WATER QUALITY

BENEFICIAL USE ATTAINMENT

The basin has streams which are classified for all beneficial uses listed by the Missouri Department of Natural Resources (MDNR 1994) (Table 7). The basin also has one Metropolitan No-Discharge Stream, the entire length of Pearson Creek.

Under this designation, no water contaminant except uncontaminated cooling water, permitted stormwater discharges in compliance with permit conditions, and excess wet-weather discharges not interfering with beneficial uses, shall be discharged to Pearson Creek (Moriarty 1994).

In addition to the streams, Sequiota Park Lake (Class L3) has been classified for livestock watering and aquatic life use, and Lake Springfield (Class L3) has been classified for livestock watering, aquatic life, industrial, and boating and canoeing. Table Rock Lake, at the foot of the basin, has use designations for livestock watering, aquatic life, whole body contact recreation, and boating and canoeing.

CHEMICAL QUALITY, CONTAMINATION, AND FISH KILLS

Several streams have had health advisories listed on selected fish species. In 1991, Level I and III health advisories were issued on fishes in the James River Basin.

A level I advisory is issued for a species or area if contaminant levels are elevated but lower than the level of concern. If this advisory is issued, consumption of the fish species should be limited. A level I advisory was issued due to chlordane for all fish species in the James River from Wilson Creek to Piney Creek in 1991.

A level III advisory is issued for a species or area if most of the fish which are tested have contaminant concentrations above levels of concern. Under this advisory, the specified fish should not be eaten. This level of advisory was implemented due to chlordane contamination in paddlefish and their eggs found in the James River and Table Rock Lake. This level was also issued for carp and channel catfish species found in Wilson Creek.

The level I advisory was lifted for all species except paddlefish in 1993. The level III advisories were also lifted for all species in 1993. The level I advisory for paddlefish was lifted in 1995. No advisories are currently in effect.

Chemical water quality data have been collected throughout the basin. Collections have been taken by USGS at gages on the James River and Wilson Creek. Other groups have sampled water quality at various localities in the Crane Creek, Finley Creek, and Flat Creek sub-basins. All samples for each particular site were averaged, and the site high and low values were recorded in Table 8. Parameters considered were water temperature, pH, dissolved oxygen, nitrate, fecal coliform, and fecal strep. In some cases other water quality parameters were tested, and this information may be found in Castillon (1994), Castillon (unpublished), and USGS (1989, 1993, and 1994).

According to the water quality standards set forth by the Missouri Department of Natural Resources and the Clean Water Commission (1996) pH should range from 6-9, fecal coliform levels should not exceed

Table 7. Stream use classifications for the James River Basin.

C or P---Class

Class C---Streams which may cease flow in periods of drought but which maintain permanent pools with aquatic life.

Class P---Streams which maintain permanent flow even in drought periods.

Use designation

IRR----Irrigation

LWW----Livestock and Wildlife Watering

AQL----Protection of Warm Water Aquatic Life and Human Health- Fish Consumption

CLF----Cool Water Fishery

CDF----Cold Water Fishery

WBC----Whole Body Contact Recreation

BTG----Boating and Canoeing

DWS----Drinking Water Supply

STREAM NAME	COUNTY	C	MI	FROM	TO	BENEFICIAL USE
CALTON CREEK	BARRY	C	5.0	MOUTH	25N 26W 16	LWW, AQL
CARNEY CREEK	BARRY	C	4.0	MOUTH	24N 25W 3	LWW, AQL
CRANE CREEK	STONE	P	4.5	MOUTH	25N 23W 8	LWW, AQL, WBC,BTG
CRANE CREEK	STONE	P	13.5	25N 23W 8	LAWRENCE CO LINE	LWW,AQL,CDF,WBC,BTG
DAVIS CREEK	GREENE	P	1.0	MOUTH	29N 20W 12	LWW, AQL
DAVIS CREEK	GREENE	C	3.0	29N 20W 12	29N 20W 2	LWW, AQL
TRIB TO DAVIS CREEK	GREENE	C	1.0	MOUTH	29N 20W 1	LWW, AQL
DAVIS BRANCH	WEBSTER	C	4.0	MOUTH	28N 18W 2	LWW, AQL
DRY CREEK	STONE, BARRY	C	5.0	MOUTH	24N 25W 12	LWW, AQL
FASSNIGHT CREEK	GREENE	C	1.2	29N 22W 30	29N 22W 30	LWW, AQL
FINLEY CREEK	STONE, WEBSTER	P	44.0	MOUTH	28N 16W 19	LWW,AQL,CLF,WBC,BTG
FLAT CREEK	STONE, BARRY	P	39.0	24N 24W 28	23N 27W 9	LWW,AQL,CLF,WBC,BTG
FLAT CREEK	BARRY	P	3.0	23N 27W 9	23N 27W 21	IRR,LWW,AQL,CDF,BTG,WBC
FLAT CREEK	BARRY	P	7.5	23N 27W 21	22N 28W 23	LWW,AQL,CLF,WBC,BTG
TRIB TO FLAT CREEK	BARRY	C	3.0	MOUTH	24N 26W 28	LWW, AQL
TRIB TO FLAT CREEK	BARRY	C	2.0	MOUTH	22N 28W 26	LWW, AQL
FORTUNE BRANCH	BARRY	C	2.5	MOUTH	23N 26W 9	LWW, AQL
GALENA HOLLOW	BARRY	C	2.5	MOUTH	23N 26W 20	LWW, AQL
GALLOWAY CREEK	GREENE	P	3.2	28N 21W 16	28N 21W 4	LWW, AQL
GUNTER CREEK	BARRY	C	6.0	MOUTH	24N 27W 29	LWW, AQL
HORSE CREEK	STONE	C	2.0	MOUTH	25N 23W 26	LWW, AQL
HUNT BRANCH	GREENE	P	0.5	28N 21W 22	28N 21W 22	LWW, AQL
HUNT BRANCH	GREENE	P	1.0	28N 21W 23	28N 21W 24	LWW, AQL
JAMES RIVER	STONE	P	28.0	24N 22W 10	26N 22W 8	IRR,LWW,AQL,CLF,WBC,BTG
JAMES RIVER	STONE, GREENE	P	26.0	26N 22W 8	LAKE SPFLD DAM	IRR,LWW,AQL,CLF,WBC,BTG
JAMES RIVER	GREENE, WEBSTER	P	35.0	HWY 65	29N 17W 24	LWW,AQL,CLF,WBC,BTG,DWS
JENKINS CREEK	BARRY	C	2.5	MOUTH	24N 26W 1	LWW, AQL
JOHNSON HOLLOW	CHRISTIAN	P	1.0	MOUTH	27N 20W 13	LWW, AQL
JORDAN CREEK	GREENE	P	3.8	29N 22W 29	29N 22W 13	LWW, AQL

