

**UTAH DIVISION OF WATER QUALITY**

195 North 1950 West  
PO Box 144870  
Salt Lake City, Utah 84114-4870

**Willard Bay Project Proposal Form**

**NOTE: Proposal must be no longer than 6 pages. Supplemental documents such as letters of support, information to demonstrate previous project implementation and other relative supportive documents may be submitted in addition to this form.**

Applicant Name: Reed Price, Executive Director, Utah Lake Commission

Co-Applicant Name(s) (if applicable):

Project Title: Utah Lake Carp Removal

Agency or Business Name (if applicable): Utah Lake Commission

Mailing Address: 51 S. University Avenue Suite 109 City: Provo State: Utah Zip: 84601

Phone: 801-851-2900 E-mail: rprice@utahlakecommission.org

Individual  Non-Profit  Govt. Agency  Academic  Commercial  Other

**1. Estimated Project Costs:**

An RFP for carp removal at Utah Lake was advertised in 2008. A local commercial fisherman was selected to conduct carp removal at the lake and is paid \$0.20 per pound to remove carp. The contractor has kept the cost the same throughout the project. To achieve the annual goal of removing 5.0 million pounds per year, we must secure \$1.0 million annually through grants, partner contributions and other sources. Costs for labor, materials and equipment are borne by the contractor based on their proposal. Every dollar of this request will be used to harvest carp from Utah Lake. Costs associated with data collection, analysis, and report preparation will be carried by the Utah Lake Commission and the June Sucker Recovery Implementation Program (JSRIP).

Labor/Materials/Equipment	<u>\$1,000,000 (Borne by contractor at \$0.20/lb )</u>
Administration	<u>\$ All borne by ULC and JSRIP</u>
Miscellaneous	<u>\$ _____</u>
TOTAL	<u>\$1,000,000</u>

**Other sources of project funding:**

Source <u>State of Utah</u>	Amount <u>\$500,000*</u>
Source <u>Willard Bay Grant</u>	Amount <u>\$200,000</u>
Source <u>Bureau of Reclamation</u>	Amount <u>\$300,000</u>

**Total project cost including other sources of funding: \$1,000,000**

(please include bids for labor, equipment, rentals, etc.)

*\*\$300,000 guaranteed; matching funds required for remaining \$200,000.*

**2. Describe the purpose and need of the project:**

Purpose

Scientific studies of Utah Lake's non-native species initiated in 2001 revealed that the largest single impediment to Utah Lake restoration and recovery of the endangered June sucker (*Chasmistes liorus*) was

the presence of over 7 million adult common carp (*Cyprinus carpio*) (age 2+ and over) . The carp were estimated to be 90 percent of Utah Lake's biomass, were limiting the re-establishment of macrophytes, and, in short, were destroying any potential for a healthy, shallow lake ecosystem. The carp contribute to degrading water quality and a degraded Utah Lake ecosystem by increasing internal nutrient loading, removing aquatic vegetation, and destroying the lake's fish community. Additionally, the Utah Lake TMDL identifies carp as one of the probable factors reducing water quality in Utah Lake (PSOMAS). That TMDL also identifies the need to address the carp problem in the lake prior to pursuing additional controls on nutrients or other factors that may affect Utah Lake water quality. Carp's impact on June sucker included predation, competition and habitat loss and degradation which ultimately lead to the listing of June sucker as an endangered species in 1986.

Modeling followed by a pilot study revealed that harvesting carp beyond their point of maximum sustainable yield could reduce carp numbers by 75% of their current levels to a level that could be maintained indefinitely. According to scientific literature such a reduction in carp is a prerequisite to shift the ecosystem into a clear water state where primary productivity is driven by rooted aquatic macrophytes. Macrophytes are believed to be essential to the restoration of Utah Lake and for June sucker recovery, will foster the reestablishment of a healthy zooplankton community, and allow for sufficient numbers of young June sucker to avoid predation and recruit to the adult population. As we close in on the 75% carp reduction, June sucker numbers will increase; and, biodiversity, recreation opportunities, water quality and aesthetics of the lake will also improve.

