

PRE-REHABILITATION PLAN Burke Lake, Grant County

I. PROPOSAL

A. Justification for Proposed Rehabilitation

1 & 2.) Burke Lake is located on the Quincy Wildlife Management Area and is managed as an opening day trout fishery. The fishing season is from March 1st through September 30th and has statewide regulations for daily bag and minimum size limits. Burke Lake is stocked with rainbow trout fingerlings in spring. When competing and/or predatory fishy species are controlled, Burke Lakes is capable a producing an excellent trout fishery during the late winter through early spring for yearling trout averaging 12 inches and carryovers up to and exceeding 20 inches.

Periodic lake rehabilitations are required to control populations of nuisance fish species (e.g., sunfish, perch, bass, bullheads, common carp, etc.). Rehabilitation and total fish eradication is not a difficult endeavor at Burke Lake; however, the illegal re-introduction of nuisance fish species seems to be a recurring problem because Burke Lake is easily accessible and lies in close proximity to several other waters managed for warmwater fish. Angler participation in the trout fisheries make this project worthwhile relative to the amount of effort and cost involved in treatment even if required every five years.

Burke Lake is a statewide public resource. A WDFW surveys since the early 1980's indicate less than 20% of the anglers attending these fisheries were from Grant County. Over 45% were from western counties. At least 9,000 angler trips per season were conservatively estimated on Burke Lake in 1983. Even on “off” years, when ice and/or cold prevail, this water attracts up to 250 anglers on the opener.

3.) Primary management of this water is not for waterfowl production; however, rehabilitations tend to promote waterfowl use.

4.) Burke Lake has been rehabilitated in 1966, 1970, 1975, 1977, 1983, 1987, 1993, 1999, 2005 and 2012. WDFW policy states that lake rehabilitation is an option for eliminating illegally planted fish.

B. Physical Description of Waters Proposed for Rehabilitation

- 1.) WATER: Burke Lake
- 2.) LOCATION: Sec 14,15 & 23 T19N R23E Grant Co.
- 3.) SURFACE ACRES: 70.0
- 4.) AVERAGE DEPTH: 15 feet
- 5.) MAX. DEPTH: 28 feet
- 6.) WATER VOLUME: 1,050 acre feet (2,852,108,632.8 lbs H2O)
- 7.) INLET: seepage from West Canal; OUTLET: sub-surface

- 8.) STREAM: MILES - NA (Flow (cfs): NA)
- 9.) PUBLIC ACCESS: Entire Lake
- 10.) LAND OWNERSHIP: Public 100%; Private 0 %
- 11.) ESTABLISHED RESORTS: None

C. Proposed Management Actions

- 1.) WATER: Burke Lake
- 2.) TARGET SPECIES: Yellow Perch
- 3.) DATE LAST REHABED: October 2012
- 4.) PROPOSED TREATMENT DATE: October 2019
- 5.) REPLANTING DATE: February-May 2020
- 6.) SPECIES: Rainbow Trout
- 7.) CATCHABLES: $\leq 12,000$ FINGERLINGS: $\leq 20,000$
- 8.) PROPOSED TOXICANT: Fish Toxicant Powder and CFT-Legumine: ≤ 4.0 ppm
- 9.) AMOUNT (ROTENONE AT 5% ACT. INGRED): $\leq 11,424$ lbs powder and ≤ 80 gal liquid
- 10.) METHOD OF APPLICATION: pumper boat slurry and airboat/ATV spray
- 11.) CREW DESCRIPTION: Leader(s): Mike Schmuck + Personnel 3-5

TOTAL PROPOSED TOXICANT: Rotenone Concentration: ≤ 4.0 ppm
AMOUNT (ROTENONE AT 5% ACT. INGRED): $\leq 11,424$ lbs powder and ≤ 80 gal liquid.

