OTAY CROSSINGS COMMERCE PARK

APPENDIX C

ACOUSTICAL ASSESSMENT REPORT

to the

DRAFT SUPPLEMENTAL
ENVIRONMENTAL IMPACT REPORT

EIR 93-19-006Q, TM 5405RPL[7]
SCH No. 2006041039

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MAY 2010

NOISE ANALYSIS REPORT

OTAY CROSSINGS COMMERCE PARK

TM5405RPL7
ER 93-19-006Q

East Otay Mesa, CA

January 8, 2007
Revised April 22, 2010

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EXECUTIVE SUMMARY

This report contains an assessment of noise associated with the Otay Crossings Commerce Park project located in Subarea 2 of the East Otay Mesa Specific Plan (EOMSP) area in the County of San Diego. The proposed project would subdivide the property into 56 industrial lots and three open space lots. The construction activities would comply with the County's hours of operation and would result in a less than significant noise impact. The project traffic noise would significantly increase the ambient noise level at three off-site existing homes along Otay Mesa Road. Based on the results of preliminary noise modeling, a noise barrier 11 feet in height along the edge of pavement of Old Otay Mesa Road would be required to reduce the cumulative noise level to below the level of significance at the usable outdoor area of the homes. Sound walls of this height are generally not acceptable in the County of San Diego. An 8-foot-high barrier would reduce the level to 63 dBA. Return walls perpendicular to the roadway would be required to compensate for gaps at driveway openings; the necessary length of the returns would be equal to the widths of the gaps to minimize flanking noise. The potential for a significant and unmitigable noise impact at these residences was previously recognized in the adopted EOMSP Final Environmental Impact Report (FEIR) (Ogden Environmental 1994).

Site-specific noise analyses would be required for any industrial lot adjacent to areas designated for residential use to demonstrate that the proposed facility would operate in compliance with the County noise ordinance sound level limits. The analysis would be conducted at some point in the future when site plan applications are submitted for industrial lots. A Noise Protection Easement would be dedicated on Lots 16, 17, and 18 to ensure compliance with property line noise limits.

A sewer pump station (SPS) is proposed to be located at the site. There is no preliminary design information for the SPS; however, the capacity and a preliminary layout were available from the design engineers. Based on input from the design engineers, the analysis assumed that the SPS design would be similar to City of San Diego SPS No. 88, which houses all equipment except the emergency generator inside the building. The emergency generator would not significantly impact any noise sensitive land use. Although development of the SPS would be phased, the initial building would be designed to provide noise attenuation for the ultimate facility.

Verification sound level measurements would be required for the SPS prior to final occupancy or certification for the permanent facilities of the pump station. The applicant shall submit to the satisfaction of the Director of the Department of Planning and Land Use (DPLU) a letter prepared by a County-certified acoustical consultant that verifies compliance with the property line sound level limits.

1.0 INTRODUCTION

This report assesses the potential noise impacts from the proposed Otay Crossings Commerce Park project. The following includes the findings of the field investigation and an impact assessment.

1.1 PROJECT LOCATION AND DESCRIPTION

The proposed Otay Crossings Commerce Park project is located in the unincorporated community of East Otay Mesa within the Otay Subregional Planning Area in the southernmost portion of San Diego County, approximately two miles east of the future State Route (SR)-125/SR-905 interchange. The project site is located within the southern section of Subarea 2 of the EOMSP area, southeast of the intersection of Old Otay Mesa and Alta Roads. The site extends southeast from the intersection to the United States (U.S.)-Mexico International Border. Refer to Figure 1 for a Regional Location Map.

The northwest portion of the irregularly shaped project site is bordered on the north by Otay Mesa Road, on the west by Alta Road and on the south by a currently unpaved extension of Airway Road. The southern portion of the project site extends as far south as the U.S.-Mexico International Border, and approximately one mile east of Alta Road. Refer to Figure 2 for a Project Vicinity Map.

The proposed project is a Tentative Map (TM) and Preliminary Grading Plan (Tract 5405) for 311.5 acres of land designated for Mixed Industrial, Rural Residential and State Route (i.e., SR-11). The future route for SR-11 traverses the site and the future U.S. Port-of-Entry is situated on the south portion of the site. The TM would subdivide the property into 56 industrial lots and three open space lots ranging in size from 0.90 net acres to 59.1 net acres. The 56 industrial lots would be divided and recorded in five separate units. Approximately 285.5 acres would be placed in lots, while 20.4 acres would contain on-site public streets. The right-of-way for SR-11 has been mapped on approximately 3 of the 59 lots. The portions of those lots that are encumbered by the potential Caltrans right-of-way are shown on the TM as "approximate location of future SR-11 right-of-way." The encumbered area is a reservation of future right-of-way for SR-11 made pursuant to Government Code section 66480.

Grading for the proposed project would be completed in two phases. Grading for Phase 1 comprises three final maps (units 1, 2 and 3) and Grading Phase 2 comprises two final maps (units 4 and 5). The developer proposes to construct the project in the following timeline: construct Unit 1 by 2011, construct Unit 2 by 2012, construct Unit 3 by 2013, and construct Units 4 and 5 by 2014.

The project site is currently zoned S88 (Specific Planning Area) under the County Zoning Ordinance. The S88 zoning is intended to accommodate any land uses designated in the applicable Specific Plan. In the case of the project site, this is primarily the Mixed Industrial land use designation, with a small area in the northeastern corner of the site designated Rural Residential, as described above. The project would designate all lots for industrial use.

1.2 ENVIRONMENTAL NOISE BACKGROUND

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 and this relation holds true for sounds of any loudness.

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.

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 County of San Diego to evaluate land-use compatibility with regard to noise.

Sound levels of typical noise sources and environments are provided in Table 1.

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

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)	Higher Limit of Urban Ambient Sound	80	2 times as loud
Passenger Car, 65 mph (25 ft) Living Room Stereo (15 ft) Vacuum Cleaner (10 ft)		70	Reference Loudness **Moderately Loud**
Normal Conversation (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**
		10	1/64 as loud
		0	1/128 as loud **Threshold of Hearing**

Source: Compiled by Kimley-Horn and Associates, Inc.

1.3 APPLICABLE NOISE REGULATIONS AND STANDARDS

The following excerpts are applicable to construction and operation of the proposed project:

County of San Diego Noise Ordinance

Section 36.404: General Sound Level Limits states:

(a) Except as provided in section 36.409 of this chapter, it shall be unlawful for any person to cause or allow the creation of any noise, which exceeds the one-hour average sound level limits in Table 36.404, when the one-hour average sound level is measured at the property line of the property on which the noise is produced or at any location on a property that is receiving the noise.

Table 36.404
Sound Level Limits in Decibels (dBA)

ZONE	TIME	ONE-HOUR AVERAGE SOUND LEVEL LIMITS (dBA)
(1) RS, RD, RR, RMH, A70, A72, S80, S81, S87, S90, S92 and RV and RU with a density of less than 11 dwelling units per acre.	7 a.m. to 10 p.m. 10 p.m. to 7 a.m.	50 45
(2) RRO, RC, RM, S86, V5 and RV and RU with a density of 11 or more dwelling units per acre.	7 a.m. to 10 p.m. 10 p.m. to 7 a.m.	55 50
(3) S94, V4 and all commercial zones.	7 a.m. to 10 p.m. 10 p.m. to 7 a.m.	60 55
(4) V1, V2 V1, V2 V1 V2 V3	7 a.m. to 7 p.m. 7 p.m. to 10 p.m. 10 p.m. to 7 a.m. 10 p.m. to 7 a.m. 7 a.m. to 10 p.m. 10 p.m. to 7 a.m.	60 55 55 50 70 65
M50, M52 and M54.	Anytime	70
S82, M56 and M58.	Anytime	75
S88 (see subsection (c) below)		

(b) Where a noise study has been conducted and the noise mitigation measures recommended by that study have been made conditions of approval of a Major Use Permit, which authorizes the noise-generating use or activity and the decision making body approving the Major Use Permit determined that those noise mitigation measures reduce potential impacts to a level below significance, implementation and compliance with those noise mitigation measures shall constitute compliance with subsection (a) above.

(c) S88 zones are Specific Planning Areas which allow different uses. The sound level limits in Table 36.404 above that apply in an S88 zone depend on the use being made of the property. The limits in Table 36.404, subsection (1) apply to property with a residential, agricultural or civic use. The limits in subsection (3) apply to property with a commercial use. The limits in subsection (5) apply to property with an industrial use that would only be allowed in an M50, M52, or M54 zone. The limits in subsection (6) apply to all property with an extractive use or a use that would only be allowed in an M56 or M58 zone.

(d) If the measured ambient noise level exceeds the applicable limit in Table 36.404, the allowable one-hour average sound level shall be the one-hour average ambient noise level, plus three decibels. The ambient noise level shall be measured when the alleged noise violation source is not operating.

(e) The sound level limit at a location on a boundary between two zones is the arithmetic mean of the respective limits for the two zones. The one-hour average sound level limit applicable to extractive industries, however, including but not limited to borrow pits and mines, shall be 75 decibels at the property line regardless of the zone in which the extractive industry is located.

(f) A fixed-location public utility distribution or transmission facility located on or adjacent to a property line shall be subject to the sound level limits of this section, measured at or beyond six feet from the boundary of the easement upon which the facility is located.

Section 36.407: Refuse Vehicles & Parking Lot Sweepers states:

No person shall operate or allow to be operated, a refuse compacting, processing, or collection vehicle or a parking lot sweeper between the hours of 10 p.m. to 6 a.m., in or within 100 feet of a residential zone.

Section 36.409: Sound Level Limitations on Construction Equipment states:

Except for emergency work, it shall be unlawful for any person to operate construction equipment or cause construction equipment to be operated, that exceeds an average sound level of 75 decibels for an eight-hour period, between 7 a.m. and 7 p.m., when measured at the boundary line of the property where the noise sources is located or on any occupied property where the noise is being received.

The project site is zoned S88 and is planned to be for industrial use. All surrounding properties are zoned S88 and are designated for industrial use, with the exception of the area designated for residential use northeast of the site. Therefore, the hourly property line noise level limit based on the County Noise Ordinance is 70 dBA adjacent to industrial uses, and 60 dBA from 7 a.m. to 10 p.m. and 57.5 dBA from 10 p.m. to 7 a.m. adjacent to residential uses.

County of San Diego General Plan, Noise Element, Policy 4b (September 27, 2006)

Because exterior community noise equivalent levels (CNEL) above 60 decibels and/or interior CNEL above 45 decibels may have an adverse effect on public health and welfare, it is the policy of the County of San Diego that:

1. Whenever it appears that new *development* may result in any (existing or future) *noise sensitive land use* being subject to *exterior noise* levels of CNEL equal to 60 *decibels (A)* or greater, an acoustical analysis shall be required.

2. If the acoustical analysis shows that *exterior noise* levels at any *noise sensitive land use* will exceed CNEL equal to 60 *decibels (A)*, modifications shall be made to the development which reduce the *exterior noise* level to less than CNEL of 60 *decibels (A)* and the *interior noise* level to less than CNEL of 45 *decibels (A)*.

3. If modifications are not made to the *development* in accordance with paragraph 2 above, the *development* shall not be approved unless a finding is made that there are specifically identified overriding social or economic considerations which warrant approval of the *development* without such modification; provided, however, if the acoustical analysis shows that *exterior noise* levels for any *noise sensitive land use* will exceed CNEL equal to 75 *decibels (A)* even with such modifications, the *development* shall not be approved irrespective of such social or economic considerations.

Definitions, Notes & Exceptions

"*Decibels (A)*" refers to A-weighted sound levels as noted on page VIII-2 of this Element.

"*Development*" means any physical development including but not limited to residences, commercial, or industrial facilities, roads, civic buildings, hospitals, schools, airports, or similar facilities.

"*Exterior Noise*":

(a) For single family detached dwelling projects, "exterior noise" means noise measured at an outdoor living area which adjoins and is on the same lot as the dwelling, and which contains at least the following minimum area:

(i)	Net lot area up to 4,000 square feet:	400 square feet
(ii)	Net lot area 4,000 square feet to 10 acres:	10% of net lot area
(iii)	Net lot area over 10 acres:	1 acre

(b) For all other projects, "exterior noise" means noise measured at all exterior areas which are provided for *group or private usable open space* purposes.

(c) For County road construction projects, the *exterior noise* level due to vehicular traffic impacting a *noise sensitive land use* should not exceed the following values:

(i)	Federally funded projects:	The noise standard contained in applicable Federal Highway Administration standards.
(ii)	Other projects:	60 decibels (A), except if the existing or projected noise level without the project is 58 decibels (A) or greater, a 3 decibel (A) increase is allowed, up to the maximum permitted by Federal Highway Administration standards.

"*Group or Private Usable Open Space*" means usable open space intended for common use by occupants of a *development*, either privately owned and maintained or dedicated to a public agency, normally including swimming pools, recreation courts, patios, open landscaped areas, and greenbelts with pedestrian walkways and equestrian and bicycle trails, but not including off-street parking and loading areas or driveways (Group Usable Open Space) and usable open space intended for use by occupants of one dwelling unit, normally including yards, decks and balconies (Private Usable Open Space).

"*Interior Noise*": The following exception shall apply: For rooms which are usually occupied only a part of the day (schools, libraries, or similar), the interior one-hour average sound level, due to noise outside, should not exceed 50 *decibels (A)*.

"*Noise Sensitive Land Use*" means any residence, hospital, school, hotel, resort, library or any other facility where quiet is an important attribute of the environment.

The County Guidelines for Determining Significance for Noise (January 27, 2009) indicates that "An increase of 10 dB (CNEL) over pre-existing noise" or more is considered a significant impact.

2.0 ENVIRONMENTAL SETTINGS AND EXISTING CONDITIONS

2.1 SETTINGS AND LOCATIONS

The existing area consists primarily of undeveloped land. At the southwest corner of Alta Road and Old Otay Mesa Road is an auto storage, wrecking and recycling facility. Calpine plans to operate an energy plant approximately 1,400 feet north of the site. Correctional facilities are located over a mile north of the site. The adjacent properties are generally designated in the EOMSP for industrial development. Land designated for rural residential (1 dwelling unit per 20 acres) development is located along the northeastern portion of the site. However, a rock quarry is currently proposed for the portion of this area closest to the site.

The closest noise sensitive receptors are three single-family residences located approximately ¾ mile west of the site along Old Otay Mesa Road between Sanyo Avenue and Enrico Fermi Drive. Also, a fourth residence is located along Kuebler Ranch Road, approximately one mile north of the site.

2.1.1 Existing Noise Conditions

The site is located within a relatively undeveloped area. The closest existing noise sources include traffic on Old Otay Mesa Road and Alta Road, which intersect at the northwest corner of the site, and an auto recycling facility on the northwest corner of the site. Refer to Section 3.1 for existing ADTs on existing roadways. In addition, Brown Field Municipal Airport and the Tijuana International Airport are near the project site. Brown Field is a general aviation airport in the City of San Diego, approximately 2.75 miles west of the site. The Tijuana International Airport is in Tijuana, Mexico, approximately two miles southwest of the site. Both airports generate noise levels below 60 dBA CNEL at the project site. Aircraft used by the border patrol to fly above the project area also contribute to the existing noise environment.

2.2 METHODOLOGY AND EQUIPMENT

2.2.1 Noise Measuring Methodology and Procedures

Sound level measurements were conducted by Pacific Noise Control at the project site and along Alta Road and Old Otay Mesa Road to determine the existing noise level at the site and along nearby existing roads. The measurements were made using a calibrated Larson-Davis Model 700 (S.N. 2132) integrating sound level meter equipped with a Type 2551 ½-inch pre-polarized condenser microphone with pre-amplifier. When equipped with this microphone, the sound level meter meets the current American National Standards Institute (ANSI) standard for a Type 1 precision sound level meter. The sound level meter was positioned at a height of approximately five feet above the ground.

Measurements were conducted on May 24, 2005 and June 7, 2005. The measurement locations are depicted as measurement locations (MLs) 1-4 on Figure 2. ML1 was at the northern portion of the project site. ML2 was 70 feet from the centerline of Otay Mesa Road east of Cactus Road. ML3 was 45 feet from the centerline of Old Otay Mesa Road between Sanyo Avenue and Enrico Fermi Drive. ML4 was 50 feet from the centerline of Alta Road approximately 2,000 feet north of Old Otay Mesa Road. MLs 2, 3 and 4 had a direct line-of-sight view to the adjacent roads. The measured noise levels were 41 dBA Leq at ML1,

76 dBA Leq at ML2, 70 dBA Leq at ML3 and 66 dBA Leq at ML4. The noise levels and concurrent traffic volumes are shown in Table 2.

Table 2. Measured Noise Levels and Traffic Volumes

Site	Description	Date / Time	Leq (dBA)	Cars	Medium Trucks	Heavy Trucks
1	Northern portion of project site	5/24/05 09:10 - 09:20	41	-	-	-
2	70' from centerline of SR-905	6/7/05 08:00 - 08:30	76	1,529	36	92
3	45' from centerline of Old Otay Mesa Road	5/24/05 07:00 - 08:00	70	535	9	21
4	50' from centerline of Alta Road	5/24/05 08:10 - 08:30	66	84	1	4

Source: Pacific Noise Control 2005.

2.3 EXISTING VEHICULAR TRAFFIC NOISE MODELING

The existing traffic volumes along project roadways were obtained from the project Traffic Impact Study (TIS) (Darnell & Associates, Inc. 2008) and are shown in Table 4. Traffic noise levels were calculated at 50 feet from the centerlines of the nearby roads using the Federal Highway Administration's Traffic Noise Model version 2.5 (FHWA 2004). The model calculates the hourly average sound level and considers roadway alignments, estimated average vehicle speed, peak-hour traffic volume, vehicle mix, roadway geometrics and distance to receivers.

The model used a standard roadway scenario of two 24-foot-wide and 2000-foot-long lanes in opposite directions, 24 feet apart, with a speed of 55 mph and a vehicle mix of 1.1% medium trucks and 5.4% heavy trucks, with a default ground type of 'hard soil.' The truck mix is based on estimates along SR-905 west of Old Otay Mesa Road (Caltrans 2004) and is similar to the truck mix noted during the noise monitoring along Old Otay Mesa and Alta Roads. The peak-hour traffic volume was assumed to be 10 percent of the ADT on each roadway. Agencies such as the U.S. Department of Housing and Urban Development consider the peak-hour sound level to be reasonably equivalent to the CNEL for vehicle traffic. This assumed equivalency is partially based on expected hourly traffic distribution; this analysis assumes that this distribution would not change as a result of the project.

The results of vehicular traffic noise modeling are presented in Table 3. A review of the table shows that the sound level along Old Otay Mesa Road between Sanyo Avenue and Enrico Fermi Drive near the three single-family residences (6940, 6944 and 6948 Old Otay Mesa Road) is currently 70 dBA CNEL. Field observations indicate areas of outdoor frequent use at these residences are primarily located behind the houses and shielded from the roadway; however, a portion of the side yards may be used for recreational purposes. Sound levels on the residential property currently exceed 60 dBA CNEL; this is considered significant by the County.

3.0 ANALYSIS OF PROJECT EFFECTS

The EOMSP FEIR analyzed the potential noise impacts to off-site noise-sensitive receptors associated with the designated on-site industrial/commercial and residential uses. Subsequent to the certification of the EOMSP FEIR and adoption of the Specific Plan in 1994, the project applicant is proposing to subdivide the property into 56 industrial lots requiring an analysis of the noise impacts. No specific land uses or buildings are proposed at this time. Also, the project would amend the EOMSP to shift the boundary of the Mixed Industrial/Rural Residential land use designation east. In addition, the County DPLU changed some significance criteria since the certification of the EOMSP FEIR. Noise associated with the project would include short-term construction, industrial use activities and traffic noise along existing and planned roads.

Noise impacts associated with the proposed Specific Plan Amendment are discussed below.

3.1 VEHICULAR TRAFFIC

Traffic noise impacts were evaluated based on information provided in the TIS. Table 28 of the TIS presents ADTs for the Existing condition and the Existing + Project Build Out (Units 1-5) condition. Table 33 presents ADTs for the Cumulative (2020) with SR-905 1A and 1B condition. The worst-case traffic volume on any given roadway segment would occur in one of these conditions. The higher of the traffic volumes in the two future conditions was assessed as the Future condition. The results of vehicular traffic noise modeling are presented in Table 3. The traffic report does not indicate a change in the character of traffic (truck mix); therefore, this analysis assumes that this will remain constant.

3.1.1 Off-Site Traffic

The project would generate additional traffic along existing roads in the area. The majority of the project-generated traffic that would expose noise-sensitive receptors to increased noise levels would occur on Otay Mesa Road. Direct noise impacts associated with project-generated traffic are evaluated based on the Existing and Future traffic scenarios as described above.

The project-generated traffic would increase noise along local roadways by approximately 0 dBA to 10 dBA. The greatest noise increases in the vicinity of noise sensitive receptors would occur on Otay Mesa Road between SR-125 and Alta Road (4-6 dBA).

The Existing + Project Build Out (Units 1-5) traffic volume along Otay Mesa Road between Vann Centre Drive and Enrico Fermi Drive would be 27,220 ADT. The project traffic in this condition would be 18,087 ADT. The three single-family residential properties in this area (6940, 6944 and 6948 Old Otay Mesa Road) would experience sound levels of approximately 76 dBA, approximately 4 dBA greater than the existing condition.

Table 3. Off-Site Traffic Noise Levels (at 50 Feet from Centerline of Road)

Roadway Segment	Existing		Future		Increase: Existing vs. Future
	ADT	CNEL	ADT	CNEL	
Otay Mesa Road					
Heritage to Cactus	64,299	80	77,067[1]	81	1
Cactus to Britannia	71,080	80	83,848[1]	81	1
Britannia to La Media	58,999	80	72,405[1]	80	0
La Media to Piper Ranch	44,523	78	58,035[1]	80	2
Piper Ranch to SR-125	43,109	78	56,940[1]	79	1
SR-125 to SR-905	16,686	74	41,640[1]	78	4
SR-905 to Harvest	9,738	72	41,640[1]	78	6
Harvest to Sanyo	8,224	71	26,311[1]	76	5
Sanyo to Vann Centre	9,133	72	27,220[1]	76	4
Vann Centre to Enrico Fermi	9,133	72	27,220[1]	76	4
Enrico Fermi to Alta	6,928	70	17,574[1]	74	4
Airway Road					
La Media to SR-905	8,093	71	9,700[2]	72	1
SR-905 to Sanyo	9,631	72	10,589[1]	72	0
Sanyo to Paseo de las Americas	5,649	69	16,030[2]	74	5
Paseo de las Americas to Michael Faraday	4,513	68	6,129[1]	70	2
Michael Faraday to Enrico Fermi	2,918	67	5,380[2]	69	2
Enrico Fermi to Airway	1,160	63	11,795[1]	73	10
Airway to Alta	-	-	10,635[1]	72	-
Siempre Viva Road					
Drucker to SR-905	-	-	21,180[2]	75	-
SR-905 to Paseo de las Americas	26,653	76	53,620[2]	79	3
Paseo de las Americas to Michael Faraday	9,886	72	22,180[2]	75	3
Michael Faraday to Enrico Fermi	6,442	70	19,090[2]	75	5
Enrico Fermi to Airway	830	61	830[1]	61	0
La Media Road					

Otay Mesa to St. Andrews	15,225	74	28,210[2]	76	2
Sanyo Avenue					
Otay Mesa to Airway	2,666	66	16,220[2]	74	8
Enrico Fermi Drive					
Otay Mesa to Airway	2,681	66	14,895[2]	74	8
Airway to Siempre Viva	7,110	70	11,491[2]	72	2

Source: Darnell & Associates, Inc. 2010. Tables 28 and 33.
Shading indicates roadway segments adjacent to existing residential receptors.

[1]Existing + Project Build Out (Units 1-5) condition
[2]Cumulative (2020) with SR-905 1A & 1B condition

3.2 OPERATIONS

3.2.1 Industrial Noise Impacts

The proposed project would develop industrial lots adjacent to existing and planned industrial uses and planned residential uses (Figure 4). Specific industrial uses have not been identified for the lots, but may include industrial facilities that would engage in the manufacturing, processing, compounding, assembling, packaging, warehousing, treatment, or fabrication of materials or products. In general, noise associated with industrial uses typically includes truck deliveries, loading dock activities (including trash compactors), outdoor mechanical equipment (such as air compressors, pumps, fans and cooling towers) and maintenance activities such as parking lot sweepers and trash collection trucks. Other noise sources associated with industrial uses include shop tools and forklifts.

The property boundary of the closest existing residence is approximately 0.75-mile west of the site along Old Otay Mesa Road. The undeveloped area adjacent to Lots 16-18, at the northeastern boundary of the site, is designated for residential uses. Note that a portion of this property is currently proposed to be developed with a construction aggregates extraction operation (i.e. Otay Hills project [MUP 04-004]). If this development occurs, the property line noise limits would change; however, this analysis was conducted under the worst-case assumption that this area would remain planned for residential use.

The lots created by the project would be required to comply with the County noise ordinance Based on the arithmetic mean methodology applicable to the interface of different land use designations, the hourly sound level limit at industrial property lines would be 70 dBA Leq anytime, and the hourly sound level limit at residential property lines would be 60 dBA between the hours of 7 a.m. and 10 p.m and 57.5 dBA between the hours of 10 p.m. and 7 a.m.

The noise level generated by industrial uses onsite would vary depending upon the specific type of industrial uses developed at the site. These include the specific land use, size of equipment, location and orientation of equipment, number and location of loading docks, and parking areas. Therefore, it is not possible to determine the level of noise impact until specific industrial land uses and their locations are identified. Future applicants will submit site plans that would contain detailed use and sound level information for the uses.

Although the exact noise level generated cannot be specifically quantified at this time because of many variables involved, typical sound levels associated with these type noise sources range from approximately 60 to 75 dBA at 50 feet from the source. However, in practice, the one-hour average sound level at 50 feet typically ranges from approximately 50 to 70 dBA, depending on the equipment and the intensity of use (duty cycle). Higher noise levels are possible if the equipment is not adequately muffled or maintained.

Fixed location noise sources have point source acoustical characteristics and generally decay at a rate of 6 dBA per doubling of distance from the source. This is a logarithmic relationship describing the acoustical spreading of a pure, undisturbed spherical wave in air. The rule applies to the propagation of sound waves with no ground interaction. The point source attenuation formula is as follows:

$$SPL_2 = SPL_1 - 20\log\left(\frac{d_2}{d_1}\right)$$ where SPL_1 = known sound level, SPL_2 = desired sound level, d_1 = known distance, and d_2 = desired distance.

At a distance of 300 feet from a property line adjacent to an area designated for residential use, a continuous sound level of 75 dBA at 50 feet from the source would result in an hourly average sound level of 59.5 dBA at the property line and comply with the County noise ordinance. This simplified calculation does not account for shielding achieved by on-site structures or noise reduction associated with the intermittent nature of industrial activity. Therefore, compliance of lots adjacent to areas designated for residential use is feasible. However, a site-specific noise analysis would be required when individual lot owners seek approval of site and building plans from the County.

The area adjacent to Lots 16-18 on the east is designated for residential use. This property is currently undeveloped; however, future site plan review for these lots should undergo screening for compliance with the Noise Ordinance. Operations on Lots 16-18 are potentially significant; however, as discussed above, impacts can be mitigated through proper site planning.

Parking lot sweepers, trash collection and refuse compacting would occur between the hours of 6:00 a.m. to 10:00 p.m. and would not significantly impact any residential receptor.

Sewer Pump Station

A sewer pump station (SPS) would be located on the south side of Lot 34 (Figure 3). All surrounding lots would be industrial. West and south of the pump station would be SR-11. East of the pump station would be Lone Star Road with Lot 33 beyond the road. The pump station would be located approximately 15 feet from the south property line, 30 feet from the east property line, and approximately 3,000 feet from the nearest residential area.

The SPS would be developed in phases, with an interim phase for the buildout and ultimate design capacity (refer to Appendix A). However, the initial building would be designed to provide noise attenuation for the ultimate facility.

A conceptual layout of the new SPS is provided in Appendix A. The layout of the SPS is based on a similar facility designed for the City of San Diego (SPS No. 88), which is located in the Black Mountain Ranch community. The SPS is planned to be a 485 sq. ft. three-story facility with the bottom two stories to be located below grade. The three 25-horsepower (HP) vertical non-clog sewage pumps would be located on the bottom level (two floors below grade) with the pump motors located on the intermediate level below grade. The wet well would be sized for both operational and emergency storage needs and would have a footprint of approximately 700 sq. ft. All electrical switchgear and equipment would be located on the upper/grade level. This is similar to the layout for the SPS No. 88 facility which was built and placed in service in 2003.

SPS No. 88 is a 1.1 MGD (million gallons per day) three story pumping facility with two stories located below grade. The pump motors are located on the upper/grade level of the building. The SPS No. 88 facility is equipped with two 100-HP vertical non-clog sewage pumps. The footprint of the pump station

facility is approximately 715 sq. ft. with the below-grade wet well of about 410 sq. ft. All electrical switchgear and equipment are located on the upper/grade level of the facility.

The noise generation from the proposed facility would be expected to be lower than the existing SPS No. 88 based on the following comparison of the facilities:

- The pump station layouts are essentially the same, have similar building footprints and will be constructed with similar building materials.

- The size of the proposed pumps are considerably smaller (25 HP vs. 100 HP), although there would be three pumps instead of two pumps. However, the total HP of all three proposed pumps is still less than one SPS No. 88 pump. Furthermore, the motors of the proposed facility would be located below grade on the intermediate level while SPS No. 88 has the motors on the grade level; therefore, the proposed facility structure would provide more acoustical shielding.

- The electrical switchgear and motor control center for the pumps are located on the upper/grade level floor of each facility. Since the pumps would be smaller for the proposed facility, the motor starters and related equipment that generate noise when in operation would be smaller as well.

- Noise is typically emitted through the building walls and via the HVAC duct system providing ventilation to the building areas. Since the SPS motors are the main heat generation source and require the greater amount of ventilation, having the proposed pump motors located on the intermediate level aids in reducing heat and allows for attenuation of noise through the ducting system before being emitted to the outside, thus reducing noise impacts.

Based on the similar layouts of the proposed SPS and SPS No. 88 stations and because the pumps and motors would be of smaller capacity, the use of noise data from SPS No. 88 seems to be a reasonable benchmark for evaluating the impacts for the proposed facility.

Five-minute sound level measurements were taken at SPS No. 88 on December 14, 2006. The measurements were conducted using a Larson Davis Model 820 ANSI Type 1 Integrating Sound Level Meter. The meter was mounted on a tripod approximately five feet above the ground. The sound level meter was calibrated before and after the measurement period with a Larson Davis Model 150B calibrator.

Sound levels were measured on the side of the SPS that had an opening for ventilation. When the pumps were operating, sound levels were 53 dBA Leq at 10 feet and 49 dBA Leq at 20 feet. When the pumps and blowers were operating, sound levels were 60 dBA Leq at 10 feet and 56 dBA Leq at 20 feet. The ambient sound level when the pump station was not operating was 47 dBA Leq. Non-SPS noise sources consisted of distant gardening equipment.

Sound levels of the SPS No. 88 emergency generator were measured on August 8, 2007. The generator, running at full capacity, was found to produce between 66 dBA and 69 dBA at 25 feet (depending on orientation). The ambient noise level was less than 50 dBA. The generator was a Cummins Onan 125 kw with a Quiet Site II sound reduction enclosure. The overall dimensions were 9’ high × 12’ wide × 3’ deep, on a 6” pedestal. The generator was located 6’ from the pump station building façade.

Based on the sound level measurements, the proposed SPS would result in sound levels less than 70 dBA at the industrial lot boundary and below 57.5 dBA at the northeastern boundary adjacent to the designated rural residential uses (3,000 feet away). The SPS would not be audible at any noise sensitive land use. Although development of the SPS will be phased, the initial building will be designed to provide noise attenuation for the ultimate facility.

