

Appendix A.

Hydrologic Units, Designated Uses, 2008 TMDLs, and Impairments

Content

A-1	Hydrologic Units and Designated Uses	A-3
A-2	Previous TMDLs.....	A-5
A-3	Impairments.....	A-8
A-4	Development of New TMDLs	A-17
A-4.1	New Bacteria WQS.....	A-17
A-4.2	Finer Scale WAUs.....	A-17
A-4.3	Project Area Expansion.....	A-17
A-4.4	Refined Designated Uses and Additional Impairments.....	A-17
A-4.5	NPDES Permit Changes.....	A-18
A-4.6	New Source Data.....	A-18
A-4.6.1	Point Sources.....	A-18
A-4.6.2	Nonpoint Sources	A-18
A-4.6.3	Current and Historic Data.....	A-18

Tables

Table A-1. Crosswalk of old and new hydrologic units in the Black River watershed (HUC 04110001).....	A-3
Table A-2. Designated uses of waterbodies in the Black River watershed.....	A-4
Table A-3. WWTPs that received WLAs in the 2008 TMDLs.....	A-7
Table A-4. Black River WAUs in Ohio’s 2018 Integrated Report	A-8
Table A-5. Aquatic life use attainment and impairments from Ohio EPA’s 2012 assessment	A-9
Table A-6. Recreation use attainment and impairments from Ohio EPA’s 2012 assessment.....	A-13

Figures

Figure A-1. Map of old WAUs and ALU attainment in the old Black River project area.....	A-5
Figure A-2. Map of old WAUs and recreation use attainment in the old Black River project area.....	A-6

A-1 Hydrologic Units and Designated Uses

Table A-1. Crosswalk of old and new hydrologic units in the Black River watershed (HUC 04110001)

HUC 10/12 (Current)			HUC 11/14 (Previous)		
HUC 12	Name	Area (sq. mi.)	HUC 14	Name	Area (sq. mi.)
Headwaters East Branch Black River (03)			East Branch Black River (headwaters to downstream Coon Creek) (030)		
03 01	East Fork of East Branch Black River	14.2	030 030	East Fork of East Branch Black River	15.1
03 02	Headwaters West Fork East Branch Black River	43.4	030 010	West Fork of East Branch Black River headwaters to near Lodi	28.0
03 03	Coon Creek-East Branch Black River	38.3	030 020	West Fork of East Branch Black River from near Lodi to above East Fork Black River	14.5
East Branch Black River (04)			East Branch Black River (downstream Coon Creek to mouth) (040)		
04 01	Town of Litchfield-East Branch Black River	36.0	040 010	East Branch Black River below Coon Creek to Grafton	74.0
04 02	Salt Creek-East Branch Black River	33.9	040 030	Willow Creek	22.9
04 03	Willow Creek	22.6	040 020	East Branch Black River from Grafton to above West Branch [except Willow Creek]	28.9
04 04	Jackson Ditch-East Branch Black River	33.6	West Branch Black River (020)		
West Branch Black River (05)			020 030	Charlemont Creek	26.0
05 01	Charlemont Creek	26.1	020 010	West Branch Black River headwaters to below Buck Creek	14.6
05 02	Upper West Branch Black River	40.1	020 020	West Branch Black River below Buck Cr. to above Charlemont Creek	25.5
05 03	Wellington Creek	29.6	020 050	Wellington Creek	29.7
05 04	Middle West Branch Black River	25.7	020 040	West Branch Black River below Charlemont Creek to above Wellington Creek	25.6
05 05	Plum Creek	13.8	020 070	Plum Creek	13.6
05 06	Lower West Branch Black River	39.1	020 060	West Branch Black River below Wellington Creek to above Plum Creek	13.6
Black River (06)			020 080	West Branch Black River below Plum Creek to above East Branch	28.7
06 01	French Creek	38.4	Black River (excluding Lake Erie tributaries) (050)		
06 02	Black River	35.3	050 020	French Creek	38.9
06 03	Heider Ditch-Frontal Lake Erie	26.3	050 010	Black River below confluence of East Branch & West Branch to Lake Erie (except French Creek)	35.5
			<i>(not previously included in the Black River watershed)</i>		

Notes

HUC = hydrologic unit code.

HUC-12s in the current HUC-10/12 scheme (left side, sorted by HUC-12) are aligned with the HUC-14s in the previous HUC-11/14 scheme (right side).

Table A-2. Designated uses of waterbodies in the Black River watershed

Waterbody	ALU			Water supply			Recreation	
	SRW	WWH	SSH	PWS	AWS	IWS	PCR	SCR
Brownhelm Creek		X			X	X	X	
Quarry Creek		X			X	X	X	
Beaver Creek		X			X	X	X	
Martin Run		X			X	X	X	
Black River		X	X		X	X	X	
French Creek								
– Gulf Road to mouth		X	X		X	X	X	
– all other segments		X			X	X	X	
Ridgeway Ditch (BR RM 10.18)		X			X	X	X	
East Branch		X			X	X	X	
Willow Creek (EBBR RM 5.56)		X			X	X	X	
Brentwood tributary (aka Alexander Ditch; EBBR BR 5.89)		X			X	X	X	
Salt Creek		X			X	X	X	
<i>unnamed tributary</i> (EBBR RM 22.65)		X			X	X	X	
Crow Creek		X			X	X		X
Center Creek (EBBR RM 28.65)		X			X	X		
Coon Creek		X			X	X	X	
<i>unnamed tributary</i> (EBBR RM 39.06)		X			X	X	X	
<i>unnamed tributary</i> (EBBR RM 41.41)		X			X	X	X	
East Fork		X			X	X	X	
West Fork		X			X	X	X	
Clear Creek		X			X	X	X	
West Branch	X	X			X	X	X	
– RM 14.42	X	X		X ^a	X	X	X	
Kelner Ditch (WBWR RM 8.61)		X			X	X	X	
Plum Creek		X			X	X	X	
Elk Creek		X			X	X	X	
Wellington Creek	X	X			X	X	X	
Charlemont Creek								
– RM 2.97		X		X ^b	X	X	X	
– all other segments		X			X	X	X	
<i>unnamed tributary</i> (Charlemont Creek RM 0.51)		X			X	X	X	
Buck Creek		X			X	X	X	
Powdermaker Ditch		X			X	X	X	
Heider Ditch		X			X	X	X	
Gable Ditch		X			X	X	X	

Source: OAC-3745-1-27

Notes

ALU = aquatic life use; AWS = agricultural water supply; BR = Black River; EBBR = East Branch Black River; IWS = industrial water supply; PCR = primary contact recreation; PWS = public water supply; RM = rivermile; SCR = secondary contact recreation; SRW = state resource water; SSH = seasonal salmonid habitat; WBWR = West Branch Black River; WWH = warmwater habitat. Waterbodies discharging to Lake Erie are left justified. Tributaries are indented.

a. PWS at RM 14.42 at the intake for Oberlin.

b. PWS at RM 2.97 at the intake for Wellington.

