Whooping Crane Stopover Habitats on Kaw Lake, Oklahoma
U.S. Army Corps of Engineers, Tulsa District

The primary purpose of this report is to: (1) *protect* existing wild Whooping Crane "stopover habitats; (2) *improve* existing habitats where needed; and (3) *create* new "stopover habitats" where there are opportunities.

Friends of the Wild Whoopers (FOTWW) and the U.S Army Corps of Engineers (USACE) have a Memorandum of Understanding to evaluate Whooping Crane "stopover habitats" on USACE lake properties. The project involves the six state migration corridor within in the states of Texas, Oklahoma, Kansas, Nebraska, South Dakota and North Dakota.

Figure 1. One juvenile and two adult Whooping Cranes

FOTWW was scheduled to conduct its evaluation of Kaw Lake on October 12, 2018. Regrettably, three days of rain created flood conditions causing lake water to rise 8 feet above normal. We were unable to observe stopover habitats from boat or vehicle. Fortunately Kaw Lake personnel were well informed about the lake's habitats and together, we successfully identified one large stopover habitat site (and possibly more) by studying satellite photos. FOTWW is submitting this partially completed evaluation of Kaw Lake to support funding for our recommended projects. We plan to visit the lake again when we return to northern Oklahoma to complete our evaluation.

There is only one wild self-sustaining population of Whooping Cranes remaining on earth. These birds are America's symbol of conservation. They are the largest bird in North America standing 5 feet tall with a wingspan of 7 feet (Figure 1). They are endangered species and need our help. This population nests and rears their young in Wood Buffalo National Park, Canada during spring and summer. After their chicks fledge, they migrate 2,500 miles through 6 states in the midsection of our nation to Aransas National Wildlife Refuge on Texas coast where they spend the winter (Figure 2). Thus these birds are known as the Aransas-Wood Buffalo population.

Destruction of nesting habitat and killing the birds for food decimated the population during the 1800's and early 1900's. Coupled with this is the loss of approximately15 million wetland acres in the 6 state migration corridor. In 1943 there were only 16 Whoopers remaining. With protection and habitat management the population has slowly increased to an estimated 505 in 2018.

Today, however Whooping Cranes are facing more threats to their habitats. During their two 2,500 mile migrations they must stop 15 to 30 times to rest and feed. Secure stopover habitats are needed throughout the migration corridor approximately every 25 miles. And more secure wintering habitats are needed along the Texas coast near the Aransas National Wildlife Refuge. Currently about half of the population winters off the Aransas National Wildlife Refuge where they are not as safe. Continuous development along the coast is taking a serious toll on habitat.

FOTWW believes that the wild Whooping Cranes in the Aransas/Wood Buffalo population are capable of taking care of themselves with two exceptions. They need (1) humans to protect their habitats and (2) humans to stop shooting them. We firmly believe that the USACE can do much to protect and manage many "stopover habitats" within the migration corridor.

During their two 2,500 mile migrations each year they migrate to and from their winter habitats on the Texas coast to their nesting habitats in northern Canada (See migration map Fig. 2).

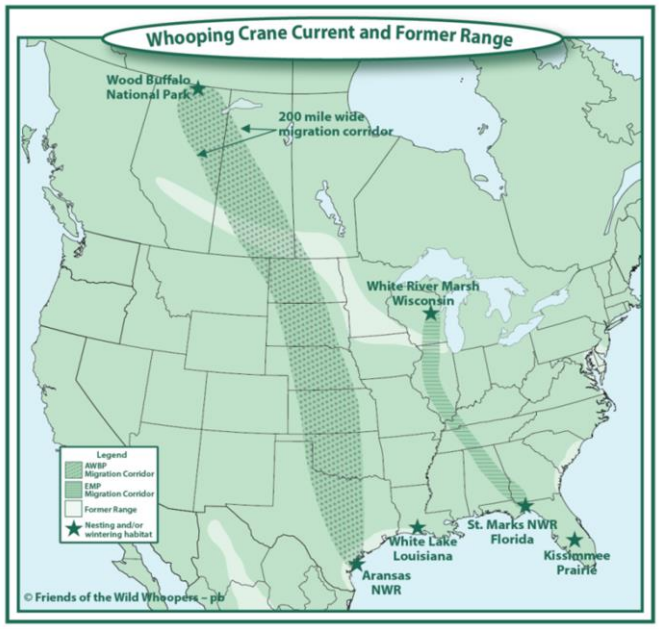

Figure 2. Map showing migration route through 6 mid-western states and /Canada.

