



# The Clark Fork Project FERC Project No. 2058

## 2023 Annual Implementation Plans





## 2023 ANNUAL IMPLEMENTATION PLAN SUMMARY – APPENDIX A

### Clark Fork Project, FERC No. 2058 Cabinet Gorge and Noxon Rapids Hydroelectric Developments

#### **Title**

Idaho Tributary Habitat Acquisition and Fishery Enhancement Program

#### **Implementation Staff Lead**

Ken Bouwens, Idaho Department of Fish and Game (IDFG), (208) 769-1414,  
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#### **Background**

The purpose of this program is to offset the impacts of the power peaking operation of the Cabinet Gorge Project to native salmonids through the restoration and enhancement of lower Clark Fork River and Lake Pend Oreille (LPO) tributary watersheds, fishery monitoring and management support, and a public education and enforcement initiative focused on Bull Trout and their associated habitats in Idaho.

Outlined below is the 2023 annual implementation plan for Idaho Tributary Habitat Acquisition and Enhancement and Fish Resource Monitoring, Enhancement, and Management portions of this program. The public education and enforcement component of this program is described in Appendix D of the Clark Fork Settlement Agreement (CFSA). In addition, other CFSA appendices also support watershed and native salmonid protection, restoration, and enhancement (e.g., Fish Passage/Native Salmonid Restoration Plan, Watershed Council Program), and thereby augment the efforts to be initiated under this program.

#### **2023 Project Plans**

##### *Tributary Habitat Acquisition and Enhancement*

1. Habitat Restoration Scoping Allocation
2. Habitat Restoration and Acquired Property Maintenance and Monitoring Allocation
3. Priority Native Salmonid Habitat Acquisition and Conservation Allocation
4. Idaho Field Station Operation and Maintenance
5. Pack River Watershed Management Plan Addendum
6. Trestle Creek Habitat Enhancement Project Phase I
7. Rattle Creek Habitat Enhancement Project Design

##### *Fishery Resource Monitoring, Enhancement, and Management*

8. Fish Resource Monitoring, Enhancement, and Management Plan

#### **Work Products**

##### *Habitat Restoration Scoping Allocation*

- Designs and cost estimates for specific projects will be reported in the form of Technical Memoranda or other appropriate documentation
- Annual Work Summary; due December 1, 2023

*Habitat Restoration and Acquired Property Maintenance and Monitoring Allocation*

- Annual Project Update (Avista Property Vegetation Management); due December 1, 2023
- Annual Work Summary; due December 1, 2023

*Priority Native Salmonid Habitat Acquisition and Conservation Allocation*

- Annual Work Summary; due December 1, 2023

*Idaho Field Station Operation and Maintenance*

- All work performed for this project plan will be documented in an Annual Work Summary; due December 1, 2023

*Pack River Watershed Management Plan Addendum*

- Pack River Native Salmonid Habitat Restoration Plan; final due November 1, 2023
- Annual Work Summary; due December 1, 2023

*Trestle Creek Habitat Enhancement Project Phase I*

- Engineering work will be documented via appropriate technical memoranda
- Annual Work Summary; due December 1, 2023

*Rattle Creek Habitat Enhancement Project Design*

- Engineering work will be documented via appropriate technical memoranda
- Annual Work Summary; due December 1, 2023

*Fish Resource Monitoring, Enhancement, and Management Plan*

- Annual Project Update; 2022 redd count data; final due November 1, 2023
- Comprehensive Project Report; report summarizing 2009–2023 tributary monitoring data; final due December 1, 2024
- Annual Work Summary; due December 1, 2023
- Temperature monitoring data for the six sites; due December 1, 2023
- Annual Project Update; 2023 tributary monitoring data; final due November 1, 2024
- Annual Project Update; 2023 Bull Trout redd count data; final due November 1, 2024

## 2023 Appendix A Tributary Habitat Acquisition and Enhancement Fund Budget

Budget Summary	
Unexpended funds with interest	\$3,341,481
2023 contribution (including GDP inflation rate)	\$661,046
Transfer to Fish Resource Monitoring, Enhancement, and Management Fund	-\$60,926
<b>Total available</b>	<b>\$3,941,601</b>
2023 MC-approved budget	\$221,470
<b>Unobligated funds</b>	<b>\$3,720,131</b>

2023 Project	Carryover <sup>1</sup>	2023 Budget
Habitat Restoration Scoping Allocation	\$5,000	\$25,000
Habitat Restoration and Acquired Property Maintenance and Monitoring Allocation	\$2,500	\$20,000
Priority Native Salmonid Habitat Acquisition and Conservation Allocation	\$33,000	\$75,000
Idaho Field Station Operation and Maintenance	\$4,000	\$17,500
Pack River Watershed Management Plan Addendum	\$2,300	\$0
Trestle Creek Habitat Enhancement Project Phase I	\$12,000	\$0
Rattle Creek Habitat Enhancement Project Design	\$25,170	\$0
<b>Total</b>	<b>\$83,970</b>	<b>\$137,500</b>
<b>MC-approved budget</b>		<b>\$221,470</b>

<sup>1</sup> Estimated carryover of unexpended, approved funds as of January 1.

## 2023 Appendix A Fish Resource Monitoring, Enhancement, and Management Plan Budget

Budget Summary	
Unexpended funds with interest	\$0
2023 contribution (including GDP inflation rate)	\$57,074
Transfer from Tributary Habitat Acquisition and Enhancement Fund <sup>1</sup>	\$60,926
<b>Total available</b>	<b>\$118,000</b>
2023 MC-approved budget	\$118,000
<b>Unobligated funds</b>	<b>\$0</b>

<sup>1</sup> In 2019, the MC approved that the allocation for the Fish Resource Monitoring, Enhancement and Management Plan be permanently increased to \$96,000. The funding for this plan will continue to be transferred from the Tributary Habitat Acquisition and Enhancement Program under Appendix A. These transferred funds will revert back to the Tributary Habitat Acquisition and Enhancement Fund if not spent in a given year.

2023 Project	Carryover <sup>1</sup>	2023 Budget
Fish Resource Monitoring, Enhancement, and Management Plan	\$22,000	\$96,000
<b>Total</b>	<b>\$22,000</b>	<b>\$96,000</b>
<b>MC-approved budget</b>		<b>\$118,000</b>

<sup>1</sup> Estimated carryover of unexpended, approved funds as of January 1.

## 2023 PROJECT PLAN

### Habitat Restoration Scoping Allocation

#### Project Contact

Ken Bouwens, Idaho Department of Fish and Game (IDFG), (208) 769-1414,  
[ken.bouwens@idfg.idaho.gov](mailto:ken.bouwens@idfg.idaho.gov)

#### Project History

This project was first approved in 2017. We are requesting continuation of this project in 2023. The scope and budget for this project will be reviewed by the Management Committee (MC) annually.

#### Background

Habitat restoration is an important component of the Appendix A program. Watershed restoration and assessment projects have been completed throughout the Lake Pend Oreille watershed aimed at improving habitat for native salmonid populations. New project development is an involved scoping process requiring the identification and integration of information regarding specific project streams, locations, willing landowners, and associated biological limitations. Often, technical engineering support is required to develop viable project proposals, including feasibility analyses, preliminary designs, and cost estimates. This allocation is designed to provide limited resources to allow pre-project review and collaboration with qualified fish habitat engineers. It is expected that this scoping will lead to full project proposals for MC review and approval.

Beginning in 2021 we included funding for a third party to help identify, negotiate, and facilitate fish habitat enhancement projects, primarily with willing private landowners. This partnership allows the involvement of an entity who is well versed in prior fish habitat assessments and can begin discussions with willing landowners as appropriate.

This allocation is designed to provide managers with a means to rapidly respond to opportunities and needs as they arise, and to reduce the burden of numerous, low-dollar Consent Mail requests on the MC. As opportunities or needs arise, managers will notify the Aquatic Implementation Team and seek Avista approval prior to expending funds that were not specified within a Project Plan. Given it is an allocation and not related to a specific project, the Appendix A ranking criteria do not apply.

#### Goal

Provide support to assist with the development of future fish habitat projects.

#### Objectives

1. Provide funding for fish habitat engineers to perform preliminary site visits and review and assist with technical document preparation.
2. Fund a third-party contractor to identify and make initial contacts with willing landowners with the intent of developing future fish habitat projects.

## **Tasks**

Specific tasks will be identified as necessary, but may include conducting initial site visits, providing conceptual design, assessing potential project feasibility, and developing preliminary agreements and cost estimates.

## **Work Products**

- Designs and cost estimates for specific projects will be reported in the form of Technical Memoranda or other appropriate documentation
- Annual Work Summary; due December 1, 2023

## **Permitting Requirements**

Not applicable for the tasks proposed in this project plan.

Endangered Species Act consultation for this project plan is associated with the 2019 Biological Opinion on the effects of continued operation of the Clark Fork Hydroelectric Project on Bull Trout and designated Bull Trout critical habitat (BiOp), and the U.S. Fish and Wildlife Service (USFWS)-Idaho Department of Fish and Game (IDFG) Cooperative Agreement pursuant to Section 6 of the Act. This project plan is consistent with the analysis and conclusions contained in the 2019 BiOp and the USFWS-IDFG Cooperative Agreement, and will adhere to all appropriate Terms and Conditions designed to reduce the extent and effects of incidental take on Bull Trout. No incidental take of Bull Trout is anticipated as a result of this project plan; therefore, no take reporting is required.

## **Cultural/Historic Resource Review**

Not applicable for the tasks proposed in this project plan, there are no ground and/or vegetation disturbing activities, or proposed impacts to cultural/historic resources.

## **Benefit to the Resource**

Projects developed using this allocation will be consistent with the 2019-2023 Clark Fork River Native Salmonid Restoration Plan (AIT 2018), and the Idaho Tributary Habitat Acquisition and Fishery Enhancement Program (Appendix A of the Clark Fork Settlement Agreement) through enhancement of tributary habitat conditions for native salmonids including Bull Trout and Westslope Cutthroat Trout. As such, they will also be consistent with goals of the Fish Passage/Native Salmonid Restoration Plan Protection, Mitigation & Enhancement measure (Appendix C). Projects developed using this allocation will also be consistent with the Dissolved Gas Supersaturation Control, Mitigation, and Monitoring Program (Appendix F5) as they will likely identify options for improving spawning, rearing, and migratory habitat for focus species of the Appendix F5 mitigation program.

Tasks conducted under this allocation are also consistent with other established plans including the Lake Pend Oreille Bull Trout Conservation Plan (habitat enhancement; Resource Planning Unlimited 1999) and the IDFG Fisheries Management Plan (IDFG 2019).

This allocation is designed to assist with the development of full fish habitat restoration/enhancement proposals with the goal of enhancing conditions for native salmonids. Project-specific benefits will be identified as a result of the use of this allocation.

### Budget

Item	Estimated Carryover <sup>1</sup>	2023 Budget Request
Engineering support	\$5,000	\$15,000
Outreach support	\$0	\$10,000
<b>Total</b>	\$5,000	\$25,000
<b>Anticipated Expenditures</b>		\$30,000

<sup>1</sup> Estimated carryover of unexpended, approved funds as of January 1.

### Literature Cited

AIT (Aquatic Implementation Team). 2018. Clark Fork River Native Salmonid Restoration Plan. Five-Year Plan (2019–2023).

IDFG (Idaho Department of Fish and Game). 2019. Fisheries Management Plan 2019-2024. Boise, Idaho.

Resource Planning Unlimited. 1999. Lake Pend Oreille Bull Trout Conservation Plan. State of Idaho. Boise, Idaho.



## 2023 PROJECT PLAN

### Habitat Restoration and Acquired Property Maintenance and Monitoring Allocation

#### Project Contact

Ken Bouwens, Idaho Department of Fish and Game (IDFG), (208) 769-1414  
[ken.bouwens@idfg.idaho.gov](mailto:ken.bouwens@idfg.idaho.gov)

#### Project History

The Habitat Restoration and Acquired Property Maintenance and Monitoring allocations have been continually approved separately since 2003. They were combined into one project plan in 2018. We request the continuation of this plan in 2023. The scope and budget for this project are reviewed by the Management Committee (MC) annually.

#### Background

Watershed restoration and assessment projects have been completed throughout the Lake Pend Oreille watershed aimed at improving habitat for native salmonid populations. While a substantial amount of habitat restoration still needs to be completed, ongoing minor maintenance and monitoring of completed restoration projects is also necessary to ensure that completed projects are functioning as intended. This allocation is also designed to provide an ongoing funding source to monitor, perform minor maintenance, and pay ongoing costs (weed control, etc.) associated with acquired properties. These expenses often arise throughout the year and this allocation is designed to be able to address these needs without burdening the MC for approval for each individual transaction.

Monitoring habitat restoration projects is important for both maintaining projects and for learning more about how various restoration techniques succeed. Monitoring under this allocation would be completed at various scales dependent on project magnitude and sensitivity. Lower intensity monitoring would consist of activities such as replicating photo-points or completing a qualitative “walk-through” assessment of the designated project. This scale of monitoring would typically be completed either for lower priority restoration projects or for projects which did not experience substantial changes due to flow conditions. Higher intensity monitoring would be more in-depth post construction surveys to include surveying cross-sections, longitudinal profiles, photo-points, and potentially channel geometry if substantial changes have occurred (e.g., channel avulsions).

Maintenance activities can vary depending on year and project. In general, this allocation is designed to deal with small-scale repairs, generally above the ordinary high water mark, that do not change the design of the original project or require additional engineering. Major repairs that include substantial in-water work or work that would be subject to additional engineering or permitting would generally be proposed as an individual project for MC approval.

This allocation is designed to provide managers with a means to rapidly respond to opportunities and needs as they arise, and to reduce the burden of numerous, low-dollar Consent Mail requests on the MC. As opportunities or needs arise, managers will notify the Aquatic Implementation Team and seek Avista approval prior to expending funds that were not specified within a Project

Plan. Given it is an allocation and not related to a specific project, the Appendix A ranking criteria do not apply.

### **Goal**

Provide a stable funding mechanism to complete minor repairs and maintenance on existing habitat projects and acquired properties.

### **Objectives**

1. Monitor previously completed habitat projects to ensure ongoing functionality and stability.
2. Perform minor maintenance to previously completed habitat projects as necessary.
3. Monitor existing properties for vandalism, etc.
4. Perform minor maintenance to existing properties as necessary.
5. Pay ongoing costs (weed control, etc.) associated with acquired properties.

### **Tasks**

1. Perform weed control at previously constructed habitat projects as necessary.
2. Perform weed control at Avista-held lands acquired through the CFSA as necessary.

### **Work Products**

- Annual Project Update (Avista Property Vegetation Management); due December 1, 2023
- Annual Work Summary; due December 1, 2023

### **Permitting Requirements**

Any permits necessary for weed control activities will be acquired by the applicator. If activities are substantial enough to require additional permitting, then the project will be submitted to the MC for individual approval.

Endangered Species Act consultation for this project plan is associated with the 2019 Biological Opinion on the effects of continued operation of the Clark Fork Hydroelectric Project on Bull Trout and designated Bull Trout critical habitat (BiOp), and the U.S. Fish and Wildlife Service (USFWS)-Idaho Department of Fish and Game (IDFG) Cooperative Agreement pursuant to Section 6 of the Act. This project plan is consistent with the analysis and conclusions contained in the 2019 BiOp and the USFWS-IDFG Cooperative Agreement, and will adhere to all appropriate Terms and Conditions designed to reduce the extent and effects of incidental take on Bull Trout. No incidental take of Bull Trout is anticipated as a result of this project plan; therefore, no take reporting is required.

### Cultural/Historic Resource Review

Work proposed under this allocation will either: 1) not involve any ground and/or vegetation disturbing activities or impact historic resources, or 2) will be performed under the cultural assessment associated with the original project.

### Benefit to the Resource

Projects developed using this allocation will be consistent with the 2019-2023 Clark Fork River Native Salmonid Restoration Plan (AIT 2018), and the Idaho Tributary Habitat Acquisition and Fishery Enhancement Program (Appendix A of the Clark Fork Settlement Agreement) through enhancement of tributary habitat conditions for native salmonids including Bull Trout and Westslope Cutthroat Trout. As such, they are consistent with goals of the Fish Passage/Native Salmonid Restoration Plan Protection, Mitigation, & Enhancement measure (Appendix C) and with the Dissolved Gas Supersaturation Control, Mitigation, and Monitoring Program (Appendix F5) as they protected spawning, rearing, and/or migratory habitat for focus species of the Appendix F5 mitigation program.

Tasks conducted under this allocation will be consistent with other established plans including the Lake Pend Oreille Bull Trout Conservation Plan (habitat enhancement; Resource Planning Unlimited 1999) and the IDFG Fisheries Management Plan (IDFG 2019).

### Budget

Item	Estimated Carryover <sup>1</sup>	2023 Budget Request
Task-specific costs	\$0	\$15,000
Law enforcement monitoring (cost share with Appendix G)	\$2,500	\$5,000
<b>Total</b>	<b>\$2,500</b>	<b>\$20,000</b>
<b>Anticipated Expenditures</b>		<b>\$22,500</b>

<sup>1</sup> Estimated carryover of unexpended, approved funds as of January 1.

The law enforcement monitoring is a 50:50 cost share with Appendix G. There is a 2023 request in the amount of \$5,000 in Appendix G in addition to the 2023 \$5,000 budget request above.

### Literature Cited

AIT (Aquatic Implementation Team). 2018. Clark Fork River Native Salmonid Restoration Plan. Five-Year Plan (2019–2023).

IDFG (Idaho Department of Fish and Game). 2019. Fisheries Management Plan 2019-2024. Boise, Idaho.

Resource Planning Unlimited. 1999. Lake Pend Oreille Bull Trout Conservation Plan. State of Idaho. Boise, Idaho.



## 2023 PROJECT PLAN

### Priority Native Salmonid Habitat Acquisition and Conservation Allocation

#### Project Contact

Ken Bouwens, Idaho Department of Fish and Game (IDFG), (208) 769-1414,  
[ken.bouwens@idfg.idaho.gov](mailto:ken.bouwens@idfg.idaho.gov)

#### Project History

This project has been continually approved since 2003. We are requesting continuation of this project in 2023. The scope and budget for this project are reviewed by the Management Committee (MC) annually.

#### Background

This allocation was set up to support efforts in Idaho to acquire, protect, and improve the quality of critical native salmonid (Bull Trout and Westslope Cutthroat Trout) tributary habitat in high priority spawning streams. Land will be conserved through fee title purchase or through placement of conservation easements, working only with willing sellers and cooperators. As with the previously approved habitat acquisition proposals, purchases of specific individual parcels or conservation easements will be presented individually for MC approval. This allocation is designed to provide support to investigate potential land conservation opportunities and to perform due diligence (title report, baseline research, survey, appraisal, negotiations, etc.) to ready potential transactions for presentation to the MC.

We intend to continue to provide annual funding to fund outside entities to help identify, negotiate, and facilitate land conservation actions. This partnership allows the involvement of entities who are well versed in land conservation and the local markets to monitor the market and can begin discussions with willing landowners as appropriate. Due to the rapid pace associated with the real estate market, having funds on hand to begin discussions and perform due diligence on perspective opportunities is imperative.

This allocation is designed to provide managers a means to rapidly respond to opportunities and needs as they arise, and to reduce the burden of numerous, low-dollar Consent Mail requests on the MC. As opportunities or needs arise, managers will notify the Aquatic Implementation Team and seek Avista approval prior to expending funds that were not specified within the Project Plan.

#### Goal

Identify and quickly respond to potential land acquisition opportunities.

#### Objectives

1. Continue to provide support to investigate potential land conservation opportunities.
2. Perform due diligence to ready potential transactions for presentation to the MC.

## **Tasks**

1. Hire third-party contractor(s) to provide outreach support and monitor the markets for potential opportunities. (Objective 1)
2. Prepare title reports, perform baseline research, acquire surveys and appraisals, and perform negotiations on potential new acquisitions/easements to ready them for MC approval. (Objective 2)

## **Work Products**

- Annual Work Summary; due December 1, 2023

## **Permitting Requirements**

Not applicable for the tasks proposed in this project plan.

Endangered Species Act consultation for this project plan is associated with the 2019 Biological Opinion on the effects of continued operation of the Clark Fork Hydroelectric Project on Bull Trout and designated Bull Trout critical habitat (BiOp), and the U.S. Fish and Wildlife Service (USFWS)-Idaho Department of Fish and Game (IDFG) Cooperative Agreement pursuant to Section 6 of the Act. This project plan is consistent with the analysis and conclusions contained in the 2019 BiOp and the USFWS-IDFG Cooperative Agreement, and will adhere to all appropriate Terms and Conditions designed to reduce the extent and effects of incidental take on Bull Trout. No incidental take of Bull Trout is anticipated as a result of this project plan; therefore, no take reporting is required.

## **Cultural/Historic Resource Review**

Not applicable for the tasks proposed in this project plan, there are no ground and/or vegetation disturbing activities, or proposed impacts to cultural/historic resources. Avista will review any land acquisitions that result from this project plan to determine if further Cultural/historic resource review is necessary.

## **Benefit to the Resource**

Property conservation actions developed using this allocation would be consistent with the 2019-2023 Clark Fork River Native Salmonid Restoration Plan (AIT 2018), and the Idaho Tributary Habitat Acquisition and Fishery Enhancement Program (Appendix A of the Clark Fork Settlement Agreement) through enhancement of tributary habitat conditions for native salmonids including Bull Trout and Westslope Cutthroat Trout. As such, they would also be consistent with goals of the Fish Passage/Native Salmonid Restoration Plan Protection, Mitigation, and Enhancement measure (Appendix C), and the Dissolved Gas Supersaturation Control, Mitigation, and Monitoring Program (Appendix F5) as they would protect spawning, rearing, and/or migratory habitat for focus species of the Appendix F5 mitigation program.

This allocation is designed to assist with land acquisitions; therefore, depending on the particular property, the benefitted species and exactly how that land action benefits those species may change. However, priority will be placed upon properties that surround streams that support native salmonids.

**Budget**

<b>Item</b>	<b>Estimated Carryover<sup>1</sup></b>	<b>2023 Budget Request</b>
Outreach support	\$3,000	\$25,000
Due diligence costs	\$30,000	\$50,000
<b>Total</b>	<b>\$33,000</b>	<b>\$75,000</b>
<b>Anticipated Expenditures</b>		<b>\$108,000</b>

<sup>1</sup> Estimated carryover of unexpended, approved funds as of January 1.

**Literature Cited**

AIT (Aquatic Implementation Team). 2018. Clark Fork River Native Salmonid Restoration Plan. Five-Year Plan (2019–2023).



## 2023 PROJECT PLAN

### Idaho Field Station Operation and Maintenance

#### Project Contact

Ken Bouwens, Idaho Department of Fish and Game (IDFG), (208) 769-1414,  
[ken.bouwens@idfg.idaho.gov](mailto:ken.bouwens@idfg.idaho.gov)

#### Project History

This is a continuation of the Idaho Field Station project first approved in 2017. Construction was completed in October, 2021. We seek continuation with a reduction in scope and budget for 2023, limiting costs to ongoing operation and maintenance. The budget will be a cost share with Appendix F5.

#### Background

In 2020, the MC approved construction of a new field station at Trestle Creek and construction was completed in October 2021. This project plan is intended to provide funding for ongoing operational costs like utilities and snow removal as well as provide a small budget for minor maintenance activities like heating system service and consumables such as paper towels, cleaning supplies, etc.

#### Goal

Provide a mechanism to address ongoing utility and operational costs for the Idaho Field Station.

#### Objectives

1. Provide CFSA funding to pay utility bills.
2. Provide CFSA funding for minor maintenance activities and consumables.

#### Tasks

1. Pay appropriate electrical, telephone, IT, and trash service bills (Objective 1).
2. Conduct routine minor maintenance to the facility as necessary (Objective 2).
3. Purchase consumables such as paper towels, cleaning supplies, etc. (Objective 3).

#### Work Products

- All work performed for this project plan will be documented in an Annual Work Summary; due December 1, 2023

#### Permitting Requirements

Not applicable for the tasks proposed in this project plan.

### Cultural/Historic Resource Review

Not applicable for the tasks proposed in this project plan; there are no ground and/or vegetation disturbing activities, or proposed impacts to cultural/historic resources. Avista received approval from the Idaho State Historic Preservation Office and the Cultural Resource Management Group in 2020 for construction of the field station. The work product for this review is confidential due to the sensitive nature of the content.

### Benefit to the Resource

Projects operated out of this facility will be consistent with the 2019-2023 Clark Fork River Native Salmonid Restoration Plan (AIT 2018), and the Idaho Tributary Habitat Acquisition and Fishery Enhancement Program (Appendix A of the Clark Fork Settlement Agreement) through enhancement of tributary habitat conditions for native salmonids including Bull Trout and Westslope Cutthroat Trout. As such, they will also be consistent with goals of the Fish Passage/Native Salmonid Restoration Plan Protection, Mitigation & Enhancement measure (Appendix C) and the Dissolved Gas Supersaturation Control, Mitigation, and Monitoring Program (Appendix F5). Tasks would also be consistent with other established plans including the Lake Pend Oreille Bull Trout Conservation Plan (habitat enhancement; Resource Planning Unlimited 1999) and the IDFG Fisheries Management Plan (IDFG 2019).

### Budget

Item	Estimated Carryover <sup>1</sup>	2023 Budget Request
Supplies	\$2,000	\$5,000
Avista Time (0.1 FTE)	\$1,000	\$5,000
Operational (electric, phone, IT, plowing, trash, etc.)	\$1,000	\$7,500
<b>Total</b>	<b>\$4,000</b>	<b>\$17,500</b>
<b>Anticipated Expenditures</b>		<b>\$21,500</b>

<sup>1</sup> Estimated carryover of unexpended, approved funds as of January 1.

The Avista staff time and operational costs for this project are a 50:50 cost share with Appendix F5. There is a 2023 request in the amount of \$17,500 in Appendix F5 in addition to the total 2023 budget request above.

### Literature Cited

AIT (Aquatic Implementation Team). 2018. Clark Fork River Native Salmonid Restoration Plan. Five-Year Plan (2019–2023).

IDFG (Idaho Department of Fish and Game). 2019. Fisheries Management Plan 2019-2024. Boise, Idaho.

Resource Planning Unlimited. 1999. Lake Pend Oreille Bull Trout Conservation Plan. State of Idaho. Boise, Idaho.

## 2023 PROJECT PLAN

### Pack River Watershed Management Plan Addendum

#### Project Contact

Jessica Erickson, Watershed Coordinator, Pack River Watershed Council (PRWC), (208) 255-5545, [bluedeleeuw@gmail.com](mailto:bluedeleeuw@gmail.com) and

Ken Bouwens, Idaho Department of Fish and Game (IDFG), (208) 769-1414, [ken.bouwens@idfg.idaho.gov](mailto:ken.bouwens@idfg.idaho.gov)

#### Project History

This is a continuing project for 2023. Changes have been made to the scope to extend the timeline for completion with no additional budget requested.

#### Background

The Pack River watershed is the second largest tributary system to Lake Pend Oreille. A variety of native and non-native species utilize the Pack River and its tributaries including Bull Trout and Westslope Cutthroat Trout. This watershed is an important area for native fish and as such, portions of the Pack River watershed have been designated as priority habitat for efforts associated with Appendix E and Appendix A of the Clark Fork Settlement Agreement.

The Pack River is currently included on the State of Idaho's list of water quality impaired waterbodies. Cold-water biota, salmonid spawning, and primary and secondary contact recreation are impaired or not fully supported in the Pack River watershed due to excess sediment, temperature, and nutrients.

In 2001, the Pack River Watershed Council (PRWC), formed in response to the Endangered Species Act listing of Bull Trout and concerns about water quality impairments and observed bank erosion. The PRWC formed a collaborative partnership with the Tri-State Water Quality Council, the Bonner Soil and Water Conservation District, and the Natural Resources Conservation Service to recruit a Technical Advisory Committee (TAC) to help create a watershed management plan that would protect the natural resources of the Pack River and its tributaries.

The Pack River Watershed Management Plan and Total Maximum Daily Load (TMDL) Implementation Plan was completed in 2006 (BSWCD 2006). This document provides general strategies for protecting and improving water quality and includes on-the-ground project recommendations. Since the development of the Pack River Watershed Management Plan and TMDL Implementation Plan, other watershed assessments have been completed in the Pack River Watershed including the Upper Pack River Stressor Identification (TerraGraphics Environmental Engineering 2006a), McCormick Creek Stressor Identification (TerraGraphics Environmental Engineering 2006b), Grouse Creek Watershed Assessment and Restoration Prioritization Plan (River Design Group 2009), the Pend Oreille Lake and Tributaries TMDL 5-year Review (IDEQ 2017), and the Grouse Creek Reassessment and Prioritization Plan Update (River Design Group 2018). More recently, a habitat evaluation for Caribou and Hellroaring

Creeks was completed in 2019 (GeoEngineers 2019) and a similar evaluation for the upper Pack River and McCormick Creek was completed in 2020 (GeoEngineers 2020).

The Pack River Watershed Management Plan and TMDL Implementation Plan needs to be updated to include the recommendations from the most recent assessments. Initially the update was to be in the form of an addendum to the DEQ management plan and would identify and prioritize conservation/restoration/enhancement projects by sub-watershed. It was later decided the goal of this project would be better served by producing a stand-alone document developed and reviewed by multiple entities. This would be a user-friendly living document that can be revised periodically and will provide updates on project implementation progress. In July of 2019, the PRWC met with members of the TAC to develop a strategic restoration plan for the Pack River watershed with the goal to identify and prioritize specific projects that benefit native salmonids by enhancing fish habitat and improving watershed function. The TAC decided it would be beneficial to identify projects specific to each sub-watershed and then prioritize sub-watersheds with a top to bottom approach. It was decided that a small working group consisting of representatives from the Idaho Department of Fish and Game (IDFG), Avista, U.S. Forest Service, Natural Resources Conservation Service, and Trout Unlimited would form a core team that would perform the majority of the work, and would report to a broader review team consisting of interested agencies, citizen groups, or other entities.

Implementation of formal meetings and planning was set to kick off in early 2020 but was not conducted due to the Covid-19 pandemic. Significant work took place in 2021 and 2022. This proposal requests to extend the timeline of the project by an additional year with no additional budget requested.

### **Goal**

Develop a document that will help stakeholders enhance the quality of the Pack River watershed's natural resources, increase available habitat, and ensure the success of restoration efforts.

### **Objective**

1. Develop a stand-alone document (previously anticipated to be an addendum) complimentary to the Pack River Watershed Management Plan and TMDL Implementation Plan which includes recommendations and updates from the Pend Oreille Lake and Tributaries TMDL 5-year Review, as well as other Watershed Assessments and Habitat Prioritization Evaluations.

### **Tasks**

1. Summarize existing documentation from assessments conducted in the Pack River watershed, reorganizing it into sub-watersheds. (*Completed in 2021*)
2. List completed conservation/restoration/enhancement projects by sub-watershed. (*Ongoing*)
3. Identify recommended conservation/restoration/enhancement projects and organize by sub-watershed. (*Ongoing*)

## Work Products

- Pack River Native Salmonid Habitat Restoration Plan; final due November 1, 2023
- Annual Work Summary; due December 1, 2023

## Permitting Requirements

Not applicable for the tasks proposed in this project plan.

Endangered Species Act consultation for this project plan is associated with the 2019 Biological Opinion on the effects of continued operation of the Clark Fork Hydroelectric Project on Bull Trout and designated Bull Trout critical habitat (BiOp), and the U.S. Fish and Wildlife Service (USFWS)-IDFG Cooperative Agreement pursuant to Section 6 of the Act. This project plan is consistent with the analysis and conclusions contained in the 2019 BiOp and the USFWS-IDFG Cooperative Agreement, and will adhere to all appropriate Terms and Conditions designed to reduce the extent and effects of incidental take on Bull Trout. No incidental take of Bull Trout is anticipated as a result of this project plan; therefore, no take reporting is required.

## Cultural/Historic Resource Review

Not applicable for the tasks proposed in this project plan, there are no ground and/or vegetation disturbing activities, or proposed impacts to cultural/historic resources.

## Benefit to the Resource

This project consistent with the 2019-2023 Clark Fork River Native Salmonid Restoration Plan (AIT 2018). This project is also consistent with the Watershed Councils Program (Appendix E), as well as the Idaho Tributary Habitat Acquisition and Fishery Enhancement Program (Appendix A), as updating the Pack River Management Plan and TMDL Implementation Plan, organized by sub-watershed, will provide a clear and concise format to document past projects as well as identify and prioritize future conservation/restoration/enhancement projects. The Pack River is the second largest tributary to Lake Pend Oreille, and is ranked as a high-priority for restoration and protection under the lake's Key Watershed Bull Trout Problem Assessment (PBTAT 1998).

## Budget

Item	Estimated Carryover <sup>1</sup>	2023 Budget Request
Report writing (FTE 0.10)	\$2,000	\$0
Administration fee (15% of expended funds)	\$300	\$0
<b>Total</b>	\$2,300	\$0
<b>Anticipated Expenditures</b>		\$2,300

<sup>1</sup> Estimated carryover of unexpended, approved funds as of January 1.

## Literature Cited

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Plan and TMDL Implementation Plan. Bonner County, ID.

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GeoEngineers. 2020. Habitat Prioritization Evaluation for McCormick Creek and Upper Pack River. Spokane, WA. Prepared for Avista and the Idaho Dept. of Fish and Game.

IDEQ (Idaho Department of Environmental Quality). 2017. Pend Oreille Lake and Tributaries TMDL 5-year Review.

PBTAT (Panhandle Bull Trout Technical Advisory Team). 1998. Lake Pend Oreille Key Watershed Bull Trout Problem Assessment. Prepared for Lake Pend Oreille Watershed Advisory Group and the State of Idaho. Boise, Idaho.

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## 2023 PROJECT PLAN

### Trestle Creek Habitat Enhancement Project Phase I

#### Project Contact

Ken Bouwens, Idaho Department of Fish and Game (IDFG), (208) 769-1414,  
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#### Project History

This project was ranked by the WRTAC on January 21, 2020 and approved by the Management Committee in 2020. The physical installation of the project was completed in 2021. The scope and budget were modified in 2022 to continue collaboration with Federal Highways engineers through their design process on a paving project for Trestle Creek Road. We request a time extension to continue this collaboration.

#### Background

Located approximately three miles northwest of Hope, Idaho, Trestle Creek is a third order watershed that encompasses 14,713 acres and includes several smaller tributaries (Figure 1). Trestle Creek watershed's stream density is 1.56 miles of streams per square mile, and the relatively high drainage density and generally steep slopes lead to rapid flood events. This watershed drops 3,300 feet in elevation from the divide across from Quartz Creek to Lake Pend Oreille (LPO).

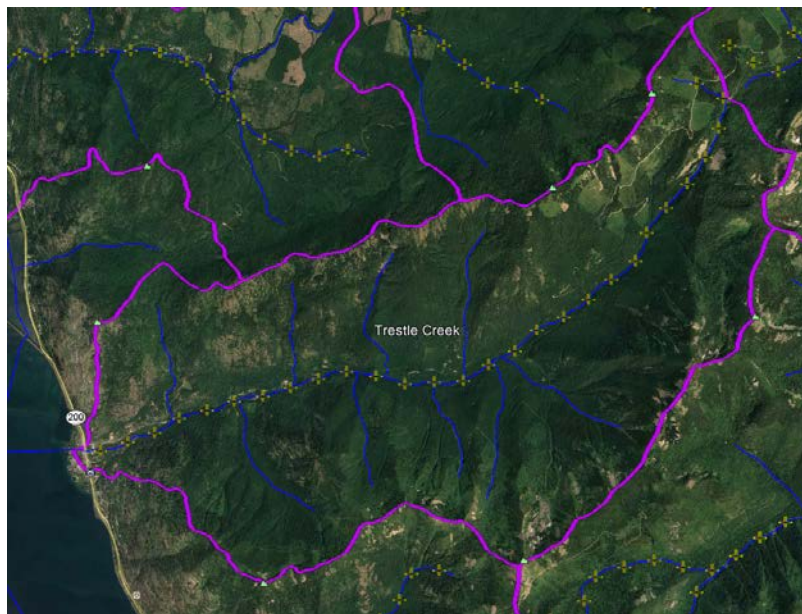


FIGURE 1. Map of the Trestle Creek watershed. Cross symbols depict  $\frac{1}{2}$  km stream increments.

Trestle Creek is a high priority watershed because of the presence of Bull Trout spawning and rearing habitat. It contains some of the highest quality Bull Trout habitat remaining in the LPO /lower Clark Fork River tributary system (PBTTAT 1998). During the past 20 years of Bull Trout redd counts, Trestle Creek has had the overall highest average number of redds. At 223, it's nearly twice as many redds on average as any other tributary where redds are surveyed

annually (Jakubowski and Bouwens 2018). However, the number of Bull Trout redds counted in the watershed has been declining steadily since the mid-2000s (Figure 2) and are declining disproportionately with respect to the rest of the LPO tributaries (Figure 3; Alta 2019), indicating the problem was likely occurring within Trestle Creek, not LPO.

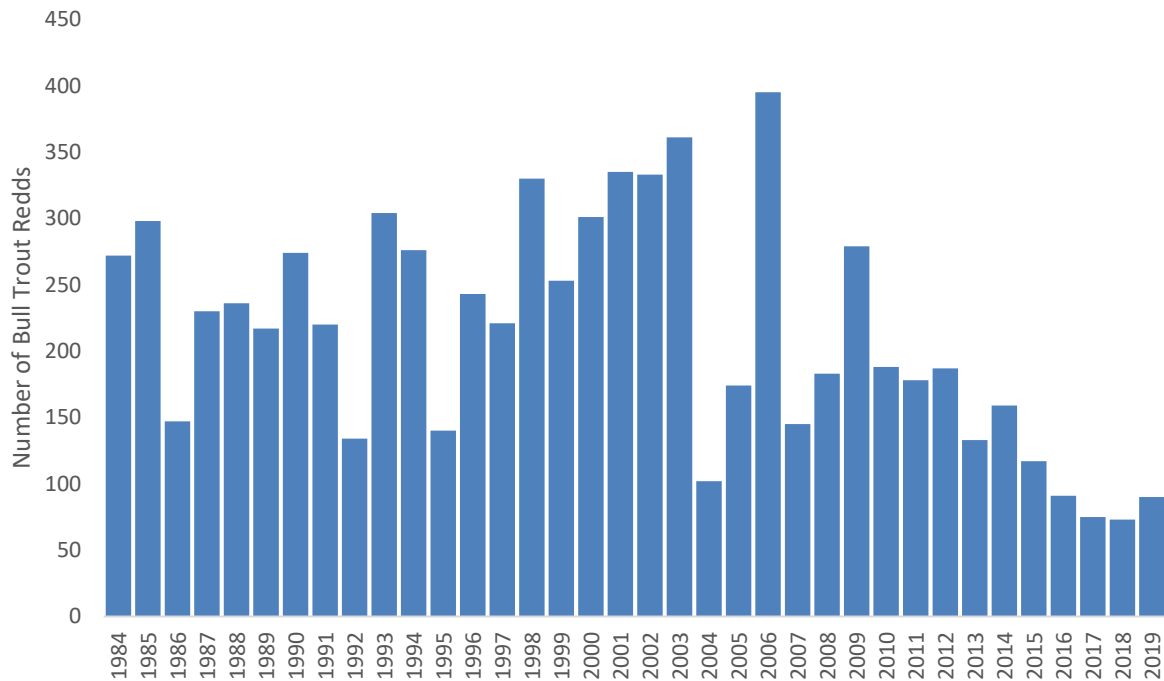


FIGURE 2. Number of Bull Trout redds counted in Trestle Creek, 1984 through 2019.