A-2 Previous TMDLs

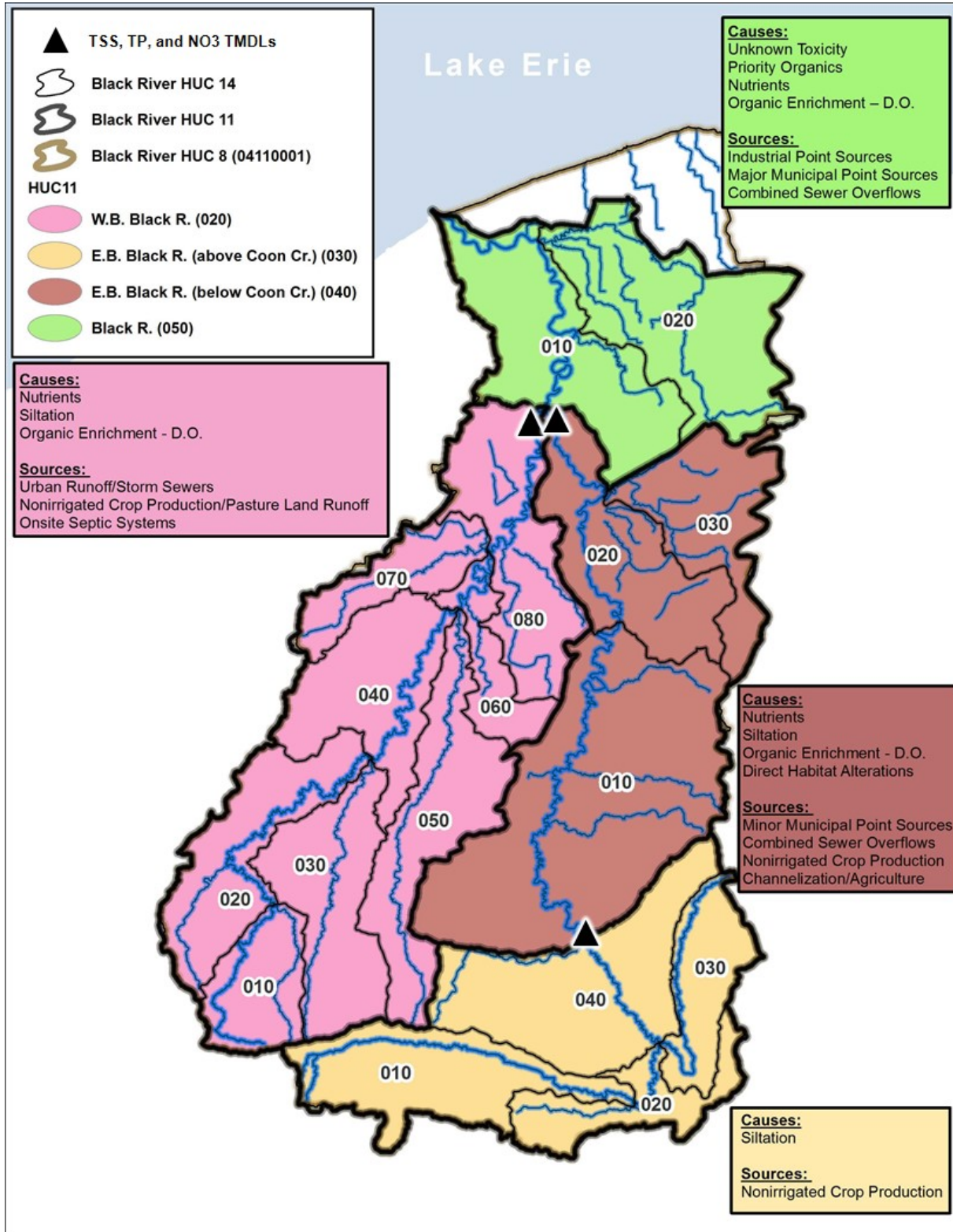


Figure A-1. Map of old WAUs and ALU attainment in the old Black River project area.

