Bass Lake Restoration Project
Environmental Assessment & Decision Notice

March 28, 2013

Region One Fisheries
490 North Meridian Road
Kalispell, MT 59901
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and

Bonneville Power Administration
(DOE/EA-1932)

ENVIRONMENTAL ASSESSMENT AND DECISION NOTICE FOR THE BASS LAKE RESTORATION PROJECT

March 28, 2013

Proposal

In a draft environmental assessment (EA) dated August 9, 2012, Montana Fish, Wildlife & Parks (MFWP) proposed removing an illegal introduction of northern pike (*Esox lucius)* from Bass Lake and Mud Creek in northwest Montana by applying CFT Legumine, a commercial formulation of rotenone (a pesticide poisonous to fish) to the lake and nearby stream system, and then restocking the lake with westslope cutthroat trout (*Oncorhynchus clarkii lewisii)* after northern pike had been removed. Northern pike are predators that eat other fish, including native westslope cutthroat and bull trout (*Salvelinus confluentus*). This predation can have detrimental effects on native and other sport fish populations. The removal of northern pike would help maintain and restore native and sport fish populations in the Tobacco River and in Lake Koocanusa, which receives surface inflow, including fish, from Bass Lake and Mud Creek. MFWP funding for this project would come from the Libby Dam Mitigation Project, which is funded by Bonneville Power Administration (BPA).

Public Involvement and Decision Notice

In compliance with the Montana Environmental Policy Act (MEPA) and National Environmental Policy Act (NEPA), a draft EA was prepared and circulated for public comment from August 9 through October 9, 2012. Notices were advertised in three local newspapers (Daily Inter Lake, Tobacco Valley News, and The Western News), a news release was done, and notification was mailed to local conservation groups, timber companies, selected businesses, natural resource agencies, and local landowners. Copies of the EA were made available at three local libraries, the state library in Helena, the MFWP Region 1 head- quarters in Kalispell, and the MFWP internet web site. In addition to the EA, MFWP invited local landowners surrounding Bass Lake to a public meeting on December 12, 2012, in Eureka to exchange information and gather input. The comments and MFWP's responses are included in the Public Comment section of this document below.

Based on the comments received during the public comment period for the draft EA and at the landowner meeting, MFWP has completed the final EA for the proposed actions. No changes were made to the draft EA; therefore, the draft will become the final assessment document. MFWP had proposed to use rotenone to remove unwanted pike as a preferred alternative action. However, during the public comment process, several landowners living near Bass Lake did not support the project and expressed concerns about the human health risk of

rotenone associated with the preferred alternative. They also questioned whether Bass Lake pike were entering Tobacco River/Lake Koocanusa and whether other removal methods would eliminate northern pike.

Although MFWP considers rotenone use, with exposure minimization measures, to be safe and effective, MFWP acknowledges the public's concerns and therefore I recommend that MFWP does not implement plans to chemically remove northern pike from Mud Creek and Bass Lake at this time. Instead MFWP will explore alternative methods to remove northern pike, including electrofishing and use of traps or nets. MFWP will also supply the landowners with additional information on the risks and benefits of rotenone use. MFWP will evaluate the need to complete additional environmental analyses and public input for alternative removal methods as appropriate. MFWP will pursue these alternative removal methods and develop further information over a two-year period. At the end of that period MFWP will analyze the additional information, develop a long-term management strategy for Bass Lake northern pike, and conduct additional EA if necessary.

James R. Satterfield, Jr.

March 29, 2013

James R. Satterfield Jr., Ph.D., Supervisor — Date
MT Fish, Wildlife & Parks, Region One

Project Background and Justification:

Mud Creek is a small second-order stream that originates in the Whitefish Mountain Range, is a tributary to Therriault Creek, Tobacco River, and Lake Koocanusa, and has a base flow that ranges from about 1-3 cubic feet per second. An earthen dam on Mud Creek constructed in the mid-to-late 1940s at river mile 0.3 created Bass Lake, which has a surface area of 11.8 acres, a maximum depth of approximately 11.5 feet, and a volume of 50.6 acre-feet.