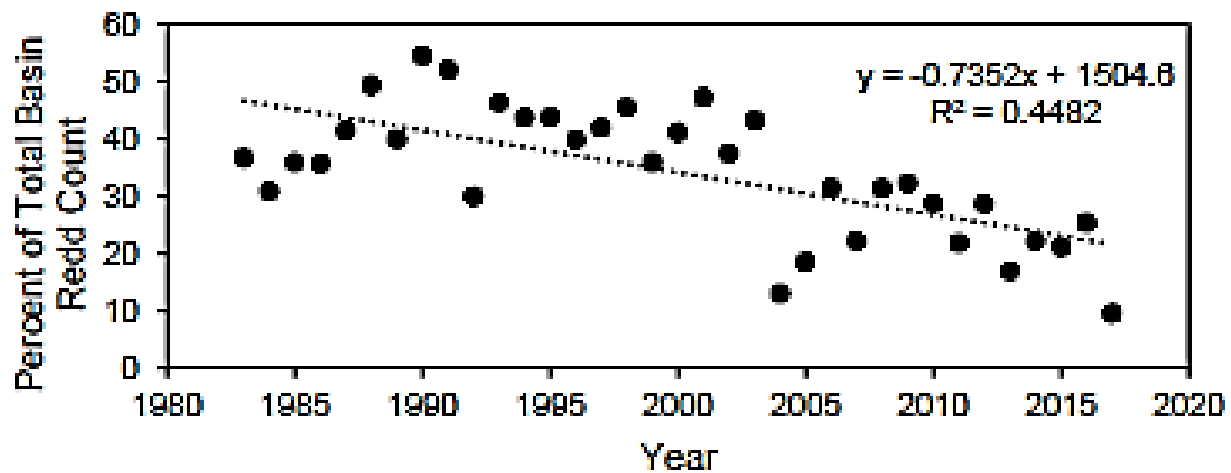


FIGURE 3. Trestle Creek Bull Trout redds as a percentage of the total number of Bull Trout redds counted per year in the LPO basin, 1984–2017. Figure from Alta (2019).

This information inspired the Trestle Creek Habitat Prioritization Evaluation study (Alta 2019). This Clark Fork Settlement Agreement (CFSA)-funded project evaluated Trestle Creek’s habitat, geomorphic and riparian condition, and identified areas of degradation and prioritized actions to

benefit native salmonids- including Bull Trout. A specific area of impairment was not identified that could account directly for Bull Trout declines. However, numerous areas were identified that could be improved to increase spawning and rearing conditions for juvenile Bull Trout (Figure 4), and specific projects were proposed to address these impairments. Construction in 2021 addressed areas that were identified as severely impaired (Figure 4; Alta 2019).

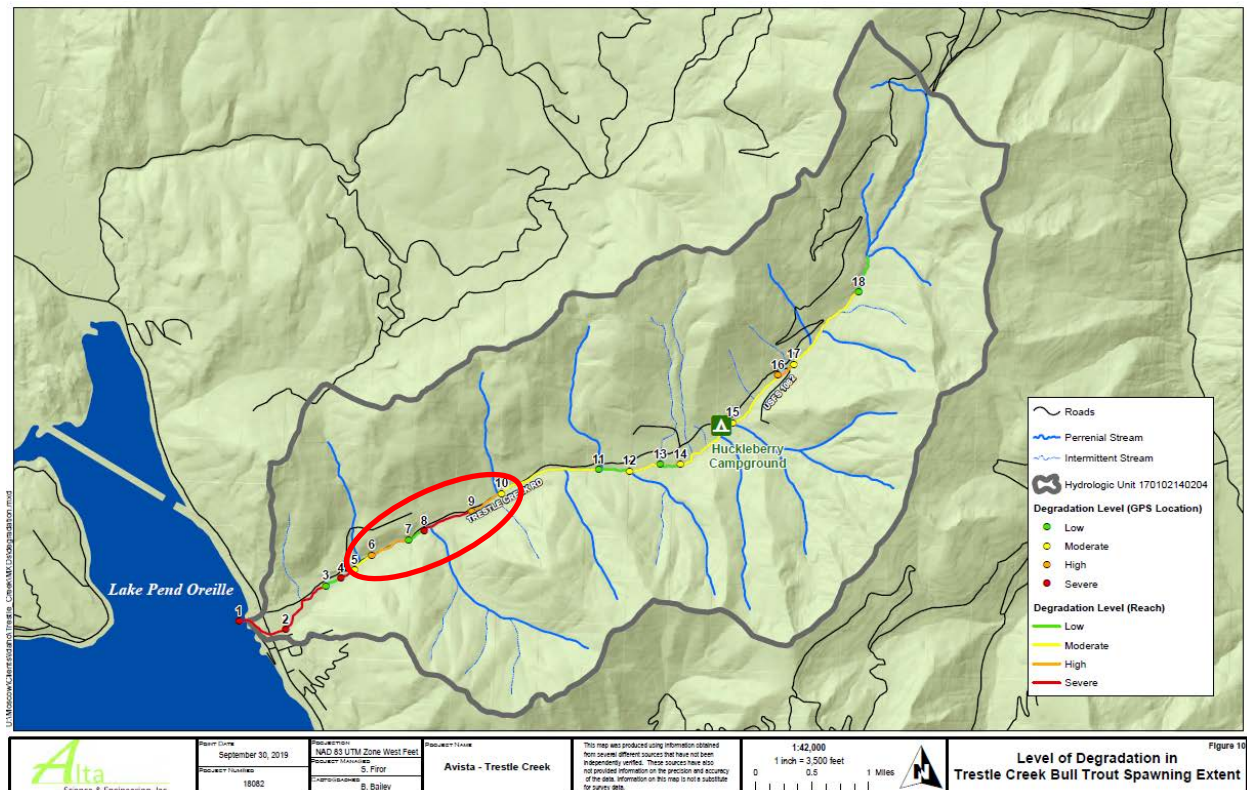


FIGURE 4. Areas of degradation in Trestle Creek. Project area is circled in red. Figure from Alta (2019).

Prioritizing the order to complete these projects can be difficult. In the case of Trestle Creek, an opportunity exists to work with the Federal Highways' Federal Land Access Program (FLAP) and Bonner County to address areas where Trestle Creek Road directly impacts Trestle Creek. The FLAP is designed to provide funding to non-federal entities to increase access to Federal lands. In this case, Trestle Creek Road is owned and maintained by Bonner County. Beginning in 2020, funds prioritized preliminary engineering and topography survey data collection to begin designing habitat rehabilitation as part of the upgrades to Trestle Creek Road. The priority of the road project is to increase the quality of Trestle Creek Road while reducing impacts to Trestle Creek. Drainage will be improved, the road will be widened where possible, and the road will be paved to reduce sedimentation to Trestle Creek and improve drivability. This project will address areas where we can work collaboratively with the FLAP project to provide additional native fish habitat protection and enhancement in coordination with the planned road construction. For example, this project will focus on separating Trestle Creek from the road prism where possible; when not possible, goals include increasing the riparian buffer between the road and the stream (Figure 5). The intent is to partner with the road engineers to blend the FLAP's and the CFSA's priorities into a project beneficial to all. Achieving this goal with the various partners will require

additional levels of coordination and engineering collaboration beyond what is typical for a fish habitat project. Our involvement with this project resulted in a MOU between IDFG and Federal Highways and Bonner County ensuring the habitat installed from this project will be preserved during the paving project and IDFG/Avista engineers will be an official part of the design and review team for the road project.



FIGURE 5. Streambank adjacent to Mile 1.3 of Trestle Creek Road.

This proposed project will require coordination and collaboration between our fisheries/hydraulic engineer with the road design team to ensure protection of critical Bull Trout habitat in Trestle Creek. As the road design advances, our team will ensure consideration of fisheries habitat features. Using natural elements such as large trees and boulders, our hydraulic engineer will work with the road engineers to encourage natural processes that will minimize future road bank erosion. In addition, our design goals will include protection of the stream from further road impacts such as limited riparian or floodplain interaction and sediment inputs. Hydraulic features that encourage Bull Trout habitat, such as deflection barbs and increased pool density, will be used to ensure the roadway design has minimal negative impacts to the adjacent stream. This will involve an iterative and collaborative design process using multiple expertise from the partners. The culmination will be mutually acceptable design drawings and cost estimates for projects to be implemented in 2021 and beyond.

As approved by the Management Committee on 3/14/2023

Three specific project areas were identified for construction in 2021 (Figure 6). A common intent in all projects is to use native wood and materials to manipulate the hydraulics and increase pool density and hydraulic roughness. Project 1, the most upstream project, will specifically focus to push water to the left remnant channel and inundate the left floodplain. There is a fork at this location where the left channel will become the primary channel alleviated hydraulic pressure from the roadbed. Wood will be relocated to the toe of the eroding bank below the road to reduce shear stress and velocities causing scour. The Project 2 area will focus on removing some trees that are blocking the left channel and floodplain and similarly use these to protect from the right losing bank below the road. Large equipment will be used on the left channel through this area to encourage the left channel to become primary, which will effectively move much of the flow away from the road while also creating additional rearing and lateral habitat and floodplain inundation. Project 3 is located at extremely steep sections of roadbed where the County maintains practice of dumping rip rap rock into the channel to protect from erosion. The project intent is to roughen the right bank with native large wood (versus riprap), effectively reducing the ability for downstream transfer of shear stress and creating lateral pockets of habitat for juvenile fish. Wood will be strategically located to deflect the creek away from the road and improve rearing pools and lateral habitat.



FIGURE 6. Map of 2021 habitat projects in Trestle Creek.

## **Goal**

Restore and improve Bull Trout habitat in Trestle Creek while protecting it from impacts associated with Trestle Creek Road.

## **Objectives**

1. Continue to participate as a member of the FLAP design team to influence decisions that can be beneficial to native salmonids in Trestle Creek.
2. Develop final designs and cost estimates for implementation of these projects in 2021 and beyond.
3. Complete construction of identified and designed projects.

## **Tasks**

1. Contract a fish habitat engineer to work closely with FLAP design team. (Objective 1; **Ongoing**)
2. Perform initial bathymetry surveys, collect and analyze hydrology data, etc., to develop a description of existing conditions. (Objective 1 and 2; **Completed in 2021**)
3. Develop final stamped project designs, including CAD drawings and revisions, hydraulic modeling of proposed conditions, stability calculations, technical specifications, etc. (Objective 2; **Completed in 2021**)
4. Develop cost estimates of final design. (Objective 2; **Completed in 2021**)
5. Hire a contractor to construct the final design. (Objective 3; **Completed in 2021**)
6. Construct the project(s). (Objective 3; **Completed in 2021**)

## **Work Products**

- Engineering work will be documented via appropriate technical memoranda
- Annual Work Summary; due December 1, 2023

## **Permitting Requirements**

All necessary permits were acquired for the construction phase of this project. As the remaining portion of Phase I only involves engineering consultation, no additional permits are required.

Endangered Species Act consultation for this project plan is associated with the 2019 Biological Opinion on the effects of continued operation of the Clark Fork Hydroelectric Project on Bull Trout and designated Bull Trout critical habitat (BiOp), and the U.S. Fish and Wildlife Service (USFWS)-IDFG Cooperative Agreement pursuant to Section 6 of the Act. This project plan is consistent with the analysis and conclusions contained in the 2019 BiOp and the USFWS-IDFG Cooperative Agreement, and will adhere to all appropriate Terms and Conditions designed to reduce the extent and effects of incidental take on Bull Trout. Incidental take reporting for this

project plan will be included in the annual Biological Opinion report as required by Term and Conditions 15–18 of the 2019 Incidental Take Statement, as well as IDFG’s annual Section 6 report to the USFWS.

### **Cultural/Historic Resource Review**

Avista received approval from the Idaho State Historic Preservation Office and the Cultural Resource Management Group in 2021 for construction of phase I. The work product for this review is confidential due to the sensitive nature of the content.

### **Benefit to the Resource**

This project is consistent with the 2019-2023 Clark Fork River Native Salmonid Restoration Plan (AIT 2018). The project is also consistent with the Idaho Tributary Habitat Acquisition and Fishery Enhancement Program (Appendix A of the Settlement Agreement), through enhancement of tributary habitat conditions for native salmonids including Bull Trout and Westslope Cutthroat Trout. It is also consistent with the goals of the Dissolved Gas Supersaturation Control, Mitigation, and Monitoring Program (Appendix F5) as it identifies options for improving rearing habitat for Bull Trout, a species identified as the focus of the Appendix F5 mitigation program. The project is consistent with other established plans including the Lake Pend Oreille Bull Trout Conservation Plan (habitat enhancement; Resource Planning Unlimited 1999) and the IDFG Fisheries Management Plan (conservation and enhancement of Bull Trout; IDFG 2019).

### **Budget**

<b>Item</b>	<b>Estimated Carryover<sup>1</sup></b>	<b>2023 Budget Request</b>
FLAP Consultation Engineering Contract costs	\$12,000	\$0
<b>Total</b>	<b>\$12,000</b>	<b>\$0</b>
<b>Anticipated Expenditures</b>		<b>\$12,000</b>

<sup>1</sup> Estimated carryover of unexpended, approved funds as of January 1.

### **Literature Cited**

AIT (Aquatic Implementation Team). 2018. Clark Fork River Native Salmonid Restoration Plan. Five-Year Plan (2019–2023).

Alta Science and Engineering Inc. 2019. Trestle Creek Habitat Prioritization Evaluation. Report to Avista and Idaho Department of Fish and Game.

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## 2023 PROJECT PLAN

### Rattle Creek Habitat Enhancement Project Design

#### Project Contact

Ken Bouwens, Idaho Department of Fish and Game (IDFG), (208) 769-1414,  
[ken.bouwens@idfg.idaho.gov](mailto:ken.bouwens@idfg.idaho.gov)

#### Project History

The was scored by the WRTAC on 1/19/2022 and first approved by the MC in 2022. We seek continuation for 2023, with no additional budget requested.

#### Background

Located approximately 16 miles north of Clark Fork, Idaho, Rattle Creek is a third order tributary to Lightning Creek (Figure 1). It drains an area of approximately 27 km<sup>2</sup>, and on average receives over 75 inches of precipitation annually, mostly between October and June. It is susceptible to frequent rain-on-snow events due to its elevation and high winter precipitation levels. It is recovering from moderate to high levels of land use through logging and associated road infrastructure (PWA 2004). Recent work in the watershed includes road obliteration and replacement of the U.S. Forest Service (USFS) bridge where the USFS road crosses Rattle Creek near its mouth.

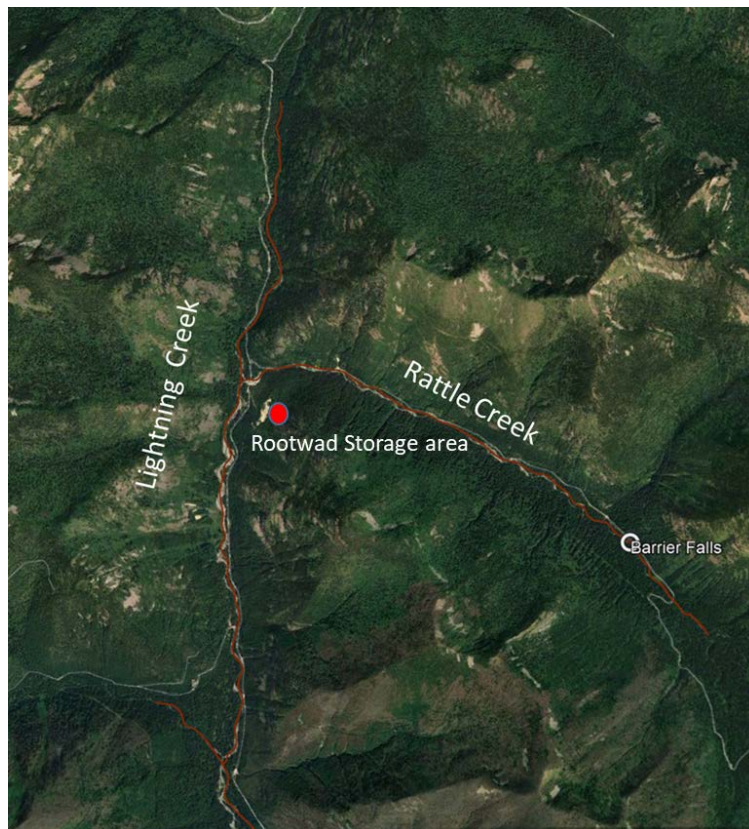


FIGURE 1. Map of Rattle Creek.

Bull Trout utilize the lower 5.8 km of Rattle Creek for spawning and rearing and resident and potentially migratory Westslope Cutthroat Trout are also found throughout the watershed (Bouwens et al. 2021, Ransom et al. 2021). Since 1992 Rattle Creek supported approximately 4% of all Bull Trout redds counted in the LPO watershed and 27% of the redds counted in the Lightning Creek drainage. Rattle Creek Bull Trout redd counts have varied from a high of 67 in 2001 to a low of 0 in 1994, averaging 26 redds over that period (Figure 2).

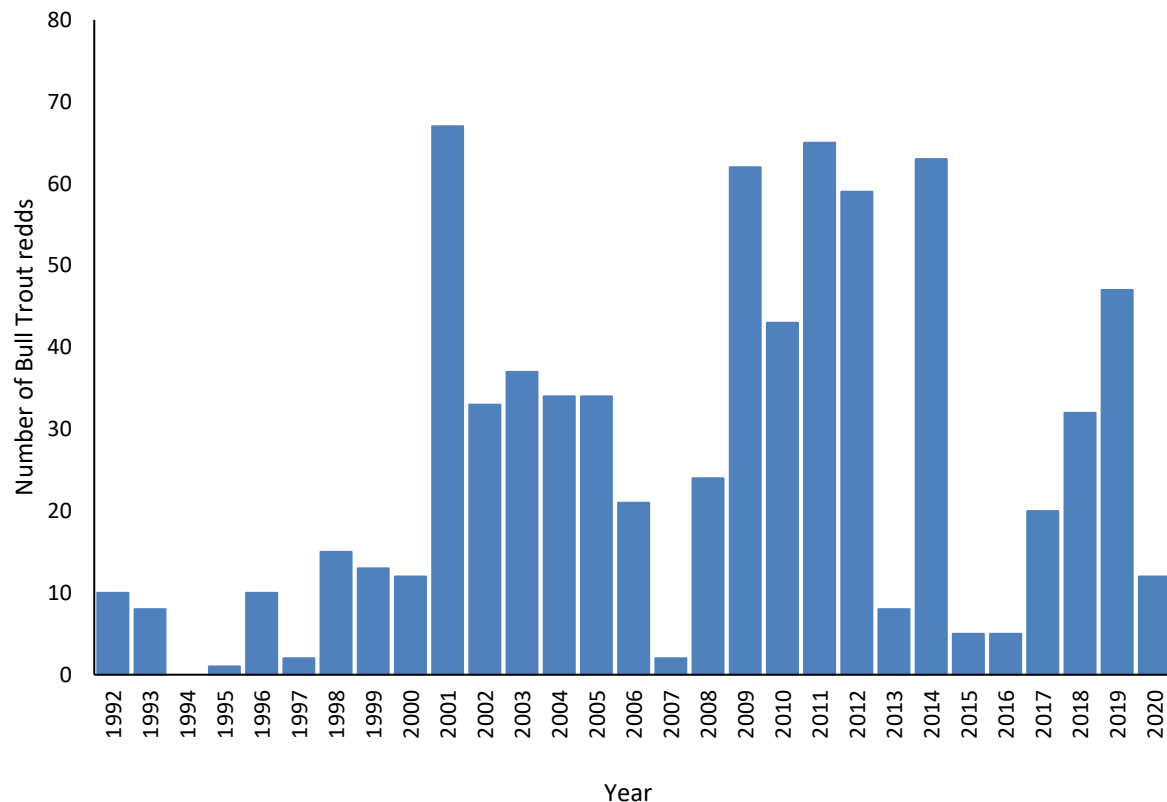


FIGURE 2. Number of Bull Trout redds counted in Rattle Creek, 1992 through 2020.

Two major flood events occurred in the Lightning Creek watershed within the past 15 years. In both 2006 and 2015, discharge exceeded the 50-year flood frequency estimate of 10,300 cfs. The 2006 flood exceeded even the 100-year flood event at 16,400 cfs and the 2015 flood topped at 10,500 cfs (Figure 3; for reference, the 100-year flood event is 12,000 cfs). These two events caused massive scour through the large cobble substrate in Rattle Creek and left much of the wetted stream width completely void of large wood which has resulted in significant loss of pools and fine gravels. Without floodplain wood, the stream lacks ability to retain fine gravels and sediment which has resulted in loss of surface water and pools with increased void space in the large cobble substrate.

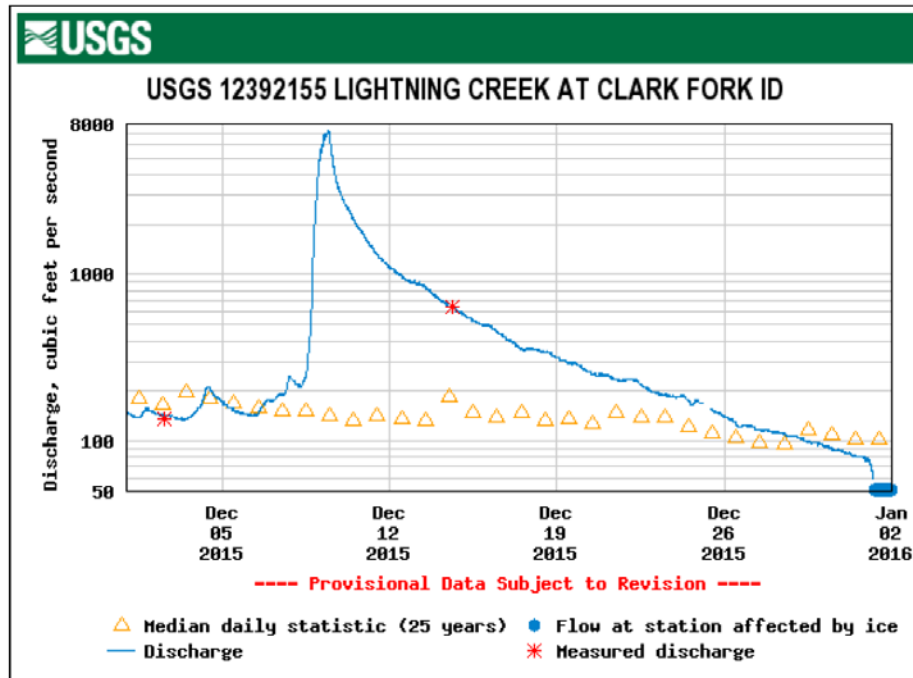


FIGURE 3. Lightning Creek hydrograph.

These events mobilized a large amount of wood and caused significant erosion in the Rattle Creek watershed, and much of wood was transported downstream into Lightning Creek. Most of the riparian timber was lost from the system during this event and transported downstream into mainstem Lightning Creek (Figure 4).



FIGURE 4. Photograph of lower Lightning Creek shortly after the peak of the 2015 flood showing large amounts of new accumulated large woody debris sourced from the upper watershed.

Instream conditions have degraded markedly in Rattle Creek since 2015. There are few

established log jams remaining in the system and the potential for new large wood recruitment has been greatly diminished due to the riparian zone being heavily scoured. Thus, despite ample smaller sediment supply, gravel retention and sorting has been reduced and the streambed has become cobble and boulder dominated with associated high stream velocities. This scour creates a disconnection with the floodplain which further increasing stream velocities, further exacerbating the problem. With little potential wood recruitment, conditions are not expected to change without some sort of intervention (Figures 5 and 6).



FIGURE 5. Photo of current conditions in Rattle Creek.



FIGURE 6. Aerial photo of current conditions in Rattle Creek.

In 2018 and 2019, over 200 rootwads were salvaged from a natural blowdown in the area and stored near Rattle Creek for future use using Appendix A funding (Figure 7). This project proposes to install a portion or all of these trees along with directionally felling select riparian timber in Rattle Creek to create log complexes designed to maximize stream hydraulics, pools, gravel retention, and cover. Due to the lack of road access in the area, it is likely these logs need to be will be transported and placed via helicopter.

The USFS manages the property where the project is proposed to take place, and a substantial amount of coordination with them is anticipated before final project approval. Hence, this design aspect of the project will be conducted in stages so enough information is provided to facilitate USFS review of the project without spending unnecessary dollars. If at any point it appears project approval will not be granted, then work toward final design will be halted.



FIGURE 7. Salvaged rootwads being hauled for storage. The Rattle Creek drainage is visible in the background of this photo.

### Goal

Create a preliminary design to restore and improve Bull and Westslope Cutthroat trout habitat and stream functionality in Rattle Creek.

### Objectives

1. Work with the U.S. Fish and Wildlife Service (USFWS), USFS, and other project partners to identify areas and types structures to be installed.
2. Create a preliminary and final engineering designs.
3. Develop cost estimates for construction.

### Tasks

1. Begin discussion with the U.S. Forest Service (landowner) regarding project implementation. (Objective 1) **Ongoing**
2. Gain landowner (U.S. Forest Service) permission to implement the project. The project design will not be developed beyond 30% without landowner permission. (Objective 1) **Ongoing**
3. Contract a fish habitat engineer. (Objectives 1–3) **Completed in 2022**
4. Perform initial surveys, collect and analyze hydrology data, etc., to develop a description of existing conditions. (Objectives 1–2) **Completed in 2022**
5. Develop 30% project designs, including CAD drawings, proposed conditions, etc.

(Objectives 1–2) **Ongoing**

6. If landowner agrees with 30% project designs, develop 60% project designs, including refined CAD drawings, modeling of proposed conditions, hydraulic modeling, etc. (Objectives 1–2)
7. If landowner agrees with 60% project designs, develop final design including design verification, technical specifications, and construction details. (Objectives 1–2).
8. Develop cost estimates of construction. (Objective 3)

**Work Products**

- Engineering work will be documented via appropriate technical memoranda
- Annual Work Summary; due December 1, 2023

**Permitting Requirements**

As this is for project design only, no permits are required.

Endangered Species Act consultation for this project plan is associated with the 2019 Biological Opinion on the effects of continued operation of the Clark Fork Hydroelectric Project on Bull Trout and designated Bull Trout critical habitat (BiOp), and the USFWS-IDFG Cooperative Agreement pursuant to Section 6 of the Act. This project plan is consistent with the analysis and conclusions contained in the 2019 BiOp and the USFWS-IDFG Cooperative Agreement, and will adhere to all appropriate Terms and Conditions designed to reduce the extent and effects of incidental take on Bull Trout. Incidental take reporting for this project plan will be included in the annual Biological Opinion report as required by Term and Conditions 15–18 of the 2019 Incidental Take Statement, as well as IDFG’s annual Section 6 report to the USFWS.

**Cultural/Historic Resource Review**

Not applicable for the tasks proposed in this project plan, there are no ground and/or vegetation disturbing activities, or proposed impacts to cultural/historic resources.

**Benefit to the Resource**

This project is consistent with the 2019-2023 Clark Fork River Native Salmonid Restoration Plan (AIT 2018). The project is also consistent with the Idaho Tributary Habitat Acquisition and Fishery Enhancement Program (Appendix A of the Settlement Agreement), through enhancement of tributary habitat conditions for native salmonids including Bull Trout and Westslope Cutthroat Trout. It is also consistent with the goals of the Dissolved Gas Supersaturation Control, Mitigation, and Monitoring Program (Appendix F5) as it identifies options for improving rearing habitat for Bull Trout, a species identified as the focus of the Appendix F5 mitigation program. The project is consistent with other established plans including the Lake Pend Oreille Bull Trout Conservation Plan (habitat enhancement; Resource Planning Unlimited 1999) and the IDFG Fisheries Management Plan (conservation and enhancement of Bull Trout; IDFG 2019).

## Budget

Item	Estimated Carryover <sup>1</sup>	2023 Budget Request
Design Engineering Contract costs	\$23,170	\$0
Avista employee costs (0.02 FTE; assist with field work, etc.)	\$2,000	\$0
<b>Total</b>	<b>\$25,170</b>	<b>\$0</b>
<b>Anticipated Expenditures</b>		<b>\$25,170</b>

<sup>1</sup> Estimated carryover of unexpended, approved funds as of January 1.

## Literature Cited

- AIT (Aquatic Implementation Team). 2018. Clark Fork River Native Salmonid Restoration Plan. Five-Year Plan (2019–2023).
- Bouwens, K.A., R. Jakubowski, A. Ransom, J. Johnson, and S. Busmire. 2021. 2020 Idaho Tributary Salmonid Abundance Monitoring Annual Project Update. Avista Doc. No. 2021-0162. Report to Avista and the Idaho Department of Fish and Game.
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- Resource Planning Unlimited. 1999. Lake Pend Oreille Bull Trout Conservation Plan. State of Idaho. Boise, Idaho.

## 2023 PROJECT PLAN

### Fish Resource Monitoring, Enhancement, and Management Plan

#### Project Contact

Ken Bouwens, Idaho Department of Fish and Game (IDFG), (208) 769-1414  
[ken.bouwens@idfg.idaho.gov](mailto:ken.bouwens@idfg.idaho.gov)

#### Project History

This is a continuing project that was originally approved for funding from Appendix A by the Management Committee (MC) in 1999. The scope and budget for this project are reviewed by the MC annually.

#### Background

Implementation of on-the-ground activities associated with the Clark Fork Settlement Agreement (CFSA) began in 1999. One tenant of the CFSA and the Native Salmonid Restoration Plan is that restoration actions will be monitored to evaluate their effectiveness in achieving the maintenance, enhancement, and restoration of native salmonid populations. This requires some funds be used for research and monitoring to meet this need.

Monitoring of salmonid abundance in 25 Lake Pend Oreille (LPO) spawning and rearing tributaries and annual monitoring of Bull Trout redd abundance in LPO tributaries are long-term projects expected to continue. The information collected in these projects is necessary for evaluating impacts from habitat changes, both because of directed fish habitat improvement projects and because of natural events such as floods. Abundance monitoring provides valuable information on recruitment trends of juvenile Bull Trout as well as long-term trends in the fish assemblages in tributary streams. Bull Trout redd counts are required monitoring identified in the CFSA and provide a valuable long-term data set for use in evaluating project goals. In addition, this monitoring is valuable for describing abundance and distribution trends of other native and non-native fishes.

In 2009, IDFG began implementing a rotating LPO basin-wide abundance monitoring plan. In this plan each monitored stream throughout the LPO basin would be sampled approximately once every five years. Following the intent of the proposed guidelines for juvenile abundance monitoring, we propose sampling streams last surveyed in 2018 including Berry, Jeru, Mosquito, Spring, and Char creeks. This will complete the third round of sampling of all the streams. In addition to this work we will continue to look for opportunities to make new observations by surveying tributaries not previously sampled, and to perform other monitoring or sampling as necessary and as time allows.

#### Goal

Perform necessary fish resource monitoring to support enhancement and management actions with respect to the CFSA.

#### Objectives

1. Perform annual tributary monitoring.

2. Summarize 2009–2018 tributary monitoring data.
3. Perform annual redd counts.

### Tasks

1. Monitor Berry, Jeru, Mosquito, Spring, and Char creeks using standardized stream e-fishing methods for salmonid abundance (see Ransom and Jakubowski 2022a). Sampling will take place over approximately 100 m reaches every km or every other km, depending on stream length, to correspond with reaches last sampled in 2018. A temperature data logger will be deployed near the mouth of each stream in 2023 (Table 1). (Objective 1)
2. Summarize 2023 tributary monitoring data in annual project update reports. (Objective 1)
3. Perform a comprehensive analysis of 2009–2023 tributary monitoring data and summarize long-term trends in species-specific abundance, distribution, size, and relative species composition. (Objective 2)
4. Perform Bull Trout redd counts using standardized methods on 22 tributaries to LPO. (see Ransom and Jakubowski 2022b; Objective 3)
5. Summarize 2022 and 2023 Bull Trout redd count data in annual project update reports. (Objective 3)

Table 1. Location of temperature data loggers on Mosquito, Spring, Char, Jeru, and Berry creeks.

Stream	Site name	River km	Latitude	Longitude
Mosquito	Mosquito 1	1.0	48.14272	-116.171440
Spring	Spring 1	1.0	48.163061	-116.184089
Char	Char 1	1.0	48.269933	-116.065455
Jeru	Jeru 1	1.0	48.531842	-116.606071
Berry	Berry 1	1.0	48.419796	-116.553158

### Work Products

- Annual Project Update; 2022 redd count data; final due November 1, 2023
- Comprehensive Project Report; report summarizing 2009–2023 tributary monitoring data; final due December 1, 2024
- Annual Work Summary; due December 1, 2023
- Temperature monitoring data for the five sites; due December 1, 2023
- Annual Project Update; 2023 tributary monitoring data; final due November 1, 2024
- Annual Project Update; 2023 Bull Trout redd count data; final due November 1, 2024

### Permitting Requirements

Not applicable for the tasks proposed in this project plan.

Endangered Species Act consultation for this project plan is associated with the 2019 Biological Opinion on the effects of continued operation of the Clark Fork Hydroelectric Project on Bull

Trout and designated Bull Trout critical habitat (BiOp), and the U.S. Fish and Wildlife Service (USFWS)-Idaho Department of Fish and Game (IDFG) Cooperative Agreement pursuant to Section 6 of the Act. This project plan is consistent with the analysis and conclusions contained in the 2019 BiOp and the USFWS-IDFG Cooperative Agreement, and will adhere to all appropriate Terms and Conditions designed to reduce the extent and effects of incidental take on Bull Trout. Incidental take reporting for this project plan will be included in the annual Biological Opinion report as required by Term and Conditions 15–18 of the 2019 Incidental Take Statement, as well as IDFG’s annual Section 6 report to the USFWS.

### **Cultural/Historic Resource Review**

Not applicable for the tasks proposed in this project plan, there are no ground and/or vegetation disturbing activities, or proposed impacts to cultural/historic resources.

### **Benefit to the Resource**

Ongoing monitoring of LPO tributary native salmonid populations provide a measure of effectiveness of past work (e.g., habitat improvement) and also provide a tool for determining and prioritizing future work priorities. The proposed activities using this fund are consistent with the Idaho Tributary Habitat Acquisition and Fishery Enhancement Program (Appendix A of the Clark Fork Settlement Agreement), through assessment of native salmonid populations, including Bull Trout and Westslope Cutthroat Trout. As such, they are also consistent with goals of the Fish Passage/Native Salmonid Restoration Plan (Appendix C), and the Dissolved Gas Supersaturation Control, Mitigation, and Monitoring Program (Appendix F5) as many of the focus species of the Appendix F5 mitigation program also utilize tributary habitat during part of their life history. Tasks conducted under this fund are also consistent with other established plans including the Lake Pend Oreille Bull Trout Conservation Plan (Resource Planning Unlimited 1999) and the IDFG Fisheries Management Plan (IDFG 2019).

### **Budget**

In recognition of the activities occurring through this project plan and the costs associated with them, in 2019 we requested, and the MC approved, that the allocation for the Fish Resource Monitoring, Enhancement and Management Plan be permanently increased to \$96,000. The funding for this plan will continue to be transferred from the Tributary Habitat and Acquisition and Enhancement Program under Appendix A. These transferred funds will revert to the Tributary Habitat and Acquisition and Enhancement Program if not spent in a given year.

Item	Estimated Carryover <sup>1</sup>	2023 Budget Request
Avista labor (0.8 FTE)	\$20,000	\$74,500
University of Idaho Summer Intern	\$0	\$5,000
Field gear (waders, raingear, gloves, etc.)	\$0	\$2,900
Data collection supplies (PIT tags, vials, dip nets, etc.)	\$0	\$4,100
Vehicle/boat operation and maintenance	\$0	\$6,000
Avista employee training and professional development	\$2,000	\$3,000
Avista administration	\$0	\$500
<b>Total</b>	\$22,000	\$96,000
<b>Anticipated Expenditures</b>		\$118,000

<sup>1</sup> Estimated carryover of unexpended, approved funds as of January 1.

### Literature Cited

IDFG (Idaho Department of Fish and Game). 2019. Fisheries Management Plan 2019-2024. Boise, Idaho.

Ransom, A.L. and R. Jakubowski. 2022a. Idaho Tributary Salmonid Abundance Monitoring 2021 Annual Project Update. Avista document identification number 2022-0054. Report to Avista and the Idaho Department of Fish and Game.

Ransom, A.L. and R. Jakubowski. 2022b. Pend Oreille Basin Bull Trout Redd Monitoring 2021 Annual Project Update. Avista document identification number 2022-0035. Report to Avista and the Idaho Department of Fish and Game.

Resource Planning Unlimited. 1999. Lake Pend Oreille Bull Trout Conservation Plan. State of Idaho. Boise, Idaho.

## **2023 ANNUAL IMPLEMENTATION PLAN SUMMARY – APPENDIX B**

### **Clark Fork Project, FERC No. 2058**

### **Cabinet Gorge and Noxon Rapids Hydroelectric Developments**

#### **Title**

Montana Tributary Habitat Acquisition and Recreational Fishery Enhancement Program

#### **Implementation Staff Lead**

Travis Rehm, Montana Fish, Wildlife and Parks (MFWP), (406) 382-3032, [travis.rehm@mt.gov](mailto:travis.rehm@mt.gov)

#### **Background**

The purpose of this program is to offset the impacts of the power peaking operation of the Cabinet Gorge and Noxon Rapids Projects to native salmonids and recreational fisheries in Montana. This program is a multiple component effort that includes the restoration and enhancement of Clark Fork River tributary watersheds, support of recreational fishery monitoring and management, and evaluation and implementation of recreational fishery enhancement projects. This program is comprised of two primary components: Tributary Habitat Acquisition and Enhancement; and, Fish Resource Monitoring, Enhancement, and Management (including Sub-impoundment Fisheries).

