

**Attachment A**  
**TDA-NPS FY-2019 Watershed Based Plan**

**Name of Project:** Pigeon Roost Creek Project

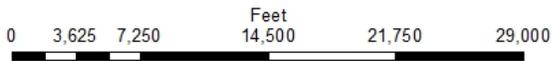
**Lead Organization:** Giles County Soil Conservation District

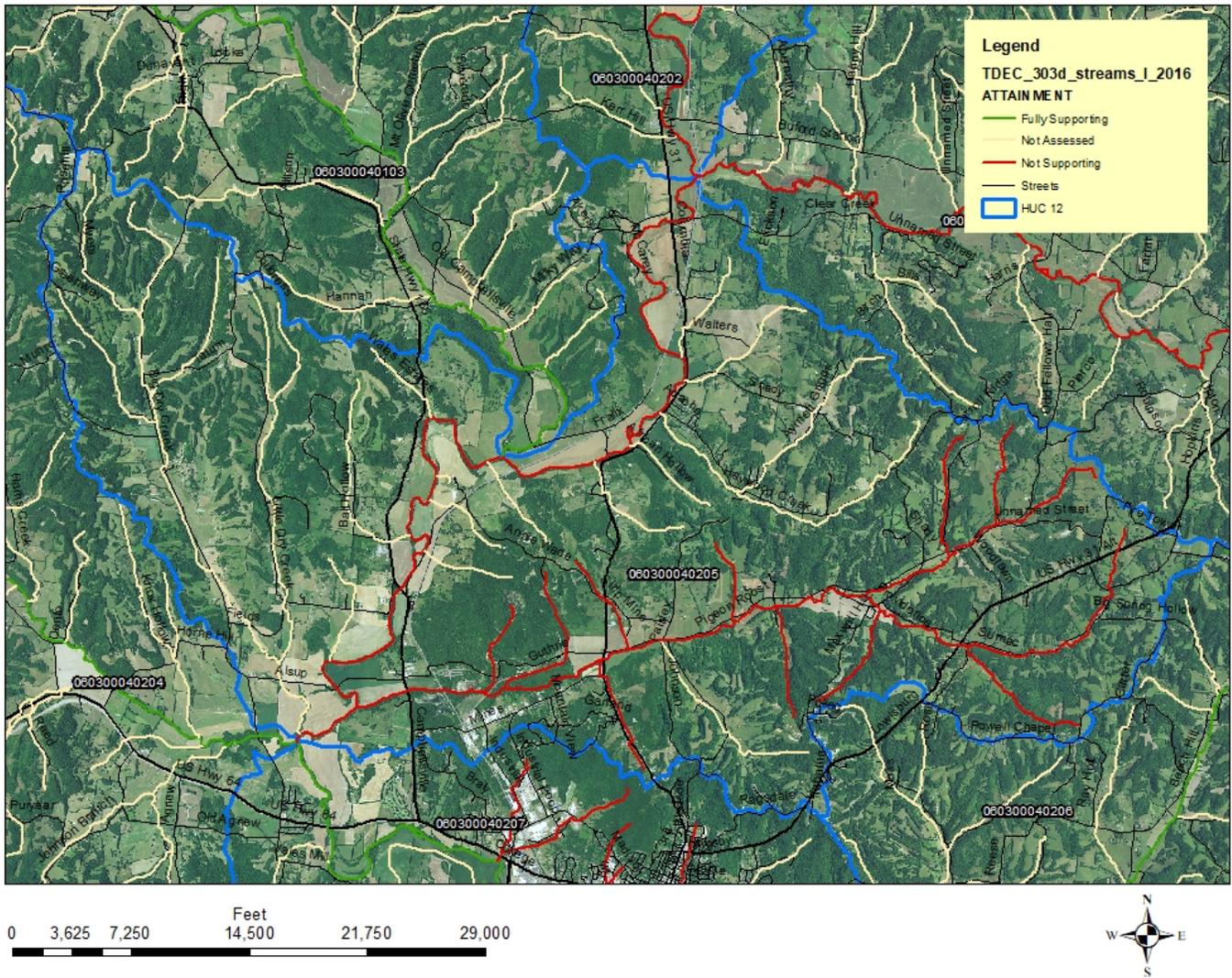
**Watershed Identification (name, location, HUC, etc.):**

