

## Applicant Information

United States Army Corps of Engineers  
Kansas City District

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## Project Information

Title: Smithville Lake Habitat Enhancement Partnership

Location: Smithville Lake (Figure 1), Clay County, Missouri (39.395678, -94.555635). Smithville Lake is a 7,190-acre U.S. Army Corps of Engineers (USACE) reservoir located just north of Kansas City, Missouri. Smithville Lake is known for its hundreds of irregular shaped coves that furnish 175 miles of shoreline. Smithville Lake was completed in 1982 and currently attracts thousands of water enthusiasts, including thousands of anglers each year. The lake's primary purpose is flood control and, as a result, often experiences large water level fluctuations. Like many reservoirs across the country, fish habitat in the lake has significantly diminished since the reservoir was constructed. Repeated and long-term water level fluctuations have dramatically increased shoreline erosion, increased sedimentation rates and limited aquatic vegetation growth. Re-vegetation efforts in the past 10 years have been met with limited success. More than 4,000 acres of standing timber was left intact when the lake was built to provide fish habitat which has since degraded and provides only limited habitat for fish. The lack of stabilized shorelines and suitable fish habitat is limiting the lake's potential to serve as a productive and diverse fishery. In order to greatly increase the quality of the fishery and reduce the sedimentation rate, Smithville Lake needs additional hardwood and rocky fish habitat at various depths and significant shoreline protection.

Project Focus: Fish species include largemouth bass, white and black crappie and walleye.

Congressional District: 6

Estimated On-the-Ground Start and End Dates: January 2015 - December 2015

Estimated Total Cost:	RFHP Grant	\$ 20,000
	Anticipated Match	<u>\$115,620</u>
	Total	\$135,620

List of Partners: U.S. Army Corps of Engineers (USACE)  
Missouri Department of Conservation (MDC)  
Clay County Parks Department (CCP)  
Burtons Bait & Tackle  
Friends Involved with Smithville Habitat (FISH)

## **Project Description**

### **Project Overview**

The purpose of this Reservoir Fisheries Habitat Partnership is to establish and enhance suitable aquatic habitat in Smithville Lake in order to increase angler-fish interactions, improve angler success and enhance recruitment of multiple fish species that will lead to improved lake health, increased wildlife-related recreation opportunities and strengthened local economies. The project proposal includes armoring 2,000 feet of shoreline with 4,333 tons of rip-rap on the lakes most highly eroded points. The stabilization of the shoreline will decrease the sedimentation rate, increase water quality as well as provide the lake with additional shallow water habitat. The shoreline in Sailboat Cove and the Visitor Center point will be targeted first to complete the shoreline stabilization. The project also involves the installation of 12 large boulders in the reservoir coves. Rock sizes will vary to diversify habitat structure ranging from 24 inch up to 42 inch rip-rap boulders. The large boulders will provide excellent diverse habitat for fishing and recruitment purposes that will last indefinitely. In addition, woody cover will be enhanced in the lake by hinge-cutting approximately 300 selected trees near the waterline along the bridge abutments and installing approximately 75 large hardwood brush piles consisting of five trees per brush pile. The focus of the hinge-cutting and brush pile work will be conducted around the three main bridges and bridge abutments on the lake. Their locations provide excellent access to shoreline fisherman and boaters. Entire hardwood trees will be used to construct brush piles at selected locations. Hard, woody cover provides excellent nursery sites for young-of-the-year fishes as well as providing excellent habitat and fishing destinations leading to increased angler success. The RFHP grant funding would be used to repair/enhance an existing 190 feet fishing jetty/wave break. The existing jetty was constructed at only two feet above normal pool. The grant would provide funding to raise the height of the jetty to four feet above normal pool and extend the jetty another 60 to 100 feet. The jetty top would be graveled for easy access to the public for fishing. The new and improved jetty would extend a minimum of 250 feet into the lake and serve as a fishing pier for shoreline fisherman and provide additional fish habitat in up to nine feet of water. The fishing jetty would also serve as a wave break to drastically reduce the sedimentation rate of sand being deposited into the lake from the Little Platte Park swim beach.

### **Monitoring Plan Overview**

MDC staff will conduct monitoring to determine the use of the proposed shallow water boulder and brush pile structures by sport fish species. The lake visibility will not allow for standardized surveys to be conducted on the deeper brush piles. All evaluations of the angler/fish interactions from the shoreline rip-rap, fishing jetty, boulder locations, hinge cut trees and brush piles will be monitored through angler interactions with USACE Park Rangers, MDC Fisheries Staff and MDC Protection Staff.

