LAND USE

В.

B.1. HISTORICAL LAND USE

B.1.1. General

Experts at the US Geological Survey pinpoint land-use changes as possible cause for the present maladies of stream systems within the Ozarks. Changes in stream morphology have taken place within the entire Ozarks and the Meramec River basin. Written historic observations of early settlers and explorers do not suggest extensive gravel bars on Ozark streams as seen today. Nevertheless, geologists working in the late 1800s, before significant land use, describe large quantities of gravel in streambanks and beds (Jacobson and Primm 1994). Until 1920, shortleaf pine logging practices created minimal erosional processes; however, Jacobson and Primm believe the combined effects of land clearing, road construction and floods from 1895-1915 to be the beginning of upland disruption that peaked from 1920-60. Stream disturbance may have resulted from several practices in the post-timber boom period (1920-60) such as upland burning, grazing of cut-over-valley-side slopes and open land, and lastly, using marginal land for cultivated crops. Oral-history reports compiled by Jacobson and Primm (1994) reveal "flashier" streams in the period from 1960-93 than the period from 1920-60 due to changes in upland and riparian zone vegetation, resulting in decreased water storage and flow resistance. Jacobson and Primm identify destruction of riparian vegetation from livestock grazing on bottom lands as the most disrupting force on Ozarks stream channels.

B.1.2. Farming

Floodplains are well known as fertile areas, making them desirable for settlement. By the early 1800s, the land was being cleared for crops and the wood used as timber for home construction, fences, and firewood. In pre-settlement times, main-stem riparian zones were up to two miles wide on either side of the river. In upland areas different settings existed due to fires set by Native Americans, which resulted in expansive savannahs and glades that dotted the Meramec River basin.

Within Franklin, Washington, and Jefferson counties the principal agricultural crop production in 1880 was barley, buckwheat, Indian corn, oats, rye, and wheat (Goodspeed 1888). In 1850, Franklin, Crawford, and Washington counties had 42,674, 26,910, and 36,139 acres of improved land, respectively. Total improved acres were on the rise because as noted in Goodspeed, "Malaria is rapidly disappearing before the advance of civilization and improved methods of cultivating and draining the soil." Residents in Franklin County relied heavily on wheat as a money-making crop because the soil was well adapted to its growth. Prior to 1820 in all counties within the Meramec River basin, residents paid little attention to the production of wheat, because people lived on corn bread, wild game, and vegetables. Inhabitants were more attentive to mining than agriculture.

B.1.3. Grazing

As the Timber-boom period (1880-1920; see subsection B.1.6) came to a halt and large commercial interests sought more fertile grounds outside the Ozarks, the inhabitants' livestock grazed the open ranges left in cutover areas. To prevent trees and shrubs from reclaiming the range, the basin residents burned seasonally. Oral-history accounts from residents describe seasonal burning as necessary to

maintain pasture. Some oral-history respondents recall extensive erosion in areas of the Ozarks due to the upland farming and grazing, and gully and sheet erosion were common sites (Jacobson and Primm 1994).

B.1.4. Recreation

In 1940, the Missouri State Planning Board estimated 834,350 persons recreated in the Meramec River basin from May 15 - September 30 (Brown 1945). Fishing, swimming, picnicking, and boating made up 85% of the recreational use. The Missouri State Planning Board calculated that flooding during this peak attendance caused losses of \$1.36 per person per day. Finding a means of controlling these floods has been a concern of the Army Corps of Engineers since the 1930s. Consequently. Meramec Park Lake was advocated as a flood control reservoir as well as a recreational reservoir. The reservoir was never constructed, however, because of public opposition.

B.1.5. *Mining*

The original attraction to the Meramec River region was the lure of precious metals such as gold, copper, and silver. These metals were not found, but the first white settlers did find lead and iron ore (Jackson 1985). Also, highly prized for clean sand and gravel, streams in the Meramec River basin have been mined to provide construction materials.

B.1.5.1. Lead and Iron

The first lead mine was established in 1797 by Moses Austin. The site is now the town of Potosi. Several other lead mines were described by Schoolcraft (1821) in Jefferson and Washington counties (Jacobson and Primm 1994). In 1818, one mine was worked in what is now Jefferson County, Gray's Mine on the Big River. In fact, in Washington County, most lead mines mentioned in Schoolcraft (1821) were on the Big River system.

