United States Department of Agriculture | Forest Service | Dixie National Forest | 1789 N. Wedgewood Ln
Cedar City, UT 84721-7769
435-865-3700

File Code: 2670/1950
Date: June 30, 2011

Mr. Larry Crist
Utah Field Supervisor
U.S. Fish and Wildlife Service
2360 West Orton Circle, Suite 50
West Valley City, UT 84119

Dear Larry:

This letter is in reference to the enclosed Biological Assessment for the East Fork of Boulder Creek Native Trout Restoration Project on the Dixie National Forest. The Dixie National Forest has coordinated the preparation of this Biological Assessment and is submitting it for your review and concurrence. The Forest Service has been in informal consultation with your office on this project since 2009, and prior to that during the FERC relicensing process that ended in 2007. We appreciate the assistance from your staff and value the cooperative efforts made to get native fish back into the East Fork of Boulder Creek. Given the unlikely risk of disturbance to the California condor or the Mexican spotted owl, implementation of the proposed action *may affect, but is not likely to adversely affect* the California condor or the Mexican spotted owl.

In closing, we appreciate our cooperative relationship and look forward to receiving your concurrence as quickly as possible as we continue to expedite this process. If there are further questions or comments please contact Ron Rodriguez or Mike Golden at 435-865-3700.

Sincerely,

ROBERT G. MACWHORTER
Forest Supervisor

cc: Ron Rodriguez, Michael Golden

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Biological Assessment
of
Threatened, Endangered, and Proposed Species
for the
East Fork Boulder Creek Native Trout Restoration Project

Escalante Ranger District
Dixie National Forest

Reviewed by: Ronald L. Rodriguez Date: 6/30/2011

Ronald L. Rodriguez
Wildlife, Fish, and Rare Plants Program Manager, Dixie National Forest

I. Introduction

This Biological Assessment (BA) analyzes the potential effects of the proposed East Fork Boulder Creek Native Trout Restoration Project on species listed as threatened or endangered under the Endangered Species Act (ESA), and to determine whether the likely effects to these species necessitates a formal consultation or conference with the U.S. Fish and Wildlife Service.

The objectives of this Biological Assessment (BA) include:

1) Ensure that Forest Service actions do not result in the loss of persistence of any native or desired non-native plant or animal species, or create significant trends toward Federal listing of any species.
2) Comply with the Endangered Species Act (ESA) requirement that actions of Federal agencies not jeopardize or adversely modify critical habitat of Federally listed species.
3) Provide a process and standard that ensures that threatened, endangered, and proposed species receive full consideration in the decision making process (FSM 2670.11 to 2671.45f).
4) Maintain documentation on actions regulated under the "Environmental Policy and Procedures Handbook" FSH 1909.15 chapter 40 (Environmental Assessments and Related Documents).

The Federally listed species that may occur or have suitable habitat on the Escalante Ranger District of the Dixie National Forest are shown in Table 1.

Table 1. Species listed as Threatened (T) or Endangered (E) under the Endangered Species Act (ESA) that may occur or have suitable habitat on the Escalante Ranger District, Dixie National Forest, and their occurrence in or near the proposed East Fork Boulder Creek Native Trout Restoration Project.

Species	Habitat suitability or known occurrences of listed species in or near the project area	Species to be analyzed further? (Yes or No)*
California Condor (E) *Gymnogyps californianus*	This is a non-essential, experimental population east of I-15. Condors may occur incidentally.	**Yes**
Mexican Spotted Owl (T) *Strix occidentalis lucida*	Nearest PAC is over 10 air miles away. Area contains potentially suitable winter/dispersal habitat.	**Yes**
Utah Prairie Dog (T) *Cynomys parvidens*	Suitable grassland and shrub-steppe habitat with deep, well-drained soils does not exist within the project area.	No

***Yes** – The proposed project's potential effects on these species will be further analyzed in this document.
***No** – No further analysis is necessary, and a determination of "No Effect" is rendered.

