

PRELIMINARY ENGINEERING REPORT

SANITARY SEWER SYSTEM REHABILITATION

FOR

**CITY OF CROSSVILLE
CROSSVILLE, TENNESSEE**

FEBRUARY 2018



PREPARED BY:

The logo for GRW Engineers, Inc., consisting of the letters "GRW" in a stylized, bold, black font.

**GRW ENGINEERS, INC.
404 BNA DRIVE, SUITE 201
NASHVILLE TN 37217**

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- Site Maps, and Drawings

I. PROJECT DESCRIPTION, PURPOSE, AND NEED

The Crossville sewer collection system lies along the Obed and Little Obed Rivers on the north side of the system, and Byrd Creek and One Mile Creek on the south side of the system. All four (4) are listed on pages 104 and 105 of the “Year 2016 303(d) List” (approved December 2017) (see attachment). As can be seen from this listing, the problems listed for the waters are associated with collection system failure on the Little Obed, and a municipal point source discharge (NPDES permit No. 0024996) on the Obed River, and E. Coli in One Mile Creek. **In addition the Obed River (from I-40 to the confluence with the Emory River), and Byrd Creek have been designated an “Exceptional TN Streams” by TDEC as shown in the Attachment. The Obed River has also been classified as an Outstanding National Resource Water and National Wild and Scenic River** and is listed as impacted by nutrients from the Crossville area. The City is aware of the issues regarding the collection system failures, and the point source discharge, and have been aggressively addressing these items over the last several years.

The City has been addressing the collection system based on a flow study completed in 2012 and a second study in 2014. Since the studies the City has completed several sewer system rehabilitation projects and pump station renovation projects. Two areas that have been addressed as problem areas either through recent CCTV inspection (closed circuit television), or current overflow issues are;

- The Old Landfill drainage basin. Although the Old Landfill Pump Station was recently renovated in 2017 overflow issues continue due to the upstream lines that parallel and cross One Mile Creek. I/I issues in these lines from the close proximity to One Mile Creek have contributed to the overflows at the pump station and into One Mile Creek.
- The Little Obed drainage basin, which includes the Genesis Road Pump Station area. The Little Obed Pump Station was renovated in 20015 and the Genesis Road Pump Station is currently being renovated, but incoming peak flows and subsequent overflows indicate additional I/I upstream of the pump stations.

The City has proactively contracted the CCTV work for the majority of these two areas expecting the CCTV work to be completed by the spring of 2018. This project proposes to address the majority of these lines with sanitary sewer line rehabilitation work of the lines that have already had the CCTV work completed.

The City of Crossville intends to apply for a CDBG grant of \$525,000 and provide a local match of \$175,000 (total project cost \$700,000) to complete this work.

II. EXISTING FACILITIES

The City of Crossville is located in Cumberland County, on the Cumberland Plateau and is the county seat. It is approximately 120 miles east of Nashville and 70 miles west of Knoxville. Several State and U.S. highways go through the City as well as Interstate 40. The City currently has a population of approximately 11,000 persons. The City has a strong economy in which manufacturing and retail trade provide approximately 32 percent of the employment.

Based on the projected growth of the system, future average flows are expected to increase by the year 2025 to 5.0 MGD.

Residential growth is projected to increase to 13,343 in 2025 based on data from the TN Advisory Commission on Intergovernmental Relations. In addition the County is expected to see a similar growth increase. Much of Crossville's residential growth is based in the retirement industry that Crossville promotes. The retirement industry is expected to boost the Retail/Service industry which accounts for 42% of the work force in Crossville. In addition the manufacturing sector which employs 17% of the work force (US Bureau of Census) is expected to increase accordingly.

Currently an upgrade at the WWTP is underway to provide capacity for the anticipated growth, and the City is making improvements to the collection system, including the removal of I/I to provide capacity.

Wastewater Treatment Plant

The existing wastewater treatment plant is rated for an average flow of 3.5 MGD and 15.0 MGD peak flow. The following structures and equipment currently exist.