Studies of the Utah Lake food web substantiate that millions of young carp are being taken annually by white bass and channel catfish. Along with the recent low lake levels, carp recruitment appears to be extremely limited. This alone has contributed to the likelihood that this project will be successful in improving lake and water quality conditions. Additionally, tens of thousands of 8-inch captive-reared June sucker are stocked annually, are growing to adult size, and are showing up in spawning runs in Utah Lake tributaries. Once macrophytes re-establish in the ecosystem, naturally spawned June suckers should have sufficient cover and food to begin natural recruitment in Utah Lake and move closer toward federal downlisting and delisting.

### Need

The carp removal effort on Utah Lake has been initiated with support from several partners including the U.S. Fish and Wildlife Service, Utah Department of Environmental Quality, Bureau of Reclamation, Utah Department of Natural Resources and others. It is essential to continue with a sustained effort that removes approximately 4-5 million pounds of carp annually until the population reduction goal of 75% is achieved. At which time removal would continue at a maintenance level through fish community monitoring efforts and commercial fishing. Without a consistent and sustained effort in the interim, the carp population will rebound and funding and effort spent to date will be for naught. The 2014 Utah Legislature provided \$500,000 for carp removal, with \$200,000 of that requiring a 1:1 match. If we are successful at receiving the requested \$200,000 from Willard Bay settlement grant, the full amount of funding from the legislature will be made available for the project and carp removal is guaranteed through and likely beyond July 2015. Failure to secure this matching funding puts the project in jeopardy of not meeting removal targets and allowing the carp population in the lake to rebound.

### Project Objectives

- I. To remove at least 75% of Utah Lake's carp by 2018.
- II. To provide monitoring of Utah Lake attributes in order to document changes and improvements in ecosystem health (funded in part by June Sucker Recovery Implementation Program).
- III. To provide infrastructure and support to increase removal efficiency and to provide incentives for the highest and best use of carp and carp products.
- IV. To conduct research and refine methods for reducing carp at all life stages (telemetry tagged carp for locating high concentrations of carp, daughterless carp, etc).
- V. To record methods and accomplishments for information, education and other outreach and scientific purposes.

### **3. Estimated time frame of the project with significant milestones (Note: Project must be completed with final reports filed by January 1, 2018):**

The requested funding is to match funding appropriated by the Utah State Legislature and will be expended between July 1, 2014 through June 30, 2015. A final report will be submitted by January 1, 2016. Every dollar of this request will be used to harvest carp from Utah Lake. Costs associated with data collection, analysis, and report preparation will be carried by the Utah Lake Commission and the June Sucker Recovery Implementation Program (JSRIP).

### **4. Describe the location of the project with attached location map, including details on the total area that will be directly enhanced by the project:**

Utah Lake is located within Utah Valley adjacent to the cities of Provo and Orem and surrounded by many smaller municipalities. The lake lies between the Wasatch Mountains to the east and Traverse Mountain to the west. The lake is approximately 25 miles long and 12 miles wide. The entire 95,000 acres of Utah Lake and the surrounding communities will benefit from carp removal.

### **5. Describe how the project will specifically enhance and protect waterways affected by the Willard Bay diesel release and improve the conditions of one or more of the following: wildlife, habitat, natural vegetation, water quality or emergency response:**

Carp contribute to degrading water quality and a degraded Utah Lake ecosystem by increasing internal nutrient loading, removing aquatic vegetation, and destroying the lake's fish community. Additionally, the Utah Lake TMDL mentions carp as one of the probable factors reducing water quality in Utah Lake (PSOMAS). That TMDL also identifies the need to address the carp problem in the lake prior to pursuing additional controls on nutrients or other factors that may affect Utah Lake water quality.

Utah Lake is part of a corridor along the Wasatch Front that includes the Great Salt Lake, Willard Bay, and the Bear River Refuge that provides a migratory and feeding pathway for migratory birds, waterfowl, raptors and other wildlife. These water bodies work in conjunction to provide the Great Basin hub of the Pacific Flyway for migratory birds. Utah Lake provides an alternative feeding and resting area for avian species when other waters along the pathway are impaired. Over 190 bird species that are associated with Utah Lake have been observed. The lake is also used by numerous mammal, reptiles, and amphibians, some of which are classified as species of greatest conservation concern by the Utah Division of Wildlife Services. Carp removal will improve water quality, wildlife habitat, and natural vegetation allowing the compromised ecosystem to improve.

