PRE-REHABILITATION PLAN

Hatch, Little Hatch, and Keogh lakes (Stevens County)

April 20, 2020 – W.P. Baker & B.M. Walker

I. PROPOSAL

A. Justification for Proposed Rehabilitation

Hatch Lake is the largest lake of a seasonally connected system including Little Hatch and Keogh lakes. Hatch Lake has historically been a popular winter trout fishery in the Colville area. Illegal introductions of undesirable fish species (primarily Yellow Perch *Perca flavescens*) have impacted trout production in this lake since trout stocking began in 1956. Seasonal connection to Little Hatch and Keogh lakes also allows illegally introduced populations of nuisance fish species from these waters access to Hatch Lake during years with high spring run-off. The Hatch Lake system is currently infested with Yellow Perch, causing poor recruitment of the Rainbow Trout *Oncorhynchus mykiss* fry plant (2017-2019) due to competition and predation. Poor survival and growth of trout necessitate the removal of illegally introduced fish species

B. Physical Description of Water Proposed for Rehabilitation

l. WATER: **Hatch Lake**
2. LOCATION: Sec's 30 and 31, T35N, R40E, Stevens County
3. SURFACE ACRES: 35 MAXIMUM DEPTH: 40 ft
4. VOLUME: 525 acre-feet; 171,025,050 lbs H_2O
5. OUTLET: Yes; to Little Hatch Lake.
6. STREAM: Short outlet stream to Little Hatch Lake.
7. PUBLIC ACCESS: Yes; WDFW access area.
8. LAND OWNERSHIP: Public <1%, Private >99%.
9. ESTABLISHED RESORTS: None.

l. WATER: **Little Hatch Lake**
2. LOCATION: Sec 30, T35N, R40E, Stevens County
3. SURFACE ACRES: 14 MAXIMUM DEPTH: 15 ft
4. VOLUME: 105 acre-feet; 34,205,010 lbs H_2O
5. OUTLET: None.
6. STREAM: Short, seasonal inlet stream from Hatch Lake and Keogh Lake.
7. PUBLIC ACCESS: None.
8. LAND OWNERSHIP: Public 0%, Private 100%.
9. ESTABLISHED RESORTS: None.

l. WATER: **Hatch, Little Hatch, and Keogh lakes**
2. LOCATION: Sec 19, T35N, R40E, Stevens County
3. SURFACE ACRES: 18 MAXIMUM DEPTH: 65 ft
4. VOLUME: 584 acre-feet; 190,245,008 lbs H_2O
5. OUTLET: Seasonal from Keogh to Little Hatch Lake.
6. STREAM: Short outlet stream to Little Hatch Lake.
7. PUBLIC ACCESS: None.
8. LAND OWNERSHIP: Publice 0%, Private 100%.
9. ESTABLISHED RESORTS: None.

C. <u>Proposed Management Actions</u>

1. WATER: **Hatch Lake**
2. TARGET SPECIES: Yellow Perch
3. DATE LAST REHABED: 2008
4. PROPOSED TREATMENT DATE: October 2020
5. REPLANTING DATE: Spring 2021
6. SPECIES: Rainbow Trout
7. CATCHABLES: 2,800 FRY: 10,000
8. PROPOSED TOXICANT: Rotenone, powder and liquid CONCENTRATION: 2.5 ppm
   AMOUNT (ROTENONE AT 5% ACT. INGRED): 3,147 lbs., 50 gal.
9. METHOD OF APPLICATION: pumper boat slurry and airboat spray
10. CREW DESCRIPTION: Leader(s) Bill Baker, Personnel: 7

1. WATER: **Little Hatch Lake**
2. TARGET SPECIES: Yellow Perch
3. DATE LAST REHABED: 2008
4. PROPOSED TREATMENT DATE: October 2020
5. REPLANTING DATE: Spring 2021
6. SPECIES: Rainbow Trout
7. CATCHABLES: 280 FRY: 750
8. PROPOSED TOXICANT: Rotenone, powder and liquid CONCENTRATION: 2.5 ppm
   AMOUNT (ROTENONE AT 5% ACT. INGRED): 547 lbs., 20 gal.
9. METHOD OF APPLICATION: pumper boat slurry and airboat spray
10. CREW DESCRIPTION: Leader(s) Bill Baker, Personnel: 4

