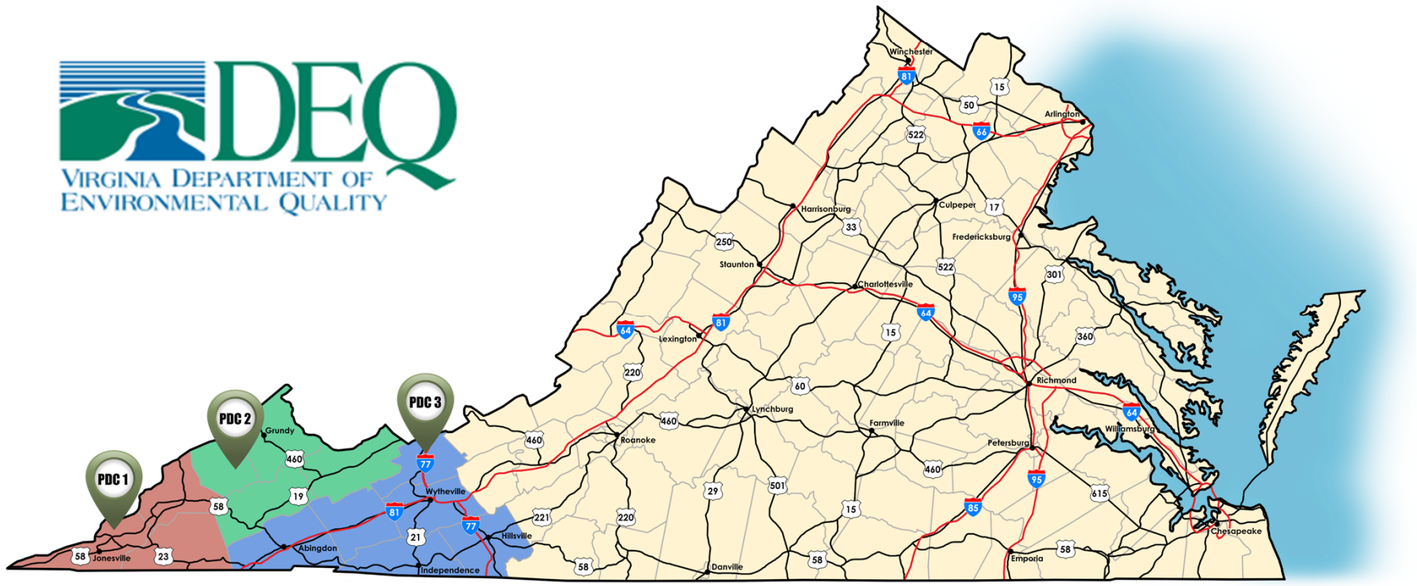
Southwest Virginia Comprehensive Regional Wastewater Study

Stakeholder Meeting

March 21, 2023



Study Background and Purpose

- 2005 - First and original Southwest Regional Wastewater Study was developed.
- 2023 - Southwest Regional Wastewater Study updates and builds upon the 2005 Study.
- 18 years since development of the 2005 Southwest Regional WW Study:
    - Update and bring SWVA Wastewater needs to the attention of the community and all stakeholders who play a role in implementing and meeting the water quality needs of our region.

Southwest Virginia has Unique and Specific Wastewater Infrastructure Needs

- The cost of constructing wastewater infrastructure has increased significantly.
- The affordability of constructing wastewater projects for Southwest localities has been a challenge.
- The implications on sewer rate payers to support wastewater projects, especially with population trends continuing to decline within SWVA. This presents a large challenge for local governments to develop affordable rate structures and still meet operatorial needs of their utilities.
- Evaluate water quality needs of Southwest Virginia while keeping in mind funding solutions to meet the needs of our communities.

2023 EPA and Commonwealth Needs Assessment

- Information and data collected and presented in the Study has been a vital part of meeting the required 2023 EPA and Commonwealth Wastewater Needs Assessment.
- EPA and Commonwealth Wastewater Needs Assessment helps to secure funding for the Virginia by demonstrating the need for wastewater infrastructure projects.

Project Management Team

- Karen Doran – DEQ-CWFAP Program Manager
- Allen Cornett – DEQ-CWFAP Project Manager
- Joe Blevins – Mount Rogers PDC
- Jimmy Adkins – LENOWISCO PDC
- Thomas Lawson – LENOWISCO PDC
- Scotty Wampler – Cumberland Plateau PDC
- Jim Baldwin – Cumberland Plateau PDC
- Ron Helton, P.E. – T&L
- Tim Mullins, P.E. – T&L
- Scott Wilson, P.E. – T&L
- Bill Skeen, P.E.
- Cliff Carson – AOSE
- Jon Broskey, P.E. – TLG
- Chris Mullins – TLG
- Kevin Heath, P.E. – TLG
- Matthew Lane, P.E. – TLG

DEQ
VIRGINIA DEPARTMENT OF ENVIRONMENTAL QUALITY

A Region Connected
Cumberland Plateau Planning District

MRPDC

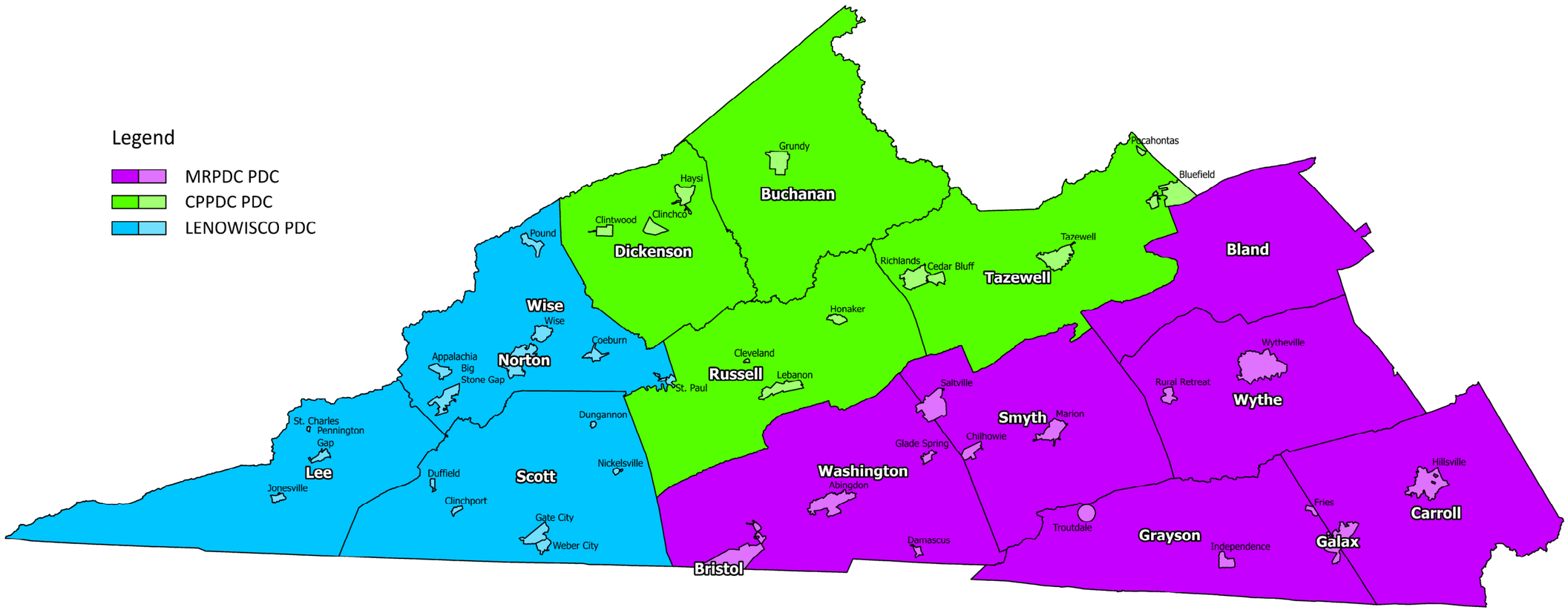
the LANE GROUP

THOMPSON & LITTON

ONSITE SYSTEMS ENGINEERING, PLLC

The Study Area

- The Study Area includes:
  - Mount Rogers Planning District
  - LENOWISCO Planning District
  - Cumberland Plateau Planning District



Study Objectives

- Conduct inventory of existing public wastewater collection and treatment systems.
  - Inventory each publicly owned wastewater collection system and treatment facility within the study area.
  - Providing mapping of each system utilizing GIS.
- Solicit input from regulatory agencies, system owners and operators, and other stakeholders.
  - Virginia Department of Health and the Department of Environmental Quality
  - All system owners and operators
- Update the data contained in the existing 2005 Study.
  - Reevaluate the projects that were not completed. Prepare new descriptions, needs matrix, and cost information.
- Identify and evaluate unserved areas in need of wastewater systems/extensions and develop proposed projects to meet those needs.
- Attend and conduct public informational meetings.

The Importance of Public Sanitary Sewer

- Sanitary sewer service is one of the most important services provided by any local government entity.
  - Paramount to public health and welfare
  - Necessary for residential, commercial, and industrial growth
  - Protection of the environment (ecosystem of our waterways)
  - Sanitary sewer systems are the foundation for the future social and economic prosperity of Southwest Virginia
- The development, operation, and maintenance of public wastewater collection, treatment, and disposal infrastructure is one of the most costly and challenging issues facing local governments in Southwest Virginia.
- Meeting and overcoming those challenges is essential to the future of our region.

