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INFRASTRUCTURE AND UTILITIES

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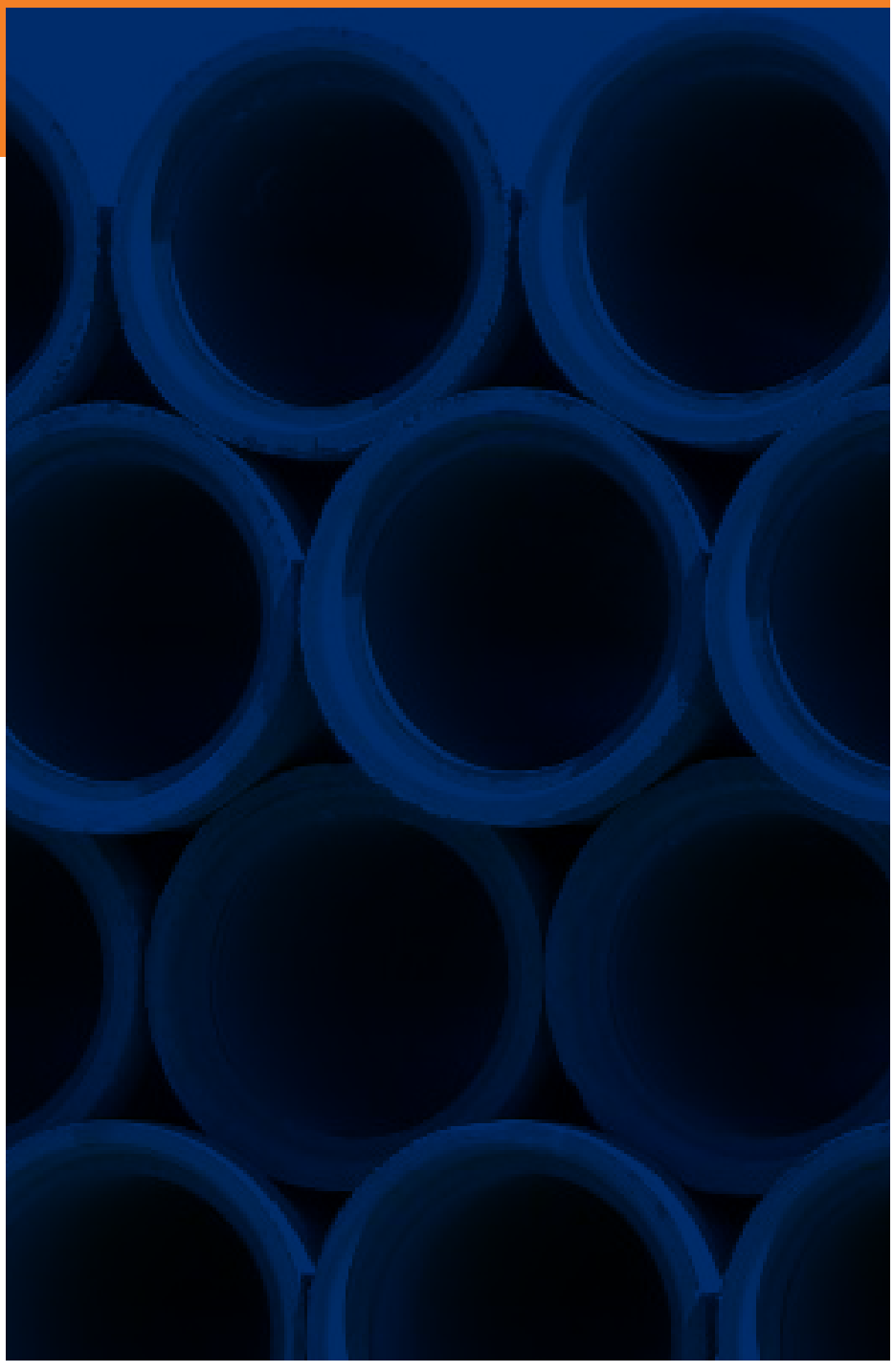

INFRASTRUCTURE

This chapter provides the infrastructure component of the Beckley

Comprehensive Plan.

"The road to Easy Street goes through the sewer"

–John Madden

9.1

INTRODUCTION

This Chapter describes locations, capabilities and capacities of various forms of infrastructure necessary to meet the needs of residents. For the most part, key municipal infrastructure systems necessary to support human populations are the utilities. Utilities provide the critical foundation upon which all cities are built. The City of Beckley is no different. The presence of sound utility infrastructure will not only sustain and meet the needs of current residents, but also is fundamental to the City's ability to attract future businesses and residents. Utilities traditionally have included water; wastewater; natural gas; power transmission; and telecommunications. Today, we also consider storm sewers; broadband; and wireless infrastructure. This chapter discusses the current utilities and considers the future challenges facing our utilities. Included in this consideration are environmental issues in terms of water, wastewater and stormwater management to promote and sustain our community's healthy environment.