LITTLE CRANE CREEK	STONE, BARRY	C	6.0	MOUTH	25N 25W 4	LWW, AQL
LITTLE FINLEY CREEK	WEBSTER	P	5.0	MOUTH	28N 17W 5	LWW, AQL
TRIB TO LITTLE FINLEY CREEK	WEBSTER	P	2.0	MOUTH	28N 17W 7	LWW, AQL
LITTLE FLAT CREEK	BARRY	P	3.5	MOUTH	25N 27W 25	LWW,AQL,CDF,WBC,BTG
LITTLE FLAT CREEK	BARRY	C	2.0	25N 27W 25	25N 27W 34	LWW, AQL
MASH HOLLOW	STONE	C	1.0	MOUTH	24N 24W 33	LWW, AQL
PANTHER CREEK	WEBSTER	P	8.5	MOUTH	29N 18W 29	LWW, AQL
PEARSON CREEK	GREENE	P	8.0	MOUTH	29N 20W 5	LWW, AQL, WBC
PEDELO CREEK	CHRISTIAN	P	0.5	MOUTH	27N 19W 7	LWW, AQL
PEDELO CREEK	CHRISTIAN	C	1.0	27N 19W 7	27N 19W 6	LWW, AQL
PINE RUN	STONE	C	4.0	MOUTH	25N 24W 26	LWW, AQL
PINEY CREEK	STONE, BARRY	C	3.0	MOUTH	23N 25W 22	LWW, AQL
PRAIRIE RUN HOLLOW	BARRY	C	1.0	MOUTH	25N 27W 25	LWW, AQL
RAILEY CREEK	STONE	C	6.5	MOUTH	HWY 13	LWW, AQL
ROCKHOUSE CREEK	BARRY	P	2.0	MOUTH	23N 26W 14	LWW, AQL
ROCKHOUSE CREEK	BARRY	C	4.0	23N 26W 14	23N 26W 28	LWW, AQL
TRIB TO ROCKHOUSE CREEK	BARRY	C	2.5	MOUTH	23N 26W 34	LWW, AQL
SAWYER CREEK	GREENE	P	5.0	MOUTH	28N 20W 12	LWW, AQL
SCHULER CREEK	GREENE	P	3.2	28N 23W 26	28N 23W 28	LWW, AQL
SILVER LAKE BRANCH	STONE	C	1.5	MOUTH	26N 23W 13	LWW, AQL
SOUTH CREEK	GREENE	P	3.8	28N 22W 7	29N 22W 34	LWW, AQL
SPRING BRANCH	GREENE	P	1.5	MOUTH	29N 22W 4	LWW, AQL
SPRING CREEK	STONE	P	5.5	MOUTH	26N 24W 12	LWW, AQL, CDF
TRIB TO SPRING CREEK	STONE	P	1.0	MOUTH	26N 23W 18	LWW, AQL
STEWART CREEK	CHRISTIAN	P	1.0	MOUTH	27N 19W 12	LWW, AQL
STEWART CREEK	CHRISTIAN	C	3.0	27N 19W 12	27N 18W 17	LWW, AQL
SUGARCAMP HOLLOW	BARRY	C	2.5	MOUTH	23N 26W 17	LWW, AQL
TERRELL BRANCH	WEBSTER	P	2.0	MOUTH	28N 18W 17	LWW, AQL
TERRELL CREEK	CHRISTIAN	P	1.0	MOUTH	27N 23W 2	LWW, AQL, WBC
TERRELL CREEK	CHRISTIAN	P	4.0	27N 23W 2	27N 23W 5	LWW, AQL
TERRELL CREEK	CHRISTIAN	C	1.0	27N 23W 5	27N 23W 6	LWW, AQL
TERRELL CREEK	CHRISTIAN	P	1.0	27N 23W 6	27N 24W 1	LWW, AQL
TORY CREEK	STONE, CHRISTIAN	P	2.5	MOUTH	26N 22W 27	LWW, AQL, CDF
TURNBO CREEK	WEBSTER	P	6.5	MOUTH	30N 18W 16	LWW, AQL
TURNER CREEK	GREENE	P	4.0	MOUTH	29N 20W 33	LWW, AQL
WARD BRANCH	GREENE	P	3.3	MOUTH	28N 22W 13	LWW, AQL
WILSON CREEK	CHRISTIAN, GREENE	P	18.0	MOUTH	29N 22W 16	LWW, AQL
WILSON CREEK	GREENE	C	1.3	29N 22W 16	29N 22W 10	LWW, AQL
WILSON RUN	STONE	C	2.5	MOUTH	24N 23W 17	LWW, AQL
WOOLLY CREEK	STONE	C	1.5	MOUTH	23N 24W 7	LWW, AQL
WORKMAN BRANCH	GREENE	C	1.0	28N 22W 22	28N 22W 15	LWW, AQL

Source: Missouri Department of Natural Resources (1994).

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DWS----Drinking Water Supply

Table 8. Water quality averages for the James River Basin

Stream Site and Collector: DO = Dissolved Oxygen
F = Finley Creek Collections F coli = Fecal coliform
J = James River Collections F strep = Fecal streptococcus
C = Crane Creek Collections N/A = information not available
Fl = Flat Creek Collections TNTC = colonies too numerous to count
a = Castillon 1994
b = Castillon unpublished
c = Castillon unpublished
d = Berkas and USGS

STREAM SITE	DATE	WATER TEMP(ºF) AVG HI LO	pH AVG HI LO	DO AVG HI LO	NITRATE AVG HI LO	F COLI AVG HI LO	F STREP AVG HI LO
F1a	1993	43.5 44.5 43.6	8.2 8.3 8.0	6.0 6.0 6.0	0.94 1.3 0.59	36 42 30	86.5 120 53
F2a	1993	52 52 52	8.1 8.1 8.1	6.0 6.0 6.0	0.14 0.14 0.14	4 4 4	N/A
F3a	1993	43 46 40	8.0 8.3 8.7	7.0 7.0 7.0	0.57 0.68 0.45	20 31 9	65.5 70 61
F4a	1993	N/A	7.7 7.7 7.7	6.0 6.0 6.0	0.3 0.3 0.3	91 91 91	82 82 82
F5a	1993	45 45 45	7.7 7.7 7.7	5.0 5.0 5.0	0.88 0.88 0.88	76 76 76	112 112 112
F6a	1993	48 48 48	7.3 7.3 7.3	6.0 6.0 6.0	1.5 1.5 1.5	52 52 52	159 159 159
F7a	1993	45 45 45	8.7 8.7 8.7	7.0 7.0 7.0	0.2 0.2 0.2	72 72 72	114 114 114
F8a	1993	42 42 42	8.0 8.0 8.0	N/A	0.55 0.55 0.55	3 3 3	13 13 13
F9a	1993	46 46 46	8.7 8.7 8.7	N/A	0.9 0.9 0.9	8 8 8	84 84 84
F10a	1993	50 50 50	7.5 7.5 7.5	11.6 11.6 11.6	0.31 0.31 0.31	45 45 45	33 33 33
F11a	1993	55 55 55	7.8 7.8 7.8	10.8 10.8 10.8	0.71 0.71 0.71	235 235 235	22 22 22
F12a	1993	47 47 47	7.4 7.4 7.4	5.8 5.8 5.8	0.35 0.35 0.35	10 10 10	10 10 10
F13a	1993	50 50 50	8.2 8.2 8.2	5.8 5.8 5.8	0.40 0.40 0.40	N/A	19 19 19
F14a	1993	46 46 46	7.5 7.5 7.5	5.6 5.6 5.6	0.30 0.30 0.30	N/A	9 9 9
F15a	1993	46 46 46	7.5 7.5 7.5	5.5 5.5 5.5	0.32 0.32 0.32	N/A	24 24 24
F16a	1993	46 46 46	7.75 8.0 7.5	7.0 9.0 5.0	2.82 3.26 2.38	5 7 3	26 50 2
F17a	1993	52 52 52	7.2 7.3 7.1	8.0 10.0 6.0	3.96 4.22 3.7	23 45 1	68.5 114 23
F18a	1993	42 42 42	7.9 8.0 7.8	8.0 9.0 7.0	2.36 2.86 1.85	52 98 6	70 106 34
F19a	1993	43 43 43	7.85 8.0 7.7	8.5 9.0 8.0	2.73 3.17 2.29	24.5 40 9	39.5 42 37
F20a	1993	52 52 52	7.5 7.8 7.2	8.0 8.0 8.0	4.4 4.4 4.4	9 13 5	30 43 17
F21a	1993	44 44 44	8.1 8.2 8.0	8.0 9.0 7.0	2.14 2.42 1.85	48.5 86 11	51.5 53 50
F22a	1993	46 46 46	8.0 8.0 8.0	8.5 9.0 8.0	3.58 4.05 3.12	41 75 7	49 82 16
F23a	1993	N/A	8.0 8.0 8.0	9.0 9.0 9.0	2.77 2.77 2.77	7 7 7	51 51 51