#### **2023 Project Plans**

##### *Tributary Habitat Acquisition and Enhancement*

1. Habitat Restoration Monitoring and Native Salmonid Abundance Monitoring Plan
2. Redd Surveys in Montana Tributaries
3. Stream Gage Monitoring
4. Crow Creek Bull Trout Investigation
5. Upper Prospect Creek LWD Project
6. Lower Clark Fork Watershed Group Project Coordination
7. Habitat Restoration Monitoring, Maintenance, and Contingency Allocation
8. Habitat Restoration, Property Acquisition, and Conservation Easement Contingency Allocation
9. Prospect Creek Bull Trout Salvage Evaluation (*New*)
10. Sims Meander Stream and Floodplain Restoration Project
11. Vermilion River Restoration Projects 4 - 6 Survey and Design (*New*)
12. St. Paul Trailhead Improvement Project (*New*)

##### *Recreational Fishery Enhancement*

13. Cabinet Gorge and Noxon Reservoir Fisheries Monitoring Plan
14. Mountain Lake Fisheries Monitoring Project
15. Lower Bull River Day Use Boat Access Site Operation
16. Noxon Reservoir Boat Ramp Improvements
17. Managing Aquatic Invasive Plants on Noxon and Cabinet Gorge Reservoirs
18. Dreissenid Mussel Sampling on Noxon and Cabinet Gorge Reservoirs
19. Noxon Reservoir Bathymetry Update
20. Upper Thompson River Connectivity Project (*New*)

## **Work Products**

### *Habitat Restoration Monitoring and Native Salmonid Abundance Monitoring Plan*

- Annual Project Update; 2022 activities; final due October 1, 2023
- Annual Project Update; 2023 activities; final due October 1, 2024
- Temperature monitoring data for the long-term sites; due December 1, 2023
- Annual Work Summary; from Aquatic Program Leader to Avista; due December 1, 2023

### *Redd Surveys in Montana Tributaries*

- Annual Project Update; Redd Survey (2022 data); final due April 1, 2023
- Annual Work Summary; due December 1, 2023
- Annual Project Update; Redd Survey (2023 data); final due April 1, 2024

### *Stream Gage Monitoring*

- Excel spreadsheet containing 2023 temperature and discharge data in 30-minute intervals for each calendar year in each stream (and channel) will be provided to Avista by January 1, 2024
- 2023 Annual Water Year Data Report for each stream (Bull River, East Fork Bull River, Rock Creek, Trout Creek, Vermilion River, Graves Creek); due to Avista January 1, 2024
- Mid-year report; due to Aquatic Program Leader (APL) August 1, 2023
- Annual Work Summary; due to APL November 15, 2023

### *Crow Creek Bull Trout Investigation*

- Annual Work Summary; from Aquatic Program Leader to Avista; due December 1, 2023
- Project Completion Report; final due December 31, 2023

### *Upper Prospect Creek LWD Project*

- Mid-year report; due to the Aquatic Program Leader (APL) August 1, 2023
- Annual Work Summary; due to the APL November 15, 2023
- Review of fisheries and/or physical habitat monitoring efforts two-years post run-off (2022–2024, depending on timing of final monitoring activities) in technical memo or in a Native Salmonid Abundance and Tributary Habitat Restoration Monitoring Annual Project Update report

### *Lower Clark Fork Watershed Group Project Coordination*

- Comprehensive Report; Lower Clark Fork Stream Restoration Summary (1995–2021) Review Draft (including complementary maps); October 31, 2023
- Comprehensive Report; Lower Clark Fork Stream Restoration Summary (1995–2021) Final; December 31, 2023
- Mid-year report; due to the Aquatic Program Leader (APL) August 1, 2023
- Annual Work Summary; due to APL November 15, 2023

### *Habitat Restoration Monitoring, Maintenance, and Contingency Allocation*

- Mid-year report; due to the Aquatic Program Leader (APL) August 1, 2023
- Annual Work Summary; due to the APL November 15, 2023

### *Habitat Restoration, Property Acquisition, and Conservation Easement Contingency Allocation*

- Annual Work Summary; from Aquatic Program Leader to Avista; due December 1, 2023
- Designs for specific projects would be reported in the form of a Technical Memorandum

### *Prospect Creek Bull Trout Salvage Evaluation*

- Annual Work Summary; from Aquatic Program Leader to Avista; due December 1, 2023
- University of Montana Conservation Genetics Laboratory Report for 2024; final due May 1, 2025

- Project Completion Report; final due December 31, 2026

*Sims Meander Stream and Floodplain Restoration Project*

- As-built monitoring report; expected March 2023
- Mid-Year Report; due to the Aquatic Program Leader (APL) August 1, 2023
- Annual Work Summary; due to the APL November 15, 2023

*Vermilion River Restoration Projects 4 - 6 Survey and Design*

- Presentation of proposed actions to LCFWG technical advisors and partners; due December 15, 2023
- Restoration design package and cost estimates for Projects 4, 5, and 6; due March 31, 2024
- Mid-Year Report; due to the Appendix B Aquatic Program Lead (APL) August 1, 2023
- Annual Work Summary; due to the APL November 15, 2023

*St. Paul Trailhead Improvement Project*

- NEPA decision; expected September 1, 2023
- Final design for the new trailhead; expected November 1, 2023
- Mid-year report; due to the Aquatic Program Leader (APL) August 1, 2023
- Annual Work Summary; due to the APL December 1, 2023

*Cabinet Gorge and Noxon Reservoir Fisheries Monitoring Plan*

- Annual Project Update; 2022 activities; final due October 1, 2023
- Annual Project Update; 2023 activities; final due October 1, 2024
- Annual Work Summary; from Aquatic Program Leader to Avista; due December 1, 2023

*Mountain Lake Fisheries Monitoring Project*

- Annual Work Summary; from Aquatic Program Leader to Avista; due December 1, 2023
- Comprehensive Project Report; final due to Avista; due December 31, 2023

*Lower Bull River Day Use Boat Access Site Operation*

- Site visitation information; from contractor to the Aquatic Program Leader and Avista; due November 15, 2023
- Annual Work Summary; due December 1, 2023

*Noxon Reservoir Boat Ramp Improvements*

- Technical memorandum or other appropriate work product listing associated development options, including site plan(s) and cost estimates; due April 1, 2023
- Annual Work Summary; due December 1, 2023

*Managing Aquatic Invasive Plants on Noxon and Cabinet Gorge Reservoirs*

- Mid-year report; due to the Aquatic Program Leader (APL) August 1, 2023
- Annual Work Summary; due to the APL November 15, 2023

*Dreissenid Mussel Sampling on Noxon and Cabinet Gorge Reservoirs*

- Mid-year report; due to the Aquatic Program Leader (APL) August 1, 2023
- Sampling status report (likely memorandum); due September 30, 2023
- Annual Work Summary; due to the APL November 15, 2023

*Noxon Reservoir Bathymetry Update*

- Internal-use map; due December 31, 2023
- Annual Work Summary; due December 1, 2023

*Upper Thompson River Connectivity Project*

- Annual Project Update; due November 15, 2023

As approved by the Management Committee on 3/14/2023

- Annual Work Summary; due December 1, 2023

### 2023 Appendix B Tributary Habitat Acquisition and Enhancement Fund Budget

Budget Summary	
Unexpended funds with interest	\$2,525,063
2023 contribution (including GDP inflation rate)	\$470,996
<b>Total available</b>	<b>\$2,996,059</b>
2023 MC-approved budget	\$470,167
<b>Unobligated funds</b>	<b>\$2,525,892</b>

2023 Project	Carryover <sup>1</sup>	2023 Budget
Habitat Restoration Monitoring and Native Salmonid Abundance Monitoring Plan	\$15,000	\$137,310
Redd Surveys in Montana Tributaries	\$13,900	\$12,000
Stream Gage Monitoring	\$0	\$5,451
Crow Creek Bull Trout Investigation	\$2,749	\$0
Upper Prospect Creek LWD Project	\$0	\$550
Lower Clark Fork Watershed Group Project Coordination	\$0	\$21,582
Habitat Restoration Monitoring, Maintenance, and Contingency Allocation	\$3,200	\$21,300
Habitat Restoration, Property Acquisition, and Conservation Easement Contingency Allocation	\$0	\$60,000
Prospect Creek Bull Trout Salvage Evaluation	\$0	\$31,000
Sims Meander Stream and Floodplain Restoration Project	\$0	\$0
Vermilion River Restoration Projects 4 - 6 Survey and Design	\$0	\$110,125
St. Paul Trailhead Improvement Project	\$0	\$33,500
Graves Creek Bull Trout Translocation Project (cost share; see Appendix C project plan)	\$0	\$2,500
<b>Total</b>	<b>\$34,849</b>	<b>\$435,318</b>
<b>MC-approved budget</b>		<b>\$470,167</b>

<sup>1</sup> Estimated carryover of unexpended, approved funds as of January 1.

## 2023 Appendix B Recreational Fishery Enhancement Fund Budget

Budget Summary	
Unexpended funds with interest	\$1,662,123
2023 contribution (including GDP inflation rate)	\$313,994
<b>Total available</b>	<b>\$1,976,117</b>
2023 MC-approved budget	\$467,037
<b>Unobligated funds</b>	<b>\$1,509,080</b>

2023 Project	Carryover <sup>1</sup>	2023 Budget
Cabinet Gorge and Noxon Reservoir Fisheries Monitoring Plan	\$17,000	\$81,000
Mountain Lake Fisheries Monitoring Project	\$2,000	\$0
Lower Bull River Day Use Boat Access Site Operation	\$5,218	\$2,000
Noxon Reservoir Boat Ramp Improvements	\$11,050	\$0
Managing Aquatic Invasive Plants on Noxon and Cabinet Gorge Reservoirs	\$40,000	\$40,000
Dreissenid Mussel Sampling on Noxon and Cabinet Gorge Reservoirs	\$600	\$2,741
Noxon Reservoir Bathymetry Update	\$10,428	\$5,000
Upper Thompson River Connectivity Project	\$0	\$250,000
<b>Total</b>	<b>\$86,296</b>	<b>\$380,741</b>
<b>MC-approved budget</b>		<b>\$467,037</b>

<sup>1</sup> Estimated carryover of unexpended, approved funds as of January 1.



## 2023 PROJECT PLAN

### Habitat Restoration Monitoring and Native Salmonid Abundance Monitoring Plan

#### Project Contact

Travis Rehm, Montana Fish, Wildlife and Parks (MFWP), (406) 382-3032, [travis.rehm@mt.gov](mailto:travis.rehm@mt.gov), and Jason Blakney, MFWP, (406) 382-3033, [jblakney@mt.gov](mailto:jblakney@mt.gov)

#### Project History

This is a continuing project. Habitat Restoration Monitoring was originally approved by the Management Committee (MC) in 2001 and the addition of Native Salmonid Abundance Monitoring was originally approved in 2003. The scope and budget of this project are reviewed by the MC annually.

#### Background

The main goal of this project is to monitor the abundance of juvenile and resident salmonids with an emphasis on Bull Trout and Westslope Cutthroat Trout (WCT) in drainages key to the long-term persistence of these species. A secondary goal is to monitor salmonid abundance before and after stream restoration projects. Monitoring stream fish populations is necessary for documenting long-term variation associated with native fish populations and changes in the abundance and distribution of non-native fish species. This long-term monitoring is essential for the planning and implementation of restoration projects and/or management intervention, supplementation, reintroduction of extirpated populations and/or to focus other conservation-based activities.

Stream monitoring activities proposed for 2023 will focus on 1) long-term abundance, habitat restoration monitoring and updating WCT genetic information; 2) Prospect Creek native salmonid salvage; 3) evaluation of baseflow barriers to upstream Bull Trout movement; and 4) Bull River drainage native salmonid data collection and evaluation

#### *Long-term abundance and habitat restoration monitoring*

Data collection in local native salmonid streams should be tailored to specific restoration and enhancement projects to ensure the best possible biotic and abiotic data is quantified. A one-size-fits-all approach to sampling is not recommended as each stream is unique, as are the challenges they face and the potential suite of projects that may be used to restore or enhance them. In some instances, sampling a stream multiple years in a row may be warranted (ex., Bull Trout outmigration dynamics in Graves Creek, PIT tagging fish in the Vermilion River or evaluating the impact of restoration and demographic support in Crow Creek). The collection of habitat data such as flow measurements, LWD counts, or substrate scoring may also be beneficial in some instances. While sampling priority will be given to Bull Trout streams, streams that are strongholds for Westslope Cutthroat Trout will be monitored and genetic data will be updated for population where that information has never been collected or if needs to be updated (>10 years).

Monitoring in 2023 will likely occur at sites in Upper Prospect Creek (n=4), Lower Prospect Creek (n=2-3), Copper Gulch (n=3-4), Swamp Creek (n=1-3), East Fork Blue Creek (n=2), Graves Creek (n=2-4), Rock Creek (n=4), and the upper forks of the Bull River. One or two

electrofishing sites can be conducted per day and thus there will be approximately 18-20 days of electrofishing efforts. Streams inhabited by WCT may be sampled in September or October (i.e., East Fork Blue Creek) and additional WCT samples may be collected in other streams within the project area if recent samples (>10 years) have not been collected. Sampling activities will also help facilitate collection of WCT genetic tissue samples for Fish Passage/Native Salmonid Restoration Plan (Appendix C), Westslope Cutthroat Trout Transport Evaluation Project and PIT tag array operation and maintenance associated with Prospect Creek Bull Trout Salvage Evaluation Project.

Since 2019, tributary salmonid abundance monitoring has been conducted solely under the Montana Tributary Acquisition and Recreational Fishery Enhancement Clark Fork Settlement Agreement (CFSA), Appendix B program; previously, salmonid abundance was also conducted under the Fish Passage/Native Salmonid Restoration Plan (CFSA Appendix C). Appendix C sampling was undertaken, in part, to assess tributary salmonid populations' response to fish passage and other management efforts, therefore, a major component of this combined monitoring will encompass regular and periodic sampling of tributaries or areas of tributaries known to be utilized by native salmonids that have been subject to fish passage efforts. These combined monitoring efforts are generally outlined in Table 1 and other tributaries streams may be sampled on occasion that are not listed in Table 1. The number of monitoring sites and the frequency of sampling in Table 1 should be considered a general guideline.

Table 1. Stream electrofishing monitoring schedule for select lower Clark Fork River tributaries.

Stream	Target species	Occupied Habitat (miles)	# monitoring sites	Year Last Sampled	Frequency (~ years)	Next Sample Date
Upper Prospect Creek	BULL, WCT	~ 4	4	2020	2-3	2023
Lower Prospect Creek	EB, LL, RBT	many	2	2016	4+	2023
Cooper Gulch	BULL, WCT	~ 3	3-4	2020	2-3	2023
Crow Creek	BULL, WCT	~ 3-4	4	2021	2-3	2024
Lower Graves Creek	BULL, WCT	~ 3	3-4	2022	2	2024
Upper Graves Creek	WCT	~ 3-4	3	2022	4+	2026
WF Trout Creek	BULL, WCT	~ 4-5	4	2021	2-3	2024
Lower Vermilion River	BULL, WCT	~ 9	6-8	2021	2-3	2024
Upper Vermilion River	WCT, EB	unknown	~8	2021	4+	2025
Swamp Creek	BULL, WCT	~3-5	3	2017	2-3	2023
Rock Creek	BULL, WCT	~ 3	4	2021	2	2023
EF Bull River	BULL, WCT	~ 8	8	2022	2	2024
Deep Creek	WCT	~ 5	2	2021	4+	2025
EF Trout Creek	WCT	~ 3-4	3	2021	4+	2025
South Fork Bull River	WCT	~ 4-5	4	2022	4+	2026
East Fork Blue Creek	WCT	~ 3	2	2017	4+	2023
Mainstem Bull River	WCT	many	?	2022	4+	2026
upper Forks of Bull R.	WCT	many	?	2014	4+	2023

*Prospect Creek native salmonid salvage*

The Prospect Creek drainage is unique in that the lower portion of the drainage is mainly occupied by non-native salmonids, while the upper drainage and its major tributaries are occupied solely by native fish species. This dichotomy is likely facilitated by the geology of the area where large unconsolidated substrate was deposited by Glacial Lake Missoula and underlies portions of the stream causing the mainstem and reaches of its tributaries to go dry during low flow periods each year (Sando and Blasch 2015; M. Lawlor, U.S. Geological Survey, unpublished data). Two lengthy, naturally intermittent sections of stream occur on the mainstem of Prospect Creek. The lower dry reach begins just upstream of Brush Gulch and extends approximately 4 km upstream to above the Daisy Creek confluence. A short perennial section of stream occurs from an area between Daisy Creek and Therriault Gulch to just upstream of the Crow Creek confluence. Above Crow Creek, Prospect Creek again becomes ephemeral for about 6.8 km. The upper portion of Prospect Creek and its tributaries from just upstream of Evans Gulch have perennial flow.

In 2017, Appendix B staff-initiated sampling efforts to capture native salmonids in stranded pools within the two ephemeral portions of Prospect Creek. Westslope Cutthroat captured in these areas are moved to lower Prospect Creek near Brush Gulch, while Bull Trout are relocated into the Crow Creek drainage. Crow Creek has low densities of Bull Trout compared to the other two streams occupied by the species in the upper drainage. From 2017 to 2022, a total of 204 Bull Trout have been released in Crow Creek through this effort. In 2022 alone, 134 WCT were salvaged with all of these fish receiving PIT tags. Since their release near Brush Gulch, many of the salvaged WCT have been detected on the PIT array in lower Prospect Creek (Rehm et al. 2022). No changes in protocol or methods for native salmonid salvage efforts in Prospect Creek are proposed for 2023.

*Evaluate baseflow barriers to upstream Bull Trout movement*

In recent years, field staff have observed barriers to upstream Bull Trout movement during baseflow periods in late summer and fall. The two most common barriers to upstream migration encountered in local spawning tributaries are debris jams and beaver dams. Debris jams are typically caused by one or more large trees that fall in the stream. In some cases, subsequent runoff events cause aggrading of streambed material which raises the streambed elevation and may cause an impassable barrier to form. Allochthonous material such as trees, branches, leaves, and conifer needles often come to rest in areas where channel spanning wood is located, creating low flow barriers, especially in smaller streams. Debris jams believed to be seasonal barriers from 2019-2022 were observed on redd count walks in numerous lower Clark Fork River Bull Trout spawning tributaries including West Fork Trout Creek, East Fork Crow Creek, West Fork Crow Creek, Cooper Gulch, West Fork Thompson River, Jungle Creek, Beatrice Creek and West Fork Fishtrap Creek.

Most Bull Trout populations in the lower Clark Fork River drainage in Montana are existing at very low population levels (i.e., less than 50 adults) and therefore it is imperative for these fish to have yearly upstream access to spawning/rearing habitat to the greatest extent possible, especially in areas where they have previously been documented. Historically and in present day areas with robust, connected populations, such seasonal barriers were/are likely not an issue if enough other adequate spawning and rearing habitat exist. However, in small and/or isolated

populations every mature adult and every meter of suitable habitat is important, every year. Therefore, in late summer of 2023 efforts will be made to clear debris from these jams (only those believed to be complete barriers to upstream movement) from Bull Trout spawning streams in the Avista project area. In many cases debris jams will become passable if debris and streambed material is moved, with much of this work is possible by hand. In more extreme examples, a portion of a channel spanning log would need to be cut to allow passage. An after-the-fact 124 Permit would be submitted to MFWP if the work was deemed to be at the level it would require such a permit. It is estimated that this work would take about a week and would occur in late August through September. Modification of a debris jam complexes in 2020 in Cooper Gulch led to multiple redds being found above a jam where they have typically been found in the past. In 2019, no redds were found above the debris jam. Debris jams were also modified by hand in West Fork Trout Creek, East Fork Crow Creek, and West Fork Crow Creek; however, no redds were observed in these streams above where this work took place.

Beaver dams have also been observed to impede upstream movement by Bull Trout on spawning migrations. In recent years, a myriad of beaver dams throughout the Fishtrap Creek drainage (Thompson River) have precluded migratory fish from reaching ideal and previously used spawning and rearing habitats, often many kilometers upstream (MFWP, unpublished data). Multiple beaver dams were observed on the lower portion of the East Fork Bull River, where the stream is braided, in the fall of 2019 (field staff notes suggest beavers have been using the lower East Fork since at least 2006). These channel-spanning dams appear to preclude or at least severely reduce both upstream and downstream movement of Bull Trout (Adams and Bernall 2021; Avista and MFWP, personal observations). Because these dams are so low in the system, Bull Trout captured below Cabinet Gorge dam in September and October were released above these dams so they could have access to prime spawning habitat much higher in the drainage. These dams also likely hinder outmigration of juvenile Bull Trout in a stream important to Appendix C downstream transport efforts. Beaver have come and gone in various other Bull Trout streams in the area but appear most prevalent and impactful in the two aforementioned drainages. Due to the small population size and isolated nature of most local Bull Trout populations, active management of beavers and their dams is imperative.

The consequences of Bull Trout spawning lower in these systems due to the presence of beaver dams is not completely known, but in Fishtrap Creek these less-than-ideal spawning areas have a much higher proportion of non-native salmonids present which may decrease survival at early life stages through increased competition and predation. Such conditions could cause downstream migrating Bull Trout to leave these systems earlier and at a smaller size which may also increase their risk of being preyed upon in larger waterbodies. Furthermore, spawning in larger downstream portions of tributaries areas could leave redds more susceptible to scour and bedload movement when compared to smaller, more stable spawning reaches in the headwaters and tributary streams. Similar to the proposed actions associated with debris jams, if beaver dams are found to be barriers to movement in late summer and early fall in Bull Trout streams within the Avista project area, they will be altered or removed to allow fish passage. An after-the-fact 310 or 124 permit could then be submitted if the action is deemed to rise to such a level. However, the Green Mountain Conservation District does not have a current rule on the books that specially states a 310 permit is required to alter or remove a beaver dam. If beavers become a nuisance in a given drainage, MFWP wildlife and enforcement staff will be consulted on

actions needed to remove the animals from the area. For both debris and beaver dams a more permanent plan of operations through the Conservation District is being pursued.

### *Temperature monitoring*

Thermographs will be placed in selected streams to record water temperature as described in Table 2. This measurement provides a means to assess a fundamental requirement of native salmonids and provides a needed index to assess success of habitat restoration activities that were undertaken, in part, to address identified state water quality listed impairments.

Table 2. Stream thermograph locations for select lower Clark Fork River tributaries.

<b>Stream</b>	<b>location</b>	<b>Rkm</b>	<b>Lat</b>	<b>long</b>
Prospect Creek	17-Mile Bridge	29.3	47.57532	115.63960
Prospect Creek	Below Crow Creek confluence	19.5	47.53792	115.54430
Cooper Gulch	Below Chipmunk	5.5	47.51573	115.63824
Cooper Gulch	Above long-term site #1	3.7	47.52697	115.62262
Crow Creek	2007 restoration reach	1.8	47.52654	115.55730
West Fork Crow Creek	2-3 minutes up WF trail	0.6	47.52253	115.56592
East Fork Crow Creek	Above culvert	2	47.50772	115.54918
West Fork Trout Creek	Below 1st creek crossing	1.4	47.79791	115.73014
West Fork Trout Creek	Above Robin Run	4.9	47.79922	115.77051
West Fork Trout Creek	Below South Branch confluence	7.0	47.78782	115.79187
Vermilion River	Near mouth	2.1	47.83113	115.53483
Vermilion River	Between Roe Gulch and Canyon Creek	5.5	47.85102	115.50986
Canyon Creek	Below bridge	0.8	47.85416	115.50043
Vermilion River	Below Cataract Creek	9.5	47.85833	115.46500
Vermilion River	1.1 km downstream of Grouse Creek	13.8	47.86951	115.41712
Sims Creek	Near mouth	0	47.86984	115.40367
Vermilion River	Above Chapel Slide	17.9	47.87542	115.37028
Vermilion River	Below Willow Creek	22.8	47.87008	115.31618
Vermilion River	Below Frosty/Charred Creeks	25.8	47.85178	115.29940
Vermilion River	Below Miller	29	47.82653	115.29953
Vermilion River	Control-Verm confluence	32.7	47.79630	115.30254
Happy Gulch	Near mouth	0	47.81109	115.30100
Miller Creek	Near mouth	0.3	47.82551	115.30341
Graves Creek	Above falls	5.5	47.72145	115.37679
Graves Creek	Upstream of bridge above falls	10.5	47.74743	115.33042
Graves Creek	At Lawn Lake trailhead	13.4	47.74835	115.29729
Rock Creek	Above West Fork	8.6	48.02432	115.70541
Rock Creek	Upstream of first bridge on trail	12.4	48.04322	115.66750
Rock Creek	Upper cascade-upper Bull distribution	13.5	48.04305	115.65551

Table 2 (continued). Stream thermograph locations for select lower Clark Fork River tributaries.

Stream	location	Rkm	Lat	long
South Fork Bull	~30 meters above mouth	0.03	48.19279	115.81584
East Fork Blue	Long-term temp monitoring site	0.3	48.10473	116.01051

### Goal

The goal of this project is to monitor the abundance and distribution native and non-native salmonids to assess the success of past and future restoration and enhancement projects and to inform management decisions in drainages important to the long-term persistence of Bull Trout and Westslope Cutthroat Trout in the lower Clark Fork River drainage, Montana.

### Objectives

1. Monitor native salmonid abundance in streams important to the species local persistence and in reaches where stream restoration, habitat improvements or fish passage efforts have taken or will take place.
2. Salvage native salmonids from ephemeral reaches of Prospect Creek.
3. Evaluate baseflow barriers to upstream Bull Trout movement and take actions to make these areas passable to fish for spawning.
4. Collect temperature data across the lower Clark Fork drainage.
5. Evaluate opportunities for restoration, management intervention, supplementation, reintroduction, or other conservation focused activities.

### Tasks

1. Monitor native salmonid populations at long-term electrofishing sites. Population estimates will be carried out at sampling locations using electrofishing- depletion methodology (Zippin 1958, Carle and Strub 1978). In 2023, sampling will likely occur at sites in upper Prospect Creek (n=4), lower Prospect Creek (n=2-3), Copper Gulch (n=3-4), Swamp Creek (n=1-3), East Fork Blue Creek (n=2), Graves Creek (n=2-4), Rock Creek (n=4), and the upper forks of the Bull River. One or two electrofishing sites can be conducted per day and thus there will be approximately 18-20 days of electrofishing efforts. Streams inhabited by WCT may be sampled in September or October (i.e., East Fork Blue Creek) and additional WCT samples may be collected in other streams within the project area if recent samples (>10 years) have not been collected. Sampling activities will also help facilitate collection of WCT genetic tissue samples for Fish Passage/Native Salmonid Restoration Plan (Appendix C), Westslope Cutthroat Trout Transport Evaluation Project and PIT tag array operation and maintenance associated with the Prospect Creek Bull Trout Salvage Evaluation Project.
2. Native salmonid rescue efforts utilizing backpack electrofishing will occur throughout the summer and fall of 2023 in portions of the Prospect Creek drainage that experience

natural stream intermittency. Efforts may also focus on capturing stranded fish in other portions of the drainage including in the lower reaches of Crow Creek and Cooper Gulch. Stranded Bull Trout captured in mainstem Prospect Creek will again be moved into the Crow Creek, while Westslope Cutthroat Trout will be moved to lower Prospect Creek in the vicinity of Brush Gulch. All Bull Trout and Westslope Cutthroat Trout >99 mm will be PIT tagged to support the evaluation of movement and life-history expression in the drainage (based on PIT array detections and recaptured fish) (Objectives 2, 3 and 5).

3. Bull Trout spawning stream reaches will be walked in late August through early September to evaluate barriers (i.e., debris jams and beaver dams) that preclude fish from accessing prime spawning habitat. Complete barriers will be altered only enough to allow fish passage.
4. Thermographs will be placed in the following streams to record water temperature including upper Prospect Creek, Cooper Gulch, Crow Creek, Graves Creek, Vermilion River, West Fork Trout Creek, Rock Creek, Bull River, East Fork Bull River, South Fork Bull River and Blue Creek. Thermographs will be set to record temperature every 30 minutes, are deployed at established sites prior to July 1 and will be retrieved after October 1 (Objectives 1, 4 and 5).
5. Collect and analyze Westslope Cutthroat Trout genetic samples in sampled stream reaches where appropriate. Westslope Cutthroat populations that have not been evaluated for hybridization in the last 10 years are appropriate candidates for updating their genetic composition as are drainages where hybrid *Oncorhynchus* have been documented in headwater lakes (data collected from Mountain Lakes Fisheries Monitoring Project). Westslope Cutthroat genetic samples will be randomly collected and will be analyzed at the Conservation Genetics lab at the University of Montana (Objectives 1, 4 and 5).

### **Work Products**

- Annual Project Update; 2022 activities; final due October 1, 2023
- Annual Project Update; 2023 activities; final due October 1, 2024
- Temperature monitoring data for the long-term sites; due December 1, 2023
- Annual Work Summary; from Aquatic Program Leader to Avista; due December 1, 2023

### **Permitting Requirements**

The only permit that would need to be filed would be an after-the-fact 124 permit (if done or supervised by MFWP biologist) or 310 permit (if done by a non-government organization). No permits are required for fisheries sampling work as all work will be conducted and/or overseen by MFWP fisheries biologists.

### **Cultural/Historic Resource Review**

Not applicable for the tasks proposed in this project plan, there are no ground and/or vegetation disturbing activities, or proposed impacts to cultural/historic resources.

### **Benefit to the Resource**

The collection of long-term data for stream fish populations is essential for defining natural

variation associated with native salmonid populations, determining changes in the distribution or abundance of non-native fish species, the planning and implementation of restoration/enhancement projects, management intervention, and/or to focus other conservation-based activities. The proposed work is consistent with the language and spirit of Appendix B of the Clark Fork Settlement Agreement and the goals and objectives of MFWP. The proposed work also supplements efforts conducted under Appendix C of the CFSA.

## Budget

Item	Estimated Carryover <sup>1</sup>	2023 Budget Request
Avista Labor (Technician, 0.5 FTE)	\$15,000	\$47,500
MFWP Technician (Tech 4 level, 0.75 FTE)	\$0	\$52,810
New backpack electrofishing unit	\$0	\$8,000
Waders, wading boots, field gear, etc.	\$0	\$2,000
PIT tags	\$0	\$3,000
Fuel	\$0	\$3,000
Repairs, supplies (sampling gear and vehicle maintenance)	\$0	\$6,000
Thermographs	\$0	\$2,500
WCT genetic monitoring (\$40/sample @ up to 250 samples)	\$0	\$10,000
Training and professional development for Avista technician (AFS, CPR, Software, etc.)	\$0	\$2,500
<b>Total</b>	\$15,000	\$137,310
<b>Anticipated Expenditures</b>		\$152,310

<sup>1</sup> Estimated carryover of unexpended, approved funds as of January 1.

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## 2023 PROJECT PLAN

### Redd Surveys in Montana Tributaries

#### Project Contact

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#### Project History

This is a continuing project. From 2000 through 2020, redd surveys were one component of the Fish Abundance Monitoring Program conducted under Appendix C of the Clark Fork Settlement Agreement (CFSA). Beginning in 2021, Bull Trout and Brown Trout redd surveys were conducted through the Montana Tributary Habitat Acquisition and Recreational Fishery Enhancement Program Appendix B beginning. Due to this change, this project was ranked by the WRTAC on January 20, 2021. An additional change proposed for the 2023 implementation is the discontinuation of Brown Trout redd surveys in area tributaries, with the exception of the East Fork Bull River (EFBR).

#### Background

Previously, redd surveys were conducted under the Fish Passage/Native Salmonid Restoration Plan (CFSA Appendix C). These surveys were undertaken, in part, to assess tributary salmonid populations' response to fish passage and other management efforts, therefore, redd survey of tributaries or areas of tributaries (e.g., Index Reaches) known to be utilized by Bull Trout that have been subject to fish passage efforts will continue to be emphasized (Table 1). Surveys in other tributaries or exploratory reaches (Table 2) will also continue as time allows to assess Bull Trout spawning trends. Commonality of methods used, and replication of areas surveyed will facilitate continuation through Appendix B monitoring. This long-term data set helps identify population trends, potential contribution of transported and/or non-transported Bull Trout, critical habitat, potential threats and barriers, and when combined with Brown Trout redd surveys in the EFBR, lost spawning potential due to superimposition of Brown Trout redds on Bull Trout redds. Completion and/or accuracy of redd surveys, particularly Brown Trout redd surveys, are subject to field conditions and are performed as such conditions (i.e., streamflow, snow and ice, etc.) allow. Due to the difficulty in field conditions, the limited use of the data, and the exceedingly rare instances of Brown Trout redd on Bull Trout redd superimposition documented in the past, Brown Trout redd surveys were considered unnecessary by the Aquatic Implementation Team in 2022 and are being discontinued except for the EFBR.

#### Goal

Monitor the relative abundance of adult Bull Trout and Brown Trout in important Montana tributaries to the lower Clark Fork River.

#### Objectives

1. Monitor spawning activity of Bull Trout (and Brown Trout in the EFBR).

## Tasks

1. In conjunction with Appendix C and other Appendix B programs, coordinate and conduct annual Bull Trout and Brown Trout redd counts in tributaries of the Montana portion of Avista Project Area tributaries and the Thompson River drainage. Index reaches will be surveyed annually as conditions allow; whereas, the additional areas listed in Table 2 will be surveyed opportunistically, as appropriate. (Objective 1)
2. Continue to sample and genetically analyze eggs from positively identified Brown Trout redds in the EFBR. (Objective 1)

Table 1. Bull Trout redd survey index reaches for tributaries of the Lower Clark Fork River–Avista Project Area, and tributaries of the Thompson River.

Stream	Reach description	Upstream extent	Downstream extent
Bull River	East Fork Bull River to Solid Rock bridge	48.10903; -115.78388	48.08025; -115.78908
East Fork Bull River	Mouth to Isabella Creek	48.10970; -115.67815	48.10903; -115.78388
Rock Creek	Near mouth of West Fork to Trailhead	48.03956; -115.67906	48.02442; -115.70617
Swamp Creek	Wilderness Boundary to 3 km upstream	47.98547; -115.56454	47.96561; -115.58108
Marten Creek	Mouth to perennial near Clinton Gulch	47.89147; -115.80457	47.87945; -115.75562
West Fork Trout Creek	Robin Run to Devil Run	47.79204; -115.81705	47.79895; -115.76984
Vermilion River (upper)	Grouse Creek spur to 0.8 km below Falls	47.87619; -115.36521	47.86975; -115.41889
Vermilion River (lower)	Bottom of Roe Gulch braids to China Gorge	47.85578; -115.47959	47.84881; -115.51561
Graves Creek	USFS road 367 bridge to Falls	47.72088; -115.37824	47.71415; -115.38219
Prospect Creek (upper)	Highway mile marker 17 to 19.5 (Glidden Gulch)	47.56443; -115.68977	47.57545; -115.63990
Prospect Creek (lower)	Wilkes bridge to 400 m upstream of Brush Gulch	47.55518; -115.48697	47.57587; -115.39372
Dry Creek	Mouth to top of flow/gradient barrier	47.58118; -115.35287	47.58494; -115.35465
Crow Creek	Mouth to forks	47.52438; -115.55832	47.53838; -115.54589
East Fork Crow Creek	Mouth to USFS road crossing	47.50813; -115.54926	47.52438; -115.55832
Cooper Gulch	Lower perennial to USFS road 7623 bridge	47.51311; -115.64364	47.53420; -115.61759
WF Thompson River	Spruce Creek to Anne Creek	47.71386; -115.20695	47.68998; -115.20549
WF Fishtrap Creek	Mouth to road mile 4	47.79870; -115.21008	47.81641; -115.14465
Beatrice Creek	Mouth to road crossing in section 2	47.77530; -115.15220	47.79424; -115.10262
Jungle Creek	Mouth to west section line of T23N, R28W, S13	47.74564; -115.13402	47.72486; -115.05607

Table 2. Typical non-index reaches surveyed for Bull Trout redds along tributaries of the Lower Clark Fork River–Avista Project Area, and tributaries of the Thompson River; additional exploratory efforts in areas where Bull Trout spawning may occur may also be surveyed as scheduling allows.

Stream	Reach description	Upstream extent	Downstream extent
Bull River	“Spring branch” to South Fork Bull River	48.19313; -115.81577	48.18773; -115.85779
North Fork EFBR	Mouth to upstream of USFS road 407 bridge	48.12970; -115.72107	48.12577; -115.72369
Swamp Creek	Trail head to Wilderness Boundary	47.96561; -115.58108	47.91859; -115.61102
SF Marten Creek	Mouth to perennial near Jackson Gulch	47.87233; -115.76401	47.87595; -115.76139
Vermilion River (lower)	Bottom of Roe Gulch braids to mouth	47.84881; -115.51561	47.82931; -115.53804
Graves Creek	Mouth to USFS road 367 bridge	47.71415; -115.38219	47.68271; -115.40770
Thorne Creek	Mouth to old diversion ~600m upstream	47.69172; -115.39342	47.69058; -115.40114
Prospect Creek (upper)	Upstream of Evans Gulch to Hwy mile 17 bridge	47.57545; -115.63990	47.55670; -115.62533
EF Crow Creek	300 m upstream of USFS road crossing	47.50627; -115.54551	47.50813; -115.54926
WF Crow Creek	Mouth to ~ river km 1	47.52341; -115.56411	47.52440; -115.55834
Cooper Gulch	Above FR 7623 Crossing	47.51241; -115.64775	47.51311; -115.64364
Cooper Gulch (Spokane)	Lower ~ 400 m of Spokane Creek	47.51635; -115.63231	47.51635; -115.63266
Cooper Gulch (Chipmunk)	Lower ~ 400 m of Chipmunk Creek	47.51121; -115.64095	47.51380; -115.64097
WF Thompson River	Honeymoon Creek to Spruce Creek	47.68998; -115.20549	47.66036; -115.19294
Fishtrap Creek	Just below Jungle Creek to mouth of Beatrice Creek	47.79424; -115.10262	47.72377; -115.05600
WF Fishtrap Creek	Upstream of index	47.78033; -115.23129	47.79870; -115.21008

## Work Products

- Annual Project Update; Redd Survey (2022 data); final due April 1, 2023
- Annual Work Summary; due December 1, 2023
- Annual Project Update; Redd Survey (2023 data); final due April 1, 2024

## Permitting Requirements

Redd surveys, by themselves are not specified in Montana Scientific Collection Permit; however, data recorded follows state database requirements and is reported.

Endangered Species Act consultation for this project plan is associated with the 2019 Biological Opinion on the effects of continued operation of the Clark Fork Hydroelectric Project on Bull Trout and designated Bull Trout critical habitat (BiOp). This project plan is consistent with the analyses and conclusions contained in the 2019 BiOp and will adhere to all appropriate Terms

and Conditions designed to reduce the extent and effects of incidental take on Bull Trout. No incidental take of Bull Trout is anticipated as a result of this project plan; therefore, no take reporting is required.

### **Cultural/Historic Resource Review**

Not applicable for the tasks proposed in this project plan, there are no ground and/or vegetation disturbing activities, or proposed impacts to cultural/historic resources.

### **Benefit to the Resource**

Bull Trout, listed as threatened under the Endangered Species Act, is a primary species identified in the Native Salmonid Restoration Plan (NSRP) for consideration for fish passage and associated Protection Mitigation and Enhancement Efforts (PM&E) measures. The NSRP identified “native fish abundance studies” to measure changes in tributary native salmonid population’s distribution and abundance in relation to fish passage and other native fish restoration activities. The Aquatic Implementation Team has determined that implementation of native fish abundance studies including annual Bull Trout and Brown Trout redd counts should proceed in a manner that facilitates long term monitoring. Data provided enables managers to assess the effect of related PM&Es and provides data for state and federal management plans.

### **Budget**

<b>Item</b>	<b>Estimated Carryover<sup>1</sup></b>	<b>2023 Budget Request</b>
Biologist field work and reporting (<0.10 FTE)	\$8,500	\$4,000
Technician field work, data mgmt., and reporting (0.20 FTE)	\$3,000	\$6,000
Equipment (waders, etc.)	\$400	\$0
Vehicle mileage	\$0	\$1,000
Lab costs for Brown Trout egg samples genetic analysis	\$2,000	\$1,000
<b>Total</b>	<b>\$13,900</b>	<b>\$12,000</b>
<b>Anticipated Expenditures</b>		<b>\$25,900</b>

<sup>1</sup> Estimated carryover of unexpended, approved funds as of January 1.

## **2023 PROJECT PLAN**

### **Stream Gage Monitoring**

#### **Project Contact**

Craig Neesvig, United States Forest Service (USFS), (406) 827-0734, [craig.neesvig@usda.gov](mailto:craig.neesvig@usda.gov)

#### **Project History**

This Project Plan represents the merger of two interrelated continuing projects; Rock and Graves Creek 2016–2020 Stream Gage Maintenance and Stream Gage Replacement and 2017–2021 Maintenance. The “Rock and Graves Creek 2016–2020 Stream Gage Maintenance” project was originally approved by the Management Committee (MC) in 2010 and was then renewed as a five-year project in 2016. Thus, the MC has approved the funding for this work through the 2020 water year. The five-year “Stream Gage Replacement and 2017–2021 Maintenance” project was originally approved by the MC in 2017. Thus, the MC has approved the funding for this work through the 2021 water year. Beginning in 2018, these two continuing projects were merged into the “Stream Gage Monitoring” project. Thus, annual stream gage monitoring in all six tributaries through is now covered through this project plan. The scope and budget for this project are reviewed by the MC annually.

#### **Background**

Since 2008, automated stream gages have been installed and maintained by the USFS in multiple locations across the Cabinet Ranger District. These autonomous gages record temperature and pressure values which can be used to estimate parameters such as discharge. Thus, stream gages have provided continuous discharge and temperature information since 2008. In addition to informing water forecasting and annual water budgets, information collected through stream gage monitoring provide valuable insights into to multiple aspects of projects implemented under the Clark Fork Settlement Agreement (CFSA) such as fish trap design and performance, fish migration behaviors, design and function of restoration projects, and stream intermittency.

Over the last three years new data loggers with a guaranteed lifespan of 7–10 years were purchased through appendices B and C of the CFSA and installed and maintained by USFS personnel. These new loggers were deployed in the Bull River at the historic U.S. Geological Survey gage house, East Fork Bull River near the historic Ranger Station (one gage in each of the two channels), Trout Creek at the 214 bridge, Vermilion River at the red bridge, Rock Creek near the mouth, and Graves Creek at the permanent weir trap site. These projects also provided funding for the USFS to conduct annual calibration, maintenance, and data compilation and reporting through 2021 in the Bull River, East Fork Bull River, Trout Creek, and Vermilion River, and through 2020 in Rock and Graves creeks.

#### **Goal**

The goal of this project is maintain and operate the current stream gaging network and to provide continuous, accurate streamflow data in selected area tributaries.

## **Objectives**

1. Continue accurately characterizing stream discharge, temperature and other metrics within the Bull River, East Fork Bull River, Trout Creek, Vermilion River, Rock Creek and Graves Creek. Data and reports produced within the 2023 water year will be added to the long-term period of record to arrive at various streamflow and temperature statistics over time.

## **Tasks**

1. Annually, and as needed, calibrate, maintain, and download data from all seven electronic stream gages (the East Fork Bull River has two channels, thus two electronic data loggers).
2. Perform manual discharge, stage and temperature measurements at each gaging station when streamflow conditions allow for safe measurement to accurately represent the rising and falling limbs of the hydrograph to describe the current water year condition.
3. Utilize known pressure–discharge relationships to estimate gage height and discharge at 30-minute intervals for each site for water year 2023. Record temperature at 30-minute intervals for each site for water year 2023.
4. Perform data quality assurance and control for accuracy and import finalized data into an annual report format.

