

**PRELIMINARY SEWER SERVICE STUDY
FOR THE
ESCONDIDO BALLPARK**

October 13, 2010

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Job No. 586-001

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586-001

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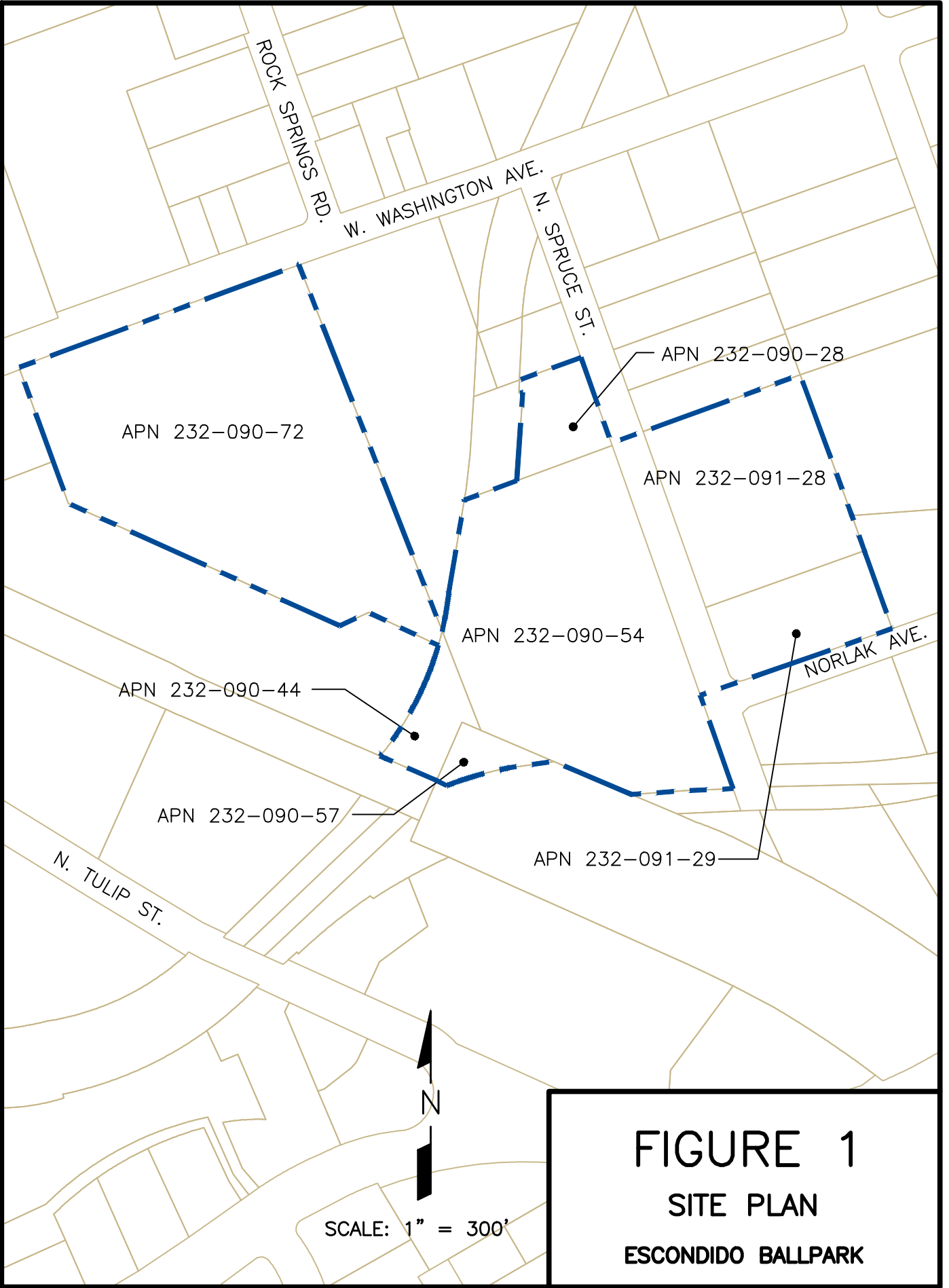
Subject: Preliminary Sewer Service Study for the Escondido Ballpark in the City of
Escondido

Introduction

This letter report provides a preliminary study of sewer service to the proposed Escondido Ballpark project. The Escondido Ballpark project involves the construction and operation of a triple -A minor league baseball ballpark on approximately 24.8 acres of land in the western portion of the City of Escondido north of Norlak Avenue and south of W. Washington Avenue, on either side of N. Spruce Street. Figure 1 presents a parcel map site plan showing the properties associated with the proposed Escondido Ballpark project.