1. WATER: **Keogh Lake**
2. TARGET SPECIES: Yellow Perch
3. DATE LAST REHABED: 1988
4. PROPOSED TREATMENT DATE: October 2020
5. REPLANTING DATE: Spring 2021
6. SPECIES: Rainbow Trout
7. CATCHABLES: 540 FRY: 5,400
8. PROPOSED TOXICANT: Rotenone, powder and liquid CONCENTRATION: 2.5 ppm
   AMOUNT (ROTENONE AT 5% ACT. INGRED): 3,532 lbs., 50 gal.
9. METHOD OF APPLICATION: pumper boat slurry and airboat spray
10. CREW DESCRIPTION: Leader(s) Bill Baker, Personnel: 5

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 with a variety of fish species, requiring varying levels of skill. Public demand for, and participation in, production trout fisheries is high. These fisheries are prized as opportunities for families to recreate together and provide an appropriate challenge for occasional or novice anglers. Winter season trout fisheries provide a relaxed recreational opportunity, give anglers outdoor opportunity during the winter months, and are also integral to the state and local economies.

Alternatives to rehabilitation are costly or impractical. To maintain a comparable fishery in Hatch Lake with catchable-sized trout would require 3,500-4,000 trout stocked annually. The cost of catchable-sized trout is roughly ten times that of trout fry, and WDFW Region 1 lacks the hatchery space and water to institute a catchable trout stocking program as a substitute for lake rehabilitation. In the absence of rehabilitation, the current fish community in Hatch Lake would negatively affect trout recruitment and quality, leading to a poor trout fishery.

III. INTENDED OUTCOME/MEASURE OF SUCCESS:

WDFW intends to restore Hatch Lake to a popular, easily accessible trout fishery supported by fry-stocked trout. The average catch rates should be 3 to 5 fish/angler on the opener with a sustained harvest of 2 to 3 fish/angler for the remainder of the fishing season. Success will be measured during Winter Season Opening Day creel, occasional creel spot-checks, and biological surveys. Beneficial effects of the treatment should last approximately 8 to 10 years under the current management scheme.

IV. RESOURCE IMPACTS:

1. The population of the target species, Yellow Perch, will be severely and negatively impacted. In the Hatch Lake system, Yellow Perch is an illegally introduced warmwater species that is not a desired component of the fishery under the current lake management plan.

2. Regional Lands, Habitat, Wildlife and Non-Game managers have been apprised of the proposed rehabilitation. No unmitigated concerns have been expressed regarding 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 pre-treatment 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.

4. Loss of the 2020 winter fishery in Hatch Lake will occur. The fishery will resume in the winter of 2021. During the period of treatment, the lake will be closed to angling and other recreational uses such as boating and swimming.

5. Professional biologists and other naturalists have visited this site over the past 50 years. To our knowledge, no endemic, rare, threatened or otherwise listed species will be 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 spring waterfowl nesting. The eradication of Yellow Perch will also benefit waterfowl through increased production of invertebrates. Stocked

populations of trout will not be as numerous as the current Yellow Perch population.

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.

5. Required personal protective equipment (PPE) will be worn by all staff participating in the 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 3-5 trout/trip on the opener and 2-3 trout/trip sustained harvest for the duration of the season are expected. Yearling trout should average around 11 inches. Carryovers should be expected to comprise 10-15% of the catch and average 15 inches for 2-year-olds and 18 inches for 3-year-olds.

VII. ECONOMIC IMPACTS:

An estimated minimum of 500 angler trips/year made to Hatch Lake as a result of the proposed management action would result in an increased economic impact totaling $20,000/year (2011 dollars; based on USFWS estimate of $40.00 per trip). If the project is successful for 8 years it will generate an estimated $160,000 in economic activity. The total annual cost to plant these lakes with rainbow trout fry is less than $500. The rehabilitation will cost an estimated $37,207 (including costs of rotenone, time, and travel). Thus, the investment by the state will be realized within 2 years of treatment.

VIII. RELATED MANAGEMENT ACTION:

See I.C.6 and I.C.7 for fish stocking information.

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 lake/stream rehabilitation proposals, assess public opinion, and address local concerns.
Initiated by: Region 1, District 1 Fisheries Management