1. Headworks Structure including:
 - a. Bar Screens rated at 12.0 MGD (peak)
 - b. Grit Chamber rated at 15.0 MGD (peak)
 - c. Fine Screen rated at 15.0 MGD (peak)
2. Influent Pumps (2 pumps @ 12 MGD)
 - a. Little Obed Pump Station pumps directly to Grit Chamber (1.5 MGD)
 - b. Industrial Park Pump Sta. pumps directly to Grit Chamber (1.5 MGD)
3. Aeration Basins (4 basins each 126.5' long x 42' wide x 13' deep)
4. Nitrification Basin (1 basin 88' Diameter)
5. Final Clarifiers (2 @ 50' Diam., & 2 @ 54' Diam. 700 gpd/sf overflow)
6. Tertiary Filters (Installed 2011 12 MGD peak w/ high flow bypass).
7. Ultraviolet Disinfection (UV) system.
8. Anaerobic Digester (44 ft diameter x 15 ft SWD)
9. Belt Filter Press- 2, 2 Meter Presses.

To keep the existing WWTP current the city has been upgrading their wastewater treatment plant (WWTP) over the last three (3) years, and currently a construction contract is in place to optimize treatment at the WWTP.

The City of Crossville's wastewater treatment facility discharges into the Obed River, which is classified by the National Park Service as a wild and scenic river and has designated it as an Outstanding National Resource Water (ONRW). The State of Tennessee Water Quality Control Board has also designated the Obed River as an ONRW also referred to as Tier III Water and has placed the river on the 303 (d) list.

Collection System

The Crossville sewage collection and transportation system consists of over 430,000 LF of 6-inch to 30-inch diameter gravity sewer lines and approximately 292,000 LF of low pressure sewer lines. The collection system has approximately 22 pump stations and force mains in operation in three (3) major divisions.

The collection system is divided into three (3) main divisions by the City. The divisions are as follows:

- Division 1 – Plant
- Division 2 – Little Obed
- Division 3 – Old Landfill

III. PROJECT NEED AND PROPOSED IMPROVEMENTS

Of the three divisions above, presently Division 1 is capable of handling the flows that reach the main pump station at the WWTP. During previous flow studies, Divisions 2 & 3 both had overflow/surcharging problems during large rain events. During the first study period from January 2011 to July 30, 2012 there were five (5) major rain events that caused ten (10) overflows in these two (2) Divisions. Seven (7) of the ten overflows reported due to high infiltration and inflow (I/I) problems were located in Division 2 (Little Obed). Since this Division appears to have some of the worst I/I problems, the initial rehabilitation work was focused on that area.

Little Obed Collection System

Division 2 of the collection system contains some of the oldest (near the middle of the city) and newest (northern area and next to the interstate) parts of the collection system. Flow monitoring was done on several of the mini basins (during December 2012 through February 2013) that make up Division 2 in an effort to locate the infiltration and inflow sources and begin the process of rehabilitating the collection system. Seven (7) flow meters were used in this initial flow monitoring study. Three (3) flow monitors (CR-05, 06 & 07) associated with the gravity sewer lines coming directly into the Little Obed Interceptor are collector lines of the newly replaced (2010/2011) Dooley Street trunk sewer. The flow records indicate that the Average Daily Flow (ADF) for CR-05 was approximately 0.013 MGD, but has seen flows of between 0.25 – 0.35 MGD ([0.3 MGD] an increase of about 23 times the average). The ADF for CR-06 is approximately 0.137 MGD, but has seen peak flows approximately 4.8 times that flow (0.6 MGD). The remaining flow monitor CR-07 has an ADF of approximately 0.081 MGD, but has recorded peak flows of approximately 0.70 MGD for brief periods or 8.6 times the normal flow.

Based on the flow monitoring results, smoke testing and CCTV work was performed in a small portion of the collection system associated with those flow monitors. The findings of the smoke testing and the CCTV were recorded in a spreadsheet and each issue prioritized from 0 (no problems seen) to 5 (immediate rehabilitation needed).

In this basin the following work is being proposed;

- Braun Avenue to Wayne Avenue – This area is designated as the 2nd highest priority in this report and is to be CCTV'd in a current project to be completed by the spring of 2018. It is anticipated the CDBG project will provide funding for design and construction.
- North Hill Drive and Stone Drive - This area is designated as the 3rd highest priority in this report and is to be CCTV'd in a current project to be completed by the spring of 2018. It is anticipated the CDBG project will provide funding for design and construction.
- Genesis Road Pump Station to Cook Road - This area is designated as the 5th highest priority in this report and is to be CCTV'd in a current project to be completed by the spring of 2018. It is anticipated the CDBG project will provide funding for design and construction..

