208 Factsheet regarding Bacteria and Turbidity TMDLs for the Red-Sulphur Subregion Study Area

Watershed: This TMDL Study Area is located in the southcentral part of Oklahoma. The waterbodies and their watersheds addressed in this report are scattered over Atoka, Bryan, Coal, Hughes, Johnston, Murray, Pittsburg, and Pontotoc counties.

Beneficial Uses in This Watershed: According to Oklahoma's 2022 Integrated Report, the designated beneficial uses for Oklahoma streams in the Red-Sulphur Subregion are Aesthetics (AES), Agriculture (AG), Fish & Wildlife Propagation (Warm Water Aquatic Community Subcategory (WWAC)), Fish Consumption (FISH), Primary Body Contact Recreation (PBCR), Public & Private Water Supply (PPWS), and Emergency Water Supply (EWS).

Based on an assessment of water quality monitoring data for the 2022 IR, Oklahoma DEQ has placed the below waterbodies in Category 5 for nonsupport of PBCR or Fish & Wildlife Propagation beneficial uses.

Waterbody ID	Waterbody Name	AES	AG	WWAC	FISH	PBCR	PPWS	EWS
OK410400030010_00	**Clear Boggy Creek**	F	I	N	F	N	I	
OK410400030370_00	**Leader Creek**	I	F	N	X	N		
OK410400030490_00	**Goose Creek**	F	F	I	X	N		
OK410400050270_10	**Muddy Boggy Creek**	F	F	N	F	N	F	
OK410400050410_00	**Boggy Creek, North**	N	N	N	X	N	N	
OK410400060120_00	**Caney Boggy Creek**	F	F	N	X	N	I	
OK410600010140_00	**Caddo Creek**	N	N	N	X	N		
OK410600010300_00	**Mineral Bayou**	F	F	N	X	N		F
OK410600020020_00	**Sandy Creek**	F	F	F	X	N	I	
OK410600020100_00	**Little West Blue Creek**	F	F	F	X	N		

F – Fully supporting information | **N** – Not supporting | **I** – Insufficient | **X** – Not assessed | Source: **DEQ 2022 Integrated Report**

Possible Sources of Impairments: Only bacteria TMDLs were addressed in this report. All TSS TMDLs for turbidity impaired waterbodies were developed in previous (2012 Bacteria and Turbidity TMDLs for the Muddy Boggy Creek Area).

Point Source:

- **OPDES regulated municipal and industrial wastewater treatment facilities:** There are three permitted municipal WWTFs given WLA within the Study Area (Atoka MA, Coalgate PWA, and Stringtown PWA) and five active OPDES industrial point sources that are not considered as a bacteria contributor. This can be found in Table 3-1 of the TMDL report.

- **OPDES regulated stormwater discharges:** DEQ regulates stormwater discharges from

Municipal Separate Storm Sewer Systems (MS4s), industrial sites, and construction sites. The TMDL watersheds do not have any MS4s and stormwater from industrial and construction sites is not considered as a bacteria source.

- **No-Discharge Facilities**: There are five facilities in the Study Area (Table 3-4).
- **Sanitary Sewer Overflows (SSO)**: Between 1992 and 2004, 99 SSO occurrences were reported with amounts ranging from a minimal quantity to 750,000 gallons (Table 3-5).
- **NPDES regulated Animal Feeding Operations (AFOs):** In the Study Area, there are three SFOs.

Nonpoint Sources**:**

- **Wildlife** –Estimated numbers of wild deer are summarized in Table 3-7 of the TMDL report.
- **Farm animals** –Estimated numbers of farm animals are summarized in Table 3-11 of the TMDL report.
- **Pets** –Estimated numbers of pets are summarized in Table 3-9 of the TMDL report.
- **Failing Septic Systems** –Estimated numbers of failing septic systems are summarized in Table 3-14 of the TMDL report.

TMDL Calculation**:**

The TMDL, WLA, LA, and MOS will vary with flow condition, and are calculated at every 5th flow interval percentile. The below tables summarize the TMDL, WLA, LA and MOS loadings at the 50% flow percentile.