Today's Maramec Spring Trout Park was once the site of Maramec Iron Works. Thomas James and his business associate, Samuel Massey, both from Ohio, started the Maramec Iron Works in 1826. In 1847, Samuel Massey was forced to sell his interest in the company, and the son of Thomas James assumed management of the works until its closure in 1876. This operation tried hauling iron on the Meramec River, but the numerous trees, snags, and gravel riffles were major obstacles. Although the mining operations opened the Ozark wilderness to settlers, these operations caused instream pollution from tailings. Tailings were a source of sediment and toxic substances that adversely affected aquatic biota. In addition, riparian woodlands were cleared to fuel the smelting furnaces.(*note: Maramec Spring is spelled differently than the river and the watershed).

In Goodspeed's 1888 publication, the author reported iron mining operating within the vicinity of several creek systems between 1860-88. Sligo Iron Furnace was in operation in the Crooked Creek drainage. Near Dry Branch Creek, Booth Bank Iron Mines (Sec 27, T41, R1W) removed 2,000 tons of red hematite. The owners of Moselle Iron Furnace (Sec 14, T42, R1E) mined brown hematite ore from a deposit near Benton Creek in the Upper Meramec River watershed. The iron ore was deposited or banked into various shapes and sizes on or near the surface of the land. Banks of ore were found in isolated locations--there are no veins. As a result, today, many small depressions (pits approximately 3-15 feet deep) can be found in various locations within the Meramec River basin where mining was done.

B.1.5.2. Historic Sand and Gravel Operations

Since the early 1800s, the Meramec River has been recognized and utilized for its sand and gravel resources. Operations included the removal of sand and gravel from quarry and instream locations. Sand and gravel were, and still are, important construction materials. The quality of the sand and gravel varies among river systems, as well as between small and large streams within a system. Geologists found Meramec gravel samples to be clean and abundant. The Ozarks Region produced 20% of the state's sand and gravel during 1913, and during that same year, the Meramec River produced 17% by weight of Missouri's total sand and gravel output (Dake 1918). In 1918, sand and gravel operations on the Meramec River were located at Valley Park, Drake, Sherman, Pacific, and Moselle (Dake 1918). Some of these sites are still active today.

In 1918, sand dredging was a continuous trade, but the freezing of wet sand hindered some methods of sand extraction during the winter. At locations near St. Louis, within-stream mining, common at this time, involved using 15-inch centrifugal dredge pumps to load material from the Meramec River into waiting barges. Other methods included loading by hand into wagons or barges towed by gasoline-powered tugs, and loading by clam-shell dredge. The severity of impacts to the stream would vary with method. Extraction by hand and wagon methods were more appropriate for smaller stream systems and dealers whose products were strictly for local use (Dake 1918).

B.1.6. Logging

The expansive Ozark Plateau had two land-use periods known as the Timber Boom (1880-1920) and the Post-timber Boom (1920-1960) that affected uplands, valley slopes, and valley bottoms. The Post-timber Boom was a time of economic depression and migration out of the Ozarks. Cutover valley slopes during the Timber Boom were converted to pasture and seasonally burned. The Great Depression placed increased pressure on the valley bottoms and uplands for subsistence farming (Jacobson and Primm 1994). From 1880-1920, timber was cut for a variety of uses. Several portable sawmills existed for home use. Because of the limited supply of shortleaf pine, builders used hardwoods for railroad ties, flooring, barrel staves, and fuel. Franklin, Jefferson, Crawford, and Washington counties had predominately hardwood species such as scrub oak, white oak, post oak, and red oak in the uplands and black walnut, hickory, maple, ash, birch, sycamore in bottom lands (Goodspeed 1888). Sources agree that until the railroad reached the Meramec vicinity in 1870, cutting was limited to small operations near river systems (Goodspeed 1888; Jacobson and Primm 1994). Large-scale producers of dairy products and cord wood shipped their goods to St. Louis via the Iron Mountain Railroad. Transport, however, was mainly for producers within the vicinity of the railroad, and it was noted in that, "Wood supply along the immediate line of the Iron Mountain Railroad was being exhausted" (Goodspeed 1888). This notation compares well with the decline in Missouri timber production in 1900 described by Jacobson and Primm (1994).

The Timber Boom apparently had not reached Crawford County in 1888 because the author Thomas Gileson noted the untapped water resources and "... timber that could be made into furniture and land to be cleared for agriculture" (Goodspeed 1888). At this time, many people were migrating to the Ozark area to work in the forest operations and mills. The author wrote that area streams had "... clear water, flowing through rich valleys that can supply water power to run mills" (Goodspeed 1888).

