New River Valley Regional Wastewater Study
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New River Valley Regional Wastewater Study
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I. EXECUTIVE SUMMARY

Scope

The improvement of water quality in the streams and groundwaters of the New River Valley via the development of public wastewater collection, treatment and disposal infrastructure is one of the most challenging issues facing local governments within the New River Valley Planning District (NRVPD). Many miles of rivers and streams in the NRVPD have water quality violations due to bacteriological impairments (fecal coliform and *Escherichia coli*). The collection, treatment, and disposal of wastewater are one way to address a portion of the human cause of these bacteriological impairments.

Localities in the New River Valley face water quality issues in areas within their jurisdiction because many areas have clusters of housing that currently have no acceptable means of wastewater treatment. In fact, many households are currently discharging into inadequate septic systems, affecting environmental quality as well as public health.

The presence of approved wastewater collection and treatment systems is essential for the enhancement of public health, protection of the environment, successful economic development initiatives, and an increase in new housing production. Some of the most common problems resulting from the lack of this vital infrastructure include, but are not limited to, the following:

- Numerous environmental and public health problems arising from the use of failed, overstressed, and/or poorly maintained on-site septic tank/drain field systems;

- An inability to accommodate new housing production due to shallow depths of soil to bedrock and/or high groundwater conditions on potential building lots thereby preventing the approval of septic tank/drainfield systems;

- The lack of public wastewater collection and treatment systems limits the ability of planners and local officials to market portions of the NRVPD to potential industrial prospects. Economic development activities are underway throughout the New River Valley in an effort to attract new industries, create jobs, and diversify the local economy. In many cases, the ability to market the region to a particular industrial prospect is directly linked to the availability of public wastewater collection and treatment services. Potential industries expect public wastewater collection and treatment to be available. Moreover, the prospect of developing mass septic tank/drainfield systems to accommodate industrial users is problematic due to costs and the resulting land area requirements.

Purpose

With generous funding provided by the Southern Rivers Watershed Enhancement Program, the New River Valley Regional Wastewater Study is intended to address water quality improvement through the development of sewage collection and treatment alternatives. The Study's goals include identifying the need for sewer service in the region, identifying and prioritizing projects, finding and identifying funding sources for these projects, and eliminating the health hazards and environmental problems associated with inadequate septic systems and straight pipe discharges to streams. The study also identifies projects that due to their remote location, topographic situations, small size or soil conditions, will benefit from non-traditional de-centralized wastewater systems (DWS). It is envisioned that the Study will serve as a road map for future implementation of sanitary sewer collection, treatment and disposal projects in the New River Valley.

Methods

During the course of this Study, the Design Team examined over 134 projects. These projects were analyzed and prioritized based on the degree of health hazard, elimination of water quality problems, the number of customers served, construction cost per connection, facility availability, as well as residential and industrial growth potential.

Conclusions

The project rankings led to a recommendation to pursue 20 centralized projects and 6 de-centralized projects.

The 20 centralized projects will serve more than 3,135 connections at a cost of $67,404,744. The 6 de-centralized projects will serve 424 connections at a cost of $5,562,970.

Recommendations

There is very little grant funding available for sanitary sewer projects, despite the urgent need that has been identified in this Study. It is imperative that additional grant funding be established to help solve this critical environmental and public health threat, such that the New River Valley can benefit from a cleaner, healthier and more economically viable future. DHCD and the Governor should recognize this study as an example of the water quality issues and solutions in the Southern Rivers region of the state and recommend that the General Assembly fund the Southern Rivers Program to provide matching and leverage funding to undertake the primary priority projects.

Table 1 - Cost Summary Centralized Systems (Primary Priority)

Project ID	County	Project Name	Project Cost	Estimated Number of Equivalent Connections
F-4	Floyd	EPPERLY MILL ROAD	$ 1,223,066	35
G-1	Giles	MARVILLE	$ 2,673,112	108
G-2	Giles	ROUTE 100-INGRAM VILLAGE/ONEY/MUTTER	$ 6,495,423	297
M-11	Montgomery	PRICES FORK	$ 3,015,480	125
M-12	Montgomery	YELLOW SULPHER ROAD TO TOWN OF CHRISTIANSBURG	$ 1,755,130	42
M-13	Montgomery	PEPPERS FERRY RD (Rt. 114) - CHRISTIANSBURG WEST TO VICKER SWITCH RD.	$ 5,267,990	118
M-15	Montgomery	PEPPERS FERRY RD (Rt. 114) - COAL HOLLOW RD TO McCORMICK RD.	$ 573,820	26
M-16	Montgomery	NW RT 460 BY-PASS - ELLET RD.	$ 3,094,650	115
M-20	Montgomery	RINER PHASE 1 FAIRVIEW CHURCH RD., RINER RD NORTH OF UNION VALLEY RD.	$ 3,676,790	149
M-23	Montgomery	SHAWSVILLE - BUILDOUT EXISTING SERVICE AREA	$ 2,271,230	172
M-24	Montgomery	IRONTO / I81 EXIT 128 - BUILDOUT EXISTING SERVICE AREA	$ 2,472,730	79
P-1	Pulaski	THORNE SPRING BRANCH PHASE 1	$ 4,130,568	212
P-4	Pulaski	ALUM SPRING ROAD PHASE 1	$ 3,565,770	219
P-9	Pulaski	PONDLICK BRANCH / MOUNT OLIVET PHASE 1	$ 3,794,440	126
P-12	Pulaski	ROUTE 100 - DUBLIN / COMMERCE PARK	$ 5,870,358	208
P-13	Pulaski	BACK CREEK AREA	$ 4,219,852	120
P-14	Pulaski	EAST DUBLIN / STONERIDGE DRIVE	$ 5,246,722	427
P-16	Pulaski	BELSPRING / GATE 10 ROAD	$ 4,067,791	133
P-21	Pulaski	NORTH CLAYTOR LAKE	$ 4,343,684	257
P-33	Pulaski	SOUTH DUBLIN	$ 2,238,002	167
		Total	**$ 69,996,608**	**3,135**

Table 2 - Cost Summary Decentralized Systems (Primary Priority)

Project ID	County	Project Name	Project Cost	Estimated Number of Equivalent Connections
DC-6	Giles	RIPPLEMEAD	$ 1,821,400	140
DC-7	Giles	RAM WAYSIDE	$ 618,870	50
DC-8	Giles	SNIDERTOWN	$ 407,400	24
DC-10	Giles	STAFFORDSVILLE	$ 597,800	40
DC-13	Montgomery	McCOY	$ 1,347,500	100
DC-18	Pulaski	PAINTERS WOODS	$ 770,000	70
		Total	**$ 5,562,970**	**424**

II. INTRODUCTION

Purpose

In 2007 the Virginia General Assembly allocated funds to improve water quality in the streams and groundwaters of the "Southern Rivers" region of Virginia. The Department of Housing and Community Development was allocated $17,000,000 for the Southern Rivers Watershed Enhancement Program (SRWEP) to improve water quality in non-Chesapeake Bay watersheds. Generally, this program was designed to target the construction, expansion or enhancement of publicly-owned wastewater treatment systems to provide measurable community development benefits.

Three program priorities were identified: 1) to improve water quality and enhance community development by eliminating the direct discharge of untreated household wastewater into streams or groundwater, 2) to improve water quality and enhance community development by eliminating deficient household wastewater systems that threaten to pollute streams or groundwater, and 3) the construction, expansion or enhancement of publicly-owned and managed wastewater treatment systems that enhance community development and provide significant, documentable improvements in stream and groundwater water quality.

Cities and counties in the watersheds of Virginia that do not drain into the Chesapeake Bay were eligible for funding through the SRWEP. Three grant programs were developed for eligible localities: planning grants, managed on-site construction grants, and wastewater treatment system construction grants.

To address some of the issues of water quality in the New River Valley region, focusing on improving wastewater collection and treatment, the New River Valley Planning District Commission applied for a SRWEP planning grant in early 2008. The localities included in this application are: Floyd, Giles, Montgomery, and Pulaski counties, and the Towns of Floyd, Pembroke, Pearisburg, Narrows, Rich Creek, Glen Lyn, Blacksburg, Christiansburg, Dublin, and Pulaski. Figure 1 depicts a location map for the region.

The study resulting from the SRWEP planning grant is the New River Valley Regional Wastewater Study (NRVRWS). The intent of this NRVRWS is to address water quality improvement through the development of sewage collection and treatment alternatives, including traditional centralized systems and de-centralized wastewater systems (DWS). The study identifies specific projects, prioritize them and provides project costs. This study serves as a road map for sewer projects in the New River Valley over the next twenty years.

This study included the cooperative development of an overall project list to be evaluated. The development of the project list was facilitated by the Advisory Management Team (AMT), consisting of members representing the PDC, the local health districts, funding agencies, local watershed groups, sewer providers, local government representatives, concerned citizens and the Design Team. The AMT met monthly throughout the project to advise the Design Team on various aspects of the project including project selection/evaluation, study contents, criteria for the ranking matrix and the timetable of activities.

Scope

Thompson & Litton, in association with Maxim Engineering was commissioned to prepare this study with emphasis on projects that illustrate the urgent need for sewer facilities in the region, such that funding can be secured for projects that will have a maximum positive impact on the health and environmental quality within the New River Valley Planning District. As a planning document, the study only evaluates each project in sufficient detail to assemble cost estimates. The design team made use of the available planning documents for each county as well as River Basin Studies, preliminary engineering reports and comprehensive master plans.

Uniform cost estimating methodology was developed to prepare estimates for the projects studied herein. Recognizing that construction costs may vary to some degree within the study area, uniform unit pricing has been used to justify cost estimates. Unit pricing was developed by averaging recent bid data from the study region.

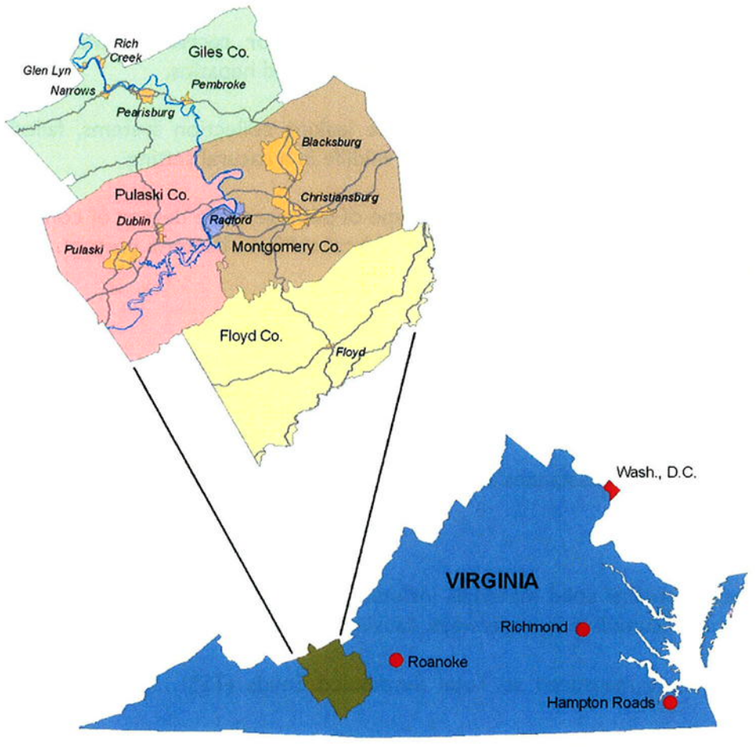

Figure 1- Location Map

III. WASTEWATER PRIMER

Water leaving a home ("wastewater") has much different characteristics than water entering a home ("potable water"). This section explains, in simple terms, the definition of wastewater and it's various components.

Wastewater contains the following components…microorganisms, toxic substances, solids, organic material, and nutrients…each of which must be addressed by a treatment system prior to discharge into the environment. Each component can be more fully described as follows:

Microorganisms

Microorganisms in wastewater include bacteria, viruses and protozoans. Some of these microorganisms are helpful in breaking down the contaminants in wastewater, while others can cause disease. Disease causing microorganisms are called pathogens.

People who come in contact with contaminated drinking or recreation water risk infection and development of diseases such as cholera, typhoid, dysentery and hepatitis.

The main sources of waterborne pathogens include leaking collection systems, failed septic systems, failed treatment, feedlot runoff, and fecal wastes of wildlife in a natural setting.

As it is not practical to test wastewater for each type of pathogen, the degree of contamination of water by human and animal wastes is gauged by the level of fecal coliform bacteria present.

Toxic Substances

Toxic substances found in wastewater can include pesticides, herbicides, paints, solvents and heavy metals. These substances are often disposed of unknowingly by homeowners who flush them into the wastewater collection system.

Many of these common toxic substances are known to cause cancer or other human health problems.

Solids

Wastewater typically contains solid materials including sand particles, grit, clay, wood, fecal waste and food. These solids can accumulate in waterways, causing fouling and damage to higher order organisms.

The presence of solids is measured as Total Suspended Solids (TSS)…these are solids that will not readily settle out.

Organic Material

Organic materials are derived from plants and animals, and come mainly from feces and kitchen wastes. This material is a source of food for the bacteria in wastewater. As organic material is broken down (decomposes), oxygen in the water is consumed, making less available for aquatic life. This can result in fish kills or otherwise impair aquatic life.

Concentrations of organic matter are measured as Biochemical Oxygen Demand (BOD).

Nutrients

Nutrients in wastewater include nitrogen and phosphorous, both of which can have a negative impact on receiving waters.

Phosphorous is the limiting nutrient in aquatic ecosystems. The addition of phosphorous results in excessive algae and plant growth. As these plants die, they deplete dissolved oxygen and harm the aquatic community.

Nitrogen comes from domestic, industrial and agricultural sources and undergoes a cyclic process where various forms of nitrogen, including ammonia, are produced. Ammonia is extremely toxic to aquatic organisms. Nitrate, another form of nitrogen can cause methemoglobinemia (when found in drinking water sources), a serious health effect in infants and pregnant or lactating women.

IV. WATER QUALITY AND GEOLOGY

The New River Basin covers over 3,000 square miles in Virginia, almost 8% of the Commonwealth's total land area. The New River traverses approximately 87 miles in Virginia, running through three of the four counties in the Planning District on its way to West Virginia. Almost 400 miles of the New River and its tributaries in Virginia are considered impaired due to high levels of fecal coliform or E. coli, possibly due to failing or deficient wastewater systems. More than 1,400 square miles of the New River watershed make up the New River Valley Planning District and are the focus of this study.

Impairment listing of surface waters in the New River Valley result from a violation of one of several possible criteria, including but not limited to benthic macroinvertebrates, bacterial, temperature, or dissolved oxygen levels. The impaired classification of a body of water is determined by monitoring station testing as indicated by the Clean Water Act. Once a waterbody has been classified as impaired, a Total Maximum Daily Load (TMDL) Development is required. TMDL Developments establish a maximum pollutant load capacity and/or a benthic health standard of an impaired body of water, establish the probable stressor, or stressors, causing the impairment, and determine plausible implementation plan(s) that will result in the meeting of existing water quality standards. The document, *Guidance for Water Quality-Based Decisions: The TMDL Process* (United States Environmental Protection Agency, 1999), states:

> *According to Section 303(d) of the Clean Water Act and EPA water quality planning and management regulations, States are required to identify waters that do not meet or are not expected to meet water quality standards even after technology-based or other required controls are in place. The waterbodies are considered water quality-limited and require TMDLs.*
>
> *…A TMDL is a tool for implementing State water quality standards, and is based on the relationship between pollution sources and in-stream water quality conditions. The TMDL establishes the*

allowable loadings or other quantifiable parameters for a waterbody and thereby provides the basis for States to establish water quality-based controls. These controls should provide the pollution reduction necessary for a waterbody to meet water quality standards.

TMDL Developments have been prepared for a portion of Back Creek in Pulaski County, Crab Creek in Montgomery County, the Dan River and its tributaries in Floyd County, Dodd Creek in Floyd County, Mill Creek in Montgomery County, Peak Creek in Pulaski County, Stroubles Creek in Montgomery County, and Wilson Creek in Montgomery and Floyd Counties. Of the above listed TMDL Developments, all but TMDL for Stroubles Creek was in response to a bacteriological impairment due to multiple monitoring station violations of the fecal coliform standard.

TMDL Developments are followed by TMDL Implementation Plans (IPs) which establish a staged implementation strategy that will result in the attainment of existing water quality standards. An IP identifies specific measures that must be taken to reduce pollution levels in the identified waterbody and a schedule of events to attain this required reduction in a staged manner. The schedule includes an impact and cost analysis of each step as well as monitoring to determine successful implementation of each step. Also included are suggestions to establish user education and desired involvement in the IP.

TMDL IPs have been established for Back Creek, Dodd Creek, Mill Creek and Stroubles Creek. Back, Dodd, and Mill Creeks' IPs include required bacteriological reductions in response to the violations of the fecal coliform standard. TMDL Reports, Implementation Plans and Implementation progress updates are available on DEQ's TMDL website at http://www.deq.virginia.gov/tmdl. A map illustrating the impaired streams in the New River Valley is presented in Figure 2. Table 3 provides a listing of these streams.

As many of the region's residents identify water quality as a top priority, there is a need in the New River Valley Planning District to examine the quality of water in the region's surface water, including streams, rivers, lakes, and ponds. The New River, along with Claytor Lake, supplies a large percentage of the water to residents of the region, including Pulaski County PSA, the Blacksburg/Christiansburg/VPI Water Authority and the City of Radford. Additionally, Montgomery County purchases some of the water it distributes to its residents from New River sources.

The planning district consists of Floyd, Giles, Montgomery and Pulaski Counties. Floyd County is located in the Blue Ridge Province, which is a relatively narrow zone of high mountains. The rocks underlying the area are granite, gneiss, and marble. Steep terrain and a thin soil covering result in rapid surface runoff and low ground water recharge. Water quality is generally good, and the pollution potential of ground water is low in this province. However, it should be noted, many residents in some of the more sparsely populated areas of Floyd, Giles, Pulaski and Montgomery counties still utilize springs as drinking water sources, which are highly susceptible to surface water influence and contamination.

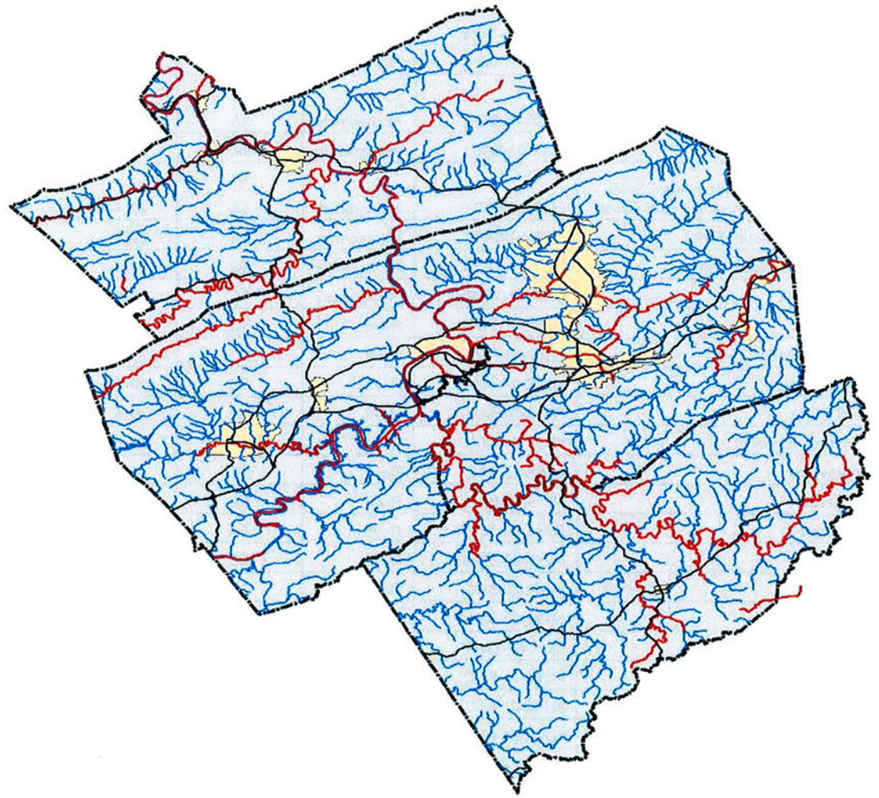

Figure 2 – Impaired Streams in New River Valley

Water Name	Cause group code	Location	Cause Category	TMDL Development Date
Meadow Creek	N21R-02-BAC	Montgomery	5A	2014
Stroubles Creek	N22R-02-BAC	Montgomery	5A	2014
Plum Creek	N18R-03-BAC	Montgomery	5A	2016
Brush Creek	N21R-05-BAC	Montgomery	5A	2016
Toms Creek	N22R-04-TEMP	Montgomery	5C	2020
Slate Branch	N22R-05-BEN	Montgomery	5A	2020
Unnamed Tributaries XEJ & XEH to Slate Branch	N22R-06-BEN	Montgomery	5A	2020
Roanoke River, North Fork	L02R-01-BAC	Montgomery	5A	2014
Roanoke River, Blackwater River, Smith Mtn. Lake, Tinker Creek, & Peters Creek	L12R-01-PCB	Montgomery	5A	2014-2016
Roanoke River, South Fork	L01R-01-BAC	Montgomery	5A	2016
Roanoke River, South Fork	L01R-01-TEMP	Montgomery	5C	2016
Bottom Creek	L01R-02-TEMP	Montgomery	5C	2020
Little River	N19R-01-TEMP	Floyd	5C	2014
West Fork Dodd Creek	N20R-01-TEMP	Floyd	5C	2014
Big Indian Creek	N21R-07-TEMP	Floyd	5C	2016
Laurel Creek	N21R-06-BAC	Floyd	5A	2016
Little River (Upper)	N19R-01-BAC	Floyd	5A	2016/2018
Meadow Run	N19R-02-BAC	Floyd	5A	2018
Pine Creek	N19R-03-BAC	Floyd	5A	2018
Pine Creek	N19R-03-TEMP	Floyd	5C	2020
Dodd Creek	N20R-02-TEMP	Floyd	5C	2020
Greasy Creek	N14R-02-BAC	Floyd	5A	2020
Meadow Run	N19R-02-BEN	Floyd	5A	2020
Rennet Bag Creek	L51R-01-TEMP	Floyd	5C	2014
Kimberling Creek	N26R-01-BAC	Giles	5A	2014
Rich Creek	N34R-01-BAC	Giles	5A	2014
New River	N24R-01-DDE	Giles	5A	2016
New River	N24R-01-DDT	Giles	5A	2016
Little Walker Creek	N27R-01-BAC	Giles	5A	2016
Adair Run	N35R-01-BAC	Giles	5A	2016
Wolf Creek	N32R-01-BAC	Giles	5A	2016/2018
New River	N24R-01-HEPOXID	Giles	5A	2018
Walker Creek	N25R-01-BAC	Giles	5A	2018
New River	N08R-01-BAC	Pulaski	5A	2016/2018

Table 3 – List of Impaired Streams in New River Valley

Water Name	Cause group code	Location	Cause Category	TMDL Development Date
Big Reed Island Creek	N14R-03-BAC	Pulaski	5A	2020
Little Reed Island Creek	N15R-01-BAC	Pulaski	5A	2020
Little Reed Island Creek	N15R-01-TEMP	Pulaski	5A	2020
Connelly's Run	N18R-02-BAC	Radford	5A	2016
New River, Claytor Lake, Peak Creek, & Reed Creek	N29R-01-PCB	Giles, Montgomery, Pulaski	5A	2014/2018
Little River	N21R-01-BEN	Floyd, Montgomery	5A	2020
Little River (Lower)	N21R-01-BAC	Floyd, Pulaski, Montgomery	5A	2014/2016
Roanoke River	L03R-01-TEMP	Montgomery	4C	
Claytor Lake	N16L-01-DO	Pulaski	4C	
Claytor Lake - Peak Creek	N16L-02-DO	Pulaski	4C	
Dodd Creek & West Fork Dodd Creek	N20R-01-BAC	Floyd	4A	2002
Mill Creek, Poplar Branch, Mill Creek UT (XDE & XDF)	N21R-03-BAC	Montgomery	4A	2002
Crab Creek	N18R-01-BAC	Montgomery	4A	2004
Crab Creek	N18R-01-BEN	Montgomery	4A	2004
Stroubles Creek	N22R-02-BAC	Montgomery	4A	2004
Wilson Creek & Wilson Creek, UT	L02R-02-BAC	Montgomery	4A	2006
Peak Creek	N17R-01-BAC	Pulaski	4A	2004
Peak Creek	N17R-01-BEN	Pulaski	4A	2004
Peak Creek	N17R-01-CU	Pulaski	4A	2004
Peak Creek	N17R-01-ZN	Pulaski	4A	2004
Back Creek	N22R-03-BAC	Pulaski	4A	2004
Back Creek	N22R-03-BEN	Pulaski	4A	2004

Table 3 (Contd.) – List of Impaired Streams in New River Valley

Giles, Montgomery and Pulaski Counties are located in the Valley and Ridge Province. The ridges and upland areas of these counties are generally covered by forests and are often underlain by sandstone and shale. The ground water moves slowly through these soils, and the pollution potential of ground water and surface water is low. It is a different story in the valleys, which are used for agricultural and residential lands. The valleys are underlain by shales and carbonate rocks, such as limestone and dolomite. These rocks are relatively soft and easily dissolved, and thus form karst. Characteristic features of karst include caves, sinking streams that disappear into holes in the bedrock, and sinkholes formed by the collapse of subsurface voids. The Department of Conservation and Recreation reports that karst underlies 50% or more of the New River watershed and an even larger proportion of the valley floors where population and development are concentrated. Ground water flows quickly through karst topography, and therefore receives very little filtration. Also, surface water and ground water sometimes intermingle, and this makes for an environment that is easily contaminated. This intermingling may explain why Walker Creek, which originates in Bland County and flows a long distance through sparsely populated areas of Giles County, is bacterially impaired throughout its entire length.

The College of Environmental Engineering at Virginia Tech estimates that one-half of all septic systems in Virginia are not functioning correctly. Surface water contamination can occur when the soil becomes clogged with waste particles causing the untreated wastewater in the drain field to make its way to the surface and eventually be washed into the stream during precipitation events. A more significant failure is when these pollutants move too quickly through the soil and pollute the groundwater. This type of failure occurs in soils with high permeability or in karst topography.

There are other factors which contribute to contamination: 1). The design life of septic systems averages thirty years. There are many systems in the New River watershed installed before 1980, which have exceeded their design life and may no longer be operating properly. 2). The density of septic systems in an area may also contribute to contamination. The Environmental Protection Agency has determined that as few as 40 systems per square mile (one system per 16 acres) can cause ground water contamination.

V. HEALTH RISK

By using water, impurities are added that pollute it. Common pollutants include human wastes, nutrients and household chemicals. Polluted water results in public health problems and damages aquatic ecosystems.

It is estimated that, in the United States, 10% of on-site septic systems have stopped working and that some communities report failure rates as high as 70%. In Virginia, one of the leading causes of impairment in our rivers and streams is violation of bacteria standards. Failing septic tanks are reported as a significant contributing source for these water quality problems. The federal Centers For Disease Control and Prevention estimates that 73,000 Americans are infected and 61 die each year from a virulent form of coliform bacteria.

The effects of this pollution can be far reaching, resulting in the degradation of our natural resources, increased costs for treating drinking water, illness and even death.

Disease causing organisms, also called pathogens, make water unsafe for drinking, recreation and most other uses. People who come in contact with contaminated water, whether by drinking or recreation, risk infection and development of diseases such as cholera, typhoid, dysentery, viral hepatitis A, salmonellosis, shigellosis, sporadic viral gastroenteritis, epidemic viral gastroenteritis, and amebiasis. Sources of waterborne pathogens (bacteria, viruses and parasites) include failed septic systems, straight pipes, leaking collection systems, failed treatment and feedlot runoff. These diseases may also be contracted through contact with any number of creatures that have been exposed to untreated waste, including dogs, cats, rats, flies, cockroaches, fleas and a host of others.

Other health risks from coming in contact with contaminated water include:

- Contact with toxins (pesticides, herbicides, paints, solvents, heavy metals…) Many of these substances are known to cause cancer and other serious human health problems.
- Contact with nitrate (from nitrogen) in water. High nitrate levels in groundwater can result from inadequately treated wastewater and can cause methemoglobinemia, a serious health problem for infants and pregnant or lactating women.
- Contact with synthetic cleaning products or other chemicals used around the house can be toxic to humans, pets and wildlife. These products can reach the ground surface or end up in the water.
- Flies and mosquitoes that are attracted to and breed in wet areas where wastewater reaches the surface can also spread disease.

Inadequate treatment of wastewater can also allow excess nutrients to reach streams, lakes and ponds, promoting algae or weed growth. Algal blooms and abundant weeds not only make the water body unpleasant for recreation (swimming, boating), but they also affect the water quality for fish and wildlife habitat. As plants die, settle to the bottom, and decompose, they use up oxygen that fish need to survive.

VI. WASTEWATER SYSTEMS

There are three basis types of wastewater systems available - conventional onsite systems, central systems, and decentralized systems. Each type is explained below.

CONVENTIONAL ONSITE SYSTEMS

The individual onsite septic system, consisting of a septic tank and drain field, has been the primary treatment and disposal system of domestic wastewater in rural areas in the New River Valley for many years. These systems, when properly situated, designed and maintained work well, but have a average life of thirty (30) years due to the soils becoming clogged with particle created in the purification process. When the soil becomes clogged, the inadequately-treated wastewater in the drain field comes to the surface and may be washed into the stream during precipitation events. This type of system failure is easily detected, and can be corrected although often at a high cost to the homeowner. The second type of failure is caused when the wastewater is washed through the soils so quickly that the bacteria is not killed. This failure type can occur either where the soil is highly permeable or where subsurface fracturing exists (karst topography). This type failure occurs underground and is difficult to detect. Ground water contamination can result if this type of septic system failure goes undetected, especially in concentrated communities. Ground water contamination is very expensive to clean up: therefore, prevention is essential to protecting this valuable natural resource. Regulating conventional onsite systems has been the responsibility of the Virginia Department of Health (VDH) for many years.

CENTRALIZED WASTEWATER SYSTEMS

Centralized wastewater systems are the most common type of publicly owned wastewater systems and contain collection lines and a centralized treatment facility. They are used to collect and treat large volumes of wastewater. The collection system typically requires large diameter pipes, deep excavation, and frequent manhole access. At the treatment facility, the wastewater is treated to standards required for discharge to a surface water body. The large amounts of bio-solids (sludge) generated are either land-applied, placed on a surface disposal site or incinerated.

DECENTRALIZED WASTEWATER SYSTEMS

Decentralized wastewater systems are collection, treatment and disposal systems designed to serve small communities that cannot be economically served by a centralized system. These systems are fairly new and provide permanent infrastructure when adequately managed. In order to protect their investments, developers and funding agencies usually require that these systems be owned and operated by a public utility.

Collection Systems

In most cases, sewage flows through the building sewer to an interceptor (septic) tank. The interceptor tank is the first and a very key component in decentralized wastewater systems. The interceptor tank is a watertight vessel that provides a quiet environment where the solids can settle. The solids, called septage, are subsequently disposed of at a central treatment facility or stabilized and land applied at an approved site. Tanks are equipped with risers to the surface for easy access and inspection, and generally require pumping about once every ten years.

The filtered effluent from the interceptor tank is conveyed to the treatment system through a common collection line. Thus, these collection lines are called effluent sewers. Effluent sewers have several cost advantages over centralized wastewater systems: (1) they are smaller in diameter, (2) they do not need to be installed as deep or on grade, and (3) they do not require manholes for access. There are two types of effluent sewers, gravity and pressure. Gravity systems are known as STEG, meaning septic tank effluent gravity, and pressure systems are known as STEP, for septic tank effluent pumping. Following collection, there are a number of treatment and disposal system alternatives that can be used to treat wastewater.

Treatment Systems

Alternative treatment systems include small aerobic treatment plants and bio-filtration systems using a variety of materials, such as sand, peat, synthetic textile, or open cell foam, as the filter medium.

Disposal Systems

When the treated effluent is dispersed into the soil for further treatment, it is called an "onsite" system, and is governed by the Virginia Department of Health (VDH). Permitting and sampling requirements for onsite systems are minimal, so it is a low-cost method of disposal. Dispersing treated effluent into the soil helps recharge the water table. Also, because the area serviced by a decentralized system is relatively small, the recharge applies to the area where the water was used. This is particularly important during times of drought.

There are several soil dispersal methods available including conventional gravel trenches, non-gravel trenches utilizing infiltration chambers or synthetic aggregate, low-pressure distribution, drip dispersal, and spray irrigation. The soil texture and depth to a restriction determine which dispersal method will work best for a project site. Designing an onsite system requires a detailed soil and site evaluation to be made at each site. This evaluation is often conducted jointly by a soil scientist and an engineer. Conducting the soil and site evaluation was not done for the projects listed in this study, since the scope of the study was only to identify where there was an urgent need for sewer facilities.

There is a current trend toward water conservation and re-use. Because of their small size, there are many possibilities for reusing the treated effluent from decentralized wastewater systems. These re-uses include plant irrigation in greenhouses, nurseries, or parks; irrigation of fairways and greens at golf courses; steam generating facilities; or other uses, such as car washes. The cost of preparing the effluent for re-use would be offset by a reduction in the need for clean, drinking water. Reuse systems are regulated by the Virginia Department of Environmental Quality (DEQ).

Finally, there are project areas where neither onsite dispersal nor reuse options exist. In such instances, a permit can be obtained from DEQ to allow the treated effluent to be discharged to surface waters, or to a dry ditch. The treated effluent must be disinfected before discharging it. Disinfection methods include chlorination and de-chlorination, ultraviolet (UV) light, and ozone. Permitting and sampling costs are always higher for discharging systems; but, more importantly, there is a concern right now that more stringent permit requirements for total nitrogen (TN) and total phosphorus (TP) will soon be placed at all wastewater treatment plants. Should this occur, even though the decentralized plants are small, the operating costs would increase significantly.

System Size

Decentralized systems can be designed for any size community. In this wastewater study, a cluster of fifteen homes was the minimum size community to be considered for a decentralized wastewater system.

Benefits

The primary benefit of decentralized wastewater systems is an improvement to the public health and environment in any area where they are used. These systems are not in competition with the central wastewater facilities, but can be used by a governing body (town or county) to complement "big pipe" systems. Decentralized systems can be installed in any community where conventional onsite systems are not an option. These systems can also be installed quickly in environmentally sensitive areas, without having to wait for several miles of a centralized system to be constructed, which may consist of several projects, before central sewer service is available to that community.

When decentralized systems are owned by a responsible management entity (RME), it becomes part of our nation's permanent infrastructure. The U.S. Environmental Protection Agency (EPA) requires that all new systems be owned and maintained by a public body, or other responsible management entity that annually demonstrates that it is fiscally responsible for maintaining the system. All decentralized systems must generate sufficient income to cover operation and maintenance costs. Proper maintenance guarantees that the homeowner receives the same full service as with central sewers. The only noticeable difference is that since the interceptor tank is generally located on the homeowner's property, a utility employee will periodically visit the tank to clean the effluent filter and measure the sludge and scum (floating material) buildup in the tank.

Beyond these primary benefits, however, there are secondary benefits of managed DWS, discussed as follows.

Benefits to public utilities:

1. DWS allow utilities to add sewer service to their other services, expanding both their customer base and their revenue base.

2. DWS are economical to install. An entire decentralized system (including collection, treatment, and disposal) often cost less that extending a conventional gravity sewer line, especially in less populated areas. DWS also conserve the capacity of the central treatment facility, thus avoiding the expense of a plant expansion.

3. DWS are economical to operate and maintain. They require routine maintenance every few months and their performance can be monitored and controlled using remote telemetry. Two or three employees can maintain DWS serving hundreds of homes.

4. DWS often allow utilities to acquire land for treatment facilities at minimum expense, as developers may deed over land for treatment in exchange for the benefits of a managed DWS.

Benefits to Homeowners:

1. Home sites become available in areas where central sewers do not exist and/or conventional septic systems do not work.

2. Homeowners are relieved of maintaining an onsite sewer system.

3. Monthly sewer rates are typically lower than with centralized systems because the costs of installing and maintaining the DWS are lower.

Benefits to Developers:

1. A prime residential location can be developed in a timely manner rather than waiting for a central sewer line to be extended.

2. Development density can also be increased by as much as 20% because homes can be sited on smaller lots than conventional systems require.

3. The presence of a publicly owned and operated sewer system is a selling point to homeowners.

ONSITE WASTEWATER SYSTEMS

The individual onsite septic system, consisting of a septic tank and drain field, has been the primary treatment and disposal system of domestic wastewater in rural areas in the New River Valley for many years. These systems, when properly situated, designed and maintained work well, but have a average life of thirty (30) years due to the soils becoming clogged with particles created in the purification process. When the soil becomes clogged, the inadequately-treated wastewater in the drain field comes to the surface and may be washed into the stream during precipitation events. This type system failure is easily detected, and can be corrected although often at a high cost to the homeowner. The second type of failure is caused when the wastewater is washed through the soils so quickly that the bacteria is not killed. This failure type can occur either where the soil is highly permeable (beach sands) or where miniature subsurface fracturing exists (karst topography). This type of failure occurs underground and is difficult to detect. Ground water contamination can result if this type of septic system failure goes undetected, especially in concentrated communities. Ground water contamination is very expensive to clean up: therefore, prevention is essential to protecting this valuable natural resource.

VII. PRIORITIZATION

Scoring Criteria

Based on the existing needs and future sewer demands presented in this study, there is a significant need for sanitary sewer collection and treatment within the study area over the 20-year planning horizon. A need has been identified to rank the projects in order to maximize the benefits to the area.

Ranking criteria for centralized and decentralized sewer projects have been developed in order to assist in the prioritization of the proposed projects identified in this study. For centralized projects, these criteria were used in order to evaluate each project with respect to the number of households served, present worth per new residential connection, elimination of health hazards, elimination of water quality problems, available facilities, and residential / industrial growth potential. For decentralized projects, the criteria used to evaluate the projects were somewhat different and included elimination of health hazards, improvement to water quality, permitted water system, community involvement, utility willingness, financial support, and present worth cost per connection. The criteria employed for decentralized (DWS) projects differed from those used for centralized projects due to the fact that DWS projects are usually much smaller in scope and cost, they tend to be community-oriented projects, they do not always require discharge permits, and they are sometimes funded differently than centralized projects.

Each criterion was assigned a point value, which was used to measure how well a proposed project meets and/or addresses the intent of the criteria. A project could receive a maximum of 100 points if it meets or addresses all of the ranking criteria. Weighting factors are built in to each of the evaluation criteria based on their relative importance. The criteria were selected based on input from the Advisory Management Team and from funding agencies' existing methodologies for evaluating projects.

A threshold for determining primary priority projects was set at 65 out 100 points for centralized sewer projects and 55 out of 100 for decentralized sewer projects. These thresholds were determined by the AMT by evaluating the number of projects falling above and below a given set of threshold values. After scoring of all identified projects and determining which were above the threshold value, it was determined that a project's affect on eliminating water quality and health hazards were a driving force in their designation as a primary priority.

CENTRALIZED SEWER PROJECTS

Number of Equivalent Customers Served by the Project (20 points)

The total number of equivalent customers served by the project will be evaluated for each project. Since one of the objectives of this study is to serve new customers, projects that serve more customers will receive more points.

This criterion shall be evaluated in accordance with the following point system:

< 25 equivalent connections	=	0 points
26 – 100 equivalent connections	=	5 points
101 – 200 equivalent connections	=	10 points
201 – 300 equivalent connections	=	15 points
> 300 equivalent connections	=	20 points

Present Worth Per Connection (20 points)

The cost of sewer system ownership can be separated into two categories. The first category is capital cost, which is the measure of the cost to install a new system. Capital costs are composed of hard costs and soft costs. Hard costs include the price of new materials and the cost to install them, while soft capital costs are those that are related to the construction costs such as engineering, legal, right-of-way, and administrative costs. A second cost of ownership of sewer systems is the annual operation and maintenance (O&M) costs. This is the continuous cost of operating the system and keeping it in good repair. The present worth analysis provides a convenient mechanism for accounting for all of the costs in the system analysis. Present Worth, as used in this report, is defined as the amount of money that must be placed on deposit today at 8% interest for 30 years to pay all of the capital and O&M costs for the planning period.

The total present worth of the project will be evaluated with respect to the potential number of connections that will be served by the proposed project. The lower the cost per connection the more points the project will receive under this criteria due to the fact that less grant funding is required the lower the per connection cost.

This criterion shall be evaluated in accordance with the following point system:

< $15,000 per connection	=	20 points
$15,001 - $22,500 per connection	=	15 points
$22,501 - $30,000 per connection	=	10 points
$30,001 - $37,500 per connection	=	5 points
> $37,501 per connection	=	0 points

Elimination of Health Hazards (15 points)

If a proposed project will minimize/eliminate VDH identified septic system failures, a maximum of 15 points will be awarded. If a proposed project is situated in an area with homes older than 30 years which rely of septic systems, 10 points will be awarded. Proposed projects which do not target an identified health hazard or an area with assumed septic issues will be awarded 0 points with respect to this criteria.

Elimination of Water Quality Problems (20 points)

If a proposed project is situated in the watershed and is within the vicinity (i.e., adjacent to the impaired water) of an impaired stream it will be awarded 20 points. If a proposed project in situated in the watershed but is not in the vicinity of an impaired stream it will be awarded 10 points. Proposed projects which are not in the watershed of an impaired stream will be awarded 0 points with respect to this criteria.

Available Facilities (10 points)

Available facilities considers whether a proposed project will be connected to an existing system or whether it will be connected to another proposed project. If a proposed project can be connected to an existing wastewater treatment plant / collection system without requiring modifications to the existing facilities it will be awarded 10 points. If modifications / upgrades are required to the existing wastewater treatment plant or collection system prior to construction of the new facilities, the project will be awarded 5 points. If proposed treatment facilities or collection systems must be constructed in order to provide a connection point for the project being evaluated, then 0 points will be awarded.

Residential / Industrial Growth Potential (15 points)

If a proposed project will provide sewer service to an area that will support future residential / industrial growth it will be awarded 15 points. If a proposed project will provide sewer service to an area that will only support future residential or industrial growth it will be awarded 10 or 5 points, respectively. A project that will provide little to no potential for growth of any significance will be given 0 points.

DECENTRALIZED SEWER PROJECTS

Elimination of Health Hazards (20 points)

Proposed projects that correct health hazards as identified by the Virginia Department of Health or are located in karst terrain as shown on maps provided by the Virginia Department of Conservation and Recreation will be evaluated in accordance with the following point system:

Identified septic failures	=	20 points
Contaminated ground water	=	20 points
Located in karst terrain	=	15 points
Known older homes (›30 years) with septic systems	=	10 points
No known health hazards	=	0 points

Elimination of Water Quality Problems (20 points)

This intent of this study, which is funded through Southern Rivers Water Quality Improvement Fund, is to supplement the efforts of the Department of Environmental Quality's Total Maximum Daily Loads (TMDL) Program whereby stream samples are taken and analyzed for fecal coliform bacteria, oxygen reduction, and other pollutants. This criterion also evaluates a project's potential for improving ground water quality where karst terrain exists. The karst criterion can be used to add points to projects that are located in an impaired watershed but not in vicinity of an impaired stream. Each proposed project will be evaluated according to published TMDL information using the following point system:

In an impaired watershed and in vicinity of impaired stream	=	20 points
In impaired watershed but not in vicinity of impaired stream	=	10 points
In karst terrain	=	5 points
Not in impaired watershed and not in vicinity of impaired stream	=	0 points

Permitted Water Source (5 points)

Since the county governments have recognized that septic systems can contaminate ground water, they have, for the most part, either installed public water systems or helped to get private drinking water systems permitted. If a proposed project currently has a permitted water system, 5 points will be awarded. Projects that have no permitted water system will be awarded 0 points. The existence of a permitted water system is important as it provides a way to insure customer payment of sewer bills. Some funding agencies will not provide money for sewer projects where there is no permitted water system.

Existing permitted water system or available within 1 year	=	5 points
Not available	=	0 points

Community Involvement (15 points)

Projects will be evaluated based on current community involvement in trying to solve their existing wastewater problems. Projects in communities demonstrating watershed group activities and organized citizen initiatives, including surveys, water quality monitoring, community meeting, etc., will be awarded 15 points. Projects in communities exhibiting evidence of citizen initiatives such as public meetings, requests for assistance, etc., will be awarded 10 points. Sometimes a project area may have an organized watershed group, but its efforts are focused on water quality issues other than wastewater pollution. In such a case, the project will only be awarded 5 points. Those communities not represented by a watershed group and not expressing interest in water quality will receive 0 points.

Organized citizen initiatives and watershed group activity	=	15 points
Organized citizen initiatives in improving water quality	=	10 points
Watershed group activity but not addressing wastewater	=	5 points
No watershed group or citizen initiative	=	0 points

Utility Willingness (10 points)

Utility willingness considers whether the local public service provider (city, town, or PSA) is willing to own and operate a decentralized system (DWS). This meets the qualifications of a Responsible Management Entity (RME) as set forth by the US Environmental Protection Agency in its Voluntary National Guidelines for Management of Onsite and Clustered (Decentralized) Wastewater Treatment Systems.

The criteria shall be evaluated in accordance with the following point system:

Utility has expressed a willingness to operate a DWS	=	10 points
Utility is unwilling to operate a DWS	=	0 points

Financial Support (10 points)

If a proposed project has had prior financial expenditures (planning, studies, etc.), or if funding has been requested or committed, it will be awarded 10 points. Projects that have shown no financial support will receive 0 points.

Present Worth Cost per Connection (20 points)

If a proposed project has a low present worth cost per connection (less than $15,000) the project will be awarded 20 points. If a proposed project has a present worth cost per connection between $15,001 - $17,500, it will be awarded 10 points; and projects with a present worth cost per connection between $17,501-$20,000 will receive 5 points. Projects where the present worth cost per connection is greater than $20,000, 0 points will be awarded.

‹$15,000 per connection	=	20 points
$15,001-$17,500 per connection	=	15 points
$17,501-$20,000 per connection	=	10 points
›$20,000 per connection	=	0 points

Table 4 - Matrix Scoring Summary - Centralized Projects

Equivalent Connections	**Score**	**(20 Points Total)**
i. ≤ 25 Equivalent Connections	0	Points
ii. 26-100 Equivalent Connections	5	Points
iii. 101-200 Equivalent Connections	10	Points
iv. 201-300 Equivalent Connections	15	Points
v. >300 Equivalent Connections	20	Points

Present Worth Per Connection	**Score**	**(20 Points Total)**
i. >$37,501 Per Connection	0	Points
ii. $30,001-$37,500 Per Connection	5	Points
iii. $22,501-$30,000 Per Connection	10	Points
iv. $15,001-$22,500 Per Connection	15	Points
v. <$15,000 Per Connection	20	Points

Elimination of Health Hazard	**Score**	**(15 Points Total)**
i. Identified Septic Failures	15	Points
ii. Known Older Homes (> 30 Yrs.) with Septic Systems	10	Points
iii. No Older Homes with Septic Systems or Failures	0	Points

Elimination of Water Quality Problems	**Score**	**(20 Points Total)**
i. In Watershed and Within Vicinity of Impaired Stream	20	Points
ii. In Watershed and Not Within Vicinity of Impaired Stream	10	Points
iii. Not in Watershed or Within Vicinity of Impaired Stream	0	Points

Available Facilities	**Score**	**(10 Points Total)**
i. WWTP/Collection System Capacity Available	10	Points
ii. WWTP/Collection System Upgrades Required	5	Points
iii. WWTP/Collection System Not Available	0	Points

Potential Growth - Residential/Industrial	**Score**	**(15 Points Total)**
i. Industrial and Residential Growth Potential	15	Points
ii. Residential growth potential only	10	Points
iii. Industrial growth potential only	5	Points
iv. No growth potential	0	Points

Table 5 - Matrix Scoring Summary - Decentralized Projects

Elimination of Health Hazard	**Score**	**(20 Points Total)**
i. Identified Septic Failures	20	Points
ii. Contaminated Ground Water	20	Points
iii. Located in Karst Terrain	15	Points
iv. Known Older Homes (> 30 Yrs.) with Septic Systems	10	Points
v. No Older Homes with Septic Systems or Failures	0	Points

Elimination of Water Quality Problems	**Score**	**(20 Points Total)**
i. In Watershed and Within Vicinity of Impaired Stream	20	Points
ii. In Watershed and Not Within Vicinity of Impaired Stream	10	Points
iii. Located In Karst Terrain	5	Points
iv. Not in Watershed or Within Vicinity of Impaired Stream	0	Points

Permitted Water System (> 15 connections)	**Score**	**(5 Points Total)**
i. Existing Permitted Water System or Available within 1 Year	5	Points
ii. Not Available	0	Points

Community Involvement	**Score**	**(15 Points Total)**
i. Both Activity & Initiatives	15	Points
ii. Organized Citizen Initiatives	10	Points
iii. Watershed Group Activity	5	Points
iv. No Activity or Initiatives	0	Points

Utility Willingness	**Score**	**(10 Points Total)**
i. Available or Planned Responsible Mgmt Entity	10	Points
ii. No Responsible Mgmt Entity	0	Points

Financial Support	**Score**	**(10 Points Total)**
i. Prior Expenditures	10	Points
ii. Project Funding Requested or Committed	10	Points
iii. None of the Above	0	Points

Present Worth Per Connection	**Score**	**(20 Points Total)**
i. >$20,000 Per Connection	0	Points
ii. $17,501-$20,000 Per Connection	10	Points
iii. $15,001-$17,500 Per Connection	15	Points
iv. <$15,000 Per Connection	20	Points

VIII. FLOYD COUNTY

Seven centralized and five de-centralized projects have been defined to address water quality and service needs in Floyd County.

The centralized projects are associated with the Dodd Creek watershed and an expansion of the Floyd-Floyd County Public Service Authority wastewater service area. The de-centralized projects are located in areas of the county which have experienced localized population growth but remain well outside the serviceable area of the PSA.

Primary Priorities

Centralized Projects

Project Name	Project Cost
Epperly Mill Road (F-4)	$ 1,223,120
Total	*$ 1,223,120*

Decentralized Projects

Project Name	Project Cost
None	$ 0

Secondary Priorities

Centralized Projects

Project Name	Project Cost
North Floyd Phase 1 (F-1)	$ 767,300
North Floyd Phase 2 (F-2)	$ 440,080
Stockers Knob (F-3)	$ 1,537,384
St. Route 221 (F-5)	$ 2,228,901
St. Route 681 Phase 1 (F-6)	$ 860,100
St. Route 681 Phase 2 (F-7)	$ 2,376,200
Total	*$ 8,209,965*

Decentralized Projects

Project Name	Project Cost
Check (DC-1)	$ 538,300
Willis (DC-2)	$ 923,300
Indian Valley (DC-3)	$ 637,000
Copper Valley (DC-4)	$ 337,400
Carthage (DC-5)	$ 756,000
Total	*$ 3,192,000*

Total Funding Necessary for Floyd County = $12,625,085

Table 6 - Overall Project Ranking - Centralized Projects
Floyd County

County	Project ID	Total ERC's	Equivalent Connections	Present Worth Per Connection	Elimination of Health Hazard	Elimination of Water Quality Problems	Available Facilities	Potential Growth (Residential/Industrial)	Total Points
			20	***20***	***15***	***20***	***10***	***15***	***100***
Floyd	F-4	35	5	5	10	20	10	15	65
Floyd	F-1	36	5	15	10	10	10	10	60
Floyd	F-2	31	5	20	10	10	10	0	55
Floyd	F-7	58	5	0	10	20	0	10	45
Floyd	F-3	37	5	0	10	20	10	10	55
Floyd	F-5	38	5	0	10	20	10	10	55
Floyd	F-6	24	0	5	10	10	10	10	45

Table 7 - Overall Project Ranking - Decentralized Projects
Floyd County

County	Project ID	Total ERC's	Elimination of Health Hazard	Elimination of Water Quality Problems	Permitted Water System	Community Involvement	Utility Willingness	Financial Support	Present Worth Per Connection	Total Points
			20	***20***	***5***	***15***	***10***	***10***	***20***	***100***
Floyd	DC-2	65	10	0	0	5	10	0	15	40
Floyd	DC-1	29	10	0	0	5	10	0	0	25
Floyd	DC-5	36	10	0	0	5	10	0	0	25
Floyd	DC-4	15	10	0	0	5	10	0	0	25
Floyd	DC-3	26	10	0	0	5	10	0	0	25

LEGEND

PROJECT AREA

COUNTY LIMITS

Centralized Projects

F-1. North Floyd Phase I
F-2. North Floyd Phase II
F-3. Stockers Knob
F-4. Epperly Mill Road
F-5. State Route 221
F-6. State Route 681 Phase I
F-7. State Route 681 Phase II

Decentralized Projects

DC-1. Check
DC-2. Willis
DC-3. Indian Valley
DC-4. Copper Valley
DC-5. Carthage

N
W E
S

0 7,500 15,000

SCALE: 1" = 15,000'

SOURCE: RADFORD, VA & GALAX, VA
U.S.G.S. QUADRANGLE

FIGURE 3:
FLOYD COUNTY PROJECT AREAS
New River Valley Planning District

EPPERLY MILL ROAD SEWER EXTENSION (F-4)

FLOYD COUNTY PUBLIC SERVICE AUTHORITY

New River Valley Planning District

Project Background

The Epperly Mill Road project area is located west of the Town of Floyd and extends primarily along U.S. Route 221 and State Routes 720. The project area includes approximately 35 residential connections. Currently, the area is not served by a public sewage system. Residences in the area primarily utilize privately owned and maintained on-site septic systems. The project area lies in the watersheds of Dodd Creek, which has been identified by the Virginia Department of Environmental Quality (DEQ) as an impaired stream. It is anticipated that, with the provision of public sewage service, a moderate to high potential will exist for residential growth and a low to moderate potential for industrial/commercial growth.

Proposed Facilities

The proposed facilities associated with the Epperly Mill Road Sewer Extension include approximately 10,929 linear feet of 8-inch gravity sewer. The extension will connect to the existing Town of Floyd sewage collection system and all wastewater generated in the project area will ultimately be conveyed to and treated at the existing Floyd County Wastewater Treatment Plant (WWTP). The Town of Floyd WWTP has a permitted capacity of 0.15 million gallons per day (MGD) and currently treats an average of 0.095 MGD. Treated effluent from the Town of Floyd WWTP discharges into Dodd Creek which has been identified by DEQ as an impaired stream. Based on a 50-year design period, a potential future customer base of 43 connections (anticipated 50-year growth of 20%) and a flow of 300 gallons per day (GPD) per connection, future average daily flow for the project area will be approximately 12,900 GPD or 0.013 MGD. Therefore, adequate capacity is available at the Town of Floyd WWTP to treat the anticipated wastewater generated in the Epperly Mill Road project area.

Project Costs

The preliminary probable project cost and annual operation and maintenance costs associated with the Epperly Mill Road Sewer Extension are $1,223,120 and $1,093, respectively. These costs result in an approximate present worth of $35,300 per existing connection.