MDC will monitor the results of the proposed fishing jetty, boulder installation, shallow water brush piles and hinge cut areas by conducting annual electrofishing surveys. Annual electrofishing surveys have been conducted on Smithville Lake dating back to 1982. In order to standardize data, updated transects for annual electrofishing samples were redesigned in 2009. All remaining historic transects will act as controls and will be sampled along with the treatment

sites. Future electrofishing data sets collected will be compared to historical data sets in both control and treatment transects to determine changes in catch-per-unit-effort (CPUE) values. By comparing future data sets from both control and treatment transects we expect to better assess fish abundance changes and monitor increased recruitment of targeted fish species.

## **Outreach Plan**

Outreach efforts will be initiated through continued partner contacts during project development and site selection. Local communities, state and federal agencies, local anglers and organized angler/volunteer organizations will be contacted one-on-one and at an organized public meeting.

Follow-up outreach efforts will include:

- Working with local media outlets (magazine, newspaper, television and radio) to describe project plans, provide information concerning project progress and to recognize various partners, including RFHP);
- Publish a post-project summary in MDC's *Missouri Conservationist* magazine, reaching 400,000 Missourians each month;
- Post signs recognizing partners at selected access locations around Smithville Lake and at the local MDC and USACE offices;
- Post signs identifying the location of habitat structures along the lake's shoreline adjacent to selected structures;
- Post the locations of habitat structures, including GPS coordinates, on USACE's and MDC's public website for use by anglers;
- Present project information to local NGOs (e.g., angler clubs, volunteer organizations, Kiwanis, Eagles, county and city governments, etc.) and at professional and society meeting(s) in Missouri and other locations in the Midwest.

It is vital that we educate the public about the value of Smithville Lake and the benefits that it provides to the citizens of Missouri. Smithville Lake is currently a high-use reservoir and further restoration and enhancement of the fishery will only help to increase recreational use. The opportunities for educating Smithville Lake stakeholders are promising due to the high density population surrounding the lake. Additionally, a healthy reservoir system and fishery can lead to great economic benefits for local communities. Below are current statistics on population density and economic benefits for Smithville Lake and the surrounding area.

- The 2012 city data states that Smithville, Mo. population is 8,768 people, a 59 percent increase since the year 2000.
- The surrounding metropolitan area within a 50-mile radius of Smithville Lake is 1.39 million people.
- Smithville Lake has the greatest population density within a 50 mile radius than any major reservoir in Missouri (Figure 4).
- Smithville Lake receives an estimated 1.3 million visitors each year, of which 460,000 are fishermen.

- The annual economic benefits of Smithville Lake are an estimated \$52 million in visitor spending per year within a 30 mile radius of Smithville Lake.

### **Project Protection**

Supplemental woody materials (e.g., entire hardwood trees, etc.) will be used to replenish habitat structures as needed at approximately five year intervals post-project. The proposed rip-rap to be used on the shoreline stabilization, boulders and fishing jetty are blasted from the Bethany Falls rock ledge and have a life expectancy of 100 years.

### **Required Permits**

USACE staff has secured a 404 permit for the installation of brush piles and boulders for fish habitat. USACE anticipates the need for another Section 404 permit for the placement of fill in the form of rock to repair/enhance the Little Platte fishing jetty. USACE staff will work closely with personnel from Missouri Department of Natural Resources (MDNR) to prepare the 404 application. Approval of permit request is anticipated.

### **Project Timeline**

Discussions are ongoing with partners to secure matching funds and will continue through the early stages of the project. Project details and efforts to secure permits will begin early in 2015. Various partners, including CCP, MDC, Burtons Bait & Tackle, and local anglers will be engaged in the determination of habitat depths and specific locations. Once habitat placement details have been completed and funding and permits have been secured, project installation will begin and should be completed within seven months. Pending permit approval and available funds, the following project timeline will be implemented:

January - February 2015	Meetings to discuss habitat locations and depths along with 404 permit application, procure supplies and materials, install shoreline stabilization rip-rap.
March - May 2015	Install brush piles and boulders.
June - July 2015	Initiate public outreach efforts.
August - September 2015	Complete jetty improvements - continue outreach efforts (e.g., articles, TV and radio interviews, etc).
October - December 2015	Continue outreach efforts, post GPS locations for all structures online, install signs at selected locations and prepare and distribute final report.

## Budget

The following budget details both grant and matching fund estimates.