Challenges Facing Southwest Virginia

- Problems associated with providing public wastewater service affect many rural communities throughout the Commonwealth, however, the issues are even more challenging in Southwest Virginia because of several factors:
  - Depressed Economy
  - Aging Infrastructure
  - User Costs and Income Levels
  - Topography and Soil Conditions
  - Declining and Aging Population
  - Staff shortages – Plant Operators

SOCIO-ECONOMIC TRENDS OF SOUTHWEST VIRGINIA COMPARED TO THE REST OF THE COMMONWEALTH

Cumberland Plateau PDC	Total Population	Median Household Income	Population 2010-2020	Population 65 years and older
Buchanan County	20,355	$34,302	-15.5%	23.1%
Dickenson County	14,124	$30,116	-11.2%	23.0%
Russell County	25,781	$38,564	-10.8%	22.5%
Tazewell County	40,429	$42,207	-10.3%	23.1%
LENOWISCO PDC	**Total Population**	**Median Household Income**	**Population 2010-2020**	**Population 65 years and older**
City of Norton	3,687	$30,518	-6.8%	Unknown
Lee County	22,173	$35,006	-13.3%	22.2%
Scott County	21,576	$41,540	-6.9%	24.9%
Wise County	36,130	$41,285	-12.8%	19.2%
Mount Rogers PDC	**Total Population**	**Median Household Income**	**Population 2010-2020**	**Population 65 years and older**
Bland County	6,270	$50,365	-8.1%	23.6%
Carroll County	29,155	$44,518	-3.0%	25.4%
City of Bristol	17,219	$39,679	-3.5%	21.5%
City of Galax	6,720	$35,184	-4.6%	20.3%
Grayson County	15,333	$41,558	-1.3%	25.3%
Smyth County	29,800	$41,088	-7.5%	22.6%
Washington County	53,935	$50,928	-1.7%	23.6%
Wythe County	28,290	$51,639	-3.2%	22.1%
	Total Population	**Median Household Income**	**Population 2010-2020**	**Population 65 years and older**
State of Virginia	**8,631,393**	**$76,398**	**7.9%**	**16.5%**

Existing System Evaluation

- Most of our region's sewer systems were constructed when the economy and population of Southwest Virginia were booming. We are now faced with the task of maintaining those systems in a depressed economy with fewer customers.
- Existing Wastewater System Inventory
  - Existing Collection Systems
    - Over **70** municipal sewerage collection systems identified
  - Existing Treatment Facilities
    - **44** public community WWTPs
  - Existing Onsite Wastewater Systems
    - Over **235** Alternative Onsite Sewer Systems
    - Approximately **900** DEQ VPDES General Permits
- Stakeholder meetings were held at the office of each PDC.
- Information request templates were developed and sent to each system operator.
- All the information was compiled and is presented in the report.

TOWN OF ABINGDON COLLECTION SYSTEM

Town of Abingdon
Mount Rogers Planning District Commission

System Description – The Town of Abingdon collection system serves the customers of the Town of Abingdon located off Exits 14, 17, and 19 of I-81. The original collection system was constructed circa the 1950s.

The approximate number of customers served by the system was reported to be:

4,420	Residential Customers
730	Commercial Customers
1	Other Municipal Systems
5,151	**Total Number of Customers**

The system's customer billings flow amounts for 2021 were estimated to be approximately **86%** residential and **14%** non-residential.

The collection system consists of 6" through 24" gravity lines. It is estimated that approximately 40% of the system consists of terra cotta or concrete lines and approximately 45% of the manholes are masonry brick. The newest area of the system was constructed in 2018. The oldest areas of the system are estimated to have been constructed in the 1950s.

The system includes six (6) pump stations:

- Wilson Subdivision Pump Station *(18255 Woodland Hills Road)*, Installed in 1984
  - F.E. Myers Company Manufacturer
  - Myers WG30H Grinder Pumps, 60 Amps, 200 Volts, Generator 30 KW, Manual Start, Omni-Site #20816, 3450 RPM, 3.5 HP, Rated 48 GPM, 77 TDH
  - Engineer: Draper Aden Associates, Blacksburg, Virginia,
  - Contractor: *(Unknown)*
  - Force Main 2175.38' L.F. 4" Schedule 40 PVC Pipe
- Southview Pump Station *(989 Empire Drive)*, Installed in 1989
  - Yeoman's Chicago Corporation Manufacturer
  - Yeoman's 9100, 400 Amps, 480 Volts, Generator 125 KW, Auto-Start, Omni-site #11476, w/Arc Flash, 60 HP, 1750 RPM, Rated 347 GPM, 182 TDH
  - S.O. #: 266076
  - Engineer: Thompson & Litton, Inc., Wise, Virginia
  - Contractor: Mendon Pipeline Company
  - Force Main 5186.73 L.F. 6" DI Pipe
- Westwood Pump Station *(18326 Stonemill Road),* Installed in 1992
  - Yeoman's Chicago Corporation Manufacturer
  - Yeoman's 9000, 200 Amps, 460 Volts, Generator 30 KW, Manual Start, Omni-Site #21206, w/Arc Flash, 1750 RPM, 3HP, #2 Pump Rated 201 GPM, #1 Pump Rated 204 GPM, Total Rating 152 GPM & 29 TDH
  - Engineer: Draper Aden Associates, Blacksburg, Virginia
  - Contractor: Highland Construction Company (Abingdon, VA) & Nicar Construction (Bristol, TN)
  - Force Main 79 L.F., 6" DI Pipe
- Watauga Road Pump Station *(17366 Watauga Road)*, Installed in 1994, Standby Pump – 06/13/2012
  - Davis EMU Manufacturer
  - Davis EMU Model FA 10.65E, 200 Amps, 240 Volts, Generator 80 KW, Auto-Start, Omni-Site #21171, 25 HP, 1740 RPM, 240 Volts, Three Phase, Rated 260 GPM, 161 TDH
  - Engineer: Anderson & Associates, Blacksburg, VA
  - Contractor: Little "B" Enterprises, Castlewood, VA
  - Force Main 8,796.26 L.F., 6" C900 PVC Pipe, & 5,957 L.F., 8" C900 PVC Pipe
- Meade Meadows Pump Station *(24030 Berry Creek Drive)*, Installed in 1999
  - General Signal Pump Group Manufacturer
  - Pumps Hydromatic S4LRC 62 HX, 230 Volts, 225 Amps, 4 Wire Delta Generator 60 KW, Auto-Start, Rated 100 GPM, 107 TDH, 25 HP, 3450 RPM, Omni-Site #21172
  - Engineer: R.D. Designs, Abingdon, VA
  - Contractor: Little "B" Enterprises, Castlewood, VA
  - Force Main 830.77 L.F., 4" PVC Pipe
- JMH Cancer Center Pump Station *(26180 Lee Hwy)*, Installed in 2007
  - F.E. Myers Company Manufacturer
  - Myers 4VCX, 15 HP, 1750 RPM, 208 Volts, Rated 250 GPM, 44 TDH, Generator (Genset Model DSHA, DSHAB, DSHAC, DSHAE, and DSHAF) 125 KW, Auto-Start, Omni-Site #21162
  - Engineer: Unknown
  - Contractor: Rentenbach Constructors, Inc. & Baker's Construction and Excavation
  - Force Main 2,125.27 L.F., 6" PVC Pipe

The system also collects flow from a portion of the Washington County Service Authority sewer system at approximately *(information not provided)* GPD.

Treatment is ultimately provided at the Wolf Creek Water Reclamation Facility (VPDES Permit #VA0026531).

System Flows - A summary of the system's collected and billed flows for the calendar year 2021 is provided as follows:

Month (2021)	Gallons Treated	Gallons Billed	Percent Accountable
January	87,040,000	15,570,000	18%
February	98,880,000	34,194,000	16%
March	130,890,000	23,284,000	26%
April	90,870,000	25,079,000	26%
May	61,470,000	28,078,000	41%
June	61,790,000	26,772,996	45%
July	62,240,000	25,115,998	43%
August	60,870,000	29,786,999	41%
September	48,600,000	29,120,000	61%
October	55,090,000	27,429,988	53%
November	49,300,000	29,235,000	56%
December	50,030,000	29,492,000	59%
Monthly Average	**71,422,500**	**26,929,832**	
Daily Average	**2,543,815**	**959,145**	
Avg/Customer	**493.8487805**	**186**	

Permit Violations/System Overflows/Consent Order

- The Town of Abingdon collection system had **16** reported sewer system overflows during the calendar year 2021 due to excessive Infiltration and Inflow line blockages created by root intrusion, grease, or other debris, and lines at less than minimal slopes.
- The system has had no permit violations over the past 2 years.
- The system is not under a consent order with the DEQ.

Other Maintenance-Related Issues Experienced by System

- I/I related overflows
- Capacity issues related to I/I
- Frequent issues with pump stations maintenance

Sewer System Evaluation Survey (SSES)

One SSES was performed on the system in 2021 CHA, and further assessed by The Lane Group, Inc. CHA is currently working on a second SSES. The 2021 SSES identified a total of $9.5 million of recommended system rehabilitation projects.

Capital Improvements Plan

The system currently has a CIP adopted in 2022. The CIP includes $8,603,000 of projects for completion in the next 5 years.

Asset Management Plan

The Town has an Asset Management Plan for a portion of the system that was completed in 2021 as part of the SSES completed by CHA

Sewer Rate Structure

The following sewer rate structure was last modified on July 1, 2022.

Opinion of Probable Cost for Necessary System Improvements – The opinion of probable cost for the identified system improvements is $9,502,000.

System Dept and Maturity Date of Outstanding Loans

Debt Service
Sewer Fund

Schedule	Maturity Dates
Profile as Of	11/15/2022
Frequency	Annual
First Period End	11/30/2023
End Date	11/30/2040

	Total Sewer Fund		
Date	**Principal**	**Interest**	**Total**
11/30/2023	743,142.25	1,500.67	744,642.92
11/30/2024	711,611.32	513.22	712,124.54
11/30/2025	692,949.12		692,949.12
11/30/2026	692,949.12		692,949.12
11/30/2027	394,184.31		394,184.31
11/30/2028	95,419.60		95,419.60
11/30/2029	95,419.60		95,419.60
11/30/2030	95,419.60		95,419.60
11/30/2031	95,419.60		95,419.60
11/30/2032	95,419.60		95,419.60
11/30/2033	4,971.29		4,971.29
Total	3,716,905.41	2,013.89	3,718,919.30

WOLF CREEK WATER RECLAMATION FACILITY
VPDES PERMIT #VA0026531
TOWN OF ABINGDON
Mount Rogers PDC

Facility Description – The treatment facility is located along Wolf Creek in the Town of Abingdon, Virginia, just off State Route 75 (see attached general vicinity map). The facility was originally constructed in 1978. The last major upgrade/expansion to the WWTP was made in 2011. The facility utilizes aerobic digestion as the method of sewage treatment.

