PRE-REHABILITATION PLAN

Worth Lake

I. PROPOSAL

A. Justification for Proposed Rehabilitation

Worth Lake is located northwest of Mesa, Washington in Franklin County. Worth Lake has an approximate surface area of 5 hectares (12 acres), a mean depth of 2 meters (m), and a maximum depth of 3.5 m. The lake is fed by intermittent irrigation and wetland runoff while water exits the lake through an irrigation canal on the southwest end. Development around the lake is limited primarily to agriculture. A Washington Department of Fish and Wildlife (WDFW) parking site provides shoreline and hand-launch boat access to the lake. Historically, Worth Lake has provided rainbow trout (Oncorhynchus mykiss) and warmwater angling opportunities. Between 1958-1979, WDFW stocked the lake with over 83,000 rainbow trout. WDFW records indicate that no stocking occurred between 1980 and 1999. In 2000, 75 adult black crappie, Pomoxis nigromaculatus, were stocked into Worth Lake and rainbow trout were again stocked in 2004. No crappie or rainbow trout were sampled during a population survey in 2005. Worth Lake has been rehabilitated twice since 1969 (1969 and 1979) in efforts to eliminate non-game fishes such as carp (Cyprinus carpio). However, because of the lake's connectivity to the Columbia Basin irrigation system and/or limited rehabilitation success, carp always re-inhabit the lake within several years. A fish survey conducted in 1998 by WDFW Warmwater Program personnel revealed that carp had once again immigrated into the lake. In 2004, the original water control structure was reconstructed at the outlet of the lake to regulate water levels and to prevent upstream immigration of carp. Carp removal efforts using electrofishing were conducted in 2006, 2007, and 2008. Carp densities have remained at low-to-moderate levels in recent years.

On June 14-15, 2005, personnel from the WDFW Warmwater Enhancement Program, along with district fish biologists, conducted a fishery assessment on Worth Lake. The results from this survey were used to assess the current status of the fish community and to identify possible enhancement opportunities. Six fish species were collected from Worth Lake in June 2005. Warmwater gamefish comprised approximately 97 percent of the total fish captured. Yellow perch was the most abundant species (95.5%) encountered in the samples, but contributed only 40% of the biomass. Conversely, carp comprised only 2.9% of the total number sampled, but accounted for over 51% of the total biomass. Largemouth bass, bluegill, sculpin, and pumpkinseed, combined, contributed less than 2% of the sample by number and less than 9% of the biomass. Largemouth bass sampled from Worth Lake ranged in total length from 177 to 491 mm and ranged in age from 1 to 7 years. Growth of Worth Lake largemouth bass far exceeded the eastern Washington average at all ages. Yellow perch sampled from Worth Lake ranged in total length from 41 to 282 mm and ranged in age from 1 to 3 years. Growth of Worth Lake yellow perch far exceeded the Washington statewide average at all ages. Although Worth Lake yellow perch exhibited good growth, their condition was far below the national 75th percentile. At the time of this survey, Worth Lake showed indications of having a prey crowded fish community dominated by small yellow perch. The poor condition, high overall sample size, and low stock density index values indicate extensive intra-specific competition for available resources. Electrofishing and fyke netting CPUE for yellow perch during this 2005 survey was higher than what was observed in a past survey in 1998. Length frequency and CPUE data suggest that a large proportion of Worth Lake yellow perch are fish at or below stock size (130 mm) and this population likely provides little fishing opportunity.

The good condition and low sample size of largemouth bass in Worth Lake suggests a low density population with ample food resources. Largemouth bass are likely preying upon the abundant small yellow perch in the lake. Divens and Phillips (2000) observed a highly abundant largemouth bass population in 1998 with electrofishing CPUE of 118 largemouth bass/hr. In contrast, electrofishing CPUE of largemouth bass in 2005 (52 fish/hr.) was less than half of that observed in 1998, indicating that their density has reduced in the last seven years. Although largemouth bass up to 491 mm (~19 inches) were sampled in Worth Lake in 2005, their numbers are few, which limits angling opportunity.

Carp were highly abundant in Worth Lake at the time of this survey. In 1998, Divens and Phillips (2000) observed low numbers of carp in the lake and suggested that they were entering the lake through the irrigation canal system. In 2004, a water control structure was constructed at the outlet to prevent carp from immigrating upstream into the lake. Since carp were present in the lake when the control structure was built, subsequent efforts were made to mechanically remove them using electrofishing. The first effort, immediately following this survey in June 2005, yielded 161 carp, which were sacrificed and discarded. A second effort in November 2005 yielded 940 carp.