**6. Describe project's connectivity to other natural areas or projects that further enhance wildlife, habitat, natural vegetation, water quality or emergency response:**

Utah Lake feeds into the Jordan River, which flows north to the Great Salt Lake. The water quality of Utah Lake directly affects the river's quality and environmental values. Total phosphorus levels in Utah Lake exceed the pollution indicator level of 25 ug/l averaging 46.66 ug/L . Additionally, Utah Lake is currently listed on the Utah Department of Environmental Quality's 303(d) list of impaired waters. The Utah Lake TMDL identified common carp as one of the probable factors reducing water quality in Utah Lake (PSOMAS). Large scale removal of common carp has the potential to remove large quantities of phosphorus from the system and help reduce internal nutrient loading of phosphorus. Common carp on average are composed of 0.48% phosphorus by wet biomass. Removing an estimated 5 million pounds of carp per year (our annual target) would result in the annual removal of an estimated 24,000 pounds of phosphorus. Common carp also influences internal nutrient cycling by resuspending benthic particulates through waste excretion. Direct excretion data reveal a common carp population of 200kg/ha can internally load orthophosphate at a rate of 0.52 mg P/m<sup>2</sup>/day and total-P at a rate of 1.07-2.18 mg/P/m<sup>2</sup>/day. Common carp densities in Utah Lake at the start of this project were approximately 400 kg/ha and thus removal of large numbers would reduce a major source of internal nutrient loading. In addition to the reduction of total phosphorus, common carp removal would also benefit the federally endangered June sucker. It is believed that as carp are removed, June sucker and other fish densities would increase with the added benefit of improved water quality and the resulting increase in food resources.

**7. Describe any additional social benefits of implementing this project:**

Utah Lake provides opportunities for camping, boating, fishing, hiking, bird watching, picnicking and other recreational activities. Although the lake is located adjacent to and within a short distance from Utah's largest cities, visitation is well below what would be expected. The primary reason the lake is under-utilized is its muddy appearance and concerns with water quality. Historically, the lake has produced large blue-green algal blooms and fish die-offs. Since the inception of the carp removal project neither of these have been observed. A recent economic study completed by Environ International on behalf of the Utah Lake Commission and the Department of Natural Resources estimated that increased fishing associated with carp removal would exceed \$38 million over the next 20 years. The study determined that a 10% improvement in water quality would generate an \$8.1 million benefit annually in improved ecosystem services. A survey of Utah County residents conducted in 2013 showed that residents strongly supported the carp removal efforts with 69% of respondents indicating that they were very supportive of the effort. Likewise, when polled about funding various projects at Utah Lake, respondents indicated a strong willingness to pay to ensure the success of the carp removal project seeing multiple benefits to the lake, including improved water quality, recreational experiences, habitat, and increased numbers of other more desirable fish species.

**8. Project plans and details, including rights to work on specified piece of land:**

In January of 2010, the project proponents completed an environmental assessment (EA) for Utah Lake carp removal in order to comply with the National Environmental Policy Act. That EA resulted in the issuance of a Finding of No Significant Impact (FONSI), concluding that the Utah Lake Carp Removal Project will not have negative effects on the ecosystem nor the human environment..

Loy Fisheries, a commercial fishing operation, has conducted most of the carp removal to date while under contract through the JSRIP. The Utah Division of Wildlife Resources has issued Loy Fisheries a commercial harvest permit for Utah Lake that allows them to catch and remove common carp, white bass, and black bullhead. Commercial harvest of carp is possible throughout the year, with the highest catch rates occurring during the winter months when ice covers the lake. The commercial fishermen use large

seine net to harvest carp from several areas around the lake. Research efforts have allowed the use of telemetry tagged carp to aid in locating large concentrations of carp. Together with the experience of the commercial fishing crew, this has allowed for the efficient targeting of carp within the lake. The primary fishing locations are on the south and east sides of the lake, particularly Goshen Bay, Provo Bay, and areas near Lincoln Point and the mouth of the Spanish Fork River. During 2013, these commercial fishing efforts resulted in the removal of approximately 4.1 million pounds of carp from Utah Lake. This represents increases in efficiency, effort, and improvements in equipment.