The primary purpose of the proposed Escondido Ballpark project is to serve as a permanent home field for the new triple-A Padres-affiliated minor league team; however, the ballpark would be designed also to accommodate other events including concerts, public gatherings, graduations, speaking engagements, and other similar community events and activities.

\\PACIFIC\DWG\586001\SEWER FIGURES\FIGURE 1.DWG 10-13-10 14:20:34 LAYOUT: 8.5X11



APN 232-090-72

APN 232-090-28

APN 232-091-28

APN 232-090-54

APN 232-090-44

APN 232-090-57

APN 232-091-29

FIGURE 1

SITE PLAN

ESCONDIDO BALLPARK

SCALE: 1" = 300'

Project Description

The proposed ballpark would provide fixed seating for up to 7,500 persons. An additional 1,500 persons could be accommodated within a lawn area and general-admission bleachers located beyond the outfield wall, as well as private suites integrated into the ballpark. It is estimated that permanent employees would number approximately 200 workers.

The field facilities would consist of a natural grass playing surface. Street trees and other landscaping would be installed on and around the ballpark site to provide visual interest. Grass turf would be used in the lawn area outside of the outfield.

Clubhouse facilities would include a home team and a visiting team clubhouse, umpire facilities, an auxiliary locker room, laundry room, and a batting tunnel to be shared by the home and visiting teams. Additional facilities would include service and operations facilities such as employee areas and administrative offices, ticket offices, day-of-game staff and locker rooms, security areas, janitorial areas, maintenance and storage rooms.

Parking will be provided for approximately 331 spaces west of the proposed realignment of N. Spruce Street. An additional 844 spaces are anticipated to be provided west of Reidy Creek and south of W. Washington Avenue on property currently used by the City.

Operational Characteristics. The ballpark would host approximately 70 regular home games each season which would generally occur between the months of April and October. Games would be played throughout the week in the afternoon and evening hours. In addition to ballgames, the stadium could host a variety of other events, such as concerts. Many of these events would utilize the entire ballpark while others may utilize the stadium in an amphitheater configuration with a temporary stage set up either in the outfield or near second base. The operational hours for such events would be similar to that of the ballgames.