## **Work Products**

- Excel spreadsheet containing 2023 temperature and discharge data in 30-minute intervals for each calendar year in each stream (and channel) will be provided to Avista by January 1, 2024
- 2023 Annual Water Year Data Report for each stream (Bull River, East Fork Bull River, Rock Creek, Trout Creek, Vermilion River, Graves Creek); due to Avista January 1, 2024
- Mid-year report; due to Aquatic Program Leader (APL) August 1, 2023
- Annual Work Summary; due to APL November 15, 2023

## **Permitting Requirements**

Not applicable for the tasks proposed in this project plan.

Endangered Species Act consultation for this project plan is associated with the 2019 Biological Opinion on the effects of continued operation of the Clark Fork Hydroelectric Project on Bull Trout and designated Bull Trout critical habitat (BiOp). This project plan is consistent with the analyses and conclusions contained in the 2019 BiOp and will adhere to all appropriate Terms and Conditions designed to reduce the extent and effects of incidental take on Bull Trout. No incidental take of Bull Trout is anticipated as a result of this project plan; therefore, no take reporting is required.

## **Cultural/Historic Resource Review**

Not applicable for the tasks proposed in this project plan, there are no ground and/or vegetation

disturbing activities, or proposed impacts to cultural/historic resources.

### Benefit to the Resource

The information collected by this project will further enhance the regional hydraulic relationships which are used in channel design and stream restoration, thereby informing decisions and help adaptively manage projects conducted under appendices B and C of the CFSA.

With very few active USGS stream gaging stations in the area (Prospect Creek, Thompson River) these monitoring stations will provide for the long-term period of record at each location listed which represent annual streamflow conditions specific to the tributaries in the Lower Clark Fork drainage.

Bull Trout and Westslope Cutthroat Trout populations are present within all six of these streams. Information from the Graves Creek, Rock Creek, East Fork Bull River, and Vermilion River gages will help managers understand the relationships between discharge and trap efficiency and juvenile Bull Trout emigrations. Ultimately, this information will be used to inform trapping protocols and improve efficiencies. Additionally, discharge information from the Bull River will help researchers understand and evaluate the success of the Clark Fork River Westslope Cutthroat Trout Experimental Transport Program.

### Budget

Item	Estimated Carryover <sup>1</sup>	2023 Budget Request
USFS data collection and report writing (Hydro Crew – Usually GS-04 and GS-06)	\$0	\$8,149
All 7 gage station operation/maintenance and repair supplies, waders, etc.	\$0	\$1,500
13% Overhead	\$0	\$1,254
<b>Total</b>	\$0	\$10,903
<b>Anticipated Expenditures</b>		\$10,903

<sup>1</sup> Estimated carryover of unexpended, approved funds as of January 1.

This project is a 50:50 cost share with Appendix C; thus, one half of the above expenditures will be paid from each appendix.



## 2023 PROJECT PLAN

### Crow Creek Bull Trout Investigation

#### Project Contact

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#### Project History

This is a continuing project that was approved by the Management Committee (MC) in 2016. A total funding request of \$18,500 was approved in 2016 and no additional funding is requested. It is being requested that the Project Completion Report completion date be extended to December 31, 2023.

#### Background

Crow Creek is a third order tributary that enters Prospect Creek at river kilometer 19.8. The lower portion of Crow Creek, like many other streams in the lower Clark Fork River drainage, experiences seasonal intermittency associated with the underlying geology of the area (Sando and Blasch 2015). Crow Creek enters Prospect Creek in a small perennial stretch of stream that dried in 2015- the first time since at least 2000. Two mainly resident Bull Trout populations occur upstream of Crow Creek, in upper Prospect Creek and Cooper Gulch. These populations are isolated during base flow conditions by seasonal intermittency but have been shown to exchange migrants (Oldenburg et al. 2015; DeHaan and Bernall 2017). Bull Trout have been found at low abundance in Crow Creek since at least 1996 (WWP 1996; Moran 2004; Horn and Tholl 2011; Moran and Storaasli 2013). At least three age classes of Bull Trout were captured in Crow Creek at long-term monitoring sites in 2014. In the fall of 2015, three larger resident Bull Trout were observed during redd counts in Crow Creek including one individual in a 2007 restoration site. Three Bull Trout redds have been found in Crow Creek from 2003-2015, two in the East Fork in 2012 (Moran and Storaasli 2013) and one in the lower mainstem in 2014 (Storaasli 2015). Therefore, based on low density Bull Trout observations over multiple years and locations including in both forks of Crow Creek, as well as the occasional occurrence of observable redds in the stream, it does appear to provide suitable habitat for Bull Trout. However, it is unclear if this population is self-sustaining.

Field work for this study was completed in 2016 and 2017. Initial results suggest a small population of Bull Trout does inhabit the Crow Creek drainage as multiple age class of fish were found both years, albeit at low densities. Low levels of natural reproduction did occur in the drainage during the study period as young-of-the year (YOY). Bull Trout were encountered in the West Fork of Crow Creek in both 2016 and 2017. However, no redds have been found in the drainage since 2019. Genetic analyses from fish sampled in Crow Creek in 2016 suggests most fish in the drainage assign to upper Prospect Creek and Cooper Gulch (Adams et al. 2017). Crow Creek was not able to be evaluated to determine if it is genetically distinct population because samples were only collected from 41 individuals, half of which were YOY and likely siblings. Crow Creek, Cooper Gulch and upper Prospect Creek are isolated for a significant portion of the year, but this genetic information adds further evidence of movement and connectivity between

the three streams occupied by the species in the Prospect Creek watershed (Oldenburg et al. 2015; DeHaan and Bernal 2017; Adams et al. 2017).

Over the two-year study period, Bull Trout were documented at 14 of 20 sites sampled in Crow Creek and at all 10 sites sampled in Cooper Gulch. Westslope Cutthroat Trout were found at all sites in both streams and Cedar Sculpin were noted at 19 of 20 sites in Crow Creek but were not found to occur in Cooper Gulch. A number of habitat variables were quantified at each electrofishing site along with fish abundance data including stream discharge, substrate, canopy cover, bankfull width, habitat unit classification and measurements (length, widths, and depths), large woody debris and undercut banks. Stream temperature data was recorded at six sites in Crow Creek and five sites in Cooper Gulch. Thermographs have collected two years of winter water temperature data to help assess groundwater influence, which in turn will help better understand spawning potential in both streams. Streambed core samples were collected in late August and early September of 2017 to evaluate levels of fine sediment in spawning gravels.

### **Goal**

The goals of this project are to assess the current status of Bull Trout in Crow Creek, investigate habitat variables that are essential for the species at different portions of their life cycle, determine if the population is self-sustaining or if the stream is capable of supporting an independent population as well as to quantify and compare stream habitat condition in Crow Creek and a neighboring stream with higher Bull Trout abundance, Cooper Gulch. This information will be used to inform future stream restoration, land management, supplementation and other conservation-based actions.

### **Objective**

1. Assess the current status of Bull Trout in Crow Creek and investigate critical habitat variables to determine if the population is self-sustaining or if the stream is capable of supporting an independent population.

### **Tasks**

1. Monitoring Bull Trout at two long-term sample sites and additional locations in the Crow Creek and Cooper Gulch drainages in 2016 and 2017 to assess fish species distribution and abundance using multiple pass electrofishing (**Completed in 2017**).
2. Conduct genetic assessment tests of Bull Trout captured electrofishing in the Crow Creek drainage to determine population of origin (**Completed in 2018**).
3. Implant Passive Integrated Transponder (PIT) tags in high proportion of Bull Trout in Crow Creek to evaluate future movements and habitat use in the drainage at electrofishing sites and by walking the stream with a mobile PIT tag scanner (**Completed in 2018**).
4. Monitoring juvenile rearing habitat quality at electrofishing sites using substrate scoring method (Bjornn et al. 1977; Leathe and Enk 1985; Weaver and Fraley 1991) (**Completed in 2017**).

5. Conduct habitat surveys of low to moderate intensity at the reach scale to quantify variables associated with riffle and pool habitats at low flow periods (Overton et al. 1997). Compare known habitat occupied by Bull Trout in Cooper Gulch (**Completed in 2017**).
6. Monitor stream temperature and flow in mainstem and both forks by seasonal deployment of temperature loggers throughout Bull Trout occupied areas of the Crow Creek and Cooper Gulch drainages (**Completed in 2017**).
7. Determine areas of groundwater upwelling that could be potentially used by spawning Bull Trout by visually inspecting streams reaches during very cold periods in the winter (**Completed in 2017**).
8. Investigate spawning/incubation environment using substrate core samples to determine if fine sediment limits Bull Trout embryo survival (Shepard et al. 1984). Areas chosen in Crow Creek will be based on location of previously known spawning and areas that appear to be influenced by groundwater upwelling. Areas chosen in Cooper Gulch will be those where Bull Trout have been documented spawning in the same location on multiple occasions (**Completed in 2018**).
9. Continue to conduct redd counts in Crow Creek. Possibly conduct redd counts in mid to late September (versus in October) when fish are actively spawning in hopes of more easily identifying smaller resident-type redds (**Completed in 2018**).

### **Work Products**

- Annual Work Summary; from Aquatic Program Leader to Avista; due December 1, 2023.
- Project Completion Report; final due December 31, 2023

### **Permitting Requirements**

Not applicable for the tasks proposed in this project plan. Instream sampling associated with this project has been completed; therefore, Endangered Species Act consultation for this project plan is associated with the 2019 Biological Opinion on the effects of continued operation of the Clark Fork Hydroelectric Project on Bull Trout and designated Bull Trout critical habitat (BiOp). This project plan is consistent with the analyses and conclusions contained in the 2019 BiOp and will adhere to all appropriate Terms and Conditions designed to reduce the extent and effects of incidental take on Bull Trout. No incidental take of Bull Trout is anticipated as a result of this project plan; therefore, no take reporting is required.

### **Cultural/Historic Resource Review**

Not applicable for the tasks proposed in this project plan, there are no ground and/or vegetation disturbing activities, or proposed impacts to cultural/historic resources.

### **Benefit to the Resource**

This study will help achieve a better understanding of habitat factors that dictate resident Bull Trout abundance in two neighboring and cosmetically similar streams (temperature, discharge, anthropogenic impacts) in the upper Prospect Creek watershed, Crow Creek and Cooper Gulch.

The upper Prospect Creek watershed is an important resident Bull Trout metapopulation, as it the only lower Clark River drainage where Bull Trout still occur in three streams (with seasonal connectivity documented among populations) and one of only two areas where only native fish species presently occur. While multiple age classes of Bull Trout have been found in Crow Creek over the past 20 years, relatively sparse spatial sampling has shown the species at low abundance and very few redds have been found. In contrast, Bull Trout in Cooper Gulch have been consistently abundant and redds are commonly found every year. By comparing habitat variable measurements between Crow Creek and Cooper Gulch, this study should help determine if habitat limits Bull Trout in Crow Creek and if so, where and how to focus restoration activities. This work will also help determine if the population in Crow Creek is self-sustaining or if it would be feasible to establish a self-sustaining population in Crow Creek. This project is consistent with CFSA Appendices B and C and is line with State of Montana and Federal Fisheries management plans.

### Budget

Item	Estimated Carryover <sup>1</sup>	2023 Budget Request
Finalize Project Completion Report	\$2,749	\$0
<b>Total</b>	\$2,749	\$0
<b>Anticipated Expenditures</b>		\$2,749

<sup>1</sup> Estimated carryover of unexpended, approved funds as of January 1.

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## 2023 PROJECT PLAN

### Upper Prospect Creek LWD Project

#### Project Contacts

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#### Project History

This project was ranked by the WRTAC and approved by Management Committee (MC) in 2020.

#### Background

The goal of this project is to encourage localized gravel deposition to improve the abundance of suitable sized spawning substrate in a stream only occupied by native salmonids, Bull Trout and Westslope Cutthroat Trout. The proposed project would occur over about 1.5 km of upper Prospect Creek within the Bull Trout redd count index reach (FIGURE 1). Suitable spawning gravel in upper Prospect Creek is limited and is often found along stream margins, areas with little to no flow which are not readily used by Bull Trout for spawning. Much of the gravel deposition within the reach is associated with cobble and boulders, with minimal large woody debris (LWD) present in the system, except in a few large log jams. Visual inspection suggests there is enough of the proper size spawning gravel (up to 50 mm) distributed throughout this reach but not concentrated in many areas. The reach is relatively high gradient and thus needs large trees that would stay in place in order to provide the energy dissipation needed to deposit spawning gravel.

Data amassed over the past two decades suggests the Bull Trout population in upper Prospect Creek may be in peril. No redds were found in 2019, although four adult-sized fish were encountered within the redd count index reach. The lower two miles of upper Prospect Creek, below the redd count index reach before the stream becomes intermittent, has been walked three of the last four years as well but no redds have been found. In fact, only two Bull Trout redd have been documented in upper Prospect Creek since 2015 and while the trend of redds by year has yet to show a statistically significant decline ( $p=0.18$ ), signs of population decline are beginning to emerge (FIGURE 2). Of the two long-term electrofishing sites in upper Prospect Creek (FIGURE 1), a significant decline in Bull Trout abundance has occurred at the lower monitoring site while a significant decline in Bull Trout biomass has been observed at the upper site (Blakney and Tholl 2019). This project represents a low cost, minimally invasive action to try to provide more adequate spawning gravel and additional cover/habitat complexity to fish in one of the few remaining streams in the lower Clark Fork River drainage in Montana occupied by an entirely native fish assemblage.

Mature trees are not limited along this section of Prospect Creek with dense stands of larger conifers present along most of the reach (FIGURE 3). The plan for this project is to create 8 to 10 LWD jams consisting of 1 to 5 larger conifers by strategically dropping trees using a skilled

sawyer. Logs will be dropped at varying angles but not directly perpendicular to the current to maximize contact with the bed. Research has suggested that logs longer than the average bankfull width of the stream should be used if the goal of the project is to retain the wood in place (Hilderbrand et al. 1998). Since trees are abundant along this section of the stream and because the reach is located in a narrow mountain valley, additional solar inputs to the stream from tree removal would be very minimal and are unlikely to have a deleterious impact on stream temperature. Trees along the stream banks will not be removed. In most cases trees will be selectively cut from the heavily timbered hillside on the south side of the stream. Project partners assessed the risk of this project to downstream infrastructure and determined that risk is low due to two large log jams that sit between this project and the downstream bridge near Twentyfour Mile Creek. Trees selected for this project will also be large, and left whole, limiting the potential for mobilization.

While the primary goal of the proposed project is to increase sorting and retention of spawning gravel within the redd count index reach, this project may have other ancillary benefits for native salmonids, such as improving overwintering habitat, and the stream ecosystem in which they live. Woody debris in salmonid streams also functions to diversify habitat by influencing and/or changing channel velocity, flow direction and gradient; depth associated with bed scour; habitat complexity essential for spatial isolation and cover; localized retention of organic matter and the distribution of invertebrates that consume such detritus (Meehan 1991). A study was recently conducted to evaluate the influence of stream and riparian habitat variables on Bull Trout and Westslope Cutthroat Trout in the two other streams occupied by both species in the Prospect Creek drainage, Crow Creek and Cooper Gulch (Blakney, *In Prep*). While this study found the amount of LWD did not influence the abundance (fish/100 m, fish caught) or biomass (g/100m<sup>2</sup>, g/100m) of either salmonid species at the reach scale in either stream (~100 m), young-of-the-year (YOY) and juvenile Bull Trout were often associated with collections of small woody debris (SWD) and organic material, likely because these areas provide adequate cover and food. Large wood often facilitates the collection of SWD and other allochthonous materials in these low order streams. Fisheries and/or physical habitat monitoring will be incorporated into this project in hopes of better understanding how such habitat enhancement projects may benefit native salmonids and stream habitat.

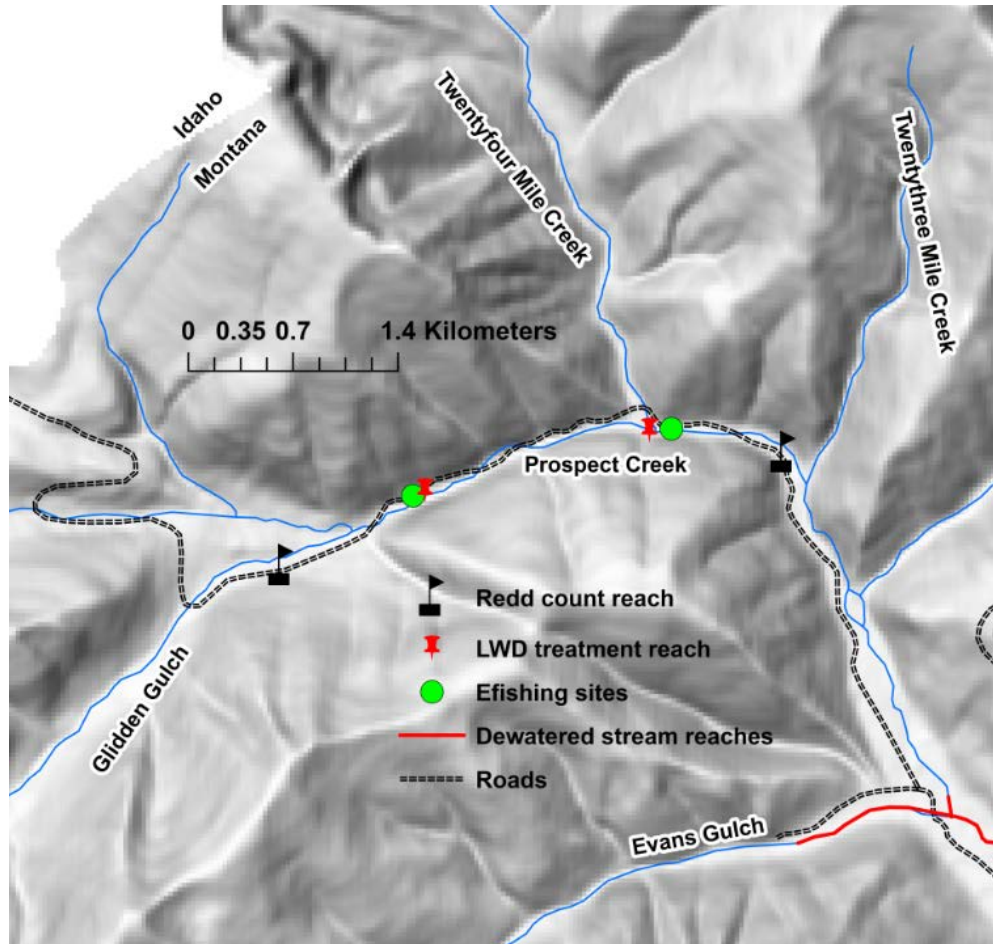


FIGURE 1. Upper Prospect Creek redd count reach (2001-2019), long-term electrofishing sites (1999-20019) and stream reach where selective woody debris addition will occur.

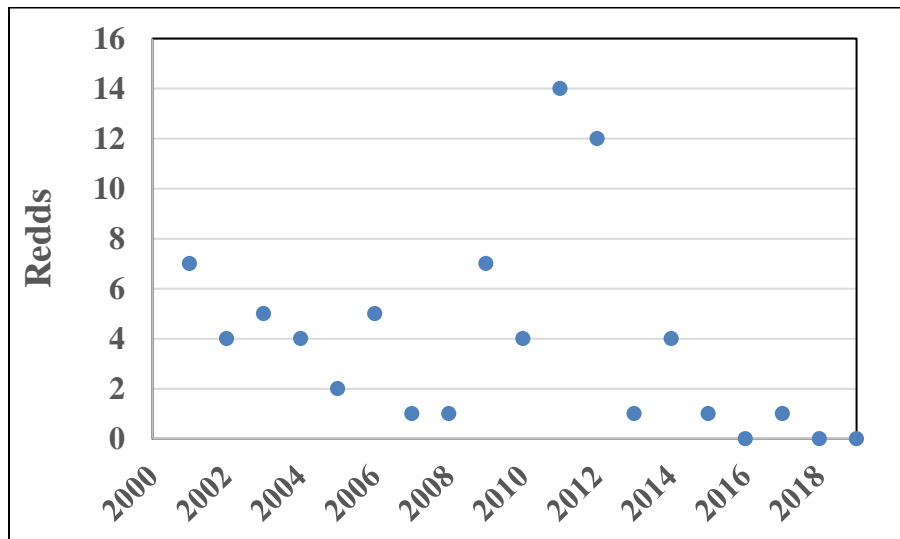


FIGURE 2. Bull Trout redds observed within the index reach in the upper Prospect Creek from 2001 to 2019.



FIGURE 3. Lower gradient section of upper Prospect Creek within the Bull Trout redd count index reach and proposed project area.

### **Goal**

The primary goal of this project is to increase the abundance of suitable sized spawning gravel for Bull Trout within redd count index reach in upper Prospect Creek by selectively felling large conifer trees over approximate 1.5 km of habitat. Secondary benefits to native salmonids and the stream ecosystem from this project may include increased habitat diversity and complexity.

### **Objectives**

1. Increase spawning gravel (up to 50 mm) deposition in the Bull Trout redd count index reach in upper Prospect Creek by selectively felling large conifers trees along up to 1.5km of stream.
2. Monitor physical habitat and/or fisheries response associated with this project.

## Tasks

1. Secure any additional permits that may be needed for this project, March-July 2020. (NEPA complete) (Objective 1; **Completed in 2019**).
2. Fell trees at strategic locations along 1.5km of upper Prospect Creek between July 15 and August 31, 2020. Trees will be dropped at 8 to 10 locations with 1 to 5 large trees (longer than average bankfull width) felled at each location. An engineer from Trout Unlimited and fisheries biologist from MFWP will oversee this work which is expected to take about two days. A skilled sawyer will be hired to fell trees. (Objective 1; **Completed in 2020**).
3. Evaluate the influence of this project on stream habitat and native trout by collecting fisheries and/or physical habitat data for at least two years following the first run-off event (2021 and 2022–2024). Pre-runoff data was collected in 2020. Post-runoff data was collected in 2021. Project proponents will collect a second year of post-runoff data sometime in the next three years, following a significant runoff event likely to promote channel changes as a result of the structures. (Objective 2; **Ongoing**).

## Work Products

- Mid-year report; due to the Aquatic Program Leader (APL) August 1, 2023
- Annual Work Summary; due to the APL November 15, 2023
- Review of fisheries and/or physical habitat monitoring efforts two-years post run-off (2022–2024, depending on timing of final monitoring activities) in technical memo or in a Native Salmonid Abundance and Tributary Habitat Restoration Monitoring Annual Project Update

## Permitting Requirements

In 2019, the NEPA for this project was completed by a project that was approved by the MC in 2017 “Lolo National Forest Priority Native Salmonid Habitat Restoration Assessment and Planning”. Also, a 124 permit was obtained from MFWP for this project.

Endangered Species Act consultation for this project plan is associated with the 2019 Biological Opinion on the effects of continued operation of the Clark Fork Hydroelectric Project on Bull Trout and designated Bull Trout critical habitat (BiOp), and the USFWS-MFWP Cooperative Agreement pursuant to Section 6 of the Act. This project plan is consistent with the analysis and conclusions contained in the 2019 BiOp and the USFWS-MFWP Cooperative Agreement, and will adhere to all appropriate Terms and Conditions designed to reduce the extent and effects of incidental take on Bull Trout. Incidental take reporting for this project plan will be included in the annual Biological Opinion report as required by Term and Conditions 15–18 of the 2019 Incidental Take Statement, as well as MFWP’s annual Section 6 report to the USFWS.

## Cultural/Historic Resource Review

The area of this project (upper Prospect Creek) was included in the cultural/historic review that was completed for this and other stream habitat improvements projects completed in 2019 by the Lolo National Forest through the NEPA process.

## Benefit to the Resource

This intended goal of this project is to increase the amount of suitable sized spawning substrate available to Bull Trout within the index reach count reach in upper Prospect Creek by selectively felling large conifers along 1.5 km of stream. While appropriately sized gravels occur within the reach, this substrate is not well sorted or is distributed in areas not often used by Bull Trout for spawning (stream margins with little or no flow). Secondary benefits of this project are increased cover, habitat complexity and habitat diversity for Bull Trout, Westslope Cutthroat Trout and other aquatic organisms. Signs of decline, based on long-term data, are becoming evident for a population that occupies about 6.5 km of habitat. This project represents a low-dollar minimally invasive attempt to enhance spawning habitat in a stream comprised solely of native salmonids. The proposed work is consistent with the underpinnings and spirit of Appendix B of the Clark Fork Settlement Agreement and the goals and objectives of MFWP.

## Budget

Item	Estimated Carryover <sup>1</sup>	2023 Budget Request
Planning and Site Assessment <sup>2</sup>	\$0	\$0
Design, monitoring plan, and permitting <sup>3</sup> (\$50 x 20 hrs.)	\$0	\$0
LCFWG project management, contracting, and coordination (\$28.30 x 24 hrs.)	\$0	\$0
Sawyer (\$60 x 20 hrs.)	\$0	\$0
Sawyer travel (\$0.58 x 200 miles)	\$0	\$0
TU Oversight (\$50 x 25 hrs.)	\$0	\$0
TU Oversight travel (\$0.58 x 300 miles)	\$0	\$0
Monitoring* (\$50 x 10 hrs.)	\$0	\$500
Project Administration (10%) <sup>4</sup>	\$0	\$50
<b>Total</b>	<b>\$0</b>	<b>\$550</b>
<b>Anticipated Expenditures</b>		<b>\$550</b>

<sup>1</sup> Estimated carryover of unexpended, approved funds as of January 1.

<sup>2</sup> This cost is estimated at \$1,000 and will be funded by a Bureau of Reclamation (BOR) grant.

<sup>3</sup> Design needs, fisheries and/or physical monitoring plan, and permitting will be developed by project proponents; labor TBD.

<sup>4</sup> An additional \$100 of project administration will be funded by the BOR grant.

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## 2023 PROJECT PLAN

### Lower Clark Fork Watershed Group Project Coordination

#### Project Contact

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#### Project History

The LCFWG was formed in 2004 and has received continuing support from Clark Fork Settlement Agreement (CFSA) Appendix B in addition to funding under Appendix E as annually approved by the Management Committee.

#### Background

The LCFWG began as an umbrella group to coordinate watershed projects in the Lower Clark Fork (LCF) watershed and assist the eight watershed councils in the LCF: Elk Creek, Prospect Creek, Rock Creek, Whitepine Creek, Bull River, Trout Creek, Pilgrim Creek and Little Beaver Creek. A significant amount of this work has been associated with habitat restoration in support of CFSA Appendix B, with the primary focus on improving habitat for native salmonids such as Bull Trout and Westslope Cutthroat Trout. Therefore, a majority of the emphasis and work performed under this project relate to facilitating on-the-ground work and maintenance of habitat restoration projects.

The LCFWG helps support on-the-ground habitat restoration and enhancement projects in the LCF watershed in multiple ways: from the development of project ideas and engaging in watershed restoration planning to ensuring the long-term follow-through on past projects. There are many details that must fall in line in order to bring successful projects to fruition, and the LCFWG helps coordinate these details and all necessary stakeholders in the process. Ongoing support through this project plan helps provide a base level of capacity for project coordination and development throughout the CFSA project area, helping to maximize the on-the-ground benefit of funding requests through other Project Plans and external funding sources. These efforts are closely tied to funding received for project implementation from other CFSA Appendix B project plans, and from CFSA Appendix E Watershed Councils Program for the coordination of the LCFWG. Historically, there has been much overlap between these proposals. For example, this project will fund development and ongoing coordination of LCF projects, which is closely related to separate project plans that were funded previously and others that may be developed in future years. This work also involves the coordination of watershed stakeholders funded by Appendix E.

Other 2023 project plans that include funding for LCF Project Coordination include:

- Habitat Restoration Monitoring, Maintenance and Contingency Allocation

Additionally, the LCFWG works to leverage other (non-CFSA) resources for restoration work in the LCF watershed, which directly assists CFSA Appendix B projects and often provides

ancillary benefits to CFSA Appendices C, E, and K.

### **Goal**

The goal of this project plan is to improve the effectiveness of watershed restoration projects in the LCF through project coordination, assisting with implementation, adaptive management, follow through, and planning.

### **Objectives**

1. Complete successful stream enhancement and restoration projects in the LCF through multi-partner planning, prioritizing, and strategizing that leads to on-the-ground project implementation.
2. Adaptively manage projects by providing consistent follow-through; learning from past successes and failures; and guiding watershed work that complements the values of local stakeholders.

### **Tasks**

1. Coordination: Continue coordinating ongoing and upcoming stream enhancement and restoration projects in the LCF watershed and Avista's project area (Objectives 1 and 2). Upcoming projects "on the radar" and expected to be pursued and/or implemented in 2023-2026 (subject to designs, permitting, and funding acquisition) include:
  - a. Restoring Riparian Function in the Bull River Watershed: Multiple funding proposals were prepared in 2022 to support a total budget of \$243,230 for ongoing Bull River planting efforts through spring of 2026. This concerted effort would accomplish necessary maintenance, monitoring (see below), and implementation of an additional \$1,500 by spring of 2026. While a separate Project Plan for this effort has not been developed and the CFSA support for direct project implementation is not being requested, base support for project coordination through this project plan (along with funds available for maintenance under the Appendix B Restoration Monitoring and Maintenance Allocation) will be leveraged to meet cost-share requirements of various grants expected to directly support the project.
  - b. Vermilion River Restoration Projects: A separate 2023 Project Plan was prepared to support survey and design of this project in 2023 in partnership with the Kootenai National Forest and United States Geological Survey. While it's expected that primary activities associated with the development of this project will be covered in full or in part through that project plan or other funding sources, its likely that a portion of the LCFWG's base capacity for project development will support this project.
  - c. Additional projects pursued at the discretion of the Appendix B Aquatic Program Leader (APL) and project partners.
2. Project development: Plan, develop, and implement ideas for new projects, in line with

priorities of CFSA Appendix B and local stakeholders, and move towards implementation (Objectives 1 and 2).

- a. While ongoing Bull River revegetation efforts require significant ongoing investment, the benefits of the project are increasingly recognized by adjacent landowners and recreational users of the Bull River. Catalyzed by successful past projects and ongoing landowner outreach efforts, there are opportunities to develop additional projects in the Bull River and continue a watershed scale effort to revegetate the Bull River. These will be informed by conclusions articulated in site plans for individual property owners, lessons learned and documented in the LCF Stream Restoration Summary (below), and ongoing maintenance efforts (below). At least 216 exclosures and well over 900 individual plantings have been completed in the Bull River drainage through the last two decades. In 2022-2023, the LCFWG will catalog past efforts, current maintenance needs, and future opportunities for all 12 existing revegetation properties in the Bull River (this is likely to lead to updated landowner agreements for most properties) as well as additional sites where there is opportunity. This effort will set the LCFWG up for successful implementation and maintenance efforts completed as a part of the “Restoring Riparian Function in the Bull River Watershed” Project mentioned above; and allow the LCFWG and project partners to better predict/anticipate maintenance burdens for this project moving forward.
  - b. Pursue opportunities and priorities identified by the Appendix B Aquatic Program Leader (APL) and project partners.
3. Funding Development: Work with Avista Grant Writer to obtain additional funding to support Appendix B projects and the above tasks (Objective 1).
4. Documentation and Maintenance: Follow-up with and monitor the success of past projects and help coordinate maintenance as deemed necessary. The Coordinator will work with staff from Natural Resource Conservation Service (NRCS), the Forest Service (USFS), Montana Fish, Wildlife and Parks (MFWP), Avista, and other partners to provide continued care for past restoration projects, which will help ensure their success into the future (Objective 2).
  - a. The update of the LCF Stream Restoration Summary (1995-2010), originally written by Chris Horn (MFWP) in 2011, is a continuing effort initiated in 2018 and is expected to be completed in early 2023. The LCFWG Coordinator is taking the lead on an update of the document which will include stream restoration projects completed from 2011-2022, as well as current updates on previous projects from 1995-2010. Little progress has been made over the last few years, as on-the-ground projects have taken priority. However, the LCFWG Coordinator (with assistance from Sean Moran) will be focusing on this project in early 2023 with the hopes of completing a final document in 2023 and making more frequent updates at least annually as a standard project closeout procedure.

- b. Following the completion of the LCF Stream Restoration Summary (1995-2021), LCFWG Coordinator will work to compile a GIS database, Google Earth file and/or an ArcGIS Story Map to make information about past projects more accessible to partners. The final output for this tool will be informed by consultation with project partners, and special focus on usability and usefulness.
- c. In order to be successful, many restoration projects require ongoing maintenance. A good example of this is the ongoing revegetation efforts on private land along the East Fork and mainstem Bull River. These efforts were initiated more than a decade ago, but have required ongoing fencing maintenance, browse protection, and, in some cases, mortality replacement plantings. Even though the results of these efforts are now paying off (there are areas within the project where natural regeneration is occurring and some planted vegetation is well upwards of 15 feet tall, providing shade to the stream), this project still requires maintenance to protect the long-term investment made at this site. On some properties, a lot of the ongoing work has been initiated and sustained by the landowner(s), but this is a unique circumstance among past projects. In many areas, projects are easily neglected as landowners do not live on-site and project partners have limited capacity for exhaustive maintenance tasks and move on to new priorities, affecting not only project outcomes, but also public perceptions and the future potential of engaging with willing landowners to implement priority restoration projects. Project maintenance is difficult to fund, as many funding sources are much more apt to support new – not ongoing – projects, but crucial to long-term resource benefit. Many maintenance tasks are easily accomplished by one person, either early or late in the season, and would either not be worthwhile for mobilizing an entire Montana Conservation Corps (MCC) crew for or be best accomplished outside of the season when crewmembers are available. In 2023, LCFWG Coordinator will accomplish maintenance tasks at past projects with landowners, volunteers, project partners, and additional staff as is required by the specific tasks. Funding for project maintenance through this project plan as well as the Appendix B Restoration Monitoring and Maintenance Allocation will be leveraged to meet match requirements for the “Restoring Riparian Function in the Bull River Watershed” Project mentioned above.

### **Work Products**

- Comprehensive Report; Lower Clark Fork Stream Restoration Summary (1995–2021) Review Draft (including complementary maps); October 31, 2023
- Comprehensive Report; Lower Clark Fork Stream Restoration Summary (1995–2021) Final; December 31, 2023
- Mid-year report; due to the Aquatic Program Leader (APL) August 1, 2023
- Annual Work Summary; due to APL November 15, 2023

### **Permitting Requirements**

No permits are required to implement this project. Permitting efforts for related projects will be covered under project-specific proposals.

Endangered Species Act consultation for this project plan is associated with the 2019 Biological Opinion on the effects of continued operation of the Clark Fork Hydroelectric Project on Bull Trout and designated Bull Trout critical habitat (BiOp). This project plan is consistent with the analyses and conclusions contained in the 2019 BiOp and will adhere to all appropriate Terms and Conditions designed to reduce the extent and effects of incidental take on Bull Trout. No incidental take of Bull Trout is anticipated as a result of this project plan; therefore, no take reporting is required.

### **Cultural/Historic Resource Review**

Avista will coordinate Cultural Resources Management Group review for those projects associated with coordination tasks described above prior to implementing those specific projects. The work product for those reviews will be confidential due to the sensitive nature of the content.

### **Benefit to the Resource**

This project exists to support stream protection and enhancement projects in the LCF watershed. Engaging and coordinating work with landowners and other stakeholders helps get more projects off the ground and improves their overall outcome. The LCFWG serves as a point of contact for long-term follow through with landowners and past projects as well as helps leverage resources to maximize the positive impact of CFSA dollars in the watershed. A significant amount of this work has been associated with habitat restoration in support of CFSA Appendix B, with the primary focus on improving habitat for native salmonids such as Bull Trout and Westslope Cutthroat Trout.

This project is consistent with the objectives of Appendix B of the CFSA, which recognized that “restoration of tributary habitats will benefit native aquatic biota, including salmonid populations” (B-3) and established the fund to improve “instream tributary habitats through the acquisition and enhancement of lands or enhancement of instream habitat features” (B-6). It was intended that “any effort aimed at restoring migratory, native fish populations in the Lake Pend Oreille-Clark Fork River system should have both a fish passage component and a habitat protection and enhancement component” (B-3). Therefore, as trap and transport efforts continue on the Bull and Vermilion Rivers, continued efforts to address habitat-related threats to Bull Trout in both systems will complement efforts to address other identified threats to Bull Trout including upstream/downstream transport programs.

As described above, the proposed projects on the Bull and Vermilion Rivers would address the primary habitat related threats to Bull Trout identified in the Bull Trout Recovery Plan and the Columbia Headwaters Recover Unity Implementation Plan (RUIP) (USFWS 2015). The RUIP specifically calls out riparian vegetation restoration in the Vermilion River and revegetation in the meadow portions (those dominated by invasive reed canarygrass and the focus of ongoing revegetation efforts) in the Bull River watershed as recovery actions needed to address one of the core area’s primary threats.

In addition, stream enhancement projects facilitated by this project also provide benefit to riparian and instream native salmonid habitat and therefore provide ancillary benefits to appendices C and K, and help address listed state water quality impairments in LCF tributaries.

## Budget

Item	Estimated Carryover <sup>1</sup>	2023 Budget Request
LCFWG staff time, up to 200 hours (Project Coordination, Task 1)	\$0	\$7,100
LCFWG staff time, up to 80 hours (Project Development, Task 2)	\$0	\$2,840
LCFWG staff time, approx. 80 hours (Funding Development, Task 3)	\$0	\$2,840
LCFWG staff time, continued from 2022 Project Plan (Documentation and Maintenance, Task 4a)	\$0	\$0
LCFWG staff time, continued from 2022 Project Plan (Documentation and Maintenance, Task 4b)	\$0	\$0
Avista biologist time, editorial support (<0.1 FTE, Task 4a)	\$0	\$1,500
Travel expenses (Documentation and Maintenance, Tasks 1-4b)	\$0	\$1,750
LCFWG staff time, up to 80 hours (Documentation and Maintenance, Task 4c)	\$0	\$2,840
Travel expenses (Documentation and Maintenance, Tasks 4c)	\$0	\$750
LCFWG Administration, 10%	\$0	\$1,962
<b>Total</b>	<b>\$0</b>	<b>\$21,582</b>
<b>Anticipated Expenditures</b>		<b>\$21,582</b>

<sup>1</sup> Estimated carryover of unexpended, approved funds as of January 1.

In addition to the watershed coordination and project development work supported through Appendix B, outreach efforts intended to generate the impetus for work on private lands is described in LCFWG's 2023 Project Plan under the Appendix E Watershed Councils Program and will also be supported by a Montana Department of Natural Resources and Conservation (DNRC) Watershed Management Grant in 2023.

The "Restoring Riparian Function in the Bull River Watershed" Project is expected to receive direct project support from the Trout and Salmon and Salmon Foundation (\$5,000, secured), Sanders County Resource Advisory Council (Rural Development and Self-Determination Act funds) (approx. \$3,500 remaining in contract, secured), Natural Resources Conservation Service (\$11,392, secured), landowners and volunteers in 2023. Additional funding applications are under preparation or pending with the Montana Department of Environmental Quality and Montana Fish, Wildlife & Parks for additional support over the course of this multi-year effort (2023-2026).

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## 2023 PROJECT PLAN

### Habitat Restoration Monitoring, Maintenance, and Contingency Allocation

#### Project Contacts

Brita Olson, Lower Clark Fork Watershed Group (LCFWG), (208) 304-3852, [brita@lcfwg.org](mailto:brita@lcfwg.org), Sarah Busmire, LCFWG, (406) 203-4725, [Sarah.Busmire@lcfwg.org](mailto:Sarah.Busmire@lcfwg.org), and Travis Rehm, Montana Fish, Wildlife and Parks (MFWP), (406) 382-3032, [travis.rehm@mt.gov](mailto:travis.rehm@mt.gov)

#### Project History

This is a continuing project originally approved by the Management Committee (MC) in 2015. The scope and budget for this project are reviewed by the MC annually.

#### Background

Habitat Restoration is an important component of Appendix B in the Clark Fork Settlement Agreement (CFSA). Stream restoration projects are expensive and due to the dynamic nature of the watersheds in this area, future maintenance is often required. Therefore, funding for maintenance of these projects is often crucial for successful implementation. Contingency funds are designed to provide managers a means to rapidly respond to needs as they arise, and to reduce the burden of numerous, low-dollar Consent Mail requests on the MC. As needs arise, managers will notify the Aquatic Implementation Team (AIT) and seek Avista approval prior to expending meaningful funds that were not specified within the Project Plan. Given it is a fund and not related to a specific project, the Appendix B ranking criteria do not apply.

