

Drainage Reports

Abbreviated Water & Sewer Need Reports

Water Study

Wastewater Study

Stormwater Waiver Application



Sewer Basis of Design
Prepared: October 2016

STORYROCK Phase 2

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3.0 PROPOSED WASTEWATER PLAN

3.1 General Discussion

Per the approved master plan, the sewer system for Phase 2 of StoryRock consists of the installment of an 8-inch gravity sewer main in 128th Street from Alameda Road to Buckskin Trail as well as collection lines internal to the development of Phase 2.

3.2 Phase 2 Proposed Collection System

The Phase 2 proposed onsite collection system will consist of 8-inch SDR 35 sewer lines, routed through the project to serve all lots in Phase 2. The gravity sewer lines will convey flows to the existing 8-inch gravity line in Alameda Road and continue through the Phase 1C development to a lift station in the northeast corner. The proposed lift station (LS #1) will pump flows through a proposed force main routed back through the development and Alameda Road to 128th Street. The force main will discharge into the proposed 8-inch gravity line in 128th Street. This gravity line conveys flows to the existing lift station located at 128th Street and Ranch Gate Road.

See Figure 2: Sewer System Layout for sewer line and lift station location.

3.3 Future Sewer Connection

In conformance with the approved masterplan, Phase 2 will be required to complete infrastructure along the project frontage to serve future development. This consists of extension of the 8-inch gravity sewer in 128th Street from Alameda Road to the southern Phase 2 project boundary.

4.0 METHODOLOGY AND CALCULATIONS

4.1 Design Criteria

Peak wet weather design flows for the Lift Station #1 Service Area are determined in the approved master report. A summary of the design flows for Phase 2 and Lift Station #1 is included in the table below:

	Average Day Flow (GPD)	Peak Wet Weather Flow (GPD)	Peak Wet Weather Flow (GPM)
Phase 2	2,236	N/A	N/A
Lift Station #1 Service Area	46,096	147,507	102

Per the DS&PM proposed sewer lines were designed to achieve a full flow velocity between 2.5 and 10 feet per second and maintain a maximum d/D ratio 0.65 when calculated with a Manning's "n" value of 0.013. To satisfy these requirements, the proposed 8-inch sewer will be designed with a minimum slope of 0.0052 ft/ft (0.52%) and a maximum slope of 0.0833 ft/ft (8.33%). See Appendix A for pipe slope calculations.

4.2 Wastewater System Analysis

To determine the capacity of the proposed wastewater collection system, the peak design flow was analyzed using the minimum design pipe slope. At the minimum design slope of 0.0052 ft/ft, an 8-inch line has the capacity to convey approximately 563,000 gallons per day. An 8-inch line at the minimum design slope can convey the proposed peak design flow of 147,507 gallons per day at a normal depth of 0.23' or a d/D ratio of 0.35, at a velocity of 2.10 ft/s. See Appendix A for pipe capacity calculations.

4.3 Lift Station and Force Main Design

Lift Station #1 and the associated force main is designed to convey the peak flow produced by Phase 2 and the rest of the service area as identified in the approved master plan. See the supplemental report "Preliminary Engineering Report for StoryRock - Lift Station #1" for further information on the design of the proposed lift station and the associated force main.