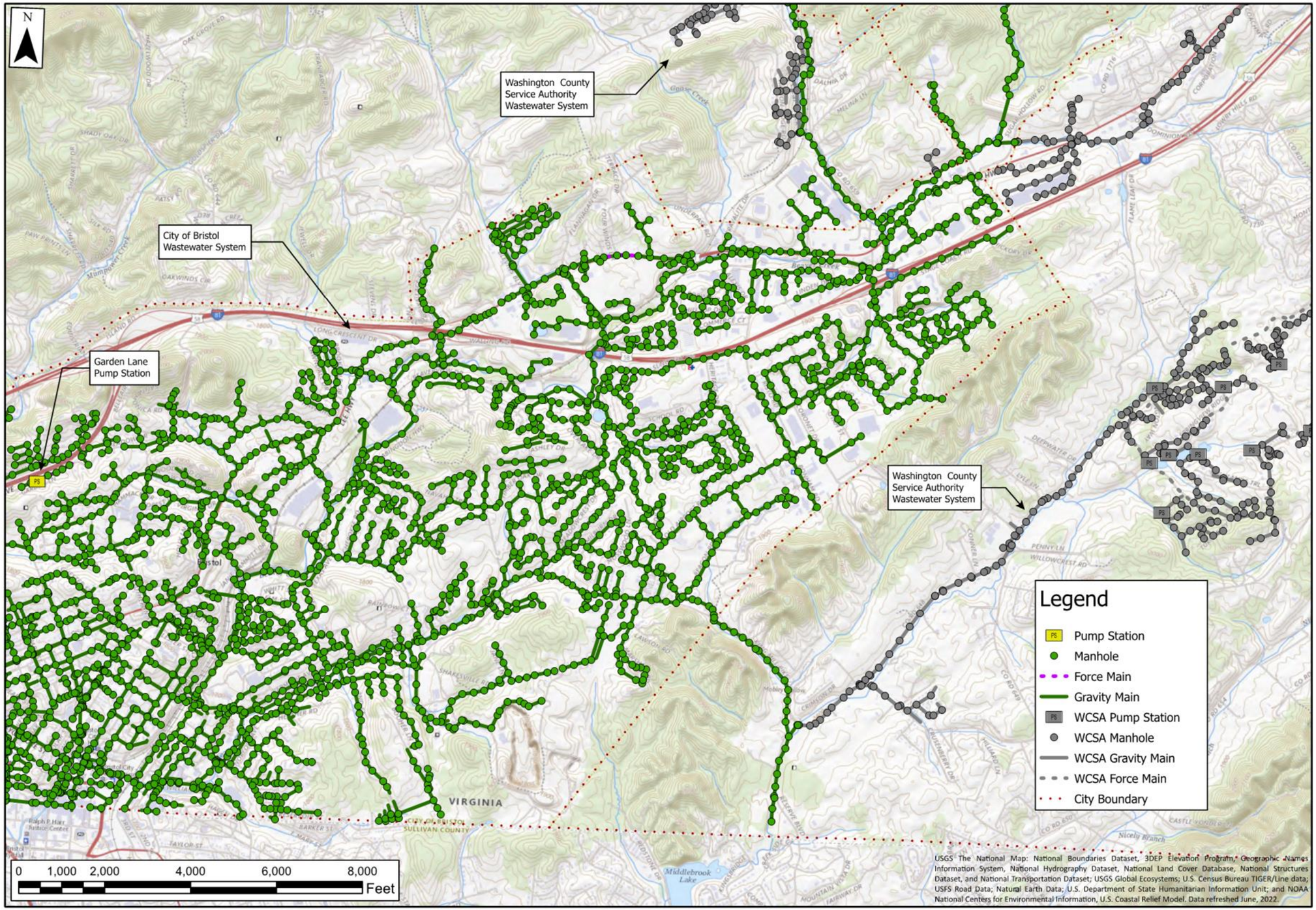
Flow Characteristics – The treatment facility receives sewage from the Town of Abingdon and a small portion of Washington County collection systems. The facility receives and treats approximately 60,000 gallons of septage per month. The permitted capacity of the facility is 4.95 MGD. The average daily flow treated at the facility during the calendar year 2021 was 2,543,815 GPD. The average daily flow treated at the facility for the highest three consecutive month period during the calendar year 2021 was 3,602,697. The facility exceeded 80% capacity for 23 days during this period. Effluent from the plant is discharged to Wolf Creek, a tributary to the South Holston Reservoir. Sludge from the facility is disposed of at a local landfill.

Facility Operation – The facility is operated and maintained by the Town of Abingdon. Currently, 15 full-time at the facility. The facility is required to be staffed 10 hours/day, Monday through Friday, and 8 hours/day on Saturday and Sunday.

Permit Violations – The facility has had zero (0) permit violations over the past 2 years.

Maintenance-Related Issues Experienced at the Facility – The predominant maintenance issues experienced by the facility are as follows:

- #2 Grit collector has an issue with the collection buckets; a trash pump is needed to pump down the area.
- The aeration dissolved oxygen controllers are sun damaged. All but two (2) of the controllers cannot be read if calibrated. The two (2) that currently work are used for controlling the blowers through a setpoint to maintain the dissolved oxygen levels necessary for properly treating the wastewater.
- One of the aeration blowers causes the main breaker to trip out.
- The centrifuges used to dewater the sludge have two polymer pumps, but only one (1) works on each unit.
- Both of the centrifuges go down frequently. Electricians have been in the plant to evaluate and troubleshoot the issues. There is old wiring, outdated electrical panels and monitors, and bypass wiring to override certain operational issues. Additionally, there are many mechanical issues with the centrifuges, particularly the motor and bearings.
- Continuous problems with the ultraviolet light disinfection system. The technician has been to the plant to evaluate the issues and helped with some repairs. His verbal assessment of the system is that it has exceeded its life expectancy, and some components are now obsolete.
- The VFD at the EQ basin is inoperable.
- The digester feed pump gearbox is out of service. It does not pump properly.
- Several pumps and motors throughout the plant are worn out or inoperable.
- Generators at Westwood and Wilson pump stations need to be replaced. Both generators are inoperable.



THE LANE GROUP / THOMPSON & LITTON

SOUTHWEST VIRGINIA
COMPREHENSIVE REGIONAL
SEWER STUDY 2022

BRISTOL VIRGINIA
UTILITY AUTHORITY
WASTEWATER STYEM
- EAST AREA

DEQ
VIRGINIA DEPARTMENT OF ENVIRONMENTAL QUALITY

DATE: 11/10/2022
SHEET:
DRAWN BY: DR
CHECKED BY:
PROJECT NO: 2248

Content - My Content | Manhole Inspection Map | 1101 (400×300)

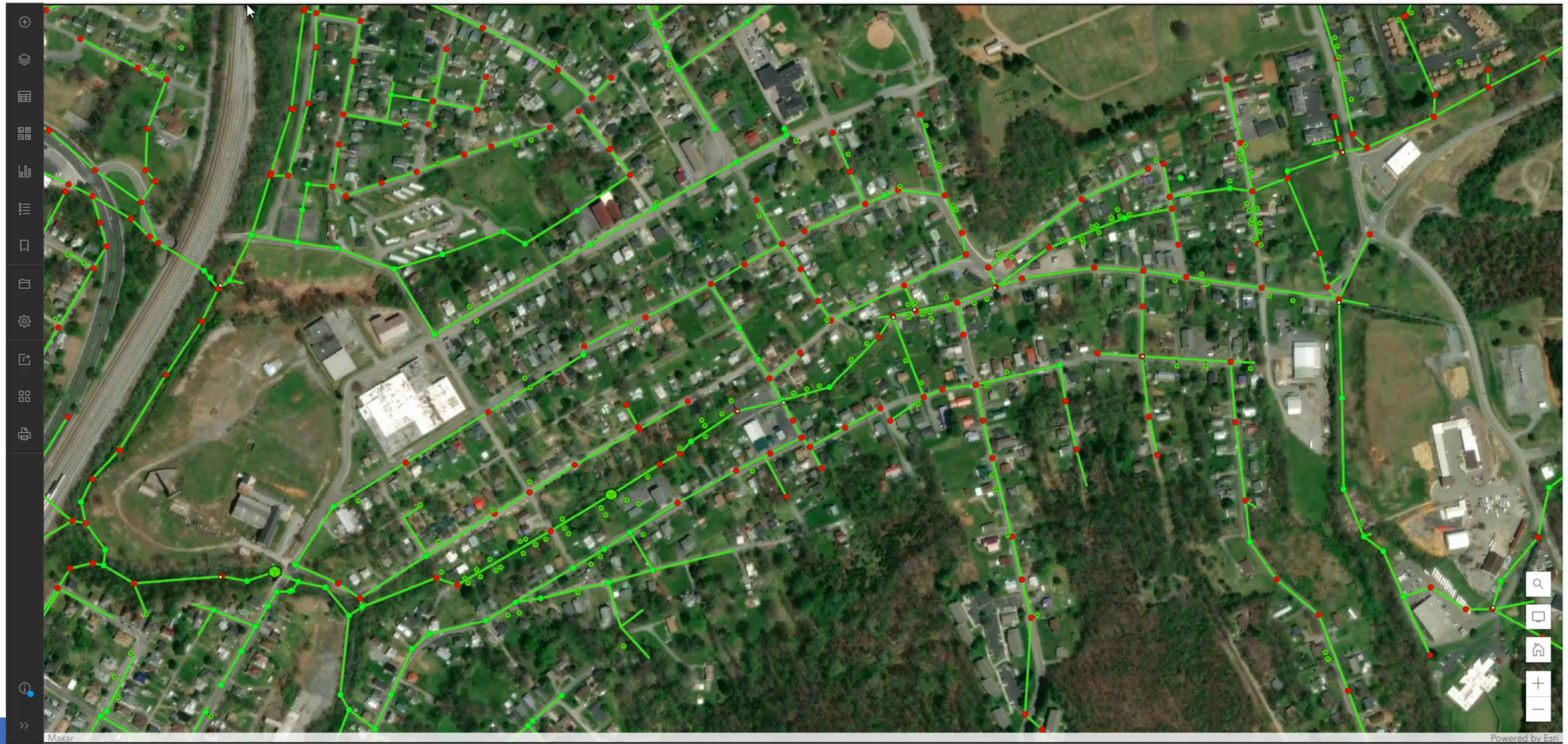
bvua.maps.arcgis.com/apps/mapviewer/index.html?webmap=2d7ffae7e08744808c3de6450d7ddd30

YouTube | Maps | Lane Engineering In... | Account Login - Arc... | Town of Abingdon,...

Manhole Inspection Map

Open in Map Viewer Classic

Isaac Rector
jdwood02



National Centers for Environmental Information, U.S. Coastal Relief Model. Data refreshed June, 2022.

