

# SECTION 7 – PUBLIC SERVICES, UTILITIES, AND FACILITIES

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## FIRE DEPARTMENT

As with many communities in Cache Valley, the Smithfield Fire Department is largely volunteer. Smithfield Fire Department personnel currently consist of the following:

- Three full-time firefighters/medical personnel, which includes the Fire Chief
- 34 volunteer firefighters

The Smithfield Fire Department provides fire protection within the corporate limits of Smithfield City. It also protects the communities of Hyde Park and Amalga, as well as the unincorporated area of Cache County surrounding Smithfield City. These additional coverage areas are contracted through interlocal agreements, which run on a five-year renewal basis. In addition to providing fire protection to these areas, the Smithfield Fire Department also supports and assists other departments in Cache Valley.

In 2003, a new 13,600-square-foot fire station was completed in Smithfield City. In 2004, a new substation was established in Hyde Park adjacent to the city offices to meet the needs of Hyde Park. This substation is staffed by volunteers living in Hyde Park.

Smithfield City, under contract with Cache County, now operates an ambulance service from the Smithfield Fire Station from the hours of 7 a.m. to 10 p.m., staffed by two full-time firefighters/intermediate Emergency Medical Technicians (EMTs). From the hours of 10 p.m. to 7 a.m., the ambulance is staffed by on-call county intermediate EMTs. Volunteer EMTs make up the remainder of staffing for emergency medical response.

Through an interlocal agreement with Cache County, the Fire Chief has also assumed the responsibility of overseeing the staffing and training of personnel who are assigned to the following:

- Ambulances stationed in Hyrum and Smithfield as part of the Cache County Emergency Medical Services
- Quick responder units throughout the county

In 2004, the Smithfield Fire Department responded to 345 calls; of these, 216 were medical calls and 129 were fire calls. In 1996, there were a total of 206 calls; of these, 152 were medical and 54 were fire calls. During this eight-year period, the

total number of calls increased 67 percent, with medical calls increasing 42 percent and fire calls increasing by 139 percent.

## **POLICE PROTECTION**

In the summer of 2000, Smithfield City formed a municipal Police Department. Police Department personnel currently consist of the following:

- Police Chief
- Seven officers
- Secretary
- Two reserve officers

Before the Police Department was formed, Smithfield City contracted with the Cache County Sheriff's Office for police services.

The current force provides a wide range of law enforcement services, including patrol, investigation, community services, ordinance enforcement, the DARE program, and community security.

## **SANITARY SEWER**

Smithfield City currently has many open areas that have the potential for development in the future. This section summarizes the capacity of the existing collection system and proposes collection system improvements to accommodate projected growth.

### **Existing System Summary**

In general, the results of the existing system evaluation indicate that all of the system is currently functioning well. However, a few sections of lines will reach capacity before Smithfield City reaches build-out populations. These occur on the western reaches of Smithfield City where land is relatively flat.

### **Future System Summary**

The system has been modeled to simulate build-out conditions within the 15 year annexation boundary. The build-out population for the area served by Smithfield City sanitary sewers is approximately 27,000 people, as determined by the population densities on the land-use map. The current population used for calibrating the sewer model is 7,460 people.

The existing system was subjected to future flows to determine which existing lines may not have sufficient capacity in the future. The build-out system model identified the lines that will not have the capacity to convey build-out flows (bottlenecks). Once the bottlenecks were identified, relief measures were developed by considering alternate routes for the existing and future flows, increasing existing lines sizes, or adding parallel lines. There are isolated areas where existing lines are at capacity or even slightly under capacity at build-out. The flows in these lines are close enough

to capacity that they do not necessarily warrant replacement. However, significant increases to current land-use densities could create too much flow for these lines. Also, extremely high impact uses could create capacity deficiencies in current lines. Typical residential, commercial, and industrial flows have been assumed throughout the city. Point sources of larger sewer flows should be analyzed on an individual basis during initial phases of development.

