

PRE-REHABILITATION PLAN
McDowell Lake (Stevens County)
April 29, 2020 – W.P. Baker & B.M. Walker

I. PROPOSAL

A. Justification for Proposed Rehabilitation

McDowell Lake is located on the Little Pend Oreille National Wildlife Refuge (USFWS). Trout stocking began in 1972, and the lake has been planted exclusively with Rainbow Trout *Oncorhynchus mykiss* since that time. The lake has been managed under fly-fishing only regulations since 1974 and became a catch-and-release fishery in 1985.

McDowell Lake has been treated with rotenone five times (1973, 1984, 1988, 2006, 2014). Previous treatments all targeted Tench *Tinca tinca*, although the 2014 treatment also targeted Pumpkinseed Sunfish *Lepomis gibbosus*. Pumpkinseed Sunfish were either illegally introduced to McDowell Lake or immigrated from the swamp through the faulty water management structure. Yellow Perch *Perca flavescens* were also found to be present following the 2014 treatment. The 2014 treatment, primarily an aerial liquid application, did not successfully eradicate Pumpkinseed Sunfish or Tench. The populations have subsequently rebounded. Whether Yellow Perch were eradicated is unknown, but additional sampling in spring/summer 2020 will be conducted to determine fish species composition in the lake. The lake is proposed for rehabilitation in 2020 to control the Pumpkinseed Sunfish and Tench populations which are limiting trout growth and recruitment through interspecific competition. The water control structure was replaced in 2015, so re-invasion of the lake by undesirable species (e.g., Pumpkinseed Sunfish and Yellow Perch) following the 2020 treatment should not be possible.

B. Physical Description of Water Proposed for Rehabilitation

1. WATER: **McDowell Lake**¹
2. LOCATION: Sec's 6, 7, and 8, T34N, R41E, Stevens County
3. SURFACE ACRES: 69 (39) acres MAXIMUM DEPTH: 29 (21) feet
4. VOLUME: 690 (220) acre-feet; 1,875,170,938 (612,000,000) lbs H₂O.
5. OUTLET: Yes. Drawdown will preclude outflow at the time of treatment. Outflow will not resume until after natural rotenone detoxification occurs.
6. STREAM: Yes. Inlet stream is a diversion from North Fork Bear Creek. The diversion will be shut off prior to treatment, so will not be flowing.
7. PUBLIC ACCESS: Yes.
8. LAND OWNERSHIP: Public 100%.
9. ESTABLISHED RESORTS: None.

¹ Values for size, depth and volume for McDowell Lake in parentheses reflect drawdown to expected treatment water level (approximately 6 ft drawdown).

C. Proposed Management Actions

1. WATER: **McDowell Lake**
2. TARGET SPECIES: Pumpkinseed Sunfish, Tench
3. DATE LAST REHABBED: October 2014
4. PROPOSED TREATMENT DATE: September-November 2020
5. REPLANTING DATE: Spring 2021
6. SPECIES: Rainbow Trout
7. CATCHABLES: 1,725 FRY/FINGERLINGS: 1,500
8. PROPOSED TOXICANT: Rotenone, powder and liquid CONCENTRATION: ≤ 4.0 ppm
AMOUNT (ROTENONE AT 5% ACT. INGRED): 2,096 lbs powder, 40 gals liquid.
9. METHOD OF APPLICATION: Powder – pumper boat; Liquid – air boat
10. CREW DESCRIPTION: Leader(s) Bill Baker, Personnel: 8

II. PURPOSE:

The Washington Department of Fish and Wildlife (WDFW) provides many types of fisheries in response to public desires. WDFW manages both trout and warmwater recreational fisheries using multiple species of fish, providing diverse recreational angling opportunity. Public demand for, and participation in, trout fisheries is high. Trout fisheries managed for catch-and-release and fly-fishing only are prized as opportunities for intermediate to expert anglers; provide outdoor opportunity during the spring and fall months; and are also integral to state and local economies.

Alternatives to rehabilitation of McDowell Lake are costly or impractical. Annual stocking of catchable-sized trout strictly to support recreational fishing is incompatible with USFWS policy (USFWS 1982). Thus, fry or fingerling trout stocking is necessary to support lowland lake recreational trout fisheries on the Little Pend Oreille National Wildlife Refuge.