It is doubtful that large log drives like those that took place on the Gasconade and Little Piney rivers in the 1880s ever occurred on the Meramec River. Nonetheless, in many areas of the Ozarks, hardwood railroad ties were cut, and when water was high, transported by river. Because officials were apprehensive about dangers of loose ties and their effects on streambanks, Missouri regulated the size of

drives and method of tie transport (Jacobson and Primm 1994). In the Ozarks, beginning in 1925, a tie producing company stopped river drives on the Black River from April 15 - June 1 because of fish spawning.

B.2. RECENT LAND USE

Some of the same forces affecting the past land-use periods still exist today. Recent land-use practices (1960-present) include greatly reduced intentional burning. Grazing and row cropping has increased in upland areas, and valley bottom lands are still being cleared for pasture and row cropping. Logging operations on valley slopes and uplands are better managed than during the Timber Boom and Post-timber Boom periods, but upland areas and valley slopes still have a slight increase in annual runoff, storm runoff, and upland sediment yield as compared to pre-settlement conditions (Jacobson and Primm 1994).

In general, land-use and land-cover estimates from the NRCS (1995) classify watershed areas as 4.5% cropland, 48% forest, 24% pasture, 1.3% rural transportation, 6.5% urban development, 15.7% water, minor and other land-use categories (Table 4). Within the upper Meramec River watershed, nearly one third of forest land is owned by farmers, corporations, and forest industries, and another one third by the federally owned Mark Twain National Forest, and the remaining one third by other private landowners. Only a small percentage of forest land is owned by the forest industry. In recent years, urban development in the lower Meramec has reduced the size of contiguous forest tracts.

B.2.1. Farming

Based on 1992 broad land-use estimates obtained from the NRCS, the Meramec River basin has 15,500 acres of cultivated cropland and 54,900 acres of uncultivated land (NRCS 1995). According to the Missouri Agricultural Statistics Service (MASS), most of the crop production is hay. Several of the larger counties within the basin do not produce sizable amounts wheat or corn (MASS 1995). Because of this low cash crop production, use of herbicides such as 2,4-D and Atrazine is generally low.

Crawford County Farm Information

St. Louis County Farm Information

Phelps County Farm Information

Washington County Farm Information

Dent County Farm Information

Jefferson County Farm Information

Farmers maintain approximately 375,100 acres of pasture for cattle, horses, and sheep (NRCS 1995). It is possible that more farmers will be converting land to pasture while cattle prices remain high. Cattle prices, however, have fallen from 1994 to 1995, and in all counties within the basin, total numbers of cattle produced fell from 1994 to 1995 (MASS 1995). Of the major counties within the basin, Franklin County produced the most cattle with Dent, Phelps, and Crawford counties close behind.

Hog production fell in all counties from 1993 to 1994 (MASS 1995). Franklin County had 63,000 hogs in 1992, 59,000 hogs in 1993, and 56,000 in 1995. Fortunately, no large-scale combined hog feeding

operations exist within the Meramec River basin. Nevertheless, hogs in open fields create areas that are devoid of vegetation and possess large gullies occur adjacent to some streams reaches in the basin.

B.2.2. Grazing

Jacobson and Primm (1994) demonstrate a trend in the rural Ozarks toward increased populations of cattle and increased grazing density. Increased grazing density translates into greater populations of cattle per unit area. County land-use information from the Missouri Agricultural Statistics Service supports this trend (Figure 3). If this trend continues, stream-channel disturbance, caused by increased runoff and sediment supply has the potential to increase. From 1960-93, populations of cattle have increased yet total improved land in farms has decreased. Cursory observation of streams shows that cattle are noticeably impacting stream water quality.

B.2.3. Recreation

Fifteen percent of the Ozarks has been purchased (US Bureau of the Census 1990) by State and Federal agencies for recreation and timber production. Recreation represents a major land use within the Meramec River basin on public and private land. Significant impacts to streams due to recreational use have not been documented. Based on a survey of the upper and lower Meramec River, the river has more use (hours per acre) than any stream in Missouri (Fleener 1988). In a telephone survey to estimate angler effort and success in Missouri waters, the Meramec River was among the highest in days fished in three of the six years listed (Table 5).