Old Landfill Collection System

Division 3 of the collection system contains lines located in some of the most remote areas in the system and several of the main lines are along creeks and drainage ditches. In 2013 a follow up flow study was completed that focused on the Old Landfill collection system and a portion of the Plant collection system. The 2013 study provided priority locations to focus on. The highest prioritized areas identified were in the Old Landfill Basin.

Overflows at the Old Landfill Pump Station have created an ongoing problem for the City and its residents. The Old Landfill Pump Station was recently renovated, but do the system hydraulics the pumping capacity of the replacement pumps was not increased. It was determined that to alleviate the overflows at the station, collection system rehabilitation would need to take place. The Old Landfill Pump Station is within 30 feet of One Mile Creek which is listed on the 303(d) list due to E. Coli and Collection System Failure.

In this basin the following work is being proposed;

- Old Landfill Pump Station to the Miller Avenue Pump Station – This area is designated as the highest priority in this report and is to be CCTV'd in a current project to be completed by the spring of 2018. It is anticipated the CDBG project will provide funding for design and construction.
- Miller Avenue Pump Station to Old Mail Road – This area is designated as the 4th highest priority in this report and is to be CCTV'd and rehabilitated in the CDBG project.

To complete this work the City is making application for grant assistance to the State of Tennessee, Department of Economic and Community Development, (Community Development Block Grant CDBG) for a CDBG grant of \$525,000 and intends to provide a local match of \$175,000 (total project cost \$700,000).

IV. FINANCIAL

A break down of the estimated construction costs, project cost and anticipated funding follows. The projects are listed in order of priority.

**CITY OF CROSSVILLE
2018 CDBG COLLECTION SYSTEM REHABILITATION PROJECT
ESTIMATED PROJECT COSTS**

I. COLLECTION SYSTEM REHABILITATION (AREAS LISTED IN ORDER OF PRIORITY)

A. Old Landfill Pump Station to Miller Ave Pump Station (8,700 LF Gravity Sewer and 40 MH's)

Item No.	Description	Qty	Unit	Unit Price	Total
1	12" CIPP Lining of Sewer Lines	3,500	LF	\$ 48.00	\$ 168,000
2	Point Repair of Sewer Line	5	EA	\$ 2,400.00	\$ 12,000
3	Manhole Replacement	10	EA	\$ 4,000.00	\$ 40,000
4	Manhole Rehabilitation	10	EA	\$ 1,200.00	\$ 12,000
5	Service Connection	5	EA	\$ 1,500.00	\$ 7,500
	Subtotal Construction				\$ 239,500

B. Braun to Wayne Ave. (1,200 LF and 8 MH's)

Item No.	Description	Qty	Unit	Unit Price	Total
1	8" CIPP Lining of Sewer Lines	600	LF	\$ 35.00	\$ 21,000
2	Point Repair of Sewer Line	1	EA	\$ 2,400.00	\$ 2,400
3	Manhole Replacement	0	EA	\$ 4,000.00	\$ -
4	Manhole Rehabilitation	4	EA	\$ 1,200.00	\$ 4,800
5	Service Connection	4	EA	\$ 1,500.00	\$ 6,000
	Subtotal Construction				\$ 34,200

C. North Hills Drive and Stone Drive (2,000 LF and 11 MH's)

Item No.	Description	Qty	Unit	Unit Price	Total
1	8" CIPP Lining of Sewer Lines	1,000	LF	\$ 35.00	\$ 35,000
2	Point Repair of Sewer Line	2	EA	\$ 2,400.00	\$ 4,800
3	Manhole Replacement	0	EA	\$ 4,000.00	\$ -
4	Manhole Rehabilitation	3	EA	\$ 1,200.00	\$ 3,600
5	Service Connection	5	EA	\$ 1,500.00	\$ 7,500
	Subtotal Construction				\$ 50,900

D. Miller Ave Pump Station to Old Mail Road (5,000 LF Gravity Sewer and 25 MH's)

Item No.	Description	Qty	Unit	Unit Price	Total
1	12" CIPP Lining of Sewer Lines	1,000	LF	\$ 48.00	\$ 48,000
2	Point Repair of Sewer Line	3	EA	\$ 2,400.00	\$ 7,200
3	Manhole Replacement	5	EA	\$ 4,000.00	\$ 20,000
4	Manhole Rehabilitation	10	EA	\$ 1,200.00	\$ 12,000
5	Service Connection	5	EA	\$ 1,500.00	\$ 7,500
	Subtotal Construction				\$ 94,700

