PRE-REHABILITATION PLAN
Hog Canyon (Hog) Lake and Hog Swamp (Spokane County)

I. PROPOSAL

A. Justification for Proposed Rehabilitation

Hog Canyon Lake has been a popular winter opener trout fishery in the Cheney/Sprague, WA area. This lake is one of two winter opener trout fisheries in the Cheney/Sprague area. Hog Canyon Lake is currently overrun with nuisance fish species that are limiting trout production.

Illegal introductions of undesirable fish species have plagued trout production on this lake over the last several decades. Most recently the unwanted expansion of Brown Bullhead, Pumpkinseed Sunfish, Yellow Perch and Tench have compromised the trout fishery in this lake to the point that catch rates and angler use are substandard, and it is no longer economically viable to support with fry plants. Through the use of rotenone, it is anticipated that rehabilitating this lake will restore this productive and popular winter trout fishery.

B. Physical Description of Water Proposed for Rehabilitation

l. WATER: **Hog Canyon Lake and Hog Swamp**
2. LOCATION: Sec's 19, 20, 29, 30 and 31; T22N, R40E. Spokane and Lincoln counties
3. SURFACE ACRES: 44.5 MAXIMUM DEPTH: 13 feet
4. VOLUME: 239 acre-feet; 649,603,434 lbs. H_2O. ~60 acre-feet; 163,198,000 lbs. H_2O in Hog Swamp.
5. OUTLET: Yes, stream will be dry at time of treatment.
6. STREAM: Hog Canyon Creek is the outlet stream. This stream is not a perennial stream but a series of interconnected beaver ponds and wetlands between Hog Canyon and Fishtrap lakes. This stream flows during spring months but will be dry, except for the wetland portion, during the time of treatment. This portion of water will be treated with rotenone as part of this project.
7. PUBLIC ACCESS: Yes
8. LAND OWNERSHIP: Public 45% (WDFW and BLM), Private 55%.
9. ESTABLISHED RESORTS: None

C. Proposed Management Actions

1. WATER: **Hog Canyon Lake and Hog Swamp**
2. TARGET SPECIES: Brown Bullhead, Pumpkinseed Sunfish, Yellow Perch, and Tench
3. DATE LAST REHABBED: October 2009
4. PROPOSED TREATMENT DATE: October 2017
5. REPLANTING DATE: Spring 2018
6. SPECIES: Rainbow Trout
7. CATCHABLES: 10,000 RB FRY/FINGERLINGS: 15,000 RB
8. PROPOSED TOXICANT: Rotenone, powder and liquid CONCENTRATION: ≤4.0 ppm AMOUNT (ROTENONE AT 5% ACT. INGRED): 2,275 lbs. powder, 25 gal. liquid in lake, 100 gal. liquid in Hog Swamp.
9. METHOD OF APPLICATION: pumper boat slurry and airboat spray (lake), helicopter application for the swamp between Fishtrap and Hog Canyon lakes.
10. CREW DESCRIPTION: Leader(s) Randall Osborne, Personnel ~ 4

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, production trout fisheries is high. These fisheries are prized as opportunities for families to recreate together, as well as providing 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 fishery comparable to the current fingerling-stocked trout fishery in this water with catchable-sized fish would require 20,000 catchable rainbow trout. Stocking catchable sized fish costs almost ten times the cost of a fry plant, and Region 1 lacks the hatchery space and water to institute a catchable fish-stocking program as a substitute for lake rehabilitation. Regardless of fish size at stocking, interspecific competition with warmwater fish limits fish growth and condition, and trout survival is compromised due to warmwater fish predation. Ultimately, in the face of competition with, and predation by, warmwater fish, reduced trout recruitment and fish quality lead to an undesirable trout fishery.

III. INTENDED OUTCOME/MEASURE OF SUCCESS:

WDFW intends to restore Hog Canyon Lake to a popular, easily accessible trout fishery based on a combination of put-grow-and-take, and fingerling-stocked trout. The average harvest rates should be 3 to 5 fish/angler on the opener with a sustained harvest of 2 to 3 fish/angler for the duration of the season. Success will be measured during Winter Season Opening Day and random creel contacts and biological surveys. Beneficial effects of lake rehabilitation should be expected to last approximately 6 to 8 years under current management schemes. In addition to reasons listed under Resource, Recreational and Economic Impacts, to abandon this lake as a trout fishery is to invite other illegal fish introductions across the state in trout-only managed lakes.

IV. RESOURCE IMPACTS:

1. The population of the target species (Brown Bullhead, Pumpkinseed Sunfish, Yellow Perch, 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 appraised 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 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. Almost no chance of eliminating an entire population exists.

4. Loss of the 2017 winter fishery in Hog Canyon Lake will occur. During the period of treatment, the lake will be closed to angling and other recreational uses such as boating and swimming. The fishery will resume in the winter of 2018, driven by planted catchable Rainbow Trout during the first year and spring fry plants in subsequent years.

5. Professional biologists and other naturalists have visited these sites frequently over the past 40 years. To our knowledge, populations of endemic, rare, threatened or otherwise listed species will not be adversely impacted by the rehabilitation.

V. MITIGATING FOR ADVERSE IMPACTS:

1. Trout fry survival and growth for the proposed water will be greatly enhanced, and the future trout fishery will attain the previous status. 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 population.

3. Fall rehabilitation will not interfere with bald eagle spring nesting. Besides bald eagles, no Washington State Endangered, Threatened, or Sensitive species are known to inhabit this area.

4. Livestock use of the waters to be treated will not be significantly affected. The concentration of rotenone used in the treatment will be far below that considered harmful to mammals. The landowners will be notified of the rehabilitation and consequent exposure of livestock to rotenone.

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 success should reach 3-5 fish/angler on the opener and 2-3 fish/angler sustained harvest for the duration of the season. Yearling trout should average about 11 inches. Carryovers should be expected to be about 10 to 15 percent of the catch and average 13 inches for 2-year-olds and

16 inches for 3-year-olds.

VII. ECONOMIC IMPACTS:

An estimated minimum of 5,000 trips are made to Hog Canyon Lake annually as a result of current fish management. This results in an increased economic impact totaling $ 155,000 per year (2011 dollars; based on the U.S. Fish and Wildlife Service 2011 National Survey of Fishing, Hunting, and Wildlife-associated Recreation estimate of $31 per trip). If the project is successful for 8 years, it will generate a minimum of $1.24 million in economic activity. The total annual cost to plant this lake with trout fry is less than $1,100. The rehabilitation will cost the Department about $50,000 (including costs of rotenone, time, travel, etc.). The investment by the state will be realized after the first year following treatment.

Estimates for the cost of the enforcement action necessary to curtail the activity of the individuals responsible for illegal fish plants are not available. However, this cost might be looked upon as a statewide expenditure since some preventive benefit would certainly occur as perpetrators find out the Department takes illegal transport and planting of fish seriously.

VIII. RELATED MANAGEMENT ACTION:

See I.C.6,7 for fish planting data

Increased penalties and enforcement activities are desirable if WDFW is going to dissuade illegal stocking of state managed waters. Educating the public about the costs in Department dollars and time with emphasis on what WDFW might be able to accomplish with those resources would be a very worthwhile activity for O & E. This may result in stemming recruitment to this ill-advised group and turning local opinion against the offenders.

IX. PUBLIC CONTACT:

Public meetings will be held during July 2017 in Spokane and Olympia to explain WDFW's 2017 rehabilitation proposals, assess public opinion, and address local concerns.

Initiated by: Region 1, District 2 Fisheries Management