0.3510	0.3510	0.0000	520.1052	520.1052	0.1218	0.0000	522.6636
				003										

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category					ton	s/yr							МТ	/yr		
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0379	0.3179	0.4707	8.6000e- 004	0.0237	4.5500e- 003	0.0282	6.7800e- 003	4.1800e- 003	0.0110	0.0000	77.2044	77.2044	5.8000e- 004	0.0000	77.2166
Worker	0.0537	0.0712	0.6731	1.7100e- 003	0.1387	1.0300e- 003	0.1397	0.0368	9.5000e- 004	0.0378	0.0000	124.2176	124.2176	6.3200e- 003	0.0000	124.3503
Total	0.0916	0.3891	1.1439	2.5700e- 003	0.1623	5.5800e- 003	0.1679	0.0436	5.1300e- 003	0.0488	0.0000	201.4220	201.4220	6.9000e- 003	0.0000	201.5669

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category					ton	s/yr							MT	/yr		
Off-Road	0.6797	5.6981	3.8442	5.8700e- 003		0.3719	0.3719		0.3510	0.3510	0.0000	520.1046	520.1046	0.1218	0.0000	522.6629
Total	0.6797	5.6981	3.8442	5.8700e- 003		0.3719	0.3719		0.3510	0.3510	0.0000	520.1046	520.1046	0.1218	0.0000	522.6629

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category					ton	ns/yr							MT	Г/yr		
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0379	0.3179	0.4707	8.6000e- 004	0.0237	4.5500e- 003	0.0282	6.7800e- 003	4.1800e- 003	0.0110	0.0000	77.2044	77.2044	5.8000e- 004	0.0000	77.2166
Worker	0.0537	0.0712	0.6731	1.7100e- 003	0.1387	1.0300e- 003	0.1397	0.0368	9.5000e- 004	0.0378	0.0000	124.2176	124.2176	6.3200e- 003	0.0000	124.3503
Total	0.0916	0.3891	1.1439	2.5700e- 003	0.1623	5.5800e- 003	0.1679	0.0436	5.1300e- 003	0.0488	0.0000	201.4220	201.4220	6.9000e- 003	0.0000	201.5669

3.3 Building Construction - 2018

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category					ton	s/yr							МТ	/yr		
Off-Road	0.5893	5.0596	3.7262	5.8900e- 003		0.3147	0.3147	- I I	0.2973	0.2973	0.0000	516.7554	516.7554	0.1197	0.0000	519.2695
Total	0.5893	5.0596	3.7262	5.8900e- 003		0.3147	0.3147		0.2973	0.2973	0.0000	516.7554	516.7554	0.1197	0.0000	519.2695

Unmitigated Construction Off-Site

	ROG	NOx	СО	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category					ton	s/yr							MT	/yr		

Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
	1							1					1	1	1	1
Vendor	0.0357	0.2881	0.4517	8.7000e-	0.0238	4.2400e-	0.0280	6.8000e-	3.9000e-	0.0107	0.0000	76.1699	76.1699	5.7000e-	0.0000	76.1819
	II V	I L		004		003	 L	003	003				I L	004	I I	I L
Worker	0.0490	0.0652	0.6112	1.7100e-	0.1392	1.0200e-	0.1402	0.0370	9.4000e-	0.0379	0.0000	120.0129	120.0129	5.9000e-	0.0000	120.1367
	1			003		003		I 	004				l -	003	l 	1
Total	0.0848	0.3534	1.0629	2.5800e-	0.1630	5.2600e-	0.1682	0.0438	4.8400e-	0.0486	0.0000	196.1828	196.1828	6.4700e-	0.0000	196.3187
				003		003			003					003		

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category					ton	s/yr							ΜT	/yr		
Off-Road	0.5893	5.0596	3.7262	5.8900e- 003		0.3147	0.3147	- I I	0.2973	0.2973	0.0000	516.7548	516.7548	0.1197	0.0000	519.2689
Total	0.5893	5.0596	3.7262	5.8900e- 003		0.3147	0.3147		0.2973	0.2973	0.0000	516.7548	516.7548	0.1197	0.0000	519.2689

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e			
Category	tons/yr											MT/yr							
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000			
Vendor	0.0357	0.2881	0.4517	8.7000e- 004	0.0238	4.2400e- 003	0.0280	6.8000e- 003	3.9000e- 003	0.0107	0.0000	76.1699	76.1699	5.7000e- 004	0.0000	76.1819			
Worker	0.0490	0.0652	0.6112	1.7100e- 003	0.1392	1.0200e- 003	0.1402	0.0370	9.4000e- 004	0.0379	0.0000	120.0129	120.0129	5.9000e- 003	0.0000	120.1367			
Total	0.0848	0.3534	1.0629	2.5800e- 003	0.1630	5.2600e- 003	0.1682	0.0438	4.8400e- 003	0.0486	0.0000	196.1828	196.1828	6.4700e- 003	0.0000	196.3187			

3.3 Building Construction - 2019 Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category					ton	s/yr							ΜT	ſ/yr		
Off-Road	0.1272	1.1195	0.8903	1.4400e- 003		0.0664	0.0664		0.0628	0.0628	0.0000	125.4291	125.4291	0.0287	0.0000	126.0325
Total	0.1272	1.1195	0.8903	1.4400e- 003		0.0664	0.0664		0.0628	0.0628	0.0000	125.4291	125.4291	0.0287	0.0000	126.0325

Unmitigated Construction Off-Site

	ROG	NOx	СО	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e			
Category	tons/yr											MT/yr							
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000			
Vendor	8.1800e- 003	0.0643	0.1057	2.1000e- 004	5.8300e- 003	9.7000e- 004	6.7900e- 003	1.6700e- 003	8.9000e- 004	2.5600e- 003	0.0000	18.3558	18.3558	1.4000e- 004	0.0000	18.3587			
Worker	0.0112	0.0148	0.1379	4.2000e- 004	0.0341	2.5000e- 004	0.0344	9.0700e- 003	2.3000e- 004	9.3000e- 003	0.0000	28.3638	28.3638	1.3600e- 003	0.0000	28.3924			
Total	0.0193	0.0791	0.2436	6.3000e- 004	0.0400	1.2200e- 003	0.0412	0.0107	1.1200e- 003	0.0119	0.0000	46.7197	46.7197	1.5000e- 003	0.0000	46.7511			

Mitigated Construction On-Site
	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category					ton	s/yr							MT	Г/yr		
Off-Road	∎ 0.1272 ∎	1.1195	0.8903	1.4400e- 003	I I	0.0664	0.0664	1	0.0628	0.0628	0.0000	125.4289	125.4289	0.0287	0.0000	126.0323
Total	0.1272	1.1195	0.8903	1.4400e- 003		0.0664	0.0664		0.0628	0.0628	0.0000	125.4289	125.4289	0.0287	0.0000	126.0323

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category					ton	s/yr							МТ	/yr		
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	8.1800e- 003	0.0643	0.1057	2.1000e- 004	5.8300e- 003	9.7000e- 004	6.7900e- 003	1.6700e- 003	8.9000e- 004	2.5600e- 003	0.0000	18.3558	18.3558	1.4000e- 004	0.0000	18.3587
Worker	0.0112	0.0148	0.1379	4.2000e- 004	0.0341	2.5000e- 004	0.0344	9.0700e- 003	2.3000e- 004	9.3000e- 003	0.0000	28.3638	28.3638	1.3600e- 003	0.0000	28.3924
Total	0.0193	0.0791	0.2436	6.3000e- 004	0.0400	1.2200e- 003	0.0412	0.0107	1.1200e- 003	0.0119	0.0000	46.7197	46.7197	1.5000e- 003	0.0000	46.7511

3.4 Paving - 2016

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category					ton	s/yr							MT	/yr		
Off-Road	0.1139	1.2200	0.8076	1.2100e- 003		0.0687	0.0687		0.0632	0.0632	0.0000	114.5253	114.5253	0.0345	0.0000	115.2507

Paving	2.5400e- 003		 ! !	 	 	0.0000	0.0000	 , ,	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	0.1164	1.2200	0.8076	1.2100e- 003		0.0687	0.0687		0.0632	0.0632	0.0000	114.5253	114.5253	0.0345	0.0000	115.2507

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category					ton	s/yr							МТ	/yr		
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	6.2000e- 003	0.0533	0.0746	1.3000e- 004	3.5500e- 003	7.8000e- 004	4.3300e- 003	1.0100e- 003	7.2000e- 004	1.7400e- 003	0.0000	11.7582	11.7582	9.0000e- 005	0.0000	11.7601
Worker	5.6100e- 003	7.4100e- 003	0.0706	1.6000e- 004	0.0131	1.0000e- 004	0.0132	3.4800e- 003	9.0000e- 005	3.5800e- 003	0.0000	12.2185	12.2185	6.5000e- 004	0.0000	12.2321
Total	0.0118	0.0607	0.1452	2.9000e- 004	0.0167	8.8000e- 004	0.0175	4.4900e- 003	8.1000e- 004	5.3200e- 003	0.0000	23.9767	23.9767	7.4000e- 004	0.0000	23.9922

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category					tons	s/yr							ΜT	/yr		
Off-Road	0.1139	1.2200	0.8076	1.2100e- 003		0.0687	0.0687		0.0632	0.0632	0.0000	114.5252	114.5252	0.0345	0.0000	115.2506
Paving	2.5400e- 003		 ! !			0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	0.1164	1.2200	0.8076	1.2100e- 003		0.0687	0.0687		0.0632	0.0632	0.0000	114.5252	114.5252	0.0345	0.0000	115.2506

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category					ton	is/yr							MT	Г/yr		
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	6.2000e- 003	0.0533	0.0746	1.3000e- 004	3.5500e- 003	7.8000e- 004	4.3300e- 003	1.0100e- 003	7.2000e- 004	1.7400e- 003	0.0000	11.7582	11.7582	9.0000e- 005	0.0000	11.7601
Worker	5.6100e- 003	7.4100e- 003	0.0706	1.6000e- 004	0.0131	1.0000e- 004	0.0132	3.4800e- 003	9.0000e- 005	3.5800e- 003	0.0000	12.2185	12.2185	6.5000e- 004	0.0000	12.2321
Total	0.0118	0.0607	0.1452	2.9000e- 004	0.0167	8.8000e- 004	0.0175	4.4900e- 003	8.1000e- 004	5.3200e- 003	0.0000	23.9767	23.9767	7.4000e- 004	0.0000	23.9922

3.5 Architectural Coating - 2019

Unmitigated Construction On-Site

	ROG	NOx	СО	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category					ton	s/yr							МТ	/yr		
Archit. Coating	1.3980					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0147	0.1010	0.1013	1.6000e- 004		7.0800e- 003	7.0800e- 003		7.0800e- 003	7.0800e- 003	0.0000	14.0429	14.0429	1.1900e- 003	0.0000	14.0678
Total	1.4127	0.1010	0.1013	1.6000e- 004		7.0800e- 003	7.0800e- 003		7.0800e- 003	7.0800e- 003	0.0000	14.0429	14.0429	1.1900e- 003	0.0000	14.0678

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category					ton	s/yr							MT	/yr		

Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
	• •					·	L	- <u></u> -					L	- <u></u> -		L
vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	3.8900e-	5.1600e-	0.0481	1.5000e-	0.0119	9.0000e-	0.0120	3.1600e-	8.0000e-	3.2400e-	0.0000	9.8967	9.8967	4.7000e-	0.0000	9.9067
	003	003		004		005		003	005	003		l -	-	004		
Total	3.8900e-	5.1600e-	0.0481	1.5000e-	0.0119	9.0000e-	0.0120	3.1600e-	8.0000e-	3.2400e-	0.0000	9.8967	9.8967	4.7000e-	0.0000	9.9067
	005	005		004		005		005	005	005				004		

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category					ton	s/yr							MT	/yr		
Archit. Coating	1.3980		I I			0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0147	0.1010	0.1013	1.6000e- 004		7.0800e- 003	7.0800e- 003		7.0800e- 003	7.0800e- 003	0.0000	14.0429	14.0429	1.1900e- 003	0.0000	14.0678
Total	1.4127	0.1010	0.1013	1.6000e- 004		7.0800e- 003	7.0800e- 003		7.0800e- 003	7.0800e- 003	0.0000	14.0429	14.0429	1.1900e- 003	0.0000	14.0678

Mitigated Construction Off-Site

	ROG	NOx	СО	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category					ton	s/yr							MT	/yr		
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	3.8900e- 003	5.1600e- 003	0.0481	1.5000e- 004	0.0119	9.0000e- 005	0.0120	3.1600e- 003	8.0000e- 005	3.2400e- 003	0.0000	9.8967	9.8967	4.7000e- 004	0.0000	9.9067
Total	3.8900e- 003	5.1600e- 003	0.0481	1.5000e- 004	0.0119	9.0000e- 005	0.0120	3.1600e- 003	8.0000e- 005	3.2400e- 003	0.0000	9.8967	9.8967	4.7000e- 004	0.0000	9.9067

4.1 Mitigation Measures Mobile

Increase Density

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category					ton	s/yr							ΜT	/yr		
Mitigated	0.4044	0.5075	3.9177	9.4200e- 003	0.7332	7.8200e- 003	0.7410	0.1954	7.2300e- 003	0.2026	0.0000	604.4953	604.4953	0.0277	0.0000	605.0771
Unmitigated	0.4043	0.5074	3.9173	9.4200e- 003	0.7331	7.8200e- 003	0.7409	0.1954	7.2300e- 003	0.2026	0.0000	604.4313	604.4313	0.0277	0.0000	605.0130

4.2 Trip Summary Information

	Aver	age Daily Trip R	ate	Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Condo/Townhouse	688.00	688.00	688.00	1,964,449	1,964,662
Other Asphalt Surfaces	0.00	0.00	0.00		
Total	688.00	688.00	688.00	1,964,449	1,964,662

4.3 Trip Type Information

		Miles			Trip %			Trip Purpos	se %
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
Condo/Townhouse	10.80	7.30	7.50	41.60	18.80	39.60	86	11	3
Other Asphalt Surfaces	9.50	7.30	7.30	0.00	0.00	0.00	0	0	0

LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
0.511000	0.225000	0.164000	0.064000	0.002000	0.001000	0.007000	0.005000	0.000000	0.001000	0.012000	0.001000	0.007000

5.0 Energy Detail

4.4 Fleet Mix

Historical Energy Use: N

5.1 Mitigation Measures Energy

Exceed Title 24

Install Energy Efficient Appliances

	ROG	NOx	СО	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category					ton	s/yr							MT	/yr		
Electricity Mitigated	I I	1	I I			0.0000	0.0000		0.0000	0.0000	0.0000	84.8881	84.8881	3.5300e- 003	9.6000e- 004	85.2610
Electricity Unmitigated	\ 	r = = = = 	F = I I	r = = = - 		0.0000	0.0000		0.0000	0.0000	0.0000	88.3804	88.3804	3.6800e- 003	1.0000e- 003	88.7686
NaturalGas Mitigated	5.4800e- 003	0.0469	0.0199	3.0000e- 004		3.7900e- 003	3.7900e- 003	 	3.7900e- 003	3.7900e- 003	0.0000	54.2643	54.2643	1.0400e- 003	9.9000e- 004	54.5946
NaturalGas Unmitigated	6.2100e- 003	0.0530	0.0226	3.4000e- 004		4.2900e- 003	4.2900e- 003		4.2900e- 003	4.2900e- 003	0.0000	61.4095	61.4095	1.1800e- 003	1.1300e- 003	61.7832

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGa s Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr					ton	is/yr							МТ	/yr		
Other Asphalt	0 1	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Surfaces	l II													1			I
1	!	L	!	<u> </u>	L	' !		' <u>_</u>	· '		!	!			! !	L	!
Condo/Townhouse	1.15077e+ I	6.2100e-	0.0530	0.0226	3.4000e-		4.2900e-	4.2900e-		4.2900e-	4.2900e-	0.0000	61.4095	61.4095	1.1800e-	1.1300e-	61.7832
	006	003			004		003	003		003	003		1	1	003	003	1
Other Asphalt Surfaces Condo/Townhouse	0 1.15077e+ 006	0.0000 6.2100e- 003	0.0000	0.0000	0.0000 3.4000e- 004		0.0000 4.2900e- 003	0.0000 4.2900e- 003		0.0000 4.2900e- 003	0.0000 4.2900e- 003	0.0000	0.0000 61.4095	0.0000 61.4095	0.0000 1.1800e- 003	0.0000 1.1300e- 003	

