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January 27, 2019

Hearing Examiner of the City of Redmond

RE Emerald Heights

Dear Sharon Rice:

The intent of this letter is to provide information regarding the stormwater, water system, and sanitary sewer design for the Emerald Heights Assisted Living Building and Independent Living Building projects. The following is an excerpt from the Redmond Zoning Code:

*RZC 21.08.C.3.b.ii states that "Retirement residences located in the R-4 through R-6 zones that provide some component of assisted living or skilled nursing care may be allowed an increase in density by up to three times the number of units permitted by the underlying zone provided . . . [t]here is adequate water and sewer capacity to serve the proposed development, together with the water and sewer capacity existing to accommodate the planned growth for the service area(s) in which the property is located. . . ."*

We have prepared a Stormwater Report for the project that details the existing and proposed conditions of the project site areas (City Exhibit 1, Attachments M and N). The report provides a "downstream analysis" section which outlines the existing offsite municipal drainage system which has been shown to have adequate capacity to receive stormwater runoff from the new development. We have noted there are no recorded downstream drainage complaints within the required limits of our downstream analysis, and no conveyance deficiencies noted in City records.

The project will provide new stormwater flow control (detention) facilities in the form of underground concrete vaults designed to meet the stringent stormwater standards of the City of Redmond and the Department of Ecology. These stormwater vaults will detain and release stormwater runoff from the project areas at flow rates matching those which would be equivalent, or less than historical, forested conditions of the project sites. As described by the City and the Department Ecology, matching forested condition release flow rates minimizes impacts on downstream municipal systems and minimizes stream bank erosion potential.

The project will connect into the City of Redmond municipal potable water system for both domestic water and fire protection. The City has noted that the municipal water system has adequate capacity to serve this development and no water system upgrades are necessary. Domestic water meters will be installed for both new buildings as required for all developments in Redmond.

In 2009, the City engaged R.W. Beck to provide analysis of the City sanitary sewer system below the Emerald Heights campus (City Exhibit 34). The R.W. Beck analysis, which included projected sewer flows from the Emerald Heights master plan, showed that there was sufficient capacity within the existing sewer system. There are no known sewer pipe conveyance capacity issues in the downstream system.

City utility maintenance crews noted a reoccurring maintenance concern within City sewer manhole #SSMH 282 located in the intersection of NE 109<sup>th</sup> Ct and 180<sup>th</sup> Ct NE. Refer to the attached *Figure 1 – Sewer System Map* for a visual depiction of the location of the manhole and orientation of the associated sewer pipes. The manhole has two inlet pipes including one from the northeast which conveys sewage discharge from single family residences and one from the southwest which conveys sewage discharge from single family residences as well as the Emerald Heights community. The manhole outlet flows to the southeast.

Sewer manholes have concrete groves or channels within the floor of the structure, which channel the sewage flows smoothly through the structure. The manhole issue has been described to us to be caused by a greater amount of sewage flow entering from the southwest, and the flow is not currently contained within the channel. We've been informed that the flows from the southwest can cause a back flow, or reverse flow, of the incoming sewer pipe entering from the northeast. As a result, we have been informed that the pipe entering from the northeast develops deposits which restrict flow and that need to be cleaned on occasion.

City staff informed Emerald Heights of this issue and Emerald Heights has volunteered to reconstruct and upgrade the manhole to provide improved flow through the manhole. It appears that the original manhole was not constructed with sufficient channeling to adequately direct incoming sewage from the southwest to the outlet pipe to the southeast. Based on design coordination with City staff, a new larger manhole will be installed with improved directional channeling which should provide improved flow towards the outlet pipe. Thus, decreasing the possibility of reverse flow up the pipe entering from the northeast.

The City of Redmond has confirmed the municipal systems providing stormwater, water, and sanitary sewer service to the Emerald Heights project have adequate capacity for the proposed development.

Sincerely,

**COUGHLIN PORTER LUNDEEN, INC.**

A handwritten signature in black ink, appearing to read "B. Balko". The signature is written in a cursive, somewhat stylized font.

Bart Balko, PE  
Project Manager