In addition, as stated in Appendix A, "Noise emanating from the pump station will meet the County's noise ordinance requirements."

Verification sound level measurements of the SPS would be conducted prior to final occupancy or certification for the permanent facilities of the SPS. The applicant would submit to the satisfaction of the Director of the DPLU a letter prepared by a County-certified acoustical consultant that verifies compliance with the property line sound level limits.

3.3 CONSTRUCTION

The proposed project grading would occur in two phases. Grading Phase 1 comprises final map units 1, 2 and 3. Grading Phase 2 comprises final map units 4 and 5. Grading for Phase 1 is planned to begin in early 2010, while grading for Phase 2 is planned to be begin in mid-2012. Noise generated by construction equipment would occur with varying intensities and durations during construction. Based on a preliminary equipment list, the beginning of Grading Phase 1 and Phase 2 would require the greatest number and variety of construction equipment. The equipment would be used to clear and grub, to remove and recompact soil, and for rock removal and excavation. The primary equipment would include bulldozers, loaders, scrapers, water trucks, compactors, a rock breaker, trucks, and graders. After the rough grading in each grading phase, finish grade construction equipment (i.e., graders, water trucks, scrapers and loaders) would be used.

Construction activities at the project site would result in a short-term, temporary increase in the ambient noise level. The increase in noise level would be primarily experienced close to the noise source. The magnitude of the impact would depend on the type of construction activity, noise level generated by various pieces of construction equipment, duration of the construction phase, and distance between the noise source and receiver. Sound 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) (Figure 6).

The average sound level at construction sites is typically less than depicted in the figure because the equipment operates in alternating cycles of full power and low power. Also, the equipment rotates in various directions (i.e., noisiest side of the equipment to quieter sides of the equipment), and moves around the construction site, especially during clearing, grubbing and grading activities. Thus, the average noise levels produced are less than the maximum level. Hourly average noise levels associated with construction activities will vary, but, can range up to approximately 95 dBA at a distance of 50 feet with the use of the rock breaker.

Construction noise in a well-defined area typically attenuates at approximately six dBA per doubling of distance. The closest off-site homes to the construction activities would be located approximately 0.75-mile west of the site along Old Otay Mesa Road. The one-hour average noise level would be less than 55

dBA at the closest homes during grading of the site. This assumes a direct line-of-sight from the receiver to the construction area. This noise level would comply with the County's construction noise level criterion.

The property to the west of the project site is occupied and is used for vehicle parking/storage. The centroid of Lots 1 and 2 is located approximately 160 feet from the shared property line. The average construction equipment noise level was assumed to be 80 dBA at 50 feet. Assuming three pieces of construction equipment operating continuously, the average noise level would be approximately 75 dBA. This noise level would comply with the County's construction noise level criterion.

The grading for the project is designed to be balanced, thus, there would be no import or export of dirt. Therefore, noise impacts associated with heavy trucks along the adjacent roads would be less than significant.

As previously stated, the hours of construction would comply with the County's allowable hours of construction (i.e., 7 a.m. to 7 p.m. Monday through Saturday, excluding legal holidays).

The approved biological study and SEIR for this project addresses indirect biological noise impacts to sensitive avian habitat.

4.0 NOISE SENSITIVE LAND USES

Some land uses are considered sensitive to noise. Noise sensitive receptors are land uses associated with indoor and/or outdoor activities that may be subject to stress and/or significant interference from noise. They often include residential dwellings, mobile homes, hotels, motels, hospitals, nursing homes, educational facilities and libraries. Industrial, commercial, agricultural and urban reserve land uses are generally not considered sensitive to ambient noise.

The property boundary of the closest existing residence is approximately 0.75-mile west of the site along Old Otay Mesa Road. A residence is also located along Kuebler Ranch Road approximately one mile north of the site. The area adjacent to Lots 16-18, near the northeast portion of the site, is designated for residential use.

4.1 GUIDELINES FOR THE DETERMINATION OF SIGNIFICANCE

Vehicular Traffic

Sound levels exceeding 60 dBA CNEL at areas of outdoor frequent use or cause an increase of 10 dBA CNEL or more at any existing residence are considered significant.

Operations

Sound levels that exceed a one-hour average of 60 dBA between the hours of 7:00 a.m. to 10:00 p.m. or 57.5 dBA between the hours of 10:00 p.m. and 7:00 a.m. at the east property lines of Lots 16-18 are considered significant. Sound levels that exceed a one-hour average of 70 dBA at any other property line are considered significant.

Construction

Sound levels that exceed an 8-hour average of 75 dBA at any occupied property are considered significant.

4.2 POTENTIAL NOISE IMPACTS

4.2.1 Vehicular Traffic

As previously stated, vehicular traffic sound levels along the roadways could increase by up to 10 dBA as a result of the project (Table 3). The majority of the project-generated traffic would occur on Otay Mesa Road. The greatest noise increases in the vicinity of noise sensitive receptors would occur on Otay Mesa Road between SR-125 and Alta Road (4-6 dBA).

The potential for significant noise impacts was previously identified in the EOMSP FEIR. Significant cumulative noise impacts are limited to the three single-family residences located on the north side of Old Otay Mesa Road between Vann Centre Drive and Enrico Fermi Drive (6940, 6944 and 6948 Old Otay Mesa Road) since this is the only road that has existing noise sensitive uses adjacent to the road. The

residences are located on large lots that have most of the outdoor areas of frequent use behind the home, shielded from vehicular traffic.

Based on preliminary noise modeling, the Existing + Project Build Out (Units 1-5) sound level at the south property line of these lots would be approximately 76 dBA CNEL. The existing sound level at these residences is estimated at 72 dBA, which exceeds the significance criteria of 60 dBA CNEL. The project-generated traffic noise increase would be approximately 4 dBA.

The Existing + Project Build Out (Units 1-5) 60 dBA CNEL noise contour along Otay Mesa Road between Sanyo Avenue and Enrico Fermi Drive would be approximately 700 feet from the centerline of the road.

Future / Year 2030

SR-905, SR-11 and other roads are planned to be built in the area; these roads would reduce traffic volumes along Otay Mesa Road and other roads in the area. Adjacent to the three nearby residences between Vann Centre Drive and Enrico Fermi Drive, the Cumulative (2020) with SR-905 1A & 1B traffic volume is projected to be 5,480 ADT, and the 2030 + Project Build Out (Units 1-5) traffic volume is projected to be 21,300 ADT. These volumes are less than the analyzed Existing + Project Build Out (Units 1-5) traffic volume of 27,220 ADT. Therefore, the noise level at the existing nearby residences would be lower in the Cumulative (2020) with SR-905 1A &1B condition and the 2030 + Project Build Out (Units 1-5) condition than the Existing + Project Build Out (Units 1-5) condition. In the 2030 condition, the Without Project traffic volume on this segment is projected to be 19,810 ADT, and the Project traffic volume is projected to be 1,490 ADT; in this condition, the project would increase the noise level at the three residences by less than 1 dBA.

Operations

The sound level from industrial operations would be required to meet Noise Ordinance limits at property lines. It is feasible for the lots in this project to be designed and operated in such a manner as to limit operation hourly sound levels to less than 60 dBA from 7 a.m. to 10 p.m. and 57.5 dBA from 10 p.m. to 7 a.m. at residential property lines, and 75 dBA at the remaining property lines. Because noise levels from operations on Lots 16-18 may exceed these property line noise level limits, the dedication of a Noise Protection Easement would be required on Lots 16, 17, and 18. This Noise Protection Easement would require future noise analysis with subsequent discretionary permits. Noise protection measures could include proper building orientation, selection of quieter equipment, or placement of noise-producing equipment behind buffer zones, noise enclosures, or parapet walls.

A use-specific noise analysis would occur when individual lots seek approval of site and building plans from the County.

The proposed SPS sound level would be less than 75 dBA at the industrial lot boundary and below 45 dBA at the northeastern boundary adjacent to the designated rural residential uses. Verification sound level measurements of the SPS would be conducted prior to final occupancy or certification for the permanent facilities of the SPS. The applicant would submit to the satisfaction of the Director of the

DPLU a letter prepared by a County-certified acoustical consultant that verifies compliance with the property line sound level limits.

Construction

Construction would be limited to the hours permitted by the County Noise Ordinance. Eight-hour average sound levels would be expected to be 75 dBA or below adjacent to the designated rural residential uses and all adjacent occupied property.

4.3 MITIGATED NOISE IMPACTS

Vehicular Traffic

Project traffic would increase the sound level by approximately 4 dBA at the south property line of the three single-family residences located on the north side of Otay Mesa Road between Vann Centre Drive and Enrico Fermi Drive; this is considered significant. The resultant cumulative sound level at 50 feet would be approximately 76 dBA.

Preliminary acoustical calculations were performed using the Fresnel Diffraction Method to evaluate the effectiveness of a noise barrier to mitigate near-term cumulative plus project traffic noise impacts at side yards of the three residences. The roadway/residence acoustical geometry is similar at each of the residences. The usable side yard area was estimated to be located 100 feet from the centerline of Otay Mesa Road. Otay Mesa Road is essentially at the same elevation as the three residences. Because this distance is twice the reference distance of 50 feet, the sound level would decrease by 3 dBA to 73 dBA, 13 dBA over the County threshold of significance. The barrier was placed approximately 25 feet from the roadway centerline. The calculations indicate that the required 13 dBA insertion loss can be achieved by constructing an 11-foot-high noise wall along the roadway right-of-way. Return walls along the side yards perpendicular to driveways and side yard property lines would also be required. The locations of these walls would be determined in consultation with the each property owner due to property line locations and other limitations on noise wall placement. Noise walls must be solid construction without holes or gaps and have a mass of at least 3.5 pounds per square foot.

Because an 11-foot-high noise wall exceeds the acceptable County noise wall height, the insertion loss that would be generated by a more practical wall height was estimated. A typical 8-foot-high wall, in the same configuration as above, would generate approximately 11 dBA of insertion loss and reduce the sound level to 62 dBA.

The southern (roadway-facing) building façades of the residences are approximately 70 feet from the centerline of Otay Mesa Road, and the rear façades are approximately 110 feet from the centerline. The residences are single-story (15 feet high). At a distance of 70 feet from the centerline, the sound level would be approximately 75 dBA. At a distance of 120 feet from the centerline, the sound level would be approximately 72 dBA. Therefore, using the Fresnel Diffraction Method, the residential structures provide approximately 17 dBA of insertion loss and the near-term plus cumulative traffic noise level at 10 feet behind the residences would therefore be approximately 55 dBA.

Operation

Site-specific noise analyses would be required for future site plans proposed on the industrial lot(s) to demonstrate that the proposed facilities would operate in compliance with the County noise ordinance.

5.0 SUMMARY OF PROJECT IMPACTS, MITIGATION & CONCLUSIONS

The project traffic would significantly increase the ambient noise level at three off-site existing homes along Otay Mesa Road. Based on the results of preliminary noise modeling, a noise barrier 11 feet in height along Otay Mesa Road would be required to reduce the noise level to below the level of significance at the homes. An 8-foot-high sound wall would reduce the noise level to 62 dBA. Return walls perpendicular to the roadway would be required to compensate for gaps at driveway openings. Sound walls greater than 8 feet in height are generally not acceptable in the County of San Diego.

Project industrial land uses can be designed and operated in compliance with the County Noise Ordinance. Site-specific noise analyses would be required for any industrial lot adjacent to areas designated for future residential use to demonstrate that the proposed facility would operate in compliance with the County noise ordinance sound level limits.

The proposed SPS can be designed and operated in compliance with the County Noise Ordinance. Verification sound level measurements would be required for the SPS prior to final occupancy or certification for the permanent facilities of the pump station. The applicant shall submit to the satisfaction of the Director of the DPLU a letter prepared by a County-certified acoustical consultant that verifies compliance with the property line sound level limits.

The construction activities would comply with the County's hours of operation and would result in a less than significant noise impact.

6.0 REFERENCES

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7.0 CERTIFICATION

The report was prepared by the following Kimley-Horn and Associates staff:

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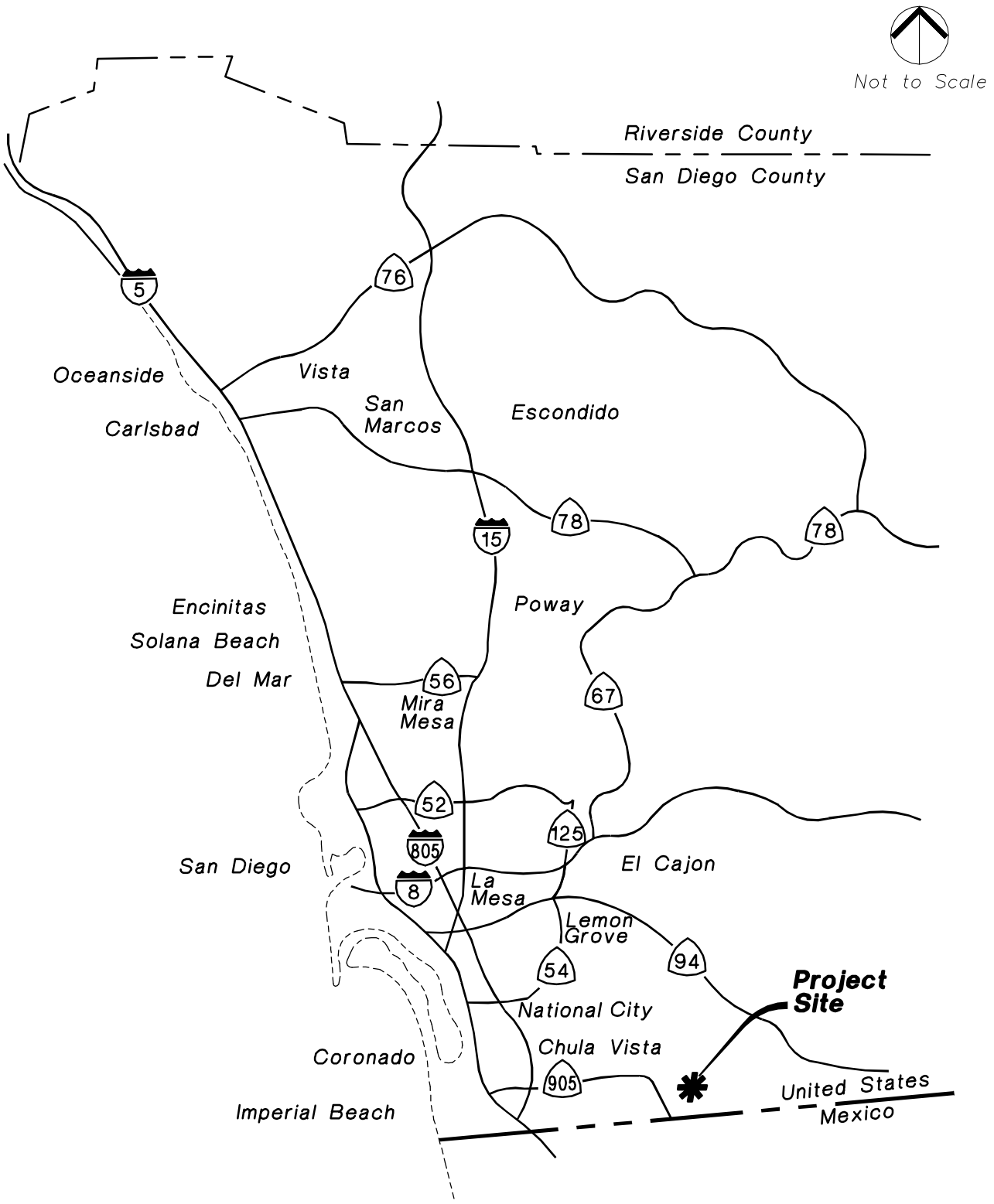

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Figure 1

Kimley-Horn and Associates, Inc.
Engineering, Planning and Environmental Consultants

Regional Location

Otay Crossings Commerce Park

Not to Scale

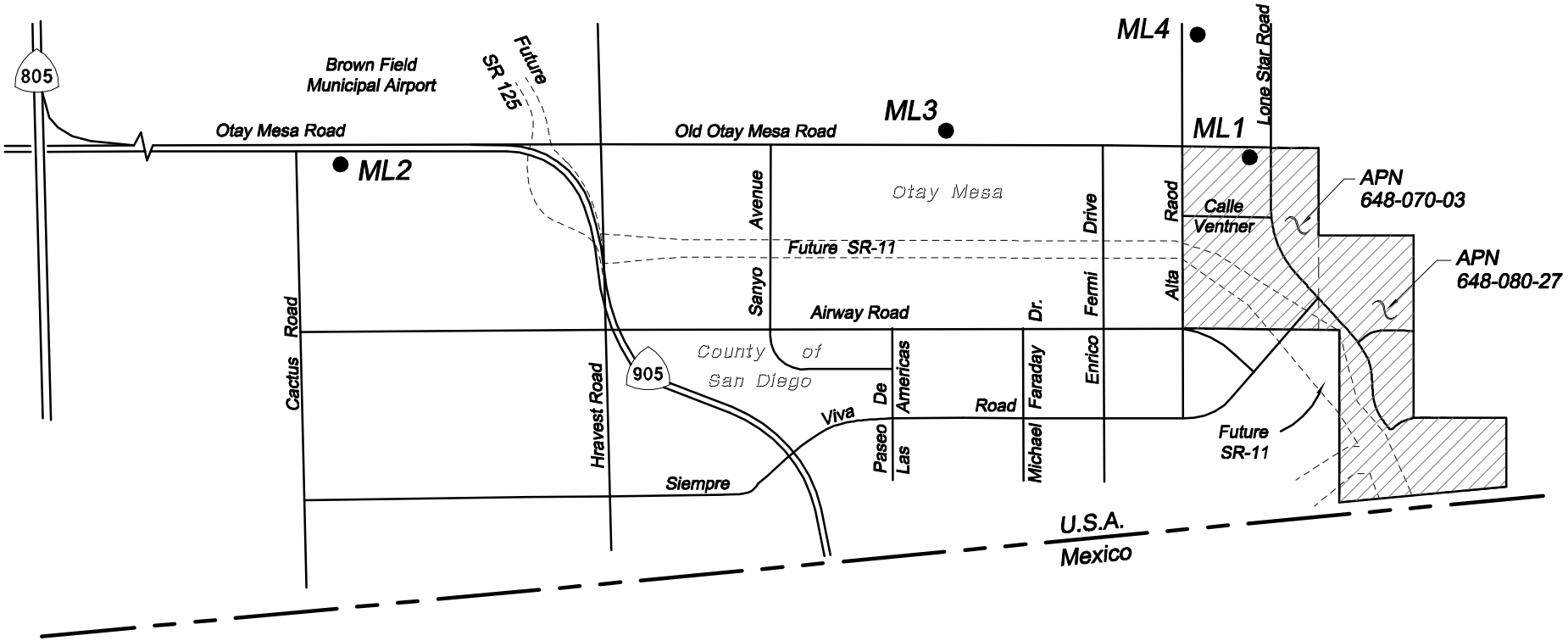

Figure 2

Kimley-Horn and Associates, Inc.
Engineering, Planning and Environmental Consultants

Project Location with Sound Level Measurement Locations

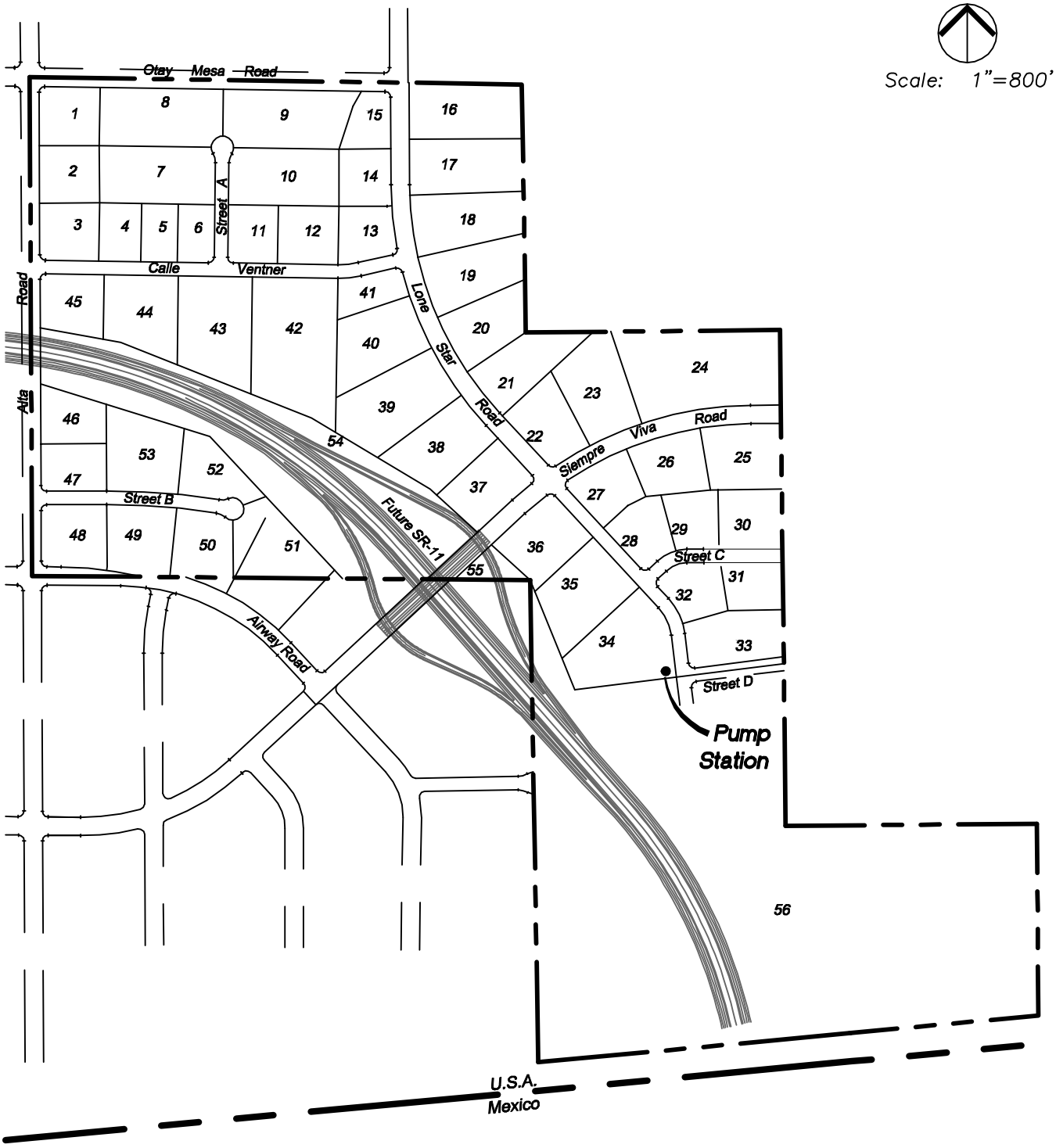

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Figure 3

Tentative Map

Not to Scale

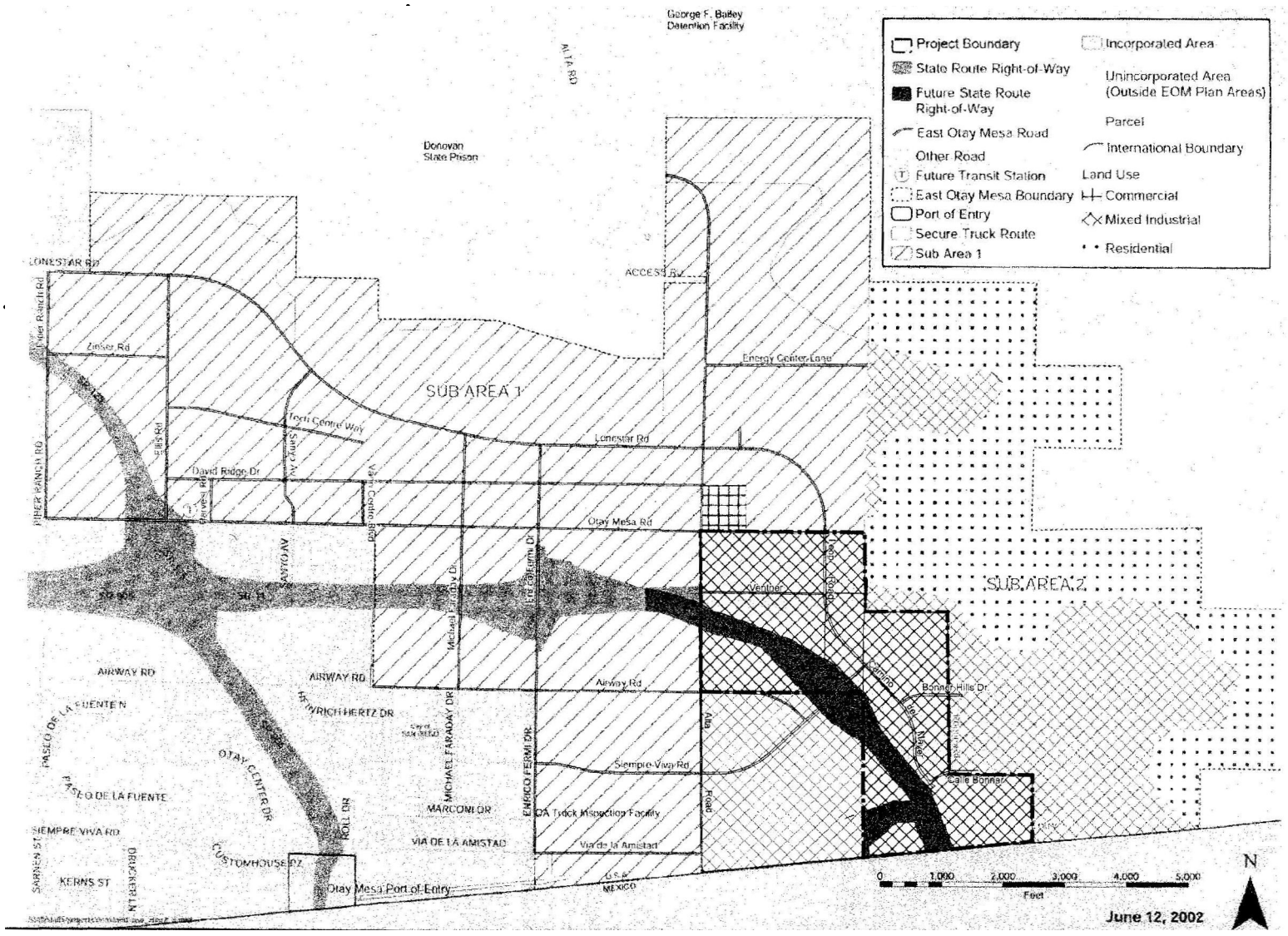

Figure 4

Kimley-Horn and Associates, Inc.
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Adjacent Designated Land Uses

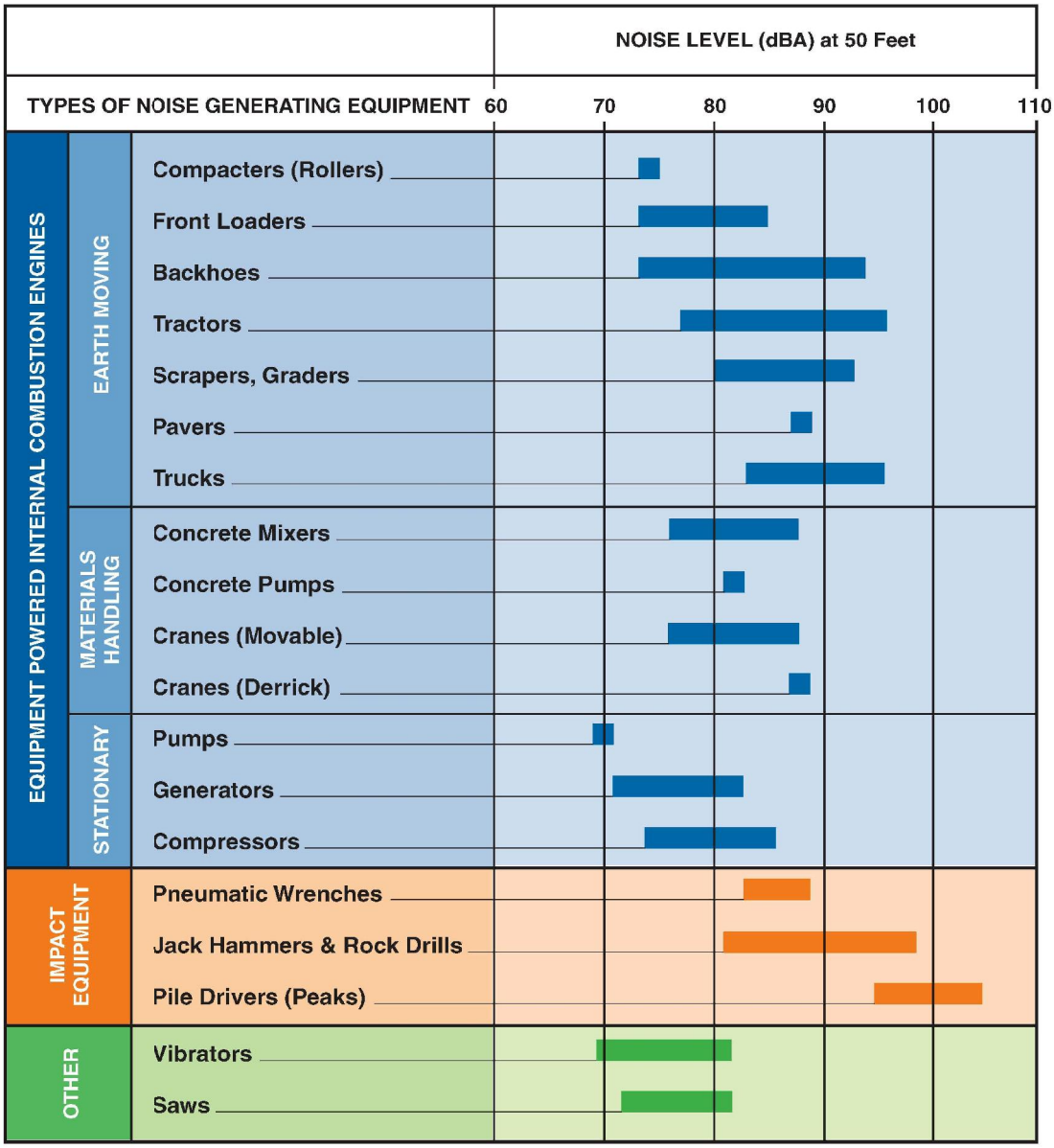

Figure 5

Kimley-Horn and Associates, Inc.
Engineering, Planning and Environmental Consultants

Construction Equipment Noise Levels

APPENDICES

APPENDIX A

CONCEPTUAL SEWER STUDY, CHAPTER 3

OTAY CROSSINGS COMMERCE PARK
CONCEPTUAL SEWER STUDY

July 2007

PBS&J Project No.: 491285.01
County of San Diego Project #SPA 04-006
TM #5405
Log No. 93-19-006Q

Prepared For:

Otay Crossings Commerce Park, LLC

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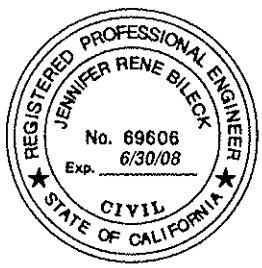

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Chapter 3
Capacity Analysis

This chapter provides a brief description of the proposed on-site and off-site sewer facilities necessary to service the Project, and describes the methodology and procedure for sizing those facilities.

3.1 Methodology

On-site gravity sewers were sized based upon the same methodology and criteria used in the 2006 East Otay Mesa Sewer Master Plan, which used a steady state analysis to size regional pipe facilities. Table 3 summarizes the criteria used in this study.

