May 18, 2016

Mr. Chester Bautista
City of Chula Vista
276 Fourth Avenue
Chula Vista, CA 91910

Subject: Sharp Chula Vista – Ocean View Tower Sewer Study

Dear Chester,

This letter is to address the City of Chula Vista sewer demand comment, clarify discrepancies between the current Sharp Chula Vista water usage and the approved Sewer Capacity Study, and confirm that we have adequate sewer capacity at the Sharp OVT site.

The City of Chula Vista DSD comment on 4/12 states that *"'the wastewater outflow for the existing Sharp Chula Vista Medical Center is calculated to be approximately 20,000 gallons per day (gpd)." However, the last three metered readings for the current wastewater system show an average billable sewer of 82,568 gpd (see attached copy of the most recent sewer bill for this project). Furthermore, the City of Chula Vista Wastewater Collection Master Plan show an Average Daily Water Bill Demand between 2009 and 2011 of 82,618 gpd"*

Bills relating to the water usage are not an accurate gauge of sewerage outfall. What should be removed from this 82K gpd number is water that does not go into the sewer system. This includes irrigation usage (which includes the majority of the Sharp Chula Vista campus), steam use, and cooling tower evaporation.

Irrigation usage is the bulk of the water used. In 2014, water usage averaged 87,328 gpd. In 2015, after improvements to approximately half of our irrigation system (which included a switch to reclaimed water), and without significant changes to other facilities or systems, the average water usage dropped to 67,808 gpd. Assuming the same savings after the remainder of the system is updated, water demand will be around 47,000 gpd.

As previously stated, the Sewer Capacity Study for Sharp Chula Vista Medical Center Expansion by Rick Engineering Company, dated January 6, 2014, shows an expected existing usage of 20,000 gpd. It also shows an anticipated usage of 28,400 gpd for each of the new towers. This resulted in a projected total usage of 76,800 gpd. Note that this is when two towers we anticipated, and now there will only be one additional tower. Using similar approved methodology, the following calculations should be noted:

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The approved master plan study used this methodology to calculate the new tower's sewer demand:

Patient Beds → 140 beds * 50 gpd =	**7,000 gpd**
Cooling Tower → 10 gal/min * 60 min/hr. * 24 hr. = 14,400 g/d * 50% evaporation =	**7,200 gpd**
GPD Load → 10 gal/min * 60 min/hr. * 12 hr. =	**7,200 gpd**
Support services → 250 fixtures * 1.5 gal/min * 1 min/60s * 15s/use * 10 use/day =	**1,000 gpd**
Kitchen = 2000 gpd per meal =	**6,000 gpd**
Total new tower sewer outfall =	**28,400 gpd**

The existing facility (after the tower is completed) can similarly be calculated:

Patient Beds → 343 beds* 50 gpd =	**17,150 gpd**
Cooling Towers → part of new tower calculations =	**0 gpd**
GPD load → moved to new tower =	**0 gpd**
Support Services → 600 fixtures * 1.5 gal/min * 1 min/60s * 15s/use * 10 use/day =	**2,250 gpd**
Kitchen → moved to new tower =	**0 gpd**
Total existing facility sewer outfall =	**19,400 gpd**

Total sewer outfall at buildout = 47,800 gpd

While the billed water usage vs. existing sewer demand gap seems extreme, these numbers show a much more accurate picture of water usage and sewer demand:

	Sewer Demand Per Rick Study	Water Usage per Billing & Future	Actual & Future Sewer
Existing Facility (340+ beds)	20,000 gpd	82,568 gpd ('09-'11)	19,400 gpd
New East Tower (140 beds)	28,400 gpd	28,400 gpd	28,400 gpd
New West Tower (140 beds)	28,400 gpd	N/A	N/A
Total Demand at Buildout	76,800 gpd	110,968 gpd	**47,800 gpd**
Ultimate Buildout Capacity per Study	82,375 gpd	82,375 gpd	**82,375 gpd**

Further, the existing and projected dn/D show adequate capacity. Current loads provide a low end of 0.07 dn/D and a high end of 0.16 dn/D. This gives a velocity range of 4.21 fps to 1.37 fps. Results from the Rick study, showed a low end of 0.12 dn/D and a high end of 0.29 dn/D. Under the allowable 0.50 dn/D. These values also resulted in velocities ranging from 5.1 fps to 2.1 fps. The updated, more accurate numbers, using the same approved methodology as in the Rick study, showed a low end of 0.11 dn/D and a high end of 0.25 dn/D, resulting in velocities ranging from 5.4 fps to 1.77. These results were anticipated with the reduction from 76,800 gpd to 47,800 gpd for the total flow rate, and confirm that the existing sewer lines in Medical Center Court have adequate capacity to convey the anticipated wastewater.

	Per Rick Study	Current	Projected After New Tower
dn/D Range	0.12-0.29	0.07-0.16	0.11-0.25
Velocity Range	5.1-2.1 fps	4.21-1.37 fps	5.4-1.77 fps

Again, these more accurate calculations show that the existing sewer system has adequate capacity for the proposed tower. And while older bills confirm a high water usage, actual sewer flow rate after construction of the new tower should be about 58% of the allowable capacity. These supporting calculations should resolve any concerns the city may have with the sewer capacity. If you have any questions, please feel free to contact me.

Sincerely,

Erich Flessner, P.E.
Senior Associate