BLM

United States Department of the Interior
Bureau of Land Management

Programmatic Environmental Assessment for Colorado Parks & Wildlife Fish Reclamation Projects on BLM Managed Lands in Colorado

Northwest District Office
Southwest District Office
Front Range District Office

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INTRODUCTION AND BACKGROUND

Historically it was believed that the state of Colorado contained one native trout species, the cutthroat trout (*Oncorhynchus clarkii*) that was further broken down into four subspecies: the now extinct Yellowfin Cutthroat Trout believed native to Twin Lakes in the Arkansas River watershed, the Greenback Cutthroat Trout native to the South Platte River watershed, the Rio Grande Cutthroat Trout native to the Rio Grande River watershed, and the Colorado River Cutthroat Trout native to the major rivers in Colorado's west slope as well as portions of Utah and Wyoming. Based on recent genetics and meristics research (Metcalf et al. 2012, Bestgen et al. 2013), it is apparent that six genetically distinct lineages of cutthroat trout were once found within the major river basins in Colorado – the same four noted above except that Colorado River Cutthroat Trout have been divided into two distinct lineages blue and green, and the now extinct San Juan River Cutthroat Trout.

Historical introductions of non-native trout species have resulted in the extinction and decline of cutthroat trout subspecies and lineages in Colorado. Recent emphasis has been put on managing for genetically pure cutthroat populations of the four remaining subspecies/lineages within their native basins of origin (Rio Grande Cutthroat Trout – Rio Grande River basin, Colorado River Cutthroat Trout Blue Lineage – White and Yampa river basins, Colorado River Cutthroat Trout Green Lineage – Colorado, Dolores, and Gunnison river basins, and Greenback Cutthroat Trout – South Platte River basin). Nonnative trout species are the primary threat and impediment to the long-term viability and expansion of native cutthroat trout populations in Colorado. Nonnative trout compete for limited resources (food, space, cover), displace native cutthroat to marginal habitats, replace cutthroats resulting in localized extirpations, and in the case of species in the same genera (rainbow trout and other nonnative cutthroat trout species), can hybridize with native cutthroat trout.

Colorado Parks & Wildlife (CPW) is the state agency responsible for management of fish and wildlife in Colorado. As such, they are the agency charged with initiating and completing fish reclamation projects. To bolster native cutthroat populations and preserve genetically pure populations for the future, CPW in cooperation with the Bureau of Land Management (BLM), United States Forest Service (USFS), and other federal and non-governmental partners, are continually looking to reclaim select waters. Reclamation entails chemically treating and removing non-native fish from suitable waters in order to reintroduce native cutthroat trout. These chemical treatments are largely a state action. However, BLM authorization is required via the issuance of a pesticide use permit (PUP) to CPW to chemically treat waters located on BLM managed lands. It is BLM policy that issuance of a PUP be tied to a NEPA document and so an Environmental Assessment has been required in order to authorize chemical treatments on BLM managed lands.

CPW follows a detailed standardized protocol (Finlayson et al. 2010) for these treatments and it is essentially the same action on any given stream. The effects (or lack thereof) are the same or very similar across the landscape. This lends itself well to a programmatic approach to analyzing the effects of these activities on BLM lands in Colorado.

Although this document is focused on chemical treatments associated with reclamation or introduction efforts for native cutthroat trout, there are instances in which CPW may want to remove select aquatic species of management interest for other reasons or to benefit species

other than cutthroat trout. The same methodologies would be utilized to remove any nonnative or undesired fish species and this PEA is intended to cover those removals as well (e. g. chemical treatment to remove predatory northern pike from native fish management emphasis waters). Cutthroat trout are the focus as it is anticipated that this species is the focus of the vast majority of work across the state. For a list of reclamation streams currently under consideration and located at least partially on BLM land by Field Office see Appendix B.

PURPOSE AND NEED FOR THE ACTION

The primary purpose of this Programmatic Environmental Assessment (PEA) for chemical reclamation treatments is to streamline the process by which the BLM authorizes CPW to release chemical piscicides (fish specific toxicants) into waters located on BLM managed lands.

CPW and BLM both place importance on the management of native fish in Colorado. Managing for native, genetically pure populations is a priority. The BLM and CPW are both signatories to the Range-wide Colorado River Cutthroat Trout Conservation Agreement and Strategy (CRCT Conservation Team 2006), the Conservation Agreement and Strategy for Rio Grande Cutthroat Trout, as well as a signatory member of the greenback cutthroat trout recovery team. BLM and CPW are also signatories to the Range-wide Three Species (Bluehead Sucker, Flannelmouth Sucker, Roundtail Chub) Conservation Agreement and Strategy. The primary goal of these documents and teams is to assure the long-term prosperity of native, genetically pure fish populations within their native ranges. The chemical treatment of streams to remove nonnative fish would aid in reestablishing and maintaining important native fish populations and may help to preclude the need to place select species, subspecies, and lineages under the protection of the Endangered Species Act or for currently listed species, subspecies, or lineages, help to down-list or remove them from the list of federally threatened or endangered species.