Figure 3. Deer and other wildlife species often use the same habitats as Whooping Cranes.

During migration Whooping Cranes often stop over on private lands, wildlife areas, lakes and some military bases. However, many private lands are being more intensively managed and face various forms of development. And some wetlands are becoming dryer due to global warming. FOTWW contends that lands and waters on USACE and military bases within the migration corridor can provide much needed relief. Some of these lands can be developed and/or managed to provide more stopover habitats for endangered Whooping Cranes. Habitats for the cranes also benefit many other species of wildlife and fish. Likewise Whooping Cranes are compatible with other wildlife species using the same habitats (Figure 3).

The most expensive part of establishing or improving habitat is land cost. If projects can be accomplished on government lands and Indian Reservations, the cost would be relatively minimal. Importantly any habitat projects deemed to be incompatible with the mission of the agencies involved would not be considered by FOTWW.

FOTWW has completed habitat evaluations on 32 military facilities, 8 Indian Reservations and 20 USACE lakes within the wild Whooping Crane migration corridor. Some of these properties currently have suitable stopover wetland habitats while other areas could be enhanced with minor work.

The USACE and FOTWW Memorandum of Understanding allows us to focus on Whooping Crane habitat assessment and management recommendations on lands under USACE jurisdiction. We first need to determine if any suitable areas could be managed, or appropriately developed, to provide stopover habitats for Whooping Cranes. The next step would be to work to encourage appropriate management.

USACE lakes within the 6 state migration corridor are likely to become even more important to Whooping Cranes in the near future because of their locations and quality of "stopover habitats". Kaw Lake and others that are located in the Whooping Crane migration corridor can be especially valuable. As the crane population increases the migration corridor may also expand in width.

The Kaw Dam and Lake Operational Management Plan (OMP) is a guide for natural resources and park management. It details the specific operation and administration requirements for the development, maintenance, protection, and use of all project land and water areas.

The dam and lake was authorized for construction by the Flood Control Act of 1962, for flood control, water supply, water quality control, recreation, and fish and wildlife enhancement. Construction began in June of 1966 and was completed in 1976.

The project area terrain consists of broad, cuesta-type ridges sloping gently westward with east-facing escarpments dissected by headward erosion into a series of short valleys and ravines. The Arkansas River has cut a relatively wide meandering valley at the site.

The lake region is characterized by a wide, flat valley which is well defined on both sides of the Arkansas River channel by low rolling hills. Shoreline erosion is a problem at several areas on Kaw Lake. Steep banks, sandy soils, water level fluctuation and strong north and south winds are all factors that have caused the shoreline erosion problems. Some bank stabilization work has been accomplished and more is planned in areas where recreational facilities are impacted. Other areas have been reported and are monitored by the project staff. Erosion repair and bank stabilization will be done on a case-by-case basis as funds become available. There are no aquatic vegetation problems in Kaw Lake at the present time. A combination of factors such as the heavy mineral content, silt deposits, gravelly shoreline and steep shoreline banks have prevented the establishment of aquatic vegetation in significant amounts.

Oklahoma Department of Wildlife Conservation (ODWC) manages 16,304 acres as a public hunting area on Kaw Lake. Approximately 4,000 acres are farmed to benefit wildlife. Various crops are planted to provide food, cover and habitat along with other services such as tree planting.

Kansas Department of Parks and Wildlife (KDPW) has 4,000 acres licensed for management as a public hunting area. Some lands are farmed to provide food, cover and habitat. Other activities include fencing boundary lines, closing unauthorized roads, establishing grass cover, planting trees and improving hunting and fishing opportunities.

The responsibility for enforcement of wildlife code regulations lies with the ODWC and the KDWP. While most project lands are open to hunting, most recreation areas are closed or at least restricted to certain types of hunting, offering some protection to game and non-game species alike.