9.2 ROADS

The City of Beckley has a Board of Public Works. The department is tasked with maintaining the 517 streets in the city, including paving, drainage, street signage, and snow removal. This organization has more than fifty employees and a large fleet of equipment dedicated to maintaining the streets, parking lots, parks, and common areas of the city. Employees perform concrete construction, demolition of structures, paving (both asphalt and brick), maintenance of traffic lights and street lights, streetscape revitalization, and other maintenance and construction tasks. The West Virginia Department of Transportation maintains various State Routes in Beckley.

9.3 WATER

The Beckley Water Company provides water service to the City. The Beckley Water Company is a private enterprise with private shareholders. The water system includes two water sources; the Glade Creek surface water reservoirs near Pluto and the Beckley mine pool groundwater source at Sweeneysburg. Two water treatment plants at Pluto and Sweeneysburg provide finished water into the system. Potable water is distributed via a pipeline network of over 500 miles. Beckley Water Company serves about 70,000 people either directly or indirectly through wholesale arrangements with other providers. Annually, the Beckley Water Company distributes 3.5 billion gallons of year throughout Raleigh County

The majority of the City currently has water infrastructure and service available. Service can be limited by line size and modern demands for things like commercial fire protection. Identified growth areas detailed elsewhere in this plan currently have limited water infrastructure available. Development strategies should be pursued to extend/upgrade water service into those areas as a way to facilitate growth. As a private enterprise, Beckley Water Company, has less infrastructure funding options available for such extensions and system renewal. The city should therefore explore public-private infrastructure funding options with the Region 1 Planning and Development Council. Examples of infrastructure funding options to promote economic development could include establishing tax increment financing districts for land adjoining the East Beckley Bypass.

Another challenge facing the water utility is the age of its distribution system. Much of the system is considered older and as such, it tends to have higher than average service needs and water loss. These operation and maintenance issue are anticipated to grow in the future. These conditions can create both increased operating costs and capital costs, which may translate into higher utility rates for residential and commercial customers.

As was recently experienced in the Freedom Industries chemical spill in Charleston, West Virgina, any public water supply is susceptible to contamination from environmental pollutants. Water supplies also can face security threats. Source Water Assessment and Protection studies (2002 and 2011) to evaluate such risks have been completed for both water sources servicing the City of Beckley and surrounding areas. The critical protection zone for the Glade Creek Reservoir is not located in the City of Beckley, but is located in a high growth area of Raleigh County. The groundwater source is the Beckley mine pool. This groundwater source is mapped to underlay a significant portion of the city as well as some areas of Raleigh County. A wellhead protection zone for this groundwater source has been identified. The safety and sustainability of both water sources are susceptible to pollution.

It is anticipated that the state and federal regulatory response to the Freedom Industries incident and future public policy will place a higher priority on the preparation and implementation of source water protection plans in the near future. The City of Beckley, its residents and businesses

are critical stakeholders in the goal to safeguard a water source. Maintaining a safe and adequate water supply is important to a community and its economy. It is recommended that the City play a more active role in any future source water protection initiatives. This role must be in partnership with county and regional efforts, since the critical protection zones for the water supplies on which the City depends are located outside of the City of Beckley. Such protection efforts also have a public-private partnership component since Beckley Water Company is a private enterprise. City of Beckley's participation will be beneficial to the Beckley Water Company, because as a private enterprise it is little to no power to regulate or control potential contaminate sources to the water supply. Recommended steps to improve area source water protection programs may include local ordinances (city and county) to protect any wellhead protection zones and source water protection areas. The City through its municipal separate storm sewer system (MS4) permit does have a regulatory mandate to evaluate new development/redevelopments impact on any source water protection area.

9.4 SANITARY SEWER

The City of Beckley is served by three publicly-owned wastewater treatment systems, the City-owned system operated by the Beckley Sanitary Board, and systems owned and operated by the North Beckley Public Service District and Crab Orchard-MacArthur Public Service District.