II. Consultation to Date

The U.S. Fish and Wildlife Service was provided a list of Threatened, Endangered, and Proposed species by Ranger District that may occur on the Dixie National Forest on February 12, 2010. The FWS approved the following list on February 19, 2010.

Common Name	Ranger Districts[1]
Utah Prairie Dog (Threatened)	D2, D3, D4, D5
Mexican Spotted Owl (Threatened)	D1, D2, D3, D4, D5
California Condor (Endangered)	D1, D2, D3, D4, D5
Virgin River Chub (Endangered)	D1
Woundfin (Endangered)	D1
Western Yellow-billed Cuckoo (Candidate)	D1, D2, D3, D4, D5
Townsendia aprica (Threatened)	D5

The FWS concurred that for those species that do not occur or have suitable habitat on a specific ranger district, a programmatic "No Effect" determination would be made. Therefore, a "No Effect" determination has been made and concurrence received for the Virgin River Chub, Woundfin, and Townsendia aprica on the Escalante Ranger District.

Critical Habitat has been designated on the Dixie National Forest for the Mexican spotted owl, but no other threatened, endangered, or proposed species. Some of this Critical Habitat has been designated on the Escalante Ranger District, but is over 10 air miles to the southwest, and does not fall within the project area or CEA.

III. Current Management Direction

Current policy is stated in the Forest Service Manual (FSM 2670.3) and includes:

1) Review actions carried out by the Forest Service to determine their potential effect on threatened, endangered, and proposed species.
2) Avoid actions that adversely affect listed species whenever possible.
3) Initiate consultation with the FWS when the Forest Service determines that a proposed activity may affect threatened, endangered, or proposed species or designated critical habitat.
4) Identify measures to prevent adverse modification of designated critical habitat or other habitats essential for the conservation of endangered, threatened, and proposed species.

Management direction specified by the Dixie National Forest Land and Resource Management Plan is to manage habitat for Federally listed species to maintain or enhance their listing status under the ESA by direct habitat improvement and agency cooperation. Objectives include managing habitats for the recovery of species listed under the Endangered Species Act (USDAFS 1986).

[1] D1 = Pine Valley Ranger District
D2 = Cedar City Ranger District
D3 = Powell Ranger District
D4 = Escalante Ranger District
D5 = Fremont River Ranger District

IV. Description of the Proposed Project

The Proposed Action is to approve the pesticide use permit that the Forest Service requires the UDWR to have to apply the fish toxicant rotenone to East Boulder Creek where it flows on Forest Service lands for a maximum of three treatments, one treatment per year for three consecutive years. The project activities addressed by the Proposed Action would completely eradicate nonnative trout from the East Fork Boulder Creek and a short segment of Boulder Creek. All fish would be temporarily eliminated from target waters. For a detailed description of the proposed action, see Appendix A.

Project Area and Location:

The project area includes the East Fork Boulder Creek from the natural barrier (below headwater meadow) to the confluence with the West Fork of Boulder Creek, the West Fork of Boulder Creek from an existing fish barrier approximately 0.23 miles (0.37 km) downstream to the confluence with the East Fork of Boulder Creek, and Boulder Creek from the confluence of the East and West Forks of Boulder Creek to approximately 0.5 miles (0.8 km) downstream to a recently constructed fish barrier. The project area also includes all perennial springs and inflows feeding the above stream sections. Also included in the proposed treatment area would be the Garkane Energy water transfer pipeline between the West Fork Reservoir and King's Pasture Reservoir; King's Pasture Reservoir; and the Garkane Energy penstock, between King's Pasture Reservoir and the Garkane Hydroelectric Power Plant (see attached map).

Duration: This project is expected to start during the fall of 2011 and into 2013.

Timing: Treatment would occur within a 24-hour period in the fall.