Table 3 – Design Criteria

Parameter	Design Criteria
Mannings 'n'	0.013
Minimum Dry Weather Peak Flow Velocity	2 fps (or 1% min slope)
Maximum Velocity	10 fps
Maximum d/D Ratio	0.50 for D ≤ 12"
	0.75 for D ≥ 15"
Minimum Sewer Size	8-inch diameter
Peaking Factor	6.2945 x Pop ^ (-0.1342)
EDU Factor	240 gpd/EDU

3.2 On-site Sewerage Facilities

As discussed in Section 1.3, the Project will be developed in two phases. Phase 1 and Lot 25 wastewater flows generated by the Project and neighboring developments will be conveyed by gravity to the proposed off-site sewer located at the intersection of Airway and Alta Road. Phase 2 (excluding Lot 25) wastewater flows will be conveyed by gravity to the proposed regional pump station located just south of Lot 27. Wastewater flows will then be pumped from the regional pump station to the Phase 1 Airway Road sewer.

An on-site sewer system analysis was performed to size the proposed collection system. Since the East Otay Mesa Sanitation District connects directly to City of San Diego sewers, the County required that the City's peaking criteria be used for collection system sizing. Figure 3 shows the recommended on-site wastewater facility sizes and indicates where tributary flows are assumed to enter the system. On-site gravity sewer and forcemain calculations are presented in Appendix B and C, respectively.

The Master Plan proposed a regional pump station within the Project's boundary. The regional pump station will receive wastewater flows from Phase 2 of the Project (except Lot 25), the Border Crossing, and Areas 3 and 6. It is expected that the Border Crossing will construct a private sewer pump station to

serve the facility and to convey flows to the regional sewer pump station within the Project. Table 4 summarizes the estimated regional pump station's design capacity and the recommended force main diameters under buildout and ultimate conditions for the Interim and Final Phase. The Interim Phase only includes Project flows to the pump station (Phase 2 except Lot 25). The Final Phase includes flows developed from the Project, the Proposed Border Crossing and the tributary developments to the east. The proposed pump station's design flow rate includes an allowance of 30% on top of the peak inflow to account for wet weather conditions and maintenance. Pump station design flow rate and force main sizing calculations are provided in Appendix A and C, respectively. The conceptual pump station layout is attached in Appendix D.

Table 4 – Regional Pump Station Design Capacity

Phase	Gross Area (acre)	EDU[3]		Pump Station Design Capacity (mgd)[4]		Force main Diameter[5]	
		Buildout	Ultimate	Buildout	Ultimate	Buildout	Ultimate
Interim Phase (Project - Phase 2)[1]	58.9	246	368	0.20	0.28	4"	4"
Final Phase[2]	461.9	784	1,370	1.17	1.79	8"	8"

1. Interim Project Phase 2 does not include Lot 25.
2. Final Phase includes Project Phase 2 (except Lot 25), the Border Crossing, Area 3, and Area 6.
3. EDU's based on 240 gpd/EDU per County Design Guidelines.
4. Design Capacity determined with the City's peaking factor equation and 30% additional flow.
5. Force main diameter determined based on maximum velocity of 8 fps and maximum retention time of 4 hours.

3.3 Off-site Sewerage Facilities

The EOMSMD currently does not have sewer facilities in the vicinity of the Project. Otay Crossings Commerce Park, LLC will be required to construct the off-site sewer facilities described in the 2006 Master Plan in order to connect to the City of San Diego's sewer collection system at the intersection of Via de la Amistad and Enrico Fermi Drive. The Project was included in Sewer Basin EOM-6 of the Master Plan. Several options were considered for sewering this basin based upon topography of the area. The preferred alternative identified in the Master Plan included a 15-inch and 18-inch diameter gravity sewer that would convey the flow from this project area southwesterly to the City's 27-inch sewer main at Via de la Amistad and Enrico Fermi, and is shown on Figure 3. A previous analysis of the downstream facilities within the City's sewer collection system demonstrated that the flows associated with EOM-6 were consistent with the City's Otay Mesa Trunk Sewer Master Plan. Therefore, no additional off-site sewer facilities would be required within the City's system.

3.4 Regional Sewerage Facilities

The Project is located within Basin EOM-6 and will connect to the City's Otay Mesa Trunk Sewer System. Existing and planned City facilities that will serve the Project are shown in Figure 4. The ultimate Otay Mesa Trunk Sewer System will consist of gravity sewers and force mains located in Siempre Viva and Otay Mesa roads that will connect to the San Ysidro and South Metro Interceptors west of Interstate 5. Phase I of the Otay Mesa Trunk Sewer Project has been constructed and includes a 27-inch to 30-inch diameter gravity sewer in Siempre Viva Road. Flows conveyed in this sewer are pumped on an interim basis to the existing Otay Valley Trunk Sewer system located north of the Otay Mesa Community Plan Area via a temporary pump station (SPS 23T) located at Siempre Viva and Cactus Roads.

As part of the OMTS Master Plan Update, hydraulic studies were conducted to evaluate capacity of the existing Otay Mesa sewer system and to size future phases of the system. These studies assumed a phased buildout of the East Otay Mesa Planning based on SANDAG growth projections, with an average ultimate flow to the Otay Mesa Trunk Sewer of 3.0 MGD and 1.0 MGD to the Otay Valley Trunk Sewer to the north. Future phases of the Otay Mesa Trunk Sewer system, which will extend the existing sewer westward in Otay Mesa Road, are currently under design or in construction. The alignment and preliminary sizes of the trunk sewer and associated pump stations and force mains were developed as part of the OMTS Master Plan Update. The basis of design used for the future trunk sewer phases assumed buildout of the Planning Area generated a total flow of 4.0 MGD, with 3.0 MGD to the Otay Mesa Trunk Sewer and 1.0 MGD to the Otay Valley Trunk Sewer. Based on ultimate flow projections of 3.0 MGD as discussed above, the planned regional facilities will still have adequate capacity to convey future East Otay Mesa wastewater flows. Table 5 summarizes the updated sewage projections for Basin EOM-6 for the ultimate condition.

Table 5 – Projected Ultimate Sewer Flows to the City's OMTS from Basin EOM-6

Land Use		Gross Area (ac)	Ultimate Unit Generation Rate (gpd/ac)	Total Sewer Flow (gpd)	EDU
Development	Type				
Otay Crossings[1]	Mixed Industrial	237.55	1,500	317,955	1,325
Border Crossing	Special	73.91	1,500	110,865	462
Area 1	Business Park	18.85	1,500	28,275	118
	Light Industrial	19.80	1,500	29,700	124
Area 2	Business Park	13.54	1,500	20,310	85
	Heavy Industrial	25.63	1,500	38,445	160
	Mixed Industrial	55.50	1,500	83,250	347
Area 3	Mixed Industrial	83.40	1,500	125,100	521
Area 4	Mixed Industrial	161.80	1,500	242,700	1,011
Area 5	Light Industrial	79.10	1,500	118,650	494
	Mixed Industrial	245.65	1,500	368,475	1,535
EOM SPA I	Light Industrial[2]	84.50	1,500	126,750	528
EOM SPA II	Residential[3]	340.07	0	0	0
Total to for Basin EOM-6		**1,439.3**		**1,610,475**	**6,710**
Master Plan Projections		**1,439.3**		**1,648,872**	**6,870**

1) Total includes the 25.58-acres of right-of-way. Area is not included in flow calculations.
2) EOM SPA-I area is not tributary to the Project's off-site sewer collection system, but is within the EOM-6 Drainage Basin.
3) Residential for the EOM area is considered Rural Residential (20 DU/ac) and is assumed to be on septic systems.

PBS&J

An employee-owned company

July 31, 2007

Mr. Judd Halenza
Otay Crossings Commerce Park
500 Stevens Avenue, Suite 208
Solana Beach, CA 92075

SUBJECT: OTAY CROSSINGS COMMERCE PARK
CONCEPTUAL SEWER PUMP STATION LAYOUT

Dear Mr. Halenza,

PBS&J has revised the conceptual level layout of the proposed sewer pump station based on County comments and land use data changes from the 2006 East Otay Mesa Sewer Master Plan (Master Plan). This pump station will collect flows from the second phase of the Otay Crossing Commerce Park (Project), adjoining property owners and the planned third border crossing. The purpose of developing the conceptual layout of the sewer facility is to provide a basis for analyzing the potential environmental impacts associated with preparing the EIR for the project.

Background

The proposed Otay Crossings Commerce Park Sewer Pump Station (OCCP SPS) will provide sewer service to the second phase of the Otay Crossings Commerce Park (Project) development with the exception of Lot 25, the proposed Border Crossing and proposed developments from the east. Figure 1 graphically presents the Project location and boundaries for the OCCP. Sewer service for the initial phase of the OCCP project will be provided by on-site gravity mains that connect to a gravity trunk sewer to be located in Airway Road that will convey collected flows to the City of San Diego sewer system. No sewer flows from the first phase of the Project are planned to be diverted to the OCCP sewer pump station.

The conceptual layout of the proposed OCCP sewer pump station is intended to illustrate the anticipated configuration of the pump station and identify the key equipment that would be expected in this type of facility for inclusion in the Project EIR. The County of San Diego (County) is the lead agency for the Project EIR and will own and operate the proposed pump station after the facility is constructed.

Location

As shown on Figure 2, the preferred site location of the OCCP SPS is proposed to be located on the west side of Camino Del Mayer on the north east corner of Lot 31. This site was selected based on the current preliminary alignment of the SR-11 freeway which is proposed to encroach on the OCCP property and potentially leave a small irregularly shaped parcel wedged in between the SR-11 ROW and the planned alignment of Camino Del Mayer. This site location is essentially infeasible to build any type of industrial or office building type facility and would most likely be left vacant.

However the SR-11 alignment is very preliminary and cannot be confirmed until a feasibility study and conceptual layout of the proposed third international border crossing is performed. The alignment of the border crossing traffic ingress and egress could easily affect the SR-11 alignment and location of the planned OCCP sewer pump station. Two alternative site locations are shown on Figure 2 which is feasible from a technical and operational perspective in the event the preferred site is no longer viable.

Proposed Pump Station Capacity

The design of the OCCP SPS is planned to be constructed in two phases. The pump station structure will initially be constructed for ultimate flows but only equipped to provide sewer service for the OCCP Project. The facility will ultimately receive wastewater flows from the second phase of the Project except Lot 25, the Border Crossing, and 329-acres of mixed industrial land use located east of the Project. It is expected that the Border Crossing will construct its own sewer pump station to serve the facility and to convey flows to the OCCP SPS.

Table 1 summarizes the estimated OCCP SPS design capacity and the recommended force main diameters under build-out and ultimate conditions for the Interim and Final Phase. The Interim Phase only includes Project flows to the pump station (Phase 2). The Final Phase includes flows developed from the Project, the Proposed Border Crossing and the tributary development to the east. The proposed pump station's design flow rate includes an allowance of 30% on top of the peak inflow to account for wet weather conditions and maintenance. Pump station design flow rate and force main sizing calculations are provided in Appendix A and C of the Otay Crossings Commerce Park Conceptual Sewer Study, December 2006, respectively.

Table 1
Pump Station Design Capacity

Phase	Gross Area (acre)	EDU[3]		Pump Station Design Capacity (mgd)[4]		Force main Diameter[5]	
		Buildout	Ultimate	Buildout	Ultimate	Buildout	Ultimate
Interim Phase (Project - Phase 2)[1]	58.9	246	368	0.20	0.28	4"	4"
Final Phase[2]	461.9	784	1,370	1.17	1.79	8"	8"

1. Interim Project Phase 2 does not include Lot 25.
2. Final Phase includes Project Phase 2 (except Lot 25), the Border Crossing, and the tributary areas to the east.
3. EDU's based on 240 gpd/EDU per County Design Guidelines.
4. Design Capacity determined with the City's peaking factor equation and 30% additional flow.
5. Force main diameter determined based on maximum velocity of 8 fps and maximum retention time of 4 hours.

Preliminary Site and Building Layout

The proposed preliminary OCCP SPS site plan is depicted on Figure 3. The OCCP SPS will be located at a proposed pad elevation of approximately 490 feet. Access to the pump station is planned to be provided by two concrete driveways for ingress and egress from the site. This is provided for adequate turning radius around the building for large trucks and other equipment. A stormwater detention basin is shown on the site plan to collect and store run-off from the pump station site only. This could be eliminated if combined with the drainage facilities planned for the overall Project. The Site perimeter is planned to be fenced with gates at each driveway for security purposes. In-coming electrical facilities including the

planned transformer for the facility is planned to be located adjacent to the stand-by generator and pump station building away from the wet well.

The pump station is conceptually laid out with independent wet and dry wells with the pump and motor rooms on two floors located below grade and the electrical and control room located on the third floor located above grade. This 3-story facility is illustrated in the pump station section view shown on Figure 4. As shown, the dry well is adjacent to the wet well which has been sized to store both emergency and operational storage. Emergency storage is sized to hold a minimum of 6 hours of peak wet weather inflow under the ultimate condition for the tributary Phase 2 Project (excluding Lot 25) and the Border Crossing flows (0.12 MG). The County may require additional emergency storage for future tributary developments, and construction would be the responsibility of those properties. Space will be provided on the proposed pump station site to accommodate additional storage for the ultimate buildout condition of 0.30 MG, for a total of 0.42 MG. This approach is consistent with discussions with County Engineering staff.

The above grade pump building structure will have an approximate overall dimension of 26 feet by 18 feet and constructed with tilt-up concrete walls and open wood framed gable roof with concrete tiles. The height of the building will be approximately 20-feet above grade. The below grade concrete structure (approximately 25- to 35-feet below grade) will include the motor room, pump room and wet well. The pump station building's architectural style and materials will blend with the surrounding industrial/ commercial business park.

A conceptual layout of the first floor which houses the electrical switchgear, ventilation equipment, and pump station control equipment is illustrated in Figure 5. The motor room which houses the pump motors is located on the intermediate floor. The elevation of the motor floor is determined based on the wet well influent pipe elevation to protect the motors from being flooded in the event a leak in the wall seals or pipe break in the lower pump room occurs flooding the lower level. The motor room and room conceptual floor plans are illustrated in Figures 6 and 7 respectively.

Primary Pump Station Equipment

A. Vertical Non-Clog Sewage Pumps

A set of three (3) 15-hp constant speed 200 gpm pumps will be installed in the Interim Phase. The three (3) 200 gpm pumps will accommodate lower flows anticipated at the pump station during the Interim Phase. In the Final Phase, the three (3) 15-hp motors will be replaced with three (3) 25-hp motors fitted to the existing pumps in order to provide three (3) 25-hp constant speed 660 gpm pumps which will provide capacity for the ultimate condition. All pumps will be vertical non-clog sewage pumps with cast iron construction with hardened wear rings and mechanical seals. Identified in Table 2 are the pumps that were preliminarily selected. Approximately 1,830 feet of one (1) 4-inch diameter and one (1) 8-inch diameter force mains will need to be installed to convey pumped flows from the OCCP SPS to the proposed gravity sewer located on Loop Road. The 4-inch and 8-inch diameter force main will be used for single pump and dual pump operation in the Interim phase, respectively. These two lines can facilitate flows from the ultimate phase unless additional redundancy if required. In this case, a second 8-inch diameter force main will be added. The 8-inch diameter force main will be used for single pump and dual pump operation in the Final phase.

Table 2
Pump Selections

Manufacturer	No. of Pumps	Horsepower (hp)	Flow (gpm)	TDH (feet)
Fairbanks Morse	3	15	200	101
Fairbanks Morse	3	25	660	86

B. .Pump Station Piping

1. Discharge Header — Dual 6-inches
2. 15 hp Pump Suction Piping — 6-inches
3. 25 hp Pump Suction Piping — 8-inches
4. Buried piping will be epoxy-lined and coated ductile iron pipe. Exposed piping will be epoxy-lined and epoxy-painted ductile iron pipe.

C. Force Main

One 4-inch and one 8-inch force mains are recommended. The mains will terminate at the start of the gravity sewer in Loop Road. The 4-inch pipeline is planned for the Initial Phase and the 8-inch force main is planned to be added for the Final Phase, unless the County requires full redundancy for each phase which would necessitate the construction of a 4-inch and an 8-inch pipeline with the first phase and require adding a second 8-inch force main with the final phase.

D. Emergency Generator

One emergency diesel generator will be provided and equipped with an automatic transfer switch (ATS). The emergency generator will be sufficiently sized to start all three 25 hp pumps, station lighting, programmable logic controller, instrumentation, and telemetry. The ATS will automatically transfer the station to back up power in the event of a commercial power failure. The emergency generators will be located behind the pump station in an acoustical weatherproof enclosures provided by the generator manufacturer.

E. Instrumentation and Controls

Electric transformer, switchgear, motor control center (MCC), and SCADA telemetry equipment will be provided.

F. Ventilation

Ventilation, consisting of exhaust fans, shall be provided for the pump station building. Fans will be provided in the pump room, motor control center, and motor room.

G. Acoustics

Noise attenuation devices, including acoustic louvers and doors (necessity, size and layout to be determined) will be provided during the final design. Noise emanating from the pump station will meet the County's noise ordinance requirements.

H. Emergency Storage

Emergency storage is sized to hold a minimum of 6 hours of peak wet weather inflow under the ultimate buildout condition, which includes the tributary Phase 2 and Border Crossing flows (0.12 MG). The County may require additional emergency storage for future tributary developments, and construction would be the responsibility of those properties. Space will be provided on the proposed pump station site to accommodate additional storage for the ultimate buildout condition of 0.30 MG, for a total of 0.42 MG. This approach is consistent with discussions with County Engineering staff.

The approximate size and conceptual layout of the proposed pump station was developed with the approach to be conservative since its intended use is for the basis of the EIR impact analysis. It is expected that the facility could be modified, consolidated and simplified depending on acceptance from the County for such modifications.

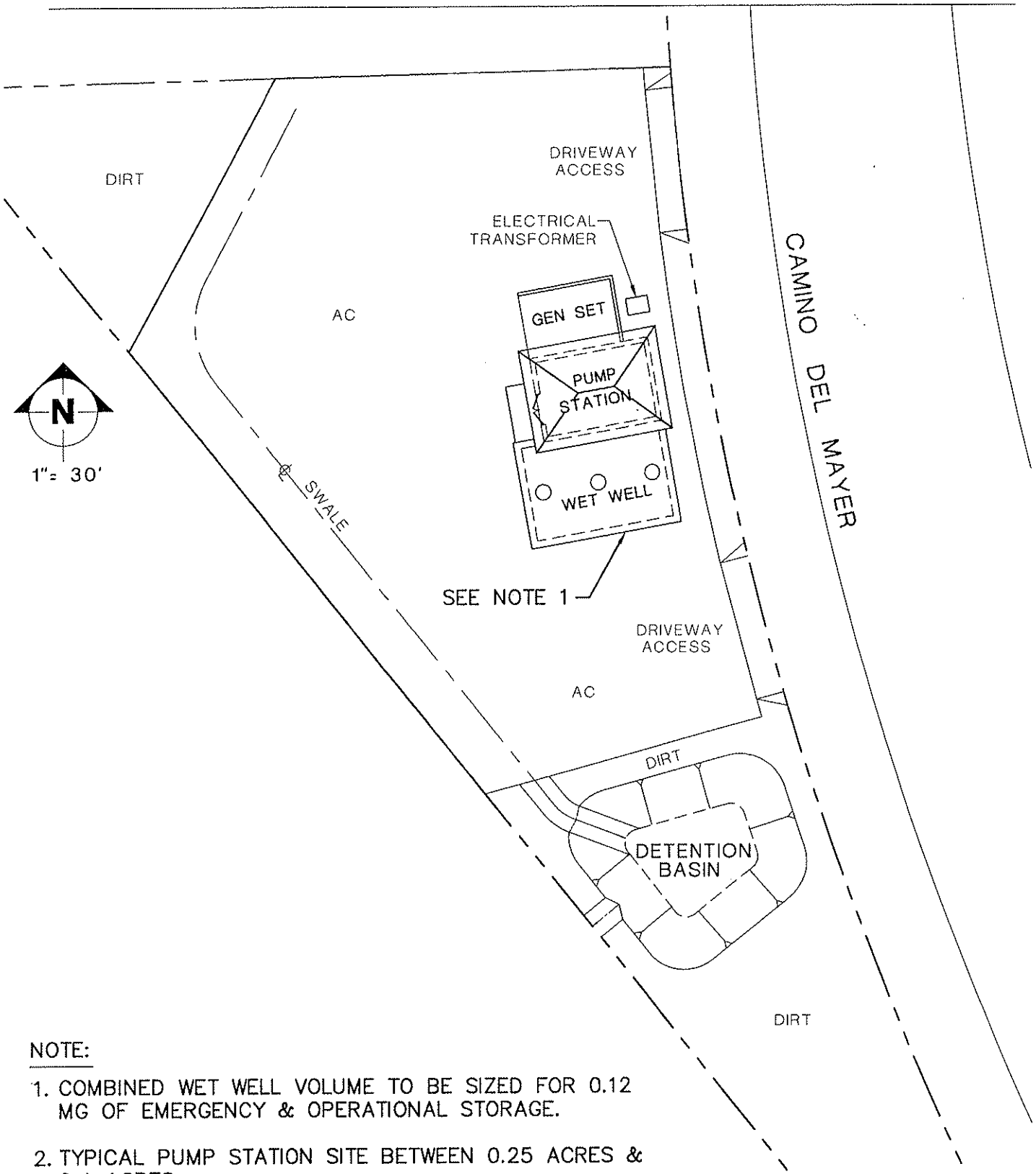
If you have any questions or need additional information for the EIR document, please feel free to call me.

Sincerely,

Jennifer R. Bileck, P.E., CFM
Senior Engineer

Attachments: Figure 1 – Project Location Map
Figure 2 – Project Sewer System Layout
Figure 3 – Typical Sewer Pump Station Site Plan
Figure 4 – Proposed Sewer Pump Station Building Section
Figure 5 – Proposed Sewer Pump Station Equipment Control Room
Figure 6 – Proposed Sewer Pump Station Motor Room
Figure 7 – Proposed Sewer Pump Station Pump Room
Emergency Storage Calculations

CC: Mark B. Elliott – PBS&J
Project File - 491115



NOTE:

1. COMBINED WET WELL VOLUME TO BE SIZED FOR 0.12 MG OF EMERGENCY & OPERATIONAL STORAGE.
2. TYPICAL PUMP STATION SITE BETWEEN 0.25 ACRES & 0.4 ACRES.
3. SPACE PROVIDED ONSITE FOR ADDITIONAL 0.30 MG OF FUTURE EMERGENCY STORAGE TO BE CONSTRUCTED BY OTHERS.

TYPICAL SEWER PUMP STATION SITE PLAN

FIGURE 3

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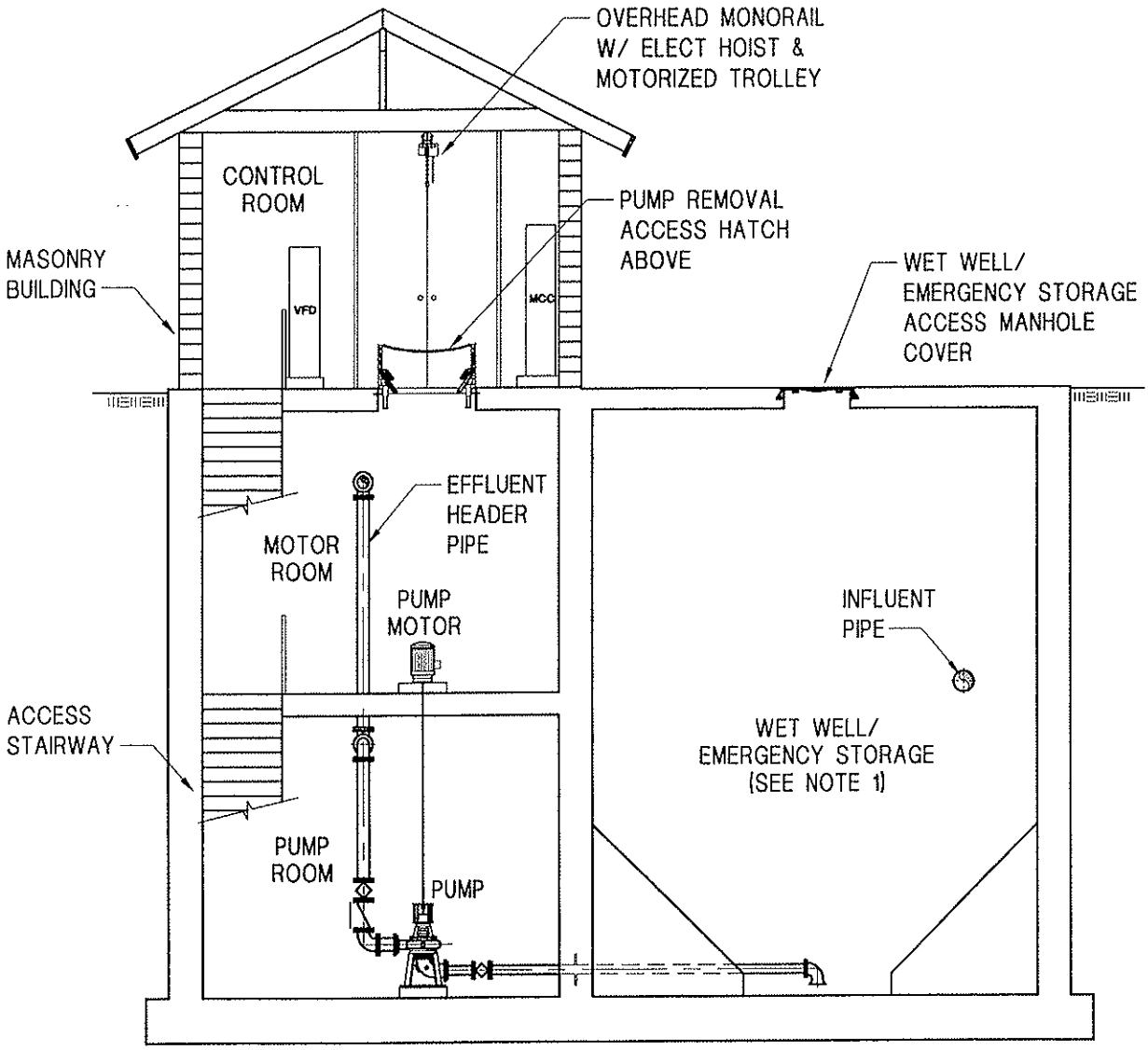

1/8"=1'-0"

NOTE:
1. COMBINED WET WELL VOLUME TO BE SIZED FOR 0.12 MG OF EMERGENCY & OPERATIONAL STORAGE.

PROPOSED SEWER PUMP STATION BUILDING SECTION

FIGURE 4

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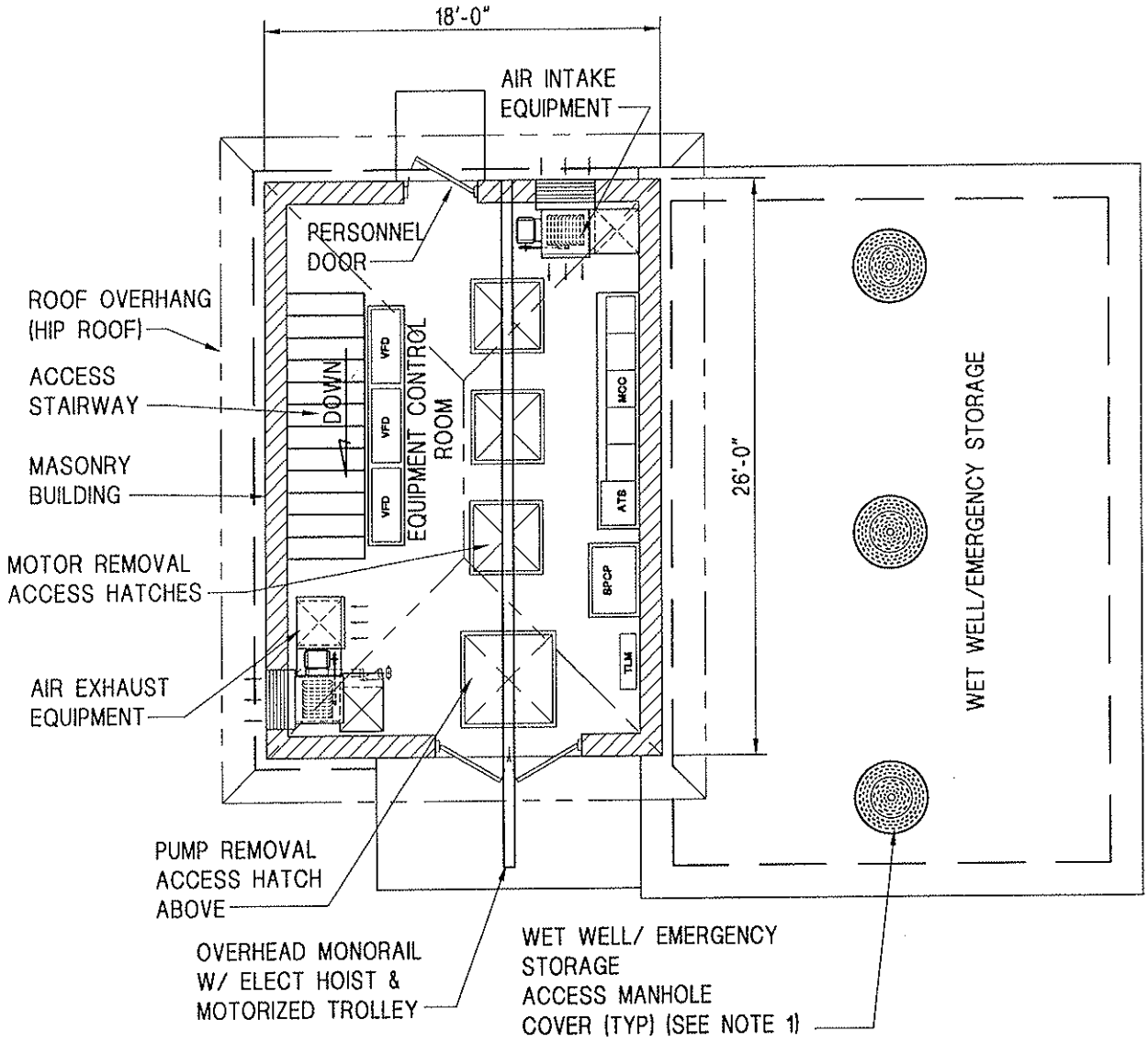

1/8"=1'-0"

NOTE:
1. COMBINED WET WELL VOLUME TO BE SIZED FOR 0.12 MG OF EMERGENCY & OPERATIONAL STORAGE.