PRELIMINARY PROBABLE PROJECT COST

Construction Cost				
10,929	L.F.	8" Gravity Sewer @	$80/L.F.	$874,320
35	EA.	Gravity Sewer Connections @	$1,900/EA.	$66,500
		Total Construction Cost		$940,820
Related Cost				
30	%	Total Construction Cost		$282,300
		Total Related Cost		$282,300
		TOTAL PROJECT COST		$1,223,120

ANNUAL OPERATION AND MAINTENACE (O&M) COST

Operation and Maintenance Cost				
10,929	L.F.	Gravity Sewer @	$0.10/L.F.	$1,093
		TOTAL ANNUAL O&M COST		$1,093

PRESENT WORTH OF ANNUAL O&M COST (30 YEARS, 8%)	$12,310
TOTAL PROJECT PRESENT WORTH	$1,235,430
PRESENT WORTH PER CONNECTION (35 CONNECTIONS)	$35,300

Table 8 - PROJECT DATA SHEET

Project Name:		Epperly Mill Road (F-4)
County:		Floyd
Type of Project:		Centralized
Utility Provider:		Floyd County PSA
Responsible Mgmt Entity?		Floyd County PSA
Existing Water System?		Yes
Existing Conditions:		The project area is currently not served by a public sewage system.
Proposed Project:		The project consists of 10,929 linear feet of 8-inch sewer.
Existing WWTP:	Name =	Floyd Town - Floyd County - Public Service Authority
	Design Flow =	0.1500
	Average Flow =	0.095
	Receiving Stream =	Dodd Creek
	Stream Classification =	V
	Impaired Stream	Yes
Watershed or Adjacent Stream:	Name =	UT of Dodd Creek, Dodd Creek
	Impaired =	Yes
	Within Vicinity =	Yes
Equivalent Customers Served:	Residential =	35
	Industrial	0
	Commercial =	0
Health Hazard:		Known older homes with septic systems.
Construction Feasibility:	WWTP/Collection System Available	X
	WWTP/Collection System Upgrades Required	
	WWTP/Collection System Not Available	
Growth Potential:		Residential and industrial growth potential
Total Project Cost:		$1,223,120
Present Worth Per Connection:		$35,300

LEGEND

- GRAVITY SEWER
- EXISTING SEWER
- FORCE MAIN
- PROJECT LIMITS
- PUMP STATION
- GRINDER PUMP STATION
- TREATMENT PLANT/ EXPANSION

F-4

N
W E
S

0 1000 2000

SCALE: 1" = 2000'

SOURCE: FLOYD, VA.
U.S.G.S. QUADRANGLE

FIGURE 4:
EPPERLY MILL ROAD (F-4)
FLOYD COUNTY PUBLIC SERVICE AUTHORITY
New River Valley Planning District

FLOYD COUNTY PROJECT DATA SHEETS

PROJECT DATA SHEET

Table 9

Project Name:	North Floyd Phase I (F-1)	
County:	Floyd	
Type of Project:	Centralized	
Utility Provider:	Floyd County PSA	
Responsible Mgmt Entity?	Floyd County PSA	
Existing Water System?	Yes	
Existing Conditions:	The project area is currently not served by a public sewage system.	
Proposed Project:	The project consists of approximately 6,475 linear feet of 8-inch gravity sewer.	
Existing WWTP:	Name =	Floyd Town - Floyd County - Public Service Authority
	Design Flow =	0.1500
	Average Flow =	0.095
	Receiving Stream =	Dodd Creek
	Stream Classification =	V
	Impaired Stream	Yes
Watershed or Adjacent Stream:	Name =	Three UTs of Dodd Creek
	Impaired =	Yes
	Within Vicinity =	No
Equivalent Customers Served:	Residential =	36
	Industrial	0
	Commercial =	2
Health Hazard:	Known older homes with septic systems	
Construction Feasibility:	WWTP/Collection System Available	X
	WWTP/Collection System Upgrades Required	
	WWTP/Collection System Not Available	
Growth Potential:	Residential growth potential only.	
Total Project Cost:	$767,300	
Present Worth Per Connection:	$20,390	

Table 10

Project Name:	North Floyd Phase II (F-2)	
County:	Floyd	
Type of Project:	Centralized	
Utility Provider:	Floyd County PSA	
Responsible Mgmt Entity?	Floyd County PSA	
Existing Water System?	Yes	
Existing Conditions:	The project area is currently not served by a public sewage system.	
Proposed Project:	The project consists of approximately 3,471 linear feet of 8-inch gravity sewer.	
Existing WWTP:	Name =	Floyd Town - Floyd County - Public Service Authority
	Design Flow =	0.1500
	Average Flow =	0.095
	Receiving Stream =	Dodd Creek
	Stream Classification =	V
	Impaired Stream	Yes
Watershed or Adjacent Stream:	Name =	Two UTs of Dodd Creek
	Impaired =	Yes
	Within Vicinity =	No
Equivalent Customers Served:	Residential =	31
	Industrial	0
	Commercial =	1
Health Hazard:	Known older homes with septic systems.	
Construction Feasibility:	WWTP/Collection System Available	X
	WWTP/Collection System Upgrades Required	
	WWTP/Collection System Not Available	
Growth Potential:	No growth potential	
Total Project Cost:	$440,080	
Present Worth Per Connection:	$13,880	

PROJECT DATA SHEET

Table 11

Project Name:	Stockers Knob (F-3)
County:	Floyd
Type of Project:	Centralized
Utility Provider:	Floyd County PSA
Responsible Mgmt Entity?	Floyd County PSA
Existing Water System?	No
Existing Conditions:	The project area is currently not served by a public sewage system.
Proposed Project:	The project consists of approximately 10,625 linear feet of 8-inch gravity sewer, 5,796 linear feet of 2-inch force main, and two grinder pump stations.
Existing WWTP: Name =	Floyd Town - Floyd County - Public Service Authority
Design Flow =	0.1500
Average Flow =	0.095
Receiving Stream =	Dodd Creek
Stream Classification =	V
Impaired Stream	Yes
Watershed or Adjacent Stream: Name =	Four UTs of Dodd Creek
Impaired =	Yes
Within Vicinity =	Yes
Equivalent Customers Served: Residential =	37
Industrial	0
Commercial =	0
Health Hazard:	Known older homes with septic systems.
Construction Feasibility: WWTP/Collection System Available	X
WWTP/Collection System Upgrades Required	
WWTP/Collection System Not Available	
Growth Potential:	Residential growth potential
Total Project Cost:	$1,537,384
Present Worth Per Connection:	$43,880

Table 12

Project Name:	Epperly Mill Road (F-4)
County:	Floyd
Type of Project:	Centralized
Utility Provider:	Floyd County PSA
Responsible Mgmt Entity?	Floyd County PSA
Existing Water System?	Yes
Existing Conditions:	The project area is currently not served by a public sewage system.
Proposed Project:	The project consists of 10,929 linear feet of 8-inch sewer.
Existing WWTP: Name =	Floyd Town - Floyd County - Public Service Authority
Design Flow =	0.1500
Average Flow =	0.095
Receiving Stream =	Dodd Creek
Stream Classification =	V
Impaired Stream	Yes
Watershed or Adjacent Stream: Name =	UT of Dodd Creek, Dodd Creek
Impaired =	Yes
Within Vicinity =	Yes
Equivalent Customers Served: Residential =	35
Industrial	0
Commercial =	0
Health Hazard:	Known older homes with septic systems.
Construction Feasibility: WWTP/Collection System Available	X
WWTP/Collection System Upgrades Required	
WWTP/Collection System Not Available	
Growth Potential:	Residential and industrial growth potential
Total Project Cost:	$1,223,120
Present Worth Per Connection:	$35,300

PROJECT DATA SHEET

Table 13

Project Name:	St. Route 221 (F-5)	
County:	Floyd	
Type of Project:	Centralized	
Utility Provider:	Floyd County PSA	
Responsible Mgmt Entity?	Floyd County PSA	
Existing Water System?	No	
Existing Conditions:	The project area is currently not served by a public sewage system.	
Proposed Project:	The project consists of approximately 16,735 linear feet of 8-inch gravity sewer, 8,079 linear feet of 2-inch force main, and two grinder pump stations.	
Existing WWTP:	Name =	Floyd Town - Floyd County - Public Service Authority
	Design Flow =	0.1500
	Average Flow =	0.095
	Receiving Stream =	Dodd Creek
	Stream Classification =	V
	Impaired Stream	Yes
Watershed or Adjacent Stream:	Name =	Two UTs of Pine Creek, Pine Creek, One UT of Oldfield Creek, Oldfield Creek (all tributaries to Litte River)
	Impaired =	Yes
	Within Vicinity =	Yes
Equivalent Customers Served:	Residential =	38
	Industrial	0
	Commercial =	0
Health Hazard:	Known older homes with septic systems.	
Construction Feasibility:	WWTP/Collection System Available	X
	WWTP/Collection System Upgrades Required	
	WWTP/Collection System Not Available	
Growth Potential:	Residential growth potential	
Total Project Cost:	$2,228,901	
Present Worth Per Connection:	$61,170	

Table 14

Project Name:	St. Route 681 Phase 1 (F-6)	
County:	Floyd	
Type of Project:	Centralized	
Utility Provider:	Floyd County PSA	
Responsible Mgmt Entity?	Floyd County PSA	
Existing Water System?	No	
Existing Conditions:	The project area is currently not served by a public sewage system.	
Proposed Project:	The project consists of approximately 7,700 linear feet of 8-inch gravity sewer.	
Existing WWTP:	Name =	Floyd Town - Floyd County - Public Service Authority
	Design Flow =	0.1500
	Average Flow =	0.095
	Receiving Stream =	Dodd Creek
	Stream Classification =	V
	Impaired Stream	Yes
Watershed or Adjacent Stream:	Name =	UT of Pine Creek
	Impaired =	Yes
	Within Vicinity =	No
Equivalent Customers Served:	Residential =	24
	Industrial	0
	Commercial =	0
Health Hazard:	Known older homes with septic systems.	
Construction Feasibility:	WWTP/Collection System Available	X
	WWTP/Collection System Upgrades Required	
	WWTP/Collection System Not Available	
Growth Potential:	Residential growth potential	
Total Project Cost:	$860,100	
Present Worth Per Connection:	$36,200	

PROJECT DATA SHEET

Table 15

Project Name:	St. Route 681 Phase 2 (F-7)	
County:	Floyd	
Type of Project:	Centralized	
Utility Provider:	Floyd County PSA	
Responsible Mgmt Entity?	Floyd County PSA	
Existing Water System?	No	
Existing Conditions:	The project area is currently not served by a public sewage system.	
Proposed Project:	The project consists of approximately 21,470 linear feet of 8-inch gravity sewer.	
Existing WWTP:	Name =	Floyd Town - Floyd County - Public Service Authority
	Design Flow =	0.1500
	Average Flow =	
	Receiving Stream =	Dodd Creek
	Stream Classification =	V
	Impaired Stream	Yes
Watershed or Adjacent Stream:	Name =	UT of Pine Creek and Pine Creek
	Impaired =	Yes
	Within Vicinity =	Yes
Equivalent Customers Served:	Residential =	58
	Industrial	0
	Commercial =	0
Health Hazard:	Known older homes with septic systems.	
Construction Feasibility:	WWTP/Collection System Available	
	WWTP/Collection System Upgrades Required	
	WWTP/Collection System Not Available	X
Growth Potential:	Residential growth potential	
Total Project Cost:	$2,376,200	
Present Worth Per Connection:	$41,390	

PROJECT DATA SHEET

Table 16

Project Name:	Willis (DC-2)
County:	Floyd
Type of Project:	Decentralized Wastewater System
Utility Provider:	Floyd County
Responsible Mgmt Entity?	Floyd County
Existing Water System?	No
Existing Conditions:	65 homes and businesses on large lots.
Proposed Project:	Septic tank effluent gravity system proposed for this community. Use community treatment system and conventional drainfield. Secondary treatment system (FAST) would serve this area since soils are excellent for subsurface disposal.
Existing WWTP:	Name = N/A Design Flow = Average Flow = Receiving Stream = Stream Classification = Impaired Stream
Watershed or Adjacent Stream:	Name = Greasy Creek Impaired = No Within Vicinity = No
Equivalent Customers Served:	Residential = 55 Industrial 0 Commercial = 10
Health Hazard:	No
Construction Feasibility:	WWTP/Collection System Available WWTP/Collection System Upgrades Required WWTP/Collection System Not Available
Growth Potential:	Yes
Total Project Cost:	$923,300
Present Worth Per Connection:	$16,506

Table 17

Project Name:	Check (DC-1)
County:	Floyd
Type of Project:	Decentralized
Utility Provider:	Floyd County
Responsible Mgmt Entity?	Floyd County
Existing Water System?	No
Existing Conditions:	Onsite systems with low densite housing (20 homes per mile)
Proposed Project:	Use Septic Tank Effluent Gravity (STEG) systems draining to a 10,000 GPD Treatment Facility serving 36 equivalent homes (ERCs) which includes church and elementary school. System could eventually be doubled in size to include MHP, county store , etc. along Route 642. Treatment system could be FAST (secondary) Treatment System with drainfield trenches. A small effluent pump station needed near Route 510.
Existing WWTP:	Name = N/A Design Flow = Average Flow = Receiving Stream = Stream Classification = Impaired Stream
Watershed or Adjacent Stream:	Name = Little River Impaired = No Within Vicinity = No
Equivalent Customers Served:	Residential = 27 Industrial 0 Commercial = 2
Health Hazard:	No
Construction Feasibility:	WWTP/Collection System Available WWTP/Collection System Upgrades Required WWTP/Collection System Not Available
Growth Potential:	System could be doubled when desired.
Total Project Cost:	$538,300
Present Worth Per Connection:	$21,122

PROJECT DATA SHEET

Table 18

Project Name:	Carthage (DC-5)	
County:	Floyd	
Type of Project:	Decentralized	
Utility Provider:	Floyd County	
Responsible Mgmt Entity?	Floyd County	
Existing Water System?	No	
Existing Conditions:	Onsite systems with low densite housing (10 homes per mile)	
Proposed Project:	Use STEP systems and pump to treatment plant located near Alum Creek where effluent will be discharged into stream.	
Existing WWTP:	Name =	N/A
	Design Flow =	
	Average Flow =	
	Receiving Stream =	
	Stream Classification =	
	Impaired Stream	
Watershed or Adjacent Stream:	Name =	INDIAN CREEK
	Impaired =	NO
	Within Vicinity =	NO
Equivalent Customers Served:	Residential =	36
	Industrial	0
	Commercial =	0
Health Hazard:	NO	
Construction Feasibility:	WWTP/Collection System Available	
	WWTP/Collection System Upgrades Required	
	WWTP/Collection System Not Available	
Growth Potential:	Minimal growth expected.	
Total Project Cost:	$756,000	
Present Worth Per Connection:	$24,445	

Table 19

Project Name:	Indian Valley (DC-3)	
County:	Floyd	
Type of Project:	Decentralized	
Utility Provider:	Floyd County	
Responsible Mgmt Entity?	Floyd County	
Existing Water System?	No	
Existing Conditions:	County Sanitarian states that there is a large percentage of sites rejected in this area due to poor soils.	
Proposed Project:	STEP systems pumping to a treatment system located near the Indian Valley School would serve the 23 homes in this area, plus the fire station, school, and church.	
Existing WWTP:	Name =	N/A
	Design Flow =	
	Average Flow =	
	Receiving Stream =	
	Stream Classification =	
	Impaired Stream	
Watershed or Adjacent Stream:	Name =	Little Indian Creek
	Impaired =	No
	Within Vicinity =	No
Equivalent Customers Served:	Residential =	23
	Industrial	0
	Commercial =	3
Health Hazard:	No	
Construction Feasibility:	WWTP/Collection System Available	
	WWTP/Collection System Upgrades Required	
	WWTP/Collection System Not Available	
Growth Potential:	Minimal.	
Total Project Cost:	$637,000	
Present Worth Per Connection:	$27,607	

PROJECT DATA SHEET

Table 20

Project Name:	Copper Valley (DC-4)	
County:	Floyd	
Type of Project:	Decentralized	
Utility Provider:	Floyd County	
Responsible Mgmt Entity?	Floyd County	
Existing Water System?	No	
Existing Conditions:	Poor soils and County Sanitarian states that there is a large percentage of sites rejected in this area.	
Proposed Project:	STEP systems pumping to a treatment system located near the Floyd/Pulaski county line would serve the 15 homes in this area. Housing density is 10 homes per mile.	
Existing WWTP:	Name =	N/A
	Design Flow =	
	Average Flow =	
	Receiving Stream =	
	Stream Classification =	
	Impaired Stream	
Watershed or Adjacent Stream:	Name =	Indian Creek
	Impaired =	No
	Within Vicinity =	No
Equivalent Customers Served:	Residential =	15
	Industrial	0
	Commercial =	0
Health Hazard:	No	
Construction Feasibility:	WWTP/Collection System Available	
	WWTP/Collection System Upgrades Required	
	WWTP/Collection System Not Available	
Growth Potential:	Minimal	
Total Project Cost:	$337,400	
Present Worth Per Connection:	$26,411	

FLOYD COUNTY PROJECT MAPS

LEGEND

- GRAVITY SEWER
- EXISTING SEWER
- FORCE MAIN
- PROJECT LIMITS
- PUMP STATION
- GRINDER PUMP STATION
- TREATMENT PLANT/ EXPANSION

F-1

F-2

F-3

F-4

F-5

F-6

F-7

N
W E
S

0 1000 2000

SCALE: 1" = 2000'

SOURCE: FLOYD, VA.
U.S.G.S. QUADRANGLE

FIGURE 5:
TOWN OF FLOYD AREAS 1 THROUGH 7 (F-1 to F-7)
FLOYD COUNTY PUBLIC SERVICE AUTHORITY
New River Valley Planning District

LEGEND

- GRAVITY SEWER
- EXISTING GRAVITY SEWER
- FORCE MAIN
- PUMP STATION
- GRINDER PUMP STATION
- TREATMENT PLANT/ EXPANSION

N
W E
S

0 1000 2000

SCALE: 1" = 2000'

SOURCE: CHECK, VA.
U.S.G.S. QUADRANGLE

FIGURE 6:
CHECK (DC-I)
FLOYD COUNTY PUBLIC SERVICE AUTHORITY
Cumberland Plateau Planning District

LEGEND

- GRAVITY SEWER
- EXISTING GRAVITY SEWER
- FORCE MAIN
- PUMP STATION
- GRINDER PUMP STATION
- TREATMENT PLANT/ EXPANSION

N
W E
S

0 1000 2000

SCALE: 1" = 2000'

SOURCE: WILLIS, VA., ALUM RIDGE, VA., INDIAN VALLEY, VA. & DUGSPUR, VA. U.S.G.S. QUADRANGLES

FIGURE 7:
WILLIS (DC-2)
FLOYD COUNTY PUBLIC SERVICE AUTHORITY
New River Valley Planning District

LEGEND

- GRAVITY SEWER
- EXISTING GRAVITY SEWER
- FORCE MAIN
- PUMP STATION
- GRINDER PUMP STATION
- TREATMENT PLANT/ EXPANSION

N
W E
S

0 1000 2000

SCALE: 1" = 2000'

SOURCE: INDIAN VALLEY, VA.
U.S.G.S. QUADRANGLE

FIGURE 8:
INDIAN VALLEY (DC-3)
FLOYD COUNTY PUBLIC SERVICE AUTHORITY
New River Valley Planning District

LEGEND

- GRAVITY SEWER
- EXISTING GRAVITY SEWER
- FORCE MAIN
- PUMP STATION
- GRINDER PUMP STATION
- TREATMENT PLANT/ EXPANSION

DC-4

DC-5

N
W E
S

0 1000 2000

SCALE: 1" = 2000'

SOURCE: INDIAN VALLEY, VA. U.S.G.S. QUADRANGLE

FIGURE 9:
COPPER VALLEY (DC-4)
CERTHAGE (DC-5)
FLOYD COUNTY PUBLIC SERVICE AUTHORITY
New River Valley Planning District

GILES COUNTY PROJECT DATA SHEETS

PROJECT DATA SHEET

Table 29

Project Name:	Marville (G-1)
County:	Giles
Type of Project:	Centralized
Utility Provider:	Giles County BOS
Responsible Mgmt Entity?	Giles County BOS
Existing Water System?	Yes
Existing Conditions:	The project area is currently not served by a public sewage system.
Proposed Project:	The project consists of approximately 23,138 linear feet of 8-inch gravity sewer.

Existing WWTP:

Name =	Narrows Town - Sewage Treatment Plant
Design Flow =	0.2500
Average Flow =	0.18
Receiving Stream =	New River
Stream Classification =	IV
Impaired Stream	Yes

Watershed or Adjacent Stream:

Name =	Wolf Creek (tributary to New River)
Impaired =	Yes
Within Vicinity =	Yes

Equivalent Customers Served:

Residential =	108
Industrial	0
Commercial =	0

Health Hazard:	Known older homes with septic systems.

Construction Feasibility:

WWTP/Collection System Available	X
WWTP/Collection System Upgrades Required	
WWTP/Collection System Not Available	

Growth Potential:	Residential growth potential only
Total Project Cost:	$2,673,140
Present Worth Per Connection:	$24,992

Table 30

Project Name:	Route 100 - Ingram Village / Oney / Mutter (G-2)
County:	Giles
Type of Project:	Centralized
Utility Provider:	Giles County BOS / Town of Pearisburg
Responsible Mgmt Entity?	Giles County BOS / Town of Pearisburg
Existing Water System?	Yes
Existing Conditions:	The project area is currently not served by a public sewage system.
Proposed Project:	The project consists of approximately 50,775 linear feet of 8-inch gravity sewer, 7,641 linear feet of 2-inch force main, three grinder pump station, and upgrade of the Town's WWTP.

Existing WWTP:

Name =	Town of Pearisburg - Sewage Treatment Plant
Design Flow =	0.2750
Average Flow =	0.19
Receiving Stream =	New River
Stream Classification =	IV
Impaired Stream	Yes

Watershed or Adjacent Stream:

Name =	Two UTs to Walker Creek (tributary to New River)
Impaired =	Yes
Within Vicinity =	No

Equivalent Customers Served:

Residential =	296
Industrial	0
Commercial =	1

Health Hazard:	Documented septic failures.

Construction Feasibility:

WWTP/Collection System Available	
WWTP/Collection System Upgrades Required	X
WWTP/Collection System Not Available	

Growth Potential:	Residential growth potential only
Total Project Cost:	$7,119,379
Present Worth Per Connection:	$24,534

PROJECT DATA SHEET

Table 31

Project Name:	Cascades Drive Extension (G-3)
County:	Giles
Type of Project:	Centralized
Utility Provider:	Giles County BOS / Town of Pembroke
Responsible Mgmt Entity?	Giles County BOS / Town of Pembroke
Existing Water System?	No
Existing Conditions:	The project area is currently not served by a public sewage system.
Proposed Project:	The project consists of approximatley 12,461 linear feet of 8-inch gravity sewer.
Existing WWTP: Name =	Pembroke Town - Sewage Treatment Plant
Design Flow =	0.2000
Average Flow =	0.095
Receiving Stream =	New River
Stream Classification =	IV
Impaired Stream	Yes
Watershed or Adjacent Stream: Name =	Litte Stony Creek (tributary to New River)
Impaired =	No
Within Vicinity =	No
Equivalent Customers Served: Residential =	45
Industrial	0
Commercial =	0
Health Hazard:	Documented septic failures.
Construction Feasibility: WWTP/Collection System Available	X
WWTP/Collection System Upgrades Required	
WWTP/Collection System Not Available	
Growth Potential:	No growth potential
Total Project Cost:	$1,407,180
Present Worth Per Connection:	$31,590

Table 32

Project Name:	Virginia Heights / River Bend (G-4)
County:	Giles
Type of Project:	Centralized
Utility Provider:	Giles County BOS / Town of Pearisburg
Responsible Mgmt Entity?	Giles County BOS / Town of Pearisburg
Existing Water System?	No
Existing Conditions:	The project area is currently not served by a public sewage system.
Proposed Project:	The project consists of approximately 20,365 linear feet of 8-inch gravity sewer, 8,859 linear feet of 4-inch force main, 1,066 linear feet of 2-inch force main, one pump
Existing WWTP: Name =	Pearisburg Town - Sewage Treatment Plant
Design Flow =	0.2750
Average Flow =	0.19
Receiving Stream =	New River
Stream Classification =	IV
Impaired Stream	Yes
Watershed or Adjacent Stream: Name =	Walker Creek,New River
Impaired =	Yes
Within Vicinity =	Yes
Equivalent Customers Served: Residential =	99
Industrial	0
Commercial =	0
Health Hazard:	Known older homes with septic systems.
Construction Feasibility: WWTP/Collection System Available	X
WWTP/Collection System Upgrades Required	
WWTP/Collection System Not Available	
Growth Potential:	Residential growth potential only
Total Project Cost:	$3,133,806
Present Worth Per Connection:	$32,910

PROJECT DATA SHEET

Table 33

Project Name:	Mountain Lake (G-5)	
County:	Giles	
Type of Project:	Centralized	
Utility Provider:	Giles County BOS	
Responsible Mgmt Entity?	Giles County BOS	
Existing Water System?	Yes	
Existing Conditions:	The project area is currently not served by a public sewage system.	
Proposed Project:	The project consists of approximately 4,900 linear feet of 8-inch gravity sewer and 14,500 linear feet of 4-inch gravity force main.	
Existing WWTP:	Name =	Pembroke Town - Sewage Treatment Plant
	Design Flow =	0.2000
	Average Flow =	0.095
	Receiving Stream =	New River
	Stream Classification =	IV
	Impaired Stream	Yes
Watershed or Adjacent Stream:	Name =	Doe Creek (tributary to New River)
	Impaired =	No
	Within Vicinity =	No
Equivalent Customers Served:	Residential =	62
	Industrial	0
	Commercial =	0
Health Hazard:	Known older homes with septic systems.	
Construction Feasibility:	WWTP/Collection System Available	X
	WWTP/Collection System Upgrades Required	
	WWTP/Collection System Not Available	
Growth Potential:	No growth potential	
Total Project Cost:	$1,190,600	
Present Worth Per Connection:	$19,560	

Table 34

Project Name:	Pearisburg System Improvements (G-6)	
County:	Giles	
Type of Project:	Centralized	
Utility Provider:	Town of Pearisburg	
Responsible Mgmt Entity?	Town of Pearisburg	
Existing Water System?	Yes	
Existing Conditions:	The project area is currently served by 107 manholes in need of replacement.	
Proposed Project:	The project consists of the replacement of 107 manholes.	
Existing WWTP:	Name =	Town of Pearisburg - Sewage Treatment Plant
	Design Flow =	0.2750
	Average Flow =	0.19
	Receiving Stream =	New River
	Stream Classification =	IV
	Impaired Stream	Yes
Watershed or Adjacent Stream:	Name =	New River
	Impaired =	No
	Within Vicinity =	No
Equivalent Customers Served:	Residential =	0
	Industrial	0
	Commercial =	0
Health Hazard:	None.	
Construction Feasibility:	WWTP/Collection System Available	X
	WWTP/Collection System Upgrades Required	
	WWTP/Collection System Not Available	
Growth Potential:	No growth potential	
Total Project Cost:	$389,500	
Present Worth Per Connection:	n/a	

PROJECT DATA SHEET

Table 35

Project Name:	Pearisburg System Improvements (G-7)
County:	Giles
Type of Project:	Centralized
Utility Provider:	Town of Pearisburg
Responsible Mgmt Entity?	Town of Pearisburg
Existing Water System?	Yes
Existing Conditions:	The project is currently served with 8-inch gravity sewer in need of upgrade.
Proposed Project:	The project consists of the replacement of approximately 1,700 linear feet of 8-inch gravity sewer.

Existing WWTP:	Name =	Town of Pearisburg - Sewage Treatment Plant
	Design Flow =	0.2750
	Average Flow =	0.19
	Receiving Stream =	New River
	Stream Classification =	IV
	Impaired Stream	Yes
Watershed or Adjacent Stream:	Name =	New River
	Impaired =	No
	Within Vicinity =	No
Equivalent Customers Served:	Residential =	0
	Industrial	0
	Commercial =	0

Health Hazard:	None.	
Construction Feasibility:	WWTP/Collection System Available	X
	WWTP/Collection System Upgrades Required	
	WWTP/Collection System Not Available	
Growth Potential:	No growth potential	
Total Project Cost:	$176,800	
Present Worth Per Connection:	n/a	

Table 36

Project Name:	Maybrook West (G-8)
County:	Giles
Type of Project:	Centralized
Utility Provider:	Giles County BOS
Responsible Mgmt Entity?	Giles County BOS
Existing Water System?	Yes
Existing Conditions:	The project area is currently not served by a public sewage system.
Proposed Project:	The project conists of approximately 1,100 linear feet of 12-inch gravity sewer, 8,090 linear feet of 10-inch gravity sewer, 50,780 linear feet of 8-inch gravity sewer,

Existing WWTP:	Name =	Pembroke Town - Sewage Treatment Plant
	Design Flow =	0.2000
	Average Flow =	0.095
	Receiving Stream =	New River
	Stream Classification =	IV
	Impaired Stream	Yes
Watershed or Adjacent Stream:	Name =	Sinking Creek (tributary to New River)
	Impaired =	No
	Within Vicinity =	No
Equivalent Customers Served:	Residential =	159
	Industrial	0
	Commercial =	0

Health Hazard:	Known older homes with septic systems.	
Construction Feasibility:	WWTP/Collection System Available	X
	WWTP/Collection System Upgrades Required	
	WWTP/Collection System Not Available	
Growth Potential:	Industrial and residential growth potential	
Total Project Cost:	$8,617,920	
Present Worth Per Connection:	$55,040	

PROJECT DATA SHEET

Table 37

Project Name:	Maybrook East Sub-Area (G-9)
County:	Giles
Type of Project:	Centralized
Utility Provider:	Giles County BOS
Responsible Mgmt Entity?	Giles County BOS
Existing Water System?	Yes
Existing Conditions:	The project area is currently not served by a public sewage system.
Proposed Project:	The project consists of approximately 34,420 linear feet of 8-inch gravity sewer, 1,490 linear feet feet of 6-inch force main, and one pump station.

Existing WWTP:	Name =	Pembroke Town - Sewage Treatment Plant
	Design Flow =	0.2000
	Average Flow =	0.095
	Receiving Stream =	New River
	Stream Classification =	IV
	Impaired Stream	Yes
Watershed or Adjacent Stream:	Name =	Sinking Creek (tributary to New River)
	Impaired =	No
	Within Vicinity =	No
Equivalent Customers Served:	Residential =	70
	Industrial	0
	Commercial =	0

Health Hazard:	Known older homes with septic systems.	
Construction Feasibility:	WWTP/Collection System Available	
	WWTP/Collection System Upgrades Required	
	WWTP/Collection System Not Available	X
Growth Potential:	Industrial and residential growth potential	
Total Project Cost:	$4,683,690	
Present Worth Per Connection:	$67,490	

Table 38

Project Name:	Newport Sub-Area (G-10)
County:	Giles
Type of Project:	Centralized
Utility Provider:	Giles County BOS
Responsible Mgmt Entity?	Giles County BOS
Existing Water System?	Yes
Existing Conditions:	The project area is currently not served by a public sewage system.
Proposed Project:	The project consists of approximately 35,410 linear feet of 8-inch gravity sewer.

Existing WWTP:	Name =	Town of Pembroke - Sewage Treatment Plant
	Design Flow =	0.2000
	Average Flow =	0.095
	Receiving Stream =	New River
	Stream Classification =	IV
	Impaired Stream	Yes
Watershed or Adjacent Stream:	Name =	Spruce Run (tributary to New River)
	Impaired =	No
	Within Vicinity =	No
Equivalent Customers Served:	Residential =	93
	Industrial	0
	Commercial =	7

Health Hazard:	Known older homes with septic systems.	
Construction Feasibility:	WWTP/Collection System Available	
	WWTP/Collection System Upgrades Required	
	WWTP/Collection System Not Available	X
Growth Potential:	Industrial and residential growth potential	
Total Project Cost:	$4,709,700	
Present Worth Per Connection:	$47,500	

PROJECT DATA SHEET

Table 39

Project Name:	Clover Hollow Sub-Area (G-11)
County:	Giles
Type of Project:	Centralized
Utility Provider:	Giles County BOS
Responsible Mgmt Entity?	Giles County BOS
Existing Water System?	Yes
Existing Conditions:	The project area is currently not served by a public sewage system.
Proposed Project:	The project consists of approximately 14,390 linear feet of 8-inch gravity sewer, 650 linear feet feet of 6-inch force main, and one pump station.
Existing WWTP:	Name = Pembroke Town - Sewage Treatment Plant Design Flow = 0.2000 Average Flow = 0.095 Receiving Stream = New River Stream Classification = IV Impaired Stream Yes
Watershed or Adjacent Stream:	Name = Clover Hollow, Sinking Creek (tributaries to New River) Impaired = No Within Vicinity = No
Equivalent Customers Served:	Residential = 34 Industrial 0 Commercial = 0
Health Hazard:	Known older homes with septic systems.
Construction Feasibility:	WWTP/Collection System Available WWTP/Collection System Upgrades Required WWTP/Collection System Not Available X
Growth Potential:	Industrial and residential growth potential
Total Project Cost:	$2,196,950
Present Worth Per Connection:	$65,120

Table 40

Project Name:	State Route 42 (G-12)
County:	Giles
Type of Project:	Centralized
Utility Provider:	Giles County BOS
Responsible Mgmt Entity?	Giles County BOS
Existing Water System?	No
Existing Conditions:	The project area is currently not served by a public sewage system.
Proposed Project:	The project consists of approximately 44,630 linear feet of 8-inch gravity sewer, 1,077 feet of 2-inch force main, and one grinder pump station.
Existing WWTP:	Name = Pembroke Town - Sewage Treatment Plant Design Flow = 0.2000 Average Flow = 0.095 Receiving Stream = New River Stream Classification = IV Impaired Stream Yes
Watershed or Adjacent Stream:	Name = Sinking Creek (tributary to New River) Impaired = No Within Vicinity = No
Equivalent Customers Served:	Residential = 57 Industrial 0 Commercial = 0
Health Hazard:	Known older homes with septic systems.
Construction Feasibility:	WWTP/Collection System Available WWTP/Collection System Upgrades Required WWTP/Collection System Not Available X
Growth Potential:	Residential growth potential only
Total Project Cost:	$5,351,063
Present Worth Per Connection:	$95,380

PROJECT DATA SHEET

Table 41

Project Name:	Sinking Creek North (G-13)
County:	Giles
Type of Project:	Centralized
Utility Provider:	Giles County BOS
Responsible Mgmt Entity?	Giles County BOS
Existing Water System?	Yes
Existing Conditions:	The project area is currently not served by a public sewage system.
Proposed Project:	The project consists of 33,145 linear feet of 8-inch gravity sewer, 2,530 linear feet of 4-inch force main, and two pump stations.

Existing WWTP:		
	Name =	Pembroke Town - Sewage Treatment Plant
	Design Flow =	0.2000
	Average Flow =	0.095
	Receiving Stream =	New River
	Stream Classification =	IV
	Impaired Stream	Yes

Watershed or Adjacent Stream:		
	Name =	Sinking Creek, New River
	Impaired =	No
	Within Vicinity =	No

Equivalent Customers Served:		
	Residential =	125
	Industrial	0
	Commercial =	0

Health Hazard:	Known older homes with septic systems.

Construction Feasibility:		
	WWTP/Collection System Available	
	WWTP/Collection System Upgrades Required	X
	WWTP/Collection System Not Available	

Growth Potential:	Residential growth only
Total Project Cost:	$4,497,940
Present Worth Per Connection:	$37,210

Table 42

Project Name:	Sinking Creek South Phase I (G-14)
County:	Giles
Type of Project:	Centralized
Utility Provider:	Giles County BOS
Responsible Mgmt Entity?	Giles County BOS
Existing Water System?	Yes
Existing Conditions:	The project area is currently not served by a public sewage system.
Proposed Project:	The project consists of approximately 39,910 linear feet of 8-inch gravity sewer, 4,380 linear feet of 4-inch force main, and two sewage pump stations.

Existing WWTP:		
	Name =	Pembroke Town - Sewage Treatment Plant
	Design Flow =	0.2000
	Average Flow =	0.095
	Receiving Stream =	New River
	Stream Classification =	IV
	Impaired Stream	Yes

Watershed or Adjacent Stream:		
	Name =	UT to Sinking Creek, Sinking Creek (tributary to New River)
	Impaired =	No
	Within Vicinity =	No

Equivalent Customers Served:		
	Residential =	48
	Industrial	0
	Commercial =	0

Health Hazard:	Known older homes with septic systems.

Construction Feasibility:		
	WWTP/Collection System Available	X
	WWTP/Collection System Upgrades Required	
	WWTP/Collection System Not Available	

Growth Potential:	Residential growth potential only
Total Project Cost:	$5,334,540
Present Worth Per Connection:	$112,180

PROJECT DATA SHEET

Table 43

Project Name:	Sinking Creek South Phase II (G-15)
County:	Giles
Type of Project:	Centralized
Utility Provider:	Giles County BOS
Responsible Mgmt Entity?	Giles County BOS
Existing Water System?	Yes
Existing Conditions:	The project area is currently not served by a public sewage system.
Proposed Project:	The project consists of approximately 9,000 linear feet of 8-inch gravity sewer.

Existing WWTP:		
	Name =	Pembroke Town - Sewage Treatment Plant
	Design Flow =	0.2000
	Average Flow =	0.095
	Receiving Stream =	New River
	Stream Classification =	IV
	Impaired Stream	Yes

Watershed or Adjacent Stream:		
	Name =	UT to Sinking Creek, Sinking Creek (tributary to New River)
	Impaired =	No
	Within Vicinity =	No

Equivalent Customers Served:		
	Residential =	31
	Industrial	0
	Commercial =	0

Health Hazard:	Known older homes with septic systems.

Construction Feasibility:		
	WWTP/Collection System Available	
	WWTP/Collection System Upgrades Required	
	WWTP/Collection System Not Available	X

Growth Potential:	Residential growth potential only
Total Project Cost:	$1,254,400
Present Worth Per Connection:	$44,430

Table 44

Project Name:	Shute Hollow (G-16)
County:	Giles
Type of Project:	Centralized
Utility Provider:	Giles County BOS
Responsible Mgmt Entity?	Giles County BOS
Existing Water System?	Yes
Existing Conditions:	The project area is currently not served by a public sewage system.
Proposed Project:	The project consists of approximately 28,618 linear feet of 8-inch gravity sewer.

Existing WWTP:		
	Name =	Narrows Town - Sewage Treatment Plant
	Design Flow =	0.2500
	Average Flow =	0.18
	Receiving Stream =	New River
	Stream Classification =	IV
	Impaired Stream	Yes

Watershed or Adjacent Stream:		
	Name =	New River
	Impaired =	No
	Within Vicinity =	No

Equivalent Customers Served:		
	Residential =	61
	Industrial	0
	Commercial =	0

Health Hazard:	None

Construction Feasibility:		
	WWTP/Collection System Available	X
	WWTP/Collection System Upgrades Required	
	WWTP/Collection System Not Available	

Growth Potential:	Residential growth potential only
Total Project Cost:	$3,127,040
Present Worth Per Connection:	$51,800

PROJECT DATA SHEET

Table 45

Project Name:	Ripplemead Community Sewer Project (DC-6)	
County:	Giles	
Type of Project:	Decentralized Wastewater System	
Utility Provider:	Giles County	
Responsible Mgmt Entity?	Giles County	
Existing Water System?	Public Water	
Existing Conditions:	Old homes on small lots. Many issues with failures and odors. Central sewerage would require a grinder pump station and a couple of miles of force mains for central sewer. Poor clay soils adversely affect onsite disposal. Community established about 1950s.	
Proposed Project:	Employ biofilter treatment system and uv disinfection and discharge into New River. Estimate of 105 gravity collection units and 35 pump systems required to flow to treatment system.	
Existing WWTP:	Name =	N/A
	Design Flow =	
	Average Flow =	
	Receiving Stream =	
	Stream Classification =	
	Impaired Stream	
Watershed or Adjacent Stream:	Name =	New River
	Impaired =	No
	Within Vicinity =	No
Equivalent Customers Served:	Residential =	140
	Industrial	0
	Commercial =	0
Health Hazard:	No	
Construction Feasibility:	WWTP/Collection System Available	No
	WWTP/Collection System Upgrades Required	
	WWTP/Collection System Not Available	
Growth Potential:	Residential growth estimated at 10%.	
Total Project Cost:	$1,821,400	
Present Worth Per Connection:	$15,707	

Table 46

Project Name:	Snidertown Community Sewer Project (DC-8)	
County:	Giles	
Type of Project:	Decentralized	
Utility Provider:	Giles County	
Responsible Mgmt Entity?	Giles County	
Existing Water System?	Permitted System	
Existing Conditions:	Several failures reported by Health Department. Sewer system badly needed.	
Proposed Project:	Combination of STEP/STEG collection. Treat to advanced secondary standard using biofilter. Disinfect and discharge to stream.	
Existing WWTP:	Name =	N/A
	Design Flow =	
	Average Flow =	
	Receiving Stream =	
	Stream Classification =	
	Impaired Stream	
Watershed or Adjacent Stream:	Name =	Stony Creek
	Impaired =	No
	Within Vicinity =	No
Equivalent Customers Served:	Residential =	24
	Industrial	0
	Commercial =	0
Health Hazard:	No	
Construction Feasibility:	WWTP/Collection System Available	No
	WWTP/Collection System Upgrades Required	
	WWTP/Collection System Not Available	
Growth Potential:	None.	
Total Project Cost:	$407,400	
Present Worth Per Connection:	$19,913	

PROJECT DATA SHEET

Table 47

Project Name:	Ram Wayside Sewer Project (DC-7)
County:	Giles
Type of Project:	Decentralized
Utility Provider:	Giles County
Responsible Mgmt Entity?	Giles County
Existing Water System?	Public Water
Existing Conditions:	These communities are located near Rich Creek where soils are awful. MHP is old and several trailers are vacant. Steep terrain at 10% overlooking New River. Approximately 50 homes needing sewer in this area.
Proposed Project:	Gravity collection should work well for this community. Advanced secondary treatment with UV disinfection system and discharge into Spring Hollow and then into New River.
Existing WWTP:	Name = N/A Design Flow = Average Flow = Receiving Stream = Stream Classification = Impaired Stream
Watershed or Adjacent Stream:	Name = Spring Hollow Impaired = No Within Vicinity = No
Equivalent Customers Served:	Residential = 50 Industrial 0 Commercial = 0
Health Hazard:	Yes
Construction Feasibility:	WWTP/Collection System Available: No WWTP/Collection System Upgrades Required: WWTP/Collection System Not Available:
Growth Potential:	The project area could easily be doubled with the addition of River Bend.
Total Project Cost:	$618,870
Present Worth Per Connection:	$15,079

Table 48

Project Name:	Staffordsville Community Sewer Project (DC-10)
County:	Giles
Type of Project:	Decentralized
Utility Provider:	Giles County
Responsible Mgmt Entity?	Giles County
Existing Water System?	Private Wells
Existing Conditions:	Parcell Lane and area above Route 100 has 14 homes and a church, while Cedar Crest Loop has 25 additional homes and businesses, totaling 40 EDUs. This area does not public water, and Walker Creek is impaired in this area.
Proposed Project:	Combination of STEP/STEG systems. Advanced secondary treatment with UV disinfection and discharge point.
Existing WWTP:	Name = N/A Design Flow = Average Flow = Receiving Stream = Stream Classification = Impaired Stream
Watershed or Adjacent Stream:	Name = WALKER CREEK Impaired = YES Within Vicinity = YES
Equivalent Customers Served:	Residential = 38 Industrial 0 Commercial = 2
Health Hazard:	YES
Construction Feasibility:	WWTP/Collection System Available: NO WWTP/Collection System Upgrades Required: WWTP/Collection System Not Available:
Growth Potential:	Minimal.
Total Project Cost:	$597,800
Present Worth Per Connection:	$18,018

PROJECT DATA SHEET

Table 49

Project Name:	Eggleston Community Sewer System (DC-9)
County:	Giles
Type of Project:	Decentralized
Utility Provider:	Giles County
Responsible Mgmt Entity?	Giles County
Existing Water System?	Private Wells
Existing Conditions:	30 homes in this community along New River. Sandy soils are available, but offers little treatment. New restaurant could not get onsite system and was forced to use discharge system.
Proposed Project:	Combination STEP/STEG collection with advance secondary treatment and UV disinfection.
Existing WWTP:	Name = N/A Design Flow = Average Flow = Receiving Stream = Stream Classification = Impaired Stream
Watershed or Adjacent Stream:	Name = NEW RIVER Impaired = NO Within Vicinity = NO
Equivalent Customers Served:	Residential = 26 Industrial 0 Commercial = 4
Health Hazard:	Yes
Construction Feasibility:	WWTP/Collection System Available: No WWTP/Collection System Upgrades Required: WWTP/Collection System Not Available:
Growth Potential:	Minimal.
Total Project Cost:	$439,600
Present Worth Per Connection:	$17,828

Table 50

Project Name:	Eggleston East/Campground Sewer System (DC-12)
County:	Giles
Type of Project:	Decentralized
Utility Provider:	Giles County
Responsible Mgmt Entity?	Giles County
Existing Water System?	Yes
Existing Conditions:	This project area is currently not served by a public sewage system. There are 25 permanent residences in the area, and many campers reside here during warm months. Sewage system is needed.
Proposed Project:	A 10,000 gpd treatment system is needed to serve the equivalent of 50 homes. The treated effluent would be disinfected and discharged into the New River. Most homes would be served by gravity flow to the treatment plant.
Existing WWTP:	Name = N/A Design Flow = Average Flow = Receiving Stream = Stream Classification = Impaired Stream
Watershed or Adjacent Stream:	Name = NEW RIVER Impaired = NO Within Vicinity = NO
Equivalent Customers Served:	Residential = 50 Industrial 0 Commercial = 0
Health Hazard:	Yes
Construction Feasibility:	WWTP/Collection System Available: No WWTP/Collection System Upgrades Required: WWTP/Collection System Not Available:
Growth Potential:	Minimal.
Total Project Cost:	$765,800
Present Worth Per Connection:	$17,950

PROJECT DATA SHEET

Table 51

Project Name:	Songer Town Community Sewer System (DC-11)	
County:	Giles	
Type of Project:	Decentralized	
Utility Provider:	Giles County	
Responsible Mgmt Entity?	Giles County	
Existing Water System?	Giles County	
Existing Conditions:	Failing or inadequate system, soil is thin and too steep to install disposal fields. Ground water is contaminated with fecal coliform bacteria.	
Proposed Project:	Community system to consist of one advanced treatment system (AX100) discharging to unnamed stream, 7 septic tanks with pumps (STEP) serving 13 homes and 2 STEG systems. Steep terrain complicates construction. UV disinfection required.	
Existing WWTP:	Name =	N/A
	Design Flow =	
	Average Flow =	
	Receiving Stream =	
	Stream Classification =	
	Impaired Stream	
Watershed or Adjacent Stream:	Name =	Sinking Creek
	Impaired =	No
	Within Vicinity =	No
Equivalent Customers Served:	Residential =	15
	Industrial	0
	Commercial =	0
Health Hazard:	No	
	0	
Construction Feasibility:	WWTP/Collection System Available	No
	WWTP/Collection System Upgrades Required	
	WWTP/Collection System Not Available	
Growth Potential:	None	
Total Project Cost:	$275,100	
Present Worth Per Connection:	$22,168	

GILES COUNTY PROJECT MAPS

LEGEND

- GRAVITY SEWER
- EXISTING SEWER
- FORCE MAIN
- PROJECT LIMITS
- PUMP STATION
- GRINDER PUMP STATION
- TREATMENT PLANT/ EXPANSION

G-1

G-16

N
W E
S

0 1000 2000

SCALE: 1" = 2000'

SOURCE: NARROWS, VA. & WV., OAKVALE, VA. & WV. U.S.G.S. QUADRANGLES

FIGURE 17:
MARVILLE (G-1) AND SHUTE HOLLOW (G-16)
GILES COUNTY BOARD OF SUPERVISORS
New River Valley Planning District

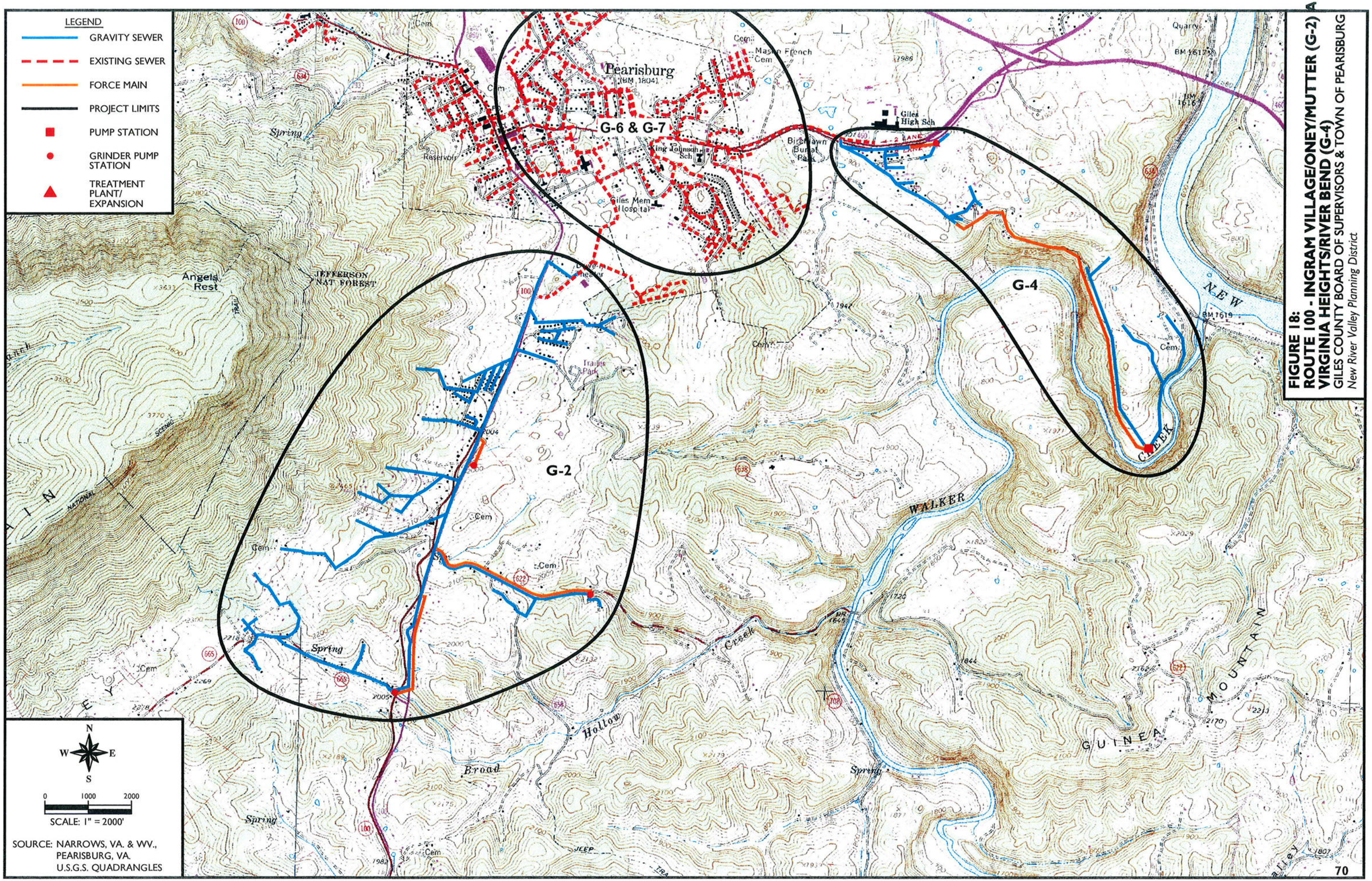

FIGURE 18:
ROUTE 100 - INGRAM VILLAGE/ONEY/MUTTER (G-2) AREA
VIRGINIA HEIGHTS/RIVER BEND (G-4)
GILES COUNTY BOARD OF SUPERVISORS & TOWN OF PEARISBURG
New River Valley Planning District

LEGEND

- GRAVITY SEWER
- EXISTING SEWER
- FORCE MAIN
- PROJECT LIMITS
- PUMP STATION
- GRINDER PUMP STATION
- TREATMENT PLANT/ EXPANSION

G-3

G-5

G-13

JEFFERSON NATIONAL FOREST

Mountain Lake

Pacers Gap

Golf Course

Barneys Wall

Bald Knob

Hoges Chapel

Mt Lebanon Ch

Stony Creek

Little Stony Creek

Doe Mountain

Spring Branch

Spring

Water Tank

Cem

Mays Hollow

Smith Hol

Millrace

N

W E

S

0 1000 2000

SCALE: 1" = 2000'

SOURCE: PEARISBURG, VA. & EGGLESTON, VA. U.S.G.S. QUADRANGLES

FIGURE 19:
CASCADES DRIVE EXTENSION (G-3) AND MOUNTAIN LAKE (G-5)
GILES COUNTY BOARD OF SUPERVISORS & TOWN OF PEMBROKE
New River Valley Planning District

LEGEND

- GRAVITY SEWER
- EXISTING GRAVITY SEWER
- FORCE MAIN
- PUMP STATION
- GRINDER PUMP STATION
- TREATMENT PLANT/ EXPANSION
- MANHOLES TO BE REPLACED

FIGURE 20:
PEARISBURG SYSTEM IMPROVEMENTS (G-6 & G-7)
TOWN OF PEARISBURG
New River Valley Planning District

G-6 & G-7

G-2

G-4

N
W E
S

0 1000 2000

SCALE: 1" = 2000'

SOURCE: NARROWS, VA. & WV.,
PEARISBURG, VA.
U.S.G.S. QUADRANGLES

LEGEND

- GRAVITY SEWER
- EXISTING SEWER
- FORCE MAIN
- PROJECT LIMITS
- PUMP STATION
- GRINDER PUMP STATION
- TREATMENT PLANT/ EXPANSION

G-13

G-14

G-8

G-9

G-11

G-10

Sinking Creek

Maybrook

Newport

SPRUCE RUN MOUNTAIN

Divide Ridge

Greenbrier River

Greenbrier Branch

Zion Ch

Cem

Water Tank

Newport Cem

GILES CO MONTGOMERY CO

GAP

N

W E

S

0 1000 2000

SCALE: 1" = 2000'

SOURCE: EGGLESTON, VA. U.S.G.S. QUADRANGLES

FIGURE 21:
MAYBROOK WEST (G-8) AND MAYBROOK EAST SUB-AREA (G-9)
GILES COUNTY BOARD OF SUPERVISORS
New River Valley Planning District

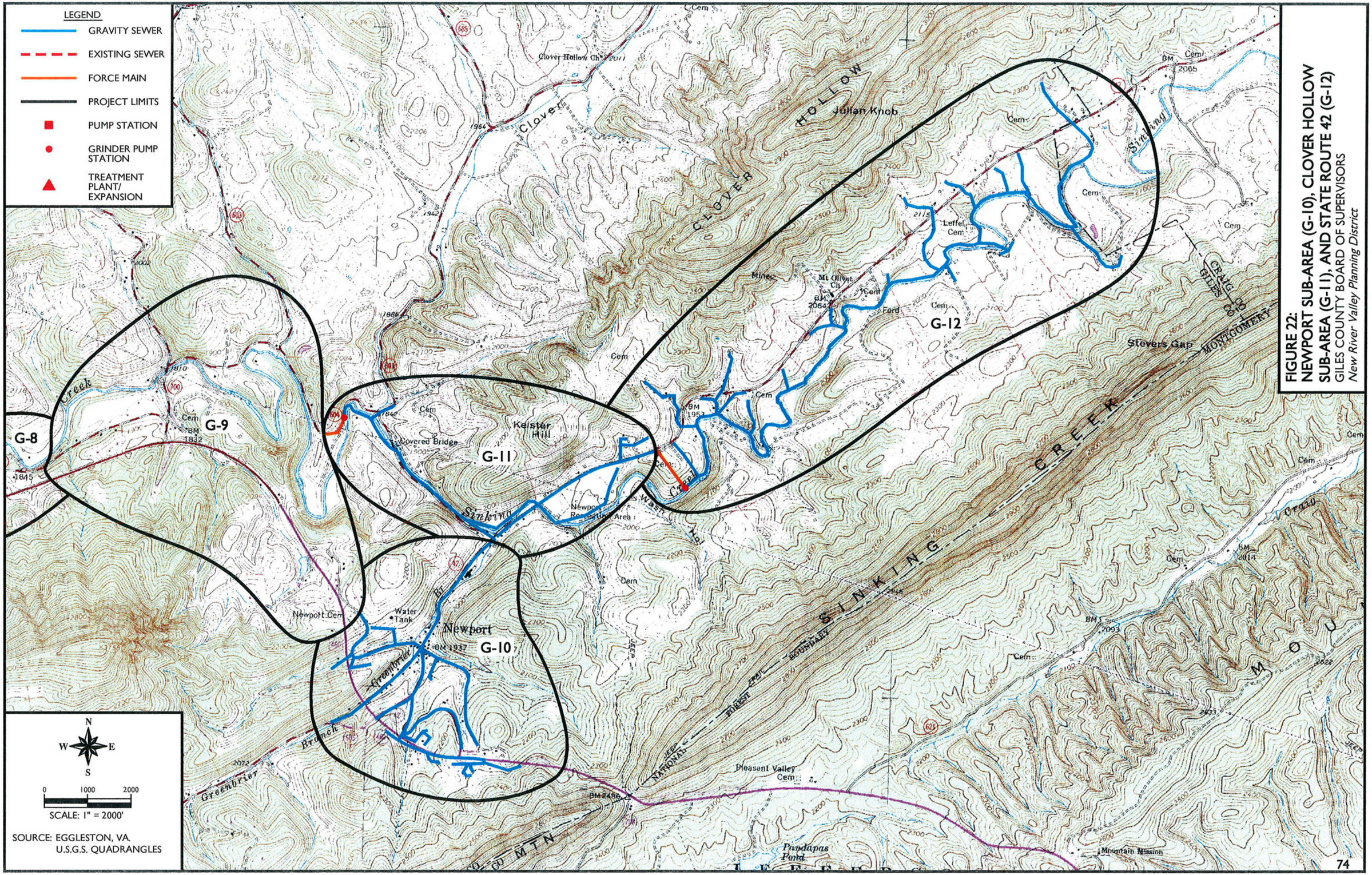

FIGURE 22:
NEWPORT SUB-AREA (G-10), CLOVER HOLLOW SUB-AREA (G-11), AND STATE ROUTE 42 (G-12)
GILES COUNTY BOARD OF SUPERVISORS
New River Valley Planning District

LEGEND

- GRAVITY SEWER
- EXISTING SEWER
- FORCE MAIN
- PROJECT LIMITS
- PUMP STATION
- GRINDER PUMP STATION
- TREATMENT PLANT/ EXPANSION

G-13

G-15

G-14

G-8

Hoges Chapel

Pembroke

Eggleston

Eggleston

Spring

Water Tank

Mt Lebanon Ch

Zion Ch

Lucas Memorial Ch

Cem

Quarry

Creek sinks

Gaging Sta

Walker Cem

BM 3088

BM 1761

BM 1648

BM 1636

BM 1655

BM 1755

Doe

Sinking

Sinking

NEW

NORFOLK AND WESTERN

NORFOLK

SPRUCE RUN MOUNTAIN TRAIL

N

W E

S

0 1000 2000

SCALE: 1" = 2000'

SOURCE: PEARISBURG, VA. & EGGLESTON, VA. U.S.G.S. QUADRANGLES

FIGURE 23:
SINKING CREEK NORTH (G-13) AND SINKING CREEK SOUTH PHASES I AND II (P-14 AND P-15)
GILES COUNTY BOARD OF SUPERVISORS
New River Valley Planning District

LEGEND

- GRAVITY SEWER
- EXISTING GRAVITY SEWER
- FORCE MAIN
- PUMP STATION
- GRINDER PUMP STATION
- TREATMENT PLANT/ EXPANSION

G-9

G-12

N
W E
S

0 1000 2000

SCALE: 1" = 2000'

SOURCE: NARROWS, VA. & WV., OAKVALE, VA. & WV. U.S.G.S. QUADRANGLES

FIGURE 24:
EGGLESTON (DC-9) AND EAST EGGLESTON (DC-12)
GILES COUNTY BOARD OF SUPERVISORS
New River Valley Planning District

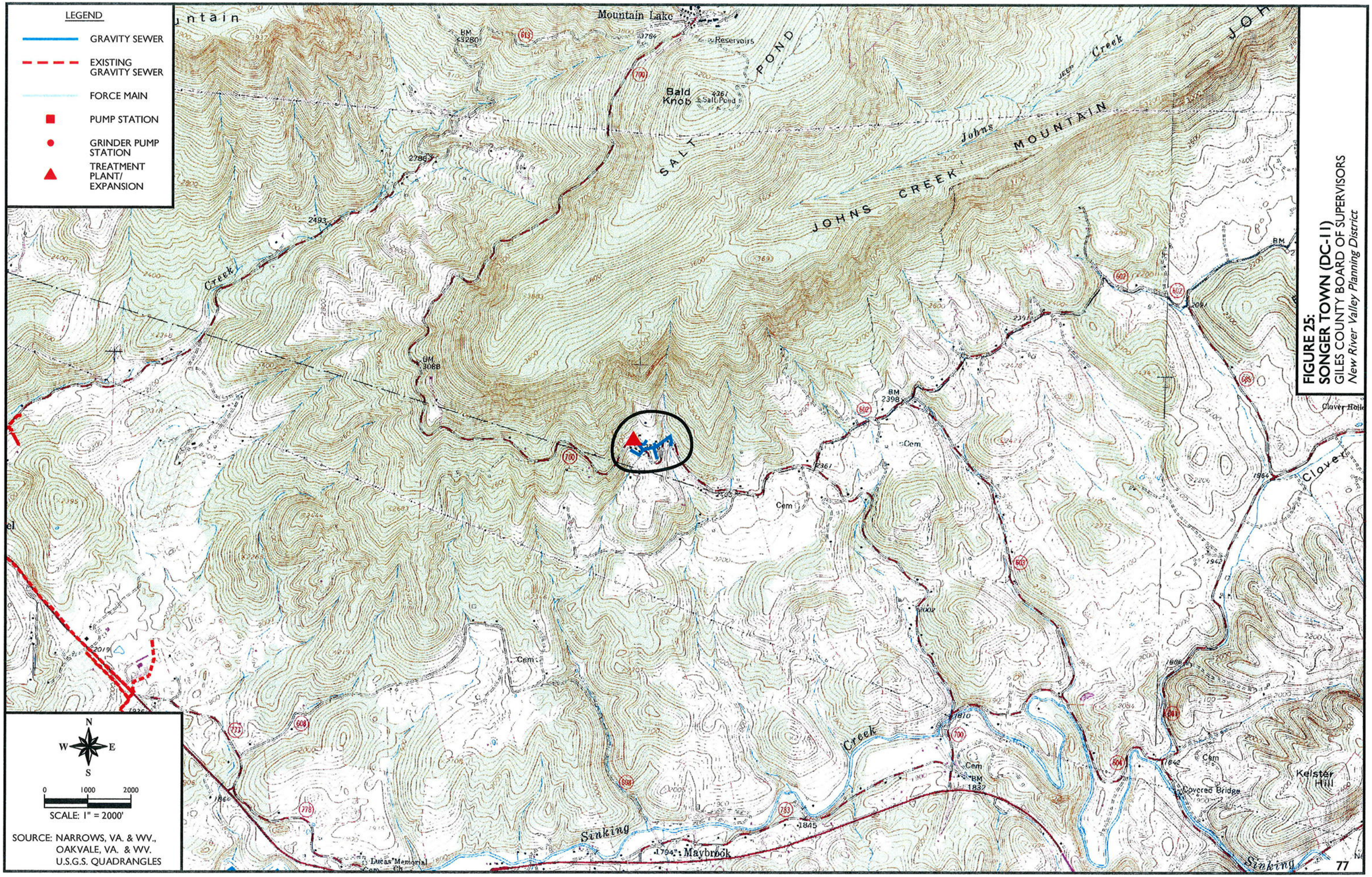

FIGURE 25:
SONGER TOWN (DC-11)
GILES COUNTY BOARD OF SUPERVISORS
New River Valley Planning District

IX. GILES COUNTY

Sixteen centralized and seven de-centralized projects were identified to improve water quality and alleviate human health concerns in Giles County.

The centralized projects focus on expanding the service areas of existing wastewater systems managed by the towns within the county. Seven of the centralized projects run along the Route 460 corridor in the Sinking Creek watershed, as well as out toward the Newport area along State Highway 42. De-centralized projects in Giles County tend to be separated from the centralized projects by extreme topography, limiting the effectiveness and efficiency of connecting to a traditional wastewater system.