Richland Creek-Dry Creek, Central Giles County,  
HUC12: 060300040205

Waterbody ID	Impacted Waterbody	County	Miles/Acres Impaired	Cause / TMDL Priority	Pollutant Source	TMDL_Priority
TN06030004044_1000	PIGEON ROOST CREEK	Giles	28.9	SEDIMENTATION/SILTATION	GRAZING IN RIPARIAN OR SHORELINE ZONES	L
TN06030004043_1000	RICHLAND CREEK	Giles	42	ESCHERICHIA COLI	GRAZING IN RIPARIAN OR SHORELINE ZONES	NA

The Richland Creek-Dry Creek Watershed is almost exclusively rural farm land. The watershed has approximately 37,324 acres total with very little of the watershed being heavily populated. However, the very southern tip of the watershed runs across part of industrial park and historical strip mining sites. The watershed area has over 325 farm operations. There are approximately 4,000 acres of row crops. Pasture and hay land farms are the predominant agricultural operation. The Pasture operations consist of Beef Cows, Horses, and Goats. Thirty to forty percent of the land area is in woodlands. More than 80% of the streams are surrounded by open land that is being used for agriculture. Cropland is the main land use along Richland Creek. Pasture and Hay are the main uses along most other streams in this watershed. The map below shows the area of the watershed.





## **Causes and Sources of Nonpoint Source Pollution in the Watershed:**

Tennessee Department of Environment and Conservation (TDEC) performed a water quality sampling of the Richland Creek-Dry Creek Watershed. The water sample indicated higher than allowed levels of sedimentation and siltation being present in Pigeon Roost Creek. It was also determined that E. Coli was present in Richland Creek. TDEC determined the source of the pollution is a result of pasture grazing operations in proximity of the stream.

Giles County Soil Conservation District performed an operational assessment of the Richland Creek- Dry Creek Watershed. This assessment found that some pasture grazing operations allow unlimited access to the stream. A few of the pasture grazing operations are feeding livestock on stream banks and the majority of the operations are using minimal rotational grazing practices. This assessment shows evidence supporting TDEC's report of pasture grazing operations as the nonpoint source of pollution.

<b>BMP Name</b>	<b>Quantity</b>	<b>Cost/Unit</b>	<b>Budget Estimate</b>
Filter Strip (NWSG)	8 AC	\$129.23/AC	\$1,033.84
Field Border (NWSG)	8 AC	\$97.24/AC	\$777.92

Forested Riparian Buffer	3 AC	\$764.63/AC	\$2,293.89
Fence	66,471.51 FT	\$1.52/FT	\$101,036.70
Pipeline	23 FT	\$2.16/FT	\$49,680.00
Watering Facilities	30	\$1,447.55	\$43,426.50
Heavy Use Area	17,280 SF	\$1.05/SF	\$18,144.10
Spring Development	5 NO.	\$2,914.32	\$14,571.60
Pumping Plant	5 NO.	\$1,833.11	\$9,165.55
Clearing and Snagging	30 HR	\$130.00/HR	\$3,900.00
Stream Crossing	15,000 SF	5.98/SF	\$8,970.00
Cover Crops	2,000 AC	\$35.00/AC	\$70,000.00
<b>Educational Event</b>	<b>Quantity</b>	<b>Cost/Unit</b>	<b>Budget Estimate</b>
Field Days	1	\$1,900/EA	\$1,900.00
Fair Exhibit	2	\$50/EA	\$100.00
<b>Total Budget for Project</b>		<b>\$325,000.00</b>	
<b>Total Match for BMP's from Landowners</b>		<b>\$216,666.67</b>	

\*Cost/Unit is based on the 2018 TN EQIP cost list

### **Filter Strips, Field Borders, Forested Riparian Buffers:**

When installed according to NRCS standards and specifications these BMP's are planned to help slow down runoff carrying nutrients and bacteria into the streams. With proper establishment of vegetation, should increase nutrient up take and therefore diminish material running off into the stream. Therefore, the buffers will indirectly decrease the amount of nutrients entering the waters from agriculture operations. The Elk River watersheds (06030004, 06030003) are also currently promoting Riparian Buffers through the Elk River Watershed Buffer Initiative (ERWBI). This would provide additional one-time incentive payments to producers who are willing to install these buffers, and hopefully increase the chances of long term benefits for the streams.

