Appendix H Sewer Analysis Report

CITY OF HUNTINGTON BEACH BEACH AND EDINGER CORRIDORS SPECIFIC PLAN

Sewer Analysis Report

Final

Prepared for
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CHAPTER 1 Introduction

This Sewer Analysis Report provides an analysis of the City's existing wastewater infrastructure, in respect to capacity for conveyance of the additional flows anticipated to be generated by build out of the proposed Beach-Edinger Corridors Specific Plan. Existing and future sewer flows were calculated using the existing and proposed land use data with the resulting data used to identify any constraints in the existing sewer system. Results of this study are summarized in Table 1-1 (Sewer Evaluation Summary) and will be incorporated into other environmental documents as necessary, including but not limited to the Environmental Impact Report (EIR).

Table 1-1 Sewer Evaluation Summary

<table>
<tr><th colspan="2">Utility</th><th>Project Impact</th><th>Evaluation Result</th></tr>
<tr><td rowspan="2">Overall</td><td>Conveyance/ Volume Rate</td><td>Overall system increase in total sewage flow by up to 2.20 MGD over existing conditions</td><td>Figures 3-2a through 3-2d (Specific Plan Required Sewer Upgrades) show individual areas where there may be capacity constraints. Specific project applicants must confirm capacity and connection adequacy. Specific project applicants shall confirm with OCSD that there is capacity in the existing main and trunk sewer lines.
<table>
<tr><th colspan="4">Summary of Wastewater Flow Rates</th></tr>
<tr><th>Flow</th><th>Existing Conditions (MGD)</th><th>General Plan Buildout (MGD)</th><th>Specific Plan Buildout (MGD)</th></tr>
<tr><td>Flow Rate</td><td>1.43</td><td>2.10</td><td>2.86</td></tr>
<tr><td>Peak Hourly Discharge</td><td>2.48</td><td>3.52</td><td>4.68</td></tr>
<tr><td colspan="4">MGD = million gallons per day</td></tr>
</table></td></tr>
<tr><td>Treatment</td><td>Project will be served by OCSD, no stated capacity limitations.</td><td>Specific project applicants shall consult with OCSD and confirm treatment capacity availability</td></tr>
</table>

CHAPTER 2 Project Description

The following information is summarized from Chapter 3 (Project Description) of the EIR prepared for the Specific Plan. The project site extends along Beach Boulevard, from the Coastal Zone boundary in the south to Edinger Avenue, and along Edinger Avenue from Beach Boulevard westward to Goldenwest Street. The total acreage of the Specific Plan is approximately 459 acres. The Beach-Edinger Corridors Specific Plan (Specific Plan) area is currently developed for retail, auto service, mixed residential, residential, commercial, restaurants, hotels, hospitals, and public institution land uses. Vacant, undeveloped lands comprise about 26.3 acres of the Specific Plan area. Figure 2-1 (Existing Land Use) shows the general categories of existing land use.

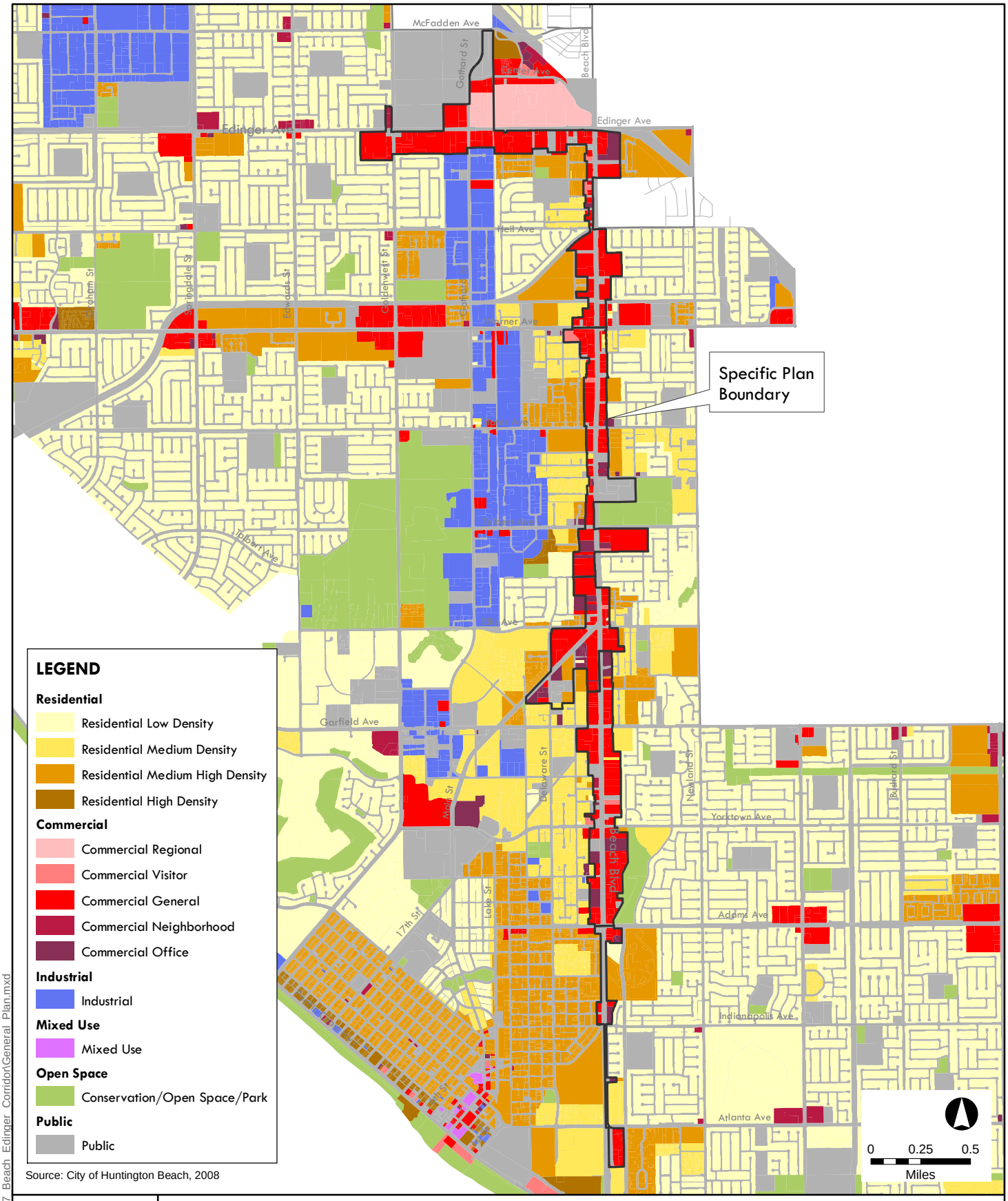
The Specific Plan includes various existing General Plan land use designations, including: Commercial General, Commercial Neighborhood, Commercial Office, Commercial Regional, Industrial, Mixed Use, Mixed Use Vertical, Public, Residential Low Density, Residential Medium Density, Residential Medium High Density, and Right-of-Way. The existing General Plan designations are shown in Figure 2-2 (General Plan Land Use Designations). As part of the proposed project the General Plan designation for properties included in the Specific Plan would be changed to Mixed-Use (M-sp), denoting that development is governed by a Specific Plan.

The proposed Specific Plan requires a General Plan Amendment (GPA), Zoning Text Amendment (ZTA), and Zoning Map Amendment (ZMA) as implementation of the proposed project would result in changes to land use and development intensity and standards related to site layout, building design, and landscaping. In all cases, existing uses within the Specific Plan area would be allowed to remain. The development standards and regulations that are contained in the Specific Plan would only apply to new developments or additions greater than 15 percent that are proposed within the Specific Plan area. The proposed land use changes and change in development intensity would allow for additional growth within the corridors.