Historical fisheries data for Mud Creek is limited. However, the lack of natural barriers prior to the creation of Bass Lake suggests that native species such as westslope cutthroat trout, bull trout, and mountain whitefish (*Prosopium williamsoni*) likely utilized Mud Creek historically. In the early 1900s rainbow trout (*Oncorhynchus mykiss)* and brook trout (*Salvelinus fontinalis*) were either introduced to or colonized the Mud Creek watershed. Shortly after Bass Lake was constructed, largemouth bass (*Micropterus salmoides)* and bluegill (*Lepomis macrochirus)* were illegally introduced to the lake, and sometime in the mid 1990s northern pike were illegally introduced (MFWP unpublished data). Sampling conducted by MFWP confirmed that northern pike are confined to Bass Lake and that portion of Mud Creek 0.26 miles upstream of the lake.

Since the construction of Libby Dam in 1972, northern pike observations in the Tobacco River and Lake Koocanusa have been relatively rare, but the occurrence of northern pike in MFWP annual gill-netting surveys of Lake Koocanusa has increased since northern pike were introduced into Bass Lake. Angler observations of northern pike have also become more frequent, primarily around the mouth of the Tobacco River (MFWP unpublished data). Northern pike emigration from Bass Lake is likely contributing to the persistence of northern pike in Lake Koocanusa, which may ultimately result in the establishment of a sustaining population of northern pike in Lake Koocanusa. Northern pike in the Tobacco River and Lake Koocanusa likely prey upon native game fish species (including cutthroat and bull trout), and nonnative fish species (rainbow trout, mountain whitefish, brook trout, and kokanee salmon [*Oncorhynchus nerka*]). An established northern pike population in Lake Koocanusa could lead to a reduction in the abundance of these other species. Therefore, MFWP seeks to remove the population of illegally introduced northern pike from Bass Lake in order to reduce the likelihood of developing a self-sustaining population of northern pike in Lake Koocanusa. In a draft EA, MFWP identified the use of CFT Legumine, a commercial formulation of rotenone, as the preferred alternative to accomplish this objective. The draft EA evaluated the potential human and environmental impacts of the preferred (rotenone removal) and no-action alternatives.

Location of Project:

The earthen dam on Mud Creek is located at river mile 0.3, and Mud Creek flows into Therriault Creek at river mile 0.8. Therriault Creek enters the Tobacco River approximately 12.5 miles upstream of Lake Koocanusa. Bass Lake is located on the west side of Highway 93 approximately 6 miles southeast of Eureka, Montana. Specifically, Bass Lake is located within Township 35 North, Range 26 West, Section 4, Lincoln County, Montana, Latitude 48.82385 degrees North, Longitude -115.95818 degrees West. Mud Creek and the vast majority of Bass Lake are located on private property, but a small portion of the northeast side of the lake is bordered by National Forest.

Public Comments:

During the public comment period for the draft EA, MFWP received comments from 25 individuals or groups. The comments were varied, but could basically be divided into three general groups. MFWP received six comments/inquiries requesting additional information or clarification of information presented. MFWP received ten comments in opposition and eight comments in support of the use of chemical removal of northern pike from Bass Lake. In order to reduce redundancy and increase efficiency, MFWP has grouped the comments and our responses into the following groups. The numbers in parentheses following 'Comment' represent the number of similar individual comments.

Comment (7):

Consumption and exposure of rotenone-treated water or dead fish may harm pets, livestock, and nontarget wildlife.