F24a	1993	N/A	8.0 8.0 8.0	4.0 4.0 4.0	4.4 4.4 4.4	3 3 3	N/A
F25a	1993	55.6 55.6 55.6	7.5 7.5 7.5	5.0 5.0 5.0	4.4 4.4 4.4	10 10 10	92 92 92
F26a	1993	48.2 48.2 48.2	7.5 7.5 7.5	4.0 4.0 4.0	4.14 4.14 4.14	11 11 11	3 3 3
F27a	1993	51.4 51.4 51.4	8.0 8.0 8.0	9.0 9.0 9.0	4.18 4.18 4.18	71 71 71	91 91 91
F28a	1993	47.5 47.5 47.5	8.0 8.0 8.0	5.0 5.0 5.0	2.64 2.64 2.64	13 13 13	34 34 34
F29a	1993	53.6 53.6 53.6	8.0 8.0 8.0	6.0 6.0 6.0	4.4 4.4 4.4	2 2 2	13 13 13
F30a	1993	52.2 52.2 52.2	7.5 7.5 7.5	3.0 3.0 3.0	4.4 4.4 4.4	7 7 7	8 8 8
F31a	1993	48.9 48.9 48.9	8.0 8.0 8.0	10.0 10.0 10.0	3.26 3.26 3.26	4 4 4	13 13 13
F32a	1993	46.9 46.9 46.9	7.5 7.5 7.5	8.0 8.0 8.0	2.46 2.46 2.46	114 114 114	97 97 97
F33a	1993	46.8 46.8 46.8	8.0 8.0 8.0	4.0 4.0 4.0	2.55 2.55 2.55	339 339 339	61 61 61
F34a	1992	56.5 72.5 43.7	7.7 8.2 7.2	10.2 13.0 6.75	1.0 3.8 0.33	88.9 34 0	42.9 185 10
F35a	1992	56.3 72.3 43.7	7.57 8.0 7.1	10.2 12.6 6.9	0.55 1.4 0.14	38.4 26 0	43.9 144 2
F36a	1992	56.9 77.1 43.5	7.68 8.0 7.3	10.5 15.4 7.0	0.57 1.8 0.18	65.9 264 0	36.4 201 5
F37a	1992	57.4 74.5 42.8	7.7 8.0 7.3	10.3 15.8 7.2	0.48 1.1 0.09	44.3 192 0	37.6 166 1
F38a	1992	56.8 68.2 44.6	7.4 8.0 7.0	10.1 15.0 6.5	0.72 2.1 0.16	54.7 371 0	41.7 166 10
F39a	1992	56.8 73.9 43.0	7.77 8.0 7.2	10.97 13.0 7.8	0.96 5.8 0.31	36.6 195 0	30.0 108 5
F40a	1992	57.6 73.9 43.0	7.7 8.1 7.4	10.1 13.2 7.2	1.04 3.5 0.35	111.0 422 0	48.1 142 12

Source: Castillon (unpublished), Castillon (1994), Berkas (1982), Berkas (1980), USGS (1986, 1988, 1989, 1991, 1993, and 1994).

Stream Site and Collector: DO = Dissolved Oxygen
F = Finley Creek Collections F coli = Fecal coliform
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C = Crane Creek Collections N/A = information not available
Fl = Flat Creek Collections TNTC = colonies too numerous to count
a = Castillon 1994
b = Castillon unpublished
c = Castillon unpublished
d = Berkas and USGS

Table 8 continued.