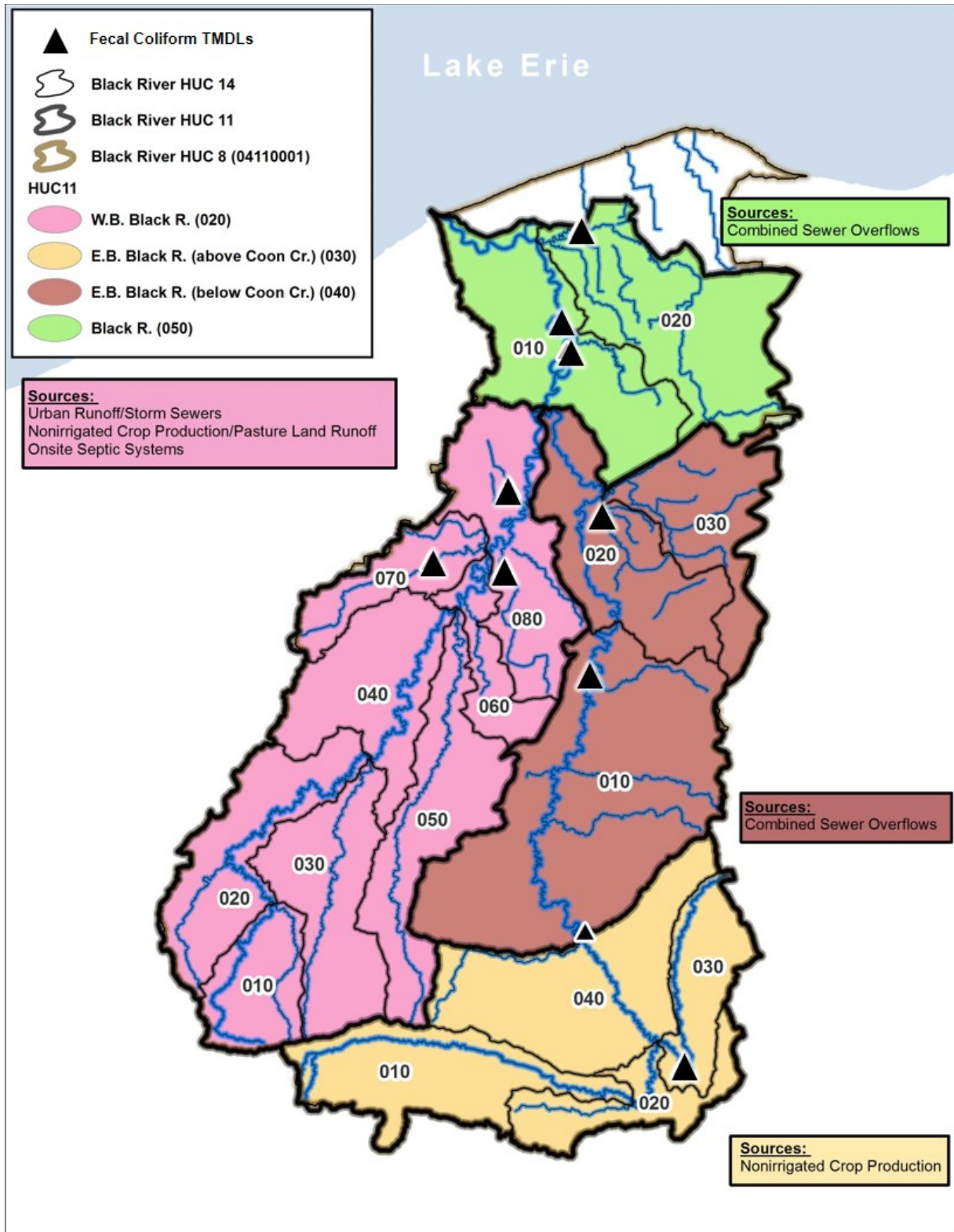


Figure A-2. Map of old WAUs and recreation use attainment in the old Black River project area.

Table A-3. WWTPs that received WLAs in the 2008 TMDLs

Facility name	Federal NPDES ID	Ohio NPDES ID	Nutrient & TSS TMDLs	Fecal coliform TMDL
LaGrange WWTP	OH0046221	3PB00061	X	X
Oberlin WWTP	OH0020427	3PD00025	X	X
Wellington WWTP	OH0026158	3PC00014	X	X
Findlay State Park Campground	OH0037044	3PP00004	X	X
Spencer WWTP	OH0022071	3PA00018	X	X
Lodi WWTP	OH0020991	3PB00027	X	X
Grafton WWTP	OH0025372	3PB00024	X	X
Eaton Estates WWTP	OH0026140	3PH00023	X	X
Brentwood Lake WWTP	OH0026158	3PH00024	X	X
Elyria WWTP	OH0025003	3PD00034		X

Source: Ohio EPA 2008

Note: NPDES = National Pollutant Discharge Elimination System; TMDL = total maximum daily load; TSS = total suspended solids; WLA = wasteload allocation; WWTP = wastewater treatment plant.

A-3 Impairments

Table A-4. Black River WAUs in Ohio's 2018 Integrated Report

WAU (04110001)	WAU name	Aquatic life use	Recreation use
Headwaters East Branch Black River			
03 01	East Fork of East Branch Black River	5d	4Ah
03 02	Headwaters West Fork East Branch Black River	4n	4Ah
03 03	Coon Creek-East Branch Black River	4C	4Ah
Town of Litchfield-East Branch Black River			
04 01	Town of Litchfield-East Branch Black River	1d	4Ah
04 02	Salt Creek-East Branch Black River	4n	4Ah
04 03	Willow Creek	4A	4Ah
04 04	Jackson Ditch-East Branch Black River	4C	4Ah
Charlemont Creek			
05 01	Charlemont Creek	5d	4Ah
05 02	Upper West Branch Black River	4A	4Ah
05 03	Wellington Creek	4A	4Ah
05 04	Middle West Branch Black River	4A	4Ah
05 05	Plum Creek	5d	4Ah
05 06	Lower West Branch Black River	4A	4Ah
French Creek			
06 01	French Creek	5	4Ah
06 02	Black River	5	4Ah
06 03	Heider Ditch-Frontal Lake Erie	5d	4Ah

Source: Appendix L of Ohio's 2018 Integrated Report (Ohio EPA 2018).

Notes

TMDL = total maximum daily load; WAU = watershed assessment unit; WQS = water quality standard.

- 1d Use attaining TMDL complete; new data show that the WAU is attaining WQSS.
- 4A Impaired; TMDL not needed TMDL complete
- 4Ah Impaired; TMDL not needed TMDL complete; data historic (greater than 5 years old)
- 4C Impaired; TMDL not needed Not a pollutant
- 4n Impaired; TMDL not needed Natural causes and sources
- 5 Impaired; TMDL needed
- 5d Impaired; TMDL needed TMDL complete; new data show that the WAU is not attaining WQSS.

Table A-5. Aquatic life use attainment and impairments from Ohio EPA's 2012 assessment