V. Existing Environment

Species Account, Life History, and Habitat Status

Information concerning life histories, suitable habitats, threats, population trends, and ecology for listed species that are known or suspected to occur within the East Fork Boulder Creek Native Trout Restoration Project area can be found within the "Life History and Analysis of Endangered, Threatened, Candidate, Sensitive, and Management Indicator Species of the Dixie National Forest" (Rodriguez 2008). This paper is located in the Dixie Supervisor's Office in Cedar City, Utah and in Escalante Ranger District files, Escalante, Utah. Potential effects and determinations are based in part upon the data presented in this document.

Existing Habitat

Existing habitat within the project area provides riparian habitat. The project area is approximately 8.5 miles of riparian habitat. Habitats adjacent to the treatment areas consist mainly of aspen, ponderosa pine, and spruce/fir forest.

California condor

No condors are known to nest on the Dixie National Forest. Condors may fly over the area and scavenge incidentally.

Mexican spotted owl

No Mexican spotted owls are known to nest on the Dixie National Forest. The nearest known suitable nesting habitat is nearly 10 air miles from the project area. Movement through the area would occur at night, between September and April, if owls were to use the area.

VI. Effects of the Proposed Action

Effects of Proposed Actions

The proposed action could affect terrestrial wildlife through direct disturbance from human presence in treatment areas. Terrestrial habitats will not be altered; temporary disturbance may occur during one day of reconnaissance and one day of treatment in each year treatment occurs. Temporary displacement of some species may occur due to disturbance, but will be short-term. Exposure to rotenone could occur through direct contact, ingestion of treated water, and consumption of aquatic organisms killed by rotenone. Rotenone "is highly toxic to fish and other aquatic life, but has low toxicity to birds" (Ling 2003, p.6). "Rotenone is not easily absorbed in higher animals and does not accumulate in the body" (ibid., p.21). "Birds and mammals are much less sensitive to rotenone than are fish and aquatic invertebrates and poisoning caused by drinking treated water or eating poisoned fish is extremely unlikely" (ibid., p. 32).

California condor

The project area is within a forested landscape, which provides little adequate open terrain for foraging condors. Open areas adjacent to the creek would not provide carrion to feed on; dead fish would "bloat and sink below the surface of the water where they disintegrate and are not available for terrestrial animal consumption" (US EPA 2007, p.24). In the event that condors did forage on the dead fish, it is "unlikely that [they] will consume enough fish to result in a lethal dose" (ibid.). Condors may fly over the project area, but would likely not remain in areas with disturbance from treatment activities. Implementation of the proposed action may affect, but will not likely adversely affect the California condor.

Mexican spotted owl

The nearest known Mexican spotted owl Protected Activity Center (PAC) is more than 10 air miles away from the project area, and the nearest designated Critical Habitat is over 12 air miles away. Suitable habitat exists in canyons and uplands near the PAC and within the boundaries of Critical Habitat. Dispersing Mexican spotted owls may pass through the project area at night, and would likely not be disturbed by daytime project activities. Nighttime project activities would occur at neutralization stations, which would be operated continuously as long as necessary to prevent the movement of rotenone into non-target waters. The neutralization stations would be located at specific point locations, and have a very small area of disturbance. If owls were to pass through the area at night, they would likely not be disturbed by project activities. Implementation of the proposed action may affect, but will not likely adversely affect the Mexican spotted owl.

VII. Determination

Given the unlikely risk of disturbance to either species, implementation of the proposed action *may affect, but is not likely to adversely affect* the California condor or the Mexican spotted owl.

VIII. Management Recommendations

If listed species are observed during any phase of this project, the Escalante Ranger District wildlife biologist must be notified and appropriate protection measures will be established.