E. Genesis Rd Pump Station to Cook RD (5,800 LF and 28 MH's)

Item No.	Description	Qty	Unit	Unit Price	Total
1	8" CIPP Lining of Sewer Lines	1,000	LF	\$ 35.00	\$ 35,000
2	Point Repair of Sewer Line	2	EA	\$ 2,400.00	\$ 4,800
3	Manhole Replacement	2	EA	\$ 4,000.00	\$ 8,000
4	Manhole Rehabilitation	5	EA	\$ 1,200.00	\$ 6,000
5	Service Connection	10	EA	\$ 1,500.00	\$ 15,000
	Subtotal Construction				\$ 68,800

TOTAL PROJECT CONSTRUCTION ESTIMATE \$ 488,100

II. PROJECT COSTS

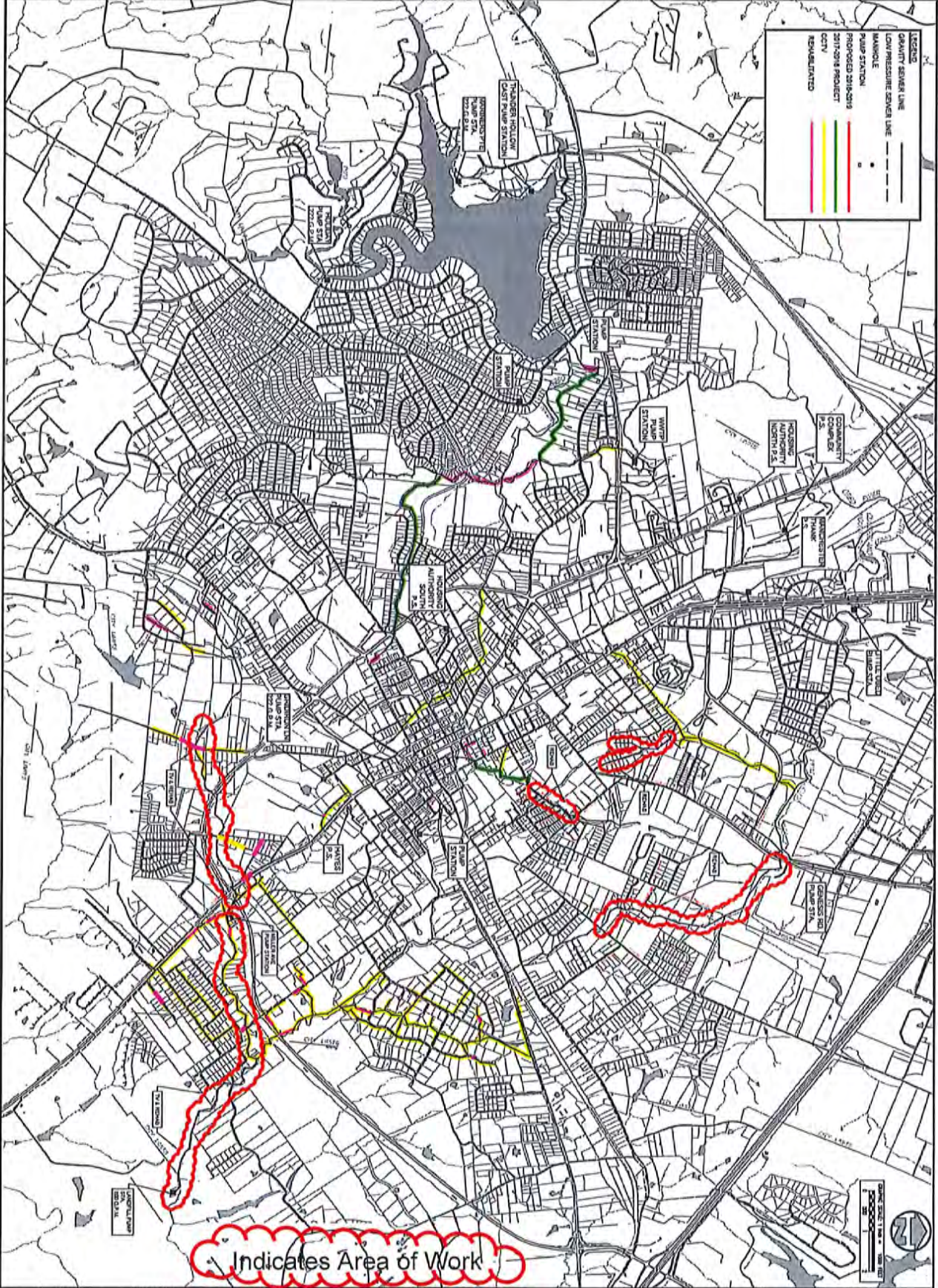
Construction					\$	488,100
Administrative					\$	37,000
Environmental Report					\$	2,500
Legal					\$	1,000
Engineering Design					\$	45,000
Engineering During Construction					\$	15,000
Resident Observation					\$	50,000
Other Engineering (Sewer Inspection)						
CCTV	9,000	EA	\$	3.00	\$	27,000
Manhole Inspection	50	EA	\$	100.00	\$	5,000
Heavy Cleaning if Needed	3,000	LF	\$	1.00	\$	3,000
Contingencies					\$	26,400
TOTAL PROJECT					\$	700,000