Primary Priorities

Centralized Projects

Project Name	Project Cost
Marville (G-1)	$ 2,673,140
Route 100-Ingram Village/Oney/Mutter (G-2)	$ 7,119,379
Total	*$ 9,792,519*

Decentralized Projects

Project Name	Project Cost
Ripplemead (DC-6)	$ 1,821,400
Ram Wayside (DC-7)	$ 618,870
Snidertown (DC-8)	$ 407,400
Staffordsville (DC-10)	$ 597,800
Total	*$ 3,445,470*

Secondary Priorities

Centralized Projects

Project Name	Project Cost
Cascades Drive Extension (G-3)	$ 1,407,180
Virginia Heights/River Bend (G-4)	$ 3,133,806
Mountain Lake (G-5)	$ 1,190,600
Pearisburg System Improvements (G-6)	$ 389,500
Pearisburg System Improvements (G-7)	$ 176,800
Maybrook West (G-8)	$ 8,617,920
Maybrook East Sub-area (G-9)	$ 4,683,690
Newport Sub-area (G-10)	$ 4,709,700
Clover Hollow Sub-area (G-11)	$ 2,196,950
State Route 42 (G-12)	$ 5,351,063
Sinking Creek North (G-13)	$ 4,497,940
Sinking Creek South Phase 1 (G-14)	$ 5,334,540
Sinking Creek South Phase 2 (G-15)	$ 1,254,400
Shute Hollow (G-16)	$ 3,127,040
Total	*$ 46,071,129*

Decentralized Projects

Project Name	Project Cost
Eggleston (DC-9)	$ 439,600
Songer Town (DC-11)	$ 275,100
Eggleston East/Campground (DC-12)	$ 765,800
Total	*$ 1,480,500*

Total Funding Necessary for Giles County = $60,789,618

Table 21 - Overall Project Ranking - Centralized Projects
Giles County

County	Project ID	Total ERC's	Equivalent Connections	Present Worth Per Connection	Elimination of Health Hazard	Elimination of Water Quality Problems	Available Facilities	Potential Growth (Residential/Industrial)	Total Points
			20	***20***	***15***	***20***	***10***	***15***	***100***
Giles	G-1	108	10	10	10	20	10	10	70
Giles	G-2	297	15	10	15	10	5	15	70
Giles	G-4	99	5	5	10	20	10	10	60
Giles	G-8	159	10	0	10	0	10	15	45
Giles	G-13	125	10	5	10	0	10	10	45
Giles	G-5	62	5	15	10	0	10	0	40
Giles	G-3	45	5	5	15	0	10	0	35
Giles	G-14	48	5	0	10	0	10	10	35
Giles	G-9	70	5	0	10	0	0	15	30
Giles	G-10	93	5	0	10	0	0	15	30
Giles	G-11	34	5	0	10	0	0	15	30
Giles	G-15	31	5	0	10	0	0	10	25
Giles	G-16	61	5	0	0	0	10	10	25
Giles	G-12	57	5	0	10	0	0	10	25
Giles	G-6	0	0	0	0	0	10	0	10
Giles	G-7	0	0	0	0	0	10	0	10

Table 22 - Overall Project Ranking - Decentralized Projects
Giles County

County	Project ID	Total ERC's	Elimination of Health Hazard	Elimination of Water Quality Problems	Permitted Water System	Community Involvement	Utility Willingness	Financial Support	Present Worth Per Connection	Total Points
			20	***20***	***5***	***15***	***10***	***10***	***20***	***100***
Giles	DC-10	40	15	20	0	5	10	0	10	60
Giles	DC-6	140	20	5	5	5	10	0	15	60
Giles	DC-7	50	20	0	5	5	10	0	15	55
Giles	DC-8	24	20	5	5	5	10	0	10	55
Giles	DC-9	30	15	5	0	10	10	0	10	50
Giles	DC-12	50	15	5	0	10	10	0	10	50
Giles	DC-11	15	20	5	5	5	10	0	0	45

LEGEND

PROJECT AREA

COUNTY LIMITS

Centralized Projects

G-1. Marville
G-2. Route 100-Ingram Valley/Oney/ Mutter
G-3. Cascades Drive Extension
G-4. Virginia Heights/River Bend
G-5. Mountain Lake
G-6. Pearisburg System Improvements
G-7. Pearisburg System Improvements
G-8. Maybrook West
G-9. Maybrook East Sub-Area
G-10. Newport Sub-Area
G-11. Clover Hollow Sub-Area
G-12. State Route 42
G-13. Sinking Creek North
G-14. Sinking Creek South Phase I
G-15. Sinking Creek South Phase II
G-16. Shute Hollow

Decentralized Projects

DC-6. Ripplemead
DC-7. Ram Wayside
DC-8. Snidertown
DC-9. Eggleston
DC-10. Staffordsville
DC-11. Songertown
DC-12. Eggleston East

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SCALE: 1" = 15,000'

SOURCE: RADFORD, VA & BLUEFIELD, WV U.S.G.S. QUADRANGLE

FIGURE 10:
GILES COUNTY PROJECT AREAS
New River Valley Planning District

MARVILLE SEWER EXTENSION (G-1)

GILES COUNTY BOARD OF SUPERVISORS

New River Valley Planning District

Project Background

The Marville project area is located southwest of the Town of Narrows and extends primarily along State Route 61. The project area includes approximately 108 residential connections. Currently, the area is not served by a public sewage system. Residences in the area primarily utilize privately owned and maintained on-site septic systems. The project area lies in the watersheds of Wolf Creek, which has been identified by the Virginia Department of Environmental Quality (DEQ) as an impaired stream. It is anticipated that, with the provision of public sewage service, a moderate to high potential will exist for residential growth.

Proposed Facilities

The proposed facilities associated with the Marville Sewer Extension include approximately 23,138 linear feet of 8-inch gravity sewer. The extension will connect to the existing Town of Narrows sewage collection system and all wastewater generated in the project area will ultimately be conveyed to and treated at the existing Town of Narrows Wastewater Treatment Plant (WWTP). The Town of Narrows WWTP has a permitted capacity of 0.25 million gallons per day (MGD) and currently treats an average of 0.18 MGD. Treated effluent from the Town of Narrows WWTP discharges into the New River which is not identified by DEQ as an impaired stream. Based on a 50-year design period, a potential future customer base of 132 connections (anticipated 50-year growth of 20%) and a flow of 300 gallons per day (GPD) per connection, future average daily flow for the project area will be approximately 39,600 GPD or 0.04 MGD. Therefore, adequate capacity is available at the Town of Narrows WWTP to treat the anticipated wastewater generated in the Marville project area.

Project Costs

The preliminary probable project cost and annual operation and maintenance costs associated with the Marville Sewer Extension are $2,673,140 and $2,314, respectively. These costs result in an approximate present worth of $24,992 per existing connection.

PRELIMINARY PROBABLE PROJECT COST

Construction Cost				
23,138	L.F.	8" Gravity Sewer @	$80/L.F.	$1,851,040
108	EA.	Gravity Sewer Connections @	$1,900/EA.	$205,200
		Total Construction Cost		$2,056,240
Related Cost				
30	%	Total Construction Cost		$616,900
		Total Related Cost		$616,900
		TOTAL PROJECT COST		$2,673,140

ANNUAL OPERATION AND MAINTENACE (O&M) COST

Operation and Maintenance Cost				
23,138	L.F.	Gravity Sewer @	$0.10/L.F.	$2,314
		TOTAL ANNUAL O&M COST		$2,314

PRESENT WORTH OF ANNUAL O&M COST (30 YEARS, 8%)	$26,050
TOTAL PROJECT PRESENT WORTH	$2,699,190
PRESENT WORTH PER CONNECTION (108 CONNECTIONS)	$24,992

Table 23- PROJECT DATA SHEET

Project Name:		Marville (G-1)
County:		Giles
Type of Project:		Centralized
Utility Provider:		Giles County BOS
Responsible Mgmt Entity?		Giles County BOS
Existing Water System?		Yes
Existing Conditions:		The project area is currently not served by a public sewage system.
Proposed Project:		The project consists of approximately 23,138 linear feet of 8-inch gravity sewer.
Existing WWTP:	Name =	Narrows Town - Sewage Treatment Plant
	Design Flow =	0.2500
	Average Flow =	0.18
	Receiving Stream =	New River
	Stream Classification =	IV
	Impaired Stream	Yes
Watershed or Adjacent Stream:	Name =	Wolf Creek (tributary to New River)
	Impaired =	Yes
	Within Vicinity =	Yes
Equivalent Customers Served:	Residential =	108
	Industrial	0
	Commercial =	0
Health Hazard:		Known older homes with septic systems.
Construction Feasibility:	WWTP/Collection System Available	X
	WWTP/Collection System Upgrades Required	
	WWTP/Collection System Not Available	
Growth Potential:		Residential growth potential only
Total Project Cost:		$2,673,140
Present Worth Per Connection:		$24,992

LEGEND

- GRAVITY SEWER
- EXISTING SEWER
- FORCE MAIN
- PROJECT LIMITS
- PUMP STATION
- GRINDER PUMP STATION
- TREATMENT PLANT/ EXPANSION

G-I

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SCALE: 1" = 2000'

SOURCE: NARROWS, VA. & WV., OAKVALE, VA. & WV. U.S.G.S. QUADRANGLES

FIGURE 11:
MARVILLE (G-I)
GILES COUNTY BOARD OF SUPERVISORS
New River Valley Planning District

ROUTE 100 – INGRAM VILLAGE/ONEY/MUTTER SEWER EXTENSION (G-2)

GILES COUNTY BOARD OF SUPERVISORS & TOWN OF PEARISBURG

New River Valley Planning District

Project Background

The Route 100 – Ingram Village/Oney/Mutter project area is located southwest of the Town of Pearisburg and extends primarily along State Routes 100, 622, and 665. The project area includes approximately 297 residential connections. Currently, the area is not served by a public sewage system. Residences in the area primarily utilize privately owned and maintained on-site septic systems. The project area lies in the watersheds of Walker Creek, which has been identified by the Virginia Department of Environmental Quality (DEQ) as an impaired stream. It is anticipated that, with the provision of public sewage service, a moderate to high potential will exist for residential growth.

Proposed Facilities

The proposed facilities associated with the Ingram Village/Oney/Mutter Sewer Extension include approximately 50,775 linear feet of 8-inch gravity sewer, 7,641 linear feet of 2-inch force main, and three grinder pump stations. The extension will connect to the existing Town of Pearisburg sewage collection system and all wastewater generated in the project area will ultimately be conveyed to and treated at the existing Town of Pearisburg Wastewater Treatment Plant (WWTP). The Town of Pearisburg WWTP has a permitted capacity of 0.275 million gallons per day (MGD) and currently treats an average of 0.19 MGD. Treated effluent from the Town of Pearisburg WWTP discharges into the New River which is not identified by DEQ as an impaired stream. Based on a 50-year design period, a potential future customer base of 362 connections (anticipated 50-year growth of 20%) and a flow of 300 gallons per day (GPD) per connection, future average daily flow for the project area will be approximately 108,600 GPD or 0.109 MGD. Therefore, adequate capacity is available at the Town of Pearisburg WWTP will require an upgrade to treat the anticipated wastewater generated in the Ingram Village/Oney/Mutter project area.

Project Costs

The preliminary probable project cost and annual operation and maintenance costs associated with the Ingram Village/Oney/Mutter Sewer Extension are $7,119,379 and $14,842, respectively. These costs result in an approximate present worth of $24,534 per existing connection.

PRELIMINARY PROBABLE PROJECT COST

Construction Cost				
50,775	L.F.	8" Gravity Sewer @	$80/L.F.	$4,062,000
7,641	L.F.	2" Force Main @	$19/L.F.	$145,179
3	EA.	Grinder Pump Stations @	$75,000/EA.	$225,000
297	EA.	Gravity Sewer Connections @	$1,900/EA.	$564,300
		WWTP upgrade per connection over capacity	$6000/EA	$480,000
		Total Construction Cost		$5,476,479
Related Cost				
30	%	Total Construction Cost		$1,642,900
		Total Related Cost		$1,642,900
		TOTAL PROJECT COST		$7,119,379

ANNUAL OPERATION AND MAINTENACE (O&M) COST

Operation and Maintenance Cost				
50,775	L.F.	Gravity Sewer @	$0.10/L.F.	$5,078
7,641	L.F.	Force Main @	$0.10/L.F.	$764
3	EA.	Grinder Pump Stations @	$3,000/EA.	$9,000
		TOTAL ANNUAL O&M COST		$14,842

PRESENT WORTH OF ANNUAL O&M COST (30 YEARS, 8%) $167,090

TOTAL PROJECT PRESENT WORTH $7,286,469

PRESENT WORTH PER CONNECTION (297 CONNECTIONS) $24,534

Table 24 - PROJECT DATA SHEET

Project Name:		Route 100 - Ingram Village / Oney / Mutter (G-2)
Type of Project:		Centralized
Utility Provider:		Giles County BOS / Town of Pearisburg
Responsible Mgmt Entity?		Giles County BOS / Town of Pearisburg
Existing Water System?		Yes
Existing Conditions:		The project area is currently not served by a public sewage system.
Proposed Project:		The project consists of approximately 50,775 linear feet of 8-inch gravity sewer, 7,641 linear feet of 2-inch force main, and three grinder pump station.
Existing WWTP:	Name =	Town of Pearisburg - Sewage Treatment Plant
	Design Flow =	0.2750
	Average Flow =	0.19
	Receiving Stream =	New River
	Stream Classification =	IV
	Impaired Stream	Yes
Watershed or Adjacent Stream:	Name =	Two UTs to Walker Creek (tributary to New River)
	Impaired =	Yes
	Within Vicinity =	No
Equivalent Customers Served:	Residential =	296
	Industrial	0
	Commercial =	1
Health Hazard:		Documented septic failures.
Construction Feasibility:	WWTP/Collection System Available	X
	WWTP/Collection System Upgrades Required	
	WWTP/Collection System Not Available	
Growth Potential:		Residential growth potential only
Total Project Cost:		$7,119,379
Present Worth Per Connection:		$24,534

LEGEND

- GRAVITY SEWER
- EXISTING SEWER
- FORCE MAIN
- PROJECT LIMITS
- PUMP STATION
- GRINDER PUMP STATION
- TREATMENT PLANT/ EXPANSION

G-2

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SCALE: 1" = 2000'

SOURCE: NARROWS, VA. & WV., PEARISBURG, VA. U.S.G.S. QUADRANGLES

FIGURE 12
ROUTE 100 - INGRAM VILLAGE/ONEY/MUTTER (G-2)
GILES COUNTY BOARD OF SUPERVISORS & TOWN OF PEARISBURG
New River Valley Planning District

RIPPLEMEAD COMMUNITY SEWER PROJECT(DC-6)

GILES COUNTY PUBLIC SERVICE AUTHORITY

New River Valley Planning District

Project Background

The large community of Ripplemead was developed around 1950, and uses conventional onsite septic systems. The older homes were built on small lots. The soil in this area consists of thick clays which have a slow percolation rate, thus requiring large drain fields. Septic system repairs are very expensive. This community is located in karst topography, with numerous sinkholes evident throughout. Central collection and treatment would require a grinder pump station and several miles of force main to get the wastewater to the Pearisburg sewage treatment plant. A plant expansion project would also be required to provide capacity for treatment. Because of the high cost of providing a central system, a decentralized system is recommended for this community. There are approximately 140 homes in this community.

Proposed Facilities

The proposed facilities associated with this project include 140 septic tanks with approximately 25% requiring pump packages to discharge into the main collection lines. The collection system would consist of 20,000 feet of small diameter effluent sewer line. The proposed treatment system is an AdvanTex AX100 Treatment System using six treatment modules, and UV disinfection system with discharge.

Project Costs

The preliminary probable project cost and annual operation and maintenance costs are $1,821,400 and $33,540, respectively. These costs result in an approximate present worth of $15,707 per existing connection.

PRELIMINARY PROBABLE PROJECT COST

Construction Cost				
35	EA.	STEP Systems	$5,000	$175,000
105	EA.	STEG Systems	$3,000	$315,000
5,000	LF	6" Gr. Effluent Line	$14	$70,000
15,000	LF	4" Gr. Eff. Or 2" Force Main	$10	$150,000
50	EA.	Road Crossings	$2,500	$125,000
30,000	Gal.	Treatment System - AX100	$10	$300,000
24,000	Gal.	Treatment Tanks	$1.50	$36,000
30,000	Gal.	Discharge System - UV	$2	$60,000
140	EA.	Crush & Fill Existing Septic Tank	$500	$70,000
		Total Construction Cost		$1,301,000
Related Cost				
40	%	Total Related Cost		$520,400
		TOTAL PROJECT COST		$1,821,400

OPERATION AND MAINTENANCE (O&M) COST

Conn.	Unit	Description	$/Month	Monthly	Total Annual
140	EA.	Plant Operations & Maintenance	$12.50	$1,750	$21,000
35	EA.	STEP System Operations	$10.50	$368	$4,410
105	EA.	STEG System Operations	$5.50	$578	$6,930
		VPDES Permit Fee	$0.71	$100	$1,200
		TOTAL O&M COST		$2,795	$33,540

PRESENT WORTH OF ANNUAL O&M COST (30 YEARS, 8%)	$377,587
TOTAL PROJECT PRESENT WORTH	$2,198,987
PRESENT WORTH PER CONNECTION (140 CONNECTIONS)	$15,707

Table 25 - PROJECT DATA SHEET

Project Name:	Ripplemead Community Sewer Project (DC-6)	
County:	Giles	
Type of Project:	Decentralized Wastewater System	
Utility Provider:	Giles County	
Responsible Mgmt Entity?	Giles County	
Existing Water System?	Public Water	
Existing Conditions:	Old homes on small lots. Many issues with failures and odors. Central sewerage would require a grinder pump station and a couple of miles of force mains for central sewer. Poor clay soils adversely affect onsite disposal. Community established about 1950s.	
Proposed Project:	Employ biofilter treatment system and uv disinfection and discharge into New River. Estimate of 105 gravity collection units and 35 pump systems required to flow to treatment system.	
Existing WWTP:	Name =	N/A
	Design Flow =	
	Average Flow =	
	Receiving Stream =	
	Stream Classification =	
	Impaired Stream	
Watershed or Adjacent Stream:	Name =	New River
	Impaired =	No
	Within Vicinity =	No
Equivalent Customers Served:	Residential =	140
	Industrial	0
	Commercial =	0
Health Hazard:	No	
Construction Feasibility:	WWTP/Collection System Available	No
	WWTP/Collection System Upgrades Required	
	WWTP/Collection System Not Available	
Growth Potential:	Residential growth estimated at 10%.	
Total Project Cost:	$1,821,400	
Present Worth Per Connection:	$15,707	

LEGEND

- GRAVITY SEWER
- EXISTING GRAVITY SEWER
- FORCE MAIN
- PUMP STATION
- GRINDER PUMP STATION
- TREATMENT PLANT/ EXPANSION

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SCALE: 1" = 2000'

SOURCE: NARROWS, VA. & WV., OAKVALE, VA. & WV. U.S.G.S. QUADRANGLES

FIGURE 13:
RIPPLEMEAD (DC-6)
GILES COUNTY BOARD OF SUPERVISORS
New River Valley Planning District

RAM WAYSIDE SEWER PROJECT (DC-7)

GILES COUNTY PUBLIC SERVICE AUTHORITY

New River Valley Planning District

Project Background

This community, often referred to as the Mullins Trailer Park, consists of several older mobile homes located on a steep hillside overlooking the New River just west of the Town of Rich Creek. Public water is available, but no public sewer. The lack of a public sewer system, poor soils, and the high costs of repairing failing onsite systems has caused a blighted condition in this community. Many of the mobile homes are abandoned, but without sewer there is no reason to remove the old trailers and replace with newer ones. The New River around Rich Creek has fishing, boating and camping activity during the warmer months, and would benefit from having a adequate sewer system for the Ram Wayside.

Proposed Facilities

The proposed facilities associated with constructing a decentralized sewage treatment system include approximately 5,200 linear feet of small diameter sewer lines for collection, and a three unit treatment system capable of handling 15,000 gallons per day. Because of the poor soil for disposing of the treated effluent onsite, a discharging system is recommended. This type of system would require the treated effluent to be disinfected before it could be discharged into the New River.

Project Costs

The preliminary probable project cost and annual operation and maintenance costs are $618,870 and $12,000, respectively. These costs result in an approximate present worth of $15,079 per existing connection.

PRELIMINARY PROBABLE PROJECT COST

Construction Cost					
50	EA.	STEG Systems	$3,000		$150,000
1,200	LF	6" Gr. Effluent Line	$14		$16,800
4,225	LF	4" Gr. Eff. Or 2" Force Main	$10		$42,250
4	EA.	Road Crossings	$2,500		$10,000
15,000	Gal.	Treatment System	$10		$150,000
12,000	Gal.	Treatment Tanks	$1.50		$18,000
15,000	Gal.	Discharge System - UV	$2		$30,000
50	EA.	Crush & Fill Existing Septic Tank	$500		$25,000
		Total Construction Cost			$442,050
Related Cost					
40	%	Total Related Cost			$176,820
		TOTAL PROJECT COST			$618,870

OPERATION AND MAINTENANCE (O&M) COST

Conn.	Unit	Description	$/Month	Monthly	Total Annual
50	EA.	Plant Operations & Maintenance	$12.50	$625	$7,500
50	EA.	STEG System Operations	$5.50	$275	$3,300
		VPDES Permit Fee	$2.00	$100	$1,200
		TOTAL O&M COST		$1,000	$12,000

PRESENT WORTH OF ANNUAL O&M COST (30 YEARS, 8%) $135,094

TOTAL PROJECT PRESENT WORTH $753,964

PRESENT WORTH PER CONNECTION (50 CONNECTIONS) $15,079

Table 26 - PROJECT DATA SHEET

Project Name:	Ram Wayside Sewer Project (DC-7)	
County:	Giles	
Type of Project:	Decentralized	
Utility Provider:	Giles County	
Responsible Mgmt Entity?	Giles County	
Existing Water System?	Public Water	
Existing Conditions:	These communities are located near Rich Creek where soils are awful. MHP is old and several trailers are vacant. Steep terrain at 10% overlooking New River. Approximately 50 homes needing sewer in this area.	
Proposed Project:	Gravity collection should work well for this community. Advanced secondary treatment with UV disinfection system and discharge into Spring Hollow and then into New River.	
Existing WWTP:	Name =	N/A
	Design Flow =	
	Average Flow =	
	Receiving Stream =	
	Stream Classification =	
	Impaired Stream	
Watershed or Adjacent Stream:	Name =	Spring Hollow
	Impaired =	No
	Within Vicinity =	No
Equivalent Customers Served:	Residential =	50
	Industrial	0
	Commercial =	0
Health Hazard:	Yes	
Construction Feasibility:	WWTP/Collection System Available	No
	WWTP/Collection System Upgrades Required	
	WWTP/Collection System Not Available	
Growth Potential:	The project area could easily be doubled with the addition of River Bend.	
Total Project Cost:		$618,870
Present Worth Per Connection:		$15,079

LEGEND

- GRAVITY SEWER
- EXISTING GRAVITY SEWER
- FORCE MAIN
- PUMP STATION
- GRINDER PUMP STATION
- TREATMENT PLANT/ EXPANSION

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SCALE: 1" = 2000'

SOURCE: NARROWS, VA. & WV., OAKVALE, VA. & WV. U.S.G.S. QUADRANGLES

FIGURE 14:
RAM WAYSIDE (DC-7)
GILES COUNTY BOARD OF SUPERVISORS
New River Valley Planning District

SNIDERTOWN COMMUNITY SEWER PROJECT (DC-8)

GILES COUNTY PUBLIC SERVICE AUTHORITY

New River Valley Planning District

Project Background

This community is located beside Stony Creek and directly in front of the chemical lime plant on State Route 635. Stony Creek is a beautiful trout steam, but is receiving pollutants from the inadequate onsite septic systems in this community. Several failures have been reported to the Health Department. Stony Creek discharges into the New River just above the Ripplemead Community. There are 24 equivalent residential connections, which includes a church.

Proposed Facilities

The proposed facilities associated with this community system include approximately 7,000 linear feet of 4-inch gravity effluent sewer lines, 24 septic tanks, one-10,000 gallon per day treatment system with a permitted discharge.

Project Costs

The preliminary probable project cost and annual operation and maintenance costs associated with this decentralized wastewater system are $407,400 and $6,264, respectively. These costs result in an approximate present worth of $19,913 per existing connection.

PRELIMINARY PROBABLE PROJECT COST

Construction Cost					
24	EA.	STEG Systems	$3,000		$72,000
7,000	LF	4" Gr. Eff. Or 2" Force Main	$10		$70,000
2	EA.	Road Crossings	$2,500		$5,000
10,000	Gal.	Treatment System	$10		$100,000
8,000	Gal.	Treatment Tanks	$1.50		$12,000
10,000	Gal.	Discharge System - UV	$2		$20,000
24	EA.	Crush & Fill Existing Septic Tank	$500		$12,000
		Total Construction Cost			$291,000
Related Cost					
40	%	Total Related Cost			$116,400
		TOTAL PROJECT COST			$407,400

OPERATION AND MAINTENANCE (O&M) COST

Conn.	Unit	Description	$/Month	Monthly	Total Annual
24	EA.	Plant Operations & Maintenance	$12.50	$300	$3,600
24	EA.	STEG System Operations	$5.50	$132	$1,584
		VPDES Permit Fee	$3.75	$90	$1,080
		TOTAL O&M COST		$522	$6,264

PRESENT WORTH OF ANNUAL O&M COST (30 YEARS, 8%) $70,519

TOTAL PROJECT PRESENT WORTH $477,919

PRESENT WORTH PER CONNECTION (24 CONNECTIONS) $19,913

Table 27 - PROJECT DATA SHEET

Project Name:	Snidertown Community Sewer Project (DC-8)	
County:	Giles	
Type of Project:	Decentralized	
Utility Provider:	Giles County	
Responsible Mgmt Entity?	Giles County	
Existing Water System?	Permitted System	
Existing Conditions:	Several failures reported by Health Department. Sewer system badly needed.	
Proposed Project:	Combination of STEP/STEG collection. Treat to advanced secondary standard using biofilter. Disinfect and discharge to stream.	
Existing WWTP:	Name =	N/A
	Design Flow =	
	Average Flow =	
	Receiving Stream =	
	Stream Classification =	
	Impaired Stream	
Watershed or Adjacent Stream:	Name =	Stony Creek
	Impaired =	No
	Within Vicinity =	No
Equivalent Customers Served:	Residential =	24
	Industrial	0
	Commercial =	0
Health Hazard:	No	
Construction Feasibility:	WWTP/Collection System Available	No
	WWTP/Collection System Upgrades Required	
	WWTP/Collection System Not Available	
Growth Potential:	None.	
Total Project Cost:	$407,400	
Present Worth Per Connection:	$19,407	

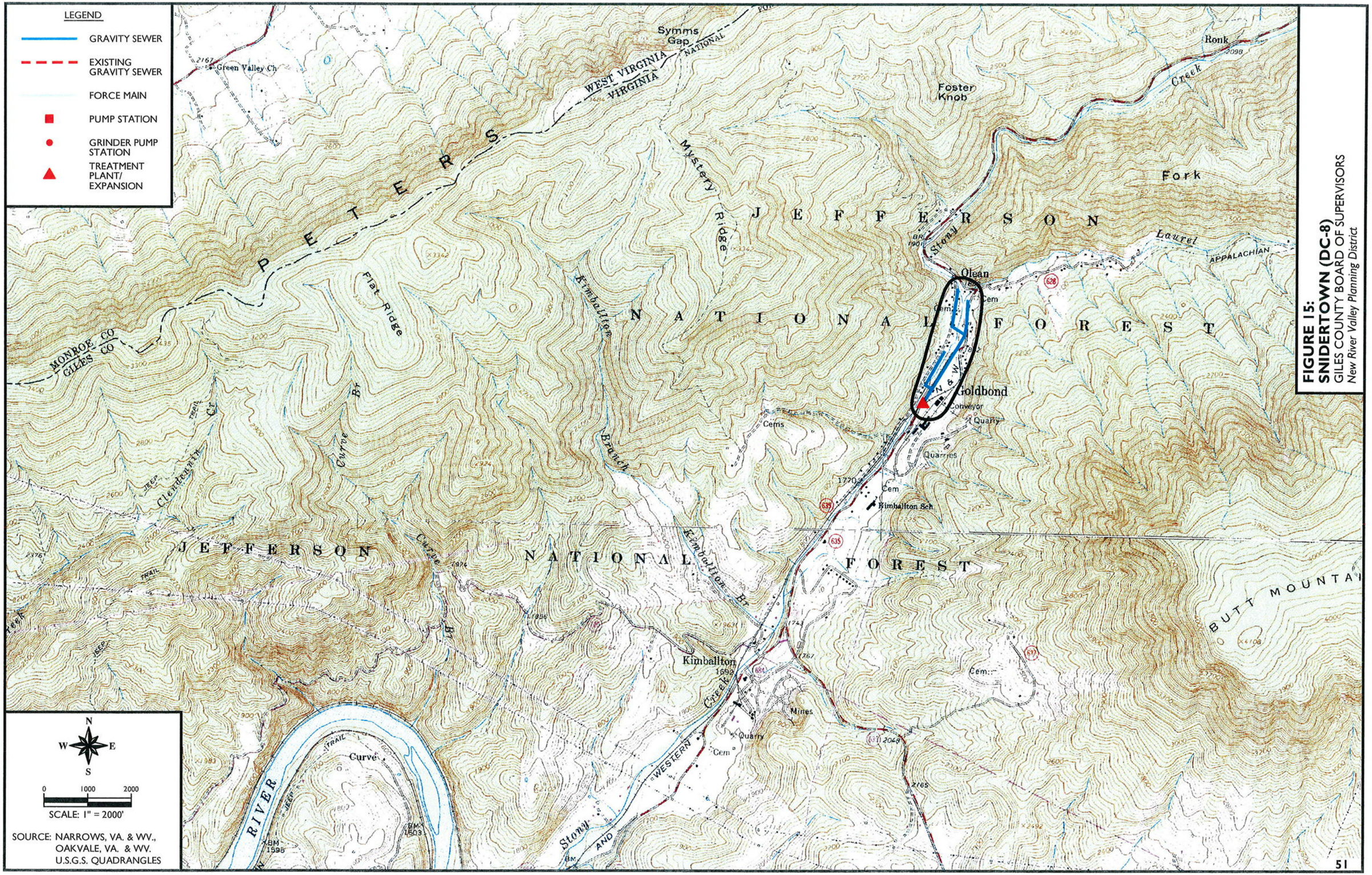

FIGURE 15:
SNIDERTOWN (DC-8)
GILES COUNTY BOARD OF SUPERVISORS
New River Valley Planning District

STAFFORDSVILLE COMMUNITY SEWER SYSTEM (DC-10)

GILES COUNTY PUBLIC SERVICE AUTHORITY

New River Valley Planning District

Project Background

Staffordsville is located in Giles County on Route 100 about four miles north of the Pulaski County line. It is situated on Walker Creek, a bacteria impaired stream which discharges into the New River between Pembroke and Pearisburg. This stream flows a long distance through karst areas with several significant caves present. These caves permit the ground water and surface waters to readily intermingle. This could potentially cause serious health problems since public water is not available in the community. The soils in the community of Staffordsville are slow to drain and are not conducive to long-life onsite septic systems. The project area includes Parcell Lane and the surrounding area above Route 100, and also the area between Route 100 and Walker Creek, which is accessed by the Cedar Lane Loop. The total project includes 40 homes and businesses.

Proposed Facilities

The proposed facilities associated with this project include approximately 9,000 feet of 4-inch effluent sewer line, with about an equal number of STEP and STEG Systemsflowing into the main collection lines. A 10,000 gallon per day (gpd) treatment system is needed to treat the wastewater from the 40 residences and businesses. The proposed treatment would be provided by 2 AdvanTex AX100 Treatment Units, followed by a UV disinfection system with discharge into Walker Creek. This decentralized treatment system would be owned and operated by the Giles County PSA.

Project Costs

The preliminary probable project cost and annual operation and maintenance costs associated with this proposed system are $597,800 and $10,920, respectively. These costs result in an approximate present worth of $18,018 per existing connection.

PRELIMINARY PROBABLE PROJECT COST

Construction Cost					
20	EA.	STEP Systems	$5,000		$100,000
20	EA.	STEG Systems	$3,000		$60,000
9,000	LF	4" Sewer Line	$10		$90,000
10	EA.	Road Crossings	$2,500		$25,000
10,000	Gal.	Treatment System - AX100	$10		$100,000
8,000	Gal.	Treatment Tanks	$1.50		$12,000
10,000	Gal.	Discharge System - UV	$2		$20,000
40	EA.	Crush & Fill Existing Septic Tank	$500		$20,000
		Total Construction Cost			$427,000
Related Cost					
40	%	Total Related Cost			$170,800
		TOTAL PROJECT COST			$597,800

OPERATION AND MAINTENANCE (O&M) COST

Conn.	Unit	Description	$/Month	Monthly	Total Annual
40	EA.	Plant Operations & Maintenance	$12.50	$500	$6,000
20	EA.	STEP System Operations	$10.50	$210	$2,520
20	EA.	STEG System Operations	$5.50	$110	$1,320
		VPDES Permit Fee	$2.25	$90	$1,080
		TOTAL O&M COST		$910	$10,920

PRESENT WORTH OF ANNUAL O&M COST (30 YEARS, 8%)	$122,935
TOTAL PROJECT PRESENT WORTH	$720,735
PRESENT WORTH PER CONNECTION (40 CONNECTIONS)	$18,018

Table 28 - PROJECT DATA SHEET

Project Name:	Staffordsville Community Sewer Project (DC-10)	
County:	Giles	
Type of Project:	Decentralized	
Utility Provider:	Giles County	
Responsible Mgmt Entity?	Giles County	
Existing Water System?	Private Wells	
Existing Conditions:	Parcell Lane and area above Route 100 has 14 homes and a church, while Cedar Crest Loop has 25 additional homes and businesses, totaling 40 EDUs. This area does not public water, and Walker Creek is impaired in this area.	
Proposed Project:	Combination of STEP/STEG systems. Advanced secondary treatment with UV disinfection and discharge point.	
Existing WWTP:	Name =	N/A
	Design Flow =	
	Average Flow =	
	Receiving Stream =	
	Stream Classification =	
	Impaired Stream	
Watershed or Adjacent Stream:	Name =	WALKER CREEK
	Impaired =	YES
	Within Vicinity =	YES
Equivalent Customers Served:	Residential =	38
	Industrial	0
	Commercial =	2
Health Hazard:	YES	
Construction Feasibility:	WWTP/Collection System Available	NO
	WWTP/Collection System Upgrades Required	
	WWTP/Collection System Not Available	
Growth Potential:	Minimal.	
Total Project Cost:	$597,800	
Present Worth Per Connection:	$18,018	

LEGEND

- GRAVITY SEWER
- EXISTING GRAVITY SEWER
- FORCE MAIN
- PUMP STATION
- GRINDER PUMP STATION
- TREATMENT PLANT/ EXPANSION

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SCALE: 1" = 2000'

SOURCE: NARROWS, VA. & WV., OAKVALE, VA. & WV. U.S.G.S. QUADRANGLES

FIGURE 16:
STAFFORDSVILLE (DC-10)
GILES COUNTY BOARD OF SUPERVISORS
New River Valley Planning District

MONTGOMERY COUNTY PROJECT DATA SHEETS

PROJECT DATA SHEET

Table 63

Project Name:	Cedar Run and Jenelle Rd. (M-1)	
County:	Montgomery	
Type of Project:	Centralized	
Utility Provider:	Montgomery County PSA	
Responsible Mgmt Entity?	Montgomery County PSA	
Existing Water System?	No	
Existing Conditions:	The project area is currently not served by a public sewage system.	
Proposed Project:	The project consists of approximately 600 L.F. of 10-inch gravity sewer, 28,800 L.F. of 8-inch gravity sewer, 16,700 L.F. of 8-inch force main, and one (1) sewage pump station.	
Existing WWTP:	Name =	Blacksburg-VPI Sanitation Authority WWTP
	Design Flow (MGD)=	9
	Average Flow =	4.8
	Receiving Stream =	New River
	Stream Classification =	IV
	Impaired Stream	Yes
Watershed or Adjacent Stream:	Name =	Cedar Run-tribuary to North Fork Roanoke River
	Impaired =	Yes
	Within Vicinity =	No
Equivalent Customers Served:	Residential =	135
	Industrial	0
	Commercial =	0
Health Hazard:	Documented Septic Failures	
Construction Feasibility:	WWTP/Collection System Available	X
	WWTP/Collection System Upgrades Required	
	WWTP/Collection System Not Available	
Growth Potential:	Residential	
Total Project Cost:	$5,115,400	
Present Worth Per Connection:	$38,660	

Table 64

Project Name:	Luster's Gate, Deercroft Dr, St. Andrew's Circle (M-2)	
County:	Montgomery	
Type of Project:	Centralized	
Utility Provider:	Montgomery County PSA	
Responsible Mgmt Entity?	Montgomery County PSA	
Existing Water System?	No	
Existing Conditions:	The project area is currently not served by a public sewage system.	
Proposed Project:	The project consists of approximately 29,300 L.F. of 8-inch gravity sewer.	
Existing WWTP:	Name =	Blacksburg-VPI Sanitation Authority WWTP
	Design Flow (MGD)=	9
	Average Flow =	4.8
	Receiving Stream =	New River
	Stream Classification =	IV
	Impaired Stream	Yes
Watershed or Adjacent Stream:	Name =	North Fork Roanoke River, UTs to North Fork Roanoke River
	Impaired =	Yes
	Within Vicinity =	Yes
Equivalent Customers Served:	Residential =	185
	Industrial	0
	Commercial =	0
Health Hazard:	none	
Construction Feasibility:	WWTP/Collection System Available	
	WWTP/Collection System Upgrades Required	X
	WWTP/Collection System Not Available	
Growth Potential:	Residential	
Total Project Cost:	$4,031,890	
Present Worth Per Connection:	$22,010	

PROJECT DATA SHEET

Table 65

Project Name:	Lusters Gate, Plank Dr, Clubhouse Rd (M-3)
County:	Montgomery
Type of Project:	Centralized
Utility Provider:	Montgomery County PSA
Responsible Mgmt Entity?	Montgomery County PSA
Existing Water System?	No
Existing Conditions:	The project area is currently not served by a public sewage system.
Proposed Project:	The project consists of approximately 27,800 L.F. of 8-inch gravity sewer.
Existing WWTP: Name =	Blacksburg-VPI Sanitation Authority WWTP
Design Flow (MGD)=	9
Average Flow =	4.8
Receiving Stream =	New River
Stream Classification =	IV
Impaired Stream	Yes
Watershed or Adjacent Stream: Name =	North Fork Roanoke River
Impaired =	Yes
Within Vicinity =	Yes
Equivalent Customers Served: Residential =	186
Industrial	0
Commercial =	0
Health Hazard:	none
Construction Feasibility: WWTP/Collection System Available	
WWTP/Collection System Upgrades Required	X
WWTP/Collection System Not Available	
Growth Potential:	Residential
Total Project Cost:	$3,350,700
Present Worth Per Connection:	$18,550

Table 66

Project Name:	Lusters Gate, Woodland Hills (M-4)
County:	Montgomery
Type of Project:	Centralized
Utility Provider:	Montgomery County PSA
Responsible Mgmt Entity?	Montgomery County PSA
Existing Water System?	No
Existing Conditions:	The project area is currently not served by a public sewage system.
Proposed Project:	The project consists of approximately 18,900 L.F. of 8-inch gravity sewer.
Existing WWTP: Name =	Blacksburg-VPI Sanitation Authority WWTP
Design Flow (MGD)=	9
Average Flow =	4.8
Receiving Stream =	New River
Stream Classification =	IV
Impaired Stream	Yes
Watershed or Adjacent Stream: Name =	North Fork Roanoke River, UTs to North Fork Roanoke River
Impaired =	Yes
Within Vicinity =	Yes
Equivalent Customers Served: Residential =	44
Industrial	0
Commercial =	0
Health Hazard:	none
Construction Feasibility: WWTP/Collection System Available	
WWTP/Collection System Upgrades Required	X
WWTP/Collection System Not Available	
Growth Potential:	Residential
Total Project Cost:	$2,074,300
Present Worth Per Connection:	$47,630

PROJECT DATA SHEET

Table 67

Project Name:	Lusters Gate, Harding Rd (M-5)	
County:	Montgomery	
Type of Project:	Centralized	
Utility Provider:	Montgomery County PSA	
Responsible Mgmt Entity?	Montgomery County PSA	
Existing Water System?	No	
Existing Conditions:	The project area is currently not served by a public sewage system.	
Proposed Project:	The project consists of approximately 25,200 L.F. of 8-inch gravity sewer.	
Existing WWTP:	Name =	Blacksburg-VPI Sanitation Authority WWTP
	Design Flow (MGD)=	9
	Average Flow =	4.8
	Receiving Stream =	New River
	Stream Classification =	IV
	Impaired Stream	Yes
Watershed or Adjacent Stream:	Name =	UTs to North Fork Roanoke River
	Impaired =	Yes
	Within Vicinity =	No
Equivalent Customers Served:	Residential =	131
	Industrial	0
	Commercial =	0
Health Hazard:	none	
Construction Feasibility:	WWTP/Collection System Available	
	WWTP/Collection System Upgrades Required	X
	WWTP/Collection System Not Available	
Growth Potential:	Residential	
Total Project Cost:	$2,944,400	
Present Worth Per Connection:	$22,700	

Talbe 68

Project Name:	Indian Run (M-6)	
County:	Montgomery	
Type of Project:	Centralized	
Utility Provider:	Montgomery County PSA	
Responsible Mgmt Entity?	Montgomery County PSA	
Existing Water System?	No	
Existing Conditions:	The project area is currently not served by a public sewage system.	
Proposed Project:	The project consists of approximately 43,100 L.F. of 8-inch gravity sewer.	
Existing WWTP:	Name =	Blacksburg-VPI Sanitation Authority WWTP
	Design Flow (MGD)=	9
	Average Flow =	4.8
	Receiving Stream =	New River
	Stream Classification =	IV
	Impaired Stream	Yes
Watershed or Adjacent Stream:	Name =	Indian Run-tributary of North Fork Roanoke River
	Impaired =	No
	Within Vicinity =	No
Equivalent Customers Served:	Residential =	128
	Industrial	0
	Commercial =	0
Health Hazard:	none	
Construction Feasibility:	WWTP/Collection System Available	
	WWTP/Collection System Upgrades Required	X
	WWTP/Collection System Not Available	
Growth Potential:	Residential	
Total Project Cost:	$4,798,600	
Present Worth Per Connection:	$37,870	

PROJECT DATA SHEET

Table 69

Project Name:	Merrimac Phase I (M-7)
County:	Montgomery
Type of Project:	Centralized
Utility Provider:	Montgomery County PSA
Responsible Mgmt Entity?	Montgomery County PSA
Existing Water System?	Yes
Existing Conditions:	The project area is currently not served by a public sewage system.
Proposed Project:	The project consists of approximately 700 L.F. of 10-inch gravity sewer and 32,800 L.F. of 8-inch gravity sewer.

Existing WWTP:	
Name =	Christiansburg Town - Sewage Treatment Plant (Crab Creek)
Design Flow (MGD)=	4
Average Flow =	2
Receiving Stream =	New River
Stream Classification =	IV
Impaired Stream	Yes

Watershed or Adjacent Stream:	
Name =	Slate Branch-trib. to New River
Impaired =	No
Within Vicinity =	No

Equivalent Customers Served:	
Residential =	320
Industrial	0
Commercial =	0

Health Hazard:	none

Construction Feasibility:	
WWTP/Collection System Available	X
WWTP/Collection System Upgrades Required	
WWTP/Collection System Not Available	

Growth Potential:	Industrial and Residential
Total Project Cost:	$4,411,700
Present Worth Per Connection:	$13,910

Table 70

Project Name:	Merrimac Phase II (M-8)
County:	Montgomery
Type of Project:	Centralized
Utility Provider:	Montgomery County PSA
Responsible Mgmt Entity?	Montgomery County PSA
Existing Water System?	Yes
Existing Conditions:	The project area is currently not served by a public sewage system.
Proposed Project:	The project consists of approximately 31,500 L.F. of 8-inch gravity sewer.

Existing WWTP:	
Name =	Christiansburg Town - Sewage Treatment Plant (Crab Creek)
Design Flow (MGD)=	4
Average Flow =	2
Receiving Stream =	New River
Stream Classification =	IV
Impaired Stream	Yes

Watershed or Adjacent Stream:	
Name =	Slate Branch-trib. to New River
Impaired =	No
Within Vicinity =	No

Equivalent Customers Served:	
Residential =	296
Industrial	0
Commercial =	0

Health Hazard:	none

Construction Feasibility:	
WWTP/Collection System Available	
WWTP/Collection System Upgrades Required	X
WWTP/Collection System Not Available	

Growth Potential:	Residential
Total Project Cost:	$4,007,200
Present Worth Per Connection:	$13,660

PROJECT DATA SHEET

Table 71

Project Name:	Merrimac Phase III (M-9)	
County:	Montgomery	
Type of Project:	Centralized	
Utility Provider:	Montgomery County PSA	
Responsible Mgmt Entity?	Montgomery County PSA	
Existing Water System?	No	
Existing Conditions:	The project area is currently not served by a public sewage system.	
Proposed Project:	The project consists of approximately 17,700 L.F. of 8-inch gravity sewer, 4,500 L.F. of 2-inch force main, and one (1) grinder pump station.	
Existing WWTP:	Name =	Blacksburg-VPI Sanitation Authority WWTP
	Design Flow (MGD)=	9
	Average Flow =	4.8
	Receiving Stream =	New River
	Stream Classification =	IV
	Impaired Stream	Yes
Watershed or Adjacent Stream:	Name =	UT to Wilson Creek
	Impaired =	Yes
	Within Vicinity =	Yes
Equivalent Customers Served:	Residential =	89
	Industrial	0
	Commercial =	0
Health Hazard:	none	
Construction Feasibility:	WWTP/Collection System Available	X
	WWTP/Collection System Upgrades Required	
	WWTP/Collection System Not Available	
Growth Potential:	Industrial and Residential	
Total Project Cost:	$2,269,300	
Present Worth Per Connection:	$26,160	

Table 72

Project Name:	Merrimac Phase IV (M-10)	
County:	Montgomery	
Type of Project:	Centralized	
Utility Provider:	Montgomery County PSA	
Responsible Mgmt Entity?	Montgomery County PSA	
Existing Water System?	No	
Existing Conditions:	The project area is currently not served by a public sewage system.	
Proposed Project:	The project consists of approximately 30,400 L.F. of 8-inch gravity sewer, 3,300 L.F. of 2-inch force main, and one (1) grinder pump station.	
Existing WWTP:	Name =	Blacksburg-VPI Sanitation Authority WWTP
	Design Flow (MGD)=	9
	Average Flow =	4.8
	Receiving Stream =	New River
	Stream Classification =	IV
	Impaired Stream	Yes
Watershed or Adjacent Stream:	Name =	Stroubles Creek
	Impaired =	Yes
	Within Vicinity =	Yes
Equivalent Customers Served:	Residential =	146
	Industrial	0
	Commercial =	0
Health Hazard:	none	
Construction Feasibility:	WWTP/Collection System Available	X
	WWTP/Collection System Upgrades Required	
	WWTP/Collection System Not Available	
Growth Potential:	Residential	
Total Project Cost:	$3,701,300	
Present Worth Per Connection:	$25,850	

PROJECT DATA SHEET

Table 73

Project Name:	Prices Fork (M-11)
County:	Montgomery
Type of Project:	Centralized
Utility Provider:	Montgomery County PSA
Responsible Mgmt Entity?	Montgomery County PSA
Existing Water System?	Yes
Existing Conditions:	The project area is currently not served by a public sewage system.
Proposed Project:	The project consists of approximately 18,600 L.F. of 8-inch gravity sewer, 3,200 L.F. of 4-inch force main, 5,500 L.F. of 2-inch force main, one (1) sewage pump station, and two (2) grinder pump stations.
Existing WWTP: Name =	Blacksburg-VPI Sanitation Authority WWTP
Design Flow (MGD)=	9
Average Flow =	4.8
Receiving Stream =	New River
Stream Classification =	IV
Impaired Stream	Yes
Watershed or Adjacent Stream: Name =	UT to Stroubles Creek, UT to Tom's Creek
Impaired =	Yes
Within Vicinity =	No
Equivalent Customers Served: Residential =	125
Industrial	0
Commercial =	0
Health Hazard:	Documented Septic Failures
Construction Feasibility: WWTP/Collection System Available	X
WWTP/Collection System Upgrades Required	
WWTP/Collection System Not Available	
Growth Potential:	Residential
Total Project Cost:	$3,015,500
Present Worth Per Connection:	$25,370

Table 74

Project Name:	Yellow Sulphur Rd to Town of Christiansburg (M-12)
County:	Montgomery
Type of Project:	Centralized
Utility Provider:	Montgomery County PSA
Responsible Mgmt Entity?	Montgomery County PSA
Existing Water System?	No
Existing Conditions:	The project area is currently not served by a public sewage system.
Proposed Project:	The project consists of approximately 14,300 L.F. of 8-inch gravity sewer, 2,700 L.F. of 2-inch force main, and one (1) grinder pump station.
Existing WWTP: Name =	Christiansburg Town - Sewage Treatment Plant (Crab Creek)
Design Flow (MGD)=	4
Average Flow =	2
Receiving Stream =	New River
Stream Classification =	IV
Impaired Stream	Yes
Watershed or Adjacent Stream: Name =	UT to Wilson Creek
Impaired =	Yes
Within Vicinity =	Yes
Equivalent Customers Served: Residential =	42
Industrial	0
Commercial =	0
Health Hazard:	Documented Septic Failures
Construction Feasibility: WWTP/Collection System Available	X
WWTP/Collection System Upgrades Required	
WWTP/Collection System Not Available	
Growth Potential:	Industrial and Residential
Total Project Cost:	$1,755,200
Present Worth Per Connection:	$43,060

PROJECT DATA SHEET

Table 75

Project Name:	Peppers Ferry Rd (Rt. 114) - Christiansburg West to Vicker Switch Rd (M-13)
County:	Montgomery
Type of Project:	Centralized
Utility Provider:	Montgomery County PSA
Responsible Mgmt Entity?	Montgomery County PSA
Existing Water System?	Yes
Existing Conditions:	The project area is currently not served by a public sewage system.
Proposed Project:	The project consists of approximately 33,000 L.F. of 8-inch gravity sewer, 16,000 L.F. of 4-inch force main, 6,900 L.F. of 2-inch force main, three (3) sewage pump stations, and one (1) grinder pump station.

Existing WWTP:	Name =	Christiansburg Town - Sewage Treatment Plant (Crab Creek)
	Design Flow (MGD)=	4
	Average Flow =	2
	Receiving Stream =	New River
	Stream Classification =	IV
	Impaired Stream	Yes
Watershed or Adjacent Stream:	Name =	UTs to Slate Branch and Crab Creek
	Impaired =	Yes
	Within Vicinity =	No
Equivalent Customers Served:	Residential =	118
	Industrial	0
	Commercial =	0
Health Hazard:		Documented Septic Failures

Construction Feasibility:	WWTP/Collection System Available	X
	WWTP/Collection System Upgrades Required	
	WWTP/Collection System Not Available	

Growth Potential:	Residential
Total Project Cost:	$2,051,300
Present Worth Per Connection:	$18,340

Table 76

Project Name:	Dominion Dr/Crab Creek Rd - South of Peppers Ferry Rd (M-14)
County:	Montgomery
Type of Project:	Centralized
Utility Provider:	Montgomery County PSA
Responsible Mgmt Entity?	Montgomery County PSA
Existing Water System?	Yes
Existing Conditions:	The project area is currently not served by a public sewage system.
Proposed Project:	The project consists of approximately 33,000 L.F. of 8-inch gravity sewer, 16,000 L.F. of 4-inch force main, 6,900 L.F. of 2-inch force main, three (3) sewage pump stations, and one (1) grinder pump station.

Existing WWTP:	Name =	Christiansburg Town - Sewage Treatment Plant (Crab Creek)
	Design Flow (MGD)=	4
	Average Flow =	2
	Receiving Stream =	New River
	Stream Classification =	IV
	Impaired Stream	Yes
Watershed or Adjacent Stream:	Name =	UTs to Slate Branch and Crab Creek
	Impaired =	Yes
	Within Vicinity =	No
Equivalent Customers Served:	Residential =	115
	Industrial	0
	Commercial =	0
Health Hazard:		Documented Septic Failures

Construction Feasibility:	WWTP/Collection System Available	X
	WWTP/Collection System Upgrades Required	
	WWTP/Collection System Not Available	

Growth Potential:	Residential
Total Project Cost:	$3,816,500
Present Worth Per Connection:	$34,520

PROJECT DATA SHEET

Table 77

Project Name:	Peppers Ferry Rd (Rt. 114) - Coal Hollow Rd to McCormick Rd (M-15)	
County:	Montgomery	
Type of Project:	Centralized	
Utility Provider:	Montgomery County PSA	
Responsible Mgmt Entity?	Montgomery County PSA	
Existing Water System?	Yes	
Existing Conditions:	The project area is currently not served by a public sewage system.	
Proposed Project:	The project consists of approximately 4,900 L.F. of 8-inch gravity sewer.	
Existing WWTP:	Name =	Blacksburg-VPI Sanitation Authority WWTP
	Design Flow (MGD)=	9
	Average Flow =	4.8
	Receiving Stream =	New River
	Stream Classification =	IV
	Impaired Stream	Yes
Watershed or Adjacent Stream:	Name =	UTs to Stroubles Creek
	Impaired =	Yes
	Within Vicinity =	No
Equivalent Customers Served:	Residential =	26
	Industrial	0
	Commercial =	0
Health Hazard:	Documented Septic Failures	
Construction Feasibility:	WWTP/Collection System Available	X
	WWTP/Collection System Upgrades Required	
	WWTP/Collection System Not Available	
Growth Potential:	Residential	
Total Project Cost:	$573,900	
Present Worth Per Connection:	$22,290	

Table 78

Project Name:	NW Rt 460 By-Pass - Ellett Rd (M-16)	
County:	Montgomery	
Type of Project:	Centralized	
Utility Provider:	Montgomery County PSA	
Responsible Mgmt Entity?	Montgomery County PSA	
Existing Water System?	Yes	
Existing Conditions:	The project area is currently not served by a public sewage system.	
Proposed Project:	The project consists of approximately 18,800 L.F. of 8-inch gravity sewer, 8,500 L.F. of 4-inch force main, 5,000 L.F. of 2-inch force main, one (1) sewage pump station, and one (1) sewage pump stations.	
Existing WWTP:	Name =	Christiansburg Town - Sewage Treatment Plant (Crab Creek)
	Design Flow (MGD)=	4
	Average Flow =	2
	Receiving Stream =	New River
	Stream Classification =	IV
	Impaired Stream	Yes
Watershed or Adjacent Stream:	Name =	Wilson Creek
	Impaired =	Yes
	Within Vicinity =	Yes
Equivalent Customers Served:	Residential =	115
	Industrial	0
	Commercial =	0
Health Hazard:	none	
Construction Feasibility:	WWTP/Collection System Available	X
	WWTP/Collection System Upgrades Required	
	WWTP/Collection System Not Available	
Growth Potential:	Industrial and Residential	
Total Project Cost:	$3,094,700	
Present Worth Per Connection:	$28,010	

PROJECT DATA SHEET

Table 79

Project Name:	Radford Rd - Rt. 11 (M-17)
County:	Montgomery
Type of Project:	Centralized
Utility Provider:	Montgomery County PSA
Responsible Mgmt Entity?	Montgomery County PSA
Existing Water System?	No
Existing Conditions:	The project area is currently not served by a public sewage system.
Proposed Project:	The project consists of approximately 16,800 L.F. of 8-inch gravity sewer, 13,700 L.F. of 4-inch force main, and two (1) sewage pump stations.
Existing WWTP: Name =	Christiansburg Town - Sewage Treatment Plant (Crab Creek)
Design Flow (MGD)=	4
Average Flow =	2
Receiving Stream =	New River
Stream Classification =	IV
Impaired Stream	Yes
Watershed or Adjacent Stream: Name =	UTs to Crab Creek
Impaired =	Yes
Within Vicinity =	No
Equivalent Customers Served: Residential =	71
Industrial	0
Commercial =	0
Health Hazard:	none
Construction Feasibility: WWTP/Collection System Available	X
WWTP/Collection System Upgrades Required	
WWTP/Collection System Not Available	
Growth Potential:	Residential
Total Project Cost:	$3,071,300
Present Worth Per Connection:	$45,330

Table 80

Project Name:	Mud Pike - North of I81 (M-18)
County:	Montgomery
Type of Project:	Centralized
Utility Provider:	Montgomery County PSA
Responsible Mgmt Entity?	Montgomery County PSA
Existing Water System?	Yes
Existing Conditions:	The project area is currently not served by a public sewage system.
Proposed Project:	The project consists of approximately 33,800 L.F. of 8-inch gravity sewer, 900 L.F. of 6-inch gravity sewer, 13,700 L.F. of 4-inch force main, 1,400 L.F. of 2-inch force main, two (2) sewage pump stations, and one (1) grinder pump station.
Existing WWTP: Name =	Christiansburg Town - Sewage Treatment Plant (Crab Creek)
Design Flow (MGD)=	4
Average Flow =	2
Receiving Stream =	New River
Stream Classification =	IV
Impaired Stream	Yes
Watershed or Adjacent Stream: Name =	UTs to Crab Creek and Meadow Creek
Impaired =	Yes
Within Vicinity =	No
Equivalent Customers Served: Residential =	247
Industrial	0
Commercial =	0
Health Hazard:	none
Construction Feasibility: WWTP/Collection System Available	X
WWTP/Collection System Upgrades Required	
WWTP/Collection System Not Available	
Growth Potential:	Industrial and Residential
Total Project Cost:	$5,490,300
Present Worth Per Connection:	$23,050

PROJECT DATA SHEET

Table 81

Project Name:	Flanagan Dr / Riner Rd / Life Dr - South of I81 Exit 114 (M-19)
County:	Montgomery
Type of Project:	Centralized
Utility Provider:	Montgomery County PSA
Responsible Mgmt Entity?	Montgomery County PSA
Existing Water System?	No
Existing Conditions:	The project area is currently not served by a public sewage system.
Proposed Project:	The project consists of approximately 16,400 L.F. of 8-inch gravity sewer, 3,800 L.F. of 4-inch force main, 1,400 L.F. of 2-inch force main, one (1) sewage pump station, and one (1) grinder pump station.

Existing WWTP:	Name =	Christiansburg Town - Sewage Treatment Plant (Crab Creek)
	Design Flow (MGD)=	4
	Average Flow =	2
	Receiving Stream =	New River
	Stream Classification =	IV
	Impaired Stream	Yes
Watershed or Adjacent Stream:	Name =	Smith Creek, UTs to Smith Creek
	Impaired =	No
	Within Vicinity =	No
Equivalent Customers Served:	Residential =	53
	Industrial	0
	Commercial =	0

Health Hazard:	none	
Construction Feasibility:	WWTP/Collection System Available	X
	WWTP/Collection System Upgrades Required	
	WWTP/Collection System Not Available	
Growth Potential:	Industrial and Residential	
Total Project Cost:	$2,432,000	
Present Worth Per Connection:	$48,050	

Table 82

Project Name:	Riner Phase I - Fairview Church Rd., Riner Rd. North of Union Valley Rd. (M-20)
County:	Montgomery
Type of Project:	Centralized
Utility Provider:	Montgomery County PSA
Responsible Mgmt Entity?	Montgomery County PSA
Existing Water System?	Yes
Existing Conditions:	The project area is currently not served by a public sewage system.
Proposed Project:	The project consists of approximately 27,400 L.F. of 8-inch gravity sewer, 500 L.F. of 6-inch gravity sewer, 2,400 L.F. of 4-inch force main, and one (1) sewage pump station.

Existing WWTP:	Name =	Riner Town -Sewage Treatment Plant
	Design Flow (MGD)=	0.1
	Average Flow =	0.022
	Receiving Stream =	Mill Creek
	Stream Classification =	IV
	Impaired Stream	Yes
Watershed or Adjacent Stream:	Name =	UTs to Mill Creek
	Impaired =	Yes
	Within Vicinity =	Yes
Equivalent Customers Served:	Residential =	149
	Industrial	0
	Commercial =	0

Health Hazard:	Known older homes (>30 yrs.) with septic systems.	
Construction Feasibility:	WWTP/Collection System Available	X
	WWTP/Collection System Upgrades Required	
	WWTP/Collection System Not Available	
Growth Potential:	Residential	
Total Project Cost:	$3,676,800	
Present Worth Per Connection:	$25,290	

PROJECT DATA SHEET

Table 83

Project Name:	Riner Phase II - Union Valley Rd. to Mill Creek (M-21)
County:	Montgomery
Type of Project:	Centralized
Utility Provider:	Montgomery County PSA
Responsible Mgmt Entity?	Montgomery County PSA
Existing Water System?	Yes
Existing Conditions:	The project area is currently not served by a public sewage system.
Proposed Project:	The project consists of approximately 17,700 L.F. of 8-inch gravity sewer, 3,700 L.F. of 4-inch force main, 1,500 L.F. of 2-inch force main, one (1) sewage pump station, and one (1) grinder pump station.