Build-out lines are divided into two categories:

- Lines that will need to be constructed to serve currently undeveloped areas (future lines)
- Lines that will need to be constructed to relieve existing lines (relief lines)

Build-out lines should be located to take advantage of existing system capacity. They should also be located in proposed roads or section lines where rights-of-way and easements may more easily be acquired. The sewer map in Figure 7-1 shows proposed locations and sizes of future lines to serve the undeveloped areas.

## **Future Relief Improvements and Capital Improvement Plan**

To accommodate future growth, relief improvements need to be constructed in portions of the existing system. The sewer map (Figure 7-1) shows the future lines that will likely be required before build-out. The following is a list of the relief alternatives for the recommended relief lines and the future lines shown on the sewer map. See the sewer master plan for more data on these projects.

Capital facilities projects:

- 600 West (300 N.) Relief Line
- West Side Gravity Lines (including manholes)
- West Side Force Main
- Lift Stations (two)

The first of the listed projects will be required as the community reaches build-out conditions. This project will increase or supplement line sizes near 600 West for the existing system. The remaining projects will be required if at any time higher-density development occurs west of the existing system. The land-use map currently plans for agricultural land use west of the existing sewer system. If these plans remain in place, a sewer system will not be required. However, if plans change, the remaining three improvements will be necessary. It is recommended that impact fees or developers pay for these improvements.

## **Wastewater Treatment Facility Improvements**

Smithfield City currently sends wastewater to the regional Logan Wastewater Treatment Facility. An alternative to this current scenario would be to construct a local wastewater treatment facility. Smithfield City will want to weigh existing costs for participating in regional treatment with costs for local wastewater treatment.

One of the larger costs of standard wastewater treatment facilities is land acquisition. At build-out conditions, Smithfield City would require approximately

30 acres for a typical facultative lagoon system. This acreage would be slightly less with an aerated lagoon system.

For larger cities (with high wastewater volumes), the facultative lagoon or the aerated lagoon system appears to be the most cost effective method for wastewater treatment.

For smaller communities like Smithfield City, a membrane bio-reactor (MBR) treatment facility appears to be a more cost-effective option. Smithfield City's build-out flows will likely be between 2.5 and 3.0 million gallons per day. An MBR facility for these flows would require 3 to 5 acres of land. This includes land for the treatment facility and sufficient land for typical solids composting operations.

It should be noted that the installation of any type of treatment plant in the lower reaches of Smithfield City will facilitate the development and construction of new collection lines in the western areas of the city.

The proposed low densities in the western areas of the city (agricultural lands) may not warrant the construction of collection facilities in this area. If a treatment facility were to be installed, the city will need to consider policies for this area (agricultural lands) regarding collection system improvements and septic tanks, in order to allow this area to develop as the city intends.

#### IMPACT FEE FOR FUNDING

INSERT FIGURE 7-1 HERE

SMITHFIELD CITY SEWER MAP

## WATER RESOURCES

Smithfield City's water system is supplied by three sets of springs and two wells. These include Miles Springs, Peterson Springs, and other springs located in Smithfield Canyon. The wells are located in Forrester Acres and on the east bench near the golf course and 1000 East. These sources supply an average water source rate of 4,315 gallons per minute (gpm).

In addition to this culinary water, Smithfield City is served by two secondary water systems. One of these is owned and operated by the city and the other is maintained by an irrigation company. The sources of water for the secondary systems are two canals supplied by the Logan River

See Figure 7-2 for an illustration of the Smithfield City water map.

### Existing Water Demand

The demand for water in Smithfield City varies greatly on whether or not secondary water is available. Approximately 50 percent of the city is served by a secondary water system. The service areas of secondary water are below the source canals. As expected, areas without a secondary water system will typically have a higher demand than areas where secondary water is available. Water usage records during the summer of 2004 for areas with and areas without secondary water were used as a starting point in determining an average summer-day culinary water demand.