2.1 SPECIFIC PLAN SEGMENTS

The proposed Specific Plan would be divided into five general geographic transition areas (also referred to as segments): Residential Parkway, Neighborhood Parkway, Five Points District, Neighborhood Boulevard, and the Town Center Boulevard. These segments are shown in Figure 2-3 (Project Area Depicting Proposed Specific Plan Segments), and described below. In addition, a separate land use designation (Neighborhood Centers) is identified on specific parcels throughout three of the segments.

- **Neighborhood Centers:** Neighborhood Centers are existing shopping centers. Entitlements would be provided for intensification with upper level housing, office, and/or lodging. New development on these sites may continue to provide exclusively shopping center uses with surface parking, or may also feature a wider mixture of uses and structured parking.
- **Residential Parkway Segment:** In the southern-most portion of the Specific Plan, this area is located along Beach Boulevard between Adams Avenue to the southern Specific Plan boundary. The general planning approach to this particular area is preservation, as the majority of development along this segment is composed of existing residential uses. One Neighborhood Center is located in this segment, which is on the southeast corner of Beach Boulevard and Atlanta Avenue.
- **Neighborhood Parkway Segment:** Transitioning north along Beach Boulevard, this segment is located between Adams Avenue and the Five Points Center (south of Ellis Avenue). In addition to residential development, office, lodging, and neighborhood-serving retail would also be permitted. This segment also includes two designated Neighborhood Centers; one occupies the majority of the eastern frontage of Beach Boulevard between Adams and Yorktown Avenues, and the other occupies the southwest quadrant of the intersection of Beach Boulevard and Garfield Avenue.
- **Five Points District Segment:** The Five Points area occupies the half-way point between the beachfront and I-405, and is organized around the confluence of Beach Boulevard and Main Street/Ellis Avenue. It contains the Five Points Shopping Center. The area south of Main Street is characterized by a more diverse mix of uses (e.g., office, medical services, multi-family, and senior housing) and building types. Entitlements would be provided for greater development intensity than surrounding segments. The greatest development intensities would be provided in the core retail area. Infill development on underutilized properties would be composed of the types of coherent arrangements of building, streets, and blocks that are presently lacking in this centrally located district.
- **Neighborhood Boulevard Segment:** This segment along Beach Boulevard is generally located between the Five Points Center and Warner Avenue. The area is characterized by a significant amount of ageing commercial strip development. Neighborhood-serving and hospital-serving retail and services, corner/crossroads located retail, and office and office-medical would be encouraged to take advantage of the proximity to the Huntington Beach Hospital and its related cluster of medical services. Infill residential uses would also be permitted throughout this segment. This segment also includes six neighborhood centers; the first three are located at the intersection of Beach Boulevard and Talbert Avenue (the northeast corner is not included in the project boundaries); two more are located at the southern corners at the intersection of Beach Boulevard and Slater Avenue; and the last is located at the southwest corner of Beach Boulevard and Warner Avenue.



Source: City of Huntington Beach, 2008

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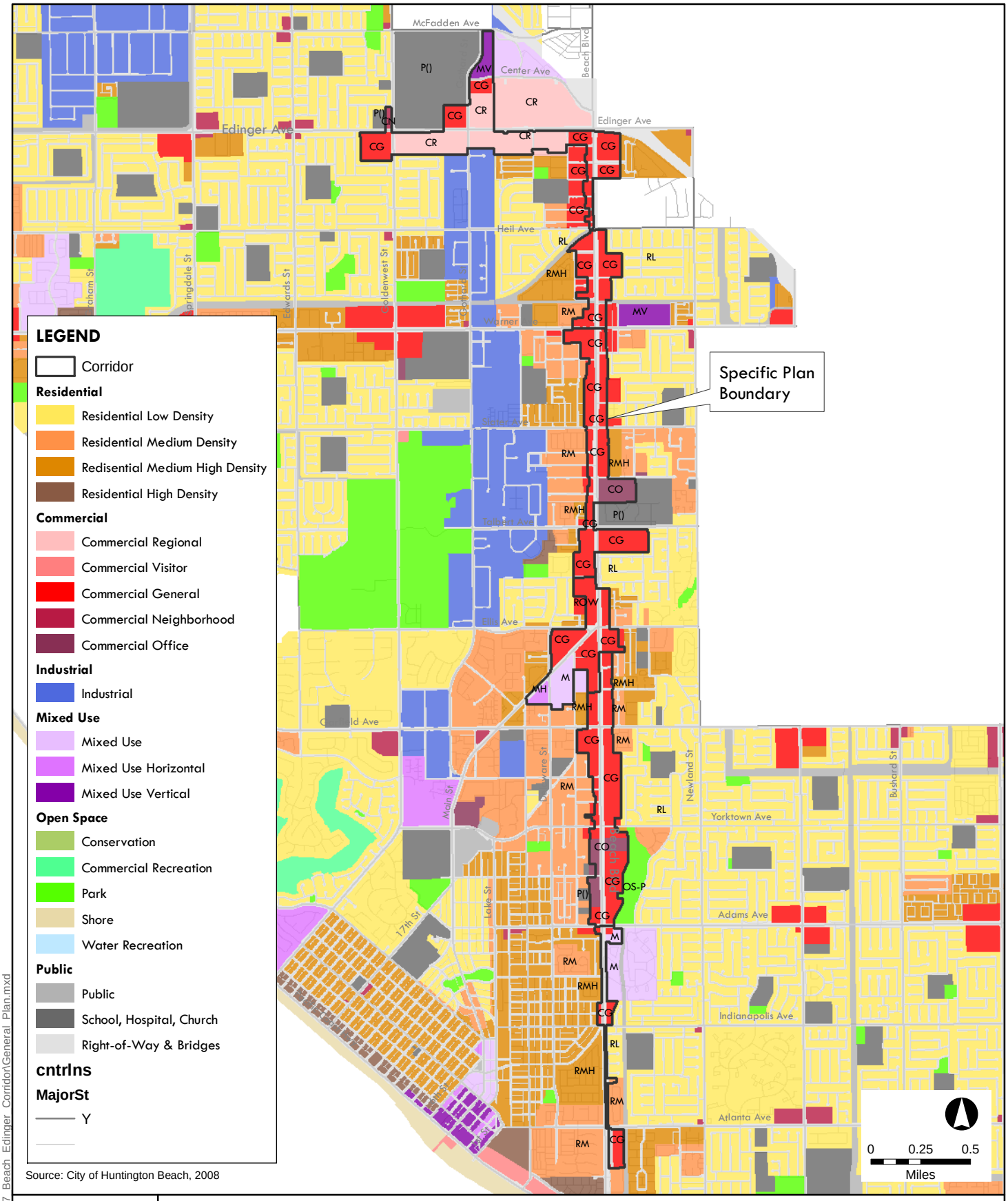
FIGURE **2-1**