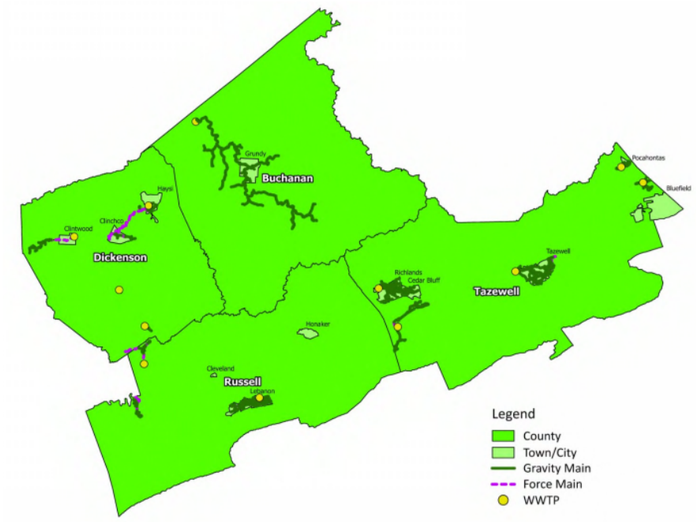
THE LANE GROUP INC. © 2022

Existing System Evaluation

- Summary tables were created for each PDC – Collection Systems and Treatment Facilities

Summary Table of Wastewater Collection Systems - Cumberland Plateau PDC

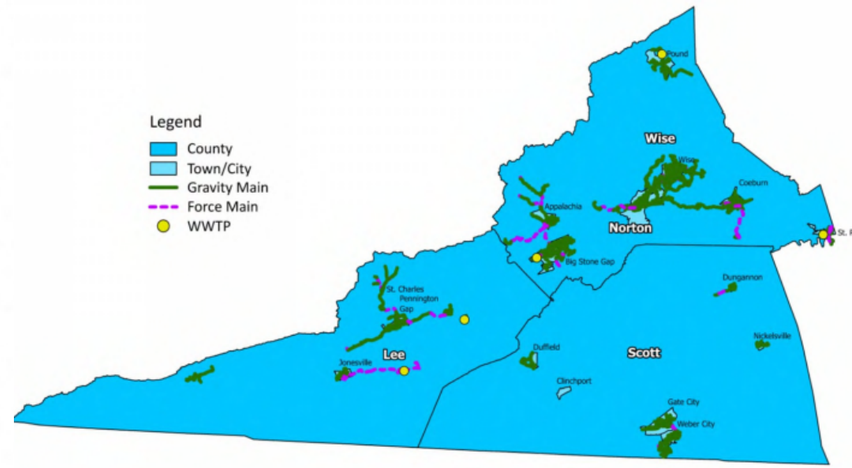
	Primary Systems		Secondary Systems				
Sewer System	Number of Customers	Daily Gallons Treated, 2021	Number of Customers	Daily Gallons Treated, 2021	Daily Gallons Billed, 2021	Percent Accountable	Overflows in 2021
Buchanan County PSA - Conaway	1,398	1,680,458			387,571	23.1%	5
Town of Cleveland	Not Provided	40,047			Not Provided	#VALUE!	N/A
Town of Clintwood	913	197,705			116,837	59.1%	0
Dickenson County PSA - Haysi	333	195,984			62,726	32.0%	4
Dickenson County PSA - Trammell	40	4,046			2,284	56.5%	0
Town of Honaker	630	112,975			131,074	116.0%	9
Town of Lebanon	1,653	562,213			230,026	40.9%	4
Town of Richlands	2,425	2,171,066			344,047	15.8%	N/A
Russell County PSA - Dante	Not Provided	32,173			Not Provided	#VALUE!	N/A
Tazewell County PSA - Claypool Hill	974	197,397			117,818	59.7%	0
Tazewell County PSA - Falls Mills / Hales Bottom	171	53,863			16,589	30.8%	0
Tazewell County PSA - Northern County	155	216,132			Not Provided	#VALUE!	6
Town of Tazewell	1,921	887,989			286,239	32.2%	0
Totals	**10,613**	**6,352,047**	**0**	**0**	**1,695,213**	**26.7%**	**28**



Existing System Evaluation

Summary Table of Wastewater Collection Systems - LENOWISCO PDC

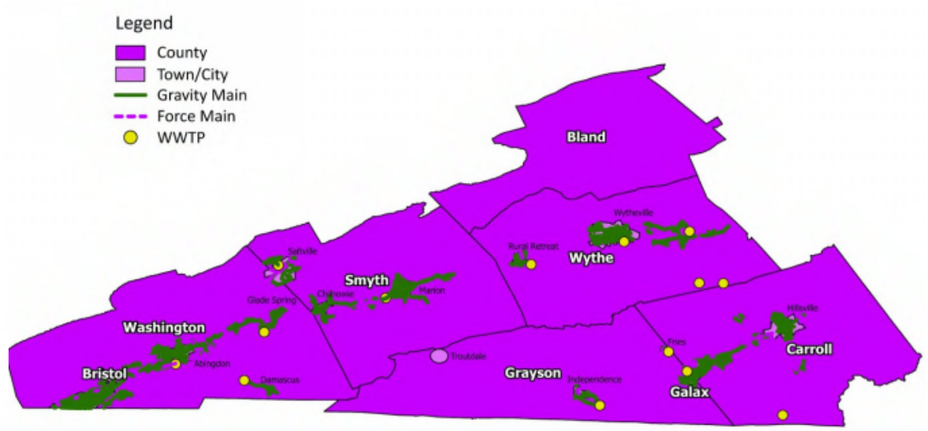
	Primary Systems		Secondary Systems				
Sewer System	**Number of Customers**	**Daily Gallons Treated, 2021**	**Number of Customers**	**Daily Gallons Treated, 2021**	**Daily Gallons Billed, 2021**	**Percent Accountable**	**Overflows in 2021**
Town of Appalachia			710	134,535	80,986	60.2%	0
Town of Big Stone Gap	2,573	1,239,252			362,322	29.2%	31
CNW Regional WW Treatment Authority	4	3,636,658			3,653,000	100.4%	0
Town of Coeburn			996	654,430	106,594	16.3%	0
Town of Dungannon	231	23,285			19,224	82.6%	0
Town of Gate City			939	319,345	112,602	35.3%	0
Town of Jonesville			510	44,055	Not Provided	#VALUE!	0
Lee County PSA - Ben Hur			87	55,000	23,393	42.5%	0
Lee County PSA - Cross Creek Subdivision	88	10,000			Not Provided	#VALUE!	0
Lee County PSA - Dryden			225	54,226	26,130	48.2%	0
Lee County PSA - Ewing			12	Not Provided	1,060	#VALUE!	0
Lee County PSA - Hickory Flats	23	287,386			238,932	83.1%	0
Lee County PSA - Rose Hill	143	59,852			12,897	21.5%	0
Lee County PSA - St. Charles			189	65,000	14,150	21.8%	0
City of Norton			2,195	2,289,249	300,763	13.1%	1
Town of Pennington Gap	983	286,989			Not Provided	#VALUE!	2
Town of Saint Paul	412	80,871			47,840	59.2%	0
Scott County PSA - Duffield	151	196,622			96,569	49.1%	0
Scott County PSA - Holston Regional	986	141,274			87,986	62.3%	1
Scott County PSA - Nickelsville	247	36,145			21,707	60.1%	0
Wise County PSA - Exeter / Imboden			152	Not Provided	9,487	#VALUE!	0
Wise County PSA - Fairgrounds			27	Not Provided	3,167	#VALUE!	0
Wise County PSA - Guest River			141	21,600	12,730	58.9%	0
Wise County PSA - Hamiliton Town			72	15,840	6,940	43.8%	0
Wise County PSA - Josephine			77	12,960	9,138	70.5%	0
Wise County PSA - Pound	667	564,263			57,120	10.1%	A lot
Wise County PSA Roda / Osaka / Stonega / Derby			212	Not Provided	13,254	#VALUE!	0
Wise County PSA - Tacoma / Riverview			319	Not Provided	20,835	#VALUE!	0
Town of Wise			2,179	710,000	307,924	43.4%	0
Totals	**6,508**	**6,562,597**	**9,042**	**4,376,240**	**5,646,750**	**51.6%**	**35**



Existing System Evaluation

Summary Table of Wastewater Collection Systems - Mount Rogers PDC

	Primary Systems		Secondary Systems				
Sewer System	Number of Customers	Daily Gallons Treated, 2021	Number of Customers	Daily Gallons Treated, 2021	Daily Gallons Billed, 2021	Percent Accountable	Overflows in 2021
Town of Abingdon	5,151	2,324,493			879,720	37.8%	16
Bland County - Bastian	411	97,225			Not Provided	#VALUE!	6
BVU Authority	7,900	6,471,000			2,027,057	31.3%	3
Carroll County PSA - I-77 Exit 1	3	8,734			12,702	145.4%	0
Carroll County PSA - Fancy Gap			76	9,369	9,568	102.1%	0
Carroll County PSA - Gladeville Cranberry			962	639,632	552,327	86.4%	2
Town of Chilhowie	1,180	261,641			285,730	109.2%	3
Town of Fries	310	84,321			21,069	25.0%	0
City of Galax	2,900	1,674,101			752,633	45.0%	11
Town of Hillsville	1,235	373,260			261,020	69.9%	13
Town of Independence	499	287,384			162,570	56.6%	0
Town of Marion	2,960	1,389,526			700,841	50.4%	0
Town of Rural Retreat	742	230,137			118,082	51.3%	2
Town of Saltville	947	329,005			75,223	22.9%	12
Smyth County - Adwolfe			70	10,466	10,438	99.7%	0
Smyth County - Allison Gap			116	16,587	8,046	48.5%	0
Smyth County - Atkins			85	174,277	58,316	33.5%	0
Smyth County - Green Hill			Not Provided	Not Provided	Not Provided	#VALUE!	0
Smyth County - Hall Addition			211	19,441	17,189	88.4%	0
Smyth County - Hungry Mother			205	57,136	22,449	39.3%	0
Smyth County - Staley Creek			82	88,814	6,798	7.7%	0
Wash. Co. Service Authority - BVU Area			429	149,765	92,402	61.7%	0
Wash. Co. Service Authority - Damascus	490	155,452			105,541	67.9%	1
Wash. Co. Service Authority - Exit 13 Area			379	65,408	81,632	124.8%	0
Wash. Co. Service Authority - Hall Creek	1,482	323,025			319,206	98.8%	3
Wythe County - Austinville	65	3,000			5,900	196.7%	0
Wythe County - Exit 24 / Poplar Camp	18	1,831			2,000	109.2%	0
Wythe County - Fort Chiswell / Max Meadows	674	361,790			507,000	140.1%	0
Town of Wytheville	3,219	2,062,216			1,114,962	54.1%	25
Totals	**30,186**	**16,438,142**	**2,615**	**1,230,895**	**8,210,421**	**46.5%**	**97**