Stream name ^a	Site Name ^b	RM	STORET	DA	Size ^c	ALU ^d	IBI ^e	MIwb ^e	QHEI	ICI ^{e,f}	Attainment	Causes	Sources
Headwaters East Branch Black River (04110001 03)													
East Branch Black River (04110001 03 01)													
East Fork East Branch Black River	N of Lodi at Chippewa Lake Rd.	5.84	B01W12	7.60	H	WWH	38 ^{NS}	--	70.5	G	FULL		
	at Lodi at Lodi City Park	2.67	B01S36	12.90	H	WWH	36 ^{NS}	--	52.5	F*	PARTIAL	Other flow regime alterations	Urban runoff/storm sewers
	75 ft. upstream of . Lodi WWTP	1.73	B01W11	13.90	H	WWH	36 ^{NS}	--	77	F*	PARTIAL	Other flow regime alterations	Urban runoff/storm sewers
	downstream of Lodi WWTP	1.60	B01S35	14.00	H	WWH	52	--	82	F*	PARTIAL	Other flow regime alterations	Urban runoff/storm sewers
	at mouth at Richmond Rd.	0.06	B01W10	15.20	H	WWH	44	--	52.5	F*	PARTIAL	Sedimentation/siltation	Urban runoff/storm sewers
Headwaters West Fork East Branch Black River (04110001 03 02)													
West Fork East Branch Black River	at Twp. Rd. 391	13.97	301931	14.10	H	WWH	24*	--	59	F*	NON	Organic enrichment	Natural sources
												Natural conditions (flow or habitat)	Natural sources
	at Homer at St. Rt. 301	8.90	201609	25.00	W	WWH	28*	7.70 ^{NS}	49	LF*	NON	Organic enrichment	Natural sources
												Natural conditions (flow or habitat)	Natural sources
	W of Lodi, downstream of St. Rt. 421 and railroad	2.30	201607	41.10	W	WWH	41	9.16	83.5	38	FULL		
W of Lodi at Hidden Hollow Park	1.15	201606	41.70	W	WWH	--	--	--	VG	--			
at Sanford Rd.	0.34	B01W13	42.20	W	WWH	39	9.29	71.5	36	FULL			
Clear Creek	SW of Lodi at Pawnee Rd.	1.80	201615	6.20	H	WWH	42	n/a	69.5	MG ^{NS}	FULL		
Coon Creek-East Branch Black River (04110001 03 03)													
East Branch Black River	NW of Lodi at Shaw Rd. (Twp. Rd. 99)	41.45	B01S34	68	W	WWH	42	8.51	63.5	F*	PARTIAL	Sedimentation/siltation	Dam or impoundment
	NW of Lodi, upstream of Old Mill Dam (Twp. Rd. 68)	40.80	302107	72	B	WWH	36 ^{NS}	8.12 ^{NS}	56.5	--	(FULL)		
	NW of Lodi at Old Mill Rd. (Twp. Rd. 68)	40.47	B01K07	72	W	WWH	35 ^{NS}	9.59	67.5	34	FULL		
UT EBBR (RM 41.41)	at Shaw Rd. (Lower)	0.35	302006	1.77	H	CWH+	--	--	60	VG	FULL		
UT EBBR (RM 39.06)	at Spencer Lake Rd. (2013)	3.60	B01K13	3.20	H	CWH+	n/a	--	--	MG	FULL		
	at Spencer Lake Rd.	2.16	Q01K04	4.66	H	CWH+	38 ^{NS}	--	69.3	G	FULL		
Coon Creek	at River Corners Rd.	0.88	301933	10.20	H	WWH	40	--	73	MG ^{NS}	FULL		
East Branch Black River (04110001 04)													
Town of Litchfield-East Branch Black River (04110001 04 01)													
East Branch Black River	W of Spencer Lake at River Corners Rd.	36.80	201591	96	W	WWH	36 ^{NS}	9.07	69.5	46	FULL		
	at Lorain/Medina Co. line (Smith Rd.)	32.42	B01S33	104	W	WWH	--	--	--	38	(FULL)		
UT EBBR (RM 28.65)	at Foster Rd.	1.50	201599	5.30	H	WWH+	38 ^{NS}	--	45.5	MG ^{NS}	FULL		
Salt Creek-East Branch Black River (04110001 04 02)													
East Branch Black River	SE of LaGrange at Short Rd.	24.60	201589	136	W	WWH	37 ^{NS}	9.37	65	G	FULL		
	E of LaGrange at Vermont St. (Co. Rd. 62)	18.94	B01S32	158	W	WWH	38	8.25	65.5	52	FULL		
Crow Creek	NE of Penfield at Vermont Rd.	0.80	201602	3.70	H	WWH	42	--	48	F*	PARTIAL	Natural conditions (flow or habitat)	Natural sources
UT EBBR (RM 22.65)	at Vermont Rd.	0.60	B01K09	6.40	H	WWH+	30*	--	54.5	LF*	NON	Natural conditions (flow or habitat)	Natural sources

Stream name ^a	Site Name ^b	RM	STORET	DA	Size ^c	ALU ^d	IBI ^e	MIwb ^e	QHEI	ICI ^{e,f}	Attainment	Causes	Sources
Salt Creek	at Chamberlain Rd.	0.53	301934	6.73	H	WWH	40	--	58	F*	PARTIAL	Natural conditions (flow or habitat)	Natural sources
Willow Creek (04110001 04 03)													
Willow Creek	upstream of Eaton Estates at Island Rd.	6.59	301935	2.99	H	WWH	26*	--	41	P*	NON	Organic enrichment	On-site treatment systems (septic)
												Nutrient/eutrophication biological indicators	On-site treatment systems (septic)
												Sedimentation/Siltation	Agriculture
												Direct habitat alterations	Channelization
	SE of Elyria at Durkee Rd. (upstream of crossing)	2.85	B01S38	13.30	H	WWH	22*	--	62.5	F*	NON	Organic enrichment	On-site treatment systems (septic)
												Nutrient/eutrophication biological indicators	On-site treatment systems (septic) Municipal point source discharge
												Sedimentation/Siltation	Agriculture
												Direct habitat alterations	Channelization
Jackson Ditch-East Branch Black River (04110001 04 04)													
East Branch Black River	at Grafton at Parsons Rd.	11.34	B01S31	179	W	WWH	45	9.49	81	50	FULL		
	downstream of Grafton WWTP at Indian Hollow Park	10.50	B01S30	180	W	WWH	36 ^{NS}	9.14	68.5	38	FULL		
	S of Elyria, upstream of Brentwood Tributary	6.00	B01S29	185	W	WWH	31*	9.09	51.5	52	PARTIAL	Natural conditions (flow or habitat)	Natural sources
	upstream of Elyria at Fuller Rd.	3.07	B01S11	217	W	WWH	40	9.59	70	34	FULL		
	at Elyria at Washington St.	0.36	B01P07	222	B	WWH	33*	7.62*	64.5	8*	NON	Sedimentation/Siltation	Dam or impoundment
UT EBBR (RM 5.89) (Brentwood tributary)	at Waterfall Dr.	1.00	301936	4.45	H	WWH+	44	--	58	F*	PARTIAL	Natural conditions (flow or habitat)	Natural sources
	at Robson Dr.	0.10	301937	7.19	H	WWH+	46	--	57.5	MG ^{NS}	FULL		
West Branch Black River (04110001 05)													
Charlemont Creek (04110001 05 01)													
Charlemont Creek	at Baker Rd.	8.55	301938	10.80	H	WWH	28*	n/a	65	F*	NON	Nutrient/eutrophication biological indicators	On-site treatment systems (septic)
	W of Wellington at Pitts Rd.	2.20	201634	22.60	W	WWH	32*	6.91*	64.5	G	PARTIAL	Nutrient/eutrophication biological indicators	On-site treatment systems (septic)
	downstream of Wellington at Peck-Wadsworth Rd.	0.39	B01P05	25.80	W	WWH	27*	6.03*	64.5	28*	NON	Nutrient/eutrophication biological indicators	Municipal point source discharge
UT Charlemont Creek (RM 0.51)	upstream of Wellington WWTP	1.00	301940	1.75	H	WWH+	26*	--	70.5	F*	NON	Impairment unknown	Source unknown
	downstream of Wellington WWTP	0.76	301943	1.75	H	WWH+	38 ^{NS}	--	64	P*	NON	Nutrient/eutrophication biological indicators	Municipal point source discharge
Upper West Branch Black River (04110001 05 02)													
West Branch Black River	S of Rochester at Stewart Rd.	48.10	201627	4.30	H	WWH+	--	--	--	LF*	--		
	at Rochester at St. Rt. 511 (upstream of crossing)	41.67	B01S41	16.00	H	WWH+	--	--	--	MG ^{NS}	--	--	--
	S of Brighton at St. Rt. 511 (downstream of crossing)	37.30	201624	28.00	W	WWH+	32*	6.64*	63.5	MG ^{NS}	PARTIAL	Sedimentation/siltation	Agriculture
	NW of Wellington at Pitts Rd.	28.50	B01K21	28.50	W	WWH+	28*	6.73*	64	G	PARTIAL	Sedimentation/siltation	Agriculture
Buck Creek	SE of Rochester at Bursley Rd.	0.95	B01S46	4.80	H	WWH	38 ^{NS}	n/a	47.3	F*	PARTIAL	Natural conditions (flow or habitat)	Natural sources
East Creek	at Stocking Road	0.56	B01W23	5.40	H	n/a	--	--	--	--	--		
Wellington Creek (04110001 05 03)													
	at Bursley Rd.	17.10	201633	5.20	H	WWH	28*	--	57	LF*	NON	Natural conditions (flow or habitat)	Natural sources