Existing Land Use



Source: City of Huntington Beach, 2008

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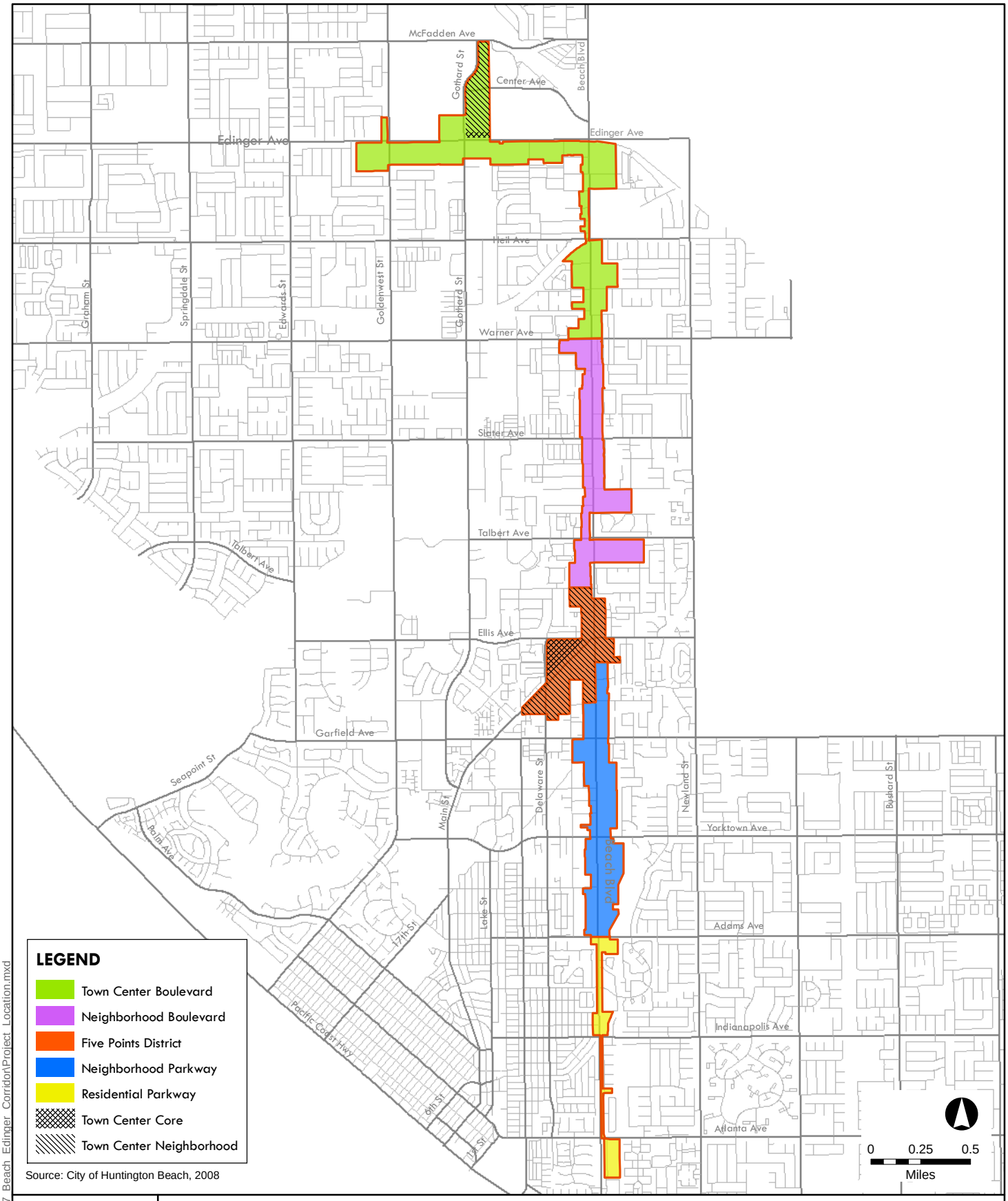
FIGURE **2-2**

Existing General Plan Land Use Designations



Source: City of Huntington Beach, 2008

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FIGURE **2-3**

Project Area Depicting Proposed Specific Plan Segments

- **Town Center Boulevard Segment:** The Town Center Boulevard segment encompasses uses along Beach Boulevard from Warner Avenue to Edinger Avenue, as well as along Edinger Avenue itself.

  > **Beach Boulevard**

  Within this segment, Beach Boulevard is primarily characterized by small and shallow properties that currently limit redevelopment potential. The planning approach for this area is to encourage gradual transition to a more pedestrian-oriented development.

  > **Edinger Avenue**

  As shown on Figure 2-3, Edinger Avenue Corridor generally represents a continuation of the Town Center Boulevard segment. New infill development on properties lining Edinger Avenue would be directed toward the augmentation of the existing pattern of isolated, low-intensity, single-use, surface-parked development. New uses would generally feature a mixture of ground-level shops and services, with upper-level homes, offices, or hotel rooms. An increasing number of buildings would feature multiple levels. Out and away from the Town Center Core, development would become less compact. Over time, the amount of ground-level retail may likewise increase as one travels toward the Town Center Core and decrease in the other direction.

2.1.1 Land Use Summary

The proposed land use changes and increases in development intensity would result in additional growth focused within each of the above-mentioned areas. Overall, buildout of the Specific Plan (estimated at 2030) could result in the addition of up to 6,400 new dwelling units (du), 738,400 sf of retail uses, 350 hotel rooms, and 112,000 sf of office uses. However, not all of this development would be considered net growth. In many cases, existing structures would be replaced or redeveloped with the new uses. It is estimated that at buildout, commercial and office space would decrease compared to existing conditions but the 6,400 du would be considered net growth. Table 2-1 (Projected Specific Plan Development) outlines the projected development scenario over the short- and long-term.

2.2 RELATIONSHIP TO THE GENERAL PLAN

The proposed Specific Plan implements the broad policies established in the City of Huntington Beach General Plan to guide growth and change along the Beach Boulevard and Edinger Avenue Corridors. The Development Code contained within the Specific Plan would replace previous land use and development regulations contained within the Huntington Beach Zoning and Subdivision Ordinance for these portions of the City.

Table 2-1 Projected Specific Plan Development

Street/Street Segment	Short Term			Long Term				Total[a]			
	DUs	Retail SF	Hotel Rms	DUs	Retail SF	Hotel Rms	Office SF	DUs	Retail SF	Hotel Rms	Office SF
Edinger Avenue	1,660	60,000	150	1,040	146,000	—	—	2,700	206,000	150	—
Beach Boulevard											
Town Center Blvd.	—	—	—	800	114,400	—	—	800	114,400	—	—
Neighborhood Blvd.	300	11,000	—	150	87,000	—	112,000	450	98,000	—	112,000
Five Points District	400	75,000	—	1,100	42,500	—	—	1,500	117,500	—	—
Neighborhood Parkway	100	25,000	—	650	162,500	—	—	750	187,500	—	—
Residential Parkway	—	—	—	200	15,000	200	—	200	15,000	200	—
Beach Subtotal	800	111,000	—	2,900	421,400	200	112,000	3,700	532,400	200	112,000
Total	***2,460***	***171,000***	***150***	***3,940***	***567,400***	***200***	***112,000***	***6,400***	***738,400***	***350***	***112,000***

SOURCE: City of Huntington Beach, Written communication via email with Mary Beth Broeren. February 11, 2009

[a] Values may differ from Table 3-3 because these values are only the new or redeveloped amounts, whereas Table 3-3 includes the total (gross) amount of development within the Specific Plan Area

An important distinction that is reflected throughout specific resource sections of this EIR is that the proposed Specific Plan would ultimately allow mixed-use and stand-alone residential development in an area of the City that was not previously designated to permit such uses. Huntington Beach is almost fully developed. Through implementation of the proposed project, it is the City's intent to effectively redistribute the overall residential growth that was originally identified in the General Plan to other areas of the City. However, the City is not undertaking associated efforts to preclude or reduce the amount of residential growth that is currently allowed elsewhere in the City. Therefore, the maximum increase in projected residential development at Specific Plan buildout (6,400 dwelling units) is considered a net increase for purposes of this EIR.

The City's increase in residential growth since 1990 is well below the 18,500 units that were identified as the General Plan buildout limit (General Plan Policy LU 2.1.4). According to the General Plan EIR (Table PD-1) the City's 1990 level of housing was 74,179 units. For comparison purposes, the California Department of Finance (DOF) identified the City's 1990 level of housing at 72,736 units —a difference of 1,443 units. This EIR utilizes the 1990 data provided in the General Plan EIR because the document provides buildout scenarios (based on the 74,179 units) utilizing the 18,500 units as directed in the General Plan. The 1990 data provided by the DOF was revised based on the 2000 census, which was produced after adoption of the City's General Plan and General Plan EIR. Given the known discrepancies in the 1990 data, the General Plan EIR data is most accurate with respect to estimating residential buildout of the City.

