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SANITARY SEWER ANALYSIS

For

LAKEWOOD BUSINESS PARK

Lee's Summit, Jackson County, Missouri

Prepared for:

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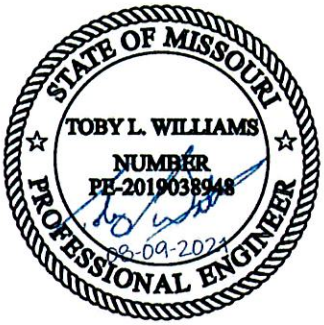

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1.0 INTRODUCTION

1.1 General Information

Powell CWM, Inc. prepared this sanitary sewer downstream capacity analysis for the proposed Lakewood Business Park development in Lee's Summit, Missouri. The 30 acre development is located in the Planned Industrial (PI) zoning district and includes three 1+ acre lots along NE Hagan Road, four mid-size 4± acre lots and one large 7.7 acre lot. The planned use for the lots is undetermined and may vary from office space, warehouse, and light industrial. The development will include construction of public improvements and the sanitary sewer will connect to existing manhole 14-068 at the East property line.

1.2 Intent and Scope

The purpose of this analysis is to evaluate the available capacity of the receiving downstream sanitary sewer system and the potential sewage generation of the proposed development. Utilizing estimated peak flows as calculated per the Lee's Summit Design and Construction Manual, Section 6500, we applied Manning's Equation for gravity flow to determine whether the receiving gravity sewer has sufficient available capacity for the sewage produced by the proposed development. The results of this analysis are presented below.

2.0 METHODOLOGY

The receiving sewer for this project is a 10-inch ductile iron pipe on the western property line flowing north to parallel 21-inch and 27-inch polyvinyl chloride (PVC) pipes. The 10-inch DIP receiving sewer has two building service connections, Lot 23A and B of the Lakewood Business Center, and a minimum slope of 1.10% according to Lee's Summit Sewer GIS. The building is approximately 71,000-sq.ft. and is zoned Planned Commercial (CS) with an assumed EDU of 0.3/1000-sq. ft for 2 stories. The total area of these lots is approximately 7.69-acres. Using Figure 6501-1 the flow contribution from these lots is 0.149-MGD.

The proposed development use mix is undetermined so conservatively it is assumed to be 100% light industrial. Using APWA 5500 value of 0.015-cfs/ac for the 30-acre site a peak base flow (PBF) of 0.291-MGD was calculated. This equates to an EDU of 2.42 per 1,000-sq.ft. applied to the 400,000-sq.ft. floor area proposed. Using Figure 6501-3 the I/I was estimated at 0.381 cfs/ac or 0.246-MGD for the 30-acre site. The peak flow from the site using the aforementioned parameters is 0.537-MGD. The capacity in the existing sewer is 1.28-MGD flowing full, using an n-value of 0.015 for the 10-inch DIP at 1.10% slope. As proposed the remaining capacity of the sewer to full flow would be approximately 0.594-MGD.

3.0 CONCLUSION

The receiving 10-in DIP sanitary sewer has available capacity for the existing and proposed Lakewood Industrial Park Development sewage. The downstream system will adequately serve the project as proposed and the existing tributary sanitary sewer flow from neighboring development, in conformance with the guidelines outlined in the City of Lee's Summit Design and Construction Manual.