Existing WWTP:	
Name =	Riner Town -Sewage Treatment Plant
Design Flow (MGD)=	0.1
Average Flow =	0.022
Receiving Stream =	Mill Creek
Stream Classification =	IV
Impaired Stream	Yes

Watershed or Adjacent Stream:	
Name =	UTs to Mill Creek, Mill Creek
Impaired =	Yes
Within Vicinity =	Yes

Equivalent Customers Served:	
Residential =	126
Industrial	0
Commercial =	0

Health Hazard:	Known older homes (>30 yrs.) with septic systems.

Construction Feasibility:	
WWTP/Collection System Available	
WWTP/Collection System Upgrades Required	
WWTP/Collection System Not Available	X

Growth Potential:	Residential
Total Project Cost:	$2,746,300
Present Worth Per Connection:	$22,270

Table 84

Project Name:	Falling Branch Rd / Craig Mtn. Rd. (M-22)
County:	Montgomery
Type of Project:	Centralized
Utility Provider:	Montgomery County PSA
Responsible Mgmt Entity?	Montgomery County PSA
Existing Water System?	No
Existing Conditions:	The project area is currently not served by a public sewage system.
Proposed Project:	The project consists of approximately 6,700 L.F. of 8-inch gravity sewer, 1,900 L.F. of 2-inch force main, and one (1) grinder pump station.

Existing WWTP:	
Name =	Christiansburg Town - Sewage Treatment Plant (Crab Creek)
Design Flow (MGD)=	4
Average Flow =	2
Receiving Stream =	New River
Stream Classification =	IV
Impaired Stream	Yes

Watershed or Adjacent Stream:	
Name =	Falling Branch and UT-tributaries of Ellott Creek
Impaired =	No
Within Vicinity =	No

Equivalent Customers Served:	
Residential =	42
Industrial	0
Commercial =	0

Health Hazard:	Documented Septic Failures

Construction Feasibility:	
WWTP/Collection System Available	X
WWTP/Collection System Upgrades Required	
WWTP/Collection System Not Available	

Growth Potential:	Residential
Total Project Cost:	$945,600
Present Worth Per Connection:	$23,540

PROJECT DATA SHEET

Table 85

Project Name:	Shawsville - Buildout Existing Service Area (M-23)
County:	Montgomery
Type of Project:	Centralized
Utility Provider:	Montgomery County PSA
Responsible Mgmt Entity?	Montgomery County PSA
Existing Water System?	Yes
Existing Conditions:	The project area is currently not served by a public sewage system.
Proposed Project:	The project consists of approximately 15,400 L.F. of 8-inch gravity sewer, 700 L.F. of 2-inch force main, and one (1) grinder pump station.

Existing WWTP:

Name =	Shawsville - Sewage Treatment Plant
Design Flow (MGD)=	0.2
Average Flow =	0.053
Receiving Stream =	South Fork Roanoke River
Stream Classification =	V
Impaired Stream	Yes

Watershed or Adjacent Stream:

Name =	South Fork Roanoke River, Spring Branch
Impaired =	Yes
Within Vicinity =	Yes

Equivalent Customers Served:

Residential =	172
Industrial	0
Commercial =	0

Health Hazard:	Documented Septic Failures

Construction Feasibility:

WWTP/Collection System Available	X
WWTP/Collection System Upgrades Required	
WWTP/Collection System Not Available	

Growth Potential:	Residential
Total Project Cost:	$2,271,300
Present Worth Per Connection:	$13,510

Table 86

Project Name:	Ironto / I81 Exit 128 - Buildout Existing Service Area (M-24)
County:	Montgomery
Type of Project:	Centralized
Utility Provider:	Montgomery County PSA
Responsible Mgmt Entity?	Montgomery County PSA
Existing Water System?	Yes
Existing Conditions:	The project area is currently not served by a public sewage system.
Proposed Project:	The project consists of approximately 14,700 L.F. of 8-inch gravity sewer, 1,200 L.F. of 6-inch gravity sewer, 3,400 L.F. of 2-inch force main, and three (3) grinder pump stations.

Existing WWTP:

Name =	Elliston-Lafayette WWTP
Design Flow (MGD)=	0.25
Average Flow =	0.058
Receiving Stream =	South Fork Roanoke River
Stream Classification =	V
Impaired Stream	Yes

Watershed or Adjacent Stream:

Name =	Roanoke River, South & North Forks
Impaired =	Yes
Within Vicinity =	Yes

Equivalent Customers Served:

Residential =	79
Industrial	0
Commercial =	0

Health Hazard:	Documented Septic Failures

Construction Feasibility:

WWTP/Collection System Available	X
WWTP/Collection System Upgrades Required	
WWTP/Collection System Not Available	

Growth Potential:	Industrial and Residential
Total Project Cost:	$2,472,800
Present Worth Per Connection:	$32,860

PROJECT DATA SHEET

Table 87

Project Name:	Brush Mountain Phase I (M-25)	
County:	Montgomery	
Type of Project:	Centralized	
Utility Provider:	Montgomery County PSA	
Responsible Mgmt Entity?	Montgomery County PSA	
Existing Water System?	Yes	
Existing Conditions:	The project area is currently not served by a public sewage system.	
Proposed Project:	The project consists of approximately 7,600 linear feet of 10-inch gravity sewer, 18,200 linear feet of 8-inch sewer, 5,900 linear feet of 6-inch sewer, 4200 linear feet of 8-inch force main, and one pump station.	
Existing WWTP:	Name =	Blacksburg-VPI Sanitation Authority WWTP
	Design Flow (MGD)=	9
	Average Flow =	4.8
	Receiving Stream =	New River
	Stream Classification =	IV
	Impaired Stream	Yes
Watershed or Adjacent Stream:	Name =	Toms Creek, Uts to Toms Creek
	Impaired =	No
	Within Vicinity =	Yes
Equivalent Customers Served:	Residential =	95
	Industrial	0
	Commercial =	0
Health Hazard:	Known older homes (>30 yrs.) with septic systems.	
Construction Feasibility:	WWTP/Collection System Available	
	WWTP/Collection System Upgrades Required	X
	WWTP/Collection System Not Available	
Growth Potential:	Residential	
Total Project Cost:	$4,949,000	
Present Worth Per Connection:	$53,120	

Table 88

Project Name:	Brush Mountain Phase II (M-26)	
County:	Montgomery	
Type of Project:	Centralized	
Utility Provider:	Montgomery County PSA	
Responsible Mgmt Entity?	Montgomery County PSA	
Existing Water System?	No	
Existing Conditions:	The project area is currently not served by a public sewage system.	
Proposed Project:	The project consists of approximatley 22,100 linear feet of 8-inch gravity sewer and 1,700 linear feet of 6-inch gravity sewer.	
Existing WWTP:	Name =	Blacksburg-VPI Sanitation Authority WWTP
	Design Flow (MGD)=	9
	Average Flow =	4.8
	Receiving Stream =	New River
	Stream Classification =	IV
	Impaired Stream	Yes
Watershed or Adjacent Stream:	Name =	Toms Creek, Uts to Toms Creek
	Impaired =	No
	Within Vicinity =	Yes
Equivalent Customers Served:	Residential =	60
	Industrial	0
	Commercial =	0
Health Hazard:	Known older homes (>30 yrs.) with septic systems.	
Construction Feasibility:	WWTP/Collection System Available	
	WWTP/Collection System Upgrades Required	X
	WWTP/Collection System Not Available	
Growth Potential:	Residential	
Total Project Cost:	$3,323,400	
Present Worth Per Connection:	$55,840	

PROJECT DATA SHEET

Table 89

Project Name:	Brush Mountain Phase III (M-27)
County:	Montgomery
Type of Project:	Centralized
Utility Provider:	Montgomery County PSA
Responsible Mgmt Entity?	Montgomery County PSA
Existing Water System?	No
Existing Conditions:	The project area is currently not served by a public sewage system.
Proposed Project:	The project consists of approximately 19,500 linear feet of 8-inch gravity sewer and 1,500 linear feet of 6-inch gravity sewer.
Existing WWTP: Name =	Blacksburg-VPI Sanitation Authority WWTP
Design Flow (MGD)=	9
Average Flow =	4.8
Receiving Stream =	New River
Stream Classification =	IV
Impaired Stream	Yes
Watershed or Adjacent Stream: Name =	Toms Creek, Uts to Toms Creek
Impaired =	No
Within Vicinity =	Yes
Equivalent Customers Served: Residential =	130
Industrial	0
Commercial =	0
Health Hazard:	Known older homes (>30 yrs.) with septic systems.
Construction Feasibility: WWTP/Collection System Available	
WWTP/Collection System Upgrades Required	X
WWTP/Collection System Not Available	
Growth Potential:	Residential
Total Project Cost:	$3,368,300
Present Worth Per Connection:	$26,100

Table 90

Project Name:	Brush Mountain Phase IV (M-28)
County:	Montgomery
Type of Project:	Centralized
Utility Provider:	Montgomery County PSA
Responsible Mgmt Entity?	Montgomery County PSA
Existing Water System?	No
Existing Conditions:	The project area is currently not served by a public sewage system.
Proposed Project:	The project consists of approximatley 35,300 linear feet of 8-inch gravity sewer.
Existing WWTP: Name =	Blacksburg-VPI Sanitation Authority WWTP
Design Flow (MGD)=	9
Average Flow =	4.8
Receiving Stream =	New River
Stream Classification =	IV
Impaired Stream	Yes
Watershed or Adjacent Stream: Name =	Toms Creek, Uts to Toms Creek
Impaired =	No
Within Vicinity =	Yes
Equivalent Customers Served: Residential =	90
Industrial	0
Commercial =	0
Health Hazard:	none
Construction Feasibility: WWTP/Collection System Available	
WWTP/Collection System Upgrades Required	X
WWTP/Collection System Not Available	
Growth Potential:	Residential
Total Project Cost:	$4,735,900
Present Worth Per Connection:	$53,070

PROJECT DATA SHEET

Table 91

Project Name:	Brush Mountain Phase V (M-29)	
County:	Montgomery	
Type of Project:	Centralized	
Utility Provider:	Montgomery County PSA	
Responsible Mgmt Entity?	Montgomery County PSA	
Existing Water System?	No	
Existing Conditions:	The project area is currently not served by a public sewage system.	
Proposed Project:	The project consists of approximatley 31,700 linear feet of 8-inch gravity sewer and 900 linear feet of 6-inch gravity sewer.	
Existing WWTP:	Name =	Blacksburg-VPI Sanitation Authority WWTP
	Design Flow (MGD)=	9
	Average Flow =	4.8
	Receiving Stream =	New River
	Stream Classification =	IV
	Impaired Stream	Yes
Watershed or Adjacent Stream:	Name =	Toms Creek, Uts to Toms Creek
	Impaired =	No
	Within Vicinity =	Yes
Equivalent Customers Served:	Residential =	103
	Industrial	0
	Commercial =	0
Health Hazard:	none	
Construction Feasibility:	WWTP/Collection System Available	
	WWTP/Collection System Upgrades Required	X
	WWTP/Collection System Not Available	
Growth Potential:	Residential	
Total Project Cost:	$4,599,600	
Present Worth Per Connection:	$45,020	

Table 92

Project Name:	Brush Mountain Phase VI (M-30)	
County:	Montgomery	
Type of Project:	Centralized	
Utility Provider:	Montgomery County PSA	
Responsible Mgmt Entity?	Montgomery County PSA	
Existing Water System?	No	
Existing Conditions:	The project area is currently not served by a public sewage system.	
Proposed Project:	The project consists of approximatley 24,000 linear feet of 8-inch gravity sewer and 3,700 linear feet of 6-inch gravity sewer.	
Existing WWTP:	Name =	Blacksburg-VPI Sanitation Authority WWTP
	Design Flow (MGD)=	9
	Average Flow =	4.8
	Receiving Stream =	New River
	Stream Classification =	IV
	Impaired Stream	Yes
Watershed or Adjacent Stream:	Name =	Toms Creek, Uts to Toms Creek
	Impaired =	No
	Within Vicinity =	Yes
Equivalent Customers Served:	Residential =	128
	Industrial	0
	Commercial =	0
Health Hazard:	none	
Construction Feasibility:	WWTP/Collection System Available	
	WWTP/Collection System Upgrades Required	X
	WWTP/Collection System Not Available	
Growth Potential:	Residential	
Total Project Cost:	$4,023,800	
Present Worth Per Connection:	$31,680	

PROJECT DATA SHEET

Table 93

Project Name:	Falling Branch Industrial Park (M-31)
County:	Montgomery
Type of Project:	Centralized
Utility Provider:	Town of Christiansburg
Responsible Mgmt Entity?	Town of Christiansburg
Existing Water System?	Yes
Existing Conditions:	The project area is currently served by a public sewage system that requires repairs and/or line upgrades.
Proposed Project:	The project consists of approximately 2,100 L.F. of 8-inch gravity sewer replacement.

Existing WWTP:

Name =	Christiansburg Town - Sewage Treatment Plant (Crab Creek)
Design Flow (MGD)=	4
Average Flow =	2
Receiving Stream =	New River
Stream Classification =	IV
Impaired Stream	Yes

Watershed or Adjacent Stream:

Name =	Crab Creek, UTs to Smith Creek, UTs to Slate Branch
Impaired =	Yes
Within Vicinity =	No

Equivalent Customers Served:

Residential =	N/A
Industrial	
Commercial =	

Health Hazard:	none

Construction Feasibility:

WWTP/Collection System Available	X
WWTP/Collection System Upgrades Required	
WWTP/Collection System Not Available	

Growth Potential:	Residential
Total Project Cost:	$218,400
Present Worth Per Connection:	N/A

Table 94

Project Name:	Elk Drive Extension (M-32)
County:	Montgomery
Type of Project:	Centralized
Utility Provider:	Town of Christiansburg
Responsible Mgmt Entity?	Town of Christiansburg
Existing Water System?	Yes
Existing Conditions:	The project area is currently served by a public sewage system that requires repairs and/or line upgrades.
Proposed Project:	The project consists of approximately 1,900 L.F. of 8-inch gravity sewer replacement.

Existing WWTP:

Name =	Christiansburg Town - Sewage Treatment Plant (Crab Creek)
Design Flow (MGD)=	4
Average Flow =	2
Receiving Stream =	New River
Stream Classification =	IV
Impaired Stream	Yes

Watershed or Adjacent Stream:

Name =	Crab Creek, UTs to Smith Creek, UTs to Slate Branch
Impaired =	Yes
Within Vicinity =	No

Equivalent Customers Served:

Residential =	N/A
Industrial	
Commercial =	

Health Hazard:	none

Construction Feasibility:

WWTP/Collection System Available	X
WWTP/Collection System Upgrades Required	
WWTP/Collection System Not Available	

Growth Potential:	Residential
Total Project Cost:	$197,600
Present Worth Per Connection:	N/A

PROJECT DATA SHEET

Table 95

Project Name:	Silverlake Interceptor (M-33)
County:	Montgomery
Type of Project:	Centralized
Utility Provider:	Town of Christiansburg
Responsible Mgmt Entity?	Town of Christiansburg
Existing Water System?	Yes
Existing Conditions:	The project area is currently served by a public sewage system that requires repairs and/or line upgrades.
Proposed Project:	The project consists of approximately 12,000 L.F. of 8-inch gravity sewer replacement.
Existing WWTP: Name =	Christiansburg Town - Sewage Treatment Plant (Crab Creek)
Design Flow (MGD)=	4
Average Flow =	2
Receiving Stream =	New River
Stream Classification =	IV
Impaired Stream	Yes
Watershed or Adjacent Stream: Name =	Crab Creek, UTs to Smith Creek, UTs to Slate Branch
Impaired =	Yes
Within Vicinity =	No
Equivalent Customers Served: Residential =	N/A
Industrial	
Commercial =	
Health Hazard:	none
Construction Feasibility: WWTP/Collection System Available	X
WWTP/Collection System Upgrades Required	
WWTP/Collection System Not Available	
Growth Potential:	Residential
Total Project Cost:	$1,248,000
Present Worth Per Connection:	N/A

Table 96

Project Name:	White Pine Drive P.S. and Extension (M-34)
County:	Montgomery
Type of Project:	Centralized
Utility Provider:	Town of Christiansburg
Responsible Mgmt Entity?	Town of Christiansburg
Existing Water System?	Yes
Existing Conditions:	The project area is currently served by a public sewage system that requires repairs and/or line upgrades.
Proposed Project:	The project consists of approximately 4,500 L.F. of 8-inch gravity sewer replacement and 1,300 L.F. of 2-inch force main.
Existing WWTP: Name =	Christiansburg Town - Sewage Treatment Plant (Crab Creek)
Design Flow (MGD)=	4
Average Flow =	2
Receiving Stream =	New River
Stream Classification =	IV
Impaired Stream	Yes
Watershed or Adjacent Stream: Name =	Crab Creek, UTs to Smith Creek, UTs to Slate Branch
Impaired =	Yes
Within Vicinity =	No
Equivalent Customers Served: Residential =	N/A
Industrial	
Commercial =	
Health Hazard:	none
Construction Feasibility: WWTP/Collection System Available	X
WWTP/Collection System Upgrades Required	
WWTP/Collection System Not Available	
Growth Potential:	Residential
Total Project Cost:	$500,200
Present Worth Per Connection:	N/A

PROJECT DATA SHEET

Table 97

Project Name:	Rosehill Dr. Replacement (M-35)
County:	Montgomery
Type of Project:	Centralized
Utility Provider:	Town of Christiansburg
Responsible Mgmt Entity?	Town of Christiansburg
Existing Water System?	Yes
Existing Conditions:	The project area is currently served by a public sewage system that requires repairs and/or line upgrades.
Proposed Project:	The project consists of approximately 1,300 L.F. of 8-inch gravity sewer replacement.
Existing WWTP: Name =	Christiansburg Town - Sewage Treatment Plant (Crab Creek)
Design Flow (MGD)=	4
Average Flow =	2
Receiving Stream =	New River
Stream Classification =	IV
Impaired Stream	Yes
Watershed or Adjacent Stream: Name =	Crab Creek, UTs to Smith Creek, UTs to Slate Branch
Impaired =	Yes
Within Vicinity =	No
Equivalent Customers Served: Residential =	N/A
Industrial	
Commercial =	
Health Hazard:	none
Construction Feasibility: WWTP/Collection System Available	X
WWTP/Collection System Upgrades Required	
WWTP/Collection System Not Available	
Growth Potential:	Residential
Total Project Cost:	$135,200
Present Worth Per Connection:	N/A

Table 98

Project Name:	Lester St. Replacement (M-36)
County:	Montgomery
Type of Project:	Centralized
Utility Provider:	Town of Christiansburg
Responsible Mgmt Entity?	Town of Christiansburg
Existing Water System?	Yes
Existing Conditions:	The project area is currently served by a public sewage system that requires repairs and/or line upgrades.
Proposed Project:	The project consists of approximately 700 L.F. of 8-inch gravity sewer replacement.
Existing WWTP: Name =	Christiansburg Town - Sewage Treatment Plant (Crab Creek)
Design Flow (MGD)=	4
Average Flow =	2
Receiving Stream =	New River
Stream Classification =	IV
Impaired Stream	Yes
Watershed or Adjacent Stream: Name =	Crab Creek, UTs to Smith Creek, UTs to Slate Branch
Impaired =	Yes
Within Vicinity =	No
Equivalent Customers Served: Residential =	N/A
Industrial	
Commercial =	
Health Hazard:	none
Construction Feasibility: WWTP/Collection System Available	X
WWTP/Collection System Upgrades Required	
WWTP/Collection System Not Available	
Growth Potential:	Residential
Total Project Cost:	$72,800
Present Worth Per Connection:	N/A

PROJECT DATA SHEET

Table 99

Project Name:	W. Main St. Replacement - Robin Rd. (M-37)
County:	Montgomery
Type of Project:	Centralized
Utility Provider:	Town of Christiansburg
Responsible Mgmt Entity?	Town of Christiansburg
Existing Water System?	Yes
Existing Conditions:	The project area is currently served by a public sewage system that requires repairs and/or line upgrades.
Proposed Project:	The project consists of approximately 350 L.F. of 8-inch gravity sewer replacement.
Existing WWTP: Name =	Christiansburg Town - Sewage Treatment Plant (Crab Creek)
Design Flow (MGD)=	4
Average Flow =	2
Receiving Stream =	New River
Stream Classification =	IV
Impaired Stream	Yes
Watershed or Adjacent Stream: Name =	Crab Creek, UTs to Smith Creek, UTs to Slate Branch
Impaired =	Yes
Within Vicinity =	No
Equivalent Customers Served: Residential =	N/A
Industrial	
Commercial =	
Health Hazard:	none
Construction Feasibility: WWTP/Collection System Available	X
WWTP/Collection System Upgrades Required	
WWTP/Collection System Not Available	
Growth Potential:	Residential
Total Project Cost:	$36,400
Present Worth Per Connection:	N/A

Table 100

Project Name:	James St. Replacement (M-38)
County:	Montgomery
Type of Project:	Centralized
Utility Provider:	Town of Christiansburg
Responsible Mgmt Entity?	Town of Christiansburg
Existing Water System?	Yes
Existing Conditions:	The project area is currently served by a public sewage system that requires repairs and/or line upgrades.
Proposed Project:	The project consists of approximately 570 L.F. of 6-inch gravity sewer replacement.
Existing WWTP: Name =	Christiansburg Town - Sewage Treatment Plant (Crab Creek)
Design Flow (MGD)=	4
Average Flow =	2
Receiving Stream =	New River
Stream Classification =	IV
Impaired Stream	Yes
Watershed or Adjacent Stream: Name =	Crab Creek, UTs to Smith Creek, UTs to Slate Branch
Impaired =	Yes
Within Vicinity =	No
Equivalent Customers Served: Residential =	N/A
Industrial	
Commercial =	
Health Hazard:	none
Construction Feasibility: WWTP/Collection System Available	X
WWTP/Collection System Upgrades Required	
WWTP/Collection System Not Available	
Growth Potential:	Residential
Total Project Cost:	$53,440
Present Worth Per Connection:	N/A

PROJECT DATA SHEET

Table 101

Project Name:	Eanes Cir. Replacement (M-39)
County:	Montgomery
Type of Project:	Centralized
Utility Provider:	Town of Christiansburg
Responsible Mgmt Entity?	Town of Christiansburg
Existing Water System?	Yes
Existing Conditions:	The project area is currently served by a public sewage system that requires repairs and/or line upgrades.
Proposed Project:	The project consists of approximately 600 L.F. of 8-inch gravity sewer replacement.

Existing WWTP:		
	Name =	Christiansburg Town - Sewage Treatment Plant (Crab Creek)
	Design Flow (MGD)=	4
	Average Flow =	2
	Receiving Stream =	New River
	Stream Classification =	IV
	Impaired Stream	Yes

Watershed or Adjacent Stream:		
	Name =	Crab Creek, UTs to Smith Creek, UTs to Slate Branch
	Impaired =	Yes
	Within Vicinity =	No

Equivalent Customers Served:		
	Residential =	N/A
	Industrial	
	Commercial =	

Health Hazard:	none

Construction Feasibility:		
	WWTP/Collection System Available	X
	WWTP/Collection System Upgrades Required	
	WWTP/Collection System Not Available	

Growth Potential:	Residential
Total Project Cost:	$62,400
Present Worth Per Connection:	N/A

Table 102

Project Name:	Crab Creek Trunk Line Replacement (M-40)
County:	Montgomery
Type of Project:	Centralized
Utility Provider:	Town of Christiansburg
Responsible Mgmt Entity?	Town of Christiansburg
Existing Water System?	Yes
Existing Conditions:	The project area is currently served by a public sewage system that requires repairs and/or line upgrades.
Proposed Project:	The project consists of approximately 2200 L.F. of 24-inch gravity sewer replacement.

Existing WWTP:		
	Name =	Christiansburg Town - Sewage Treatment Plant (Crab Creek)
	Design Flow (MGD)=	4
	Average Flow =	2
	Receiving Stream =	New River
	Stream Classification =	IV
	Impaired Stream	Yes

Watershed or Adjacent Stream:		
	Name =	Crab Creek, UTs to Smith Creek, UTs to Slate Branch
	Impaired =	Yes
	Within Vicinity =	No

Equivalent Customers Served:		
	Residential =	N/A
	Industrial	
	Commercial =	

Health Hazard:	none

Construction Feasibility:		
	WWTP/Collection System Available	X
	WWTP/Collection System Upgrades Required	
	WWTP/Collection System Not Available	

Growth Potential:	Residential
Total Project Cost:	$291,800
Present Worth Per Connection:	N/A

PROJECT DATA SHEET

Table 103

Project Name:	Junkin St. Replacement (M-41)
County:	Montgomery
Type of Project:	Centralized
Utility Provider:	Town of Christiansburg
Responsible Mgmt Entity?	Town of Christiansburg
Existing Water System?	Yes
Existing Conditions:	The project area is currently served by a public sewage system that requires repairs and/or line upgrades.
Proposed Project:	The project consists of approximately 950 L.F. of 8-inch gravity sewer replacement.

Existing WWTP:	Name =	Christiansburg Town - Sewage Treatment Plant (Crab Creek)
	Design Flow (MGD)=	4
	Average Flow =	2
	Receiving Stream =	New River
	Stream Classification =	IV
	Impaired Stream	Yes
Watershed or Adjacent Stream:	Name =	Crab Creek, UTs to Smith Creek, UTs to Slate Branch
	Impaired =	Yes
	Within Vicinity =	No
Equivalent Customers Served:	Residential =	N/A
	Industrial	
	Commercial =	

Health Hazard:	none	
Construction Feasibility:	WWTP/Collection System Available	X
	WWTP/Collection System Upgrades Required	
	WWTP/Collection System Not Available	
Growth Potential:	Residential	
Total Project Cost:	$98,800	
Present Worth Per Connection:	N/A	

Table 104

Project Name:	Montague St. Replacement (M-42)
County:	Montgomery
Type of Project:	Centralized
Utility Provider:	Town of Christiansburg
Responsible Mgmt Entity?	Town of Christiansburg
Existing Water System?	Yes
Existing Conditions:	The project area is currently served by a public sewage system that requires repairs and/or line upgrades.
Proposed Project:	The project consists of approximately 630 L.F. of 8-inch gravity sewer replacement.

Existing WWTP:	Name =	Christiansburg Town - Sewage Treatment Plant (Crab Creek)
	Design Flow (MGD)=	4
	Average Flow =	2
	Receiving Stream =	New River
	Stream Classification =	IV
	Impaired Stream	Yes
Watershed or Adjacent Stream:	Name =	Crab Creek, UTs to Smith Creek, UTs to Slate Branch
	Impaired =	Yes
	Within Vicinity =	No
Equivalent Customers Served:	Residential =	N/A
	Industrial	
	Commercial =	

Health Hazard:	none	
Construction Feasibility:	WWTP/Collection System Available	X
	WWTP/Collection System Upgrades Required	
	WWTP/Collection System Not Available	
Growth Potential:	Residential	
Total Project Cost:	$65,600	
Present Worth Per Connection:	N/A	

PROJECT DATA SHEET

Table 105

Project Name:	Mulberry Dr. Replacement (M-43)
County:	Montgomery
Type of Project:	Centralized
Utility Provider:	Town of Christiansburg
Responsible Mgmt Entity?	Town of Christiansburg
Existing Water System?	Yes
Existing Conditions:	The project area is currently served by a public sewage system that requires repairs and/or line upgrades.
Proposed Project:	The project consists of approximately 4100 L.F. of 8-inch gravity sewer replacement.

Existing WWTP:	Name =	Christiansburg Town - Sewage Treatment Plant (Crab Creek)
	Design Flow (MGD)=	4
	Average Flow =	2
	Receiving Stream =	New River
	Stream Classification =	IV
	Impaired Stream	Yes
Watershed or Adjacent Stream:	Name =	Crab Creek, UTs to Smith Creek, UTs to Slate Branch
	Impaired =	Yes
	Within Vicinity =	No
Equivalent Customers Served:	Residential =	N/A
	Industrial	
	Commercial =	

Health Hazard:	none	
Construction Feasibility:	WWTP/Collection System Available	X
	WWTP/Collection System Upgrades Required	
	WWTP/Collection System Not Available	
Growth Potential:	Residential	
Total Project Cost:	$426,400	
Present Worth Per Connection:	N/A	

Table 106

Project Name:	Alleghany St. Replacement (M-44)
County:	Montgomery
Type of Project:	Centralized
Utility Provider:	Town of Christiansburg
Responsible Mgmt Entity?	Town of Christiansburg
Existing Water System?	Yes
Existing Conditions:	The project area is currently served by a public sewage system that requires repairs and/or line upgrades.
Proposed Project:	The project consists of approximately 1900 L.F. of 8-inch gravity sewer replacement.

Existing WWTP:	Name =	Christiansburg Town - Sewage Treatment Plant (Crab Creek)
	Design Flow (MGD)=	4
	Average Flow =	2
	Receiving Stream =	New River
	Stream Classification =	IV
	Impaired Stream	Yes
Watershed or Adjacent Stream:	Name =	Crab Creek, UTs to Smith Creek, UTs to Slate Branch
	Impaired =	Yes
	Within Vicinity =	No
Equivalent Customers Served:	Residential =	N/A
	Industrial	
	Commercial =	

Health Hazard:	none	
Construction Feasibility:	WWTP/Collection System Available	X
	WWTP/Collection System Upgrades Required	
	WWTP/Collection System Not Available	
Growth Potential:	Residential	
Total Project Cost:	$197,600	
Present Worth Per Connection:	N/A	

PROJECT DATA SHEET

Table 107

Project Name:	N. Franklin St. (Town Office to Depot) (M-45)
County:	Montgomery
Type of Project:	Centralized
Utility Provider:	Town of Christiansburg
Responsible Mgmt Entity?	Town of Christiansburg
Existing Water System?	Yes
Existing Conditions:	The project area is currently served by a public sewage system that requires repairs and/or line upgrades.
Proposed Project:	The project consists of approximately 1,600 L.F. of 8-inch gravity sewer replacement.

Existing WWTP:	Name =	Christiansburg Town - Sewage Treatment Plant (Crab Creek)
	Design Flow (MGD)=	4
	Average Flow =	2
	Receiving Stream =	New River
	Stream Classification =	IV
	Impaired Stream	Yes
Watershed or Adjacent Stream:	Name =	Crab Creek, UTs to Smith Creek, UTs to Slate Branch
	Impaired =	Yes
	Within Vicinity =	No
Equivalent Customers Served:	Residential =	N/A
	Industrial	
	Commercial =	

Health Hazard:	none	
Construction Feasibility:	WWTP/Collection System Available	X
	WWTP/Collection System Upgrades Required	
	WWTP/Collection System Not Available	
Growth Potential:	Residential	
Total Project Cost:	$166,400	
Present Worth Per Connection:	N/A	

Table 108

Project Name:	Longview Dr. Replacement (M-46)
County:	Montgomery
Type of Project:	Centralized
Utility Provider:	Town of Christiansburg
Responsible Mgmt Entity?	Town of Christiansburg
Existing Water System?	Yes
Existing Conditions:	The project area is currently served by a public sewage system that requires repairs and/or line upgrades.
Proposed Project:	The project consists of approximately 1,800 L.F. of 8-inch gravity sewer replacement.

Existing WWTP:	Name =	Christiansburg Town - Sewage Treatment Plant (Crab Creek)
	Design Flow (MGD)=	4
	Average Flow =	2
	Receiving Stream =	New River
	Stream Classification =	IV
	Impaired Stream	Yes
Watershed or Adjacent Stream:	Name =	Crab Creek, UTs to Smith Creek, UTs to Slate Branch
	Impaired =	Yes
	Within Vicinity =	No
Equivalent Customers Served:	Residential =	N/A
	Industrial	
	Commercial =	

Health Hazard:	none	
Construction Feasibility:	WWTP/Collection System Available	X
	WWTP/Collection System Upgrades Required	
	WWTP/Collection System Not Available	
Growth Potential:	Residential	
Total Project Cost:	$187,200	
Present Worth Per Connection:	N/A	

PROJECT DATA SHEET

Table 109

Project Name:	Water St. Replacement (M-47)
County:	Montgomery
Type of Project:	Centralized
Utility Provider:	Town of Christiansburg
Responsible Mgmt Entity?	Town of Christiansburg
Existing Water System?	Yes
Existing Conditions:	The project area is currently served by a public sewage system that requires repairs and/or line upgrades.
Proposed Project:	The project consists of approximately 1,500 L.F. of 15-inch gravity sewer replacement.

Existing WWTP:		
	Name =	Christiansburg Town - Sewage Treatment Plant (Crab Creek)
	Design Flow (MGD)=	4
	Average Flow =	2
	Receiving Stream =	New River
	Stream Classification =	IV
	Impaired Stream	Yes

Watershed or Adjacent Stream:		
	Name =	Crab Creek, UTs to Smith Creek, UTs to Slate Branch
	Impaired =	Yes
	Within Vicinity =	No

Equivalent Customers Served:		
	Residential =	N/A
	Industrial	
	Commercial =	

Health Hazard:	none

Construction Feasibility:		
	WWTP/Collection System Available	X
	WWTP/Collection System Upgrades Required	
	WWTP/Collection System Not Available	

Growth Potential:	Residential
Total Project Cost:	$198,900
Present Worth Per Connection:	N/A

Table 110

Project Name:	Depot St. to Wing St. Replacement (M-48)
County:	Montgomery
Type of Project:	Centralized
Utility Provider:	Town of Christiansburg
Responsible Mgmt Entity?	Town of Christiansburg
Existing Water System?	Yes
Existing Conditions:	The project area is currently served by a public sewage system that requires repairs and/or line upgrades.
Proposed Project:	The project consists of approximately 2310 L.F. of 15-inch gravity sewer replacement.

Existing WWTP:		
	Name =	Christiansburg Town - Sewage Treatment Plant (Crab Creek)
	Design Flow (MGD)=	4
	Average Flow =	2
	Receiving Stream =	New River
	Stream Classification =	IV
	Impaired Stream	Yes

Watershed or Adjacent Stream:		
	Name =	Crab Creek, UTs to Smith Creek, UTs to Slate Branch
	Impaired =	Yes
	Within Vicinity =	No

Equivalent Customers Served:		
	Residential =	N/A
	Industrial	
	Commercial =	

Health Hazard:	none

Construction Feasibility:		
	WWTP/Collection System Available	X
	WWTP/Collection System Upgrades Required	
	WWTP/Collection System Not Available	

Growth Potential:	Residential
Total Project Cost:	$306,320
Present Worth Per Connection:	N/A

PROJECT DATA SHEET

Table 111

Project Name:	Bank St. Replacement (M-49)	
County:	Montgomery	
Type of Project:	Centralized	
Utility Provider:	Town of Christiansburg	
Responsible Mgmt Entity?	Town of Christiansburg	
Existing Water System?	Yes	
Existing Conditions:	The project area is currently served by a public sewage system that requires repairs and/or line upgrades.	
Proposed Project:	The project consists of approximately 225 L.F. of 6-inch gravity sewer replacement.	
Existing WWTP:	Name =	Christiansburg Town - Sewage Treatment Plant (Crab Creek)
	Design Flow (MGD)=	4
	Average Flow =	2
	Receiving Stream =	New River
	Stream Classification =	IV
	Impaired Stream	Yes
Watershed or Adjacent Stream:	Name =	Crab Creek, UTs to Smith Creek, UTs to Slate Branch
	Impaired =	Yes
	Within Vicinity =	No
Equivalent Customers Served:	Residential =	N/A
	Industrial	
	Commercial =	
Health Hazard:	none	
Construction Feasibility:	WWTP/Collection System Available	X
	WWTP/Collection System Upgrades Required	
	WWTP/Collection System Not Available	
Growth Potential:	Residential	
Total Project Cost:	$21,100	
Present Worth Per Connection:	N/A	

Table 112

Project Name:	Forest St. Replacement (M-50)	
County:	Montgomery	
Type of Project:	Centralized	
Utility Provider:	Town of Christiansburg	
Responsible Mgmt Entity?	Town of Christiansburg	
Existing Water System?	Yes	
Existing Conditions:	The project area is currently served by a public sewage system that requires repairs and/or line upgrades.	
Proposed Project:	The project consists of approximately 850 L.F. of 8-inch gravity sewer replacement.	
Existing WWTP:	Name =	Christiansburg Town - Sewage Treatment Plant (Crab Creek)
	Design Flow (MGD)=	4
	Average Flow =	2
	Receiving Stream =	New River
	Stream Classification =	IV
	Impaired Stream	Yes
Watershed or Adjacent Stream:	Name =	Crab Creek, UTs to Smith Creek, UTs to Slate Branch
	Impaired =	Yes
	Within Vicinity =	No
Equivalent Customers Served:	Residential =	N/A
	Industrial	
	Commercial =	
Health Hazard:	none	
Construction Feasibility:	WWTP/Collection System Available	X
	WWTP/Collection System Upgrades Required	
	WWTP/Collection System Not Available	
Growth Potential:	Residential	
Total Project Cost:	$88,400	
Present Worth Per Connection:	N/A	

PROJECT DATA SHEET

Table 113

Project Name:	Harless St. N.E. Replacement (M-51)
County:	Montgomery
Type of Project:	Centralized
Utility Provider:	Town of Christiansburg
Responsible Mgmt Entity?	Town of Christiansburg
Existing Water System?	Yes
Existing Conditions:	The project area is currently served by a public sewage system that requires repairs and/or line upgrades.
Proposed Project:	The project consists of approximately 500 L.F. of 8-inch gravity sewer replacement.

Existing WWTP:	Name =	Christiansburg Town - Sewage Treatment Plant (Crab Creek)
	Design Flow (MGD)=	4
	Average Flow =	2
	Receiving Stream =	New River
	Stream Classification =	IV
	Impaired Stream	Yes
Watershed or Adjacent Stream:	Name =	Crab Creek, UTs to Smith Creek, UTs to Slate Branch
	Impaired =	Yes
	Within Vicinity =	No
Equivalent Customers Served:	Residential =	N/A
	Industrial	
	Commercial =	

Health Hazard:	none	
Construction Feasibility:	WWTP/Collection System Available	X
	WWTP/Collection System Upgrades Required	
	WWTP/Collection System Not Available	
Growth Potential:	Residential	
Total Project Cost:	$52,000	
Present Worth Per Connection:	N/A	

Table 114

Project Name:	Glade Dr. at old P.S. (M-52)
County:	Montgomery
Type of Project:	Centralized
Utility Provider:	Town of Christiansburg
Responsible Mgmt Entity?	Town of Christiansburg
Existing Water System?	Yes
Existing Conditions:	The project area is currently served by a public sewage system that requires repairs and/or line upgrades.
Proposed Project:	The project consists of approximately 1,000 L.F. of 8-inch gravity sewer replacement.

Existing WWTP:	Name =	Christiansburg Town - Sewage Treatment Plant (Crab Creek)
	Design Flow (MGD)=	4
	Average Flow =	2
	Receiving Stream =	New River
	Stream Classification =	IV
	Impaired Stream	Yes
Watershed or Adjacent Stream:	Name =	Crab Creek, UTs to Smith Creek, UTs to Slate Branch
	Impaired =	Yes
	Within Vicinity =	No
Equivalent Customers Served:	Residential =	N/A
	Industrial	
	Commercial =	

Health Hazard:	none	
Construction Feasibility:	WWTP/Collection System Available	X
	WWTP/Collection System Upgrades Required	
	WWTP/Collection System Not Available	
Growth Potential:	Residential	
Total Project Cost:	$104,000	
Present Worth Per Connection:	N/A	

PROJECT DATA SHEET

Table 115

Project Name:	Hickok St. Replacement (M-53)
County:	Montgomery
Type of Project:	Centralized
Utility Provider:	Town of Christiansburg
Responsible Mgmt Entity?	Town of Christiansburg
Existing Water System?	Yes
Existing Conditions:	The project area is currently served by a public sewage system that requires repairs and/or line upgrades.
Proposed Project:	The project consists of approximately 2,000 L.F. of 8-inch gravity sewer replacement.

Existing WWTP:		
	Name =	Christiansburg Town - Sewage Treatment Plant (Crab Creek)
	Design Flow (MGD)=	4
	Average Flow =	2
	Receiving Stream =	New River
	Stream Classification =	IV
	Impaired Stream	Yes

Watershed or Adjacent Stream:		
	Name =	Crab Creek, UTs to Smith Creek, UTs to Slate Branch
	Impaired =	Yes
	Within Vicinity =	No

Equivalent Customers Served:		
	Residential =	N/A
	Industrial	
	Commercial =	

Health Hazard:	none

Construction Feasibility:		
	WWTP/Collection System Available	X
	WWTP/Collection System Upgrades Required	
	WWTP/Collection System Not Available	

Growth Potential:	Residential
Total Project Cost:	$208,000
Present Worth Per Connection:	N/A

Table 116

Project Name:	Maple St. Replacement (M-54)
County:	Montgomery
Type of Project:	Centralized
Utility Provider:	Town of Christiansburg
Responsible Mgmt Entity?	Town of Christiansburg
Existing Water System?	Yes
Existing Conditions:	The project area is currently served by a public sewage system that requires repairs and/or line upgrades.
Proposed Project:	The project consists of approximately 1,700 L.F. of 8-inch gravity sewer replacement.

Existing WWTP:		
	Name =	Christiansburg Town - Sewage Treatment Plant (Crab Creek)
	Design Flow (MGD)=	4
	Average Flow =	2
	Receiving Stream =	New River
	Stream Classification =	IV
	Impaired Stream	Yes

Watershed or Adjacent Stream:		
	Name =	Crab Creek, UTs to Smith Creek, UTs to Slate Branch
	Impaired =	Yes
	Within Vicinity =	No

Equivalent Customers Served:		
	Residential =	N/A
	Industrial	
	Commercial =	

Health Hazard:	none

Construction Feasibility:		
	WWTP/Collection System Available	X
	WWTP/Collection System Upgrades Required	
	WWTP/Collection System Not Available	

Growth Potential:	Residential
Total Project Cost:	$176,800
Present Worth Per Connection:	N/A

PROJECT DATA SHEET

Table 117

Project Name:	Christie Lane Extension (M-55)
County:	Montgomery
Type of Project:	Centralized
Utility Provider:	Town of Christiansburg
Responsible Mgmt Entity?	Town of Christiansburg
Existing Water System?	Yes
Existing Conditions:	The project area is currently served by a public sewage system that requires repairs and/or line upgrades.
Proposed Project:	The project consists of approximately 1,300 L.F. of 8-inch gravity sewer replacement.
Existing WWTP: Name =	Christiansburg Town - Sewage Treatment Plant (Crab Creek)
Design Flow (MGD)=	4
Average Flow =	2
Receiving Stream =	New River
Stream Classification =	IV
Impaired Stream	Yes
Watershed or Adjacent Stream: Name =	Crab Creek, UTs to Smith Creek, UTs to Slate Branch
Impaired =	Yes
Within Vicinity =	No
Equivalent Customers Served: Residential =	N/A
Industrial	
Commercial =	
Health Hazard:	none
Construction Feasibility: WWTP/Collection System Available	X
WWTP/Collection System Upgrades Required	
WWTP/Collection System Not Available	
Growth Potential:	Residential
Total Project Cost:	$135,200
Present Worth Per Connection:	N/A

Table 118

Project Name:	Dunlap Extension (M-56)
County:	Montgomery
Type of Project:	Centralized
Utility Provider:	Town of Christiansburg
Responsible Mgmt Entity?	Town of Christiansburg
Existing Water System?	Yes
Existing Conditions:	The project area is currently served by a public sewage system that requires repairs and/or line upgrades.
Proposed Project:	The project consists of approximately 2,500 L.F. of 8-inch gravity sewer replacement.
Existing WWTP: Name =	Christiansburg Town - Sewage Treatment Plant (Crab Creek)
Design Flow (MGD)=	4
Average Flow =	2
Receiving Stream =	New River
Stream Classification =	IV
Impaired Stream	Yes
Watershed or Adjacent Stream: Name =	Crab Creek, UTs to Smith Creek, UTs to Slate Branch
Impaired =	Yes
Within Vicinity =	No
Equivalent Customers Served: Residential =	N/A
Industrial	
Commercial =	
Health Hazard:	none
Construction Feasibility: WWTP/Collection System Available	X
WWTP/Collection System Upgrades Required	
WWTP/Collection System Not Available	
Growth Potential:	Residential
Total Project Cost:	$260,000
Present Worth Per Connection:	N/A

PROJECT DATA SHEET

Table 119

Project Name:	Mt. Pleasant Extension (M-57)
County:	Montgomery
Type of Project:	Centralized
Utility Provider:	Town of Christiansburg
Responsible Mgmt Entity?	Town of Christiansburg
Existing Water System?	Yes
Existing Conditions:	The project area is currently served by a public sewage system that requires repairs and/or line upgrades.
Proposed Project:	The project consists of approximately 600 L.F. of 8-inch gravity sewer replacement.
Existing WWTP: Name =	Christiansburg Town - Sewage Treatment Plant (Crab Creek)
Design Flow (MGD)=	4
Average Flow =	2
Receiving Stream =	New River
Stream Classification =	IV
Impaired Stream	Yes
Watershed or Adjacent Stream: Name =	Crab Creek, UTs to Smith Creek, UTs to Slate Branch
Impaired =	Yes
Within Vicinity =	No
Equivalent Customers Served: Residential =	N/A
Industrial	
Commercial =	
Health Hazard:	none
Construction Feasibility: WWTP/Collection System Available	X
WWTP/Collection System Upgrades Required	
WWTP/Collection System Not Available	
Growth Potential:	Residential
Total Project Cost:	$62,400
Present Worth Per Connection:	N/A

Table 120

Project Name:	East Main St. Replacement (M-58)
County:	Montgomery
Type of Project:	Centralized
Utility Provider:	Town of Christiansburg
Responsible Mgmt Entity?	Town of Christiansburg
Existing Water System?	Yes
Existing Conditions:	The project area is currently served by a public sewage system that requires repairs and/or line upgrades.
Proposed Project:	The project consists of approximately 2,300 L.F. of 8-inch gravity sewer replacement.
Existing WWTP: Name =	Christiansburg Town - Sewage Treatment Plant (Crab Creek)
Design Flow (MGD)=	4
Average Flow =	2
Receiving Stream =	New River
Stream Classification =	IV
Impaired Stream	Yes
Watershed or Adjacent Stream: Name =	Crab Creek, UTs to Smith Creek, UTs to Slate Branch
Impaired =	Yes
Within Vicinity =	No
Equivalent Customers Served: Residential =	N/A
Industrial	
Commercial =	
Health Hazard:	none
Construction Feasibility: WWTP/Collection System Available	X
WWTP/Collection System Upgrades Required	
WWTP/Collection System Not Available	
Growth Potential:	Residential
Total Project Cost:	$239,200
Present Worth Per Connection:	N/A

PROJECT DATA SHEET

Table 121

Project Name:	Graysontown (M-59)
County:	Montgomery/Pulaski
Type of Project:	Centralized
Utility Provider:	Pulaski County
Responsible Mgmt Entity?	Pulaski County
Existing Water System?	No
Existing Conditions:	The project area is currently not served by a public sewage system.
Proposed Project:	The project consists of approximately 47,100 L.F. of 10-inch gravity sewer, 5,230 L.F. of 8-inch gravity sewer, 1,540 L.F. of 6 -inch force main, and one sewage pump station.
Existing WWTP:	
Name =	Peppers Ferry
Design Flow (MGD)=	9 mgd
Average Flow =	3.98 mgd
Receiving Stream =	New River
Stream Classification =	IV
Impaired Stream	Yes
Watershed or Adjacent Stream:	
Name =	Little River and New River
Impaired =	Yes
Within Vicinity =	Yes
Equivalent Customers Served:	
Residential =	29
Industrial	0
Commercial =	0
Health Hazard:	None.
Construction Feasibility:	
WWTP/Collection System Available	X
WWTP/Collection System Upgrades Required	
WWTP/Collection System Not Available	
Growth Potential:	Residential
Total Project Cost:	$6,502,580
Present Worth Per Connection:	$160,080

Table 122

Project Name:	McCoy (DC-13)
County:	Montgomery
Type of Project:	Decentralized
Utility Provider:	Montgomery County
Responsible Mgmt Entity?	Montgomery County
Existing Water System?	No
Existing Conditions:	This is a large community where the homes are generally on large lots, but the soils are not very good for onsite treatment and disposal. Wells are contaminated with bacteria.
Proposed Project:	The existing 100 homes in the community could be served by using a STEG/STEP system at each home or business. Treatment would be provided by using an AdvanTex Treatment System followed by UV disinfection system before discharging into the unnamed tributary of the New River.
Existing WWTP:	
Name =	N/A
Design Flow =	
Average Flow =	
Receiving Stream =	
Stream Classification =	
Impaired Stream	
Watershed or Adjacent Stream:	
Name =	New River
Impaired =	No
Within Vicinity =	No
Equivalent Customers Served:	
Residential =	100
Industrial	0
Commercial =	0
Health Hazard:	Yes
Construction Feasibility:	
WWTP/Collection System Available	No
WWTP/Collection System Upgrades Required	
WWTP/Collection System Not Available	
Growth Potential:	Residential growth is expected since building lots would not need to be as large.
Total Project Cost:	$1,610,933
Present Worth Per Connection:	$16,109

MONTGOMERY COUNTY PROJECT MAPS

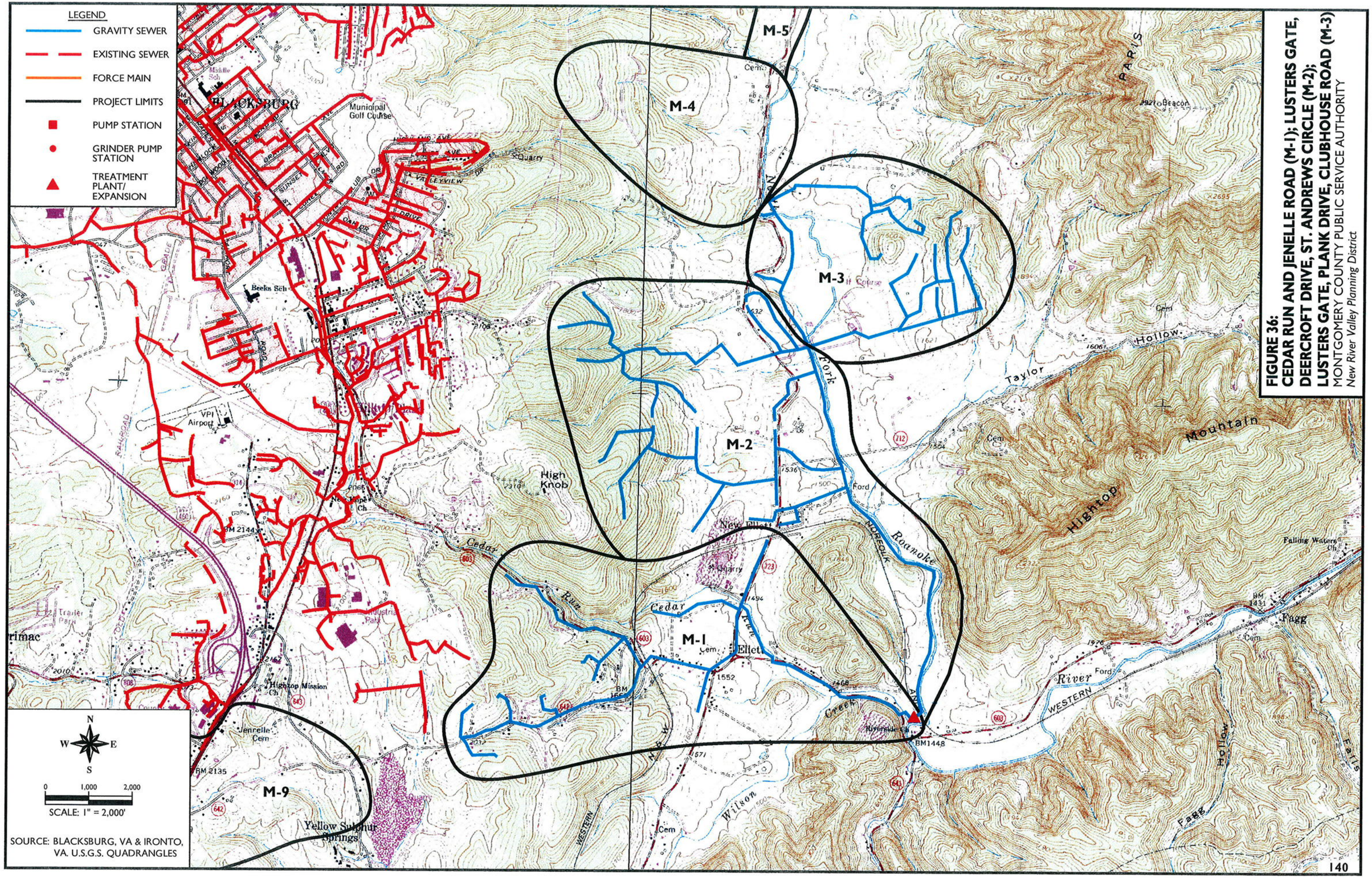

FIGURE 36:
CEDAR RUN AND JENELLE ROAD (M-1); LUSTERS GATE, DEERCROFT DRIVE, ST. ANDREWS CIRCLE (M-2); LUSTERS GATE, PLANK DRIVE, CLUBHOUSE ROAD (M-3)
MONTGOMERY COUNTY PUBLIC SERVICE AUTHORITY
New River Valley Planning District

LEGEND

- GRAVITY SEWER
- EXISTING SEWER
- FORCE MAIN
- PROJECT LIMITS
- PUMP STATION
- GRINDER PUMP STATION
- TREATMENT PLANT/ EXPANSION

M-6

M-5

M-4

M-3

N
W E
S

0 1000 2000

SCALE: 1" = 2000'

SOURCE: BLACKSBURG, VA & IRONTO, VA. U.S.G.S. QUADRANGLES

FIGURE 37:
LUSTERS GATE AND WOODLAND HILLS (M-4); LUSTERS GATE AND HARDING ROAD (M-5); AND INDIAN RUN (M-6)
MONTGOMERY COUNTY PUBLIC SERVICE AUTHORITY
New River Valley Planning District

LEGEND

- GRAVITY SEWER
- EXISTING SEWER
- FORCE MAIN
- PROJECT LIMITS
- PUMP STATION
- GRINDER PUMP STATION
- TREATMENT PLANT/ EXPANSION

M-10

M-8

M-7

M-9

M-1

N

W E

S

0 1000 2000

SCALE: 1" = 2000'

SOURCE: BLACKSBURG, VA & IRONTO, VA. U.S.G.S. QUADRANGLES

FIGURE 38:
MERRIMAC PHASES I THROUGH IV (M-7 THROUGH M-10)
MONTGOMERY COUNTY PUBLIC SERVICE AUTHORITY
New River Valley Planning District

LEGEND

- GRAVITY SEWER
- EXISTING SEWER
- FORCE MAIN
- PROJECT LIMITS
- PUMP STATION
- GRINDER PUMP STATION
- TREATMENT PLANT/ EXPANSION

N
W E
S

0 1000 2000

SCALE: 1" = 2000'

SOURCE: BLACKSBURG, VA & RADFORD NORTH, VA. U.S.G.S. QUADRANGLE

FIGURE 39:
PRICES FORK (M-11)
MONTGOMERY COUNTY PUBLIC SERVICE AUTHORITY
New River Valley Planning District

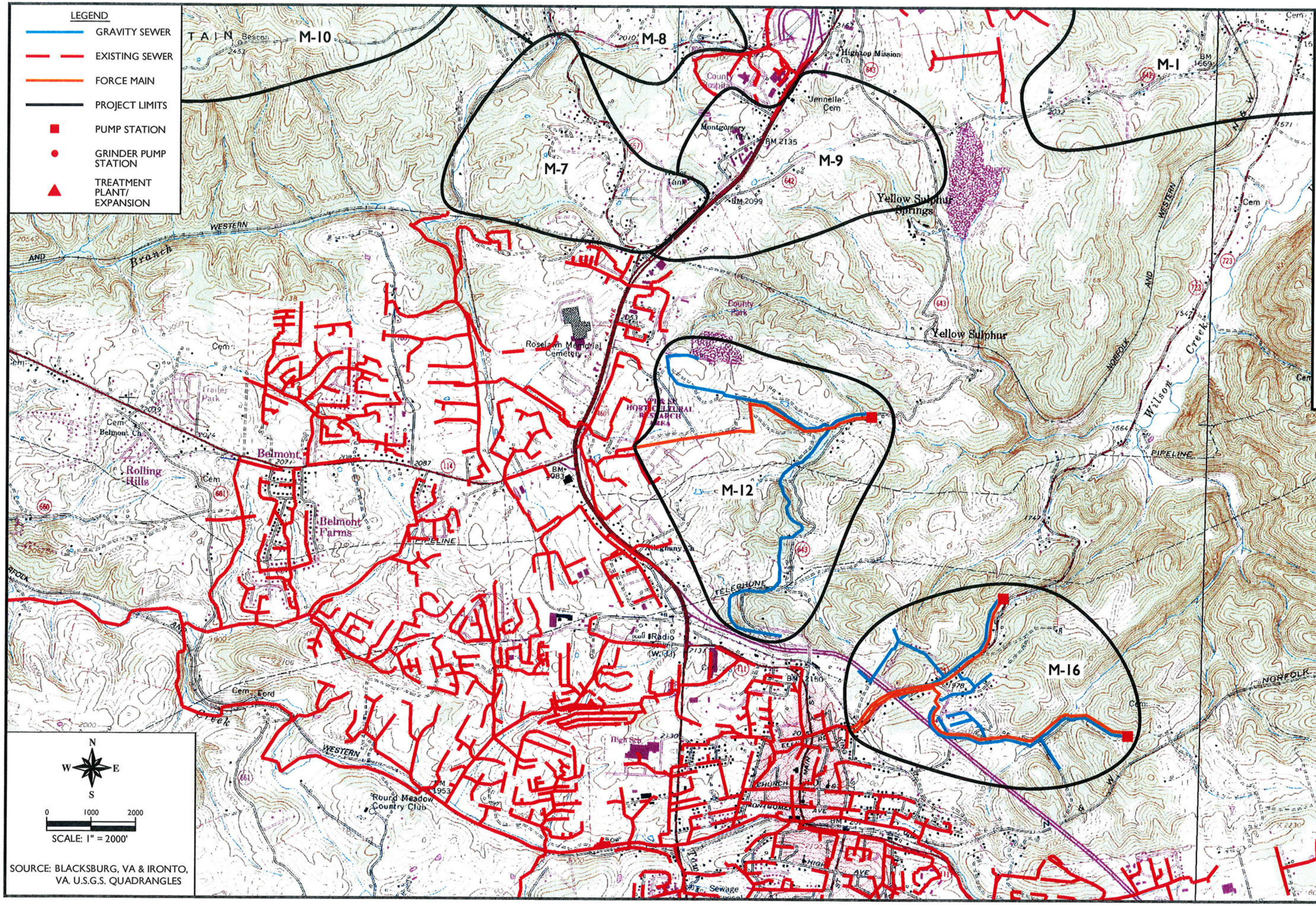

FIGURE 40:
YELLOW SULPHUR ROAD TO TOWN OF CHRISTIANSBURG (M-12); NW ROUTE 460 BYPASS - ELLETT ROAD (M-16)
MONTGOMERY COUNTY PUBLIC SERVICE AUTHORITY
New River Valley Planning District

LEGEND

- GRAVITY SEWER
- EXISTING SEWER
- FORCE MAIN
- PROJECT LIMITS
- PUMP STATION
- GRINDER PUMP STATION
- TREATMENT PLANT/ EXPANSION

M-13

M-14

N
W E
S

0 1000 2000

SCALE: 1" = 2000'

SOURCE: BLACKSBURG, VA & RADFORD NORTH, VA. U.S.G.S. QUADRANGLES

FIGURE 41:
PEPPERS FERRY ROAD - CHRISTIANSBURG WEST TO VICKER SWITCH ROAD (M-13); DOMINION DRIVE/ CRAB CREEK ROAD - SOUTH OF PEPPERS FERRY ROAD (M-14)
MONTGOMERY COUNTY PUBLIC SERVICE AUTHORITY
New River Valley Planning District

LEGEND

- GRAVITY SEWER
- EXISTING SEWER
- FORCE MAIN
- PROJECT LIMITS
- PUMP STATION
- GRINDER PUMP STATION
- TREATMENT PLANT/ EXPANSION

N
W E
S

0 1000 2000

SCALE: 1" = 2000'

SOURCE: BLACKSBURG, VA & RADFORD NORTH, VA. U.S.G.S. QUADRANGLES

FIGURE 42:
PEPPERS FERRY ROAD - COAL HOLLOW ROAD TO MCCORMICK ROAD (M-15)
MONTGOMERY COUNTY PUBLIC SERVICE AUTHORITY
New River Valley Planning District

LEGEND

- GRAVITY SEWER
- EXISTING SEWER
- FORCE MAIN
- PROJECT LIMITS
- PUMP STATION
- GRINDER PUMP STATION
- TREATMENT PLANT/ EXPANSION

M-17

M-18

M-19

N
W E
S

0 1000 2000

SCALE: 1" = 2000'

SOURCE: BLACKSBURG, VA & RINER, VA. U.S.G.S. QUADRANGLES

FIGURE 43:
RADFORD ROAD - ROUTE 11 (M-17); MUD PIKE - NORTH OF I81 (M-18); FLANAGAN DRIVE/RINER ROAD/ LIFE DRIVE - SOUTH OF I81 EXIT 114 (M-19)
MONTGOMERY COUNTY PUBLIC SERVICE AUTHORITY
New River Valley Planning District

LEGEND

- GRAVITY SEWER
- EXISTING SEWER
- FORCE MAIN
- PROJECT LIMITS
- PUMP STATION
- GRINDER PUMP STATION
- TREATMENT PLANT/ EXPANSION

M-20

M-21

Riner

Alburn High Sch

Union Valley Ch

Trailer Park

Smith Creek

Elliott Creek

Mill Creek

Poplar Creek

Valley

MOUNTAIN

PILOT

BM 2089

BM 2049

N

W E

S

0 1000 2000

SCALE: 1" = 2000'

SOURCE: RINER, VA. U.S.G.S. QUADRANGLE

FIGURE 44:
RINER PHASE I - FAIRVIEW CHURCH ROAD, RINER ROAD NORTH OF UNION VALLEY ROAD (M-20); RINER PHASE II - UNION VALLEY ROAD TO MILL CREEK (M-21)
MONTGOMERY COUNTY PUBLIC SERVICE AUTHORITY
New River Valley Planning District

LEGEND

- GRAVITY SEWER
- EXISTING SEWER
- FORCE MAIN
- PROJECT LIMITS
- PUMP STATION
- GRINDER PUMP STATION
- TREATMENT PLANT/ EXPANSION

N
W E
S

0 1000 2000

SCALE: 1" = 2000'

SOURCE: BLACKSBURG, VA., RINER, VA., IRONTO, VA. & PILOT, VA. U.S.G.S. QUADRANGLES

FIGURE 45:
FALLING BRANCH ROAD/CRAIG MOUNTAIN ROAD (M-22)
MONTGOMERY COUNTY PUBLIC SERVICE AUTHORITY
New River Valley Planning District

LEGEND

- GRAVITY SEWER
- EXISTING SEWER
- FORCE MAIN
- PROJECT LIMITS
- PUMP STATION
- GRINDER PUMP STATION
- TREATMENT PLANT/ EXPANSION

N
W E
S

0 1000 2000

SCALE: 1" = 2000'

SOURCE: ELLISTON, VA & IRONTO, VA. U.S.G.S. QUADRANGLES

FIGURE 46:
SHAWSVILLE - BUILDOUT EXISTING SERVICE AREA (M-23)
MONTGOMERY COUNTY PUBLIC SERVICE AUTHORITY
New River Valley Planning District

LEGEND

- GRAVITY SEWER
- EXISTING SEWER
- FORCE MAIN
- PROJECT LIMITS
- PUMP STATION
- GRINDER PUMP STATION
- TREATMENT PLANT/ EXPANSION

N
W E
S

0 1000 2000

SCALE: 1" = 2000'

SOURCE: ELLISTON, VA & IRONTO, VA. U.S.G.S. QUADRANGLES

FIGURE 47:
IRONTO/181 EXIT 128 - BUILDOUT EXISTING SERVICE AREA (M-24)
MONTGOMERY COUNTY PUBLIC SERVICE AUTHORITY
New River Valley Planning District

LEGEND

- GRAVITY SEWER
- EXISTING SEWER
- FORCE MAIN
- PROJECT LIMITS
- PUMP STATION
- GRINDER PUMP STATION
- TREATMENT PLANT/ EXPANSION

M-25

M-26

M-27

M-28

M-29

M-30

M-6

N
W E
S

0 1000 2000

SCALE: 1" = 2000'

SOURCE: NEWPORT, VA. U.S.G.S. QUADRANGLE

FIGURE 48:
BRUSH MOUNTAIN PHASES I THROUGH V (M-25 THROUGH M-30)
MONTGOMERY COUNTY PUBLIC SERVICE AUTHORITY
New River Valley Planning District

LEGEND

- GRAVITY SEWER
- EXISTING SEWER
- FORCE MAIN
- POJECT LIMITS
- GRAVITY SEWER TO BE REPLACED
- PUMP STATION
- GRINDER PUMP STATION
- TREATMENT PLANT/ EXPANSION

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0 1000 2000

SCALE: 1" = 2000'

SOURCE: BLACKSBURG, VA & IRONTO, VA. U.S.G.S. QUADRANGLES

FIGURE 49:
TOWN OF CHRISTIANSBURG LINE REPLACEMENT PROJECT (M-31 THROUGH M-58)
MONTGOMERY COUNTY PUBLIC SERVICE AUTHORITY
New River Valley Planning District

1 OF 3

MATCH LINE SHEET 3 OF 3

MATCH LINE SHEET 2 OF 3

LEGEND

- GRAVITY SEWER
- EXISTING SEWER
- FORCE MAIN
- POJECT LIMITS
- GRAVITY SEWER TO BE REPLACED
- PUMP STATION
- GRINDER PUMP STATION
- TREATMENT PLANT/ EXPANSION

MATCH LINE SHEET 1 OF 3

MATCH LINE SHEET 3 OF 3

N
W E
S

0 1000 2000

SCALE: 1" = 2000'

SOURCE: BLACKSBURG, VA & IRONTO, VA. U.S.G.S. QUADRANGLES

FIGURE 50:
TOWN OF CHRISTIANSBURG LINE REPLACEMENT PROJECT (M-31 THROUGH M-58)
MONTGOMERY COUNTY PUBLIC SERVICE AUTHORITY
New River Valley Planning District

2 OF 3

LEGEND

- GRAVITY SEWER
- EXISTING SEWER
- FORCE MAIN
- POJECT LIMITS
- GRAVITY SEWER TO BE REPLACED
- PUMP STATION
- GRINDER PUMP STATION
- TREATMENT PLANT/ EXPANSION

MATCH LINE SHEET 1 OF 3

MATCH LINE SHEET 2 OF 3

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0 1000 2000

SCALE: 1" = 2000'

SOURCE: BLACKSBURG, VA & IRONTO, VA. U.S.G.S. QUADRANGLES

FIGURE 5I:
TOWN OF CHRISTIANSBURG LINE REPLACEMENT PROJECT (M-31 THROUGH M-58)
MONTGOMERY COUNTY PUBLIC SERVICE AUTHORITY
New River Valley Planning District

3 OF 3

LEGEND

- GRAVITY SEWER
- EXISTING SEWER
- FORCE MAIN
- PROJECT LIMITS
- PUMP STATION
- GRINDER PUMP STATION
- TREATMENT PLANT/ EXPANSION

P-21

P-22

M-59

CLAYTOR LAKE STATE PARK

CLAYTOR LAKE

NORMAL POOL ELEVATION 1848

NEW RIVER

Mountain View

Graysontown

Snowville

Childress

Claytor Dam

N

W E

S

0 1000 3000

SCALE: 1" = 3000'

SOURCE: RADFORD SOUTH, VA & DUBLIN, VA. U.S.G.S. QUADRANGLES

FIGURE 52:
GRAYSONTOWN (M-59)
MONTGOMERY COUNTY PUBLIC SERVICE AUTHORITY
New River Valley Planning District

X. MONTGOMERY COUNTY

Fifty-nine centralized projects and one de-centralized project were identified in Montgomery County, addressing water quality and human health concerns.