The annual ability to address maintenance and revegetation along native salmonid stream as well as at previous restoration or enhancement projects sites is a cost-effective way to ensure the best performance of such investments. Such projects are consistent with stated goals of Appendix B and E of the CFSA to conserve and improve important tributary habitat as well as having ancillary benefits to Appendices C, and K, state water quality prescriptions, and when located along streams with native salmonids, are consistent with Federal and State of Montana management plans for these species.

These funds will be used if damage to previously funded restoration sites occurs, and maintenance is needed. Implementation and/or planning for smaller-scale revegetation work (at previously funded restoration sites) may also occur under this project plan. Methods for implementing maintenance activities and revegetation efforts will be site specific and depend on the scope of effort needed. The Montana Conservation Corps (MCC) has been used in the past to assist with implementation of revegetation and restoration work and may be hired if needs are great enough that a crew would be occupied for an entire week or more (maximizing benefits relative to the cost of fielding a crew for a week).

#### Goal

The goal of this project is to provide support to fix or enhance stream restoration sites in the lower Clark Fork River drainage, Montana.

## **Objective**

1. Sustain or enhance previous restoration or enhancement projects through continued maintenance.

## **Tasks**

1. Identify, assess and implement maintenance needs at past stream habitat restoration or enhancement projects performed along area tributaries. Specific methods used for restoration site maintenance are site dependent. (Objective 1).
2. Plant additional riparian shrubs (if need is identified) and fix any damage sustained to browse protection exclosures at previously completed projects in the lower Clark Fork River drainage, Montana (Objective 1).
3. In coordination with the Natural Resource Conservation Service (NRCS), catalog remaining browse protection and work to remove any remaining weed matting on the Stein ownership along the East Fork Bull River from decades old revegetation effort, to ensure vegetation survival into the future (Objective 1). This task will be leveraged as match funding for ongoing Bull River revegetation efforts.
4. In coordination with the NRCS, catalog remaining browse protection and double-check that all weed matting is either removed or cut back from planted trees. This task will be leveraged as match funding for ongoing Bull River revegetation efforts.
5. From 2023-2025, remove all large exclosures fencing installed from 2014-2018 and transition browse protection to individual cages around established trees. Remove matting – or at minimum, cut away from base of trees to prevent future girdling. In coordination with the NRCS, catalog all remaining browse protection, and double-check that all weed matting is either removed or cut back from planted trees. This task will be leveraged as match funding for ongoing Bull River revegetation efforts.
6. In coordination with the Kootenai National Forest, hand-pull weeds from the base of planted vegetation to promote survival of target species in the Miners Gulch and Sims Meander reaches the Vermilion River, utilizing hand-pulling (Objective 1).
7. As time and capacity allow work with the Kootenai National Forest to remove ineffectual or no longer necessary fencing in the Chapel Slide reach of the Vermilion River. Work to begin removing fencing on established trees in the Miners Gulch reach as well, and stash downstream to be repurposed in future projects.

## **Work Products**

- Mid-year Report; due to the Aquatic Program Leader (APL) August 1, 2023
- Annual Work Summary; due the APL November 15, 2023

## **Permitting Requirements**

No permitting requirements have been identified at this time; however, if required maintenance required stream bank alteration, a 310 or 124 permit will be submitted to Green Mountain

Conservation District or MFWP necessary.

Endangered Species Act consultation for this project plan is associated with the 2019 Biological Opinion on the effects of continued operation of the Clark Fork Hydroelectric Project on Bull Trout and designated Bull Trout critical habitat (BiOp). This project plan is consistent with the analyses and conclusions contained in the 2019 BiOp and will adhere to all appropriate Terms and Conditions designed to reduce the extent and effects of incidental take on Bull Trout. No incidental take of Bull Trout is anticipated as a result of this project plan; therefore, no take reporting is required.

### Cultural/Historic Resource Review

This is a carryover or maintenance project and the cultural/historic resource review was completed for Bull River revegetation in 2016 by the Cultural Resources Management Group. For activities in other areas, Avista will coordinate Cultural Resources Management Group review for this project prior to implementing the project.

### Benefit to the Resource

Conducting maintenance of previously funded restoration and enhancement projects is essential for the long-term success of these projects. A significant portion of maintenance projects Appendix B has dealt with in the past involve streamside vegetation. The general goal of riparian planting projects is to reestablish native vegetation along streams which has a plethora of ecological benefits including improved bank and channel stability, cover for fish, increased stream shading, localized water retention as well as bird and wildlife habitat. As such, this project is also in line with Appendix K as well as State of Montana and Federal fisheries management plans and water quality objectives.

### Budget

Item	Estimated Carryover <sup>1</sup>	2023 Budget Request
LCFWG planning, labor, contracting, and coordination (\$28-35.50/hr x 100 hrs)	\$0	\$3,550
LCFWG staff travel (IRS mileage rate)	\$0	\$750
Fund to cover necessary labor (MCC crew, additional contract or staff labor, etc.) related to maintenance at past stream restoration sites.	\$1,500	\$12,000
Funds to purchase native plants from local nursery, weed treatments, other materials necessary to implement maintenance or planting activities, or other unforeseen expenses related to maintenance at past stream restoration sites.	\$1,700	\$5,000
<b>Total</b>	<b>\$3,200</b>	<b>\$21,300</b>
<b>Anticipated Expenditures</b>		<b>\$24,500</b>

<sup>1</sup> Estimated carryover of unexpended, approved funds as of January 1.

At least two MCC crews are expected to be utilized annually through 2025 to accomplish maintenance goals, particularly those described in Task 3-5. This expense (\$6,000 x 2/yr x 3 yrs) and associated LCFWG labor for oversight and maintenance will be used to leverage external funds to support ongoing

Bull River revegetation efforts. It's anticipated that this may total as much as \$50,713 through 2026. By 2025, LCFWG aims to have all exclosures transitioned to long-term, individual browse protection with location of all browse protection materials clearly documented, and maintenance plans and responsibilities documented in landowner agreements for all revegetation properties in the Bull River. It's anticipated that at this point, the annual maintenance burden of Bull River vegetation projects implemented over the last two decades will be greatly reduced.

Anticipated expenditures include LCFWG staff time (\$3,550), associated mileage (\$750), two MCC crews (\$12,000), and \$1,000 of miscellaneous expenses. Additional expenses beyond \$17,300 will be conducted with written approval from the APL.

## 2023 PROJECT PLAN

### Habitat Restoration, Property Acquisition, and Conservation Easement Contingency Allocation

#### Project Contact

Travis Rehm, Montana Fish, Wildlife and Parks (MFWP), (406) 382-3032, [travis.rehm@mt.gov](mailto:travis.rehm@mt.gov)

#### Project History

This is a continuing project originally approved by the Management Committee (MC) in 2017. The scope and budget for this project are reviewed by the MC annually.

#### Background

This proposed project is a fund and not related to a specific project, thus the Appendix B ranking criteria does not apply. This fund is proposed so that quick and timely actions can be made to purchase property and/or conservations easements for recreational or native fisheries as well as to support restoration planning opportunities that may become available. The Aquatic Implementation Team (AIT) will be notified if any substantial expenditures are anticipated under this contingency fund and would confer on appropriateness and whether additional actions were required.

This fund will be set up to support efforts in Montana to acquire, protect, and improve the quality of critical native salmonid (Bull Trout and Westslope Cutthroat Trout) tributary habitat in high priority spawning streams as well areas deemed important to recreational fisheries. Therefore, funding for specific projects will either come from the Tributary Habitat Acquisition and/or Recreation Enhancement Fisheries funds. Purchase of specific individual parcels or conservation easements will be presented individually for MC approval. Land conservation will be through fee title purchase or through placement of conservation easements, working only with willing sellers and cooperators. This fund is designed to provide support to potential land acquisition, conservation opportunities and to perform due diligence (title report, baseline research, survey, appraisal, negotiations, etc.) to ready potential transactions for presentation to the MC.

We intend to continue our partnership with a third party to provide annual funding to help identify, negotiate, and facilitate land conservation actions. This partnership allows the involvement an entity who is well versed in land conservation and the local markets, to monitor the market and begin discussions with willing landowners as appropriate.

Habitat restoration is also an important component of the Appendix B program. New project development is an involved scoping process requiring the identification and integration of information regarding specific project streams, locations, willing landowners, and associated biological limitations. Often times, technical engineering support is required to develop viable project proposals, including feasibility analyses, preliminary designs, and cost estimates. This fund is designed to provide limited resources to allow pre-project review and collaboration with qualified fish habitat engineers and other interested parties. It is expected that this scoping will lead to full project proposals for MC review and approval.

Projects developed using this fund will be consistent with the Montana Tributary Habitat Acquisition and Recreational Fishery Enhancement Program (Appendix B of the Clark Fork Settlement Agreement), through enhancement of tributary habitat conditions for native salmonids and improvements or access for recreational fisheries. Native fisheries or recreational fisheries funds could be used depending on the specific project.

This fund is designed to provide managers with a means to rapidly respond to opportunities and needs as they arise, and to reduce the burden of numerous, low-dollar Consent Mail requests on the MC. As opportunities or needs arise, managers will notify the AIT and seek Avista approval prior to expending funds that were not specified within a Project Plan. Given it is a fund and not related to a specific project, the Appendix B ranking criteria do not apply.

### **Goal**

The goal of this project is to provide the ability for timely investigations associated with engineering support for restoration projects and support to potential land acquisition, conservation opportunities and to perform due diligence (title report, baseline research, survey, appraisal, negotiations, etc.) to ready potential transactions for presentation to the MC.

### **Objectives**

1. Fund a third-party contractor to provide outreach support.
2. Cover due diligence costs (title report, baseline research, survey, appraisal, negotiations on potential land actions) on potential new acquisitions/easements to ready them for MC approval.
3. Provide engineering support to assist with the development of future fish habitat projects.

### **Tasks**

Specific tasks will be identified as necessary, but may include conducting initial site visits, providing conceptual design, assessing potential project feasibility, and developing preliminary cost estimates.

### **Work Products**

- Annual Work Summary; from Aquatic Program Leader to Avista; due December 1, 2023
- Designs for specific projects would be reported in the form of a Technical Memorandum

### **Permitting Requirements**

Not applicable for the tasks proposed in this project plan.

Endangered Species Act consultation for this project plan is associated with the 2019 Biological Opinion on the effects of continued operation of the Clark Fork Hydroelectric Project on Bull Trout and designated Bull Trout critical habitat (BiOp). This project plan is consistent with the analyses and conclusions contained in the 2019 BiOp and will adhere to all appropriate Terms and Conditions designed to reduce the extent and effects of incidental take on Bull Trout. No incidental take of Bull Trout is anticipated as a result of this project plan; therefore, no take reporting is required.

### Cultural/Historic Resource Review

Not applicable for the tasks proposed in this project plan, there are no ground and/or vegetation disturbing activities, or proposed impacts to cultural/historic resources.

### Benefit to the Resource

This fund is designed to: 1) assist with land acquisitions and conservation easements, depending on the particular property, for native or recreational fish species 2) assist with the development of fish habitat restoration/enhancement proposals with the goal of enhancing conditions for native salmonids or recreational fisheries.

### Budget

Item	Estimated Carryover <sup>1</sup>	2023 Budget Request
Outreach support	\$0	\$5,000
Due diligence costs	\$0	\$35,000
Engineering Support	\$0	\$20,000
<b>Total</b>	<b>\$0</b>	<b>\$60,000</b>
<b>Anticipated Expenditures</b>		<b>\$60,000</b>

<sup>1</sup> Estimated carryover of unexpended, approved funds as of January 1.



## 2023 PROJECT PLAN

### Prospect Creek Bull Trout Salvage Evaluation

#### Project Contact

Travis Rehm, Montana Fish, Wildlife and Parks (FWP), (406) 382-3032, [travis.rehm@mt.gov](mailto:travis.rehm@mt.gov)

#### Project History

This is a new project being proposed for 2023. This project was scored by the WRTAC on January 18, 2023, and the Evaluation and Ranking Criteria scores are included as the last page of this project plan.

#### Background

The Prospect Creek drainage is unique in that the lower portion of the drainage is occupied primarily by non-native salmonids, while the upper drainage and its major tributaries are occupied solely by native fish species. This dichotomy is likely facilitated by the geology of the area where large unconsolidated substrate was deposited by Glacial Lake Missoula and underlies portions of the stream causing the mainstem and portions of its tributaries to go dry during low flow periods each year (Sando and Blasch 2015; M. Lawlor, U.S. Geological Survey, unpublished data). Two lengthy, naturally intermittent sections of stream occur on the mainstem of Prospect Creek. The lower dry reach begins just upstream of Brush Gulch and extends approximately 2.5 miles upstream to above the Daisy Creek confluence (Figure 1). A short perennial section of stream occurs from an area between Daisy Creek and Therriault Gulch to just upstream of the Crow Creek confluence (Figure 1). Above where Crow Creek enters at RM 12.3, Prospect Creek again becomes ephemeral for about 4.2 miles. Bull Trout occur in the three streams in the upper Prospect Creek drainage (Crow Creek, Cooper Gulch and the upper mainstem of Prospect Creek) and each stream is disconnected from one another annually during baseflow periods due to natural stream intermittency. Depending on fall precipitation, these streams maybe isolated for up 8 months a year (August to April). Connectivity between these populations (i.e., individual streams), whether it be through gene flow or dispersal, has been observed (Oldenburg et al. 2015; DeHaan and Bernall 2017; Adams et al. 2017).

In 2012, the U.S. Geological Survey and MFWP, while working on a stream intermittency study, encountered Bull Trout in stranded pools in the ephemeral section of Prospect Creek just upstream of its confluence with Crow Creek (R. Kreiner, FWP, personal observation). Twenty Bull Trout and 17 Westslope Cutthroat Trout were salvaged from these pools and moved downstream to the lower perennial portion of Prospect Creek. The next year, fish were left in these pools based on discussions with the U.S Fish and Wildlife Service. Fish rescue efforts resumed in 2014 and through 2016, 37 of the 41 Bull Trout captured were transported to the lower Clark Fork River in Idaho, below Cabinet Gorge Dam. The four other fish that were too small to be PIT tagged or transported, were released near Brush Gulch (Eric Oldenburg, Avista, personal communication; Oldenburg et al. 2015).

Starting in 2017 to help supplement that population, Bull Trout captured in ephemeral portions of Prospect Creek have been moved into Crow Creek. Crow Creek is a tributary of Prospect Creek in the short perennial reach that typically flows from just upstream of Crow Creek

downstream to an area between Therriault Gulch and Daisy Creek (Figure 1). The drainage is almost entirely within the Lolo National Forest and its fish community is comprised solely of native species. Bull Trout exist only at low densities throughout Crow Creek, particularly when compared to neighboring tributary Cooper Gulch (Blakney *In prep.*).

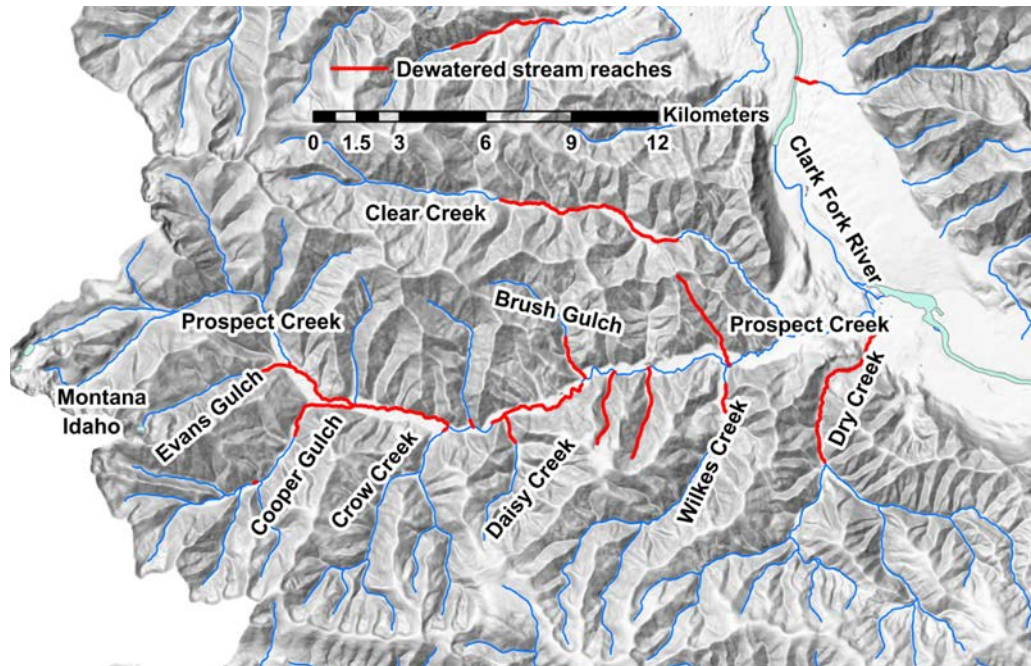


Figure 1. Map of entire Prospect Creek drainage, including the approximate distribution of naturally intermittent stream reaches.

To date, 204 Bull Trout have been moved into Crow Creek since 2017 (Rehm et al. 2022). In 2022, efforts to capture Bull Trout in stranded pools in the mainstem of Prospect Creek occurred over eight days in late July and August. Observations indicate timing and extent of intermittency is quite variable; some stream reaches dry up in a matter of hours while in other areas the stream and associated ephemeral pools may take days or weeks to go completely dry. In 2022 a total of 87 Bull Trout were rescued from isolated pools ranging 53–271 mm in length and were relocated to Crow Creek. Seventy-five Bull Trout were PIT tagged ( $\geq 100$  mm). The mean length of Bull Trout captured in ephemeral pools was 159 mm with 16 fish  $\geq 200$  mm. Based on length at time of capture fish ranged from an estimated age-0 to age-4+ (Zymonas 2006).

Fifty-seven Bull Trout  $\geq 200$  mm in length have been rescued from the intermittent sections of Prospect Creek since 2012. Of these 57 fish, 45 Bull Trout have been released into Crow Creek (2017–2022). Resident Bull Trout greater than 200 mm in length are likely age-4 or older and should be at or near sexually maturity (Rieman and McIntyre 1993; Zymonas 2006). Annual supplementation with fish from stranded pools could increase production in Crow Creek. Because of the low densities of Bull Trout in the drainage, even a few more large fish in Crow Creek could benefit the population both demographically and genetically. PIT tags have been inserted in all Bull Trout  $\geq 100$  mm in length and genetics samples have been collected from all Bull Trout rescued from Prospect Creek and translocated into Crow Creek.

To date, there has been no evaluation of potential reproduction or emigration of Bull Trout salvaged from ephemeral sections of Prospect Creek and translocated into Crow Creek. Results of this project will help inform future decisions associated with salvaged Bull Trout, and if continued translocation into Crow Creek is merited.

### **Goal**

Assess the efficacy of Bull Trout salvaging efforts in the ephemeral sections of Prospect Creek, particularly reproduction and emigration of Bull Trout translocated to Crow Creek.

### **Objectives**

1. Determine if any Bull Trout salvaged from the ephemeral sections of Prospect Creek have successfully reproduced in the Crow Creek.
2. Determine what percentage of Bull Trout are emigrating out of Crow Creek and describe emigration-timing.

### **Methods**

#### *Emigration Monitoring*

Two submersible Biomark antenna systems will be deployed near the mouth of Crow Creek. All Bull Trout (>100 mm) translocated into Crow Creek have received a PIT tag. Using the two-antenna system will allow calculation of detection probability and estimation of the percentage of Bull Trout emigrating out of Crow Creek. Additionally, emigration-timing and possible immigration of PIT tagged Bull Trout will be described in Crow Creek. One more submersible Biomark antenna system will be deployed immediately below the confluence of the East and West Forks of Crow Creek. This antenna will help monitor use of the forks of Crow Creek by translocated Bull Trout.

#### *Genetic Monitoring*

Genetic monitoring will occur throughout the Crow Creek drainage starting in 2024. Activities, including sampling of long-term monitoring sites, conducted under the *Montana Tributary Habitat Acquisition and Recreational Fishery Enhancement Program* (Appendix B), will be used to help facilitate collection of tissue samples. Backpack electrofishing will be used to capture fish during genetic monitoring. Tissue samples from all Bull Trout captured during these activities will be collected. Coordination of genetic analysis of fin tissue samples collected will be made with University of Montana Fish Conservation Genetics Lab.

Tissue samples of all Bull Trout salvaged from ephemeral sections of Prospect Creek and translocated into Crow Creek (2017-present) were taken at the time of transfer. Samples were initially sent to Abernathy Fish Technology Center; they will be transferred to the University of Montana Fish Conservation Genetics Lab for parentage analysis. Parentage analysis, a widely used method to describe reproductive success of known origin salmonid fish throughout the Columbia River basin (e.g., Steele et al. 2019), will be used to determine if any fish collected are offspring of those salvaged fish. The specific molecular method that will be used to produce genotypes will depend on sampling intensity (i.e., proportion of putative parents that are sampled) statistical power of available molecular markers, and legacy data sets.

## Work Products

- Annual Work Summary; from Aquatic Program Leader to Avista; due December 1, 2023
- University of Montana Conservation Genetics Laboratory Report for 2024; final due May 1, 2025
- Project Completion Report; final due December 31, 2026

## Permitting Requirements

No permits are required for fisheries sampling work as all work will be conducted and/or overseen by MFWP fisheries biologists. A 124 permit will be issued by MFWP for the installation of the submersible PIT tag arrays.

Endangered Species Act consultation for this project plan is associated with the 2019 Biological Opinion on the effects of continued operation of the Clark Fork Hydroelectric Project on Bull Trout and designated Bull Trout critical habitat (BiOp), and the USFWS-MFWP Cooperative Agreement pursuant to Section 6 of the Act. This project plan is consistent with the analysis and conclusions contained in the 2019 BiOp and the USFWS-MFWP Cooperative Agreement and will adhere to all appropriate Terms and Conditions designed to reduce the extent and effects of incidental take on Bull Trout. Incidental take reporting for this project plan will be included in the annual Biological Opinion report as required by Term and Conditions 15–18 of the 2019 Incidental Take Statement, as well as MFWP’s annual Section 6 report to the USFWS.

## Cultural/Historic Resource Review

If ground or vegetation disturbance activities are proposed, MFWP cultural staff will coordinate a cultural/historic resource review for the project. The work product for this review will be confidential due to the sensitive nature of the content.

## Benefit to the Resource

This project is primarily being implemented to evaluate the effectiveness Bull Trout saving efforts in the ephemeral sections of Prospect Creek conducted under the Montana Tributary Habitat Acquisition and Recreational Fishery Enhancement Program (Appendix B), *Habitat Restoration Monitoring and Native Salmonid Abundance Monitoring Plan*. The proposed work is consistent with the language and spirit of Appendix B of the Clark Fork Settlement Agreement and the goals and objectives of MFWP. The proposed work also supplements efforts conducted under Appendix C of the CFSA.

## Budget

Item	Estimated Carryover <sup>1</sup>	2023 Budget Request
Three Submersible PIT Tag Arrays (antennae, node, battery, etc.)	\$0	\$30,000
Repair, supplies (duckbill anchors, etc.)	\$0	\$1,000
<b>Total</b>	\$0	\$31,000
<b>Anticipated Expenditures</b>		\$31,000

<sup>1</sup> Estimated carryover of unexpended, approved funds as of January 1.

### **Literature Cited**

- Adams, B., B. Prom, J. Von Bargen, and S. Bernall. 2017. Genetics analysis of native salmonids from the Lake Pend Oreille and Clark Fork River System, Idaho and Montana. U.S. Fish and Wildlife Service, Abernathy Fish Technology Center, Longview, Washington. Prepared for Avista Corporation, Noxon, Montana.
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- Zymonas, N. 2006. Age structure, growth, and factors affecting relative abundance of life history forms of Bull Trout in the Clark Fork River drainage, Montana and Idaho. Master of Science Thesis, Department of Biological Sciences, Montana State University, Bozeman, Montana.

## Appendix B Project Evaluation and Ranking Criteria score sheet

*As scored by the WRTAC on 1/18/2023*

### **Project Title: Prospect Creek Bull Trout Salvage Evaluation**

Criteria	Score			
	3	2	1	0
<b>A. Species to benefit</b>	Bull Trout <u>and</u> Westslope Cutthroat Trout	Bull Trout <u>or</u> Westslope Cutthroat Trout	Target species but not Bull Trout or Westslope Cutthroat Trout	None
<b>B. Resource increase</b>	Great (> 25%)	Moderate (10–25%)	Limited (< 10%)	No increase
<b>C. Project addresses</b>	Threat to existence of population	Problem that limits population	Does not address a problem but enhances population	Not associated with target populations
<b>D. Project effectiveness</b>	Solves primary problem	Partially solves or provides all information to solve primary problem	Provides some information to address primary problem	Does not address primary problem
<b>E. Cost/benefit</b>	Benefit exceptional relative to cost	Benefit high relative to cost	Benefit consistent with cost	Cost exceeds benefit
<b>F. Outside funding</b>	≥ 50%	25–49%	≤ 24%	Entirely CFSA funded

#### **Scoring Instructions:**

- When ranking proposals that do not involve on-the-ground implementation but are necessary to the scope of physical projects (e.g., applied research, watershed assessments, NEPA analyses), score them with regard to the “expected” or “average” resultant physical project.
- **A score of “0” in any of the criteria does not necessarily mean the project is ineligible for CFSA funding.** Rather, a score of “0” should be considered an indication that this aspect of the project needs to be thoroughly discussed and considered.
- Although total scores for each proposed project can be summed to get a general idea of the relative strength of each project, **the scoring system should be viewed as an ordinal rather than absolute ranking system.** In light of this and in the interest of maintaining a simple and objective scoring system, only whole numbers will be utilized (e.g., no half points).

## 2023 PROJECT PLAN

### Sims Meander Stream and Floodplain Restoration Project

#### Project Contact

Sarah Busmire, Green Mountain Conservation District (GMCD), (406) 827-4833, [GMCD@blackfoot.net](mailto:GMCD@blackfoot.net), and Craig Neesvig, Kootenai National Forest (KNF), (406) 827-0734, [craig.neesvig@usda.gov](mailto:craig.neesvig@usda.gov)

#### Project History

This is a continuing project based on information developed during the Vermilion River Sims Reach Restoration Survey and Design project, which was approved in 2017 and scored 74/110 by the WRTAC. This project is being carried forward to 2023 in order to allow for the completion of the As-built Monitoring Report in late-winter/early-spring of 2023.

#### Background

The Sims reach of the Vermilion River provides important Bull Trout and Westslope Cutthroat Trout habitat. The Vermilion River has consistently been one of the primary Bull Trout spawning areas in the Lower Clark Fork River drainage. Due to its importance to native fish species, the Vermilion River has been the focus of concerted efforts to implement watershed scale restoration.

Montana's 2002 303(d) list classified 22.5 miles of the Vermilion River as impaired and only partially supporting its beneficial uses of aquatic life and cold-water fisheries. In 2005, the Lower Clark Fork River Drainage Habitat Problem Assessment (GEI Consultants, 2005) ranked the Vermilion River as among the top priorities for improving and protecting native fish habitat in the Lower Clark Fork watershed. In 2006, the Kootenai National Forest completed the Vermilion River Watershed Assessment (Neesvig et al. 2007). This assessment included a preliminary restoration plan aimed at addressing identified impairments and habitat deficiencies in the Vermilion River, resulting from historic disturbances such as mining and riparian timber harvest. In 2012, watershed partners began a top-down watershed-scale restoration effort in the drainage with the Chapel Slide Project. This was followed by the Miners Gulch Project in 2016. Post-runoff monitoring completed by the Kootenai National Forest indicates that these projects are performing well (Neesvig 2019).

The Sims reach of the Vermilion River is located approximately 8 miles upstream of the mouth of the Vermilion River (accessed via the Grouse Creek Trailhead) and immediately downstream of the Miners Gulch Project. The proposed Sims Meander Project will reactivate the floodplain of the Vermilion River that has been disconnected due to past disturbances (primarily the removal of large diameter wood and mining activity) (Figure 1).



Figure 1. The Vermilion River's floodplain is disconnected throughout much of the Sims Meander Reach. While a narrow border of vegetation thrive at the immediate water's edge, the remaining floodplain is a dry, cobble bar.

Project design alternatives were developed by the KNF, based on LiDAR data and detailed hydrological surveys, that employ on-the-ground techniques to improve channel dimensions relative to reference conditions, bank stability, in-stream habitat complexity, bedload transport, and riparian and floodplain function. Designs were reviewed by a group of project stakeholders and further evaluated in NEPA consultation completed in June 2021.

Bull Trout redds have been found in both restoration reaches post-construction, however overall Bull Trout redd numbers have recently declined in the Vermilion River. Therefore, techniques used successfully upstream in the Chapel Slide and Miners Gulch restoration projects were modified for the Sims Meanders Project in response to concerns raised by fisheries biologists (Montana Fish, Wildlife and Parks and Avista). These concerns are focused on the desire to minimize short-term disturbance required to construct instream habitat features in the face of a declining Bull Trout population. Final project designs were reviewed by project stakeholders in order to minimize impacts and maximize benefits to native fish. Proposed activities included stabilizing the channel while maintaining proper channel and floodplain dimensions; reshaping of the floodplain; bank protection; installation of large woody debris (LWD) structures, and an aggressive riparian planting program that includes temporary irrigation for maximum success.

Disturbed areas will be planted with native species including cottonwood, willow, conifers and a suite of local brush species.

### **Goal**

The overall goal of the Sims Meander Project is to correct historic disturbances in the Vermilion River drainage from logging and mining by restoring a degraded stream channel and floodplain, such that vegetation can be established through planting and natural regeneration and the surrounding area can reach over the long-term a self-sustaining, fully functional, dynamic equilibrium.

### **Objectives**

1. Reconnect and recontour the floodplain along 1,500-2,000 feet of stream channel.
2. Install floodplain structures (large woody debris and/or fascines) to stabilize the stream channel, trap fine sediments and support revegetation efforts.
3. Install in-stream structures for bank protection, grade control, and fish habitat (where and if necessary).
4. Reestablish native trees and shrubs in the floodplain along the stream channel.
5. Develop outreach materials to educate the public about the work in the Vermilion River, the characteristics of healthy streams and rivers, the importance of floodplains, and the habitat needs of native fish.

### **Tasks**

1. NEPA consultation will be completed and necessary permits will be secured by the KNF over the winter and spring of 2021 (Objectives 1, 2, 3, and 4; **Completed spring 2021**)
2. Funding for project will be secured by March 2021, and contractor selection will be made (Objectives 1, 2, and 3; **Completed spring 2021**)
3. Construction will be completed by July 15 and August 31, 2021 (Objectives 1, 2 and 3; **Completed summer 2021**)
4. Riparian revegetation will be completed in fall of 2021 and/or spring of 2022 and irrigated in subsequent 2-3 years (Objective 4; **Planting Completed 2022**)
5. Outreach materials (including a 3-5 minute film) will be developed and finalized for distribution by December 31, 2021 (Objective 5; **Completed 2022**)
6. Monitoring: As-built survey and construction documentation (including sediment reduction) will be monitored in 2021 immediately post-construction. Post-runoff and revegetation monitoring will occur in 2022 and subsequent years (Objectives 1, 2, 3, and 4; **Pending winter/spring 2023**)

7. Coordination of project planning, implementation, reporting, and as-needed project support will occur through March 2023 (Objectives 1-5).

### **Work Products**

- As-built monitoring report; expected March 2023
- Mid-Year Report; due to the Aquatic Program Leader (APL) August 1, 2023
- Annual Work Summary; due to the APL November 15, 2023

### **Permitting Requirements**

This project required NEPA consultation, which included Endangered Species Act consultation, and the following permits/authorizations: 404, 318 and 124. All NEPA consultation and permitting were completed by the KNF.

Endangered Species Act consultation for this project plan is associated with the 2019 Biological Opinion on the effects of continued operation of the Clark Fork Hydroelectric Project on Bull Trout and designated Bull Trout critical habitat (BiOp), and the USFWS-IDFG Cooperative Agreement pursuant to Section 6 of the Act. This project plan is consistent with the analysis and conclusions contained in the 2019 BiOp and the USFWS-IDFG Cooperative Agreement, and will adhere to all appropriate Terms and Conditions designed to reduce the extent and effects of incidental take on Bull Trout. Incidental take reporting for this project plan will be included in the annual Biological Opinion report as required by Term and Conditions 15–18 of the 2019 Incidental Take Statement, as well as IDFG’s annual Section 6 report to the USFWS.

### **Cultural/Historic Resource Review**

Cultural and historic resource review were completed by the KNF as a part of NEPA consultation.

### **Benefit to the Resource**

This project is consistent with the objectives of Appendix B. Bull Trout are known to be present in the Vermilion River along with Westslope Cutthroat Trout. This project will improve native fish habitat by restoring a degraded stream channel and floodplain, regenerating native riparian vegetation, increasing habitat complexity with LWD structures, and improving the stability of the stream channel. Therefore, this project supports state and federally approved management plans for Bull Trout and Westslope Cutthroat Trout. In addition, stream enhancement measures will help address listed state water quality impairments throughout the Vermilion River as well as providing important riparian habitat for wildlife. Therefore, this project provides ancillary benefits to appendices C and K.

## Budget

Item	Estimated Carryover <sup>1</sup>	2023 Budget Request
GMCD-sponsored construction contract	\$0	\$0
GMCD Administration fee, 10%	\$0	\$0
USFS-led Revegetation – Labor (USFS staff and crew to oversee and implement revegetation effort)	\$0	\$0
USFS-led Revegetation – Materials (cottonwood, willow, seed, t-posts, fencing, irrigation equipment, herbicide, etc.)	\$0	\$0
USFS-led Revegetation – Travel (mileage only)	\$0	\$0
LCFWG Project Contribution.	\$0	\$0
<b>Total</b>	\$0	\$0
<b>Anticipated Expenditures</b>		\$0

<sup>1</sup> Estimated carryover of unexpended, approved funds as of January 1.

This project plan provided nonfederal match for the following federal contributions to the planning and implementation of this project:

Montana Department of Environmental Quality, \$200,000

Sanders Count Resource Advisory Committee, \$25,000

Kootenai National Forest (in-kind), \$35,100

Kootenai National Forest (cash), \$10,000

## Literature Cited

GEI Consultants, Inc. 2005. Lower Clark Fork River Drainage Habitat Problem Assessment. Report to Avista Corporation, Spokane, WA.

Neesvig, C. 2019. Vermilion River Project #2, Miners Gulch Reach, 2018 Post Run-off Monitoring Report. U.S. Forest Service Kootenai National Forest, Trout Creek, MT.

Neesvig, C., D. Grupenhoff, and A. Reif, 2007. Vermilion River Watershed Assessment and Preliminary Restoration Plan. U.S. Forest Service Kootenai National Forest, Libby, MT.



## 2023 PROJECT PLAN

### Vermilion River Restoration Projects 4 - 6 Survey and Design

#### Project Contact

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#### Project History

This is a new project plan and will continue stream and floodplain restoration activities in the mainstem of the Vermilion River where they have been ongoing since 2012. To-date, 3 projects have been completed totaling 4,400 ft of restored stream and associated floodplain; this project plan would initiate the survey and design of the next 3 reaches in the Vermilion River totaling nearly 1.5 miles of stream and associated floodplain restoration intended for completion by FY26. The Kootenai National Forest has great potential to receive significant funding through the Collaborative-Based, Aquatic Focused, Landscape-Scale Restoration (CALR) program authorized through the Infrastructure Investment and Jobs Act (commonly known as the Bipartisan Infrastructure Law or BIL) in support of this project. The Vermilion River Restoration Project is currently ranked high in Forest Service Region 1, and, if selected, the CALR would directly contribute funds to the implementation of these projects from 2024 to 2026. The Clark Fork Settlement Agreement (CFSA) has been a significant funder of the past three restoration projects on the Vermilion River, in part because the river's high potential to provide quality native salmonid habitat (GEI 2005). In particular, the CFSA has provided critical capacity for restoration survey and design necessary to prepare permitting documents, cost estimates, and funding proposals, and to ensure a successful outcome for the resource during project implementation. This project plan represents the up-front planning and design work necessary to leverage the CALR and realize locally the benefits of a historic investment in watershed restoration efforts nationwide. This is a new project being proposed for 2023. This project was scored by the WRTAC on January 18, 2023, and the Evaluation and Ranking Criteria scores are included as the last page of this project plan.

#### Background

Projects 4 through 6 are located along reaches of the Vermilion River that provide important Bull Trout and Westslope Cutthroat Trout habitat (RM 8.5-7.0). The Vermilion River was historically and is currently an important Bull Trout spawning tributary in the Lower Clark Fork River drainage, and a priority stream for recovery efforts. In 2007, the Vermilion River Watershed Assessment and Preliminary Restoration Plan was completed for the Vermilion River watershed (Neesvig et al 2007). The findings of the Watershed Assessment were reinforced through a collaborative planning process that informed the Lower Clark Fork Tributary Watershed Restoration Plan (WRP), completed in 2019. The Vermilion River is listed as impaired due to 'alteration in stream-side or littoral vegetative cover' and the WRP identifies the proposed projects as the next priorities for restoration in the Vermilion River to address non-functional floodplains, establish riparian woody vegetation, and improve associated instream habitat deficiencies (Bowman and Olson 2019, pp 131). This area of the mainstem was and still is limited in channel stability, floodplain accessibility, pool depth/frequency, substrate quality,

Large Woody Debris (LWD) and riparian vegetation. In line with the final Bull Trout Recovery Plan and the Columbia Headwaters Recover Unity Implementation Plan (RUIP), the Conservation Strategy for Bull Trout on USFS Lands in Western Montana identifies excess sediment, channel instability, poor rearing conditions, and immature riparian vegetation as key habitat-related threats to the Vermilion River Bull Trout population and recommends riparian restoration and increased riparian tree densities as a focus of any improvements in the watershed (USFWS 2015; USFS and USFWS 2013, pp 522-525).

Beginning at the Vermilion River falls, a top-down approach to restoration was selected as the most successful option and was initiated in 2012. Following the first restoration project at the Chapel Slide reach constructed in 2012, the Miners Gulch reach was constructed in 2016, and just recently the Sims reach was constructed in 2021. Effectiveness monitoring of these previous projects to-date has been mostly physical, assessing geomorphic changes of the project reaches relative to reference conditions. Projects completed to-date have indicated success relative to reference in terms of overall substrate changes (% fines, gravel sorting), longitudinal profile changes (pools fill in/get deeper), dimension profiles (cross sectional area maintained), and wood changes in reach (LWD retention and loss). Furthermore, riparian plots have shown high success of revegetation efforts and increased natural recruitment throughout floodplains where deposition of fine sediment is occurring (Neesvig 2019; Neesvig 2013). Direct biological or population responses of restoration for target species (Bull Trout, Westslope Cutthroat Trout and other native spp.) have been difficult to quantify. Population changes indicated by fisheries monitoring efforts (electrofishing, redd counts, snorkeling, etc.) are confounded by numerous other factors and other identified threats to Bull Trout, such as fish passage and competition with non-native species.

As a complement to the design and implementation of this phase of Vermilion River Restoration, partners are also working to develop a robust project effectiveness monitoring plan, in coordination with technical experts at the United States Geological Survey (USGS), that would further enhance understanding of the effects of watershed restoration on groundwater/surface water interactions (flow, stream temperature) and biogeochemistry (water chemistry, nutrient cycling, microbiology). Newly completed projects can be compared to reference conditions as well as projects completed 10 (2012), 6 (2016) and 1 (2021) year ago. The data collected by this project will further enhance the local hydraulic relationships, groundwater/surface water, water quality, nutrient cycling and biotic communities which are used in stream and watershed restoration design. The result of this project effectiveness monitoring program and study results would inform decisions and help adaptively manage projects conducted throughout the Lower Clark Fork Watershed and across the state of Montana.

By installing a groundwater monitoring network, this planning project will help provide needed information for restoration design, particularly to inform the location of features intended to mimic oxbow wetlands and abandoned meander mends. These features allow design to reflect the 4 dimensions of stream continuum (lateral, longitudinal, vertical, and temporal) relative to reference conditions.