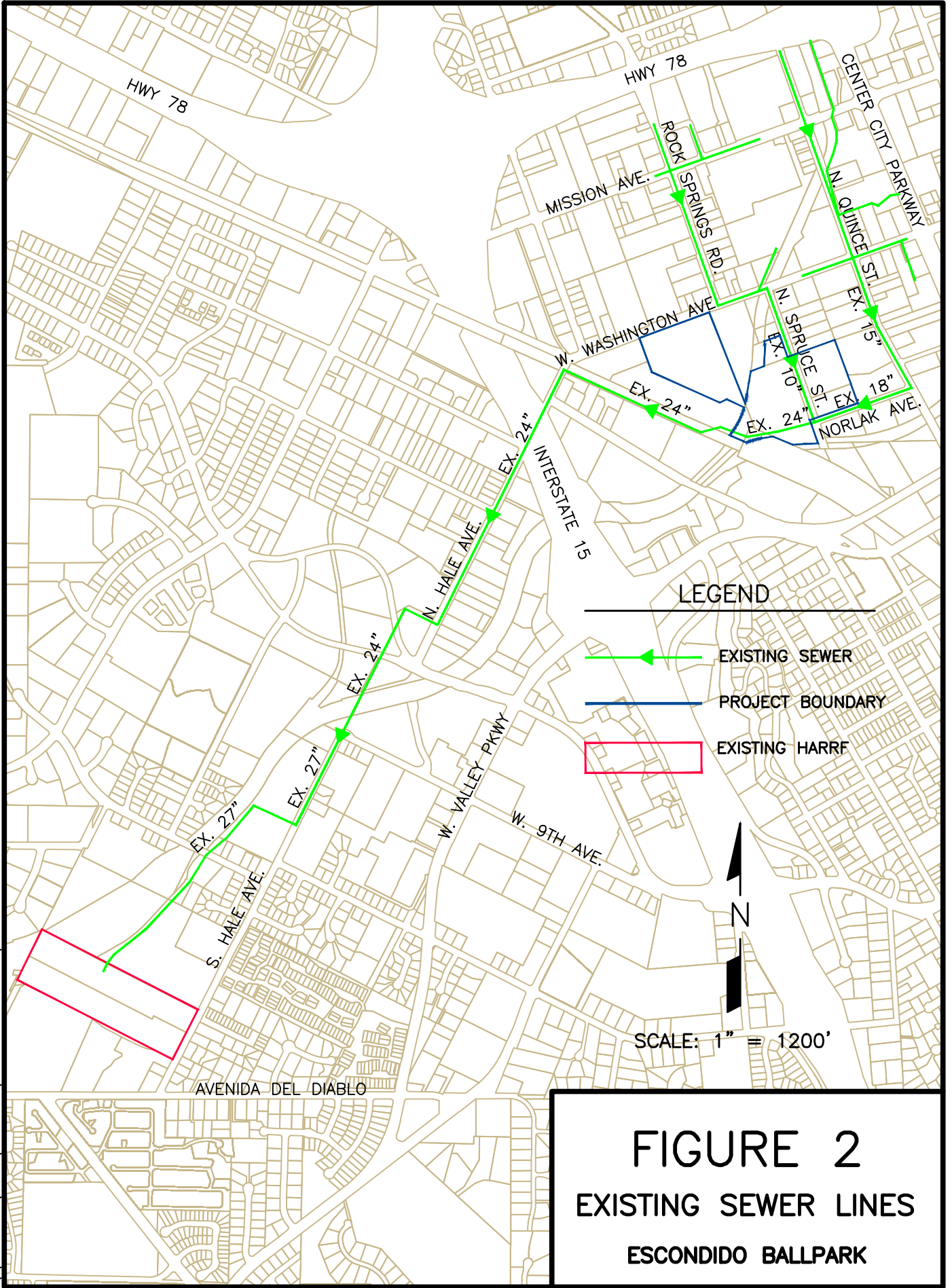
Sewer Service

The proposed Escondido Ballpark project is within the sewer service area of the City of Escondido. Existing gravity sewers are located in N. Spruce Street and Norlak Avenue. The sewer in N. Spruce Street flows south to Norlak Avenue. The sewer in Norlak Avenue flows west, picks up the sewer flow from N. Spruce Street, continues west along the railroad tracks to W. Washington Avenue, then south and west onto Hale Avenue to the Hale Avenue Resource Recovery Facility (HARRF). Figure 2 presents a schematic diagram of the gravity sewer interceptor that conveys sewage from the proposed Escondido Ballpark properties to the wastewater treatment plant. Many other sewer lines exist in this area but do not provide service to the proposed ballpark properties.

Sewer System Design Criteria

Sewer system design criteria such as estimating sewage flows and sewer pipe capacity parameters are based on the November 2005 Wastewater Collection System Master Plan Update for the City of Escondido. This master plan update is also used to evaluate the available capacity of offsite sewer mains. Assessing the available treatment and disposal capacity for sewage generated by the property is based on the December 2006 Wastewater Treatment and Disposal Facilities Capacity Study.

\\PACIFIC\DWG\586001\SEWER FIGURES\FIGURE 2.DWG 10-13-10 14:39:36 LAYOUT: 8.5X11



Sewer Flow Generation

Sewer flow generation values are calculated for the proposed Escondido Ballpark project properties using several approaches. The first approach was to estimate sewage flow using existing water meter records. Water meter data records were provided by the City for any water meters associated with all the parcels which make up the proposed ballpark project site. Table 1 provides an estimate of the existing sewage flow generated on the ballpark site properties based on water meter data. Considering the types of uses of the properties, consumptive use was assumed to be insignificant. Meters that are designated as irrigation were assumed to be used entirely for that purpose. Existing sewage flow from the proposed ballpark project properties is estimated to be 7,795 gallons per day average.

TABLE 1 EXISTING SEWAGE GENERATION AT ESCONDIDO BALLPARK PROPOSED SITE				
APN	Address	Meter Type	Average Water Demand, gpd	Estimated Sewage Generation, gpd
232-091-28	480 North Spruce Street	Commercial 1.5-inch meter	2,152	2,152
232-091-29	NCTD Bus Yard on Spruce Street	Irrigation 1.5-inch meter	948	0
232-090-54	475 N. Spruce Street, City Public Works	3-inch turbo meter	213	213
		2-inch meter	476	476
		2-inch meter	1,880	1,880
		2-inch meter	149	149
		1.5-inch meter	759	759
		Commercial 2-inch meter	635	635
232-090-72	1021 W. Washington Avenue, City Yard	3-inch turbo meter	1,531	1,531
232-090-28	475 N. Spruce Street, City Public Works	No Meter	0	0
232-090-57	475 N. Spruce Street, City Public Works	No Meter	0	0
232-090-44	Flood Control	No Meter	0	0
TOTAL			8,743	7,795

Since ultimate wastewater flows are used by the City for master planning their sewage conveyance, treatment, and disposal needs, it is useful to calculate the expected sewage flow from the proposed Escondido Ballpark project properties based on General Plan Land Use designations. Table 2 below presents the estimated sewage generation for the existing General Plan land use designations for the proposed Escondido Ballpark properties. The sewage generation factors are from the November 2005 Wastewater Collection System Master Plan Update.