### **Fence, Pipeline, Watering Facilities, Spring Development, Pumping Plant, Heavy Use Areas, and Stream crossing:**

These BMP's are planned to help develop a more efficient, environmentally and economically, prescribed grazing system that utilizes the livestock as the nutrient delivery systems for the pastures, and helps to reduce concentrated areas of manure in sensitive areas. With manure being spread more evenly across the field it will allow for increased breakdown of the manure and allow the nutrients to be absorbed more rapidly into the soil profile. Consequently, prescribed grazing practices will help to reduce the amount of nutrients entering the stream. The Stream Crossing has been incorporated with the prescribed grazing aspect in the event that the landowner owns both sides of a stream and to better rotate his cattle would need an armored crossing to allow his cattle access to the other side of the stream at one particular point along the stream.

### **Clearing and Snagging:**

This BMP is planned to clear debris and blockages from the streams therefore reducing flooding, increasing bank stability, and decreasing sediment loading and deposition. With the flooding factor being reduced it will help to allow more time for nutrients to breakdown and filter through the soil profile as opposed to being swept into the stream during flood stages. The removal of debris from the stream channel will also eliminate an area for hazardous materials to collect and concentrate.

### **Cover Crops:**

This BMP is planned to improve soil health function by controlling erosion, building organic matter, increasing available water holding capacity, and promoting nutrient retention and recycling. This practice does not necessarily have a direct effect on removing or limiting livestock access to the stream, but if cover crops are

installed water infiltration has been proven to be increased. Therefore, there would be less offsite movement of each raindrop and potentially reduce flooding and runoff water across the pastures adjacent to the streams. These cover crop fields could potentially also be used as winter grazing areas and reduce some of the need for winter feeding areas where manure and urine can be concentrated.

### **Field Day and Fair Exhibits:**

These educational projects will be designed to inform the public of our project and the hazards of NPS Pollution to our streams and drinking water. With the scheduled field day to showcase our efforts in the watershed during the second year of the grant we plan to acquire additional customers interested in the BMP's we are implementing in the area.

## **NPS TMDL Load Reduction Estimates**

<u>Practice</u>	<u>NRCS Code</u>	<u>Amount</u>	<u>Unit</u>	<u>N Reduction Factor</u>	<u>lbs N/yr</u>
Clearing and Snagging	326	300	ft	6	1,800.000
Cover Crops	340	2,000	ac	11.4	22,800.000
Fence	382	66,471.51	ft	0.25	16,617.870
Field Border	386	8	ac	56.2	449.600
Filter Strip	393	8	ac	375.8	3,006.400
Forested Riparian Buffer	391	3	ac	308.4	925.200
Heavy Use Area	561	17,280	sqft	0.09	1,555.200

Pipeline	516	23,000	ft		0.13	2,990.000
Pumping Plant	533	5	no.	Part of Water System		
Spring Development	574	5	no.		78.9	394.500
Stream Crossing	578	15,000	sqft		50.3	754,500.000
Watering Facilities	614	30	no.		70.23	2,106.900
					Expected reduction in N Load	
					=	807,145.670

Practice	NRCS Code	Amount	Unit		P Reduction Factor	lbs N/yr
Clearing and Snagging	326	300	ft		1.1	330
Cover Crops	340	2,000	ac		2.4	4,800.000
		66,471.5				
Fence	382	1	ft		0.02	1,329.430
Field Border	386	8	ac		11.4	912.000
Filter Strip	393	8	ac		83	664.000
Forested Riparian Buffer	391	3	ac		22.6	67.800
Heavy Use Area	561	17,280	sqft		0.01	172.800
Pipeline	516	23,000	ft		0.02	460.000
Pumping Plant	533	5	no.	Part of Water System		
Spring Development	574	5	no.		7.2	36.000
Stream Crossing	578	15,000	sqft		7.5	112,500.000
Watering Facilities	614	30	no.		5.88	176.400
					Expected reduction in P Load=	121,448.430