A survey conducted from 1978-79 on a 74-mile segment of the upper Meramec River found camping, floating, swimming, and picnicking accounting for 84% of all hours spent in the area and 75% of all visits (Fleener 1988). All types of fishing made up about 10% of all visits. In the 117-mile lower segment of the Meramec River, pole-and-line fishing was popular, making up 15% of all visits to the area. According to the survey, canoeing is a very popular outdoor activity, especially on the Huzzah and Courtois creeks. The gradient and the water clarity of these streams seem to attract many outdoor enthusiasts.

B.2.4. Mining

Mining for lead, barite, iron, and sand and gravel within the upper portion of the Meramec River have the potential to adversely affect streams. Nevertheless, mining is a major industry within the basin and employs several thousand people. Recently, land restoration mining technology has been funded by the mining industry. Stricter regulation, direct taxation of mineral production, and customer awareness have also fueled water quality monitoring and waste management systems.

B.2.4.1. Lead

Doe Run Mining Company's Viburnum 35 Lead Mine (NW NE Sec 11, T34, R2), which is within the Huzzah Creek and Courtois Creek drainages, has potential to affect aquatic biota within a tributary to Crooked Creek and Indian Creek tributaries (Table 19; Water Quality Section, D.6. Non-point Source Pollution). Although the tailings ponds have not been a problem, proper maintenance and observation are recommended to assure that the risk posed to downstream aquatic habitat and biota is held to a minimum. In addition, the Viburnum Mine operation manages a smelting operation within the vicinity of Crooked Creek.

B.2.4.2. Barite

Parole, Howell, Palmer, Politte, and Joe Smith are mine sites where barite (barium sulfate) has been extracted from the land surface (Water Quality Section, D.6. Non-point Source Pollution). Parole Mine has water-covered tailings and all others are partially water covered. Although tailings dam failures are infrequent, barite mining, centered in Washington County, has in the past buried creeks in red mud, destroying aquatic life (MDNR 1995). Barite tailings are less damaging to the aquatic environment than lead tailings because of the small-sized particles (MDNR 1995). The DNR's Dam Safety Program is responsible for monitoring tailings ponds for structural integrity.

B.2.4.3. Iron

Historically, iron mining was an important industry within the basin, and several old abandoned mining operations still impact the stream biota. Today, of the remaining two major mining operations, Pea Ridge Iron Mines and Hobo Iron Mines, only Hobo Mines has been reported to cause stream water quality problems (Water Quality Section, D.6. Non-point Source Pollution, MDNR 1995). The tailings pond are monitored by the DNR to prevent potential contamination of streams.

These mines both have tailings ponds classified by USFWS National Wetland Inventory (NWI). In the NWI map classification, Pea Ridge Iron Mines has a series of 12 polygonal wetlands; only one polygonal wetland has the spoils designation, and the remaining polygons give no indication that mine tailings are present. Hobo Mines tailings are not identified as mining spoils but as a single pond. Vegetation found on these tailings ponds is characteristic of the cattail wetland. Cattail wetland conditions reduce the tailings waste to a less reactive waste.

B.2.4.4. Sand and Gravel

The Army Corps of Engineers (COE) through Section 404 of the Clean Water Act and the Department of Natural Resources (DNR), through its Land Reclamation Program, issue permits for the mining of stream sand and gravel. Although the regulation of sand and gravel mining is in a state of flux, guidelines developed by state and federal agencies with input from the regulated community and used by the COE allow mining of gravel bars and floodplains.

The use of GIS allowed the MDC's East Central Region to store, search, and display mined stream sites, landowners, type of permit holders, and permit conditions. Seventy-one permitted sites on 11 different streams in seven counties were mapped (Figure 4). Thirty-two sites were permitted under the Missouri General Permit (GP-34M) from January 1996 to August 1996. Brazil Creek, with a relatively small watershed area, had 20 gravel mining sites, making it the most heavily mined watershed (Blanc 1997).

B.2.5. Logging

Forests in the Meramec Basin are dominated by oak species (Leatherberry 1990; Hansen 1991), but accurate percentages of upland forest types within the basin are difficult to obtain. Black-scarlet oak and white oak are the dominant upland forest types within the basin. Succession is toward white oak as climax species. White oak and red oak account for approximately 60-75% of growing stock volume on timberland (Leatherberry 1990; Hansen 1991). Softwood species such as shortleaf pine account for between 10-15% of the growing stock volume. Roughly one half of the red and white oak species' growing stock is logged annually. Of all stands within the basin, the stand size-classes (stocked forest land based on the size of the tree on the area) on tracts of land are roughly 45% saw timber, 30% pole

timber, and 18-25% seedling and sapling timber (Leatherberry 1990; Hansen 1991).