TABLE 2 GENERAL PLAN SEWAGE GENERATION AT ESCONDIDO BALLPARK PROPOSED SITE				
APN	Address	Acres	Generation Factor gpd/acre	Sewage Flow gpd
232-091-28	480 North Spruce Street	3.79	2,000	7,580
232-091-29	NCTD Bus Yard on Spruce Street	1.68	2,000	3,360
232-090-54	475 N. Spruce Street, City Public Works	7.82	2,000	15,640
232-090-72	1021 W. Washington Avenue, City Yard	10.3	2,000	20,600
232-090-28	475 N. Spruce Street, City Public Works	0.83	2,000	1,660
232-090-57	475 N. Spruce Street, City Public Works	0.38	2,000	760
232-090-44	Flood Control		0	0
TOTAL		24.8		49,600

Included in the list of properties in Table 2 is one parcel for the existing flood control channel. No sewage generation is calculated for this parcel. It is expected that this parcel will remain relatively unchanged if the proposed Escondido Ballpark project proceeds forward.

Table 3 below presents the basis for estimating the sewage generation from the proposed Escondido Ballpark project. Attendance data collected from similar Triple-A baseball teams in Lake Elsinore, California and Portland, Oregon indicate that a typical event includes a 75 percent capacity crowd. Therefore, the analysis for the proposed Escondido Ballpark project will be based on a typical attendance of 6,750 persons plus 200 employees.

TABLE 3 SEWAGE GENERATION FOR THE PROPOSED BALLPARK PROJECT			
Generation Type	Generation Factor	Estimated Units	Sewage Flow
Stadium Facilities	6 gal/person	6,950 persons	41,700 gpd
Seating Area Washdown	20 gal/1000 sq ft	43,616 sq ft	872 gpd
NCTD Bus Yard	---	---	0
City Public Works Yard	---	---	5,643 gpd
TOTAL			48,215 gpd

The sewage generation rate used for the ballpark event was derived from data found in *Wastewater Engineering, Treatment and Reuse*, Metcalf & Eddy, Inc., Fourth Edition, Table 3-2 Typical Wastewater Flowrates from Commercial Sources in the United States, page 157. This table does not have a specific sewage flowrate for a sports facility; however, it includes similar types of uses such as the following.

Conference Center	8 ppd/person
Public Lavatory	4 gpd/user
Restaurant, conventional	8 gpd/customer
Theater	3 gpd/seat

From this data we concluded that for the ballpark facility a reasonable estimate of sewage generation would be 6 gpd/person. This incorporates the Public Lavatory factor together with a food service aspect.

Wastewater generation is also expected from washdown of the ballpark seating area. The sewage generation factor in Table 3 is estimated to reflect a powerwashing/steam cleaning type of operation.

Finally, of the existing land uses that would be displaced by the proposed Escondido Ballpark project, the NCTD bus parking and the City's wastewater maintenance operations are anticipated to be relocated to the existing City yard parcel west of Reidy Creek and south of W. Washington Avenue. Therefore, the existing sewage flow generation quantities identified in Table 1 for these existing uses must be added as components of the proposed ballpark sewage generation numbers.

Table 3 shows the sewage generation specific to a ballpark event as well as the sewage generated by the existing uses which are proposed to be relocated within the ballpark properties. The generation factor per person includes restroom use and food preparation. Based on a typical attendance of 6,750 people and 200 employees, the sewage generation from the proposed ballpark project event is less than the daily sewage generation based on General Plan land uses (compare totals in Tables 2 and 3). The proposed ballpark project increase in sewage flow compared to existing uses is 40,420 gallons on a per event basis (compare totals in Tables 1 and 3).

For the purpose of analyzing impacts to the capacity of the existing downstream sewer conveyance system, it is appropriate to consider the flow from the proposed Escondido Ballpark project on an event-day basis. Furthermore, it is reasonable to expect that the peak sewage flow from the event will be significant because of the assembly of a large number of people and the limited duration of the event.