Total	6.2100e-	0.0530	0.0226	3.4000e-	4.2900e-	4.2900e-	4.2900e-	4.2900e-	0.0000	61.4095	61.4095	1.1800e-	1.1300e-	61.7832
	003			004	003	003	003	003				003	003	
														1

Mitigated

	NaturalGa s Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr					tor	ns/yr							MT	ī/yr		
Condo/Townhouse	1.01688e+	5.4800e-	0.0469	0.0199	3.0000e-		3.7900e-	3.7900e-		3.7900e-	3.7900e-	0.0000	54.2643	54.2643	1.0400e-	9.9000e-	54.5946
	006	003	I I	I	004		003	003		003	003	I	I I		003	004	
Other Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total		5.4800e- 003	0.0469	0.0199	3.0000e- 004		3.7900e- 003	3.7900e- 003		3.7900e- 003	3.7900e- 003	0.0000	54.2643	54.2643	1.0400e- 003	9.9000e- 004	54.5946

5.3 Energy by Land Use - Electricity

Unmitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr		MT	ſ/yr	
Condo/Townhouse	368599	88.3804	3.6800e- 003	1.0000e- 003	88.7686
Other Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000
Total		88.3804	3.6800e- 003	1.0000e- 003	88.7686

Mitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr		M	ſ/yr	
Condo/Townhouse	354034	84.8881	3.5300e- 003	9.6000e- 004	85.2610
Other Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000
Total		84.8881	3.5300e- 003	9.6000e- 004	85.2610

6.0 Area Detail

6.1 Mitigation Measures Area

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category					tons	s/yr							Μ٦	/yr		
Mitigated	0.9863	7.4100e- 003	0.6407	3.0000e- 005		3.5200e- 003	3.5200e- 003	I I I	3.5200e- 003	3.5200e- 003	0.0000	1.0431	1.0431	1.0200e- 003	0.0000	1.0645
Unmitigated	0.9863	7.4100e- 003	0.6407	3.0000e- 005		3.5200e- 003	3.5200e- 003		3.5200e- 003	3.5200e- 003	0.0000	1.0431	1.0431	1.0200e- 003	0.0000	1.0645

6.2 Area by SubCategory

<u>Unmitigated</u>

	ROG	NOx	СО	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory					ton	s/yr							MT	/yr		
Architectural Coating	0.3009					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

Consumer Products	0.6659	· 	 	· ·		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
	"	I	L	/ /	L '	J	'		/ /		L		L	L	'	L
Hearth	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	l	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
	I '	I I	I L	 /	l L'	 	 '	 	 / /			 	I L	 	 	
Landscaping	0.0195	7.4100e-	0.6407	3.0000e-		3.5200e-	3.5200e-		3.5200e-	3.5200e-	0.0000	1.0431	1.0431	1.0200e-	0.0000	1.0645
	I	003	I	005		003	003	l	003	003		l		003	l	l
Total	0.9863	7.4100e-	0.6407	3.0000e-		3.5200e-	3.5200e-		3.5200e-	3.5200e-	0.0000	1.0431	1.0431	1.0200e-	0.0000	1.0645
		003		005		003	003		003	003				003		

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory					ton	s/yr							MT	ī/yr		
Architectural Coating	0.3009					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	0.6659					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Hearth	0.0000	0.0000	0.0000	0.0000	r 	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	0.0195	7.4100e- 003	0.6407	3.0000e- 005		3.5200e- 003	3.5200e- 003		3.5200e- 003	3.5200e- 003	0.0000	1.0431	1.0431	1.0200e- 003	0.0000	1.0645
Total	0.9863	7.4100e- 003	0.6407	3.0000e- 005		3.5200e- 003	3.5200e- 003		3.5200e- 003	3.5200e- 003	0.0000	1.0431	1.0431	1.0200e- 003	0.0000	1.0645

7.0 Water Detail

7.1 Mitigation Measures Water

Install Low Flow Bathroom Faucet

Install Low Flow Kitchen Faucet

Install Low Flow Toilet

Install Low Flow Shower

Use Water Efficient Irrigation System

	Total CO2	CH4	N2O	CO2e
Category		MT	/yr	
Mitigated	24.2533	0.1470	3.7000e- 003	28.4880
Unmitigated	28.6816	0.1837	4.6200e- 003	33.9705

7.2 Water by Land Use

<u>Unmitigated</u>

	Indoor/Out door Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal		MT	ſ/yr	
Condo/Townhouse	5.60325 / 3.53248	28.6816	0.1837	4.6200e- 003	33.9705
Other Asphalt Surfaces	0/0	0.0000	0.0000	0.0000	0.0000
Total		28.6816	0.1837	4.6200e- 003	33.9705

Mitigated

	Indoor/Out door Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal		Π	ī/yr	
Condo/Townhouse	4.4826 / 3.317	24.2533	0.1470	3.7000e- 003	28.4880

Other Asphalt Surfaces	 0/0	 0.0000	0.0000	0.0000	0.0000
Total		24.2533	0.1470	3.7000e- 003	28.4880

8.0 Waste Detail

8.1 Mitigation Measures Waste

Institute Recycling and Composting Services

Category/Year

	Total CO2	CH4	N2O	CO2e
		MT	/yr	
Mitigated	4.0152	0.2373	0.0000	8.9982
Unmitigated	8.0303	0.4746	0.0000	17.9965

8.2 Waste by Land Use

<u>Unmitigated</u>

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons		M	/yr	
Condo/Townhouse	39.56	8.0303	0.4746	0.0000	17.9965
Other Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000
Total		8.0303	0.4746	0.0000	17.9965

Mitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons		MT	Г/yr	
Condo/Townhouse	19.78	4.0152	0.2373	0.0000	8.9982
Other Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000
Total		4.0152	0.2373	0.0000	8.9982

9.0 Operational Offroad

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

10.0 Vegetation

Southview East Project Habitat Management Plan

September 2016

Prepared for:

Cornerstone Communities

4365 Executive Drive, Suite 600 San Diego, CA 92121

Prepared by:

Alden Environmental, Inc.

3245 University Avenue, #1188 San Diego, CA 92104



Southview East Project Habitat Management Plan

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1.0 INTRODUCTION

This Habitat Management Plan (HMP) has been prepared for the preserved open space area (preserve area) on the Southview East Project site in accordance with requirements identified in the Project's Biological Technical Report (Alden Environmental, Inc. [Alden] 2016). Specifically, the preserve area provides upland habitat mitigation for the both the Southview East and Airway Road extension projects, as well as preservation of surplus habitat not used for mitigation. The extension of Airway Road (if built) also would impact road pools supporting the federal listed endangered San Diego fairy shrimp (*Branchinecta sandiegonensis*). This HMP does not address vernal pool and fairy shrimp mitigation management associated with the Airway Road extension project.

The main purpose of this HMP is to provide assurances that the preserve area will be adequately managed and monitored in a manner consistent with Section 1.5, Framework Management Plan, of the City of San Diego's (City's) Multiple Species Conservation Program (MSCP) Subarea Plan (City 1997a). This HMP also defines the methods and schedules to sustain habitat function and value, determines the parties responsible for management, and identifies the responsible entity and funding source for the long-term maintenance, management, and monitoring. The ultimate goal of this HMP is to preserve long-term viability and function and value of native habitats on site along with the listed and sensitive species they support. Achieving this goal also would benefit and improve the quality of life for local residents through preservation and enhancement of a more diverse and balanced environment.

2.0 PRESERVE AREA DESCRIPTION

The approximately 10.8-acre preserve area is located south of State Route 905 (SR 905) and east of Caliente Avenue in the City. The preserve area is situated east of San Ysidro High School and has undeveloped lands to the east and to the south. The entire preserve area will be located within the City Multi-habitat Planning Area (MHPA; Figures 1 and 2).

2.1 SENSITIVE RESOURCES WITHIN THE PRESERVE AREA

Vegetation

Six sensitive vegetation communities occur within the preserve area: vernal pools, freshwater marsh, maritime succulent scrub, southern willow scrub, non-native grassland, and disturbed habitat (Table 1; Figure 3).



Table 1 PRESERVE AREA VEGETATION COMMUNITIES (acre[s])		
Vegetation Community	Total Acres	
Wetlands/Riparian Habitats		
Vernal pool	0.02	
Freshwater marsh	0.08	
Southern willow scrub	0.04	
Total Wetland/Riparian	0.14	
Upland Vegetation Communities		
Maritime succulent scrub	1.04	
Non-native grassland	8.53	
Disturbed habitat	1.15	
Total Upland	10.72	
TOTAL	10.86	

Plant Species

A total of 81 plant species were observed within the preserve area (Alden 2016). Six of which are considered sensitive: ashy spike moss (*Selaginella cinerascens*), San Diego bur-sage (*Ambrosia chenopodiifolia*), Palmer's grapplinghook (*Harpagonella palmeri*), San Diego barrel cactus (*Ferocactus viridescens*), San Diego viguiera (*Bahiopsis laciniata*), and seaside calandrinia (*Cistanthe maratima*). None of these species is federally or state listed as threatened or endangered. No City narrow endemic plant species were observed within the preserve area. The sensitive plant species found occur within maritime succulent scrub and disturbed habitat on the northeastern side of the preserve area.

Animal Species

A total of 50 animal species were observed or detected within the preserve area (Alden 2016), of which 7 are considered sensitive: federally listed endangered San Diego fairy shrimp and Riverside fairy shrimp (*Streptocephalus woottoni*); federally listed threatened coastal California gnatcatcher (*Polioptila californica californica*); fully protected white-tailed kite (*Elanus leucurus*), and California species of special concern northwestern San Diego pocket mouse (*Chaetodipus fallax fallax*), northern harrier (*Circus cyaneus*) and San Diego black-tailed jackrabbit (*Lepus californicus bennettii*).









3.0 **RESPONSIBLE PARTIES**

3.1 **RESPONSIBILITY**

3.1.1 Project Proponent

The Owner/Permittee is 100 percent responsible for funding the implementation of the management requirements identified in this HMP. Long-term HMP tasks involve activities associated with the management and maintenance of the preserve area in perpetuity, including habitat monitoring/mapping, exotic species control, public awareness programs, and general monitoring and reporting. Additional descriptions of all these long-term efforts are provided below in Section 5.0.

The Owner/Permittee shall complete the following requirements:

- Contract with a Habitat Manager approved by the City.
- Supply the Habitat Manager with digital and hard copies of all reports prepared for the Project area, as appropriate (i.e., reports containing sensitive resource data, such as this HMP).
- Place the preserve area in a Covenant of Easement for Protection of Environmentally Sensitive Lands within the MSCP Multi-Habitat Planning Area and Other Environmentally Sensitive Lands.

3.1.2 Habitat Manager

An individual or organization acceptable to the Owner/Permittee and City shall be contracted to serve as Habitat Manager for the general management effort. If the entity hired is an organization, the person(s) actively managing the open space must satisfy criteria for a Habitat Manager (as described below), and a Project Manager must be designated. The Habitat Manager shall possess the following qualifications:

- A B.S. or B.A. degree in wildlife management, natural resources, ecology, zoology, botany, biology, or similar degree.
- A minimum of 2 years of experience in field biology in southern California (preferably San Diego County).
- Demonstrated experience in similar projects, or in projects requiring similar skills.
- Experience in working with community groups.

The Habitat Manager (1) will be responsible for the implementation of this HMP; and (2) will carry out the HMP's requirements and objectives. The Habitat Manager's primary responsibility will be to maintain the integrity of all preserved habitats. In order to fulfill that responsibility, the Habitat Manager shall:

- Be an advocate of the preserved open space and its protection.
- Be familiar with this HMP and supporting documentation.
- Be responsible for all points noted in this HMP as being within his/her responsibility or judgment, as discussed in applicable sections of this document.
- Maintain all documents transferred by the Project Proponent (as previously noted), and be knowledgeable about the resources addressed in these reports.
- Educate the surrounding community about the presence and need for the open space and be responsive to any community concerns or problems regarding the open space.
- Provide direction to the community on the importance and maintenance of open space.
- Document all field visits, and notify the City in a timely manner of all concerns, problems, and suggested solutions. Forward all applicable monitoring and management data to the City for incorporation into the MSCP database.
- Coordinate with the manager(s) of adjacent preserves (i.e., MHPA) on management practices and tasks related to preservation and maintenance of the subregional open space system and apply pertinent adaptive management recommendations received from the regional monitoring source. Specifically, this will include activities such as the removal of exotic and pest species, and ensuring compatibility with the overall open space management plan proposed as part of the MSCP Subarea Plan.

4.0 FUNDING MECHANISM

General Funding

The Owner/Permittee will maintain fee title of the preserve area and will fund the management requirements identified in this HMP. It is anticipated that funding will be included as a line item in the annual HOA budget, which will ensure that dues collected will be sufficient to carry out all required management measures identified in this HMP. The Owner/Permittee shall be responsible for funding implementation of the HMP in perpetuity

5.0 MANAGEMENT SPECIFICATIONS

General Management

The overall preserve area is intended to serve as a habitat preserve, and as such, is not compatible with many uses. Activities specifically prohibited include grazing, hunting, off-road vehicle use, dumping, construction activities and staging, vegetation clearing, and removal of natural resources. Exceptions to these prohibitions include selective hand-clearing of vegetation to the extent required by written order of the fire authorities for the express purpose of reducing an identified fire hazard or weed problem. A number of individual open space management tasks are described below and in Table 2, with these efforts to be conducted at appropriate time intervals, depending on their specific characteristics, and under the supervision of the Habitat Manager to avoid or minimize adverse effects to MSCP Covered Species and any other sensitive species.

Table 2 LONG-TERM MANAGEMENT TASKS				
Task Description	Approximate Implementation Date/Frequency			
Spring habitat mapping	Map update every 5 years in spring			
General monitoring	Quarterly			
Vernal pool monitoring	Twice each year (generally February through April) for a period of 10 years. Each year thereafter, one visit (generally February).			
Upland habitat monitoring	In conjunction with the vernal pool monitoring			
Exotic plant control	Minimum of once a year within and adjacent to the preserved vernal/road pools (January/February) beginning with the first year of active management			
Exotic animal control	As needed			
Fire response planning	As needed			
Annual reports	Annually/January 15			
Barrier and sign inspection/repair	In conjunction with regular monitoring visits			
Educational brochure	Once – within 3 months of active management			
Trash removal	In conjunction with regular monitoring visits			

5.1 HABITAT MONITORING

Improving and maintaining the health and diversity of habitat contained within the preserve area are the basis for successful management. To assist the Habitat Manager in prioritizing management tasks and to provide information to the general public, City, and researchers regarding the overall state of the open space area, the Habitat Manager will monitor and document habitat types and conditions on a regular basis. These activities will include the ongoing surveys and tasks described below.



5.1.1 Long-term Habitat Monitoring and Documentation

Vegetation communities and boundaries may change over time due to natural processes such as fire, flood, and succession. In addition, the preserve area could be susceptible to indirect impacts from adjacent development, particularly along the development/preserve margins. Any changes within the preserve area may affect the functions and values provided by the existing vegetation communities, with monitoring and documentation of such changes important to successful long-term management. Specifically, information obtained from regularly monitoring and documenting changes in open space habitats will assist the Habitat Manager in determining and prioritizing future management tasks.

Methods

Spring Habitat Mapping

The Habitat Manager will conduct spring habitat mapping to note changes in vegetation communities. Updated vegetation maps should be submitted to the USFWS and City every 5 years.

General Monitoring

The preserve area will be visually inspected for changes during quarterly maintenance and monitoring visits, and all observations will be documented. Substantial changes will be monitored more closely to determine the necessity of additional measures. Recommendations from such activities will be submitted to the City for review and information prior to implementation. Vegetation and sensitive species mapping should be conducted during regular site monitoring, and updated maps should be submitted to the City every 5 years.