<b>Categories</b>	<b>Partner Contribution Amount</b>	<b>Type of Contribution (cash or in-kind)</b>
Reservoir Fisheries Habitat Partnership		
Construction Costs/Materials	\$20,000	Cash
Partner A – U.S. Army Corps of Engineers		
Administrative/Technical Services	\$2,500	In-kind
Construction Costs/Materials	\$55,000	Cash
Labor (paid)	\$15,600	In-kind
Labor (volunteer)		
Partner B – Clay County Parks Dept		
Administrative/Technical Services		
Construction Costs/Materials	\$20,000	Cash
Labor (paid)	\$5,760	In-kind
Labor (volunteer)		
Partner C – Missouri Department of Conservation		
Administrative/Technical Services		
Construction Costs/Materials	\$1,000	Cash
Labor (paid)	\$5,760	In-kind
Labor (volunteer)		
Partner D – Burtons Bait & Tackle – FISH Group		
Administrative/Technical Services	\$1,000	In-kind
Construction Costs/Materials		
Labor (paid)		
Labor (volunteer)	\$9,000	In-kind
<b>Total Direct Costs</b>	\$135,620	Including RFHP grant

\* Volunteer labor should be calculated at \$18/hr for volunteers; agency staff labor rates at \$24/hr.

## **Budget Narrative**

Partners in this project include USACE, MDC, CCP, and Burtons Bait & Tackle. USACE Park Manager will oversee this project. The RFHP funds will be used to improve/enhance an existing 190 foot long rip-rap fishing jetty on the Little Platte swimming beach point on Smithville Lake. Additional rip-rap will be placed on top of the existing jetty to raise the height of the jetty to four feet above normal pool and extend the jetty another 60 to 100 feet. These improvements to the jetty will drastically increase the protection of the swim beach to reduce the sedimentation rate, provide additional fishing opportunities, along with additional fish habitat. The jetty top will be graveled for easy access to the public for fishing. MDC will provide three employees to work approximately 80 hours each, (240 hours of in-kind labor) for this project that will include; selection, cutting, and hauling of trees; providing a habitat barge with operator; and installation of trees for brush piles. MDC will also assist with monitoring the response of the fish to the newly installed habitat. The fuel cost estimate for MDC is \$1,000 for vehicles and boats used for this project. USACE will provide 3,000 tons of rip-rap at \$15/ton, 650 hours of in-kind labor, habitat barge, skid loader and other equipment for the installation of the boulders, brush piles, rip-rap and hinge cut trees. The USACE Park Manager is estimated to work 250 hours with two maintenance workers assisting at 150 hours each. USACE will provide a skid loader and tree shear to assist in the cutting, hauling and installation of trees for brush pile establishment. Administrative costs to USACE for permits and design work is estimated to be \$2,500. The estimate for fuel, rope, concrete weights and misc supplies for USACE is \$5,000. Equipment rental for USACE is estimated to be \$5,000 for jetty improvements. CCP has agreed to provide three employees to work approximately 80 hours each (240 hours of in-kind labor), 1,333 tons of rip-rap at \$15/ton and the equipment to install the rip-rap funded by them for shoreline stabilization. CCP will provide an operator and barge for installation of trees for brush piles. Burtons Bait & Tackle will organize the volunteers to help with the project. The volunteer group is called Friends Involved with Smithville Habitat. FISH is a group of 45 volunteers eager to provide 500 hours of labor with any habitat project on the lake.

Project personnel include:

Derek Dorsey, Park Manager, U.S. Army Corps of Engineers

Eric Dennis, Fisheries Management Biologist, Missouri Department of Conservation

Karl Waters, Assistant County Administrator to Operations, Clay Co. Parks and Recreation

Gary Burton, Burton's Bait & Tackle

## **Optional Supporting Materials**

The Smithville Lake map and the surrounding area is depicted in Figure 1. Selected potential project sites for boulder placement, hinge cutting and brush pile work are depicted in Figures 2 and 3. Supporting graph is depicted in Figure 4 indicating Smithville Lake's ranking in populations within a 50 mile radius. Photographs of some previous brush pile work are Figures 5 and 6. Figure 7 shows the jetty at Little Platte swim beach. Figures 8 and 9 show the eroded shoreline at the proposed stabilization sites, Sailboat Cove and the Visitor Center respectively. Figure 10 is a letter of support from the Missouri Department of Conservation.