PROPOSED SEWER PUMP STATION EQUIPMENT CONTROL ROOM

FIGURE 5

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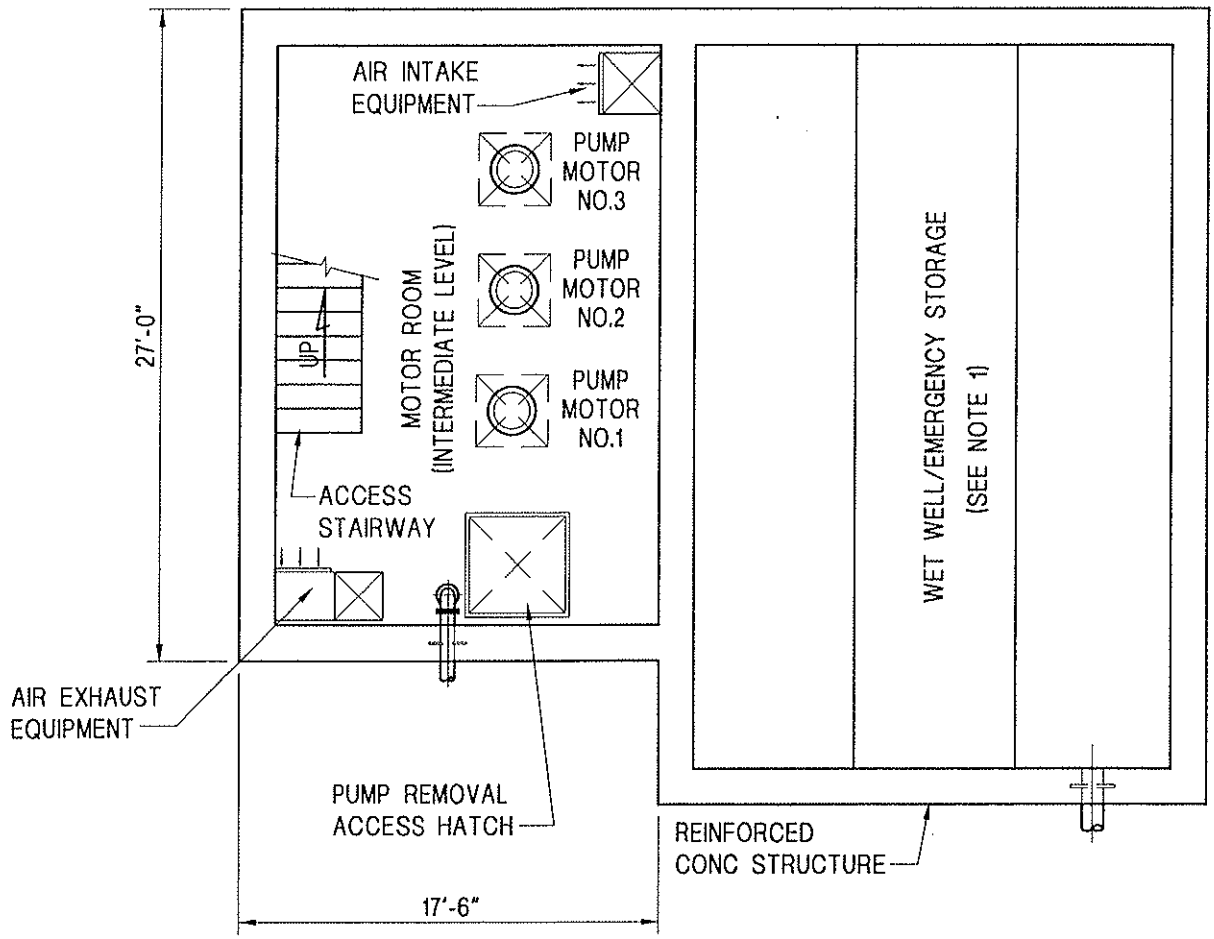

1/8"=1'-0"

NOTE:
1. COMBINED WET WELL VOLUME TO BE SIZED FOR 0.12 MG OF EMERGENCY & OPERATIONAL STORAGE.

PROPOSED SEWER PUMP STATION MOTOR ROOM (INTERMEDIATE LEVEL)

FIGURE 6

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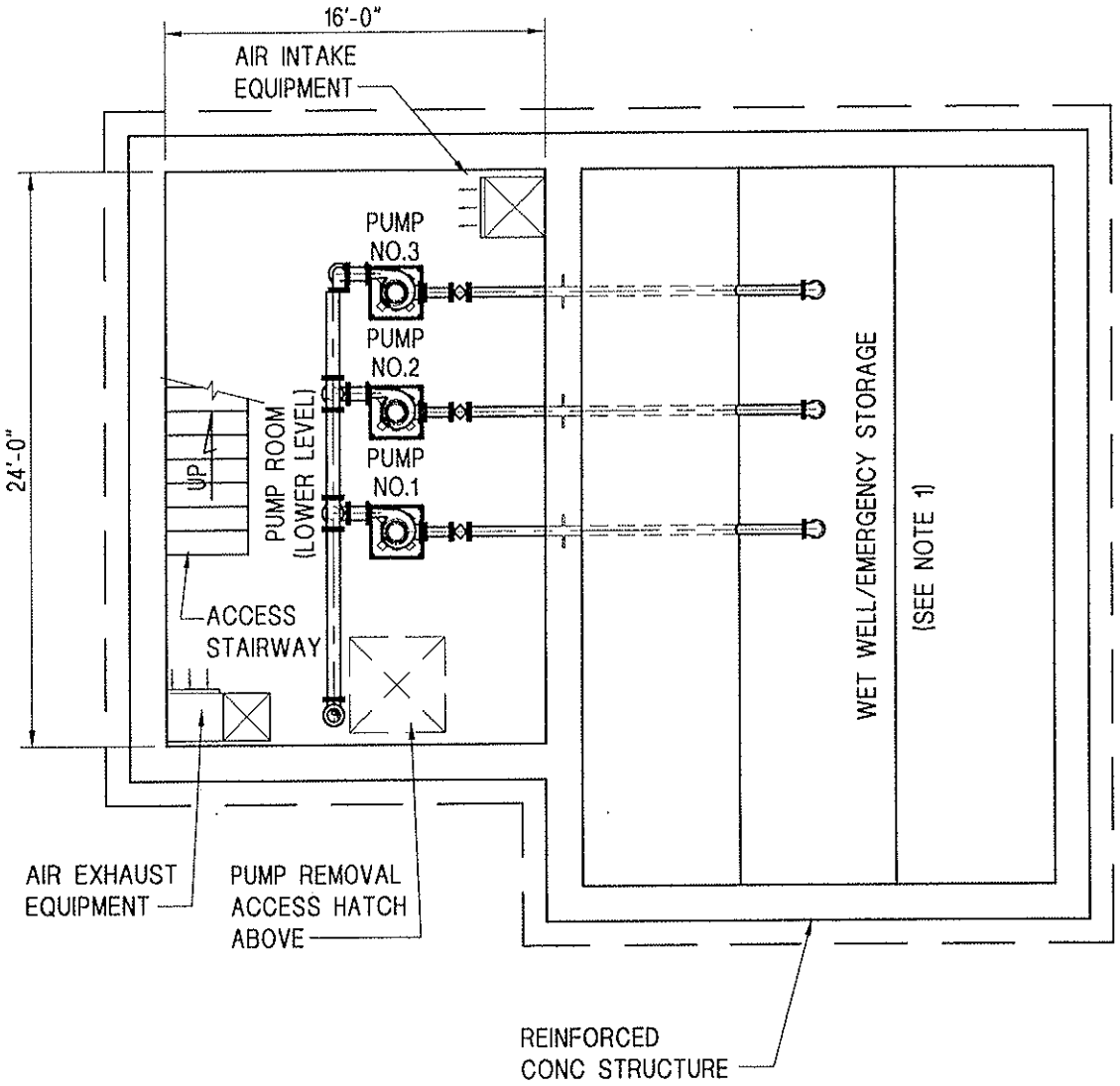

1/8"=1'-0"

PROPOSED SEWER PUMP STATION PUMP ROOM (LOWER LEVEL)

FIGURE 7

NOTE:
1. COMBINED WET WELL VOLUME TO BE SIZED FOR 0.12 MG OF EMERGENCY & OPERATIONAL STORAGE.

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PBS&J
9275 Sky Park Court, Suite 200
San Diego, CA 92123

PROJECT OCCP - Emergency Storage
CLIENT
CALCULATED BY J. Bileck DATE 7.30.07
CHECKED BY MIE DATE 8/1/07
PROJECT NO 491285 SHT 1 OF 2

* Per revised Sewer Study (July 2007): Ultimate Condition

Peak Phase 2 (except Lot 25) Project flow: PWWF = 217,225 gpd

Peak Border Crossing flow: PWWF = 264,325 gpd

* Add peaks b/c the Border Crossing is a pumped flow:

$217,225 \text{ gpd} + 264,325 = 481,550 \text{ gpd}$

$ES_{6,ult}$ = 6 hrs of emergency storage @ ultimate flows.

$= \left(\frac{481,550 \text{ gpd}}{24 \text{ hrs/day}}\right) \times 6 \text{ hrs} = 120,388 \text{ gal}$ of storage required

$$\boxed{120,388 \text{ gal} = 16,095 \text{ cf}}$$

* If ultimate flows are not reached: Buildout Condition

Peak Phase 2 (except Lot 25) flow: PWWF = 152,915 gpd
Peak Border Crossing flow: PWWF = 116,106 gpd

Total = 269,021 gpd

$ES_{?,BO} = \left(\frac{269,021 \text{ gpd}}{24 \text{ hrs/day}}\right) \times R_{TIME} = 120,388 \text{ gal}$

$= 10.7 \text{ hrs}$

* $ES_{6,ULT}$ will provide 10.7 hrs of storage in the buildout condition.

PBS&J
9275 Sky Park Court, Suite 200
San Diego, CA 92123

PROJECT OCCP- Emergency Storage
CLIENT
CALCULATED BY J.Bileck DATE
CHECKED BY MZ DATE 3/1/07
PROJECT NO SHT 2 OF 2

* Ultimate buildout of the entire tributary area would require additional storage be built. This would be the responsibility of the developing property. Space will be provided on the SPS site.

Tributary Flows to SPS:

Project Phase 2 (no Lot 25): ADWF = 88,380 gpd
Border Crossing: ADWF = 110,865 gpd
Area 3: ADWF = 125,100 gpd
Area 6: ADWF = 368,475 gpd

Total = 692,820 gpd - ADWF

$$\text{Population} = \text{ADWF} / 80\,\text{gpd/p} = 8{,}660 \text{ ppl}$$

$$pf = 6.2945 \times pop^{-0.1342} = 6.2945\,(8{,}660\,\text{ppl})^{-0.1342}$$

$$pf = 1.864$$

$$PDWF = ADWF \times pf = 692{,}820\,\text{gpd} \times 1.864$$

$$PDWF = 1.29\,\text{MGD}$$

$$PWWF = PDWF \times 1.3 = 1.29\,\text{MGD} \times 1.3 = 1.68\,\text{MGD}$$

$$ES_{6,ULT-Trib} = \left(\frac{1.68\,\text{MGD}}{24\,\text{hrs/day}}\right) \times 6\,\text{hrs} = 0.42\,\text{MG}$$

$$ES_{6,ULT} = 120{,}388\,\text{gal} \quad (0.12\,\text{MG})$$

* Future development would be required to build:
0.42 - 0.12 = **0.30 MG**

OTAY CROSSINGS COMMERCE PARK

APPENDIX C

ACOUSTICAL ASSESSMENT REPORT

to the

DRAFT SUPPLEMENTAL
ENVIRONMENTAL IMPACT REPORT

EIR 93-19-006Q, TM 5405RPL[7]
SCH No. 2006041039

Lead Agency:

County of San Diego
Department of Planning and Land Use
5201 Ruffin Road, Suite B
San Diego, California 92123
Contact: Robert Hingtgen
(858) 694-3712

MAY 2010

NOISE ANALYSIS REPORT

OTAY CROSSINGS COMMERCE PARK

TM5405RPL7
ER 93-19-006Q

East Otay Mesa, CA

January 8, 2007
Revised April 22, 2010

Prepared for:
Kearny PCCP Otay 311, LLC
500 Stevens Avenue, Suite 208
Solana Beach, CA 92075

Prepared by:
Kimley-Horn and Associates, Inc.
401 B Street, Suite 600
San Diego, CA 92101

095219010

Tables

Figures

Appendices

EXECUTIVE SUMMARY

This report contains an assessment of noise associated with the Otay Crossings Commerce Park project located in Subarea 2 of the East Otay Mesa Specific Plan (EOMSP) area in the County of San Diego. The proposed project would subdivide the property into 56 industrial lots and three open space lots. The construction activities would comply with the County's hours of operation and would result in a less than significant noise impact. The project traffic noise would significantly increase the ambient noise level at three off-site existing homes along Otay Mesa Road. Based on the results of preliminary noise modeling, a noise barrier 11 feet in height along the edge of pavement of Old Otay Mesa Road would be required to reduce the cumulative noise level to below the level of significance at the usable outdoor area of the homes. Sound walls of this height are generally not acceptable in the County of San Diego. An 8-foot-high barrier would reduce the level to 63 dBA. Return walls perpendicular to the roadway would be required to compensate for gaps at driveway openings; the necessary length of the returns would be equal to the widths of the gaps to minimize flanking noise. The potential for a significant and unmitigable noise impact at these residences was previously recognized in the adopted EOMSP Final Environmental Impact Report (FEIR) (Ogden Environmental 1994).

Site-specific noise analyses would be required for any industrial lot adjacent to areas designated for residential use to demonstrate that the proposed facility would operate in compliance with the County noise ordinance sound level limits. The analysis would be conducted at some point in the future when site plan applications are submitted for industrial lots. A Noise Protection Easement would be dedicated on Lots 16, 17, and 18 to ensure compliance with property line noise limits.

A sewer pump station (SPS) is proposed to be located at the site. There is no preliminary design information for the SPS; however, the capacity and a preliminary layout were available from the design engineers. Based on input from the design engineers, the analysis assumed that the SPS design would be similar to City of San Diego SPS No. 88, which houses all equipment except the emergency generator inside the building. The emergency generator would not significantly impact any noise sensitive land use. Although development of the SPS would be phased, the initial building would be designed to provide noise attenuation for the ultimate facility.

Verification sound level measurements would be required for the SPS prior to final occupancy or certification for the permanent facilities of the pump station. The applicant shall submit to the satisfaction of the Director of the Department of Planning and Land Use (DPLU) a letter prepared by a County-certified acoustical consultant that verifies compliance with the property line sound level limits.

1.0 INTRODUCTION

This report assesses the potential noise impacts from the proposed Otay Crossings Commerce Park project. The following includes the findings of the field investigation and an impact assessment.

1.1 PROJECT LOCATION AND DESCRIPTION

The proposed Otay Crossings Commerce Park project is located in the unincorporated community of East Otay Mesa within the Otay Subregional Planning Area in the southernmost portion of San Diego County, approximately two miles east of the future State Route (SR)-125/SR-905 interchange. The project site is located within the southern section of Subarea 2 of the EOMSP area, southeast of the intersection of Old Otay Mesa and Alta Roads. The site extends southeast from the intersection to the United States (U.S.)-Mexico International Border. Refer to Figure 1 for a Regional Location Map.

The northwest portion of the irregularly shaped project site is bordered on the north by Otay Mesa Road, on the west by Alta Road and on the south by a currently unpaved extension of Airway Road. The southern portion of the project site extends as far south as the U.S.-Mexico International Border, and approximately one mile east of Alta Road. Refer to Figure 2 for a Project Vicinity Map.

The proposed project is a Tentative Map (TM) and Preliminary Grading Plan (Tract 5405) for 311.5 acres of land designated for Mixed Industrial, Rural Residential and State Route (i.e., SR-11). The future route for SR-11 traverses the site and the future U.S. Port-of-Entry is situated on the south portion of the site. The TM would subdivide the property into 56 industrial lots and three open space lots ranging in size from 0.90 net acres to 59.1 net acres. The 56 industrial lots would be divided and recorded in five separate units. Approximately 285.5 acres would be placed in lots, while 20.4 acres would contain on-site public streets. The right-of-way for SR-11 has been mapped on approximately 3 of the 59 lots. The portions of those lots that are encumbered by the potential Caltrans right-of-way are shown on the TM as "approximate location of future SR-11 right-of-way." The encumbered area is a reservation of future right-of-way for SR-11 made pursuant to Government Code section 66480.

Grading for the proposed project would be completed in two phases. Grading for Phase 1 comprises three final maps (units 1, 2 and 3) and Grading Phase 2 comprises two final maps (units 4 and 5). The developer proposes to construct the project in the following timeline: construct Unit 1 by 2011, construct Unit 2 by 2012, construct Unit 3 by 2013, and construct Units 4 and 5 by 2014.

The project site is currently zoned S88 (Specific Planning Area) under the County Zoning Ordinance. The S88 zoning is intended to accommodate any land uses designated in the applicable Specific Plan. In the case of the project site, this is primarily the Mixed Industrial land use designation, with a small area in the northeastern corner of the site designated Rural Residential, as described above. The project would designate all lots for industrial use.

1.2 ENVIRONMENTAL NOISE BACKGROUND

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 and this relation holds true for sounds of any loudness.

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.

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 County of San Diego to evaluate land-use compatibility with regard to noise.

Sound levels of typical noise sources and environments are provided in Table 1.

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

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)	Higher Limit of Urban Ambient Sound	80	2 times as loud
Passenger Car, 65 mph (25 ft) Living Room Stereo (15 ft) Vacuum Cleaner (10 ft)		70	Reference Loudness **Moderately Loud**
Normal Conversation (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**
		10	1/64 as loud
		0	1/128 as loud **Threshold of Hearing**

Source: Compiled by Kimley-Horn and Associates, Inc.

1.3 APPLICABLE NOISE REGULATIONS AND STANDARDS

The following excerpts are applicable to construction and operation of the proposed project:

County of San Diego Noise Ordinance

Section 36.404: General Sound Level Limits states:

(a) Except as provided in section 36.409 of this chapter, it shall be unlawful for any person to cause or allow the creation of any noise, which exceeds the one-hour average sound level limits in Table 36.404, when the one-hour average sound level is measured at the property line of the property on which the noise is produced or at any location on a property that is receiving the noise.

Table 36.404
Sound Level Limits in Decibels (dBA)

ZONE	TIME	ONE-HOUR AVERAGE SOUND LEVEL LIMITS (dBA)
(1) RS, RD, RR, RMH, A70, A72, S80, S81, S87, S90, S92 and RV and RU with a density of less than 11 dwelling units per acre.	7 a.m. to 10 p.m. 10 p.m. to 7 a.m.	50 45
(2) RRO, RC, RM, S86, V5 and RV and RU with a density of 11 or more dwelling units per acre.	7 a.m. to 10 p.m. 10 p.m. to 7 a.m.	55 50
(3) S94, V4 and all commercial zones.	7 a.m. to 10 p.m. 10 p.m. to 7 a.m.	60 55
(4) V1, V2 V1, V2 V1 V2 V3	7 a.m. to 7 p.m. 7 p.m. to 10 p.m. 10 p.m. to 7 a.m. 10 p.m. to 7 a.m. 7 a.m. to 10 p.m. 10 p.m. to 7 a.m.	60 55 55 50 70 65
M50, M52 and M54.	Anytime	70
S82, M56 and M58.	Anytime	75
S88 (see subsection (c) below)		

(b) Where a noise study has been conducted and the noise mitigation measures recommended by that study have been made conditions of approval of a Major Use Permit, which authorizes the noise-generating use or activity and the decision making body approving the Major Use Permit determined that those noise mitigation measures reduce potential impacts to a level below significance, implementation and compliance with those noise mitigation measures shall constitute compliance with subsection (a) above.

(c) S88 zones are Specific Planning Areas which allow different uses. The sound level limits in Table 36.404 above that apply in an S88 zone depend on the use being made of the property. The limits in Table 36.404, subsection (1) apply to property with a residential, agricultural or civic use. The limits in subsection (3) apply to property with a commercial use. The limits in subsection (5) apply to property with an industrial use that would only be allowed in an M50, M52, or M54 zone. The limits in subsection (6) apply to all property with an extractive use or a use that would only be allowed in an M56 or M58 zone.

(d) If the measured ambient noise level exceeds the applicable limit in Table 36.404, the allowable one-hour average sound level shall be the one-hour average ambient noise level, plus three decibels. The ambient noise level shall be measured when the alleged noise violation source is not operating.

(e) The sound level limit at a location on a boundary between two zones is the arithmetic mean of the respective limits for the two zones. The one-hour average sound level limit applicable to extractive industries, however, including but not limited to borrow pits and mines, shall be 75 decibels at the property line regardless of the zone in which the extractive industry is located.

(f) A fixed-location public utility distribution or transmission facility located on or adjacent to a property line shall be subject to the sound level limits of this section, measured at or beyond six feet from the boundary of the easement upon which the facility is located.

Section 36.407: Refuse Vehicles & Parking Lot Sweepers states:

No person shall operate or allow to be operated, a refuse compacting, processing, or collection vehicle or a parking lot sweeper between the hours of 10 p.m. to 6 a.m., in or within 100 feet of a residential zone.

Section 36.409: Sound Level Limitations on Construction Equipment states:

Except for emergency work, it shall be unlawful for any person to operate construction equipment or cause construction equipment to be operated, that exceeds an average sound level of 75 decibels for an eight-hour period, between 7 a.m. and 7 p.m., when measured at the boundary line of the property where the noise sources is located or on any occupied property where the noise is being received.

The project site is zoned S88 and is planned to be for industrial use. All surrounding properties are zoned S88 and are designated for industrial use, with the exception of the area designated for residential use northeast of the site. Therefore, the hourly property line noise level limit based on the County Noise Ordinance is 70 dBA adjacent to industrial uses, and 60 dBA from 7 a.m. to 10 p.m. and 57.5 dBA from 10 p.m. to 7 a.m. adjacent to residential uses.

County of San Diego General Plan, Noise Element, Policy 4b (September 27, 2006)

Because exterior community noise equivalent levels (CNEL) above 60 decibels and/or interior CNEL above 45 decibels may have an adverse effect on public health and welfare, it is the policy of the County of San Diego that:

1. Whenever it appears that new *development* may result in any (existing or future) *noise sensitive land use* being subject to *exterior noise* levels of CNEL equal to 60 *decibels (A)* or greater, an acoustical analysis shall be required.

2. If the acoustical analysis shows that *exterior noise* levels at any *noise sensitive land use* will exceed CNEL equal to 60 *decibels (A)*, modifications shall be made to the development which reduce the *exterior noise* level to less than CNEL of 60 *decibels (A)* and the *interior noise* level to less than CNEL of 45 *decibels (A)*.

3. If modifications are not made to the *development* in accordance with paragraph 2 above, the *development* shall not be approved unless a finding is made that there are specifically identified overriding social or economic considerations which warrant approval of the *development* without such modification; provided, however, if the acoustical analysis shows that *exterior noise* levels for any *noise sensitive land use* will exceed CNEL equal to 75 *decibels (A)* even with such modifications, the *development* shall not be approved irrespective of such social or economic considerations.

Definitions, Notes & Exceptions

"*Decibels (A)*" refers to A-weighted sound levels as noted on page VIII-2 of this Element.

"*Development*" means any physical development including but not limited to residences, commercial, or industrial facilities, roads, civic buildings, hospitals, schools, airports, or similar facilities.

"*Exterior Noise*":

(a) For single family detached dwelling projects, "exterior noise" means noise measured at an outdoor living area which adjoins and is on the same lot as the dwelling, and which contains at least the following minimum area:

(i)	Net lot area up to 4,000 square feet:	400 square feet
(ii)	Net lot area 4,000 square feet to 10 acres:	10% of net lot area
(iii)	Net lot area over 10 acres:	1 acre

(b) For all other projects, "exterior noise" means noise measured at all exterior areas which are provided for *group or private usable open space* purposes.

(c) For County road construction projects, the *exterior noise* level due to vehicular traffic impacting a *noise sensitive land use* should not exceed the following values:

(i)	Federally funded projects:	The noise standard contained in applicable Federal Highway Administration standards.
(ii)	Other projects:	60 decibels (A), except if the existing or projected noise level without the project is 58 decibels (A) or greater, a 3 decibel (A) increase is allowed, up to the maximum permitted by Federal Highway Administration standards.

"*Group or Private Usable Open Space*" means usable open space intended for common use by occupants of a *development*, either privately owned and maintained or dedicated to a public agency, normally including swimming pools, recreation courts, patios, open landscaped areas, and greenbelts with pedestrian walkways and equestrian and bicycle trails, but not including off-street parking and loading areas or driveways (Group Usable Open Space) and usable open space intended for use by occupants of one dwelling unit, normally including yards, decks and balconies (Private Usable Open Space).

"*Interior Noise*": The following exception shall apply: For rooms which are usually occupied only a part of the day (schools, libraries, or similar), the interior one-hour average sound level, due to noise outside, should not exceed 50 *decibels (A)*.

"*Noise Sensitive Land Use*" means any residence, hospital, school, hotel, resort, library or any other facility where quiet is an important attribute of the environment.

The County Guidelines for Determining Significance for Noise (January 27, 2009) indicates that "An increase of 10 dB (CNEL) over pre-existing noise" or more is considered a significant impact.

2.0 ENVIRONMENTAL SETTINGS AND EXISTING CONDITIONS

2.1 SETTINGS AND LOCATIONS

The existing area consists primarily of undeveloped land. At the southwest corner of Alta Road and Old Otay Mesa Road is an auto storage, wrecking and recycling facility. Calpine plans to operate an energy plant approximately 1,400 feet north of the site. Correctional facilities are located over a mile north of the site. The adjacent properties are generally designated in the EOMSP for industrial development. Land designated for rural residential (1 dwelling unit per 20 acres) development is located along the northeastern portion of the site. However, a rock quarry is currently proposed for the portion of this area closest to the site.

The closest noise sensitive receptors are three single-family residences located approximately ¾ mile west of the site along Old Otay Mesa Road between Sanyo Avenue and Enrico Fermi Drive. Also, a fourth residence is located along Kuebler Ranch Road, approximately one mile north of the site.

2.1.1 Existing Noise Conditions

The site is located within a relatively undeveloped area. The closest existing noise sources include traffic on Old Otay Mesa Road and Alta Road, which intersect at the northwest corner of the site, and an auto recycling facility on the northwest corner of the site. Refer to Section 3.1 for existing ADTs on existing roadways. In addition, Brown Field Municipal Airport and the Tijuana International Airport are near the project site. Brown Field is a general aviation airport in the City of San Diego, approximately 2.75 miles west of the site. The Tijuana International Airport is in Tijuana, Mexico, approximately two miles southwest of the site. Both airports generate noise levels below 60 dBA CNEL at the project site. Aircraft used by the border patrol to fly above the project area also contribute to the existing noise environment.

2.2 METHODOLOGY AND EQUIPMENT

2.2.1 Noise Measuring Methodology and Procedures

Sound level measurements were conducted by Pacific Noise Control at the project site and along Alta Road and Old Otay Mesa Road to determine the existing noise level at the site and along nearby existing roads. The measurements were made using a calibrated Larson-Davis Model 700 (S.N. 2132) integrating sound level meter equipped with a Type 2551 ½-inch pre-polarized condenser microphone with pre-amplifier. When equipped with this microphone, the sound level meter meets the current American National Standards Institute (ANSI) standard for a Type 1 precision sound level meter. The sound level meter was positioned at a height of approximately five feet above the ground.

Measurements were conducted on May 24, 2005 and June 7, 2005. The measurement locations are depicted as measurement locations (MLs) 1-4 on Figure 2. ML1 was at the northern portion of the project site. ML2 was 70 feet from the centerline of Otay Mesa Road east of Cactus Road. ML3 was 45 feet from the centerline of Old Otay Mesa Road between Sanyo Avenue and Enrico Fermi Drive. ML4 was 50 feet from the centerline of Alta Road approximately 2,000 feet north of Old Otay Mesa Road. MLs 2, 3 and 4 had a direct line-of-sight view to the adjacent roads. The measured noise levels were 41 dBA Leq at ML1,

76 dBA Leq at ML2, 70 dBA Leq at ML3 and 66 dBA Leq at ML4. The noise levels and concurrent traffic volumes are shown in Table 2.

Table 2. Measured Noise Levels and Traffic Volumes

Site	Description	Date / Time	Leq (dBA)	Cars	Medium Trucks	Heavy Trucks
1	Northern portion of project site	5/24/05 09:10 - 09:20	41	-	-	-
2	70' from centerline of SR-905	6/7/05 08:00 - 08:30	76	1,529	36	92
3	45' from centerline of Old Otay Mesa Road	5/24/05 07:00 - 08:00	70	535	9	21
4	50' from centerline of Alta Road	5/24/05 08:10 - 08:30	66	84	1	4

Source: Pacific Noise Control 2005.

2.3 EXISTING VEHICULAR TRAFFIC NOISE MODELING

The existing traffic volumes along project roadways were obtained from the project Traffic Impact Study (TIS) (Darnell & Associates, Inc. 2008) and are shown in Table 4. Traffic noise levels were calculated at 50 feet from the centerlines of the nearby roads using the Federal Highway Administration's Traffic Noise Model version 2.5 (FHWA 2004). The model calculates the hourly average sound level and considers roadway alignments, estimated average vehicle speed, peak-hour traffic volume, vehicle mix, roadway geometrics and distance to receivers.

The model used a standard roadway scenario of two 24-foot-wide and 2000-foot-long lanes in opposite directions, 24 feet apart, with a speed of 55 mph and a vehicle mix of 1.1% medium trucks and 5.4% heavy trucks, with a default ground type of 'hard soil.' The truck mix is based on estimates along SR-905 west of Old Otay Mesa Road (Caltrans 2004) and is similar to the truck mix noted during the noise monitoring along Old Otay Mesa and Alta Roads. The peak-hour traffic volume was assumed to be 10 percent of the ADT on each roadway. Agencies such as the U.S. Department of Housing and Urban Development consider the peak-hour sound level to be reasonably equivalent to the CNEL for vehicle traffic. This assumed equivalency is partially based on expected hourly traffic distribution; this analysis assumes that this distribution would not change as a result of the project.

The results of vehicular traffic noise modeling are presented in Table 3. A review of the table shows that the sound level along Old Otay Mesa Road between Sanyo Avenue and Enrico Fermi Drive near the three single-family residences (6940, 6944 and 6948 Old Otay Mesa Road) is currently 70 dBA CNEL. Field observations indicate areas of outdoor frequent use at these residences are primarily located behind the houses and shielded from the roadway; however, a portion of the side yards may be used for recreational purposes. Sound levels on the residential property currently exceed 60 dBA CNEL; this is considered significant by the County.

3.0 ANALYSIS OF PROJECT EFFECTS

The EOMSP FEIR analyzed the potential noise impacts to off-site noise-sensitive receptors associated with the designated on-site industrial/commercial and residential uses. Subsequent to the certification of the EOMSP FEIR and adoption of the Specific Plan in 1994, the project applicant is proposing to subdivide the property into 56 industrial lots requiring an analysis of the noise impacts. No specific land uses or buildings are proposed at this time. Also, the project would amend the EOMSP to shift the boundary of the Mixed Industrial/Rural Residential land use designation east. In addition, the County DPLU changed some significance criteria since the certification of the EOMSP FEIR. Noise associated with the project would include short-term construction, industrial use activities and traffic noise along existing and planned roads.

Noise impacts associated with the proposed Specific Plan Amendment are discussed below.

3.1 VEHICULAR TRAFFIC

Traffic noise impacts were evaluated based on information provided in the TIS. Table 28 of the TIS presents ADTs for the Existing condition and the Existing + Project Build Out (Units 1-5) condition. Table 33 presents ADTs for the Cumulative (2020) with SR-905 1A and 1B condition. The worst-case traffic volume on any given roadway segment would occur in one of these conditions. The higher of the traffic volumes in the two future conditions was assessed as the Future condition. The results of vehicular traffic noise modeling are presented in Table 3. The traffic report does not indicate a change in the character of traffic (truck mix); therefore, this analysis assumes that this will remain constant.

3.1.1 Off-Site Traffic

The project would generate additional traffic along existing roads in the area. The majority of the project-generated traffic that would expose noise-sensitive receptors to increased noise levels would occur on Otay Mesa Road. Direct noise impacts associated with project-generated traffic are evaluated based on the Existing and Future traffic scenarios as described above.

The project-generated traffic would increase noise along local roadways by approximately 0 dBA to 10 dBA. The greatest noise increases in the vicinity of noise sensitive receptors would occur on Otay Mesa Road between SR-125 and Alta Road (4-6 dBA).

The Existing + Project Build Out (Units 1-5) traffic volume along Otay Mesa Road between Vann Centre Drive and Enrico Fermi Drive would be 27,220 ADT. The project traffic in this condition would be 18,087 ADT. The three single-family residential properties in this area (6940, 6944 and 6948 Old Otay Mesa Road) would experience sound levels of approximately 76 dBA, approximately 4 dBA greater than the existing condition.