Existing System Evaluation

CUMBERLAND PLATEAU PLANNING DISTRICT COMMISSION

PERMITTED WWTP DISCHARGE SUMMARIES FOR CALENDAR YEAR 2021

Facility	Permit No.	Permitted Flow Capacity, MGD	Average Daily Flow for 2021, MGD	Maximum Daily Flow for 2021, MGD	Highest 3-Consecutive Month Avg. Flow, MGD
Buchanan Cnty PSA - Conaway WWTP	VA0090531	2.000	1.667	2.350	2.033
Buchanan Cnty PSA - Council Industrial Park STP	VA0087254	0.017	0.001	0.001	0.001
Buchanan Cnty PSA - Deskins STP	VA0090239	0.003	0.001	0.001	0.001
Buchanan Cnty Public Schools - Hurley High School	VA0026972	0.008	0.003	0.003	0.007
Buchanan Cnty Public Schools - Twin Valley H S STP	VA0068438	0.007	0.003	0.003	0.003
Buchanan Cnty Public Schools-Hurley Middle School	VA0067521	0.017	0.004	0.004	0.006
Breaks Interstate Park	VA0060275	0.010	0.000	0.000	0.000
Breaks Interstate Park Camp 1 STP	VA0023892	0.060	0.010	0.034	0.010
Camp Jacob Incorporated STP	VA0086274	0.006	0.000	0.000	0.000
Clintwood WWTP	VA0026565	0.495	0.153	0.449	0.238
Dickenson Cnty Public Schools - Ervinton E S STP	VA0027421	0.005	0.001	0.001	0.001
Dickenson Cnty Public Schools - Sandlick E S STP	VA0027464	0.010	0.001	0.001	0.003
Dickenson County Public Service Auth - Haysi STP	VA0067571	0.200	0.196	0.329	0.231
Dickenson County Public Service Authority STP 1	VA0082589	0.020	0.004	0.006	0.005
Dickenson Russell Contura - McClure River Prep Plt	VA0067032	0.006	0.003	0.003	0.003
Paramont Contura LLC - Deep Mine 41	VA0092576	0.015	0.009	0.009	0.009
Paramont Contura LLC -Deep Mine 44 STP	VA0092878	0.005	0.001	0.001	0.001
Ridgeview High and Middle School	VA0092681	0.035	0.000	0.000	0.000
Buchanan Cnty Public Schools - Council Elem & HS	VA0064751	0.023	0.003	0.003	0.005
Cleveland STP	VA0021016	0.039	0.040	0.137	0.063
Dante Community WWTP	VA0088935	0.125	0.032	0.127	0.068
DOC - Appalachian Comm Corr Alternative Prog	VA0020672	0.021	0.005	0.007	0.006
Honaker STP	VA0026387	0.400	0.113	0.189	0.152
Lebanon WWTP	VA0020745	0.999	0.564	1.126	0.798
Bluefield Westside WWTP	VA0025054	8.100	3.858	7.525	6.500
Claypool Hill Wastewater Treatment Plant	VA0064271	0.700	0.225	0.394	0.321
Northern Tazewell County WWTF	VA0091588	0.500	0.217	0.386	0.330
Richlands Regional WWTF	VA0021199	4.000	2.182	4.496	3.209
Tazewell County PSA - Amonate WWTP	VA0090620	0.012	0.002	0.003	0.002
Tazewell County PSA - Falls Mills Hales Bottom STP	VA0062561	0.108	0.104	0.168	0.103
Tazewell WWTP	VA0026298	2.000	0.893	1.809	1.514
Combined Systems Totals, MGD		***19.946***	***10.297***	***19.567***	***15.624***

Existing System Evaluation

LENOWISCO PLANNING DISTRICT COMMISSION
PERMITTED WWTP DISCHARGE SUMMARIES FOR CALENDAR YEAR 2021

Facility	Permit No.	Permitted Flow Capacity, MGD	Yearly Average Flow, MGD	Yearly Maximum Flow, MGD	Highest 3-Consecutive Month Avg. Flow, MGD
Lee County PSA - Hickory Flats WWTP	VA0089397	0.800	0.287	0.437	0.316
Lee County Public Service Authority - Cross Creek	VA0075515	0.030	0.010	0.010	0.010
Lee County Public Service Authority-Rose Hill WWTP	VA0088111	0.060	0.060	0.129	0.074
Pennington Gap STP	VA0029599	0.600	0.287	0.657	0.386
Beeline Mobile Home Park LLC	VA0064009	0.004	0.001	0.002	0.001
Bellamy Manufacturing and Repair Company STP	VA0029084	0.004	0.002	0.002	0.002
Duffield Industrial Park WWTP	VA0029564	0.400	0.199	0.332	0.278
Dungannon STP	VA0070670	0.039	0.023	0.062	0.034
Nickelsville WWTP	VA0087955	0.070	0.035	0.071	0.053
Scott County PSA - Holston Regional WWTP	VA0067351	1.250	0.453	1.287	0.680
Scott County Schools - Hilton Elementary	VA0021083	0.004	0.003	0.001	0.007
Scott County Schools - Twin Springs High	VA0066311	0.015	0.007	0.001	0.009
Appalachia Elementary School STP	VA0060798	0.012	0.000	0.000	0.000
Big Stone Gap Regional WWTP	VA0020940	4.000	1.678	3.594	2.604
Coeburn Norton Wise Regional WWTP	VA0077828	6.500	3.651	7.749	5.307
DOC - Wise Correctional Unit 18 STP WWTP	VA0023477	0.030	0.012	0.018	0.013
Empire Mobile Home Park STP	VA0065471	0.004	0.004	0.004	0.007
Pound WWTP	VA0061913	0.500	0.564	1.162	0.719
Robinette Mobile Home Park WWTP	VA0092045	0.010	0.001	0.001	0.001
St Paul Wastewater Treatment Plant	VA0026221	0.500	0.081	0.148	0.103
Combined Systems Totals, MGD		***14.832***	***7.357***	***15.669***	***10.603***

Existing System Evaluation

MOUNT ROGERS PLANNING DISTRICT COMMISSION
PERMITTED WWTP DISCHARGE SUMMARIES FOR CALENDAR YEAR 2021

Facility	Permit No.	Permitted Flow Capacity, MGD	Yearly Average Flow, MGD	Yearly Maximum Flow, MGD	Highest 3-Consecutive Month Avg. Flow, MGD
VDOC - Bland Correctional Center ESU WWTP	VA0020729	0.150	0.084	0.118	0.102
Bastian WWTP	VA0089583	0.200	0.098	0.233	0.154
Hillsville WWTP	VA0089443	1.250	0.375	0.633	0.427
I-77 Exit 1 WWTP	VA0092312	0.020	0.009	0.013	0.011
Olde Mill Golf Resort	VA0088498	0.040	0.002	0.004	0.002
Deer Creek Motorcoach Resort WWTP	VA0092461	0.004	0.002	0.002	0.004
Fries WWTP	VA0067881	0.220	0.085	0.244	0.118
Galax WWTP	VA0078484	3.000	1.678	2.694	1.678
Independence STP	VA0064424	0.465	0.287	0.445	0.325
Oak Hill Academy STP	VA0065714	0.010	0.287	0.445	0.325
Chilhowie Regional Wastewater Treatment Plant	VA0026379	0.999	0.264	0.595	0.440
Marion WWTP	VA0086304	3.400	1.383	2.963	2.067
Saltville Town - WWTP	VA0026808	0.990	0.331	0.627	0.535
Smyth County Public Schools - Northwood Middle	VA0029688	0.009	0.004	0.004	0.004
USDA - Forest Service - Grindstone Recreation Area	VA0022993	0.017	0.010	0.017	0.009
Callebs Cove Campground STP	VA0087882	0.007	0.000	0.001	0.000
Damascus WWTP	VA0021130	0.250	0.156	0.348	0.270
The Old Farm Golf Club	VA0090182	0.005	0.000	0.000	0.000
Washington Cnty Service Authority -Hall Creek WWTP	VA0087378	0.630	0.324	0.489	0.410
Washington County Public Schools - Holston High	VA0026778	0.008	0.002	0.002	0.002
Washington County Public Schools - Watauga Elem	VA0065315	0.012	0.002	0.002	0.002
Washington County Public Schools- Rhea Valley Elem	VA0065323	0.012	0.001	0.001	0.001
Washington County Public Schools -Valley Institute	VA0026786	0.006	0.001	0.001	0.001
Wolf Creek Water Reclamation Facility	VA0026531	4.950	2.332	4.240	3.593
Fort Chiswell WWTP	VA0074161	1.250	0.419	0.610	0.549
Foster Falls WWTP	VA0092509	0.005	0.001	0.001	0.001
Rural Retreat Wastewater Treatment Plant	VA0021326	0.250	0.233	0.414	0.463
Shorts Creek WWTP	VA0092843	0.020	0.002	0.004	0.002
Wythe Cnty Water and Wastewater - Austinville STP	VA0067059	0.020	0.003	0.003	0.003
Wytheville WWTP	VA0020281	4.000	2.070	3.152	3.066
Combined Systems Totals, MGD		***22.199***	***10.444***	***18.304***	***14.562***

Existing System Evaluation

Planning District	Estimated # of Sewer Customers	Daily Gallons Treated 2021	Daily Gallons Billed 2021	Percent Accountable	Overflows in 2021
Cumberland Plateau	10,613	6,352,047	1,695,213	26.7%	28
Lenowisco	15,550	6,562,597	5,646,750	51.6%	35
Mount Rogers	32,801	16,438,142	8,210,421	46.5%	97
Totals	**58,964**	**29,352,786**	**15,552,384**	**44.5%**	**160**