The identified centralized projects focus on the areas previously identified by the County as growth areas for both wastewater services and population. The single de-centralized project identified, that also ranked out as a "Primary Priority" project, is in an area in the county that has experienced condensed population growth, but which is relatively removed from other wastewater service areas.

Primary Priorities

Centralized Projects

Project Name	Project Cost
Prices Fork (M-11)	$ 3,015,500
Yellow Sulphur Road (M-12)	$ 1,755,200
Pepper's Ferry Road-Vicker's Switch (M-13)	$ 2,,051,300
Pepper's Ferry Road- Coal Hollow Rd (M-15)	$ 573,900
NW Rt. 460 By-pass (M-16)	$ 3,094,700
Riner Phase 1 (M-20)	$ 3,676,800
Shawsville (M-23)	$ 2,271,300
Ironto (M-24)	$ 2,472,800
Total	*$ 18,911,500*

De-centralized Projects

Project Name	Project Cost
McCoy (DC-13)	$ 1,347,500
Total	*$ 1,347,500*

Secondary Priorities

Centralized Projects

Project Name	Project Cost
Cedar Run (M-1)	$ 5,115,400
Luster's Gate (M-2)	$ 4,031,890
Luster's Gate (M-3)	$ 3,350,700
Luster's Gate (M-4)	$ 2,074,300
Luster's Gate (M-5)	$ 2,944,400
Indian Run (M-6)	$ 4,798,600
Merrimac Phase 1 (M-7)	$ 4,411,700
Merrimac Phase 2 (M-8)	$ 4,007,200
Merrimac Phase 3 (M-9)	$ 2,269,300
Merrimac Phase 4 (M-10)	$ 3,701,300
Dominion Dr/Crab Creek Rd (M-14)	$ 3,816,500
Radford Rd. (M-17)	$ 3,071,300
Mud Pike (M-18)	$ 5,490,300
Flanagan Dr (M-19)	$ 2,432,000
Riner Phase 2 (M-21)	$ 2,746,300
Falling Branch Rd M-22)	$ 945,600
Brush Mtn Phase 1 (M-25)	$ 4,949,000
Brush Mtn Phase 2 (M-26)	$ 3,323,400
Brush Mtn Phase 3 (M-27)	$ 3,368,300
Brush Mtn Phase 4 (M-28)	$ 4,735,900
Brush Mtn Phase 5 (M-29)	$ 4,599,600
Brush Mtn Phase 6 (M-30)	$ 4,023,800
Multiple Town of Christiansburg Line Replacements (M-31 to M-58)	$ 5,810,560
Graysontown (M-59)	$ 6,502,580
Total	*$ 92,519,930*

De-centralized Projects

Project Name	Project Cost
None	$ 0

Total Funding Necessary for Montgomery County = $112,778,930

Table 52 - Overall Project Ranking - Centralized Projects
Montgomery County

County	Project ID	Total ERC's	Equivalent Connections	Present Worth Per Connection	Elimination of Health Hazard	Elimination of Water Quality Problems	Available Facilities	Potential Growth (Residential/Industrial)	Total Points
			20	***20***	***15***	***20***	***10***	***15***	***100***
Montgomery	M-23	172	10	20	15	20	10	10	85
Montgomery	M-13	115	10	15	15	10	10	10	70
Montgomery	M-20	149	10	10	10	20	10	10	70
Montgomery	M-24	79	5	5	15	20	10	15	70
Montgomery	M-11	125	10	10	15	10	10	10	65
Montgomery	M-12	42	5	0	15	20	10	15	65
Montgomery	M-15	26	5	15	15	10	10	10	65
Montgomery	M-16	115	10	10	0	20	10	15	65
Montgomery	M-7	320	20	20	0	0	5	15	60
Montgomery	M-9	89	5	10	0	20	10	15	60
Montgomery	M-10	146	10	10	0	20	10	10	60
Montgomery	M-14	118	10	5	15	10	10	10	60
Montgomery	M-18	247	15	10	0	10	10	15	60
Montgomery	M-21	126	10	10	10	20	0	10	60
Montgomery	M-1	135	10	0	15	10	5	10	50
Montgomery	M-2	185	10	10	0	20	0	10	50
Montgomery	M-3	186	10	10	0	20	0	10	50
Montgomery	M-22	42	5	10	15	0	10	10	50
Montgomery	M-59	29	5	0	0	20	10	10	45
Montgomery	M-5	131	10	5	0	20	0	10	45
Montgomery	M-8	296	15	20	0	0	0	10	45
Montgomery	M-27	130	10	10	10	0	0	10	40
Montgomery	M-4	44	5	0	0	20	0	10	35
Montgomery	M-17	71	5	0	0	10	10	10	35
Montgomery	M-19	53	5	0	0	0	10	15	30
Montgomery	M-25	95	5	0	10	0	5	10	30
Montgomery	M-26	60	5	0	10	0	0	10	25
Montgomery	M-30	128	10	5	0	0	0	10	25
Montgomery	M-6	128	10	0	0	0	0	10	20
Montgomery	M-29	103	10	0	0	0	0	10	20
Montgomery	M-31/M-58	0	0	0	0	10	10	0	20
Montgomery	M-28	90	5	0	0	0	0	10	15

Table 53 - Overall Project Ranking - Decentralized Projects
Montgomery County

County	Project ID	Total ERC's	Elimination of Health Hazard	Elimination of Water Quality Problems	Permitted Water System	Community Involvement	Utility Willingness	Financial Support	Present Worth Per Connection	Total Points
			20	***20***	***5***	***15***	***10***	***10***	***20***	***100***
Montgomery	DC-13	100	20	5	0	5	10	0	15	55

FIGURE 26:
MONTGOMERY COUNTY PROJECT AREAS
New River Valley Planning District

LEGEND

PROJECT AREA

COUNTY LIMITS

Centralized Projects

M-1. Cedar Run and Jennelle Road
M-2. Luster's Gate, Deercroft Dr, St. Andrew's Cir.
M-3. Luster's Gate, Plank Drive, Clubhouse Road
M-4. Luster's Gate, Woodland Hills
M-5. Luster's Gate, Harding Road
M-6. Indian Run
M-7. Merrimac Phase I
M-8. Merrimac Phase II
M-9. Merrimac Phase III
M-10. Merrimac Phase IV
M-11. Prices Fork
M-12. Yellow Sulpher Rd - Town of Christiansburg
M-13. Peppers Ferry Road - Christiansburg West to Vicker Switch Road
M-14. Dominion Dr/Crab Creek Rd - South of Peppers Ferry Road
M-15. Peppers Ferry Road - Coal Hollow Road to McCormick Road
M-16. NW Rte. 460 By-Pass - Ellett Road
M-17. Radford Road - Rte. 11
M-18. Mud Pike - North of I81
M-19. Flanagan Dr/Riner Rd/Life Dr - South of I81Exit 114
M-20. Riner Phase I- Fairview Church Rd. North of Union Valley Rd.
M-21. Riner Phase II - Union Valley Road to Mill Creek
M-22. Falling Branch Road/Craig Mountain Road
M-23. Shawsville - Buildout Existing Service Area
M-24. Ironto / I81 Exit 128 - Buildout Existing Service Area
M-25. Brush Mountain Phase I
M-26. Brush Mountain Phase II
M-27. Brush Mountain Phase III
M-28. Brush Mountain Phase IV
M-29. Brush Mountain Phase V
M-30. Brush Mountain Phase VI
M-59. Graysontown

Decentralized Projects

DC-13. McCoy Community

N
W E
S

0 7,500 15,000

SCALE: 1" = 15,000'

SOURCE: RADFORD, VA & GALAX, VA U.S.G.S. QUADRANGLE

PRICES FORK SEWER EXTENSION (M-11)

MONTGOMERY COUNTY PUBLIC SERVICE AUTHORITY

New River Valley Planning District

Project Background

The Prices Fork project area is located to the west of the Town of Blacksburg and extends primarily along State Route 685. The project area includes approximately 125 residential connections. Currently, the area is not served by a public sewage system. Residences in the area primarily utilize privately owned and maintained on-site septic systems. The project area lies in the watershed of Stroubles Creek and Tom's Creek, both of which have been identified by the Virginia Department of Environmental Quality (DEQ) as impaired streams. It is anticipated that, with the provision of public sewage service, a moderate to high potential will exist for residential growth.

Proposed Facilities

The proposed facilities associated with the Prices Fork Sewer Extension include approximately 18,600 L.F. of 8-inch gravity sewer, 3,200 L.F. of 4-inch force main, 5,500 L.F. of 2-inch force main, one (1) sewage pump station, and two (2) grinder pump stations. The extension will connect to the existing sanitation authority sewage collection system and all wastewater generated in the project area will ultimately be conveyed to and treated at the existing Blacksburg-VPI Sanitation Authority Wastewater Treatment Plant (WWTP). The Blacksburg-VPI Sanitation Authority WWTP has a permitted capacity of 9.0 million gallons per day (MGD) and currently treats an average of 4.8 MGD. Treated effluent from the Blacksburg-VPI Sanitation Authority WWTP discharges into the New River which has been identified by DEQ as an impaired stream. Based on a 50-year design period, a potential future customer base of 153 connections (anticipated 50-year growth of 20%) and a flow of 300 gallons per day (GPD) per connection, future average daily flow for the project area will be approximately 45,900 GPD or 0.046 MGD. Therefore, adequate capacity is available at the Blacksburg-VPI Sanitation Authority WWTP to treat the anticipated wastewater generated in the Prices Fork project area.

Project Costs

The preliminary probable project cost and annual operation and maintenance costs associated with the Prices Fork Sewer Extension are $3,015,500 and $13,730, respectively. These costs result in an approximate present worth of $25,370 per existing connection.

PRELIMINARY PROBABLE PROJECT COST

Construction Cost				
18,600	L.F.	8" Gravity Sewer @	$80/L.F.	$1,488,000
3,200	L.F.	4" Force Main @	$28/L.F.	$89,600
5,500	L.F.	2" Force Main @	$19/L.F.	$104,500
1	EA.	Sewage Pump Stations @	$250,000/EA.	$250,000
2	EA.	Grinder Pump Stations @	$75,000/EA.	$150,000
125	EA.	Gravity Sewer Connections @	$1,900/EA.	$237,500
		Total Construction Cost		$2,319,600
Related Cost				
30	%	Total Construction Cost		$695,900
		Total Related Cost		$695,900
		TOTAL PROJECT COST		$3,015,500

ANNUAL OPERATION AND MAINTENACE (O&M) COST

Operation and Maintenance Cost				
18,600	L.F.	Gravity Sewer @	$0.10/L.F.	$1,860
8,700	L.F.	Force Main @	$0.10/L.F.	$870
1	EA.	Sewage Pump Stations @	$5,000/EA.	$5,000
2	EA.	Grinder Pump Stations @	$3,000/EA.	$6,000
		TOTAL ANNUAL O&M COST		$13,730

PRESENT WORTH OF ANNUAL O&M COST (30 YEARS, 8%) $154,570

TOTAL PROJECT PRESENT WORTH $3,170,070

PRESENT WORTH PER CONNECTION (125 CONNECTIONS) $25,370

Table 54 - PROJECT DATA SHEET

Project Name:		Prices Fork (M-11)
County:		Montgomery
Type of Project:		Centralized
Utility Provider:		Montgomery County PSA
Responsible Mgmt Entity?		Montgomery County PSA
Existing Water System?		Yes
Existing Conditions:		The project area is currently not served by a public sewage system.
Proposed Project:		The project consists of approximately 18,600 L.F. of 8-inch gravity sewer, 3,200 L.F. of 4-inch force main, 5,500 L.F. of 2-inch force main, one (1) sewage pump station, and two (2) grinder pump stations.
Existing WWTP:	Name =	Blacksburg-VPI Sanitation Authority WWTP
	Design Flow (MGD)=	9
	Average Flow =	4.8
	Receiving Stream =	New River
	Stream Classification =	IV
	Impaired Stream	Yes
Watershed or Adjacent Stream:	Name =	UT to Stroubles Creek, UT to Tom's Creek
	Impaired =	Yes
	Within Vicinity =	No
Equivalent Customers Served:	Residential =	125
	Industrial	0
	Commercial =	0
Health Hazard:		Documented Septic Failures
Construction Feasibility:	WWTP/Collection System Available	X
	WWTP/Collection System Upgrades Required	
	WWTP/Collection System Not Available	
Growth Potential:		Residential
Total Project Cost:		$3,015,500
Present Worth Per Connection:		$25,370

LEGEND

- GRAVITY SEWER
- EXISTING SEWER
- FORCE MAIN
- PROJECT LIMITS
- PUMP STATION
- GRINDER PUMP STATION
- TREATMENT PLANT/ EXPANSION

M-11

N
W E
S

0 1000 2000

SCALE: 1" = 2000'

SOURCE: BLACKSBURG, VA & RADFORD NORTH, VA. U.S.G.S. QUADRANGLE

FIGURE 27:
PRICES FORK (M-11)
MONTGOMERY COUNTY PUBLIC SERVICE AUTHORITY
New River Valley Planning District

YELLOW SULPHUR ROAD-TOWN OF CHRISTIANSBURG SEWER EXTENSION (M-12)

MONTGOMERY COUNTY PUBLIC SERVICE AUTHORITY

New River Valley Planning District

Project Background

The Yellow Sulphur Road project area is located to the east of the Town of Christiansburg and extends primarily along State Route 643. The project area includes approximately 42 residential connections. Currently, the area is not served by a public sewage system. Residences in the area primarily utilize privately owned and maintained on-site septic systems. The project area lies in the watershed of Wilson Creek, which has been identified by the Virginia Department of Environmental Quality (DEQ) as an impaired stream. It is anticipated that, with the provision of public sewage service, a moderate to high potential will exist for residential growth and a moderate potential will exist for industrial/commercial growth.

Proposed Facilities

The proposed facilities associated with the Yellow Sulphur Road Sewer Extension include approximately 14,300 L.F. of 8-inch gravity sewer, 2,700 L.F. of 2-inch force main, and one (1) grinder pump station. The extension will connect to the existing Town of Christiansburg sewage collection system and all wastewater generated in the project area will ultimately be conveyed to and treated at the existing Town of Christiansburg Wastewater Treatment Plant (WWTP). The Town of Christiansburg WWTP has a permitted capacity of 4.0 million gallons per day (MGD) and currently treats an average of 2.0 MGD. Treated effluent from the Town of Christiansburg WWTP discharges into the New River which has been identified by DEQ as an impaired stream. Based on a 50-year design period, a potential future customer base of 52 connections (anticipated 50-year growth of 20%) and a flow of 300 gallons per day (GPD) per connection, future average daily flow for the project area will be approximately 15,600 GPD or 0.016 MGD. Therefore, adequate capacity is available at the Town of Christiansburg WWTP to treat the anticipated wastewater generated in the Yellow Sulphur Road project area.

Project Costs

The preliminary probable project cost and annual operation and maintenance costs associated with the Yellow Sulphur Road Sewer Extension are $1,755,200 and $4,700, respectively. These costs result in an approximate present worth of $43,060 per existing connection.

PRELIMINARY PROBABLE PROJECT COST

Construction Cost				
14,300	L.F.	8" Gravity Sewer @	$80/L.F.	$1,144,000
2,700	L.F.	2" Force Main @	$19/L.F.	$51,300
1	EA.	Grinder Pump Stations @	$75,000/EA.	$75,000
42	EA.	Gravity Sewer Connections @	$1,900/EA.	$79,800
		Total Construction Cost		$1,350,100
Related Cost				
30	%	Total Construction Cost		$405,100
		Total Related Cost		$405,100
		TOTAL PROJECT COST		$1,755,200

ANNUAL OPERATION AND MAINTENACE (O&M) COST

Operation and Maintenance Cost				
14,300	L.F.	Gravity Sewer @	$0.10/L.F.	$1,430
2,700	L.F.	Force Main @	$0.10/L.F.	$270
1	EA.	Grinder Pump Stations @	$3,000/EA.	$3,000
		TOTAL ANNUAL O&M COST		$4,700

PRESENT WORTH OF ANNUAL O&M COST (30 YEARS, 8%) $52,920

TOTAL PROJECT PRESENT WORTH $1,808,120

PRESENT WORTH PER CONNECTION (42 CONNECTIONS) $43,060

Table 55 - PROJECT DATA SHEET

Project Name:		Yellow Sulphur Rd to Town of Christiansburg (M-12)
County:		Montgomery
Type of Project:		Centralized
Utility Provider:		Montgomery County PSA
Responsible Mgmt Entity?		Montgomery County PSA
Existing Water System?		No
Existing Conditions:		The project area is currently not served by a public sewage system.
Proposed Project:		The project consists of approximately 14,300 L.F. of 8-inch gravity sewer, 2,700 L.F. of 2-inch force main, and one (1) grinder pump station.
Existing WWTP:	Name =	Christiansburg Town - Sewage Treatment Plant (Crab Creek)
	Design Flow (MGD)=	4
	Average Flow =	2
	Receiving Stream =	New River
	Stream Classification =	IV
	Impaired Stream	Yes
Watershed or Adjacent Stream:	Name =	UT to Wilson Creek
	Impaired =	Yes
	Within Vicinity =	Yes
Equivalent Customers Served:	Residential =	42
	Industrial	0
	Commercial =	0
Health Hazard:		Documented Septic Failures
Construction Feasibility:	WWTP/Collection System Available	X
	WWTP/Collection System Upgrades Required	
	WWTP/Collection System Not Available	
Growth Potential:		Industrial and Residential
Total Project Cost:		$1,755,200
Present Worth Per Connection:		$43,060

LEGEND

- GRAVITY SEWER
- EXISTING SEWER
- FORCE MAIN
- PROJECT LIMITS
- PUMP STATION
- GRINDER PUMP STATION
- TREATMENT PLANT/ EXPANSION

M-12

N
W E
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0 1000 2000

SCALE: 1" = 2000'

SOURCE: BLACKSBURG, VA & IRONTO, VA. U.S.G.S. QUADRANGLES

FIGURE 28:
YELLOW SULPHUR ROAD TO TOWN OF CHRISTIANSBURG
(M-12)
MONTGOMERY COUNTY PUBLIC SERVICE AUTHORITY
New River Valley Planning District

PEPPERS FERRY ROAD-CHRISTIANSBURG WEST TO VICKER SWITCH ROAD SEWER EXTENSION (M-13)

MONTGOMERY COUNTY PUBLIC SERVICE AUTHORITY

New River Valley Planning District

Project Background

The Peppers Ferry Road-Christiansburg West to Vicker Switch Road- project area is located west of the Town of Christiansburg and extends primarily along State Route 114. The project area includes approximately 118 residential connections. Currently, the area is not served by a public sewage system. Residences in the area primarily utilize privately owned and maintained on-site septic systems. The project area lies in the watershed of Slate Branch and Crab Creek, both of which have been identified by the Virginia Department of Environmental Quality (DEQ) as impaired streams. It is anticipated that, with the provision of public sewage service, a moderate to high potential will exist for residential growth.

Proposed Facilities

The proposed facilities associated with the Peppers Ferry Road-Christiansburg West to Vicker Switch Road Sewer Extension include approximately 10,100 L.F. of 8-inch gravity sewer, 16,000 L.F. of 4-inch force main, 6,900 L.F. of 2-inch force main, one (1) sewage pump stations, and one (1) grinder pump station. The extension will connect to the existing sanitation authority sewage collection system and all wastewater generated in the project area will ultimately be conveyed to and treated at the existing Town of Christiansburg Wastewater Treatment Plant (WWTP). The Town of Christiansburg WWTP has a permitted capacity of 4.0 million gallons per day (MGD) and currently treats an average of 2.0 MGD. Treated effluent from the Town of Christiansburg WWTP discharges into the New River which has been identified by DEQ as an impaired stream. Based on a 50-year design period, a potential future customer base of 144 connections (anticipated 50-year growth of 20%) and a flow of 300 gallons per day (GPD) per connection, future average daily flow for the project area will be approximately 43,200 GPD or 0.043 MGD. Therefore, adequate capacity is available at the Town of Christiansburg WWTP to treat the anticipated wastewater generated in the Peppers Ferry Road-Christiansburg West to Vicker Switch Road project area.

Project Costs

The preliminary probable project cost and annual operation and maintenance costs associated with the Peppers Ferry Road-Christiansburg West to Vicker Switch Road Sewer Extension are $2,051,300 and $10,020, respectively. These costs result in an approximate present worth of $18,340 per existing connection.

PRELIMINARY PROBABLE PROJECT COST

Construction Cost				
10,100	L.F.	8" Gravity Sewer @	$80/L.F.	$808,000
3,200	L.F.	4" Force Main @	$28/L.F.	$89,600
6,900	L.F.	2" Force Main @	$19/L.F.	$131,100
1	EA.	Sewage Pump Stations @	$250,000/EA.	$250,000
1	EA.	Grinder Pump Stations @	$75,000/EA.	$75,000
118	EA.	Gravity Sewer Connections @	$1,900/EA.	$224,200
		Total Construction Cost		$1,577,900
Related Cost				
30	%	Total Construction Cost		$473,400
		Total Related Cost		$473,400
		TOTAL PROJECT COST		$2,051,030

ANNUAL OPERATION AND MAINTENACE (O&M) COST

Operation and Maintenance Cost				
30,300	L.F.	Gravity Sewer @	$0.10/L.F.	$1,010
22,900	L.F.	Force Main @	$0.10/L.F.	$1,010
1	EA.	Sewage Pump Stations @	$5,000/EA.	$5,000
1	EA.	Grinder Pump Stations @	$3,000/EA.	$3,000
		TOTAL ANNUAL O&M COST		$10,020

PRESENT WORTH OF ANNUAL O&M COST (30 YEARS, 8%) $112,810

TOTAL PROJECT PRESENT WORTH $2,164,110

PRESENT WORTH PER CONNECTION (118 CONNECTIONS) $18,340

Table 56 - PROJECT DATA SHEET

Project Name:		Peppers Ferry Rd (Rt. 114) - Christiansburg West to Vicker Switch Rd (M-13)
County:		Montgomery
Type of Project:		Centralized
Utility Provider:		Montgomery County PSA
Responsible Mgmt Entity?		Montgomery County PSA
Existing Water System?		Yes
Existing Conditions:		The project area is currently not served by a public sewage system.
Proposed Project:		The project consists of approximately 33,000 L.F. of 8-inch gravity sewer, 16,000 L.F. of 4-inch force main, 6,900 L.F. of 2-inch force main, three (3) sewage pump stations, and one (1) grinder pump station.
Existing WWTP:	Name =	Christiansburg Town - Sewage Treatment Plant (Crab Creek)
	Design Flow (MGD)=	4
	Average Flow =	2
	Receiving Stream =	New River
	Stream Classification =	IV
	Impaired Stream	Yes
Watershed or Adjacent Stream:	Name =	UTs to Slate Branch and Crab Creek
	Impaired =	Yes
	Within Vicinity =	No
Equivalent Customers Served:	Residential =	118
	Industrial	0
	Commercial =	0
Health Hazard:		Documented Septic Failures
Construction Feasibility:	WWTP/Collection System Available	X
	WWTP/Collection System Upgrades Required	
	WWTP/Collection System Not Available	
Growth Potential:		Residential
Total Project Cost:		$2,051,300
Present Worth Per Connection:		$18,340

LEGEND

- GRAVITY SEWER
- EXISTING SEWER
- FORCE MAIN
- PROJECT LIMITS
- PUMP STATION
- GRINDER PUMP STATION
- TREATMENT PLANT/ EXPANSION

M-13

N
W E
S

0 1000 2000

SCALE: 1" = 2000'

SOURCE: BLACKSBURG, VA & RADFORD NORTH, VA. U.S.G.S. QUADRANGLES

FIGURE 29:
PEPPERS FERRY ROAD - CHRISTIANSBURG WEST TO VICKER SWITCH ROAD (M-13)
MONTGOMERY COUNTY PUBLIC SERVICE AUTHORITY
New River Valley Planning District

PEPPERS FERRY ROAD - COAL HOLLOW ROAD TO MCCORMICK ROAD SEWER EXTENSION (M-15)

MONTGOMERY COUNTY PUBLIC SERVICE AUTHORITY

New River Valley Planning District

Project Background

The Peppers Ferry Road - Coal Hollow Road to McCormick Road project area is located to the east of the community of Centerville and extends primarily along State Route 114. The project area includes approximately 26 residential connections. Currently, the area is not served by a public sewage system. Residences in the area primarily utilize privately owned and maintained on-site septic systems. The project area lies in the watershed of Stroubles Creek, which has been identified by the Virginia Department of Environmental Quality (DEQ) as an impaired stream. It is anticipated that, with the provision of public sewage service, a moderate to high potential will exist for residential growth.

Proposed Facilities

The proposed facilities associated with the Peppers Ferry Road - Coal Hollow Road to McCormick Road Sewer Extension include approximately 4,900 L.F. of 8-inch gravity sewer. The extension will connect to the existing sanitation authority sewage collection system and all wastewater generated in the project area will ultimately be conveyed to and treated at the existing Blacksburg-VPI Sanitation Authority Wastewater Treatment Plant (WWTP). The Blacksburg-VPI Sanitation Authority WWTP has a permitted capacity of 9.0 million gallons per day (MGD) and currently treats an average of 4.8 MGD. Treated effluent from the Blacksburg-VPI Sanitation Authority WWTP discharges into the New River which has been identified by DEQ as an impaired stream. Based on a 50-year design period, a potential future customer base of 32 connections (anticipated 50-year growth of 20%) and a flow of 300 gallons per day (GPD) per connection, future average daily flow for the project area will be approximately 9,600 GPD or 0.01 MGD. Therefore, adequate capacity is available at the Blacksburg-VPI Sanitation Authority WWTP to treat the anticipated wastewater generated in the Peppers Ferry Road - Coal Hollow Road to McCormick Road project area.

Project Costs

The preliminary probable project cost and annual operation and maintenance costs associated with the Peppers Ferry Road - Coal Hollow Road to McCormick Road Sewer Extension are $573,900 and $490, respectively. These costs result in an approximate present worth of $22,290 per existing connection.

PRELIMINARY PROBABLE PROJECT COST

Construction Cost				
4,900	L.F.	8" Gravity Sewer @	$80/L.F.	$392,000
26	EA.	Gravity Sewer Connections @	$1,900/EA.	$49,400
		Total Construction Cost		$441,400
Related Cost				
30	%	Total Construction Cost		$132,500
		Total Related Cost		$132,500
		TOTAL PROJECT COST		$573,900

ANNUAL OPERATION AND MAINTENACE (O&M) COST

Operation and Maintenance Cost				
4,900	L.F.	Gravity Sewer @	$0.10/L.F.	$490
		TOTAL ANNUAL O&M COST		$490

PRESENT WORTH OF ANNUAL O&M COST (30 YEARS, 8%) $5,520

TOTAL PROJECT PRESENT WORTH $579,420

PRESENT WORTH PER CONNECTION (26 CONNECTIONS) $22,290

Table 57 - PROJECT DATA SHEET

Project Name:		Peppers Ferry Rd (Rt. 114) - Coal Hollow Rd to McCormick Rd (M-15)
County:		Montgomery
Type of Project:		Centralized
Utility Provider:		Montgomery County PSA
Responsible Mgmt Entity?		Montgomery County PSA
Existing Water System?		Yes
Existing Conditions:		The project area is currently not served by a public sewage system.
Proposed Project:		The project consists of approximately 4,900 L.F. of 8-inch gravity sewer.
Existing WWTP:	Name =	Blacksburg-VPI Sanitation Authority WWTP
	Design Flow (MGD)=	9
	Average Flow =	4.8
	Receiving Stream =	New River
	Stream Classification =	IV
	Impaired Stream	Yes
Watershed or Adjacent Stream:	Name =	UTs to Stroubles Creek
	Impaired =	Yes
	Within Vicinity =	No
Equivalent Customers Served:	Residential =	26
	Industrial	0
	Commercial =	0
Health Hazard:		Documented Septic Failures
Construction Feasibility:	WWTP/Collection System Available	X
	WWTP/Collection System Upgrades Required	
	WWTP/Collection System Not Available	
Growth Potential:		Residential
Total Project Cost:		$573,900
Present Worth Per Connection:		$22,290

LEGEND

- GRAVITY SEWER
- EXISTING SEWER
- FORCE MAIN
- PROJECT LIMITS
- PUMP STATION
- GRINDER PUMP STATION
- TREATMENT PLANT/ EXPANSION

M-15

RADFORD ARMY AMMUNITION PLANT

NEW RIVER

Cowan

Centerville

Pepper

Pumping Station

Walton

Vicker

Vicker Heights

Pine View Ch

Belview Sch

Filtration Plant

Radio Tower

Trailer Park

Rockford Ch

Mt Hope Ch

Gravel Pit

ABANDONED

PIPELINE

3 LANE

NORFOLK & WESTERN RAILWAY

WESTERN

Stroubles Creek

Crab Creek

VIRGINIA POLYTECHNIC INSTITUTE AND STATE UNIVERSITY

N

W E

S

0 1000 2000

SCALE: 1" = 2000'

SOURCE: BLACKSBURG, VA & RADFORD NORTH, VA. U.S.G.S. QUADRANGLES

FIGURE 30:
PEPPERS FERRY ROAD - COAL HOLLOW ROAD TO MCCORMICK ROAD (M-15)
MONTGOMERY COUNTY PUBLIC SERVICE AUTHORITY
New River Valley Planning District

NW ROUTE 460 BY-PASS - ELLETT ROAD SEWER EXTENSION (M-16)

MONTGOMERY COUNTY PUBLIC SERVICE AUTHORITY

New River Valley Planning District

Project Background

The Route 460 By-Pass - Ellett Road project area is located to the east of the Town of Christiansburg and extends primarily along State Route 723. The project area includes approximately 115 residential connections. Currently, the area is not served by a public sewage system. Residences in the area primarily utilize privately owned and maintained on-site septic systems. The project area lies in the watershed of Wilson Creek, which has been identified by the Virginia Department of Environmental Quality (DEQ) as an impaired stream. It is anticipated that, with the provision of public sewage service, a moderate to high potential will exist for residential growth and a moderate potential will exist for industrial/commercial growth.

Proposed Facilities

The proposed facilities associated with the Route 460 By-Pass - Ellett Road Sewer Extension include approximately 18,800 L.F. of 8-inch gravity sewer, 8,500 L.F. of 4-inch force main, 5,000 L.F. of 2-inch force main, one (1) sewage pump station, and one (1) sewage pump stations. The extension will connect to the existing Town of Christiansburg sewage collection system and all wastewater generated in the project area will ultimately be conveyed to and treated at the existing Town of Christiansburg Wastewater Treatment Plant (WWTP). The Town of Christiansburg WWTP has a permitted capacity of 4.0 million gallons per day (MGD) and currently treats an average of 2.0 MGD. Treated effluent from the Town of Christiansburg WWTP discharges into the New River which has been identified by DEQ as an impaired stream. Based on a 50-year design period, a potential future customer base of 141 connections (anticipated 50-year growth of 20%) and a flow of 300 gallons per day (GPD) per connection, future average daily flow for the project area will be approximately 42,300 GPD or 0.042 MGD. Therefore, adequate capacity is available at the Town of Christiansburg WWTP to treat the anticipated wastewater generated in the Route 460 By-Pass - Ellett Road project area.

Project Costs

The preliminary probable project cost and annual operation and maintenance costs associated with the Route 460 By-Pass - Ellett Road Sewer Extension are $3,094,700 and $11,230, respectively. These costs result in an approximate present worth of $28,010 per existing connection.

PRELIMINARY PROBABLE PROJECT COST

Construction Cost				
18,800	L.F.	8" Gravity Sewer @	$80/L.F.	$1,504,000
8,500	L.F.	4" Force Main @	$28/L.F.	$238,000
5,000	L.F.	2" Force Main @	$19/L.F.	$95,000
1	EA.	Sewage Pump Stations @	$250,000/EA.	$250,000
1	EA.	Grinder Pump Stations @	$75,000/EA.	$75,000
115	EA.	Gravity Sewer Connections @	$1,900/EA.	$218,500
		Total Construction Cost		$2,380,500
Related Cost				
30	%	Total Construction Cost		$714,200
		Total Related Cost		$714,200
		TOTAL PROJECT COST		$3,094,700

ANNUAL OPERATION AND MAINTENACE (O&M) COST

Operation and Maintenance Cost				
18,800	L.F.	Gravity Sewer @	$0.10/L.F.	$1,880
13,500	L.F.	Force Main @	$0.10/L.F.	$1,350
1	EA.	Sewage Pump Stations @	$5,000/EA.	$5,000
1	EA.	Grinder Pump Stations @	$3,000/EA.	$3,000
		TOTAL ANNUAL O&M COST		$11,230

PRESENT WORTH OF ANNUAL O&M COST (30 YEARS, 8%) $126,430

TOTAL PROJECT PRESENT WORTH $3,221,130

PRESENT WORTH PER CONNECTION (115 CONNECTIONS) $28,010

Table 58 - PROJECT DATA SHEET

Project Name:		NW Rt 460 By-Pass - Ellett Rd (M-16)
County:		Montgomery
Type of Project:		Centralized
Utility Provider:		Montgomery County PSA
Responsible Mgmt Entity?		Montgomery County PSA
Existing Water System?		Yes
Existing Conditions:		The project area is currently not served by a public sewage system.
Proposed Project:		The project consists of approximately 18,800 L.F. of 8-inch gravity sewer, 8,500 L.F. of 4-inch force main, 5,000 L.F. of 2-inch force main, one (1) sewage pump station, and one (1) sewage pump stations.
Existing WWTP:	Name =	Christiansburg Town - Sewage Treatment Plant (Crab Creek)
	Design Flow (MGD)=	4
	Average Flow =	2
	Receiving Stream =	New River
	Stream Classification =	IV
	Impaired Stream	Yes
Watershed or Adjacent Stream:	Name =	Wilson Creek
	Impaired =	Yes
	Within Vicinity =	Yes
Equivalent Customers Served:	Residential =	115
	Industrial	0
	Commercial =	0
Health Hazard:		none
Construction Feasibility:	WWTP/Collection System Available	X
	WWTP/Collection System Upgrades Required	
	WWTP/Collection System Not Available	
Growth Potential:		Industrial and Residential
Total Project Cost:		$3,094,700
Present Worth Per Connection:		$28,010

LEGEND

- GRAVITY SEWER
- EXISTING SEWER
- FORCE MAIN
- PROJECT LIMITS
- PUMP STATION
- GRINDER PUMP STATION
- TREATMENT PLANT/ EXPANSION

M-16

N
W E
S

0 1000 2000

SCALE: 1" = 2000'

SOURCE: BLACKSBURG, VA & IRONTO, VA. U.S.G.S. QUADRANGLES

FIGURE 31:
NW ROUTE 460 BYPASS - ELLETT ROAD (M-16)
MONTGOMERY COUNTY PUBLIC SERVICE AUTHORITY
New River Valley Planning District

RINER PHASE 1-FAIRVIEW CHURCH RD. NORTH OF UNION VALLEY RD. SEWER EXTENSION (M-20)

MONTGOMERY COUNTY PUBLIC SERVICE AUTHORITY

New River Valley Planning District

Project Background

The Riner Phase 1-Fairview Church Rd. North of Union Valley Rd. project area is located within and north of the community of Riner and extends primarily along State Routes 8, 669, and 671. The project area includes approximately 149 residential connections. Currently, the area is not served by a public sewage system. Residences in the area primarily utilize privately owned and maintained on-site septic systems. The project area lies in the watershed of Mill Creek, which has been identified by the Virginia Department of Environmental Quality (DEQ) as an impaired stream. It is anticipated that, with the provision of public sewage service, a moderate to high potential will exist for residential growth.

Proposed Facilities

The proposed facilities associated with the Riner Phase 1-Fairview Church Rd. North of Union Valley Rd. Sewer Extension include approximately 27,400 L.F. of 8-inch gravity sewer, 500 L.F. of 6-inch gravity sewer, 2,400 L.F. of 4-inch force main, and one (1) sewage pump station. The extension will connect to the existing community of Riner sewage collection system and all wastewater generated in the project area will ultimately be conveyed to and treated at the existing Community of Riner Wastewater Treatment Plant (WWTP). The Community of Riner WWTP has a permitted capacity of 0.1 million gallons per day (MGD) and currently treats an average of 0.022 MGD. Treated effluent from the Community of Riner WWTP discharges into the Mill Creek which has been identified by DEQ as an impaired stream. Based on a 50-year design period, a potential future customer base of 182 connections (anticipated 50-year growth of 20%) and a flow of 300 gallons per day (GPD) per connection, future average daily flow for the project area will be approximately 54,600 GPD or 0.055 MGD. Therefore, adequate capacity is available at the Community of Riner WWTP to treat the anticipated wastewater generated in the Riner Phase 1-Fairview Church Rd. North of Union Valley Rd. project area.

Project Costs

The preliminary probable project cost and annual operation and maintenance costs associated with the Riner Phase 1-Fairview Church Rd. North of Union Valley Rd. Sewer Extension are $3,676,800 and $8,030, respectively. These costs result in an approximate present worth of $25,290 per existing connection.

PRELIMINARY PROBABLE PROJECT COST

Construction Cost				
27,400	L.F.	8" Gravity Sewer @	$80/L.F.	$2,192,000
500	L.F.	6" Gravity Sewer @	$72/L.F.	$36,000
2,400	L.F.	4" Force Main @	$28/L.F.	$67,200
1	EA.	Sewage Pump Stations @	$250,000/EA.	$250,000
149	EA.	Gravity Sewer Connections @	$1,900/EA.	$283,100
		Total Construction Cost		$2,828,300
Related Cost				
30	%	Total Construction Cost		$848,500
		Total Related Cost		$848,500
		TOTAL PROJECT COST		$3,676,800

ANNUAL OPERATION AND MAINTENACE (O&M) COST

Operation and Maintenance Cost				
27,900	L.F.	Gravity Sewer @	$0.10/L.F.	$2,790
2,400	L.F.	Force Main @	$0.10/L.F.	$240
1	EA.	Sewage Pump Stations @	$5,000/EA.	$5,000
		TOTAL ANNUAL O&M COST		$8,030

PRESENT WORTH OF ANNUAL O&M COST (30 YEARS, 8%) $90,410

TOTAL PROJECT PRESENT WORTH $3,767,210

PRESENT WORTH PER CONNECTION (149 CONNECTIONS) $25,290

Table 59 - PROJECT DATA SHEET

Project Name:		Riner Phase I - Fairview Church Rd., Riner Rd. North of Union Valley Rd. (M-20)
County:		Montgomery
Type of Project:		Centralized
Utility Provider:		Montgomery County PSA
Responsible Mgmt Entity?		Montgomery County PSA
Existing Water System?		Yes
Existing Conditions:		The project area is currently not served by a public sewage system.
Proposed Project:		The project consists of approximately 27,400 L.F. of 8-inch gravity sewer, 500 L.F. of 6-inch gravity sewer, 2,400 L.F. of 4-inch force main, and one (1) sewage pump station.
Existing WWTP:	Name =	Riner Town -Sewage Treatment Plant
	Design Flow (MGD)=	0.1
	Average Flow =	0.022
	Receiving Stream =	Mill Creek
	Stream Classification =	IV
	Impaired Stream	Yes
Watershed or Adjacent Stream:	Name =	UTs to Mill Creek
	Impaired =	Yes
	Within Vicinity =	Yes
Equivalent Customers Served:	Residential =	149
	Industrial	0
	Commercial =	0
Health Hazard:		Known older homes (>30 yrs.) with septic systems.
Construction Feasibility:	WWTP/Collection System Available	X
	WWTP/Collection System Upgrades Required	
	WWTP/Collection System Not Available	
Growth Potential:		Residential
Total Project Cost:		$3,676,800
Present Worth Per Connection:		$25,290

LEGEND

- GRAVITY SEWER
- EXISTING SEWER
- FORCE MAIN
- PROJECT LIMITS
- PUMP STATION
- GRINDER PUMP STATION
- TREATMENT PLANT/ EXPANSION

M-20

Riner

Alburn High Sch

Union Valley Ch

Trailer Park

Union Valley

Smith Creek

Elliott Creek

Mill Creek

Poplar Creek

MOUNTAIN

PILOT

BM 2089

BM 2049

N

W E

S

0 1000 2000

SCALE: 1" = 2000'

SOURCE: RINER, VA. U.S.G.S. QUADRANGLE

FIGURE 32:
RINER PHASE I - FAIRVIEW CHURCH ROAD, RINER ROAD NORTH OF UNION VALLEY ROAD (M-20)
MONTGOMERY COUNTY PUBLIC SERVICE AUTHORITY
New River Valley Planning District

SHAWSVILLE SEWER EXTENSION (M-23)

MONTGOMERY COUNTY PUBLIC SERVICE AUTHORITY

New River Valley Planning District

Project Background

The Shawsville project area is located northeast of the Community of Shawsville and extends primarily along U.S. Route 11/460 and State Route 633. The project area includes approximately 172 residential connections. Currently, the area is not served by a public sewage system. Residences in the area primarily utilize privately owned and maintained on-site septic systems. The project area lies in the watersheds of South Fork Roanoke River and Spring Branch, which have been identified by the Virginia Department of Environmental Quality (DEQ) as impaired streams. It is anticipated that, with the provision of public sewage service, a moderate to high potential will exist for residential growth.

Proposed Facilities

The proposed facilities associated with the Shawsville Sewer Extension includes approximately 15,400 L.F. of 8-inch gravity sewer, 700 L.F. of 2-inch force main, and one (1) grinder pump station. The extension will connect to the existing Community of Shawsville sewage collection system and all wastewater generated in the project area will ultimately be conveyed to and treated at the existing Shawsville Wastewater Treatment Plant (WWTP). The Shawsville WWTP has a permitted capacity of 0.2 million gallons per day (MGD) and currently treats an average of 0.053 MGD. Treated effluent from the Shawsville WWTP discharges into the South Fork Roanoke River which has been identified by DEQ as an impaired stream. Based on a 50-year design period, a potential future customer base of 210 connections (anticipated 50-year growth of 20%) and a flow of 300 gallons per day (GPD) per connection, future average daily flow for the project area will be approximately 63,000 GPD or 0.063 MGD. Therefore, adequate capacity is available at the Shawsville WWTP to treat the anticipated wastewater generated in the Shawsville project area.

Project Costs

The preliminary probable project cost and annual operation and maintenance costs associated with the Shawsville Sewer Extension are $2,271,300 and $4,610, respectively. These costs result in an approximate present worth of $13,510 per existing connection.

PRELIMINARY PROBABLE PROJECT COST

Construction Cost				
15,400	L.F.	8" Gravity Sewer @	$80/L.F.	$1,232,000
700	L.F.	2" Force Main @	$19/L.F.	$13,300
1	EA.	Grinder Pump Stations @	$75,000/EA.	$75,000
1	EA.	Railroad Crossings @	$100,000/EA.	$100,000
172	EA.	Gravity Sewer Connections @	$1,900/EA.	$326,800
		Total Construction Cost		$1,747,100
Related Cost				
30	%	Total Construction Cost		$524,200
		Total Related Cost		$524,200
		TOTAL PROJECT COST		$2,271,300

ANNUAL OPERATION AND MAINTENACE (O&M) COST

Operation and Maintenance Cost				
15,400	L.F.	Gravity Sewer @	$0.10/L.F.	$1,540
700	L.F.	Force Main @	$0.10/L.F.	$70
1	EA.	Grinder Pump Stations @	$3,000/EA.	$3,000
		TOTAL ANNUAL O&M COST		$4,610

PRESENT WORTH OF ANNUAL O&M COST (30 YEARS, 8%) $51,900

TOTAL PROJECT PRESENT WORTH $2,323,200

PRESENT WORTH PER CONNECTION (172CONNECTIONS) $13,510

Table 60 - PROJECT DATA SHEET

Project Name:	Shawsville - Buildout Existing Service Area (M-23)	
County:	Montgomery	
Type of Project:	Centralized	
Utility Provider:	Montgomery County PSA	
Responsible Mgmt Entity?	Montgomery County PSA	
Existing Water System?	Yes	
Existing Conditions:	The project area is currently not served by a public sewage system.	
Proposed Project:	The project consists of approximately 15,400 L.F. of 8-inch gravity sewer, 700 L.F. of 2-inch force main, and one (1) grinder pump station.	
Existing WWTP:	Name =	Shawsville - Sewage Treatment Plant
	Design Flow (MGD)=	0.2
	Average Flow =	0.053
	Receiving Stream =	South Fork Roanoke River
	Stream Classification =	V
	Impaired Stream	Yes
Watershed or Adjacent Stream:	Name =	South Fork Roanoke River, Spring Branch
	Impaired =	Yes
	Within Vicinity =	Yes
Equivalent Customers Served:	Residential =	172
	Industrial	0
	Commercial =	0
Health Hazard:	Documented Septic Failures	
Construction Feasibility:	WWTP/Collection System Available	X
	WWTP/Collection System Upgrades Required	
	WWTP/Collection System Not Available	
Growth Potential:	Residential	
Total Project Cost:	$2,271,300	
Present Worth Per Connection:	$13,510	

LEGEND

- GRAVITY SEWER
- EXISTING SEWER
- FORCE MAIN
- PROJECT LIMITS
- PUMP STATION
- GRINDER PUMP STATION
- TREATMENT PLANT/ EXPANSION

M-23

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W E
S

0 1000 2000

SCALE: 1" = 2000'

SOURCE: ELLISTON, VA & IRONTO, VA. U.S.G.S. QUADRANGLES

FIGURE 33:
SHAWSVILLE - BUILDOUT EXISTING SERVICE AREA (M-23)
MONTGOMERY COUNTY PUBLIC SERVICE AUTHORITY
New River Valley Planning District

IRONTO/I81 EXIT 128/I81 EXIT 128 – BUILDOUT EXISTING SERVICE AREA (M-24)

MONTGOMERY COUNTY PUBLIC SERVICE AUTHORITY

New River Valley Planning District

Project Background

The Ironto/I81 Exit 128 project area is located to the east and south of the community of Elliston and extends primarily along U.S. Route 460 and State Route 631. The project area includes approximately 79 residential connections. Currently, the area is not served by a public sewage system. Residences in the area primarily utilize privately owned and maintained on-site septic systems. The project area lies in the watershed of the South and North Forks of the Roanoke River, both of which have been identified by the Virginia Department of Environmental Quality (DEQ) as impaired streams. It is anticipated that, with the provision of public sewage service, a moderate to high potential will exist for residential growth, and a moderate potential will exist for industrial/commercial growth.

Proposed Facilities

The proposed facilities associated with the Ironto/I81 Exit 128-Buildout Existing Service Area project includes approximately 14,700 L.F. of 8-inch gravity sewer, 1,200 L.F. of 6-inch gravity sewer, 3,400 L.F. of 2-inch force main, and three (3) grinder pump stations. The extension will connect to the existing community of Elliston sewage collection system and all wastewater generated in the project area will ultimately be conveyed to and treated at the existing Elliston-Lafayette Wastewater Treatment Plant (WWTP). The Elliston-Lafayette WWTP has a permitted capacity of 0.25 million gallons per day (MGD) and currently treats an average of 0.058 MGD. Treated effluent from the Elliston-Lafayette WWTP discharges into the South Fork Roanoke River which has been identified by DEQ as an impaired stream. Based on a 50-year design period, a potential future customer base of 97 connections (anticipated 50-year growth of 20%) and a flow of 300 gallons per day (GPD) per connection, future average daily flow for the project area will be approximately 29,100 GPD or 0.029 MGD. Therefore, adequate capacity is available at the Elliston-Lafayette WWTP to treat the anticipated wastewater generated in the Ironto/I81 Exit 128 project area.

Project Costs

The preliminary probable project cost and annual operation and maintenance costs associated with the Ironto/I81 Exit 128-Buildout Existing Service Area project are $2,472,800 and $10,930, respectively. These costs result in an approximate present worth of $32,860 per existing connection.

PRELIMINARY PROBABLE PROJECT COST

Construction Cost				
14,700	L.F.	8" Gravity Sewer @	$80/L.F.	$1,176,000
1,200	L.F.	6" Gravity Sewer @	$72/L.F.	$86,400
3,400	L.F.	2" Force Main @	$19/L.F.	$64,600
3	EA.	Grinder Pump Stations @	$75,000/EA.	$225,000
2	EA.	Railroad Crossings @	$100,000/EA.	$200,000
79	EA.	Gravity Sewer Connections @	$1,900/EA.	$150,100
		Total Construction Cost		$1,902,100
Related Cost				
30	%	Total Construction Cost		$570,700
		Total Related Cost		$570,700
		TOTAL PROJECT COST		$2,472,800

ANNUAL OPERATION AND MAINTENACE (O&M) COST

Operation and Maintenance Cost				
15,900	L.F.	Gravity Sewer @	$0.10/L.F.	$1,590
3,400	L.F.	Force Main @	$0.10/L.F.	$340
3	EA.	Grinder Pump Stations @	$3,000/EA.	$9,000
		TOTAL ANNUAL O&M COST		$10,930

PRESENT WORTH OF ANNUAL O&M COST (30 YEARS, 8%)	$123,050
TOTAL PROJECT PRESENT WORTH	$2,595,850
PRESENT WORTH PER CONNECTION (79 CONNECTIONS)	$32,860

Table 61 - PROJECT DATA SHEET

Project Name:	Ironto / I81 Exit 128 - Buildout Existing Service Area (M-24)	
County:	Montgomery	
Type of Project:	Centralized	
Utility Provider:	Montgomery County PSA	
Responsible Mgmt Entity?	Montgomery County PSA	
Existing Water System?	Yes	
Existing Conditions:	The project area is currently not served by a public sewage system.	
Proposed Project:	The project consists of approximately 14,700 L.F. of 8-inch gravity sewer, 1,200 L.F. of 6-inch gravity sewer, 3,400 L.F. of 2-inch force main, and three (3) grinder pump stations.	
Existing WWTP:	Name =	Elliston-Lafayette WWTP
	Design Flow (MGD)=	0.25
	Average Flow =	0.058
	Receiving Stream =	South Fork Roanoke River
	Stream Classification =	V
	Impaired Stream	Yes
Watershed or Adjacent Stream:	Name =	Roanoke River, South & North Forks
	Impaired =	Yes
	Within Vicinity =	Yes
Equivalent Customers Served:	Residential =	79
	Industrial	0
	Commercial =	0
Health Hazard:	Documented Septic Failures	
Construction Feasibility:	WWTP/Collection System Available	X
	WWTP/Collection System Upgrades Required	
	WWTP/Collection System Not Available	
Growth Potential:	Industrial and Residential	
Total Project Cost:	$2,472,800	
Present Worth Per Connection:	$32,860	

LEGEND

- GRAVITY SEWER
- EXISTING SEWER
- FORCE MAIN
- PROJECT LIMITS
- PUMP STATION
- GRINDER PUMP STATION
- TREATMENT PLANT/ EXPANSION

M-24

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W E
S

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SCALE: 1" = 2000'

SOURCE: ELLISTON, VA & IRONTO, VA. U.S.G.S. QUADRANGLES

FIGURE 34:
IRONTO/I81 EXIT 128 - BUILDOUT EXISTING SERVICE AREA (M-24)
MONTGOMERY COUNTY PUBLIC SERVICE AUTHORITY
New River Valley Planning District

McCOY COMMUNITY SEWER SYSTEM (DC-13)

MONTGOMERY COUNTY PUBLIC SERVICE AUTHORITY

New River Valley Planning District

Project Background

McCoy is located in a beautiful section of Montgomery County, across the New River from the Radford Army Ammunition Plant, and roughly 9 miles from the Virginia Tech campus in Blacksburg. Public water and sewer are not available in this community, and ground water contamination has been reported recently. All the homes are served by individual onsite septic systems, which is not desirable in densely populated areas with karst conditions.