Stream name ^a	Site Name ^b	RM	STORET	DA	Size ^c	ALU ^d	IBI ^e	MIwb ^e	QHEI	ICI ^{e,f}	Attainment	Causes	Sources
Wellington Creek	at Wellington at Cemetery Rd.	13.09	B01S43	10.50	H	WWH	26*	--	62.3	LF*	NON	Natural conditions (flow or habitat)	Natural sources
	NE of Wellington at Webster Rd.	8.40	201632	19.70	H	WWH	30*	--	60	MG ^{NS}	PARTIAL	Nutrient/eutrophication biological indicators	On-site treatment systems (septic)
	near mouth at Nickel Plate Rd.	0.60	201630	29.60	W	WWH	33*	7.37*	65	MG ^{NS}	PARTIAL	Nutrient/eutrophication biological indicators	On-site treatment systems (septic)
Middle West Branch Black River (04110001 05 04)													
West Branch Black River	N of Wellington at St. Rt. 58	25.30	B01S40	67	W	WWH+	30*	6.05*	70.3	36	PARTIAL	Sedimentation/siltation	Agriculture
	E of Pittsfield at St. Rt. 303	19.60	201620	80	W	WWH+	29*	6.77*	67.3	42	PARTIAL	Sedimentation/siltation	Agriculture
	at West Rd. (Kipton Nickel Plate Rd.)	16.56	B01W19	83	W	WWH+	27*	6.52*	61.3	34	NON	Sedimentation/siltation Fish passage barrier	Agriculture Dam or impoundment
Plum Creek (04110001 05 05)													
Plum Creek	at Oberlin at Morgan St.	5.57	301944	4.77	H	WWH	24*	n/a	52.5	F*	NON	Sedimentation/siltation	Urban runoff/storm sewers
	upstream of Oberlin WWTP at St. Rt. 511	3.19	B01P03	7.60	H	WWH	34*	n/a	63	F*	NON	Sedimentation/siltation	Urban runoff/storm sewers
	just downstream of Oberlin WWTP	2.80	B01S10	7.90	H	WWH	32*	n/a	66	F*	NON	Sedimentation/siltation	Urban runoff/storm sewers
	E of Oberlin at Oberlin-Elyria Rd.	0.83	B01P02	9.28	H	WWH	38 ^{NS}	n/a	75.5	F*	PARTIAL	Bacterial slimes	Landfills
Lower West Branch Black River (04110001 05 06)													
West Branch Black River	at Metro Parks Equestrian Area	10.60	201619	132	W	WWH	35 ^{NS}	8.02	65.5	42	FULL		
	at Butternut Ridge Rd.	7.68	B01P01	161	W	WWH	32*	7.07*	67.5	40	PARTIAL	Sedimentation/siltation Fish passage barrier	Agriculture Dam or impoundment
	upstream of Elyria at Oberlin-Elyria Rd.	4.18	B01S13	169	W	WWH	35 ^{NS}	8.56	60	32 ^{NS}	FULL		
	at Elyria, upstream of Third St.	1.20	B01K18	172	W	WWH	--	--	80	46	(FULL)		
Elk Creek	at Metro Park property off Parsons Rd.	0.15	301945	7.55	H	WWH+	26*	n/a	61	MG ^{NS}	NON	Nutrient/eutrophication biological indicators Direct habitat alterations	Agriculture Channelization (upstream)
Kelner Ditch	E of Oberlin at Parsons Rd.	3.00	201629	4.40	H	WWH+	30*	n/a	62.5	F*	NON	Nutrient/eutrophication biological indicators	On-site treatment systems (septic), Agriculture
	E of Oberlin at Nickel Plate Diagonal Rd.	1.00	B01W15	9.40	H	WWH+	28*	n/a	67.3	G	PARTIAL	Nutrient/eutrophication biological indicators	On-site treatment systems (septic), Agriculture
Black River (04110001 06)													
French Creek (04110001 06 01)													
French Creek	E of Elyria at Mills Rd.	10.41	B01P19	11.80	H	WWH	38 ^{NS}	n/a	49.5	LF*	PARTIAL	Nutrient/eutrophication biological indicators; Direct habitat alterations	On-site treatment systems (septic) Channelization
	SE of Avon at Riegelsberger Rd.	9.02	B01P18	17.20	H	WWH	32*	n/a	57	LF*	NON	Nutrient/eutrophication biological indicators Direct habitat alterations	On-site treatment systems (septic) Channelization
	at Bridge Point Trail	5.50	301953	25.40	W	WWH	34 ^{NS}	8.02	81.3	34	FULL		
	NE of Lorain at Abbe Rd. (St. Rt. 301)	3.20	B01P32	32.30	W	WWH	30*	6.21*	72.5	36	PARTIAL	Impairment unknown	Source unknown
	near Lorain at E. River Rd.	0.54	B01S14	38.60	W	WWH	35 ^{NS}	8.51	87	38	FULL		
Black River (04110001 06 02)													
Black River	at Elyria at Cascade Park	14.95	501520	396	B	WWH	45	9.34	83	36	FULL		

Stream name ^a	Site Name ^b	RM	STORET	DA	Size ^c	ALU ^d	IBI ^e	MIwb ^e	QHEI	ICI ^{e,f}	Attainment	Causes	Sources
	downstream of Elyria, near Spring Valley Golf Club	11.50	B01S09	398	B	WWH	42	9.51	72.5	36	FULL		
	250 feet upstream of Elyria WWTP	10.70	B01W07	401	B	WWH	41	9.87	81.5	--	(FULL)		
	downstream of Elyria WWTP at Ford Rd.	9.80	501510	412	B	WWH	44	9.41	79.5	26*	Partial	Specific Conductance	Municipal point source discharge
												Nutrient/eutrophication biological indicators	
	at Sheffield at North Ridge Rd.	8.35	B01S07	418	B	WWH	42	10.1	76.5	32 ^{NS}	FULL		
	at East 31st Street	6.20	B01S06	424	B	n/a	--	--	--	--	--		
UT BR (RM 10.18)	at Gulf Rd.	0.68	301954	10.20	H	WWH+	50	n/a	54	G	FULL		
Heider Ditch-Frontal Lake Erie(04110001 06 03)													
Heider Ditch	at Electric Ave.	0.25	301955	7.84	H	WWH+	38 ^{NS}	n/a	54.3	LF*	PARTIAL	Direct habitat alterations	Channel erosion from upstream hydromodifications
Gable Ditch	at Electric Ave.	0.30	301956	1.39	H	WWH+	<u>26*</u>	n/a	55.8	<u>P*</u>	NON	Direct habitat alterations	Channel erosion from upstream hydromodifications
Powdermaker Ditch	at Electric Ave.	0.15	301958	4.25	H	WWH+	32*	n/a	54.5	<u>P*</u>	NON	Direct habitat alterations	Channel erosion from upstream hydromodifications, Loss of riparian habitat

Source: Ohio EPA 2016.