Between 1990 and 2008, approximately 5,000 units were constructed in the City. However, accounting for demolitions, the net increase in residential growth within this timeframe is closer to 3,828 units, which is far from the buildout capacity of 18,500 units identified in the General Plan and General Plan EIR. Additionally, past residential projects have not reached the full size allowed under the General Plan for those sites. Many of the residential projects have only been developed to 70 percent of the total allowable size, with the City not reaching its growth potential within the time frame previously anticipated. Full buildout of the proposed Specific Plan would capture less than half of the remaining anticipated residential growth in the City. Consequently, while the City does not anticipate subsequent re-zoning of other areas to reflect the redistribution intent, the project would not necessarily represent an increase in housing above what was projected in the General Plan buildout scenario. Moreover, the City's General Plan land use policy would prevent that from occurring.

CHAPTER 3 Wastewater

The City owns, operates, and maintains a wastewater collection system that includes gravity pipelines, manholes, lift stations, and force mains throughout the City. This system serves over 95 percent of the areas within the City, and several small areas within the cities of Westminster, Seal Beach, Newport Beach, and Fountain Valley. The City's wastewater system would provide service to the proposed Specific Plan and connects to various Orange County Sanitation District (OCSD) regional trunk sewer lines that ultimately flow to reclamation plants operated by OCSD (Huntington Beach 2003, 3.2).

3.1 SEWER CONVEYANCE

3.1.1 City Collection System

The City's collection system is comprised of approximately 385 miles of wastewater pipelines ranging in size from 6 to 30 inches in diameter. Approximately 85 percent of the City's wastewater pipelines are 8 inches in diameter. Because of the City's generally flat conditions, the City also operates and maintains 28 lift stations ranging in capacity from approximately 80 gallons per minute to 1,350 gallons per minute. These facilities lift sewage from low points in the collection system to manholes at higher locations (Huntington Beach 2005b, 8-1; Huntington Beach 2003, 1.1).

The City's local system generally discharges to larger OCSD facilities to convey wastewater to the local reclamation plants. Given the growth within OCSD's service area, OCSD is currently upsizing a number of collection system pipelines to provide additional capacity.

3.1.2 Orange County Sanitation District Collection System

OCSD is responsible for receiving, treating, and disposing of the wastewater generated in central and northwest Orange County, including the City of Huntington Beach. In this regional management capacity, OCSD owns, operates, and maintains the majority of the "backbone" wastewater collection trunk pipelines. The sewer system consists of 12 trunk sewer systems ranging in size from 12 to 96 inches in diameter and is collectively over 500 miles long. Additionally, there are 39 sewer interconnections and 87 diversions to maximize conveyance of flows through the system. Twenty pump stations are used to pump sewage from lower lying areas to the reclamation plants (Huntington Beach 2005b, 8-1).

No existing capacity issues have been identified in the OCSD system, and OCSD has developed engineering plans for plant improvements anticipated to meet area demands to the year 2050 (EIP Associates 2003, 3.15-3).

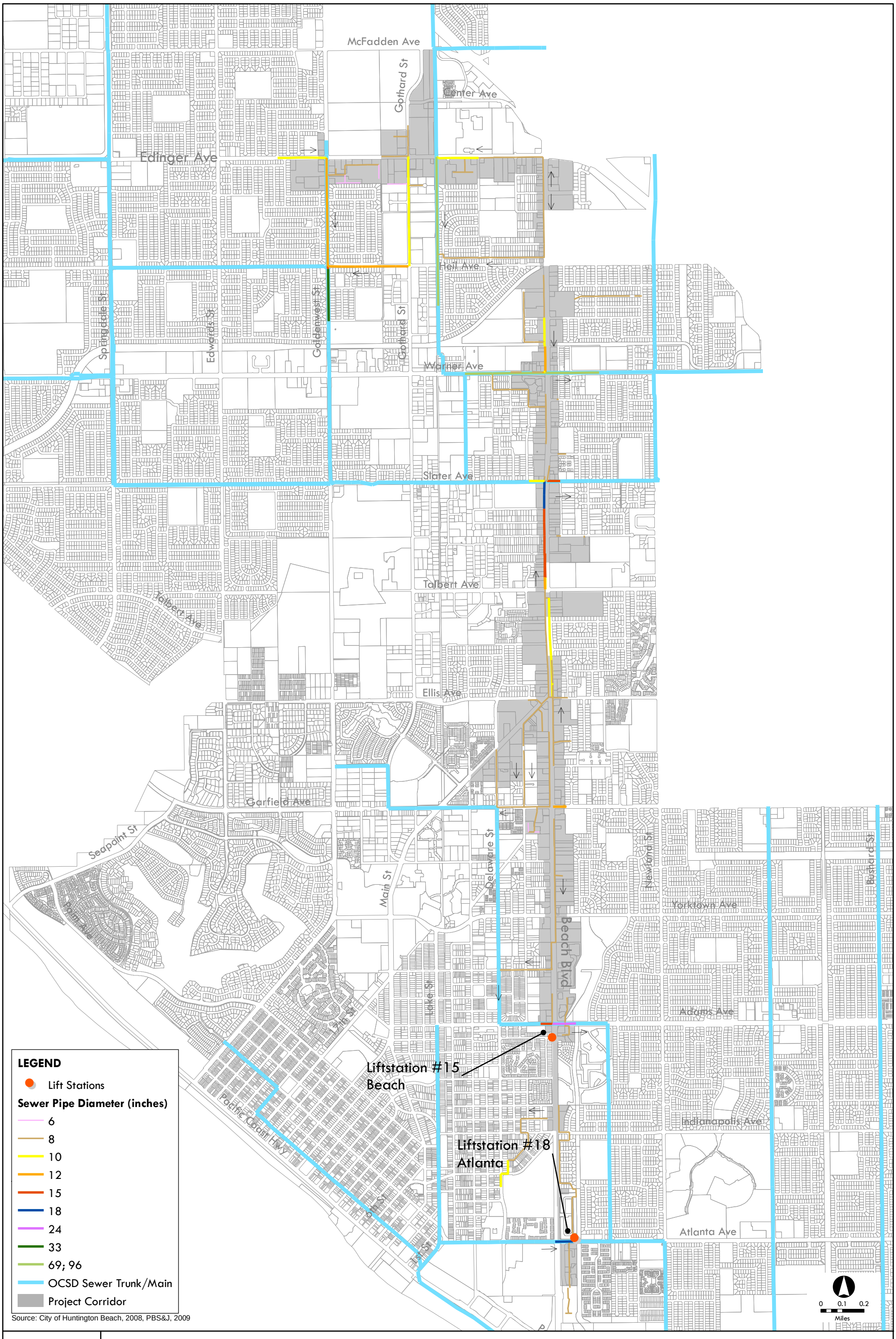
3.1.3 Existing Sewer System

The City of Huntington Beach Citywide Sewer Master Plan (SMP) (City of Huntington Beach 2003) evaluated the existing sewer system capacity constraints for build-out of the General Plan. Along Beach Boulevard, from Talbert Avenue to Slater Avenue, the SMP identified capacity constraints requiring upsizing of the existing sewer lines to meet City flow criteria. Figure 3-1 (Existing/Sewer Master Plan Sewer System) depicts the existing sewer line sizes serving the Specific Plan area with SMP-required sizes for build-out of the General Plan. Only those sewer lines that receive flow from the Specific Plan area are shown. Sewer lines are terminated where they discharge to an OCSD main or trunk line.