Using the event day flow generation of 48,215 gallons per day, and the sewage peaking equation from the November 2005 Wastewater Collection System Master Plan Update for the City of Escondido (page 6), the peak sewage flow is calculated to be 111,641 gpd. This equates to a peaking factor of 2.3. However, this low peaking factor does not adequately characterize the expected peak flow from a typical crowd at a ballpark.

Another approach is to consider the actual duration of an event and estimate the sewage flow that would occur over that time period. The estimated sewage generation related to

the event attendees is shown in Table 3 to be 41,700 gallons. Typical events may range in duration from four to six hours. For a conservative calculation, a four-hour duration was used. This results in a peak sewage flow estimate of:

$$41,700 \text{ gallons} / 4 \text{ hours} / 60 \text{ min per hr} = 174 \text{ gpm.}$$

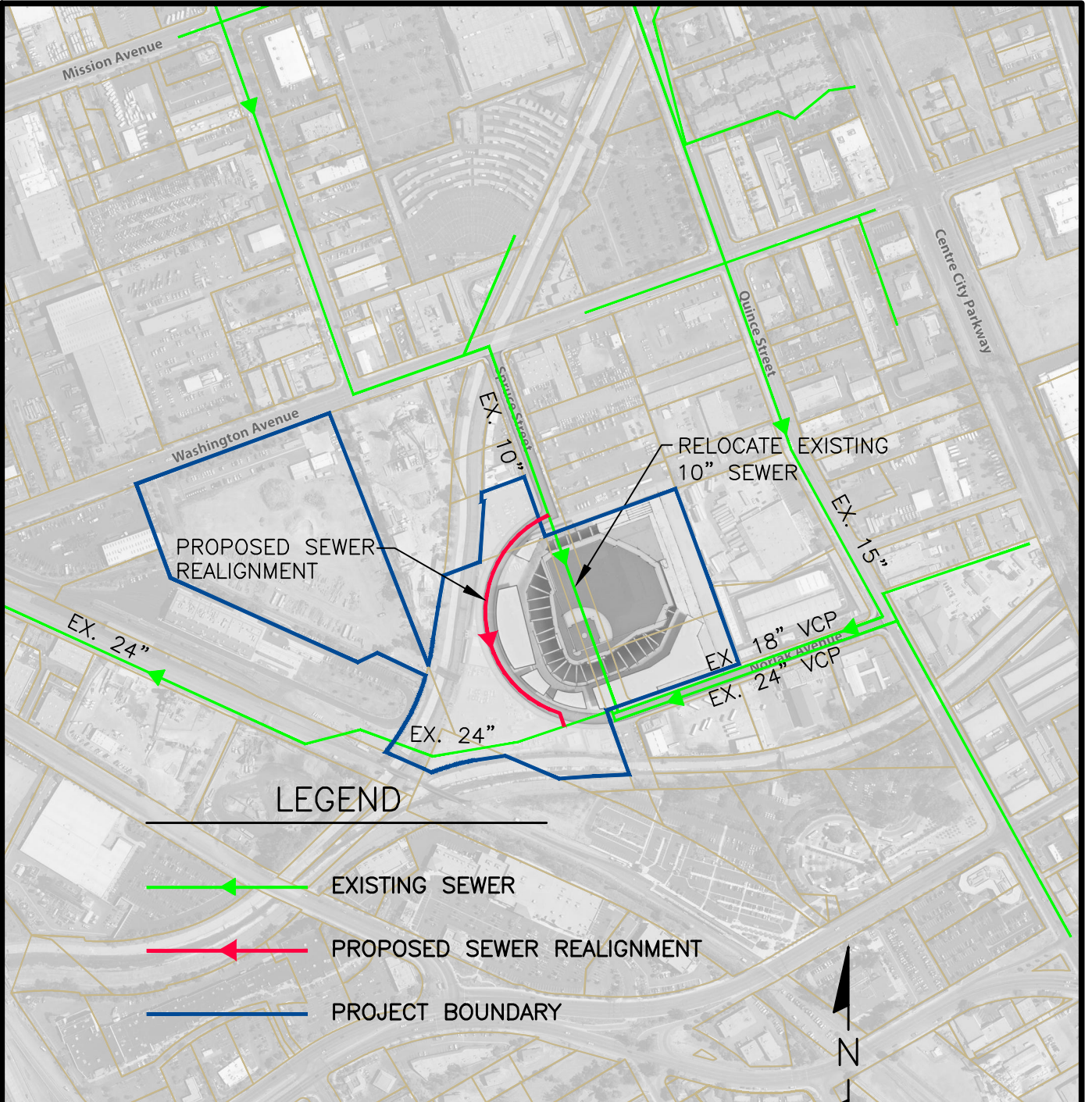
Using a peak flow of 174 gpm results in a peaking factor of 5.2 for the event day. This figure better reflects the concentrated quantity of sewage flow that is anticipated from the ballpark facility during an event.