In addition, the Habitat Manager will assess the condition of the preserve area visually and note any problems in need of attention. The preserve area fences and signs will be inspected and any necessary repairs noted. All applicable monitoring data will be forwarded to the City for incorporation into the MSCP database.

If substantial changes are noted, the area in question will be monitored more closely to determine if additional measures are appropriate. Any recommendations resulting from such activities will be submitted to the City for review and approval prior to implementation.

Vernal Pool Monitoring

The preserved vernal pools within the preserve area will be visited to assess their condition. Each pool will be visually monitored and a species list created. The list will note the presence of exotic species and estimate cover for each species present.

Upland Habitat Monitoring

The condition of the upland habitats on site will be visually assessed. A general species list will be created for each habitat type and the vegetation map will be updated to reflect site conditions.



Schedule

Spring Habitat Mapping

The Habitat Manager will update spring habitat mapping every 5 years following completion of the Mitigation Plan using a current aerial photograph.

General Monitoring

The condition and extent of existing habitats within the preserve will be monitored and documented during regular site visits.

Vernal Pool Monitoring

The preserved vernal pools within the preserve area will be visited twice during the rainy season (generally February and April) each year for a period of 10 years. Each year thereafter, the preserved vernal pools within the preserve area will be visited once during the rainy season (generally February). The exact timing of the visits will depend on seasonal rainfall. The visits should be timed to best identify vernal pool plant and animal species. These visits are in addition to the general monitoring visits described above.

Upland Habitat Monitoring

Monitoring of the upland vegetation communities within the preserve area will occur in conjunction with the regularly scheduled monitoring visits.

5.2 SENSITIVE SPECIES MONITORING

Preservation of sensitive plant and animal populations within the preserve area is one step in achieving the overall long-term conservation of these species. Monitoring of sensitive species located within open space has 2 purposes: (1) to identify short-term threats to species persistence; and (2) to identify longer-term trends that may suggest that a population is in decline. Adaptive management measures may be required to intervene when either natural or man-made disturbances or effects appear to be adversely influencing a sensitive species.

5.2.1 Methods

It is the responsibility of the Habitat Manager to evaluate the status of the preserved species within preserve area and to institute protective measures if any individual species becomes threatened. Monitoring of sensitive species populations will vary based on the target species and be conducted in conjunction with regularly scheduled visits. Not all monitoring parameters can be identified within the context of this plan because some parameters will be dependent on a detailed assessment of field conditions. In each assessment, however, the Habitat Manager will observe and document sensitive species locations and conditions.



Fairy Shrimp Monitoring

A USFWS permitted biologist will conduct non-protocol wet season fairy shrimp surveys in the preserved vernal pools within the preserve area. Only pools holding water during regularly scheduled site visits will be surveyed.

Coastal California Gnatcatcher Monitoring

Gnatcatchers observed during site visits will be noted. No focused surveys will occur.

Burrowing Owl Monitoring

A qualified biologist will conduct non-protocol burrowing owl surveys in appropriate preserved area on site. Owls observed during other site visits also will be noted.

Monitoring for Other Sensitive Species

All sensitive species observed during site visits will be noted and recorded on updated maps.

5.2.2 <u>Schedule</u>

Fairy Shrimp Monitoring

Monitoring for fairy shrimp will occur in conjunction with the vernal pool monitoring described above.

Coastal California Gnatcatcher Monitoring

Monitoring for coastal California gnatcatchers will occur in conjunction with the upland habitat monitoring as well as opportunistically during all site visits.

Burrowing Owl Monitoring

Monitoring for burrowing owls will occur in conjunction with the upland habitat monitoring as well as opportunistically during all site visits.

Monitoring for Other Sensitive Species

Monitoring for other sensitive plant and animal species populations will be conducted opportunistically during all site visits.





5.3 CONTROL OF EXOTIC SPECIES

Exotic plant and animal species through urban edge effects could result in degradation of both native habitats and associated wildlife populations. Appendix A of the City's MSCP Subarea Plan lists Area Specific Management Directives (ASMDs) for the protection of MSCP Covered Species. Specifically, ASMDs for the coastal California gnatcatcher require management measures to maintain or improve habitat quality including vegetation structure, and ASMDs for the southern California rufous-crowned sparrow (*Aimophila ruficeps canescens*) require maintenance of dynamic processes to perpetuate some open phases of this species' habitat. Control of exotic plant species would be consistent with these directives. The Habitat Manager will implement the following measures to control introduction of exotic plants and animals in the preserve area.

5.3.1 Exotic Plant Control

There are numerous exotic plant species known to occur within vernal pool and upland habitats in the preserve area. The preserve area includes non-native grassland and disturbed habitat. Both of these areas support numerous non-native species. As such, there will be a high tolerance of non-native species. Annual weed removal will occur using mechanical line trimmers within and adjacent to the preserved road and vernal pools on site. No other weed control is required.

Schedule

Removal of exotic plant species will be conducted annually in January/February. The Habitat Manager may modify this schedule as necessary to accommodate annual fluctuations in weed growth.

5.3.2 Exotic Animal Control

Several exotic animal species may be present now or in the future (either in the preserve or adjacent area), including Argentine ant (*Iridomyrmax humilis*) and European starling (*Sturnus vulgaris*). The Argentine ant displaces native ants that comprise the principal food source for native horned lizards, while European starlings compete with native species for nest sites and food sources.

Methods/Schedule

Exotic animal species will be noted during all site visits. If a population of an exotic animal species poses a threat to the preserve area, a control/eradication program will be coordinated with the City, if appropriate. Control and eradication efforts will be implemented at the most appropriate time(s) of year and will reflect current field conditions and observations regarding the target species. No exotic animal species control is expected to be necessary and will be implemented only under extreme conditions.



5.4 FIRE MANAGEMENT

Fire is an important element in the ecology of southern California and presents a potential hazard to buildings located adjacent to open space area. Fuel management zones for the adjacent development would occur entirely outside of the preserved area. As such, no regular fuel modification is anticipated within the preserve area. ASMDs for the coastal California gnatcatcher require protection measures to reduce the potential for habitat degradation due to unplanned fire. In the event of a fire, fire fighters would have access to the preserve area to extinguish it and protect gnatcatcher habitat.

5.4.1 Fire Response Planning

Access would be provided from the Project site to open space area in the event of fire. When requested, the Habitat Manager will coordinate with the local fire marshal to discuss appropriate access locations and measures to minimize impacts to sensitive biological resources in the event of a fire.

5.5 ANNUAL REPORT

An annual report summarizing the status of the preserve area, results of the annual surveys, and all major actions taken since the last assessment will be provided to the City each year. This annual report will include: (1) information on the extent and overall health of the various habitats present within the preserve area; (2) any changes to the health or distribution of sensitive plant and animal species observed (provided on a map); (3) any observed changes resulting from natural or man-made causes; (4) summary of any management issues/tasks addressed during the last year; and (5) tasks or recommendations for changes in management identified for the next year. In addition, the annual report will include: (1) results of floral and faunal surveys; (2) photographs of the site from fixed photo points; (3) summary of the endowment; (4) funds generated, expenses incurred in performing site management, and year-end balance; (5) locations of sensitive species plotted on a site map; and (6) site maps providing information on the cumulative area of exotic species, trespass, dumping, and other concerns. This report also will compare the most recent data with that collected in previous years, and will outline appropriate remedial measures if habitat or sensitive species issues are noted.

5.6 OPEN SPACE BARRIERS

Development barriers will be constructed as part of Project development to discourage unauthorized access and protect sensitive resources within the preserve area. Barrier installation is not a component of this HMP nor is it the responsibility of the Habitat Manager. As part of the development project, the Project Proponent will construct the fences. These barriers (and any additional fencing deemed necessary [see Section 5.8.5, Fencing]) would deter unauthorized access to the preserve area and potential disturbance to the coastal California gnatcatcher during its nesting period. Minimizing disturbance to nesting gnatcatchers is an ASMD for the species.



Methods/Schedule

Inspection of the barriers will occur during regularly scheduled visits. In the event that the barrier/fence is damaged or removed, the Habitat Manager will notify the Project Proponent/HOA for repair/replacement. If appropriate, the Habitat Manager also would inform the Code Enforcement and/or Police Department of the City of the damage.

5.7 PUBLIC AWARENESS

Acceptance of the preserve area as a valuable amenity by the community is an important consideration for the long-term viability of associated open space resources. To that end, steps will be taken to encourage participation by local residents and community members in the stewardship of the preserve area. It is also a goal of this plan that community members take pride in the maintenance and protection of the preserves. The community can help police the preserve area and assist the Habitat Manager, who cannot be present 24 hours a day, in preventing vandalism and unauthorized activities from occurring.

5.7.1 Measures

The following measures will be taken to maximize public awareness and acceptance of the open space:

- A total of twenty 12- by 6-inch steel signs attached to the fences at regular intervals will provide notice in both English and Spanish that the preserve area are ecological preserve area and that trespassing is prohibited. Creation, installation, and maintenance of these signs will be the responsibility of the Project Proponent/HOA.
- The Habitat Manager will inform adjacent residents (or other applicable individuals) that any damage to or alteration of barriers would violate the Municipal Code, and be subject to possible action, fine, and/or criminal charges.
- The Habitat Manager will prepare and distribute an educational brochure to inform residents and businesses of the sensitivity of adjacent habitat, and how to minimize impacts to habitat. The brochure will include information regarding responsible pet care, proper landscape maintenance techniques, brush management, water quality, human intrusion, and lighting and noise requirements. It also will inform residents of the importance of not collecting plants or animals within the habitat. In order to help enforce the requirements, contact information for the City Neighborhood Code Compliance will be included in the brochure.

5.7.2 <u>Schedule</u>

Within 3 months of the start of habitat management activities, the Habitat Manager will install all signs and distribute educational brochures to the current residents adjacent to the preserve area.



5.8 ADDITIONAL MANAGEMENT CONCERNS

5.8.1 <u>Trash Removal</u>

The Habitat Manager will be responsible for the removal of trash from the preserve area. Trash removal would typically occur on an as-needed basis and would be conducted as an element of regularly scheduled site visits. In cases of excessive trash disposal within the preserve area, the Habitat Manager may enlist the help of community volunteer groups, as discussed above.

5.8.2 Illegal Occupancy

Illegal occupancy is a common problem in open space area within San Diego County. The Habitat Manager will regularly survey the site for encampments and report them to the City and applicable law enforcement agencies.

5.8.3 <u>Poaching/Collecting</u>

Removal of any plants, animals, rocks, minerals, or other natural resources will be prohibited within the preserve area. Anyone found removing natural resources would be informed, in a non-confrontational manner, that these activities are illegal. The Habitat Manager should maintain a log of all incidences of collecting within the preserve. Should a situation turn confrontational or if requests to discontinue illegal activities are ignored, the Habitat Manager shall report the offender(s) to the City and applicable law enforcement agencies.

The Habitat Manager may, at his/her discretion, allow seed collection and plant cuttings to be used for revegetation efforts within or outside of the preserve area. Any such activities will take place under the direct supervision of the Habitat Manager, and the amount of collected plant materials will be limited to ensure protection of on-site resources.

5.8.4 Lighting

Lighting from the developed adjacent projects will not be directed toward the preserve area. Specifically, Project design included a number of features intended to prevent lighting impacts in the preserve area, such as prohibiting direct lighting (except temporary security lighting) into the MHPA, and minimizing the effects of exterior lighting in other open space area through proper direction and shielding of light fixtures and/or use of low sodium bulbs. The design of all Project-adjacent lighting features will conform to the guidelines in the City MSCP Subarea Plan Adjacency Guidelines (City 1997a). The Habitat Manager will notify any neighbors who are in violation of these lighting restrictions. If the issue is not resolved, the Habitat Manager shall report the offender(s) to the City and applicable law enforcement agencies.

5.8.5 Fencing

In addition to the open space perimeter barriers described above, fencing can be used as a shortor long-term tool to protect habitat if encroachment becomes a problem and other means to deter unauthorized access (e.g., signing and notices to local residents) are not effective. Fencing may also be used for the following specific purposes:



- Vernal/road pool areas.
- Protection of any revegetated habitat area (e.g., as required to replace habitat after catastrophic natural events such as fires).
- Prevention of unauthorized vehicle access.
- Prevention of unauthorized trail formation within the preserve area.

Any proposed use of fencing within the preserve area (except the barriers described above) will be identified by the Habitat Manager based on observed site conditions and related issues (e.g., unauthorized access). The Habitat Manager would then submit proposed fencing needs and locations to the Project Proponent/HOA for approval prior to installation. Funding for fence installation would be derived from the Project Proponent/HOA.

6.0 FRAMEWORK MANAGEMENT PLAN CONSISTENCY

Section 1.5 of the City's MSCP Subarea Plan (City 1997a) contains the Framework Management Plan designed to "maintain and enhance biological diversity in the region and conserve viable populations of endangered, threatened, and key sensitive species and their habitats, thereby preventing local extirpation and ultimate extinction, and minimizing the need for future listings, while enabling economic growth in the region, which outlines the management goals and objectives for the MHPA." Sections 1.5.2 and 1.5.3 of the Subarea Plan address the General Management Objectives for all areas covered by the Subarea Plan and Specific Management Policies and Directives for the Otay Mesa Area, respectively. This HMP's consistency with Sections 1.5.2 and 1.5.3 is demonstrated below.

6.1 GENERAL MANAGEMENT OBJECTIVES

Section 1.5.2 of the City's MSCP Subarea Plan (City 1997a) includes General Management Objectives that apply to all areas covered by the Subarea Plan, as appropriate.

Mitigation

Mitigation shall be performed in accordance with the City's Environmentally Sensitive Lands (ESL) Ordinance and Biology Guidelines (City 2012). The habitat preservation that is being done to mitigate impacts of the Southview East and Airway Road extension projects has been formulated to satisfy the requirements of the City's MSCP Subarea Plan, ESL Regulations, and Biology Guidelines (Alden 2016). Specifically, it provides preservation of habitat for impacts to Tier I through Tier IIIB habitats at ratios required by the ESL Regulations. The preserve area that is the subject of this HMP also includes surplus habitat that may be sold as mitigation for other projects. This HMP provides for the long-term maintenance, management, and monitoring of all of these habitats to ensure their long-term viability, function, and value.



Public Access, Trails, and Recreation

Section 1.5.2 includes requirements for public access to the MHPA as well as for trails and recreation in the MHPA. Under this HMP, there will be no public access to the preserve area, which will be entirely within the MHPA. Public access will be prohibited through the use of physical barriers, public education, and signage as described in this HMP in Sections 5.6 (Open Space Barriers), 5.7 (Public Awareness), and 5.8.5 (Fencing).

Litter/Trash and Materials Storage

Section 1.5.2 also includes requirements for litter/trash and materials storage. Section 5.8.1 (Trash Removal) of this HMP states that the Habitat Manager will be responsible for the removal of trash from the preserve area on as as-needed basis. There will be no storage of materials in the preserve area. The Habitat Manager may also opt to install fencing (per Section 5.8.5 [Fencing]) in addition to the open space barriers, if necessary, to deter unauthorized access resulting in trash dumping.

Adjacency Management Issues

Illegal intrusions to the MHPA shall be enforced, prevented, and removed on an annual basis in addition to on a complaint basis. Additionally, educational information shall be disseminated to residents that addresses issues such as access and pet intrusion. Lastly, barriers (fencing, rock/boulders, vegetation) and/or signage shall be installed where necessary to direct public access.

As explained above, public access will be prohibited through the use of physical barriers, public education, and signage as described in Sections 5.6 (Open Space Barriers), 5.7 (Public Awareness), and 5.8.5 (Fencing). Furthermore, the Habitat Manager will distribute an educational brochure (see Section 5.7.1 Measures) that includes information on topics such as human intrusion and pets. Lastly, the Habitat Manager will regularly survey the preserve area for illegal encampments and will report them to the City and applicable law enforcement agencies.