DECISION TO BE MADE

The BLM would decide whether to authorize chemical treatments in waters located on BLM managed lands across the state at the programmatic level, and if so, under what terms and conditions.

AREA OF CONSIDERATION

The area of consideration in this PEA includes all streams and rivers that harbor fish on BLM managed lands in the state of Colorado. It may also include waters that were historically fishless (e.g. streams above natural barriers), but that now contain nonnative fish and provide suitable habitat for native fish species where introduction efforts could aid in population expansion. Most streams proposed for reclamation are small, discrete systems that are identified as priority during multi-agency Geographical Management Unit (GMU) Team Meetings that occur annually. Members are comprised of state and federal biologist for select geographical areas within the state.

DURATION OF UTILITY

This PEA would be considered valid until such time as new information on unanticipated effects from rotenone are identified, CPW makes substantial changes to its treatment protocol, or there are changes in law, regulation, or policy that would affect the utility of this document.

DESCRIPTION OF PROPOSED ACTION AND ALTERNATIVES

PROPOSED ACTION

The proposed action would apply to streams and rivers determined by CPW and the BLM as suitable for nonnative fish removal. In addition, these waters would be selected based on the assumption that target fish could be effectively removed via the methods discussed below. It is possible that select stream treatments would not be applicable under this PEA and would require their own separate and site specific analysis. Each proposed treatment involving stream reaches managed by the BLM would be looked at to determine this documents adequacy in facilitating a streamlined approval.

Once a suitable stream is selected for reclamation efforts, the following CPW action would occur and would require authorization by BLM:

Chemical Treatment. CPW would write a detailed Reclamation Plan for the specific water of interest with detailed specific information on chemical treatment procedures, protocols, and plans. CPW uses the U. S. Environmental Protection Agency (EPA) approved piscicide (fish toxicant) rotenone to eradicate target nonnative fishes. The chemical treatment would follow a stream treatment specific Reclamation Plan. Rotenone formulations commonly used by CPW in fish reclamation projects include: CFT LegumineTM, Liquid Rotenone 5.0% Active Ingredient, (EPA Registration No.: 75338-2); Cube Root Rotenone, Wettable Powdered Rotenone 7.4% Active Ingredient, (EPA Registration No.: 655-691), and Prentox Synpren-Fish Toxicant, Liquid 2.5% Active Ingredient, (EPA Registration No.: 655-421). CPW generally uses CFT LegumineTM, Liquid Rotenone 5.0% Active Ingredient, (EPA Registration No.: 75338-2) for most projects. Rotenone is used by CPW as the chemical of choice because of its effectiveness in eradicating fish and its lack of long-term effects on the environment (Sousa et al 1987). Rotenone is a naturally occurring plant derived fish toxicant that is toxic only to fish, some aquatic invertebrates, and some juvenile amphibians. The EPA found it to be non-toxic to humans, other mammals, and birds at the concentrations used to remove fish (EPA 2007). It has been widely used in the United States since the 1950's. CPW has used rotenone successfully in many similar projects and has refined application techniques to minimize adverse effects to the environment. For more detailed information on rotenone see Appendix A.

Potassium permanganate ($KMnO_4$) would be used by CPW to neutralize rotenone at a primary detoxification station at the lower terminus of the treatment reach to prevent the movement/effects of rotenone into non-target waters. Potassium permanganate was selected because it is a strong oxidizer that breaks down into potassium, manganese, and water. All are common in nature and have no deleterious environmental effects at the concentrations that would be used for project activities (Finlayson et al. 2000). Potassium permanganate is used as an oxidizing agent in treatment plants to purify drinking water (EPA 1999). Although the oxidation process is not immediate, neutralization should occur within an estimated 0.25 to 0.5 miles of the neutralization site. The equipment required to operate the

main detoxification station consists of water tanks, small gasoline powered water pumps, constant head delivery valves, and flexible tubing.

