

BKF No. 20191982
 August 20, 2020

**Subject: University of Utah Research Park
 Existing Conditions Memorandum**

Base on BKF’s research and interviews associated with the University of Utah Research Park’s utility infrastructure, we have prepared the following existing conditions memorandum to document our findings.

I. Storm Drainage

A. Flooding

The Research Park is located in the Red Butte Creek watershed. In general storm water flows from the Research Park flow to the Creek via a network of streets and piped storm drainage systems. Based on FEMA’s 2009 analysis, the research park site has been given the designation of Zone X, an area determined to be outside the 0.2% annual chance floodplain, and can be labeled an area of minimal flood hazard, while Red Butte Creek is within Zone AE.



Figure 1: FEMA Flood Insurance Rate Map

The water level of the Red Butte Creek adjacent to the site is presented in the FEMA Flood Insurance Rate Map (FIRM) dated September 25, 2009. The 100-year water level in the creek is between elevations 4,763 and 4,893 feet (NAVD 88).

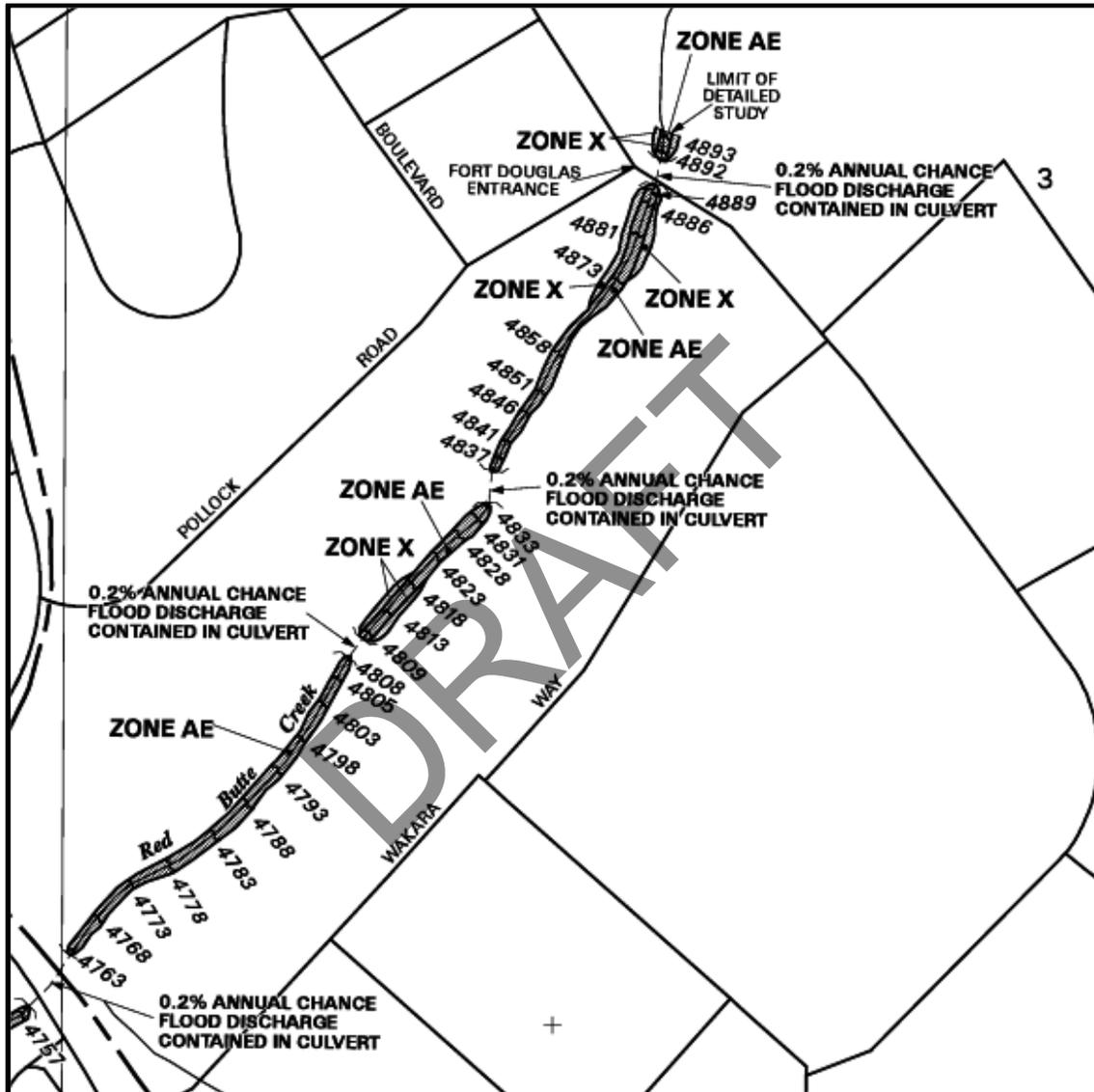


Figure 2: Red Butte Creek FEMA Designation

B. Storm Drainage Piping Network

Public storm drainage facilities in and around the University of Utah Research Park are owned and maintained by Salt Lake City Department of Public Works (SLC). This public system is comprised of roadway drainage inlets, storm drainage pipes, manholes, and outfalls into the Creek.