Figure 1. Smithville Lake map

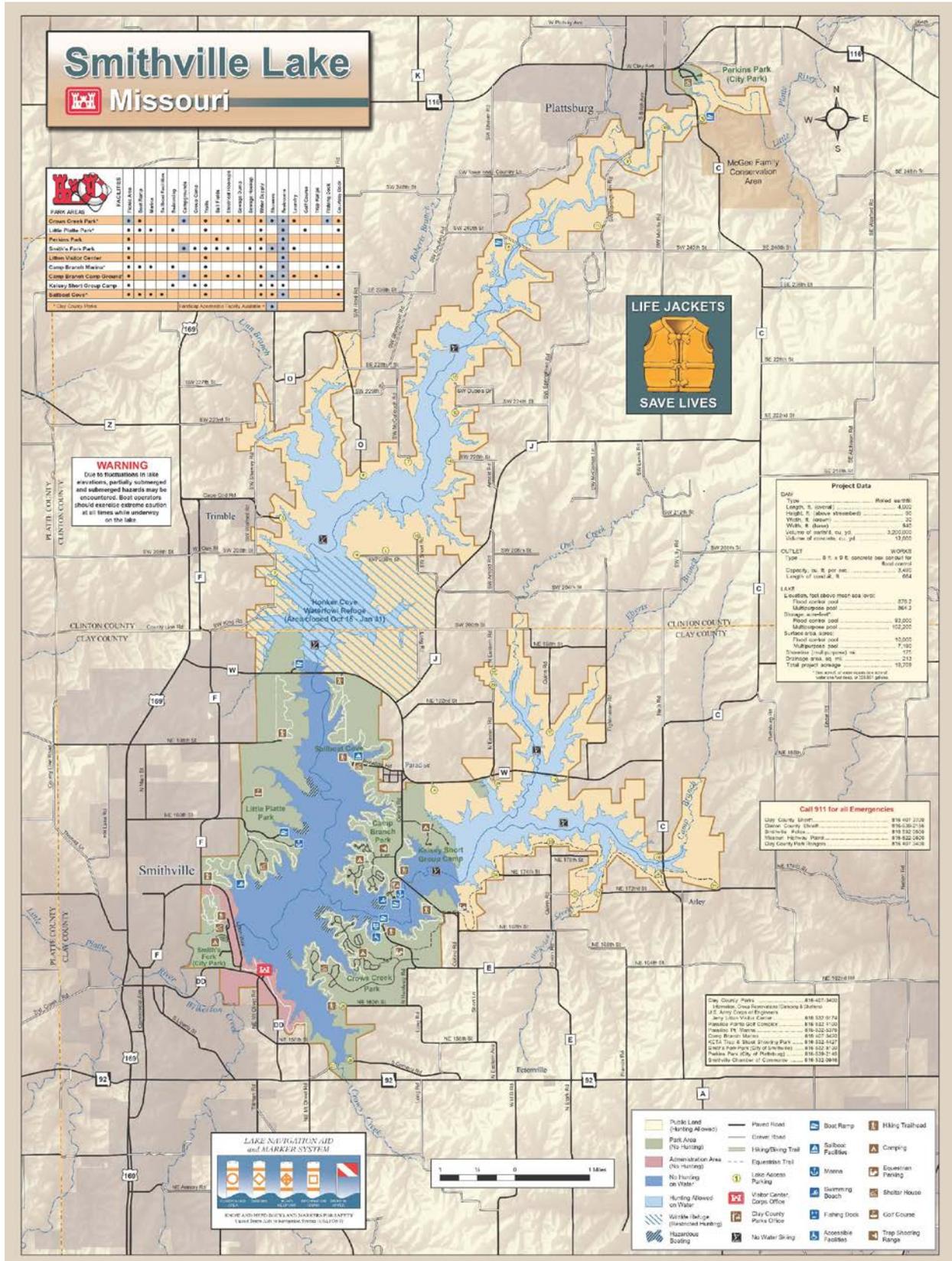


Figure 2. – 12 Locations for Boulder Placement near Camp Branch and Crows Creek Parks