FUNDING

CDBG Funds					\$	525,000
Local Match					\$	175,000
TOTAL FUNDING					\$	700,000

APPENDICES

SITE MAPS, AND DRAWINGS



LEGEND	
—	QUALITY SEWER LINE
- - -	LOW PRESSURE SEWER LINE
—	MANHOLE
●	PUMP STATION
—	PROPOSED 2016-2019
—	2017-2018 PROJECT
—	CITY REHABILITATED

Indicates Area of Work

REVISIONS	
NO.	DESCRIPTION

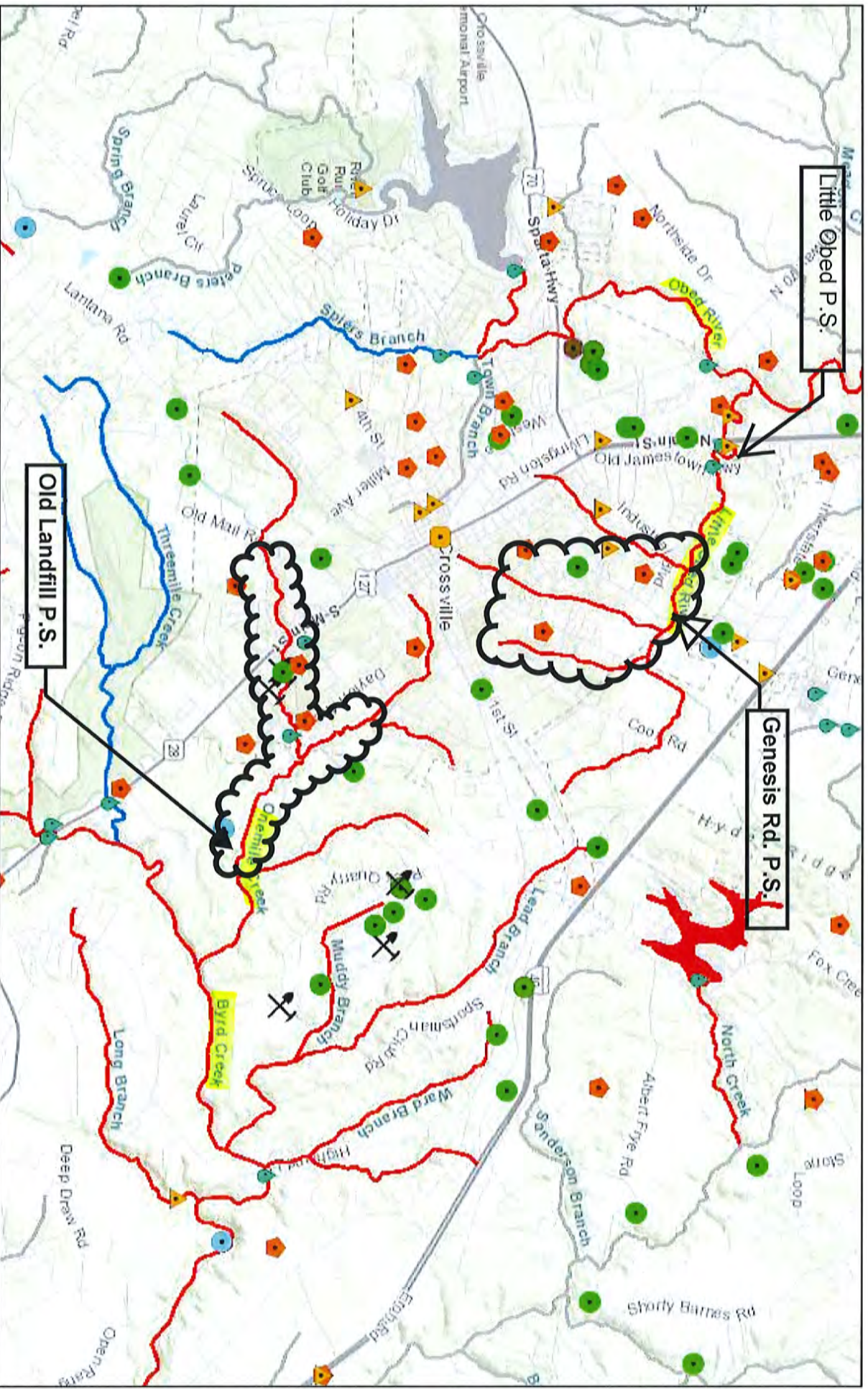
**SANITARY SEWER COLLECTION SYSTEM
SEWER REHABILITATION**
CITY OF CROSSVILLE, TENNESSEE