STREAM SITE	DATE	WATER TEMP (ºF) AVG HI LO	pH AVG HI LO	DO AVG HI LO	NITRATE AVG HI LO	F COLI AVG HI LO	F STREP AVG HI LO
F41a	1993	57.6 59.9 43.0	7.5 7.5 7.5	11.5 12.0 10.0	N/A	2 5 0	47.0 81 21
F42a	1993	51.6 59.9 43.0	7.9 8.0 7.5	11.75 12.0 11.0	N/A	4.8 9 0	28 73 9
F43a	1993	51.3 59.0 43.0	7.7 8.0 7.5	12.0 13.0 11.0	N/A	1.5 5 0	29.6 56 15
J1d	1984, 87	58.8 77.0 43.7	7.85 8.6 7.2	9.5 12.9 7.0	1.5 5.1 0.6	327.3 2300 2	N/A
J1d	1964-77	60.8 89.6 32.9	7.9 8.3 7.3	8.6 13.3 5.0	1.3 3.2 0	758 N/A N/A	N/A
J1d	1977-79	59.4 82.4 36.5	7.7 8.2 7.5	8.57 12.6 6.0	1.63 6.5 0.5	897 N/A N/A	N/A
J2d	1985, 87 93,94	59.5 77.0 41.9	7.9 8.9 7.2	9.6 19.3 5.4	2.8 5.5 1.4	1489.3 13000 11	1745.2 12000 10
J2d	1964 -77	59.9 84.2 32.9	7.7 8.5 7.2	6.9 13.3 1.0	2.4 7.7 0	1790 N/A N/A	N/A
J2d	1977 -79	58.5 80.6 33.8	7.7 8.3 7.4	8.51 14.6 4.2	3.09 6.5 0.1	3900 N/A N/A	N/A
C1b	1995	54.0 58.8 49.1	8.2 8.5 7.9	9.9 11.3 6.6	5.6 8.8 0.92	52 TNTC 52	13.5 TNTC 8
C2b	1995	52.9 55.2 49.8	7.9 8.0 7.7	11.0 11.9 10.0	0.65 0.81 0.48	114 179 75	37.2 44 37
C3b	1995	54.0 54.0 54.0	8.0 8.0 8.0	9.5 9.5 9.5	N/A	41 41 41	5 5 5
C4b	1995	55.2 57.0 53.6	7.4 7.5 7.3	9.9 10.2 9.7	0.28 0.53 0.04	45.6 98 9	23.3 39 15
C5b	1995	59.4 59.7 59.0	8.15 8.3 8.0	11.3 13.4 9.1	0.52 0.84 0.19	85 120 50	19 24 4
C6b	1995	56.7 56.7 56.7	7.8 7.8 7.8	13.4 13.4 13.4	0.087 0.087 0.08	194 194 194	46 46 46
C7b	1995	60.3 60.3 60.3	8.0 8.0 8.0	10.7 10.7 10.7	0.44 0.44 0.44	TNTC	TNTC
C8b	1995	54.1 54.1 54.1	7.3 7.3 7.3	8.4 8.4 8.4	0.792 0.792 0.79	390 390 390	99 99 99
C9b	1995	60.8 60.8 60.8	8.0 8.0 8.0	7.5 8.0 7.0	0.33 0.352 0.31	222.5 260 185	37.5 40 35
C10b	1995	56.5 68.0 45.0	8.0 8.0 8.0	11.0 14.0 8.0	0.161 0.322 0	58.5 61 56	216 408 24
C11b	1995	59.0 59.0 59.0	8.0 8.0 8.0	8.0 8.0 8.0	0.286 0.286 0.28	290 290 290	7 7 7
C12b	1995	54.5 54.5 54.5	7.5 7.5 7.5	9.0 9.0 9.0	0 0 0	118 118 118	18 18 18
C13b	1995	55.4 55.4 55.4	8.5 8.5 8.5	12.0 12.0 12.0	0 0 0	230 230 230	625 625 625
C14b	1995	55.6 55.9 55.4	6.0 6.0 6.0	8.5 9.0 8.0	5.5 7.04 3.96	48 50 46	112.5 145 80
C15b	1995	45.5 48.9 42.0	6.5 6.5 6.5	10.0 11.0 9.0	3.74 7.04 0.44	154 162 146	64 100 28
C16b	1995	50.4 55.9 44.6	7.5 8.0 7.0	7.0 8.0 6.0	6.6 7.48 5.72	53.5 66 41	22 41 13
C17b	1995	45.0 45.0 45.0	6.5 6.5 6.5	9.0 9.0 9.0	0 0 0	72 72 72	43 43 43
C18b	1995	52.0 52.0 52.0	8.0 8.0 8.0	10.0 10.0 10.0	7.92 7.92 7.92	26 26 26	26 26 26
C19b	1995	55.9 55.9 55.9	7.0 7.0 7.0	5.0 5.0 5.0	N/A	N/A	N/A
C20b	1995	53.6 53.6 53.6	6.0 6.0 6.0	9.0 9.0 9.0	0 0 0	N/A	138 138 138
C21b	1995	54.0 56.3 51.8	6.75 8.0 7.5	12.7 13.2 12.2	2.9 3.4 2.4	221 336 106	587 1020 154

C22b	1995	60.3 55.8 51.4	7.58 7.75 7.5	12.3 14.4 10.4	0.6 5.4 2.2	63 114 33	109.3 170 65
C23b	1995	57.3 59.9 55.9	7.08 7.5 6.5	9.8 10.5 9.3	2.26 3.6 1.4	233 570 39	211 435 17
C24b	1995	57.6 58.3 56.3	7.83 8.0 7.5	10.1 10.5 9.9	4.78 6.16 3.52	149.7 246 96	144.7 349 29
C25b	1995	55.8 56.3 55.4	7.83 8.0 7.5	9.93 10.1 9.8	8.43 9.9 7.04	135 310 22	25.7 58 7
C26b	1995	57.8 59.0 55.6	8.1 8.3 7.7	9.76 10.5 9.4	6.68 9.24 2.0	392.3 1093 35	34.3 79 10
C27b	1995	53.7 57.7 47.8	7.9 7.9 7.9	13.4 14.0 12.2	7.92 11.0 4.84	93.5 TNTC 12	752 2208 10
C28b	1995	52.9 56.5 47.8	7.26 7.4 7.0	11.36 14.0 10.0	8.65 15.84 6.6	594.7 1400 120	1417 4128 21
C29b	1995	50.9 56.8 41.9	7.93 8.0 7.9	13.06 14.0 11.9	3.37 4.84 2.64	369 960 44	344.7 864 46

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J = James River Collections F strep = Fecal streptococcus
C = Crane Creek Collections N/A = information not available
Fl = Flat Creek Collections TNTC = colonies too numerous to count
a = Castillon 1994
b = Castillon unpublished
c = Castillon unpublished
d = Berkas and USGS

Table 8 continued.

STREAM SITE	DATE	WATER TEMP (°F) AVG HI LO	pH AVG HI LO	DO AVG HI LO	NITRATE AVG HI LO	F COLI AVG HI LO	F STREP AVG HI LO
C30b	1995	50.1 56.1 52.5	7.73 7.9 7.6	10.96 14.9 8.0	8.07 9.24 6.16	64 149 0	37.3 85 2
C31b	1995	54.0 54.0 54.0	7.6 7.6 7.6	9.5 9.5 9.5	1.0 1.0 1.0	0 0 0	3 3 3
C32b	1995	54.0 54.0 54.0	7.5 7.5 7.5	9.8 9.8 9.8	1.6 1.6 1.6	72 72 72	43 43 43
C33b	1995	53.0 53.0 53.0	7.5 7.5 7.5	10.0 10.0 10.0	2.2 2.2 2.2	10 10 10	12 12 12
C34b	1995	58.1 58.1 58.1	7.9 7.9 7.9	10.5 10.5 10.5	1.5 1.5 1.5	7 7 7	124 124 124
C35b	1995	58.5 64.0 51.1	7.9 8.2 7.7	12.6 13.4 11.4	1.5 2.8 0.6	98.5 126 71	27.6 59 7
C36b	1995	54.5 55.4 53.6	8.0 8.0 8.0	10.0 10.0 10.0	0.271 0.374 0.44	744 1531 258	111.3 221 49
C37b	1995	56.3 58.1 55.4	8.0 8.0 8.0	9.0 12.0 5.0	0.22 0.264 0.17	400 668 132	81.0 219 7
C38b	1995	55.4 55.4 55.4	8.0 8.0 8.0	10.5 11.0 10.0	0.66 0.968 0.35	196 196 196	34 40 28
Fl1c	1996	48.6 51.6 45.7	7.5 7.5 7.5	11.0 11.0 11.0	12.8 13.2 12.4	0 0 0	18 24 12
Fl2c	1996	55.0 58.2 51.4	7.4 7.5 7.2	10.0 10.0 10.0	22.1 30.8 13.4	0 0 0	66.7 120 44
Fl3c	1996	53.6 55.9 52.0	7.8 8.0 7.3	11.0 11.0 11.0	11.7 17.6 4.4	0.67 2 0	27.3 38 18
Fl4c	1996	58.2 61.5 56.5	7.3 7.3 7.2	10.0 10.0 10.0	12.2 13.2 11.2	2.7 6 0	416 778 54
Fl5c	1996	54.9 58.6 52.0	7.5 7.6 7.5	N/A	14.4 17.6 12.4	0 0 0	10.7 26 2
Fl6c	1996	56.3 57.6 55.6	7.1 7.2 7.1	N/A	12.1 13.2 11.0	0 0 0	17.3 28 8
Fl7c	1996	54.7 56.1 52.5	7.8 7.8 7.7	N/A	9.1 9.4 8.8	2 6 0	46.7 54 38
Fl8c	1996	54.5 56.3 51.4	7.5 7.7 7.3	N/A	7.3 8.8 4.4	0 0 0	32.7 42 18
Fl9c	1996	54.0 55.8 52.0	7.6 7.7 7.5	N/A	9.5 13.2 7.7	5.3 16 0	50.7 60 38
Fl10c	1996	55.3 55.4 55.2	7.9 8.0 7.75	11.4 11.6 11.3	0.8 1.5 0.7	8 8 8	18 24 12
Fl11c	1996	54.7 54.7 54.7	7.75 7.75 7.75	9.78 9.78 9.78	0.97 0.97 0.97	4 4 4	2 2 2
Fl12c	1996	52.3 52.3 52.3	7.75 7.75 7.75	10.2 10.2 10.2	0.35 0.35 0.35	14 14 14	92 92 92
Fl13c	1996	51.7 54.0 49.5	7.5 7.5 7.5	8.6 8.7 8.43	0.59 1.14 0.04	1 2 0	7 8 6
Fl14c	1996	51.1 51.1 51.1	7.5 7.5 7.5	10.63 10.63 10.63	0.26 0.26 0.26	2 2 2	26 26 26
Fl15c	1996	52.3 52.3 52.3	7.5 7.5 7.5	8.02 8.02 8.02	0.26 0.26 0.26	2 2 2	38 38 38