Notes

ALU = aquatic life use; DA = drainage area, in square miles; IBI = Index of Biotic Integrity; ICI = Invertebrate Community Index; MIwb = Modified Index of well-being; QHEI = Qualitative Habitat Evaluation Index; RM = rivermile.

a. Stream name abbreviations: Black River (BR), East Branch Black River (EBBR), rivermile (RM), and unnamed tributary (UT).

b. Site name abbreviations: Avenue (Ave.), east (E), north (N), northeast (NE), northwest (NW), road (Rd.), southeast (SE), state route (St. Rt.), street (St.), township (Twp), and wastewater treatment plant (WWTP).

c. Stream sizes are boating (B), wading (W), and headwaters (H).

d. Aquatic life uses are warmwater habitat (WWH) or not available (n/a). A plus ("+") indicates a recommended ALU.

e. Scores identified with an "NS" indicate non-significant departure from the WQS, while an asterisk (*) indicates that significant departure from WQS. An underline indicates poor or very poor scores. MIwb is not applied (n/a) to headwaters sized streams. A double dash ("--") indicates that samples were not collected.

f. Narrative Invertebrate Community Index Scores are based a qualitative sample of *Ephemeroptera*, *Plecoptera*, and *Tricoptera* taxa richness, number of sensitive taxa, and community composition. The narrative scores in the Black River project area are: very good (VG), good (G), marginally good (MG), fair (f), low-fair (LF), and poor (P).

Table A-6. Recreation use attainment and impairments from Ohio EPA's 2012 assessment

Stream name ^a	Site Name ^b	RM	STORET	DA	PCR class ^c	Geometric mean	Attainment
Headwaters East Branch Black River (04110001 03)							
East Branch Black River (04110001 03 01)							
East Fork East Branch Black River	N of Lodi at Chippewa Lake Rd.	5.84	B01W12	7.60	B	--	--
	at Lodi at Lodi City Park	2.67	B01S36	12.90	B	48	FULL
	75 ft. upstream of Lodi WWTP	1.73	B01W11	13.90	B	--	--
	downstream of Lodi WWTP	1.60	B01S35	14.00	B	--	--
	at mouth at Richman Rd.	0.06	B01W10	15.20	B	369	NON
Headwaters West Fork East Branch Black River (04110001 03 02)							
West Fork East Branch Black River	at Twp. Rd. 391	13.97	301931	14.10	B	179	NON
	at Homer at St. Rt. 301	8.90	201609	25.00	B	415	NON
	W of Lodi, downstream of St. Rt. 421 and railroad	2.30	201607	41.10	B	--	--
	W of Lodi at Hidden Hollow Park	1.15	201606	41.70	B	--	--
	at Sanford Rd.	0.34	B01W13	42.20	B	245	NON
Clear Creek	SW of Lodi at Pawnee Rd.	1.80	201615	6.20	B	164	NON
Coon Creek-East Branch Black River (04110001 03 03)							
East Branch Black River	NW of Lodi at Shaw Rd. (Twp. Rd. 99)	41.45	B01S34	68	B	190	NON
	NW of Lodi, upstream of Old Mill Dam (Twp. Rd. 68)	40.80	302107	72	B	97	FULL
UT EBBR (RM 41.41)	at Shaw Rd. (Lower)	0.35	302006	1.77	B	152	NON
UT EBBR (RM 39.06)	at Spencer Lake Rd. (2013)	3.60	B01K13	3.20	B	--	--
	at Spencer Lake Rd.	2.16	Q01K04	4.66	B	--	--
Coon Creek	at River Corners Rd.	0.88	301933	10.20	B	84	FULL
East Branch Black River (04110001 04)							
Town of Litchfield-East Branch Black River (04110001 04 01)							
East Branch Black River	NW of Lodi at Old Mill Rd. (Twp. Rd. 68)	40.47	B01K07	72	B	--	--
	W of Spencer Lake at River Corners Rd.	36.80	201591	96	A	--	--
	at Lorain/Medina Co. line (Smith Rd.)	32.42	B01S33	104	A	345	NON
UT EBBR (RM 28.65)	at Foster Rd.	1.50	201599	5.30	B	266	NON

Stream name ^a	Site Name ^b	RM	STORET	DA	PCR class ^c	Geometric mean	Attainment
Salt Creek-East Branch Black River (04110001 04 02)							
East Branch Black River	SE of LaGrange at Short Rd.	24.60	201589	136	A	--	--
	E of LaGrange at Vermont St. (Co. Rd. 62)	18.94	B01S32	158	A	365	NON
Crow Creek	NE of Penfield at Vermont Rd.	0.80	201602	3.70	B	340	NON
UT EBBR (RM 22.65)	at Vermont Rd.	0.60	B01K09	6.40	B	261	NON
Salt Creek	at Chamberlain Rd.	0.53	301934	6.73	B	450	NON
Willow Creek (04110001 04 03)							
Willow Creek	upstream of Eaton Estates at Island Rd.	6.59	301935	2.99	B	729	NON
	SE of Elyria at Durkee Rd. (upstream of crossing)	2.85	B01S38	13.30	B	530	NON
Jackson Ditch-East Branch Black River (04110001 04 04)							
East Branch Black River	at Grafton at Parsons Rd.	11.34	B01S31	179	A	--	--
	downstream of Grafton WWTP at Indian Hollow Park	10.50	B01S30	180	A	204	NON
	S of Elyria, upstream of Brentwood Trib.	6.00	B01S29	185	A	333	NON
	upstream of Elyria at Fuller Rd.	3.07	B01S11	217	A	1,022	NON
	at Elyria at Washington St.	0.36	B01P07	222	A	130	NON
UT EBBR (RM 5.89) (Brentwood trib)	at Waterfall Dr.	1.00	301936	4.45	B	--	--
	at Robson Dr.	0.10	301937	7.19	B	249	NON
West Branch Black River (04110001 05)							
Charlemont Creek (04110001 05 01)							
Charlemont Creek	at Baker Rd.	8.55	301938	10.80	B	569	NON
	W of Wellington at Pitts Rd.	2.20	201634	22.60	B	295	NON
	downstream of Wellington at Peck-Wadsworth Rd.	0.39	B01P05	25.80	B	879	NON
UT Charlemont Creek (RM 0.51)	upstream of Wellington WWTP	1.00	301940	1.75	B	--	--
	downstream of Wellington WWTP	0.76	301943	1.75	B	--	--
Upper West Branch Black River (04110001 05 02)							
West Branch Black River	S of Rochester at Stewart Rd.	48.10	201627	4.30	B	--	--
	at Rochester at St. Rt. 511 (upstream of crossing)	41.67	B01S41	16.00	B	72	FULL