1. Lateral: Restored channel encompasses more of readily available floodplain; oxbow wetlands and side channels are created and/or maintained.
2. Longitudinal: Increased sinuosity attenuates excess energy and creates more hyporheic flowpaths.
3. Vertical: Habitat is more diverse. Run features foster turbulence and mixing of groundwater/surface water. Pool/eddy features reduce velocity and increase volume of water retained in the reach. Glide features provide for channel bottom positive slope that promotes upwelling and downwelling zones.
4. Temporal: Design mimics or maintains abandoned meander bends, oxbow wetlands and side channels. Increased floodplain access attenuates high flows with backwater habitats and adds hyporheic flowpaths present at baseflow.

It is thought that this area of the Vermilion River includes both losing and gaining reaches; understanding where those groundwater-surface water dynamics change is critical to ensure that constructed wetland features function as intended.

When designing stream and floodplain restoration of this scale, restoration practitioners make assumptions relative to residence time, groundwater-surface water interaction, and biogeochemical processes – watershed and ecosystem processes that link geomorphic changes to the Bull Trout food chain and habitat quality. The current understanding is that Vermilion River water is nutrient limited, as indicated by belt series lithology, high resistivity, and low conductivity. A successful, data-informed design that incorporates the 4 dimensions of the stream continuum above is assumed to result in the following effects.

- *Residence time.* Increases in residence time of water flowing through the reach could increase hyporheic volume, retain more nutrients within the restoration reach and increase biogeochemical processes.
- *Groundwater-surface water interaction.* Increased valley wall to valley wall stream access, increased overall channel mean depth and volume, and direct connection with groundwater that is increased or maintained throughout the project reaches will promote more storage during baseflow conditions, attenuate excess energy during peakflow, recharge and connect hyporheic flowpaths, and increase winter stream temperature (benefitting overwintering Bull Trout survival).
- *Biogeochemical processes.* Increased residence time, groundwater-surface water interactions and increased allochthonous influence will increase nutrient (Nitrogen, Phosphorus, and Carbon) retention, production, and cycling. Connected floodplains can collect annual peak flow and associated alluvial deposits. Large amounts of stable in-channel and floodplain large woody debris creates an environment that retains imported upstream wood and debris. In-stream and floodplain wood complexes create more of a medium for foodweb biota (diatoms, algae, periphyton) which in turn could increase limiting factor nutrients. Wood and debris accumulation also increase transient storage and, in effect, local nutrient uptake. Perched floodplain areas will be converted to native riparian forests featuring macrophytes (i.e., Black Cottonwood, Willow, Dogwood) and nitrogen fixing plants like Thinleaf Alder.

The next 3 downstream reaches of the mainstem are the top priorities in the Vermilion River watershed for improving native salmonid habitat, addressing water quality impairments,

improving nutrient retention and production, and increasing the resiliency of the watershed overall. These objectives would be achieved by reconnecting the channel with the floodplain, creation of oxbow nutrient/groundwater storage areas (disconnected from the channel to achieve intended function, which will also avoid creating backwater / side channel habitats favorable to nonnative trout that compete with Bull Trout), and extensive riparian revegetation. Maps are included as an attachment and preliminary design concepts (subject to change as guided by bathymetry and groundwater surveys) are described below:

*Project #4 – Grouse Reach – 2500 feet (RM 8.5-8.0) - 2024  
Township 24N-Range 30W-Section 2 within Sanders County, MT.*

This site, located immediately downstream from the Sims reach, exhibits channel instability throughout the entire project reach that mostly relates to channel downcutting/straightening, meander cutoffs and floodplain inaccessibility. Near-bank viable riparian vegetation is little to non-existent. This reach is further influenced by the presence of streambank gabion baskets (rock filled iron wire baskets) and artificial levees. The existing failed gabions and constructed levees were installed between 1970 and 2000 after a series of flood events caused damage to the riparian road accessing the Grouse Creek Trailhead. These early road engineering practices continue to prevent normal channel migration, disconnect the floodplain and mobilize cobble to the river from the gabion walls. During implementation these floodplain restrictions would be removed, off-channel oxbow wetlands would be reconstructed and approximately 2500 feet of channel would be restored to reference channel and floodplain dimensions.

*Project #5 – Rocker Reach – 2500 feet (RM 8.0-7.5) - 2025  
Township 24N, Range 30W, Section 2 within Sanders County, MT.*

This reach historically supported a single-thread channel with floodplain overflow that has transitioned into a multi-braided channel that lacks sediment transport competency. Unstable banks exist with inadequate riparian vegetation. The lack of pools, large wood, and complex habitat has accelerated a shift from reference. The lack of near-bank riparian vegetation prevents the stream from maintaining a stable channel geometry. This progression has resulted in a channel that is wider and shallower than desired. There are existing overflow channels and historic meander scrolls where off-channel groundwater upwelling zones will be desirable to maintain. This channel design project will be guided by these sensitive areas. There is mature riparian vegetation nearby in historic channel locations that could be reinitiated to provide bank stability when reconstructing the channel to a more reference planform and dimension.

*Project #6 – 100 Ton Reach – 2500 feet (RM 7.5-7.0) – 2026  
Township 24N, Range 30W, Section 3 within Sanders County, MT.*

The narrow valley and the main Vermilion River Road 154 have influenced this reach lending the channel to be less sinuous, slightly entrenched, and more efficient at sediment and wood transport. Much of the reach is riffle type habitat with a few streambanks that are actively contributing fine sediment under all flow conditions. The LiDAR survey as well as the baseline groundwater measurements will provide insight into whether channel relocation is appropriate in this reach. More accessible floodplain benches will be constructed to dissipate flood flows. Large

wood will augment the in-channel habitat as well as the revegetation of the newly constructed floodplain.

Projects 4 - 6 are located approximately 8 miles upstream of the mouth of the Vermilion River within Sanders County, MT. Benefits to the watershed are expected from the mouth of Vermilion to the Vermilion Falls area, or a length of the mainstem roughly 12 miles long.

### **Goal**

The overall goal of this project is to correct historic disturbances in the Vermilion River drainage from logging and mining by restoring a degraded stream channel and floodplain, such that vegetation can be established through planting and natural regeneration and the surrounding area can reach over the long-term a self-sustaining, fully functional, dynamic equilibrium.

### **Objectives**

1. Light Detection and Ranging (LiDAR)/Thermal Infrared Radiation (IR) survey of the project area. This method would employ a survey grade drone working with the USFS Missoula Technology and Development Center (MTDC), Allied Engineering and/or the United States Geological Survey (USGS). A portion of this would utilize a field crew for setting up ground control and feature acquisition. The drone would provide for the bulk of the scan of the bareground surface (1/2 meter Digital Elevation Model (DEM)) as well as the thermal signatures of the water column for the next three projects, or a total of 7500 feet of channel length covering approximately 250 acres representing all three project locations. Thermal IR would be collected during the late summer of 2023 during the period of maximum groundwater and stream temperature difference. Due to the scale and complexity of proposed work relative to all past watershed restoration completed to date in the Lower Clark Fork, and particularly in recognition of the sensitivity of local Bull Trout populations, project partners agree it is critical to fully understand groundwater dynamics prior to construction such that the short-term disruption of construction is minimized and data can drive design to provide the maximum possible benefit to the species.
2. Bathymetry survey to capture below water stream channel elevations. This task would employ a survey-grade real time kinematics (RTK) GPS unit working with a USFS survey crew. This information is needed to refine the required cut and fill volumes for permit acquisition (404, 318, and 124) and construction cost estimates.
3. Installation of a groundwater monitoring network to aid in initial design and effectiveness monitoring. It is thought that this area of the Vermilion River has gaining and losing reaches as well as off-channel wetlands. These types of conditions are largely influenced by groundwater upwelling and downwelling areas at different times of the year in different locations. It is possible that groundwater dynamics could be a driver of Bull Trout spawning (principle spawning areas are primarily from the Chapel Slide reach downstream to the Grouse Reach). Previous restoration reaches were predominantly gaining reaches with strong groundwater influence, indicated by the quantity of water present in the channel even when a clearwater diversion was in place. Past redd surveys have showed near absence of redd distribution from the Grouse Reach downstream to

China Gorge (below proposed project extent). Pre-project assessment of groundwater dynamics will allow project design to emphasize connection to groundwater and promote hyporheic flow that could promote Bull Trout spawning use. These next three reaches will also employ off-channel oxbow wetland creation in the design to promote groundwater and nutrient storage. Restoration success in areas such as these require knowledge of where groundwater upwelling and downwelling areas are and how they interact with the main channel. This information will guide decisions on whether to avoid or augment them with active restoration techniques. Furthermore, a clear mapping of the static groundwater elevation is critical to ensure that gaining reaches through the reach are maintained.

4. Restoration design packages and cost estimates for the 3 reaches: Grouse, Rocker and 100 Ton. This would include permit-ready designs utilizing products obtained from Objectives 1, 2 and 3 and rendered using AutoCAD based software.

### **Tasks**

1. Coordination with LCFWG, project partners, funders and permitting agencies (Objectives 1-4; ongoing).
2. Hold project kick-off meeting to gather initial feedback and input from LCFWG technical advisors and project partners, including but not limited to USFS, USGS, Lower Clark Fork Watershed Group (LCFWG), Montana Department of Environmental Quality (DEQ), United States Fish and Wildlife Service (USFWS), Montana Fish, Wildlife & Parks (MFWP), Avista, and Green Mountain Conservation District (GMCD). (Objective 4; estimated timeline April 2023).
3. USFS personnel (Hydrologist and Hydrologic Technicians, MTDC staff), Allied engineering staff, and/or USGS staff will implement the initial Lidar/Thermal IR flight and field survey of the area (Objective 1; estimated timeline August 2023).
4. USFS personnel (Hydrologist and Hydrologic Technicians) and USGS staff will install and maintain groundwater monitoring network prior to and during project implementation (Objective 3; estimated timeline July 15 – August 31, 2023).
5. USFS personnel (Hydrologist and Hydrologic Technicians) will complete the underwater bathymetry survey prior to project final design (Objective 2; estimated timeline September 2023).
6. USFS personnel (Hydrologist) will present proposed action for each of the 3 restoration sites to LCFWG technical advisors and project partners, including but not limited to USFS, USGS, Lower Clark Fork Watershed Group (LCFWG), Montana Department of Environmental Quality (DEQ), United States Fish and Wildlife Service (USFWS), Montana Fish, Wildlife & Parks (MFWP), Avista, and Green Mountain Conservation District (GMCD). (Objective 4; estimated delivery December 2023).
7. USFS personnel (Hydrologist) will review and consider input gathered in Task 6 and

complete the final technical design that will include a restoration plan with the proposed action for each of the 3 restoration sites (Objective 4; estimated delivery March 2024).

### **Work Products**

- Presentation of proposed actions to LCFWG technical advisors and partners; due December 15, 2023.
- Restoration design package and cost estimates for Projects 4, 5, and 6; due March 31, 2024.
- Mid-Year Report; due to the Appendix B Aquatic Program Lead (APL) August 1, 2023
- Annual Work Summary; due to the APL November 15, 2023

### **Permitting Requirements**

Additional permits may be required for this project. The scope of the groundwater monitoring well installation is currently under development by the USFS and USGS. The USFS expects to initiate NEPA analysis for this portion of the project in February 2023, and will evaluate need for additional permits such as a 124 permit for river crossings and well installation based on final proposed locations and expected methods of installation.

Endangered Species Act consultation for this project plan is associated with the 2019 Biological Opinion on the effects of continued operation of the Clark Fork Hydroelectric Project on Bull Trout and designated Bull Trout critical habitat (BiOp). This project plan is consistent with the analyses and conclusions contained in the 2019 BiOp and will adhere to all appropriate Terms and Conditions designed to reduce the extent and effects of incidental take on Bull Trout. No incidental take of Bull Trout is anticipated as a result of this project plan; therefore, no take reporting is required.

### **Cultural/Historic Resource Review**

The USFS expects to initiate NEPA analysis for this portion of the project in February 2023, which will include any required cultural/historic resource review. Inventories will also need to be done once the restoration design is complete prior to implementation.

### **Benefit to the Resource**

The Vermilion River is designated critical spawning and rearing habitat for migratory Bull Trout and is also known to support resident life histories. Additional native species include Westslope Cutthroat Trout, sculpin spp., and a variety of non-natives. In recent years, Bull Trout recovery efforts have included an increased focus on trap and transport efforts in the Vermilion River. This project is consistent with the objectives of Appendix B of the CFSA, which recognized that “restoration of tributary habitats will benefit native aquatic biota, including salmonid populations” (B-3) and established the fund to improve “instream tributary habitats through the acquisition and enhancement of lands or enhancement of instream habitat features” (B-6). It was intended that “any effort aimed at restoring migratory, native fish populations in the Lake Pend Oreille-Clark Fork River system should have both a fish passage component and a habitat protection and enhancement component” (B-3). Therefore, as trap and transport efforts are increased on the Vermilion River, continued efforts to address habitat-related threats to Bull Trout in the Vermilion River will complement efforts to address other identified threats to Bull Trout including upstream/downstream transport programs.

The proposed Vermilion River restoration efforts, in proposed restoration reaches of the Vermilion River where spawning and rearing habitat is known to occur, is further in line with the Clark Fork River Native Salmonid Restoration Plan, Five Year Plan (2019-2023), which states (pp. 5):

“When considering potential habitat restoration projects, priority will be given to the enhancement of fish passage conditions and improvement of spawning and rearing habitat in streams supporting or capable of supporting substantial populations of native salmonids” (AIT 2018).

As described above, the proposed projects would address the primary habitat related threats to Bull Trout identified in the Bull Trout Recovery Plan, Columbia Headwaters Recover Unity Implementation Plan (RUIP), and the Conservation Strategy for Bull Trout on USFS Lands in Western Montana (USFWS 2015; USFS and USFWS 2013). The RUIP specifically calls out riparian vegetation restoration in the Vermilion River watershed as a recovery action needed to address one of the core area’s primary threats.

Groundwater mapping, as stated above, will be critical to inform restoration design. In addition, as a complement to the design and implementation of this phase of Vermilion River Restoration, partners are also working to develop a robust project effectiveness monitoring plan, in partnership with the USGS, that would further enhance understanding of the effects of watershed restoration on groundwater/surface water interactions (flow, stream temperature) and biogeochemistry (water chemistry, nutrient cycling, microbiology, and potentially macroinvertebrates). The data collected by this project will further enhance the local hydraulic relationships, groundwater/surface water, and nutrient interactions which are used in channel design and stream restoration, thereby informing decisions and helping with the adaptive management of projects conducted throughout the Lower Clark Fork Watershed, including those implemented under Appendix B of the CFSA for the benefit of native salmonids. Ultimately, this information will be used to inform project effectiveness across trophic levels and will supplement all stream restoration designs in the Lower Clark Fork basin.

## Budget

Item	Estimated Carryover	2023 Budget Request
Tasks 1 and 2 – Project coordination, contracting and administration, \$35.50 x 120-160 hours = \$4,260-5,680, mileage - \$750, miscellaneous expenses (LCFWG)*	\$0	\$0
Task 3 – LIDAR/Thermal IR Flight/Bare Ground DEM (LCFWG)	\$0	\$70,000
Task 4 – Equipment/Supplies for groundwater/surface water monitoring network (USFS)	\$0	\$2,875
Task 4 – Contract for the installation of groundwater monitoring wells, estimated at \$2,000-\$2,500/well (LCFWG)	\$0	\$20,000
Task 5 – Bathymetry Survey of 7500 lineal feet of the Vermilion River (USFS)	\$0	\$0
Tasks 6 and 7 – Production and manufacturing of the permit ready final design (USFS)	\$0	\$17,250
<b>Total</b>	<b>\$0</b>	<b>\$110,125</b>
<b>Anticipated Expenditures</b>		<b>\$110,125</b>

*\*Funding for this task has been requested through DNRC Planning Grant. Budget request included here represents a “fail-safe” to ensure at least some base funding is available to meet this project need. LCFWG would also only charge their standard administration fee on organizational expenses (LCFWG staff, travel, etc. being covered under Task 6) not materials, equipment, contracts or other forms of “pass-through”.*

Match funding (See Table 1, below) need to accomplish the full project scope (survey and design) outlined above totals \$192,500 and includes:

\$50,000 - DNRC Planning Grant which would fund Tasks 1 and 3 (secured)

\$25,000 – Sanders County Resource Advisory Council (Rural Development and Self-Determination Act funds) which would fund Task 3 (secured)

\$60,000 – USGS Cooperative Matching Funds which would support Tasks 1 and 3

\$32,500 – USFS Cabinet Ranger District confirmed cash and in-kind funding which will support Task 1, 3, 4, 5 and 6.

\$25,000 – USFS Kootenai National Forest funding which would support Tasks 1 and 3.

Project proponents made effort to separate the Survey and Design components (\$194,125) of the project budget from the total cost (\$697,952) of the full proposed Vermilion River Restoration and Project Effectiveness Monitoring Project, which will complement three phases of Vermilion River Restoration and culminate with a joint USFS/USGS study (see Table 2 below). The only circumstance where a matter of judgment was needed in apportioning the Survey and Design budget from the total was for Task 3: Groundwater-Surface Water Monitoring Network. The whole cost of the monitoring network is shown as match (above and below in Table 1); in Table 2 below, 50% of this expense is attributed to Survey and Design as is 50% of USGS matching fund contributions to the project. The \$22,500 requested from the CFSA for this task includes only contract, equipment and materials costs, which represents approximately 16% of anticipated FY2023 costs and less than 10% of predicted Task 3 total over the life of the project.

Funding from the CFSA for this project plan would enable project proponents to leverage

significant outside funding to pursue the full scope of the Vermilion River Restoration and Project Effectiveness Monitoring Project under development by the USFS, USGS, and LCFWG. A proposal, sponsored by the Cabinet Ranger District and the Northern Region, USFS, is under development to fund project implementation and project effectiveness monitoring through FY2026. Additional funding through the BIL is expected to be available over the next four years as well. The Cabinet Ranger District, in close coordination with the LCFWG, will pursue multiple sources of funding to undertake the full scope of this proposed project plan (those tasks and pre-project data collection necessary to complete restoration design and cost estimates), a robust project effectiveness monitoring program, and eventually future implementation of on-the-ground restoration in the Vermilion River (Tasks 1-10 listed in Table 2 below) through FY2027. Currently, a proposal to the Montana Department of Natural Resources and Conservation (DNRC) Reclamation and Development (RDG) Planning Grant sponsored by GMCD, will request support for project planning and pre-project monitoring expenses. USGS Cooperative Matching funds are available to support project effectiveness monitoring for up to \$60,000 per fiscal year, with the expectation that the project will (1) result in an interpretive project, such as a USGS Report and/or journal article(s) and (2) is accompanied by required nonfederal match (25% USGS / 75% non-federal cooperator). The USGS has already committed a total of \$180,000 for FY2023-FY2025. The conservative estimate of USGS in-kind match (\$12,000 shown above under Task 3) reflects the reduced scope of this project plan (survey and design only) relative to the entire project scope for Vermilion River Restoration and Project Effectiveness Monitoring, but approval of CFSA funds would be leveraged such that project proponents would have the entire 75% match for the \$60,000 of available USGS funds. Program coordinators at DNRC as well as Montana DEQ have encouraged the USFS and LCFWG to develop this project effectiveness monitoring project, in part due to the value that monitoring results would provide to the state and field of watershed restoration, and partners intend to work with funders throughout the state and country to fund this project through FY2027.

Restoration partners anticipate that this investment in survey and design (\$110,125) will allow up to \$600,000 of external funds to be leveraged in FY2023 and up to \$3.5 million to be leveraged through FY2027 for the entire scope of Vermilion River Restoration and Project Effectiveness Monitoring. Further, partners recognize that CFSA support for survey and design as requested as a part of this project plan does not denote a commitment to fund future project implementation. Separate project plans will be prepared annually for Management Committee review as project partners recognize need and/or local resource managers prioritize habitat restoration on the Vermilion River as a worthwhile component of native salmonid restoration efforts.

### **Literature Cited**

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U.S. Fish and Wildlife Service (USFWS). 2015. Recovery plan for the coterminous United States population of bull trout (*Salvelinus confluentus*). Portland, Oregon. xii + 179 pages.

<b>Table 1. Vermilion Budget by Task (2023)</b>							
<b>Task</b>	<b>CFSA Appendix B</b>	<b>DNRC Planning Grant (pending)</b>	<b>Sanders County RAC (pending)</b>	<b>USGS Cooperative 25% Matching Funds (confirmed pending 75% match acquisition - requests to the left would qualify)</b>	<b>USFS Cabinet Ranger District (confirmed)</b>	<b>USFS Cabinet Ranger District (pending)</b>	<b>Grand Total</b>
Task 1: Project Management and Study Design	\$ -	\$ 12,645	\$ -	\$ 15,000	\$ 5,000	\$ 7,950	\$ 40,595
Task 2: UAS LiDAR/Thermal Infrared Survey	\$ 70,000	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 70,000
Task 3: Groundwater-Surface Water Monitoring Network	\$ 22,500	\$ 37,355	\$ 25,000	\$ 45,000	\$ 3,500	\$ 7,050	\$ 140,405
Task 4: Bathymetry Survey	\$ -	\$ -	\$ -	\$ -	\$ 18,000	\$ -	\$ 18,000
Task 5 (DRAFT) and 6 (FINAL): Restoration Design Packages	\$ 15,000	\$ -	\$ -	\$ -	\$ 6,000	\$ -	\$ 21,000
Administration	\$ 2,625	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 2,625
<b>Total</b>	<b>\$ 110,125</b>	<b>\$ 50,000</b>	<b>\$ 25,000</b>	<b>\$ 60,000</b>	<b>\$ 32,500</b>	<b>\$ 15,000</b>	<b>\$ 292,625</b>

**Table 2. Vermilion River Restoration and Project Effectiveness Monitoring Budget, FY2023**

Task	Vermilion River Restoration Projects 4 - 6 Survey and Design				Vermilion River Restoration and Project Effectiveness Monitoring					Grand Total
	CFSA Appendix B	USFS Cabinet Ranger District (confirmed)	Sanders County RAC (pending)	USGS Cooperative 25% Matching Funds (confirmed pending 75% match acquisition)	USGS Cooperative 25% Matching Funds (confirmed pending 75% match acquisition)	DNRC Planning Grant (pending)	USFS Cabinet Ranger District (confirmed)	USFS Cabinet Ranger District (pending)	CALR, America the Beautiful, and/or other BIL funds (pending)	
Task 1: Project Management (CFSA App B Task 1)	\$ -	\$ 5,000	\$ -	\$ 7,500	\$ 7,500	\$ 12,645	\$ -	\$ 7,950	\$ 39,405	\$ 80,000
Task 2: UAS LiDAR/Thermal Infrared Survey (CFSA App B Task 2)	\$ 70,000	\$ -	\$ -		\$ -	\$ -	\$ -	\$ -	\$ -	\$ 70,000
Task 3: USGS Streamgage and Continuous Water Quality	\$ -	\$ -	\$ -		\$ -	\$ -	\$ -	\$ -	\$ 97,722	\$ 97,722
Task 4: Biogeochemical Analysis (Water chemistry, microbiology, and streamflow discrete event monitoring network)	\$ -	\$ -	\$ -		\$ -	\$ -	\$ -	\$ -	\$ 255,550	\$ 255,550
Task 5: Groundwater-Surface Water Monitoring Network (CFSA Appendix B Task 3)	\$ 22,500	\$ -	\$ 25,000	\$ 22,500	\$ 22,500	\$ 37,355	\$ 3,500	\$ 7,050	\$ -	\$ 140,405
Task 6: Bathymetry Survey (CFSA Appendix B Task 4)	\$ -	\$ 18,000	\$ -		\$ -	\$ -	\$ -	\$ -	\$ -	\$ 18,000
Task 7 (DRAFT) and 8 (FINAL): Restoration Design Packages (CFSA Appendix B Task 5 and 6)	\$ 15,000	\$ 6,000	\$ -		\$ -	\$ -	\$ -	\$ -	\$ -	\$ 21,000
Task 9: Implementation	\$ -	\$ -	\$ -		\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
Task 10: Communication of project results / Education and Outreach	\$ -	\$ -	\$ -		\$ -	\$ -	\$ -	\$ -	\$ 12,650	\$ 12,650
Administration	\$ 2,625	\$ -	\$ -		\$ -	\$ -	\$ -	\$ -	\$ -	\$ 2,625
<b>Subtotal</b>	<b>\$ 110,125</b>	<b>\$ 29,000</b>	<b>\$ 25,000</b>	<b>\$ 30,000</b>	<b>\$ 30,000</b>	<b>\$ 50,000</b>	<b>\$ 3,500</b>	<b>\$ 15,000</b>	<b>\$ 405,327</b>	<b>\$ 697,952</b>
<b>Grand Total</b>	<b>\$ 194,125</b>				<b>\$</b>	<b>\$ 503,827</b>				<b>\$ 697,952</b>

As approved by the Management Committee on 3/14/2023

## Appendix B Project Evaluation and Ranking Criteria score sheet

As scored by the WRTAC on 1/18/2023

### **Project Title: Vermilion River Restoration Projects 4 - 6 Survey and Design**

Criteria	Score			
	3	2	1	0
<b>A. Species to benefit</b>	Bull Trout <u>and</u> Westslope Cutthroat Trout	Bull Trout <u>or</u> Westslope Cutthroat Trout	Target species but not Bull Trout or Westslope Cutthroat Trout	None
<b>B. Resource increase</b>	Great (> 25%)	Moderate (10–25%)	Limited (< 10%)	No increase
<b>C. Project addresses</b>	Threat to existence of population	Problem that limits population	Does not address a problem but enhances population	Not associated with target populations
<b>D. Project effectiveness</b>	Solves primary problem	Partially solves or provides all information to solve primary problem	Provides some information to address primary problem	Does not address primary problem
<b>E. Cost/benefit</b>	Benefit exceptional relative to cost	Benefit high relative to cost	Benefit consistent with cost	Cost exceeds benefit
<b>F. Outside funding</b>	≥ 50%	25–49%	≤ 24%	Entirely CFSA funded

#### **Scoring Instructions:**

- When ranking proposals that do not involve on-the-ground implementation but are necessary to the scope of physical projects (e.g., applied research, watershed assessments, NEPA analyses), score them with regard to the “expected” or “average” resultant physical project.
- A score of “0” in any of the criteria does not necessarily mean the project is ineligible for CFSA funding.** Rather, a score of “0” should be considered an indication that this aspect of the project needs to be thoroughly discussed and considered.
- Although total scores for each proposed project can be summed to get a general idea of the relative strength of each project, **the scoring system should be viewed as an ordinal rather than absolute ranking system.** In light of this and in the interest of maintaining a simple and objective scoring system, only whole numbers will be utilized (e.g., no half points).

## 2023 PROJECT PLAN

### St. Paul Trailhead Improvement Project

#### Project Contact

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Travis Rehm, Montana Fish, Wildlife & Parks, (406) 382-3032, [travis.rehm@mt.gov](mailto:travis.rehm@mt.gov) and  
Sean Moran, Avista, (406) 847-1291, [sean.moran@avistacorp.com](mailto:sean.moran@avistacorp.com)

#### Project History

This is a new project being proposed for 2023. This project was scored by the WRTAC on January 18, 2023, and the Evaluation and Ranking Criteria scores are included as the last page of this project plan.

#### Background

Bull Trout in the East Fork Bull River represent one of only three local populations in tributaries to the Clark Fork River between Cabinet Gorge and Thompson Falls dams that regularly exhibits an adfluvial life history. Thus, this local population is a very high priority for protection and enhancement through Clark Fork Settlement Agreement (CFSA) programs as well as through the Endangered Species Act. Numerous CFSA programs and projects have been implemented with the common goal of recovering this local population. Examples of these projects include stream restoration, riparian revegetation, non-native fish suppression, augmentation from another local population, facilitated transport to and from Lake Pend Oreille, and extensive applied research and monitoring. Despite these efforts, this local population remains in decline and without further action is likely on the verge of extirpation.

The trailhead for U.S. Forest Service (USFS) St. Paul Lake Trail 646 is located directly adjacent to the East Fork Bull River at the end of National Forest Service Road 407A (Figure 1). This trailhead was improved in the early 2000s at which time gravel was spread and large rocks were placed to designate a parking area, and a vault toilet was installed. St. Paul Trail 646 is one of the busiest wilderness trails on the west side of the Cabinet Mountains Wilderness Area. As such, the trailhead receives a commensurate high degree of use which includes dispersed camping.

The highest densities of Bull Trout spawning activity and resultant redds within the East Fork Bull River are in the reaches immediately adjacent to the trailhead. Based on annual Bull Trout redd counts from 2016 through 2020, 21 of the 32 identified redds were located within about 500 meters of the trailhead. Of those, 17 were within 250 meters, and the closest cluster was within 50 meters. It is important to note that the trailhead has served as one of the release sites for the upstream transport program which has likely contributed to high redd densities in this area. Thus, the St. Paul Lake trailhead inadvertently focuses public use on the most sensitive Bull Trout reaches within the East Fork Bull River.

There are numerous concerns with regard to focused public use in this area. In the fall, large-bodied adult Bull Trout are concentrated in this area. These fish are highly vulnerable to poaching as well as general stressors related to anthropogenic activities. In addition, eggs and pre-emergent fry are in the streambed gravels from the fall into the spring. Fish of these life

As approved by the Management Committee on 3/14/2023

stages are extremely susceptible to being “squished” or otherwise injured by pedestrian foot traffic. In addition, water quality is crucial during these life stages and there is concern regarding sedimentation from the adjacent raw banks, runoff carrying contaminants from the parking area, and contaminants from campers bathing, washing dishes, and other anthropogenic activities. Similarly, it is suspected that there is a bad seal in the vault toilet that may be introducing waste into the local groundwater-stream water interface (see Figures 2–4 for reference).

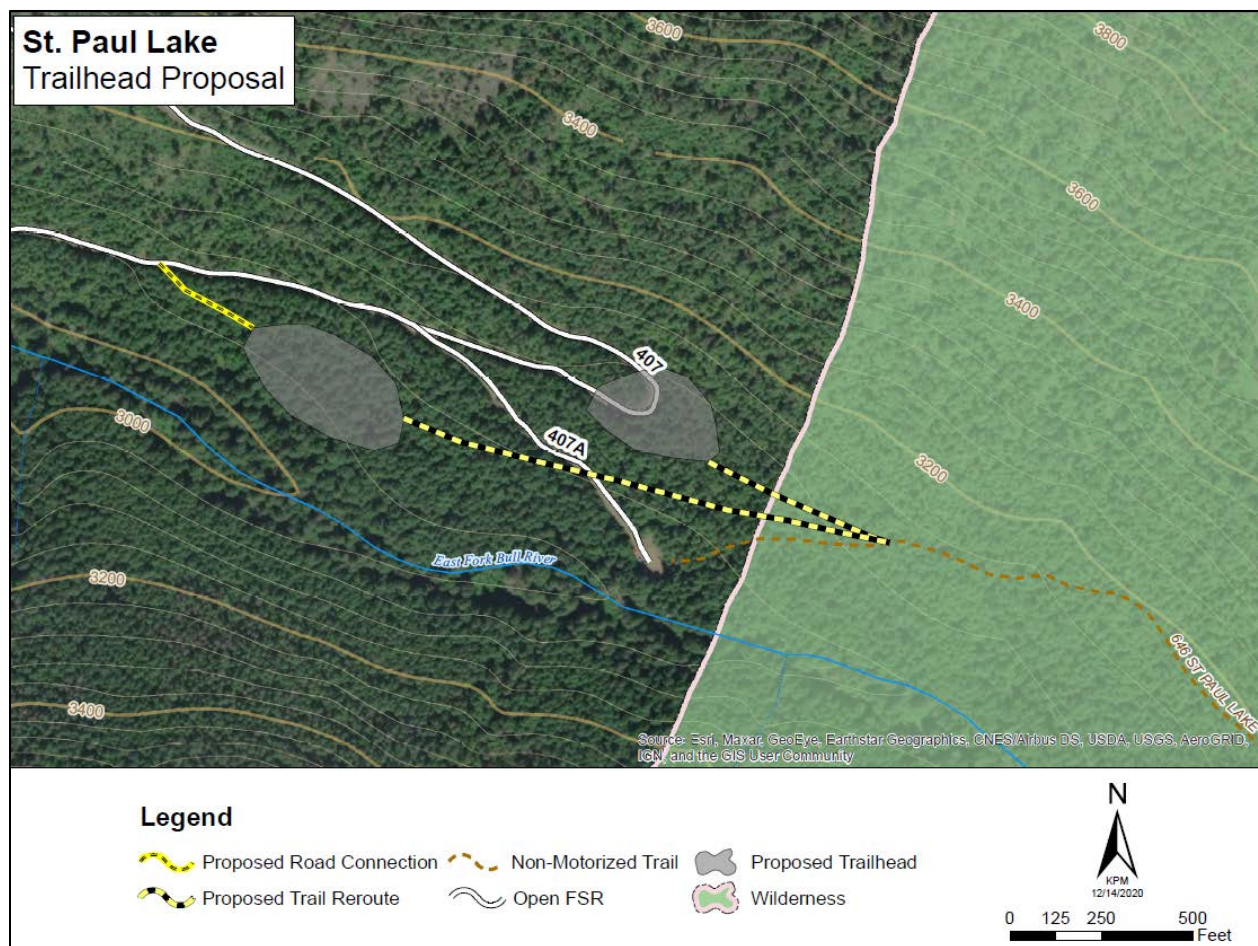


Figure 1. Map of the St. Paul Lake trailhead (at the terminus of road 407A) including the existing St. Paul Lake Trail. The gray shaded areas denote areas the USFS is in the preliminary stages of considering for trailhead relocation. The gray area on the switchback represents to preferred alternative at the time of preparing this project plan.



Figure 2. View from the south bank of the East Fork Bull River looking north at the trailhead to the St. Paul Lake trail. Note the overexposed vault toilet 50 meters to the north in the background. Also note the boulders demarcating the parking area boundary. In 2018, there were three Bull Trout redds that would have been visible within this photograph with four more just outside of the frame.



Figure 3. Denuded bank leading from the parking area to the river.



Figure 4. Campfire remnants and denuded bank between the parking area and the East Fork Bull River.

## **Goal**

The goal of this project is to protect the East Fork Bull River local population of Bull Trout (and other native salmonids) by refocusing public use away from the most sensitive reaches of the stream and otherwise reducing threats in this area.

## **Objectives**

1. Complete design for the new trailhead site
2. Complete NEPA for the project.
3. Relocate the trailhead for St. Paul Lake Trail 646 including connecting the new trailhead to St. Paul Lake Trail 646 along a Bull Trout-conscious path to an appropriate location in the existing trail.
4. Rehabilitate the current trailhead.

## **Tasks**

1. Hire contractor to survey and design the new trailhead site. Contractor will coordinate a site visit with appropriate stakeholders (primarily USFS) to conduct an initial site visit and meeting to develop design criteria and complete the survey. The goal is to complete this task as soon as possible as snow recedes (target date is prior to June 1; Objective 1).
2. Contractor will complete and submit 30% design within 30 days following the site visit (target date is July 1; Objective 1).
3. Appropriate stakeholders (primarily USFS) will review and provide comments on 30% design within 14 days of receipt of 30% design (target date is July 15). The Aquatic Implementation Team plus any additional CFSA stakeholders that indicate the desire to participate will be afforded the opportunity to review 30% design. (Objective 1)
4. Contractor will complete and submit 60% design within 30 days following receipt of 30% design comments (target date is August 1; Objective 1).
5. The USFS will complete the NEPA analysis supporting this project based on 60% design. Decision is anticipated by September 1, 2023. Note that the remaining tasks are contingent upon NEPA approval and other USFS policy considerations. However, as appropriate, some of the remaining tasks may occur simultaneous to NEPA review to expedite the overall project timeline. (Objective 2)
6. Appropriate stakeholders (primarily USFS) will review and provide comments on 60% design. This review may or may not be completed prior to NEPA decision. (target date is October 1; Objective 1)
7. Contractor will complete and submit final design based on 60% design comments within 30 days of receiving 60% design/post-NEPA comments (target date is November 1). (Objective 1)

8. If appropriate, Avista will work with USFS personnel to identify the most effective and efficient mechanism to contract the physical work associated with the new trailhead construction. USFS personnel will construct the association rerouting of trail 646 as well as rehabilitation of any abandoned parts of the existing trail as an in-kind contribution to this project. The goal is to complete the trailhead relocation by November 30, 2023. (Objective 3)
9. The USFS will develop and implement a rehabilitation plan for the current trailhead site (the USFS may work with CFSA personnel on this task, as appropriate). One consideration to be addressed will be access for the purpose of releasing fish. The vault toilet will be removed from the current St. Paul Lake trailhead as early in 2023 as possible. Considerations that may influence this task are the NEPA outcome, weather, and logistic considerations regarding use and human waste. The ultimate disposition of the toilet is currently unknown. It may be repaired and installed at the new trailhead, disposed of, or some other ultimate disposition. (Objective 4)

### **Work Products**

- NEPA decision; expected September 1, 2023
- Final design for the new trailhead; expected November 1, 2023
- Mid-year report; due to the Aquatic Program Leader (APL) August 1, 2023
- Annual Work Summary; due to the APL December 1, 2023

### **Permitting Requirements**

The USFS will be responsible for identifying and obtaining any permits required to implement this project.

Endangered Species Act consultation for the effects of this project plan on listed species will occur between the U.S. Forest Service and the U.S. Fish and Wildlife Service. As such, project files and reporting associated with the effects of this project plan on listed species will be housed with the Forest Service and/or U.S. Fish and Wildlife Service.

### **Cultural/Historic Resource Review**

Cultural/historic resource review(s) will be completed by USFS Kootenai National Forest staff as part of the NEPA process.

### **Benefit to the Resource**

One component of Appendix B of the CFSA is to enhance tributaries to the lower Clark Fork River in the interest of benefiting native salmonid populations. Similarly, Appendix C of the CFSA calls for implementation of the Native Salmonid Restoration Plan and associated Five-Year Plan. This project is designed to directly benefit native salmonids in the East Fork Bull River by reducing anthropogenic threats to sensitive life stages in the most sensitive reach of the stream.

These efforts are consistent with direction from the U.S. Fish and Wildlife Service through the Bull Trout Recovery Plan, Biological Opinion for the Clark Fork Projects FERC license, and

informal consultation through the CFSA process. This project is in direct support of the USFS 2015 Forest Plan which seeks to provide dispersed camping opportunities that are available for a wide variety of users while considering resource concerns, activity conflicts, or overuse. In addition, the Forest Plan seeks Bull Trout population trends toward recovery through cooperation and coordination with the USFWS, state agencies, other federal groups, and interested groups. These actions also align with the MFWP management plan in the interest of managing for the recovery of native species.

**Budget**

<b>Item</b>	<b>Estimated Carryover<sup>1</sup></b>	<b>2023 Budget Request</b>
Contract for survey and design	\$0	\$33,500
<b>Total</b>	\$0	\$33,500
<b>Anticipated Expenditures</b>		\$33,500

<sup>1</sup> Estimated carryover of unexpended, approved funds as of January 1.

This project is a cost share between Appendix B and the USFS. In-kind contributions from the USFS include the NEPA analysis, engineering support, permitting and cultural/historic reviews and approvals, general project management, and trailhead construction, and rehabilitation of the existing trailhead site. Funding is likely to be sought through the Forest Service Legacy Road and Trail Remediation Program as well as the Resource Advisory Council. These contributions are valued at \$180,000.

## Appendix B Project Evaluation and Ranking Criteria score sheet

*As scored by the WRTAC on 1/18/2023*

### Project Title: St. Paul Trailhead Improvement Project

Criteria	Score			
	3	2	1	0
<b>A. Species to benefit</b>	Bull Trout <u>and</u> Westslope Cutthroat Trout	Bull Trout <u>or</u> Westslope Cutthroat Trout	Target species but not Bull Trout or Westslope Cutthroat Trout	None
<b>B. Resource increase</b>	Great (> 25%)	Moderate (10–25%)	Limited (< 10%)	No increase
<b>C. Project addresses</b>	Threat to existence of population	Problem that limits population	Does not address a problem but enhances population	Not associated with target populations
<b>D. Project effectiveness</b>	Solves primary problem	Partially solves or provides all information to solve primary problem	Provides some information to address primary problem	Does not address primary problem
<b>E. Cost/benefit</b>	Benefit exceptional relative to cost	Benefit high relative to cost	Benefit consistent with cost	Cost exceeds benefit
<b>F. Outside funding</b>	≥ 50%	25–49%	≤ 24%	Entirely CFSA funded

#### Scoring Instructions:

- When ranking proposals that do not involve on-the-ground implementation but are necessary to the scope of physical projects (e.g., applied research, watershed assessments, NEPA analyses), score them with regard to the “expected” or “average” resultant physical project.
- A score of “0” in any of the criteria does not necessarily mean the project is ineligible for CFSA funding.** Rather, a score of “0” should be considered an indication that this aspect of the project needs to be thoroughly discussed and considered.
- Although total scores for each proposed project can be summed to get a general idea of the relative strength of each project, **the scoring system should be viewed as an ordinal rather than absolute ranking system.** In light of this and in the interest of maintaining a simple and objective scoring system, only whole numbers will be utilized (e.g., no half points).