The incremental peak sewage flow from the proposed Escondido Ballpark project must take into account the underlying General Plan land use and associated sewage generation. From Table 2, the existing land use generates 49,600 gpd of sewage (0.077 cfs average). The average flow from the proposed ballpark can be derived using the sewage peaking formula to convert 174 gpm peak into an average flow. The result is 0.171 cfs average. Thus, from a master planning perspective, the total incremental average flow from the site is $0.171 - 0.077 = 0.094$ cfs. This value converts to a peak flow from the site of 0.216 cfs (97 gpm) by using the sewage peaking equation from the November 2005 Wastewater Collection System Master Plan.

Onsite Sewer Line Relocation

The proposed Escondido Ballpark project will encroach over a section of existing N. Spruce Street. Approximately the southern half of N. Spruce Street between W. Washington Avenue and Norlak Avenue will be covered by the proposed ballpark facilities. There is an existing 10-inch gravity sewer in N. Spruce Street which flows south to Norlak Avenue. This sewer line will need to be relocated. The most likely relocation is to place the new sewer line to the west of the ballpark facilities and connect to the existing 24-inch gravity sewer traversing the south end of the City yard. Figure 3 shows the existing sewer facilities and the possible relocation alignment for the N. Spruce Street sewer.

\\PACIFIC\DWG\586001\SEWER FIGURES\FIGURE 3.DWG 10-13-10 14:47:41 LAYOUT: 8.5X11



LEGEND

- EXISTING SEWER
- PROPOSED SEWER REALIGNMENT
- PROJECT BOUNDARY



SCALE: 1" = 500'

FIGURE 3
PROPOSED SEWER
ESCONDIDO BALLPARK

The size of the relocated gravity sewer is based on ultimate peak dry weather flow from the service area to the north of the proposed ballpark project plus the peak flow estimated from the proposed ballpark project on an event day. The peak dry weather flow was estimated by obtaining the ultimate peak wet weather flow in the existing 10-inch gravity sewer in N. Spruce Street from the November 2005 Wastewater Collection System Master Plan and subtracting the inflow and infiltration component of the flow. To accommodate ultimate peak dry weather flow, the relocated gravity sewer line for the proposed Escondido Ballpark project must be 12-inch diameter to flow less than half full.

Sewer service to the proposed ballpark facilities can be provided by connecting sewer laterals to the relocated N. Spruce Street gravity sewer line or by extending a sewer lateral south to the existing 18-inch gravity sewer line in Norlak Avenue.

Ultimate Sewer Service for the Proposed Escondido Ballpark Project

Analysis of available sewer service to the proposed Escondido Ballpark project must be divided between two distinct components. One aspect of sewer service is the City's available wastewater treatment and disposal capacity; the second component of sewer service is the collection system capacity.

Wastewater Treatment and Disposal. Wastewater treatment and disposal for the ultimate projected sewage flow from the City of Escondido sewer service area is addressed best by referring to the December 2006 Wastewater Treatment and Disposal Facilities Capacity Study, Final Project Report, prepared by Brown and Caldwell. This report evaluates the HARRF relative to the current as well as estimated ultimate sewage flows. The ultimate projected average sewage flows predicted for the proposed Escondido Ballpark project are consistent with the projected ultimate flows calculated in the November 2005 Wastewater Collections System Master Plan Update. These flow calculations are based on the City's General Plan for land use within the City.

The December 2006 study by Brown and Caldwell outlines a phased approach for the City to follow to implement facility improvements in order to maintain adequate treatment and disposal capacity for the wastewater generated within the City's service area. This phased approach addresses wastewater flow capacity up to the expected ultimate buildout of the City's sewer service area.