Principle wildlife species include whitetail deer, various species of waterfowl, bobwhite quail, fox and gray squirrel, cottontail rabbits, wild turkey, mourning dove, greater prairie chicken, raccoon, beaver, bobcats, opossum, skunks and various species of songbirds and birds of prey. The management practices implementation on Kaw Lake property by the several agencies are beneficial to Whooping Cranes that use the site.

While no rare or endangered species are year-round residents of Kaw Lake, Whooping Cranes are occasional visitors. In addition, Interior Least Terns, American Osprey, and Peregrine Falcon are seasonal visitors. In 2007 a nesting area for the Interior Least Tern was established along the left bank of the river downstream of the dam. It is hoped that this protected site will be used by the birds during their nesting season, June-August. Traditionally, Kaw Lake holds one of the largest winter populations of southern Bald Eagles in the Tulsa District. The southern Bald Eagle is a success story having been removed from the endangered/threatened list.

Unfortunately we could find no reference to endangered Whooping Cranes in the Natural Resource Management Plan. Friends of the Wild Whoopers strongly recommends that Whooping Cranes be added to the list needing serious attention at KAW Lake and that both USACE, ODWC and KDWP management documents include specific plans for endangered Whooping Cranes. ***Friends of the Wild Whoopers urges project staff to coordinate with their Tulsa District officials and the U.S. Fish and Wildlife Service to prepare a management plan.***

FOTWW Wildlife Biologist Chester McConnell visited Kaw Lake on October 12, 2018 to assess potential "stopover habitats" for Whooping Cranes. David Hoover, Conservation Biologist, Kansas City, MO, USACE in coordination with Stacy Dunkin M.S. CWB® Biologist made arrangements for our trip.

FOTWW appreciates all involved with making preparations for a productive and enjoyable visit.

During a staff briefing, McConnell explained the need for Whooping Crane "stopover habitat" and features necessary to make suitable habitats. Kaw Lake staff members Pete Robinson (USACE) and Hutch Todd, Biologist (USACE) participated in the lake stopover habitat discussion. We also discussed the natural resource situation for Kaw Lake and potential areas where stopover habitats might be located. We studied satellite maps to better understand the lake and potential stopover habitats. Unfortunately, we could not make a tour of the lake property to examine places that may provide stopover habitats. Lake water levels were 8 feet above normal pool and any stopover habitats would be under water. FOTWW plans to make a return trip to Kaw Lake to complete our evaluation.

Much of the topography of Kaw Lake property is steep. Most of the shore area is narrow and trees are abundant near most of the lakeshore. These conditions do not lend themselves to stopover habitat for

Whooping Cranes. Importantly, there are some potential stopover habitats on sand bars along the river and these need protection and management. Three such habitats are described later in this report.

Whooping Cranes normally migrate over or near Kaw Lake during April (northward migration) and fall during October – November (southward migration). They usually stopover to rest late in the afternoon and depart early to mid-morning the following day (Figure 4). Mostly, during migration, they stopover on lakes, natural wetlands and small ponds on private farms just to rest overnight. Like humans on a long trip they just need a small place to briefly stop, feed and then continue their journey. Proactive techniques implemented by conservation interest can help reduce potential morality that occurs during migration.

Figure 4. Whooping Cranes stopping over for the night or a few days. They land on the shore and walk into shallow water (2 inches to 10 inches deep) to roost. While roosting in water, they are able to better protect themselves from predators.

Whooping Cranes need lakes, wetlands and ponds with the following features as "stopover sites" during migration:

- Lakes/small ponds/wetlands from 0.3 acres and larger in size
- Lakes/ponds/wetlands with some shallow areas 2 to 10 inches deep for roosting sites
- Flight glide path clear of obstructions for Whooping Cranes to land near roosting sites
- No thick bushes or trees in or near landing site
- Gradual or gentle slopes into lakes/ponds where water is shallow
- Little or no emergent or submerged vegetation in lake at roost areas
- Extensive horizontal visibility from roost site so predators can be detected
- 200 or more yards from human development or disturbance such as power lines
- Agricultural grain fields or pasture land within one mile of stopover site for foraging

Figure 5. Excellent "stopover roost site" for Whooping Cranes. Number "1" points out the glide path for Whooping Cranes landing on lakeshore. The site is clear of obstructions and provides a gradual slope into the shallow water. Horizontal visibility around the roost site is good. Number "2" points out the shallow water from 2 to 10 inches deep in roost area. Whoopers can feed on aquatic animal in the lake and forage on insects and grains in nearby fields.