Practice	NRCS Code	Amount	Unit		Sediment Reduction Factor	tn/ac/yr
Clearing and Snagging	326	300	ft		0.7	210
Cover Crops	340	2,000	ac		0.84	1,680.000
Fence	382	66,471.51	ft		0.006	398.829
Field Border	386	8	ac		2.4	19.200
Filter Strip	393	8	ac		32.9	263.200
Forested Riparian Buffer	391	3	ac		3	9.000
Heavy Use Area	561	17,280	sqft		0.002	34.560
Pipeline	516	23,000	ft		0.006	138.000
Pumping Plant	533	5	no.	Part of Water System		
Spring Development	574	5	no.		1.8	9.000
Stream Crossing	578	15,000	sqft		2.8	42,000.000
Watering Facilities	614	30	no.		0.004	0.120
					Expected reduction in sediment Load=	44.761.909

## Timeline, Tasks, and Assessment of Progress:

- **March 2019** Sign 319 contract with Tennessee Department of Agriculture (TDA) to implement the next Phase of BMP's not funded through EQIP and WHIP.
- **May 2019** Projecting 30% of 319 BMP Funding obligated to be under implementation.

- **August 2019** Set up exhibit at the Annual Giles County Fair. The exhibit will educate the public of the need for involvement in the Richland Creek- Dry Creek Watershed project and the county's water quality improvement in general.
- **September 2019** Turn in annual report to TDA on progress of project. Report will include actual installed amounts of each practice with the estimated Nitrogen, Phosphorus, Sediment Total Maximum Daily Limits (NPS TMDL) chart to document potential load reductions in the watershed.
- **July 2020** Projecting 75% of 319 BMP Funding obligated to be installed and have 50% of BMP goals completed.
- **August 2020** Set up exhibit at the Annual Giles County Fair. Our exhibit will inform the public of progress made in the Richland Creek- Dry Creek Watershed area and the success of the overall project using 319 Funding.
- **September 2020** Turn in annual report to TDA on progress of project. Report will include actual installed amounts of each practice with the estimated Nitrogen, Phosphorus, Sediment Total Maximum Daily Limits (NPS TMDL) chart to document potential load reductions in the watershed.
- **October 2020** Host a Field Day event on a farm where projects have been completed to show clients and potential clients some of the BMP's implemented through our project.
- **July/August 2021** Projecting 100% of 319 BMP goals completed.
- **October 2021** Turn in Close-out report to TDA on the progress and completion of the Pigeon Roost Creek Watershed Project. Report will include actual installed amounts of each practice with the estimated Nitrogen, Phosphorus, Sediment Total Maximum Daily Limits (NPS TMDL) chart to document potential load reductions in the watershed.

## **Criteria for Documenting Success**

The Nitrogen, Phosphorus, Sediment Total Maximum Daily Loads (NPS TMDL) will be estimated annually using actual installed amounts of each practice and the NPS TMDL tool provided in the grant application process. With this information we will be able to provide a calculated estimate in our annual report to document projected decreases. Incorporating this table with annual photos of the streams at the bridge crossings along Highway 166 (Pigeon Roost Creek at Wales Baptist Church and Richland Creek at Annie Wade Road) we will be able to document water color. We will also utilize a form of water quality test kit (i.e. 6-way Pool Test Strips) to test the water annually at these same road crossings. Baseline data at these sampling locations will be established (using the above mentioned methods) once grant approval has been granted.

## **Monitoring and Documenting Success:**

Contact will be made to the local TDEC office to make them aware of the grant acquired in the Richland Creek – Dry Creek watershed area, and we will ask for increased monitoring at their already established monitoring stations in the area. We will also continue monitoring water quality based on the current 303d list of streams for the state of TN. To be able to increase the success of the 319 funds along the streams in this watershed the GCSCD plans to continue utilizing other programs (EQIP, ARCF, ERWBI, etc.) once the grant is complete.

Due to the reduction in field staff for the GCSCD initial monitoring efforts will have to be done based on what is available from TDEC and what can be seen during a drive thru of the watershed. However, efforts will be made to document the visible changes (exclusion fences installed, water color after a rain event, etc.) taking place along the main channel of Pigeon Roost Creek and Richland Creek. GCSCD also plans to document (pictures at road crossings, 303d list updates) the stream conditions at 5-year intervals to determine if more long-term effects are noticeable.

The Watershed Coordinator will be responsible for informing the public and stakeholders of progress each year. The Financial Watershed Coordinator will be responsible for generating reports to all partners involved with the project.