## 2023 PROJECT PLAN

### Cabinet Gorge and Noxon Reservoir Fisheries Monitoring Plan

#### Project Contact

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and Travis Rehm, MFWP, (406) 382-3032, [travis.rehm@mt.gov](mailto:travis.rehm@mt.gov)

#### Project History

This is a continuing project originally approved by the Management Committee (MC) in 2000. The scope and budget for this project are reviewed by the MC annually.

#### Background

Over the past 20 years, monitoring on Noxon and Cabinet Gorge reservoirs has revealed important changes in the fisheries community. For example, eliminations of large water level fluctuations by Avista in the 1980s resulted in successful reproduction of bass species which has translated to an increase in angling pressure (Kreiner and Tholl 2016). Additionally, dramatic shifts in species composition of tournament-caught fish and increases in Walleye abundance since 2000 have been documented and monitored under this program (Kreiner and Tholl 2016; Kreiner et al. 2020; Rehm et al. 2021). More recently, focus has been put on identifying year-class strength of Walleye within Noxon Reservoir. Monitoring activities in 2023 will include fall gillnetting, bass tournament monitoring, and Walleye sampling. Finally, we will continue to promote recreational fishing in Sanders County by holding two kids fishing days.

#### *Fall Gillnetting*

Standardized annual fall gillnetting in Noxon and Cabinet Gorge reservoirs provides the most comprehensive index of relative abundance for fish species and fish community composition in both reservoirs. Standardized gillnet surveys are conducted annually in Noxon and Cabinet Gorge reservoirs in early October. The surveys consist of 45 total overnight gillnet sets, 30 in Noxon Reservoir and fifteen in Cabinet Gorge. In Noxon, 19 sites are in the lower portion of the reservoir below Beaver Creek Bay, while the remaining 11 sites are in the upper riverine portion. Originally planned as biennial sampling in 2000, annual sampling was deemed necessary in 2002 because of the expanding population of Walleye. Standardized (i.e., identical) sites have been sampled annually since then. Coldwater sites such as tributary mouths, have been intentionally avoided to reduce Bull Trout by-catch and mortality.

#### *Bass Tournament Monitoring*

The status of adult Largemouth and Smallmouth Bass populations has been assessed annually since 1997 by monitoring bass tournaments on Noxon Reservoir. In most years, between five and seven two-day bass tournaments occur on Noxon Reservoir. One to three tournaments are monitored each year. Noxon Reservoir bass tournaments required that bass to be weighed-in had a minimum length of 305 mm (12"). Therefore, only bass this size or larger are monitored at tournaments. Indices collected at Noxon tournaments since the 1990s include the percentage of quality fish weighed in (fish greater than 380 mm or 15 inches; Gabelhouse 1984), mean length of fish weighed in (>305 mm), and proportion of species brought to weigh-in (Smallmouth versus Largemouth bass). All tournaments held on Noxon Reservoir allowed high-grading or

culling (i.e., the replacement of smaller fish captured with larger fish after a 5-fish limit was attained) so catch rates cannot be accurately estimated.

### *Spring Walleye Sampling*

Walleye were illegally introduced into Noxon Reservoir in the 1980s or early 1990s (WWP 1995, Horn and Tholl 2010). Since 2000, the population of Walleye has become self-sustaining and has increased in abundance relative to other species. Walleye have since become established in the downriver waterbodies of Cabinet Gorge Reservoir, Lake Pend Oreille, and the Pend Oreille River through Idaho and into Washington. Based on movement information obtained during a previous telemetry study (Horn et al. 2009), MFWP began spring surveys for Walleye on suspected spawning grounds in 2012. This work has continued through 2021, primarily using jet-boat electrofishing at night. To coincide with suitable spring spawning temperature and pre-runoff flows, spring Walleye electrofishing is conducted from late March to early May (Willis and Stephen 1987). Efforts occur in two spawning areas directly downstream of Thompson Falls Dam, adjacent to the River's Bend Golf Course and upstream of the Highway 200 bridge. Nighttime electrofishing for Walleye will continue in the spring in order to track year class strength, run timing, and relative abundance of spawning Walleye.

### *Promote Recreational Fishing*

For more than 15 years the CFSA has supported kids fishing days in Sanders County. Historically fishing day were held exclusively at Triangle Pond, however more recently they have been expanded to the Thompson Falls State Park Pond.

## **Goal**

Accurately monitor species composition, long-term trends in relative abundance, and growth data of fish species in Noxon Reservoir.

## **Objectives**

1. Track the long-term trends in abundance fish populations in Noxon and Cabinet Gorge reservoirs through annual fall gillnetting.
2. Monitor the overall status of the bass fishery in Noxon Reservoir with tournament data.
3. Monitor the population of Walleye in Noxon Reservoir through spring electrofishing, and annual fall gillnetting.
4. Promote recreational fishing in our youth.

## **Tasks**

1. Monitor relative abundance and fish community composition in both Noxon and Cabinet Gorge reservoirs. Standardized gill net sets will occur on both reservoirs in early October. The surveys consist of 45 total overnight gillnet sets, 30 in Noxon Reservoir and fifteen in Cabinet Gorge. In Noxon, 19 sites are in the lower portion of the reservoir below Beaver Creek Bay, while the remaining 11 sites are in the upper riverine portion.

2. Monitor the bass fishery in Noxon Reservoir. Select bass tournaments (1-3) will be monitored to collect length data and species composition of all tournament caught fish.
3. Nighttime electrofishing of Noxon Reservoir Walleye will consist of multiple nights sampled during several weeks in April and/or May 2023. For complete details on past methodologies, please refer to Kreiner and Tholl 2016.
4. Promote recreational fishing in our youth. The promotion and operation of two kids fishing days will occur on Triangle Pond and the Thompson Falls State Park Pond.

### **Work Products**

- Annual Project Update; 2022 activities; final due October 1, 2023
- Annual Project Update; 2023 activities; final due October 1, 2024
- Annual Work Summary; from Aquatic Program Leader to Avista; due December 1, 2023

### **Permitting Requirements**

No permits are required for fisheries sampling work as all work will be conducted and/or overseen by MFWP fisheries biologists.

Endangered Species Act consultation for this project plan is associated with the 2019 Biological Opinion on the effects of continued operation of the Clark Fork Hydroelectric Project on Bull Trout and designated Bull Trout critical habitat (BiOp), and the USFWS-MFWP Cooperative Agreement pursuant to Section 6 of the Act. This project plan is consistent with the analysis and conclusions contained in the 2019 BiOp and the USFWS-MFWP Cooperative Agreement and will adhere to all appropriate Terms and Conditions designed to reduce the extent and effects of incidental take on Bull Trout. Incidental take reporting for this project plan will be included in the annual Biological Opinion report as required by Term and Conditions 15–18 of the 2019 Incidental Take Statement, as well as MFWP’s annual Section 6 report to the USFWS.

### **Cultural/Historic Resource Review**

Not applicable for the tasks proposed in this project plan, there are no ground and/or vegetation disturbing activities, or proposed impacts to cultural/historic resources.

### **Benefit to the Resource**

Noxon Reservoir is one of the most popular fisheries in northwest Montana (MFWP 2014). In a recent report, Scarnecchia et al. (2014) caution that while the current fishery is functioning at a level in which predators and prey are more balanced than in the past, continued monitoring is necessary. There is potential for one or more species to reach a level which could be detrimental to the quality of angling, either through dramatic increases in one or more predator species, or a depletion of the prey base. The authors encourage additional sampling protocols for all fish, including Walleye and basses, outside of the standard gillnetting. Appendix B of the CFSA states that “[Avista] will support and cooperate with the fishery monitoring, enhancement, and management efforts of MFWP on Noxon and Cabinet Gorge Reservoirs”, which includes “monitoring fish populations”.

## Budget

Item	Estimated Carryover <sup>1</sup>	2023 Budget Request
Avista Labor (Technician, 0.6 FTE)	\$15,000	\$57,000
Technical assistance on the Thompson River	\$0	\$6,000
Meals (Univ. ID student volunteers)	\$0	\$4,000
Supplies and maintenance (gill nets, boat repair, daily equip., etc.)	\$0	\$4,000
Fuel	\$0	\$4,000
Depth finder (jet boat; purchase and installation)	\$2,000	\$0
Walleye otolith extraction and analysis	\$0	\$1,000
PIT tags	\$0	\$3,000
Aging equipment	\$0	\$1,000
Kids fishing day costs	\$0	\$1,000
<b>Total</b>	<b>\$17,000</b>	<b>\$81,000</b>
<b>Anticipated Expenditures</b>		<b>\$98,000</b>

<sup>1</sup> Estimated carryover of unexpended, approved funds as of January 1.

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## 2023 PROJECT PLAN

### Mountain Lake Fisheries Monitoring Project

#### Project Contacts

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#### Project History

This is a continuing project for which the originally intended four-year scope was approved by the Management Committee in 2016. No additional funding or changes to the scope are being requested for this project; although a delay in 2019 sampling due to unrelated injury to personnel resulted in a need to extended sampling of the remaining lakes to 2020, completing the field component of the project. It is being requested that the Comprehensive Project Report completion date be extended from December 31, 2022 to December 31, 2023.

#### Background

High-mountain lake fisheries represent a unique angling experience in a backcountry setting and are popular summer and fall destinations for many outdoor enthusiasts. The Cabinet and Bitterroot Mountains Ranges located on land administered by the Lolo and Kootenai National forests in northwest Montana offer numerous high-mountain lake angling opportunities with varying levels of access; from remote wilderness lakes that require miles of hiking in steep mountainous terrain to lakes which can be accessed by motor vehicle. Montana Fish, Wildlife and Parks (MFWP) has dedicated considerable resources to stocking these lakes but many of these fisheries have never been evaluated. There is a need to evaluate stocking strategies in these waterbodies as to provide diverse angling experiences based on the potential of a given lake. This evaluation would allow MFWP to develop management objectives (i.e., classification) and adjust stocking strategies for individual lakes according to the findings of the proposed work. Similar high-mountain lakes investigations have been conducted by MFWP staff in Region 2 and will be used as a template for this work. Knotek et al. (2013) provides a comprehensive list of management objectives for high-mountain lakes such as high density/harvested oriented fisheries, quality fisheries, trophy fisheries, self-sustaining fisheries and fishless lakes. Management classifications for individual lakes will be based on size, age structure and condition of fish; catch rates (gill nets and angling); accessibility; angler use; and physical habitat. In turn, these metrics will be used to determine stocking strategies, specifically the number of fish stocked per acre and the frequency of stocking events. Sampling events will also include sub-impoundments fisheries such as the Thompson Falls State Park pond, Frog Pond, Triangle Pond and Quinns Cut.

High-mountain lake fisheries can also present challenges in the management and conservation of native salmonids. Non-native salmonids have been known to invade headwater stream reaches occupied by native salmonids, through downstream dispersal from lake basins which are often located at the upper terminus of stream catchments (Adams 1999; Adams et al. 2001). Brook Trout *Salvelinus fontinalis* in high-mountain lakes are of concern because this species is known to outcompete Cutthroat Trout *Oncorhynchus Clarki* spp. and hybridize with Bull Trout *Salvelinus confluentus*. In many western states including Montana, species and subspecies of the

*Oncorhynchus* genus have been stocked in mountain lakes outside of their native distribution. In western Montana, Yellowstone Cutthroat Trout *Oncorhynchus clarkii bouvieri* were historically stocked in many drainages occupied by native Westslope Cutthroat Trout *Oncorhynchus clarkii lewisi*. The identification of non-native salmonids and *Oncorhynchus* hybrids in mountain lakes is an important component of native fish management. Thus, detection of any non-native fish will be useful in identifying potential future removal projects. Genetic analyses to investigate *Oncorhynchus* species hybridization will be conducted at lakes where stocking records indicate non-native species such as Yellowstone Cutthroat Trout were stocked in the past, or where visual inspection reveals unusual phenotypic characteristics. Mountain lakes may also present an opportunity to be used in the future as refugia for Bull Trout populations, whose distribution is predicted to contract with climate-change (Isaak et al. 2015) and the presence of appropriate habitats will be documented.

This plan is supported by the Clark Fork Settlement Agreement (CFSA) which calls for an evaluation of recreational fisheries. This data will provide management direction for high-mountain lakes fisheries and outline possible threats in important native salmonid drainages. Listed below are direct quotes from the CFSA that pertain to the validity of this proposal.

“MFWP will develop recreational fisheries proposals that meet their organization’s objectives, while in consultation with the Water Resources Technical Advisory Committee and the Management Committee. The Management Committee’s decision to approve funding for these recreational fisheries initiatives will be limited to issues of federal conflict arising between the actions of providing funding under the federal hydropower license, and those of other applicable federal laws (e.g. ESA).” (Avista Corp. 1999, pg. B-10).

“Although the Thompson River is not located in the immediate project vicinity, its proximity to the project area and the limited number of recreational fishery enhancement opportunities in the area make the Thompson River a viable recreation fishery mitigation area.” (Avista Corp. 1999, pg. B-5).

## **Goal**

The goal of this project is to evaluate species present, relative abundance, size structure and natural reproduction as well as basic physical lake characteristics to inform future stocking strategies and other management activities.

## **Objectives**

1. Summarize historical information for lakes such as stocking history and past surveys.
2. Describe current biological status of individual lakes including size structure, growth rates, condition, reproductive success, relative abundance of species present, fish diet composition (qualitative), levels of hybridization, amphibian presence; physical lake attributes such as maximum depth, P.H., dissolved oxygen, surface water temperature, surface acreage, elevation, presence of aquatic vegetation; and relevant recreational information such as accessibility and angling pressure.

3. Create future management objectives (stocking density and frequency) based on findings of these surveys.
4. Determine lakes where non-native species or *Oncorhynchus* hybrid presence could threaten native salmonids and what management actions are appropriate.

### **Tasks**

1. Lakes will be sampled from June through October of each year, weather permitting. Fish populations will be sampled with sinking experimental, monofilament gillnets. Basic water quality and physical measurements will be taken at each fish bearing lake. For some lakes it may be hard to determine if the lake is capable of sustaining fish (and should be sampled) until they are visually inspected. A good portion of the smaller lakes are likely shallow and fishless, and thus only basic information would be collected (presence of amphibians, inlet/outlet, etc.). (Objectives 2-4; **Completed in 2020**).

### **Work Products**

- Annual Work Summary; from Aquatic Program Leader to Avista; due December 1, 2023
- Comprehensive Project Report; final due to Avista; due December 31, 2023

### **Permitting Requirements**

No permits are required for fisheries sampling work as all work will be conducted and/or overseen by MFWP fisheries biologists.

Endangered Species Act consultation for this project plan is associated with the 2019 Biological Opinion on the effects of continued operation of the Clark Fork Hydroelectric Project on Bull Trout and designated Bull Trout critical habitat (BiOp), and the USFWS-MFWP Cooperative Agreement pursuant to Section 6 of the Act. This project plan is consistent with the analysis and conclusions contained in the 2019 BiOp and the USFWS-MFWP Cooperative Agreement, and will adhere to all appropriate Terms and Conditions designed to reduce the extent and effects of incidental take on Bull Trout. Incidental take reporting for this project plan will be included in the annual Biological Opinion report as required by Term and Conditions 15–18 of the 2019 Incidental Take Statement, as well as MFWP’s annual Section 6 report to the USFWS.

### **Cultural/Historic Resource Review**

Not applicable for the tasks proposed in this project plan, there are no ground and/or vegetation disturbing activities, or proposed impacts to cultural/historic resources.

### **Benefit to the Resource**

Mountain lakes surveys will allow MFWP to determine the distribution of native and non-native salmonids throughout headwater lakes in the lower Clark Fork River drainage. Such information will in turn be used to formulate strategies for the conservation of native stream dwelling salmonids that occupy particular drainages of importance. Baseline mountain lakes surveys will also allow MFWP to evaluate past stocking strategies based on survey findings and create future management objectives for these recreational fisheries.

### Budget

Item	Estimated Carryover <sup>1</sup>	2023 Budget Request
Implement Mountain Lakes Survey reporting, including fish otolith ageing and report preparation	\$2,000	\$0
<b>Total</b>	\$2,000	\$0
<b>Anticipated Expenditures</b>		\$2,000

<sup>1</sup> Estimated carryover of unexpended, approved funds as of January 1.

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## 2023 PROJECT PLAN

### Lower Bull River Day Use Boat Access Site Operation

#### Project Contacts

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#### Project History

This is a continuing Project Plan originally approved in 2019 and incorporating actions that were approved by the Management Committee (MC) during the fall 2018 meeting. This Project Plan is a follow-up to the completed Lower Bull River Day Use Boat Access Plan and Final Design project. In 2017, this property was listed for sale and was acquired through Appendix B following Consent Mail approval of the MC. In 2018, under the Lower Bull River Day Use Boat Access Plan and Final Design project, a site plan was produced by MFWP and design and management considerations were discussed at a meeting with the Bull River Watershed Council. In order to make this site operational as soon as possible, the design was included in a proposal and major construction was completed in the fall of 2018 using funds (\$100,000) approved by the MC at the September 25 meeting (Avista 2018). The site management plan was finalized and major construction at the site was completed in 2019. Kiosk and interpretive signs, and picnic tables were installed, and maintenance was performed in 2020. Approach signage on Highway 56 was installed in 2021. Use visitation was recorded in 2020–2022 and described a slight decrease between the first and latter two seasons. Quantification of use will be considered and applied to future consideration on whether the installation of vault toilet is needed in light of an unforeseen zoning issue that greatly complicates permitting of such an installation. A porta-potty was installed in the interim and may be sufficient for the foreseeable future.

#### Background

The Bull River provides an increasingly popular fishery for both native Westslope Cutthroat Trout and non-native salmonids. From 2005 to 2009, angling pressure on the river approximately doubled (MFWP 2009). Due to its location, size (with over 20 miles of floatable channel), and spectacular setting, the Bull River represents a unique recreational opportunity in northwest Montana. Throughout much of its length, the low gradient and sinuous nature of the channel provides for scenic and relaxing floating throughout a variety of flow levels. Because a majority of the channel is too deep to provide wading access, much of the use is by small, non-motorized watercraft. Private land dominates the lower and middle areas of the river and very few public access points existed. This limited access was particularly pronounced along the lower Bull River, in which public access suitable for non-motorized boat launching was limited to the mouth of the East Fork Bull River at approximate river mile 10, and the USFS campground located at Bull River Bay. Not only was access limited, but by having to take out in the bay, floaters were subject to the more hazardous conditions encountered in the lower two miles of the channel.

Accordingly, investigations into the potential purchase of private land along the lower Bull River approximately two river miles upstream from the bay had been investigated under a feasibility study approved by the MC in 2013. Private disputes between landowners precluded finalizing the

purchase of this property until 2017. With the purchase of this property under the Recreational Fishery Enhance Fund (Appendix B) of the Clark Fork Settlement Agreement (CFSA), the site enjoyed its first full season of use in 2020.

### **Goal**

The goal of this project is to maintain the site and assess use for the 2023 recreation season.

### **Objective**

1. Complete necessary maintenance tasks to upkeep the site prior to and during 2023 recreation season (Task 1).
2. Quantify use levels to inform future site plan considerations, including need for a vault toilet. (Task 2)

### **Tasks**

1. Perform required ground maintenance and other efforts to ensure use during the 2023 recreation season. (Objective 1)
2. Continue to use traffic-counting equipment to assess use levels during the 2023 recreation season. (Objective 2)

### **Work Products**

- Site visitation information; from contractor to the Aquatic Program Leader and Avista; due November 15, 2023
- Annual Work Summary; due December 1, 2023

### **Permitting Requirements**

All necessary permitting has been completed for the current development and use of this site. Continued due-diligence as to required zoning and permitting for potential vault toilet installation is ongoing.

Endangered Species Act consultation for this project plan is associated with the 2019 Biological Opinion on the effects of continued operation of the Clark Fork Hydroelectric Project on Bull Trout and designated Bull Trout critical habitat (BiOp). This project plan is consistent with the analyses and conclusions contained in the 2019 BiOp and will adhere to all appropriate Terms and Conditions designed to reduce the extent and effects of incidental take on Bull Trout. No incidental take of Bull Trout is anticipated as a result of this project plan; therefore, no take reporting is required.

### **Cultural/Historic Resource Review**

This is a carryover project and the cultural/historic resource review was completed in 2018 by the Cultural Resources Management Group. Avista will coordinate site monitoring with Confederated Salish and Kootenai Tribe archeologist prior to initiating any of the ground work for this project plan.

### Benefit to the Resource

This project is consistent with the Montana Tributary Habitat Acquisition and Recreational Fishery Enhancement Program, both by facilitating access for sampling associated with implementing, maintaining, and assessing stream habitat and riparian revegetation programs (under the Tributary Habitat Fund) and by increasing public recreational fishery access (under the Recreational Fishery Enhancement Fund). The construction of this project is being funded by Appendix B; however, the Passive Integrated Transponder (PIT) tag array installed in 2018 is also consistent with goals of the Fish Passage/ Native Salmonid Restoration Plan (Appendix C). By providing law enforcement access to the Bull River and, depending on input into the development plan that could entail educational facilities, this project is also consistent with the goals of the Bull Trout Protection and Public Education Program (Appendix D of the CFSA). By providing signage on ongoing revegetation efforts floaters are likely to see, this site also provides out-reach to the Watershed Councils Program (Appendix E) and stream restoration efforts conducted under Appendix B.

### Budget

Item	Estimated Carryover <sup>1</sup>	2023 Budget Request
Install visitation monitoring equipment and reporting.	\$2,500	\$1,000
Avista staff maintenance and 8 mo. porta-potty service	\$2,718	\$1,000
<b>Total</b>	<b>\$5,218</b>	<b>\$2,000</b>
<b>Anticipated Expenditures</b>		<b>\$7,218</b>

<sup>1</sup> Estimated carryover of unexpended, approved funds as of January 1.

### Literature Cited

Avista. 2018. Management Committee meeting minutes from September 25, 2018. Avista document identification number 2018-0349. Avista, Noxon, Montana.

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[www.fwp.mt.gov/fishing/anglingPressureSurveys/](http://www.fwp.mt.gov/fishing/anglingPressureSurveys/)



## 2023 PROJECT PLAN

### Noxon Reservoir Boat Ramp Improvements

#### Project Contacts

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#### Project History

This is a carryover project that was approved by the Management Committee in 2017. Ramp improvements and the adoption of a management plan addendum to Montana Fish Wildlife and Parks' Thompson Falls State Park plan have occurred; however, full implementation may include installation of access gating this year. Accordingly, approval for this change in scope and budget is being requested.

#### Background

In 2015, 2016 and 2018, unseasonably warm early spring weather, combined with increased angler interest in the upper reach of Noxon Reservoir, resulted in a number of angler complaints regarding the lack of boat access. Two boat ramps exist in the upper reach of Noxon Reservoir, Flat Iron Ridge and Thompson Falls State Park. In 2015 and 2016, low snowpack and decreased run-off, combined with Avista's ability to draft Noxon Reservoir up to 10 feet between October 1 and May 14, has limited the ability to launch motorized boats in the upper reach of Noxon Reservoir.

The current ramp at Thompson Falls State Park has been extended to allow function at low recreation and non-recreation season pool levels or river flows (FIGURE 1). At low flows and low reservoir elevations, the Flatiron Boat ramp is often unusable due to sedimentation (FIGURE 2). Currently, the ramp area is dredged every five to eight years to remove sediment and improve access.

Following investigations into potential liability, constraints imposed by the physical attributes of each location, and logistical considerations, representatives from MFWP and Avista met at Thompson Falls State Park and Flatiron boat ramps in October 2020 to discuss a path forward. At this meeting it was decided to extend the Thompson Falls State Park ramp and to continue periodic dredging of the Flatiron site. Also, during this meeting, the potential to install gating to allow for spring use of the ramp prior to the park's April 29<sup>th</sup> opening date was discussed. Preliminary designs, cost estimates, permitting, and construction of the Thompson Falls State Park ramp extension were completed in 2021. Requests for permitting of periodic dredging of the Flat Iron Boat Ramp and investigation of alternative dredging methods are ongoing.

#### Goal

The goal of this project is to increase boater access to upper Noxon Reservoir during periods of low flow.



FIGURE 1. Sixteen-foot concrete ramp extension at the Thompson Falls State Park November 2021.



FIGURE 2. Boat ramp at Flat Iron Ridge Fishing Access Site during low-water in 2016.

### Objective

1. Identify most appropriate means of providing suitable deep water boat access in upper Noxon Reservoir.

## Tasks

1. Evaluate options for improving boat access at Flat Iron Ridge and/or Thomson Falls State Park. Avista and MFWP, with input from Northwest Energy, will agree upon an improvement potentially including the redesign of the Thompson Falls State Park boat ramp, potential redesign Flat Iron Ridge boat ramp (Figure 4), design of a new low-water boat ramp at Flatiron Ridge, and/or dredging of Flat Iron Ridge. The evaluation will also consider compliance with the Recreation Resource Management Plan (CFSA Appendix H), need, feasibility, environmental impacts, permitting (including cultural resource survey), cost (both construction and operation and maintenance), as well as legal obligation and liability. (Objective 1; **Completed 2020**)
2. Once preferred alternative(s) are identified, engineering support may be required to design the ramp modifications. In addition, permits will be required prior to constructing or dredging, and contractors will be required to execute the preferred alternative(s). (Objective 1; ***ramp extension Completed in 2021, although permitting request for dredging and investigation of alternative dredging methods at the Flat Iron site is ongoing***)
3. Under coordination with MFWP State Park administration, develop a management plan addendum to provide for spring access prior to the typical late-April opening date of the park. (Objective 1 **Completed 2021**)
4. Provided the addendum, with the addition of restrictive gating is amenable to MFWP, install gating across access roads within the park limiting public access to the boat ramp. (FIGURE 3; Objective 1)



FIGURE 3. Thompson Falls State Park with proposed seasonal gating (yellow) limiting vehicle access to boat ramp in the early spring prior to campground opening date.

### Work Products

- Technical memorandum or other appropriate work product listing associated development options, including site plan(s) and cost estimates; due April 1, 2023
- Annual Work Summary; due December 1, 2023

### Permitting Requirements

Permitting requirements will be determined after preferred alternative(s) are identified and approved. Permitting will likely consist of a U.S. Army Corps of Engineers Joint Aquatic Resource Permit Application (“JARPA”).

Endangered Species Act consultation for this project plan is associated with the 2019 Biological Opinion on the effects of continued operation of the Clark Fork Hydroelectric Project on Bull Trout and designated Bull Trout critical habitat (BiOp). This project plan is consistent with the analyses and conclusions contained in the 2019 BiOp and will adhere to all appropriate Terms and Conditions designed to reduce the extent and effects of incidental take on Bull Trout. No incidental take of Bull Trout is anticipated as a result of this project plan; therefore, no take reporting is required.

### Cultural/Historic Resource Review

Avista cultural staff will coordinate a cultural/historic resource review for the project. The work product for this review will be confidential due to the sensitive nature of the content.

### Benefit to the Resource

Noxon Reservoir is one of the most popular fisheries in northwest Montana and supports a diverse and dynamic recreational fishery. Assuring access at lower water levels to the upper reservoir not only facilitates recreational enjoyment but is also consistent with efforts of the Recreational Fisheries component of Appendix B to support fishery monitoring, enhancement, and management efforts of MFWP on Noxon and Cabinet Gorge reservoirs.

### Budget

Item	Estimated Carryover <sup>1</sup>	2023 Budget Request
Upper Noxon Reservoir boat ramp improvements; plans and construction	\$3,250	\$0
Gating (4 @ \$1,200 ea.)	\$4,800	\$0
Labor to install gating	\$3,000	\$0
<b>Total</b>	<b>\$11,050</b>	<b>\$0</b>
<b>Anticipated Expenditures</b>		<b>\$11,050</b>

<sup>1</sup> Estimated carryover of unexpended, approved funds as of January 1.



## 2023 PROJECT PLAN

### Managing Aquatic Invasive Plants on Noxon and Cabinet Gorge Reservoirs

#### Project Contact

Kim McMahon, Sanders County Aquatic Invasive Plants Task Force Facilitator, (406) 546-2447, [kim.pinnacle.research@gmail.com](mailto:kim.pinnacle.research@gmail.com)

#### Project History

This is a continuing project implemented by the Sanders County Aquatic Invasive Plants Task Force (Task Force) to manage the infestation of Eurasian watermilfoil (EWM) in the Noxon and Cabinet Gorge reservoirs. The Management Committee (MC) originally approved this project in 2008 with funding from Appendices G and H. Also in 2008, the MC approved a small amount of funding from Appendix B for reservoir mapping of EWM. The MC first approved funds for treatment of EWM (from Appendix B) in 2014. Following consideration of the Alternatives Analysis in 2017, a change in scope to focus treatment on high use areas and access points was adopted. The scope and budget of this project are reviewed annually by the MC. The MC approved \$40,000 from the Appendix B Recreational Fishery Enhancement Program for control of EWM in 2022. No change in scope and budget are being requested for 2023. The work to control EWM is complemented by monitoring, education and research, which is being funded through other avenues (e.g., CFSA Appendix G; Montana Fish, Wildlife & Parks, and grants).

#### Background

Eurasian watermilfoil and curlyleaf pondweed (CLP)<sup>1</sup> were confirmed in Noxon and Cabinet Gorge reservoirs in 2007; this was the first identified infestation of EWM in Montana. Initial studies indicated that EWM covered 247 acres in Noxon and 117 acres in Cabinet.

Eurasian watermilfoil is an aggressive, non-native aquatic weed that poses a serious threat to Montana's rivers and lakes. When introduced into a waterbody, EWM spreads quickly and forms thick beds with dense canopies that crowd out native aquatic plants and threaten fisheries, water quality, drinking and irrigation water supplies and recreational uses. Once established, dense EWM beds can deplete oxygen needed by fish and other aquatic organisms (Madsen 2014). With the exception of bottom barriers, control measures selectively target EWM, thereby maintaining populations of native coontail, elodea, pondweeds and white water buttercup.

The Sanders County Commissioners established the Task Force in 2008 to develop and implement an integrated weed management approach to contain and manage infestations of EWM. The annual program has included the following components:

- Controlling priority areas of invasive milfoil stands through a combination of aquatic herbicide treatments, diver dredging (hand removal) in small, narrow plots where herbicides have proven to be less effective, and the use of bottom barriers at high-use

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<sup>1</sup> Although CLP is present in the Lower Clark Fork reservoirs, EWM is the targeted plant species in this project due to: 1) EWM's known impacts to aquatic environments, 2) high risk of its spread to other non-infested water bodies in Montana, and 3) relatively low amount of infested acreage which allows for containment. CLP will only be treated where it exists within beds targeted for EWM control.

- docks/ramps (public and private) to reduce the risk of boats transporting weed fragments.
- Conducting pre- and post-treatment monitoring to verify treatment effectiveness on targeted invasive species and re-colonization of native aquatic plant species at treated sites.
- Monitoring littoral zones of Noxon and Cabinet Gorge reservoirs to determine if and how the composition and density of submersed vegetation and the location of invasive plant stands is changing over time.
- Implementing a public awareness and education program about aquatic invasive plants that targets boaters, anglers and the general public and demonstrates specific ways that people can help slow the spread of aquatic weeds.
- Coordinating with Montana Fish, Wildlife & Parks and Idaho Department of Agriculture on mandatory boat check stations to prevent invasive aquatic plants from being transported to non-infested areas.
- Meeting monthly to evaluate program results and guide adaptive management techniques. Technical expertise includes aquatic resource professionals and representatives of federal, state and local government agencies, nonprofits, tribes and others with knowledge in fisheries, aquatic plant ecology, water resources, water quality and aquatic plant management. A Scientific Advisory Panel was established in 2018 to further assist the Task Force with review of monitoring results and consideration of control options.

Widespread herbicide treatment began as a control measure in the reservoirs in 2012 with the intention of achieving a maintenance level within a few years, when large-scale herbicide treatments would no longer be needed. While treatments in 2012 through 2014 saw measurable improvements, in 2015 there was a resurgence of EWM, with re-expansion into already treated plots and the establishment of several new infestations in Noxon Rapids Reservoir.

In 2016, the Task Force received funding from the Montana Department of Natural Resources and Conservation (DNRC) to conduct an alternatives analysis (DeBruyckere and Pennington 2017) to examine management methods for reducing infestations. The study was initiated due to the variability in treatment success and the lack of longer-term positive gains in EWM reduction. The analysis determined that successful management of EWM in Sanders County would be the containment and control of existing aquatic invasive species (AIS) populations and prevention of new introductions of AIS within the Noxon and Cabinet Gorge reservoirs. The top priority for control was determined to be near public and private access sites, including public and private boating access sites and shoreline dock areas. The second priority for control is large, high density shallow access areas with significant boat traffic.

Control methods for the priority areas are to be determined by a Scientific Advisory Panel. The panel evaluates annual monitoring data and surveys to determine the extent and location of management methods. Beginning in 2018, monitoring of EWM was conducted by MFWP as an in-kind contribution to the program. MFWP has conducted monitoring annually since 2018 and is expected to continue to provide monitoring in 2023.

The Analysis of Treatment Alternatives calls for an adaptive management strategy using a suite of appropriate tools. In 2017, Sanders County did not treat the reservoirs with herbicides due to lack of funding and a desire among project partners to explore alternatives. In 2018, Sanders

County treated approximately 31 acres of EWM with aquatic herbicide in high priority areas of the reservoirs. Herbicide treatments have followed each year since. In August 2022, 48.85 acres infested with EWM in Noxon Rapids Reservoir was treated at a cost of \$59,956. Costs were covered by a \$20,000 grant from the Montana Aquatic Invasive Species Council, and the balance of \$39,956 from Appendix B.

Funding from Appendix B will ensure that there are sufficient funds to treat all Priority 1 areas in the reservoirs in 2023. Sanders County will be applying again for grant funds through the Montana Aquatic Invasive Species Council, which could reduce the amount of funds needed through Appendix B. The actual acreage will be determined following the July 2023 survey.

### **Goal**

The goals of this project are to sustain recreational opportunities in the reservoirs as well as native plants and species that rely on riparian and littoral areas and habitats.

### **Objectives**

1. Manage aquatic invasive species according to the Sanders County Aquatic Invasive Plant Management Plan.
2. Improve access to land- and water-based recreational opportunities.
3. Maintain water quality at acceptable levels, considering turbidity, water temperature, and dissolved oxygen, as well as localized and reservoir-wide water exchange.
4. Sustain local economies that depend on recreation.
5. Manage aquatic invasive plant populations in the context of regional natural resources.

### **Tasks**

1. Control Planning: Based on review of 2022 monitoring, surveys, recreation data and reservoir maps, the Scientific Advisory Panel will propose control measures – including type, extent and locations - for the field season in spring 2023. Herbicide treatments are the most likely control measure to be recommended. Survey work will be conducted by MFWP and will occur in July. (Objectives 1-5)
2. Control Measures: Herbicide treatments utilize a variable-depth water injection system to ensure precision treatment, and applications are calibrated with boat speed and plant stand depth for exact delivery to the targeted submersed plant stands. Exact acreages and locations of control measures will be based on information from pre-treatment surveys, with public access and recreation sites taking priority. Herbicide treatment will occur in early August. (Objectives 1-5)
3. Quality control and project oversight: The Task Force and professional contractors maintain the scientific integrity of all work performed. The Task Force facilitator will coordinate development of the final control plan, assist the county with selecting a contractor, and provide all necessary public and agency notifications. (Objectives 1–5)

## **Work Products**

- Mid-year report; due to the Aquatic Program Leader (APL) August 1, 2023
- Annual Work Summary; due to the APL November 15, 2023

## **Permitting Requirements**

A Montana Pesticide Discharge Permit is required for the use of herbicides to treat aquatic invasive species. Sanders County has a current permit, which is in effect through May 1, 2026.

Potential treatment is limited in scope and would occur during the mid-to-late summer along shallow warm areas, and herbicides use would quickly degrade; therefore, Endangered Species Act consultation for this project plan is associated with the 2019 Biological Opinion on the effects of continued operation of the Clark Fork Hydroelectric Project on Bull Trout and designated Bull Trout critical habitat (BiOp). This project plan is consistent with the analyses and conclusions contained in the 2019 BiOp and will adhere to all appropriate Terms and Conditions designed to reduce the extent and effects of incidental take on Bull Trout. No incidental take of Bull Trout is anticipated as a result of this project plan; therefore, no take reporting is required.

## **Cultural/Historic Resource Review**

When the Environmental Assessment was scoped for EWM herbicide treatments, it was determined that treatments would not involve any new disturbance; therefore, no cultural resource surveys were required.

## **Benefit to the Resource**

Key objectives of this project focus on sustaining the reservoirs' recreational fisheries, improving access to water-based recreational opportunities, maintaining or improving aesthetic values, and protecting sensitive and important resources of Noxon and Cabinet reservoirs. As such, this project supports the CFSA Appendix B Recreational Fishery Enhancement Program (recreational fishery management); CFSA Appendix G Implementation of the Land Use Management Plan (protection and maintenance of sensitive resources, including shorelines); and CFSA Appendix H Implementation of the Recreation Resource Management Plan (management and preservation of recreation resources and public access).

With a focus on control, prevention and education, project activities dovetail with aquatic invasive species efforts on-going across Montana, Idaho and regionally. This project is consistent with the 2016 Montana Invasive Species Framework (Montana Invasive Species Council 2016) control objective to "ensure that invasive species control restores the desired ecological, economic and cultural values to the land that is being managed." The program is consistent with the Montana Aquatic Nuisance Management Plan, which seeks to minimize the harmful ecological, economic, and social impacts of aquatic nuisance species through prevention and management, population growth, and dispersal into, within, and from Montana (Montana ANS Technical Committee 2002). The program is also consistent with the state's Wildlife Action Plan, which seeks to avoid spread of aquatic invasive species (Montana Fish, Wildlife and Parks 2015) and the state Aquatic Invasive Species Program, which "seeks to minimize the harmful ecological, economic, and social impact of AIS through prevention and management of introduction, population growth and dispersal of AIS" (DeBruyckere and Pennington 2017).

## Budget

Item	Estimated Carryover <sup>1</sup>	2023 Budget Request
Herbicide treatments; not to exceed requested amount. (Task 2)	\$40,000	\$40,000
<b>Total</b>	\$40,000	\$40,000
<b>Anticipated Expenditures</b>		\$80,000

<sup>1</sup> Estimated carryover of unexpended, approved funds as of January 1.

## Literature Cited

DeBruyckere, L. A., and T. Pennington. 2017. Analysis of Treatment Alternatives for Invasive Watermilfoil in Noxon Rapids and Cabinet Gorge Reservoirs, Sanders County, Montana.

Madsen, J. D. 2014. Eurasian Watermilfoil. *In* Biology and Control of Aquatic Plants, A Best Management Practices Handbook. L. A. Gettys, W. T. Haller, and D. G. Petty, editors. Aquatic Ecosystem Restoration Foundation.

Montana Aquatic Nuisance Species (ANS) Technical Committee. 2002. Montana Aquatic Nuisance Species Management Plan. 142pp.

Montana Fish, Wildlife and Parks. 2015. Montana's State Wildlife Action Plan. Helena, MT.

Montana Invasive Species Council. 2016. Montana Invasive Species Framework.



## 2023 PROJECT PLAN

### Dreissenid Mussel Sampling on Noxon and Cabinet Gorge Reservoirs

#### Project Contacts

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#### Project History

This is a continuing project for 2023. The project was first approved by the Management Committee (MC) in 2021. The scope and budget for this project are reviewed by the MC annually.