B.3. NATURAL RESOURCES SOIL CONSERVATION PROJECTS

The Meramec River basin has no PL-566 projects (Small Watershed Projects) and no SALT (Special Area Land Treatment) projects (MDNR 1995; Clarence Buel, NRCS, personal communication); however, several PL-566 applications within the basin are filed with NRCS (Clarence Buel, personal communication). Thirty years ago, Congress enacted the Watershed Protection and Flood Prevention Act (Public Law 83-566). This act provides federal dollars to help plan and construct projects in small watersheds less than 250,000 acres. The program has evolved from the initial focus on flood control and erosion to water quality and wetlands, among others.

B.4. PUBLIC AREAS

The de-authorization of the Meramec Park Lake, through Public Law 97-128, allowed the state of Missouri to acquire a sizable amount of acreage. In 1969, the Army Corps of Engineers began a slow purchase of land along the Meramec River. By 1977, the federal government had purchased 25,697 acres of land. The de-authorization bill, signed into law by President Ronald Reagan in December 1981, contained several important provisions besides the de-authorization of the reservoir: 1) The state of Missouri was to receive deed to 3,382 to 5,122 acres of land, unless the state legislature disapproved; 2) Within ninety days the Corps was to appraise the remaining acreage and offer it back for sale to the original landowners first, and then at public auction; 3) The state of Missouri was deeded a perpetual 600-foot easement on privately-owned land bordering the Meramec River, Huzzah Creek, and Courtois Creek (Ruddy 1992). This easement was to provide a 600-foot natural, cultural, and visual corridor, starting at the center of the river. The legislature prohibited construction of new buildings, tree cutting, and trash deposition in the 600-foot corridor (Ruddy 1992). Presently, no state agency is designated to carry out the terms of the easement (Shorr 1995).

The state of Missouri acquired 5,122 acres for state parks and conservation areas (Figure 5-source Franklin County Tribune Map), after the Missouri House of Representatives defeated a bill denying the state's right to the land (Ruddy 1992). Al Nilges, who represented a district near the Bourbon area, introduced the bill. After the state accepted title to the 5,122 acres, it offered 1,732 acres for resale to past owners or for a public auction. Its sale would help pay the cost of maintaining the 3,390 acres of land. The final plan for deposition of the lands allowed the state to add Onondaga Cave State Park, Campbell Bridge Access, Vilander Bluff, Blue Springs Creek, Sappington Bridge Access, and additional land to the Meramec Conservation Area (Figure 5- Franklin County Tribune Map).

The Meramec River basin has 55,257.6 acres of state-owned land (Table 6). Twenty-two MDC Conservation Areas, 17 MDC River Accesses and several other tracts of land provide opportunities for recreational activities (Figure 6). Although not considered public land, Maramec Spring Trout Park, owned by the James Foundation, is a 1,534.8-acre area offering year-round rainbow trout fishing. (*note: Maramec Spring is spelled differently than the river and the watershed).

B.4.1. Stream Frontage

Stream frontage miles for MDC-owned lands were provided by area managers (Table 6). An estimated total of 46.5 miles of land along streams are found within MDC-owned lands.

B.4.2. Stream Access

The Missouri Department of Conservation (MDC) maintains 17 public stream accesses within the Meramec River basin (Table 6). Nearly all of the accesses are on the main stem of the Meramec River. MDC has a long-standing program to acquire strategically located stream frontage tracts from willing sellers at market values. The Conservation Commission makes annual payments to compensate local governments and schools for lost tax revenues at assessment levels current when acquired. The objective of the program is to provide stream access at reasonable floating or motoring distances. This objective for the Meramec River basin has been largely achieved, although a few stream segments could use frontage sites, and two prior acquisitions remain undeveloped as accesses (McPherson 1994). Because of the combination of MDC, MDNR, and USFS lands, the major streams within the Meramec River basin are very accessible to the public.

B.4.3. Flood Buy Out Lands

The severity of the 1993 floods led taxpayers and government agencies to reassess the repeated payment of federal money for disaster relief. From 1995-96, a large amount of federal money from the Federal Emergency Management Agency (FEMA) in the form of grants was available to local governments to buy out damaged structures and remove them from the floodplain. These areas will become greenways for resource conservation or for recreation.

B.5. CORPS OF ENGINEERS 404 JURISDICTION

The entire Meramec River basin is under the jurisdiction of the St. Louis District of the U.S. Army Corps of Engineers. Section 404 regulation permitting, inquiries, and violation reports should be directed to the St. Louis Office: 1222 Spruce Street, St. Louis, MO 63103-2833 or call (314) 331-8575.

