Strategic Land Solutions, Inc.
Civil Engineering • Land Planning • Entitlements

Friday- October 6, 2023
Attn: Mr. Michael Walton
Town of Parker Colorado:
Engineering Services Manager
20120 E. Mainstreet
Parker, CO 80138
RE: Utility Letter Study (Mainstreet Apartments Parker)

Dear Mr. Walton,

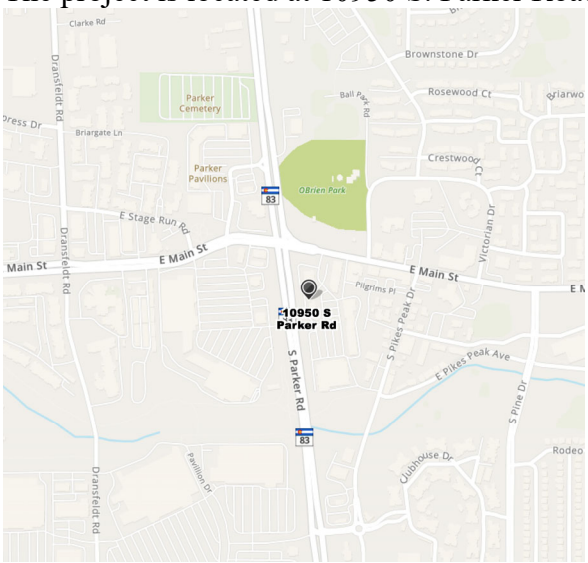
As required by the Town of Parker this Letter Report shall serve as the required Water and Sewer Study (hereinafter the STUDY) for this development, which is tributary to Parker Water and Sanitation District. We acknowledge that the Parker Water and Sanitation District review of the presented information is for general conformance with the submittal requirements, current design criteria, and standard engineering principles and practices, and that the Parker Water and Sanitation District does not and will not assume liability for facilities designed by others.

INTRODUCTION

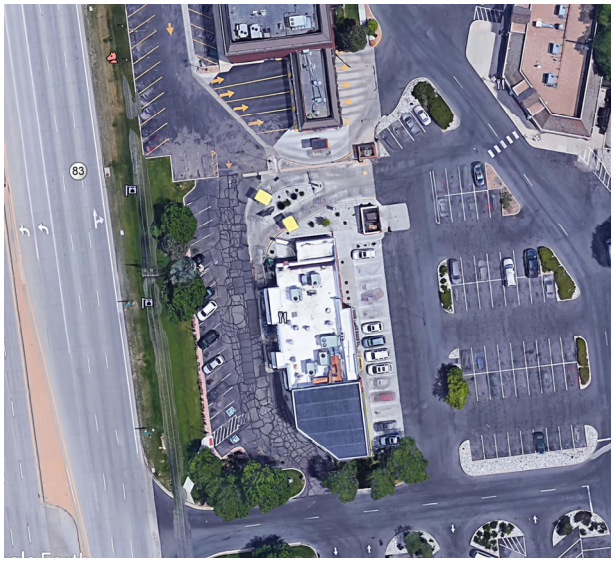
The purpose of this STUDY is to determine the estimated water and sanitary sewer effluent from this planned development, and to determine if the existing water main and downstream sanitary sewer has sufficient capacity to accommodate this project. We understand that your team will use this information to determine what impact, if any, this development may have on the existing sanitary sewer infrastructure.

LOCATION

The project is located at 10950 S. Parker Road.



Site Location Map



Aerial Site Location Map

2595 Ponderosa Road ● Franktown ● CO ● 80116
Email: rpalmer@strategicls.net
Phone: 720.384.7661
Website: http://www.strategicls.net

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PROJECT DESCRIPTION

The site currently encompasses approximately 0.70-acres of developed land.

The proposed project includes a major remodel of the existing restaurant, new site pavement, relocation of the gas meter, relocation of the electrical transformer, and undergrounding of the overhead electrical lines adjacent to S. Parker Road.

The existing building size will not increase with the proposed project.

EXISTING WATER SERVICE

There is an existing 8-inch water main located in the parking lot east of the exiting restaurant. The water main provides water to the existing restaurant as well as providing fire flow to the adjacent fire hydrants.

The building is currently served by a 1-1/2-inch domestic water tap. There is no fire sprinkler system in the existing restaurant.

