

APPENDIX C
HYDROLOGIC AND HYDRAULIC INFORMATION

Hydrologic Analyses

Spring Lake impounds the primary water source historically known as the San Marcos Springs, but often referred to as the Aquarena Springs. Based on data compiled by the U.S. Geological Survey (USGS), for the gaging period from 1956 to 2001, the San Marcos Springs have delivered an average flowrate of 170 cubic feet per second (cfs). The annual average flowrate over this gaging period has ranged from 92 cfs in water year 1964 to 331 cfs in water year 1992. The daily average flowrate has ranged from 46 cfs on 15 August 1956 to 451 cfs on 12 March 1992. Flows from the San Marcos Springs provide the overwhelming majority of the total volume of flow normally passed along the reach of the San Marcos River through the immediate study area and the City of San Marcos.

In terms of runoff from storm events, the magnitude of the flows from the San Marcos Springs pales in comparison to those from the contributing watershed area upstream from San Marcos. This floodwater source is known as Sink Creek. The headwaters of the Sink Creek watershed are located about 11.6 miles west-northwest from Spring Lake. The contributing watershed area above Spring Lake is about 48.5 square miles in size. However, three floodwater retarding structures implemented by the Natural Resources Conservation Service (formerly the Soil Conservation Service), significantly affect runoff from about 89 percent of the contributing watershed area.

Peak flood discharges in the immediate study area are based on results obtained during development of the Hays County Flood Insurance Study (FIS). The FIS was prepared for the Federal Emergency Management Agency (FEMA), via an interagency agreement with the Fort Worth District of USACE, in 1995. This FIS has an effective date of 18 February 1998.

The peak discharges were computed using a set of regression equations developed by the USGS specifically for use in Hays County. Adjustments were made to account for the relatively "non-contributing" portions of drainage area situated upstream from the three Natural Resources Conservation Service floodwater retarding structures.

Hydraulic Analyses

Flood water surface elevations in the immediate study area are also based on results obtained during development of the Hays County FIS. The one percent annual chance exceedance (i.e. "100-year" recurrence interval) event stages in the Spring Lake area range from 579 feet National Geodetic Vertical Datum (NGVD) at the Spring Lake Dam to 581 feet NGVD at the upstream end of Spring Lake.

A standard FEMA Floodway developed as part of the effective FIS indicates that the area targeted for building(s) removal lies in the so-called "fringe" between the limits of the floodway and outer boundary of the floodplain.

The proposed project is not expected to significantly alter either of the existing hydrologic or hydraulic conditions.