Planning District	# of VPDES Discharges	Total Permitted Capacity, MGD	2021 Average Daily Discharge, MGD
Cumberland Plateau	31	19.946	10.297
LENOWISCO	20	14.832	7.357
Mount Rogers	30	22.199	10.444
Totals	**81**	**56.977**	**28.098**

Table 3.5.1 Average User Cost

Planning District	Average Monthly User Cost – Based on 3,000 gallon Usage	2021 Median Household Income (MHI)	Sewer Bill as a Percentage of MHI
Cumberland Plateau	$39.73	$34,276	1.43 %
LENOWISCO	46.30	32,231	1.61
Mount Rogers	36.55	45,055	1.00
Average	**$40.34**	**$39,701**	**1.30**

Existing Systems Identified Deficiencies

<u>Collection Systems</u>

- Infiltration and Inflow (I/I)
  - Significant problems in most collection systems. Within study area, systems averaged 45% accountable – 55% of flow is I/I.
  - Economics
- Aging Sewer Infrastructure
  - Terra Cotta and Concrete Sewer Lines
  - Brick Manholes

<u>Treatment Facilities</u>

- Outdated Equipment
  - Most treatment facilities in the study area are over 40 years old and in need of equipment replacement and rehabilitation.
- Operators

<u>Discharging Systems (Non-Municipal)</u>

- Many are not properly maintained and have reached the end of their useful life.
- Lack of Qualified Operators

Existing Systems Identified Deficiencies

- Project Data Sheets were developed for each potential project.
- Information from existing CIPs and SSES reports were utilized to develop cost estimates for potential system upgrade/rehabilitation projects.
- Criteria were developed for scoring potential projects. The scoring criteria mirror DEQ's CWSRF project scoring system.
  - Targeted Project Types/Outcomes (42 Points)
  - Environmental Concerns – Priority Watersheds (25 Points)
  - Environmental Concerns – Enforcement / Compliance History (4 Points)
  - Commission on Local Government Composite Fiscal Stress Index Ranking (17 Points)
  - Potential Bonus Points for Towns or Cities (4 Points)
  - Readiness to Proceed with Project (8 Points)
- All identified projects in each PDC were ranked.
- In total over $381 million in existing system upgrade/rehabilitation projects were identified and evaluated.
  - Cumberland Plateau - **$140,068,456**
  - LENOWISCO - **$104,542,800**
  - Mount Rogers - **$136,737,715**

PROJECT DATA SHEET

Project Name:	System-Wide Sewer Improvements Project						
County:	Russell						
Planning District:	Cumberland Plateau						
Utility Provider:	Town of Lebanon						
Served by Public Water (Y/N):	Yes						
Existing Conditions:	Approximately half of the existing gravity sewer system was constructed more than 30 years ago and has deteriorated significantly, resulting in significant I/I flows. Thus the Town's system experiences SSO's during wet weather events and increased flows in the the WWTP.						
Proposed Project:	The project consists of CIPP lining approximately 16,300 linear feet of gravity sewer line and approximately 110 manholes throughout the conveyance system.						
Existing WWTP:	Name:	Lebanon Sewer Filtering Plant					
	Design Flow:	1.00	MGD				
	Average Flow:	0.619	MGD				
	Receiving Stream:		Little Cedar Creek				
	Stream Classification:		IV				
	Impaired Stream (Y/N):		Yes				
Watershed or Adjacent Stream:	Name:	Big Cedar Creek, Burgess Creek		Impaired (Y/N):	Yes		
Equivalent Customers Served:	Residential =	1569	Commercial =	80	Industrial =	6	
Health Hazards:							
Construction Feasibility:	Very Feasible - The improvements to the sewer conveyance will significantly reduce I/I, thus increasing capacity for the area, reduce SSO's, and decreasing flows into the WWTP.						
Growth Potential:	Residential - Moderate Commercial - High Industrial - High						
Total Project Cost:	$ 2,921,700						
Present Worth Per Connection:	$1,765						

Evaluation of Unserved Areas in Need of Wastewater Service

- Updating the 2005 Regional Wastewater Study
  - The 2005 Study helped identify and facilitate the development of many sewer projects throughout our region.
  - Of the 136 projects evaluated by the 2005 Study, 43 Centralized, 12 Decentralized, and 3 hybrid sewer projects were recommended for development and construction.
- 27 of those recommended projects were fully completed along with portions of 12 others.

Evaluation of Unserved Areas in Need of Wastewater Service

- Completed Projects from 2005 Regional Wastewater Study

Projects Partially Completed from the 2005 Southwest Virginia Regional Wastewater Study			
County	**PDC**	**Project**	**Status**
Lee	LEN	Woodway	PER/ER completed and approved by RD only
Scott	LEN	Daniel Boone	Phase 1 only completed – Phase 2 & 3 remaining
Scott	LEN	Yuma	Phase 1 complete
Scott	LEN	Yuma	Phase 2, 3 & 4 design complete, advertise 2023
Scott	LEN	Hiltons	Design complete, advertise 2023
Wise	LEN	South Coeburn/Sheffield Acres	Partially completed
Wise	LEN	Banner	Design complete, advertise 2023
Carroll	MTR	Cana / I-77	I-77 Exit 1 Partially Complete
Washington	MTR	West Central (Beaver Creek)	Partially completed
Washington	MTR	Spring Creek	Design complete. Planning to advertise 2023
Washington	MTR	Wash Co Industrial Park	PER/ER Completed Approved by RD
Wythe	MTR	Poplar Camp / Foster Falls	Poplar Camp Only Completed

Projects Completed from the 2005 Southwest Virginia Regional Wastewater Study		
County	**PDC**	**Project**
Buchanan	CP	Poplar Creek
Dickenson	CP	Rt 83/Georges Fork
Dickenson	CP	Birchleaf
Russell	CP	Castlewood
Russell	CP	Hansonville
Tazewell	CP	Baptist Valley East
Tazewell	CP	Gratton
Tazewell	CP	Tazewell to Divides
Tazewell	CP	Birmingham
Tazewell	CP	Dry Town
Lee	LEN	Rose Hill
Lee	LEN	Red Hill/Poor Valley
Lee	LEN	Woodway
Scott	LEN	Daniel Boone
Scott	LEN	Yuma
Scott	LEN	Hiltons
Wise	LEN	Tacoma
Wise	LEN	Esserville
Wise	LEN	Stonega
Wise	LEN	Josephine
Wise	LEN	Osaka/Roda
Wise	LEN	Riverview
Wise	LEN	Fairgrounds
Carroll	MTR	I-77/Route 620
Washington	MTR	West Central (Beaver Creek)
Washington	MTR	Spring Creek
Washington	MTR	Washington County Industrial Park

Evaluation of Unserved Areas in Need of Wastewater Service

- Updating the 2005 Regional Wastewater Study
  - All uncompleted projects were reevaluated as part of the 2022 Southwest Virginia Comprehensive Regional Wastewater Study.
- New Sewer System Development and Extension Projects
  - New Centralized and Decentralized sewer system extension projects were identified in each PDC

Cumberland Plateau Planning District

- 33 potential centralized projects
- 12 potential decentralized projects

LENOWISCO Planning District

- 30 potential centralized projects
- 8 potential decentralized projects

Mount Rogers Planning District

- 33 potential centralized projects
- 5 potential decentralized projects

Evaluation of Unserved Areas in Need of Wastewater Service

- Project Data Sheets were developed for each identified project.
- Generalized Unit Costs for Sewer System extension projects were developed for use when a previous PER or CIP was not available. The unit costs were established using averages of recent bid results.
- Scoring matrices were developed for centralized projects and decentralized projects.

Centralized Sewer Projects

- Project Outcomes, Health Hazards & Water Quality Problems (30 Points)
- Affordability / Project Implementation Cost per Equivalent Residential Connection (25 Points)
- Regionalization (15 Points)
- Number of Equivalent Customers Served by the Project (10 Points)
- Average Residential Customer's Annual Sewer Bill as a Percentage of Project Area's Median Household Income (10 Points)
- Environmental Justice – EPA EJScreen report for Project Area (10 Points)

Decentralized Sewer Projects

- Project Outcomes, Health Hazards & Water Quality Problems (30 Points)
- Affordability / Project Implementation Cost per Equivalent Residential Connection (25 Points)
- Community Involvement & Willingness to Participate (10 Points)
- Responsible Management Entity (RME) Consideration for Ownership and Operation (15 Points)
- Average Residential Customer's Annual Sewer Bill as a Percentage of Project Area's Median Household Income (10 Points)
- Environmental Justice – EPA EJScreen report for Project Area (10 Points)

- A Project Ranking was developed for each PDC based on the scoring matrix

PROJECT DATA SHEET

Project Name:	Lynn Camp/Looney Creek Sewer Extension					
County:	Buchanan					
Planning District:	Cumberland Plateau					
Utility Provider:	Buchanan County Public Service Authority					
Served by Public Water (Y/N):	No					
Existing Conditions:	The project area is currently not served by a public sewage system.					
Proposed Project:	The project consists of approximately 24,000 linear feet of 8-inch gravity sewer.					
Existing WWTP:	Name:	Conaway WWTP				
	Design Flow:	2.00	MGD			
	Average Flow:	1.667	MGD			
	Receiving Stream:		Levisa Fork			
	Stream Classification:		IV			
	Impaired Stream (Y/N):		Yes			
Watershed or Adjacent Stream:	Name:	Lynn Camp Creek Looney Creek		Impaired (Y/N):	No No	
Equivalent Customers Served:	Residential =	132	Commercial =		Industrial =	0
Health Hazards:	Failing septic systems and straight pipes suspected.					
Construction Feasibility:	Very Feasible - The project will connect to an existing system with adequate treatment capacity.					
Growth Potential:	Residential - Moderate Commercial - Low Industrial - Low					
Total Project Cost:	$7,250,100					
Cost Per Connection:	$54,925					

