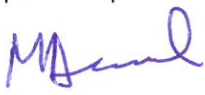


Date: February 3, 2016
To: Planning and Community Development Department
From: Mark Daniels, Utilities Engineer
Department of Utilities 
Subject: **Destin Landing PUD**
Water and Sewer Utilities Phasing Plan

Background:

The Destin Landing development is proposed to contain approximately 760 acres in SE Norman. All of this area, with the exception of approximately 50 acres which can be serviced by the Post Oak Lift Station, is located outside the "Current Urban Service Area" (CUSA) or "Future Urban Service Area" (FUSA) as defined by the most recent updates to the ***Norman 2025 Land Use Plan***. Inclusion of new area in the service area will require Council approval. The ability of the applicant/development to demonstrate a water/sewer solution meeting the minimum requirements of the Department of Utilities does not necessarily imply the Department recommends the Council approve expansion of the future urban service area as proposed by the developers.

Discussion:

In order to adequately evaluate the development, the Department of Utilities required that water and wastewater modeling be completed to determine if increased water demand or increased wastewater flow will require improvements in these systems outside the limits of the development. In response, the developers agreed to fund a wastewater modeling scenario performed by HDR Engineering. This report is complete and applicant has incorporated modeling recommendations into the ***Wastewater Collection System Study*** prepared by Search, Inc. In addition, the ***Water Distribution System Study*** prepared by Search, Inc. included water system modeling documenting compliance the DEQ mandated minimum pressure requirements during a fire flow event. These documents are attachments to the PUD.

Wastewater Collection System Study:

To summarize, the ***Wastewater Collection System Study*** assumes the development will ultimately be served by four lift stations (LS) to be phased in as the area develops. The report assumes an average day sewage generation at 100 gallons per capita per day (gpcd) with a peaking factor of 4; this design criterion is acceptable. Projected average day and peak day wastewater flows for full build-out of the development are 0.76 MGD and 3.05 MGD, respectively. Modification of proposed densities and/or projected per capita flow rates will modify wastewater flow projections and potentially the sizing of sewer lines, interceptors and lift stations.

The layout and capacity of the proposed lift stations and sewer force mains are generally acceptable. However, the PUD generally does not provide details such as alignment, easement width, pipe sizing and manhole locations for gravity mains or force mains, nor does it provide the detailed design and associated cost for proposed lift stations. Additionally, to provide a definitive sewer solution for any area, the developer is required to document the ability to obtain a sanitary sewer easement across impacted private properties. This type of information is typically provided prior to approval of a preliminary plat. Lastly, any new lift station, or connection to the existing Post Oak LS, requires Council approval of a LS agreement at the time of preliminary plat approval; under this agreement, the areas served by the LS are assessed a monthly fee equal to the estimated cost to operate, maintain and replace the LS over time. The developers must agree to provide this LS agreement prior to preliminary plat approval for any phase of the development. The proposed phasing is of utmost importance to the sizing of lift stations and associated force mains.

The developer has identified the initial phase of project development to include up to 238 acres which will be provided sewer service by the **Section 10 Lift Station** located about ½ mile north of Cedar Lane on 36th Avenue SE. The Department of Utilities concurs with the proposed Phase 1 development but requires additional documentation noted above prior to approval of any preliminary plat. The Department of Utilities is not obligated to provide sewer service until approval of the preliminary plat.

Water Distribution System Study

To summarize, the **Water Distribution System Study** assumes water improvements serving the development will be phased in as the area develops. The report assumes an average daily water demand of 100 gpcd (per DEQ standards); thus, an average day demand of 0.896 MGD or 622 gallons per minute (gpm) is estimated for the full build-out population of 8,962 persons. Utilizing a peak daily demand factor of 1.73, a peak daily demand of 1.55 MGD or 1,076 gpm is expected. Utilizing a peak seasonal demand factor of 1.9, a peak summertime demand of 2.95 MGD or 2,045 gpm is expected; this design criterion is acceptable to the Department of Utilities. Lastly, a fire flow of 1,500 gpm is assumed on top of the peak summertime demand while maintaining a pressure of at least 25 psi.