PROJECT NO. 2017-100
DATE: 08/14/2018
SCALE: 0.5"=100'-0"
DRAWN BY: JMM
CHECKED BY: JMM
APPROVED BY: JMM

C-01

TDEC Water Resources Data Viewer - CROSSVILLE PROJECT IMPACT AREA



January 18, 2018

Sources: Esri, HERE, DeLorme, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, Geobase, IGN, Kadaster NL, Ordnance Survey, Tennessee STS GIS, Esri, HERE, Garmin, INCREMENT P, Intermap, USGS, METNUSA, NGA, EPA, USDA | Web AppBuilder for ArcGIS

Final

YEAR 2016

303(d) LIST

December, 2017



**TENNESSEE DEPARTMENT OF ENVIRONMENT
AND CONSERVATION**

**Planning and Standards Unit
Division of Water Resources
William R. Snodgrass Tennessee Tower
312 Rosa L. Parks Ave
Nashville, TN 37243**

2016 303(d) LIST (Emory River Watershed continued)

Waterbody ID	Impacted Waterbody	County	Miles/Acres Impaired	CAUSE / TMDL Priority	Pollutant Source	COMMENTS
TN06010208 004_0400	SUMMERS BRANCH	Morgan	5.0	Loss of biological integrity due to siltation NA	Abandoned Mining	Category 4a. EPA approved a siltation/habitat TMDL that addresses the known pollutants on 7/31/06.
TN06010208 004_1000	CROOKED FORK	Morgan	6.9	Nitrate+Nitrite Low Dissolved Oxygen L L	Municipal Point Source Pasture Grazing	Category 5. (One or more uses impaired.) TMDLS needed. TMDL Vision Priority Watershed
TN06010208 004_2000	CROOKED FORK	Morgan	16.7	Physical Substrate Habitat Alterations Loss of biological integrity due to siltation NA NA	Abandoned Mining Channelization	Category 4a. EPA approved a siltation/habitat TMDL that addresses the known pollutants on 7/31/06.
TN06010208 007_0210	SCANTLING BRANCH	Cumberland	1.98	Low Dissolved Oxygen Flow Alteration L NA	Upstream Impoundment	Category 5. (One or more uses impaired.) TMDL needed. Flow alteration is 4c (Impairment not caused by a pollutant.)
TN06010208 007_2000	OBED RIVER	Morgan Cumberland	15.4	Total Phosphorus Nitrate+Nitrite L L	Municipal Point Source Discharges from MS4 area Pasture Grazing	Category 5. (One or more uses impaired.) TMDLS needed. Outstanding National Resource Water and National Wild and Scenic River now impacted by excessive nutrients from Crossville area. Provides habitat for the listed Tangerine darter (<i>Percina aurantiaca</i>) and Spottfin chub (<i>Cyprinella monacha</i>).
TN06010208 008_2000	CLEAR CREEK	Morgan	1.41	Oil L	Petroleum Activities	Category 5. (One or more uses impaired.) TMDL needed. Provides habitat for the listed Spottfin chub (<i>Cyprinella monacha</i>) and Tangerine darter (<i>Percina aurantiaca</i>). Oil spill in this section of the Obed National Wild and Scenic River.
TN06010208 013_0200	LITTLE OBED RIVER	Cumberland	7.96	Total Phosphorus Nitrate+Nitrite Loss of biological integrity due to siltation Escherichia coli L L L L	Discharges from MS4 area Collection System Failure	Category 5. (One or more uses impaired.) TMDLS needed.