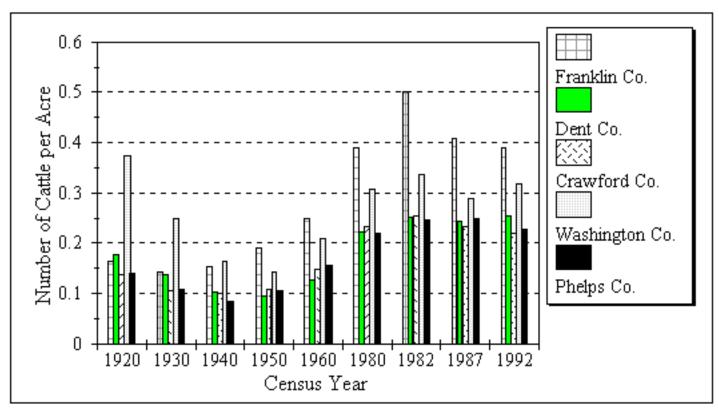
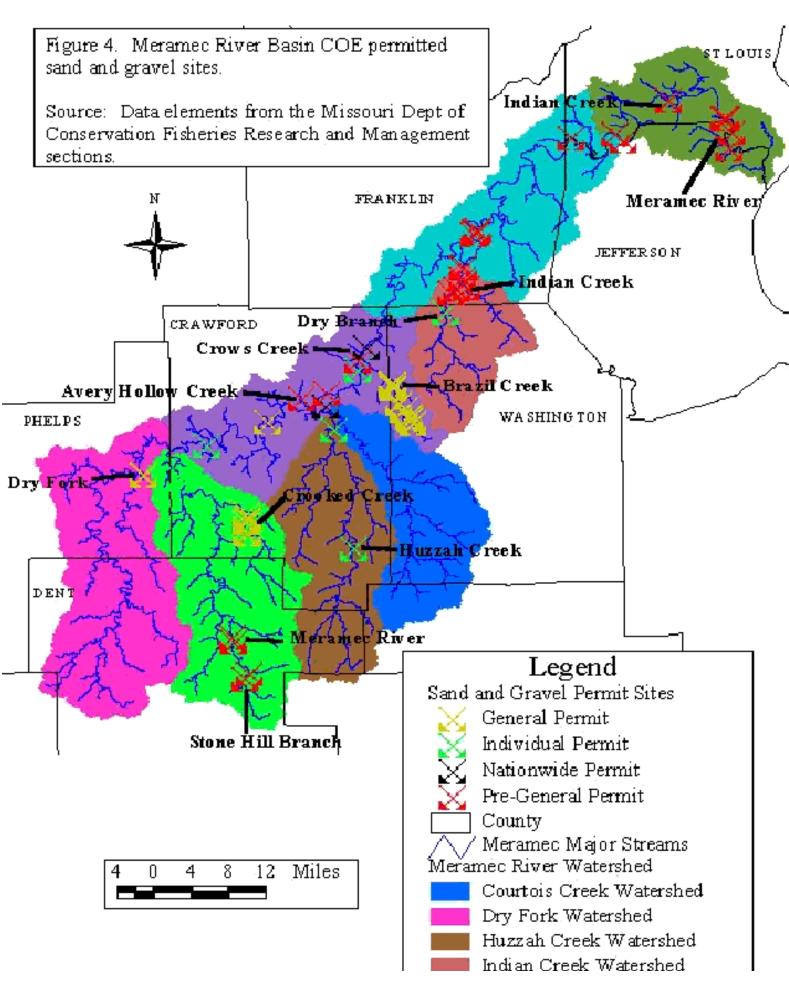


Figure 3. Cattle population per pastured acre in selected counties of the Meramec River basin (MASS 1995).