Table 3. Off-Site Traffic Noise Levels (at 50 Feet from Centerline of Road)

Roadway Segment	Existing		Future		Increase: Existing vs. Future
	ADT	CNEL	ADT	CNEL	
Otay Mesa Road					
Heritage to Cactus	64,299	80	77,067[1]	81	1
Cactus to Britannia	71,080	80	83,848[1]	81	1
Britannia to La Media	58,999	80	72,405[1]	80	0
La Media to Piper Ranch	44,523	78	58,035[1]	80	2
Piper Ranch to SR-125	43,109	78	56,940[1]	79	1
SR-125 to SR-905	16,686	74	41,640[1]	78	4
SR-905 to Harvest	9,738	72	41,640[1]	78	6
Harvest to Sanyo	8,224	71	26,311[1]	76	5
Sanyo to Vann Centre	9,133	72	27,220[1]	76	4
Vann Centre to Enrico Fermi	9,133	72	27,220[1]	76	4
Enrico Fermi to Alta	6,928	70	17,574[1]	74	4
Airway Road					
La Media to SR-905	8,093	71	9,700[2]	72	1
SR-905 to Sanyo	9,631	72	10,589[1]	72	0
Sanyo to Paseo de las Americas	5,649	69	16,030[2]	74	5
Paseo de las Americas to Michael Faraday	4,513	68	6,129[1]	70	2
Michael Faraday to Enrico Fermi	2,918	67	5,380[2]	69	2
Enrico Fermi to Airway	1,160	63	11,795[1]	73	10
Airway to Alta	-	-	10,635[1]	72	-
Siempre Viva Road					
Drucker to SR-905	-	-	21,180[2]	75	-
SR-905 to Paseo de las Americas	26,653	76	53,620[2]	79	3
Paseo de las Americas to Michael Faraday	9,886	72	22,180[2]	75	3
Michael Faraday to Enrico Fermi	6,442	70	19,090[2]	75	5
Enrico Fermi to Airway	830	61	830[1]	61	0
La Media Road					

Otay Mesa to St. Andrews	15,225	74	28,210[2]	76	2
Sanyo Avenue					
Otay Mesa to Airway	2,666	66	16,220[2]	74	8
Enrico Fermi Drive					
Otay Mesa to Airway	2,681	66	14,895[2]	74	8
Airway to Siempre Viva	7,110	70	11,491[2]	72	2

Source: Darnell & Associates, Inc. 2010. Tables 28 and 33.
Shading indicates roadway segments adjacent to existing residential receptors.

[1]Existing + Project Build Out (Units 1-5) condition
[2]Cumulative (2020) with SR-905 1A & 1B condition

3.2 OPERATIONS

3.2.1 Industrial Noise Impacts

The proposed project would develop industrial lots adjacent to existing and planned industrial uses and planned residential uses (Figure 4). Specific industrial uses have not been identified for the lots, but may include industrial facilities that would engage in the manufacturing, processing, compounding, assembling, packaging, warehousing, treatment, or fabrication of materials or products. In general, noise associated with industrial uses typically includes truck deliveries, loading dock activities (including trash compactors), outdoor mechanical equipment (such as air compressors, pumps, fans and cooling towers) and maintenance activities such as parking lot sweepers and trash collection trucks. Other noise sources associated with industrial uses include shop tools and forklifts.

The property boundary of the closest existing residence is approximately 0.75-mile west of the site along Old Otay Mesa Road. The undeveloped area adjacent to Lots 16-18, at the northeastern boundary of the site, is designated for residential uses. Note that a portion of this property is currently proposed to be developed with a construction aggregates extraction operation (i.e. Otay Hills project [MUP 04-004]). If this development occurs, the property line noise limits would change; however, this analysis was conducted under the worst-case assumption that this area would remain planned for residential use.

The lots created by the project would be required to comply with the County noise ordinance Based on the arithmetic mean methodology applicable to the interface of different land use designations, the hourly sound level limit at industrial property lines would be 70 dBA Leq anytime, and the hourly sound level limit at residential property lines would be 60 dBA between the hours of 7 a.m. and 10 p.m and 57.5 dBA between the hours of 10 p.m. and 7 a.m.

The noise level generated by industrial uses onsite would vary depending upon the specific type of industrial uses developed at the site. These include the specific land use, size of equipment, location and orientation of equipment, number and location of loading docks, and parking areas. Therefore, it is not possible to determine the level of noise impact until specific industrial land uses and their locations are identified. Future applicants will submit site plans that would contain detailed use and sound level information for the uses.

Although the exact noise level generated cannot be specifically quantified at this time because of many variables involved, typical sound levels associated with these type noise sources range from approximately 60 to 75 dBA at 50 feet from the source. However, in practice, the one-hour average sound level at 50 feet typically ranges from approximately 50 to 70 dBA, depending on the equipment and the intensity of use (duty cycle). Higher noise levels are possible if the equipment is not adequately muffled or maintained.

Fixed location noise sources have point source acoustical characteristics and generally decay at a rate of 6 dBA per doubling of distance from the source. This is a logarithmic relationship describing the acoustical spreading of a pure, undisturbed spherical wave in air. The rule applies to the propagation of sound waves with no ground interaction. The point source attenuation formula is as follows:

$$SPL_2 = SPL_1 - 20\log\left(\frac{d_2}{d_1}\right)$$ where SPL_1 = known sound level, SPL_2 = desired sound level, d_1 = known distance, and d_2 = desired distance.

At a distance of 300 feet from a property line adjacent to an area designated for residential use, a continuous sound level of 75 dBA at 50 feet from the source would result in an hourly average sound level of 59.5 dBA at the property line and comply with the County noise ordinance. This simplified calculation does not account for shielding achieved by on-site structures or noise reduction associated with the intermittent nature of industrial activity. Therefore, compliance of lots adjacent to areas designated for residential use is feasible. However, a site-specific noise analysis would be required when individual lot owners seek approval of site and building plans from the County.

The area adjacent to Lots 16-18 on the east is designated for residential use. This property is currently undeveloped; however, future site plan review for these lots should undergo screening for compliance with the Noise Ordinance. Operations on Lots 16-18 are potentially significant; however, as discussed above, impacts can be mitigated through proper site planning.

Parking lot sweepers, trash collection and refuse compacting would occur between the hours of 6:00 a.m. to 10:00 p.m. and would not significantly impact any residential receptor.

Sewer Pump Station

A sewer pump station (SPS) would be located on the south side of Lot 34 (Figure 3). All surrounding lots would be industrial. West and south of the pump station would be SR-11. East of the pump station would be Lone Star Road with Lot 33 beyond the road. The pump station would be located approximately 15 feet from the south property line, 30 feet from the east property line, and approximately 3,000 feet from the nearest residential area.

The SPS would be developed in phases, with an interim phase for the buildout and ultimate design capacity (refer to Appendix A). However, the initial building would be designed to provide noise attenuation for the ultimate facility.

A conceptual layout of the new SPS is provided in Appendix A. The layout of the SPS is based on a similar facility designed for the City of San Diego (SPS No. 88), which is located in the Black Mountain Ranch community. The SPS is planned to be a 485 sq. ft. three-story facility with the bottom two stories to be located below grade. The three 25-horsepower (HP) vertical non-clog sewage pumps would be located on the bottom level (two floors below grade) with the pump motors located on the intermediate level below grade. The wet well would be sized for both operational and emergency storage needs and would have a footprint of approximately 700 sq. ft. All electrical switchgear and equipment would be located on the upper/grade level. This is similar to the layout for the SPS No. 88 facility which was built and placed in service in 2003.

SPS No. 88 is a 1.1 MGD (million gallons per day) three story pumping facility with two stories located below grade. The pump motors are located on the upper/grade level of the building. The SPS No. 88 facility is equipped with two 100-HP vertical non-clog sewage pumps. The footprint of the pump station

facility is approximately 715 sq. ft. with the below-grade wet well of about 410 sq. ft. All electrical switchgear and equipment are located on the upper/grade level of the facility.

The noise generation from the proposed facility would be expected to be lower than the existing SPS No. 88 based on the following comparison of the facilities:

- The pump station layouts are essentially the same, have similar building footprints and will be constructed with similar building materials.

- The size of the proposed pumps are considerably smaller (25 HP vs. 100 HP), although there would be three pumps instead of two pumps. However, the total HP of all three proposed pumps is still less than one SPS No. 88 pump. Furthermore, the motors of the proposed facility would be located below grade on the intermediate level while SPS No. 88 has the motors on the grade level; therefore, the proposed facility structure would provide more acoustical shielding.

- The electrical switchgear and motor control center for the pumps are located on the upper/grade level floor of each facility. Since the pumps would be smaller for the proposed facility, the motor starters and related equipment that generate noise when in operation would be smaller as well.

- Noise is typically emitted through the building walls and via the HVAC duct system providing ventilation to the building areas. Since the SPS motors are the main heat generation source and require the greater amount of ventilation, having the proposed pump motors located on the intermediate level aids in reducing heat and allows for attenuation of noise through the ducting system before being emitted to the outside, thus reducing noise impacts.

Based on the similar layouts of the proposed SPS and SPS No. 88 stations and because the pumps and motors would be of smaller capacity, the use of noise data from SPS No. 88 seems to be a reasonable benchmark for evaluating the impacts for the proposed facility.

Five-minute sound level measurements were taken at SPS No. 88 on December 14, 2006. The measurements were conducted using a Larson Davis Model 820 ANSI Type 1 Integrating Sound Level Meter. The meter was mounted on a tripod approximately five feet above the ground. The sound level meter was calibrated before and after the measurement period with a Larson Davis Model 150B calibrator.

Sound levels were measured on the side of the SPS that had an opening for ventilation. When the pumps were operating, sound levels were 53 dBA Leq at 10 feet and 49 dBA Leq at 20 feet. When the pumps and blowers were operating, sound levels were 60 dBA Leq at 10 feet and 56 dBA Leq at 20 feet. The ambient sound level when the pump station was not operating was 47 dBA Leq. Non-SPS noise sources consisted of distant gardening equipment.

Sound levels of the SPS No. 88 emergency generator were measured on August 8, 2007. The generator, running at full capacity, was found to produce between 66 dBA and 69 dBA at 25 feet (depending on orientation). The ambient noise level was less than 50 dBA. The generator was a Cummins Onan 125 kw with a Quiet Site II sound reduction enclosure. The overall dimensions were 9’ high × 12’ wide × 3’ deep, on a 6” pedestal. The generator was located 6’ from the pump station building façade.

Based on the sound level measurements, the proposed SPS would result in sound levels less than 70 dBA at the industrial lot boundary and below 57.5 dBA at the northeastern boundary adjacent to the designated rural residential uses (3,000 feet away). The SPS would not be audible at any noise sensitive land use. Although development of the SPS will be phased, the initial building will be designed to provide noise attenuation for the ultimate facility.

In addition, as stated in Appendix A, "Noise emanating from the pump station will meet the County's noise ordinance requirements."

Verification sound level measurements of the SPS would be conducted prior to final occupancy or certification for the permanent facilities of the SPS. The applicant would submit to the satisfaction of the Director of the DPLU a letter prepared by a County-certified acoustical consultant that verifies compliance with the property line sound level limits.

3.3 CONSTRUCTION

The proposed project grading would occur in two phases. Grading Phase 1 comprises final map units 1, 2 and 3. Grading Phase 2 comprises final map units 4 and 5. Grading for Phase 1 is planned to begin in early 2010, while grading for Phase 2 is planned to be begin in mid-2012. Noise generated by construction equipment would occur with varying intensities and durations during construction. Based on a preliminary equipment list, the beginning of Grading Phase 1 and Phase 2 would require the greatest number and variety of construction equipment. The equipment would be used to clear and grub, to remove and recompact soil, and for rock removal and excavation. The primary equipment would include bulldozers, loaders, scrapers, water trucks, compactors, a rock breaker, trucks, and graders. After the rough grading in each grading phase, finish grade construction equipment (i.e., graders, water trucks, scrapers and loaders) would be used.

Construction activities at the project site would result in a short-term, temporary increase in the ambient noise level. The increase in noise level would be primarily experienced close to the noise source. The magnitude of the impact would depend on the type of construction activity, noise level generated by various pieces of construction equipment, duration of the construction phase, and distance between the noise source and receiver. Sound 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) (Figure 6).

The average sound level at construction sites is typically less than depicted in the figure because the equipment operates in alternating cycles of full power and low power. Also, the equipment rotates in various directions (i.e., noisiest side of the equipment to quieter sides of the equipment), and moves around the construction site, especially during clearing, grubbing and grading activities. Thus, the average noise levels produced are less than the maximum level. Hourly average noise levels associated with construction activities will vary, but, can range up to approximately 95 dBA at a distance of 50 feet with the use of the rock breaker.

Construction noise in a well-defined area typically attenuates at approximately six dBA per doubling of distance. The closest off-site homes to the construction activities would be located approximately 0.75-mile west of the site along Old Otay Mesa Road. The one-hour average noise level would be less than 55

dBA at the closest homes during grading of the site. This assumes a direct line-of-sight from the receiver to the construction area. This noise level would comply with the County's construction noise level criterion.

The property to the west of the project site is occupied and is used for vehicle parking/storage. The centroid of Lots 1 and 2 is located approximately 160 feet from the shared property line. The average construction equipment noise level was assumed to be 80 dBA at 50 feet. Assuming three pieces of construction equipment operating continuously, the average noise level would be approximately 75 dBA. This noise level would comply with the County's construction noise level criterion.

The grading for the project is designed to be balanced, thus, there would be no import or export of dirt. Therefore, noise impacts associated with heavy trucks along the adjacent roads would be less than significant.

As previously stated, the hours of construction would comply with the County's allowable hours of construction (i.e., 7 a.m. to 7 p.m. Monday through Saturday, excluding legal holidays).

The approved biological study and SEIR for this project addresses indirect biological noise impacts to sensitive avian habitat.

4.0 NOISE SENSITIVE LAND USES

Some land uses are considered sensitive to noise. Noise sensitive receptors are land uses associated with indoor and/or outdoor activities that may be subject to stress and/or significant interference from noise. They often include residential dwellings, mobile homes, hotels, motels, hospitals, nursing homes, educational facilities and libraries. Industrial, commercial, agricultural and urban reserve land uses are generally not considered sensitive to ambient noise.

The property boundary of the closest existing residence is approximately 0.75-mile west of the site along Old Otay Mesa Road. A residence is also located along Kuebler Ranch Road approximately one mile north of the site. The area adjacent to Lots 16-18, near the northeast portion of the site, is designated for residential use.

4.1 GUIDELINES FOR THE DETERMINATION OF SIGNIFICANCE

Vehicular Traffic

Sound levels exceeding 60 dBA CNEL at areas of outdoor frequent use or cause an increase of 10 dBA CNEL or more at any existing residence are considered significant.

Operations

Sound levels that exceed a one-hour average of 60 dBA between the hours of 7:00 a.m. to 10:00 p.m. or 57.5 dBA between the hours of 10:00 p.m. and 7:00 a.m. at the east property lines of Lots 16-18 are considered significant. Sound levels that exceed a one-hour average of 70 dBA at any other property line are considered significant.

Construction

Sound levels that exceed an 8-hour average of 75 dBA at any occupied property are considered significant.

4.2 POTENTIAL NOISE IMPACTS

4.2.1 Vehicular Traffic

As previously stated, vehicular traffic sound levels along the roadways could increase by up to 10 dBA as a result of the project (Table 3). The majority of the project-generated traffic would occur on Otay Mesa Road. The greatest noise increases in the vicinity of noise sensitive receptors would occur on Otay Mesa Road between SR-125 and Alta Road (4-6 dBA).

The potential for significant noise impacts was previously identified in the EOMSP FEIR. Significant cumulative noise impacts are limited to the three single-family residences located on the north side of Old Otay Mesa Road between Vann Centre Drive and Enrico Fermi Drive (6940, 6944 and 6948 Old Otay Mesa Road) since this is the only road that has existing noise sensitive uses adjacent to the road. The

residences are located on large lots that have most of the outdoor areas of frequent use behind the home, shielded from vehicular traffic.

Based on preliminary noise modeling, the Existing + Project Build Out (Units 1-5) sound level at the south property line of these lots would be approximately 76 dBA CNEL. The existing sound level at these residences is estimated at 72 dBA, which exceeds the significance criteria of 60 dBA CNEL. The project-generated traffic noise increase would be approximately 4 dBA.

The Existing + Project Build Out (Units 1-5) 60 dBA CNEL noise contour along Otay Mesa Road between Sanyo Avenue and Enrico Fermi Drive would be approximately 700 feet from the centerline of the road.

Future / Year 2030

SR-905, SR-11 and other roads are planned to be built in the area; these roads would reduce traffic volumes along Otay Mesa Road and other roads in the area. Adjacent to the three nearby residences between Vann Centre Drive and Enrico Fermi Drive, the Cumulative (2020) with SR-905 1A & 1B traffic volume is projected to be 5,480 ADT, and the 2030 + Project Build Out (Units 1-5) traffic volume is projected to be 21,300 ADT. These volumes are less than the analyzed Existing + Project Build Out (Units 1-5) traffic volume of 27,220 ADT. Therefore, the noise level at the existing nearby residences would be lower in the Cumulative (2020) with SR-905 1A &1B condition and the 2030 + Project Build Out (Units 1-5) condition than the Existing + Project Build Out (Units 1-5) condition. In the 2030 condition, the Without Project traffic volume on this segment is projected to be 19,810 ADT, and the Project traffic volume is projected to be 1,490 ADT; in this condition, the project would increase the noise level at the three residences by less than 1 dBA.

Operations

The sound level from industrial operations would be required to meet Noise Ordinance limits at property lines. It is feasible for the lots in this project to be designed and operated in such a manner as to limit operation hourly sound levels to less than 60 dBA from 7 a.m. to 10 p.m. and 57.5 dBA from 10 p.m. to 7 a.m. at residential property lines, and 75 dBA at the remaining property lines. Because noise levels from operations on Lots 16-18 may exceed these property line noise level limits, the dedication of a Noise Protection Easement would be required on Lots 16, 17, and 18. This Noise Protection Easement would require future noise analysis with subsequent discretionary permits. Noise protection measures could include proper building orientation, selection of quieter equipment, or placement of noise-producing equipment behind buffer zones, noise enclosures, or parapet walls.

A use-specific noise analysis would occur when individual lots seek approval of site and building plans from the County.

The proposed SPS sound level would be less than 75 dBA at the industrial lot boundary and below 45 dBA at the northeastern boundary adjacent to the designated rural residential uses. Verification sound level measurements of the SPS would be conducted prior to final occupancy or certification for the permanent facilities of the SPS. The applicant would submit to the satisfaction of the Director of the

DPLU a letter prepared by a County-certified acoustical consultant that verifies compliance with the property line sound level limits.

Construction

Construction would be limited to the hours permitted by the County Noise Ordinance. Eight-hour average sound levels would be expected to be 75 dBA or below adjacent to the designated rural residential uses and all adjacent occupied property.

4.3 MITIGATED NOISE IMPACTS

Vehicular Traffic

Project traffic would increase the sound level by approximately 4 dBA at the south property line of the three single-family residences located on the north side of Otay Mesa Road between Vann Centre Drive and Enrico Fermi Drive; this is considered significant. The resultant cumulative sound level at 50 feet would be approximately 76 dBA.

Preliminary acoustical calculations were performed using the Fresnel Diffraction Method to evaluate the effectiveness of a noise barrier to mitigate near-term cumulative plus project traffic noise impacts at side yards of the three residences. The roadway/residence acoustical geometry is similar at each of the residences. The usable side yard area was estimated to be located 100 feet from the centerline of Otay Mesa Road. Otay Mesa Road is essentially at the same elevation as the three residences. Because this distance is twice the reference distance of 50 feet, the sound level would decrease by 3 dBA to 73 dBA, 13 dBA over the County threshold of significance. The barrier was placed approximately 25 feet from the roadway centerline. The calculations indicate that the required 13 dBA insertion loss can be achieved by constructing an 11-foot-high noise wall along the roadway right-of-way. Return walls along the side yards perpendicular to driveways and side yard property lines would also be required. The locations of these walls would be determined in consultation with the each property owner due to property line locations and other limitations on noise wall placement. Noise walls must be solid construction without holes or gaps and have a mass of at least 3.5 pounds per square foot.

Because an 11-foot-high noise wall exceeds the acceptable County noise wall height, the insertion loss that would be generated by a more practical wall height was estimated. A typical 8-foot-high wall, in the same configuration as above, would generate approximately 11 dBA of insertion loss and reduce the sound level to 62 dBA.

The southern (roadway-facing) building façades of the residences are approximately 70 feet from the centerline of Otay Mesa Road, and the rear façades are approximately 110 feet from the centerline. The residences are single-story (15 feet high). At a distance of 70 feet from the centerline, the sound level would be approximately 75 dBA. At a distance of 120 feet from the centerline, the sound level would be approximately 72 dBA. Therefore, using the Fresnel Diffraction Method, the residential structures provide approximately 17 dBA of insertion loss and the near-term plus cumulative traffic noise level at 10 feet behind the residences would therefore be approximately 55 dBA.

Operation

Site-specific noise analyses would be required for future site plans proposed on the industrial lot(s) to demonstrate that the proposed facilities would operate in compliance with the County noise ordinance.

5.0 SUMMARY OF PROJECT IMPACTS, MITIGATION & CONCLUSIONS

The project traffic would significantly increase the ambient noise level at three off-site existing homes along Otay Mesa Road. Based on the results of preliminary noise modeling, a noise barrier 11 feet in height along Otay Mesa Road would be required to reduce the noise level to below the level of significance at the homes. An 8-foot-high sound wall would reduce the noise level to 62 dBA. Return walls perpendicular to the roadway would be required to compensate for gaps at driveway openings. Sound walls greater than 8 feet in height are generally not acceptable in the County of San Diego.

Project industrial land uses can be designed and operated in compliance with the County Noise Ordinance. Site-specific noise analyses would be required for any industrial lot adjacent to areas designated for future residential use to demonstrate that the proposed facility would operate in compliance with the County noise ordinance sound level limits.

The proposed SPS can be designed and operated in compliance with the County Noise Ordinance. Verification sound level measurements would be required for the SPS prior to final occupancy or certification for the permanent facilities of the pump station. The applicant shall submit to the satisfaction of the Director of the DPLU a letter prepared by a County-certified acoustical consultant that verifies compliance with the property line sound level limits.

The construction activities would comply with the County's hours of operation and would result in a less than significant noise impact.

6.0 REFERENCES

County of San Diego. 2006. General Plan, Part VII: Noise Element. September 27.

2009. County Code of Regulatory Ordinances, Section 36, Chapter 4: Noise Abatement and Control. January 9.

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U.S. Environmental Protection Agency. 1971. Noise from Construction Equipment and Operations, Building Equipment and Home Appliances. Prepared under contract by Bolt, et al., Bolt, Beranek & Newman, Boston, Massachusetts. Washington, D.C.

7.0 CERTIFICATION

The report was prepared by the following Kimley-Horn and Associates staff:

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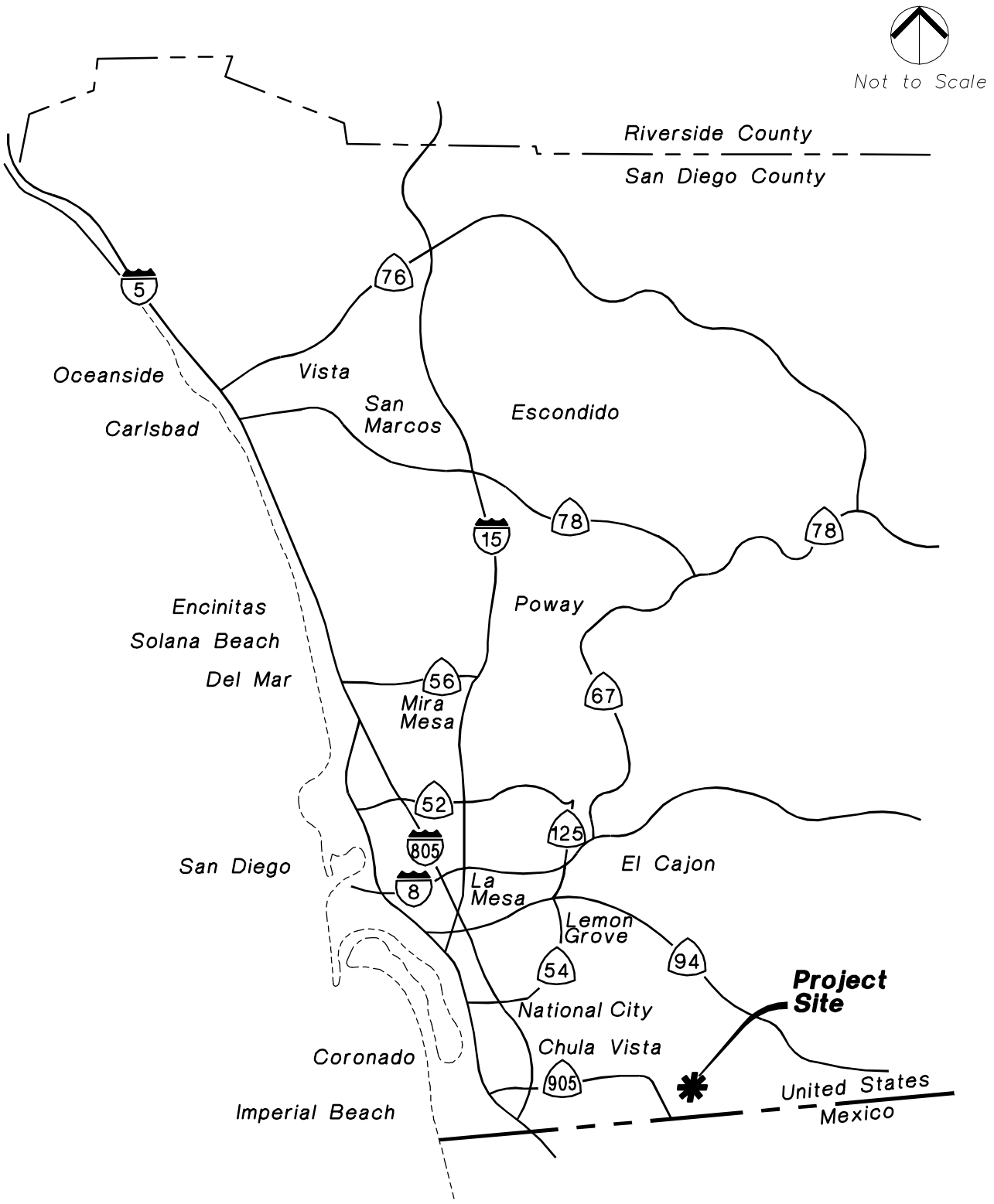

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Figure 1

Kimley-Horn and Associates, Inc.
Engineering, Planning and Environmental Consultants

Regional Location

Otay Crossings Commerce Park

Not to Scale

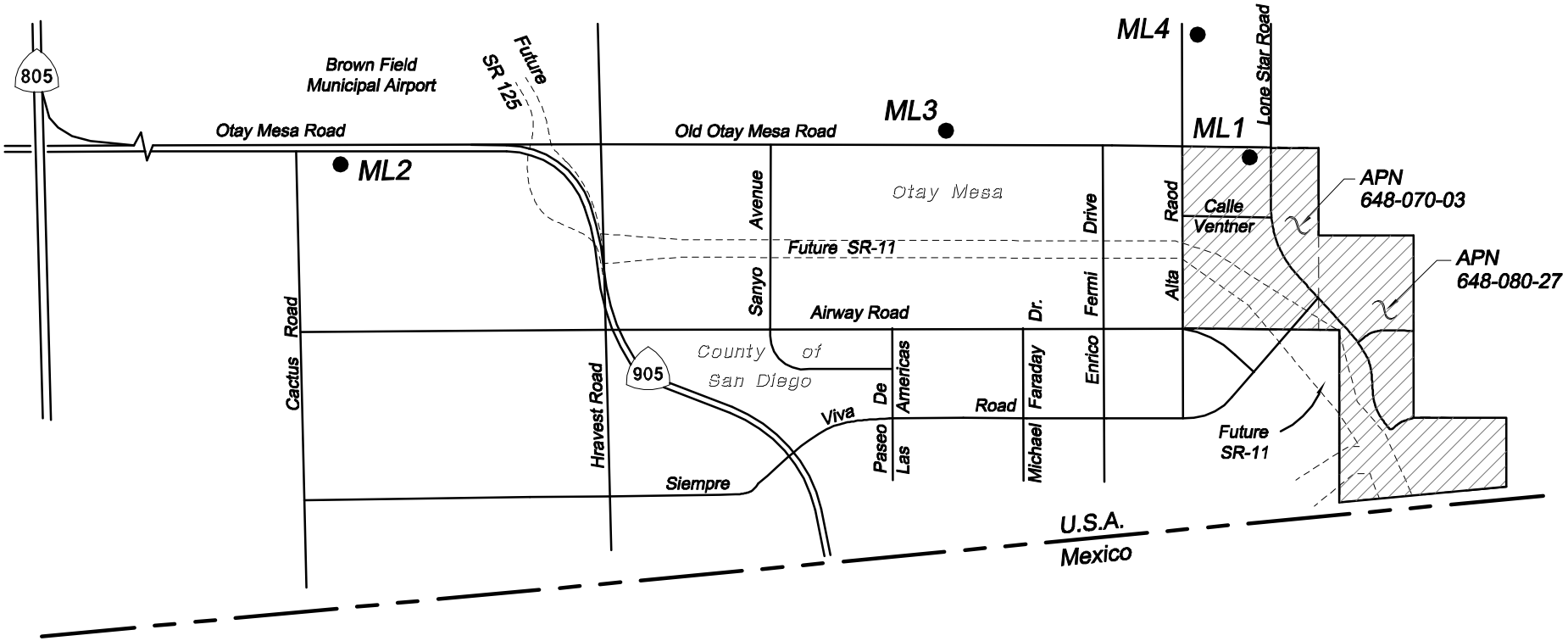
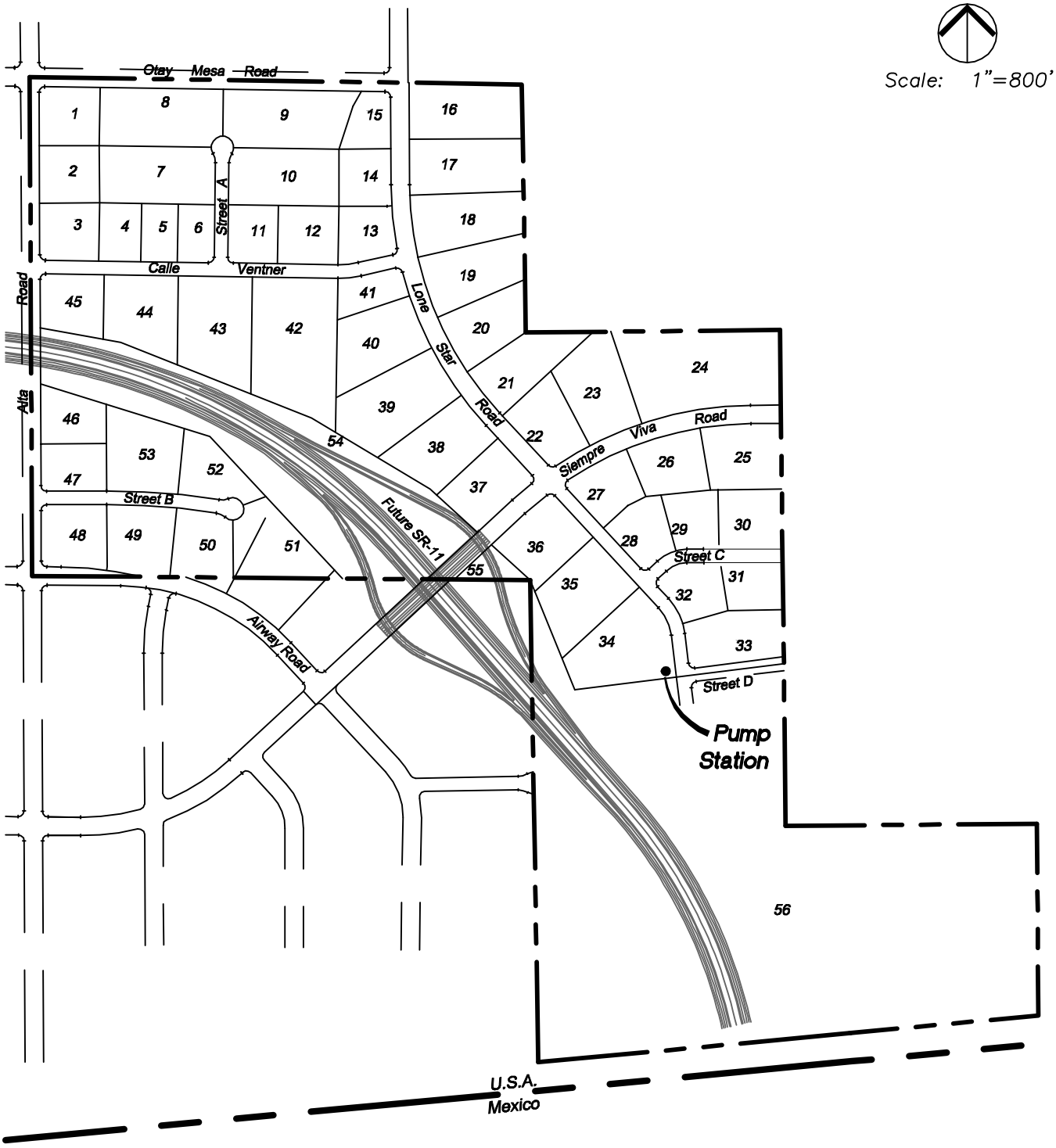