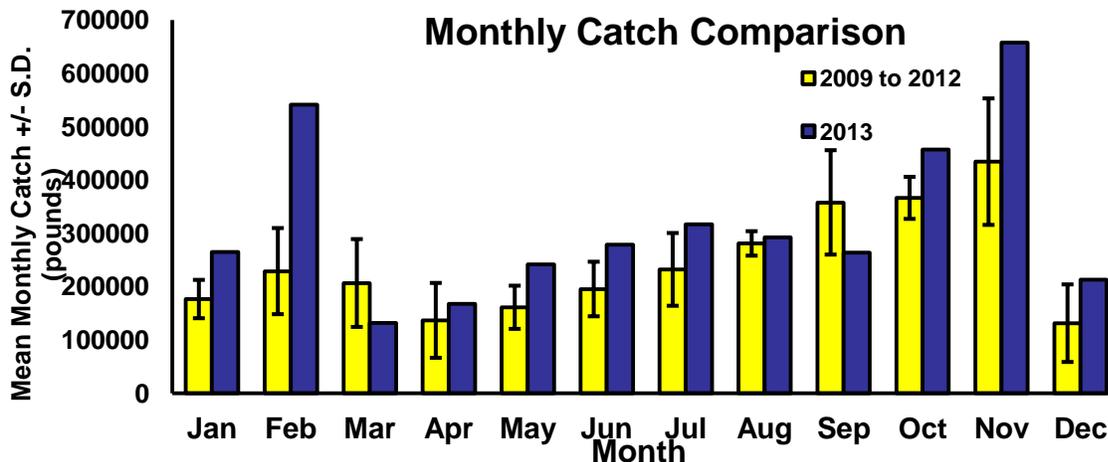
Utah Lake is sovereign land of the State of Utah and commercial fishing access to the lake is primarily through Utah Lake State Park and access points managed by the Utah Division of Forestry Fire and State Lands. Permission to use these locations to access the lake has been obtained. Additionally, Loy Fisheries leases a small area near the mouth of the Provo River for storage of equipment and use in the off-loading of carp from transport boats.

**9. Describe your experience in implementing projects of similar scope and magnitude:**

A pilot project was implemented in 2008-2009 to determine the feasibility of implementing a large scale carp removal project on Utah Lake. The pilot project resulted in the removal of 2.6 million pounds of carp over 12 months and indicated that with an adequate sized fishing crew and appropriate equipment, the commercial harvest of large numbers of carp from Utah Lake was feasible. As stated above, National Environmental Policy Act Compliance was completed for this project in January 2010 and full scale carp removal efforts have continued ever since. Through April 2014, the project has resulted in the removal of over 15 million pounds of carp from Utah Lake. The table below shows removal results for the pilot project and the subsequent years of harvest.

Project Year	Dates	Pounds of Carp Removed
Pilot Projects	Oct 2008 to Jan 2010	2.6 Million
First Year	Feb 2010 to Jan 2011	2.9 Million
Second Year	Feb 2011 to Jan 2012	3.0 Million
Third Year	Feb 2012 to Jan 2013	3.0 Million
Fourth Year	Feb 2013 to Jan 2014	4.2 Million

As the project has proceeded, improvements have been made in equipment and efficiency and contractors have improved upon their techniques. These improvements have allowed for increases in the number of days fished and the total amount of carp removed from the lake. The chart below illustrates some of these improvements as it shows the monthly amount of carp removed in 2013 compared to the average amount removed per month for the period of 2009 through 2012.



In addition to the removal of carp, monitoring of the remaining carp population in the lake has been carried out through contracts with the Utah Division of Wildlife Resources and Utah State University. This monitoring effort involves netting at established carp population monitoring sites throughout Utah Lake and estimating the density of carp remaining in the lake. This monitoring indicates that adult carp numbers have been reduced by 40 percent.