Low Mid Meramec Watershed
Lower Meramec Watershed
Up Mid Meramec Watershed
Upper Meramec Watershed

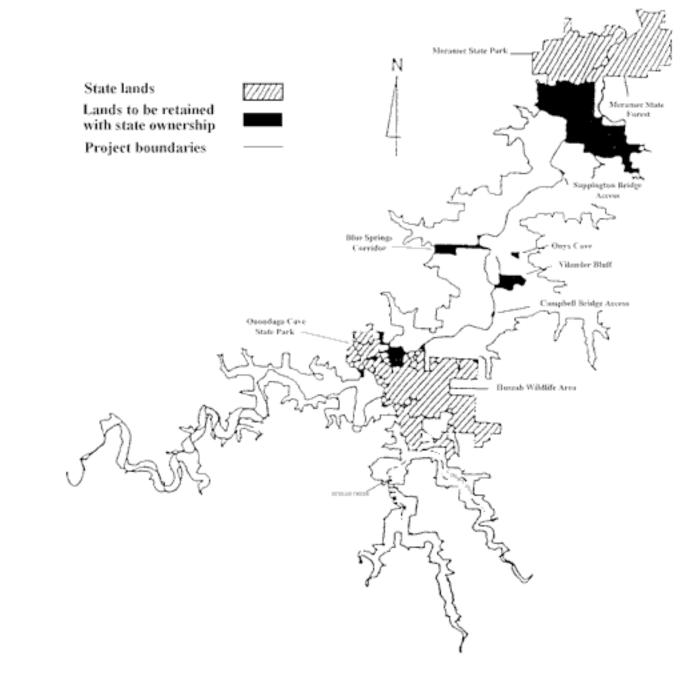


Figure 5. Public lands in the area. (source: Franklin County Tribune)

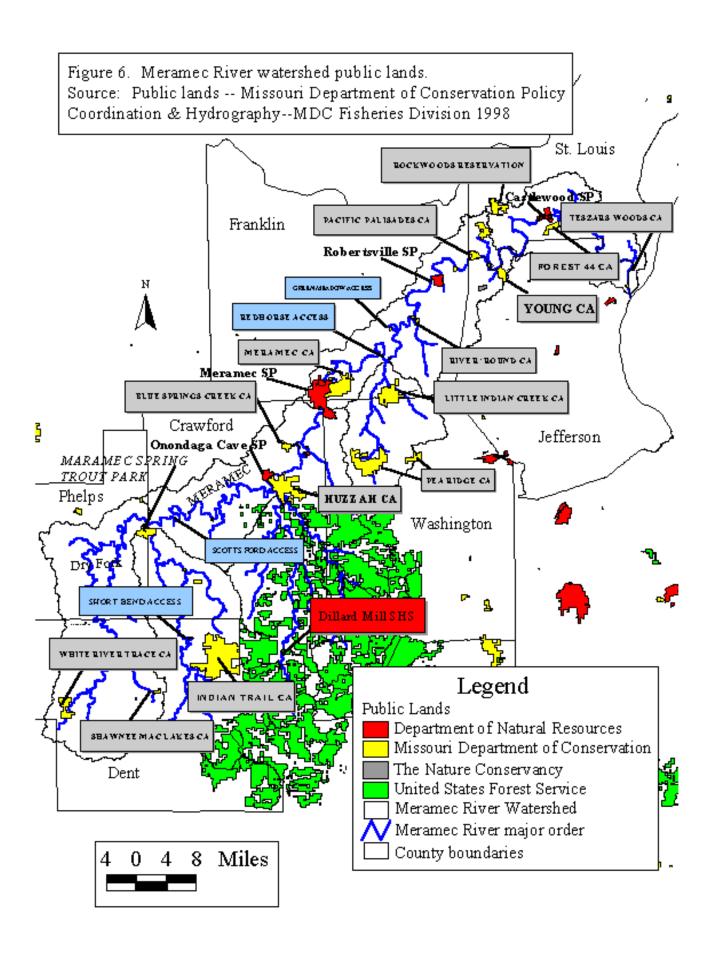


Table 4. 1992 broad land-use estimates for the Meramec River basin. Based on 8-digit hydrologic units (1992 National Resources Inventory, USDA Natural Resources Conservation Service).

Broad Cover/Use	Thousands of Acres	Percent of Totals
Cropland - cultivated	15.5	.99
Cropland - noncultivated	54.9	3.51
Forest land	750.0	48.00
Miscellaneous /minor land cover/uses	19.3	1.24
Pastureland	375.1	24.01
Rangeland	0.0	0.00
Rural transportation - roads and railroads	20.5	1.31
Urban - small and large built-up	101.1	6.47
Water - census - streams >= 660 feet wide and water bodies >= 40 acres	0.6	0.04
Water - small - stream < 660 feet wide and water bodies < 40 acres	14.5	0.93
Other	210.9	13.50
Total	1,562.4	100.00

^{*} Percentages do not add to 100 % due to decimal rounding effects.