Invasive Exotics Control and Removal

The first priority for control and removal of invasive exotics is to avoid introducing invasive, non-native species to the MHPA. The MSCP Land Use Adjacency Guidelines require that no invasive, non-native plant species be introduced into areas adjacent to the MHPA. Furthermore, no invasive or potentially invasive species identified in the California Invasive Plant Inventory prepared by the California Invasive Plant Council (2006) are allowed by the City within 100 feet of the MHPA. Landscaping for the Southview East and Airway Road extension projects will comply with these requirements.

The second priority is to monitor for exotic species and remove them. As explained in Sections 5.3.1 (Exotic Plant Control) and 5.3.2 (Exotic Animal Control) as well as in Table 2 of this HMP, removal of exotic plant species will be conducted annually, and control/removal of exotic animal species will occur as needed; however, the latter is not expected to be necessary.



Flood Control

There are no flood channels in the preserve area to maintain.

6.2 SPECIFIC MANAGEMENT POLICIES AND DIRECTIVES FOR THE OTAY MESA AREA

Section 1.5.3 of the City's MSCP Subarea Plan (City 1997a) includes Overall Management Policies and Directives for Otay Mesa applicable to the preserve area, as follows. There are no Specific Management Directives for northwest Otay Mesa applicable to the preserve area.

General Policies

Priority 1:

1. No unauthorized motorized vehicles except border patrol, MHPA (preserve) managers, maintenance personnel or emergency vehicles will be allowed on any trails or off-trail in the MHPA.

Unauthorized access to the preserve area will be controlled through the use of physical barriers, public education, and signage as described above in Sections 5.6 (Open Space Barriers), 5.7 (Public Awareness), and 5.8.5 (Fencing).

2. Trash, hazardous materials, and vehicles from the MHPA shall be removed prior to transfer from private into public ownership and/or management.

The preserve area will not be transferred into public ownership or management; however, as explained in Section 5.8.1 (Trash Removal) of this HMP, trash removal would typically occur on an as-needed basis and would be conducted as an element of regularly scheduled site visits.

3. Vernal pool areas within the Otay Mesa area shall be inventoried for sensitive and target species where not previously or recently done, and assessed for enhancement/restoration needs or opportunities, general status, and potential threats.

Vernal pool mapping, fairy shrimp, and sensitive plant surveys were conducted in the preserve area in 2014 and/or 2015 as described in the Project's Biological Technical Report (Alden 2016). Under this HMP, vernal pool monitoring will occur twice during the rainy season each year for a period of 10 years. Each year thereafter, the preserved vernal pools will be visited once during the rainy season. Exotic plant control will occur a minimum of once per year within and adjacent to the vernal pools.



7.0 REFERENCES

- California Invasive Plant Council. 2006. California Invasive Plant Inventory. http://www.calipc.org/ip/inventory/pdf/Inventory2006.pdf
- City of San Diego (City). 1997a. Multiple Species Conservation Program. City of San Diego MSCP Subarea Plan. March.

1997b. City of San Diego MSCP Implementing Agreement Documents.

2012. Land Development Code Biology Guidelines. Adopted September 1999. Last amended April 23, 2012 by Resolution No. R-307376.

Alden Environmental, Inc. (Alden). 2016. Biological Technical Report for the Southview East Project. June.

Kimley »Horn

MEMORANDUM

То:	Jim Lundquist City of San Diego
From:	Leonardo Espelet, T.E. Kimley-Horn and Associates, Inc.
Date:	April 19, 2016
Subject:	Southview Driveway Signal Warrant Analysis

This memorandum was prepared to provide signal warrant analysis for the future intersection of Airway Road and the Southview Driveway. The new intersection will be constructed along the extension of Airway Road to the east of Caliente Avenue in the Otay Mesa community in the City of San Diego. The intersection will provide access for the developments of Vista del Sur (formerly Southview) and Southview-East.

The memorandum will provide traffic signal warrant analysis for the following scenarios:

- Vista del Sur (Year 2035)
- Vista del Sur + Southview-East (Year 2035)
- Vista del Sur + Southview-East (Buildout Conditions without La Media connection)

Signal warrant analysis for Airway Road and Southview Driveway is based on the peak-hour warrant (Warrant 3) from the California Manual on Uniform Traffic Control Devices (CA-MUTCD) 2014 Edition.

Year 2035 intersection volumes for the study intersection were based on the peak-hour trip generation and trip assignment of the Southview and Southview-East developments. Airway Road east of Caliente Avenue is anticipated to be constructed as a cul-de-sac and would only provide access to the Vista del Sur and Southview-East developments, therefore Year 2035 intersection approach volumes assumed all vehicles would only be generated by the two developments. **Figure 1** and **Figure 2** present the peak-hour signal warrant analysis for Southview and the combined Vista del Sur and Southview-East developments, respectively.

As shown in the figures, both scenarios do not meet the peak-hour signal warrant.

According to the Otay Mesa Community Plan (Buildout Scenario 3B without La Media Road), Airway Road will be extended to connect from Caliente Avenue to Heritage Road by Buildout Conditions. Based on the Otay Mesa Facilities Financing Plan FY 2014, the extension will be funded between 2043 and 2054. For Buildout Conditions traffic volumes at the intersection of Airway Road and Southview Driveway, approximately 10% of the ADT along Airway Road (38,000 ADT) was assumed to travel east

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and west while northbound and southbound vehicles out of Southview Driveway were assumed to consist of outbound vehicles from the Vista del Sur and Southview-East developments. **Figure 3** presents the peak-hour signal warrant analysis for Buildout Conditions.

The Buildout Conditions signal warrant analysis shows that the intersection of Airway Road and Southview Driveway would meet the peak-hour traffic signal warrant based on the approach volumes at the intersection.

Please contact me at 619.744.0136 or at leo.espelet@kimley-horn.com should you have any questions.

and the second

Leo Espelet, T.E.

TR# 2678

Attachments:

- Figure 1 Vista del Sur Year 2035 Signal Warrant Analysis
- Figure 2 Vista del Sur + Southview-East Year 2035 Signal Warrant Analysis
- Figure 3 Vista del Sur + Southview-East Buildout Conditions (without La Media connection) Signal Warrant Analysis
Vista del Sur - Year 2035

FIGURE 1

WARRANT 3 - Peak Hour (Part A or Part B must be satisfied)				SATISFIED	YES	NOX		
<u>PART A</u> (All parts 1,2 and 3 below must be satisfied for the	same one hour, f	or any four	consecutive 1	SATISFIED 5-minute periods)	YES	NOX		
 The total delay experienced by traffic on one minor st <u>four</u> vehicle-hours for a one-lane approach, or five vehic 	1. The total delay experienced by traffic on one minor street approach (one direction only) controlled by a STOP sign equals or exceeds four vehicle-hours for a one-lane approach, or five vehicle-hours for a two-lane approach; AND							
The volume on the same minor street approach (one or vph for two moving lanes; <u>AND</u>	2. The volume on the same minor street approach (one direction only) equals or exceeds <u>100</u> vph for one moving lane of traffic or 150 vph for two moving lanes: AND							
 The total entering volume serviced during the hour equipment of intersections with three approaches. 	3. The total entering volume serviced during the hour equals or exceeds 800 vph for intersections with four or more approaches or <u>650</u> vph for intersections with three approaches.							
PART B				SATISFIED	YES	NOX		
APPROACH LANES	One	2 or More	AMPEat	/ Hour				
Both Approaches - Airway Road (Major Street)		Х	35					
Higher Approach- NB Southview Driveway (Minor S	Street) X		97					

All plotted points fall above the applicable curve in Figure 4C-3.	Yes No X
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The satisfaction of a traffic signal warrant or warrants shall not in itself require the installation of a traffic control signal.



VEHICLES PER HOUR (VPH)

*Note: 150 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 100 vph applies as the lower threshold volume for a minor-street approach with one lane.

Vista del Sur + Southview-East - Year 2035

FIGURE 2

WARRANT 3 - Peak Hour (Part A or Part B must be satisfied)				SATISFIED	YES	NOX	
<u>PART A</u> (All parts 1,2 and 3 below must be satisfied for the sa	me one hour, f	or any four	consecutive 1	SATISFIED 5-minute periods)	YES	NOX	
1. The total delay experienced by traffic on one minor stree four vehicle-hours for a one-lane approach, or <u>five</u> vehicle-l	y a STOP sign equals or exceeds	Yes	No X				
The volume on the same minor street approach (one dire vph for two moving lanes; <u>AND</u>	2. The volume on the same minor street approach (one direction only) equals or exceeds 100 vph for one moving lane of traffic or <u>150</u> vph for two moving lanes; AND						
 The total entering volume serviced during the hour equa vph for intersections with three approaches. 	3. The total entering volume serviced during the hour equals or exceeds <u>800</u> vph for intersections with four or more approaches or 650 vph for intersections with three approaches.						
PART B				SATISFIED	YES	NOX	
APPROACH LANES	One	2 or More	AMPERT	/ Hour			
Both Approaches - Airway Road (Major Street)		Х	46				
Higher Approach- NB Southview Driveway (Minor Stre	eet) X		117				

All plotted points fall above the applicable curve in Figure 4C-3.	Yes No X
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The satisfaction of a traffic signal warrant or warrants shall not in itself require the installation of a traffic control signal.



*Note: 150 vph applies as the lower threshold volume for a minor-street

approach with two or more lanes and 100 vph applies as the lower threshold volume for a minor-street approach with one lane.

Vista del Sur + Southview-East - Buildout Conditions (without La Media connection)

Higher Approach- NB Southview Driveway (Minor Street)

FIGURE 3

WARRANT 3 - Peak Hour (Part A or Part B must be satisfied)		SATISFIED	YES X	NO			
<u>PART A</u> (All parts 1,2 and 3 below must be satisfied for th	e same one hour, for any four consecutive 15-minute pe	SATISFIED riods)	YESX	NO			
1. The total delay experienced by traffic on one minor four vehicle-hours for a one-lane approach, or five veh	street approach (one direction only) controlled by a STOP sign icle-hours for a two-lane approach; <u>AND</u>	equals or exceeds	Yes X	No			
The volume on the same minor street approach (one vph for two moving lanes; <u>AND</u>	2. The volume on the same minor street approach (one direction only) equals or exceeds <u>100</u> vph for one moving lane of traffic or 150 vph for two moving lanes; AND						
 The total entering volume serviced during the hour or vph for intersections with three approaches. 	equals or exceeds <u>800</u> vph for intersections with four or more a	approaches or 650	Yes X	No			
PART B		SATISFIED	YESX	NO			
APPROACH LANES	One 2 or More _F u ^{rest} / Hour						
Both Approaches - Airway Road (Major Street)	X 3800						

All plotted points fall above the applicable curve in Figure 4C-3. Yes X No

117

The satisfaction of a traffic signal warrant or warrants shall not in itself require the installation of a traffic control signal.

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VEHICLES PER HOUR (VPH)

*Note: 150 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 100 vph applies as the lower threshold volume for a minor-street approach with one lane.

Kimley »Horn

MEMORANDUM

To:	Jim Lundquist City of San Diego
From:	Leonardo Espelet, T.E. Kimley-Horn and Associates, Inc.
Date:	April 19, 2015
Subject:	Southview-East Trip Generation

This memorandum was prepared to provide a trip generation analysis for the proposed Southview-East residential development. The proposed residential project would be located along Airway Road east of Caliente Avenue in the community of Otay Mesa in the City of San Diego.

The Southview-East development is the remaining portion of the larger, previously approved Southview development. The Southview development was originally approved for 553 dwelling units under the "multiple dwelling unit (over 20 du/ac)" land use in 2006. However, the Southview development was split into two sub-projects, Vista del Sur (277 du) and Southview-East (proposed). As part of the first Vista del Sur project, 277 dwelling units will be constructed under the "multiple dwelling unit (under 20 du/ac)" land use. The second sub-project, Southview-East, is proposed to be construct 86 dwelling units also under the "multiple dwelling unit (under 20 du/ac)" land use.

The trip generation for the previously (2006) approved development and the proposed new residential development is presented in **Table 1**. Trip generation was based on the City of San Diego Trip Generation Manual (2003). Table 1 shows that the addition of the proposed Southview-East residential development (86 du) to the existing Vista del Sur development (277 du) would result in fewer generated trips than the originally approved Southview development (553 du). The total trip generation with the proposed Southview-East development is estimated to be 2,904 daily trips, 232 (46 in, 186 out) a.m. peak-hour trips, and 291 (203 in, 88 out) and p.m. peak-hour trips.

The addition of the proposed Southview-East development (86 du) to the Vista del Sur development (277 du) would result in fewer trips than what was originally approved in 2006 for the Southview development (553 du), therefore, an additional traffic study would not be required.

Please contact me at 619.744.0136 or at leo.espelet@kimley-horn.com should you have any questions.

Leo Espelet, T.E. (TR# 2678)

TABLE 1 TRIP GENERATION SUMMARY															
						AM Peak	-Hour				Р	M Peak-	Hour		
Land Use	Land Use as listed in SanDiego	Units ¹	Trip Rate ²	Daily Trips	% of ADT	² In:Out Ratio ²	In	Out	Total	% of ADT ²	In:Out	Ratio ²	In	Out	Total
New Proposed Developmen	at														
Vista del Sur	Multiple Dwelling Unit - Under 20 dwelling units/acre	277 du	8 / du	2,216	8%	2.00 : 8.00	35	142	177	10%	7.00	: 3.00	155	67	222
Southview-East	Multiple Dwelling Unit - Under 20 dwelling units/acre	86 du	8 / du	688	8%	2.00 : 8.00	11	44	55	10%	7.00	: 3.00	48	21	69
New Proposed Development	Total			2,904			46	186	232				203	88	291
Previously Approved Devel	lopment														
Southview	Multiple Dwelling Unit - Over 20 dwelling units/acre	553 du	6 / du	3,318	8%	2.00 : 8.00	53	212	265	9%	7.00	: 3.00	209	90	299
Previously Approved Develop	pment Total			3,318			53	212	265				209	90	299
NET TRIP GENER	RATION =			-414			-7	-26	-33				-6	-2	-8
Note: 1. du = dwelling unit 2. Daily and peak-hour trip genera	ste: du = dwelling unit Daily and peak-hour trip generation rates referenced from the City of San Diego Land Development Code - Trip Generation Manual, May 2003.														

K:\SND_TPTO\095791004 - Southview-East\Excel\[791003TG01-Old v New TG.xlsm]Summary (Simple)

April 15, 2015

CONCEPTUAL WASTE MANAGEMENT PLAN FOR SOUTHVIEW EAST

City of San Diego Project No. 371807

PREPARED FOR: SOUTHVIEW DEVELOPMENT PARTNERS, L.L.C. 4365 Executive Drive, Suite 600 SAN DIEGO, CA 92121 (858)-458-9700

> PREPARED BY: 3990 RUFFIN ROAD, SUITE 120



SAN DIEGO, CA 92123

858-560-1141

JOB NO. 70910.62

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- 2.0 Existing Site Conditions
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- 4.0 Waste Management Implementation
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- 6.0 Conclusion
- 7.0 References

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Appendices

Appendix I: San Diego Municipal Code: Construction and Demolition Debris Diversion Deposit Program Appendix II: San Diego Municipal Code: Recycling Ordinance Appendix III: City of San Diego Construction & Demolition (C&D) Debris Conversion Rate Table

1.0 Introduction

This Conceptual Waste Management Plan (WMP) has been prepared for the Southview East project to address and reduce potential project impacts that could have adverse effects on landfill capacity as well as solid waste services.

According to the City of San Diego's waste management requirements, projects can fall under direct or cumulative impact categories. Projects that are considered "direct impacts" to solid waste services generate 1,500 tons of waste or more and are 1,000,000 sq ft and larger in project size. Projects in the "cumulative impact" category will generate significant impacts to solid waste services if they generate 60 tons of waste or more and are 40,000 sq ft or greater in total area.

The proposed project site covers a total of 922,349 square feet, which means that the project exceeds the cumulative impact category threshold. Cumulative impact projects are required to be mitigated through the implementation of a Waste Management Plan to reduce the impact of solid waste produced on site. This WMP report will comply with solid waste and recycling laws and regulations as well as the City of San Diego's Municipal Code Refuse and Recyclable Materials Storage Regulations, AB 939, AB 341, and City Ordinances O-19420, O-19694, and O-19678.