PROPOSED WATER SERVICE

The site is currently planned for a major remodel of the existing restaurant. Changes to the building area will be minimal, and no changes to the domestic water are planned. However, an automatic fire sprinkler will be added to the restaurant. As part of the fire sprinkler system, a new fire riser room and fire department hose connection will be added to the building. The fire sprinkler system is expected to utilize a new 6-inch fire sprinkler line, and a new fire hydrant is being installed within 100-feet of the fire department hose connection.

No change to the existing water meter is proposed.

Retail/Commercial: 4,000 gallons/acre (0.70 x 4,000 gallons)/1440	=1.95 gpm
Irrigation: 0.154 acre X 4.2 gpm	=0.65 gpm
Sub Total	= 2.60 gpm
5% Unaccounted Consumption Rate	= 2.73 gpm
Average daily consumption rate	**= 2.73 gpm**

Required Fire Flow

CODE ANALYSIS: 2021 IFC
Building 6,071 S.F. Restaurant
Occupancy Group B/A-2, Construction Type: VB, Fire Area = 6,071 S.F.

VB Fire Flow	= 2,000 gpm
Total Building Fire Flow	= 2,000 gpm
Building is Fully Sprinklered	

Required Fire Flow with 50% reduction	=1,500 gpm
Expected Fire Sprinkler flow (estimated from similar buildings)	= 482 gpm
Total Fire	= 1,982 gpm
Average daily consumption rate	= 2.73gpm
Peak design consumption rate = 2.73 gpm x 1.7)	**=4.64 gpm**
Maximum daily consumption rate plus fire flow	**= 1,987 gpm**

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EXISTING SANITARY SEWER

There is a 12-inch PVC sanitary sewer located in the shopping center parking lot east of the McDonald's Restaurant. The 12-inch main flows northwest past the Wells Fargo Building to Mainstreet.

PROPOSED SANITARY SEWER SERVICE

The existing restaurant is served by a 4-inch sanitary sewer and a 1,500-gallon grease interceptor. During construction the grease interceptor will be cleaned and inspected. Currently there is no indication that any repair or replacement is needed. Therefore, no modifications to the existing sanitary sewer service are proposed.

SANITARY SEWER SYSTEM ANALYSIS & SUMMARY

The sanitary sewer effluent is estimated per Parker Water and Sanitation regulations. The site is currently zoned for commercial use.

North Site

Retail: 4,000 gallons/acre (0.70 x 4,000 gallons)/1440	=1.94 gpm
Sub Total/Average daily flow	= 1.94 gpm (0.004 CFS)
5.08 Peak Factor	= 9.98 gpm
Peak Flow	**= 9.98 gpm (0.020 CFS)**

Infiltration expected at 200 gallons per day per inch of diameter per mile of sewer line. The proposed building is designed with a 34.5 feet long, 4-inch diameter, PVC outfall. Therefore, the expected infiltration is:
Length=76-feet=0.0144 miles.
Diameter=4-inch
Expected infiltration=(0.0144x4x200)=11.52 gallons per day.
Expected infiltration=11.52 GPD=.000021 CFS

Total expected peak sanitary sewer:
0.020 cfs (building peak flow) + 0.000021 cfs (infiltration) = 0.020 cfs total.

The Manning Equation for circular pipes flowing full is: $Q = \frac{0.00001}{n} x\, d^{\frac{8}{3}} x\, S^{\frac{1}{2}}$

where:
Q = Flow (in CFS)
n = variable friction factor (see above)
d = Pipe Diameter (in inches)
S = pipe slope (in feet/feet)

As such, the existing 12 PVC @ 0.32 % sewer has a 90% full flow capacity of 2.79 CFS at 3.75 ft/s. The expected peak flow from the restaurant is 0.020 cfs, which equates to approximately 0.72% of the pipe capacity of the 12-inch main. As such, this project should not have an adverse impact on the adjacent sanitary sewer facilities serving the north site.

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We trust this Utility Letter Report is acceptable and look forward to receiving your approval shortly. Please feel free to call me at (720) 384-7661 upon receipt and review should you have questions or wish to discuss the information presented above in greater detail. Thank you!

Sincerely,

STRATEGIC LAND SOLUTIONS, INC.

Robert J. Palmer, PE *(CO, NM, WY, AZ, MT)*
President for SLS, Inc. A Colorado Corporation

Attachments: As noted above.

cc: Mr. Robert Yaguseky, McDonald's Corporation via: robert.yaguseky@us.mcd.com.com