3.2 WASTEWATER GENERATION

Estimates of proposed Specific Plan wastewater generation were performed to identify potential capacity constraints for the buildout conditions. In consultation with the City Public Works Department, the sewer lines serving the Specific Plan area were identified and traced to the nearest downstream OCSD facility. Then, wastewater generation calculations were performed on each portion of the Specific Plan area discharging to the various sewer lines. Estimates of existing, General Plan build-out, and proposed Specific Plan land uses were provided by the City's Planning Department to determine the various flow rates. Assumptions on where development would most likely occur were made by the City and used in this analysis. Where City land use data were aggregated on a larger scale than required for the analysis of individual sewer line flows, estimates of proportions flowing to different sewer lines were based on existing land use proportions, as listed in the City of Huntington Beach GIS sewer database, and anticipated development or redevelopment areas within aggregated areas. Where disaggregated General Plan build out data were not available, it was assumed to be the same as existing conditions.

Land use data were aggregated into categories with the same sewer generation rates; all commercial, government office, and religious designations were categorized under 'commercial' because they have the same sewer generation rate of 0.2 gallon per day per square foot (gpd/sf). Where a land use results in no sewage generation (e.g., parking lots, utilities, vacant lands), these categories were not included in the analysis.



Source: City of Huntington Beach, 2008, PBS&J, 2009

FIGURE 3-1

Existing/Sewer Master Plan Sewer System

3.2.1 Existing Wastewater Generation

Table 3-1 (Estimated Sewer Generation for Existing Conditions) summarizes the estimated existing sewer generation for each segment of the proposed Specific Plan area as identified above in Section 2.1 (Specific Plan Segments).

Table 3-1 Estimated Sewer Generation for Existing Conditions

Land Use	*Quantity*	*Duty Factor*	*Estimated Flow*
Town Center Boulevard			
Commercial	1,892.53	200 gpd/TSF	378,506
Overnight Accommodations	102	150 gpd/room	15,300
Residential	42	250 gpd/DU	10,500
Subtotal			*404,306 gpd*
Subtotal Peak Hourly Discharge			*0.77 MGD*
Neighborhood Boulevard			
Commercial	1,526.83	200 gpd/TSF	305,366
Overnight Accommodations	141	150 gpd/room	21,150
Residential	4	250 gpd/DU	1,000
Hospital	131	450 gpd/room	58,950
Subtotal			*386,466 gpd*
Subtotal Peak Hourly Discharge			*0.74 MGD*
Five Points District			
Commercial	802.19	200 gpd/TSF	160,438
Overnight Accommodations	34	150 gpd/room	5,100
Residential	696	250 gpd/room	174,000
Hospital	133	450 gpd/room	59,850
Subtotal			*399,388 gpd*
Subtotal Peak Hourly Discharge			*0.77 MGD*
Neighborhood Parkway			
Commercial	890.44	200 gpd/TSF	178,088
Overnight Accommodations	64	150 gpd/room	9,600
Residential	39	250 gpd/DU	9,750
Subtotal			*197,438 gpd*
Subtotal Peak Hourly Discharge			*0.40 MGD*

Table 3-1 Estimated Sewer Generation for Existing Conditions			
Land Use	*Quantity*	*Duty Factor*	*Estimated Flow*
Residential Parkway			
Commercial	229.05	200 gpd/TSF	45,810
Overnight Accommodations	0	150 gpd/room	0
Residential	0	250 gpd/DU	0
Subtotal			*45,810 gpd*
Subtotal Peak Hourly Discharge			*0.10 MGD*
Total (gpd)			***1,433,408 gpd***
Total (MGD)			***1.43 MGD***
Total Peak Hourly Discharge	***1.78(Q_{ave})^0.92***		***2.48 MGD***

SOURCE: PBS&J 2009

DU = dwelling unit; TSF = thousand square feet; gpd = gallons per day; MGD = million gallons per day; Q = discharge; ave = average

3.2.2 General Plan Buildout Wastewater Generation

Table 3-2 (Estimated Sewer Generation for General Plan Buildout) summarizes the estimated General Plan buildout sewer generation for each segment of the proposed Specific Plan area as identified above in Section 2.1.

3.2.3 Proposed Specific Plan Wastewater Generation

Table 3-3 (Estimated Sewer Generation for the Proposed Specific Plan) summarizes the estimated proposed Specific Plan sewer generation for each segment of the proposed Specific Plan area as identified above in Section 2.1 (Specific Plan Segments).

3.2.4 Sewer System Capacity Constraints

As depicted in Figure 3-1, the proposed Specific Plan area discharges to several different sewer systems, many of which receive flows from tributary areas outside of the Specific Plan boundary. In order to determine the effect of the additional flows created by the Specific Plan buildout on the existing sewer systems, base flows for the existing conditions needed to be determined. In some areas, actual measured flow data were available for use, however, in some locations, existing flow data were not available and were calculated using flow generations rates and existing land use data contributory to sewer system. Flows from each contributing area, including Specific Plan areas, were assumed to enter the sewer lines at the furthest up-gradient location adjacent to the contributing area in order to estimate the potential 'worst case' situation.

Table 3-2 Estimated Sewer Generation for General Plan Buildout			
Land Use	*Quantity*	*Duty Factor*	*Estimated Flow*
Town Center Boulevard			
Commercial	2,853.76	200 gpd/TSF	570,552
Overnight Accommodations	322	150 gpd/room	48,300
Residential	579	250 gpd/DU	144,750
Subtotal			*763,602 gpd*
Subtotal Peak Hourly Discharge			*1.39 MGD*
Neighborhood Boulevard			
Commercial	1,688.74	200 gpd/TSF	337,748
Overnight Accommodations	141	150 gpd/room	21,150
Residential	4	250 gpd/DU	1,000
Hospital	131	450 gpd/room	58,950
Subtotal			*418,848 gpd*
Subtotal Peak Hourly Discharge			*0.80 MGD*
Five Points District			
Commercial	1,054.77	200 gpd/TSF	210,954
Overnight Accommodations	50	150 gpd/room	7,500
Residential	826	250 gpd/room	206,500
Hospital	133	450 gpd/room	59,850
Subtotal			*484,804 gpd*
Subtotal Peak Hourly Discharge			*0.91 MGD*
Neighborhood Parkway			
Commercial	1,361.67	200 gpd/TSF	272,334
Overnight Accommodations	64	150 gpd/room	9,600
Residential	42	250 gpd/DU	10,500
Subtotal			*292,434 gpd*
Subtotal Peak Hourly Discharge			*0.57 MGD*
Residential Parkway			
Commercial	230.17	200 gpd/TSF	46,034
Overnight Accommodations	0	150 gpd/room	0
Residential	376	250 gpd/DU	94,000
Subtotal			*140,034 gpd*
Subtotal Peak Hourly Discharge			*0.29 MGD*
Total (gpd)			***2,099,702 gpd***
Total (MGD)			***2.10 MGD***
Total Peak Hourly Discharge	***1.78(Q_{ave})^0.92***		***3.52 MGD***

SOURCE: PBS&J 2009

DU = dwelling unit, TSF = thousand square feet; gpd = gallons per day; MGD = million gallons per day; Q = discharge; ave = average