Response:

MFWP expects that the impacts to nontarget invertebrates from the proposed project would have been minimal based on the resilient nature of most invertebrates to the chemicals and dosages proposed. Potential impacts to amphibians and reptiles as a result of the proposed project would have been further minimized by implementing the project during the late summer/fall, when larval life stages were less likely to be present in the area. The proposed project would have had little or no adverse effect on mammals or birds occupying the area, based on research that has shown that rotenone is not toxic to mammals and birds at the fish-killing concentrations proposed for use in this project. It is also unlikely that the proposed project would have had secondary effects, such as displacement, on any local populations of birds or mammals. The aquatic community in Bass Lake is also unlikely to be a substantial or obligatory food source for any sensitive animal species. Therefore any potential disruptions in the aquatic food web that would have resulted from this project would have been short term and minor.

Mammals are generally not affected by exposure to or by the consumption of rotenone because they neutralize rotenone by enzymatic action in their stomach and intestines (AFS 2002). Laboratory tests fed forms of rotenone to rats and dogs as part of their diet for periods of six months to two years and observed effects such as diarrhea, decreased food consumption, and weight loss (Marking 1988). This study found that despite unusually high treatment concentrations of rotenone in rats and dogs, it did not cause tumors or reproductive problems in mammals. Studies of risk for terrestrial animals found that a 22-pound dog would have to drink 7,915 gallons of treated lake water within 24 hours, or eat 660,000 pounds of rotenone-killed fish, to receive a lethal dose (CDFG 1994). Birds consuming dead fish would also have to consume an unrealistically high quantity in order to be harmed. The risk of exposure to livestock, pets, and nontarget wildlife would have been further reduced by containing the rotenone-treated water to the project area, which would have been accomplished by detoxification at the outlet of the lake. Potential exposure time would have also been relatively short due to the relatively rapid breakdown of rotenone.

Rotenone is toxic to most gill-breathing larval amphibians and reptiles, aquatic insects, and zooplankton. However, the potential impact to amphibians and reptiles within the project area would have been minimized through the implementation schedule for this project by conducting the project during the fall when many of the sensitive life stages are not present in the lake. Rotenone is not harmful to adult reptiles or amphibians. The preferred alternative's effects on plankton and aquatic insects were expected to have been short term and minor due to natural reproduction and/or recolonization by these species, which would have been sufficient to restore populations to pretreatment densities relatively soon after the rotenone treatment.

Therefore, MFWP concluded that if the preferred alternative had been implemented, the potential risk to livestock, pets, and nontarget wildlife would have been low.

Comment (2):

An unintended fish kill downstream in Therriault Creek or the Tobacco River may result from the preferred alternative.

Response:

MFWP proposed applying a neutralizing agent at the outlet of Bass Lake to ensure that the rotenone would not have killed fish downstream in Therriault Creek or the Tobacco River. This detoxification operation would have continued until sentinel fish located downstream of the lake outlet survived and showed no signs of distress for at least four hours, as specified on the product label.

Comment (7):

Human exposure to rotenone as a result of the preferred alternative may cause human health impairments.

Response:

The risk of public exposure to rotenone resulting from the proposed project would have been minor. Human exposure (especially applicators) to CFT Legumine is greatest from dermal, inhalation, and oral exposure routes. However, these routes of exposure would have been significantly reduced, if not eliminated, for the proposed project.

Rotenone is not an eye or skin irritant nor a skin sensitizer, and rotenone has a very low dermal absorption rate. Public dermal exposure as a result of the proposed project would be virtually eliminated by restricting public access to the lake during application and preventing swimming and bathing with lake water until rotenone residues had subsided to very low levels. Rotenone is not volatile (vapor pressure of 6×10^{-6} Pa), and therefore the potential for rotenone to become airborne and dermally expose members of the public is low. Potential public dermal exposure for the proposed project would have been further minimized by containing the treatment within the designated zone by detoxifying the piscicide as it leaves the lake.

The risk of inhalation of rotenone as a result of the proposed project would have been low since it does not readily volatilize due to its low vapor pressure (6×10^{-6} Pa) and, thus, inhalation is a highly unlikely route of exposure from liquid formulations such as CFT Legumine. This risk would have been further minimized by limiting public access to the lake during the period of treatment and limiting aerial dispensing of the rotenone. The vast majority of the CFT Legumine proposed for use for this project would have been dispensed directly into the water and would not have an opportunity to volatize even if it had a propensity to do so.