**10. Describe how ongoing maintenance of the project will be funded and carried out:**

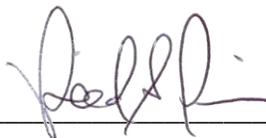
The Utah Lake Commission was established in April 2007 to help coordinate management efforts of Utah Lake to improve the resource. The Commission will continue to work with the JSRIP, which was formally established in 2002 as a partnership of water interests that includes federal and state agencies. Funding for the Program is from annual contributions from the various partners. The JSRIP uses these funds to support projects benefiting June sucker recovery. Ongoing maintenance of the reduced carp population in Utah Lake is anticipated to cost from \$150,000 to \$300,000 annually. The JSRIP has committed to fund this ongoing maintenance in order to keep carp levels at or below the levels achieved through this ongoing carp removal project.

**11. List consultants or agency partners that have participated in project development (below):**

Name/Company: Henry Maddux, Utah Dept. of Natural Resources  
Address: PO Box 145610, Salt Lake City, UT, 84114-5610  
Phone: 801-538-7420

Name/Company: Mike Mills, Central Utah Water Conservancy District  
Address: 355 W. University Parkway, Orem, UT, 84058  
Phone: 801-226-7132

Signature \_\_\_\_\_  
Applicant



Date May 2, 2014

Signature \_\_\_\_\_  
Co-Applicant (if applicable)

Date \_\_\_\_\_

September 15, 2008



**JUNE SUCKER RECOVERY  
IMPLEMENTATION PROGRAM**

1584 West North Temple, Ste 3710  
Salt Lake City, Utah 84114-5610

**Reed Harris**  
Recovery Program Director

**Kris Buelow**  
Local Recovery Program Coordinator

**Participating Organizations**

Utah Department of Natural Resources

U.S. Fish and Wildlife

Central Utah Water Conservancy District

Utah Reclamation Mitigation  
and Conservation Commission

U.S. Department of the Interior

U.S. Bureau of Reclamation

Provo River Water Users Association

Provo Reservoir Water Users Company

Outdoor and Environmental Interest Groups

To: Reed Harris, Program Director, June Sucker Recovery Implementation Program

From: Michael Mills, Local Coordinator, June Sucker Recovery Implementation Program

Subject: Selection of Carp Removal Contractor for Utah Lake Carp Removal

**Background:**

The JSRIP has actively been researching methods for controlling common carp in Utah Lake for the past several years. At its January meeting, the Administrative Committee asked the Program Director's Office (PDO) to follow a Request for Proposals (RFP) process should funding for implementing carp removal become available. During the month of May, the RFP was advertised in the Daily Herald, the Salt Lake Tribune and the Deseret Morning News. The RFP was also circulated to known commercial fishing companies throughout the country. On June 2, 2008 eight proposals were received.