Black crappie stocked at low densities in 2000, were not observed during sampling in 2005, which suggests low survival. Historically, management biologists have discouraged the stocking of crappie in small waters (Swingle 1952; Jenkins 1958; Hackney 1975). Jenkins (1957) found that only two of the sixteen small Oklahoma ponds evaluated supported adequate numbers of harvestable size crappie. Today, states like Missouri do not recommend stocking crappie in lakes less than 40 ha (Dillard 1982). If Worth Lake were rehabilitated, warm water species such as largemouth bass and bluegill, or a combination of warm water species and trout, may produce the best angling opportunities for the public.

Worth Lake historically has been managed as a mixed species water, trout and warm water. Currently, angling opportunities are limited with a large population of undersize yellow perch and minimal numbers of largemouth bass. Treatment of the lake is needed to establish a quality fishery.

Primary management of this waters is for largemouth bass and bluegill.

The Ringold Meseberg Hatchery (RMH) is the only State operated warm water species incubation and rearing facility in Washington. Currently, broodstock for production of largemouth bass and bluegill is collected off site and transported to the facility as there are no local populations sufficient in magnitude to meet broodstock needs. If the bass and bluegill populations are restored at Worth Lake it may help to meet the needs for hatchery production. Adults could be electrofished at Worth Lake, transported to RMH, allowed to spawn, and then returned to the lake. Distance from the lake to the hatchery is approximately 12 miles.

B. Physical Description of Water Proposed for Rehabilitation

WATER: Worth Lake
LOCATION: Sec 20, T13N, R30E, Franklin Co.
SURFACE ACRES: 12
MAX. DEPTH: 10ft
VOLUME: 75-120 acre-feet
OUTLET: Water control structure within irrigation canal
STREAM: MILES N/A FLOW (cfs): 1-6 cfs
PUBLIC ACCESS: WDFW, Bureau of Reclamation
LAND OWNERSHIP: State (Public) 100%
ESTABLISHED RESORTS: None

C. Proposed Management Actions

WATER: Worth Lake
TARGET SPECIES: Common carp, yellow perch
DATE LAST REHABED: March 1979
PROPOSED TREATMENT DATE: March 2009
REPLANTING DATE: May 2009
SPECIES: Largemouth Bass & Bluegill
STOCKING: Largemouth, 25 adult (>10"), 1,200 fingerling (2"-4")
Bluegill, 250 adult, 4,800 fingerling (2"-4")
PROPOSED TOXICANT: Rotenone, powder
CONCENTRATION: 2 ppm
AMOUNT (ROTENONE AT 5% ACT. INGRED): 300 lbs powder, 30 gallons liquid
METHOD OF APPLICATION: small pumper boat - slurry and spray; backpack sprayers
CREW DESCRIPTION: Leader Jeff Korth, Personnel 3-4

II. PURPOSE:

Pubic demand for and participation in warm water fisheries is very high. These fisheries are prized as opportunities for the angler or family recreation. Year around season fisheries provide a relaxed recreational opportunity and are also integral to the state and local economies. The District 4 area, Benton and Franklin counties, has relatively few lakes, fewer lakes with public access, and even fewer lakes that can be actively managed due to the connectivity of most lakes through an elaborate system of irrigation canals. These canals allow immigration of unwanted species and out migration of desirable species. Currently, angling opportunities at Worth Lake are limited with a large population of undersize yellow perch and minimal numbers of largemouth bass. Treatment of the lake is needed to establish a quality warm water fishery. A secondary goal is to establish a local broodstock for the Ringold-Meseberg Warm Water Hatchery. Complete rehabilitation is the only feasible method of restoring these waters to a largemouth bass/bluegill management scheme. Complete removal of all species is the goal of the rehabilitation.

III. INTENDED OUTCOME/MEASURE OF SUCCESS:

We intend to establish Worth Lake as a successful warm water fishery and improve its popularity by maintaining the lake as one of the few local waters with moderate to strong populations of both largemouth bass and bluegill. Success of this measure will be apparent during random creel surveys and population sampling. Given a reasonable chance of eliminating the populations of undesirable species, the beneficial effects should be noticeable one-two years post treatment.

IV. RESOURCE IMPACTS:

- The populations of the target species, common carp and yellow perch, along with all other fish species inhabiting the lake will be severely and negatively impacted. All are exotic species. To the extent possible, largemouth bass will be collected and held at the RMH until the rehabilitation is completed and the effects of the rotenone has dissipated; then returned to the lake.

- Regional Lands, Habitat, Wildlife and Non Game managers have been appraised of our rehabilitation plans. No unmitigated concerns have been expressed on the potential impacts to non targeted species.