Chemical Application. Liquid rotenone would be applied under the supervision of qualified and certified CPW personnel at a rate of 1.0 -2.0 parts per million (ppm). Amounts of chemical are based primarily on water flow volumes at the time of treatment. The rotenone would be applied using a combination of small 1 gallon water dispensers with constant flow drip-heads at a determined number of drip stations throughout the treatment area over a 3 to 24 hour period. The number of drip stations is based on the length of treatment reach and rate of water travel. Personnel on foot would utilize pressurized backpack sprayers, spraying a diluted solution of rotenone into the stream primarily along low and zero flow water margins, at springs and seeps, and small ponded areas. Bagged concentrations of time release rotenone may be used at spring sources and standing water locations as well. Cages of live sentinel fish are collected and placed just upstream of drip stations to help monitor rotenone treatment effectiveness. These live fish (bioassays) help personnel monitor chemical effectiveness between stations, with all live cage fish expected to die within four to eight hours of chemical treatment. Caged fish would also be placed at sites below the primary detoxification station to monitor detoxification success. Block nets may be placed up and downstream of the primary detoxification station to collect dead fish that might otherwise drift downstream and outside of the project area. Depending on stream access, remoteness, and habitat complexity, two rotenone treatments could be completed on back to back days. All work would be conducted during daytime hours by personnel on foot. Most projects would occur during the routine business week (Monday – Friday) to reduce potential recreational user conflicts. The number of personnel needed would be determined based on the length of the stream treatment reach, number of drip station needed, number of backpack sprayers needed, as well as habitat complexity. There would be a minimum of one certified applicator per 15 people. This would include personnel needed to run drip stations, detoxification stations, backpack sprayers, monitor sentinel fish, staff small aid stations, and monitor overall operations. All chemical treatment work is generally done on foot and vehicles would be parked along existing roads and equipment walked in as appropriate.

Rotenone would be neutralized by CPW using potassium permanganate at a detoxification station located at the downstream terminus of the treatment reach. A detoxicant/oxidizing solution of potassium permanganate ($KMnO_4$) would be applied at a rate of 2.0-4.0 ppm through a constant head delivery device, while the stream is being treated with rotenone. Stream flow would be measured prior to and during treatment to ensure the accurate delivery of the detoxicant solution. Calculations regarding the volume of potassium permanganate required for use during this project are based upon desired $KMnO_4$ concentration (2.0-4.0 ppm) and stream flow. Potassium permanganate would be applied within 200 feet of the downstream end of treatment. The detoxicant generally requires approximately 30 minutes of contact time to fully oxidize rotenone, depending on water temperatures and organic composition of the water and stream channel. A CPW aquatic researcher would be present to monitor rotenone concentrations upstream and downstream of the potassium permanganate application site (primary detoxification station) to ensure that $KMnO_4$ is neutralizing all rotenone. Sentinel fish would also be held in the stream downstream of the detoxification station to ensure that chemical neutralization of rotenone is occurring properly. Additionally, dilution of rotenone by ground water and contributions of additional stream flows downstream of the primary detoxification station would assist in further diffusion of any

residual rotenone. Detoxification would continue post treatment until ppm readings are below desired levels (<1ppm).

Additional potassium permanganate would be staged and available at an identified emergency detoxification station located downstream of the primary detoxification station to ensure adequate chemicals are available in the event of a large thunder storm or accidental rotenone spill. This emergency detoxification site would only be used in the event it is needed.

All work is anticipated to take up to 5 days to complete including staging, set up, treatment, and clean-up. Drip stations and detoxification stations would be removed. The majority of dead fish would be left in the stream to provide for nutrient recycling.

The following component does not necessarily require authorization for CPW to complete, and may be initiated by the BLM and may be part of the proposed action (where beaver dams are present). Because beaver dam breaching is integral to project success and can be ground disturbing, effects will be analyzed in detail in this PEA.

Beaver Dam Breaching. Beaver dams create excellent habitat for fish. However, beaver dams are not considered permanent fixtures on the landscape and routinely come and go. Streams are not static but are dynamic and always changing. Beaver dams routinely blow out and disappear and new dams are created. Beaver move in and out of streams based primarily on food availability. To effectively chemically treat streams with the fish toxicant rotenone, it is important that water be free flowing within the stream treatment reach. Rotenone quickly binds to organic matter and breaks down rapidly into carbon dioxide and water, which makes efficient movement through the treatment reach important. Non flowing waters such as beaver ponds can reduce rotenone's effectiveness by slowing down the progression of the chemical and providing areas for organic binding. In addition, beaver ponds provide refuge areas for fishes to hide and avoid the chemical.

As part of the planning process for each specific stream treatment, beaver structures would be inventoried and assessed. Where beaver dams are present, the proposed action would call for dams to be breached to allow for pond draining and to create free flowing stream conditions to facilitate the movement of rotenone. Breaching of beaver dams could occur by several methods including manual notching using hand tools on small dams (< 1 feet tall), the use of small explosive devices under the direction of contracted qualified detonation specialists on larger dams (> 1 feet tall), or via the use of heavy equipment most likely a track hoe walked to the sites to mechanically dismantle dams. Breaching would entail creating a notch similar in width to the natural channel width to allow for pond draining and stream flow.