2016 303(d) LIST (Emory River Watershed continued)

Waterbody ID	Impacted Waterbody	County	Miles/Acres Impaired	CAUSE / TMDL Priority	Pollutant Source	COMMENTS
TN06010208 013_0400	DROWNING CREEK	Cumberland	13.1	Loss of biological integrity due to siltation NA	Pasture Grazing	Category 4a. EPA approved a siltation TMDL that addresses the known pollutants on 7/31/06.
TN06010208 013_0420	COPELAND CREEK	Cumberland	20.4	Loss of biological integrity due to siltation NA	Pasture Grazing	Category 5. (One or more uses impaired.) TMDLs needed.
TN06010208 013_1000	OBED RIVER	Cumberland	14.5	Nitrate+Nitrite Total Phosphorus L L	Municipal Point Source Discharges from MS4 area	Category 5. (One or more uses impaired.) TMDLs needed. Federally-listed species have been documented downstream of this section, in the Wild and Scenic River section.
TN06010208 013_2000	OBED RIVER	Cumberland	1.48	Flow Alteration Physical Substrate Habitat Alterations NA NA	Discharges from MS4 area Upstream Impoundment	Category 4a. Flow alteration is 4c (Impairment not caused by a pollutant). EPA approved a habitat alteration TMDL that addresses the known pollutant on 7/31/06. Below Lake Holiday near Crossville.
TN06010208 015_0600	LICK CREEK	Cumberland	12.5	Low Dissolved Oxygen Flow Alteration L NA	Upstream Impoundment	Category 5. (One or more uses impaired.) TMDL needed. Flow alteration is 4c (Impairment not caused by a pollutant).
TN06010208 015_0610	LONG BRANCH	Cumberland	2.2	Loss of biological integrity due to siltation Flow Alterations NA NA	Sand/Gravel/Rock Mining Upstream Impoundment	Category 4a. EPA approved a siltation TMDL that addresses the known pollutant on 7/31/06. (This segment was identified as 0510 in TMDL.) Flow alteration is 4c (Impairment not caused by a pollutant).
TN06010208 015_0900	BYRD CREEK	Cumberland	32.01	Low Dissolved Oxygen L	Upstream Impoundment	Category 5. (One or more uses impaired.) TMDL needed.
TN06010208 015_0930	ONE MILE CREEK	Cumberland	8.5	Loss of biological integrity due to siltation Escherichia coli NA L	Land Development Collection System Failure	Category 5. (One or more uses impaired.) TMDL needed. EPA approved a siltation TMDL that addresses some of the known pollutants on 7/31/06. (This segment was identified as 0810 in TMDL.)
TN06010208 015_1111	BAGWELL BRANCH	Cumberland	3.32	Flow Alteration NA	Upstream Impoundment	Category 4c. (Impairment not caused by a pollutant.)



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Exceptional TN Waters

Q Go Rows 15 Actions

County = 'Cumberland'