Stream name ^a	Site Name ^b	RM	STORET	DA	PCR class ^c	Geometric mean	Attainment
	S of Brighton at St. Rt. 511 (downstream of crossing)	37.30	201624	28.00	B	--	--
	NW of Wellington at Pitts Rd.	28.50	B01K21	28.50	B	92	FULL
Buck Creek	SE of Rochester at Bursley Rd.	0.95	B01S46	4.80	B	245	NON
East Creek	at Stocking Road	0.56	B01W23	5.40	B	32	FULL
Wellington Creek (04110001 05 03)							
Wellington Creek	at Bursley Rd.	17.10	201633	5.20	B	371	NON
	at Wellington at Cemetery Rd.	13.09	B01S43	10.50	B	235	NON
	NE of Wellington at Webster Rd.	8.40	201632	19.70	B	--	--
	near mouth at Nickel Plate Rd.	0.60	201630	29.60	B	447	NON
Middle West Branch Black River (04110001 05 04)							
West Branch Black River	N of Wellington at St. Rt. 58	25.30	B01S40	67	B	--	--
	E of Pittsfield at St. Rt. 303	19.60	201620	80	B	370	NON
	at West Rd. (Kipton Nickel Plate Rd.)	16.56	B01W19	83	A	596	NON
Plum Creek (04110001 05 05)							
Plum Creek	at Oberlin at Morgan St.	5.57	301944	4.77	B	422	NON
	upstream of Oberlin WWTP at St. Rt. 511	3.19	B01P03	7.60	B	815	NON
	just downstream of Oberlin WWTP	2.80	B01S10	7.90	B	--	--
	E of Oberlin at Oberlin-Elyria Rd.	0.83	B01P02	9.28	B	675	NON
Lower West Branch Black River (04110001 05 06)							
West Branch Black River	at Metro Parks Equestrian Area	10.60	201619	132	A	277	NON
	at Butternut Ridge Rd.	7.68	B01P01	161	A	--	--
	upstream of Elyria at Oberlin-Elyria Rd.	4.18	B01S13	169	A	187	NON
	at Elyria, upstream of Third St.	1.20	B01K18	172	A	175	NON
Elk Creek	at Metro Park property off Parsons Rd.	0.15	301945	7.55	B	--	--
Kelner Ditch	E of Oberlin at Parsons Rd.	3.00	201629	4.40	B	--	--
	E of Oberlin at Nickel Plate Diagonal Rd.	1.00	B01W15	9.40	B	510	NON

Stream name ^a	Site Name ^b	RM	STORET	DA	PCR class ^c	Geometric mean	Attainment
Black River (04110001 06)							
French Creek (04110001 06 01)							
French Creek	E of Elyria at Mills Rd.	10.41	B01P19	11.80	B	--	--
	SE of Avon at Riegelsberger Rd.	9.02	B01P18	17.20	B	115	FULL
	at Bridge Point Trail	5.50	301953	25.40	B	--	--
	NE of Lorain at Abbe Rd. (St. Rt. 301)	3.20	B01P32	32.30	B	206	NON
	near Lorain at E. River Rd.	0.54	B01S14	38.60	B	329	NON
Black River (04110001 06 02)							
Black River	at Elyria at Cascade Park	14.95	501520	396	A	285	NON
	downstream of Elyria, near Spring Valley Golf Club	11.50	B01S09	398	A	--	--
	250 ft. upstream of Elyria WWTP	10.70	B01W07	401	A	--	--
	downstream of Elyria WWTP at Ford Rd.	9.80	501510	412	A	527	NON
	at Sheffield at North Ridge Rd.	8.35	B01S07	418	A	--	--
	at East 31st Street	6.20	B01S06	424	A	119	FULL
UT BR (RM 10.18)	at Gulf Rd.	0.68	301954	10.20	B	738	NON
Heider Ditch-Frontal Lake Erie(04110001 06 03)							
Heider Ditch	at Electric Ave.	0.25	301955	7.84	B	1,739	NON
Gable Ditch	at Electric Ave.	0.30	301956	1.39	B	267	NON
Powdermaker Ditch	at Electric Ave.	0.15	301958	4.25	B	2,046	NON

Source: Ohio EPA 2016.

Notes

DA = drainage area, in square miles; PCR = primary contact recreation; RM = rivermile.

a. Stream name abbreviations: Black River (BR), East Branch Black River (EBBR), rivermile (RM), and unnamed tributary (UT).

b. Site name abbreviations: Avenue (Ave.), east (E), north (N), northeast (NE), northwest (NW), road (Rd.), southeast (SE), state route (St. Rt.), street (St.), township (Twp), and wastewater treatment plant (WWTP).

c. In OAC-3745-1-07(4)(b)(i) (effective March 15, 2010), PCR Class A waters are defined as "waters that support, or potentially support, frequent primary contact recreation activities."

In 2010, PCR Class A waters throughout the state were listed in Table 7-16 of OAC-3745-1-07. In OAC-3745-1-07(4)(b)(ii), PCR Class B waters are defined as "waters that support, or potentially support, occasional primary contact recreation activities. All surface waters of the state are designated as Class B primary contact recreation unless otherwise designated as bathing waters, Class A primary contact recreation, Class C primary contact recreation or secondary contact recreation."

d. The seasonal geometric means of *E. coli* bacteria (in counts per 100 milliliters) are displayed. The geometric mean criteria for PCR Class A and B streams are 126 and 161 counts per 100 milliliters, respectively. A double dash ("--") indicates that samples were not collected.