Figure 2

Kimley-Horn and Associates, Inc.
Engineering, Planning and Environmental Consultants

Project Location with Sound Level Measurement Locations



Kimley-Horn and Associates, Inc.
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Figure 3

Tentative Map

Not to Scale

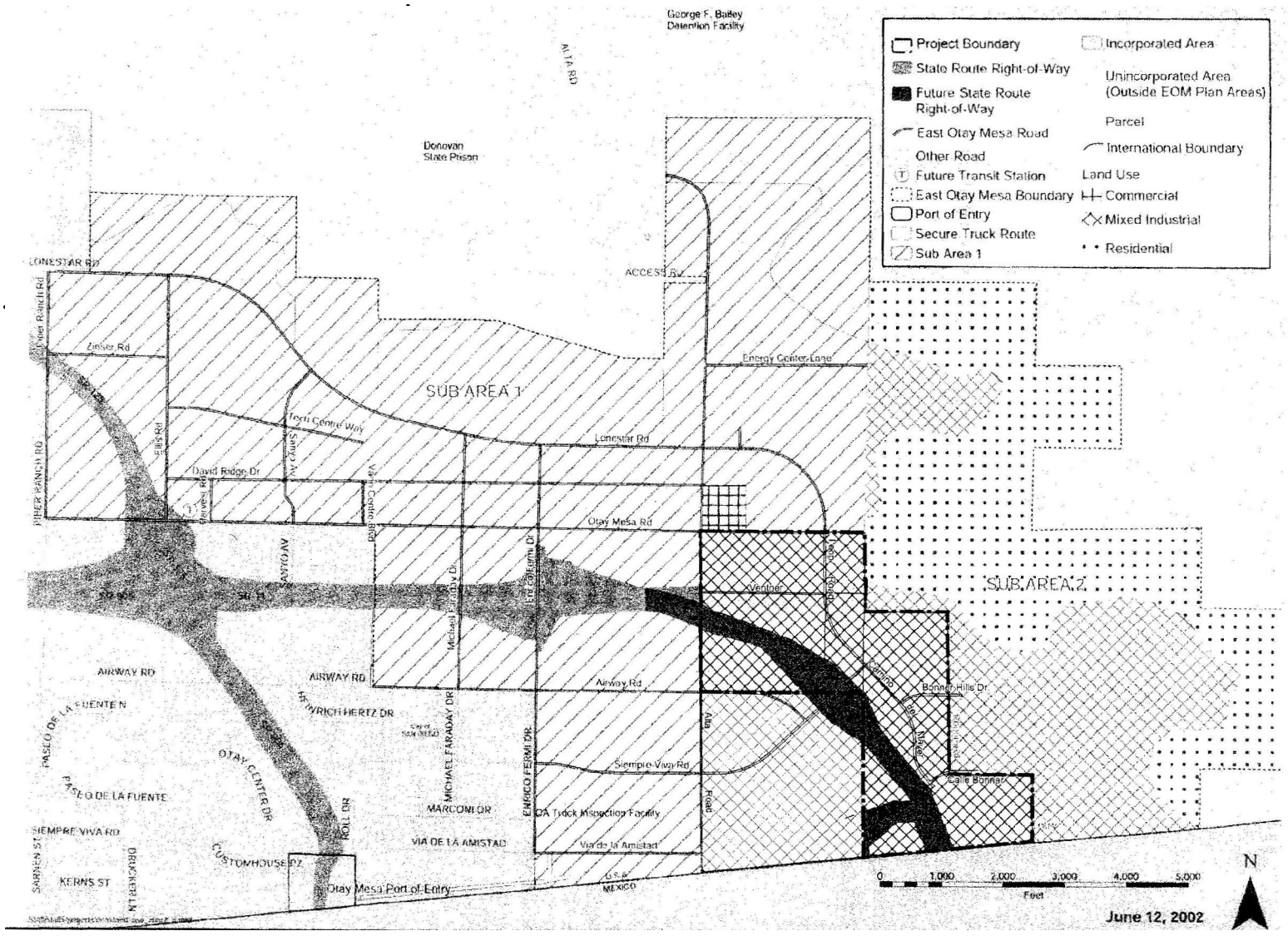

Figure 4

Kimley-Horn and Associates, Inc.
Engineering, Planning and Environmental Consultants

Adjacent Designated Land Uses

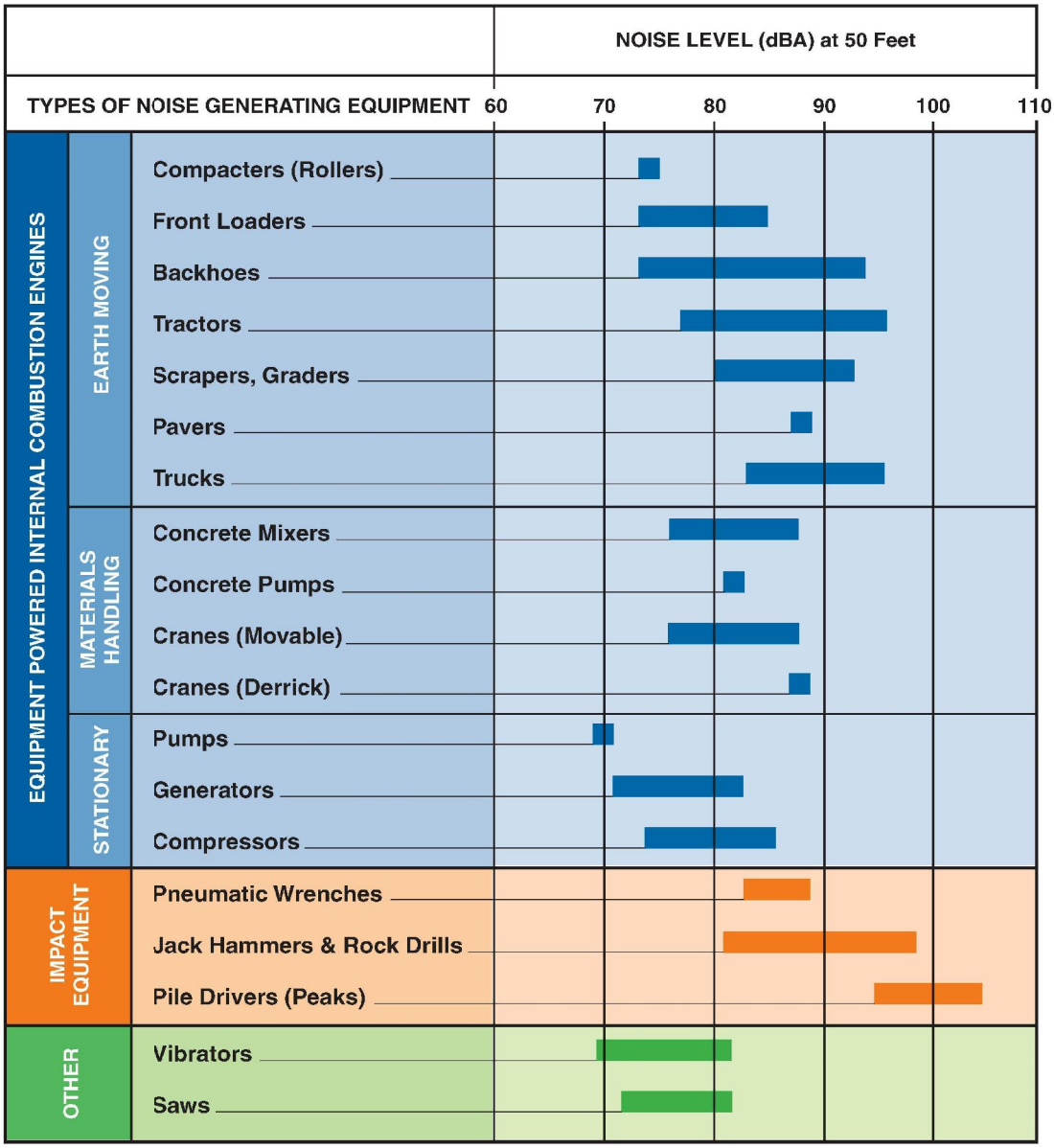

Figure 5

Kimley-Horn and Associates, Inc.
Engineering, Planning and Environmental Consultants

Construction Equipment Noise Levels

APPENDICES

APPENDIX A

CONCEPTUAL SEWER STUDY, CHAPTER 3

OTAY CROSSINGS COMMERCE PARK
CONCEPTUAL SEWER STUDY

July 2007

PBS&J Project No.: 491285.01
County of San Diego Project #SPA 04-006
TM #5405
Log No. 93-19-006Q

Prepared For:

Otay Crossings Commerce Park, LLC

Prepared By:

9275 Sky Park Court, Suite 200
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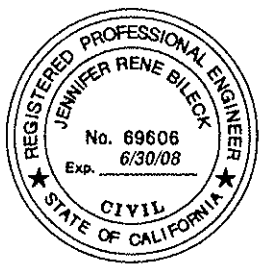

Mark B. Elliott, P.E.
Program Manager

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Senior Engineer

Chapter 3
Capacity Analysis

This chapter provides a brief description of the proposed on-site and off-site sewer facilities necessary to service the Project, and describes the methodology and procedure for sizing those facilities.

3.1 Methodology

On-site gravity sewers were sized based upon the same methodology and criteria used in the 2006 East Otay Mesa Sewer Master Plan, which used a steady state analysis to size regional pipe facilities. Table 3 summarizes the criteria used in this study.

Table 3 – Design Criteria

Parameter	Design Criteria
Mannings 'n'	0.013
Minimum Dry Weather Peak Flow Velocity	2 fps (or 1% min slope)
Maximum Velocity	10 fps
Maximum d/D Ratio	0.50 for D ≤ 12"
	0.75 for D ≥ 15"
Minimum Sewer Size	8-inch diameter
Peaking Factor	6.2945 x Pop ^ (-0.1342)
EDU Factor	240 gpd/EDU

3.2 On-site Sewerage Facilities

As discussed in Section 1.3, the Project will be developed in two phases. Phase 1 and Lot 25 wastewater flows generated by the Project and neighboring developments will be conveyed by gravity to the proposed off-site sewer located at the intersection of Airway and Alta Road. Phase 2 (excluding Lot 25) wastewater flows will be conveyed by gravity to the proposed regional pump station located just south of Lot 27. Wastewater flows will then be pumped from the regional pump station to the Phase 1 Airway Road sewer.

An on-site sewer system analysis was performed to size the proposed collection system. Since the East Otay Mesa Sanitation District connects directly to City of San Diego sewers, the County required that the City's peaking criteria be used for collection system sizing. Figure 3 shows the recommended on-site wastewater facility sizes and indicates where tributary flows are assumed to enter the system. On-site gravity sewer and forcemain calculations are presented in Appendix B and C, respectively.

The Master Plan proposed a regional pump station within the Project's boundary. The regional pump station will receive wastewater flows from Phase 2 of the Project (except Lot 25), the Border Crossing, and Areas 3 and 6. It is expected that the Border Crossing will construct a private sewer pump station to

serve the facility and to convey flows to the regional sewer pump station within the Project. Table 4 summarizes the estimated regional pump station's design capacity and the recommended force main diameters under buildout and ultimate conditions for the Interim and Final Phase. The Interim Phase only includes Project flows to the pump station (Phase 2 except Lot 25). The Final Phase includes flows developed from the Project, the Proposed Border Crossing and the tributary developments to the east. The proposed pump station's design flow rate includes an allowance of 30% on top of the peak inflow to account for wet weather conditions and maintenance. Pump station design flow rate and force main sizing calculations are provided in Appendix A and C, respectively. The conceptual pump station layout is attached in Appendix D.

Table 4 – Regional Pump Station Design Capacity

Phase	Gross Area (acre)	EDU[3]		Pump Station Design Capacity (mgd)[4]		Force main Diameter[5]	
		Buildout	Ultimate	Buildout	Ultimate	Buildout	Ultimate
Interim Phase (Project - Phase 2)[1]	58.9	246	368	0.20	0.28	4"	4"
Final Phase[2]	461.9	784	1,370	1.17	1.79	8"	8"

1. Interim Project Phase 2 does not include Lot 25.
2. Final Phase includes Project Phase 2 (except Lot 25), the Border Crossing, Area 3, and Area 6.
3. EDU's based on 240 gpd/EDU per County Design Guidelines.
4. Design Capacity determined with the City's peaking factor equation and 30% additional flow.
5. Force main diameter determined based on maximum velocity of 8 fps and maximum retention time of 4 hours.

3.3 Off-site Sewerage Facilities

The EOMSMD currently does not have sewer facilities in the vicinity of the Project. Otay Crossings Commerce Park, LLC will be required to construct the off-site sewer facilities described in the 2006 Master Plan in order to connect to the City of San Diego's sewer collection system at the intersection of Via de la Amistad and Enrico Fermi Drive. The Project was included in Sewer Basin EOM-6 of the Master Plan. Several options were considered for sewering this basin based upon topography of the area. The preferred alternative identified in the Master Plan included a 15-inch and 18-inch diameter gravity sewer that would convey the flow from this project area southwesterly to the City's 27-inch sewer main at Via de la Amistad and Enrico Fermi, and is shown on Figure 3. A previous analysis of the downstream facilities within the City's sewer collection system demonstrated that the flows associated with EOM-6 were consistent with the City's Otay Mesa Trunk Sewer Master Plan. Therefore, no additional off-site sewer facilities would be required within the City's system.

3.4 Regional Sewerage Facilities

The Project is located within Basin EOM-6 and will connect to the City's Otay Mesa Trunk Sewer System. Existing and planned City facilities that will serve the Project are shown in Figure 4. The ultimate Otay Mesa Trunk Sewer System will consist of gravity sewers and force mains located in Siempre Viva and Otay Mesa roads that will connect to the San Ysidro and South Metro Interceptors west of Interstate 5. Phase I of the Otay Mesa Trunk Sewer Project has been constructed and includes a 27-inch to 30-inch diameter gravity sewer in Siempre Viva Road. Flows conveyed in this sewer are pumped on an interim basis to the existing Otay Valley Trunk Sewer system located north of the Otay Mesa Community Plan Area via a temporary pump station (SPS 23T) located at Siempre Viva and Cactus Roads.

As part of the OMTS Master Plan Update, hydraulic studies were conducted to evaluate capacity of the existing Otay Mesa sewer system and to size future phases of the system. These studies assumed a phased buildout of the East Otay Mesa Planning based on SANDAG growth projections, with an average ultimate flow to the Otay Mesa Trunk Sewer of 3.0 MGD and 1.0 MGD to the Otay Valley Trunk Sewer to the north. Future phases of the Otay Mesa Trunk Sewer system, which will extend the existing sewer westward in Otay Mesa Road, are currently under design or in construction. The alignment and preliminary sizes of the trunk sewer and associated pump stations and force mains were developed as part of the OMTS Master Plan Update. The basis of design used for the future trunk sewer phases assumed buildout of the Planning Area generated a total flow of 4.0 MGD, with 3.0 MGD to the Otay Mesa Trunk Sewer and 1.0 MGD to the Otay Valley Trunk Sewer. Based on ultimate flow projections of 3.0 MGD as discussed above, the planned regional facilities will still have adequate capacity to convey future East Otay Mesa wastewater flows. Table 5 summarizes the updated sewage projections for Basin EOM-6 for the ultimate condition.

Table 5 – Projected Ultimate Sewer Flows to the City's OMTS from Basin EOM-6

Land Use		Gross Area (ac)	Ultimate Unit Generation Rate (gpd/ac)	Total Sewer Flow (gpd)	EDU
Development	Type				
Otay Crossings[1]	Mixed Industrial	237.55	1,500	317,955	1,325
Border Crossing	Special	73.91	1,500	110,865	462
Area 1	Business Park	18.85	1,500	28,275	118
	Light Industrial	19.80	1,500	29,700	124
Area 2	Business Park	13.54	1,500	20,310	85
	Heavy Industrial	25.63	1,500	38,445	160
	Mixed Industrial	55.50	1,500	83,250	347
Area 3	Mixed Industrial	83.40	1,500	125,100	521
Area 4	Mixed Industrial	161.80	1,500	242,700	1,011
Area 5	Light Industrial	79.10	1,500	118,650	494
	Mixed Industrial	245.65	1,500	368,475	1,535
EOM SPA I	Light Industrial[2]	84.50	1,500	126,750	528
EOM SPA II	Residential[3]	340.07	0	0	0
Total to for Basin EOM-6		**1,439.3**		**1,610,475**	**6,710**
Master Plan Projections		**1,439.3**		**1,648,872**	**6,870**

1) Total includes the 25.58-acres of right-of-way. Area is not included in flow calculations.
2) EOM SPA-I area is not tributary to the Project's off-site sewer collection system, but is within the EOM-6 Drainage Basin.
3) Residential for the EOM area is considered Rural Residential (20 DU/ac) and is assumed to be on septic systems.

PBS&J

An employee-owned company

July 31, 2007

Mr. Judd Halenza
Otay Crossings Commerce Park
500 Stevens Avenue, Suite 208
Solana Beach, CA 92075

SUBJECT: OTAY CROSSINGS COMMERCE PARK
CONCEPTUAL SEWER PUMP STATION LAYOUT

Dear Mr. Halenza,

PBS&J has revised the conceptual level layout of the proposed sewer pump station based on County comments and land use data changes from the 2006 East Otay Mesa Sewer Master Plan (Master Plan). This pump station will collect flows from the second phase of the Otay Crossing Commerce Park (Project), adjoining property owners and the planned third border crossing. The purpose of developing the conceptual layout of the sewer facility is to provide a basis for analyzing the potential environmental impacts associated with preparing the EIR for the project.

Background

The proposed Otay Crossings Commerce Park Sewer Pump Station (OCCP SPS) will provide sewer service to the second phase of the Otay Crossings Commerce Park (Project) development with the exception of Lot 25, the proposed Border Crossing and proposed developments from the east. Figure 1 graphically presents the Project location and boundaries for the OCCP. Sewer service for the initial phase of the OCCP project will be provided by on-site gravity mains that connect to a gravity trunk sewer to be located in Airway Road that will convey collected flows to the City of San Diego sewer system. No sewer flows from the first phase of the Project are planned to be diverted to the OCCP sewer pump station.

The conceptual layout of the proposed OCCP sewer pump station is intended to illustrate the anticipated configuration of the pump station and identify the key equipment that would be expected in this type of facility for inclusion in the Project EIR. The County of San Diego (County) is the lead agency for the Project EIR and will own and operate the proposed pump station after the facility is constructed.

Location

As shown on Figure 2, the preferred site location of the OCCP SPS is proposed to be located on the west side of Camino Del Mayer on the north east corner of Lot 31. This site was selected based on the current preliminary alignment of the SR-11 freeway which is proposed to encroach on the OCCP property and potentially leave a small irregularly shaped parcel wedged in between the SR-11 ROW and the planned alignment of Camino Del Mayer. This site location is essentially infeasible to build any type of industrial or office building type facility and would most likely be left vacant.

However the SR-11 alignment is very preliminary and cannot be confirmed until a feasibility study and conceptual layout of the proposed third international border crossing is performed. The alignment of the border crossing traffic ingress and egress could easily affect the SR-11 alignment and location of the planned OCCP sewer pump station. Two alternative site locations are shown on Figure 2 which is feasible from a technical and operational perspective in the event the preferred site is no longer viable.

Proposed Pump Station Capacity

The design of the OCCP SPS is planned to be constructed in two phases. The pump station structure will initially be constructed for ultimate flows but only equipped to provide sewer service for the OCCP Project. The facility will ultimately receive wastewater flows from the second phase of the Project except Lot 25, the Border Crossing, and 329-acres of mixed industrial land use located east of the Project. It is expected that the Border Crossing will construct its own sewer pump station to serve the facility and to convey flows to the OCCP SPS.

Table 1 summarizes the estimated OCCP SPS design capacity and the recommended force main diameters under build-out and ultimate conditions for the Interim and Final Phase. The Interim Phase only includes Project flows to the pump station (Phase 2). The Final Phase includes flows developed from the Project, the Proposed Border Crossing and the tributary development to the east. The proposed pump station's design flow rate includes an allowance of 30% on top of the peak inflow to account for wet weather conditions and maintenance. Pump station design flow rate and force main sizing calculations are provided in Appendix A and C of the Otay Crossings Commerce Park Conceptual Sewer Study, December 2006, respectively.

Table 1
Pump Station Design Capacity

Phase	Gross Area (acre)	EDU[3]		Pump Station Design Capacity (mgd)[4]		Force main Diameter[5]	
		Buildout	Ultimate	Buildout	Ultimate	Buildout	Ultimate
Interim Phase (Project - Phase 2)[1]	58.9	246	368	0.20	0.28	4"	4"
Final Phase[2]	461.9	784	1,370	1.17	1.79	8"	8"

1. Interim Project Phase 2 does not include Lot 25.
2. Final Phase includes Project Phase 2 (except Lot 25), the Border Crossing, and the tributary areas to the east.
3. EDU's based on 240 gpd/EDU per County Design Guidelines.
4. Design Capacity determined with the City's peaking factor equation and 30% additional flow.
5. Force main diameter determined based on maximum velocity of 8 fps and maximum retention time of 4 hours.

Preliminary Site and Building Layout

The proposed preliminary OCCP SPS site plan is depicted on Figure 3. The OCCP SPS will be located at a proposed pad elevation of approximately 490 feet. Access to the pump station is planned to be provided by two concrete driveways for ingress and egress from the site. This is provided for adequate turning radius around the building for large trucks and other equipment. A stormwater detention basin is shown on the site plan to collect and store run-off from the pump station site only. This could be eliminated if combined with the drainage facilities planned for the overall Project. The Site perimeter is planned to be fenced with gates at each driveway for security purposes. In-coming electrical facilities including the

planned transformer for the facility is planned to be located adjacent to the stand-by generator and pump station building away from the wet well.

The pump station is conceptually laid out with independent wet and dry wells with the pump and motor rooms on two floors located below grade and the electrical and control room located on the third floor located above grade. This 3-story facility is illustrated in the pump station section view shown on Figure 4. As shown, the dry well is adjacent to the wet well which has been sized to store both emergency and operational storage. Emergency storage is sized to hold a minimum of 6 hours of peak wet weather inflow under the ultimate condition for the tributary Phase 2 Project (excluding Lot 25) and the Border Crossing flows (0.12 MG). The County may require additional emergency storage for future tributary developments, and construction would be the responsibility of those properties. Space will be provided on the proposed pump station site to accommodate additional storage for the ultimate buildout condition of 0.30 MG, for a total of 0.42 MG. This approach is consistent with discussions with County Engineering staff.

The above grade pump building structure will have an approximate overall dimension of 26 feet by 18 feet and constructed with tilt-up concrete walls and open wood framed gable roof with concrete tiles. The height of the building will be approximately 20-feet above grade. The below grade concrete structure (approximately 25- to 35-feet below grade) will include the motor room, pump room and wet well. The pump station building's architectural style and materials will blend with the surrounding industrial/ commercial business park.

A conceptual layout of the first floor which houses the electrical switchgear, ventilation equipment, and pump station control equipment is illustrated in Figure 5. The motor room which houses the pump motors is located on the intermediate floor. The elevation of the motor floor is determined based on the wet well influent pipe elevation to protect the motors from being flooded in the event a leak in the wall seals or pipe break in the lower pump room occurs flooding the lower level. The motor room and room conceptual floor plans are illustrated in Figures 6 and 7 respectively.

Primary Pump Station Equipment

A. Vertical Non-Clog Sewage Pumps

A set of three (3) 15-hp constant speed 200 gpm pumps will be installed in the Interim Phase. The three (3) 200 gpm pumps will accommodate lower flows anticipated at the pump station during the Interim Phase. In the Final Phase, the three (3) 15-hp motors will be replaced with three (3) 25-hp motors fitted to the existing pumps in order to provide three (3) 25-hp constant speed 660 gpm pumps which will provide capacity for the ultimate condition. All pumps will be vertical non-clog sewage pumps with cast iron construction with hardened wear rings and mechanical seals. Identified in Table 2 are the pumps that were preliminarily selected. Approximately 1,830 feet of one (1) 4-inch diameter and one (1) 8-inch diameter force mains will need to be installed to convey pumped flows from the OCCP SPS to the proposed gravity sewer located on Loop Road. The 4-inch and 8-inch diameter force main will be used for single pump and dual pump operation in the Interim phase, respectively. These two lines can facilitate flows from the ultimate phase unless additional redundancy if required. In this case, a second 8-inch diameter force main will be added. The 8-inch diameter force main will be used for single pump and dual pump operation in the Final phase.

Table 2
Pump Selections

Manufacturer	No. of Pumps	Horsepower (hp)	Flow (gpm)	TDH (feet)
Fairbanks Morse	3	15	200	101
Fairbanks Morse	3	25	660	86

B. .Pump Station Piping

1. Discharge Header — Dual 6-inches
2. 15 hp Pump Suction Piping — 6-inches
3. 25 hp Pump Suction Piping — 8-inches
4. Buried piping will be epoxy-lined and coated ductile iron pipe. Exposed piping will be epoxy-lined and epoxy-painted ductile iron pipe.

C. Force Main

One 4-inch and one 8-inch force mains are recommended. The mains will terminate at the start of the gravity sewer in Loop Road. The 4-inch pipeline is planned for the Initial Phase and the 8-inch force main is planned to be added for the Final Phase, unless the County requires full redundancy for each phase which would necessitate the construction of a 4-inch and an 8-inch pipeline with the first phase and require adding a second 8-inch force main with the final phase.

D. Emergency Generator

One emergency diesel generator will be provided and equipped with an automatic transfer switch (ATS). The emergency generator will be sufficiently sized to start all three 25 hp pumps, station lighting, programmable logic controller, instrumentation, and telemetry. The ATS will automatically transfer the station to back up power in the event of a commercial power failure. The emergency generators will be located behind the pump station in an acoustical weatherproof enclosures provided by the generator manufacturer.

E. Instrumentation and Controls

Electric transformer, switchgear, motor control center (MCC), and SCADA telemetry equipment will be provided.

F. Ventilation

Ventilation, consisting of exhaust fans, shall be provided for the pump station building. Fans will be provided in the pump room, motor control center, and motor room.

G. Acoustics

Noise attenuation devices, including acoustic louvers and doors (necessity, size and layout to be determined) will be provided during the final design. Noise emanating from the pump station will meet the County's noise ordinance requirements.

H. Emergency Storage

Emergency storage is sized to hold a minimum of 6 hours of peak wet weather inflow under the ultimate buildout condition, which includes the tributary Phase 2 and Border Crossing flows (0.12 MG). The County may require additional emergency storage for future tributary developments, and construction would be the responsibility of those properties. Space will be provided on the proposed pump station site to accommodate additional storage for the ultimate buildout condition of 0.30 MG, for a total of 0.42 MG. This approach is consistent with discussions with County Engineering staff.

The approximate size and conceptual layout of the proposed pump station was developed with the approach to be conservative since its intended use is for the basis of the EIR impact analysis. It is expected that the facility could be modified, consolidated and simplified depending on acceptance from the County for such modifications.

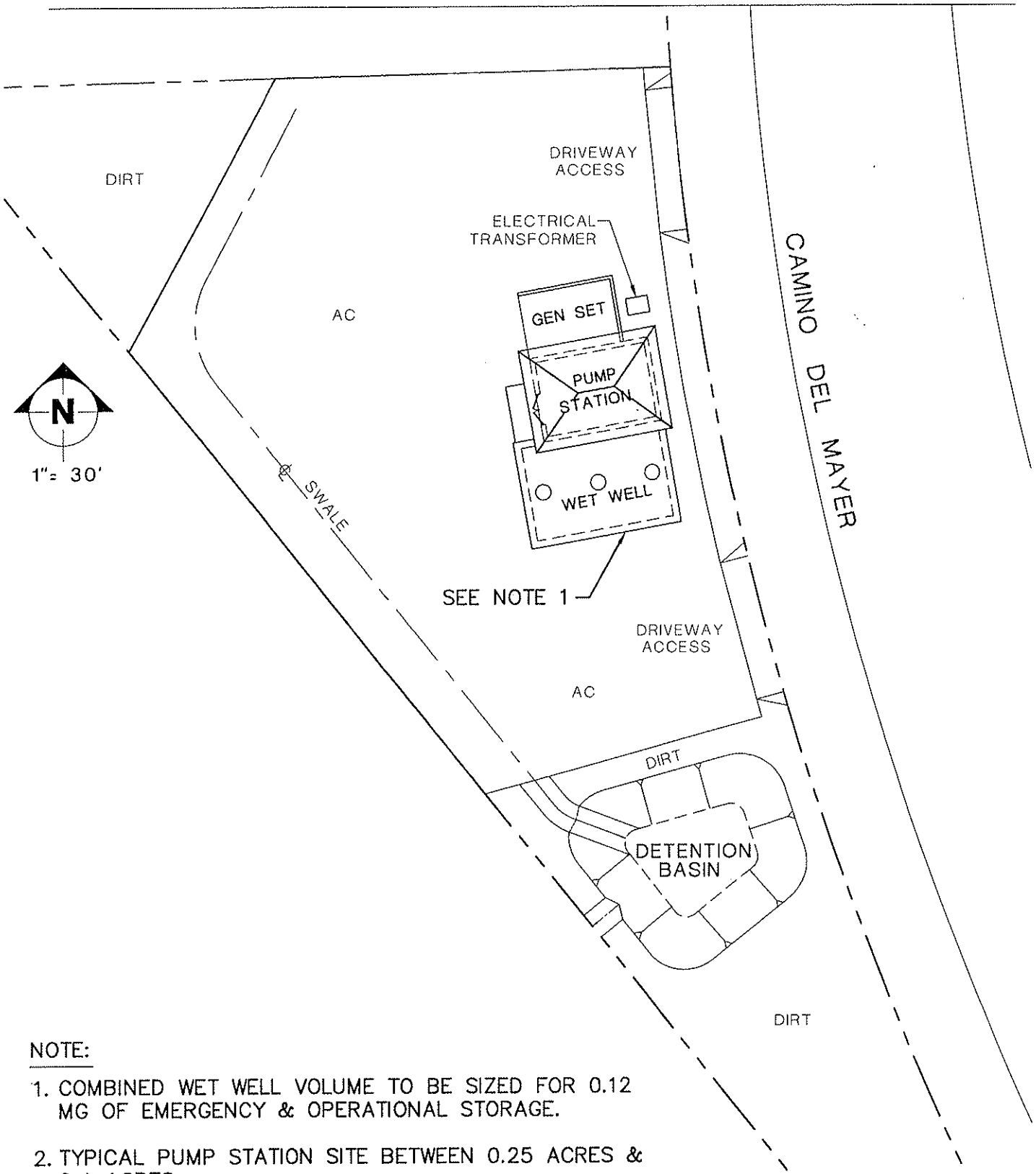
If you have any questions or need additional information for the EIR document, please feel free to call me.