II. PURPOSE:

Burke Lake is located on the Quincy Wildlife Area and is situated between two lakes managed as warmwater fisheries (Stan Coffin and Evergreen Reservoir). Recurring illegal introductions of nuisance fish species (e.g., sunfish, perch, bass, bullheads, common carp, etc.) –most likely from one of these two lakes– makes managing Burke Lake for trout difficult. Currently, Burke Lake is suffering from over abundant yellow perch which compete directly with rainbow trout fingerlings for food resources. Consequently, rainbow trout fingerling growth and survival has been negatively affected to a point at which angler catch rates and effort have declined.

The impact of nuisance fish species on trout fisheries is unquestionable. Dr. Walton and students from Peninsula State College investigated the fish populations of Burke Lake in 1991, previous to the planned rehabilitation in 1993. The bulk of fish biomass was found to be yellow perch and pumpkinseed sunfish. Of over 9,000 fish captured by a variety of methods, only three trout and one bass were taken. The study concluded that perch and sunfish were over abundant and too small to provide a fishery.

The effectiveness of rehabilitation in removing nuisance fish species from these waters was further demonstrated when the same class from Peninsula State College conducted post-rehabilitation surveys on Burke Lake in the spring of 1993. Attempts to collect fish during a week's time by electrofishing, various types of nets, and even plankton tows failed to turn up a single species or individual fish in Burke Lake two weeks after rehabilitation. Three-inch

fingerling rainbow trout were stocked later that spring, and the growth of these fish was checked the following fall. In the three gill nets set for a single night were found many nine inch, fat rainbow. As testimony to the illegal activities encountered in previous years, there were also three adult sunfish captured in the same nets.

III. INTENDED OUTCOME/MEASURE OF SUCCESS:

Our best measure of success will be increased angler participation as well as improved trout growth and fingerling survival. Given a reasonable chance of eliminating nuisance fish species and provided illegal plants are curtailed, the beneficial effects could be everlasting. If the nuisance fish species are not eliminated, or illegal plants continue, the trout fishery will still benefit for 4-6 years. Also see reasons listed under Resource, Recreational and Economic Impacts. To abandon these lakes as trout fisheries is to invite other incursions across the state.

IV. RESOURCE IMPACTS:

1. The populations of the target species, Yellow Perch, will be eradicated.
2. District and Regional Habitat, Wildlife and Non-Game biologists have been apprised of our rehabilitation plans. No objections were raised and only cautionary concerns were 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.

Surveys conducted two months after the rehabilitation of Burke Lake in 1993 revealed that bosminids and daphnia were already flourishing in the lake. The excellent survival and growth of the rainbow trout stock at that time implied the recovery of the zooplankton and benthic communities so important to the production of trout in these lakes.

Burke Lake was home to heavy concentrations of bullfrogs, an exotic amphibian. While many thousands were eradicated, the species has reappeared either due to the survival of a few of the original population or through re-colonization from nearby waters. It is likely that any native amphibians present were also not completely eradicated, and these species probably benefit from the removal of the majority of the bullfrogs from these waters.

3. Loss of the year 2020 fishery may ensue if catchable sized trout are unavailable for stocking. The meager yellow perch fishery will be eliminated. The lake 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. Recreational uses such as fishing, hunting, boating, and swimming will be curtailed during the planned period of treatment. These waters are not a source of irrigation or drinking water for either human or livestock use.

4. Professional biologists and other naturalists have visited this site frequently over the past 40 years. To our knowledge, no endemic, rare, threatened or otherwise listed species will be significantly impacted by the rehabilitation.

V. MITIGATING FOR ADVERSE IMPACTS:

1. Catchable sized (2.5 fpp) rainbow trout are available for stocking in late February so no loss of recreational fishing time will occur in 2020. The fingerling-based fishery will again be available by the spring of 2020. Trout survival and growth will be greatly enhanced. Participation in the trout fisheries will exceed that currently found for existing fisheries. .

No removal of dead fish is planned as the nutrient base contained therein is best returned to the lake. Disturbance of waterfowl during treatment or by the anticipated fishery will be offset by increased food availability as the uncontrollable number of nuisance fish species are eliminated in favor of an easily balanced population of rainbow trout. It is in the interest of all species, managed or otherwise, to refrain from over-taxing the food-base.