Fl16c	1996	57.8 57.8 57.8	8.0 8.0 8.0	10.38 10.38 10.38	0.44 0.44 0.44	0 0 0	8 8 8
Fl17c	1996	50.63 50.63 50.63	7.5 7.5 7.5	9.9 9.9 9.9	0 0 0	0 0 0	6 6 6
Fl18c	1996	52.9 52.9 52.9	7.5 7.5 7.5	8.96 8.96 8.96	0.35 0.35 0.35	0 0 0	6 6 6
Fl19c	1996	60.8 60.8 60.8	8.0 8.0 8.0	7.82 7.82 7.82	0.01 0.01 0.01	0 0 0	61 61 61
Fl20c	1996	53.6 53.6 53.6	7.5 7.5 7.5	11.04 11.04 11.04	0.02 0.02 0.02	1 1 1	20 20 20
Fl21c	1996	60.8 60.8 60.8	7.5 7.5 7.5	11.63 11.63 11.63	0.02 0.02 0.02	0 0 0	19 19 19
Fl22c	1996	53.0 53.0 53.0	8.0 8.0 8.0	9.08 9.08 9.08	0.18 0.18 0.18	0 0 0	59 59 59
Fl23c	1996	51.8 51.8 51.8	8.0 8.0 8.0	12.02 12.02 12.02	0 0 0	0 0 0	48 48 48
Fl24c	1996	59.0 59.0 59.0	7.1 7.1 7.1	10.0 10.0 10.0	0.47 0.47 0.47	0 0 0	184 184 184
Fl25c	1996	59.0 59.0 59.0	7.4 7.4 7.4	12.0 12.0 12.0	0.26 0.26 0.26	0 0 0	44 44 44
Fl26c	1996	51.8 51.8 51.8	7.6 7.6 7.6	13.0 13.0 13.0	0.26 0.26 0.26	0 0 0	73 73 73
Fl27c	1996	50.9 50.9 50.9	7.4 7.4 7.4	13.0 13.0 13.0	0.04 0.04 0.04	0 0 0	99 99 99
Fl28c	1996	50.0 50.0 50.0	7.8 7.8 7.8	12.0 12.0 12.0	0.09 0.09 0.09	0 0 0	TNTC
Fl29c	1996	50.0 50.0 50.0	7.4 7.4 7.4	12.0 12.0 12.0	0.44 0.44 0.44	0 0 0	TNTC
F130c	1996	50.9 50.9 50.9	7.7 7.7 7.7	12.0 12.0 12.0	0.44 0.44 0.44	0 0 0	9 9 9
F131c	1996	55.8 55.8 55.8	7.6 7.6 7.6	11.0 11.0 11.0	0 0 0	0 0 0	41 41 41
F132c	1996	56.1 56.1 56.1	7.5 7.5 7.5	10.0 10.0 10.0	1.32 1.32 1.32	0 0 0	89 89 89
F133c	1996	57.9 57.9 57.9	8.3 8.3 8.3	11.0 11.0 11.0	0 0 0	0 0 0	24 24 24
F134c	1996	53.1 53.1 53.1	8.0 8.0 8.0	11.0 11.0 11.0	0.22 0.22 0.22	0 0 0	67 67 67
Fl35c	1996	59.5 59.5 59.5	8.3 8.3 8.3	12.0 12.0 12.0	0 0 0	0 0 0	91 91 91
Fl36c	1996	49.9 60.8 41.0	7.5 7.95 6.94	N/A	1.6 1.6 1.6	9.3 20 4	49.7 110 14
Fl37c	1996	50.9 60.8 42.8	8.1 8.25 8.06	N/A	2.2 2.5 1.8	1.3 2 1	3 4 2
Fl38c	1996	55.4 55.4 55.4	7.26 7.26 7.26	N/A	0.39 0.39 0.39	1 1 1	13 13 13
Fl39c	1996	59.0 59.0 59.0	7.31 7.31 7.31	N/A	2.7 2.7 2.7	2 2 2	4 4 4
Fl40c	1996	48.0 48.0 48.0	8.1 8.1 8.1	N/A	3.1 3.1 3.1	36 36 36	1 1 1
Fl41c	1996	45.0 45.0 45.0	8.17 8.17 8.17	N/A	1.4 1.4 1.4	48 48 48	29 29 29

Fl42c	1996	62.6 62.6 62.6	7.89 7.89 7.89	N/A	2.9 2.9 2.9	2 2 2	51 51 51
Fl43c	1996	55.4 55.4 55.4	7.71 7.71 7.71	N/A	3.3 3.3 3.3	16 16 16	8 8 8
Fl44c	1996	60.8 60.8 60.8	7.87 7.87 7.87	N/A	2.9 2.9 2.9	170 170 170	70 70 70

Source: Castillon (unpublished), Castillon (1994), Berkas (1982), Berkas (1980), USGS (1986, 1988, 1989, 1991, 1993, and 1994).