The following components require no authorization or NEPA documentation from the BLM but may be associated with the chemical treatment effort and overall goal of managing for native fishes in select waters in Colorado. It is possible that the BLM could help fund beaver removal efforts, as such; this action will be analyzed in this PEA for potential effects. The remaining components will not be analyzed.

Beaver Removal. Beaver and beaver dams create and provide excellent habitat for fish. However, beaver and beaver dams are not considered permanent fixtures on the landscape

and routinely come and go. Streams are not static but are dynamic and always changing. Beaver dams routinely blow out and disappear and new dams are created. Beaver move in and out of streams based primarily on food availability. To effectively chemically treat streams with the fish toxicant rotenone, it is important that water be free flowing within the stream treatment reach. Rotenone quickly binds to organic matter and breaks down rapidly into carbon dioxide and water, which makes efficient movement through the treatment reach important. Non flowing waters such as beaver ponds can reduce rotenone's effectiveness by slowing down the progression of the chemical and providing areas for organic binding. In addition, beaver ponds provide refuge areas for fishes to hide and avoid the chemical.

As part of the planning process for each specific stream treatment, beaver activity and beaver structures would be inventoried and assessed. Where beaver are present, CPW's reclamation plan could call for beaver to be removed from the treatment reach. This would be conducted by qualified CPW or contract personnel and entail any number of methods ranging from live trapping and removal to lethal means. Effective means of beaver control would be determined by CPW as the entity tasked with managing Colorado's wildlife. Upon successful chemical treatment, beaver could be re-introduced back into treated waters or could naturally recolonize the treatment reach from adjacent untreated reaches, as determined by CPW.

In some cases, beaver would not need to be removed from within the treatment reach to complete chemical treatment. This could be successful in areas where only a few beaver and beaver dams exist or where several inactive dams are present with few or no beavers. Beaver rebuild dams rapidly, but in select cases personnel using hand tools could keep dams notched by hand between initial notching and completion of the chemical treatment.

Post-treatment Assessment of Success (Fish Sampling). This involves actions with no authorization needed by the BLM. Personnel from CPW and the BLM would sample the treatment reach extensively post treatment to look for live fish that may have been missed.

Post Treatment Restocking of Pure Cutthroat Trout. This involves actions with no authorization needed by BLM. However, coordination amongst CPW, the BLM, and USFWS may be warranted to determine which lineage of cutthroat trout would be most appropriate to stock into a given treatment reach.

Project Design Features. The following design features would be standard for any project and would be implemented and included in the BLM authorization:

1. The treatment would be preceded by internal and external notifications to notify the public of treatment sites and dates and would include the following: placards, signing, and possibly press releases as deemed necessary by CPW.

2. The treatment area would be placarded to deter public access during treatment and for at least three days following treatment.

3. Application of the chemical would be conducted by licensed pesticide applicators in accordance with all applicable regulations and policies, following an approved plan.

4. Transport to the site and storage of chemicals on the site would comply with guidance in the *Vegetation Treatments Using Herbicides on BLM Lands in 17 Western States Programmatic Environmental Impact Statement* (PEIS) (BLM 2007).

5. All equipment used during the treatment including nets, drip stations, portable pumps, hoses, tubing, etc. would be cleaned, sanitized, and weed free prior to arriving on site for work to eliminate the potential for introduction of invasive species or disease vectors.

6. The use of explosives, if used to breach beaver dams, would be done by qualified/certified personnel and may require the presence of qualified wildland fire personnel equipped with appropriate protective and fire-fighting gear in the unlikely event of a spot fire adjacent to the creek.

7. Standard Cultural Education/Discovery Stipulation/Condition would apply

8. To minimize impacts to amphibians, treatments would occur preferably after August 15 in order to minimize impacts to tadpoles in the gill breathing life stage. In most cases by this date the majority of amphibians have metamorphosed into adult frogs or toads and impact risk would be reduced from proposed activities.

9. Access to all treatment waters would adhere to local BLM travel management designations. The BLM could authorize CPW administrative access on closed or administrative use only routes on a case by case basis.

10. The use of heavy equipment would not be utilized for beaver dam breaching if federally listed plants cannot be avoided, other less impacting methods would be utilized such as hand tools, or small explosives.

11. CFT Legumine would be required for rotenone treatments in the North Fork of the Gunnison River watershed, or in any streams where USDA Organic Certified organic farms have irrigation diversions below proposed treatment areas.