Table 5. Estimates of angler effort (days fished) on rivers and streams in the MDC East Central Region, Missouri (Weithman 1991).

	<u>Year</u>					
Locationa	1983	1984	1985	1986	1987	1988
Big	51,922	15,291	61,539	27,177	31,245	32,441
Bourbeuse	56,387	27,451	15,692	17,997	66,943	21,818
Gasconade	93,123	89,993	98,049	72,303	119,467	103,045
Meramec	147,194	104,471	94,030	66,569	140,481	158,522
Missouri	139,410	120,915	112,440	78,945	135,981	151,374
St. Francis	21,955	68,159	91,603	37,369	47,539	38,575
Total	509,991	426,280	473,353	300,360	541,656	505,775

a The estimates of effort listed for each river or stream include days of fishing on all smaller tributaries in the watershed.

Table 6. Available information on Missouri public land acreage and miles of stream frontage upon public lands within the Meramec River basin (MDC, Planning 1996). County and city public land not included.

Area Name	Acres of Public land	Frontage Miles
Missouri Department of Conservation - Accesses		
Allenton Access	7.88	0.50
Blue Spring Creek Access		
Campbell Bridge Access	10.00	
Catawissa Access		
Chouteau Claim Access	15.11	0.50
Flamm City Access	20.44	0.50
Highway 8 Access		
Redhorse Access	47.33	0.25
Riverview Access	15.15	0.10
Sand Ford Access	32.65	0.25
Sappington Bridge Access	10.00	
Scotts Ford Access	17.81	0.30
Scotia Bridge Access		
Short Bend Access	74.63	0.00
Times Beach Access	0.96	0.25
Valley Park Access	5.00	
MDC Conservation Areas		
Blue Springs Creek CA	854.14	5.00
Catawissa CA	215.03	0.50
Forest 44 CA	981.47	0.00
Huzzah CA	6,101.78	7.25
Indian Trail CA (Indian Trails Hatchery - 75 acres)	13,462.02	1.00
Klamberg (Roger) Woods CA	65.10	0.75
Little Indian Creek CA	2,958.42	1.00
Meramec CA	3,891.60	4.80
Meramec CA - Heynes (Authur G) Memorial Annex	174.27	0.00
Onyx Cave CA	37.35	0.33
Pacific Palisades CA	733.01	2.90
MDC Conservation Areas (con't)		
Pea Ridge CA	6,453.88	4.00

Possum Woods CA	14.55	0.00
Richter CA	81.97	0.00
River 'Round CA	305.52	3.30
Shawnee Mac Lakes CA	253.93	0.00
Swiftwater Bend CA	77.35	0.50
Teszars Woods CA	95.69	0.50
White River Trace CA	1,633.92	0.00
Woods (Woodson K) Memorial CA	5,660.00	8.00
Young CA	970.00	1.30
MDC Lakes		
Queeny Park Lake	1.00	0.00
Schuman Park Lake, Rolla (Community Assistance Program)	16.76	0.00
Scioto Lake, St. James ¹ (Community Assistance Program)	5.00	0.00
Simpson Park Lake	72.00	0.00
Suson Park Lake	8.00	0.00
Vlasis Park Lake	1.00	0.00
Walker Lake	2.50	0.00
MDC - Towersites		
Keysville Towersite	76.86	0.00
Leasburg Towersite	5.35	0.00
Rockwoods Towersite	9.47	0.00
Rosati Towersite	91.64	0.00
MDC - Other Lands		
Dry Fork Tract	163.00	0.00
Green Meadow Access (undeveloped)	75.66	0.25
Maramec Spring Trout Park ¹	1,534.82	2.50
Maramec Spring Fish Hatchery ¹	16.49	0.00
MDC - Other Lands (con't)		
Rockwoods Range	1,425.98	0.00
Rockwoods Reservation	1,890.52	0.00
Powder Valley Conservation Nature Center	116.41	0.00
Wesco Tract	74.60	0.00
Department of Natural Resources - State Parks		

Castlewood SP	1,192.00	
Dillard Mill State Historic Site	130.00	
Meramec SP	6,551.00	
Onondaga Cave SP	974.00	
Robertsville SP	1,129.00	
Natural Areas		
Hyer Woods NA	31.29	
Meramec Upland Forest NA	451.26	
Roaring Spring Cave NA	11.64	
Spring's End Forest NA	7.87	
Vilander Bluff NA	219.00	
National Forest		
Mark Twain National Forest	346,000.00	
Total	407,562.08	

¹ James Foundation