All connections to the water system are equated to an Equivalent Residential Connection (ERC). A typical home is considered 1 ERC, while a school, church, or other large user would be some multiple of this based upon usage records. Currently there are 2,537 ERCs in the system.

With this information, it was determined that the existing instantaneous peak demand (the highest demand on the water system in a period of less than one hour) of culinary water is 2,938 gpm.

### Future Water Demand

The future demand is found by assuming the condition in which all land within the current annexation plan of Smithfield City has been developed as suggested on the land-use map (see Figure 5-1). This scenario is referred to as "build-out." Build-out also includes fill-in development in established sections of town. Expansion of any secondary water system has not been anticipated for determining future water demand. In addition, all future development has been modeled with the assumption that no secondary water will be available.

At build-out, 10,058 ERCs are anticipated—7,521 more ERCs than currently exist.

Future demands have also been used to determine the instantaneous peak.

The future build-out instantaneous peak demand has been identified as 13,202 gpm.

## Existing Distribution System

The existing distribution system in Smithfield City consists of a number of pipes that are undersized according to current established guidelines. A recommendation has been made in the water master plan to systematically replace all waterlines within the system that are less than 6 inches in diameter. This improvement will not only replace pipes that are most likely of questionable condition, but provide a greater level of service and system flexibility. As opportunities arise and projects occur nearby, these pipes should be replaced and upsized to meet current standards.

Several areas of inadequate fire flow were identified in the existing system. These inadequacies often occur near key locations (such as at schools, churches, industrial, and commercial areas). To mitigate these areas of concern, small improvement projects involving upsizing of a small section of pipe are needed. These projects should be undertaken when possible.

Certain developments with large water users may require the installation of larger pipes to establish the required fire or demand flow. It is recommended that this aspect be considered on a case-by-case basis as new development is planned and reviewed.

J-U-B ENGINEERS, INC. analysis has determined that the city should plan the installation of an additional pressure-reducing valve and the extension of an existing 10-inch waterline on 600 South at 800 East to reduce pressures in the west portion of the community.

## Build-out Distribution System Improvements

Future development is typically required to provide and install water distribution facilities consisting primarily of 8-inch diameter pipelines. This is the working assumption for this report. After installation of the improvements discussed above, only one distribution system improvement at build-out is required. This improvement consists of installing a parallel 16-inch diameter pipeline at the 12-inch section of the supply line from the existing storage reservoir in Smithfield Canyon.

## Future Water Source/Supply

At the build-out condition, the highest daily demand (the highest demand on the water system in a period of one day) will be 9,902 gpm. This amount is less than the instantaneous peak demand due to the averaging of water demand over a period of one day. The current sources would supply approximately 43 percent of this need. It is apparent that it will be necessary to develop new sources of water. If current population projections and spring flow rate assumptions hold, it appears that current water sources will be adequate until approximately 2020. Additional water could come from pumping more from existing wells, developing new wells or springs, or expanding the secondary system to reduce future demand on the system.

## Water Storage

Water storage provides a reserve to compensate for varying demand as a result of time of day and the season. It also provides the emergency storage needed for the large demands placed on the system by fire-fighting efforts. Water suppliers (such as the city) may also elect to include a volume of water for emergency storage.

Smithfield City currently has a total storage capacity of 2.45 million gallons located in three reservoirs. The fire storage volume for the current evaluation is the equivalent of 3,500 gpm for four hours (840,000 gallons). The required storage capacity for the existing highest daily demand and fire storage volume is 2,241,593 gallons. Of the existing highest daily storage, 33 percent is assumed for emergency storage. When compared to the existing storage capacity, it is apparent that additional storage capacity will be needed soon.

Under the build-out condition, approximately 12.45 million gallons of storage will be required. The location and timing of future development will dictate the construction schedule, size, and final number of the new storage tanks.

The map in Figure 7-2 shows the existing water system and proposed aspects of the water distribution system needed for the build-out condition.

INSERT FIGURE 7-2 HERE – WATER MAP