The Beckley Sanitary Board (BSB) is a sanitary sewer and storm water utility serving the greater Beckley area. The BSB has approximately 173 miles of gravity and force main collection systems serving 7500 customers. BSB's service area is primarily the southern portion of the city as well as areas outside the city. As part of its system, BSB maintains 23 lift stations. While most major interceptor sewers are less than 20 years old, a large portion of the BSB system are the original sewer lines. BSB experiences a significant amount of infiltration and inflow (I and I) into its sanitary sewer system. High rates of I and I contribute to excessive flows during wet weather events that can negatively impact in-stream water quality. The BSB also has a portion of its system that is considered a combined sewer with a permitted combined sewer overflow (CSO) at the Whitestick lift station. The Whitestick CSO is regulated and BSB provides primary treatment and disinfection of its discharge. BSB has a long term control plan in place that is actively being implemented to better control the CSO.

BSB as part of its asset management plan is actively engaged in renewing and replacing portions of its sanitary sewer collection system. Annually hundreds of work orders are completed on the system. BSB's Red Brush Phase III project will replace 22,000 linear feet of sanitary sewer in an area of the system that has high incidence of I and I.

Many of the growth areas identified in the plan are within the BSB service territory. It is important to note that some of these areas do not have sanitary sewer service available. Economic development strategies like establishment of a tax increment finance district to the land adjoining the East Beckley Bypass may facilitate the extension of sewer infrastructure into these areas. BSB also is positioned to capitalize on future growth within the Raleigh County Airport Industrial Park.

In addition to these growth strategies, BSB management also envisions embracing Water Environment Federation's concept of Utility of the Future. Utility of the Future includes many components one of which is changing the mind-set to consider the resources that can be captured and monetized out of the wastewater treatment processes. Under such scenarios, BSB could start actively recovering biogas from its wastewater treatment operations and use it for some beneficial use.

9.5 STORM SEWERS

Since the last comprehensive plan, Beckley has been mandated to obtain an environmental permit for its municipal separate storm sewer system (MS4). This mandate was contained within the federal Phase II stormwater rules. In response to this mandate and the associated unfunded liabilities, the City of Beckley formed a stormwater utility and stormwater fee program. This stormwater utility follows the funding examples that hundreds of communities in the United States are following to fund their stormwater environmental compliance programs.

Beckley Sanitary Board has been designated as the entity to implement the stormwater utility and associated programs. Since 2007, BSB has initiated a program to regulate, operate, maintain and improve the storm sewer system.

Storm sewers provide city's the ability to safely drain runoff from urban land to protect life and property of city residents and businesses. Storm sewers have long been an overlooked infrastructure asset across the United States. By forming a stormwater utility, the City of Beckley has taken a significant step to provide for a stable, adequate funding source to address storm sewer infrastructure. BSB has an ongoing program to map the extent of the storm sewer system. Currently, the mapped extent of the storm sewer system includes many miles of pipes, inlets and distinct discharge points. BSB forces complete dozens of work orders annually and also have completed a number of capital improvement projects.

Over the course of this planning period, BSB envisions the need for dozens of other capital improvement projects. BSB keeps an inventory of such projects and plans, designs and constructs them as funding allows.

In addition to building pipe projects, BSB has started building green infrastructure projects to solve community storm drainage issues. Green infrastructure projects are designed to mimic the hydrology of natural systems to manage, treat and convey stormwater runoff. Green infrastructure projects are engineered using specially designed soils and plants to soak up stormwater volume and associated pollutants. There are more than 18 installations of green infrastructure throughout Beckley. Beckley is considered a leading green infrastructure community in the State of West Virginia. BSB will continue to evaluate and utilize green infrastructure approaches when and where appropriate.

9.6 STORMWATER MANAGEMENT

As a regulated stormwater community, the City of Beckley is legally required by federal and state environmental statutes to manage stormwater runoff. A major component of these requirements is an obligation to manage stormwater runoff that is anticipated to come from development and redevelopment projects. As development occurs, porous land cover surfaces like woods and grasses are converted into impervious surfaces like rooftops, parking lots and driveways. This land cover change drastically alters the hydrology of cities as rainfall that traditionally would be absorbed and infiltrate into the ground, now runs off. Thus as total amount of impervious cover increases in urban environments, the volume of urban runoff increases as well as the rate at which is flows off the landscape increase. The runoff also picks up pollutants on the landscape and carries them into waterways. All of these impacts degrade the aquatic environment and modify the characteristics of urban streams.

The City of Beckley is required to institute programs to manage stormwater runoff from development. Key provisions of this program include two categories of improvements: watershed protection elements and neighborhood/site design elements.