The project will have an anticipated diversion rate of 100% during the grading phase due to the balance of cut and fill soils. A demolition phase is not included because the project site is currently vacant. The construction phase will have a targeted 75% diversion rate of all waste that will be generated on site during the construction process. Lastly, the ongoing use phase, also known as the occupancy phase, will be mitigated for as efficiently as possible.

2.0 Existing Site Conditions

The existing 21.1 acre site is situated in the eastern portion the Otay Mesa Community Plan of the City of San Diego, located approximately 1.5 miles east of the Interstate 805 Freeway, 1 mile west of Brown Field Airport, and 1 mile north of the Mexico International Border. The site is located east of the intersection of Caliente Avenue and Airway Road, south of State Route 905 highway and "across the street: from a vacant lot. See vicinity map located in Exhibit "A" for site location.

3.0 Proposed Project Site Conditions

"Southview East" will be a multi-family residential project, split north and south of the extension of Airway Road. A portion of the site is currently a part of the AR1-1 zone but will be rezoned so that it is entirely a part of the RM2-6 zone. A total of 29 buildings will include several attached product types (4-plex and 5plex buildings) with a total of 136 proposed units. In addition to the proposed buildings, the site also proposes multiple recreational areas. The developed area is approximately 19.2 acres with the remaining 2 acres dedicated as HOA slopes and permanent open space areas.

Road access to the site will be provided through the extension of Airway Road with "Driveway S" being the access point to the northern site and "Driveway D" being the main access point to the southern site. Internal driveways will provide circulation within the projects and will also add connectivity to the adjacent "Vista Del Sur" project as well as the proposed "Tesoro" project.

The proposed project requires approximately 111,387 cubic yards of import from adjacent "Vista Del Sur" and "Tesoro" projects in order to balance the grading quantities. The project will include approximately 47,300 square feet of PCC concrete and approximately 150,850 square feet of pavement.

To ensure the implementation of waste minimization requirements, construction practices will comply with local, state, and federal regulations in regards to handling and hauling building materials.

4.0 Waste Management Implementation

There are numerous measures that need to be taken into account to ensure the proper implementation of the waste management plan.

The first step is to complete and submit a *Waste Management Form Part I* and pay the refundable deposit as stated in the City of San Diego Municipal Code 66.0604, O-19420, O-19694. Certified recycling facilities must be used in order to guarantee a deposit refund. According to the City of San Diego Municipal Code section 66.0604, the certified recycling facility must accept C&D debris at a diversion rate of at least 50%. See Table 1 below for the deposit calculation table.

NEW Construction & Demolition (C&D) Deposit Schedule Effective January 1, 2014

New Deposit Schedule - Effective January 1, 2014									
Deposit Types	Deposit/ Sq Ft	Minimum Sq Ft Subject to Ordinance	Maximum Sq Ft Subject to Deposit	Range of Deposits					
Residential New Construction, Non-residential Alterations, Demolition	\$0.40	1,000	100,000	\$400 - \$40,000					
Non-residential New Construction	\$0.20	1,000	50,000	\$200 - \$10,000					
Flat Rate									
Residential Alterations*	\$1,000	1,000	6,999	\$1,000					

* Residential Alterations 7,000 square feet and greater in size, and hotels are considered Non-Residential Alterations.

(Source: City of San Diego, Information Bulletin 119: Construction Demolition Debris. January 2014)

The developer is required to notify the City's Environmental Services Department (ESD) at least 7 days prior to a grading permit being issued, inspections being needed and grading beginning onsite. Prior to construction, the ESD shall attend a pre-construction meeting with the developer to ensure that bins are appropriately provided and labeled. The ESD will also verify that a waste hauler has been contracted, with a contract clearly identifying a proper destination for the material to be relocated to. The developer is responsible for arranging periodic inspections as well as a final inspection so that the ESD is constantly aware of the project's waste diversion progress.

A Solid Waste Management Coordinator (SWMC) will be appointed. The SWMC's information should be provided to the ESD at least seven days prior to the start of any onsite work. The duty of the SWMC will be to oversee the proper implementation of the Waste Management Plan during the construction and grading phases.

Designated construction waste bins will be provided and monitored during construction. All workers will be educated on ways to comply with the WMP plan during all phases.

Measures to be taken during the on-going phase shall include on-site recycling services for the occupants, recycling and disposal bins placed in the garage of each unit as well as the proper educational materials distributed to each residential unit.

Prior to issuing any grading or building permit, release of the grading bond and issuance of a Certificate of Occupancy, the permittee shall provide documentation to the ESD and to the Director of the Entitlements Division, showing that the Waste Management plan has been properly implemented. Evidence shall be provided showing their efforts in order for the final report to be approved. The applicant will be qualified for a refund if the following is submitted to the Director of the Environmental Services Department within 180 days of the final inspection:

- A properly completed Waste Management Form Part II
- Copy of the Waste Management Form Part I
- Evidence deemed acceptable by the Director showing the proper diversion at the applicable rate

5.0 Waste Generated

Construction Waste Generated:

Demolition Waste

The Southview East site is currently vacant; therefore no waste will be produced during the demolition phase.

Grading Construction Waste

The proposed project site will have a balanced cut and fill quantity at approximately 115,580 cubic yards. Approximately 111,387 cubic yards of import will be taken from adjacent "Vista del Sur" and "Tesoro" projects.

Building Construction Waste

The preliminary portion of the building phase will begin with the installation of private driveways and pouring of concrete foundations. Washing out the cement trucks will contribute the majority of the waste in the foundation process due to the formation of concrete sludge. An estimated 100% of sludge formed from this process will be collected and taken to the Otay Valley Rock in Chula Vista for recycling. Where possible, excess pieces of material will be used onsite in the building construction phase which will also help reduce waste.

Based on the CEQA Guidelines for a Waste Management Plan, dated June 2013, 3lbs/sf of construction waste are estimated to be produced per residential unit.

Construction Calculation:

(3lbs/sf) x 313,990sf x (1tons/2000lbs) = 471 tons

Based on the City of San Diego Construction & Demolition Debris Conversion Rate of .15 tons per cy, the total anticipated landscape debris produced is 2,562 tons, assuming the average height of vegetation is .5 feet.

Landscape Debris Calculation:

21.2 acres x 43,560 sf x .5 ft x .037 cy x .15 tons = 2,562 tons

Table two provided below shows the different types of construction waste that will be generated on-site as well as their designated disposal location if not reused on site.

Table	Table 2 Types of Construction Waste to be Generated				
Material Type	Location of Facility				
Asphalt &	Otay Valley Rock				
Concrete	2041 Heritage Road				
Foundation	Chula Vista, CA 91913				
	Target Diversion:100%				
Woodwaste	Miramar Greenery				
Foundation	5180 Convoy Street				
	San Diego, CA 92111				
	Target Diversion: 100%				
Brick/Masonry/Tile	Reuse onsite if possible. Remainder sent to:				
	Reclaimed Aggregates				
	Chula Vista				
	855 Energy Way,				
	Chula Vista, CA 91911				
	Target Diversion: 100 %				
Cardboard	Cactus Recycling				
	8710 Avenida de la				

	-
	Fuente, San Diego,
	CA 92154
	Target Diversion: 100%
Carpet,	DFS Flooring
Padding/Foam	10178 Willow Creek
	Road
	San Diego, CA 92131
	Target Diversion: 100%
Drywall	EDCO Recovery and
-	Transfer
	3660 Dalbergia St.,
	San Diego, CA 92113
	Target Diversion: 70%
Landscape	Miramar Greenery
·	5180 Convoy Street
	San Diego, ČA 92111
	Target Diversion: 100%
Mixed C&D	Otay C&D Inert Debris Processing Facility
	1700 Maxwell Rd
	Chula Vista, CA 91913
	Target Diversion: 66%
Roofing Materials	EDCO Recovery & Transfer Station
	3660 Dalbergia Street
	San Diego, ČA 92113
	Target Diversion: 77%
Scrap Metal	Pacific Steel
•	1700 Cleveland
	Avenue, National City,
	CA 91913
	Target Diversion: 100%
Unpainted Wood	Miramar Greenery
& Pallets	5180 Convoy Street
	San Diego, CA 92111
	Target Diversion: 100%
Landfill Waste	Miramar Landfill
	5180 Convoy Street
	San Diego, CA 92111
	Target Diversion: 0%

All of the above material listed in Table 2 are to be separated into designated bins. Prior to the construction permit approval, the permittee will submit a statement in writing to those that the final Construction report has been approved by the ESD. The report will include the actual amounts of waste generated and diverted from all phases of the project as well as purchased material documentation, material hauling records, and the total waste reduction percentage.

Table 3 Rate of Waste Generation								
Material Type	% Total Tons	Tons	Diverted/Recycled	Disposed				
	Diverted	Generated						
Asphalt& Concrete	7.5 %	35	35	0				
Foundation								
Woodwaste Foundation	1.0 %	5	5	0				
Brick/Masonry/Tile	6.0 %	28	28	0				
Cardboard	4.0 %	19	19	0				
Carpet/Padding/Foam	1.0 %	5	5	0				
Drywall	5.0 %	24	16	8				
Mixed C&D	61.0 %	287	195	92				
Roofing Materials	1.0 %	5	5	0				
Scrap Metal	1.5 %	7	7	0				
Unpainted Wood &	6.0 %	28	28	0				
Pallets								
Landfill Waste	6.0 %	28	28	0				
		2,562	2,562	0				
	100 %	3,033	2,934	99				

Occupancy Waste Generated:

Occupancy waste still needs to be maintained and minimized post-construction. This type of waste requires a continuous plan to reduce waste generated from the residents. Some common measures used to reduce ongoing waste include recycling and educational materials. Per the City Municipal Code 66.0706, recycling methods shall include proper signage and containers, designated recycling areas, and collecting recyclables at least twice a month. It is the owner's responsibility to ensure that all occupants are educated. Educational measures include reading material, location of proper recycling containers, as well as the tenant's responsibility to comply per Recycling Ordinance O-19678.

Each of the 136 units in the Southview East project will have their own recycling and trash disposal containers located in the garage. All containers shall have proper labeling. The tenants will be given material and proper signage to better understand which materials are to be recycled or disposed of. A waste management company will be used to haul waste to both the landfills and recycling centers.

Aside from waste generated within the household, waste generated from landscape maintenance will also need to be taken into account. Landscape areas will be maintained by professional landscaping contractors who are knowledgeable of the proper methods of disposing of greenery. 100% of the waste generated from landscaping will be hauled off site to the Miramar Greenery Center.

6.0 Conclusion

The Southview East project is considered a "cumulative impact" project, as determined by the *Significance Determination Thresholds* (City 2011), therefore this Waste Management Plan was prepared as a mitigation measure in order to ensure compliance with solid waste and recycling regulations. Incorporation of the measures stated in this Waste Management Plan will provide adequate waste diversion and meet the standards and regulations. The amount of material generated from this project will amount to approximately 3,033 tons including landscape. The amount of material diverted or recycled will be approximately 2,934 tons with around 99 tons being disposed of.

A summary of the measures to be taken will include:

- Submitting the proper Waste Management Form Part I and II as well as the initial refundable deposit
- Setting up a pre-construction meeting with all involved parties
- Appointing a SWMC
- Contracting a hauling company to bring the waste to the proper destination
- Periodic check-ups from the ESD to ensure compliance
- Use and provide sufficient evidence of the 10% "buy local" effort
- Use and provide evidence of the 5% recyclable material use
- Provide, clearly label, and monitor the construction waste bins, which should be separated by material type
- Provide recycling and disposal bins in each garage unit
- Provide recycling and landfill disposal services for the residents
- Provide educational material to the residents for proper recycling and disposal practices
- Submit the final construction report and data to the ESD for approval

7.0 References

City of San Diego, Information Bulletin 119: Construction Demolition Debris. January 2014

2009. Environmental Services Department Website: Recycling Ordinance-Residential. Accessed November 24, 2014. <u>http://www.sandiego.gov/environmental-</u> <u>services/recycling/ro/residential/index.shtml#apt</u>

2011. Significance Determination Thresholds. Accessed November 24, 2014. <u>http://www.sandiego.gov/development-services/pdf/news/sdtceqa.pdf</u>

2008. City of San Diego Construction & Demolition Debris Conversion Rate Table.<u>http://www.sandiego.gov/environmentalservices/recycling/xls/cdmaterialconversiontable.xls</u> Accessed November 24, 2014.

Exhibit "A" – Vicinity Map

Vicinity Map



Exhibit "B" – Aerial Photo of Site



Imagery ©2014 Cnes/Spot Image, DigitalGlobe, Sanborn, U.S. Geological Survey, USDA Farm Service Agency, Map data ©2014 Google 500 ft

Exhibit "C" – Conceptual Site Plan









<u>NOTE NO. 1</u> REVISED LOCATION OF BUILDING NO. 11 (SDP 25170) TO ACCOMMODATE INTER-PROJECT ROAD CONNECTIVITY AT REQUEST OF THE CITY PLANNING DEPARTMENT.

<u>SETBACK NOTES</u> 1) PROPOSED 15' WIDE REAR YARD SETBACK. PROPOSED 10' WIDE SIDE YARD SETBACK.
 PROPOSED 15' WIDE FRONT YARD SETBACK.

Prepared By: SB&O INC. Address: <u>3990 RUFFIN ROAD, SUITE 1</u>₄ <u>SAN DIEGO, CALIFORNIA 9212</u> Phone #: <u>(858) 560-1141</u> Project Address: SOUTH OF FREEWAY 905, EAST OF CALIENTE AVENUE Project Name: SOUTHVIEW EAST

SITE PLAN



Exhibit "D"- Waste Management Form



Waste Management Form - Part I



Construction & Demolition (C&D) Debris Deposit Program

Required for projects described in Municipal Code §66.0601-66.0610.

Deposit will be fully realist for the minimum required accompanied by weigh to submitted within 180 da	efunded if at least recycling rate is not tickets for ALL del tys from final inspe	t 50%* of ALL met, the deposit i oris generated, ir ction. Refer to Inf	debris generate refund will be pron icluding all trash formation Bulletin	ed from the proj rated. Deposit ref , salvage, reuse ar 119 for details on acc	ect is recycled. und requests must be ad recycling, and be eptable documentation.		
Complete Part I before obtaining a building, combination or demolition permit. Submit this form and your deposit to the Development Services Department staff at permit issuance.							
Refundable Party Conta	act Information:						
Name	ন 	Гitle		Company			
Address			City	State	Zip		
Phone]	Email	•				
Project Information:							
Approval/Permit No.	Proi	ect Title					
Project Address	* * ~j			Zin			
Project Address			•	v.h			
Project Type: <i>U New Con</i>	struction 🖬 Addiți	on/Alteration 🗳	Demolition				
Building Type: <i>Comme</i>	ercial 🛛 Residentia	al	TODEE		- CT- CIT- 4 1313		
Estimated Square Feet			TO BE F	ILLED OUT BY	DSD STAFF		
Estimated Start Date	//_		"Carro	eposit" Paiu 5	· · · · · · · · · · · · · · · · · · ·		
Estimated Completion Date	/	<u>/</u>	Invoice #	Da	te Paid		
Fill out the table with <u>esti</u> Please use the City Construct	i <u>mated</u> quantities in ction and Demolition	tons for each man Debris Conversion	terial that will be <i>Table</i> if convertin	generated by your g from volume to tor	project. Note: A + B = C mage.		
Material Type	A Estimated Salvage, Reuse or Recycle	B Estimated Disposal (Trash)	C Estimated Total Debris Quantity	Hauler	Certified Recycling Facility or Disposal Destination		
Asphalt & Concrete							
Brick / Masonry / Tile							
Cabinets, Doors, Fixtures, Windows (circle all that apply)							
Caraboard					, , , , , , , , , , , , , , , , , , ,		
Ceiling Tile (acoustic)							
Dirt				n (
Drvwall							
Landscape Debris		(maandaanaanaanaanaadaha ku sosiidhaanakaanaanaanaa). - -		······			
Mixed C&D Debris							
Mixed Inerts							
Roofing Materials							
Scrap Metal							
Stucco							
Unpainted Wood & Pallets							
Garbage / Trash							
Other:				· · ·			
TOTAL	4 14 14 14 14 14 14 14 14 14 14 14 14 14				Contraction of the protocol of the		
To estimate Recycling Rate: (Total A/Total C) x 100 = Recycling % MINIMUM RECYCLING RATE FOR ALL DEBRIS FROM YOUR PROJECT IS CURRENTLY 50%* * Recycling rate is subject to change; check Information Bulletin 119 for current rate.							