Proposed Facilities

The proposed facilities associated with a decentralized wastewater system serving 100 homes includes approximately 24,000 linear feet of effluent sewer line. The lines would range from 6-inch gravity sewers to 2-inch force main. Approximately 10% of the septic tanks at the 100 homes would require pump packages due to the rolling terrain. The treatment system would require 4-AX100 modules to treat the 20,000 gallons per day of wastewater generated. An ultraviolet (UV) disinfection system would be required prior to discharging into the stream.

Project Costs

The preliminary probable project cost and annual operation and maintenance costs associated with this system are $1,347,500 and $23,400, respectively. These costs result in an approximate present worth of $16,109 per existing connection.

PRELIMINARY PROBABLE PROJECT COST

Construction Cost				
10	EA.	STEP Systems	$5,000	$50,000
90	EA.	STEG Systems	$3,000	$270,000
24,000	LF	4" Gr. Effluent & 2" Force Main	$10	$240,000
2,750	LF	6" Gravity Effluent Sewer Line	$14	$38,500
20	EA.	Road Crossings	$2,500	$50,000
20,000	Gal.	Treatment System - AX100	$10	$200,000
16,000	Gal.	Treatment Tanks	$1.50	$24,000
20,000	Gal.	Discharge System -UV	$2	$40,000
100	EA.	Crush & Fill Existing Septic Tank	$500	$50,000
		Total Construction Cost		$962,500
Related Cost				
40	%	Total Related Cost		$385,000
		TOTAL PROJECT COST		$1,347,500

OPERATION AND MAINTENANCE (O&M) COST

Conn.	Unit	Description	$/Month	Monthly	Total Annual
100	EA.	Plant Operations & Maintenance	$12.50	$1,250	$15,000
10	EA.	STEP System Operations	$10.50	$105	$1,260
90	EA.	STEG System Operations	$5.50	$495	$5,940
		VPDES Permit Fee	$1.00	$100	$1,200
		TOTAL O&M COST		$1,950	$23,400

PRESENT WORTH OF ANNUAL O&M COST (30 YEARS, 8%) $263,433

TOTAL PROJECT PRESENT WORTH $1,610,933

PRESENT WORTH PER CONNECTION (100 CONNECTIONS) $16,109

Table 62 - PROJECT DATA SHEET

Project Name:	McCoy	
County:	Montgomery	
Type of Project:	Decentralized	
Utility Provider:	Montgomery County	
Responsible Mgmt Entity?	Montgomery County	
Existing Water System?	No	
Existing Conditions:	This is a large community where the homes are generally on large lots, but the soils are not very good for onsite treatment and disposal. Wells are contaminated with bacteria.	
Proposed Project:	The existing 100 homes in the community could be served by using a STEG/STEP system at each home or business. Treatment would be provided by using an AdvanTex Treatment System followed by UV disinfection system before discharging into the unnamed tributary of the New River.	
Existing WWTP:	Name =	N/A
	Design Flow =	
	Average Flow =	
	Receiving Stream =	
	Stream Classification =	
	Impaired Stream	
Watershed or Adjacent Stream:	Name =	New River
	Impaired =	No
	Within Vicinity =	No
Equivalent Customers Served:	Residential =	100
	Industrial	0
	Commercial =	0
Health Hazard:	Yes	
Construction Feasibility:	WWTP/Collection System Available	No
	WWTP/Collection System Upgrades Required	
	WWTP/Collection System Not Available	
Growth Potential:	Residential growth is expected since building lots would not need to be as large.	
Total Project Cost:	$1,347,500	
Present Worth Per Connection:	$16,109	

LEGEND

- GRAVITY SEWER
- EXISTING GRAVITY SEWER
- FORCE MAIN
- PUMP STATION
- GRINDER PUMP STATION
- TREATMENT PLANT/ EXPANSION

N
W E
S

0 1000 2000

SCALE: 1" = 2000'

SOURCE: STAFFORDSVILLE, VA & RADFORD NORTH, VA. U.S.G.S. QUADRANGLE

FIGURE 35:
MCCOY COMMUNITY (DC-13)
MONTGOMERY COUNTY PUBLIC SERVICE AUTHORITY
New River Valley Planning District

PULASKI COUNTY PROJECT DATA SHEETS

PROJECT DATA SHEET

Table 135

Project Name:	Thorne Spring Branch Phase 1 (P-1)
County:	Pulaski
Type of Project:	Centralized
Utility Provider:	Pulaski County PSA
Responsible Mgmt Entity?	Pulaski County PSA
Existing Water System?	Yes
Existing Conditions:	The project area is currently not served by a public sewage system.
Proposed Project:	This project consists of approximately 8,985 L.F. of 12-inch gravity sewer and 23,900 L.F. of 8-inch gravity sewer.

Existing WWTP:

Name =	Peppers Ferry
Design Flow =	9 mgd
Average Flow =	3.98 mgd
Receiving Stream =	New River
Stream Classification =	IV
Impaired Stream	Yes

Watershed or Adjacent Stream:

Name =	Thorne Springs Branch - Tributary of Peak Creek
Impaired =	Yes
Within Vicinity =	No

Equivalent Customers Served:

Residential =	212
Industrial	0
Commercial =	0

Health Hazard:	Known older homes with septic systems.

Construction Feasibility:

WWTP/Collection System Available	X
WWTP/Collection System Upgrades Required	
WWTP/Collection System Not Available	

Growth Potential:	Industrial and Residential
Total Project Cost:	$4,130,660
Present Worth Per Connection:	$19,658

Table 136

Project Name:	Thorne Spring Branch Phase 2 (P-2)
County:	Pulaski
Type of Project:	Centralized
Utility Provider:	Pulaski County PSA
Responsible Mgmt Entity?	Pulaski County PSA
Existing Water System?	Yes
Existing Conditions:	The project area is currently not served by a public sewage system.
Proposed Project:	This project consists of approximately 7,630 L.F. of 10-inch gravity sewer, 27,125 L.F. of 8-inch gravity sewer, 750 L.F. of 2-inch force main, one grinder pump station, and upgrades/improvements to the existing collection system.

Existing WWTP:

Name =	Peppers Ferry
Design Flow =	9 mgd
Average Flow =	3.98 mgd
Receiving Stream =	New River
Stream Classification =	IV
Impaired Stream	Yes

Watershed or Adjacent Stream:

Name =	Thorne Springs Branch - Tributary of Peak Creek
Impaired =	Yes
Within Vicinity =	No

Equivalent Customers Served:

Residential =	95
Industrial	0
Commercial =	0

Health Hazard:	Known older homes with septic systems.

Construction Feasibility:

WWTP/Collection System Available	
WWTP/Collection System Upgrades Required	
WWTP/Collection System Not Available	X

Growth Potential:	Residential
Total Project Cost:	$4,786,550
Present Worth Per Connection:	$51,760

PROJECT DATA SHEET

Table 137

Project Name:	Thorne Spring Branch Phase 3 (P-3)
County:	Pulaski
Type of Project:	Centralized
Utility Provider:	Pulaski County PSA
Responsible Mgmt Entity?	Pulaski County PSA
Existing Water System?	Yes
Existing Conditions:	The project area is currently not served by a public sewage system.
Proposed Project:	This project consists of approximately 30,100 L.F. of 8-inch gravity sewer and upgrades/improvements to the existing collection system..
Existing WWTP:	Name = Peppers Ferry Design Flow = 9 mgd Average Flow = 3.98 mgd Receiving Stream = New River Stream Classification = IV Impaired Stream Yes
Watershed or Adjacent Stream:	Name = Thorne Springs Branch - Tributary of Peak Creek Impaired = Yes Within Vicinity = No
Equivalent Customers Served:	Residential = 179 Industrial 0 Commercial = 0
Health Hazard:	Known older homes with septic systems.
Construction Feasibility:	WWTP/Collection System Available WWTP/Collection System Upgrades Required WWTP/Collection System Not Available X
Growth Potential:	Residential
Total Project Cost:	$4,968,800
Present Worth Per Connection:	$28,460

Table 138

Project Name:	Alum Spring Road Phase 1 (P-4)
County:	Pulaski
Type of Project:	Centralized
Utility Provider:	Pulaski County PSA
Responsible Mgmt Entity?	Pulaski County PSA
Existing Water System?	Yes
Existing Conditions:	The project area is currently not served by a public sewage system.
Proposed Project:	This project consists of approximately 8,000 L.F. of 10-inch gravity sewer, 19,610 L.F. of 8-inch gravity sewer, and 750 L.F. of 6-inch gravity sewer.
Existing WWTP:	Name = Peppers Ferry Design Flow = 9 mgd Average Flow = 3.98 mgd Receiving Stream = New River Stream Classification = IV Impaired Stream Yes
Watershed or Adjacent Stream:	Name = UT - tributary of Peak Creek Impaired = Yes Within Vicinity = No
Equivalent Customers Served:	Residential = 219 Industrial 0 Commercial = 0
Health Hazard:	Known older homes with septic systems.
Construction Feasibility:	WWTP/Collection System Available X WWTP/Collection System Upgrades Required WWTP/Collection System Not Available
Growth Potential:	Residential
Total Project Cost:	$3,565,800
Present Worth Per Connection:	$16,428

PROJECT DATA SHEET

Table 139

Project Name:	Alum Spring Road Phase 2 (P-5)	
County:	Pulaski	
Type of Project:	Centralized	
Utility Provider:	Pulaski County PSA	
Responsible Mgmt Entity?	Pulaski County PSA	
Existing Water System?	Yes	
Existing Conditions:	The project area is currently not served by a public sewage system.	
Proposed Project:	This project consists of approximately 9,240 L.F. of 10-inch gravity sewer, 28,925 L.F. of 8-inch gravity sewer, 1,400 L.F. of 6-inch gravity sewer, 1,260 L.F. of 2-inch force main, and one grinder pump station.	
Existing WWTP:	Name =	Peppers Ferry
	Design Flow =	9 mgd
	Average Flow =	3.98 mgd
	Receiving Stream =	New River
	Stream Classification =	IV
	Impaired Stream	Yes
Watershed or Adjacent Stream:	Name =	Harbison Branch - tributary of Peak Creek
	Impaired =	No
	Within Vicinity =	No
Equivalent Customers Served:	Residential =	161
	Industrial	0
	Commercial =	0
Health Hazard:	Known older homes with septic systems.	
Construction Feasibility:	WWTP/Collection System Available	
	WWTP/Collection System Upgrades Required	
	WWTP/Collection System Not Available	X
Growth Potential:	Residential	
Total Project Cost:	$4,722,660	
Present Worth Per Connection:	$30,180	

Table 140

Project Name:	Robinson Tract Road Phase 1 (P-6)	
County:	Pulaski	
Type of Project:	Centralized	
Utility Provider:	Pulaski County PSA	
Responsible Mgmt Entity?	Pulaski County PSA	
Existing Water System?	No	
Existing Conditions:	The project area is currently not served by a public sewage system.	
Proposed Project:	This project consists of approximately 7,770 L.F. of 10-inch gravity sewer, 27,180 L.F. of 8-inch gravity sewer and upgrades/improvements to the existing collection system.	
Existing WWTP:	Name =	Peppers Ferry
	Design Flow =	9 mgd
	Average Flow =	3.98 mgd
	Receiving Stream =	New River
	Stream Classification =	IV
	Impaired Stream	Yes
Watershed or Adjacent Stream:	Name =	Kent Branch, Bentley Branch and Tract Fork-tributaries of Peak Creek
	Impaired =	Yes
	Within Vicinity =	No
Equivalent Customers Served:	Residential =	104
	Industrial	0
	Commercial =	0
Health Hazard:	Documented septic failures.	
Construction Feasibility:	WWTP/Collection System Available	
	WWTP/Collection System Upgrades Required	
	WWTP/Collection System Not Available	X
Growth Potential:	Residential	
Total Project Cost:	$4,783,760	
Present Worth Per Connection:	$47,250	

PROJECT DATA SHEET

Table 141

Project Name:	Robinson Tract Road Phase 2 (P-7)
County:	Pulaski
Type of Project:	Centralized
Utility Provider:	Pulaski County PSA
Responsible Mgmt Entity?	Pulaski County PSA
Existing Water System?	No
Existing Conditions:	The project area is currently not served by a public sewage system.
Proposed Project:	This project consists of approximately 38,495 L.F. of 8-inch gravity sewer and upgrades/improvements to the existing collection system.

Existing WWTP:

Name =	Peppers Ferry
Design Flow =	9 mgd
Average Flow =	3.98 mgd
Receiving Stream =	New River
Stream Classification =	IV
Impaired Stream	Yes

Watershed or Adjacent Stream:

Name =	Kent Branch, Bentley Branch and Tract Fork-tributaries of Peak Creek
Impaired =	Yes
Within Vicinity =	No

Equivalent Customers Served:

Residential =	106
Industrial	0
Commercial =	0

Health Hazard:	Documented septic failures.

Construction Feasibility:

WWTP/Collection System Available	
WWTP/Collection System Upgrades Required	
WWTP/Collection System Not Available	X

Growth Potential:	Residential
Total Project Cost:	$5,092,100
Present Worth Per Connection:	$49,300

Table 142

Project Name:	Brookmont Road (P-8)
County:	Pulaski
Type of Project:	Centralized
Utility Provider:	Pulaski County PSA
Responsible Mgmt Entity?	Pulaski County PSA
Existing Water System?	No
Existing Conditions:	The project area is currently not served by a public sewage system.
Proposed Project:	This project consists of approximately 3,770 L.F. of 12-inch gravity sewer, 7,655 L.F. of 10-inch gravity sewer, 20,270 L.F. of 8-inch gravity sewer and upgrades/improvements to the existing collection system.

Existing WWTP:

Name =	Peppers Ferry
Design Flow =	9 mgd
Average Flow =	3.98 mgd
Receiving Stream =	New River
Stream Classification =	IV
Impaired Stream	Yes

Watershed or Adjacent Stream:

Name =	Tract Branch - tributary of Peak Creek
Impaired =	Yes
Within Vicinity =	No

Equivalent Customers Served:

Residential =	222
Industrial	0
Commercial =	0

Health Hazard:	Documented septic failures.

Construction Feasibility:

WWTP/Collection System Available	
WWTP/Collection System Upgrades Required	
WWTP/Collection System Not Available	X

Growth Potential:	Residential
Total Project Cost:	$5,734,260
Present Worth Per Connection:	$26,400

PROJECT DATA SHEET

Table 143

Project Name:	Pondlick Branch / Mount Olivet Phase 1 (P-9)
County:	Pulaski
Type of Project:	Centralized
Utility Provider:	Pulaski County PSA
Responsible Mgmt Entity?	Pulaski County PSA
Existing Water System?	No
Existing Conditions:	The project area is currently not served by a public sewage system.
Proposed Project:	This project consists of approximately 4,400 L.F. of 12-inch gravity sewer and 22,275 L.F. of 8-inch gravity sewer.
Existing WWTP: Name =	Peppers Ferry
Design Flow =	9 mgd
Average Flow =	3.98 mgd
Receiving Stream =	New River
Stream Classification =	IV
Impaired Stream	Yes
Watershed or Adjacent Stream: Name =	Peak Creek
Impaired =	Yes
Within Vicinity =	Yes
Equivalent Customers Served: Residential =	126
Industrial	0
Commercial =	0
Health Hazard:	Known older homes with septic systems.
Construction Feasibility: WWTP/Collection System Available	X
WWTP/Collection System Upgrades Required	
WWTP/Collection System Not Available	
Growth Potential:	Residential
Total Project Cost:	$3,794,500
Present Worth Per Connection:	$30,621

Table 144

Project Name:	Pondlick Branch / Mount Olivet Phase 2 (P-10)
County:	Pulaski
Type of Project:	Centralized
Utility Provider:	Pulaski County PSA
Responsible Mgmt Entity?	Pulaski County PSA
Existing Water System?	No
Existing Conditions:	The project area is currently not served by a public sewage system.
Proposed Project:	This project consists of approximately 8,515 L.F. of 10-inch gravity sewer, 18,800 L.F. of 8-inch gravity sewer, 3,000 L.F. of 2-inch force main, two grinder pump stations, and upgrades/improvements to the existing collection system.
Existing WWTP: Name =	Peppers Ferry
Design Flow =	9 mgd
Average Flow =	3.98 mgd
Receiving Stream =	New River
Stream Classification =	IV
Impaired Stream	Yes
Watershed or Adjacent Stream: Name =	Peak Creek
Impaired =	Yes
Within Vicinity =	Yes
Equivalent Customers Served: Residential =	112
Industrial	0
Commercial =	0
Health Hazard:	Known older homes with septic systems.
Construction Feasibility: WWTP/Collection System Available	X
WWTP/Collection System Upgrades Required	
WWTP/Collection System Not Available	
Growth Potential:	Residential
Total Project Cost:	$4,914,420
Present Worth Per Connection:	$45,000

PROJECT DATA SHEET

Table 145

Project Name:	Route 11 - West Dublin / Cougar Trail Road (P-11)
County:	Pulaski
Type of Project:	Centralized
Utility Provider:	Pulaski County PSA
Responsible Mgmt Entity?	Pulaski County PSA
Existing Water System?	Yes
Existing Conditions:	The project area is currently not served by a public sewage system.
Proposed Project:	This project consists of approximately 13,400 L.F. of 10-inch gravity sewer, 15,925 L.F. of 8-inch gravity sewer.

Existing WWTP:		
	Name =	Peppers Ferry
	Design Flow =	9 mgd
	Average Flow =	3.98 mgd
	Receiving Stream =	New River
	Stream Classification =	IV
	Impaired Stream	Yes

Watershed or Adjacent Stream:		
	Name =	Thorne Springs Branch - Tributary of Peak Creek
	Impaired =	Yes
	Within Vicinity =	No

Equivalent Customers Served:		
	Residential =	200
	Industrial	0
	Commercial =	0

Health Hazard:	None.	
Construction Feasibility:	WWTP/Collection System Available	X
	WWTP/Collection System Upgrades Required	
	WWTP/Collection System Not Available	
Growth Potential:	Industrial and Residential	
Total Project Cost:	$3,683,200	
Present Worth Per Connection:	$19,040	

Table 146

Project Name:	Route 100 - Dublin / Commerce Park (P-12)
County:	Pulaski
Type of Project:	Centralized
Utility Provider:	Pulaski County PSA
Responsible Mgmt Entity?	Pulaski County PSA
Existing Water System?	Yes
Existing Conditions:	The project area is currently not served by a public sewage system.
Proposed Project:	This project consists of approximately 43,410 L.F. of 8-inch gravity sewer, 7,100 L.F. of 2-inch force main, and two grinder pump stations.

Existing WWTP:		
	Name =	Peppers Ferry
	Design Flow =	9 mgd
	Average Flow =	3.98 mgd
	Receiving Stream =	New River
	Stream Classification =	IV
	Impaired Stream	Yes

Watershed or Adjacent Stream:		
	Name =	Millerplace Branch - tributary of Back Creek, UT - tributary of New River, Thorne Spring Branch - tributary of Peak Creek
	Impaired =	Yes
	Within Vicinity =	No

Equivalent Customers Served:		
	Residential =	206
	Industrial	0
	Commercial =	0

Health Hazard:	Documented septic failures.	
Construction Feasibility:	WWTP/Collection System Available	X
	WWTP/Collection System Upgrades Required	
	WWTP/Collection System Not Available	
Growth Potential:	Industrial and Residential	
Total Project Cost:	$5,870,360	
Present Worth Per Connection:	$29,319	

PROJECT DATA SHEET

Table 147

Project Name:	Back Creek Area (P-13)
County:	Pulaski
Type of Project:	Centralized
Utility Provider:	Pulaski County PSA
Responsible Mgmt Entity?	Pulaski County PSA
Existing Water System?	No
Existing Conditions:	The project area is currently not served by a public sewage system.
Proposed Project:	This project consists of approximately 4,170 L.F. of 10-inch gravity sewer, 29,180 L.F. of 8-inch gravity sewer,1,470 L.F. of 4-inch force main, and one sewage pump station.

Existing WWTP:	Name =	Peppers Ferry
	Design Flow =	9 mgd
	Average Flow =	3.98 mgd
	Receiving Stream =	New River
	Stream Classification =	IV
	Impaired Stream	Yes
Watershed or Adjacent Stream:	Name =	Back Creek
	Impaired =	Yes
	Within Vicinity =	Yes
Equivalent Customers Served:	Residential =	120
	Industrial	0
	Commercial =	0

Health Hazard:	Documented septic failures.	
Construction Feasibility:	WWTP/Collection System Available	X
	WWTP/Collection System Upgrades Required	
	WWTP/Collection System Not Available	
Growth Potential:	Residential	
Total Project Cost:	$4,219,940	
Present Worth Per Connection:	$35,970	

Table 148

Project Name:	East Dublin / Stoneridge Drive (P-14)
County:	Pulaski
Type of Project:	Centralized
Utility Provider:	Pulaski County PSA
Responsible Mgmt Entity?	Pulaski County PSA
Existing Water System?	Yes
Existing Conditions:	The project area is currently not served by a public sewage system.
Proposed Project:	This project consists of approximately 6,510 L.F. of 10-inch gravity sewer and 29,525 L.F. of 8-inch gravity sewer, 1,420 L.F. of 4-inch force main, and one sewage pump station.

Existing WWTP:	Name =	Peppers Ferry
	Design Flow =	9 mgd
	Average Flow =	3.98 mgd
	Receiving Stream =	New River
	Stream Classification =	IV
	Impaired Stream	Yes
Watershed or Adjacent Stream:	Name =	Hazel Hollow - tribuary of the New River
	Impaired =	Yes
	Within Vicinity =	No
Equivalent Customers Served:	Residential =	427
	Industrial	0
	Commercial =	0

Health Hazard:	None.	
Construction Feasibility:	WWTP/Collection System Available	X
	WWTP/Collection System Upgrades Required	
	WWTP/Collection System Not Available	
Growth Potential:	Residential	
Total Project Cost:	$5,246,740	
Present Worth Per Connection:	$12,518	

PROJECT DATA SHEET

Table 149

Project Name:	Riverfront Area (P-15)
County:	Pulaski
Type of Project:	Centralized
Utility Provider:	Pulaski County PSA
Responsible Mgmt Entity?	Pulaski County PSA
Existing Water System?	Yes
Existing Conditions:	The project area is currently not served by a public sewage system.
Proposed Project:	This project consists of approximately 3,675 L.F. of 10-inch gravity sewer, 16,825 L.F. of 8-inch gravity sewer, 2,625 L.F. of 4-inch force main, and one sewage pump station.
Existing WWTP: Name =	Peppers Ferry
Design Flow =	9 mgd
Average Flow =	3.98 mgd
Receiving Stream =	New River
Stream Classification =	IV
Impaired Stream	Yes
Watershed or Adjacent Stream: Name =	New River
Impaired =	Yes
Within Vicinity =	Yes
Equivalent Customers Served: Residential =	127
Industrial	0
Commercial =	0
Health Hazard:	None.
Construction Feasibility: WWTP/Collection System Available	X
WWTP/Collection System Upgrades Required	
WWTP/Collection System Not Available	
Growth Potential:	Residential
Total Project Cost:	$2,915,280
Present Worth Per Connection:	$23,690

Table 150

Project Name:	Belspring / Gate 10 Road (P-16)
County:	Pulaski
Type of Project:	Centralized
Utility Provider:	Pulaski County PSA
Responsible Mgmt Entity?	Pulaski County PSA
Existing Water System?	Yes
Existing Conditions:	The project area is currently not served by a public sewage system.
Proposed Project:	This project consists of approximately 1,980 L.F. of 15-inch gravity sewer, 20,900 L.F. of 8-inch gravity sewer, 7,185 L.F. of 6-inch force main, 6,825 L.F. of 2-inch force main, two grinder pump stations, and two sewage pump stations.
Existing WWTP: Name =	Peppers Ferry
Design Flow =	9 mgd
Average Flow =	3.98 mgd
Receiving Stream =	New River
Stream Classification =	IV
Impaired Stream	Yes
Watershed or Adjacent Stream: Name =	New River
Impaired =	Yes
Within Vicinity =	Yes
Equivalent Customers Served: Residential =	133
Industrial	0
Commercial =	0
Health Hazard:	Known older homes with septic systems.
Construction Feasibility: WWTP/Collection System Available	X
WWTP/Collection System Upgrades Required	
WWTP/Collection System Not Available	
Growth Potential:	Residential
Total Project Cost:	$4,067,870
Present Worth Per Connection:	$32,252

PROJECT DATA SHEET

Table 151

Project Name:	Belspring Rd - Hickman Cem. / Highland to Parrott Phase 1 (P-17)
County:	Pulaski
Type of Project:	Centralized
Utility Provider:	Pulaski County PSA
Responsible Mgmt Entity?	Pulaski County PSA
Existing Water System?	Yes
Existing Conditions:	The project area is currently not served by a public sewage system.
Proposed Project:	This project consists of approximately 1,585 L.F. of 12-inch gravity sewer, 11,165 L.F. of 8-inch gravity sewer, 4,450 L.F. of 6-inch force main, one sewage pump station and upgrades/improvements to the existing collection system.
Existing WWTP:	
Name =	Peppers Ferry
Design Flow =	9 mgd
Average Flow =	3.98 mgd
Receiving Stream =	New River
Stream Classification =	IV
Impaired Stream	Yes
Watershed or Adjacent Stream:	
Name =	UT of New River
Impaired =	Yes
Within Vicinity =	No
Equivalent Customers Served:	
Residential =	103
Industrial	0
Commercial =	0
Health Hazard:	Known older homes with septic systems.
Construction Feasibility:	
WWTP/Collection System Available	
WWTP/Collection System Upgrades Required	
WWTP/Collection System Not Available	X
Growth Potential:	Residential
Total Project Cost:	$3,181,210
Present Worth Per Connection:	$31,950

Table 152

Project Name:	Belspring Rd - Hickman Cem. / Highland to Parrott Phase 2 (P-18)
County:	Pulaski
Type of Project:	Centralized
Utility Provider:	Pulaski County PSA
Responsible Mgmt Entity?	Pulaski County PSA
Existing Water System?	Yes
Existing Conditions:	The project area is currently not served by a public sewage system.
Proposed Project:	This project consists of approximately 7,855 L.F. of 10-inch gravity sewer, 15,235 L.F. of 8-inch gravity sewer and upgrades/improvements to the existing collection system.
Existing WWTP:	
Name =	Peppers Ferry
Design Flow =	9 mgd
Average Flow =	3.98 mgd
Receiving Stream =	New River
Stream Classification =	IV
Impaired Stream	Yes
Watershed or Adjacent Stream:	
Name =	UT of New River
Impaired =	Yes
Within Vicinity =	No
Equivalent Customers Served:	
Residential =	97
Industrial	0
Commercial =	0
Health Hazard:	Known older homes with septic systems.
Construction Feasibility:	
WWTP/Collection System Available	
WWTP/Collection System Upgrades Required	
WWTP/Collection System Not Available	X
Growth Potential:	Residential
Total Project Cost:	$3,601,840
Present Worth Per Connection:	$39,560

PROJECT DATA SHEET

Table 153

Project Name:	Belspring Rd - Hickman Cem. / Highland to Parrott Phase 3 (P-19)
County:	Pulaski
Type of Project:	Centralized
Utility Provider:	Pulaski County PSA
Responsible Mgmt Entity?	Pulaski County PSA
Existing Water System?	Yes
Existing Conditions:	The project area is currently not served by a public sewage system.
Proposed Project:	This project consists of approximately 3,940 L.F. of 12-inch gravity sewer, 18,750 L.F. of 8-inch gravity sewer, 19,270 L.F. of 6-inch force main, 9,775 L.F. of 4-inch force main, oen (1) sewage pump station and upgrades/improvements to the existing collection system.
Existing WWTP:	
Name =	Peppers Ferry
Design Flow =	9 mgd
Average Flow =	3.98 mgd
Receiving Stream =	New River
Stream Classification =	IV
Impaired Stream	Yes
Watershed or Adjacent Stream:	
Name =	Back Creek, Neck Creek -tributary of New River, New River
Impaired =	Yes
Within Vicinity =	Yes
Equivalent Customers Served:	
Residential =	90
Industrial	0
Commercial =	0
Health Hazard:	Documented septic failure.
Construction Feasibility:	
WWTP/Collection System Available	
WWTP/Collection System Upgrades Required	
WWTP/Collection System Not Available	X
Growth Potential:	Residential
Total Project Cost:	$4,331,780
Present Worth Per Connection:	$49,540

Table 154

Project Name:	Belspring Rd - Hickman Cem. / Highland to Parrott Phase 4 (P-20)
County:	Pulaski
Type of Project:	Centralized
Utility Provider:	Pulaski County PSA
Responsible Mgmt Entity?	Pulaski County PSA
Existing Water System?	Yes
Existing Conditions:	The project area is currently not served by a public sewage system.
Proposed Project:	This project consists of approximately 5,145 L.F. of 10-inch gravity sewer, 29,180 L.F. of 8-inch gravity sewer and upgrades/improvements to the existing collection system..
Existing WWTP:	
Name =	Peppers Ferry
Design Flow =	9 mgd
Average Flow =	3.98 mgd
Receiving Stream =	New River
Stream Classification =	IV
Impaired Stream	Yes
Watershed or Adjacent Stream:	
Name =	Back Creek, Neck Creek -tributary of New River
Impaired =	Yes
Within Vicinity =	Yes
Equivalent Customers Served:	
Residential =	150
Industrial	0
Commercial =	0
Health Hazard:	Documented septic failure.
Construction Feasibility:	
WWTP/Collection System Available	
WWTP/Collection System Upgrades Required	
WWTP/Collection System Not Available	X
Growth Potential:	Residential
Total Project Cost:	$5,163,860
Present Worth Per Connection:	$35,290

PROJECT DATA SHEET

Table 155

Project Name:	North Claytor Lake (P-21)
County:	Pulaski
Type of Project:	Centralized
Utility Provider:	Pulaski County PSA
Responsible Mgmt Entity?	Pulaski County PSA
Existing Water System?	Yes
Existing Conditions:	The project area is currently not served by a public sewage system.
Proposed Project:	This project consists of approximately 3,835 L.F. of 10-inch gravity sewer, 14,225 L.F. of 8-inch gravity sewer, 11,495 L.F. of 4-inch force main, 7,185 L.F. of 2-inch force main, one grinder pump station and three sewage pump stations.

Existing WWTP:		
	Name =	Peppers Ferry
	Design Flow =	9 mgd
	Average Flow =	3.98 mgd
	Receiving Stream =	New River
	Stream Classification =	IV
	Impaired Stream	Yes

Watershed or Adjacent Stream:		
	Name =	Claytor Lake
	Impaired =	No
	Within Vicinity =	Yes

Equivalent Customers Served:		
	Residential =	257
	Industrial	0
	Commercial =	0

Health Hazard:	Documented septic failure.

Construction Feasibility:		
	WWTP/Collection System Available	X
	WWTP/Collection System Upgrades Required	
	WWTP/Collection System Not Available	

Growth Potential:	Residential
Total Project Cost:	$4,343,695
Present Worth Per Connection:	$17,982

Table 156

Project Name:	North Claytor Lake - Bear Drive (P-22)
County:	Pulaski
Type of Project:	Centralized
Utility Provider:	Pulaski County PSA
Responsible Mgmt Entity?	Pulaski County PSA
Existing Water System?	Yes
Existing Conditions:	The project area is currently not served by a public sewage system.
Proposed Project:	This project consists of approximately 7,680 L.F. of 8-inch gravity sewer.

Existing WWTP:		
	Name =	Peppers Ferry
	Design Flow =	9 mgd
	Average Flow =	3.98 mgd
	Receiving Stream =	New River
	Stream Classification =	IV
	Impaired Stream	Yes

Watershed or Adjacent Stream:		
	Name =	Claytor Lake
	Impaired =	No
	Within Vicinity =	Yes

Equivalent Customers Served:		
	Residential =	52
	Industrial	0
	Commercial =	0

Health Hazard:	Documented septic failure.

Construction Feasibility:		
	WWTP/Collection System Available	X
	WWTP/Collection System Upgrades Required	
	WWTP/Collection System Not Available	

Growth Potential:	Residential
Total Project Cost:	$927,200
Present Worth Per Connection:	$19,730

PROJECT DATA SHEET

Table 157

Project Name:	Newbern Heights Area (P-23)
County:	Pulaski
Type of Project:	Centralized
Utility Provider:	Pulaski County PSA
Responsible Mgmt Entity?	Pulaski County PSA
Existing Water System?	Yes
Existing Conditions:	The project area is currently not served by a public sewage system.
Proposed Project:	This project consists of approximately 6,015 L.F. of 10-inch gravity sewer, 23,525 L.F. of 8-inch gravity sewer, 725 L.F. of 2-inch force main, and one grinder pump station.

Existing WWTP:

Name =	Peppers Ferry
Design Flow =	9 mgd
Average Flow =	3.98 mgd
Receiving Stream =	New River
Stream Classification =	IV
Impaired Stream	Yes

Watershed or Adjacent Stream:

Name =	Springs Branch - tributary of Peak Creek, Goose Creek - tributary of Claytor Lake
Impaired =	Yes
Within Vicinity =	No

Equivalent Customers Served:

Residential =	184
Industrial	0
Commercial =	0

Health Hazard:	Documented septic failure.

Construction Feasibility:

WWTP/Collection System Available	
WWTP/Collection System Upgrades Required	
WWTP/Collection System Not Available	X

Growth Potential:	Residential
Total Project Cost:	$3,704,695
Present Worth Per Connection:	$20,810

Table 158

Project Name:	Old Route 100 - I81 Exit 98 (P-24)
County:	Pulaski
Type of Project:	Centralized
Utility Provider:	Pulaski County PSA
Responsible Mgmt Entity?	Pulaski County PSA
Existing Water System?	Yes
Existing Conditions:	The project area is currently not served by a public sewage system.
Proposed Project:	This project consists of approximately 8,570 L.F. of 12-inch gravity sewer, 700 L.F. of 10-inch gravity sewer, 15,620 L.F. of 8-inch gravity sewer, 4,365 L.F. of 2-inch force main, and three grinder pump stations.

Existing WWTP:

Name =	Peppers Ferry
Design Flow =	9 mgd
Average Flow =	3.98 mgd
Receiving Stream =	New River
Stream Classification =	IV
Impaired Stream	Yes

Watershed or Adjacent Stream:

Name =	Goose Creek and Peak Creek
Impaired =	Yes
Within Vicinity =	Yes

Equivalent Customers Served:

Residential =	184
Industrial	0
Commercial =	0

Health Hazard:	Documented septic failure.

Construction Feasibility:

WWTP/Collection System Available	
WWTP/Collection System Upgrades Required	
WWTP/Collection System Not Available	X

Growth Potential:	Residential
Total Project Cost:	$3,418,955
Present Worth Per Connection:	$35,780

PROJECT DATA SHEET

Table 159

Project Name:	Cougar Trail Road (P-25)
County:	Pulaski
Type of Project:	Centralized
Utility Provider:	Pulaski County PSA
Responsible Mgmt Entity?	Pulaski County PSA
Existing Water System?	Yes
Existing Conditions:	The project area is currently not served by a public sewage system.
Proposed Project:	This project consists of approximately 5,100 L.F. of 10-inch gravity sewer, 24,120 L.F. of 8-inch gravity sewer and upgrades/improvements to the existing collection system.

Existing WWTP:		
	Name =	Peppers Ferry
	Design Flow =	9 mgd
	Average Flow =	3.98 mgd
	Receiving Stream =	New River
	Stream Classification =	IV
	Impaired Stream	Yes

Watershed or Adjacent Stream:		
	Name =	Goose Creek - tributary of Peak Creek
	Impaired =	No
	Within Vicinity =	Yes

Equivalent Customers Served:		
	Residential =	153
	Industrial	0
	Commercial =	0

Health Hazard:	Documented septic failure.

Construction Feasibility:		
	WWTP/Collection System Available	
	WWTP/Collection System Upgrades Required	
	WWTP/Collection System Not Available	X

Growth Potential:	Industrial and Residential
Total Project Cost:	$4,663,300
Present Worth Per Connection:	$31,290

Table 160

Project Name:	Count Pulaski Drive (P-26)
County:	Pulaski
Type of Project:	Centralized
Utility Provider:	Pulaski County PSA
Responsible Mgmt Entity?	Pulaski County PSA
Existing Water System?	No
Existing Conditions:	The project area is currently not served by a public sewage system.
Proposed Project:	This project consists of approximately 3,185 L.F. of 15-inch gravity sewer, 10,295 L.F. of 8-inch gravity sewer, 2,890 L.F. of 8-inch force main, 3,620 L.F. of 2-inch force main, one grinder pump station, and one sewage pump station.

Existing WWTP:		
	Name =	Peppers Ferry
	Design Flow =	9 mgd
	Average Flow =	3.98 mgd
	Receiving Stream =	New River
	Stream Classification =	IV
	Impaired Stream	Yes

Watershed or Adjacent Stream:		
	Name =	UT - tributary to Peak Creek, Peak Creek
	Impaired =	Yes
	Within Vicinity =	Yes

Equivalent Customers Served:		
	Residential =	53
	Industrial	0
	Commercial =	0

Health Hazard:	None.

Construction Feasibility:		
	WWTP/Collection System Available	X
	WWTP/Collection System Upgrades Required	
	WWTP/Collection System Not Available	

Growth Potential:	Residential
Total Project Cost:	$2,263,610
Present Worth Per Connection:	$44,840

PROJECT DATA SHEET

Table 161

Project Name:	Old Route 100 / McAdam Area (P-27)
County:	Pulaski
Type of Project:	Centralized
Utility Provider:	Pulaski County PSA
Responsible Mgmt Entity?	Pulaski County PSA
Existing Water System?	Yes
Existing Conditions:	The project area is currently not served by a public sewage system.
Proposed Project:	This project consists of approximately 12,925 L.F. of 12-inch gravity sewer, 13,535 L.F. of 8-inch gravity sewer, 14,380 L.F. of 8-inch force main, 2,135 L.F. of 2-inch force main, one grinder pump station, one sewage pump station and upgrades/improvements to the existing collection system.

Existing WWTP:		
	Name =	Peppers Ferry
	Design Flow =	9 mgd
	Average Flow =	3.98 mgd
	Receiving Stream =	New River
	Stream Classification =	IV
	Impaired Stream	Yes

Watershed or Adjacent Stream:		
	Name =	UT - tributary of Peak Creek
	Impaired =	No
	Within Vicinity =	Yes

Equivalent Customers Served:		
	Residential =	82
	Industrial	0
	Commercial =	0

Health Hazard:	None.

Construction Feasibility:		
	WWTP/Collection System Available	
	WWTP/Collection System Upgrades Required	
	WWTP/Collection System Not Available	X

Growth Potential:	Industrial and Residential
Total Project Cost:	$4,973,685
Present Worth Per Connection:	$62,350

Table 162

Project Name:	Draper (P-28)
County:	Pulaski
Type of Project:	Centralized
Utility Provider:	Pulaski County PSA
Responsible Mgmt Entity?	Pulaski County PSA
Existing Water System?	Yes
Existing Conditions:	The project area is currently not served by a public sewage system.
Proposed Project:	This project consists of approximately 5,270 L.F. of 10-inch gravity sewer, 18,435 L.F. of 8-inch gravity sewer, 12,215 L.F. of 6-inch force main, one sewage pump station and upgrades/improvements to the existing collection system.

Existing WWTP:		
	Name =	Peppers Ferry
	Design Flow =	9 mgd
	Average Flow =	3.98 mgd
	Receiving Stream =	New River
	Stream Classification =	IV
	Impaired Stream	Yes

Watershed or Adjacent Stream:		
	Name =	Sloan Branch - tributary to Claytor Lake
	Impaired =	No
	Within Vicinity =	No

Equivalent Customers Served:		
	Residential =	131
	Industrial	0
	Commercial =	0

Health Hazard:	None.

Construction Feasibility:		
	WWTP/Collection System Available	
	WWTP/Collection System Upgrades Required	
	WWTP/Collection System Not Available	X

Growth Potential:	Industrial and Residential
Total Project Cost:	$4,742,105
Present Worth Per Connection:	$37,200

PROJECT DATA SHEET

Table 163

Project Name:	Brown Road (P-29)
County:	Pulaski
Type of Project:	Centralized
Utility Provider:	Pulaski County PSA
Responsible Mgmt Entity?	Pulaski County PSA
Existing Water System?	No
Existing Conditions:	The project area is currently not served by a public sewage system.
Proposed Project:	This project consists of approximately 21,460 L.F. of 8-inch gravity sewer, 8,545 L.F. of 2-inch force main, one grinder pump station, one sewage pump station and upgrades/improvements to the existing collection system.

Existing WWTP:	Name =	Peppers Ferry
	Design Flow =	9 mgd
	Average Flow =	3.98 mgd
	Receiving Stream =	New River
	Stream Classification =	IV
	Impaired Stream	Yes
Watershed or Adjacent Stream:	Name =	Claytor Lake
	Impaired =	No
	Within Vicinity =	Yes
Equivalent Customers Served:	Residential =	57
	Industrial	0
	Commercial =	0

Health Hazard:	Documented septic failure.	
Construction Feasibility:	WWTP/Collection System Available	
	WWTP/Collection System Upgrades Required	
	WWTP/Collection System Not Available	X
Growth Potential:	Residential	
Total Project Cost:	$3,573,805	
Present Worth Per Connection:	$64,910	

Table 164

Project Name:	Route 11 / I81-Exit 92 (P-30)
County:	Pulaski
Type of Project:	Centralized
Utility Provider:	Pulaski County PSA
Responsible Mgmt Entity?	Pulaski County PSA
Existing Water System?	Yes
Existing Conditions:	The project area is currently not served by a public sewage system.
Proposed Project:	This project consists of approximately 8,715 L.F. of 10-inch gravity sewer, 31,525 L.F. of 8-inch gravity sewer, 16,735 L.F. of 4-inch force main, two sewage pump stations and upgrades/improvements to the existing collection system.

Existing WWTP:	Name =	Peppers Ferry
	Design Flow =	9 mgd
	Average Flow =	3.98 mgd
	Receiving Stream =	New River
	Stream Classification =	IV
	Impaired Stream	Yes
Watershed or Adjacent Stream:	Name =	Pine Run - tributary to New River
	Impaired =	Yes
	Within Vicinity =	No
Equivalent Customers Served:	Residential =	150
	Industrial	0
	Commercial =	0

Health Hazard:	None.	
Construction Feasibility:	WWTP/Collection System Available	
	WWTP/Collection System Upgrades Required	
	WWTP/Collection System Not Available	X
Growth Potential:	Industrial and Residential	
Total Project Cost:	$7,075,300	
Present Worth Per Connection:	$48,200	

PROJECT DATA SHEET

Table 165

Project Name:	I81 Pulaski/Wythe Border (P-31)
County:	Pulaski
Type of Project:	Centralized
Utility Provider:	Pulaski County PSA
Responsible Mgmt Entity?	Pulaski County PSA
Existing Water System?	Yes
Existing Conditions:	The project area is currently not served by a public sewage system.
Proposed Project:	This project consists of approximately 20,735 L.F. of 8-inch gravity sewer, 6,835 L.F. of 6-inch gravity sewer, 8,775 L.F. of 4-inch force main, 4,375 L.F. of 2-inch force main, one grinder pump station, one sewage pump station and upgrades/improvements to the existing collection system.
Existing WWTP:	Name = Peppers Ferry Design Flow = 9 mgd Average Flow = 3.98 mgd Receiving Stream = New River Stream Classification = IV Impaired Stream Yes
Watershed or Adjacent Stream:	Name = Little Pine Run - tributary to Pine Run Impaired = No Within Vicinity = No
Equivalent Customers Served:	Residential = 113 Industrial 0 Commercial = 0
Health Hazard:	Documented septic failure.
Construction Feasibility:	WWTP/Collection System Available WWTP/Collection System Upgrades Required WWTP/Collection System Not Available X
Growth Potential:	Industrial and Residential
Total Project Cost:	$4,806,745
Present Worth Per Connection:	$43,750

Table 166

Project Name:	Main Interceptor Improvements (P-32)
County:	Pulaski
Type of Project:	Centralized
Utility Provider:	Pulaski County PSA
Responsible Mgmt Entity?	Pulaski County PSA
Existing Water System?	Yes
Existing Conditions:	The project area is currently served by a public sewage system, however the main interceptor line needs to be replaced.
Proposed Project:	This project consists of removal and replacement of approximately 10,895 L.F. of 24-inch gravity sewer.
Existing WWTP:	Name = Peppers Ferry Design Flow = 9 mgd Average Flow = 3.98 mgd Receiving Stream = New River Stream Classification = IV Impaired Stream Yes
Watershed or Adjacent Stream:	Name = Peak Creek Impaired = Yes Within Vicinity = Yes
Equivalent Customers Served:	Residential = N/A Industrial Commercial =
Health Hazard:	None.
Construction Feasibility:	WWTP/Collection System Available X WWTP/Collection System Upgrades Required WWTP/Collection System Not Available
Growth Potential:	None
Total Project Cost:	$1,869,640
Present Worth Per Connection:	n/a

PROJECT DATA SHEET

Table 167

Project Name:	South Dublin (P-33)	
County:	Pulaski	
Type of Project:	Centralized	
Utility Provider:	Pulaski County PSA	
Responsible Mgmt Entity?	Pulaski County PSA	
Existing Water System?	Yes	
Existing Conditions:	The project area is currently not served by a public sewage system.	
Proposed Project:	This project consists of approximately 5,500 L.F. of 10-inch gravity sewer and 24,380 L.F. of 8-inch gravity sewer.	
Existing WWTP:	Name =	Peppers Ferry
	Design Flow =	9 mgd
	Average Flow =	3.98 mgd
	Receiving Stream =	New River
	Stream Classification =	IV
	Impaired Stream	Yes
Watershed or Adjacent Stream:	Name =	UT - tributary to Claytor Lake
	Impaired =	No
	Within Vicinity =	No
Equivalent Customers Served:	Residential =	167
	Industrial	0
	Commercial =	0
Health Hazard:	Documented septic failure.	
Construction Feasibility:	WWTP/Collection System Available	X
	WWTP/Collection System Upgrades Required	
	WWTP/Collection System Not Available	
Growth Potential:	Industrial and Residential	
Total Project Cost:	$2,238,040	
Present Worth Per Connection:	$13,517	

Table 168

Project Name:	Valley Branch Area (P-34)	
County:	Pulaski	
Type of Project:	Centralized	
Utility Provider:	Pulaski County PSA	
Responsible Mgmt Entity?	Pulaski County PSA	
Existing Water System?	No	
Existing Conditions:	The project area is currently not served by a public sewage system.	
Proposed Project:	This project consists of approximately 5,200 L.F. of 8-inch gravity sewer.	
Existing WWTP:	Name =	Peppers Ferry
	Design Flow =	9 mgd
	Average Flow =	3.98 mgd
	Receiving Stream =	New River
	Stream Classification =	IV
	Impaired Stream	Yes
Watershed or Adjacent Stream:	Name =	Valley Branch - tributary to Peak Creek
	Impaired =	Yes
	Within Vicinity =	No
Equivalent Customers Served:	Residential =	41
	Industrial	0
	Commercial =	0
Health Hazard:	None.	
Construction Feasibility:	WWTP/Collection System Available	X
	WWTP/Collection System Upgrades Required	
	WWTP/Collection System Not Available	
Growth Potential:	Residential	
Total Project Cost:	$642,100	
Present Worth Per Connection:	$18,010	

PROJECT DATA SHEET

Table 169

Project Name:	Painters Woods Subdivision (DC-18)
County:	Pulaski
Type of Project:	Decentralized Wastewater System
Utility Provider:	Pulaski County
Responsible Mgmt Entity?	Pulaski County
Existing Water System?	Yes
Existing Conditions:	70 homes on medium size lots. Poor draining soils with lots of septic tank failures. Nice homes older than 30 years of age. Karst terrain.
Proposed Project:	Septic tank effluent gravity system proposed for this community. Use community treatment system with UV disinfection and discharge into stream. Three (3) AdvanTex Ax100 Treatment Units required.
Existing WWTP:	
Name =	N/A
Design Flow =	
Average Flow =	
Receiving Stream =	
Stream Classification =	
Impaired Stream	
Watershed or Adjacent Stream:	
Name =	Unnamed Tributary
Impaired =	No
Within Vicinity =	No
Equivalent Customers Served:	
Residential =	70
Industrial	0
Commercial =	0
Health Hazard:	Groundwater Contaminated
Construction Feasibility:	
WWTP/Collection System Available	No
WWTP/Collection System Upgrades Required	
WWTP/Collection System Not Available	
Growth Potential:	Three other small clusters of homes nearby, including the Draper Valley Presbyterian Church. These communities could be served by a slightly larger treatment system.
Total Project Cost:	$770,000
Present Worth Per Connection:	$13,625

Table 170

Project Name:	McCarthy Road Subdivision (DC-14)
County:	Pulaski
Type of Project:	Decentralized Wastewater System
Utility Provider:	Pulaski County
Responsible Mgmt Entity?	Pulaski County
Existing Water System?	No
Existing Conditions:	20 homes on 3/4-ac. relatively flat lake lots. High water table.
Proposed Project:	Septic tank effluent pump system proposed for this community. Use community treatment/drainfield back away from lake. One (1) Advantex AX100 Treatment System would serve this area from a pasture field where a suitable drip disposal may be found.
Existing WWTP:	
Name =	N/A
Design Flow =	
Average Flow =	
Receiving Stream =	
Stream Classification =	
Impaired Stream	
Watershed or Adjacent Stream:	
Name =	Claytor Lake
Impaired =	Yes
Within Vicinity =	Yes
Equivalent Customers Served:	
Residential =	20
Industrial	0
Commercial =	0
Health Hazard:	No
Construction Feasibility:	
WWTP/Collection System Available	
WWTP/Collection System Upgrades Required	
WWTP/Collection System Not Available	
Growth Potential:	No
Total Project Cost:	$400,400
Present Worth Per Connection:	$23,127

PROJECT DATA SHEET

Table 171

Project Name:	DeHaven Park/Owens Road Sewer System (DC-15)
County:	Pulaski
Type of Project:	Decentralized
Utility Provider:	Pulaski County
Responsible Mgmt Entity?	Pulaski County
Existing Water System?	No
Existing Conditions:	DeHaven Park has 90 Homes on 1/4-acre lots and there are 20 lake front homes also located on small lots further north on Owens Road. Lots are too small to accommodate wells and adequately sized onsite disposal systems.
Proposed Project:	Use Septic Tank Effluent Pump (STEP) systems pumping to a 20,000 GPD Treatment Facility (serving 100 homes) with discharge into Claytor Lake. The treatment plant could eventually be doubled in size which would serve all lake property along Owens Road. Water quality limits will probably be stringent since the discharge is directly into Claytor Lake. Membrane Bioreactor (MBR) Plant will likely be required.
Existing WWTP: Name =	N/A
Design Flow =	
Average Flow =	
Receiving Stream =	
Stream Classification =	
Impaired Stream	
Watershed or Adjacent Stream: Name =	Claytor Lake
Impaired =	Yes
Within Vicinity =	Yes
Equivalent Customers Served: Residential =	100
Industrial	0
Commercial =	0
Health Hazard:	Yes
Construction Feasibility: WWTP/Collection System Available	No
WWTP/Collection System Upgrades Required	
WWTP/Collection System Not Available	
Growth Potential:	Residual growth is likely.
Total Project Cost:	$1,630,300
Present Worth Per Connection:	$20,356

Table 172

Project Name:	Plantation Estates (DC-16)
County:	Pulaski County
Type of Project:	Decentralized
Utility Provider:	Pulaski County
Responsible Mgmt Entity?	Pulaski County
Existing Water System?	Yes
Existing Conditions:	Steeply pitching lots makes onsite systems difficult to construct and maintain. Public water is available. Twenty-six (26) homes exist in this subdivision.
Proposed Project:	Use individual grinder pumps and pump offsite to pasture field. Use large settling tank, 10,000-gpd treatment system, and drip disposal system sized for 36 homes.
Existing WWTP: Name =	N/A
Design Flow =	
Average Flow =	
Receiving Stream =	
Stream Classification =	
Impaired Stream	
Watershed or Adjacent Stream: Name =	CLAYTOR LAKE
Impaired =	YES
Within Vicinity =	YES
Equivalent Customers Served: Residential =	26
Industrial	0
Commercial =	0
Health Hazard:	YES
Construction Feasibility: WWTP/Collection System Available	No
WWTP/Collection System Upgrades Required	
WWTP/Collection System Not Available	
Growth Potential:	Number of dwelling could easily grow to 36.
Total Project Cost:	$707,000
Present Worth Per Connection:	$31,110

PROJECT DATA SHEET

Table 173

Project Name:	Little Wytheville (DC-17)	
County:	Pulaski	
Type of Project:	Decentralized	
Utility Provider:	Pulaski County	
Responsible Mgmt Entity?	Pulaski County	
Existing Water System?	Yes	
Existing Conditions:	Insufficient space for onsite systems since homes sit right on edge of lake. Some homes share wells, but public water is not available.	
Proposed Project:	STEP systems pumping to a treatment system located nearly one mile away where drip disposal area may be available.	
Existing WWTP:	Name =	N/A
	Design Flow =	
	Average Flow =	
	Receiving Stream =	
	Stream Classification =	
	Impaired Stream	
Watershed or Adjacent Stream:	Name =	Claytor Lake
	Impaired =	Yes
	Within Vicinity =	Yes
Equivalent Customers Served:	Residential =	40
	Industrial	0
	Commercial =	0
Health Hazard:	Yes	
Construction Feasibility:	WWTP/Collection System Available	No
	WWTP/Collection System Upgrades Required	
	WWTP/Collection System Not Available	
Growth Potential:	Minimal	
Total Project Cost:	$758,800	
Present Worth Per Connection:	$22,077	

PULASKI COUNTY PROJECT MAPS

LEGEND

- GRAVITY SEWER
- EXISTING SEWER
- FORCE MAIN
- PROJECT LIMITS
- PUMP STATION
- GRINDER PUMP STATION
- TREATMENT PLANT/ EXPANSION

P-1
P-2
P-3
P-4
P-5
P-6
P-7
P-8
P-11
P-12

N
W E
S

0 1000 2000

SCALE: 1" = 2000'

SOURCE: PULASKI, VA & DUBLIN, VA. U.S.G.S. QUADRANGLES

FIGURE 64:
THORNE SPRING BRANCH PHASES I-III (P-1 THROUGH P-3)
PULASKI COUNTY PUBLIC SERVICE AUTHORITY
New River Valley Planning District

LEGEND

- GRAVITY SEWER
- EXISTING SEWER
- FORCE MAIN
- PROJECT LIMITS
- PUMP STATION
- GRINDER PUMP STATION
- TREATMENT PLANT/ EXPANSION

P-1
P-2
P-3
P-4
P-5
P-6
P-7
P-8
P-9
P-11
P-18

N
W E
S

0 1000 2000

SCALE: 1" = 2000'

SOURCE: PULASKI, VA & DUBLIN, VA. U.S.G.S. QUADRANGLES

FIGURE 65:
ALUM SPRING ROAD PHASES I AND II (P-4 AND P-5) AND BROOKMONT ROAD (P-8)
PULASKI COUNTY PUBLIC SERVICE AUTHORITY
New River Valley Planning District

LEGEND

- GRAVITY SEWER
- EXISTING SEWER
- FORCE MAIN
- POJECT LIMITS
- PUMP STATION
- GRINDER PUMP STATION
- TREATMENT PLANT/ EXPANSION

P-1 P-2 P-3 P-4 P-5 P-6 P-7 P-8

N W E S

0 1000 2000

SCALE: 1" = 2000'

SOURCE: PULASKI, VA U.S.G.S. QUADRANGLE

FIGURE 66:
ROBINSON TRACT ROAD PHASES I AND II (P-6 AND P-7)
PULASKI COUNTY PUBLIC SERVICE AUTHORITY
New River Valley Planning District

LEGEND

- GRAVITY SEWER
- EXISTING SEWER
- FORCE MAIN
- POJECT LIMITS
- PUMP STATION
- GRINDER PUMP STATION
- TREATMENT PLANT/ EXPANSION

P-4
P-5
P-8
P-9
P-10
P-18
P-34

PULASKI

N
W E
S

0 1000 2000

SCALE: 1" = 2000'

SOURCE: PULASKI, VA & DUBLIN, VA. U.S.G.S. QUADRANGLES

FIGURE 67:
PONDLICK BRANCH/MOUNT OLIVET PHASE I AND II (P-9 AND P-10) AND VALLEY ROAD (P-34)
PULASKI COUNTY PUBLIC SERVICE AUTHORITY
New River Valley Planning District

LEGEND

- GRAVITY SEWER
- EXISTING SEWER
- FORCE MAIN
- POJECT LIMITS
- PUMP STATION
- GRINDER PUMP STATION
- TREATMENT PLANT/ EXPANSION

P-1
P-2
P-3
P-11
P-12
P-14
P-33

N
W E
S

0 1000 2000

SCALE: 1" = 2000'

SOURCE: PULASKI, VA & DUBLIN, VA. U.S.G.S. QUADRANGLES

FIGURE 68:
WEST DUBLIN/COUGAR TRAIL ROAD (P-11), ROUTE 100 - DUBLIN/COMMERCE PARK (P-12), AND SOUTH DUBLIN (P-33)
PULASKI COUNTY PUBLIC SERVICE AUTHORITY
New River Valley Planning District

LEGEND

- GRAVITY SEWER
- EXISTING SEWER
- FORCE MAIN
- POJECT LIMITS
- PUMP STATION
- GRINDER PUMP STATION
- TREATMENT PLANT/ EXPANSION

JEFFERSON NATIONAL FOREST

French Chapel

Walker Creek

Little Walker Mountain

Back Shuffle Ridge

Mine

BM 2187

Fellowship Ch

Highland Ch

Shuffle Branch

Highland

Cem

Creek

Anderson Vickers Cem

Neck Creek

Racepath Branch

McGavock Creek

N
W E
S

0 1000 2000

SCALE: 1" = 2000'

SOURCE: STAFFORDSVILLE, VA. U.S.G.S. QUADRANGLE

FIGURE 69:
BACK CREEK AREA (P-13)
PULASKI COUNTY PUBLIC SERVICE AUTHORITY
New River Valley Planning District

LEGEND

- GRAVITY SEWER
- EXISTING SEWER
- FORCE MAIN
- POJECT LIMITS
- PUMP STATION
- GRINDER PUMP STATION
- TREATMENT PLANT/ EXPANSION

FIGURE 70:
EAST DUBLIN/STONERIDGE DRIVE (P-14)
PULASKI COUNTY PUBLIC SERVICE AUTHORITY
New River Valley Planning District

P-12

P-14

RADFORD ARMY AMMUNITION PLANT

N
W E
0 1000 2000
SCALE: 1" = 2000'

SOURCE: RADFORD NORTH, VA., RADFORD SOUTH, VA., STAFFORDSVILLE, VA. DUBLIN, VA. U.S.G.S. QUADRANGLES

LEGEND

- GRAVITY SEWER
- EXISTING SEWER
- FORCE MAIN
- POJECT LIMITS
- PUMP STATION
- GRINDER PUMP STATION
- TREATMENT PLANT/ EXPANSION

P-19

P-17

P-18

P-16

P-20

RADFORD ARMY AMMUNITION PLANT

NEW RIVER

Belspring

Cowan

Centerville

Pepper

Fairlawn

New River

Radford

Walton

Creek

PIPELINE

NORFOLK AND WESTERN

PULASKI CO

CITY OF RADFORD

MONTGOMERY CO

N

W E

S

0 1000 2000

SCALE: 1" = 2000'

SOURCE: RADFORD NORTH, VA. U.S.G.S. QUADRANGLE

FIGURE 7I:
RIVERFRONT AREA (P-15)
PULASKI COUNTY PUBLIC SERVICE AUTHORITY
New River Valley Planning District

LEGEND

- GRAVITY SEWER
- EXISTING SEWER
- FORCE MAIN
- POJECT LIMITS
- PUMP STATION
- GRINDER PUMP STATION
- TREATMENT PLANT/ EXPANSION

P-20

P-19

P-17

P-18

P-16

N
W E
S

0 1000 2000

SCALE: 1" = 2000'

SOURCE: RADFORD NORTH, VA. & STAFFORDSVILLE, VA. U.S.G.S. QUADRANGLES

FIGURE 72:
BELSPRING/GATE 10 ROAD (P-16) AND BELSPRING-HICKMAN CEMETARY/HIGHLAND TO PARROTT PHASES I THROUGH IV (P-17 THROUGH P-20)