Stream Site and Collector: DO = Dissolved Oxygen
F = Finley Creek Collections F coli = Fecal coliform
J = James River Collections F strep = Fecal streptococcus
C = Crane Creek Collections N/A = information not available
Fl = Flat Creek Collections TNTC = colonies too numerous to count
a = Castillon 1994
b = Castillon unpublished
c = Castillon unpublished
d = Berkas and USGS

1,000 colonies per milliliter per day, temperature for cold water fisheries should not exceed 68 degrees Farenheit, and the temperature for cool water fisheries should not exceed 84 degrees. Nitrate levels of 10 mg/L or less are the standard criteria for drinking water supply. Dissolved oxygen levels for cool and warm water fisheries should be no lower than 5ppm and no lower than 6ppm for cold water fisheries.

Review of the water quality data collected in the basin indicate that pH levels were never reported outside the ranges recommended by the water quality standards. Fecal coliform levels were exceeded on the James River near Wilson Creek and Boaz. Fecal coliform levels were also exceeded in the Crane Creek drainage, on Crane Creek, Spring Creek, and Hayes Spring. Temperatures for cool water fisheries were exceeded once on the James River. Dissolved oxygen levels fell below the standard levels at three locations on Finley Creek. Nitrate levels were exceeded in the Crane Creek and Flat Creek drainages, but these streams are not designated for drinking water supplies.

Fish kills have been investigated throughout the basin since the 1970's. Forty-one fish kills have been investigated since 1980 (Table 9), and of these, 13 were from Jordan Creek, 5 were from Wilson Creek, and 5 from the James River in Greene County. All but 5 fish kill locations were in Greene County. Sewage discharge is the most common problem cited in the investigation of fish kills in this region.

WATER USE

Most of the municipalities in the basin use wells for their municipal water-supply facilities (Table 10). Springfield, however, receives its water-supply from both groundwater sources (outside the basin) and reservoirs.

In 1988 there were two public water-supply surface withdrawals in the basin. One was located on Lake Springfield (28N, 21W, 20). The other was located on the James River at 29N, 21W, 35. In 1994, the James River site was the only surface withdrawal in the basin (MDNR 1994). At present, daily withdrawals at this site average 16.7 million gallons per day.

POINT SOURCE POLLUTION

Point source pollution affects many of the streams in the basin including the James River itself. Sewage treatment facilities in Clever, Crane, Fordland, Rogersville, Seymour, Sparta, Reeds Spring, Nixa, Ozark, Springfield, Galena, Purdy, Washburn, and Exeter discharge effluents to streams. Numerous industries, subdivisions, mobile home parks, and apartment complexes also have permits to discharge into streams. The streams which seem to be the most affected include: Jordan Creek, Wilson Creek, Terrell Branch in Webster County, Finley Creek, and the James River in Christian County and again in the James River arm of Table Rock Lake in Stone County. Most discharges effect less than 0.1 mile of the receiving stream. However, five miles of Wilson Creek are believed to be affected by discharge from the Springfield Southwest Treatment Plant, and about 1 mile of Railey Creek in Stone County is believed to be affected by the Reeds Spring wastewater treatment plant (MDNR 1995a). Concern has been expressed repeatedly over the effects of phosphorus from these sources on the productivity of the lower James River and Table Rock Lake. A list of all the permitted point sources in the basin is included in Table 11a. In addition to the NDPES permits, there are also several permitted stormwater discharges (Table 11b) . To report pollution incidents contact the Department of Natural Resources.

NONPOINT SOURCE POLLUTION

Table 9. Fish kill summary for the James River Basin from 1980- 1995.

DATE	STREAM	COUNTY	NUMBER KILLED	ESTIMATED VALUE	CAUSE/SOURCE
5-13-94	Lake Springfield	Greene	N/A	N/A	parasite
8- 1-94	South Creek	Greene	1,887	$ 258.95	unknown
9- 9-94	James River	Greene	300+	N/A	nitrogen fertilizer
9-13-94	Crane Creek	Stone	N/A	N/A	municipal:sewage
12-10-94	Lake Springfield	Greene	2,000	$ 160.50	unknown
12-13-94	Lake Springfield	Greene	200	N/A	high ammonia
1-22-93	James River	Greene	N/A	N/A	diesel fuel
1-29-93	Flat Creek	Barry	1,436	$ 126.40	unknown
3- 2-93	Jordan Creek	Greene	N/A	N/A	diesel fuel
5-14-93	Galloway Creek	Greene	N/A	N/A	sewage
5-17-93	Jordan Creek	Greene	21,164	$2,151.91	sour milk
10-28-93	Sawyer Creek	Greene	N/A	N/A	cattle manure
2-27-92	Jordan Creek	Greene	N/A	N/A	turkey blood
6-30-92	Wilson Creek/James River	Greene	N/A	N/A	treated sewage effluent without disinfection
7-31-92	Jordan Creek	Greene	N/A	N/A	unused concrete
7-31-92	Jordan Creek	Greene	22,511	$2,241.01	unknown
12-16-92	Ward Branch	Greene	N/A	N/A	raw sewage
2-28-91	Jordan Creek	Greene	N/A	N/A	phosphoric acid
6- 8-91	Schuyler Creek	Greene	4,909	$ 394.91	sewage
6-18-91	South Creek	Greene	184	$ 114.45	unknown
6-20-91	Jordan Creek	Greene	N/A	N/A	elemental mercury
12-12-91	Flat Creek	Barry	N/A	N/A	unknown
1- 8-90	Jordan Creek	Greene	4,162	$ 373.34	industrial
7- 2-89	Pine Run Creek	Stone	35	$ 19.60	petrolem
1-25-88	Jordan Creek	Greene	10,675	$ 800.46	unknown
3- 6-87	Jordan Creek	Greene	3,273	$ 225.08	unknown
9-23-87	Wilson Creek	Greene	N/A	N/A	sewage
10-14-86	Wilson Creek	Greene	5,539	$ 604.65	sewage
3-30-85	Wilson Creek	Greene	N/A	N/A	sewage
1-27-84	Unnamed Trib to Finley Creek	Webster	N/A	N/A	fuel oil

4-10-84	Jordan Creek	Greene	N/A	N/A	sewage
7-16-84	James River	Greene	283	$ 187.43	powerplant effluent
8- 7-84	Ward Branch	Greene	1,048	$ 77.87	sewage
8-11-84	James River	Greene	200	N/A	unknown
8-12-84	Jordan Creek	Greene	19,604	$1,340.41	unknown
8-17-84	James River	Greene	312	$ 129.90	unknown
12-17-84	Jordan Creek	Greene	300	$ 18.00	sewage
3- 1-83	Wilson Creek	Greene	N/A	N/A	sludge
5-18-83	Turner Creek	Greene	2,388	$ 331.36	manure
6- 2-82	Unnamed Trib to South Creek	Greene	N/A	N/A	oil spill
5-16-81	South Creek	Greene	60	N/A	unknown

Source: Missouri Department of Conservation Fish Kill Summary (1996)

Table 10. Municipalities in the James River Basin with wells* for water-supply facilities.**

MUNICIPALITY	COUNTY	LOCATION T R S
Billings	Christian	27N 24W 10
Butterfield	Barry	24N 28W 36
Clever	Christian	27N 23W 20
Crane	Stone	25N 24W 4
Diggins	Webster	29N 18W 25
Exeter	Barry	23N 28N 34
Fordland	Webster	28N 18W 6
Galena	Stone	24N 23W 7
Marshfield	Webster	30N 18W 10
Nixa	Christian	27N 22W 14
Ozark	Christian	27N 21W 26
Purdy	Stone	24N 28W 2
Reeds Spring	Stone	24N 23W 26
Republic	Greene	28N 23W 30
Rogersville	Webster	28N 19W 19
Sparta	Christian	27N 20W 25
Strafford	Greene	29N 20W 4
Washburn	Barry	22N 28W 28

Source: Missouri Department of Natural Resources (1995a).