Sincerely,

Jennifer R. Bileck, P.E., CFM
Senior Engineer

Attachments: Figure 1 – Project Location Map
Figure 2 – Project Sewer System Layout
Figure 3 – Typical Sewer Pump Station Site Plan
Figure 4 – Proposed Sewer Pump Station Building Section
Figure 5 – Proposed Sewer Pump Station Equipment Control Room
Figure 6 – Proposed Sewer Pump Station Motor Room
Figure 7 – Proposed Sewer Pump Station Pump Room
Emergency Storage Calculations

CC: Mark B. Elliott – PBS&J
Project File - 491115



NOTE:

1. COMBINED WET WELL VOLUME TO BE SIZED FOR 0.12 MG OF EMERGENCY & OPERATIONAL STORAGE.
2. TYPICAL PUMP STATION SITE BETWEEN 0.25 ACRES & 0.4 ACRES.
3. SPACE PROVIDED ONSITE FOR ADDITIONAL 0.30 MG OF FUTURE EMERGENCY STORAGE TO BE CONSTRUCTED BY OTHERS.

TYPICAL SEWER PUMP STATION SITE PLAN

FIGURE 3

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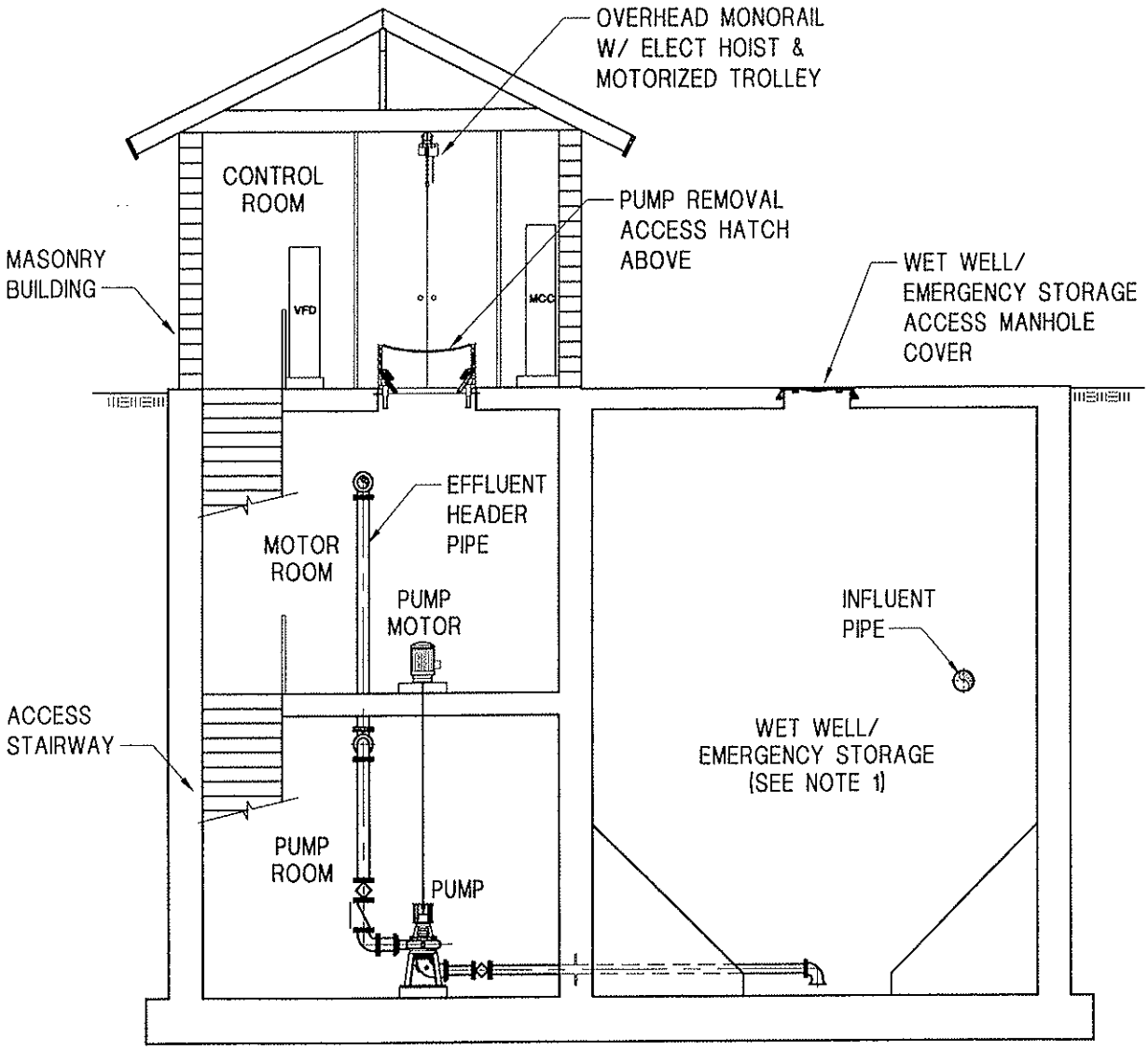

1/8"=1'-0"

NOTE:
1. COMBINED WET WELL VOLUME TO BE SIZED FOR 0.12 MG OF EMERGENCY & OPERATIONAL STORAGE.

PROPOSED SEWER PUMP STATION BUILDING SECTION

FIGURE 4

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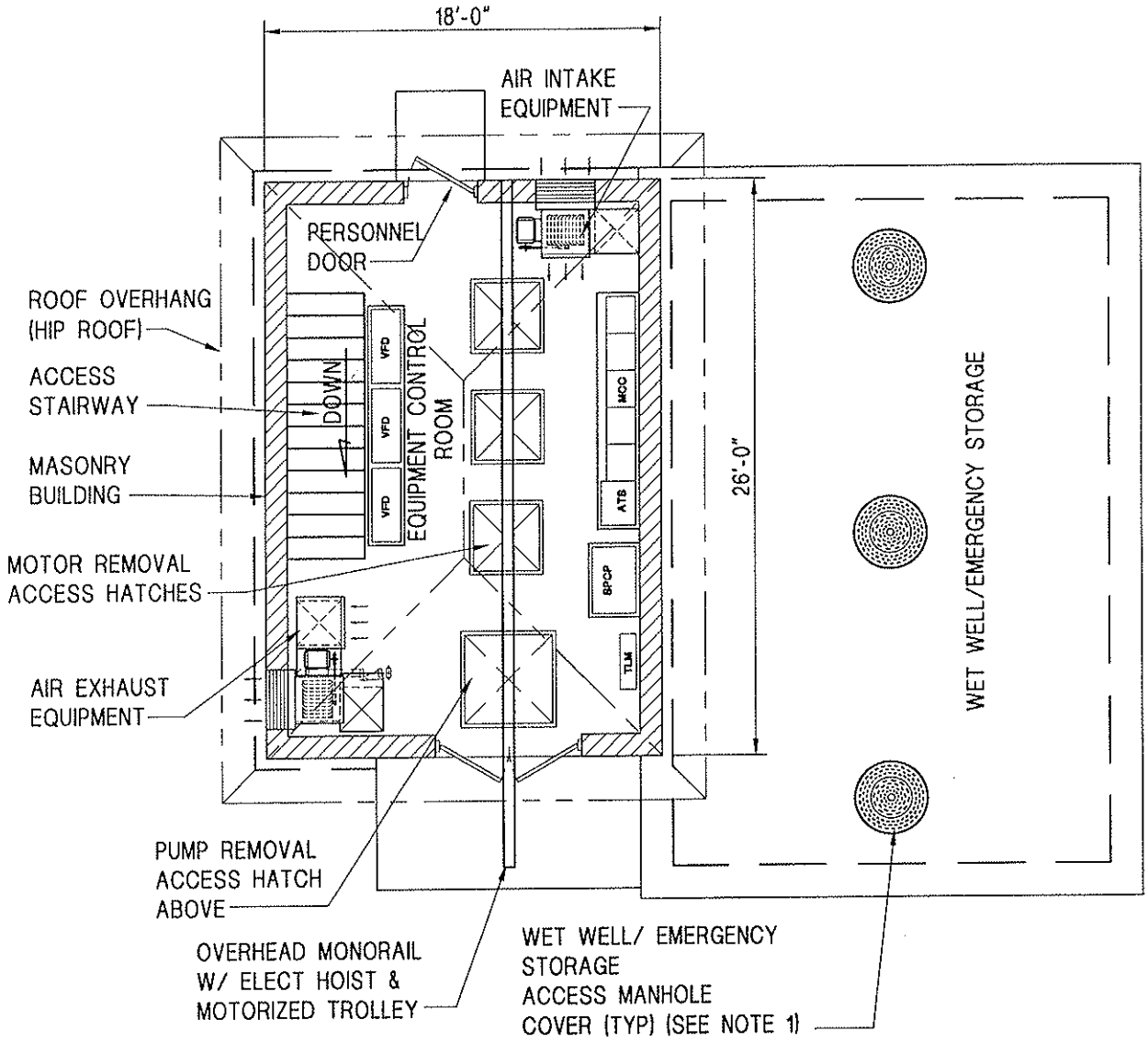

1/8"=1'-0"

NOTE:
1. COMBINED WET WELL VOLUME TO BE SIZED FOR 0.12 MG OF EMERGENCY & OPERATIONAL STORAGE.

PROPOSED SEWER PUMP STATION EQUIPMENT CONTROL ROOM

FIGURE 5

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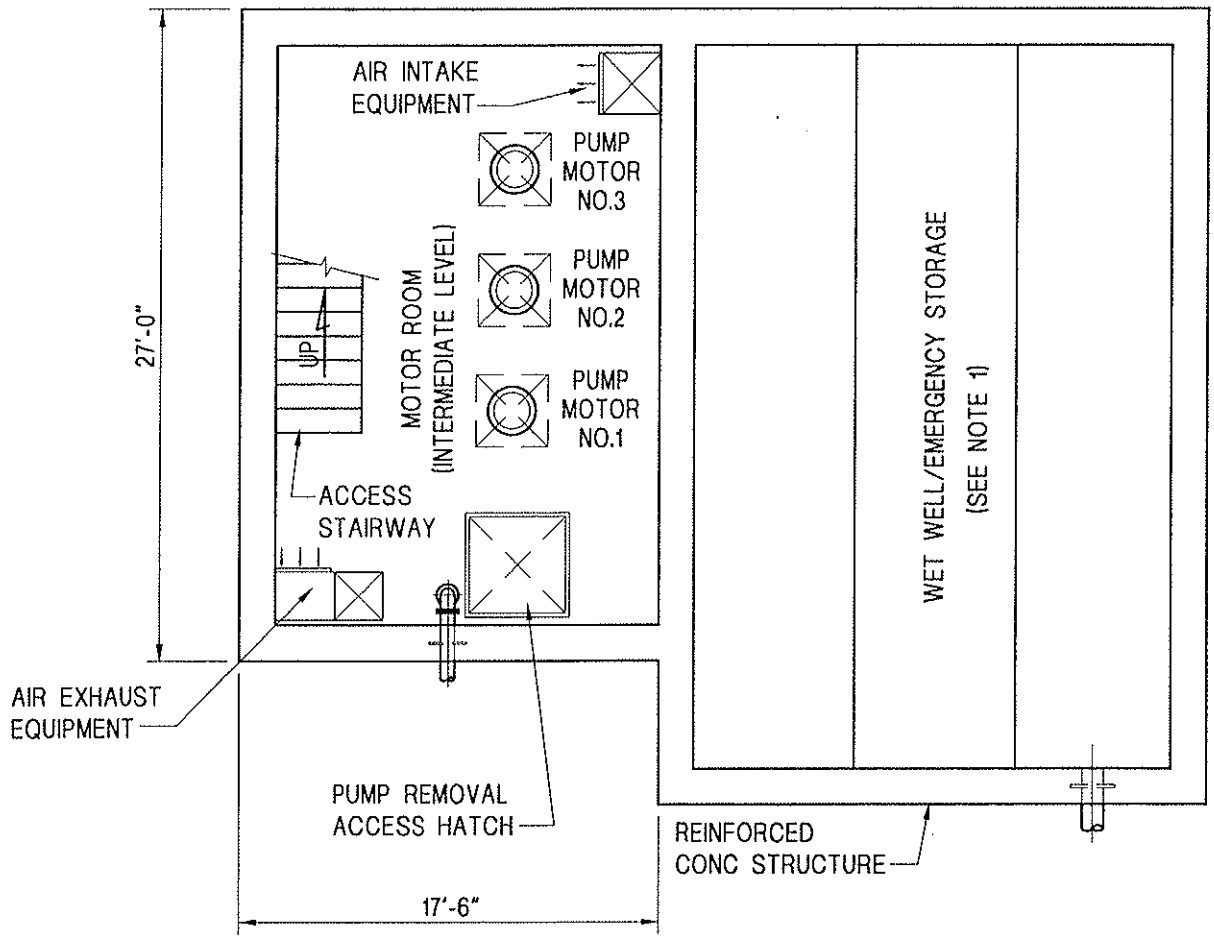

1/8"=1'-0"

NOTE:
1. COMBINED WET WELL VOLUME TO BE SIZED FOR 0.12 MG OF EMERGENCY & OPERATIONAL STORAGE.

PROPOSED SEWER PUMP STATION MOTOR ROOM (INTERMEDIATE LEVEL)

FIGURE 6

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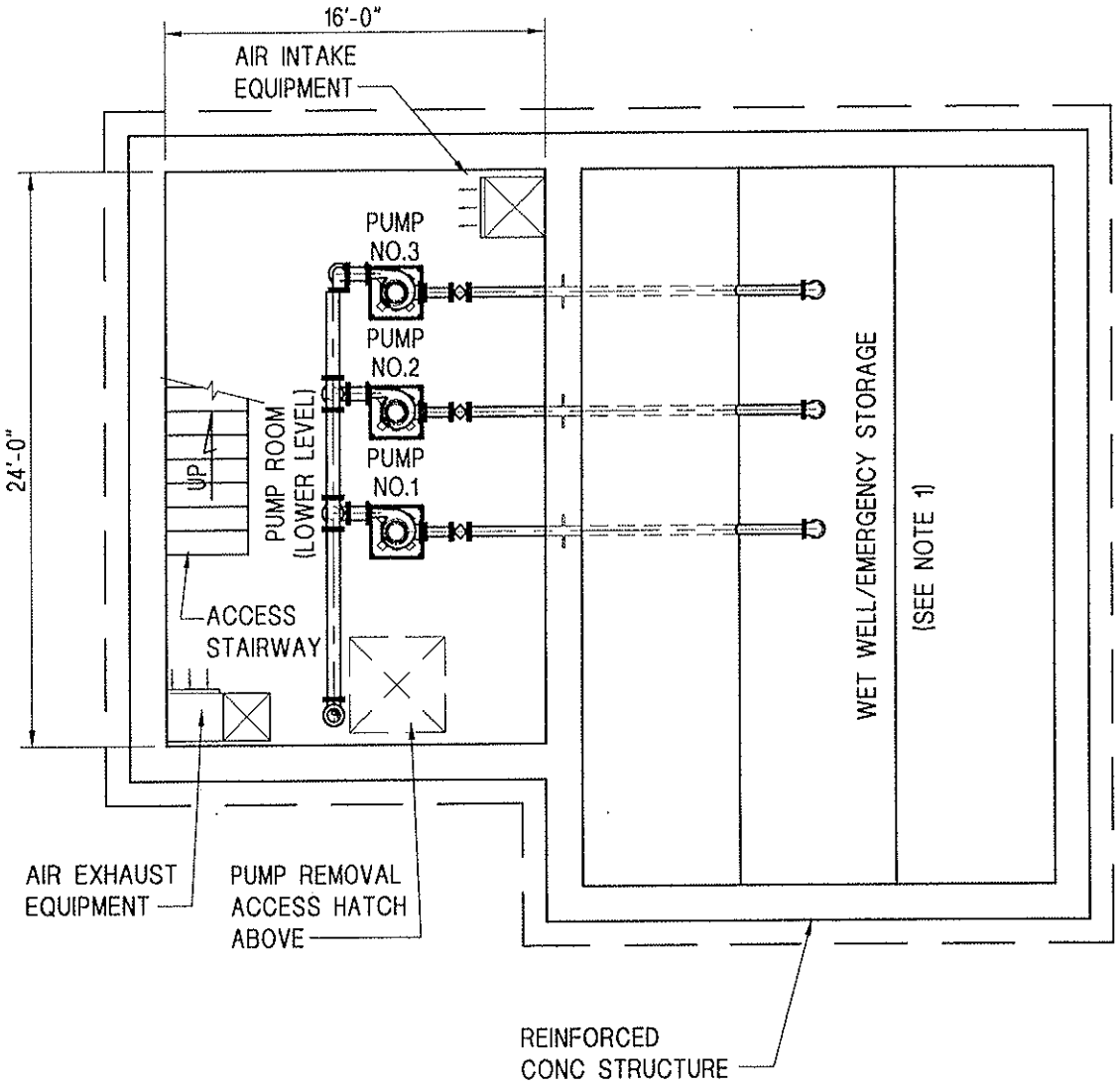

1/8"=1'-0"

PROPOSED SEWER PUMP STATION PUMP ROOM (LOWER LEVEL)

FIGURE 7

NOTE:
1. COMBINED WET WELL VOLUME TO BE SIZED FOR 0.12 MG OF EMERGENCY & OPERATIONAL STORAGE.

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PBS&J
9275 Sky Park Court, Suite 200
San Diego, CA 92123

PROJECT OCCP - Emergency Storage
CLIENT
CALCULATED BY J. Bileck DATE 7.30.07
CHECKED BY MIE DATE 8/1/07
PROJECT NO 491285 SHT 1 OF 2

* Per revised Sewer Study (July 2007): Ultimate Condition

Peak Phase 2 (except Lot 25) Project flow: PWWF = 217,225 gpd

Peak Border Crossing flow: PWWF = 264,325 gpd

* Add peaks b/c the Border Crossing is a pumped flow:

$217,225 \text{ gpd} + 264,325 = 481,550 \text{ gpd}$

$ES_{6,ult}$ = 6 hrs of emergency storage @ ultimate flows.

$= \left(\frac{481,550 \text{ gpd}}{24 \text{ hrs/day}}\right) \times 6 \text{ hrs} = 120,388 \text{ gal}$ of storage required

$$\boxed{120,388 \text{ gal} = 16,095 \text{ cf}}$$

* If ultimate flows are not reached: Buildout Condition

Peak Phase 2 (except Lot 25) flow: PWWF = 152,915 gpd
Peak Border Crossing flow: PWWF = 116,106 gpd

Total = 269,021 gpd

$ES_{?,BO} = \left(\frac{269,021 \text{ gpd}}{24 \text{ hrs/day}}\right) \times R_{TIME} = 120,388 \text{ gal}$

$= 10.7 \text{ hrs}$

* $ES_{6,ULT}$ will provide 10.7 hrs of storage in the buildout condition.

PBS&J
9275 Sky Park Court, Suite 200
San Diego, CA 92123

PROJECT OCCP- Emergency Storage
CLIENT
CALCULATED BY J.Bileck DATE
CHECKED BY MZ DATE 3/1/07
PROJECT NO SHT 2 OF 2

* Ultimate buildout of the entire tributary area would require additional storage be built. This would be the responsibility of the developing property. Space will be provided on the SPS site.

Tributary Flows to SPS:

Project Phase 2 (no Lot 25): ADWF = 88,380 gpd
Border Crossing: ADWF = 110,865 gpd
Area 3: ADWF = 125,100 gpd
Area 6: ADWF = 368,475 gpd

Total = 692,820 gpd - ADWF

$$\text{Population} = \text{ADWF} / 80\,\text{gpd/p} = 8{,}660 \text{ ppl}$$

$$pf = 6.2945 \times pop^{-0.1342} = 6.2945\,(8{,}660\,\text{ppl})^{-0.1342}$$

$$pf = 1.864$$

$$PDWF = ADWF \times pf = 692{,}820\,\text{gpd} \times 1.864$$

$$PDWF = 1.29\,\text{MGD}$$

$$PWWF = PDWF \times 1.3 = 1.29\,\text{MGD} \times 1.3 = 1.68\,\text{MGD}$$

$$ES_{6,ULT-Trib} = \left(\frac{1.68\,\text{MGD}}{24\,\text{hrs/day}}\right) \times 6\,\text{hrs} = 0.42\,\text{MG}$$

$$ES_{6,ULT} = 120{,}388\,\text{gal} \quad (0.12\,\text{MG})$$

* Future development would be required to build:
0.42 - 0.12 = **0.30 MG**

APPENDIX A

CONCEPTUAL SEWER STUDY, CHAPTER 3

OTAY CROSSINGS COMMERCE PARK
CONCEPTUAL SEWER STUDY

July 2007

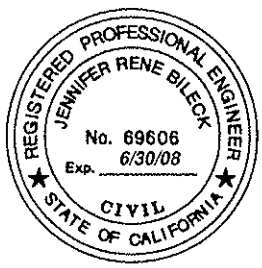
PBS&J Project No.: 491285.01
County of San Diego Project #SPA 04-006
TM #5405
Log No. 93-19-006Q

Prepared For:

Otay Crossings Commerce Park, LLC

Prepared By:

9275 Sky Park Court, Suite 200
San Diego, CA 92123



Mark B. Elliott, P.E.
Program Manager

Jennifer R. Bileck, P.E., CFM
Senior Engineer

Chapter 3
Capacity Analysis

This chapter provides a brief description of the proposed on-site and off-site sewer facilities necessary to service the Project, and describes the methodology and procedure for sizing those facilities.

3.1 Methodology

On-site gravity sewers were sized based upon the same methodology and criteria used in the 2006 East Otay Mesa Sewer Master Plan, which used a steady state analysis to size regional pipe facilities. Table 3 summarizes the criteria used in this study.

Table 3 – Design Criteria

Parameter	Design Criteria
Mannings 'n'	0.013
Minimum Dry Weather Peak Flow Velocity	2 fps (or 1% min slope)
Maximum Velocity	10 fps
Maximum d/D Ratio	0.50 for D ≤ 12"
	0.75 for D ≥ 15"
Minimum Sewer Size	8-inch diameter
Peaking Factor	6.2945 x Pop ^ (-0.1342)
EDU Factor	240 gpd/EDU

3.2 On-site Sewerage Facilities

As discussed in Section 1.3, the Project will be developed in two phases. Phase 1 and Lot 25 wastewater flows generated by the Project and neighboring developments will be conveyed by gravity to the proposed off-site sewer located at the intersection of Airway and Alta Road. Phase 2 (excluding Lot 25) wastewater flows will be conveyed by gravity to the proposed regional pump station located just south of Lot 27. Wastewater flows will then be pumped from the regional pump station to the Phase 1 Airway Road sewer.

An on-site sewer system analysis was performed to size the proposed collection system. Since the East Otay Mesa Sanitation District connects directly to City of San Diego sewers, the County required that the City's peaking criteria be used for collection system sizing. Figure 3 shows the recommended on-site wastewater facility sizes and indicates where tributary flows are assumed to enter the system. On-site gravity sewer and forcemain calculations are presented in Appendix B and C, respectively.

The Master Plan proposed a regional pump station within the Project's boundary. The regional pump station will receive wastewater flows from Phase 2 of the Project (except Lot 25), the Border Crossing, and Areas 3 and 6. It is expected that the Border Crossing will construct a private sewer pump station to

serve the facility and to convey flows to the regional sewer pump station within the Project. Table 4 summarizes the estimated regional pump station's design capacity and the recommended force main diameters under buildout and ultimate conditions for the Interim and Final Phase. The Interim Phase only includes Project flows to the pump station (Phase 2 except Lot 25). The Final Phase includes flows developed from the Project, the Proposed Border Crossing and the tributary developments to the east. The proposed pump station's design flow rate includes an allowance of 30% on top of the peak inflow to account for wet weather conditions and maintenance. Pump station design flow rate and force main sizing calculations are provided in Appendix A and C, respectively. The conceptual pump station layout is attached in Appendix D.

Table 4 – Regional Pump Station Design Capacity

Phase	Gross Area (acre)	EDU[3]		Pump Station Design Capacity (mgd)[4]		Force main Diameter[5]	
		Buildout	Ultimate	Buildout	Ultimate	Buildout	Ultimate
Interim Phase (Project - Phase 2)[1]	58.9	246	368	0.20	0.28	4"	4"
Final Phase[2]	461.9	784	1,370	1.17	1.79	8"	8"

1. Interim Project Phase 2 does not include Lot 25.
2. Final Phase includes Project Phase 2 (except Lot 25), the Border Crossing, Area 3, and Area 6.
3. EDU's based on 240 gpd/EDU per County Design Guidelines.
4. Design Capacity determined with the City's peaking factor equation and 30% additional flow.
5. Force main diameter determined based on maximum velocity of 8 fps and maximum retention time of 4 hours.

3.3 Off-site Sewerage Facilities

The EOMSMD currently does not have sewer facilities in the vicinity of the Project. Otay Crossings Commerce Park, LLC will be required to construct the off-site sewer facilities described in the 2006 Master Plan in order to connect to the City of San Diego's sewer collection system at the intersection of Via de la Amistad and Enrico Fermi Drive. The Project was included in Sewer Basin EOM-6 of the Master Plan. Several options were considered for sewering this basin based upon topography of the area. The preferred alternative identified in the Master Plan included a 15-inch and 18-inch diameter gravity sewer that would convey the flow from this project area southwesterly to the City's 27-inch sewer main at Via de la Amistad and Enrico Fermi, and is shown on Figure 3. A previous analysis of the downstream facilities within the City's sewer collection system demonstrated that the flows associated with EOM-6 were consistent with the City's Otay Mesa Trunk Sewer Master Plan. Therefore, no additional off-site sewer facilities would be required within the City's system.

3.4 Regional Sewerage Facilities

The Project is located within Basin EOM-6 and will connect to the City's Otay Mesa Trunk Sewer System. Existing and planned City facilities that will serve the Project are shown in Figure 4. The ultimate Otay Mesa Trunk Sewer System will consist of gravity sewers and force mains located in Siempre Viva and Otay Mesa roads that will connect to the San Ysidro and South Metro Interceptors west of Interstate 5. Phase I of the Otay Mesa Trunk Sewer Project has been constructed and includes a 27-inch to 30-inch diameter gravity sewer in Siempre Viva Road. Flows conveyed in this sewer are pumped on an interim basis to the existing Otay Valley Trunk Sewer system located north of the Otay Mesa Community Plan Area via a temporary pump station (SPS 23T) located at Siempre Viva and Cactus Roads.

As part of the OMTS Master Plan Update, hydraulic studies were conducted to evaluate capacity of the existing Otay Mesa sewer system and to size future phases of the system. These studies assumed a phased buildout of the East Otay Mesa Planning based on SANDAG growth projections, with an average ultimate flow to the Otay Mesa Trunk Sewer of 3.0 MGD and 1.0 MGD to the Otay Valley Trunk Sewer to the north. Future phases of the Otay Mesa Trunk Sewer system, which will extend the existing sewer westward in Otay Mesa Road, are currently under design or in construction. The alignment and preliminary sizes of the trunk sewer and associated pump stations and force mains were developed as part of the OMTS Master Plan Update. The basis of design used for the future trunk sewer phases assumed buildout of the Planning Area generated a total flow of 4.0 MGD, with 3.0 MGD to the Otay Mesa Trunk Sewer and 1.0 MGD to the Otay Valley Trunk Sewer. Based on ultimate flow projections of 3.0 MGD as discussed above, the planned regional facilities will still have adequate capacity to convey future East Otay Mesa wastewater flows. Table 5 summarizes the updated sewage projections for Basin EOM-6 for the ultimate condition.

Table 5 – Projected Ultimate Sewer Flows to the City's OMTS from Basin EOM-6

Land Use		Gross Area (ac)	Ultimate Unit Generation Rate (gpd/ac)	Total Sewer Flow (gpd)	EDU
Development	Type				
Otay Crossings[1]	Mixed Industrial	237.55	1,500	317,955	1,325
Border Crossing	Special	73.91	1,500	110,865	462
Area 1	Business Park	18.85	1,500	28,275	118
	Light Industrial	19.80	1,500	29,700	124
Area 2	Business Park	13.54	1,500	20,310	85
	Heavy Industrial	25.63	1,500	38,445	160
	Mixed Industrial	55.50	1,500	83,250	347
Area 3	Mixed Industrial	83.40	1,500	125,100	521
Area 4	Mixed Industrial	161.80	1,500	242,700	1,011
Area 5	Light Industrial	79.10	1,500	118,650	494
	Mixed Industrial	245.65	1,500	368,475	1,535
EOM SPA I	Light Industrial[2]	84.50	1,500	126,750	528
EOM SPA II	Residential[3]	340.07	0	0	0
Total to for Basin EOM-6		**1,439.3**		**1,610,475**	**6,710**
Master Plan Projections		**1,439.3**		**1,648,872**	**6,870**

1) Total includes the 25.58-acres of right-of-way. Area is not included in flow calculations.
2) EOM SPA-I area is not tributary to the Project's off-site sewer collection system, but is within the EOM-6 Drainage Basin.
3) Residential for the EOM area is considered Rural Residential (20 DU/ac) and is assumed to be on septic systems.

PBS&J

An employee-owned company

July 31, 2007

Mr. Judd Halenza
Otay Crossings Commerce Park
500 Stevens Avenue, Suite 208
Solana Beach, CA 92075

SUBJECT: OTAY CROSSINGS COMMERCE PARK
CONCEPTUAL SEWER PUMP STATION LAYOUT

Dear Mr. Halenza,

PBS&J has revised the conceptual level layout of the proposed sewer pump station based on County comments and land use data changes from the 2006 East Otay Mesa Sewer Master Plan (Master Plan). This pump station will collect flows from the second phase of the Otay Crossing Commerce Park (Project), adjoining property owners and the planned third border crossing. The purpose of developing the conceptual layout of the sewer facility is to provide a basis for analyzing the potential environmental impacts associated with preparing the EIR for the project.

Background

The proposed Otay Crossings Commerce Park Sewer Pump Station (OCCP SPS) will provide sewer service to the second phase of the Otay Crossings Commerce Park (Project) development with the exception of Lot 25, the proposed Border Crossing and proposed developments from the east. Figure 1 graphically presents the Project location and boundaries for the OCCP. Sewer service for the initial phase of the OCCP project will be provided by on-site gravity mains that connect to a gravity trunk sewer to be located in Airway Road that will convey collected flows to the City of San Diego sewer system. No sewer flows from the first phase of the Project are planned to be diverted to the OCCP sewer pump station.

The conceptual layout of the proposed OCCP sewer pump station is intended to illustrate the anticipated configuration of the pump station and identify the key equipment that would be expected in this type of facility for inclusion in the Project EIR. The County of San Diego (County) is the lead agency for the Project EIR and will own and operate the proposed pump station after the facility is constructed.

Location

As shown on Figure 2, the preferred site location of the OCCP SPS is proposed to be located on the west side of Camino Del Mayer on the north east corner of Lot 31. This site was selected based on the current preliminary alignment of the SR-11 freeway which is proposed to encroach on the OCCP property and potentially leave a small irregularly shaped parcel wedged in between the SR-11 ROW and the planned alignment of Camino Del Mayer. This site location is essentially infeasible to build any type of industrial or office building type facility and would most likely be left vacant.