PULASKI COUNTY PUBLIC SERVICE AUTHORITY

New River Valley Planning District

LEGEND

- GRAVITY SEWER
- EXISTING SEWER
- FORCE MAIN
- POJECT LIMITS
- PUMP STATION
- GRINDER PUMP STATION
- TREATMENT PLANT/ EXPANSION

P-21

P-22

N
W E
S

0 1000 2000

SCALE: 1" = 2000'

SOURCE: RADFORD SOUTH, VA & DUBLIN, VA. U.S.G.S. QUADRANGLES

FIGURE 73:
NORTH CLAYTOR LAKE (P-21) AND NORTH CLAYTOR LAKE - BEAR DRIVE (P-22)
PULASKI COUNTY PUBLIC SERVICE AUTHORITY
New River Valley Planning District

LEGEND

- GRAVITY SEWER
- EXISTING SEWER
- FORCE MAIN
- POJECT LIMITS
- PUMP STATION
- GRINDER PUMP STATION
- TREATMENT PLANT/ EXPANSION

P-1
P-2
P-5
P-11
P-23
P-24
P-25
P-26
P-27
P-33

N
W E
S

0 1000 2000

SCALE: 1" = 2000'

SOURCE: RADFORD SOUTH, VA. & DUBLIN, VA. U.S.G.S. QUADRANGLES

FIGURE 74:
NEWBERN HEIGHTS AREA (P-23), OLD ROUTE 100 - I81 EXIT 98 (P-24), AND COUGAR TRAIL ROAD (P-25)
PULASKI COUNTY PUBLIC SERVICE AUTHORITY
New River Valley Planning District

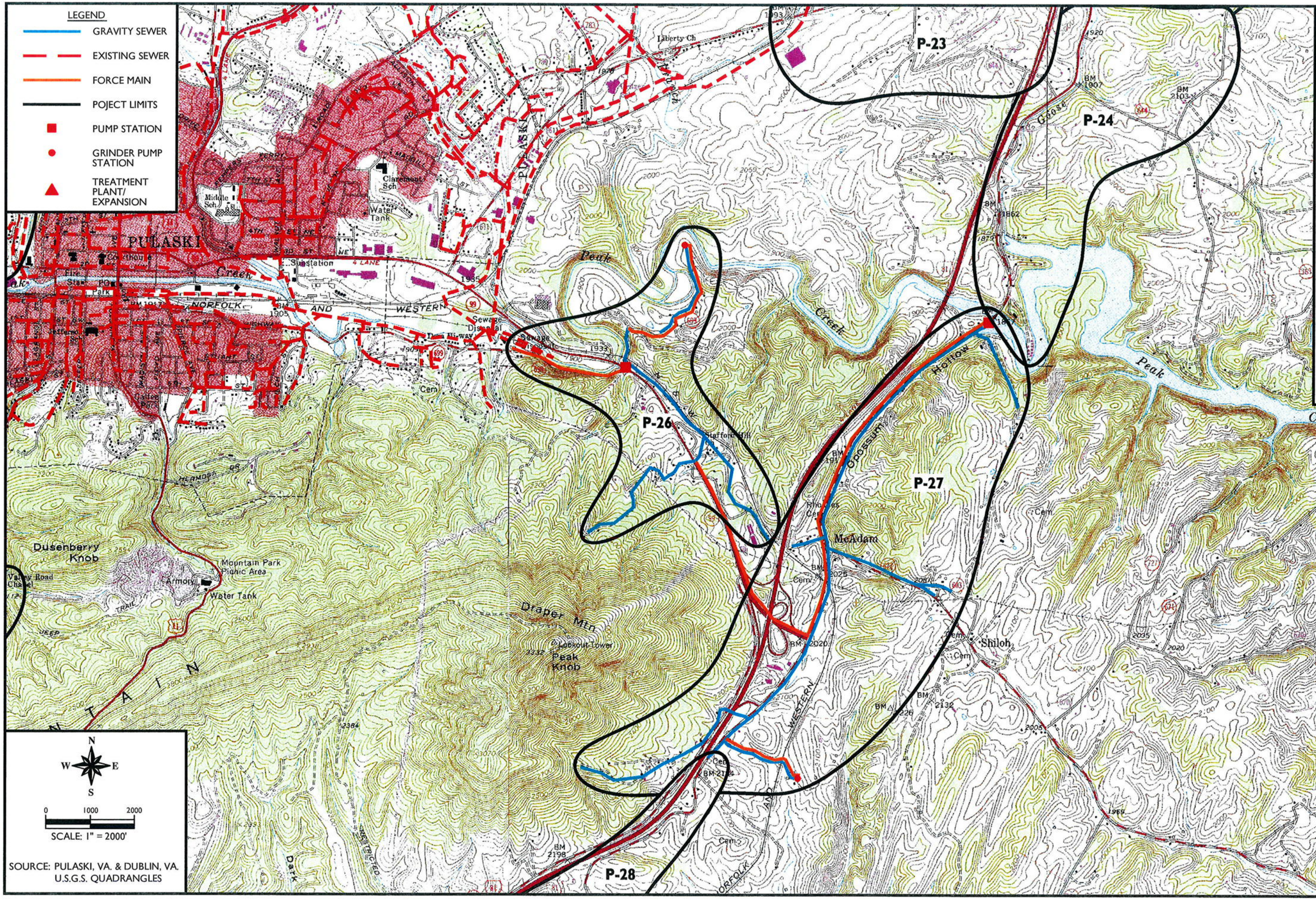

FIGURE 75: COUNT PULASKI DRIVE (P-26) AND OLD ROUTE 100/ McADAM AREA (P-27)

PULASKI COUNTY PUBLIC SERVICE AUTHORITY

New River Valley Planning District

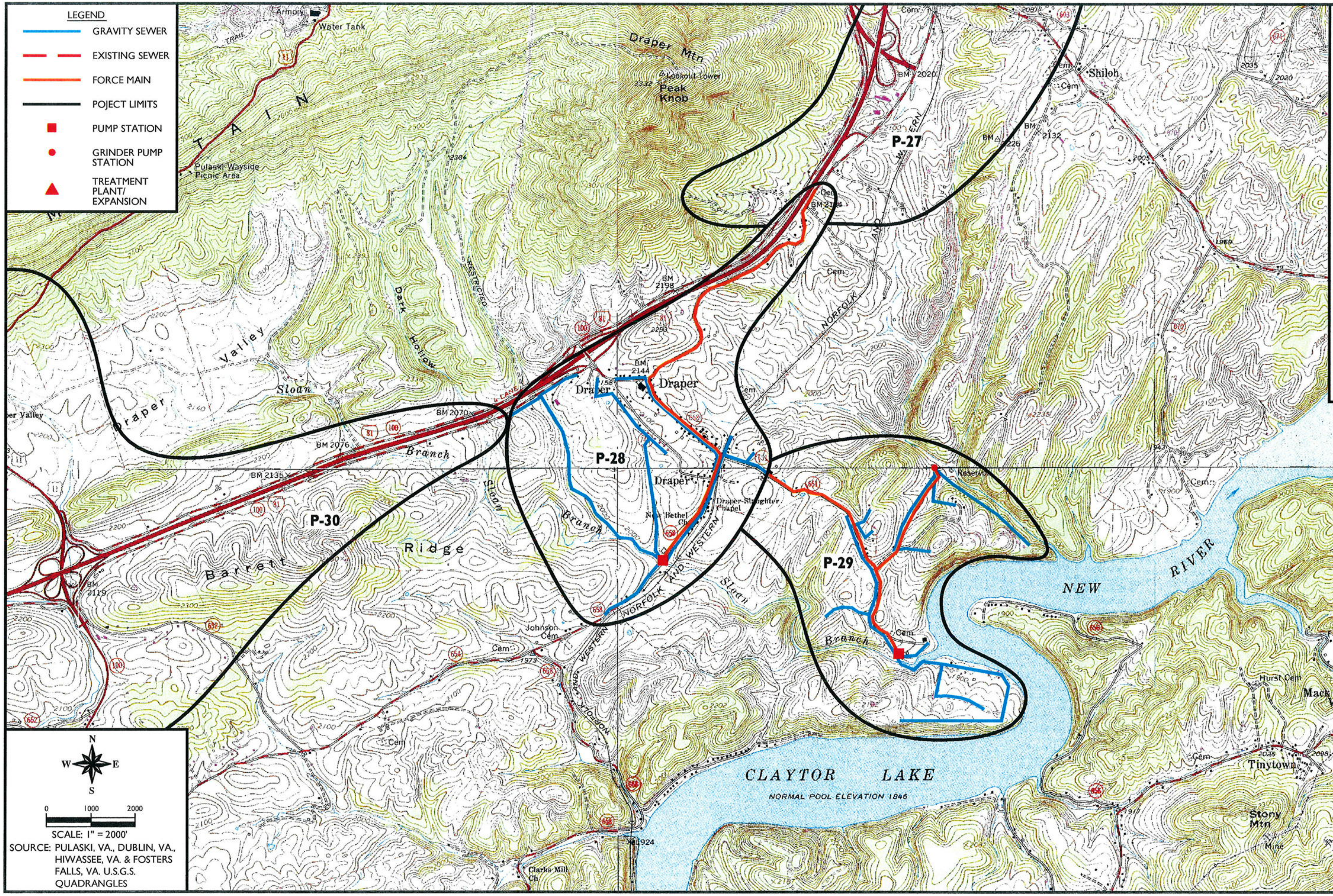

FIGURE 76:
DRAPER (P-28) AND BROWN ROAD (P-29)
PULASKI COUNTY PUBLIC SERVICE AUTHORITY
New River Valley Planning District

LEGEND

- GRAVITY SEWER
- EXISTING SEWER
- FORCE MAIN
- POJECT LIMITS
- PUMP STATION
- GRINDER PUMP STATION
- TREATMENT PLANT/ EXPANSION

P-30

P-31

P-28

N

W E

S

0 1000 2000

SCALE: 1" = 2000'

SOURCE: PULASKI, VA., DUBLIN, VA., HIWASSEE, VA. & FOSTERS FALLS, VA. U.S.G.S. QUADRANGLES

FIGURE 77:
ROUTE 11/81 - EXIT 92 (P-30) AND 81 PULASKI/WYTHEBORDER (P-31)
PULASKI COUNTY PUBLIC SERVICE AUTHORITY
New River Valley Planning District

LEGEND

- GRAVITY SEWER
- EXISTING SEWER
- FORCE MAIN
- POJECT LIMITS
- GRAVITY SEWER TO BE REPLACED
- PUMP STATION
- GRINDER PUMP STATION
- TREATMENT PLANT/ EXPANSION

N
W E
S

0 1000 2000

SCALE: 1" = 2000'

SOURCE: RADFORD SOUTH, VA & DUBLIN, VA. U.S.G.S. QUADRANGLES

FIGURE 78:
MAIN INTERCEPTOR IMPROVEMENTS (P-32)
PULASKI COUNTY PUBLIC SERVICE AUTHORITY
New River Valley Planning District

LEGEND

- GRAVITY SEWER
- EXISTING GRAVITY SEWER
- FORCE MAIN
- PUMP STATION
- GRINDER PUMP STATION
- TREATMENT PLANT/ EXPANSION

N
W E
S

0 1000 2000

SCALE: 1" = 2000'

SOURCE: PULASKI, VA & DUBLIN, VA. U.S.G.S. QUADRANGLES

FIGURE 79
PLANTATION ESTATES ROAD (DC-14)
PULASKI COUNTY PUBLIC SERVICE AUTHORITY
New River Valley Planning District

LEGEND

- GRAVITY SEWER
- EXISTING GRAVITY SEWER
- FORCE MAIN
- PUMP STATION
- GRINDER PUMP STATION
- TREATMENT PLANT/ EXPANSION

N
W E
S

0 1000 2000

SCALE: 1" = 2000'

SOURCE: PULASKI, VA & DUBLIN, VA. U.S.G.S. QUADRANGLES

FIGURE 80:
DEHAVEN PARK/OWEN ROAD (DC-15)
PULASKI COUNTY PUBLIC SERVICE AUTHORITY
New River Valley Planning District

LEGEND

- GRAVITY SEWER
- EXISTING GRAVITY SEWER
- FORCE MAIN
- PUMP STATION
- GRINDER PUMP STATION
- TREATMENT PLANT/ EXPANSION

FIGURE 8I
MCMARTHY ROAD (DC-16)
PULASKI COUNTY PUBLIC SERVICE AUTHORITY
New River Valley Planning District

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SCALE: 1" = 2000'

SOURCE: PULASKI, VA & DUBLIN, VA.
U.S.G.S. QUADRANGLES

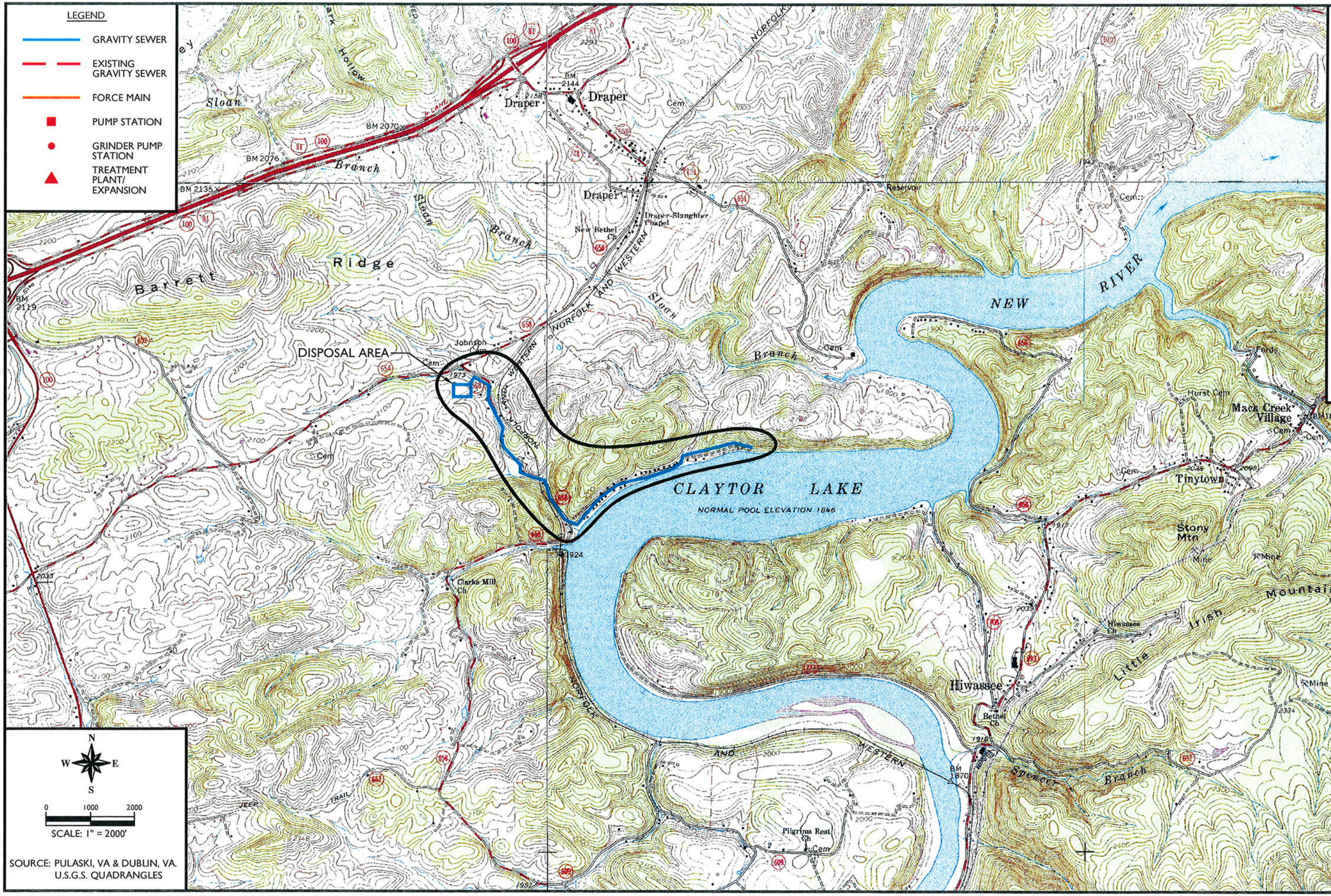

FIGURE 82: LITTLE WYTHEVILLE (DC-17)
PULASKI COUNTY PUBLIC SERVICE AUTHORITY
New River Valley Planning District

XI. PULASKI COUNTY

Thirty-four centralized and five de-centralized projects addressing water quality and human health issues were identified in Pulaski County.

The centralized projects focused on growth areas between and to the north of the Towns of Dublin and Pulaski. Several centralized projects also focused on areas developing around exits from I81. The de-centralized project areas are located on the south side of Claytor Lake, an area where the cost of extending centralized systems is prohibitively expensive.

Primary Priorities

Centralized Projects

Project Name	Project Cost
Thorne Spring Branch Phase 1(P-1)	$ 4,130,660
Alum Spring Rd Phase 1 (P-4)	$ 3,565,800
Pondlick Branch/Mt Olivet Phase 1 (P-9)	$ 3,794,500
Rt 100 Dublin/Commerce Park (P-12)	$ 5,870,360
Back Creek Area (P-13)	$ 4,219,940
East Dublin/Stoneridge Dr (P-14)	$ 5,246,740
Belspring/Gate 10 Rd (P-16)	$ 4,067,870
North Claytor Lake (P-21)	$ 4,343,695
South Dublin (P-33)	$ 2,238,040
Total	*$ 37,477,6057*

De-centralized Projects

Project Name	Project Cost
Painters Woods (DC-18)	$ 770,000
Total	*$ 770,000*

Secondary Priorities

Centralized Projects

Project Name	Project Cost
Thorne Spring Branch Phase 2 (P-2)	$ 4,786,550
Thorne Spring Branch Phase 3 (P-3)	$ 4,968,800
Alum Spring Rd Phase 2 (P-5)	$ 4,722,660
Robinson Tract Rd Phase 1 (P-6)	$ 4,783,760
Robinson Tract Rd Phase 2 (P-7)	$ 5,092,100
Brookmont Rd (P-8)	$ 5,734,260
Pondlick Branch/Mt Olivet Phase 2 (P-10)	$ 4,914,420
Rt 11 West Dublin (P-11)	$ 3,683,200
Riverfront Area (P-15)	$ 2,915,280
Belspring Rd Phase 1 (P-17)	$ 3,181,210
Belspring Rd Phase 2 (P-18)	$ 3,601,840
Belspring Rd Phase 3 (P-19)	$ 4,331,780
Belspring Rd Phase 4 (P-20)	$ 5,163,860
North Claytor Lake – Bear Dr (P-22)	$ 927,200
Newbern Heights Area (P-23)	$ 3,704,695
Old Rt 100 – I81 Exit 98 P-24)	$ 3,418,955
Cougar Trail Dr (P-25)	$ 4,663,300
Count Pulaski Dr (P-26)	$ 2,263,610
Old Rt 100 – McAdam Area (P-27)	$ 4,973,685
Draper (P-28)	$ 4,742,105
Brown Rd (P-29)	$ 3,573,805
Rt 11 – I81 Exit 92 (P-30)	$ 7,075,300
I81 Pulaski/Wythe Border (P-31)	$ 4,806,745
Main Interceptor Improvements (P-32)	$ 1,869,640
Valley Branch Area (P-34)	$ 642,100
Total	*$ 100,540,860*

De-centralized Projects

Project Name	Project Cost
Plantation Estates (DC-16)	$ 707,000
DeHaven Park (DC-15)	$ 1,630,300
McCarthy Rd Subdivision (DC-14)	$ 400,400
Little Wytheville (DC-17)	$ 758,800
Total	*$ 3,496,500*

Total Funding Necessary for Pulaski County = $142,284,965

Table 123 - Overall Project Ranking - Centralized Projects
Pulaski County

County	Project ID	Total ERC's	Equivalent Connections	Present Worth Per Connection	Elimination of Health Hazard	Elimination of Water Quality Problems	Available Facilities	Potential Growth (Residential/Industrial)	Total Points
			20	*20*	*15*	*20*	*10*	*15*	*100*
Pulaski	P-1	212	15	15	10	10	10	15	75
Pulaski	P-12	206	15	10	15	10	10	15	75
Pulaski	P-4	219	15	15	10	10	10	10	70
Pulaski	P-33	167	10	20	15	0	10	15	70
Pulaski	P-14	427	20	20	0	10	10	10	70
Pulaski	P-13	116	10	5	15	20	10	10	70
Pulaski	P-9	126	10	5	10	20	10	10	65
Pulaski	P-16	133	10	5	10	20	10	10	65
Pulaski	P-21	257	15	15	15	0	10	10	65
Pulaski	P-8	222	15	10	15	10	0	10	60
Pulaski	P-10	112	10	0	10	20	10	10	60
Pulaski	P-11	200	10	15	0	10	10	15	60
Pulaski	P-15	127	10	10	0	20	10	10	60
Pulaski	P-20	150	10	5	15	20	0	10	60
Pulaski	P-23	184	10	15	15	10	0	10	60
Pulaski	P-24	184	10	5	15	20	0	10	60
Pulaski	P-22	52	5	15	15	0	10	10	55
Pulaski	P-25	153	10	5	15	10	0	15	55
Pulaski	P-3	179	10	10	10	10	0	10	50
Pulaski	P-19	90	5	0	15	20	0	10	50
Pulaski	P-34	41	5	15	0	10	10	10	50
Pulaski	P-6	104	10	0	15	10	0	10	45
Pulaski	P-7	106	10	0	15	10	0	10	45
Pulaski	P-17	103	10	5	10	10	0	10	45
Pulaski	P-26	53	5	0	0	20	10	10	45
Pulaski	P-31	113	10	0	15	0	0	15	40
Pulaski	P-5	161	10	5	10	0	0	10	35
Pulaski	P-2	95	5	0	10	10	0	10	35
Pulaski	P-18	97	5	0	10	10	0	10	35
Pulaski	P-30	150	10	0	0	10	0	15	35
Pulaski	P-28	131	10	5	0	0	0	15	30
Pulaski	P-29	57	5	0	15	0	0	10	30
Pulaski	P-32	0	0	0	0	20	10	0	30
Pulaski	P-27	82	5	0	0	10	0	15	30

Table 124 - Overall Project Ranking - Decentralized Projects
Pulaski County

County	Project ID	Total ERC's	Elimination of Health Hazard	Elimination of Water Quality Problems	Permitted Water System	Community Involvement	Utility Willingness	Financial Support	Present Worth Per Connection	Total Points
			20	*20*	*5*	*15*	*10*	*10*	*20*	*100*
Pulaski	DC-18	70	20	5	5	5	10	0	20	65
Pulaski	DC-16	26	15	5	5	5	10	0	0	40
Pulaski	DC-17	40	20	5	0	5	10	0	0	40
Pulaski	DC-15	100	15	5	0	5	10	0	0	35
Pulaski	DC-14	20	15	5	0	5	10	0	0	35

LEGEND

PROJECT AREA

COUNTY LIMITS

Centralized Projects

P-1. Thorne Spring Branch Phase 1
P-2. Thorne Spring Branch Phase 2
P-3. Thorne Spring Branch Phase 3
P-4. Alum Spring Road Phase 1
P-5. Alum Spring Road Phase 2
P-6. Robinson Tract Road Phase 1
P-7. Robinson Tract Road Phase 2
P-8. Brookmont Road
P-9. Pondlick Branch/Mount Olivet Phase 1
P-10. Pondlick Branch/Mount Olivet Phase 2
P-11. Route 11-West Dublin/Cougar Trail Road
P-12. Route 100-Dublin/Commerce Park
P-13. Back Creek Area
P-14. East Dublin/Stoneridge Drive
P-15. Riverfront Area
P-16. Belspring/Gate 10 Road
P-17. Belspring Road/Highland to Parrott Phase 1
P-18. Belspring Road/Highland to Parrott Phase 2
P-19. Belspring Road/Highland to Parrott Phase 3
P-20. Belspring Road/Highland to Parrott Phase 4
P-21. North Claytor Lake
P-22. North Claytor Lake - Bear Drive
P-23. Newbern Heights Area
P-24. Old Route 100-I81 Exit 98
P-25. Cougar Trail Road
P-26. Count Pulaski Drive
P-27. Old Route 100/McAdam Area
P-28. Draper
P-29. Brown Road
P-30. Route 11/I-81 Exit 92
P-31. I81 Pulaski/Wythe Border
P-32. Main Interceptor Improvements
P-33. South Dublin
P-34. Valley Branch Area

Decentralized Projects

DC-14. Plantation Estates Road
DC-15. Dehaven Park/Owen Road
DC-16. McMarthy Road
DC-17. Little Wytheville
DC-18. Painters Woods Subdivison

N
W E
S

0 7,500 15,000

SCALE: 1" = 15,000'

SOURCE: RADFORD, VA & GALAX, VA
U.S.G.S. QUADRANGLE

FIGURE 53:
PULASKI COUNTY PROJECT AREAS
New River Valley Planning District

THORNE SPRING BRANCH PHASE I SEWER EXTENSION (P-1)

PULASKI COUNTY PUBLIC SERVICE AUTHORITY

New River Valley Planning District

Project Background

The Thorne Spring Branch Phase I project area is located northeast of the Town of Pulaski and extends primarily along U.S. Route 11. The project area includes approximately 212 residential connections. Currently, the area is not served by a public sewage system. Residences in the area primarily utilize privately owned and maintained on-site septic systems. The project area lies in the watershed of Thorne Spring Branch which discharges into Peak Creek, Peak Creek has been identified by the Virginia Department of Environmental Quality (DEQ) as an impaired stream. It is anticipated that, with the provision of public sewage service, a moderate to high potential will exist for residential growth and a moderate potential will exist for commercial/industrial growth.

Proposed Facilities

The proposed facilities associated with the Thorne Spring Branch Phase I Sewer Extension include approximately 8,985 linear feet of 12-inch gravity sewer and 23,900 linear feet of 8-inch gravity sewer. The extension will connect to the existing Town of Pulaski sewage collection system and all wastewater generated in the project area will ultimately be conveyed to and treated at the existing Peppers Ferry Wastewater Treatment Plant (WWTP). The Peppers Ferry WWTP has a permitted capacity of 9.0 million gallons per day (MGD) and currently treats an average of 3.98 MGD. Treated effluent from the Peppers WWTP discharges into the New River which has been identified by DEQ as an impaired stream. Based on a 50-year design period, a potential future customer base of 259 connections (anticipated 50-year growth of 20%) and a flow of 300 gallons per day (GPD) per connection, future average daily flow for the project area will be approximately 77,700 GPD or 0.078 MGD. Therefore, adequate capacity is available at the Peppers Ferry WWTP to treat the anticipated wastewater generated in the Thorne Spring Branch Phase I project area.

Project Costs

The preliminary probable project cost and annual operation and maintenance costs associated with the Thorne Spring Branch Phase I Sewer Extension are $4,130,660 and $3,289, respectively. These costs result in an approximate present worth of $19,658 per existing connection.

PRELIMINARY PROBABLE PROJECT COST

Construction Cost				
8,985	L.F.	12" Gravity Sewer @	$102/L.F.	$862,560
23,900	L.F.	8" Gravity Sewer @	$80/L.F.	$1,912,000
212	EA.	Gravity Sewer Connections @	$1,900/EA.	$402,800
		Total Construction Cost		$3,177,360
Related Cost				
30	%	Total Construction Cost		$953,300
		Total Related Cost		$953,300
		TOTAL PROJECT COST		$4,130,660

ANNUAL OPERATION AND MAINTENACE (O&M) COST

Operation and Maintenance Cost				
8,985	L.F.	12" Gravity Sewer @	$0.10/L.F.	$899
23,900	L.F.	8" Gravity Sewer @	$0.10/L.F.	$2,390
		TOTAL ANNUAL O&M COST		$3,289

PRESENT WORTH OF ANNUAL O&M COST (30 YEARS, 8%) $37,030

TOTAL PROJECT PRESENT WORTH $4,167,690

PRESENT WORTH PER CONNECTION (212 CONNECTIONS) $19,658

Table 125 - PROJECT DATA SHEET

Project Name:	Thorne Spring Branch Phase 1 (P-1)	
County:	Pulaski	
Type of Project:	Centralized	
Utility Provider:	Pulaski County PSA	
Responsible Mgmt Entity?	Pulaski County PSA	
Existing Water System?	Yes	
Existing Conditions:	The project area is currently not served by a public sewage system.	
Proposed Project:	This project consists of approximately 8,985 L.F. of 12-inch gravity sewer and 23,900 L.F. of 8-inch gravity sewer.	
Existing WWTP:	Name =	Peppers Ferry
	Design Flow =	9 mgd
	Average Flow =	3.98 mgd
	Receiving Stream =	New River
	Stream Classification =	IV
	Impaired Stream	Yes
Watershed or Adjacent Stream:	Name =	Thorne Springs Branch - Tributary of Peak Creek
	Impaired =	Yes
	Within Vicinity =	No
Equivalent Customers Served:	Residential =	212
	Industrial	0
	Commercial =	0
Health Hazard:	Known older homes with septic systems.	
Construction Feasibility:	WWTP/Collection System Available	X
	WWTP/Collection System Upgrades Required	
	WWTP/Collection System Not Available	
Growth Potential:	Industrial and Residential	
Total Project Cost:	$4,130,660	
Present Worth Per Connection:	$19,658	

LEGEND

- GRAVITY SEWER
- EXISTING SEWER
- FORCE MAIN
- PROJECT LIMITS
- PUMP STATION
- GRINDER PUMP STATION
- TREATMENT PLANT/ EXPANSION

FIGURE 54:
THORNE SPRING BRANCH PHASE I (P-I)
PULASKI COUNTY PUBLIC SERVICE AUTHORITY
New River Valley Planning District

P-I

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0 1000 2000
SCALE: 1" = 2000'

SOURCE: PULASKI, VA & DUBLIN, VA.
U.S.G.S. QUADRANGLES

ALUM SPRING ROAD PHASE I SEWER EXTENSION (P-4)

PULASKI COUNTY PUBLIC SERVICE AUTHORITY

New River Valley Planning District

Project Background

The Alum Spring Road Phase I project area is located north of the Town of Pulaski and extends primarily along State Route 636. The project area includes approximately 219 residential connections. Currently, the area is not served by a public sewage system. Residences in the area primarily utilize privately owned and maintained on-site septic systems. The project area lies in the watershed of an unnamed tributary which discharges into Peak Creek, Peak Creek has been identified by the Virginia Department of Environmental Quality (DEQ) as an impaired stream. It is anticipated that, with the provision of public sewage service, a moderate to high potential will exist for residential growth.

Proposed Facilities

The proposed facilities associated with the Alum Spring Road Phase I Sewer Extension include approximately 8,000 linear feet of 10-inch gravity sewer, 19,610 linear feet of 8-inch gravity sewer, and 750 linear feet of 6-inch gravity sewer. The extension will connect to the existing Town of Pulaski sewage collection system and all wastewater generated in the project area will ultimately be conveyed to and treated at the existing Peppers Ferry Wastewater Treatment Plant (WWTP). The Peppers Ferry WWTP has a permitted capacity of 9.0 million gallons per day (MGD) and currently treats an average of 3.98 MGD. Treated effluent from the Peppers WWTP discharges into the New River which has been identified by DEQ as an impaired stream. Based on a 50-year design period, a potential future customer base of 268 connections (anticipated 50-year growth of 20%) and a flow of 300 gallons per day (GPD) per connection, future average daily flow for the project area will be approximately 80,400 GPD or 0.081 MGD. Therefore, adequate capacity is available at the Peppers Ferry WWTP to treat the anticipated wastewater generated in the Alum Spring Road Phase I project area.

Project Costs

The preliminary probable project cost and annual operation and maintenance costs associated with the Alum Spring Road Phase I Sewer Extension are $3,565,800 and $2,836, respectively. These costs result in an approximate present worth of $16,428 per existing connection.

PRELIMINARY PROBABLE PROJECT COST

Construction Cost				
8,000	L.F.	10" Gravity Sewer @	$88/L.F.	$704,000
19,610	L.F.	8" Gravity Sewer @	$80/L.F.	$1,568,800
750	L.F.	6" Gravity Sewer @	$72/L.F.	$54,000
219	EA.	Gravity Sewer Connections @	$1,900/EA.	$416,100
		Total Construction Cost		$2,742,900
Related Cost				
30	%	Total Construction Cost		$822,900
		Total Related Cost		$822,900
		TOTAL PROJECT COST		$3,565,800

ANNUAL OPERATION AND MAINTENACE (O&M) COST

Operation and Maintenance Cost				
28,360	L.F.	Gravity Sewer @	$0.10/L.F.	$2,836
		TOTAL ANNUAL O&M COST		$2,836

PRESENT WORTH OF ANNUAL O&M COST (30 YEARS, 8%) $31,930

TOTAL PROJECT PRESENT WORTH $3,597,730

PRESENT WORTH PER CONNECTION (219 CONNECTIONS) $16,428

Table 126 - PROJECT DATA SHEET

Project Name:		Alum Spring Road Phase 1 (P-4)
County:		Pulaski
Type of Project:		Centralized
Utility Provider:		Pulaski County PSA
Responsible Mgmt Entity?		Pulaski County PSA
Existing Water System?		Yes
Existing Conditions:		The project area is currently not served by a public sewage system.
Proposed Project:		This project consists of approximately 8,000 L.F. of 10-inch gravity sewer, 19,610 L.F. of 8-inch gravity sewer, and 750 L.F. of 6-inch gravity sewer.
Existing WWTP:	Name =	Peppers Ferry
	Design Flow =	9 mgd
	Average Flow =	3.98 mgd
	Receiving Stream =	New River
	Stream Classification =	IV
	Impaired Stream	Yes
Watershed or Adjacent Stream:	Name =	UT - tributary of Peak Creek
	Impaired =	Yes
	Within Vicinity =	No
Equivalent Customers Served:	Residential =	219
	Industrial	0
	Commercial =	0
Health Hazard:		Known older homes with septic systems.
Construction Feasibility:	WWTP/Collection System Available	X
	WWTP/Collection System Upgrades Required	
	WWTP/Collection System Not Available	
Growth Potential:		Residential
Total Project Cost:		$3,565,800
Present Worth Per Connection:		$16,428

LEGEND

- GRAVITY SEWER
- EXISTING SEWER
- FORCE MAIN
- PROJECT LIMITS
- PUMP STATION
- GRINDER PUMP STATION
- TREATMENT PLANT/ EXPANSION

P-4

N
W E
S

0 1000 2000

SCALE: 1" = 2000'

SOURCE: PULASKI, VA & DUBLIN, VA. U.S.G.S. QUADRANGLES

FIGURE 55:
ALUM SPRING ROAD PHASE I (P-4)
PULASKI COUNTY PUBLIC SERVICE AUTHORITY
New River Valley Planning District

PONDLICK BRANCH/MOUNT OLIVET PHASE I SEWER EXTENSION (P-9)

PULASKI COUNTY PUBLIC SERVICE AUTHORITY

New River Valley Planning District

Project Background

The Pondlick Branch/Mount Olivet Phase I project area is located west of the Town of Pulaski and extends primarily along State Routes 640 and 710. The project area includes approximately 126 residential connections. Currently, the area is not served by a public sewage system. Residences in the area primarily utilize privately owned and maintained on-site septic systems. The project area lies in the watershed of Peak Creek, which has been identified by the Virginia Department of Environmental Quality (DEQ) as an impaired stream. It is anticipated that, with the provision of public sewage service, a moderate to high potential will exist for residential growth.

Proposed Facilities

The proposed facilities associated with the Pondlick Branch/Mount Olivet Phase I Sewer Extension include approximately 4,400 linear feet of 12-inch gravity sewer and 22,275 linear feet of 8-inch gravity sewer. The extension will connect to the existing Town of Pulaski sewage collection system and all wastewater generated in the project area will ultimately be conveyed to and treated at the existing Peppers Ferry Wastewater Treatment Plant (WWTP). The Peppers Ferry WWTP has a permitted capacity of 9.0 million gallons per day (MGD) and currently treats an average of 3.98 MGD. Treated effluent from the Peppers WWTP discharges into the New River which has been identified by DEQ as an impaired stream. Based on a 50-year design period, a potential future customer base of 154 connections (anticipated 50-year growth of 20%) and a flow of 300 gallons per day (GPD) per connection, future average daily flow for the project area will be approximately 46,200 GPD or 0.046 MGD. Therefore, adequate capacity is available at the Peppers Ferry WWTP to treat the anticipated wastewater generated in the Pondlick Branch/Mount Olivet Phase I project area.

Project Costs

The preliminary probable project cost and annual operation and maintenance costs associated with the Pondlick Branch/Mount Olivet Phase I Sewer Extension are $3,794,500 and $5,668, respectively. These costs result in an approximate present worth of $30,621 per existing connection.

PRELIMINARY PROBABLE PROJECT COST

Construction Cost				
4,400	L.F.	12" Gravity Sewer @	$102/L.F.	$422,400
22,275	L.F.	8" Gravity Sewer @	$80/L.F.	$1,782,000
1	EA.	Grinder Pump Stations @	$75,000/EA.	$75,000
4	EA.	Railroad Crossings @	$100,000/EA.	$400,000
126	EA.	Gravity Sewer Connections @	$1,900/EA.	$239,400
		Total Construction Cost		$2,918,800
Related Cost				
30	%	Total Construction Cost		$875,700
		Total Related Cost		$875,700
		TOTAL PROJECT COST		$3,794,500

ANNUAL OPERATION AND MAINTENACE (O&M) COST

Operation and Maintenance Cost				
26,675	L.F.	Gravity Sewer @	$0.10/L.F.	$2,668
1	EA.	Grinder Pump Stations @	$3,000/EA.	$3,000
		TOTAL ANNUAL O&M COST		$5,668

PRESENT WORTH OF ANNUAL O&M COST (30 YEARS, 8%) $63,810

TOTAL PROJECT PRESENT WORTH $3,858,310

PRESENT WORTH PER CONNECTION (126 CONNECTIONS) $30,621

Table 127 - PROJECT DATA SHEET

Project Name:		Pondlick Branch / Mount Olivet Phase 1 (P-9)
County:		Pulaski
Type of Project:		Centralized
Utility Provider:		Pulaski County PSA
Responsible Mgmt Entity?		Pulaski County PSA
Existing Water System?		No
Existing Conditions:		The project area is currently not served by a public sewage system.
Proposed Project:		This project consists of approximately 4,400 L.F. of 12-inch gravity sewer and 22,275 L.F. of 8-inch gravity sewer.
Existing WWTP:	Name =	Peppers Ferry
	Design Flow =	9 mgd
	Average Flow =	3.98 mgd
	Receiving Stream =	New River
	Stream Classification =	IV
	Impaired Stream	Yes
Watershed or Adjacent Stream:	Name =	Peak Creek
	Impaired =	Yes
	Within Vicinity =	Yes
Equivalent Customers Served:	Residential =	126
	Industrial	0
	Commercial =	0
Health Hazard:		Known older homes with septic systems.
Construction Feasibility:	WWTP/Collection System Available	X
	WWTP/Collection System Upgrades Required	
	WWTP/Collection System Not Available	
Growth Potential:		Residential
Total Project Cost:		$3,794,500
Present Worth Per Connection:		$30,621

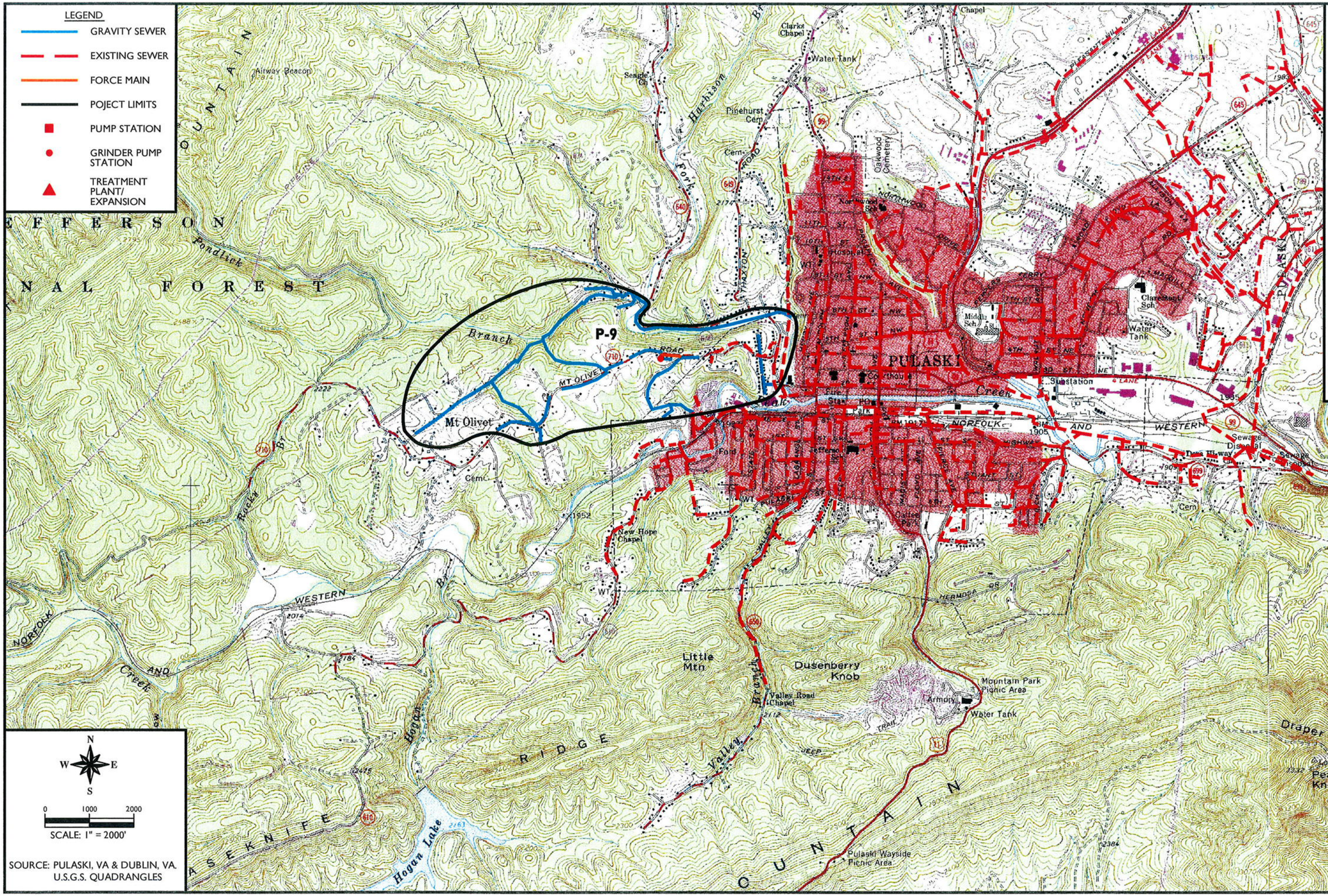

FIGURE 56:
PONDLICK BRANCH/MOUNT OLIVET PHASE I (P-9)
PULASKI COUNTY PUBLIC SERVICE AUTHORITY
New River Valley Planning District

ROUTE 100 - DUBLIN/COMMERCE PARK SEWER EXTENSION (P-12)

PULASKI COUNTY PUBLIC SERVICE AUTHORITY

New River Valley Planning District

Project Background

The Route 100 - Dublin/Commerce Park project area is located northeast of the Town of Dublin and extends primarily along U.S. Route 11 and State Routes 100, 636, and 746. The project area includes approximately 208 residential connections. Currently, the area is not served by a public sewage system. Residences in the area primarily utilize privately owned and maintained on-site septic systems. The project area lies in the watersheds of Back Creek, Peak Creek, and the New River, which have been identified by the Virginia Department of Environmental Quality (DEQ) as impaired streams. It is anticipated that, with the provision of public sewage service, a moderate to high potential will exist for residential growth, and a moderate to high potential will exist for industrial/commercial growth.

Proposed Facilities

The proposed facilities associated with the Route 100 - Dublin/Commerce Park Sewer Extension include approximately 43,410 linear feet of 8-inch gravity sewer, 7,100 linear feet of 2-inch force main, and two grinder pump stations. The extension will connect to the existing Town of Dublin sewage collection system and all wastewater generated in the project area will ultimately be conveyed to and treated at the existing Peppers Ferry Wastewater Treatment Plant (WWTP). The Peppers Ferry WWTP has a permitted capacity of 9.0 million gallons per day (MGD) and currently treats an average of 3.98 MGD. Treated effluent from the Peppers WWTP discharges into the New River which has been identified by DEQ as an impaired stream. Based on a 50-year design period, a potential future customer base of 252 connections (anticipated 50-year growth of 20%) and a flow of 300 gallons per day (GPD) per connection, future average daily flow for the project area will be approximately 75,600 GPD or 0.076 MGD. Therefore, adequate capacity is available at the Peppers Ferry WWTP to treat the anticipated wastewater generated in the Route 100 - Dublin/Commerce Park project area.

Project Costs

The preliminary probable project cost and annual operation and maintenance costs associated with the Route 100 - Dublin/Commerce Park Sewer Extension are $5,870,360 and $15,051, respectively. These costs result in an approximate present worth of $29,040 per existing connection.

PRELIMINARY PROBABLE PROJECT COST

Construction Cost				
43,410	L.F.	8" Gravity Sewer @	$80/L.F.	$3,472,800
7,100	L.F.	2" Force Main @	$19/L.F.	$134,900
2	EA.	Sewage Pump Stations @	$250,000/EA.	$500,000
2	EA.	Force Main Connections @	$8,280/EA.	$16,560
206	EA.	Gravity Sewer Connections @	$1,900/EA.	$391,400
		Total Construction Cost		$4,515,660
Related Cost				
30	%	Total Construction Cost		$1,354,700
		Total Related Cost		$1,354,700
		TOTAL PROJECT COST		$5,870,360

ANNUAL OPERATION AND MAINTENACE (O&M) COST

Operation and Maintenance Cost				
43,410	L.F.	Gravity Sewer @	$0.10/L.F.	$4,341
7,100	L.F.	Force Main @	$0.10/L.F.	$710
2	EA.	Sewage Pump Stations @	$5,000/EA.	$10,000
		TOTAL ANNUAL O&M COST		$15,051

PRESENT WORTH OF ANNUAL O&M COST (30 YEARS, 8%) $169,450

TOTAL PROJECT PRESENT WORTH $6,039,810

PRESENT WORTH PER CONNECTION (206 CONNECTIONS) $29,040

Table 128 - PROJECT DATA SHEET

Project Name:		Route 100 - Dublin / Commerce Park (P-12)
County:		Pulaski
Type of Project:		Centralized
Utility Provider:		Pulaski County PSA
Responsible Mgmt Entity?		Pulaski County PSA
Existing Water System?		Yes
Existing Conditions:		The project area is currently not served by a public sewage system.
Proposed Project:		This project consists of approximately 43,410 L.F. of 8-inch gravity sewer, 7,100 L.F. of 2-inch force main, and two grinder pump stations.
Existing WWTP:	Name =	Peppers Ferry
	Design Flow =	9 mgd
	Average Flow =	3.98 mgd
	Receiving Stream =	New River
	Stream Classification =	IV
	Impaired Stream	Yes
Watershed or Adjacent Stream:	Name =	Millerplace Branch - tributary of Back Creek, UT - tributary of New River, Thorne Spring Branch - tributary of Peak Creek
	Impaired =	Yes
	Within Vicinity =	No
Equivalent Customers Served:	Residential =	208
	Industrial	0
	Commercial =	0
Health Hazard:		Documented septic failures.
Construction Feasibility:	WWTP/Collection System Available	X
	WWTP/Collection System Upgrades Required	
	WWTP/Collection System Not Available	
Growth Potential:		Industrial and Residential
Total Project Cost:		$5,870,360
Present Worth Per Connection:		$29,040

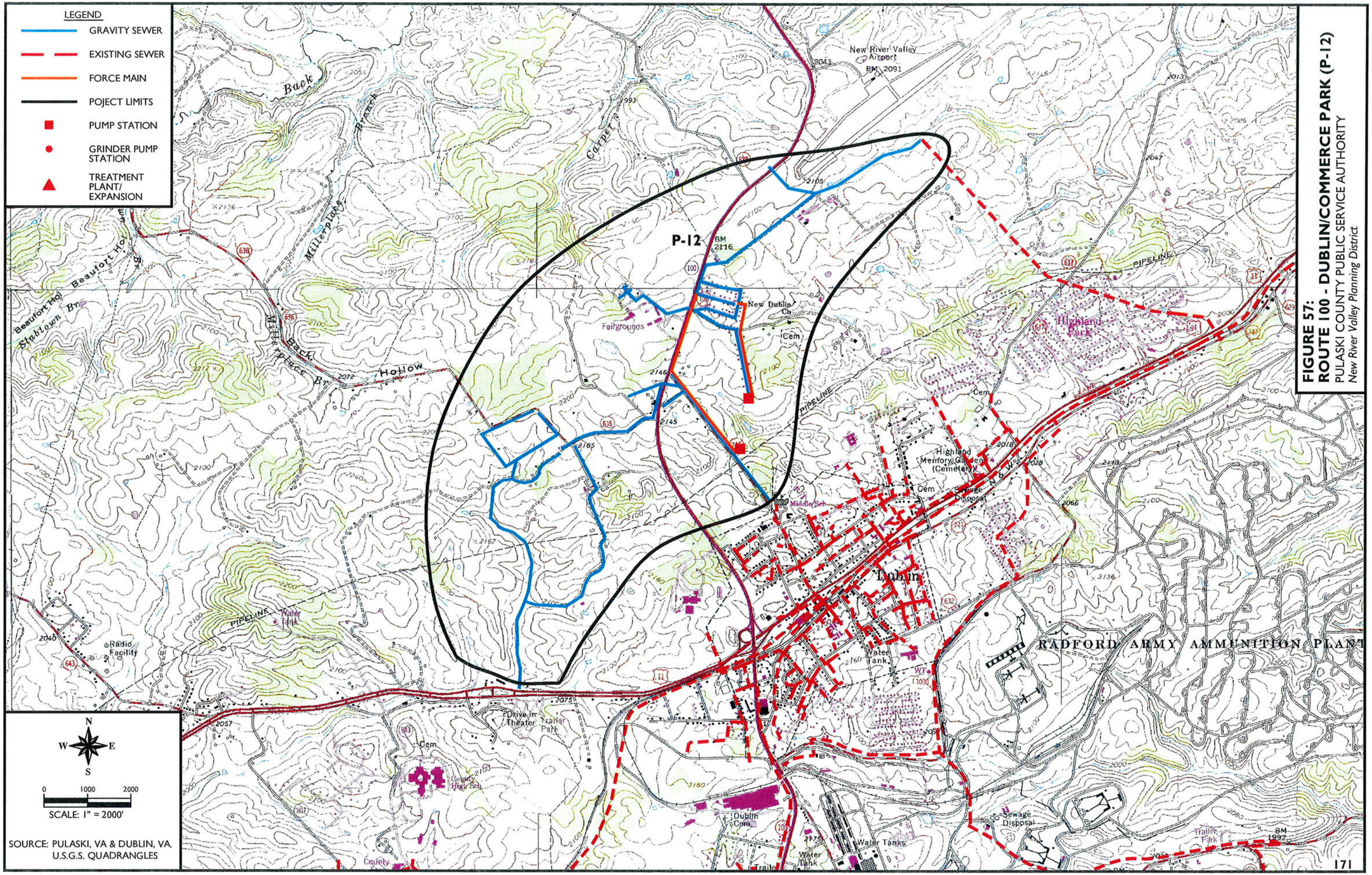

FIGURE 57:
ROUTE 100 - DUBLIN/COMMERCE PARK (P-12)
PULASKI COUNTY PUBLIC SERVICE AUTHORITY
New River Valley Planning District

BACK CREEK SEWER EXTENSION (P-13)

PULASKI COUNTY PUBLIC SERVICE AUTHORITY

New River Valley Planning District

Project Background

The Back Creek project area is located north of the Town of Dublin at the Base of Walker Mountain and extends primarily along State Route 100. The project area includes approximately 120 residential connections. Currently, the area is not served by a public sewage system. Residences in the area primarily utilize privately owned and maintained on-site septic systems. The project area lies in the watershed of Back Creek which has been identified by the Virginia Department of Environmental Quality (DEQ) as an impaired stream. It is anticipated that, with the provision of public sewage service, a moderate potential will exist for residential growth.

Proposed Facilities

The proposed facilities associated with the Back Creek Sewer Extension includes approximately 4,170 linear feet of 10-inch gravity sewer, 29,180 linear feet of 8-inch gravity sewer, 1,470 linear feet of 4-inch force main, and one sewage pump station. The extension will connect to the existing Pulaski County PSA sewage collection system and all wastewater generated in the project area will ultimately be conveyed to and treated at the existing Peppers Ferry Wastewater Treatment Plant (WWTP). The Peppers Ferry WWTP has a permitted capacity of 9.0 million gallons per day (MGD) and currently treats an average of 3.98 MGD. Treated effluent from the Peppers WWTP discharges into the New River which has been identified by DEQ as an impaired stream. Based on a 50-year design period, a potential future customer base of 143 connections (anticipated 50-year growth of 20%) and a flow of 300 gallons per day (GPD) per connection, future average daily flow for the project area will be approximately 42,600 GPD or 0.043 MGD. Therefore, adequate capacity is available at the Peppers Ferry WWTP to treat the anticipated wastewater generated in the Back Creek project area.

Project Costs

The preliminary probable project cost and annual operation and maintenance costs associated with the Back Creek Sewer Extension are $4,219,940 and $8,482, respectively. These costs result in an approximate present worth of $35,970 per existing connection.

PRELIMINARY PROBABLE PROJECT COST

Construction Cost				
4,170	L.F.	10" Gravity Sewer @	$88/L.F.	$366,960
29,180	L.F.	8" Gravity Sewer @	$80/L.F.	$2,334,400
1,470	L.F.	4" Force Main @	$28/L.F.	$41,160
1	EA.	Sewage Pump Stations @	$250,000/EA.	$250,000
4	EA.	Force Main Connections @	$8,280/EA.	$33,120
116	EA.	Gravity Sewer Connections @	$1,900/EA.	$220,400
		Total Construction Cost		$3,246,040
Related Cost				
30	%	Total Construction Cost		$973,900
		Total Related Cost		$973,900
		TOTAL PROJECT COST		$4,219,940

ANNUAL OPERATION AND MAINTENACE (O&M) COST

Operation and Maintenance Cost				
33,350	L.F.	Gravity Sewer @	$0.10/L.F.	$3,335
1,470	L.F.	Force Main @	$0.10/L.F.	$147
1	EA.	Sewage Pump Stations @	$5,000/EA.	$5,000
		TOTAL ANNUAL O&M COST		$8,482

PRESENT WORTH OF ANNUAL O&M COST (30 YEARS, 8%) $95,490

TOTAL PROJECT PRESENT WORTH $4,315,430

PRESENT WORTH PER CONNECTION (116 CONNECTIONS) $35,970

Table 129 - PROJECT DATA SHEET

Project Name:		Back Creek Area (P-13)
County:		Pulaski
Type of Project:		Centralized
Utility Provider:		Pulaski County PSA
Responsible Mgmt Entity?		Pulaski County PSA
Existing Water System?		No
Existing Conditions:		The project area is currently not served by a public sewage system.
Proposed Project:		This project consists of approximately 4,170 L.F. of 10-inch gravity sewer, 29,180 L.F. of 8-inch gravity sewer,1,470 L.F. of 4-inch force main, and one sewage pump station.
Existing WWTP:	Name =	Peppers Ferry
	Design Flow =	9 mgd
	Average Flow =	3.98 mgd
	Receiving Stream =	New River
	Stream Classification =	IV
	Impaired Stream	Yes
Watershed or Adjacent Stream:	Name =	Back Creek
	Impaired =	Yes
	Within Vicinity =	Yes
Equivalent Customers Served:	Residential =	120
	Industrial	0
	Commercial =	0
Health Hazard:		Documented septic failures.
Construction Feasibility:	WWTP/Collection System Available	X
	WWTP/Collection System Upgrades Required	
	WWTP/Collection System Not Available	
Growth Potential:		Residential
Total Project Cost:		$4,219,940
Present Worth Per Connection:		$35,970

LEGEND

- GRAVITY SEWER
- EXISTING SEWER
- FORCE MAIN
- POJECT LIMITS
- PUMP STATION
- GRINDER PUMP STATION
- TREATMENT PLANT/ EXPANSION

JEFFERSON NATIONAL FOREST

P-13

Little Walker Mountain

Walker Creek

Back Shurtts Ridge

Branch

Highland

Creek

Neck

McGavock

Racepath Branch

Creek

Anderson Vickers Cem.

French Chapel

Mine

Fellowship Ch.

Cem

BM x 2167

BR 1946

N
W E
S

0 1000 2000

SCALE: 1" = 2000'

SOURCE: STAFFORDSVILLE, VA. U.S.G.S. QUADRANGLE

FIGURE 58:
BACK CREEK AREA (P-13)
PULASKI COUNTY PUBLIC SERVICE AUTHORITY
New River Valley Planning District

EAST DUBLIN/STONERIDGE DRIVE SEWER EXTENSION (P-14)

PULASKI COUNTY PUBLIC SERVICE AUTHORITY

New River Valley Planning District

Project Background

The East Dublin/Stoneridge Drive project area is located east of the Town of Dublin and extends primarily along U.S. Route 11. The project area includes approximately 427 residential connections. Currently, the area is not served by a public sewage system. Residences in the area primarily utilize privately owned and maintained on-site septic systems. The project area lies in the watershed of Hazel Hollow which discharges into the New River which has been identified by the Virginia Department of Environmental Quality (DEQ) as an impaired stream. It is anticipated that, with the provision of public sewage service, a moderate potential will exist for residential growth.

Proposed Facilities

The proposed facilities associated with the East Dublin/Stoneridge Drive Sewer Extension includes approximately 6,510 L.F. of 10-inch gravity sewer, 29,525 L.F. of 8-inch gravity sewer, 1,420 L.F. of 4-inch force main, and one sewage pump station. The extension will connect to the existing Pulaski County Public Service Authority sewage collection system and all wastewater generated in the project area will ultimately be conveyed to and treated at the existing Peppers Ferry Wastewater Treatment Plant (WWTP). The Peppers Ferry WWTP has a permitted capacity of 9.0 million gallons per day (MGD) and currently treats an average of 3.98 MGD. Treated effluent from the Peppers WWTP discharges into the New River which has been identified by DEQ as an impaired stream. Based on a 50-year design period, a potential future customer base of 522 connections (anticipated 50-year growth of 20%) and a flow of 300 gallons per day (GPD) per connection, future average daily flow for the project area will be approximately 156,600 GPD or 0.092 MGD. Therefore, adequate capacity is available at the Peppers Ferry WWTP to treat the anticipated wastewater generated in the East Dublin/Stoneridge Drive project area.

Project Costs

The preliminary probable project cost and annual operation and maintenance costs associated with the East Dublin/Stoneridge Drive Sewer Extension are $5,246,740 and $8,746, respectively. These costs result in an approximate present worth of $12,518 per existing connection.