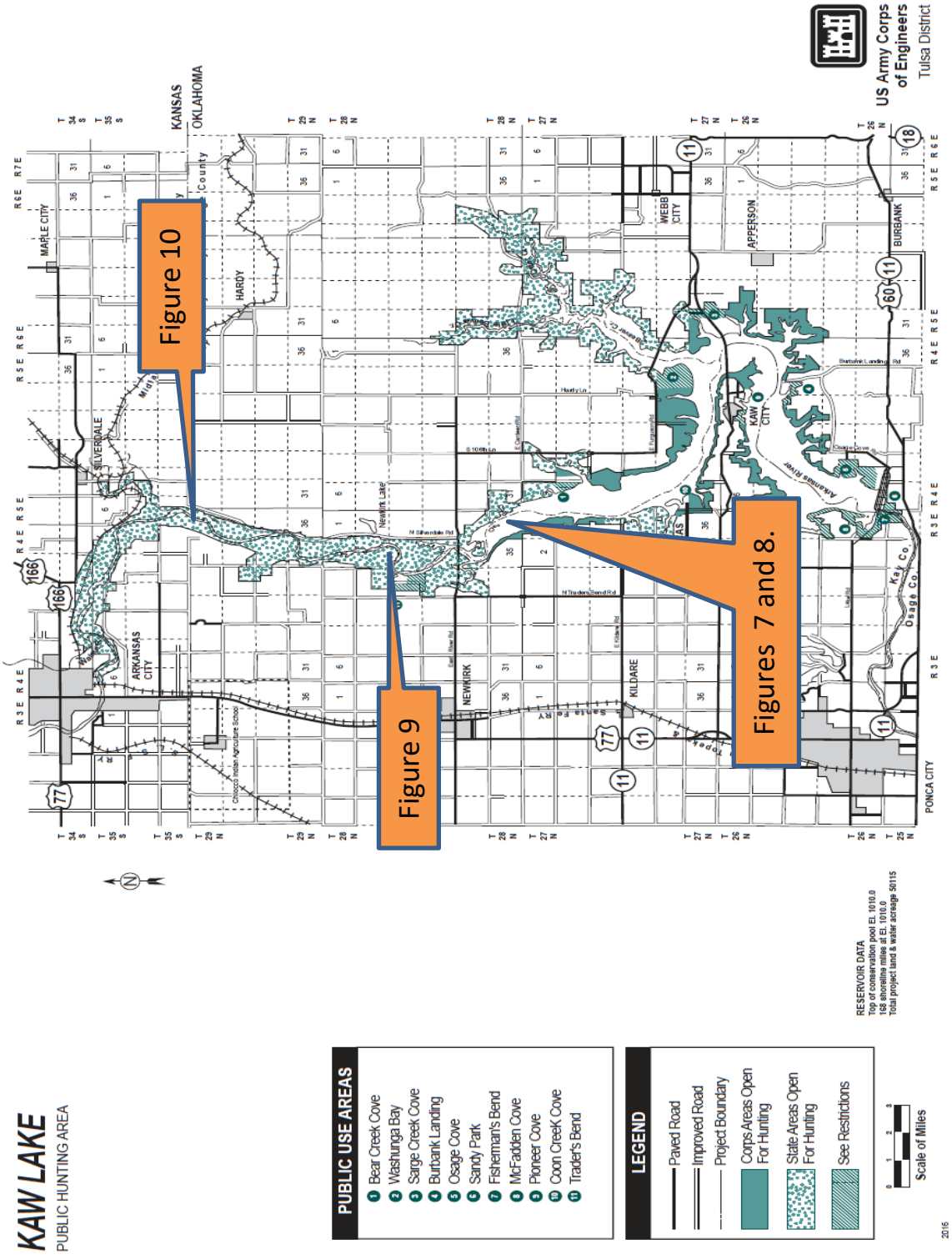

Figure 6. Map of Kaw Lake. Call-outs show where photos were taken.