***Exact locations as well as sites for wells used by subdivisions and trailer parks can be found in MDNR (1995b).**

****Springfield also uses wells for a part of its water supply. These wells are located outside the basin.**

Table 11a. Permitted point sources in the James River Basin.

FACILITY NAME	RECEIVING STREAM	LOCATION T R S)	COUNTY
CASSVILLE WWTF	FLAT CREEK	NE NE 23N 27W 21	BARRY
EXETER WWTF	TRIB TO FLAT CREEK	NE SE 23N 28W 35	BARRY
PRUDY E WWTF	LITTLE FLAT CREEK	SW NE 24N 28W 1	BARRY
WASHBURN WWTF	FLAT CREEK	NE SE 22N 28W 28	BARRY
CEDARVIEW APARTMENTS	TRIB TO JAMES RIVER	NW SE 28N 21W 32	CHRISTIAN
CLEVER WWTF	TRIB TO SPRING CREEK	SW SW 27N 23W 20	CHRISTIAN
DIVERSIFIED PLASTICS	TRIB TO JAMES RIVER	NE NE 27N 22W 2	CHRISTIAN
ENGLISH VILLAGE MHP	TRIB TO JAMES RIVER	SWSENE28N 22W 35	CHRISTIAN
FASCO INDUSTRIES	FINLEY CREEK	NWSESW27N 21W 22	CHRISTIAN
FREMONT HILLS WWTF	TRIB TO JAMES RIVER	SE NW 27N 21W 5	CHRISTIAN
INTERGRATED INGREDIENTS	TRIB TO FINLEY CREEK	NENWSW27N 22W 13	CHRISTIAN
NIXA WWTF	FINLEY CREEK	SW SE 27N 22W 24	CHRISTIAN
OZARK WWTF	FINLEY CREEK	NW NE 27N 21W 28	CHRISTIAN
RIVERDOWNS W SUBDIVISION	TRIB TO JAMES RIVER	NW NW 28N 22W 34	CHRISTIAN
SOUTH OAKS MOBLIE HOME PARK	TRIB TO FINLEY CREEK	SWSENE27N 22W 35	CHRISTIAN
SPARTA WWTF	CARTER HOLLOW	NW SE 27N 20W 26	CHRISTIAN
ASH GROVE CEMENT CO, INC	SEQUIOTA CREEK	NW SE 28N 21W 8	GREENE
BURLINGTON NORTHERN WEST	WILSON CREEK	SE SE 29N 22W 9	GREENE
CONCRETE CO OF SPRINGFIELD	JORDAN CREEK	SW SE 29N 22W 13	GREENE
DAYCO PRODUCTS INC	SOUTH CREEK	W NW 28N 22W 3	GREENE

DRURY HPER GYM AND POOL	N BRANCH JORDAN CR	NW SE 29N 22W 13	GREENE
GE, MOTOR MFG DEPARTMENT	TRIB TO GALLOWAY BR	SE SE 29N 21W 29	GREENE
GEN COUNCIL/ASSEMBLY OF GOD	TRIB TO JORDAN CREEK	NW SE 29N 22W 13	GREENE
HEATHERWOODS STP	JAMES RIVER	NW NE 28N 21W 11	GREENE
HICKORY HILLS COUNTRY CLUB	COOPER CREEK	NW NE 29N 21W 22	GREENE
JAMES VALLEY FARM SUBDIV	JAMES RIVER	SENENE29N 21W 36	GREENE
KRAFT GENERAL FOODS	FASSNIGHT CREEK	SE NW 29N 21W 29	GREENE
MID-AMERICA DAIRYMEN INC	JORDAN CREEK	SW SE 29N 22W 14	GREENE
PAUL MUELLER COMPANY	JORDAN CREEK	SE SE 29N 22W 15	GREENE
PRAIRIE VIEW HEIGHTS SUBDIV	TRIB TO WILSON CREEK	SE NE 28N 22W 17	GREENE
SOUTHWEST REG STOCKYARDS	TRIB TO WILSON CREEK	SW SW 29N 22W 11	GREENE
SPRINGFIELD, BLACKMAN WTP	TRIB TO JAMES RIVER	SW SW 29N 21W 34	GREENE
SPRINGFIELD, JAMES RIVER	LAKE SPRINGFIELD	SW SW 28N 21W 20	GREENE
SPRINGFIELD, JAMES RIVER	JAMES RIVER	NE NE 28N 21W 30	GREENE
SPRINGFIELD READY-MIX CO	JORDAN CREEK	NE NW 29N 22W 23	GREENE
SPRINGFIELD SW WWTP	WILSON CREEK	NE NE 28N 22W 7	GREENE
SPRINGFIELD SOUTHWEST PS	TRIB TO WILSON CREEK	SESWNE28N 23W 12	GREENE
SPRINGFIELD SOUTHWEST PS	TRIB TO WILSON CREEK	SESWNW28N 22W 7	GREENE
SPRINGFIELD SOUTHWEST PS	WILSON CREEK	NWNESW28N 22W 7	GREENE
SWEETHEART CUP COMPANY	TRIB TO JORDAN CREEK	SW NW 29N 21W 17	GREENE
SYNTEX AGRIBUSINESS INC	JORDAN CREEK	NE SW 29N 22W 27	GREENE

TIMBERCREST MOBLE HOME PARK	THOMPSON BRANCH	NWSENE28N 21W 17	GREENE
US MED CENTER FED PRISONERS	SOUTH CREEK	SW SE 29N 22W 34	GREENE
VILLAGE ADD. TO BATTLEFIELD	WILSON CREEK	SE SE 28N 22W 18	GREENE
WILSON CREEK NATL BATTLEFLD	MCELHANEY BRANCH	NE SW 28N 23W 23	GREENE
CRANE WWTP	CRANE CREEK	NW SE 25N 24W 4	STONE
EDGEWATER VILLA RESORT	TABLE ROCK LAKE	SW SE 23N 23W 30	STONE
FLAT CREEK RESORT	TABLE ROCK LAKE	NE SW 24N 24W 27	STONE
GALENA WWTP	PINE RUN	NW SW 24N 23W 6	STONE
HIDDEN VALLEY ESTATES	JAMES RIVER	SW NE 26N 22W 5	STONE
LAKE COUNTRY VILLAGE	TABLE ROCK LAKE	SW NE 23N 24W 11	STONE
PIONEER POINT WWTP	TRIB TO JAMES R ARM	SE NE 23N 24W 36	STONE
REEDS SPRING WWTF	RAILEY CREEK	SW NE 24N 23W 26	STONE
ROCKYTOP MOBILE HOME PARK	TRIB TO RAILEY CREEK	SW SE 24N 23W 35	STONE
RUSTIC GATE MOTOR INN	TRIB TO S AUNTS CR	SW SW 23N 23W 5	STONE
SHADRACK RESORT	TRIB TO TABLE ROCK	SE SE 23N 24W 4	STONE
USCOE, CAPE FAIR PARK	TABLE ROCK LAKE	SE SW 23N 24W 4	STONE
WHITE EAGLE WOODS SUBDIV	ANCE CR/TABLE ROCK	NWSESE23N 23W 30	STONE
FORDLAND WWTP	TERRELL BRANCH	SW NW 28N 18W 5	WEBSTER
MDOC, OZARK CORRECTIONS	TRIB TO FINLEY CREEK	NE SW 28N 18W 2	WEBSTER
ROGERSVILLE WWTF	SAWYER CREEK	NW NE 28N 19W 18	WEBSTER
SEYMOUR INN, INC	TRIB TO FINLEY CREEK	NWNWSW28N 17W 1	WEBSTER