Table 3-3 Estimated Sewer Generation for the Proposed Specific Plan Buildout

Land Use	*Quantity*[a]	*Duty Factor*	*Estimated Flow*
Town Center Boulevard			
Commercial	1,476.97	200 gpd/TSF	295,394
Overnight Accommodations	252	150 gpd/room	37,800
Residential	3,542	250 gpd/DU	885,500
Subtotal			*1,218,694 gpd*
Subtotal Peak Hourly Discharge			*2.14 MGD*
Neighborhood Boulevard			
Commercial	1,632	200 gpd/TSF	326,306
Overnight Accommodations	141	150 gpd/room	21,150
Residential	4	250 gpd/DU	1,000
Hospital	131	450 gpd/room	58,950
Subtotal			*407,406 gpd*
Subtotal Peak Hourly Discharge			*0.78 MGD*
Five Points District			
Commercial	924.8	200 gpd/TSF	184,960
Overnight Accommodations	34	150 gpd/room	5,100
Residential	2338	250 gpd/room	584,500
Hospital	0	450 gpd/room	0
Subtotal			*774,560 gpd*
Subtotal Peak Hourly Discharge			*1.41 MGD*
Neighborhood Parkway			
Commercial	709.5	200 gpd/TSF	141,900
Overnight Accommodations	64	150 gpd/room	9,600
Residential	783	250 gpd/DU	195,750
Subtotal			*347,250 gpd*
Subtotal Peak Hourly Discharge			*0.67 MGD*
Residential Parkway			
Commercial	152.17	200 gpd/TSF	30,434
Overnight Accommodations	200	150 gpd/room	30,000
Residential	200	250 gpd/DU	50,000
Subtotal			*110,434 gpd*
Subtotal Peak Hourly Discharge			*0.23 MGD*
Total (gpd)			***2,858,344 gpd***
Total (MGD)			***2.86 MGD***
Total Peak Hourly Discharge	***1.78(Qave)^0.92***		***4.68 MGD***

SOURCE: PBS&J 2009

DU = dwelling unit; TSF = thousand square feet; gpd = gallons per day; MGD = million gallons per day; Q = discharge; ave = average

[a] Values may differ from Table 2-1 because these include the total (gross) amount of development within the Specific Plan Area, whereas values in Table 2-1 include only the new or redeveloped area.

The hydraulic capacity calculations of the sewer system were based on the estimated combined flows from the contributing areas; system capacity was only assessed for the sewer lines affected by buildout of the Specific Plan. It was assumed that all OCSD trunk lines have sufficient capacity to convey the increased flows and therefore, all capacity analysis of the affected systems terminated at downstream connections with OCSD trunk lines.

The City's criteria for sewer capacity is dictated by the depth ratio where D/d is the ratio of calculated flow depth to pipe inside diameter. For pipes 12 inches and smaller, the maximum D/d is set at 0.50; for 15-inch pipes, D/d=0.67; and, 18-inch and larger, D/d = 0.75. Once the ultimate flows for the Specific Plan buildout were calculated, Mannings Equation was used to determine the necessary pipe size to convey these flows while meeting the City's criteria mentioned above.

The result of this analysis is presented in Figure 3-2a (Specific Plan Required Sewer Upgrades [Town Center Boulevard]) through Figure 3-2d (Specific Plan Required Sewer Upgrades [Residential Parkway]) in which the pipe segments that have been estimated to require upsizing as a result of the Specific Plan buildout are depicted.

For each individual project that may be developed under the proposed Specific Plan, other sewer system upgrades may be required. Consequently, prior to issuance of a Precise Grading or Building Permit, a sewer analysis shall be prepared and submitted to the Department of Public Works for review and approval. Data from a 14-day or longer flow test shall be included in the analysis. This analysis shall specifically identify constraints, including requirements for new connections or upgrades to existing stubout connections, associated with development of individual projects in accordance with the proposed Specific Plan.

It is important to note that the required sewer pipe upgrades that are recommended in this report are based on the best available data including existing flow data, calculated flow data, and future land use assumptions. Future developments may vary substantially from those assumed in this report, varying the sewer flows generated, which would in turn require a different pipe size upgrade than those shown here. Additionally, the OCSD must confirm that there is capacity in the applicable existing main or trunk sewers at the time development is proposed.

Prior to allowing additional connections to the sewer lines, the capacity of the existing sewers will need to be confirmed by metering. If upsizing is necessary, a permit will need to be obtained from the City and the applicant will be required to design and construct these improvements per the requirements of the City Engineer. Fees will be determined when the improvement plans are submitted by the City. The applicant will be responsible for the design, construction, and any other costs associated with these improvements, including any fees required by the OCSD.

3.3 WASTEWATER TREATMENT

Wastewater from the City's service area is collected and treated by OCSD, which has two operating facilities that treat wastewater from residential, commercial, and industrial sources in central and northwest Orange County. OCSD's Reclamation Plant No. 1 is located in the City of Fountain Valley about four miles northeast of the ocean and adjacent to the Santa Ana River. The plant provides advanced primary and secondary treatment through an activated sludge system. The secondary effluent is either blended with the advanced primary effluent and routed to the ocean disposal system, or is sent to the Orange County Water District facilities for advanced treatment and recycling (Huntington Beach 2005b, 8-2). OCSD's Reclamation Plant No. 2 is located in the City of Huntington Beach adjacent to the Santa Ana River and about 1,500 feet from the ocean. This plant provides a mix of advanced primary and secondary treatment. The plant receives raw wastewater through five major sewers. Approximately 33 percent of the influent receives secondary treatment through an activated sludge system, and all of the effluent is discharged into the ocean disposal system. OCSD's treated wastewater is discharged through a 120-inch outfall at a depth of about 200 feet below sea level and nearly five miles offshore from the mouth of the Santa Ana River (Huntington Beach 2005b, 8-2). Reclamation Plant No. 2 has a primary treatment capacity of 168 MGD and secondary treatment capacity of 90 MGD. OCSD is currently in the construction phase to provide an additional 60 MGD of secondary treatment capacity at Reclamation Plant 2 (OCSD n.d.).

The proposed Specific Plan wastewater flows would be treated by Reclamation Plant No. 1 (Chenowith 2008). Current maximum treatment capacity for Reclamation Plant No. 1 is 218 million gallons per day (MGD); on average, the plant treats approximately 120 MGD (Huntington Beach 2005b, 8-2). The plant is currently designed to provide primary treatment to 108 MGD of wastewater and secondary treatment to 110 MGD for a combined treatment capacity of 218 MGD. In accordance with the current discharge permit, the primary treatment system will be increased to a design capacity of 198 MGD during the current discharge permit term, for a total combined capacity of 308 MGD (CRWQCB n.d.). OCSD is currently in the construction phase to upgrade Reclamation Plant No. 1 to provide an additional 60 MGD of secondary treatment capacity. However, Reclamation Plant No. 1 is currently unable to treat all average daily flows to secondary treatment (OCSD n.d.).

The quantities of wastewater are generally proportional to the population and water use in the service area. Wastewater generated by the City in 2005 was approximately 21 MGD. By 2030, wastewater generated by the City is expected to increase to nearly 26 MGD (Huntington Beach 2005b, 8-3).