III. INTENDED OUTCOME/MEASURE OF SUCCESS:

WDFW intends to restore McDowell Lake to a popular catch-and-release fly fishing opportunity maintained through fry-stocking of rainbow trout. The average catch rates should be 10+ fish/angler on the opener with a sustained catch rate of 5+ fish/angler for the duration of the season. Spring fry should be a minimum of 11 inches, and carryover catch should account for 25-30 percent of the overall catch. Success will be measured during Opening Day creel contacts and biological surveys. Beneficial effects of lake rehabilitation should be expected to last approximately 6 to 8 years under the current management scheme.

IV. RESOURCE IMPACTS:

1. The population of the target species (Pumpkinseed Sunfish and Tench) will be severely and negatively impacted. These species are not desired for a fishery under the current lake management plan.
2. Regional Lands, Habitat, Wildlife, and Non-Game managers have been apprised of our

rehabilitation plans. No unmitigated concerns have been expressed on the potential impacts to non-targeted species.

3. 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 reptiles are affected somewhat less so. Almost no chance of eliminating an entire population exists.

4. During treatment, the lake will be closed to angling, and other recreational uses such as boating, and swimming will be curtailed. There will be minimal loss of the fishery associated with our activities. McDowell Lake will be stocked with catchable-sized trout to provide a fishery in the spring of 2021, prior to the Lowland Lakes Opening Day, and subsequent fry stocking of rainbow trout will sustain the fishery in future years.

5. Professional biologists and other naturalists have visited this site frequently over the past 50 years. To our knowledge, no endemic, rare, threatened or otherwise listed species will be adversely impacted by the rehabilitation.

V. MITIGATING FOR ADVERSE IMPACTS:

1. Trout fry survival and growth for the proposed water will be increased, and a quality trout fishery will be restored. No removal of dead fish is planned as the nutrient base contained therein is best returned to the lake.

2. Fall rehabilitation will not interfere with waterfowl spring nesting. The eradication of the undesirable fishes will also benefit waterfowl through increased production of invertebrates. Stocked populations of trout will not be as numerous as the current undesirable fish populations.

3. Livestock use of the waters to be treated will not be significantly affected. There are no livestock watering restrictions on the rotenone label. Landowners will be notified of the rehabilitation.

4. No endemic, rare, threatened or otherwise listed species are known to inhabit this area. There is a Bald Eagle *Haliaeetus leucocephalus* nest located near the southern end of the lake. However, chicks are expected to have fledged prior to treatment. The McDowell Lake treatment area is located within the home range of the Dirtyshirt Pack of wolves *Canis lupus*, but wolves are unlikely to be present in the area during treatment due to increased human presence, traffic, and activity in the days surrounding treatment. Multiple species of birds, including waterfowl, are also expected to be present, but are not expected to be impacted by the project due to high mobility and short duration of treatment.

5. Protective wear for the eyes, face, body and hands will be worn by all staff participating in rotenone treatment.

6. 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:

See Section III.

Angler catch rates of 10+ fish/angler on the opener and 5+ fish/angler for the duration of the season are expected. Yearling trout should average around 11 inches. Carryovers should comprise 25-30% of the catch and average 14 inches for 2-year-olds and 16 inches for 3-year-olds.

VII. ECONOMIC IMPACTS:

An estimated minimum of 2,000 trips/year made to McDowell Lake as a result of the proposed management action would result in an increased economic impact totaling \$80,000/year (2011 dollars; based on USFWS estimate of \$40.00 per trip). If the project is successful for 6 years it will generate a minimum of \$480,000 in economic activity. The total annual cost to plant this lake with trout fry is less than \$300. The rehabilitation will cost the Department about \$17,531 (including costs of rotenone, time, travel, etc.). The investment by the State will be realized within one year of treatment.

VIII. RELATED MANAGEMENT ACTION:

See I.C.6. for fish planting data

Increased penalties and enforcement activities are likely necessary to dissuade illegal stocking of state managed waters. Educating the public about the costs (funding and time) with emphasis on what WDFW might be able to accomplish with those resources would be a worthwhile activity.

IX. PUBLIC CONTACT:

Public meetings will be held during May 2020 in Colville and Olympia to explain 2020 rehabilitation proposals, assess public opinion, and address local concerns.

X. REFERENCES

United States Fish and Wildlife Service (USFWS). 1982. Refuge manual. Division of Refuges,
Washington D.C.

Initiated by: Region 1 Fisheries Management