PRELIMINARY PROBABLE PROJECT COST

Construction Cost				
6,510	L.F.	10" Gravity Sewer @	$88/L.F.	$572,880
29,525	L.F.	8" Gravity Sewer @	$80/L.F.	$2,362,000
1,420	L.F.	4" Force Main @	$28/L.F.	$39,760
1	EA.	Sewage Pump Stations @	$250,000/EA.	$250,000
427	EA.	Gravity Sewer Connections @	$1,900/EA.	$811,300
		Total Construction Cost		$4,035,940
Related Cost				
30	%	Total Construction Cost		$1,210,800
		Total Related Cost		$1,210,800
		TOTAL PROJECT COST		$5,246,740

ANNUAL OPERATION AND MAINTENACE (O&M) COST

Operation and Maintenance Cost				
36,035	L.F.	Gravity Sewer @	$0.10/L.F.	$3,604
1,420	L.F.	Force Main @	$0.10/L.F.	$142
1	EA.	Sewage Pump Stations @	$5,000/EA.	$5,000
		TOTAL ANNUAL O&M COST		$8,746

PRESENT WORTH OF ANNUAL O&M COST (30 YEARS, 8%)	$98,460
TOTAL PROJECT PRESENT WORTH	$5,345,200
PRESENT WORTH PER CONNECTION (427 CONNECTIONS)	$12,518

Table 130 - PROJECT DATA SHEET

Project Name:	East Dublin / Stoneridge Drive (P-14)	
County:	Pulaski	
Type of Project:	Centralized	
Utility Provider:	Pulaski County PSA	
Responsible Mgmt Entity?	Pulaski County PSA	
Existing Water System?	Yes	
Existing Conditions:	The project area is currently not served by a public sewage system.	
Proposed Project:	This project consists of approximately 6,510 L.F. of 10-inch gravity sewer and 29,525 L.F. of 8-inch gravity sewer, 1,420 L.F. of 4-inch force main, and one sewage pump station.	
Existing WWTP:	Name =	Peppers Ferry
	Design Flow =	9 mgd
	Average Flow =	3.98 mgd
	Receiving Stream =	New River
	Stream Classification =	IV
	Impaired Stream	Yes
Watershed or Adjacent Stream:	Name =	Hazel Hollow - tribuary of the New River
	Impaired =	Yes
	Within Vicinity =	No
Equivalent Customers Served:	Residential =	427
	Industrial	0
	Commercial =	0
Health Hazard:	None.	
Construction Feasibility:	WWTP/Collection System Available	X
	WWTP/Collection System Upgrades Required	
	WWTP/Collection System Not Available	
Growth Potential:	Residential	
Total Project Cost:	$5,246,740	
Present Worth Per Connection:	$12,518	

LEGEND

- GRAVITY SEWER
- EXISTING SEWER
- FORCE MAIN
- POJECT LIMITS
- PUMP STATION
- GRINDER PUMP STATION
- TREATMENT PLANT/ EXPANSION

P-14

RADFORD ARMY AMMUNITION PLANT

N
W E
0 1000 2000
SCALE: 1" = 2000'

SOURCE: RADFORD NORTH, VA., RADFORD SOUTH, VA., STAFFORDSVILLE, VA. DUBLIN, VA. U.S.G.S. QUADRANGLES

FIGURE 59:
EAST DUBLIN/STONERIDGE DRIVE (P-14)
PULASKI COUNTY PUBLIC SERVICE AUTHORITY
New River Valley Planning District

BELSPRING/GATE 10 ROAD SEWER EXTENSION (P-16)

PULASKI COUNTY PUBLIC SERVICE AUTHORITY

New River Valley Planning District

Project Background

The Belspring/Gate 10 Road project area is located north of the community of Fairlawn and extends primarily along State Routes 600 and 623. The project area includes approximately 133 residential connections. Currently, the area is not served by a public sewage system. Residences in the area primarily utilize privately owned and maintained on-site septic systems. The project area lies in the watershed of the New River which has been identified by the Virginia Department of Environmental Quality (DEQ) as an impaired stream. It is anticipated that, with the provision of public sewage service, a moderate to high potential will exist for residential growth.

Proposed Facilities

The proposed facilities associated with the Belspring/Gate 10 Road Sewer Extension includes approximately 1,980 L.F. of 15-inch gravity sewer, 20,900 L.F. of 8-inch gravity sewer, 7,185 L.F. of 6-inch force main, 6,825 L.F. of 2-inch force main, two grinder pump stations, and two sewage pump stations. The extension will connect to the existing Pulaski County Public Service Authority sewage collection system and all wastewater generated in the project area will ultimately be conveyed to and treated at the existing Peppers Ferry Wastewater Treatment Plant (WWTP). The Peppers Ferry WWTP has a permitted capacity of 9.0 million gallons per day (MGD) and currently treats an average of 3.98 MGD. Treated effluent from the Peppers WWTP discharges into the New River which has been identified by DEQ as an impaired stream. Based on a 50-year design period, a potential future customer base of 163 connections (anticipated 50-year growth of 20%) and a flow of 300 gallons per day (GPD) per connection, future average daily flow for the project area will be approximately 48,900 GPD or 0.05 MGD. Therefore, adequate capacity is available at the Peppers Ferry WWTP to treat the anticipated wastewater generated in the Belspring/Gate 10 Road project area.

Project Costs

The preliminary probable project cost and annual operation and maintenance costs associated with the Belspring/Gate 10 Road Sewer Extension are $4,067,870 and $19,689, respectively. These costs result in an approximate present worth of $32,252 per existing connection.

PRELIMINARY PROBABLE PROJECT COST

Construction Cost				
1,980	L.F.	15" Gravity Sewer @	$102/L.F.	$201,960
20,900	L.F.	8" Gravity Sewer @	$80/L.F.	$1,672,000
7,185	L.F.	6" Force Main @	$31/L.F.	$222,735
6,825	L.F.	2" Force Main @	$19/L.F.	$129,675
2	EA.	Sewage Pump Stations @	$250,000/EA.	$500,000
2	EA.	Grinder Pump Stations @	$75,000/EA.	$150,000
133	EA.	Gravity Sewer Connections @	$1,900/EA.	$252,700
		Total Construction Cost		$3,129,070
Related Cost				
30	%	Total Construction Cost		$938,800
		Total Related Cost		$938,800
		TOTAL PROJECT COST		$4,067,870

ANNUAL OPERATION AND MAINTENACE (O&M) COST

Operation and Maintenance Cost				
22,880	L.F.	Gravity Sewer @	$0.10/L.F.	$2,288
14,010	L.F.	Force Main @	$0.10/L.F.	$1,401
2	EA.	Sewage Pump Stations @	$5,000/EA.	$10,000
2	EA.	Grinder Pump Stations @	$3,000/EA.	$6,000
		TOTAL ANNUAL O&M COST		$19,689

PRESENT WORTH OF ANNUAL O&M COST (30 YEARS, 8%) $221,660

TOTAL PROJECT PRESENT WORTH $4,289,530

PRESENT WORTH PER CONNECTION (133 CONNECTIONS) $32,252

Table 131 - PROJECT DATA SHEET

Project Name:		Belspring / Gate 10 Road (P-16)
County:		Pulaski
Type of Project:		Centralized
Utility Provider:		Pulaski County PSA
Responsible Mgmt Entity?		Pulaski County PSA
Existing Water System?		Yes
Existing Conditions:		The project area is currently not served by a public sewage system.
Proposed Project:		This project consists of approximately 1,980 L.F. of 15-inch gravity sewer, 20,900 L.F. of 8-inch gravity sewer, 7,185 L.F. of 6-inch force main, 6,825 L.F. of 2-inch force main, two grinder pump stations, and two sewage pump stations.
Existing WWTP:	Name =	Peppers Ferry
	Design Flow =	9 mgd
	Average Flow =	3.98 mgd
	Receiving Stream =	New River
	Stream Classification =	IV
	Impaired Stream	Yes
Watershed or Adjacent Stream:	Name =	New River
	Impaired =	Yes
	Within Vicinity =	Yes
Equivalent Customers Served:	Residential =	133
	Industrial	0
	Commercial =	0
Health Hazard:		Known older homes with septic systems.
Construction Feasibility:	WWTP/Collection System Available	X
	WWTP/Collection System Upgrades Required	
	WWTP/Collection System Not Available	
Growth Potential:		Residential
Total Project Cost:		$4,067,870
Present Worth Per Connection:		$32,252

LEGEND

- GRAVITY SEWER
- EXISTING SEWER
- FORCE MAIN
- POJECT LIMITS
- PUMP STATION
- GRINDER PUMP STATION
- TREATMENT PLANT/ EXPANSION

P-16

Whitethorne

Belspring

Cowan

Pepper

Centerville

Fairlawn

RADFORD ARMY AMMUNITION

MONTGOMERY CO
PULASKI CO

NORFOLK AND WESTERN

NEW RIVER

PIPELINE

Golf Course

Trailer Park

Sunrise Burial Park

Drive-in Theater

Pumping Station

Gravel Pit

Rockford Ch

Cem

Gate

Radio Tower

N
W E
S

0 1000 2000

SCALE: 1" = 2000'

SOURCE: RADFORD NORTH, VA. & STAFFORDSVILLE, VA. U.S.G.S. QUADRANGLES

FIGURE 60:
BELSPRING/GATE 10 ROAD (P-16)
PULASKI COUNTY PUBLIC SERVICE AUTHORITY
New River Valley Planning District

NORTH CLAYTOR LAKE SEWER EXTENSION (P-21)

PULASKI COUNTY PUBLIC SERVICE AUTHORITY

New River Valley Planning District

Project Background

The North Claytor Lake project area is located southeast of the Town of Dublin and extends primarily along State Route 660. The project area includes approximately 257 residential connections. Currently, the area is not served by a public sewage system. Residences in the area primarily utilize privately owned and maintained on-site septic systems. The project area lies in the watershed of the Claytor Lake which is not identified by the Virginia Department of Environmental Quality (DEQ) as an impaired stream. It is anticipated that, with the provision of public sewage service, a moderate to high potential will exist for residential growth.

Proposed Facilities

The proposed facilities associated with the North Claytor Lake Sewer Extension includes approximately 3,835 L.F. of 10-inch gravity sewer, 14,225 L.F. of 8-inch gravity sewer, 11,495 L.F. of 4-inch force main, 7,185 L.F. of 2-inch force main, two grinder pump station and three sewage pump stations. The extension will connect to the existing Pulaski County Public Service Authority sewage collection system and all wastewater generated in the project area will ultimately be conveyed to and treated at the existing Peppers Ferry Wastewater Treatment Plant (WWTP). The Peppers Ferry WWTP has a permitted capacity of 9.0 million gallons per day (MGD) and currently treats an average of 3.98 MGD. Treated effluent from the Peppers WWTP discharges into the New River which has been identified by DEQ as an impaired stream. Based on a 50-year design period, a potential future customer base of 316 connections (anticipated 50-year growth of 20%) and a flow of 300 gallons per day (GPD) per connection, future average daily flow for the project area will be approximately 94,200 GPD or 0.094 MGD. Therefore, adequate capacity is available at the Peppers Ferry WWTP to treat the anticipated wastewater generated in the North Claytor Lake project area.

Project Costs

The preliminary probable project cost and annual operation and maintenance costs associated with the North Claytor Lake Sewer Extension are $4,343,695 and $24,674, respectively. These costs result in an approximate present worth of $17,982 per existing connection.

PRELIMINARY PROBABLE PROJECT COST

Construction Cost				
3,835	L.F.	10" Gravity Sewer @	$88/L.F.	$337,480
14,225	L.F.	8" Gravity Sewer @	$80/L.F.	$1,138,000
11,495	L.F.	4" Force Main @	$28/L.F.	$321,860
7,185	L.F.	2" Force Main @	$19/L.F.	$136,515
3	EA.	Sewage Pump Stations @	$250,000/EA.	$750,000
2	EA.	Grinder Pump Stations @	$75,000/EA.	$150,000
3	EA.	Force Main Connections @	$8,280/EA.	$24,840
257	EA.	Gravity Sewer Connections @	$1,900/EA.	$482,600
		Total Construction Cost		$3,341,295
Related Cost				
30	%	Total Construction Cost		$1,002,400
		Total Related Cost		$1,002,400
		TOTAL PROJECT COST		$4,343,695

ANNUAL OPERATION AND MAINTENACE (O&M) COST

Operation and Maintenance Cost				
18,060	L.F.	Gravity Sewer @	$0.10/L.F.	$1,806
18,680	L.F.	Force Main @	$0.10/L.F.	$1,868
3	EA.	Sewage Pump Stations @	$5,000/EA.	$15,000
2	EA.	Grinder Pump Stations @	$3,000/EA.	$6,000
		TOTAL ANNUAL O&M COST		$24,674

PRESENT WORTH OF ANNUAL O&M COST (30 YEARS, 8%) $277,780

TOTAL PROJECT PRESENT WORTH $4,621,475

PRESENT WORTH PER CONNECTION (257 CONNECTIONS) $17,982

Table 132 - PROJECT DATA SHEET

Project Name:		North Claytor Lake (P-21)
County:		Pulaski
Type of Project:		Centralized
Utility Provider:		Pulaski County PSA
Responsible Mgmt Entity?		Pulaski County PSA
Existing Water System?		Yes
Existing Conditions:		The project area is currently not served by a public sewage system.
Proposed Project:		This project consists of approximately 3,835 L.F. of 10-inch gravity sewer, 14,225 L.F. of 8-inch gravity sewer, 11,495 L.F. of 4-inch force main, 7,185 L.F. of 2-inch force main, one grinder pump station and three sewage pump stations.
Existing WWTP:	Name =	Peppers Ferry
	Design Flow =	9 mgd
	Average Flow =	3.98 mgd
	Receiving Stream =	New River
	Stream Classification =	IV
	Impaired Stream	Yes
Watershed or Adjacent Stream:	Name =	Claytor Lake
	Impaired =	No
	Within Vicinity =	Yes
Equivalent Customers Served:	Residential =	257
	Industrial	0
	Commercial =	0
Health Hazard:		Documented septic failure.
Construction Feasibility:	WWTP/Collection System Available	X
	WWTP/Collection System Upgrades Required	
	WWTP/Collection System Not Available	
Growth Potential:		Residential
Total Project Cost:		$4,343,695
Present Worth Per Connection:		$17,982

LEGEND

- GRAVITY SEWER
- EXISTING SEWER
- FORCE MAIN
- POJECT LIMITS
- PUMP STATION
- GRINDER PUMP STATION
- TREATMENT PLANT/ EXPANSION

P-21

CLAYTOR LAKE STATE PARK

NEW RIVER

CLAYTOR LAKE

NORMAL POOL ELEVATION 1846

Mountain View

Dublin Waterworks

Claytor Dam

Powerplant

Substations

Quality

Trailer Park

Cem

Byrd Cem

Corner View Ch

RIVER

N

W E

S

0 1000 2000

SCALE: 1" = 2000'

SOURCE: RADFORD SOUTH, VA & DUBLIN, VA. U.S.G.S. QUADRANGLES

FIGURE 61:
NORTH CLAYTOR LAKE (P-21)

PULASKI COUNTY PUBLIC SERVICE AUTHORITY

New River Valley Planning District

SOUTH DUBLIN SEWER EXTENSION (P-33)

PULASKI COUNTY PUBLIC SERVICE AUTHORITY

New River Valley Planning District

Project Background

The South Dublin project area is located south of the Town of Dublin and extends primarily along State Routes 100 and 682. The project area includes approximately 167 residential connections. Currently, the area is not served by a public sewage system. Residences in the area primarily utilize privately owned and maintained on-site septic systems. The project area lies in the watershed of the Claytor Lake which is not identified by the Virginia Department of Environmental Quality (DEQ) as an impaired stream. It is anticipated that, with the provision of public sewage service, a moderate to high potential will exist for residential growth.

Proposed Facilities

The proposed facilities associated with the South Dublin Sewer Extension include approximately 4,080 L.F. of 10-inch gravity sewer and 13,065 L.F. of 8-inch gravity sewer. The extension will connect to the existing Town of Dublin sewage collection system and all wastewater generated in the project area will ultimately be conveyed to and treated at the existing Peppers Ferry Wastewater Treatment Plant (WWTP). The Peppers Ferry WWTP has a permitted capacity of 9.0 million gallons per day (MGD) and currently treats an average of 3.98 MGD. Treated effluent from the Peppers WWTP discharges into the New River which has been identified by DEQ as an impaired stream. Based on a 50-year design period, a potential future customer base of 204 connections (anticipated 50-year growth of 20%) and a flow of 300 gallons per day (GPD) per connection, future average daily flow for the project area will be approximately 61,200 GPD or 0.061 MGD. Therefore, adequate capacity is available at the Peppers Ferry WWTP to treat the anticipated wastewater generated in the South Dublin project area.

Project Costs

The preliminary probable project cost and annual operation and maintenance costs associated with the South Dublin Sewer Extension are $2,228,040 and $1,715, respectively. These costs result in an approximate present worth of $13,517 per existing connection.

PRELIMINARY PROBABLE PROJECT COST

Construction Cost				
4,080	L.F.	10" Gravity Sewer @	$88/L.F.	$359,040
13,065	L.F.	8" Gravity Sewer @	$80/L.F.	$1,045,200
167	EA.	Gravity Sewer Connections @	$1,900/EA.	$317,300
		Total Construction Cost		$1,721,540
Related Cost				
30	%	Total Construction Cost		$516,500
		Total Related Cost		$516,500
		TOTAL PROJECT COST		$2,238,040

ANNUAL OPERATION AND MAINTENACE (O&M) COST

Operation and Maintenance Cost				
17,145	L.F.	Gravity Sewer @	$0.10/L.F.	$2,988
		TOTAL ANNUAL O&M COST		$2,988

PRESENT WORTH OF ANNUAL O&M COST (30 YEARS, 8%)	$19,310
TOTAL PROJECT PRESENT WORTH	$2,257,350
PRESENT WORTH PER CONNECTION (167 CONNECTIONS)	$13,517

Table 133 - PROJECT DATA SHEET

Project Name:	South Dublin (P-33)	
County:	Pulaski	
Type of Project:	Centralized	
Utility Provider:	Pulaski County PSA	
Responsible Mgmt Entity?	Pulaski County PSA	
Existing Water System?	Yes	
Existing Conditions:	The project area is currently not served by a public sewage system.	
Proposed Project:	This project consists of approximately 5,500 L.F. of 10-inch gravity sewer and 24,380 L.F. of 8-inch gravity sewer.	
Existing WWTP:	Name =	Peppers Ferry
	Design Flow =	9 mgd
	Average Flow =	3.98 mgd
	Receiving Stream =	New River
	Stream Classification =	IV
	Impaired Stream	Yes
Watershed or Adjacent Stream:	Name =	UT - tributary to Claytor Lake
	Impaired =	No
	Within Vicinity =	No
Equivalent Customers Served:	Residential =	167
	Industrial	0
	Commercial =	0
Health Hazard:	Documented septic failure.	
Construction Feasibility:	WWTP/Collection System Available	X
	WWTP/Collection System Upgrades Required	
	WWTP/Collection System Not Available	
Growth Potential:	Industrial and Residential	
Total Project Cost:	$2,238,040	
Present Worth Per Connection:	$13,517	

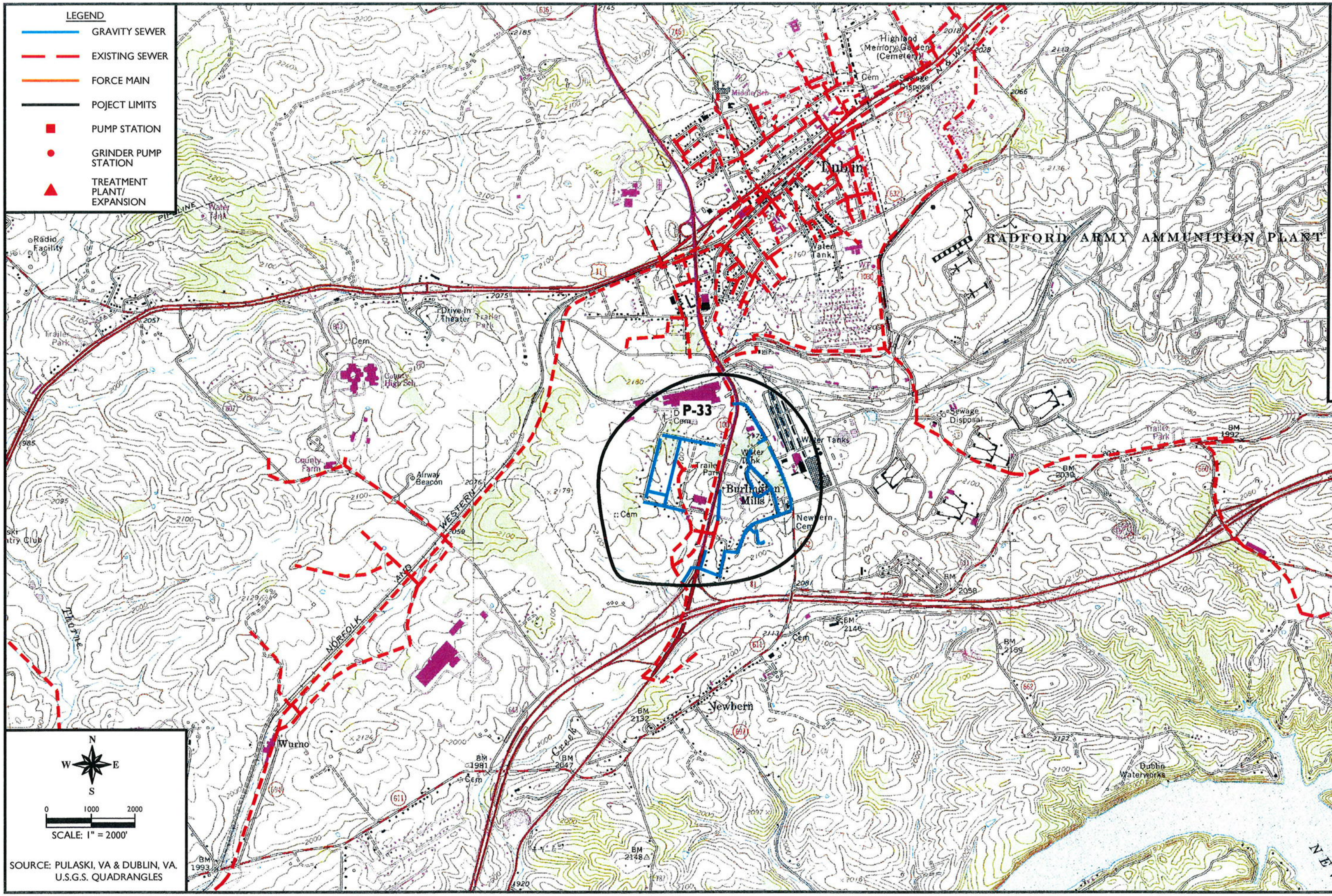

FIGURE 62:
SOUTH DUBLIN (P-33)
PULASKI COUNTY PUBLIC SERVICE AUTHORITY
New River Valley Planning District

PAINTERS WOODS SUBDIVISION SEWER SYSTEM (DC-18)

PULASKI COUNTY PUBLIC SERVICE AUTHORITY

New River Valley Planning District

Project Background

The Painters Woods Subdivision is located just off the service road paralleling the northbound lane of Interstate 81 in Pulaski County very near the Wythe County Line. The project area includes 70 residential connections. The distance of this community from the nearest conventional sewer line makes it hard to serve, and poor draining soils and karst terrain makes the community a prime candidate for a decentralized collection and treatment system. Onsite septic systems have short lives, and some of the residences have systems that have been repaired two times. The project area drains to Little Pine Run, a tributary of New River.

Proposed Facilities

The proposed treatment is a 15,000 gallon per day AdvanTex AX100 system, which uses a man-made textile fabric for the media. Since the soils are poor draining clays, an ultraviolet disinfection system/discharging system is proposed. The effluent collection system consists of a water-tight septic tank on each lot flowing by gravity to a collection system consisting of approximately 7,300 linear feet of small diameter effluent sewer lines. Since the proposed system discharges to the stream, a discharge permit will be required from the Virginia Department of Environmental Quality. The permit must be renewed every 5 years.

Project Costs

The preliminary probable project cost and annual operation and maintenance costs associated with operating the system by the Pulaski County PSA are $770,000 and $16,320, respectively. These costs result in an approximate present worth of $13,625 per existing connection.

PRELIMINARY PROBABLE PROJECT COST

Construction Cost				
70	EA.	STEG Systems	$3,000	$210,000
6,300	LF	4" Sewer Line	$10	$63,000
1,000	LF	6" Sewer Line	$14	$14,000
15	EA.	Road Crossings	$2,000	$30,000
15,000	Gal.	Treatment System - AX100	$10	$150,000
12,000	Gal.	Treatment Tanks	$1.50	$18,000
15,000	Gal.	Discharge System - UV	$2	$30,000
70	EA.	Crush and Fill Existing Tanks	$500	$35,000
		Total Construction Cost		$550,000
40	%	Total Related Cost		$220,000
		TOTAL PROJECT COST		$770,000

OPERATION AND MAINTENANCE (O&M) COST

Conn.	Unit	Description	$/Month	Monthly	Total Annual
70	EA.	Plant Operations & Maintenance	$12.50	$875	$10,500
70	EA.	STEG System Operations	$5.50	$385	$4,620
		VPDES Permit Fee	$1.43	$100	$1,200
		TOTAL O&M COST		$1,360	$16,320

PRESENT WORTH OF ANNUAL O&M COST (30 YEARS, 8%)	$183,727
TOTAL PROJECT PRESENT WORTH	$953,727
PRESENT WORTH PER CONNECTION (70 CONNECTIONS)	$13,625

Table 134 - PROJECT DATA SHEET

Project Name:	Painters Woods Subdivision	
County:	Pulaski	
Type of Project:	Decentralized Wastewater System	
Utility Provider:	Pulaski County	
Responsible Mgmt Entity?	Pulaski County	
Existing Water System?	Yes	
Existing Conditions:	70 homes on medium size lots. Poor draining soils with lots of septic tank failures. Nice homes older than 30 years of age. Karst terrain.	
Proposed Project:	Septic tank effluent gravity system proposed for this community. Use community treatment system with UV disinfection and discharge into stream. Three (3) AdvanTex Ax100 Treatment Units required.	
Existing WWTP:	Name =	N/A
	Design Flow =	
	Average Flow =	
	Receiving Stream =	
	Stream Classification =	
	Impaired Stream	
Watershed or Adjacent Stream:	Name =	Unnamed Tributary
	Impaired =	No
	Within Vicinity =	No
Equivalent Customers Served:	Residential =	70
	Industrial	0
	Commercial =	0
Health Hazard:	Groundwater Contaminated	
Construction Feasibility:	WWTP/Collection System Available	No
	WWTP/Collection System Upgrades Required	
	WWTP/Collection System Not Available	
Growth Potential:	Three other small clusters of homes nearby, including the Draper Valley Presbyterian Church. These communities could be served by a slightly larger treatment system.	
Total Project Cost:	$770,000	
Present Worth Per Connection:	$13,625	

LEGEND

- GRAVITY SEWER
- EXISTING SEWER
- FORCE MAIN
- POJECT LIMITS
- PUMP STATION
- GRINDER PUMP STATION
- TREATMENT PLANT/ EXPANSION

N
W E
S

0 1000 2000

SCALE: 1" = 2000'

SOURCE: PULASKI, VA., DUBLIN, VA., HIWASSEE, VA. & FOSTERS FALLS, VA. U.S.G.S. QUADRANGLES

FIGURE 63:
PAINTERS WOODS SUBDIVISION (DC-18)
PULASKI COUNTY PUBLIC SERVICE AUTHORITY
New River Valley Planning District

XII. FUNDING

General

This report documents the urgent need for the Commonwealth of Virginia and the General Assembly to continue funding the Southern Rivers Program to address water quality in all of the Southern Rivers region as well as within the New River Valley Planning District. The construction of wastewater collection and treatment facilities is an extremely expensive endeavor, requiring significant financial assistance from a variety of funding sources. Southern Rivers financing can be utilized to leverage financial assistance in the form of loans and grants from both State and Federal Government. It is difficult to fund project solely by relying on a single source, as the funding levels are finite, being drawn from pools of money allocated each fiscal year. Therefore, a discussion of some non-traditional, as well as the traditional funding sources have been included.

The following describes the traditional sources of funding normally used to assist in financing wastewater projects:

Virginia Department of Housing and Community Development (DHCD)

Using funds from the United States Department of Housing and Urban Development, DHCD in turn funds a variety of project types to benefit Low to Moderate Income (LMI) households, eliminate slum and blight, and provide for urgent community development needs. DHCD will fund on-site community and individual sewage treatment systems as well as off-site community systems that have a direct household benefit. The Community Development Block Grant (CDBG) Program has approximately $23,000,000 available annually in Virginia. The following grants are available:

1. Planning Grants – Available anytime between January and September 30, DHCD has $500,000 reserved annually for this purpose. Each local project is eligible for a $25,000 planning grant, while regional projects can receive up to a $40,000 planning grant.
2. Indoor Plumbing Rehabilitation (IPR) - $8,000,000 available annually in Virginia to LMI households that lack complete indoor plumbing.
3. Community Improvement Grants (CIG) – there are four types of Community Improvement Grants as follows pertaining directly to wastewater:
    a. Construction Ready Water and Sewer - $1,000,000 is reserved for projects that have been designed and are ready for construction. To be eligible, the project must serve at least 65% LMI households.
    b. Community Development Innovation – Typically this grant is for "self-help" projects, where the community helps construct the system. There is $350,000 available per project.
    c. Urgent Need Open Submission – there is $2,000,000 reserved annually for projects addressing immediate threats to health and safety. A current declaration of emergency by the Governor of Virginia or a current declaration of an immediate and severe health threat by the State Commissioner of Health is required.
    d. Competitive Grants – assistance is targeted to projects involving water and wastewater improvements, particularly those involving new services to LMI persons. This project type is eligible for up to $1,000,000.

Appalachian Regional Commission (ARC)

The ARC's purpose is to create opportunities for self-sustaining economic development and improved quality of life in designated Appalachian localities. The focus is on projects that will retain or create jobs, however, counties designated as "Distressed" can apply for funds for projects that are not job related. It should be noted that grantees must contribute matching resources and the maximum grant is $500,000. ARC funding is administered by DHCD.

Virginia Clean Water Revolving Loan Fund

Since being established, the VCWRLF has contributed over $1 billion in low interest financing for 250 wastewater projects in Virginia and has recently started the Onsite Pilot Wastewater Treatment and Disposal Program. This program addresses malfunctioning or inadequate on-site wastewater disposal systems where public health or water quality concerns exist and where connection to a public sewer is not feasible. Loans are available to local governments with a 20-year (30-year on lines) maximum loan period. The program is administered by the Virginia Department of Environmental Quality, the Virginia Resource Authority and with the cooperation of the Virginia Department of Health.

USDA Rural Development (RD)

Rural Development typically has between $9 million and $14 million available as grant funding annually. RD funding can be used for all types of wastewater projects including new construction, expansion, improvements, line installation, treatment facilities, and related costs (engineering fees, surveying costs, legal fees, etc…). To qualify for grant funding, RD will compare the project service area's median household income (MHI) with the statewide median household income (SMHI). A project qualifies for 75% grant funding if the applicant's MHI is below 80% of the SMHI. A project qualifies for a 45% grant if the applicant's MHI does not exceed 100% SMHI. Rural Development also requires a minimum monthly sewer bill of $33 for a project to be grant eligible.

Rural Development has three interest rates available for loan funds…poverty, intermediate and market. Loan terms are available for up to 40 years.

Southeast Rural Community Assistance Project, Inc. (SERCAP)

The SERCAP Program provides loan funding for sewer projects in all rural, low-income communities from Florida to Delaware. There are no application deadlines and the maximum loan is $150,000 for 1 to 10 years at interest rates from 3% to 7%. This funding is available for any type of sewer project, but is typically used for small projects, gap financing or contingency/overrun financing.

Virginia Resources Authority (VRA)

For wastewater projects, VRA issues bonds in the national market and lends the proceeds to localities. The bonds can be General Obligation or Revenue backed dependent on whether the borrower has

taxing authority. By using the moral obligation of the State, VRA can offer reasonable interest rates to the small borrower.

VRA may issue up to $300 million in revenue bonds to localities for improvements to water and/or wastewater facilities. The bonds may be either long or short-term fixed or variable rate debt with each financing structured on current market conditions and investor preference. In general, due to State backing, the VRA can obtain more attractive rates than most local governments. Localities must demonstrate the ability to repay the bonds.

VML/VACo

Sponsored by the Virginia Municipal League and the Virginia Association of Counties, the VML/VACo Finance Program includes the Pooled Bond Program. This program allows localities to take advantage of sharing fixed costs across a group of borrowers and benefits from favorable cost structures due to the size and volume of the program. The Pooled Bond Program funds are available for all types of wastewater projects. The bonds are sold twice per year, in the Spring and Fall.

Non-Traditional Funding Options

As discussed in the preceding paragraphs, there are numerous funding sources available that provide low interest loans for sewer projects and few sources available for grants. There are no grant monies available for addressing the most pervasive wastewater problem in our region…inflow/infiltration (I/I) problems. I/I problems take up valuable wastewater plant capacity that could otherwise be used to serve additional customers. Due to the high cost of the proposed projects presented in this study, funding provided by traditional sources will not be adequate to reduce user costs to an affordable level.

Virginia FY2006 Water Quality Improvement Fund (WQIF)

Administered through the Virginia Department of Conservation and Recreation, the Water Quality Improvement Fund will provide approximately $4.7 million in funding to support strategic nonpoint source water quality initiatives and cooperative nonpoint source pollution programs. Proposals from local governments can range from $50,000 to $200,000, and pending the availability of future WQIF funding, multi-year requests may total up to $800,000.

Virginia Tobacco Indemnification and Community Revitalization Commission

The Virginia Tobacco Commission was created in 1999 by the General Assembly of the Commonwealth as a way to re-invest monies from the national tobacco settlement back into tobacco farming areas of Virginia. Although the Commission has seven funding programs, two of those programs are applicable to wastewater infrastructure…the Economic Development Fund and the Special Projects Fund.

The Economic Development Fund may be used for "…utility infrastructure creation or improvements for economic development sites, including acquisition and/or development of land…" and is meant to promote economic growth and development in tobacco-dependent communities in an equitable manner throughout the Southside and Southwest regions of the Commonwealth in order to assist such communities in reducing their dependency on tobacco and tobacco-related business with the following restrictions:

1. The Commission will not entertain any request for which 100% of the cost is expected to be borne by Commission funds.
2. Additions or improvements to any public utility designed solely for residential use are not eligible.

The Special Projects Fund is available for utility infrastructure projects only if the project involves the active participation of three or more tobacco region localities. (Note: Floyd County is the only PDC member situated in the tobacco region.)

National Oceanographic and Atmospheric Administration (NOAA)

Since 1997, the NOAA has provided $66 million for PRIDE in southeastern Kentucky.
This grant funding is provided to address wastewater projects (straight pipes and failing septic systems), environmental education, illegal trash dumps. The creation and funding of a program of this nature for the New River Valley should be pursued.

Private Bond Sales

The Private Bond Market is a legitimate alternative for funding sewer projects studied in this report because: interest rates on bonds are very low and discount rates have fallen, many Virginia investment banking firms offer access to non-rated localities for selling bonds, and combining resources to create regional authorities with large customer bases makes the sale of revenue bonds on the private market a more viable alternative. It is important to note that the process for selling bonds on the private market is streamlined compared to many of the traditional funding options, and has fewer restrictions on where the proceeds are spent.

Private Activity Bonds

Private activity bonds are securities issued by, or on behalf of a local government to provide debt financing for projects used for the trade or business of a private user. Private activity bonds can be used for water, sewage or solid waste facilities as well as industrial and manufacturing facilities and equipment. Generally speaking, investors purchase the bonds, and then the money is lent to users for the completion of the project. The investor's return comes through the operational proceeds of the project. Private activity bonds do not constitute an obligation of the State or any of its jurisdictions. Because they are exempt from both federal and state taxes, private activity bonds bear interest at a significantly lower rate than do corporate bonds or traditional bank notes, and can generate significant interest savings over the term of the loan.

In Virginia, the Virginia Resources Authority (VRA) can issue private activity bonds for wastewater treatment projects used by private interests.

Design/Build/Finance

There are several private utility companies specializing in the financing, construction, operations and maintenance of de-centralized managed wastewater systems. NCS Wastewater Solutions of Puyallup, WA provides customers in non-sewered areas with affordable wastewater treatment systems. NCS Wastewater Solutions provides design/build and system management services throughout the west coast. Another successful example is Tennessee Wastewater Systems, Inc. Established in 1993; TWS owns, operates, maintains and manages on-site wastewater collection and treatment systems for numerous developments in Tennessee, making them the 4th largest wastewater utility in the state! TWS is a public utility, regulated by the State of Tennessee and could serve as a viable model for ownership and management of decentralized wastewater systems throughout the New River Valley.

Privatization

The conversion of government-owned wastewater facilities to private ownership or management is one of the fastest growing areas of privatization at the local government level. The majority of sewer system privatizations are in the form of long-term contracts for the operation and maintenance (O&M) of facilities. Long-term contracts also commonly handle facility upgrades and expansions, as well as customer service. It is important to note that short-term O&M contracts typically do not offer large enough savings to cover capital investment needs. Long-term contracts (10 to 20 years) allow both parties to share and spread risks, implement a broader range of cost savings initiatives and offer greater annual cost savings. With the 1997 changes in IRS rules, long-term contracts do not jeopardize the tax-exempt status of existing bonds and also do not preclude the use of State Revolving Loan Funds.

The objective of a long-term O&M contract is to form a cooperative partnership between the local government and the private management company that will meet current and future wastewater needs, alleviate existing and potential environmental problems, meet State and Federal environmental compliance requirements, reduce costs, reduce potential rate increases, and improve system reliability/performance. Thus far, privatization of wastewater facilities has been very successful for small systems (less than 1500 population) and has a proven track record of reduced injuries, better compliance and reduced costs.

Special Legislation

As noted at the beginning of this section, the General Assembly needs to adequately fund the Southern Rivers Program as it does the Chesapeake Bay Program to provide initial capital to encourage other funding sources to invest in the improvement of water quality in the Southern Rivers region of the state.

Sewer Service and Tax Increment Financing Districts

These districts can be established pursuant to Virginia Code Section 15.2-2400 and are common in several areas of Virginia. Property owners within the district pay an additional tax per $100 of assessed valuation annually to amortize the debt incurred for the installation of sewer facilities. The provision of sewer facilities protects the health and safety of the residents and conserves property values within the district.

Canaan Valley Institute (CVI)

The Canaan Valley Institute is a regional non-profit organization that supports watershed groups throughout the Mid Atlantic Highlands Region. They provide technical and limited funding resources for planning and design of water quality projects including alternative wastewater projects, usually decentralized managed treatment options. CVI can provide funding through small grants and resource requests applied through the CVI outreach staff as well as technical assistance including preliminary engineering reports, design, facilitation, outreach education coordination, grant writing assistance and funding research.

Funding Examples

1. New York State, 1996 Clean Water/Clean Air Bond and the Clean Water Revolving Loan Fund. Administered by the New York State Environmental Facilities Corporation (EFC) and the State Department of Environmental Conservation (DEC), and offers short-term interest-free loans and long-term low interest rate financing. Short-term loans enable municipalities to undertake project design and construction without incurring the interest expenses normally associated with commercial loans. CWSRF short-term loans are typically used as bridge financing until the borrower obtains long-term financing.
2. "Co-Funding" initiatives…a model of intergovernmental cooperation that maximizes public resources and keeps wastewater treatment affordable for rural communities.
3. Loudon County…sewer service districts…additional tax on top of the annual real estate tax.
4. New Jersey…The New Jersey Environmental Infrastructure Financing Program. This is financed by a Trust bond sale. The financing program is a partnership between the Department of Environmental Protection and the NJ Environmental Infrastructure Trust. It combines the interest-free loans from DEP's State Revolving Funds with market rate loans from the sale of the Trust bonds. The participants in the Financing program are able to borrow money at half the rate the Trust pays on its AAA-rated bonds.
5. Pennsylvania…The Pennsylvania Infrastructure Investment Authority, or PennVEST, offers multi-year, low interest loans for sewer projects. Grants are also available through PennVEST.
6. Kirkland, Washington Emergency Sewer Program.
7. Portland, Oregon's mandatory sewer connection program. This program requires developed properties to connect to the sewer system within three years after the sewer service becomes available. The program also provides low interest loans to finance connection costs and gives some property owners the option of delaying connection in case of financial hardship. The program includes a Senior Citizen deferral and a safety net program for eligible low-income homeowners.
8. Chester Borough, NJ, with a population of just 1,500, entered into a private long-term (20-year) operation and maintenance contract for its wastewater collection and treatment systems in 1997. The Borough has saved approximately 30% per year on operation and maintenance and they receive a fee from the private contractor each year to pay for an independent engineer to monitor their performance and to assure that the facilities are being properly maintained.

XIII. IMPLEMENTATION

Education, Enforcement and Enticement

In order to be financially stable, revenue from utility systems must be sufficient to retire debt, create debt reserve, and cover the cost of operation and maintenance. Since revenue is generated from the users of the system in question, the utility provider must have assurance of the participation of a sufficient number of users to create positive cash flow. Most funding agencies, in fact, require signed user agreements or user contracts prior to the issuance of project funding. When the utility being considered is wastewater, the willingness of the public to participate in the project is much less than that experienced when a water system is being constructed. The reasons for this unwillingness to participate may be summarized into three general categories.

Education

First the potential participate may not understand the associated problems of inadequately treated wastewater. Potential health problems are sometimes overlooked if wastewater is not actually "ponding" in populated areas. Also health and environmental impacts of stream degradation may not be related to individuals and many times the old saying "out of sight- out of mind" is prevalent. It is critical therefore, that local governments and regulatory agencies who share the responsibility of protecting health and the environment properly educate the potential participant as to these dangers.

Enticement

Secondly, participation is decreased due to its cost. Funding must be made available which will make sewer service to even low to moderate income residents affordable. Programs such as community development block grants, which pay for connection fees need to be expanded. Please refer to the "funding" section of this report for additional information.

Enforcement

When education and enticement are not sufficient to increase participation by potential users, it may be necessary to enforce existing laws concerning the discharge of raw or improperly treated wastewater. Public Health laws to a large extent have not been enforced due to the lack of alternative methods of wastewater handling and treatment. As alternatives are developed and implemented, these laws and regulations will need to be enforced as an incentive to connection to the approved system. There are existing laws regarding the discharge of raw sewage, or improperly treated wastewater. The Virginia Department of Health is responsible for enforcing these situations once the local health department is made aware of such violations. This is currently a criminal violation (Class I Misdemeanor). Typically the party may be found guilty in court and fined up to $2,500, but this is usually reduced and there is no mandated cleanup responsibility on the part of the violator, only guilt of the criminal misdemeanor that may be charged again and brought before the court again if the violation continues. This process is resource intensive on the local health department such that other programs may be adversely impacted. This situation should be changed from a criminal violation to a civil penalty so that it is more efficiently and effectively enforced. It is also recommended that the fine be a larger dollar amount than the hook up fee.

Regional Authority

The implementation of the recommended projects in this study, particularly the de-centralized sewer projects, would be helped greatly by the creation of a regional authority. This regional authority could be established and could cross any political boundary such as counties, towns, cities and service authorities. In this option, the local sewer providers could concentrate on the traditional centralized sewer systems that they have knowledge and experience owning and operating, while the regional authority would provide management, tracking and maintenance of de-centralized systems. The regional authority would have board representation from all of the localities it serves, but would own and operate the de-centralized sewer systems throughout the New River Valley.

The advantages of a regional authority are quite evident. The current centralized sewer system owners would not have to re-educate/re-train their staffs on de-centralized sewer construction, maintenance and record keeping. Sewer rates for de-centralized customers would be uniform across the service area, and an economy of scale could be realized by having only one operation and maintenance staff to serve the entire area rather than duplicating staff and services throughout the region. It would also be easier for a regional authority to obtain financing than for individual system owners.

Currently, the New River Valley Planning District (NRVPD) is comprised of several regional type authorities that support several community services, such as, wastewater collection / treatment, water treatment and solid waste disposal. The implementation of the aforementioned regional authority by incorporating it into the structure of an existing authority makes even more sense from the standpoint of cost and operational efficiencies. Given the fact that the Pepper's Ferry Regional Wastewater Treatment Authority provides wastewater collection / treatment service to a part of the NRVPD the greatest economy of scale may involve the expansion / modification of their member services to provide management, tracking and maintenance of de-centralized systems. The aforementioned is one of many possibilities available within the region in regards to utilizing existing organizations to improve water quality by means of decentralized sewer systems.

The disadvantages of a regional authority for de-centralized sewer systems is that the rates would be set by the authority with no control by the local governments.

XIV. CONCLUSIONS AND RECOMMENDATIONS

Conclusions

The Design Team investigated 116 centralized sewer projects and 18 decentralized projects throughout the New River Valley Planning District. Each project was scored and ranked within the evaluation matrix for each project type. Upon presentation of the final project rankings, the Advisory Management Team endorsed the further study of the top 20 centralized projects and the top 6 decentralized projects. It is important to note that all 134 of the initially considered projects are valid projects, however, the scope of this study did not allow for in-depth analysis of all of the projects.

After further study of the selected projects, it was determined that…

- The 20 centralized projects will serve approximately 3,135 connections at a cost of $67,404,744.
- The 6 decentralized projects will serve an estimated 424 connections at a cost of $5,562,970.

Recommendations

Based on the information gathered during the course of this study, the following recommendations are made:

- It is imperative that the Southern Rivers Program be provided additional grant funding to help solve this critical environmental and public health threat, such that the Southern Rivers Region of Virginia can benefit from a cleaner, healthier and more economically viable future.

- Conduct a special informational session with legislators to emphasize the need and garner support.

- Begin the process of implementing the 3 E's…Education, Enforcement and Enticement.

- The Planning District Commission should continue with its efforts to help local governments put together educational campaigns and documentation to implement the recommended sewer system projects.

- Change the laws regarding the discharge of raw sewage or improperly treated wastewater (residential only) such that the violation of the law is a civil offense rather than a criminal offense. This will allow the Virginia Department of Health to enforce the law more efficiently and effectively.

- Set the fines for discharging raw sewage, or improperly treated wastewater at a higher dollar amount than the cost of the connection or "hook up" fee.

- Encourage the enacting of "mandatory hookup" ordinances within the study area and make sure that the ordinances are enforced.

- Encourage local sewer providers to allow low income users to pay for connection fees over a one year period with no interest.

- Foster support for the recommendations set forth in this Study by holding a public presentation including local, state and federal officials.

Appendix A – Letters of Support

AT A REGULAR MEETING OF THE BOARD OF SUPERVISORS OF FLOYD COUNTY, VIRGINIA, HELD ON TUESDAY, AUGUST 14, 2007 AT 8:30 A.M. IN THE BOARD ROOM OF THE COUNTY ADMINISTRATION BUILDING, THEREOF:

PRESENT: David W. Ingram, Chairman; Jerry W. Boothe, Vice Chairman; Diane B. Belcher, J. Fred Gerald, Kerry W. Whitlock, Board Members; Daniel J. Campbell, County Administrator; Terri W. Morris, Assistant County Administrator.

The following action was taken:

On a motion of Supervisor Belcher, seconded by Supervisor Gerald, and unanimously carried, it was resolved to adopt the following resolution.

RESOLUTION SUPPORTING THE PLANNING DISTRICT COMMISSION'S APPLICATION FOR THE VIRGINIA DEPARTMENT OF HOUSING AND COMMUNITY DEVELOPMENT'S SOUTHERN RIVERS WATERSHED ENHANCEMENT PROGRAM (SRWEP) PLANNING GRANT TO CONDUCT A NEEDS ASSESSMENT, PRIORITIZATION, AND PRELIMINARY ENGINEERING REPORT OF INADEQUATE WASTEWATER TREATMENT FACILITIES IN FLOYD, GILES, MONTGOMERY AND PULASKI COUNTIES

WHEREAS, the Virginia Department of Housing and Community Development's Southern Rivers Watershed Enhancement Program (SRWEP) is designed to improve water quality in the streams and groundwater of the "southern rivers" region of Virginia while directly enhancing the quality of life of communities and their residents through installation and expansion of sewage treatment and collection systems; and

WHEREAS, the planning, engineering, and construction grants program is available to cities and counties proposing projects in those areas of Virginia that **do not** drain into the Chesapeake Bay; and

WHEREAS, the Planning District Commission, in consultation with the four jurisdictions, has identified a number of key study areas, including but not limited to Dodd Creek; and

WHEREAS, the New River Valley Planning District Commission is submitting a $150,000 SRWEP grant on behalf of Floyd, Giles, Montgomery and Pulaski Counties to perform a Needs Assessment/Prioritization and Preliminary Engineering Report. The funds and effort will be equally divided amongst the four-county region to identify sub-standard wastewater treatment facilities, whether antiquated individual systems, locations for decentralized systems, and/or extensions to existing public wastewater systems.

NOW, THEREFORE, BE IT RESOLVED, that the Board of Supervisors of Floyd County, Virginia, hereby supports the New River Valley Planning District Commission's submission of an application for planning and engineering funds from the Virginia Department of Housing and Community Development's Southern Rivers Watershed Enhancement Program.

David W. Ingram

David W. Ingram, Chairman, Board of Supervisors

ATTEST Daniel J. Campbell

Daniel J. Campbell
County Administrator

County of Giles

Board of Supervisors

315 North Main Street
Pearisburg, Virginia 24134

**RESOLUTION IN SUPPORT OF
NEW RIVER VALLEY PLANNING DISTRICT COMMISSION'S
APPLICATION FOR SOUTHERN RIVERS
WATERSHED ENHANCEMENT PROGRAM (SRWEP)
PLANNING GRANT**

WHEREAS, the Virginia Department of Housing and Community Development's Southern Rivers Watershed Enhancement Program (SRWEP) is designed to "improve water quality in the streams and ground waters of the "southern rivers" regions of Virginia while directly enhancing the quality of life of communities and their residents through installation and expansion of sewage treatment and collection systems; and

WHEREAS, Giles County has supported the development and improvement of wastewater facilities in the seven villages in Giles County and has strongly supported clean water initiatives through the comprehensive planning and village planning processes; and

WHEREAS, the planning, engineering and construction grants program is available to cities and counties proposing projects in those areas of Virginia that **do not** drain into the Chesapeake Bay; and

WHEREAS, the New River Valley Planning District Commission is submitting a $150,000 dollar SRWEP grant on behalf of Giles, Pulaski, Floyd, and Montgomery Counties to perform a Needs Assessment/Prioritization and Preliminary Engineering Report. The funds and effort will be equally divided among the four county region to identify sub-standard wastewater systems, and/or extensions to existing public wastewater systems.

NOW, THEREFORE, BE IT RESOLVED, the Giles County Board of Supervisors hereby supports the New River Valley Planning District Commission's submission of application for planning and engineering funds from the Virginia Department of Housing and Community Development's Southern Rivers Watershed Enhancement Program.

Approved by the following vote at a recess meeting on the 16th day of August, 2007:

	IN FAVOR	AGAINST	ABSTAIN
Howard Spencer	✓		
Eric Gentry	✓		
Barbara Hobbs	✓		
Richard McCoy	✓		
Paul "Chappy" Baker			✓

Attest: Chris McKlarney
Chris McKlarney
County Administrator

Telephone: (540) 921-2525 Fax: (540) 921-1846

County of Giles

Board of Supervisors

315 North Main Street
Pearisburg, Virginia 24134

August 3, 2007

Mr. David W. Rundgren, Executive Director
New River Valley Planning District Commission
6580 Valley Center Drive, Box 21
Radford, VA 24141

RE: New River Valley Southern Rivers Wastewater Evaluation Program

Dear Mr. Rundgren:

Please accept this letter as evidence of Giles County's support for your application to the Southern River's Program.

It has been suggested that many of Giles County's residents are served by aging and/or failing septic systems. Due to the difficulties of surveying and testing every septic system in the county, we feel this program will help identify and address our wastewater concerns. With the PDC's goal of exploring the areas located within the vicinity of streams identified by DEQ as being impaired, we believe this is an excellent area in which to focus our efforts and any available resources.

Thank you for your work on issues dealing with the health and welfare of the citizens of the New River Valley. Please feel free to contact us if you need further assistance.

Sincerely,

Chris McKlarney
County Administrator

Cc: Kevin Byrd, PDC

Telephone: (540) 921-2525 Fax: (540) 921-1846

AT AN ADJOURNED MEETING OF THE BOARD OF SUPERVISORS OF THE COUNTY OF MONTGOMERY, VIRGINIA HELD ON THE 23rd DAY OF JULY, 2007 AT 6:00 P.M. IN THE BOARD CHAMBERS, MONTGOMERY COUNTY GOVERNMENT CENTER, 755 ROANOKE STREET, CHRISTIANSBURG, VIRGINIA:

R-FY-08-09
A RESOLUTION SUPPORTING THE PLANNING DISTRICT COMMISSION'S APPLICATION FOR THE VIRGINIA DEPARTMENT OF HOUSING AND COMMUNITY DEVELOPMENT'S SOUTHERN RIVERS WATERSHED ENHANCEMENT PROGRAM (SRWEP) PLANNING GRANT TO CONDUCT A NEEDS ASSESSMENT, PRIORITIZATION, AND PRELIMINARY ENGINEERING REPORT OF INADEQUATE WASTEWATER TREATMENT FACILITIES IN FLOYD, GILES, MONTGOMERY, AND PULASKI COUNTIES

On a motion by Mary W. Biggs, seconded by James D. Politis and carried unanimously,

WHEREAS, The Virginia Department of Housing and Community Development's Southern Rivers Watershed Enhancement Program (SRWEP) is designed to "improve water quality in the streams and groundwaters of the "southern rivers" regions of Virginia while directly enhancing the quality of life of communities and their residents through installation and expansion of sewage treatment and collection systems; and

WHEREAS, Montgomery County has supported the development and improvement of wastewater facilities in the seven villages in Montgomery County and has strongly supported clean water initiatives through the comprehensive planning and village planning processes; and

WHEREAS, The planning, engineering, and construction grants program is available to cities and counties proposing projects in those areas of Virginia that **do not** drain into the Chesapeake Bay; and

WHEREAS, The Planning District Commission, in consultation with the four jurisdictions, has identified a number of key study areas, Lafayette and the confluence of the North and South Forks of the Roanoke River as an area of interest; and

WHEREAS, The New River Valley Planning District Commission is submitting a $150,000 dollar SRWEP grant on behalf of Montgomery Giles, Pulaski, and Floyd Counties to perform a Needs Assessment/Prioritization and Preliminary Engineering Report. The funds and effort will be equally divided amongst the four county region to identify sub-standard wastewater treatment facilities, whether antiquated individual systems, rural clusters for decentralized systems, and/or extensions to existing public wastewater systems.

NOW, THEREFORE, BE IT RESOLVED, The Board of Supervisors of Montgomery County, Virginia hereby supports the New River Valley Planning District Commission's submission of application for planning and engineering funds from the Virginia Department of Housing and Community Development's Southern Rivers Watershed Enhancement Program.

The vote on the foregoing resolution was as follows:

AYE	NAY
Mary W. Biggs	None
Doug Marrs	
Gary D. Creed	
John A. Muffo	
James D. Politis	
Annette S. Perkins	
Steve L. Spradlin	

ATTEST: B. Clayton Goodman, III
B. Clayton Goodman, III
County Administrator

A RESOLUTION SUPPORTING THE
PLANNING DISTRICT COMMISSION'S APPLICATION
FOR THE VIRGINIA DEPARTMENT OF HOUSING
AND COMMUNITY DEVELOPMENT'S
SOUTHERN RIVERS WATERSHED ENHANCEMENT PROGRAM (SRWEP)
PLANNING GRANT TO CONDUCT
A NEEDS ASSESSMENT, PRIORITIZATION, AND
PRELIMINARY ENGINEERING REPORT
OF INADEQUATE WASTEWATER TREATMENT FACILITIES IN
FLOYD, GILES, MONTGOMERY, AND PULASKI COUNTIES

WHEREAS, The Virginia Department of Housing and Community Development's Southern Rivers Watershed Enhancement Program (SRWEP) is designed to "improve water quality in the streams and groundwaters of the "southern rivers" regions of Virginia while directly enhancing the quality of life of communities and their residents through installation and expansion of sewage treatment and collection systems; and

WHEREAS, Montgomery County has supported the development and improvement of wastewater facilities in the seven villages in Montgomery County and has strongly supported clean water initiatives through the comprehensive planning and village planning processes; and

WHEREAS, The planning, engineering, and construction grants program is available to cities and counties proposing projects in those areas of Virginia that **do not** drain into the Chesapeake Bay; and

WHEREAS, The Planning District Commission, in consultation with the four jurisdictions, has identified a number of key study areas, Lafayette and the confluence of the North and South Forks of the Roanoke River as an area of interest; and

WHEREAS, The New River Valley Planning District Commission is submitting a $150,000 dollar SRWEP grant on behalf of Montgomery, Giles, Pulaski, and Floyd Counties to perform a Needs Assessment/Prioritization and Preliminary Engineering Report. The funds and effort will be equally divided amongst the four county region to identify sub-standard wastewater treatment facilities, whether antiquated individual systems, rural clusters for decentralized systems, and/or extensions to existing public wastewater systems.

NOW, THEREFORE, BE IT RESOLVED, The Planning Commission of Montgomery County, Virginia hereby supports the New River Valley Planning District Commission's submission of application for planning and engineering funds from the Virginia Department of Housing and Community Development's Southern Rivers Watershed Enhancement Program.

William Stephen Howard

William Stephen Howard, Chair

Resolution Supporting the
NRV Southern Rivers Wastewater Evaluation Project

WHEREAS, the County of Pulaski is a member of the New River Valley Planning District Commission (NRVPDC), and;

WHEREAS, the NRPDC has been partnering with the County of Pulaski on numerous projects in the past that improve the quality of life for the County's residents, and:

WHEREAS, through an extended partnership with the NRVPDC, the County of Pulaski wishes to participate in a regional application for $150,000 from the Southern Rivers Watershed Enhancement Program (SRWEP) fund for the "New River Valley Southern Rivers Watershed Evaluation Project", and;

WHEREAS, the funding from the SRWEP program will be used to evaluate existing septic systems within that may have an adverse impact on the surrounding streams and rivers within the County, and;

NOW THEREFORE, BE IT RESOLVED THAT, it is the will of the Board of Supervisors of the County of Pulaski to support the NRVPDC's funding application and authorize the County Administrator to sign and submit all appropriate documentation necessary for the application for funding.

Adopted this 23rd day of July, 2007.

APPROVED:

Joseph L. Sheffey

Mr. Joseph Sheffey, Chairman

ATTEST:

Gena Hanks

Ms. Gena Hanks, Clerk

Administration
143 Third Street, NW, Suite 1
Pulaski, VA 24301
540-980-7705
540-980-7717
www.pulaskicounty.org

County of Pulaski — EXCELLENCE — EST. 1839 — VISION — PRIDE — Virginia

Pulaski County
In Virginia's New River Valley

Virginia 2007 Community Program — Jamestown VIRGINIA 1607-2007

An Official Virginia
2007 Community

July 19, 2007

Mr. David W. Rundgren, Executive Director
New River Valley Planning District Commission
6580 Valley Center Drive, Box 21
Radford, VA 24141

RE: New River Valley Southern Rivers Wastewater Evaluation program

Dear Mr. Rundgren,

Please accept this letter as evidence of Pulaski County's support for your application to the Southern River's Program.

It has been suggested that many of Pulaski County's residents are served by aged and/or failing septic systems. Due the difficulties of surveying and testing each and every septic system located in Pulaski County, we feel this program will help identify and address our wastewater concerns. With the PDC's goal of exploring the areas located within the vicinity of streams identified by DEQ as being impaired, we believe this is an excellent area in which to focus our efforts and any available resources.

I would like to commend the Planning District Commission and it's staff for working on issues so dear to the public health and welfare for all those who reside within the New River Valley region. Your hard work is most certainly appreciated. Please know that you will have the support and assistance of the County's staff as you move forward with your programs.

Should you need further assistance, please feel free to contact me at any time.

Kind regards,

Peter Huber

Peter M. Huber, County Administrator

cc: Shawn Utt, Community Development Director

New River Watershed Roundtable, Inc.

P.O. Box 1506 • Dublin, VA • 24084 • phone 540-643-2590
email <newriverwatershedroundtable@yahoo.com>

February 6, 2009

New River Valley Planning District
6580 Valley Center Drive, Suite 124
Box 21
Radford, Virginia 24141

Dear Mr. Rundgren:

We are writing this letter to show our support for the New River Valley Planning District's Southern Rivers Regional Sewer Study. It is our understanding that this study is intended to serve as a road map for future implementation of sanitary sewer collection, treatment and disposal projects within the New River Valley with a focus on improving water quality. We believe that this type of study is vital to the interests of the residents and businesses of the New River Valley as a whole. The mission of the New River Watershed Roundtable is to promote better water quality through fair, open dialogue and effective partnerships. We envision the New River Watershed Roundtable as a community at work to protect and enhance the water quality of the New River Watershed.

In conclusion, we fully support the efforts of the Planning District as they conduct this regional sanitary sewer study and feel that this study is vital to our efforts to promote better water quality within the New River Valley. To this end, should there be anything we can do to assist your effort, please contact us at your convenience. Thank you.

Sincerely,

Ron Powers
President