SEYMOUR WWTP	TRIB TO FINLEY CREEK	NW NE 28N 17W 11	WEBSTER

Source: MDNR (1995a).

Table 11b. Permitted stormwater discharges in the James River Basin.

FACILITY NAME	RECEIVING STREAM	LOCATION (T R S)	COUNTY
HUTCHENS, PURDY QUARRY	LITTLE FLAT CREEK	NE NE 25N 27W 34	BARRY
LJ, CHRISTIAN CO STONE	LUCE BR. TERRELL CREEK	NE NE 27N 23W 9	CHRISTIAN
LJ, MCCRACKEN QUARRY	TRIB TO FINLEY CREEK	NW SW 27N 20W 20	CHRISTIAN
LJ, OZARK QUARRY	FARMER'S BRANCH	NW NW 28N 21W 34	CHRISTIAN
SAFTEY KLEEN-SPRINGFIELD	WILSON'S CREEK	NW SW 29N 22W 16	GREENE
SOLID STATE CIRCUITS	TRIB TO WILSON'S CREEK	SE SE 28N 22W 4	GREENE
3M CO, TAPE MANUFACTURING	TRIB TO JORDAN CREEK	SE 29N 21W 16	GREENE
BRANSON CO-COMPOSTING FAC	TRIB TO SOUTH ANCE CREEK	SW SE 23N 23W 11	STONE
LJ, REED'S SPRING	RAILEY CREEK	NE SW 24N 23W 23	STONE
RENFRO'S SANI AND DEMO LDFL	TRIB TO SOUTH ANCE CREEK	W SE 23N 23N 11	STONE
TABLE ROCK ASPHALT #3	TRIB LITTLE AUNTS CREEK	SW SW 23N 23W 22	STONE
HUTCHENS, STEEL PROCESSOR	TRIB TO FINLEY CREEK	NWNWNE28N 17W 2	WEBSTER
WEBSTER CO LANDFILL	TRIB TO JAMES RIVER	NE SW 30N 18W 32	WEBSTER

Source: MDNR (1995a).

There are several potential sources for nonpoint pollution in the watershed. The nonpoint sources include dairy cattle operations, poultry or turkey husbandry, sedimentation from erosion in disturbed watersheds, sludge application from sewage treatment facilities, coal pile runoff from the power plant in southwest Greene County, and some dioxin and volatile organics in the groundwater from Syntex Agribusiness (MDNR 1995a). Seepage from septic systems throughout the basin is another unquantified source of nonpoint pollutants.

Several large dairy cattle farms are a significant source of nonpoint pollution. Poultry barn operations and related land application of wastes are also potential and increasing sources of nonpoint source pollution. In 1988, the MDNR also recognized the Webster County landfill as a potential source of nonpoint pollution in the James River Basin due to leachate discharge into streams and severe soil erosion. Several farming operations have been given site descriptions by the MDNR as potential nonpoint sources of pollution (Table 12).

Table 12. Nonpoint source operations in the James River Basin.

FACILITY NAME	TYPE OF FACILITY	LOCATION T R S	COUNTY
HALL, GARY	POULTRY OR TURKEYS	SE NE 23N 27W 25	BARRY
HUDSON FARMS- H AND H	POULTRY OR TURKEYS	E NE 24N 28W 36	BARRY
HUDSON FARMS-SMITH FARM	POULTRY OR TURKEYS	SE NW 22N 28W 25	BARRY
HUTCHENS, CAROL	POULTRY OR TURKEYS	NE SW 22N 28W 14	BARRY
HUTCHENS, TOM	POULTRY OR TURKEYS	SE SW 25N 27W 24	BARRY
MADISON, BUD	POULTRY OR TURKEYS	NW SE 23N 27W 12	BARRY
MCDONALD, VIRGIL	DAIRY CALVES, MILKING, FEEDING	NE SW 25N 25W 25	BARRY
WILLIAMSON POULTRY	POULTRY OR TURKEYS	NW NE 22N 27W 11	BARRY
BARNHART, PHIL	DAIRY CALVES, MILKING, FEEDING	NW SW 26N 22W 35	CHRISTIAN
H AND H DAIRY	DAIRY CALVES, MILKING, FEEDING	NE SW 26N 20W 6	CHRISTIAN
SCHUPBACH, JAMES	POULTRY OR TURKEYS	SW SW 27N 23W 34	CHRISTIAN
COX-DAVIS DAIRY FARM	DAIRY CALVES, MILKING, FEEDING	SE NE 28N 23W 30	GREENE
DAVIS BROS. DAIRY	DAIRY CALVES, MILKING, FEEDING	NW NW 28N 20W 3	GREENE
DAVIS BROS. DAIRY	DAIRY CALVES, MILKING, FEEDING	W SW 29N 20W 27	GREENE
JACOBSON, ALLEN	DAIRY CALVES, MILKING, FEEDING	SE SW 29N 21W 1	GREENE
METCALF, RAYMOND	DAIRY CALVES, MILKING, FEEDING	SW NE 25N 24W 8	GREENE
SYNTEX AGRIBUSINESS	DIOXIN, VOLATILE ORGANICS	NWSWNE29N 22W 27	GREENE
THOMPSON, ROBERT	DAIRY CALVES, MILKING, FEEDING	NW NE 29N 21W 11	GREENE
HORSE CREEK RANCH	POULTRY OR TURKEYS	S SW 25N 23W 27	STONE
STOCKSTILL, BILLY	DAIRY CALVES, MILKING, FEEDING	NW NE 25N 24W 27	STONE
ANDREATTA, FRANK	DAIRY CALVES, MILKING, FEEDING	NW SW 30N 18W 21	WEBSTER
ATKINSON, JOHN AND DAN	DAIRY CALVES, MILKING, FEEDING	NW SW 29N 19W 21	WEBSTER
RATLIFF, BOB	DAIRY CALVES, MILKING, FEEDING	SW NE 29N 17W 17	WEBSTER

Source: MDNR (1995a).