The December 2006 Brown and Caldwell study indicates that the current wastewater treatment plant capacity is 18.0 mgd. The outfall disposal capacity is 20.1 mgd (Craig Whittemore, Utilities Dept.). The average daily flow treated in 2005 is reported to be 15.3 mgd. Current daily flows at HARRF are approximately 13 mgd (Craig Whittemore, Utilities Dept.). The reduced flow is a result of the recent economic slowdown and local water conservation efforts. The report also states that the ultimate projected sewage flow from the City service area is 22.2 mgd. This figure is consistent with the November 2005 Wastewater Master Plan Update which calculated an ultimate daily average sewage flow of 22.2 mgd based on the General Plan (and buildout of its planned land uses).

On a daily average flow basis, the proposed Escondido Ballpark project (48,215 gpd) will generate less sewage flow than the General Plan Land Use estimate for the underlying property (49,600 gpd). Therefore, there is no impact of the proposed Escondido Ballpark project on the wastewater treatment and disposal capacity. Wastewater treatment and disposal capacity for the proposed Escondido Ballpark project can be provided without any significant modification to the current long-range planning for increase of wastewater treatment and disposal capacity.

Sewer Collection System – Local Sewers. The November 2005 Wastewater Collections System Master Plan Update evaluated the existing collection system to ensure that it can accommodate the ultimate projected peak wet weather sewage flows. The proposed Escondido Ballpark project is within Basin 4 of the City. There are several improvements identified within Basin 4 and listed in Table 3 page 2 of 15 of the November 2005 Master Plan Update. Only one improvement, Pipe ID 5583, is in the vicinity of the proposed Escondido Ballpark project. In fact, this improvement would increase collection system capacity and is identified to be in the existing 10-inch sewer in N. Spruce Street which will need to be relocated because the proposed ballpark facilities footprint covers a section of N. Spruce Street.

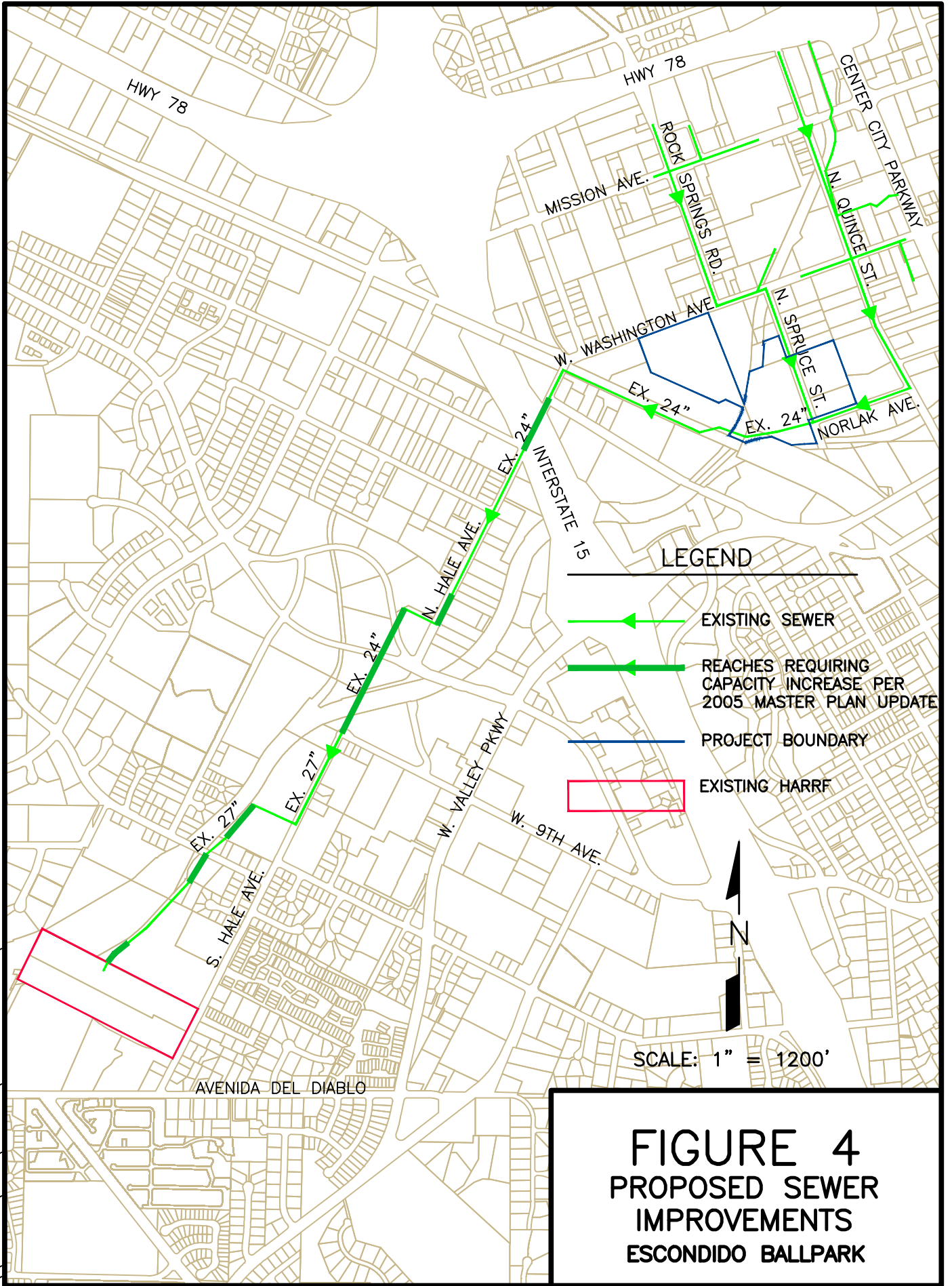
Therefore, the relocated N. Spruce Street gravity sewer will be sized to accommodate the proposed ballpark sewer flows as well as the existing flows collected by the existing N. Spruce Street gravity sewer upstream of the proposed ballpark site.