IX. Literature Cited

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X . Contributors

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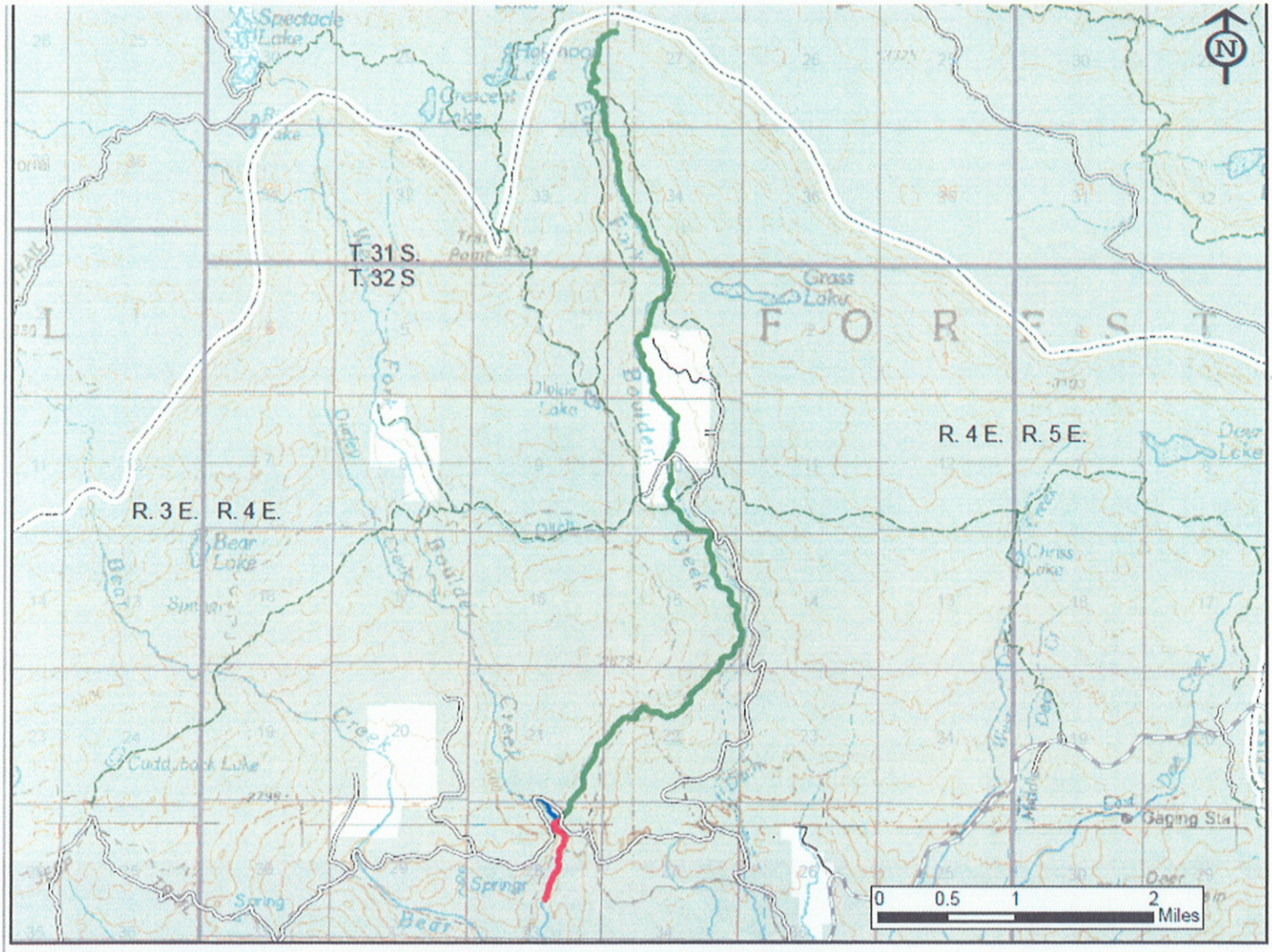