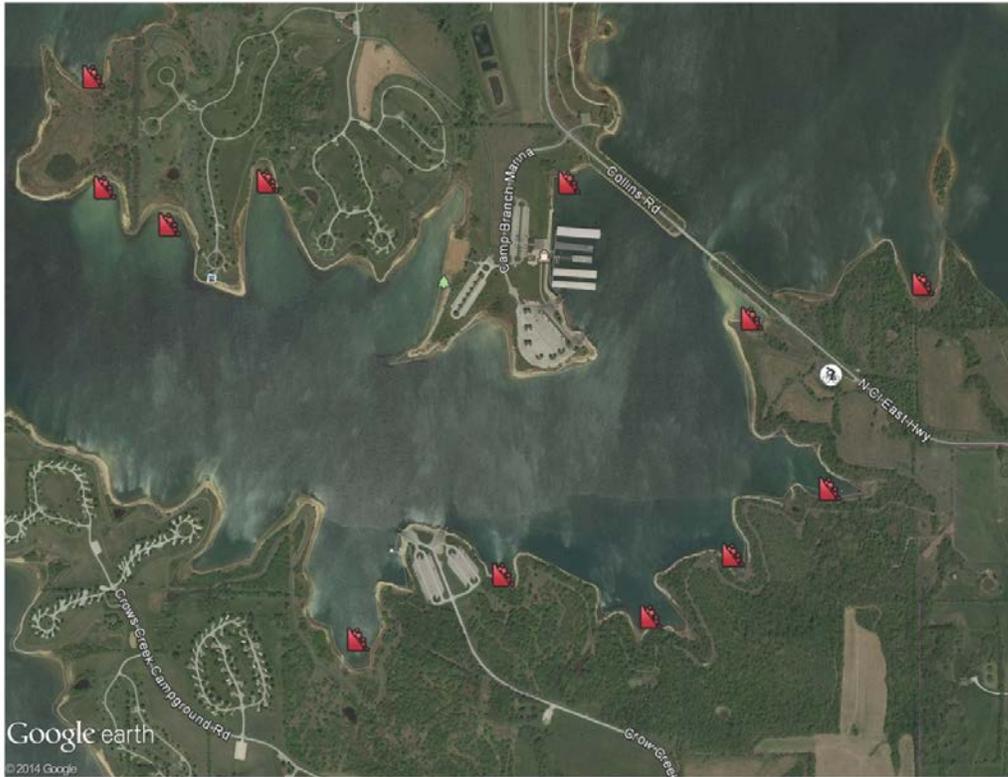


Figure 3 – 3 Bridge locations for hinge cutting and additional brush piles (white arrows)