Private systems, those outside of the roadway right-of-way collect runoff from buildings and parking lots. These systems generally connect to the public system via side connections into the public roadway inlets. Most of these connections are with 12-inch through 18-inch pipes.

The local public system consists of surface inlets and gravity storm drain pipes in streets. These vary in size between 12-inch and 44-inch. They generally flow northwesterly toward Red Butte Creek. The system discharges into Red Butte Creek on the northern portion of the project at three distinct outfall discharge locations.

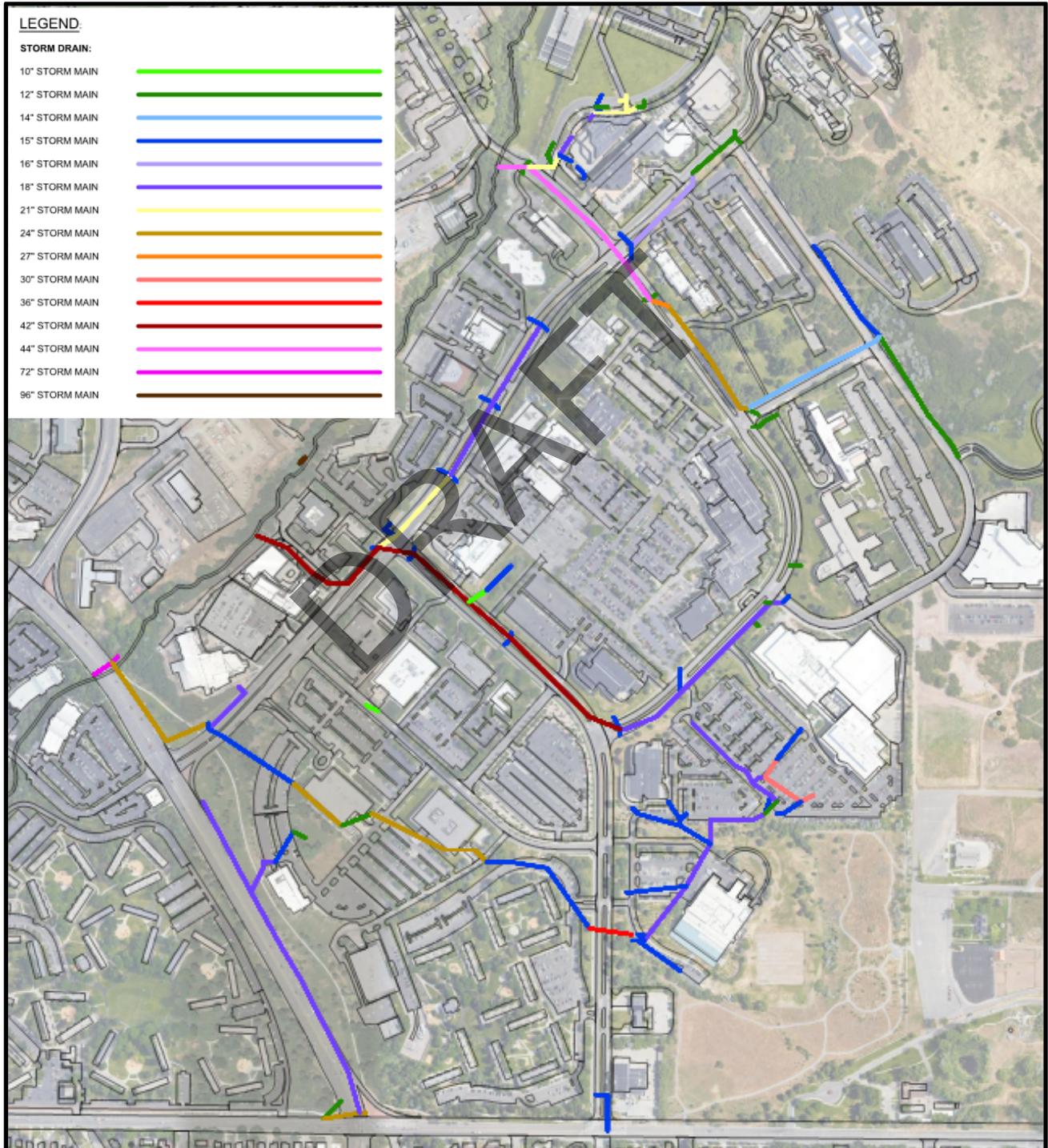


Figure 3: Existing Storm Water System

The existing system pipelines appear to be sized adequately based on anticipated flow and historical observations provided by the city personnel. Several of the private parcels have detention ponds located on the property. Additional regional detention ponds should not be needed, as the implementation of the master plan should result in an overall reduction of impervious area by 9%.