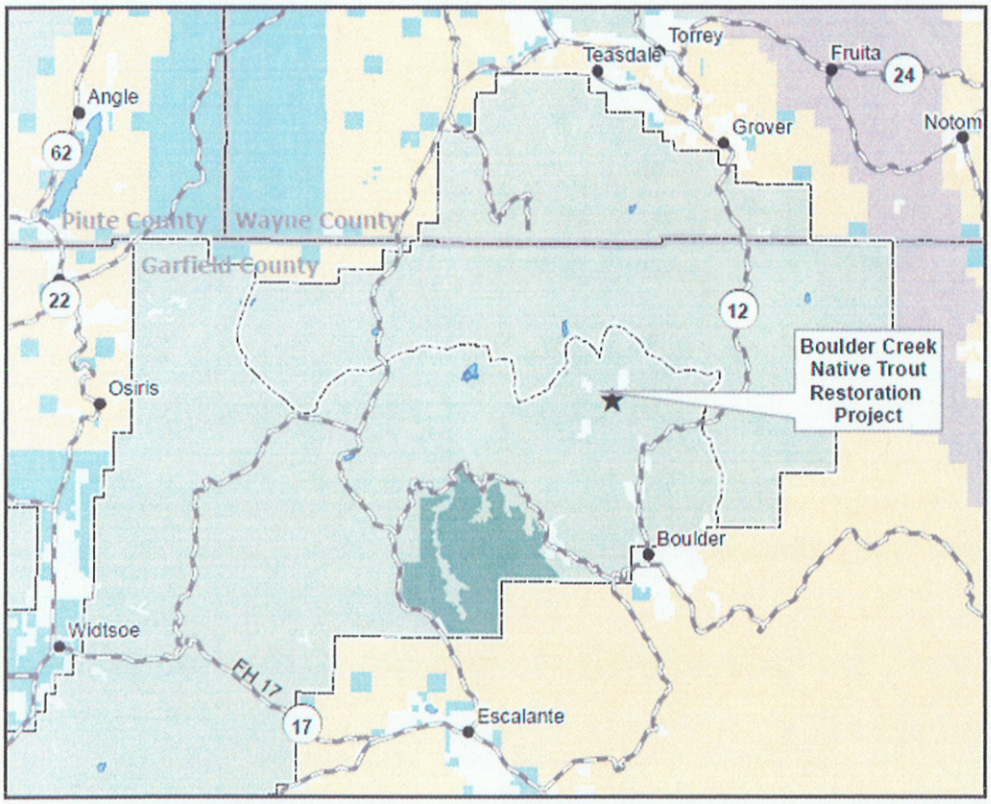

Dixie National Forest
Escalante Ranger District
East Fork Boulder Creek
Native Trout Restoration Project
Vicinity Map

Legend

Treatment Reach Name

- Boulder Creek
- East Fork Boulder Creek
- West Fork Boulder Creek
- Highway
- Forest Roads
- Non-Motorized Trail
- Non-Forest/Private Roads
- National Forest Boundary
- Forest Service
- Wilderness Areas
- Bureau Land Management
- National Park Service
- State Lands
- Private Lands

Appendix A. Proposed Action Described in Detail

The Proposed Action is to approve the pesticide use permit that the Forest Service requires the UDWR to have to apply the fish toxicant rotenone to waters that flow on NFS lands. The permit would authorize a maximum of three treatments, one treatment per year for three consecutive years. Waters that would be included in the permit are as follows:

- approximately 7.8 miles (12.6 km) of East Fork Boulder Creek from the natural barrier (below headwater meadow) on East Fork Boulder Creek to its confluence with West Fork Boulder Creek;
- approximately 0.2 miles (0.4 km) of lower West Fork Boulder Creek, from a previously constructed barrier to its confluence with East Fork Boulder Creek;
- approximately 0.5 miles (0.8 km) of Boulder Creek from the confluence of East Fork Boulder Creek and West Fork Boulder Creek downstream to a previously constructed fish barrier; and
- all seeps and springs flowing into those sections of the stream reaches specified in the permit.

The project activities addressed by the Proposed Action would completely eradicate non-native trout from East Fork Boulder Creek, a short segment of Boulder Creek, and a very short segment of West Fork Boulder Creek. All fish would be temporarily eliminated from target waters.