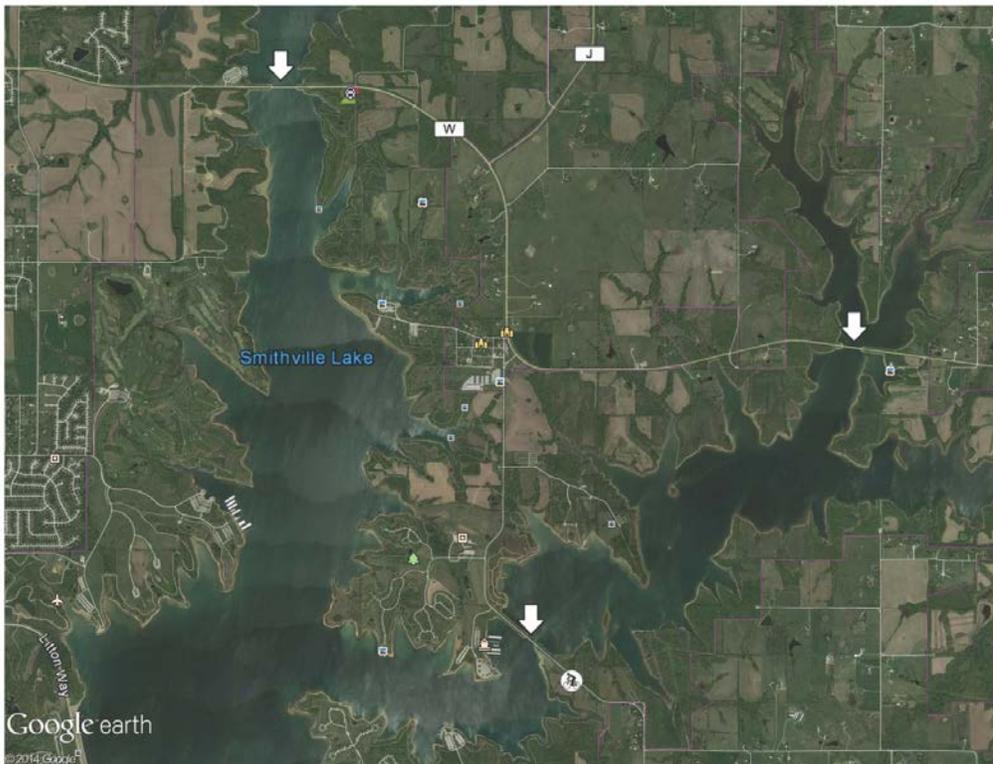


Figure 4 – Smithville Lake 2010 50-mile radius population

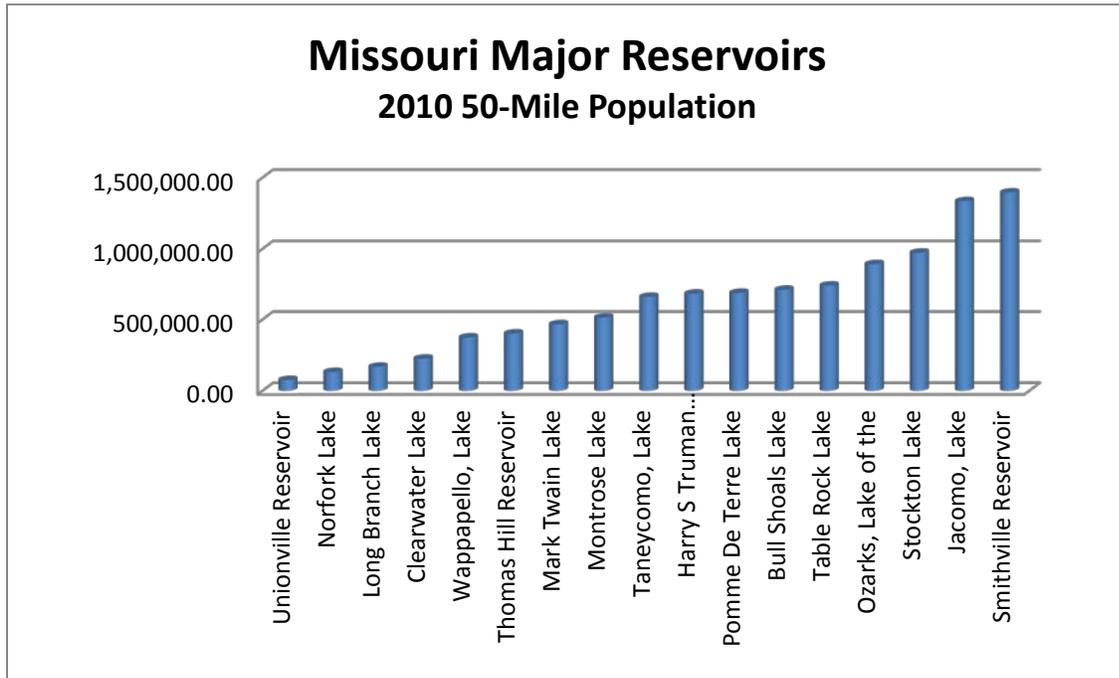


Figure 5 - Picture of Brush Pile Installation on Camp Branch Arm (picture taken: 13 Apr, 2013)



**Figure 6 - Pictures of Brush Pile Installation in Crows Creek Arm (picture taken: 19 Apr, 2014)**



**Figure 7 – Little Platte Swim Beach fishing/wave break jetty (picture taken 08 Sep, 2014)**



**Figure 8 – Sailboat Cove eroded shoreline. 6 foot tall erroded bank. (picture taken 08 Sep, 2014)**



**Figure 9 – Visitor Center eroded point. 6 foot tall erroded bank (picture taken 08 Sep, 2014)**



Figure 10 – Letter of support from Missouri Department of Conservation



## MISSOURI DEPARTMENT OF CONSERVATION

### Headquarters

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September 11, 2014

Derek Dorsey  
Park Manager  
U.S. Army Corps of Engineers  
Smithville Lake

The Missouri Department of Conservation would like to express support for the proposed RFHP Aquatic Habitat Project at Smithville Lake, in Clay County Missouri. The project proposed by the U.S. Army Corps of Engineers in cooperation with Clay County other agencies, businesses, and volunteers will continue previous efforts to enhance the aquatic structure in the Lake. The construction of multiple brush piles, the addition of rock piles, and shoreline stabilization at Smithville Lake will dramatically enhance the conditions in the lake and will improve the overall fishery.

As the Fisheries management agency for Smithville Lake, we enthusiastically support this project and will pledge continued support and assistance in the form of 240-man hours of effort for brush pile construction and the use of MDC Habitat Barges, chain saws and other equipment required to make this a successful event. We will also continue to monitor installed structures to document the success of enhancements and will use this information in our annual reports and Apps for anglers use.

Scott Ryan  
Fisheries Regional Supervisor  
Missouri Department of Conservation

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