The water modeling scenarios examined assume all existing offsite waterlines will not be improved. Several potential phasing scenarios were examined and the serviceable areas defined while maintaining required pressures. Construction of waterlines along adjacent section line roads (12-inch minimum) and internal to the development are also required. The phases presented in the report are generally described below:

1. ***Cedar Lane Connection Only:*** As shown on Exhibit A, extend 16-inch waterline west along Cedar Lane to 36th Avenue SE. This connection allows a total of about 215 acres to be served; however, to maintain required pressures during fire flow a maximum population of 1,425 (or about 475 single family dwellings) can be served in this area.
2. ***Cedar Lane and Saxon Blvd. Connections Only:*** As shown on Exhibit B, extend 16-inch waterline from Cedar Lane and 36th Avenue SE north and west to connect to the existing 12-inch waterline at the southern end of Saxon Blvd. This connection allows a total of about 290 acres to be served with no limitation on the proposed development as defined in the PUD for this area.
3. ***24th Avenue SE Connection Only:*** As shown on Exhibit C, extend 12-inch waterline from 24th Avenue SE south to Classen then east toward 36th Avenue SE to serve the area within the CUSA which can potentially connect to the existing Post Oak LS. This connection allows about 37 additional acres to be served with no limitation on the proposed development as defined in the PUD for this area.
4. ***Cedar Lane, Saxon Blvd. and 24th Avenue SE Connections:*** As shown on Exhibit D, extend waterlines as described in Scenarios 1, 2 and 3 above plus extend 16-inch waterline from Cedar Lane and 36th Avenue SE south to Post Oak and east to the eastern limit of the proposed development. These connections allow a total of about 593 acres to be served; however, to maintain required pressures during fire flow a maximum population of 1,860 (or about 620 single family dwellings) can be served in the development east of 36th Avenue SE.
5. ***Cedar Lane Connection Only With Water Storage:*** As shown on Exhibit E, construct 115-foot tall by 30-foot diameter standpipe on 36th Avenue SE, extend 16-inch waterline west along Cedar Lane to 36th Avenue SE, then south to Post Oak, and additional waterlines adjacent to the development. This connection allows all 763 acres to be served as defined in the PUD.

Modification of densities defined in the PUD document will modify water demand projections and potentially the sizing of water lines and water storage.

Recommendations for Council Consideration:

The proposed Phasing Plan (Exhibit F to the PUD) is a long term projection of the potential project phasing as prepared by the developer. At this time, the Department of Utilities generally agrees that the Phase 1 sewer and water improvements will satisfy the minimum requirements for development of the identified areas. The Department of Utilities has prepared the Destin Landing Phase 1 Utilities Map which is subdivided into Phases 1A and 1B corresponding to the proposed phasing of water improvements.

Phase 1A includes the following:

1. ***Sewer Improvements:*** As depicted in Exhibit LS-A to the PUD, construction of sewer lines internal to the development and the proposed ***Section 10 Lift Station*** provides service to about 238 acres. The proposed 12-inch force main will convey an average daily flow of approximately 346,000 gallons per day (gpd) to the existing 24-inch interceptor near Overbrook Drive and 24th Avenue SE. As documented during sewer modeling, improvements to downstream interceptors are not required. Submission and approval of a lift station agreement is required at the preliminary plat stage; collection of the sewer excise tax is required prior to issuance of building permits. These improvements are shown to provide sewer service to Areas 1 through 11 on the Rieger property and Areas 1 through 10 on the Farzaneh property.
2. ***Water Improvements:*** As depicted on Exhibit A to the PUD and identified as ***Cedar Lane Connection Only***, a maximum population of 1,425 or approximately 475 single family dwellings can be provided water service. These improvements, along with water lines internal to the development and the sewer improvements described above, provide utility service to Areas 1 through 6 on the Rieger property and Areas 1 through 10 on the Farzaneh property.

Phase 1B includes the following:

1. ***Water Improvements:*** As depicted on Exhibit B to the PUD and identified as ***Cedar Lane and Saxon Blvd. Connections Only***, up to 290 acres of the development may be provided water service. These improvements, along with the Phase 1A improvements described above, provide utility service to Areas 1 through 11 on the Rieger property and Areas 1 through 10 on the Farzaneh property.

Development beyond Phases 1A and 1B, as described above, is not recommended until a more comprehensive sewer solution for the southeastern area of Norman can be fully developed and evaluated. This sewer solution might include a larger, single lift station located downstream of the Destin Landing development and adjacent to Dave Blue Creek in the area between 48th Avenue SE and 60th Avenue SE. This larger lift station, with necessary sewer interceptors, might serve at least another 1,000 acres and eventually eliminate the Phase 1 lift station as well as two of the proposed future lift stations. The larger lift station might be identified as a payback project and funded by all entities provided sewer service under the project.

Attachments: Exhibit LS-A, Section 10 Lift Station
 Exhibit A, Cedar Lane Connection Only
 Exhibit B, Cedar Lane and Saxon Blvd. Connections Only
 Exhibit C, 24th Avenue SE Connection Only
 Exhibit D, Cedar Lane, Saxon Blvd. and 24th Avenue SE Connections
 Exhibit E, Cedar Lane Connection Only With Water Storage
 Destin Landing Phase 1 Utilities Map