Potential Project: Buchanan - Lynn Camp/Looney Creek Sewer Extension

New Centralized Collection System Extension Type Project

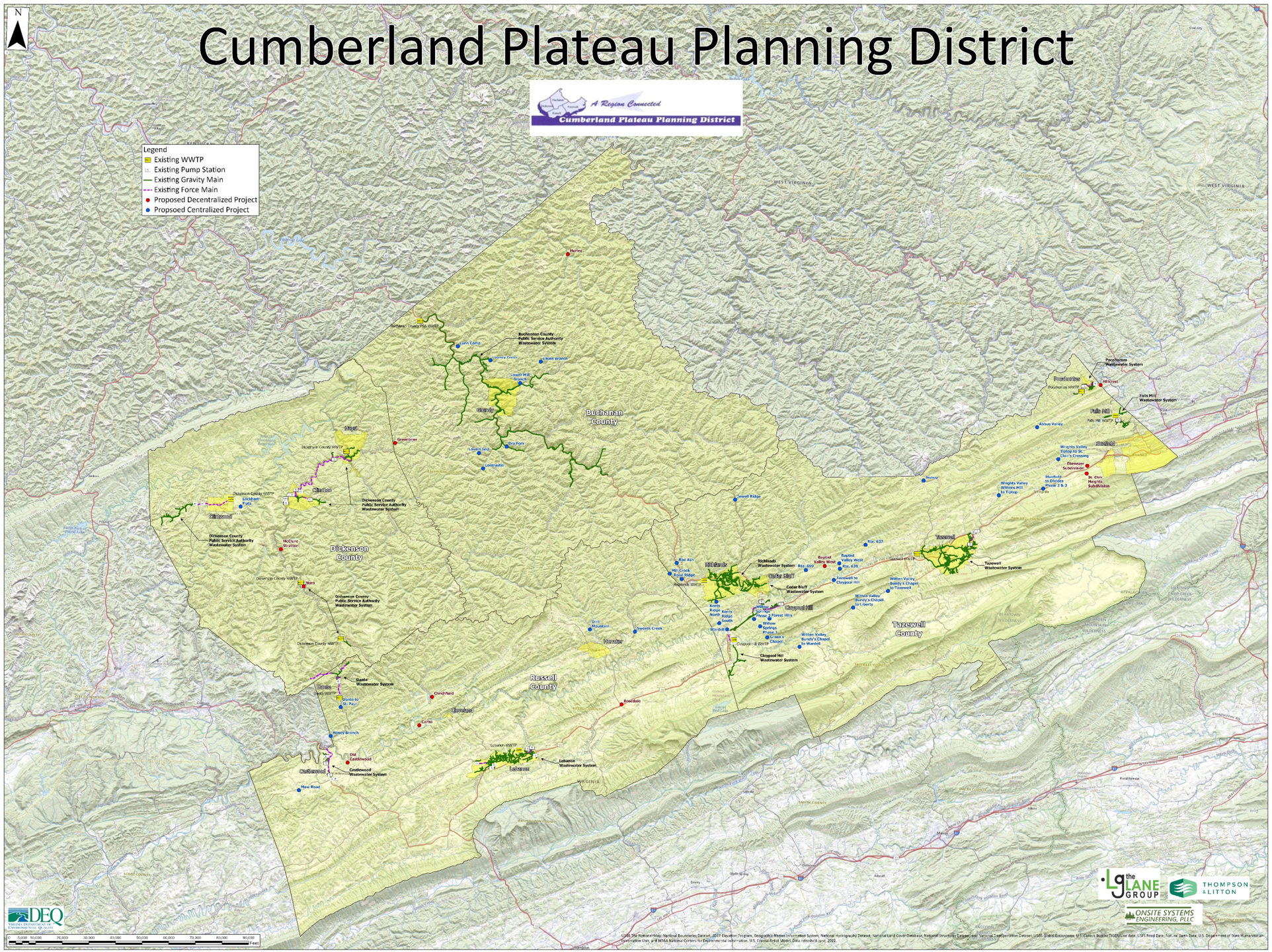
Inputs	Criteria	Score	Points
Project Outcomes, Health Hazards, & Water Quality Problems			*(30 points maximum)*
	Addresses a Severe or Urgent Public Health Hazard as Declared by Va Dept. of Health	30	
	Eliminates Failing Septic Systems or Straight Pipes in Watershed of a Listed 303(d) Impaired Water	25	*25*
	Eliminates Failing Septic Systems or Straight Pipes in a Water Not Listed as 303(d) Impaired or Threatened	20	
	Project Consolidates One or More Permitted Discharging Systems into a Centralized Collection System	15	
	Project Consolidates One or More Decentralized Systems into a Centralized Collection System	15	
	Subtotal		*25*
Affordability / Project Implementation Cost Per Equivalent Residential Connection (4,200 Gallons/Month/ERC)			*(25 points total)*
	< $20,000 per Equivalent Residential Connection	25	
	$20,000 - $30,000 per Equivalent Residential Connection	21	
	$30,000 - $45,000 per Equivalent Residential Connection	16	
	$45,000 - $60,000 per Equivalent Residential Connection	10	*10*
	$60,000 - $75,000 per Equivalent Residential Connection	7	
	> $75,000 per Equivalent Residential Connection	5	
	Subtotal		*10*
Regionalization			*(15 points maximum)*
	Project Involves Four or More Localities / Utility Providers	15	
	Project Involves Three or More Localities / Utility Providers	12	
	Project Involves Two or More Localities / Utility Providers	8	
	Subtotal		*0*
Equivalent Number of Residential Connections Served (4,200 Gallons/Month/ERC)			*(10 points maximum)*
	> 300 Equivalent Residential Connections	10	
	200 - 300 Equivalent Residential Connections	8	
	100 - 200 Equivalent Residential Connections	6	*6*
	< 100 Equivalent Residential Connections	4	
	Subtotal		*6*
Average Residential Customer's Annual Sewer Bill as a Percentage of Project Area's Median Household Income			*(10 points maximum)*
	> 2.0 % of Median Household Income	10	
	1.5 % - 2.0 % of Median Household Income	8	*8*
	1.0 % - 1.5 % of Median Household Income	5	
	0.75 % - 1.0 % of Median Household Income	2	
	Subtotal		*8*
Environmental Justice - EPA EJScreen Report for Project Area			*(10 points maximum)*
	EJScreen Composite State Percentile for 12 Pollution & Source Indexes > 70	5	
	EJScreen Composite State Percentile for 12 Pollution & Source Indexes in Range of 60 -70	4	
	EJScreen Composite State Percentile for 12 Pollution & Source Indexes in Range of 50 -60	3	
	EJScreen Composite State Percentile for 12 Pollution & Source Indexes in Range of 30 - 50	2	
	EJScreen Composite State Percentile for 8 Socioeconomic Indicators > 70	5	
	EJScreen Composite State Percentile for 8 Socioeconomic Indicators in Range of 60 - 70	4	
	EJScreen Composite State Percentile for 8 Socioeconomic Indicators in Range of 50 - 60	3	*3*
	EJScreen Composite State Percentile for 8 Socioeconomic Indicators in Range of 30 - 50	2	
	Subtotal		*3*
	Potential Project Total Score (100 Points Maximum):		***52***

Evaluation of Unserved Areas in Need of Wastewater Service

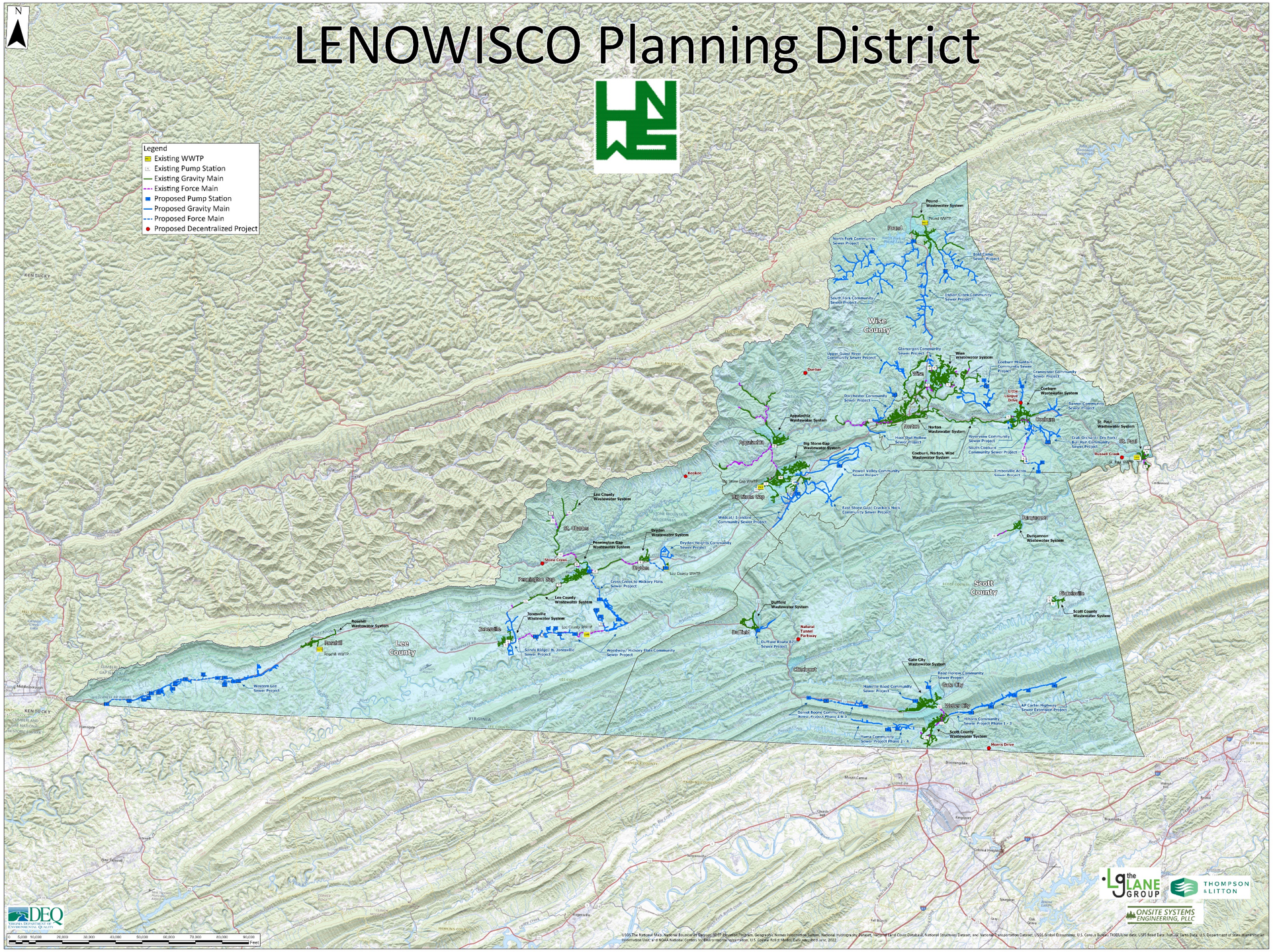
- A total of 96 centralized projects and 25 decentralized projects were evaluated and scored as a part of the Study.
- Over $1.3 Billion in new sewer system development/extension needs identified in our region.