- According to Bradbury (1986), the effects of rotenone on benthos are variable, depending on the concentrations and species. Crustaceans are most tolerant while the smaller insects are most affected. Immediate reduction of populations averages 25%, and survival doubles when access to bottom sediments exists. Benthic communities generally recover to at least pretreatment levels within two months. Zooplankton is more severely impacted, and communities generally take two to twelve months to fully recover. While relatively tolerant of even heavy doses of rotenone, amphibians (especially larval) are at risk, and herptiles are affected somewhat less so. Almost no chance of eliminating an entire population exists.

- This lake has seen very limited angler use in recent years. The lake will be closed to angling during the planned period of treatment but will reopen to the public by Summer 2009. The rehabilitation is planned for March 2009 when all applicable hunting seasons will be closed in this area. The lake proper is not a source of potable water for humans or livestock.

- Professional biologists and other naturalists have visited this site frequently over the past 10 years. To our knowledge, no endemic, rare, threatened or otherwise listed species will be impacted by the rehabilitation. In addition, a WDFW Warm Water Survey was conducted in 2005 and no State listed aquatic species were collected within the lake.

- The water in the lake is used for irrigation from late Spring to the Fall. Rehabilitation is scheduled for March 2009 prior to the irrigation season. In addition, the water level of the lake will be lowered to ensure that water will not exit the lake through the irrigation canal during the treatment period. Dead fish along the shoreline will not be a public nuisance since the lake will be closed to fishing and there are no shoreline residents.

V. MITIGATING FOR ADVERSE IMPACTS:

- Catchable-sized fish will be returned to the lake to the extent possible after treatment. There will be only a limited loss of recreational fishing immediately after treatment with a gradual improvement in following years as the fish mature. No removal of dead fish is planned as the nutrient base contained therein is best returned to the lake.

- Early spring rehabilitation (March) should not interfere with waterfowl nesting.

- Livestock does not use the waters to be treated and irrigation withdrawals will not be affected at this time of the year. The concentration of rotenone used in the treatment will be far below that considered harmful to mammals.

- Downstream resources will not need to be protected, as those waters will not be affected under the planned application. Inflows to the lake are at their lowest in March and the lake will be lowered to the minimum level. Weir boards will be placed in the water control structure to further delay the movement of water downstream. This combination of preventative measures will ensure that there is no outflow from the lake during the treatment period.

- No endemic, rare, threatened or otherwise listed species are known to inhabit this area.

- Protective wear for the eyes, face and hands will be available for all purveyors of rotenone.

- Lakes will be posted according to Department of Ecology guidelines to notify the public of the treatment and discourage the public from possessing or consuming dead fish.

VI. RECREATIONAL IMPACT:

Recreational angling opportunity will be increased if the undesirable species are removed from Worth Lake. These recreational opportunities are invaluable for the local rural communities. With the planting and maturation of largemouth bass and bluegill, Worth Lake is estimated to host 10-20 angler trips per week during the usual angling season. The level of participation will continue at minimal levels providing only marginal recreational benefits if no action is taken

VII. ECONOMIC IMPACTS:

- Rehabilitation would establish a fishery in a rural area providing associated economic activity for Basin City, Mesa, Eltopia, and the Tri-cities. An estimated 300 angler trips will be made to Worth Lake as a result of the proposed management action, with an economic impact ranging from $15,840 to $39,600 per year (2004 dollars; based on WDW estimate of $132 per trip). Fingerling and adult plants will cost the agency less than $1,000, and can be easily accomplished under current hatchery programs.

- The cost of treatment will be approximately $4,000, but the subsequent boost to the local economy will more than offset that loss within two-to-three years after treatment.

- Developing a local broodstock for the Ringold Meseberg Hatchery would greatly reduce costs for collection and transportation of broodstock from other sites and provide a local lake for the disposition of the fish after spawning.

VIII. RELATED MANAGEMENT ACTION:

Approximately 25 catchable (>10”) largemouth bass and 250 catchable bluegill will be stocked in late spring to provide immediate fishing opportunity with a follow up of 1,200 fingerling (2"-4”) largemouth bass and 4,800 fingerling bluegill (2"-4") in the fall. It is expected that the population will be self-sustaining after the initial plants. The lake will be surveyed to monitor fish population growth and abundance.

IX. PUBLIC CONTACT:

Public concern over the lack of quality warm water fisheries, especially bluegill, largemouth bass, and crappie, prompted this action.

Public meetings will be held during July 2008 in Ephrata, Tri-cities, Spokane, Prosser, and Olympia to explain DFW’s 2007-08 rehabilitation proposals, assess public opinion, and address local concerns. The announcement was provided statewide and to area papers and radio stations and mailed to landowners and residents near the lakes.

Comments on the SEPA for rehabilitations statewide will also be accepted during the month of August. The SEPA can be found on WDFW or WA Dept of Ecology's web sites, or at County offices (usually Planning Commission). Additional comments may be sent directly to WDFW via mail or e-mail.

Initiated by: Region Two Fisheries Management