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HUC	Watershed Name	Waterbody	County	Description	Basis for Inclusion	From Lat	To Lat	From Long	To Long	Inclusion Date	Revision Date
05130108	Caney Fork	Deadlimber Branch	Cumberland	Portion in Bledsoe State Forest.	Bledsoe State Forest	35.7705	35.7863	-85.2572	-85.2497		
05130108	Caney Fork	Little Cane Creek	Cumberland	Portion in Bledsoe State Forest.	Bledsoe State Forest	35.7736	35.7786	-85.2326	-85.2243		
05130108	Caney Fork	Oldfield Branch	Cumberland	Portion in Bledsoe State Forest.	Bledsoe State Forest	35.7786	35.7822	-85.2273	-85.2304		
05130108	Caney Fork	Wilkinson Creek	Cumberland	From Caney Fork to Frey Branch	State endangered Cambarus pristinus (crayfish).	35.9877	35.9876	-85.1747	-85.1979		
06010201	Watts Bar, Ft Loudoun, Little River (Upper Tennessee)	Fall Creek	Cumberland	Portion in Ozone Falls SNA.	Ozone Falls State Natural Area.	35.877	35.8798	-84.814	-84.8118		
06010208	Emory	Stillhouse Creek	Cumberland	Portion in Cumberland Mountain State Park.	Cumberland Mountain State Park	35.894	35.8914	-85.0328	-85.0343		
06010208	Emory	Threemile Creek including tributaries	Cumberland	Entirety including tributaries and headwater branches.	Cumberland Mountain State Park, exceptional biological diversity. Evaluation worksheet completed by Brandon Chance, biologist, Cookeville EFO, TDEC on 07-17-2012.	35.9177	35.9105	-84.9902	-85.0461		JUL-17-2012
06010208	Emory	Byrd Creek including unnamed tributaries in Cumberland Mountain State Park	Cumberland	Portion in Cumberland Mountain State Park including unnamed tributaries.	Cumberland Mountain State Park	35.8934	35.9004	-85.0419	-84.9922		APR-29-2009
06010208	Emory	Byrd Lake	Cumberland	Within Cumberland Mountain SP.	Cumberland Mountain SP	35.8948	35.9005	-85.0075	-85.9997		
06010208	Emory	Coon Hollow Branch	Cumberland	Portion in Cumberland Mountain State Park.	Cumberland Mountain State Park	35.897	35.004	-84.9994	-85.004		
06010208	Emory	Mill Branch	Cumberland	From Obed River to headwaters.	Federal endangered Purple Bean.	36.0864	36.0766	-84.8119	-84.8181		
06010208	Emory	Otter Creek	Cumberland	From Obed River to Lick Creek.	Federal and state endangered Purple Bean.	36.0834	36.0525	-84.8322	-84.8568		
06010208	Emory	North Fork Elmore Creek	Cumberland	From (36.1021/-84.9581) to origin.	State endangered White Fringeless orchid	36.1021	36.0973	-84.9581	-84.9808	OCT-25-2007	
06010208	Emory	Lick Creek	Cumberland	From Daddys Creek to (36.8130/-85.0257).	State threatened Tennessee Pondweed	35.8072	35.813	-85.0165	-85.0267		
06010208	Emory	Little Obed River	Cumberland	Approximately 0.3 mile upstream Genesis Road to origin.	State threatened Zigzag Bladdenwort and Brown Bog Sedge.	35.9684	35.9771	-85.0125	-84.9685	NOV-13-2007	APR-23-2009

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Abbreviations

NF = National Forest
NM = National Monument
NMP = National Military Park
NP = National Park
NRA = National Recreation Area
NRRRA = National River and Recreation Area
NW = National Wilderness
NWR = National Wildlife Refuge
ONRW = Outstanding National Resource Water
RM = River Mile
SAA = State Archaeological Area
SHP = State Historic Park
SNA = State National Area
SP = State Park
WA = Wilderness Area
WMA = Wildlife Management Area
WR = Wildlife Refuge



If you have any questions or comments, email our staff at Water.Permits@tn.gov or call at (888) 891-TDEC (8332).





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HUC	06010208
Watershed Name	Emory
Waterbody	Little Obed River
County	Cumberland
Description	Approximately 0.3 mile upstream Genesis Road to origin.
Basis for Inclusion	State threatened Zigzag Bladdenwort and Brown Bog Sedge.
From Lat	35.9684
To Lat	35.9771
From Long	-85.0125
To Long	-84.9985
Inclusion Date	NOV-13-2007
Revision Date	APR-23-2009
Row Id	5785

Abbreviations

- NF = National Forest
- NM = National Monument
- NMP = National Military Park
- NP = National Park
- NRA = National Recreation Area
- NRRA = National River and Recreation Area



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Exceptional TN Waters

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HUC	06010208
Watershed Name	Emory
Waterbody	Byrd Creek including unnamed tributaries in Cumberland Mountain State Park
County	Cumberland
Description	Portion in Cumberland Mountain State Park including unnamed tributaries.
Basis for Inclusion	Cumberland Mountain State Park
From Lat	35.8934
To Lat	35.9094
From Long	-85.0419
To Long	-84.9922
Inclusion Date	
Revision Date	APR-29-2009
Row Id	4104

Abbreviations

- NF = National Forest
- NM = National Monument
- NMP = National Military Park
- NP = National Park
- NRA = National Recreation Area
- NRRA = National River and Recreation Area

- NW = National Wilderness
- NWR = National Wildlife Refuge
- ONRW = Outstanding National Resource Water
- RM = River Mile
- SAA = State Archaeological Area
- SHP = State Historic Park
- SNA = State National Area
- SP = State Park
- WA = Wilderness Area
- WMA = Wildlife Management Area
- WR = Wildlife Refuge



If you have any questions or comments, email our staff at Water.Permits@tn.gov or call at (888) 891-TDEC (8332).