Summaries of Bacterial TMDLs

Stream Name	Waterbody ID	Pollutant	TMDL (colonies/day)	WLA $_{WWTF}$ (colonies/day)	WLA$_{_MS4}$ (colonies/day)	WLA$_{_growth}$ (colonies/day)	LA (colonies/day)	MOS (colonies/day)
Clear Boggy Creek	OK410400030010_00	EC	2.17E+11	0.00E+00	0.00E+00	2.17E+10	1.73E+11	2.17E+10
Leader Creek	OK410400030370_00	ENT	2.51E+10	0.00E+00	0.00E+00	2.51E+09	2.01E+10	2.51E+09
Goose Creek	OK410400030490_00	ENT	9.59E+09	0.00E+00	0.00E+00	9.59E+08	7.67E+09	9.59E+08
Muddy Boggy Creek	OK410400050270_10	EC	8.18E+10	4.87E+09	0.00E+00	8.18E+09	6.06E+10	8.18E+09
Boggy Creek, North	OK410400050410_00	ENT	1.13E+10	2.50E+08	0.00E+00	1.13E+09	8.79E+09	1.13E+09
Caney Boggy Creek	OK410400060120_00	ENT	2.60E+10	0.00E+00	0.00E+00	2.60E+09	2.08E+10	2.60E+09
Caddo Creek	OK410600010140_00	ENT	1.08E+10	0.00E+00	0.00E+00	1.08E+09	8.62E+09	1.08E+09
Mineral Bayou	OK410600010300_00	ENT	9.87E+09	0.00E+00	0.00E+00	9.87E+08	7.89E+09	9.87E+08
Sandy Creek	OK410600020020_00	EC	4.08E+10	0.00E+00	0.00E+00	4.08E+09	3.26E+10	4.08E+09
		ENT	1.07E+10	0.00E+00	0.00E+00	1.07E+09	8.54E+09	1.07E+09
Little West Blue Creek	OK410600020100_00	ENT	1.13E+10	0.00E+00	0.00E+00	1.13E+09	9.05E+09	1.13E+09

Each pollutant will need to reduced [Percent Reduction Goal (PRG)] in order for an impaired waterbody to meet water quality standards and its designated beneficial uses:

PRG Needed for Waterbody to meet Water Quality Standards

Waterbody ID	Waterbody Name	Required Reduction Rate (%)	
		Enterococci	*E. coli*
OK410400030010_00	Clear Boggy Creek	-	38.1%
OK410400030370_00	Leader Creek	77.3%	-
OK410400030490_00	Goose Creek	73.9%	-
OK410400050270_10	Muddy Boggy Creek	-	34.4%
OK410400050410_00	Boggy Creek, North	43.7%	-
OK410400060120_00	Caney Boggy Creek	81.2%	-
OK410600010140_00	Caddo Creek	35.4%	-
OK410600010300_00	Mineral Bayou	79.4%	-
OK410600020020_00	Sandy Creek	85.1%	18.5%
OK410600020100_00	Little West Blue Creek	70.1%	-

OPDES-permitted facilities are allocated a daily wasteload calculated as their permitted flow rate multiplied by the in-stream geometric mean water quality criterion for bacterial WLA.

Waterbody ID	Stream Name	Name	OPDES Permit No.	Design Flow (MGD)	Wasteload Allocation ($x10^8$ colonies/day)	
					E. coli	ENT
OK410400050270_10	Muddy Boggy Creek	**Atoka Municipal Authority**	OK0028576	0.8	38.2	-
		Coalgate PWA	OKG580028	0.22	10.5	-
OK410400050410_00	Boggy Creek, North	**Stringtown PWA**	OK0030449	0.2	-	2.5

The Red-Sulphur Subregion TMDL Report can be found on the following DEQ webpage: https://www.deq.ok.gov/water-quality-division/watershed-planning/tmdl/.

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