C&D debris may contain paint, asbestos, mercury switches, light bulbs, ballasts or other hazardous wastes that require removal prior to disposal. The Miramar Landfill cannot accept hazardous waste. For information on waste acceptance at the Miramar Landfill, call (858) 694-7000.



Waste Management Form - Part II



Required for	projects described in Municipal Code §66.060	1-66.0610.
Complete Part II after final inspection. Submit with ALL trash, salvage, reuse an Please refer to Information Bulletin 119 for	id recycling weigh tickets. details on acceptable documentation.	
Send this completed form and all document	ation:	
<u>By Mail</u>	By Fax	<u>By Email</u>
City of San Diego Environmental Services Department Attn: C&D Diversion Coordinator 9601 Ridgehaven Court, Suite 320 San Diego, CA 92123-1636	Attn: C&D Diversion Coordinator (858) 492-5089	ESD_CD@sandiego.gov
Applicants must submit refund requests days will not be eligible for a refund. Refund provided. Refunds will be mailed within 45 the minimum required recycling rate specifi	within 180 days from project final inspect ads will not be issued if all requested inform business days following receipt of all prop ed in Information Bulletin 119 is not met, t	tion. Requests submitted after 180 nation and documentation is not per forms and documentations. If he deposit refund will be prorated.
Project Information		
Approval/Permit No Proj	ect No Project Title	
Final Inspection Date / Affirmation Applicant is advised of San Diego Municipal	Project Address Project File	lo person willfully shall make a
Approval remit Ro. 110 Final Inspection Date / Affirmation Applicant is advised of San Diego Municipal false statement or fail to report any material other City action under the provisions of the I certify under penalty of perjury under the I form pertains to construction and demolition the accuracy of the information, and that the	Project Address Al Code section 11.0401(b) which states: "N fact in any application for City license, per san Diego Municipal Code." aws of the State of California that the infor h debris generated only from the project list information is true and correct to the best of	to person willfully shall make a mit, certificate, employment or mation provided in and with this ed in Part I, that I have reviewed of my knowledge and belief.
Approval remit Ref. Implies the second s	Project Address Al Code section 11.0401(b) which states: "N fact in any application for City license, per e San Diego Municipal Code." aws of the State of California that the infor a debris generated only from the project list information is true and correct to the best Title Compar	to person willfully shall make a mit, certificate, employment or mation provided in and with this ed in Part I, that I have reviewed of my knowledge and belief.
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Approval endertee 110 Final Inspection Date // Affirmation Applicant is advised of San Diego Municipal false statement or fail to report any material other City action under the provisions of the I certify under penalty of perjury under the I form pertains to construction and demolition the accuracy of the information, and that the Name Signature	Project Address Project File Project Address P	To person willfully shall make a mit, certificate, employment or mation provided in and with this ed in Part I, that I have reviewed of my knowledge and belief.
Application Control of the information Affirmation Applicant is advised of San Diego Municipation false statement or fail to report any material other City action under the provisions of the inform pertains to construction and demolition the accuracy of the information, and that the Name	Project Address Project File Project Address fact in any application for City license, per e San Diego Municipal Code." aws of the State of California that the infor n debris generated only from the project list information is true and correct to the best of Title Compar Date plee Party identified on the Development Ser Please provide complete mailing address to party, the Refundable Party must sign in ovide complete mailing address.	Io person willfully shall make a mit, certificate, employment or mation provided in and with this ed in Part I, that I have reviewed of my knowledge and belief. my

(858) 694-7000 or visit www.recyclingworks.com

Appendix I: San Diego Municipal Code: Construction and Demolition Debris Diversion Deposit Program

(3-2014)

Article 6: Collection, Transportation and Disposal of Refuse and Solid Waste

Division 6: Construction and Demolition Debris Diversion Deposit Program ("Construction and Demolition Debris Diversion Deposit Program" added 10-10-2000 by O–19420 N.S.;) (Amended 12-18-2007 by O-19694 N.S; effective 1-17-2008.)

§66.0601 Findings

The Council of the City of San Diego finds and declares that:

- (a) The City operates the Miramar Landfill, which is currently the only active municipal landfill in the City. The Miramar Landfill currently is expected to close by 2022. Preserving landfill capacity at the Miramar Landfill in order to extend the useful life of the Miramar Landfill for the citizens of the City is a paramount concern.
- (b) The City has made and continues to make progress in meeting the waste *diversion* requirements imposed by *AB 939*, but additional efforts, particularly in the *diversion* of *construction and demolition debris*, will assist the City in continuing to meet the goal of *diverting* 50% of its waste from landfill *disposal*.
- (c) Studies show that approximately 35% of the waste generated in the City of San Diego delivered for *disposal* is *construction and demolition debris*, which could be *diverted* from landfill *disposal*.
- (d) Efforts by the City and the private sector to encourage voluntary *construction and demolition debris diversion* have not been as successful as the City had hoped and additional efforts are necessary to ensure continued compliance with *AB 939* requirements.
- (e) *Construction and demolition debris diversion* deposit programs in other jurisdictions in the State, similar to the one implemented by this Division, have proven successful in increasing *diversion* of *construction and demolition debris* and have been favorably received by the California Integrated Waste Management Board.

(Added 10-10-2005 by O–19420 N.S; effective 1-17-2008.) (Amended 12-18-2007 by O-19694 N.S; effective 1-17-2008.) (Amended 1-30-2014 by O-20341 N.S.; effective 3-1-2014.)



(3-2014)

§66.0602 Purpose of Construction and Demolition Debris Diversion Deposit Program

The purpose of this Division is to establish the Construction and Demolition Debris Diversion Deposit Program. This program is intended to increase the *diversion* of *construction and demolition debris* from landfill *disposal*, conserve the capacity and extend the useful life of the Miramar Landfill, and avoid the potential financial and other consequences to the City of failing to remain in compliance with *AB 939* requirements.

(Added 10-10-2005 by O–19420 N.S; effective 1-17-2008.) (Amended 12-18-2007 by O-19694 N.S; effective 1-17-2008.)

§66.0603 Definitions

All defined terms in this Division appear in *italics* and are found in sections 11.0210, 66.0102, and 113.0103 of this Code, except for the terms Building Permit and Demolition/Removal Permit which refer to those terms respectively as used in the Land Development Code and which, consistent with the Land Development Code, are not italicized in this Division. In addition, whenever the following words or phrases are used in this Division, they mean:

AB 939 means the California Integrated Waste Management Act, codified at California Public Resources Code sections 40000 et seq.

Certified recycling facility means a recycling, composting, materials recovery or reuse facility which accepts *construction and demolition debris* and which has been certified by the *Director* pursuant to rules promulgated by the *Director*.

Construction and demolition debris means the waste building materials, packaging, and rubble resulting from construction, remodeling, repair, alteration, and/or demolition operations on pavements, houses, commercial buildings, and other *structures* and may include, but is not limited to, concrete, asphalt, wood, metals, bricks, dirt, rocks, and other inert waste.

Director means the Director of the Environmental Services Department (and its successor) or the designee of the Director of the Environmental Services Department (and its successor).

Disposal means the final deposition of solid waste at a permitted landfill.

Diversion or *Divert* means the reduction or elimination of *solid waste* from landfill *disposal*.



Hazardous waste has the same meaning as set forth in section 66.0102 of this Code.

Solid Waste means all putrescible and nonputrescible solid, semisolid, and liquid wastes, including, but not limited to, garbage, trash, refuse, paper, rubbish, ashes, industrial wastes, construction and demolition debris, abandoned vehicles and parts thereof, discarded home and industrial appliances, dewatered, treated, or chemically fixed sewage sludge which is not hazardous waste, manure, vegetable or animal solid and semisolid wastes, and other discarded solid and semisolid wastes. *Solid Waste* does not include hazardous waste, hazardous substances or medical wastes, as those terms are defined in this Chapter 6 or in State or Federal law.

Waste Management Form Part I means the form prepared by the City Manager on which an *applicant* for a Building Permit or Demolition/Removal Permit shall provide information including, but not limited to, the types and amounts of *construction and demolition debris* the *applicant* anticipates the *development* will generate and the expected *construction and demolition debris diversion* the *applicant* expects to achieve for that *development*.

Waste Management Form Part II means the form prepared by the City Manager on which the *applicant* for a Building Permit or Demolition/Removal Permit shall provide information including, but not limited to, the name and address of the *person* to whom a deposit refund, if any, shall be issued, as well as documentary evidence in a form satisfactory to the *Director* demonstrating the *construction and demolition debris diversion* the *applicant* achieved for the *development*.

(Added 10-10-2005 by O-19420 N.S; effective 1-17-2008.)

§66.0604 Submittal of Waste Management Form and Diversion Deposit

Beginning on the 45th day after the City has notified the public, in the manner described in section 66.0606(e), that a *certified recycling facility* which accepts mixed *construction and demolition debris* is operating at a 50% *diversion* rate, within 25 miles of the City Administration Building located at 202 "C" Street, San Diego, or beginning on July 1, 2008, whichever is later:



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- (a) All *applicants* for a Building Permit or a Demolition/Removal Permit, including the City of San Diego, shall submit a properly completed *Waste Management Form Part I* with the Building Permit or Demolition/Removal Permit application, in accordance with the requirements set forth in the Land Development Manual; and
- (b) All *applicants*, including the City of San Diego, shall pay a refundable deposit at the time the Building Permit or Demolition/Removal Permit is issued; and
- (c) No Building Permit or Demolition/Removal Permit shall be issued unless the *applicant* has submitted a properly completed W*aste Management Form Part I* and paid the required deposit.

(Added 10-10-2005 by O–19420 N.S; effective 1-17-2008.) (Amended 12-18-2007 by O-19694 N.S; effective 1-17-2008.)

§66.0605 Establishment of Construction and Demolition Debris Diversion Deposits

The City Council shall establish by resolution a schedule of *construction and demolition debris diversion* deposits applicable to Building Permits and to Demolition/Removal Permits. The schedule shall be reviewed and adjusted periodically to ensure the purposes of this Division are met.

(Added 10-10-2005 by O-19420 N.S; effective 1-17-2008.)

§66.0606 Entitlement to Refund of Diversion Deposit

- (a) An *applicant* is eligible for a refund of the deposit paid pursuant to Section 66.0604(b) provided the *applicant* submits the following directly to the *Director* within 180 days of the final inspection date for the *development* for which the deposit was paid:
 - (1) A properly completed Waste Management Form Part II, in accordance with the requirements set forth in the Land Development Manual, which demonstrates the *construction and demolition debris diversion* the *applicant* achieved for the *development*.



(2) Evidence satisfactory to the *Director* that the *construction and demolition debris* generated by the *development* was *diverted*, at the applicable *diversion* rate set forth in Section 66.0606(d) below, by one or more of the following methods:

- (a) on-site reuse of the *construction and demolition debris*;
- (b) acceptance of the *construction and demolition debris* by a *certified recycling facility*; or
- (c) other donation or reuse of the *construction and demolition debris* acceptable to the *Director*.

For a commercial *development*, such as a shopping center, with a master developer which manages solid waste generated by the *development* as a whole and which has multiple commercial or retail tenants who may construct their own tenant improvements, the evidence satisfactory to the *Director* described in section 66.0606(a)(2) may include receipts from a *certified recycling facility(ies)* showing the cumulative weight or volume of *construction and demolition debris diverted* from the *development* within the 30 calendar days prior to the final inspection date referred to in section 66.0606(a)

- (b) *Construction and demolition debris* shall be measured by weight or by volume, whichever is most accurate and practicable. To the extent practicable, all *construction and demolition debris* shall be weighed on a scale.
 - (1) For *construction and demolition debris* which is weighed, the *applicant* shall use a scale which is in compliance with all federal, state, and local regulatory requirements for accuracy and maintenance of such scale.
 - (2) For *construction and demolition debris* for which measurement by weight is not practicable, the *applicant* shall measure by volume and convert the volumetric measurements to weight using the standardized rates established in the City Construction and Demolition Debris Conversion Rate Tables.
 - (3) The *Director* reserves the right, when appropriate, to establish standard weights for various types of *construction and demolition debris* items based upon accepted average weights for such items. These standard weights shall be listed in the City Construction and Demolition Debris Conversion Rate Tables.



(3-2014)

- (c) Refunds will be based on proof, satisfactory to the *Director*, of the *construction and demolition debris diversion* the *applicant* achieved for the *development* for which the deposit was paid.
- (d) If the *Director* determines the *applicant* is entitled to a refund, the amount of the refund shall be in the same proportion to the deposit paid by the *applicant* as the *diversion* rate achieved for the *development* is to the applicable *diversion* rate set forth below:
 - (1) For Building Permits or Demolition/Removal Permits issued on or after the actual effective date of Section 66.0604 through and including 180 calendar days from the actual effective date of Section 66.0604, the *diversion* rate shall be 50% by weight of the total *construction and demolition debris* generated by the *development*; and
 - (2)For Building Permits or Demolition/Removal Permits issued after 180 calendar days from the actual effective date of Section 66.0604, the diversion rate shall be 75% by weight of the total construction and *demolition debris* generated by the *development*, provided that a certified recycling facility which accepts mixed construction and demolition debris is operating within 25 miles of the City Administration Building located at 202 "C" Street, San Diego, at a 75% diversion rate as of 181 calendar days from the actual effective date of Section 66.0604. If such a facility is not in operation as of 181 calendar days from the actual effective date of Section 66.0604, the *diversion* rate shall remain as set forth in Section 66.0606(d)(1) until a certified recycling facility which accepts mixed construction and demolition debris, with a permitted daily tonnage capacity of at least 1,000 tons, has operated at a 75% diversion rate for three consecutive calendar year quarters and the City has given the public 30 days' advance notice that such a facility is available, at which time the diversion rate shall increase to 75% by weight of the total construction and demolition debris generated by the development.
- (e) Notice under this Division may be given by placing a display advertisement of at least one-eighth page in a newspaper of general daily circulation within the City.
- (f) The *Director* shall determine whether a *certified recycling facility* has reached a certain *diversion* rate.



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- (g) The *Director* shall refund a deposit paid or collected in error.
- (h) If a Building Permit or Demolition/Removal Permit, for which a deposit has been paid, is subsequently cancelled, abandoned or expires before work on the *development* has commenced, the *Director* shall refund the deposit paid by the *applicant* upon the *applicant's* submittal to the *Director* of satisfactory proof of the cancellation, abandonment or expiration of the permit.
- (i) The *Director* shall issue the refund to the *applicant* within the time established by City Council resolution.
- (j) In no event shall the refund be in an amount greater than the deposit paid by the *applicant*.

(Added 10-10-2005 by O–19420 N.S; effective 1-17-2008.) (Amended 12-18-2007 by O-19694 N.S; effective 1-17-2008.) (Amended 1-30-2014 by O-20341 N.S.; effective 3-1-2014.)

§66.0607 Certified Recycling Facilities

- (a) After at least one public hearing, the *Director* shall establish rules and regulations for certifying facilities inside or outside the City for purposes of this Division including, but not limited to, criteria for determining the *diversion* rate achieved by the facility and for verifying that the facility has obtained all applicable permits and licenses. The *Director* shall publish in the official City newspaper a notice of the adoption or amendment of these rules and regulations. The *Director* shall certify facilities in accordance with those rules and regulations.
- (b) Within ten working days after publication of the notice adopting the proposed rules and regulations pursuant to Section 66.0607(a), any person in disagreement with the proposed rules and regulations may request in writing to the *Director* that proposed rules and regulations be considered by the City Manager or designee. The proposed rules and regulations shall be considered by the City Manager or designee, who shall issue a written decision respecting the proposed rules and regulations within thirty days of the *Director's* receipt of the written request. The decision of the City Manager or designee with respect to the rules and regulations shall be final.