C. Storm Drainage Treatment

The vast majority of the site does not currently treat the stormwater before it enters the conveyance system and flows into the creek. The desire of the Research Park leadership is to move toward a requirement of 100% treatment of all stormwater to match the existing guidelines of University of Utah main campus. Based on the proposed street grid of the masterplan, the implementation of bioswales within the public right of way may supply sufficient surface area to accomplish the desired increase in stormwater treatment for the existing and added roadways. Additional onsite treatment will need to be provided by individual parcels on site.

II. Wastewater

A. Conveyance

Wastewater conveyance facilities within the University of Utah Research Park are owned and maintained by the Salt Lake City Department of Public Utilities. The facilities consist of gravity pipelines constructed in the early 1980's, with sewer main pipelines ranging in size from 8-inches to 21-inches in diameter.

Wastewater flows to the west starting with 8-inch lines running down Colorow Rd and Chipeta Way until it ties into a 12-inch line at Arapeen Drive. The majority of flow ties into a 12-inch line in Wakara Way, which then runs west until it connects with a 21-inch line in Foothill Drive where the wastewater continues to flow south and away from Research Park.

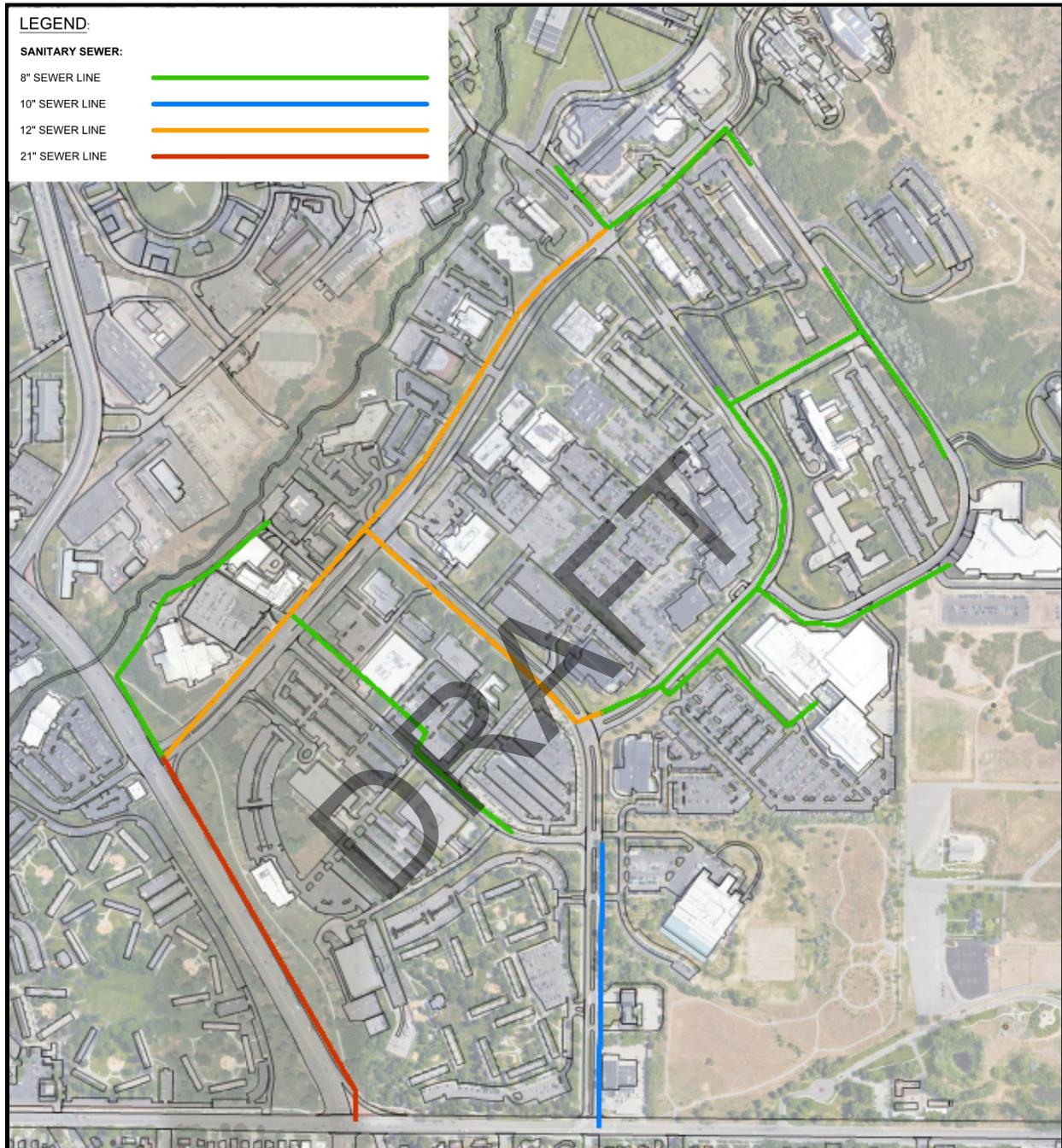


Figure 4: Existing Sewer Facilities

B. Wastewater Generation Rates

BKF has requested generation rates from SLC personnel and are awaiting information to analyze the flow rates and their relationship to pipe sizing.

C. Wastewater System Capacity

Based on observations by SLC personnel, there are currently no issues with capacity of the existing wastewater system and no concern of any additional capacity based on the proposed master plan of the Research Park area. The proposed goal of adding mixed use space allows the peak loads to vary throughout the day. Additional evaluation is necessary to determine critical points during development that would trigger the need for an increase in size or additional lines.