Planning District	Centralized Extensions	Decentralized Systems
Cumberland Plateau	$ 436,482,917	$ 28,637,600
LENOWISCO	423,925,775	9,357,500
Mount Rogers	371,708,080	21,001,300
Totals	**$1,232,116,772**	**$ 58,996,400**

Cumberland Plateau Planning District

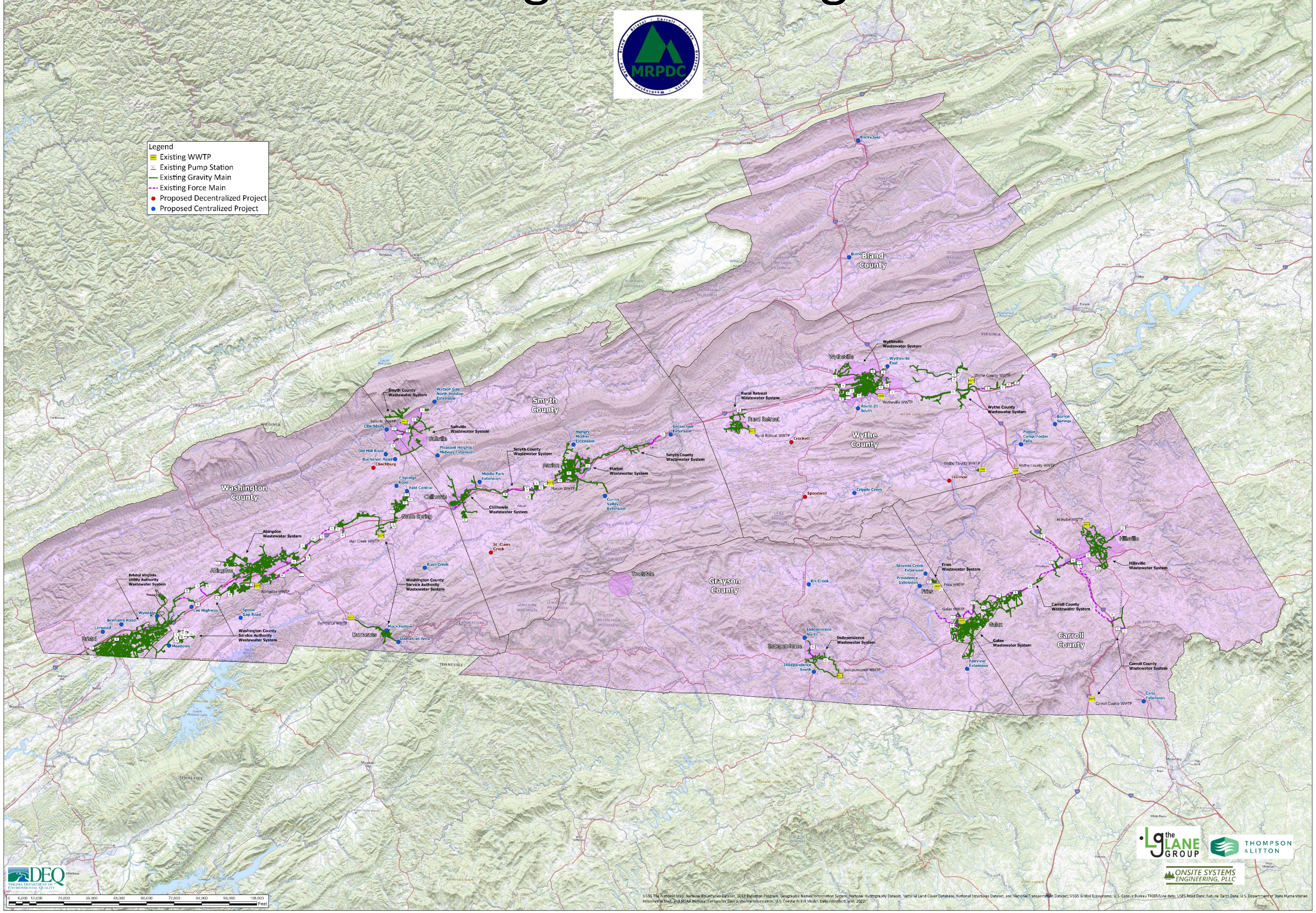


LENOWISCO Planning District



USGS The National Map, National Boundaries Dataset, 3DEP Elevation Program, Geographic Names Information System, National Hydrography Dataset, National Land Cover Database, National Structures Dataset, and National Transportation Dataset; USGS Gobal Ecosystems; U.S. Census Bureau TIGER/Line data; USFS Road Data; NatCap Parks Data; U.S. Department of State Humanitarian Information Unit; and NOAA National Centers for Environmental Information, U.S. Coastal Relief Model. Data accessed June, 2022.

Mount Rogers Planning District



Success Story of the 2005 Study

- The Tazewell County Public Service Authority's (TCPSA) Tazewell to Divides sewer project was ranked 26th in the 2005 Study. The TCPSA's primary concern with the Divides area was related to the protection of the drainage areas that contribute to the headwaters of the Clinch River and the Bluestone River which are related to the Landfill/U.S. 460/Pyott Boone and Hawks Heights service areas, respectively.
    - The North Fork of the Clinch River is the water source for the Greater Regional Tazewell water treatment plant owned and operated by the TCPSA, which not only serves the Town of Tazewell, but also customers throughout the Greater Tazewell Area which includes Pocahontas, Abbs Valley, Bishop, Boissevain, Baptist Valley, and Gratton.
- Today, the Clinch River is nationally known as a biodiversity hotspot. The Clinch River contains the nation's greatest concentration of rare and imperiled freshwater animals. Supporting up to 46 species, at least 24 of which are in danger of extinction, the Clinch River is habitat to rare mussels, colorful minnows and darters, and excellent sport fish.
- Regional cooperation between the TCPSA, the Tazewell County Board of Supervisors, and the Town of Tazewell resulted in Phase I of the project being designed and constructed. Funding assistance for the project was provided by the Virginia Department of Environmental Quality (DEQ) through the Virginia Clean Water Revolving Loan Fund.
- The Phase I project consisted of the following:
    - Approximately 4 miles of gravity sewer;
    - Approximately 1.3 miles of sewer force main;
    - Two (2) sewer pump stations; and
    - All related appurtenances.
- This $3.5 million construction project provided a collection system for the Tazewell County landfill leachate system. Additionally, the project provided the backbone sewer collection system for future sewer service to 219 connections along the U.S. Route 19/460 corridor and the surrounding areas and provided protection for the headwaters of the Clinch River and the Bluestone River.

Southwest Virginia Comprehensive Regional Wastewater Study – Conclusions and Recommendations

- As a region, we are facing enormous socio-economic challenges.
  - Maintaining and developing new wastewater systems with a declining and impoverished population is a daunting task for localities throughout Southwest Virginia.
  - Properly operated and maintained sewer systems are essential for the future well-being of this region.
    - Public Health
    - Future Economic Growth and Development
    - Recreation and Tourism
- In total, the Study identified over $1.67 Billion in conventional and decentralized system rehabilitation and extension/development needs within Southwest Virginia.
- The Study identified deteriorating and aging sewer systems and I/I as major issues affecting existing systems.
  - The DEQ should give strong consideration to continuing both the Step 1 and Step 2 programs.
  - Other funding agencies should modify or develop new funding programs that assist localities in evaluating their existing systems and in rehabbing failing wastewater infrastructure.
- The Study identified the lack of qualified wastewater treatment operators as a growing concern.
  - Local community colleges should be encouraged to offer classes related to treatment plant operation and to prepare potential students for their licensure exams.
  - Consideration should be given to an apprenticeship program funded by the state to help train the next generation of operators.

Southwest Virginia Comprehensive Regional Wastewater Study – Conclusions and Recommendations

- The $1.67 Billion in needed wastewater system projects will continue to grow exponentially year after year as the infrastructure continues to age and the cost of goods and services continue to rise.
  - The findings of the Study should be utilized in cooperation with elected officials to underscore the urgency of the situation facing the region and to increase the availability of state and federal funding for these critical projects.
- Whenever possible, consolidation of smaller systems into larger county wide public service authorities or other larger adjacent systems should be evaluated.
  - Regionalization including the cooperation of larger systems should be one of the first alternatives evaluated in future projects.
- Adequate wastewater systems benefit everyone by protecting our critical ecosystems. Tourism based outdoor recreational opportunities will be very important to Southwest Virginia's future economic sustainability.
  - Strong consideration should be given to instituting county-wide mandatory hook-up ordinances or sewer availability fees that can be used to offset the costs of system expansions and maintenance.
- A more concentrated emphasis is needed by regulatory and funding agencies on the advantages and benefits of managed decentralized wastewater systems, particularly in areas where the extension of central wastewater systems is cost-prohibitive.
  - Larger county-wide system operators should develop the means to plan, construct, operate and maintain these types of systems when other alternatives are not available.

Southwest Virginia Comprehensive Regional Wastewater Study – Conclusions and Recommendations

- State and local policy makers and the general public must be educated to understand the overall benefits provided by wastewater systems and the consequences of inaction.
  - This will require a sustained effort from multiple stakeholders and will involve the expenditure of resources in both time and money.
  - Each of the three PDCs and the regional DEQ should consider designating individuals to serve on a committee charged with developing and managing initiatives involving education of the public and the implementation of the other recommendations within the Study. The Committee could also include individuals from local organizations, health departments, engineering firms, business leaders, elected state and local representatives, and others.
  - Educational material should be developed and publicized on the websites of the PDCs and DEQ. Social media should also be utilized to present the material.
  - With each new rehabilitation or construction project, a project sign and groundbreaking and/or ribbon cutting ceremony should be held as a condition of funding. These projects should be celebrated and publicized to underscore their importance to the local community.
  - Wastewater system operators, engineering firms, and the DEQ should communicate with local middle and high schools to pursue learning opportunities such as field trips to wastewater treatment facilities to expose the students to the importance of proper wastewater collection and treatment

Questions / Discussion