Watershed protection elements are policies and/or programs which aim to improve or protect the conditions within our local watersheds. These elements include:

- Minimize the amount of impervious surfaces (roads, parking lots, roofs, etc.) within each watershed, by minimizing the creation, extension and widening of parking lots, roads and associated development.;
- Preserve, protect, create and restore ecologically sensitive areas that provide water quality benefits and serve critical watershed functions. These areas may include, but are not limited to; riparian corridors, headwaters, floodplains and wetlands;
- Implement stormwater management practices that prevent or reduce thermal impacts to streams, including requiring vegetated buffers along waterways, and disconnecting discharges to surface waters from impervious surfaces such as parking lots.'
- Seek to avoid or prevent hydromodification of stream and other water bodies caused by development, including roads, highways, and bridges.
- Implement standards to protect trees, and other vegetation with important evapotranspirative qualities.
- Implement policies to protect native soils, prevent topsoil stripping, and prevent compaction of soils

All of these watershed protection elements are requirements of the City of Beckley MS4 NPDES permit. The city must develop quantifiable objectives and a time frame for achieving them. Progress is to be reported on annually. As part of the city's mandate to satisfy this requirement, the stormwater utility needs to work with the Planning Commission on appropriate policies such as a subdivision ordinance. Many of these elements can also be incorporated into better site design requirements at the city level.

Beyond watershed protection elements, the city's stormwater management mandates also requires that it implement site and neighborhood design standards for new and redevelopment. Simply, development projects moving forward will have to control stormwater discharge rates, volumes, velocities, durations, and temperatures. The performance criteria that must be applied is sites are to implement management measures on site to keep and manage the first one inch of rainfall from a 24-storm preceded by 48 hours of no measurable precipitation. This can be achieved by a number of better side design techniques as well as structural facilities constructed on site. In addition, sites must control and treat runoff from stormwater hotspots; comply with source water protection provisions. This program must review plans for compliance; require and enforce proper maintenance; inventory and inspect such facilities.

The city must also complete an assessment of current street design guidelines and parking requirements and provide recommended changes in policy and standards. This requirement is where planners can consider appropriate parking ratios and setting maximums instead of minimums; requirements for alternate paving materials; better street designs, and other approaches.

9.7 NATURAL GAS

Natural Gas distribution lines managed by Mountaineer Gas provide service throughout the city. Natural gas transmission lines also exist locally. It should be noted that projected growth areas may not have gas service available at this time. Planners and economic development officials should keep this under consideration.

Since the prior comprehensive plan, the natural gas market has been transformed by the Marcellus shale play. The Marcellus formation includes a large portion of the northern part of the state. While it does not appear at this time that Marcellus drilling will occur in Southern WV, it is important to recognize that because of Marcellus and horizontal drilling hydrofracking in other formations, natural gas has become a much more cost competitive energy source. While this has negatively impacted the southern West Virginia coal industry, it also has opened up West Virginia to business development from industries such as manufacturing that rely on the natural gas. Beckley's proximity to the Marcellus can be an advantage.

Another trend related to natural gas and natural gas infrastructure particularly is the conversion of vehicle fleets to compressed natural gas (CNG) fuel sources. This conversion has already started in

the US and is projected to grow in importance in the next 10 to 20 years. The conversion is currently being led by the trucking industry. Research reports focused on developing the West Virginia CNG market have been completed at the state level. Those reports mention Beckley's potential location of a CNG fuelling center. Beckley's location at the crossroads of two major Interstate highways and an existing established fuelling point for interstate traffic support this possibility. Beckley should evaluate with other public and private economic development partners the future needs for CNG fuelling centers at the Exit 44 Interchange.

9.8 TELECOMMUNICATIONS/BROADBAND

Broadband/Communications is of critical importance to a city in our modern economy. This infrastructure is a key consideration for recruiting new businesses to the area. With the growth of telemedicine; education; and creative class applications this importance will only continue to increase. The city of Beckley is currently served by several private telecommunications and broadband providers. Providers in the market include Frontier Communications; Fibernet; and Suddenlink Communications.

9.9 WIRELESS COMMUNICATIONS

Complete and reliable wireless communications coverage is another vital necessity in a modern economy. Significant improvements to the wireless infrastructure in the Greater Beckley area have taken place since the previous comprehensive plan. While once limited by its completeness and number of providers, now the local area has most major wireless providers in the market with 4GLTE service available.

The reliance and level of use of wireless communications is only projected to increase. Greater demand for service will likely result in the need to construct additional wireless infrastructure (towers, etc.) The city should be proactive planning for such growth and considering if and how the siting of towers should be regulated. It is also important to note that advancements in technology may drive wireless telecommunications transmission equipment to take a more distributed form. For instance, smaller equipment being placed on existing utility and light posts. The city should monitor such advancements not only from a regulatory standpoint, but as a potential revenue stream from placement of such equipment within city rights of way.