2. Downstream resources will also be treated as they may harbor remnants of the target populations. Those waters downstream not to be treated are protected by subterranean flows.

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

4. Protective wear for the eyes, face and hands will be supplied on-site for all rotenone applicators. Superior techniques and equipment not available during previous rehabilitation attempts will be employed during this rehabilitation, further increasing the chances for success.

5. All landowners will be notified of the treatment, and access to the lakes will be posted during treatment according to Department of Ecology NPDES guidelines. Water withdrawals, swimming, possessing or consuming dead fish will cease during the period of toxicity.

VI. RECREATIONAL IMPACT: also see I.A., II and III

Recreational angling opportunity will increase if nuisance fish species are removed from these waters and fingerling trout stocking programs are reinstated. Angler success should reach ≥ 3.0 trout harvested per angler on opening day. Yearling trout should average about 12 inches. Carryovers should be expected to be about five percent or more of the catch, and average 14+ inches for 2-year-old fish.

If Burke Lake produced a good warmwater fishery (Burke has already overpopulated and produces no appreciable warmwater fishery), probably 1,000 to as many as 2,000 trips per season are estimated. This would be 6-12 % of the 15,000 trips per season produced by a good trout only fishery on these waters. The results of stocking catchable-sized trout in warmwater fish waters are so variable that angler interest generally wanes. Catchables stocked previous to rehabilitation to provide fisheries for the 2017, 2018, and 2019 openers produced fair opening days, but quickly became fished out and cost more money to stock than a fry stocking strategy that produces the same size yearling fish.

VII. ECONOMIC IMPACTS:

Rehabilitation and fingerling stocking would bring back the fishery and associated economic activity. An estimated 10,000 trips per season made to this lake as a result of the proposed management action would result in an economic impact totaling \$360,000 per year (2016 USFWS estimate of \$36.00 per trip). The fishery as it now exists, generously estimated at 2,000 trips, and generates only \$72,000 in economic benefit.

The total annual cost to Columbia Basin Hatchery to plant these lakes with 20,000 fingerlings is roughly \$4,800. The cost of stocking with 7,000 catchable-sized trout for the first season after the rehabilitation is \$9,660. The rehabilitation will cost the Department about \$46,000 (including costs of rotenone, time and travel). If the lake is treated every ten years on average the total ten-year program would cost approximately \$79,660.

The cost of stocking with catchable-sized trout, necessary to compete in a mixed species water, for the entire ten year program is \$85,000. Raising catchable-sized fish in the hatchery requires more space and water than raising fingerlings resulting in fewer fish raised overall at the hatchery, thus a catchable trout program would be at the expense of other fisheries. In addition, stocking catchable-sized trout does not produce as desirable a fishery in the angler's eye as fingerling stocking programs.

Estimates for the cost of the enforcement action necessary to curtail the activity of the individuals responsible 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 very seriously.

VIII. RELATED MANAGEMENT ACTION:

Burke Lake will be stocked with $\leq 20,000$ rainbow trout fingerlings at 100 fish/lb. Catchable rainbow trout (≤ 2.5 fpp) will be available for stocking prior to the March 1st opener so that there will be no break in fishing opportunity. Burke Lake will receive approximately 7,000 catchable rainbow trout in late February. Creel checks will be done annually on opening day, and population surveys will occur as time is available.

IX. PUBLIC CONTACT:

A public meeting to discuss the proposed rehabilitation of Burke Lake will be held in Ephrata at 6:30PM on May 22nd, 2019 and in Olympia at 6:30PM on May 21st. The purpose of the public meetings is to inform the public about this project, assess public opinion, and address any concerns. The meeting announcement was provided statewide and to local newspapers and radio stations. All opinions and comments will be thoroughly reviewed and taken into consideration of the final decision to rehabilitate Burke Lake.

Initiated by: Mike Schmuck
District 5 Fish Biologist
Grant and Adams Counties
Region 2 Fish Program