Several actions that are not part of the Forest Service decision are connected to the project, as follows. Treatment of connected waters on private property is required to meet the purpose of the project. The entire proposed treatment area is described in Section 1.1 (Figure 1). Following fish removal, UDWR would introduce the CRCT into the treated stream segments to establish self-sustaining populations. Sterile hybrids of species of non-native trout may also be stocked by UDWR at some locations following the treatments to provide sport fishing opportunities while native trout become established. The following describes the project in detail, including identification of those actions that are associated with but not part of this Forest Service decision.

Chemicals. Liquid emulsifiable rotenone (Liquid Rotenone, 5% Active Ingredient, EPA Registration No. 432-172) would be used to treat target waters. Rotenone was selected as the chemical to use because of its effectiveness in controlling fish populations and its lack of long-term effects on the environment (Sousa et al 1987). When used at the concentrations planned for the project, rotenone is a naturally occurring fish toxicant that is toxic to only fish, some aquatic invertebrates, and some juvenile amphibians. EPA found it to be not 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. UDWR has used rotenone successfully in many similar projects and has refined application techniques to minimize adverse side effects to the environment (Hepworth et al. 2001a, Hepworth et al. 2001b, Hepworth et al. 2001c, Ottenbacher and Hepworth 2001, Chamberlain and Hepworth 2002a, Chamberlain and Hepworth 2002b, Chamberlain and Hepworth 2002c, Fridell et al. 2004, Fridell et al. 2005, Fridell and Rehm 2006).

Potassium permanganate would be used to neutralize the rotenone at suitable locations to prevent the movement 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 under the Proposed Action (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.

A more detailed description of the chemicals that would be used under the Proposed Action can be found in Appendix A.

Application. Liquid rotenone would be applied at a rate of 0.5 to 2.0 ppm. In the pond and reservoir, liquid rotenone would be dispersed from personnel on small water-craft using pressurized backpack spray units. Liquid rotenone would be applied using a combination of 30 gallon and 5 gallon dispensers with constant flow drip-heads at approximately 50 to 60 stations throughout the project area over a 3 to 24 hr period (Finlayson et. al 2000, Ottenbacher et al. 2009). Thirty-gallon drip stations would be used, one each at the following:

- lower end of the headwater meadow at the upstream end of the project area
- approximately halfway between the headwater meadow and King's Pasture Reservoir
- immediately below King's Pasture Reservoir, and
- the intake for the water flow pipeline between the West Fork Reservoir and King's Pasture Reservoir.

Five-gallon drip stations would be located at approximately 1 mile (1.6 km) intervals, beginning one mile below King's Pasture Reservoir and ending 1 mile upstream from the fish barriers on the main stem of East Fork Boulder Creek, and at all major springs and seeps within the project area. The interval placement of drip stations on the main stem of East Fork Boulder Creek would be to facilitate efficient travel time of chemicals. Depending on flow volume, a single 30 gallon or 5 gallon drip would be placed on the lower fish barrier on West Fork Boulder Creek. Pressurized backpack sprayers would be used to apply a diluted solution of the chemical to springs and backwater areas containing fish that were not effectively treated by boat or drip station.

Rotenone would be neutralized with potassium permanganate downstream from target waters. Three sites are planned: where the penstock water is released at the upper power plant, where water is released at the main power plant, and at the fish barrier at the lower end of the treatment area. Each site would have a main neutralization station and at least one contingency neutralization station to ensure effectiveness. The neutralization stations would prevent rotenone from escaping the target area, except for the estimated 0.25 to 0.5 miles downstream in which the neutralization or natural degradation of rotenone is occurring.

Post-treatment activity. Following confirmation of complete non-native trout removal, UDWR would reintroduce CRCT into project stream reaches from "core" CRCT populations or from fish produced by UDWR CRCT brood stocks. Sterile hybrids of species of non-native trout may also be stocked at some locations following the treatments to provide sport fishing opportunities while native trout become established. All transfers or stocking of fish would comply with Utah State Department of Agriculture rules and UDWR policies.