The risk of human ingestion of rotenone as a result of the proposed project would have been low. The risk that rotenone will enter and be mobile in groundwater is negligible. Tests have shown that rotenone will not transport through sediments (ground water). Although several domestic wells exist around Bass Lake, MFWP proposed to test all wells within the project area to ensure they weren't contaminated and provide an alternate source of domestic water until testing confirmed the wells were rotenone free. MFWP proposed to further reduce the risk of ingestion of rotenone by posting signs that warn against the consumption of dead fish or drinking of or swimming in treated water. The exposure risk would also be minimized by collecting dead fish from the site, containing the treatment within the project area via detoxifying the piscicide, and applying very low concentrations that would degrade rapidly. MFWP also proposed to follow the

manufacturer's label, which requires using sentinel fish (cutthroat trout in this case), which would have ensured the product had adequately degraded prior to removing these restrictions from the area.

The exposure risk to applicators for rotenone projects is substantially greater than risks to the general public because of the necessity of handling the compounds at full strength. Measures to reduce risks to applicators include training, proper handling, and the use of safety equipment listed on the product labels, such as respirator, goggles, rubber boots, Tyvek overalls, and nitrile gloves. All applicators are trained on the safe handling and application of the piscicide. MFWP adheres to the label specifications for the transport, handling, application, and storage of rotenone and potassium permanganate, which further reduces the probability of human exposure or spill. Health risk to project personnel for rotenone projects is further minimized through the use of proper planning, preparation, and the use of personal protective gear.

Therefore, MFWP concludes that the risk to human health, which would have resulted from the proposed project, would have been negligible because, with recommended care and precautions, rotenone exposure is effectively eliminated.

Comment (2):

Mud Creek and Bass Lake are located upstream of the water treatment plant on the Tobacco River, which serves as a domestic water supply for the city of Eureka, Montana. This domestic water supply may be contaminated by either rotenone or potassium permanganate.

Response:

The particular manner in which the city of Eureka obtains water for this facility and the water treatment procedures used within the facility would prevent contamination. The CFT Legumine product label prohibits use of the product within ½ mile upstream of a potable water intake. The Eureka domestic water supply intake is an infiltration gallery system located approximately 4.5 miles downstream from Bass Lake. The infiltration gallery is located approximately 50 feet off of the Tobacco River and receives water from the Tobacco River after filtering through the ground. Tests have shown that rotenone and potassium permanganate bind readily with soils and will not transport through sediments (groundwater). The Eureka water treatment plant also uses two water treatment methods: chlorination and ultraviolet light. Both treatment forms would degrade rotenone if it were capable of traveling through the sediments and entering the facility.

The detoxification operation of rotenone leaving the lake and the dilution factor and travel time of waters potentially laden with rotenone or potassium permanganate would have provided additional security buffers, which would have

eliminated the risk of contamination of the domestic water supply. The actual concentration of CFT Legumine proposed for use by this project would have been determined by completing on-site bioassays near the time of treatment, but would not have exceeded 1.0 mg of CFT Legumine per 1 liter of water (ppm). The water leaving Bass Lake would have been detoxified using potassium permanganate in sufficient quantity to yield a residual (excess) of approximately 1 ppm of potassium permanganate in Mud Creek approximately 900 feet downstream of Bass Lake (30 minutes water travel time from the lake outlet). Stream gaging data for the Tobacco River and Therriault Creek over the past 10 years during the fall months (when this project was proposed to be completed) show a dilution factor of approximately 37 fold for Mud Creek water near the water treatment facility. This would yield an approximate concentration of 0.027 ppm rotenone or potassium permanganate at the water treatment facility, assuming no further degradation once the water leaves Bass Lake. However, a lengthy water travel time and subsequent environmental degradation would have provided another extra measure of security against contamination of this domestic water supply.