Figure 7. The sandbars at the head of Kaw Lake can serve as an excellent "stopover habitat" for Whooping Cranes during their migrations. The island formed as upstream banks of the Arkansas River eroded and the sand washed downstream until it met with slack waters of the lake. At this point the sand dropped out of the river water column to form the island. These islands will need management to control growth of trees and shrubs. These can be controlled by spraying with appropriate herbicides, prescribed fire or mechanical means.

Figure 8. This photo is a close up of the sandbar in Figure 7. It shows the current open area (white) where Whooping Cranes could stopover and the trees that need to be cleared.

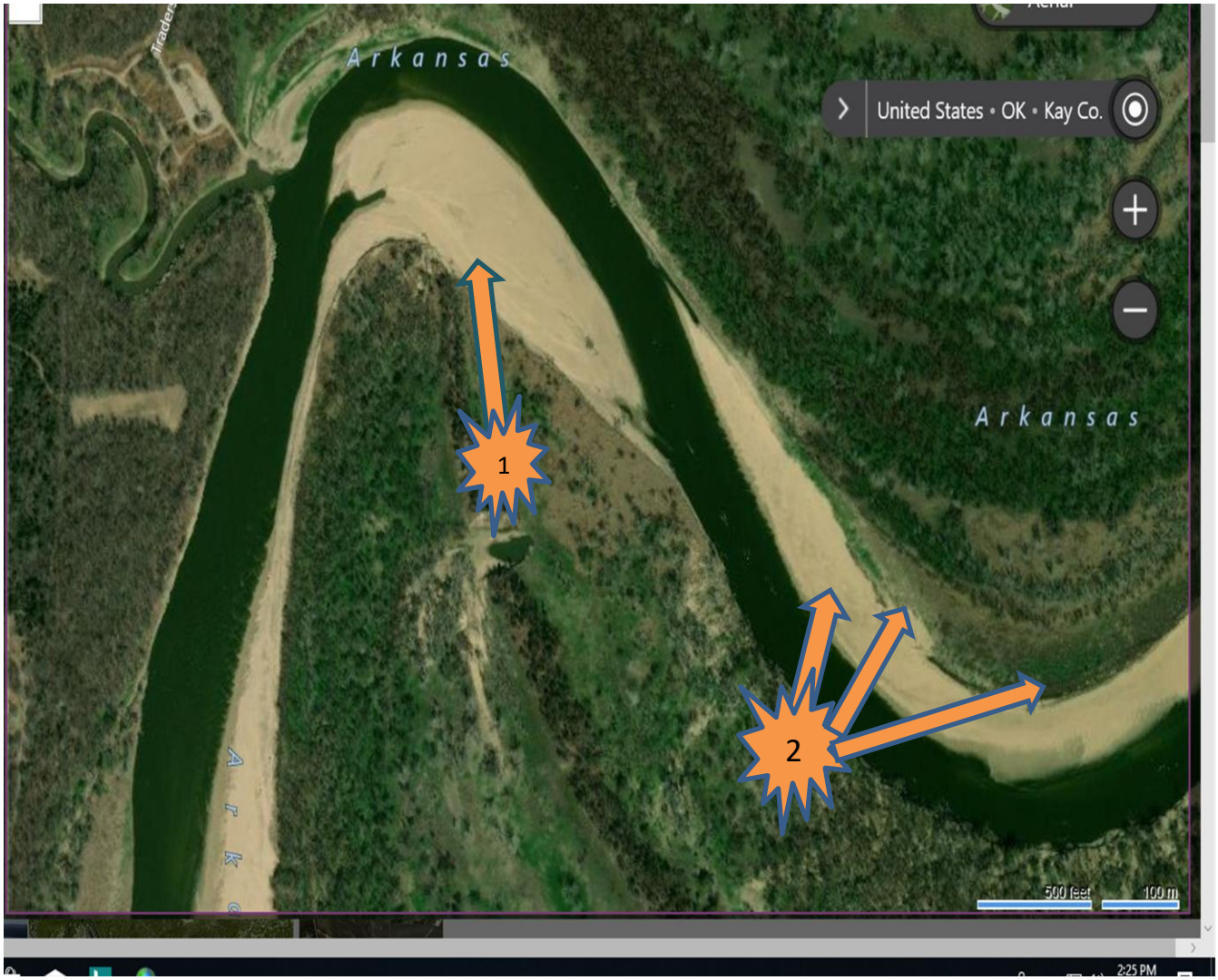

Figure 9. The sandbars in this photo are several river miles upstream of the larger sandbars in Figure 7. Marker number "1"is a wide sandbar clear of vegetation. Whooping Cranes could land here and locate shallow water available where they could roost. The sandbar at marker number "2" can also be developed into another good stopover site if the shrubs and trees identified by the arrows are cleared by cutting, burning or spraying with an appropriate herbicide.