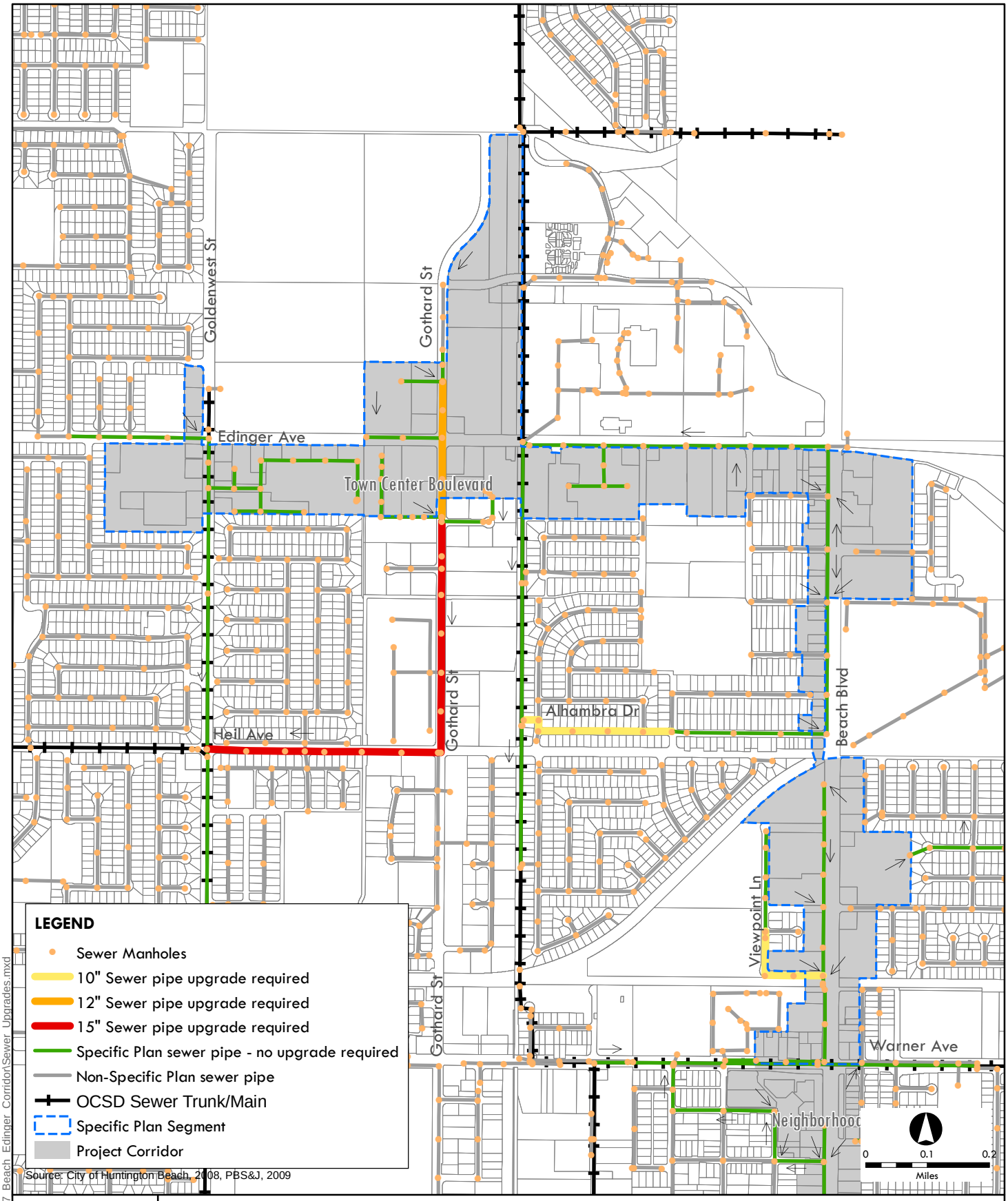


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FIGURE 3-2a

Specific Plan Required Sewer Upgrades (Town Center Boulevard)

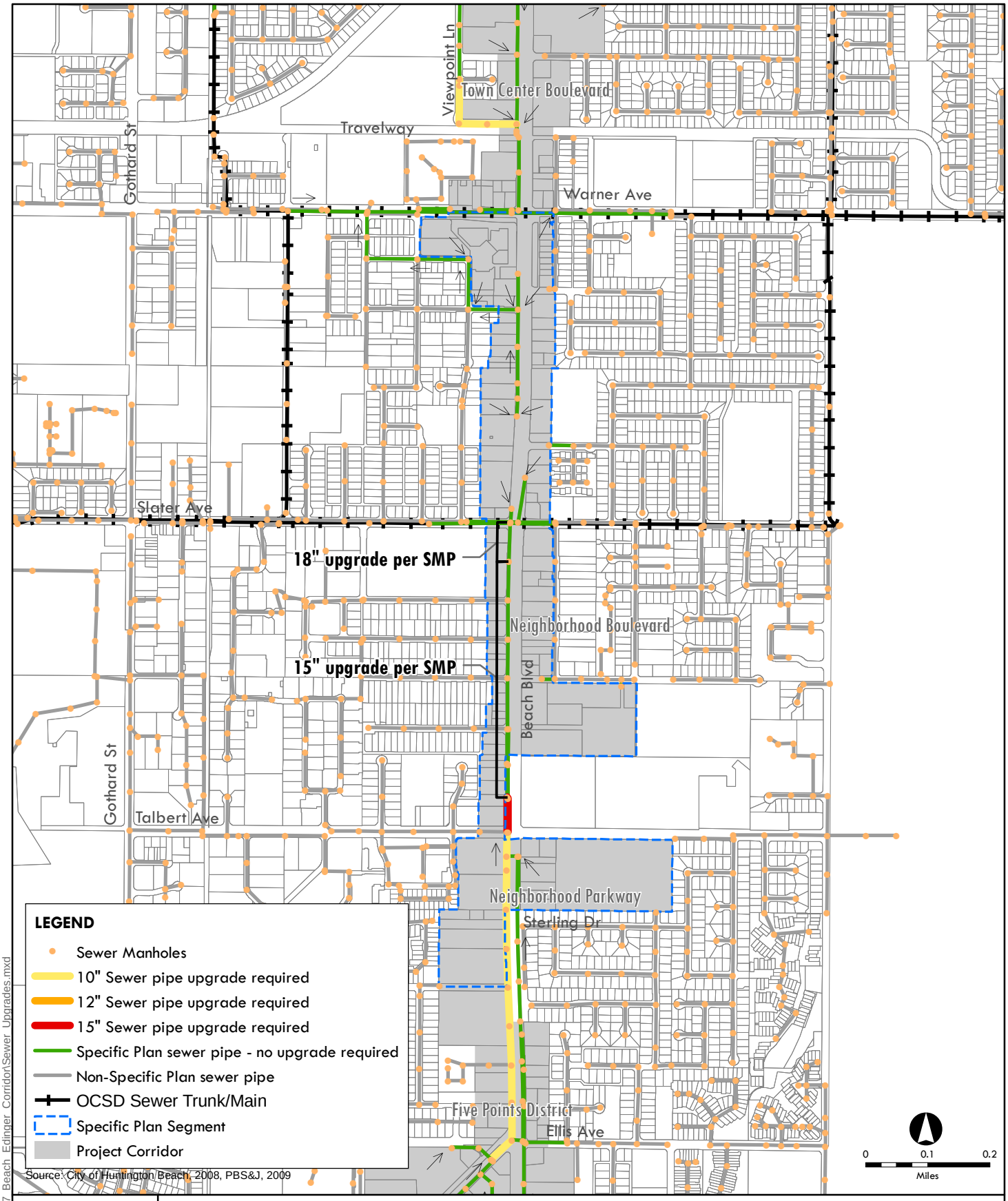

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FIGURE 3-2b

Specific Plan Required Sewer Upgrades (Neighborhood Boulevard)