However the SR-11 alignment is very preliminary and cannot be confirmed until a feasibility study and conceptual layout of the proposed third international border crossing is performed. The alignment of the border crossing traffic ingress and egress could easily affect the SR-11 alignment and location of the planned OCCP sewer pump station. Two alternative site locations are shown on Figure 2 which is feasible from a technical and operational perspective in the event the preferred site is no longer viable.

Proposed Pump Station Capacity

The design of the OCCP SPS is planned to be constructed in two phases. The pump station structure will initially be constructed for ultimate flows but only equipped to provide sewer service for the OCCP Project. The facility will ultimately receive wastewater flows from the second phase of the Project except Lot 25, the Border Crossing, and 329-acres of mixed industrial land use located east of the Project. It is expected that the Border Crossing will construct its own sewer pump station to serve the facility and to convey flows to the OCCP SPS.

Table 1 summarizes the estimated OCCP SPS design capacity and the recommended force main diameters under build-out and ultimate conditions for the Interim and Final Phase. The Interim Phase only includes Project flows to the pump station (Phase 2). The Final Phase includes flows developed from the Project, the Proposed Border Crossing and the tributary development to the east. The proposed pump station's design flow rate includes an allowance of 30% on top of the peak inflow to account for wet weather conditions and maintenance. Pump station design flow rate and force main sizing calculations are provided in Appendix A and C of the Otay Crossings Commerce Park Conceptual Sewer Study, December 2006, respectively.

Table 1
Pump Station Design Capacity

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4. Design Capacity determined with the City's peaking factor equation and 30% additional flow.
5. Force main diameter determined based on maximum velocity of 8 fps and maximum retention time of 4 hours.

Preliminary Site and Building Layout

The proposed preliminary OCCP SPS site plan is depicted on Figure 3. The OCCP SPS will be located at a proposed pad elevation of approximately 490 feet. Access to the pump station is planned to be provided by two concrete driveways for ingress and egress from the site. This is provided for adequate turning radius around the building for large trucks and other equipment. A stormwater detention basin is shown on the site plan to collect and store run-off from the pump station site only. This could be eliminated if combined with the drainage facilities planned for the overall Project. The Site perimeter is planned to be fenced with gates at each driveway for security purposes. In-coming electrical facilities including the

planned transformer for the facility is planned to be located adjacent to the stand-by generator and pump station building away from the wet well.

The pump station is conceptually laid out with independent wet and dry wells with the pump and motor rooms on two floors located below grade and the electrical and control room located on the third floor located above grade. This 3-story facility is illustrated in the pump station section view shown on Figure 4. As shown, the dry well is adjacent to the wet well which has been sized to store both emergency and operational storage. Emergency storage is sized to hold a minimum of 6 hours of peak wet weather inflow under the ultimate condition for the tributary Phase 2 Project (excluding Lot 25) and the Border Crossing flows (0.12 MG). The County may require additional emergency storage for future tributary developments, and construction would be the responsibility of those properties. Space will be provided on the proposed pump station site to accommodate additional storage for the ultimate buildout condition of 0.30 MG, for a total of 0.42 MG. This approach is consistent with discussions with County Engineering staff.

The above grade pump building structure will have an approximate overall dimension of 26 feet by 18 feet and constructed with tilt-up concrete walls and open wood framed gable roof with concrete tiles. The height of the building will be approximately 20-feet above grade. The below grade concrete structure (approximately 25- to 35-feet below grade) will include the motor room, pump room and wet well. The pump station building's architectural style and materials will blend with the surrounding industrial/ commercial business park.

A conceptual layout of the first floor which houses the electrical switchgear, ventilation equipment, and pump station control equipment is illustrated in Figure 5. The motor room which houses the pump motors is located on the intermediate floor. The elevation of the motor floor is determined based on the wet well influent pipe elevation to protect the motors from being flooded in the event a leak in the wall seals or pipe break in the lower pump room occurs flooding the lower level. The motor room and room conceptual floor plans are illustrated in Figures 6 and 7 respectively.

Primary Pump Station Equipment

A. Vertical Non-Clog Sewage Pumps

A set of three (3) 15-hp constant speed 200 gpm pumps will be installed in the Interim Phase. The three (3) 200 gpm pumps will accommodate lower flows anticipated at the pump station during the Interim Phase. In the Final Phase, the three (3) 15-hp motors will be replaced with three (3) 25-hp motors fitted to the existing pumps in order to provide three (3) 25-hp constant speed 660 gpm pumps which will provide capacity for the ultimate condition. All pumps will be vertical non-clog sewage pumps with cast iron construction with hardened wear rings and mechanical seals. Identified in Table 2 are the pumps that were preliminarily selected. Approximately 1,830 feet of one (1) 4-inch diameter and one (1) 8-inch diameter force mains will need to be installed to convey pumped flows from the OCCP SPS to the proposed gravity sewer located on Loop Road. The 4-inch and 8-inch diameter force main will be used for single pump and dual pump operation in the Interim phase, respectively. These two lines can facilitate flows from the ultimate phase unless additional redundancy if required. In this case, a second 8-inch diameter force main will be added. The 8-inch diameter force main will be used for single pump and dual pump operation in the Final phase.

Table 2
Pump Selections

Manufacturer	No. of Pumps	Horsepower (hp)	Flow (gpm)	TDH (feet)
Fairbanks Morse	3	15	200	101
Fairbanks Morse	3	25	660	86

B. .Pump Station Piping

1. Discharge Header — Dual 6-inches
2. 15 hp Pump Suction Piping — 6-inches
3. 25 hp Pump Suction Piping — 8-inches
4. Buried piping will be epoxy-lined and coated ductile iron pipe. Exposed piping will be epoxy-lined and epoxy-painted ductile iron pipe.

C. Force Main

One 4-inch and one 8-inch force mains are recommended. The mains will terminate at the start of the gravity sewer in Loop Road. The 4-inch pipeline is planned for the Initial Phase and the 8-inch force main is planned to be added for the Final Phase, unless the County requires full redundancy for each phase which would necessitate the construction of a 4-inch and an 8-inch pipeline with the first phase and require adding a second 8-inch force main with the final phase.

D. Emergency Generator

One emergency diesel generator will be provided and equipped with an automatic transfer switch (ATS). The emergency generator will be sufficiently sized to start all three 25 hp pumps, station lighting, programmable logic controller, instrumentation, and telemetry. The ATS will automatically transfer the station to back up power in the event of a commercial power failure. The emergency generators will be located behind the pump station in an acoustical weatherproof enclosures provided by the generator manufacturer.

E. Instrumentation and Controls

Electric transformer, switchgear, motor control center (MCC), and SCADA telemetry equipment will be provided.

F. Ventilation

Ventilation, consisting of exhaust fans, shall be provided for the pump station building. Fans will be provided in the pump room, motor control center, and motor room.

G. Acoustics

Noise attenuation devices, including acoustic louvers and doors (necessity, size and layout to be determined) will be provided during the final design. Noise emanating from the pump station will meet the County's noise ordinance requirements.

H. Emergency Storage

Emergency storage is sized to hold a minimum of 6 hours of peak wet weather inflow under the ultimate buildout condition, which includes the tributary Phase 2 and Border Crossing flows (0.12 MG). The County may require additional emergency storage for future tributary developments, and construction would be the responsibility of those properties. Space will be provided on the proposed pump station site to accommodate additional storage for the ultimate buildout condition of 0.30 MG, for a total of 0.42 MG. This approach is consistent with discussions with County Engineering staff.

The approximate size and conceptual layout of the proposed pump station was developed with the approach to be conservative since its intended use is for the basis of the EIR impact analysis. It is expected that the facility could be modified, consolidated and simplified depending on acceptance from the County for such modifications.

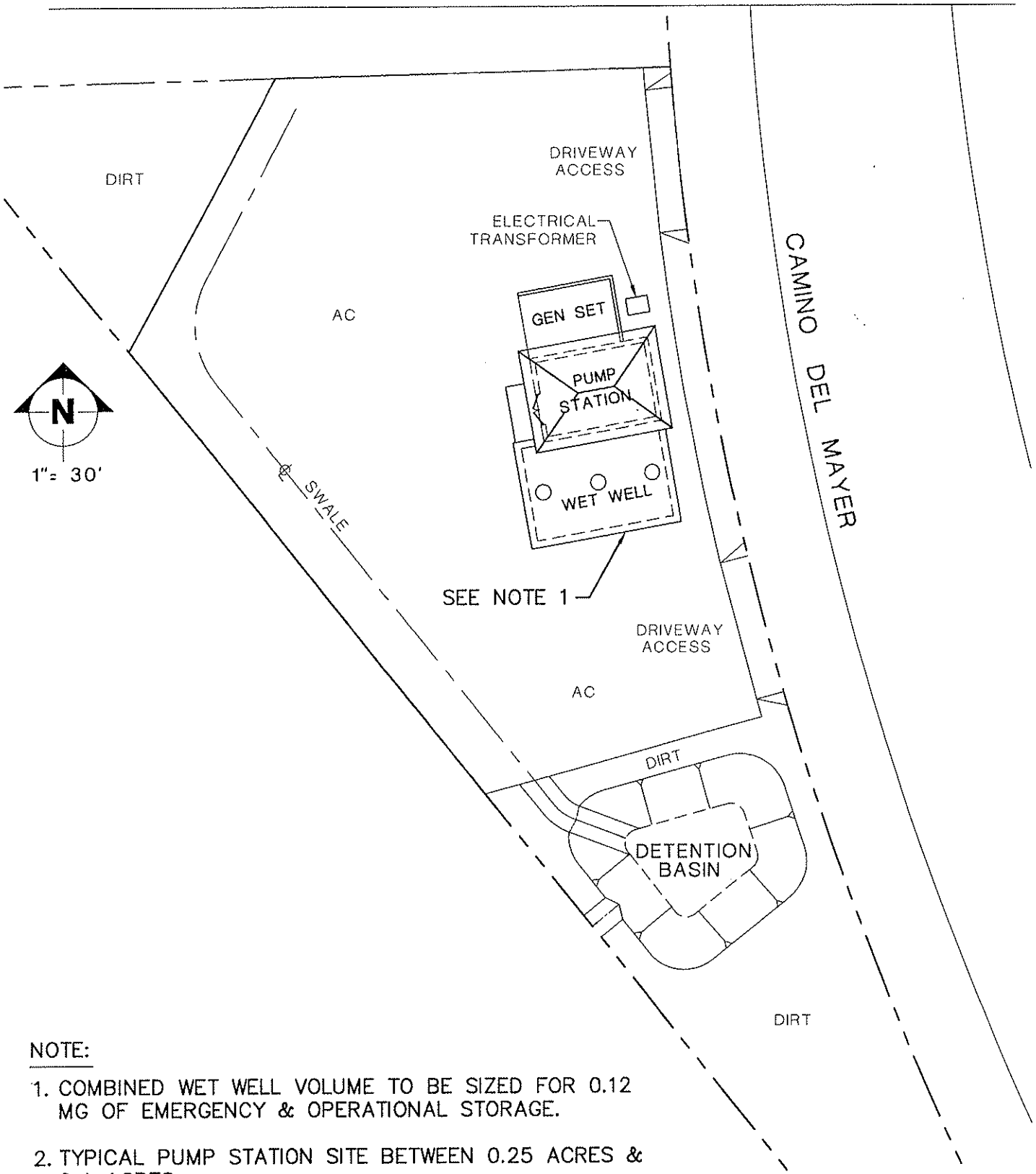
If you have any questions or need additional information for the EIR document, please feel free to call me.

Sincerely,

Jennifer R. Bileck, P.E., CFM
Senior Engineer

Attachments: Figure 1 – Project Location Map
Figure 2 – Project Sewer System Layout
Figure 3 – Typical Sewer Pump Station Site Plan
Figure 4 – Proposed Sewer Pump Station Building Section
Figure 5 – Proposed Sewer Pump Station Equipment Control Room
Figure 6 – Proposed Sewer Pump Station Motor Room
Figure 7 – Proposed Sewer Pump Station Pump Room
Emergency Storage Calculations

CC: Mark B. Elliott – PBS&J
Project File - 491115



NOTE:

1. COMBINED WET WELL VOLUME TO BE SIZED FOR 0.12 MG OF EMERGENCY & OPERATIONAL STORAGE.
2. TYPICAL PUMP STATION SITE BETWEEN 0.25 ACRES & 0.4 ACRES.
3. SPACE PROVIDED ONSITE FOR ADDITIONAL 0.30 MG OF FUTURE EMERGENCY STORAGE TO BE CONSTRUCTED BY OTHERS.

TYPICAL SEWER PUMP STATION SITE PLAN

FIGURE 3

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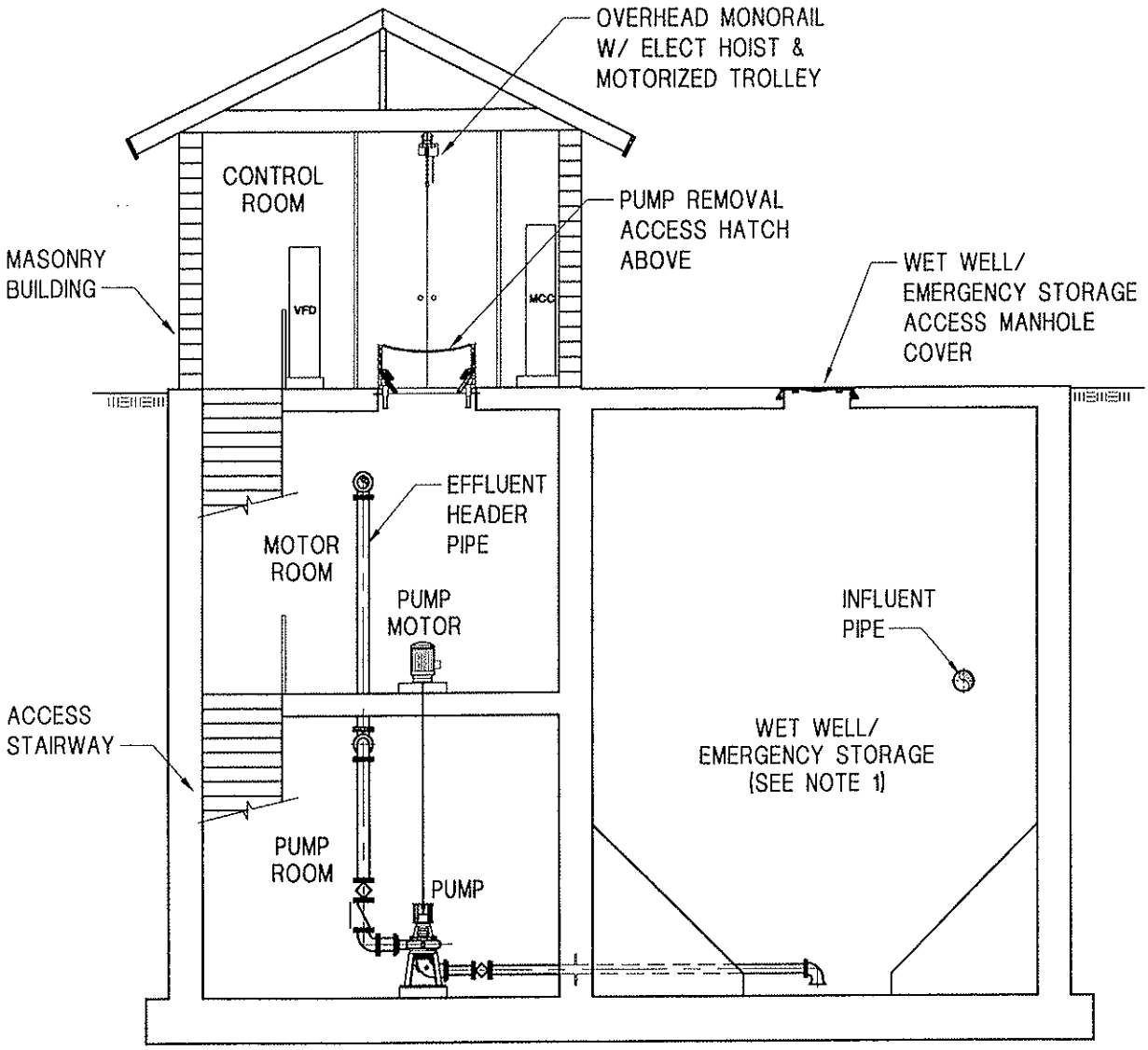

1/8"=1'-0"

NOTE:
1. COMBINED WET WELL VOLUME TO BE SIZED FOR 0.12 MG OF EMERGENCY & OPERATIONAL STORAGE.

PROPOSED SEWER PUMP STATION BUILDING SECTION

FIGURE 4

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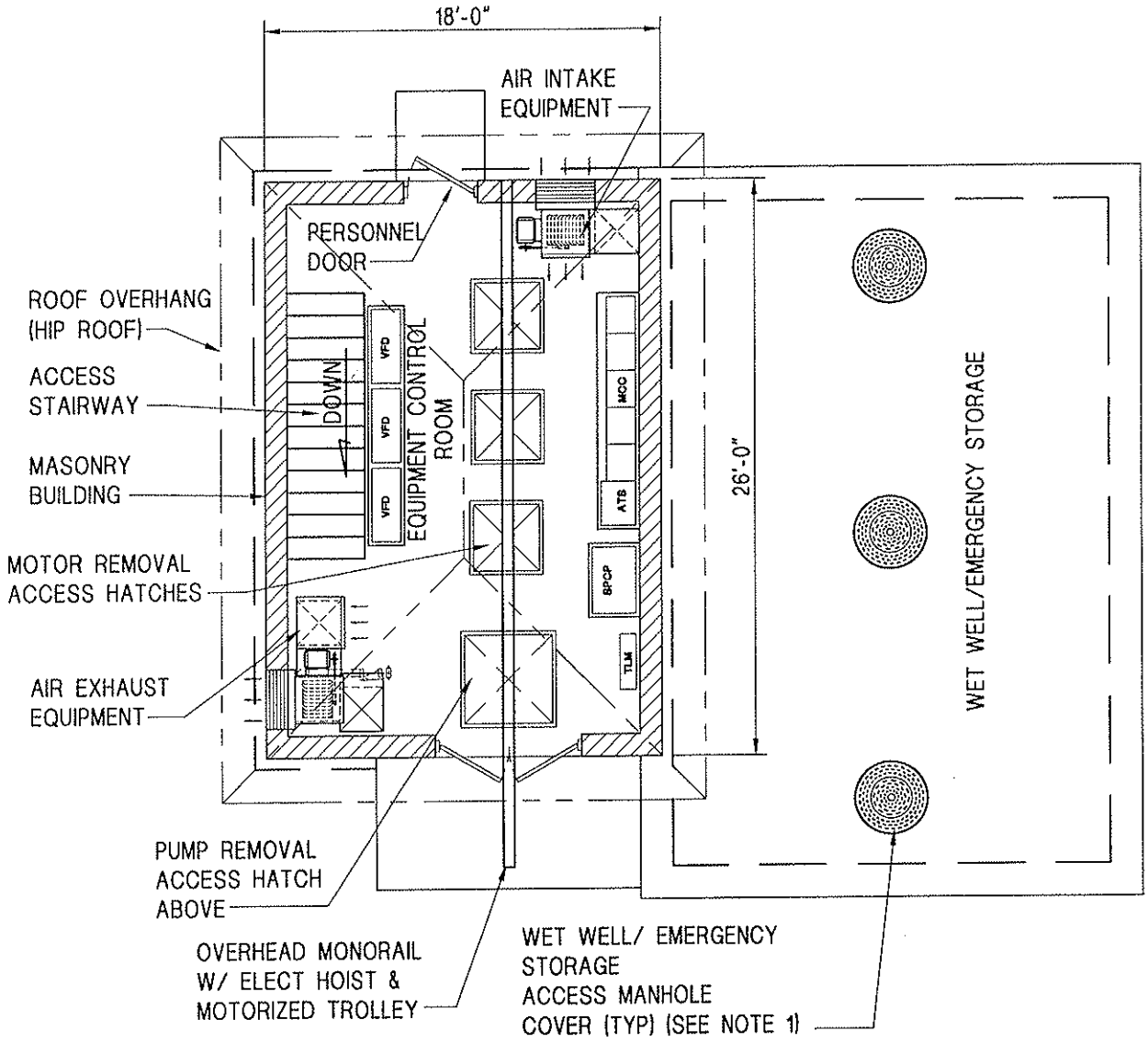

1/8"=1'-0"

NOTE:
1. COMBINED WET WELL VOLUME TO BE SIZED FOR 0.12 MG OF EMERGENCY & OPERATIONAL STORAGE.

PROPOSED SEWER PUMP STATION EQUIPMENT CONTROL ROOM

FIGURE 5

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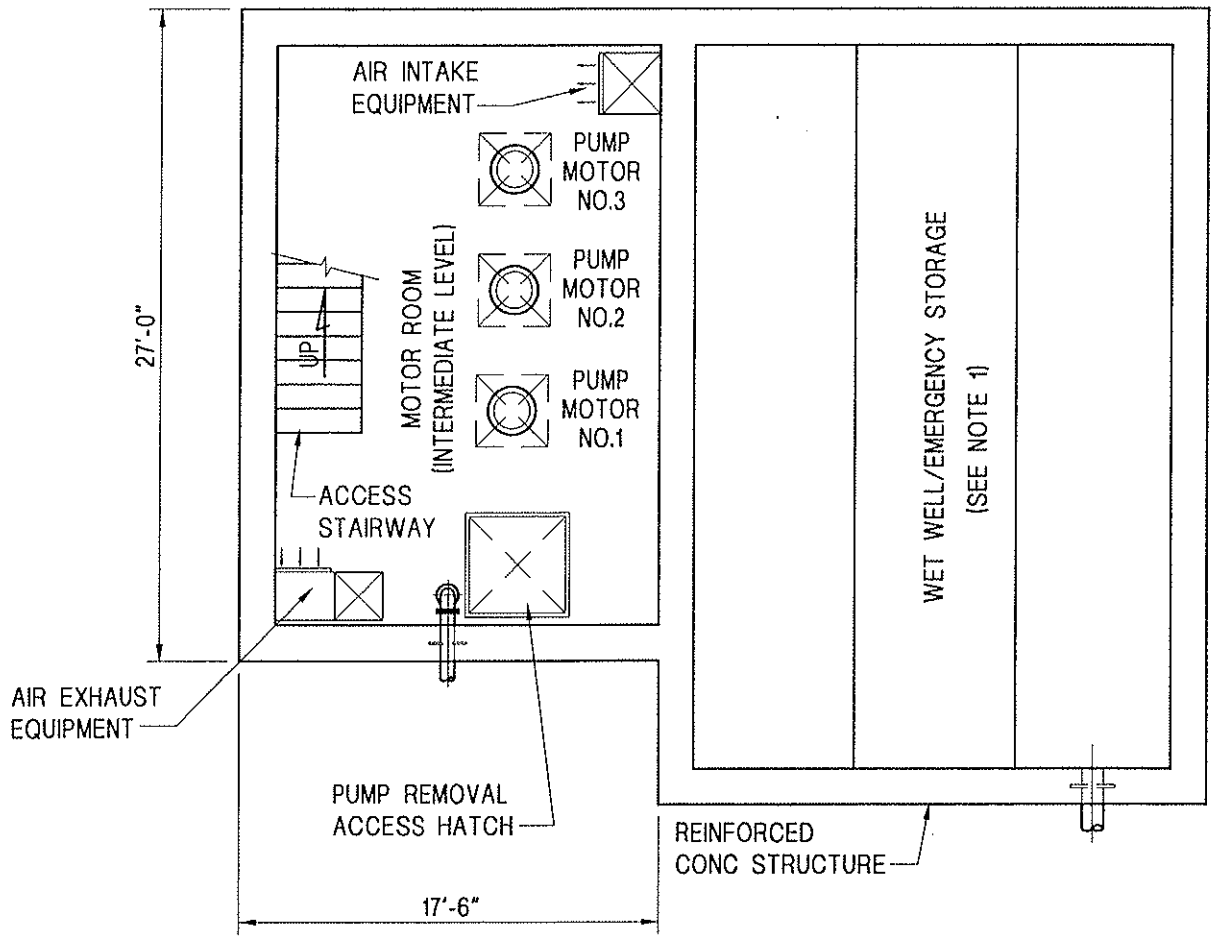

1/8"=1'-0"

NOTE:
1. COMBINED WET WELL VOLUME TO BE SIZED FOR 0.12 MG OF EMERGENCY & OPERATIONAL STORAGE.

PROPOSED SEWER PUMP STATION MOTOR ROOM (INTERMEDIATE LEVEL)

FIGURE 6

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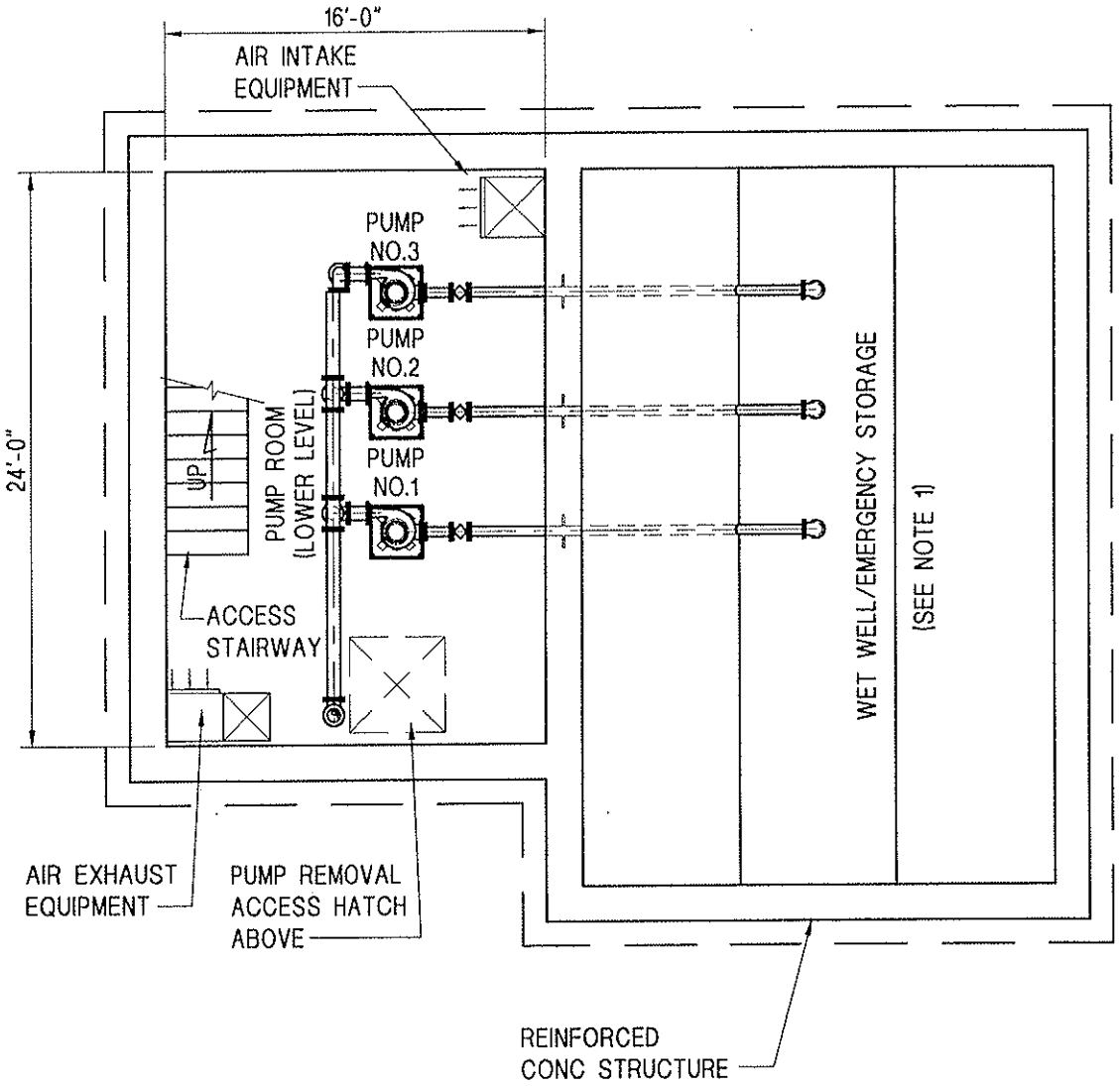

1/8"=1'-0"

PROPOSED SEWER PUMP STATION PUMP ROOM (LOWER LEVEL)

FIGURE 7

NOTE:
1. COMBINED WET WELL VOLUME TO BE SIZED FOR 0.12 MG OF EMERGENCY & OPERATIONAL STORAGE.

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PBS&J
9275 Sky Park Court, Suite 200
San Diego, CA 92123

PROJECT OCCP - Emergency Storage
CLIENT
CALCULATED BY J. Bileck DATE 7.30.07
CHECKED BY MIE DATE 8/1/07
PROJECT NO 491285 SHT 1 OF 2

* Per revised Sewer Study (July 2007): Ultimate Condition

Peak Phase 2 (except Lot 25) Project flow: PWWF = 217,225 gpd

Peak Border Crossing flow: PWWF = 264,325 gpd

* Add peaks b/c the Border Crossing is a pumped flow:

$217,225 \text{ gpd} + 264,325 = 481,550 \text{ gpd}$

$ES_{6,ult}$ = 6 hrs of emergency storage @ ultimate flows.

$= \left(\frac{481,550 \text{ gpd}}{24 \text{ hrs/day}}\right) \times 6 \text{ hrs} = 120,388 \text{ gal}$ of storage required

$$\boxed{120,388 \text{ gal} = 16,095 \text{ cf}}$$

* If ultimate flows are not reached: Buildout Condition

Peak Phase 2 (except Lot 25) flow: PWWF = 152,915 gpd
Peak Border Crossing flow: PWWF = 116,106 gpd

Total = 269,021 gpd

$ES_{?,BO} = \left(\frac{269,021 \text{ gpd}}{24 \text{ hrs/day}}\right) \times R_{TIME} = 120,388 \text{ gal}$

$= 10.7 \text{ hrs}$

* $ES_{6,ULT}$ will provide 10.7 hrs of storage in the buildout condition.

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PROJECT OCCP- Emergency Storage
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CALCULATED BY J.Bileck DATE
CHECKED BY MZ DATE 3/1/07
PROJECT NO SHT 2 OF 2

* Ultimate buildout of the entire tributary area would require additional storage be built. This would be the responsibility of the developing property. Space will be provided on the SPS site.

Tributary Flows to SPS:

Project Phase 2 (no Lot 25): ADWF = 88,380 gpd
Border Crossing: ADWF = 110,865 gpd
Area 3: ADWF = 125,100 gpd
Area 6: ADWF = 368,475 gpd

Total = 692,820 gpd - ADWF

$$\text{Population} = \text{ADWF} / 80\,\text{gpd/p} = 8{,}660 \text{ ppl}$$

$$pf = 6.2945 \times pop^{-0.1342} = 6.2945\,(8{,}660\,\text{ppl})^{-0.1342}$$

$$pf = 1.864$$

$$PDWF = ADWF \times pf = 692{,}820\,\text{gpd} \times 1.864$$

$$PDWF = 1.29\,\text{MGD}$$

$$PWWF = PDWF \times 1.3 = 1.29\,\text{MGD} \times 1.3 = 1.68\,\text{MGD}$$

$$ES_{6,ULT-Trib} = \left(\frac{1.68\,\text{MGD}}{24\,\text{hrs/day}}\right) \times 6\,\text{hrs} = 0.42\,\text{MG}$$

$$ES_{6,ULT} = 120{,}388\,\text{gal} \quad (0.12\,\text{MG})$$

* Future development would be required to build:
0.42 - 0.12 = **0.30 MG**