III. Water

A. Domestic Potable Water Facilities

SLC Department of Public Utilities owns and operates the municipal water system that conveys water to and within the Research Park. Due to the 1,600-foot elevation change within the City, 50 pressure zones regulate water pressure ranges within each zone. This water is currently used for domestic consumption, irrigation, and firefighting.

Overall efforts at a regional approach to improving water capacity for current and anticipated growth in the region rely heavily on conservation. Conservation is key to implementing a comprehensive water plan that reduces the reliance on potable water for non-consumable water needs. The 2014 Salt Lake City Water Conservation Master Plan identified goals, best practices, and implementation plans to address conservation efforts.

Potable water in the Research Park area comes primarily from a 16-inch line that is located along the east bench of the mountains. This water main ties into a 12-inch line at the top of Wakara Way, which runs west and feeds the majority of the existing properties while directing down each of the major roadways. See the figure below for a breakdown of size and location of the water mains in Research Park.

According to models run by the City, the capacity of the water source anticipates future growth in the Research Park area. There is concern regarding the lack of redundancy in Research Park as the only back up water supply is through a pump station located on the corner of Arapeen Drive and Sunnyside. The goal would be to install a second 16-inch supply line to help mitigate this concern sometime in the future.

Table 1. Water Use Projections UURP (GPD)¹

	<i>Existing</i>	<i>Masterplan</i>
<i>Total Potable Water Use</i>	206,771	1,119,533
<i>Total Non-Potable Water Use</i>	206,853	1,033,247