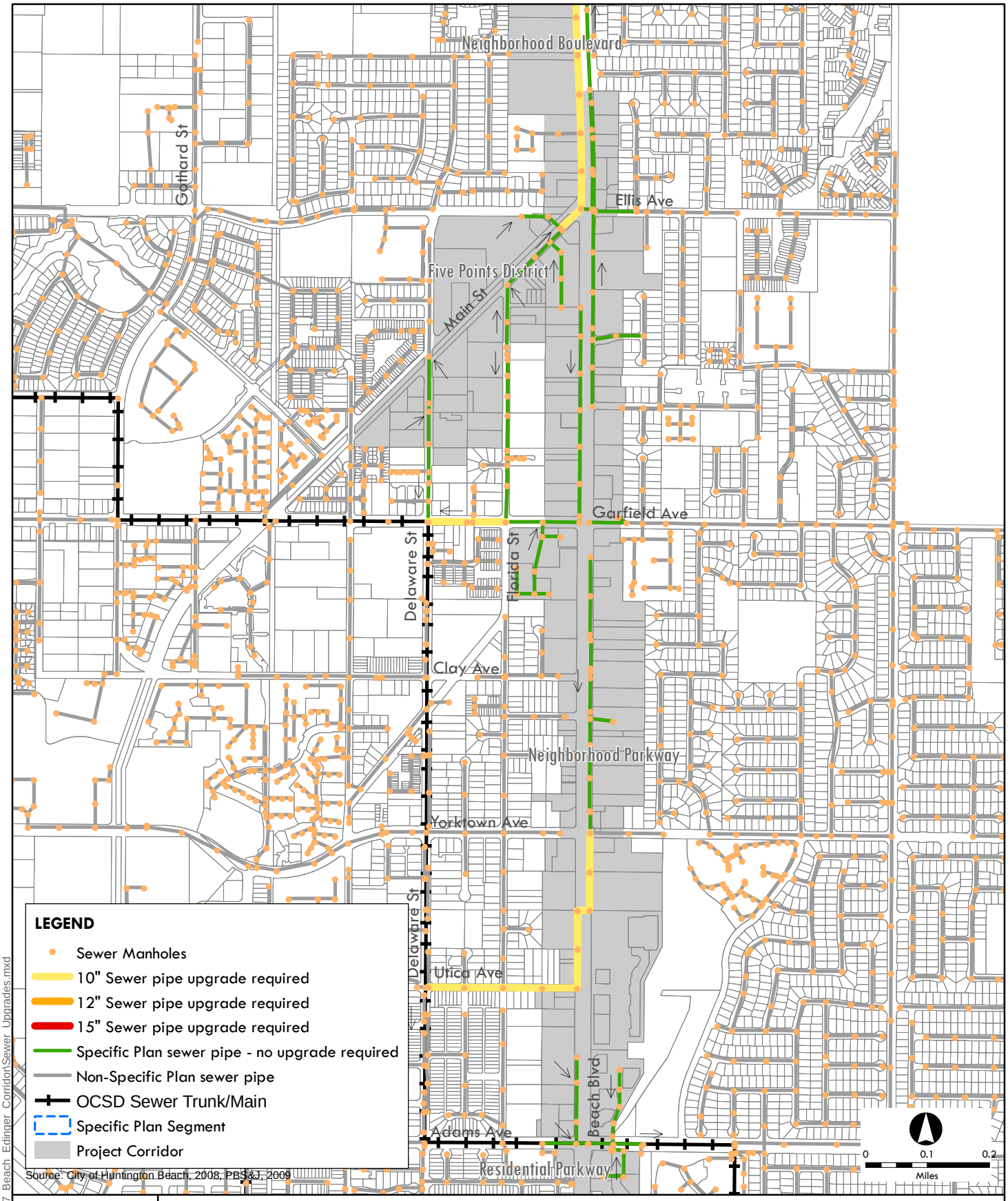

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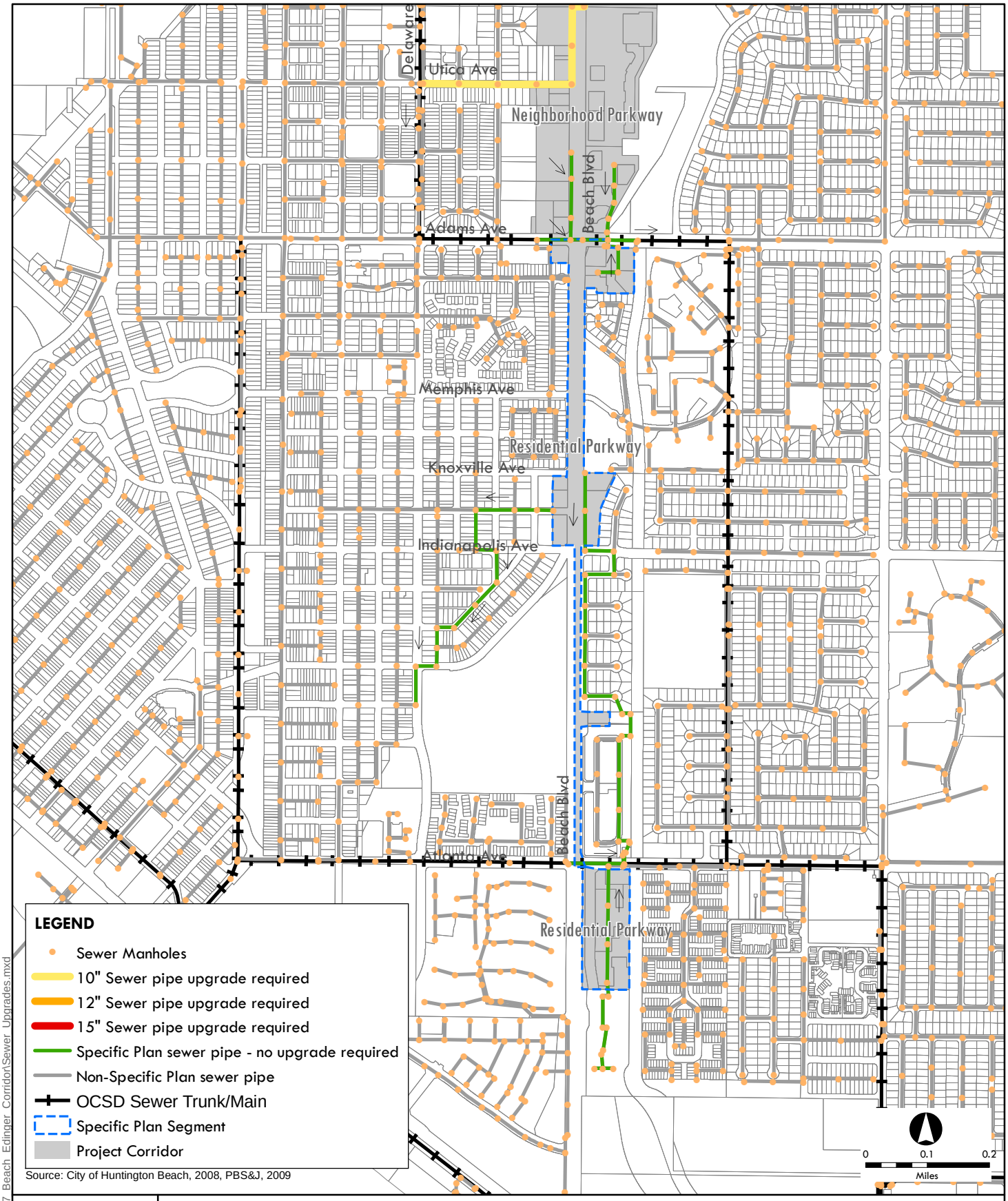
FIGURE 3-2c

Specific Plan Required Sewer Upgrades (Five Points District/Neighborhood Parkway)



Source: City of Huntington Beach, 2008, PBS&J, 2009

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FIGURE 3-2d

Specific Plan Required Sewer Upgrades (Residential Parkway)

3.3.1 Wastewater Reclamation Plant Capacity

Remaining capacity at Reclamation Plant No. 1 is 98 MGD. Remaining capacity at Reclamation Plant No. 2 is approximately 24 MGD. As such, it is assumed there would be more than adequate capacity to treat the new increase of 2.20 MGD of wastewater that would be generated by the proposed Specific Plan. However, for each individual project, the OCSD shall confirm that there is capacity in the existing main and trunk sewer lines serving the individual projects that may be developed in accordance with the proposed Specific Plan.

CHAPTER 4 References

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