Comment (2):

MFWP did not coordinate the proposed project effectively with the landowners surrounding Bass Lake.

Response:

MFWP invited the landowners surrounding Bass Lake to participate in a meeting on December 12, 2012, to discuss the future of this project.

Comment (3):

Would it be possible to remove the bag limit for northern pike on Bass Lake and allow anglers to “fish the pike out”? There was also concern expressed that chemical removal of northern pike from Bass Lake would render the northern pike unfit for human consumption, essentially resulting in waste.

Response:

MFWP has the authority under the MFWP Commission rule to modify angling regulations for the purpose of removing unwanted fish from a lake or stream. Unfortunately, this method does not guarantee complete removal of all fish. There are a number of reasons why this method would not work, especially in Bass Lake. First, liberalizing bag limits does not guarantee every angler would keep the entire catch, primarily because of personal value differences among anglers. Recreational angling has been shown to reduce the average size of fish and reduce population abundance. As the size and abundance of fish decreases, angler satisfaction tends to decrease also. For these reasons, it may be difficult

to attract anglers to a site for voluntary angling if angling quality is low, such as is the case with Bass Lake. The average size of northern pike MFWP captured in gill nets in Bass Lake in 2010 was about 22 inches (3.2 pounds). The small size, especially given that northern pike contain floating pin bones that are usually removed prior to consumption, would provide a minimal quantity of edible food. Secondly, very small fish in Bass Lake and Mud Creek would not be vulnerable to angling, leaving many fish in the lake unsusceptible to capture via angling and with an opportunity to grow and reproduce. Finally, the vast majority of shoreline on Bass Lake is privately owned, and there is no public access to the lake. In order for this alternative to be successful, a sustained angling effort over a long period would be required, which would likely be contrary to the landowners' priorities. Lifting bag limits on the lake would likely not succeed in removing fish due to difficulty in access.

Comment (2):

MFWP proposes to stock Bass Lake with hatchery cutthroat trout after northern pike are removed, and the majority of the public would not be able to angle for those fish due to limited public access on the lake.

Response:

MFWP did include stocking westslope cutthroat trout after northern pike were removed from Bass Lake as an option in the EA. However, the decision to restock Bass Lake would only have been made after discussing the alternative with the landowners surrounding Bass Lake. If stocking were to occur, it would have been a single event in order to mitigate for the loss of fish until fish from upper Mud Creek could recolonize the lake.

Comment (2):

Waters in northwestern Montana need a higher diversity of fish, including northern pike, to provide angling opportunity.

Response:

All of the northern pike west of the Continental Divide are the result of illegal plants. Northern pike also have the potential to impact other game fish species, particularly native fish in some locations, such as Lake Koocanusa. Therefore pike are managed with liberal bag limits (suppression) in the Western Fishing District. More aggressive strategies such as chemical removal are used in some individual waters with high impacts on other fisheries and a high chance of success for control, such as Bass Lake.

A primary goal of MFWP's fisheries program is to protect, maintain, and restore native fish populations, life histories, and genetic diversity, and continue to

provide angling opportunities for native species whenever possible. This goal is backed by FWP policy and state law, which require MFWP to implement programs that manage sensitive native species in a manner that assists in the maintenance or recovery of those species, and that prevents the need to list the species under the federal Endangered Species Act (ESA).

Comment (Montana DEQ):

A Pesticide General Permit and a Notice of Intent (NOI) is required for this project.

Response:

MFWP understands the permit requirements for rotenone application projects and complies with this requirement.

Comment (8):

Thank you for the opportunity to comment on this project. We fully support this project and your efforts to protect and conserve native fish.

Response:

MFWP appreciates the recognition of our efforts on this project, and we agree that the current fish species present in Lake Koocanusa provide a valuable and unique recreational resource for the state of Montana, and that the establishment of northern pike in Lake Koocanusa threatens this resource.