Design Criteria. The following design criteria would be included in the Proposed Action:

1. Stream sections will be treated in the fall to minimize impacts on non-target wildlife species (amphibians, insectivorous birds and bats). The fall treatment period will also minimize the impacts on sport fishing recreation.

2. Each treatment will be preceded by internal and external notifications and media releases to notify the public of treatment sites and dates and will include the following: notification of the Boulder Town Council, notification of private landowners in the treatment area, and news releases in local papers.

3. The treatment area will be placarded to prohibit public access during treatment and for at least 3 days following treatment.

4. Application of the chemical will be conducted by licensed pesticide applicators in accordance with all applicable regulations and policies.

5. Motorized access will be by Forest Service system roads. Exception will be minimal, require Escalante District Ranger approval, and be consistent with the Dixie National Forest Motorized Travel Plan (ROD, April 2009).

6. Neutralization sites will be placed to maximize their effectiveness at preventing downstream escapement of rotenone.

7. Treated waters will remain open to fishing.

8. Transport to the site and storage of chemicals on the site will comply with FSH 2109.14.40 (Pesticide-Use Management and Coordination Handbook, Chapter 40 - Storage, Transportation, and Disposal).

9. Sentinel fish ("in situ bioassay") will be used for pesticide residues monitoring to determine the presence or absence of unacceptable environmental effects.

10. The permit will stipulate that treatments will be discontinued if the objective of complete removal of non-native trout from the project area has been met.

Actions connected to but not included in the decision. The following parts of the project, as described above, are not under Forest Service jurisdiction and not addressed by the decision. Selection of the Proposed Action is for issuance of the pesticide use permit for the application of rotenone on NFS lands only. The following, however, are considered connected actions and thus included in the environmental analysis:

1. The treatment area includes private property, including property owned by Garkane Energy; thus, this area is not under Forest Service jurisdiction. This includes approximately 1.4 miles of East Fork Boulder Creek, Kings Pasture Reservoir, and the pond in Kings Pasture. To meet the purpose and need of the project, these areas as well as the water in the transmission pipeline and penstock must be treated. Forest Service approval of the pesticide use permit for UDWR to apply rotenone to NFS waters is not approval of UDWR activities on non-NFS lands; however, the Forest Service would not approve the pesticide use permit unless UDWR is able to treat the non-NFS waters.

   Expectation is that the entire project treatment area would receive chemical treatment as described. FERC license order Section 4(e), item 16, condition 4, requires Garkane Energy to use its reasonable efforts to cooperate in the work of UDWR and other agencies to remove non-native fish and re-establish CRCT in the above stream sections. This cooperation has already been demonstrated through construction of the fish barriers and through the first chemical treatment of Kings Pasture Reservoir in 2009.

2. Stocking of fish is under the jurisdiction of UDWR; thus, the CRCT stocking is not under Forest Service jurisdiction. To meet the purpose and need of the project, the stream would need to be stocked with CRCT from core populations or UDWR brood stock post-treatment.

Expectation is that the post-treatment recolonization/stocking of CRCT would occur as described. The purpose and need for the project, including stocking with CRCT, is to implement conservation actions under the CRCT Conservation Agreement and Strategy, to which UDWR is a signatory. In addition, the Forest Service conditions regarding the non-native fish eradication and fish restocking were included in a 2006 settlement agreement relating to the FERC license conditions and signed by Garkane Energy, Forest Service, and UDWR.

3. Fishing regulations, including whether or not treated waters would remain open to fishing, is under the jurisdiction of UDWR.

   Expectation is that UDWR would manage the fishing regulations to meet the conservation actions under the CRCT Conservation Agreement and Strategy. This is not related to the purpose and need of the project; however, UDWR recognizes the importance of the area to recreation users. Because of this, UDWR may also stock sterile hybrids of species of non-native trout at some locations following the treatments while native trout become established.

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