A-4 Development of New TMDLs

A-4.1 New Bacteria WQS

The previous TMDL project (Ohio EPA 2008) evaluated the recreation uses with Ohio's numeric WQS for fecal coliform and *E. coli*¹ that were in effect in 2008; TMDLs were developed using a target of 1,000 fecal coliform counters per 100 milliliter (mL). Ohio promulgated new WQS (effective March 15, 2010) that include (1) only *E. coli* is used to assess attainment of the designated recreation use, (2) the geometric mean period is the entire recreation season, and (3) PCR is divided into classes based upon recreation potential. Ohio again promulgated new WQS (effective January 4, 2016) that include: (1) a 90-day evaluation period for the statistical threshold and geometric mean criteria, and (2) the elimination of the PCR classes. Ohio's *E. coli* WQS are applicable during the recreation season only: May 1 through October 31, as defined in *OAC-3745-1-07(B)(3)*; the current (as of January 4, 2016) WQS are summarized in Section 2 of the main report. In this analysis, while recreation use attainment is based on the 2010 WQS, TMDL targets are based on the 2016 WQS applicable seasonal geometric mean (for bathing water, PCR, or SCR).

A-4.2 Finer Scale WAUs

As Ohio EPA's WAUs are now 12-digit HUCs, causes of sources and impairments are determined at a finer scale (than the previous, larger 11-digit HUCs). To address the impairments at a finer scale, TMDLs were developed at a finer scale (i.e., 12-digit HUs instead of 11-digit HUs). This required TMDLs to be developed at the appropriate targets, which are based, in part, upon stream size. Unlike in 2008, TMDLs were now developed for small tributaries in the Black River watershed with targets set to the headwaters and wading sizes.

As TMDLs were developed at a finer scale, future implementation will also be focused to a finer scale. As necessary, TMDLs and resultant implementation practices were developed for specific streams or segments instead of large 11-digit WAUs.

A-4.3 Project Area Expansion

Heider Ditch-Frontal Lake Erie (HUC 04110001 0603) was added with the Black River watershed to create the Black River project area defined in the current project's contract and scope of work (i.e., it was excluded from the 2008 TMDL project area). Three monitored tributaries in this WAU are in nonattainment of their recreation uses, and TMDLs were developed. In 2012, Ohio EPA sampled storm drains and ditches in the un-sewered Heider Ditch subwatershed to investigate complaints; samples results were typically in the thousands of counts of *E. coli* per 100 mL.

A-4.4 Refined Designated Uses and Additional Impairments

TMDL targets were set as the primary contact recreation 90-day geometric mean criteria. Assuming a ratio of 125:200 for *E. coli* to fecal coliform, the new TMDL targets are more stringent than the 1,000 fecal coliform count per 100 mL TMDL target from the 2008 TMDLs (Ohio EPA 2008).

Ohio EPA (2012) sampled more small streams in 2012 than were sampled in 1997 (Ohio EPA 1999b). Many of these smaller streams are headwaters (<20 square miles) and wading (20-100+ square miles) size. Thus, TMDLs developed for such streams were calculated using headwaters and wading targets

¹ Fecal coliform and *E. coli* are indicator species for pathogens that are harmful to human health.

from the *Associations* document (Ohio EPA 1999a) in lieu of the small river TMDL targets that were used for the 2008 TMDLs (Ohio EPA 2008). For example, the total phosphorus TMDL for the mouth of the WBBR was developed with a small river target of 0.17 mg/L (Ohio EPA 2008), while the new TMDL developed on Charlemont Creek at Baker Road was developed with a headwaters target of 0.08 mg/L.

A-4.5 NPDES Permit Changes

Similar to the change in Ohio's WQS to a single pathogen indicator (*E. coli*), Ohio EPA now requires NPDES permits to have *E. coli* bacteria effluent limits instead of fecal coliform bacteria effluent limits. As Ohio EPA renews NPDES permits, the permit limits are changed from fecal coliform to *E. coli*.

Additionally, Ohio EPA is now incorporating total phosphorus monitoring requirements, and sometimes effluent limits, for sanitary WWTPs. During the development of the 2008 TMDLs, many NPDES permittees did not have total phosphorus effluent limits. This TMDL project recommended new total phosphorus limits for certain NPDES permit renewals, as discussed in Section A-4.6.1.

A-4.6 New Source Data

Additional point source and nonpoint source data are now available that were not available during development of the 2008 TMDLs. These new data provided for a better representation of pollutant sources during the new TMDL development.

A-4.6.1 Point Sources

Nine WWTPs and four regulated MS4s received WLAs in the 2008 nutrient and TSS TMDLs (Ohio EPA 2008). For the new TMDLs, 56 facilities covered by individual NPDES permits received WLAs. Also, 20 regulated MS4s² are covered by the *Small MS4* general NPDES permit and received new WLAs, which is considerably more regulated MS4s than there were in the mid-2000s.

Ten WWTPs and nine regulated MS4s received WLAs in the 2008 fecal coliform TMDLs (Ohio EPA 2008). For the new TMDLs, 36 facilities covered by individual NPDES permits received *E. coli* WLAs. Thus, in addition to revising the WLAs from fecal coliform to *E. coli* for the 10 WWTPs, the additional NPDES permittees also needed *E. coli* WLAs.

Finally, significant changes occurred at various point sources (e.g., expansion of treatment capacity). More recent discharge monitoring report (DMR) data were used to develop new representations of the point sources in the SWAT modeling.

A-4.6.2 Nonpoint Sources

The Ohio Department of Health (ODH) published a 2012 survey of household sewage treatment systems (HSTS) throughout the state (ODH 2013) and raw data were obtained from ODH for Lorain and Medina counties (ODH 2012). Additionally, HSTS data were obtained from the Lorain County General Health District (LCGHD 2015) and Medina County Health Department (MCHD).

A-4.6.3 Current and Historic Data

As required by OAC Chapter 3745-4, only Level 3 Credible data³ were used in the development of loading capacities. Ohio EPA's 2012 data are Level 3 Credible. The 1997 data pre-dated Ohio's data

² The 20 regulated MS4s are the cities of Avon, Avon Lake, Elyria, Lorain, North Olmstead, North Ridgeville, Oberlin, Sheffield Lake, and Westlake; the Lorain County Metropolitan Park District; the Lorain County Stormwater Management District; the Medina County Commissioners; the townships of Amherst, Carlisle, Eaton, Elyria, Grafton, and Sheffield; and the villages of Grafton and Sheffield.

³ Ohio's data credibility rules are posted online at Ohio EPA's *Ohio Credible Data Program* website: <http://www.epa.ohio.gov/dsw/credibledata/index.aspx> (accessed December 17, 2014). To be Level 3 Credible, the following types of data must be collected by Level 3 Qualified Data Collector: benthic macroinvertebrate, chemical water quality, fish community biology, and stream

credibility rules and are now considered historical, as defined in *OAC-3745-4-02(B)*. The 2012 data are assumed to be more representative of current conditions and may show responses to the implementation of the 2008 TMDLs and improvement and restoration activities associated with the Black River AOC.

habitat. For the Black River project, TMDLs were developed with Ohio EPA data and data collected by other government agencies under approved quality assurance/quality control procedures.