Figure 10. This satellite photo shows a section of the Arkansas River upstream of the sandbar island in Figure 7. FOTWW plans to evaluate these and other sandbars to determine which would make good stopover areas and what kind of management may be necessary.

LOCATION OF EXISTING "STOPOVER SITES": The photos (Figs. 7 thru 10) illustrate three potential "stopover areas" on Kaw Lake and upstream where endangered Whooping Cranes can rest, forage and roost during their two annual migrations. The size and configuration of these lake stopover areas vary with the levels of lake water. When the photos in this report were taken, water levels were "normal". Flight glide paths to the shore areas are available from different directions for approaching cranes. The shore areas at the three sites need some management to clear bushes, trees and other obstructions. Horizontal visibility from the shore and water roost sites allows Whooping Cranes to detect predators that may be in the area. The shore and lake edge at the three sites has some gradual slopes and some water depths of 2 to 10 inches available during "normal" lake water levels. The water is clear and supports abundant aquatic life. Foraging is available on USACE property and in numerous nearby agriculture fields. In addition there are wild foods in adjacent managed grasslands and wetlands that provide an abundance of insects, wild seeds and other wild food.

MANAGEMENT OBJECTIVES FOR KAW LAKE WHOOPING CRANE STOPOVER AREAS:

There appears to be few stopover habitats for Whooping Cranes on Kaw Lake but the upstream river that flows into the lake has many sandbars that have some suitable sites. The lakeshores are mostly steep and abundant trees growing close to the lake edge. These conditions do not lend themselves to stopover habitat for Whooping Cranes. Importantly we did identify three areas with good potential stopover habitat. These are important and we encourage Kaw Lake personnel to protect and manage the carefully. The three stopover areas can provide some diversity of stopover habitats for endangered Whooping Cranes and many waterfowl, wading birds, shorebirds and other wildlife species that need wetlands. ***Friends of the Wild Whoopers strongly recommends that any endangered Whooping Crane "stopover habitats" be added to the Operation Management Plan at Kaw Lake.***

MANAGEMENT PRESCRIPTIONS:

1. Monitor the three Whooping Crane stopover habitats identified in this report to suppress any tall vegetation (over 2 feet tall), including shrubs, trees and noxious weeds by prescribed fire, mechanical means (rotary cutter/Bush Hog) and appropriate chemical application if necessary.

2. Review and update the Operation Management Plan and other policy documents to include protection, improvement and development of Whooping Crane stopover habitat.

CONCLUSIONS:

FOTWW was pleased to have the opportunity to visit Kaw Lake. As noted earlier in this report we were unable to complete our "stopover habitat evaluation due to flood water depths. However we were pleased to learn about the three potential sites that can possibly be protected and managed to provide some needed "stopover habitat" for Whooping Cranes. USACE and OWDC managers should focus on protecting all potential stopover sites described in this report. These areas currently appear to have good "stopover habitats" with safe roosting features and nearby agricultural landscapes that provide foraging opportunities. The lake and land area also has good fish and wildlife habitat for a large variety of wildlife species.

We sincerely appreciate the interest and cooperation of Kaw Lake and Tulsa District personnel. We are grateful to Peat Robinson, Kaw Lake Manager, Hutch Todd, Biologist and Stacy Dunkin, Biologist Tulsa District and other officials of USACE who cooperated with FOTWW and provided

us with documents that assisted in our evaluation. And a special thanks to David Hoover, USACE who arranged our field trips to four lakes in Oklahoma. Importantly, I also appreciate the assistance of FOTWW Vice-President Pamela Bates in preparing this report.

Friends of the Wild Whoopers

Chester A. McConnell

Chester A. McConnell, President

wmicmc@bellsouth.net