(Added 10-10-2005 by O-19420 N.S; effective 1-17-2008.) (Amended 12-18-2007 by O-19694 N.S; effective 1-17-2008.)



(3-2014)

§ 66.0608 Diversion Deposit Program Exemptions

- (a) The following activities, alone or in combination with one another, are exempt from this Division, except if the activity or activities is/are undertaken in conjunction with *development* which otherwise is subject to this Division:
 - (1) Roofing projects.
 - (2) Installation, replacement, or repair of a *retaining wall*.
 - (3) Installation, replacement, or repair of a carport, patio cover, balcony, trellis, or fireplace.
 - (4) Installation, replacement, or repair of a deck.
 - (5) Installation, replacement, or repair of a *fence*.
 - (6) Installation, replacement, or repair of a swimming pool or a spa.
 - (7) Installation, replacement, or repair of a pre-fabricated accessory, such as a *sign* or an antenna, which does not require modification to the *structure* to which the accessory is attached.
 - (8) Installation, replacement, or repair of storage racks.
 - (9) Installation, replacement, or repair of a shade structure (commercial), awning, or canopy.
 - (10) Installation or replacement of a pre-fabricated modular building or mobile home, with or without a patio enclosure or cover.
 - (11) Installation, replacement, or repair of partitions only.
 - (12) Installation, replacement, or repair of siding, stucco, or veneer.
 - (13) Installation or repair of seismic tie-downs.
 - (14) Installation, replacement, or repair of skylights, windows, doors, stair flights, or poles.
 - (15) Modification, alteration, or repair of facades.
 - (16) Re-pipe repairs.
 - (17) Foundation repairs, including caissons and piles.



- (3-2014)
- (18) *Development* which requires only an electrical permit, only a plumbing permit, or only a mechanical permit.
- (19) *Development* which requires a Building Permit that does not require plans.
- (b) The following activities are exempt from this Division:
 - (1) *Development* which is expected to generate only *hazardous waste* and/or *hazardous substances*.
 - (2) *Development* for which the *construction and demolition debris* deposit is less than \$200 as calculated by the Development Services Department or its successor.

(Added 10-10-2005 by O–19420 N.S; effective 1-17-2008.) (Amended 12-18-2007 by O-19694 N.S; effective 1-17-2008.) (Amended 1-30-2014 by O-20341 N.S.; effective 3-1-2014.)

§66.0609 Unrefunded Diversion Deposits and Accrued Interest

A deposit which is not refunded or claimed in accordance with this Division is the property of the City. For purposes of each and every deposit and all interest accrued thereon, the relationship between the *applicant* and the City is that of debtor-creditor, respectively. All interest accruing on each deposit is the property of the City, and the *applicant* shall have no claim upon the interest.

(Added 10-10-2005 by O-19420 N.S; effective 1-17-2008.)



(3-2014)

§66.0610 Use of Diversion Deposits and Accrued Interest

All deposits and accrued interest thereon shall be deposited into the Recycling Fund created pursuant to section 66.0135 of this Code. All deposits and accrued interest thereon shall be used solely and exclusively for the following purposes:

- (a) payment of deposit refunds, as determined by the *Director*;
- (b) payment of administrative costs of the Construction and Demolition Debris Diversion Program established by this Division;
- (c) payment of costs of programs designed to encourage *diversion* of *solid waste* from landfill *disposal*;
- (d) payment of costs of programs designed to develop or improve the infrastructure to *divert solid waste* from landfill *disposal*; or
- (e) payment of costs to develop or improve infrastructure to *divert solid waste* from landfill *disposal*.

(Added 10-10-2005 by O-19420 N.S; effective 1-17-2008.)


Appendix II: San Diego Municipal Code: Recycling Ordinance

Article 6: Collection, Transportation and Disposal of Refuse and Solid Waste

Division 7: Recycling Ordinance

("Recycling Ordinance" Added 11-20-2007 by O–19678 N.S.; effective 12-20-2007.)

§66.0701 Findings

The Council of the City of San Diego finds and declares that:

- (a) The City operates the Miramar Landfill, which is currently the only municipal landfill in the City. The Miramar Landfill currently is expected to close between 2011 and 2013. Preserving landfill capacity at the Miramar Landfill in order to extend the useful life of the Miramar Landfill for the citizens of the City is a paramount concern.
- (b) The City has met (for 2004 and 2005) and continues to make progress in maintaining the waste *diversion* requirements imposed by *AB 939*, but additional efforts, particularly in the *recycling* of paper, cardboard, and other *recyclable materials*, will assist the City in maintaining and exceeding the goal of *diverting* 50% of its waste from landfill *disposal*.
- (c) Studies show that approximately 21% of the waste generated in the City of San Diego and delivered for landfill *disposal* is paper and 16% is compostable organics, all of which could be *diverted* from landfill *disposal*.
- (d) Efforts by the City and the private sector to encourage voluntary *diversion* of residential, commercial, and special event waste have not been as successful as the City had hoped and additional efforts are necessary to ensure continued compliance with *AB 939* requirements.
- (e) *Recycling* programs in other jurisdictions in the State, similar to the one implemented by this Division, have proven successful in increasing *diversion* of *recyclable materials* and have been favorably received by the California Integrated Waste Management Board.

(Added 11-20-2007 by O-19678 N.S.; effective 12-20-2007.)



(11-2007)

§66.0702 Purpose

The purpose of this Division is to establish requirements for *recycling* of *recyclable materials* generated from residential facilities (both single family and multi-family), commercial facilities (including City buildings), and special events. These requirements are intended to increase the *diversion* of *recyclable materials* from landfill *disposal*, conserve the capacity and extend the useful life of the Miramar Landfill, reduce greenhouse gas emissions, and avoid the potential financial and other consequences to the City of failing to meet *AB 939* requirements.

(Added 11-20-2007 by O-19678 N.S.; effective 12-20-2007.)

§66.0703 Definitions

All defined terms in this Division appear in *italics*. For purposes of this Division, the following definitions apply:

AB 939 has the same meaning as set forth in Section 66.0102 of this Article.

Certified Recyclable Materials Collector means a *Recyclable Materials Collector* which has been issued a certificate by the City pursuant to this Division.

Collect or *Collection* shall mean to take physical possession of and remove *solid waste* or *recyclable materials* at the place of generation.

Commercial facilities means any facilities that are not *residential facilities* or *mixed use facilities. Commercial facilities* includes City buildings for which the *responsible person* is a City of San Diego employee.

Department means the City of San Diego Environmental Services Department or its successor.

Director has the same meaning as set forth in Section 66.0102 of this Article.

Disposal means the final deposition of waste at a permitted landfill or other permitted waste facility.

Diversion or *Divert* means the reduction or elimination of *solid waste* from landfill *disposal*.

Franchisee has the same meaning as set forth in Section 66.0102 of this Article.

Mixed use facilities means facilities which include both residential and commercial uses.



Person has the same meaning as set forth in Section 66.0102 of this Article.

Recyclable has the same meaning as set forth in Section 66.0102 of this Article.

Recyclable Materials has the same meaning as set forth in Section 66.0102 of this Article.

Recyclable Materials Collector has the same meaning as set forth in Section 66.0102 of this Article.

Recycling or *Recycle* has the same meaning as set forth in Section 66.0102 of this Article.

Recycling facility means a *recycling*, composting, or materials recovery or reuse facility.

Refuse has the same meaning as set forth in Section 66.0102 of this Article.

Residential facility has the same meaning as set forth in Section 66.0127(a)(4) of this Article.

Responsible person has the same meaning as set forth in Section 11.0210 of the San Diego Municipal Code including, but not limited to, the individual or entity responsible for the management of *solid waste* at the *residential*, *commercial* or *mixed use facility* or special event for *disposal* or *recycling*.

Self-haul means the process of personally, or through one's own full-time employees, *collecting*, transporting, and delivering one's own *solid waste* or *recyclable materials*.

Solid waste has the same meaning as set forth in Section 66.0102 of this Article.

(Added 11-20-2007 by O–19678 N.S.; effective 12-20-2007.)

§66.0704 Unlawful Acts

It is unlawful for any *person* to fail to comply with any provision or requirement set forth in this Division which is applicable to such *person*.

(Added 11-20-2007 by O–19678 N.S.; effective 12-20-2007.)

§66.0705 Recycling Requirement for Persons Serviced by City of San Diego

Effective January 1, 2008, *persons* who are provided with curbside *recycling collection* services by the City of San Diego shall participate in the City curbside *recycling* program by separating *recyclable materials* from other *solid waste* and depositing the *recyclable materials* in the approved *recycling* container. *Ch. Art. Div.*

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§66.0706 Recycling Requirement for Residential Facilities Serviced by Franchisee

- (a) Occupants of Single Family *Residential Facilities*. Effective on the 90th day after the date of final passage of the ordinance adopting this Division, occupants of single-family *residential facilities* which receive *solid waste collection* service from a *Franchisee* shall participate in a curbside *recycling* program, offered by the *Franchisee* or a *Recyclable Materials Collector*, by separating *recyclable materials* from other *solid waste* and depositing the *recyclable materials* in the *recycling* container provided by the *Franchisee* or *Recyclable Materials Collector*.
- (b) Single Family *Residential Facilities* Managed by Association. For single family *residential facilities*, whose *solid waste collection* services are managed by an association or other organization responsible for providing for *solid waste collection* services to multiple single family *residential facilities* within a housing development, the *responsible person* for the association or other organization shall provide curbside *recycling* services to each single family *residential facility* in compliance with the requirements in sections 66.0706(e) and 66.0706(f), beginning on the 90th day after the date of final passage of the ordinance adopting this Division.
- (c) Multi-Family *Residential Facilities*. For multi-family *residential facilities* which receive *solid waste collection* service from a *Franchisee*, the responsible *person* shall provide on-site *recycling* services to occupants as required by this Division, by the following dates:
 - (1) The 90th day after the date of final passage of the ordinance adopting this Division, for multi-family *residential facilities* with 100 *residential* units or more;
 - (2) January 1, 2009, for multi-family *residential facilities* with at least 50 but not more than 99 *residential* units; and
 - (3) January 1, 2010, for multi-family *residential facilities* with up to 49 *residential* units.
- (d) Occupants of Multi-Family *Residential Facilities*. Occupants of multi-family *residential facilities* which receive *solid waste collection* service from a *Franchisee* shall participate in a *recycling* program by separating *recyclable materials* from other *solid waste* and depositing the *recyclable materials* in the *recycling* container provided by the *Franchisee* or *Recyclable Materials Collector*, beginning on the applicable dates specified in Section 66.0706(c).



- (e) *Recycling* Services. The *recycling* services required by this Section 66.0706 shall include, at a minimum, all of the following:
 - (1) *collection* of *recyclable materials* at least two times per month;
 - (2) *collection* of plastic bottles and jars, paper, newspaper, metal containers, cardboard, and glass containers;
 - (3) utilization of *recycling* receptacles which comply with the standards in the Container and Signage Guidelines established by the *Department*;
 - (4) designated *recycling collection* and storage areas; and
 - (5) signage on all *recycling* receptacles, containers, chutes, and/or enclosures which complies with the standards described in the Container and Signage Guidelines established by the *Department*.
- (f) Occupant Education. For multi-family *residential facilities*, the *responsible person* shall ensure that occupants are educated about the *recycling* services as follows:
 - (1) Information, including the types of *recyclable materials* accepted, the location of *recycling* containers, and the occupants responsibility to *recycle* pursuant to this Division, shall be distributed to all occupants annually;
 - (2) All new occupants shall be given information and instructions upon occupancy; and
 - (3) All occupants shall be given information and instructions upon any change in *recycling* service to the facility.

(Added 11-20-2007 by O-19678 N.S.; effective 12-20-2007.)

§66.0707 Recycling Requirements for Commercial Facilities Serviced by Franchisee

- (a) *Commercial facilities*. For *commercial facilities* which receive *solid waste collection* services from a *Franchisee*, the *responsible person* shall provide on-site *recycling* services to occupants as required by this Division, by the following dates:
 - (1) The 90th day after the date of final passage of the ordinance adopting this Division, for *commercial facilities* of 20,000 square feet or more;



- (2) January 1, 2009, for *commercial facilities* of 10,000 square feet or more, but less than 20,000 square feet; and
- (3) January 1, 2010, for *commercial facilities* under 10,000 square feet.
- (b) Occupants of *Commercial Facilities*. Occupants of *commercial facilities* which receive *solid waste collection* service from a *Franchisee*, shall participate in a *recycling* program by separating *recyclable materials* from other *solid waste* and depositing the *recyclable materials* in the *recycling* container provided by the *Franchisee* or *Recyclable Materials Collector*, beginning on the applicable dates specified in Section 66.0707(a).
- (c) *Recycling* Services. The *recycling* services required by this Section 66.0707 shall include, at a minimum, all of the following:
 - (1) *collection* of *recyclable materials* as frequently as necessary to meet demand;
 - (2) *collection* of plastic bottles and jars, paper, newspaper, metal containers, cardboard, and glass containers;
 - (3) *collection* of other *recyclable materials* for which markets exist, such as scrap metal, wood pallets, and food waste, as determined by the *Director*, with *collection* of such *recyclable materials* required beginning on the 181st day after the City gives public notice thereof by placing a display advertisement of at least one-eighth page in a newspaper of general daily circulation within the City and posting a notice including such *recyclable materials* on a list maintained on the *Department's* website;
 - (4) utilization of *recycling* receptacles or containers which comply with the standards in the Container and Signage Guidelines established by the *Department*;
 - (5) designated *recycling collection* and storage areas; and
 - (6) signage on all *recycling* receptacles, containers, chutes, and/or enclosures which complies with the standards described in the Container and Signage Guidelines established by the *Department*



- (d) Occupant Education. For *commercial facilities*, the *responsible person* shall ensure that occupants are educated about the *recycling* services as follows:
 - (1) Information, including the types of *recyclable materials* accepted, the location of *recycling* containers, and the occupants responsibility to *recycle* pursuant to this Division, shall be distributed to all occupants annually;
 - (2) All new occupants shall be given information and instructions upon occupancy; and
 - (3) All occupants shall be given information and instructions upon any change in *recycling* service to the *commercial facility*.

(Added 11-20-2007 by O-19678 N.S.; effective 12-20-2007.)

§66.0708 Recycling Requirements for Mixed Use Facilities

- (a) Majority Residential. For a *mixed use facility* which has the majority of its square footage devoted to residential uses, the *responsible person* shall comply with the *recycling* requirements set forth in Section 66.0706 of this Division.
- (b) Majority Commercial. For a *mixed use facility* which has the majority of its square footage devoted to commercial uses, the *responsible person* shall comply with the *recycling* requirements set forth in Section 66.0707 of this Division.
- (c) Occupants of Majority Residential *Mixed Use Facility*. Occupants of a *mixed use facility* which has the majority of its square footage devoted to residential uses, shall comply with the *recycling* requirements applicable to occupants set forth in Section 66.0706 of this Division.
- (d) Occupants of Majority Commercial *Mixed Use Facility*. Occupants of a *mixed use facility* which has the majority of its square footage devoted to commercial uses, shall comply with the *recycling* requirements applicable to occupants set forth in Section 66.0707 of this Division.



§66.0709 Delivery of Recyclable Materials to Recycling Facility

Franchisees and Recyclable Materials Collectors who collect recyclable materials generated within the City shall deliver those recyclable materials to a recycling facility. Persons who self-haul recyclable materials must deliver those recyclable materials to a recycling facility. The recycling facility may be located at a landfill, but recyclable materials generated within the City shall not be delivered to a landfill or other site for disposal.

(Added 11-20-2007 by O–19678 N.S.; effective 12-20-2007.)

§66.0710 Recycling Containers

- (a) Container Signage. Automatic lift containers, bins, roll-offs, and other containers provided by *Franchisees* and *Recyclable Materials Collectors* to *collect* and store *recyclable materials* pending *collection* shall be clearly identified as a *recyclable materials* container, shall display the name and phone number of the *Franchisee or Recyclable Materials Collector* to whom the container belongs, and shall display a list of the *recyclable materials* which may be deposited into the container.
- (b) Container Features. Automatic lift containers, bins, roll-offs, and other containers used to *collect* and store *recyclable materials* pending *collection* shall be equipped with close-fitting lids and be leak-proof and rodent-proof.