**Selection Process:**

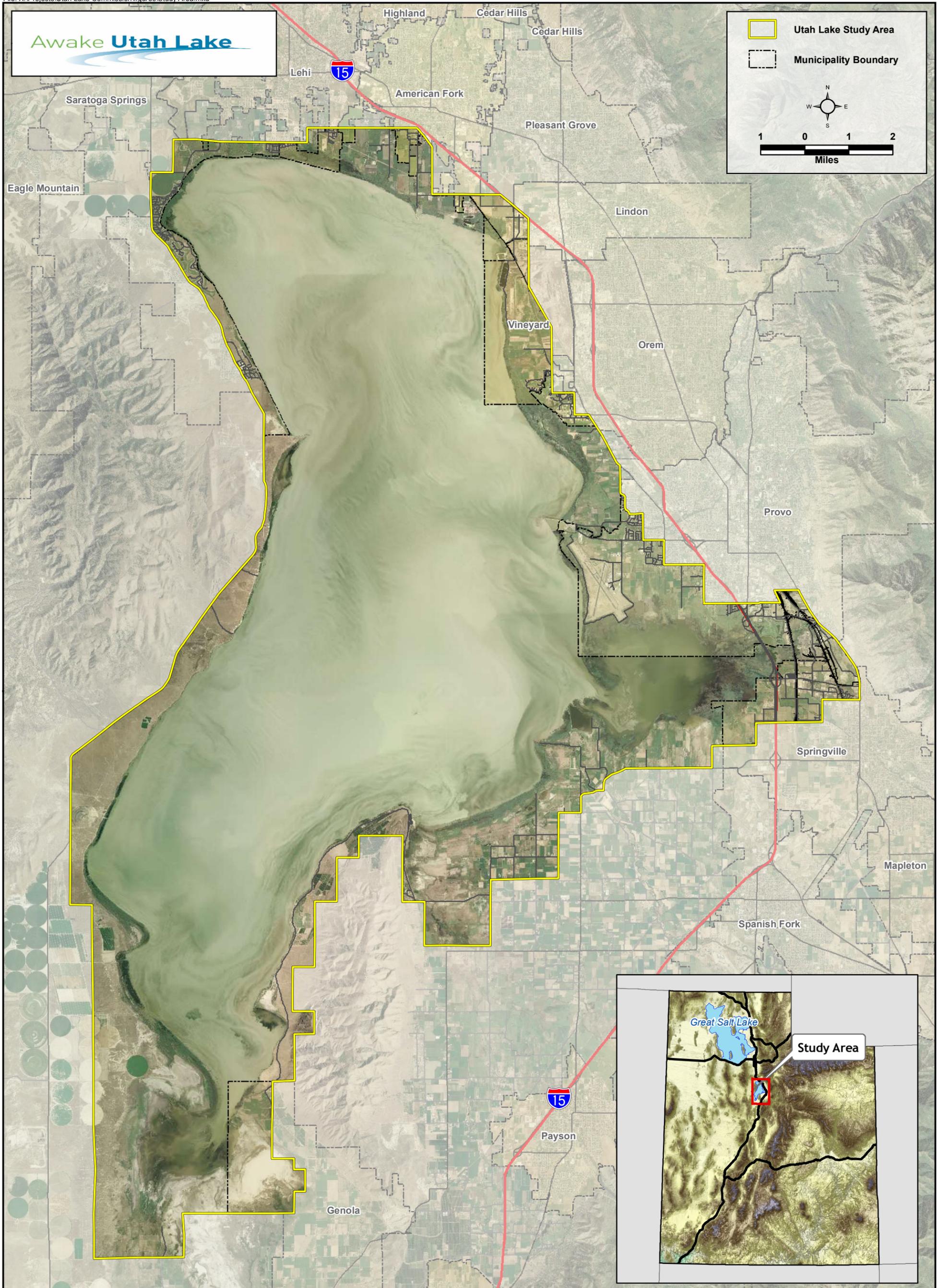
The PDO and representatives from the Utah Department of Natural Resources and Central Utah Water Conservancy District served as the selection panel and were given copies of the proposals from each interested party. Reviewers were also given selection criteria to rank each proposal and were instructed to provide specific comments beyond the narrative, if warranted. The criteria used to rank each proposal included, commercial fishing experience, responsiveness to the programs objectives, knowledge of harvest of common carp, ability to implement fishing techniques in shallow water, and feasibility of stated objectives.

**Results:**

The eight proposals received included two joint ventures from fishing companies that also submitted separate proposals representing their own companies. The top three proposals were presented by American Heartland Processing, Jerry Cross, and Loy Fisheries and follow up interviews with representatives from these three companies were held in Salt Lake City. Cost proposals from the three companies were similar and identified a cost of \$0.20 per pound would be necessary for accomplishing the removal. During the interview process and through follow up contacts with Jerry Cross, it was determined that his company would not be capable of accomplishing removal of the large volumes of fish necessary to accomplish the goals of the project. Interviews with representatives of Heartland Processing emphasized the need for land with utility access would need to be provided, in addition to project costs, for them to implement their proposal.

During the evaluation process, reviewers identified Loy Fisheries carp fishing and shallow lake experience as being superior to those offered by the other proposals. Loy Fisheries' experience operating on Utah Lake was also considered a valuable asset to the Program.

Based on the results of the evaluation process and subsequent meetings with the interested parties, I recommend that we select Loy Fisheries for conducting the Program's carp removal project for 2008 to 2009.



## 2.1 - Study Area Map

Utah Lake Commission and **URS**