¹ 2010 UWMP, Table 15

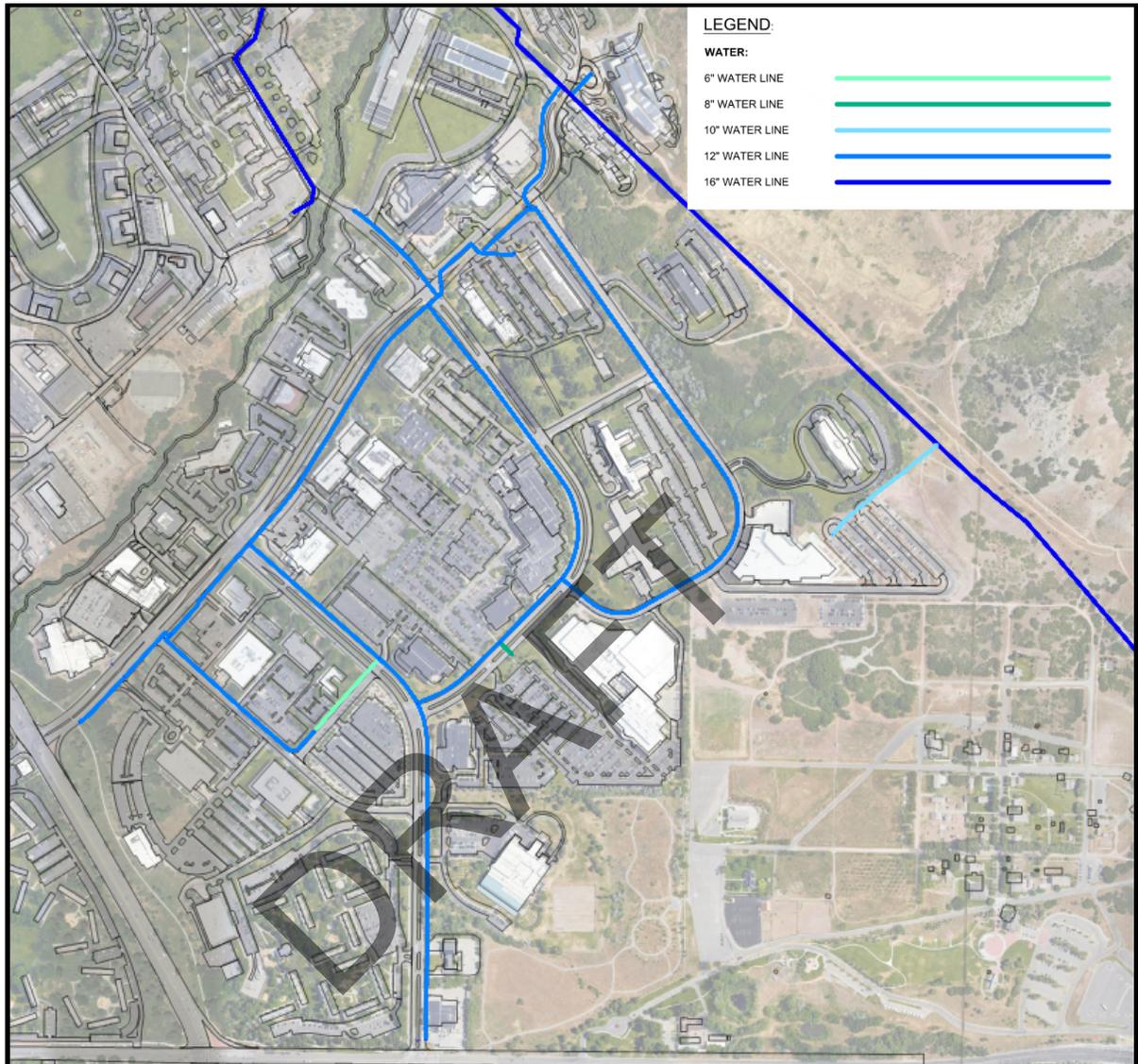


Figure 5: Existing Water System

B. Recycled and Non-Potable Water Facilities

As indicated above, conservation is key to reducing the reliance on potable water for non-consumable water needs community-wide. While currently there is no recycled water system in place in the Research Park area, the Research Park area could be an ideal location for such infrastructure due to the commercial use, open space, and water consumption.

IV. Gas Facilities

The site is served gas by Dominion Energy, including a 20" distribution main on the east side of Research Park that serves 8-inch and 6-inch lines in Wakara Way, Arapeen Drive, Colorow Rd and Chipeta Way.

The system has very little additional capacity, and would require an upgrade if any major increases in gas supply is needed. The goal of the University of Utah campus is to move the entire energy supply to electric and away from gas, which may result in minimal increase in gas supply even with the proposed growth. However, if additional supply is needed there is potential for a tap near Research Park that is estimated to give 10x the needed capacity on campus.

V. Electrical Facilities

Rocky Mountain Power provides electric utility power to the entire Research Park area. Per discussions with Rocky Mountain personnel, there are two substations that feed this region. One of those are called the Fort Douglas Substation and the other is the Research Substation. The underground distribution system and switches have been inspected recently and appear to be adequate; however, the system is approximately 50 years old and may need updating soon. In addition, the University has a 12.5 kV underground electrical feed to the East Village that is fed from the stadium substation. This feed is located inside the curb line on the north side of Sunnyside.

All recent studies in this area have shown sufficient capacity for smaller projects, but no evaluation of a major increase in capacity has occurred. Rocky Mountain personnel have indicated any major growth in the area may trigger a need for additional capacity at some point. All proposed facility(s) that would result in an increase of over a megawatt would require a new study to determine if the current infrastructure is sufficient to handle the increase load. In general, Rocky Mountain Power performs this study internally at the expense of the landowner or developer.

VI. Telecommunications

This site has various telecommunication utilities located adjacent to the public right of way throughout the Research Park. The majority of these utilities are located outside of the roadway and follow the sidewalk or planting strips along the major roads within the park. Providers include Comcast, AT&T, as well as fiber lines connecting to the campus wide system.