(Added 11-20-2007 by O-19678 N.S.; effective 12-20-2007.)

§66.0711 Annual Reports from Franchisees and Recyclable Materials Collectors

- (a) Franchisees and Certified Recyclable Materials Collectors shall submit an annual report by August 15 of each year, beginning August 15, 2008, to the Department, on a form or using a format prescribed by the Director. Annual reports shall include the following information for each facility serviced within the City for the period June 30 through July 1 of the immediately preceding twelve month period:
 - (1) The name of the *person(s)* responsible for *solid waste* and/or *recyclable materials* management at the facility serviced;
 - (2) The name and address of the facility serviced;
 - (3) The volume in cubic yards or gallons, measured by the size of the applicable containers in use at the facility, of *solid waste* and *recyclable materials collected* per week from the facility;



- (4) The frequency of *solid waste* and *recyclable materials collection* service provided to the facility; and
- (5) Additional information as required by the *Director*.
- (b) *Franchisees* and *Recyclable Materials Collectors* also shall include in the annual reports for the time period specified in section 66.0711(a) the following information:
 - (1) The total amount of *recyclable materials*, measured in tons, *collected* by the *Franchisee* or *Recyclable Materials Collector* within the City; and
 - (2) The names and addresses of the *recycling facilities* to which the *recyclable materials collected* within the City were delivered for *recycling*.

(Added 11-20-2007 by O–19678 N.S.; effective 12-20-2007.)

§66.0712 Special Events Recycling

- (a) For a community special event requiring an event permit from the City of San Diego, the *responsible person* shall provide *recycling* receptacles throughout the event venue, effective beginning on the 90th day after the date of final passage of the ordinance adopting this Division.
- (b) The number of *recycling* receptacles shall equal the number of *solid waste* receptacles.
- (c) The *solid waste* and *recycling* receptacles shall be placed next to one another throughout the event venue.
- (d) The types of *recyclable materials* suitable for deposit into each *recycling* receptacle shall include, at a minimum, aluminum and metal cans, and glass and plastic bottles and jars.
- (e) Each *recycling* receptacle shall be clearly identified as a *recycling* receptacle and shall display a list of the types of *recyclable materials* which may be deposited into the *recycling* receptacle.
- (f) The *responsible person* shall ensure that the *recyclable materials* deposited into the *recycling* receptacles are delivered to a *recycling facility*. The *recycling facility* may be located at a landfill, but *recyclable materials* shall not be delivered to a landfill for *disposal*.

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§66.0713 Exemptions

- (a) Six cubic yard exemption. *Multi-family residential facilities, commercial facilities,* and *mixed use facilities* which generate 6 cubic yards or less per week of *solid waste,* including *recyclable materials* mixed with *solid waste,* are exempt from the requirements of this Division. The 6 cubic yard threshold may be decreased at the discretion of the City Manager effective 90 days after the City has notified the public thereof by placing a display advertisement of at least one-eighth page in a newspaper of general daily circulation within the City and posting a notice on the *Department's* website.
- (b) Other Exemptions. Other exemptions to some or all of the requirements of this Division may be granted at the discretion of the *Director's* designee. Applications for exemptions may be granted upon consideration of the following factors: available markets for *recyclable materials*, available space for *recycling* containers, alternative *recycling* efforts, and the amount and type of *solid waste* or *recyclable materials* generated. To be effective, an exemption must be in writing and signed by the *Director's* designee. An exemption may be revoked at any time at the discretion of the *Director's* designee if one or more of the factors justifying the exemption no longer exist, or other change in circumstances warrant revocation. Unless earlier revoked, an exemption shall be effective for a period of one year from the date it was granted. Subsequent applications for exemptions may be granted at the discretion of the *Director's* lesignee in this section 66.0713(b).
- (c) Application for Exemption. Applications for an exemption shall be submitted to the *Department* in writing, on a form approved by the *Director*, together with a cost-recovery processing fee. The processing fee shall be reviewed annually by the City Manager and adjusted accordingly to ensure full cost-recovery for processing the application for exemption.
- (d) If the *Director's* designee denies an application for an exemption, the *Director's* designee shall notify the applicant in writing of the reasons for the denial. The denial of an application for an exemption or the revocation of an exemption may be appealed to the *Director*, whose decision shall be final.



§66.0714 Certified Recyclable Materials Collector

- (a) *Certified Recyclables Materials Collector*. A *Recyclable Materials Collector* may apply to the *Director* to become a *Certified Recyclable Materials Collector*. The certification will be valid for no more than two years after the date it is issued by the *Director*. The *Director* shall maintain a current list of *Certified Recyclable Materials Collectors* on the *Department's* website and in other educational materials published by the *Department*.
- (b) Application Form and Fee. Applicants for a *recyclable materials collector* certificate shall complete and submit to the *Director* a written application, on a form approved by the *Director*, together with a cost-recovery processing fee. The processing fee shall be reviewed annually by the City Manager and adjusted accordingly to ensure full cost-recovery for processing the application for certification. The application shall include, at a minimum, all of the following:
 - (1) name, address, and telephone number of the applicant;
 - (2) name, address, and telephone number of an individual contact for the applicant;
 - (3) description of each vehicle the applicant will use to provide *recyclable materials collection* services within the City including, but not limited to make, model, serial or vehicle identification number, and license number;
 - (4) address where all vehicles and operating equipment used to provide *recyclable materials collection* services within the City will be stored and maintained;
 - (5) the applicant's agreement to defend, with counsel to be agreed upon by both parties, indemnify, and hold harmless, City and its agents, officers, servants, and employees from and against any and all claims asserted or liability established for damages or injuries to any person or property, including injury to City's employees, agents, or officers which arise from, or are connected with, or are caused or claimed to be caused by acts or omissions of the applicant, or its agents, officers or employees, in the performance of the *recyclable materials collection* services, and all costs and expenses of investigating and defending against same; provided, however, that the applicant's duty to indemnify and hold harmless shall not include any claims or liability arising from the established active negligence, sole negligence, or sole willful misconduct of the City, its agents, officers, or employees;

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- (6) without limiting the indemnification obligation above, the applicant's agreement to obtain and maintain in full force and effect throughout the term of the *recyclable materials collector* certificate, and any extensions or modifications thereof, insurance coverage which meets or exceeds the requirements established by the *Director*; and
- (7) A written statement certifying that the applicant has reviewed and will comply with the requirements of this Division and in the certificate.
- (c) Insurance. The *Director*, in consultation with the City's Risk Management Department, shall establish minimum reasonable insurance requirements for *Certified Recyclable Materials Collectors*. Simultaneously with the submittal of its application, the applicant shall furnish proof satisfactory to the *Director* that the applicant has obtained the required insurance coverage. Annually on each anniversary of the issuance of the certificate, the applicant shall furnish proof satisfactory to the Director that the applicant shall furnish minimum required insurance coverage.
- (d) Vehicles and Equipment. All vehicles, containers, and other equipment used to provide the *recyclable materials collection* services shall be kept in a clean and well-maintained condition.
- (e) Container Signage. Automatic lift containers, bins, roll-offs, and other containers used to *collect* and store *recyclable materials* pending *collection* shall be clearly identified as a *recyclable materials* container, shall display the name and phone number of the *Certified Recyclable Materials Collector* to whom the container belongs, and shall display a list of the *recyclable materials* which may be deposited into the container.
- (f) Container Features. Automatic lift containers, bins, roll-offs, and other containers used to *collect* and store *recyclable materials* pending *collection* shall be equipped with close-fitting lids and be leak-proof and rodent-proof.
- (g) Compliance with Law. *Certified Recyclable Materials Collectors* shall conduct all of their activities in compliance with all applicable federal, state, and local laws, regulations, ordinances, and requirements and shall be responsible for obtaining all applicable permits, licenses, certifications, and registrations.
- (h) Application Verification. The *Director* may independently verify any and all statements made or implied in the application or any accompanying documents. The *Director* may also request clarification from the applicant of any such statements or information.



- (i) Application Review. In reviewing each application, the *Director* shall take into consideration all components of the application including, but not limited to:
 - (1) the ability of the applicant to meet the requirements of this Division and the certificate;
 - (2) any history of criminal or civil violations that may compromise the public's interest; and
 - (3) the completeness, accuracy, and validity of the application.
- (j) Application Determination. After a reasonable review period, the *Director* shall grant or deny the application. If the *Director* fails to grant an application after thirty days from the receipt of a complete application, including accompanying documentation, the applicant may at the applicant's option deem the application denied. If the *Director* denies an application, the *Director* shall notify the applicant in writing of the reasons for the denial.
- (k) Certificate Revocation. The *Director* may revoke a certificate if the *Director* determines, after providing notice and an opportunity for a hearing, that a *Certified Recyclable Materials Collector* has violated the provisions in the certificate or any applicable law. If the *Director* revokes a certificate, the *Director* shall notify the applicant in writing of the reasons for the revocation.
- (1) Appeal Upon Denial of Application or Revocation of Certificate. Within thirty days after the issuance of a written notice of the denial of an application or the revocation of a certificate, the applicant or Certified Recyclable Materials Collector may request in writing to the Director that the City Manager review the Director's decision. Within thirty days of the Department's receipt of such a request, a meeting with the City Manager or designee shall be scheduled to review the items cited in the written notice. At that meeting, the applicant or Certified Recyclable Materials Collector may provide any additional information in support of their position. Within thirty days of such a meeting, the City Manager will issue a written decision on the application or revocation, which shall include the reasons for the decision. The City Manager's decision shall be final. A copy of the City Manager's written decision shall be provided to the applicant or Certified Recyclable Materials Collector Manager's written decision and the Director.



§66.0715 Self-Haul and Use of Non-Certified Recyclable Materials Collector

- (a) Nothing in this Division shall preclude any *person* from *self-hauling recyclable materials* generated by that *person* to a *recycling* facility.
- (b) The *responsible person* for a multi-family *residential facility, commercial facility, mixed use facility,* or association or organization described in section 66.0706(b), which *self-hauls solid waste* to a *disposal* facility shall comply with the *recycling* requirements in this Division applicable to that multi-family *residential facility, commercial facility, mixed use facility,* or association or organization described in section 66.0706(b).
- (c) Except for occupants of single family *residential facilities*, a *person* who *self-hauls solid waste* to a *disposal* facility and/or *self-hauls recyclable materials* to a *recycling* facility shall comply with the reporting requirements set forth in section 66.0711(a).
- (d) Except for occupants of single family *residential facilities*, a *person* who uses the services of a *recyclable materials collector*, which is neither a *Franchisee* nor a *Certified Recyclable Materials Collector*, to collect, transport, and deliver *recyclable materials* generated by that *person* to a *recycling* facility, shall comply with the reporting requirements set forth in section 66.0711(a).

(Added 11-20-2007 by O-19678 N.S.; effective 12-20-2007.)

§66.0716 Selling or Donating Recyclable Materials

Nothing in this Division shall preclude any *person* from selling or exchanging at fair market value, for reuse or *recycling*, source-separated *recyclable materials* generated by that *person* or from donating to another entity, for reuse or *recycling*, source-separated *recyclable materials* generated by that *person*.

(Added 11-20-2007 by O-19678 N.S.; effective 12-20-2007.)

§66.0717 Scavenging of Recyclable Materials Prohibited

(a) No *person* other than the *person* under contract with the generator of the *recyclable materials* to *collect* the *recyclable materials*, shall remove or otherwise interfere with *recyclable materials* which have been placed at a designated *recycling* or *recyclable materials collection* location.



(b) No *person* shall be guilty of a violation of this section 66.0717 unless the *person* knew or reasonably should have known that the *recyclable materials* were set out for purposes of *collection* by another *person* authorized to *collect* the *recyclable materials*.

(Added 11-20-2007 by O-19678 N.S.; effective 12-20-2007.)

§66.0718 Enforcement

- (a) Authority. The *Director* is authorized to administer and enforce the provisions of Chapter 6, Article 6, Division 7 of this Code. The *Director* or anyone designated by the *Director* to be an *enforcement official* may exercise any enforcement powers as provided in Chapter 1 of this Code.
- (b) Remedies. It is unlawful to violate any provision or requirement of Division 7. The failure to comply with any requirement of Division 7 constitutes a violation of Division 7. Each instance of a violation of Division 7 is a separate offense. Violations of the provisions or requirements of Division 7 may be prosecuted as misdemeanors subject to the penalties provided in section 12.0201 of this Code. The *Director* or designee may seek injunctive relief or civil penalties in the Superior Court pursuant to section 12.0202 of this Code or may pursue any administrative remedy provided in Chapter 1, Article 2, Divisions 3 through 10 inclusive, of this Code.
- (c) Remedies Cumulative. Remedies under section 66.0718 are in addition to and do not supersede or limit any and all other remedies, civil or criminal. The remedies provided for herein shall be cumulative and not exclusive.
- (d) Strict liability. Except as otherwise set forth in section 66.0717, violations of Division 7 shall be treated as strict liability offenses regardless of intent.



Appendix III: City of San Diego Construction & Demolition (C&D) Debris Conversion Rate Table



CITY OF SAN DIEGO CONSTRUCTION & DEMOLITION (C&D) DEBRIS CONVERSION RATE TABLE



This worksheet lists materials typically generated from a construction or demolition project and provides formulas for converting common units (i.e., cubic yards, square feet, and board feet) to tons. It should be used for preparing your Waste Management Form, which requires that quantities be provided in tons.

Enter the estimated quantity for each applicable material in Column I, based on units of cubic yards (cy), square feet (sq ft), or board feet (bd ft). Step 2

Multiply by Tons/Unit figure listed in Column II. Enter the result for each material in Column III. If using Excel version, column III will automatically calculate tons.

Step 3

Step 1

Enter quantities for each separated material from Column III on this worksheet into the corresponding section of your Waste Management Form.

For your final calculations, use the actual quantities, based on weight tags, gate receipts, or other documents.

		Column I			Column II		Column III
<u>Category</u>	<u>Material</u>	Volume	<u>Unit</u>		Tons/Unit		Tons
Asphalt/Concrete	Asphalt (broken)		су	x	0.70	=	
	Concrete (broken)		су	x	1.20	= .	
	Concrete (solid slab)		су	x	1.30	= .	
Brick/Masonry/Tile	Brick (broken)		су	x	0.70	=	
	Brick (whole, palletized)		су	x	1.51	=	
	Masonry Brick (broken)		су	х	0.60	= .	
	Tile		sq ft	x	0.00175	=	
Building Materials (doors, win	dows, cabinets, etc.)		су	x	0.15	=	
Cardboard (flat)		、	су	x	0.05	=	0.05
Carpet	By square foot		sq ft	x	0.0005	= .	
	By cubic yard		су	х	0.30	= .	
Carpet Padding/Foam			sq ft	x	0.000125	= .	
Ceiling Tiles	Whole (palletized)		sq ft	x	0.0003	=	
	Loose		су	x	0.09	= .	
Drywall (new or used)	1/2" (by square foot)		sq ft	x	0.0008	=	
	5/8" (by square foot)		sq ft	х	0.00105	=	
	Demo/used (by cubic yd)		су	x	0.25	=	
Earth	Loose/Dry		су	х	1.20	=	
	Excavated/Wet		су	х	1.30	=	
	Sand (loose)		су	x	1.20	=	
Landscape Debris (brush, tree	es, etc)		су	x	0.15	=	
Mixed Debris	Construction		су	x	0.18	=	
	Demolition		су	x	1.19	=	
Scrap metal			су	x	0.51	=	
Shingles, asphalt			су	x	0.22	=	
Stone (crushed)			су	x	2.35	=	
Unpainted Wood & Pallets	By board foot		bd ft	x	0.001375	=	
	By cubic yard		су	x	0.15	=	
Garbage/Trash			су	x	0.18	=	
Other (estimated weight)			су	x	estimate	=	
			су	x	estimate	=	
			су	x	estimate	=	
			су	x	estimate	=	