Sewer Collection System – Trunk Sewers. The relocated N. Spruce Street 10-inch gravity sewer is anticipated to be extended south on the western side of the proposed ballpark facilities and connect to the existing 24-inch trunk sewer which conveys flows from multiple sewer basin within the City to the HARRF. The detailed analysis of the capacity in this trunk sewer is beyond the scope of this study. To qualitatively evaluate the capacity of the trunk sewer relative to the flows from the proposed Escondido Ballpark project, reference is made to the November 2005 Wastewater Collection System Master Plan Update for the City of Escondido.

The 2005 Wastewater Collection System Master Plan Update evaluated the capacity in the Hale Avenue Trunk Sewer using flow generated from all the sewer basins in the City which connect to this trunk sewer. Figure 4 shows the trunk sewer reaches recommended for improvement based on capacity limitations under ultimate peak wet weather flows. There are currently improvement projects in the City's five-year capital improvement projects budget for upgrading portions of the Hale Avenue Trunk Sewer.

The incremental peak sewage flow from the proposed Escondido Ballpark site can be compared to the calculated ultimate peak flow per the 2005 Master Plan Update for the reaches of sewer that are shown to be undersized. From Figure 4, for the upstream-most reach under the Interstate 15 Freeway, the 2005 Master Plan Update shows a peak ultimate flow of 6.914 cfs. Thus, the incremental flow (0.216 cfs) from the proposed ballpark site on an event day is 3.1 percent of the peak wet weather ultimate flow in this reach. For downstream reaches of the Hale Avenue Trunk Sewer, the proposed ballpark incremental flow will become a less significant component of the ultimate flow. Considering that the proposed ballpark will not be used during a rain event, the effect of the proposed ballpark on the peak sewage flow in the sewer system is further diminished.

A capital improvement project for the Hale Avenue Trunk Sewer is budgeted to occur in the next five years. This improvement will have capacity for the cumulative buildout condition of the area, and therefore will accommodate a small increase in peak flow from the proposed Escondido Ballpark project.



Summary

The proposed Escondido Ballpark project will be constructed on land that is currently designated by the General Plan as General Industrial land use. The expected sewage generation from the proposed ballpark project is estimated to be less than the average daily sewage generation from the underlying property. Peak flow from the proposed ballpark is calculated to be greater than the peak flow from the underlying property based on existing land use designations.

Wastewater treatment and disposal capacity is available for the proposed ballpark project since the required capacity for the proposed ballpark project is less than the master planned capacity needed for the underlying properties based on General Plan land use designations.

Local sewer collection impacts include the relocation of the existing 10-inch gravity sewer in N. Spruce Street which will be covered by the proposed ballpark facilities. In the course of relocation, the new gravity sewer main can be sized to accommodate the ultimate expected flows.

Trunk sewer capacity in the Hale Avenue Trunk Sewer has been identified by the 2005 Wastewater Master Plan Update to be deficient in several reaches based on ultimate flow projections. The City's capital improvements projects program includes projects to upgrade the trunk sewer reaches to accommodate ultimate peak wet weather flows.

Thank you for the opportunity to provide engineering services on this project. Please feel free to contact us to further discuss any aspect of the information presented in this sewer service review for the proposed Escondido Ballpark project.

Dexter Wilson Engineering, Inc.



Andrew Owen, P.E.

AO:ps