#### Background

Dreissenid (i.e., zebra and quagga) mussels are a threat to fisheries and infrastructure as they can alter the trophic status and food web of a waterbody (Miehls et al. 2009; Higgins and Zanden 2010; Madenjian et al. 2015), negatively affect fish populations (Hoyle et al. 2008), and clog piping (MacIsaac 1996). Once established, dealing with dreissenid mussels has a substantial economic cost (Strayer 2009; Connelly et al. 2007; Chakraborti et al. 2016; Nelson 2019).

In the fall of 2016, dreissenid mussel veligers were detected in Tibor Reservoir with a “suspect” sample coming from Canyon Ferry Reservoir. Both reservoirs are located east of the Continental Divide in Montana and contain popular fisheries. With this discovery, a concerted effort to prevent further introduction of dreissenid mussels into Montana and to monitor for early detection of any introduction was implemented. This effort has involved expanding days and hours of operation at aquatic invasive species inspection stations, educational programs, and statewide sampling for dreissenid mussels. The statewide mussel sampling includes collection of water samples from Noxon and Cabinet Gorge reservoirs to look for veligers. In 2020, Montana Fish, Wildlife and Parks (MFWP) collected at least eight samples from each reservoir between May and October. In addition, Avista voluntarily collected a sample from the forebay of each reservoir in August after receiving a request from the Whitefish Lake Institute to collect samples that would supplement those collected by MFWP. The purpose of this project plan is to continue supplemental sampling with funds from Appendix B.

#### Goal

The goal of this project is to provide information about dreissenid (zebra and/or quagga) mussel presence/absence in the event of invasive mussel establishment in the Clark Fork River system.

#### Objectives

1. Contribute to the dreissenid mussel sampling program being implemented by MFWP.

#### Task

1. Sample Noxon and Cabinet Gorge reservoirs twice during 2023 (late July and late August), following the protocols found in MFWP (2019a). (Objective 1)

#### Work Products

- Mid-year report; due to the Aquatic Program Leader (APL) August 1, 2023

- Sampling status report (likely memorandum); due September 30, 2023
- Annual Work Summary; due to the APL November 15, 2023

### Permitting Requirements

Not applicable for the tasks proposed in this project plan.

Endangered Species Act consultation for this project plan is associated with the 2019 Biological Opinion on the effects of continued operation of the Clark Fork Hydroelectric Project on Bull Trout and designated Bull Trout critical habitat (BiOp). This project plan is consistent with the analyses and conclusions contained in the 2019 BiOp and will adhere to all appropriate Terms and Conditions designed to reduce the extent and effects of incidental take on Bull Trout. No incidental take of Bull Trout is anticipated as a result of this project plan; therefore, no take reporting is required.

### Cultural/Historic Resource Review

Not applicable for the tasks proposed in this project plan, there are no ground and/or vegetation disturbing activities, or proposed impacts to cultural/historic resources.

### Benefit to the Resource

This project is being implemented to help with the early detection of dreissenid mussels in Noxon and/or Cabinet Gorge reservoirs. Early detection will help MFWP develop procedures that will limit the likelihood of these reservoirs serving as sources for invasion to other waterbodies. In addition, early detection may provide the opportunity to implement control efforts that will minimize the impact of a dreissenid mussel invasion on the trophic status and food webs within the reservoirs. This project is consistent with Appendix B of the Clark Fork Settlement Agreement as it provides information that can be used for effective management of the fish resources affected by the operations of Noxon Rapids and Cabinet Gorge dams. This project is also consistent with the “2019-2027 Statewide Fisheries Management Program and Guide” (MFWP 2019b), as it will provide fisheries managers with reservoir-specific information that can be used to improve current aquatic invasive species management strategies and potentially be applied elsewhere in Montana.

### Budget

Item	Estimated Carryover <sup>1</sup>	2023 Budget Request
Technician (0.02 FTE)	\$300	\$1,973
Biologist (0.004 FTE)	\$300	\$768
<b>Total</b>	<b>\$600</b>	<b>\$2,741</b>
<b>Anticipated Expenditures</b>		<b>\$3,341</b>

<sup>1</sup> Estimated carryover of unexpended, approved funds as of January 1.

### Literature Cited

Chakraborti, R. K., S. Madon, and J. Kaur. 2016. Costs for controlling dreissenid mussels affecting drinking water infrastructure: case studies. *Journal of the American Water Works Association* 108:442–453.

- Connelly, N. A., C. R. O'Neill, B. A. Knuth, and T. L. Brown. 2007. Economic impacts of zebra mussels on drinking water treatment and electric power generation facilities. *Environmental Management* 40:105–112.
- Higgins, S. N., and M. V. Zanden. 2010. What a difference a species makes: a meta-analysis of dreissenid mussel impacts on freshwater ecosystems. *Ecological monographs* 80:179–196.
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- Nelson, N. M. 2019. Enumeration of potential economic costs of dreissenid mussels infestation in Montana. Flathead Lake Biological Station, Polson, MT.
- Strayer, D. L. 2009. Twenty years of zebra mussels: lessons from the mollusk that made headlines. *Frontiers in Ecology and the Environment* 7:135–141.



## 2023 PROJECT PLAN

### Noxon Reservoir Bathymetry Update

#### Project Contact

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Eric Oldenburg, Avista (406) 847-1290, [Eric.Oldenburg@avistacorp.com](mailto:Eric.Oldenburg@avistacorp.com)

#### Project History

This is a continuing project originally approved in 2022; however, the production of a Noxon Reservoir bathymetric map was first approved through Appendix B of the Clark Fork Settlement Agreement (CFSA) in 2002 and completed in 2003. This project was not ranked because it is being conducted through the “Recreational Fishery Enhancement” component of Appendix B. This is being proposed as a multi-year project. The goal and objectives for the entire project are included in this project plan; however, the tasks and budget request are specific to the 2023 work. The only change for 2023 are additional funding (\$5,000) and extended deadlines because the survey work is taking longer than was originally estimated.

#### Background

A Noxon Reservoir bathymetric map was produced through Appendix B of the CFSA and made publicly available in 2003 (hard-copy format). This map has been popular and valued by the recreating public and CFSA stakeholders.

The inventory of existing Noxon Reservoir bathymetric maps is getting low. Rather than reprinting the original maps, there is a desire to update some of the messaging and supplemental information that is included on the hard-copy maps. Examples may include things such as species identification, fish consumption advisories, *Dreissenid* mussel and other invasive species information, dam and reservoir safety information, and other messaging or information pertinent to the goals of the CFSA and related agency objectives.

In addition to updating the messaging on hard-copy maps, this is also an opportunity to update the bathymetric data itself. The original files from the 2003 survey were retained; however, the saved data were in the form of shape files and are of limited usability. In addition, we now have the opportunity to collect and present the information at a higher resolution (i.e., run tighter transects) as compared to the original survey as well as capture anything that may have changed over the past 20 years (e.g., siltation in the Finley Flats area). This will also allow the opportunity to explore different formats through which we can disseminate the bathymetric information. In addition to hard-copy maps, we now have the ability to produce files that will display on Lowrance and Hummingbird GPS/sonar units and produce files that can be displayed as layers in Google Earth. At a minimum, these files will be useful for internal use by CFSA partners to increase the safety and effectiveness of projects on Noxon Reservoir. In addition, we will work through legal questions with a goal of also making the latter two formats publicly available (Noxon Reservoir bathymetry is not commercially available on GPS/sonar unit “chips”).

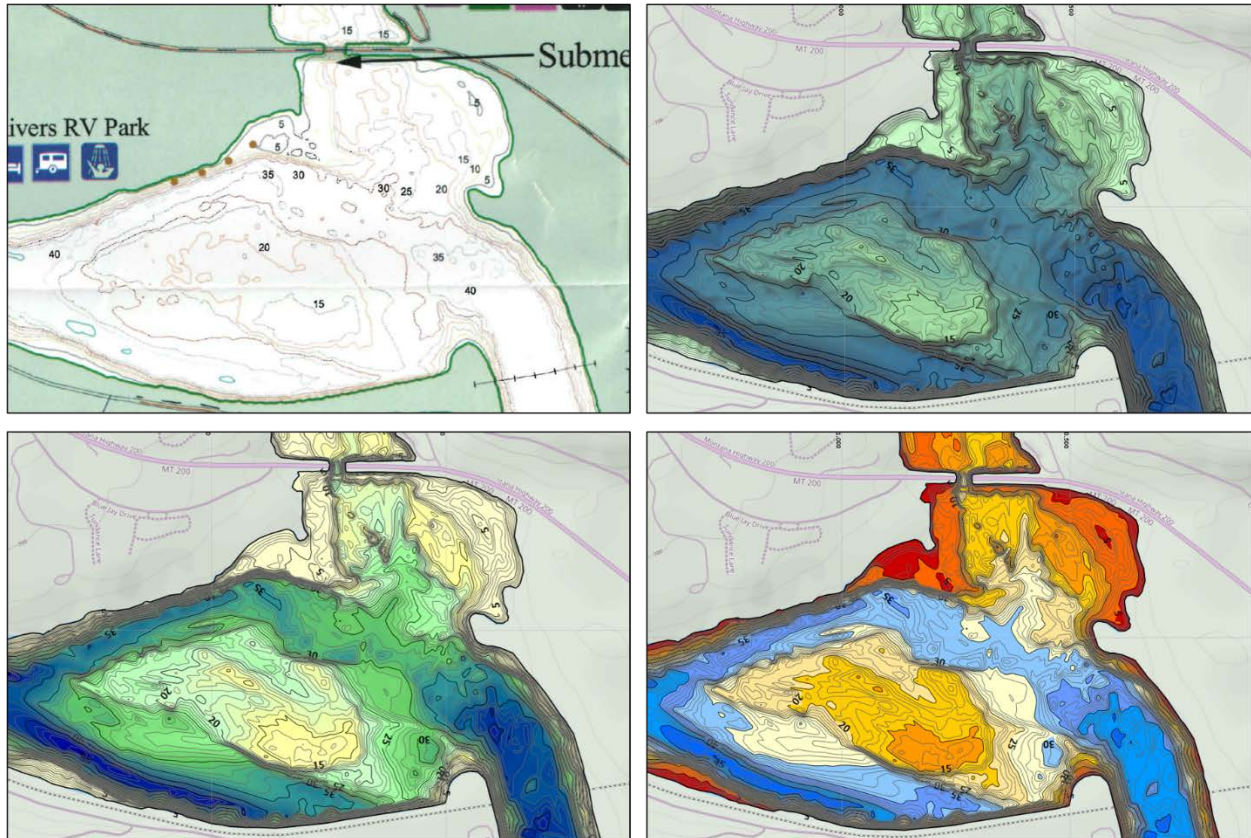


Figure 1. Examples of the existing bathymetric map (upper left), and maps produced using recently collected data and plotted using ReefMaster 2.0. Displayed are shaded relief (upper right), flat raster (lower left), and isobath (lower right) options. Note that contour intervals and color schemes are customizable. Also note that the above is from Cabinet Gorge Reservoir for demonstration purposes.

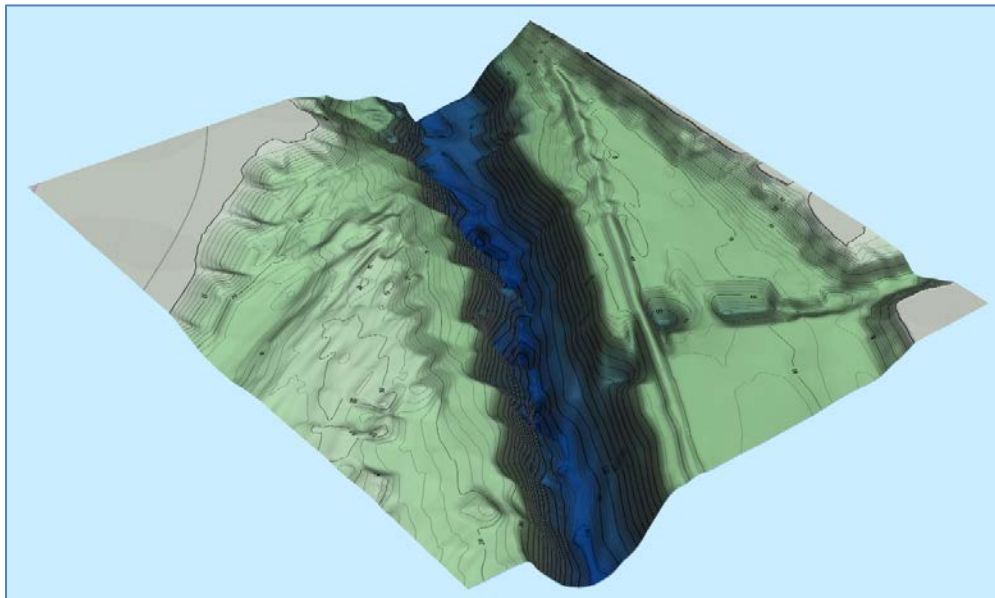


Figure 2. Example three-dimensional view of an area of Noxon Reservoir recently surveyed and plotted using ReefMaster 2.0. Note the old highway bed adjacent to the main channel.

## **Goal**

Provide high-resolution bathymetric information for Noxon Reservoir to (1) increase the safety and effectiveness of reservoir activities for managers, implementers of CFSA projects, and the recreating public; and (2) include refreshed messaging on bathymetric maps related to the goals of the CFSA and agency management objectives.

## **Objectives**

1. Collect remaining bathymetric data necessary to produce a high-resolution map for Noxon Reservoir and construct an internal use only base map in multiple formats using ReefMaster 2.0.
2. Determine formats through which the bathymetric maps will be disseminated publicly (e.g., hard copies, files compatible with GPS/sonar units, Google Earth layers).
3. Develop new messaging pertaining to agency and CFSA objectives to be included on the hard-copy maps.
4. Hire a consultant for final design and production of hard-copy maps.
5. Produce appropriate maps for internal and public use.

## **Tasks**

1. Purchase and install a Lowrance Elite or HDS unit and calibrate to survey boat. (Objective 1) (completed in 2022)
2. Develop survey transects to obtain remaining data for Noxon Reservoir. (Objective 1) (completed in 2022)
3. Complete transect surveys. Transects will be broken into increments no greater than 30 minutes in duration to enable maximum resolution for water surface elevation corrections. Each transect will be corrected to Noxon Reservoir full pool elevation (2,331.0 feet). Transect surveys will be conducted strategically to minimize interference from aquatic macrophytes. All transects will be surveyed at speeds less than six miles per hour. (Objective 1) (ongoing)
4. Construct and optimize the bathymetric map in ReefMaster 2.0. (Objective 1) (ongoing)
5. Work with interested “internal” stakeholders (CFSA partners) to develop and test the maps in multiple formats (e.g., hard copy; files for sonar units; Google Earth). (Objective 1)
6. Save the raw bathymetric transect data files (“.sl2”) in a long-term data repository to be available for future use. (Objective 1)
7. Conduct internal (Avista) legal review of concerns related to liability and making maps publicly available. (precursor to Objectives 2, 3, 4 and 5)

## Work Products

- Internal-use map; due December 31, 2023
- Annual Work Summary; due December 1, 2023

## Permitting Requirements

Not applicable for the tasks proposed in this project plan.

Endangered Species Act consultation for this project plan is associated with the 2019 Biological Opinion on the effects of continued operation of the Clark Fork Hydroelectric Project on Bull Trout and designated Bull Trout critical habitat (BiOp). This project plan is consistent with the analyses and conclusions contained in the 2019 BiOp and will adhere to all appropriate Terms and Conditions designed to reduce the extent and effects of incidental take on Bull Trout. No incidental take of Bull Trout is anticipated as a result of this project plan; therefore, no take reporting is required.

## Cultural/Historic Resource Review

Not applicable for the tasks proposed in this project plan, there are no ground and/or vegetation disturbing activities, or proposed impacts to cultural/historic resources.

## Benefit to the Resource

The bathymetric information disseminated through this project will help CFSA implementers to be more safe, effective, and efficient in conducting future projects. For example, having the bathymetric data on GPS/sonar units will help implementers to avoid underwater hazards while operating on the reservoir. This information will also be useful for future projects as a means to quantify certain reservoir attributes (e.g., shallow water habitat) or inform the design of future sampling efforts (e.g., gillnetting or electrofishing). In addition, this information will be valued by the recreating public both from the navigation and boating safety perspective as well as identifying certain types of habitat for angling. As such this project is consistent with the goals of Appendix B and Montana Fish, Wildlife and Parks to enhance recreational fisheries and opportunities in Noxon Reservoir.

## Budget

The below budget covers the costs to develop internal-use bathymetric maps (Objective 1). Costs associated with developing this information in publicly available formats (e.g., designing and printing maps and/or files compatible with sonar units) will likely be proposed for 2024.

Item	Estimated Carryover <sup>1</sup>	2023 Budget Request
Transect surveys (technician 0.08 FTE)	\$6,000	\$3,500
Boat fuel and maintenance	\$500	\$1,500
Bathymetry development for internal use (technician 0.04 FTE)	\$3,928	\$0
<b>Total</b>	<b>\$10,428</b>	<b>\$5,000</b>
<b>Anticipated Expenditures</b>		<b>\$15,428</b>

<sup>1</sup> Estimated carryover of unexpended, approved funds as of January 1.

An Avista staff member has already collected approximately one-quarter of the Noxon bathymetric data, established shorelines, and started constructing the map in ReefMaster 2.0 at no cost to the CFSA.

## 2023 PROJECT PLAN

### Upper Thompson River Connectivity Project

#### Project Contact

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and Leah Breidinger, MFWP, (406) 751-4573, [lbreidinger@mt.gov](mailto:lbreidinger@mt.gov)

#### Project History

This is a new project for 2023. This project seeks to acquire non-federal match funds required to secure a perpetual conservation easement (CE) on the remaining unprotected private timber company land in the Thompson River watershed. This project is requested to be funded out of the “Recreational Fisheries Enhancement Program” component of Appendix B; therefore, the project does not require ranking.

#### Background

This proposed CE would protect the remaining 48,032 acres of private timber company land owned by Green Diamond Resource Company in the Thompson River drainage in portions of Sanders and Flathead counties (Figure 1). If successful this CE would complement the 2003 Thompson-Fisher CE which permanently protected approximately 142,000 acres of corporate timberlands in Lincoln, Sanders, and Flathead counties. Protections from this CE are similar to the 2003 CE and would include permanent public access for fishing and other types of outdoor recreational activities, no residential or mineral development, grazing best management practices (BMPs), important protections for native fish streams that go above and beyond state streamside management zone (SMZ) law, and forest management protections to benefit a host of fish and wildlife species.

The Upper Thompson Connectivity Project would protect many thousands of acres of forestland that drains directly into native fish bearing streams, including over 12,000 acres in drainages occupied by Bull Trout. The project borders 150 miles of the Lolo National Forest, 36 miles of state land, and 33 miles of the Thompson-Fisher CE. Streams flow from the headwaters on national forest and state land across sections of this privately-owned property and down to where they join the Thompson River, which is protected by the Montana Fish, Wildlife and Parks (MFWP)-held Thompson-Fisher CE. If the needed funding is not raised, these lands could be sold to private, non-timber company interests, which could result in residential development adjacent to these important stream courses. Subdivision and residential development often result in negative impacts to riparian areas and an increase in sedimentation and harmful run-off into stream courses. This scenario has the potential to severely impact fish populations and would also hinder any attempts to improve or restore native trout populations in these drainages.

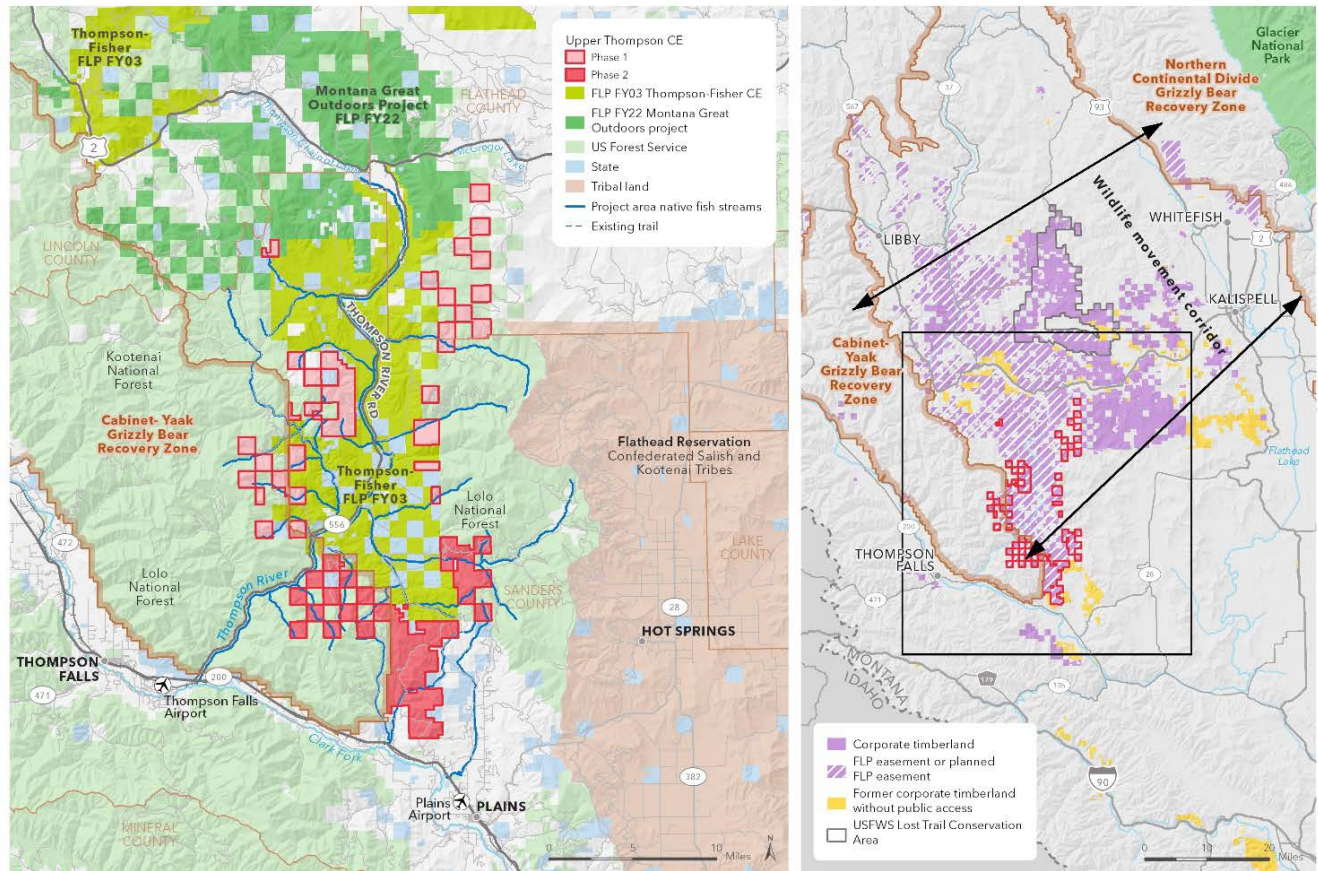
The terms of the MFWP-held CE and associated Multi-Resource Management Plan would preclude all development on this property and ensure that Bull Trout and native fish habitat are protected in perpetuity. The land would remain a working forest and would continue to support local rural economies. Additional riparian protections will be negotiated along some stream reaches that have Bull trout and Westslope Cutthroat Trout populations of high conservation

value.

The proposed project would protect approximately 12,000 acres within the Fishtrap Creek and Big Rock Creek drainages, two of the three drainages inhabited by Bull Trout populations in the Thompson River watershed. This includes seven sections (640-acre parcel, 1x1 mile square) in Fishtrap Creek tributaries (Beatrice Creek and Jungle Creek), three to four sections in the Fishtrap Creek drainage (McCully Ridge area), and four sections in the Big Rock Creek drainage. This proposed project would also protect two sections in the Deerhorn Creek drainage where in 2019 MFWP observed Bull Trout for the first time, indicating the habitat and the temperature regime of this stream is suitable for the species. The Bull Trout populations in these streams represent a diversity in life history forms ranging from predominantly stream resident fish in Jungle Creek and Big Rock Creek, to fluvial and adfluvial fish in Beatrice Creek, Fishtrap Creek and presumably Deerhorn Creek. From 2004 through 2018, a total of 106 Bull Trout that genetically assigned to the Thompson River were captured below Cabinet Gorge Dam (Bernall and Duffy 2019) which demonstrates a clear nexus to the project area. A significant portion of the watershed's habitat for Bull Trout falls within the drainages that the Upper Thompson Connectivity Project would protect.

The project would also secure permanent protections for over 20 miles of Westslope Cutthroat Trout habitat including in portions of Fishtrap Creek and its tributaries (Jungle, Beatrice, Basin Draw), Deerhorn Creek, Chippy Creek, Bear Creek, Big Rock Creek, Murr Creek, upper Weeksville Creek, upper Lynch Creek as well as in the Little Thompson River and portions of its tributaries (Loneman Creek, Todd Creek, Corona Creek, Snider Creek, Indian Gulch, Todd Creek). A portion of the habitat to be protected occurs in stream reaches in Shroder Creek and South Fork Murr Creek that were naturally fishless until recently. Since 2020, MFWP has conducted conservation efforts to translocate non-hybridized WCT populations from across the drainage in three streams, including in the two aforementioned streams, to serve as refuge habitat free of non-native salmonids that can outcompete or hybridize with the species.

Given the high level of connectivity between the Thompson River and most of its tributaries, this project would also provide protections that would benefit migratory forms of non-native trout species including Brown Trout and Rainbow Trout, which use tributary habitat for spawning and juvenile rearing. These species are dominant in the mainstem Thompson River and are targeted by both local and out-of-state anglers. The CE would allow continued access for monitoring, restoration and other conservation-based activities that would benefit Bull Trout and Westslope Cutthroat also well as other native and non-native sport-fish species. Angler access to the tributary stream reaches would also be permanently secured.



## Upper Thompson CE

SANDERS AND FLATHEAD COUNTIES, MONTANA

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FIGURE 1. Map of the Upper Thompson Connectivity Project.

### Goal

The goal of this project is to acquire a perpetual CE on the remaining 48,032 of cooperative timber land in the Thompson River drainage between Highway 200 and Highway 2, which includes about 5 miles of Bull Trout habitat and over 20 miles of Westslope Cutthroat habitat. The funds requested in this proposal would be used as portion of the non-federal match required through the U.S. Forest Service Forest Legacy Program (FLP).

### Objectives

1. The funds requested from Avista through Appendix B of the Clark Fork Settlement Agreement Committee (CFSA) would serve as a portion of the non-federal match needed for the proposed Upper Thompson Connectivity Project.

### Methods

The preliminary estimate for the cost of this conservation easement is \$17,922,000. The project partners, TPL and MFWP, are in the process of requesting a total of \$13 million dollars from the U.S. Forest Service Forest Legacy Program (FLP) for this project which will require \$ 4,335,000 in non-federal match. In 2022, the first phase of the project ranked #1 in the country and will be

awarded \$6 million from the FLP in 2023. An application for the second phase, which asked for an additional \$7 million, was recently submitted by project proponents. The estimated cost of the easement also includes in-kind services performed by the Trust for Public Land (TPL) which are estimated at \$587,000. Montana Fish, Wildlife and Parks employees' in-kind hours spent working on the project have not been quantified but are substantial, and include local, regional and statewide fish and wildlife staff.

Funds from Appendix B of the CFSA would contribute to non-federal match for FLP funding. The Trust for Public Land and FWP recently applied for the second phase of FLP funding, for an additional \$7 million which if successful, would be awarded in 2024, with results of application success revealed in the spring or early summer of 2023. In October 2021, TPL and MFWP applied for the first phase of FLP funding, and was fully funded (\$6 million), with these funds awarded in 2023. The Trust for Public Land and MFWP are committed to raising the match funding needed to make this conservation easement project a reality. As an example, this project was awarded \$170,000 in 2021 and \$100,000 in 2022, from the NorthWestern Energy-Thompson Falls TAC which will be used toward the non-federal match requirement.

The Trust for Public Land and MFWP would disburse FLP and non-federal match funding to purchase a perpetual CE from Green Diamond Resource Company. If this project is unsuccessful, TPL would return Appendix B funds to Avista.

### **Work Products**

- Annual Project Update; due November 15, 2023
- Annual Work Summary; due December 1, 2023

### **Permitting Requirements**

Not applicable for the tasks proposed in this project plan.

### **Cultural/Historic Resource Review**

Not applicable for the tasks proposed in this project plan, there are no ground and/or vegetation disturbing activities, or proposed impacts to cultural/historic resources. The Confederated Salish and Kootenai Tribes were consulted regarding this potential conservation easement and the Tribal Council provided a letter of support for the FY2023 Forest Legacy Program grant application.

### **Benefit to the Resource**

If a CE can be successfully acquired on the remaining 48,000 acres of corporate timber land in the Thompson River drainage, it would have significant long-term benefits for native fish, the recreational fishery and public access. This proposed CE would provide perpetual protections for 5 miles of Bull Trout habitat, over 20 miles of Westslope Cutthroat habitat while also protecting migratory corridors and tributary streams reaches used by Brown Trout and Rainbow Trout that occupy in the mainstem Thompson River, which is the most popular trout fishery in the lower Clark Fork. The land within this CE, and the proceeding 2003 Thompson-Fisher CE would provide landscape level connectivity for native and non-native fish species as this Green Diamond land borders many thousands of acres of state and federal lands within the watershed. From a recreational fisheries stand-point, this CE would provide anglers many miles of perpetual

access to numerous perennial tributaries.

There are some specific information on tributary streams and even sections within these drainages that are worth mentioning in further detail based on their high conservation value that would receive perpetual protection.

- A significant portion of habitat within the Fishtrap Creek drainage which is the largest Bull Trout spawning tributary in the lower Clark Fork River drainage would receive protection from this CE. This drainage supports over 20 miles of spawning, rearing and stream resident habitat. In total 10 to 11 sections would be protected which includes nearly all of the remaining land in the drainage (the rest is state or federally owned or has already has an existing CE). Two large, Fishtrap Creek tributaries would receive the bulk of the protection. Jungle Creek, which was recently found to have a genetically unique Bull Trout population (Dehaan et al. 2016), would receive 2 miles of mainstem and 0.5 miles of a major tributary protection. Jungle Creek is an important cool water source to Fishtrap Creek, with maximum daily temperature in the exceptionally hot summer of 2021 not exceeding 48°F. Beatrice Creek, another large Fishtrap Creek tributary, would receive additional protection on 1 mile of a major tributary which corresponds to approximately 1,280 acres (2 sections). This stream's maximum temperature also did not exceed 48°F in 2021, and incredibly high densities of juvenile Bull Trout (70 fish/100 > 75 mm) were encountered in this stream in 2011, indicating its potential as productive spawning and rearing habitat within the Fishtrap Creek drainage.
- Big Rock Creek harbors the most upstream Bull Trout population in the Thompson River. About 1.2 miles of the mainstem and 3 miles tributary habitat would be protected in Big Rock Creek within a section stream that has high densities of Westslope Cutthroat (>100 fish/100 m >75 mm) and among the best habitat in the drainage for resident Bull Trout across the species life cycle (lots of LWD, side-channels, deep pools, overhead cover, as well as an intact riparian community).
- Deerhorn Creek enters the Thompson River a few miles downstream of Fishtrap Creek. In 2019, Bull Trout were documented in this stream for the first time outlining its potential importance to the species. Approximately 1,280 acres of this drainage would be protected including 0.8 miles of the mainstem. This stream also holds non-hybridized Westslope Cutthroat Trout and provides a cool water input to the mainstem Thompson River, with maximum daily temperatures that did not exceed 54°F in the summer 2021.
- A section in Chippy Creek (section 33) was found in 2018 to hold extremely high densities of Westslope Cutthroat Trout, with 248 individuals >75 mm captured in a 91-meter section of stream. Non-hybridized fish were subsequently collected from this reach and translocated into Bear Creek in 2020 and into South Fork Murr and Shroder Creek in to 2021. This section and half of the neighboring downstream section (section 32) would be protected through this CE.
- Bighole Creek, a tributary that is fishless aside from its lower reaches near the Thompson River confluence and holds great promise as another stream to harbor non-hybridized

Westslope Cutthroat Trout in the future. A total of 2.8 miles of Bighole Creek will receive protection through this CE within these parcels bound by federal lands. Surveys in 2021 and 2022 indicated the stream is fishless and provides approximately 3 miles of suitable habitat for the species in its middle reaches and lower portions of tributaries. In the coming years, FWP plans to release an EA for public comment with the goal to introducing Thompson River WCT into this stream.

- Two sections in Shroder Creek (15 and 23) which includes over 2 miles of the mainstem are incorporated in the proposed CE. Westslope Cutthroat Trout from four populations across the Thompson Drainage have been introduced into these sections of stream in 2021 and 2022. Similarly, two sections in South Fork Murr Creek (7 and 19) within the reach of stream where Westslope Cutthroat Trout from three population were first introduced in 2021, are also include in the CE.

Key language from the Clark Fork Settlement Agreement (Avista 1999) supports the funding of this CE given its potential wide-ranging benefits to native salmonoids, non-native sportfish and angler access.

“MFWP will develop recreational fisheries proposals that meet their organization’s objectives, while in consultation with the Water Resources Technical Advisory Committee and the Management Committee. The Management Committee’s decision to approve funding for these recreational fisheries initiatives will be limited to issues of federal conflict arising between the actions of providing funding under the federal hydropower license, and those of other applicable federal laws (e.g., ESA).” (Avista 1999, pg. B-10).

“Although the Thompson River is not located in the immediate project vicinity, its proximity to the project area and the limited number of recreational fishery enhancement opportunities in the area make the Thompson River a viable recreation fishery mitigation area.” (Avista 1999, pg. B-5).

## Budget

Item	Estimated Carryover <sup>1</sup>	2023 Budget Request
Non-federal match funds for Thompson River CE <sup>2</sup>	\$0	\$250,000
<b>Total</b>	\$0	\$250,000
<b>Anticipated Expenditures</b>		\$250,000

<sup>1</sup> Estimated carryover of unexpended, approved funds as of January 1.

<sup>2</sup> See Upper Thompson Connectivity Project expense table (below) for project costs

NorthWestern Energy has contributed \$270,000 to this project. The NWE TAC approved \$170,000 in 2021, and we’ll ask for \$100,000 this year. We know how much we acquire on Dec 7.

Upper Thompson Connectivity Project expense table

<b>Project Expense</b>	<b>Source</b>	<b>NWE cost</b>	<b>Avista</b>	<b>Total project cost</b>
Land Acquisition- match funds				
2022	NWE	\$170,000*		
2023	NWE /Avista	\$100,000*	\$250,000	
Land Acquisition	FLP			\$13,000,000
Land Acquisition	match funds			\$4,335,000*
Direct Labor/Staffing	TPL			205,000**
Office Costs	TPL			\$19,000**
Professional Services	FLP admin			\$80,000**
Professional Services	TPL			\$185,000**
Travel and meetings	TPL			\$14,000**
Other Expenses	TPL			\$18,000**
Indirect	TPL			\$66,000**
Total Expense***				\$17,922,000

\* Amount dependent on Avista, Northwestern Energy, and other non-federal match funding sources and would be subtracted from the total cost need for match funds

\*\* TPL in-kind services

\*\*\*FWP in-kind contribution not included but includes hundreds of personnel hours

### Literature Cited

- Dehaan, P., Adams, B., Von Bargen, J., and M. Brinkmeyer. 2016. Genetics analysis of native salmonids from the Lake Pend Oreille and Clark Fork River System, Idaho and Montana. U.S. Fish and Wildlife Service, Abernathy Fish Technology Center, Longview, Washington. Report to Avista Corporation, Noxon, Montana.
- Avista Corporation. 1999. Volume III Settlement Agreement including appended PM&Es and cultural resource programmatic agreement, Cabinet Gorge Hydroelectric Project (FERC No. 2058) and Noxon Rapids Hydroelectric Project (FERC No. 2075). Application for new license submitted to Federal Energy Regulatory Commission, Washington D.C. Avista Corporation, Spokane, Washington.
- Bernall, S. and K. Duffy. 2019. Upstream Fish Passage Program-Bull Trout, Fish Passage/Native Salmonid Restoration Program, Appendix C. Annual Project Update- 2018. Report to Avista Corporation, Noxon, Montana.



## **2023 ANNUAL IMPLEMENTATION PLAN SUMMARY – APPENDIX C**

### **Clark Fork Project, FERC No. 2058 Cabinet Gorge and Noxon Rapids Hydroelectric Developments**

#### **Title**

Fish Passage/Native Salmonid Restoration Plan

#### **Implementation Staff Lead**

Shana Bernall, Avista, (406) 847-1293, [Shana.Bernall@avistacorp.com](mailto:Shana.Bernall@avistacorp.com)

#### **Background**

The purpose of the Fish Passage/Native Salmonid Restoration Plan is “...to mitigate the continuing effects of the project as obstructions to fish passage, and to achieve the goal of increasing the long term population viability of native salmonids in the Lake Pend Oreille-lower Clark Fork River system” (FERC Order, Article 406). This goal is to be accomplished through the aggressive implementation of the Clark Fork River Native Salmonid Restoration Plan (NSRP).

The NSRP addresses a number of issues influencing availability of native fish stocks suitable for fish passage. Genetics, pathogens, exotic fish species, fish abundance and tributary and mainstem habitat are all discussed in the NSRP. Consideration of these factors is important in determining if fish passage is the most effective tool to increase native salmonid populations. A number of projects have been identified as activities needed for implementation in 2023 to achieve the goals of the Fish Passage/Native Salmonid Restoration Plan. The locations where all program components will be implemented are within the Avista project area, located downstream of Thompson Falls Dam, Montana proceeding downstream to Lake Pend Oreille, Idaho.

#### **2023 Project Plans**

##### *Annual Operations*

1. Upstream Fish Passage Program
2. Westslope Cutthroat Trout Transport Evaluation
3. Native Salmonid Restoration Plan Five-Year Plan (*New*)
4. Tributary Trapping and Downstream Juvenile Bull Trout Transport Program
5. PIT-Monitoring Station Operation and Maintenance
6. Graves Creek Bull Trout Translocation Project (*New*)

##### *Facilities*

7. Fish Capture Facilities Operation, Development, and Testing
8. Graves Creek Permanent Weir Trap Enhancements

##### *Cabinet Minor Modifications*

9. Cabinet Gorge Fish Passage Facility Minor Modifications (*New*)

## **Work Products**

### *Upstream Fish Passage Program*

- Annual Work Summary; due December 1, 2023
- Comprehensive Project Report; Upstream Fish Passage Program (2001 – 2021 data); final due December 1, 2023 (including Upstream Fish Passage Program 2019, 2020 and 2021 data)
- Annual Project Update; Upstream Fish Passage Program (2022 data); final due December 1, 2023
- Annual Project Update; Upstream Fish Passage Program (2023 data); final due December 1, 2024
- Annual Project Update; Abernathy Fish Technology Center Genetics Report (2022 data); final due November 1, 2023
- Annual Project Update; Abernathy Fish Technology Center Genetics Report (2023 data); final due November 1, 2024
- Annual Project Update; Idaho Fish Health Center Pathogen Report (2022 data); final due July 1, 2023
- Annual Project Update; Idaho Fish Health Center Pathogen Report (2023 data); final due July 1, 2024
- Temperature monitoring data for the CGFPF; due December 1, 2023

### *Westslope Cutthroat Trout Transport Evaluation*

- Mid-year report; due to the Appendix C Implementation Staff Lead; August 1, 2023
- Annual Work Summary; due to the Appendix C Implementation Staff Lead; November 15, 2023
- University of Montana Conservation Genetics Laboratory Report for 2022; final due May 1, 2023
- University of Montana Conservation Genetics Laboratory Report for 2023; final due May 1, 2024
- Project Completion Report; final due December 31, 2024.

### *Native Salmonid Restoration Plan Five-Year Plan*

- Annual Work Summary; due December 1, 2023
- Native Salmonid Restoration Plan Five-Year Plan; final due May 1, 2024

### *Tributary Trapping and Downstream Juvenile Bull Trout Transport Program*

- Comprehensive Project Report; Tributary Trapping and Downstream Juvenile Bull Trout Transport Program (2018-2022 data; final due July 1, 2023 and includes Graves Creek permanent weir trap monitoring and evaluation plan report)
- Annual Project Update; Tributary Trapping and Downstream Juvenile Bull Trout Transport Program (2023 data; final due October 1, 2024 and includes Graves Creek permanent weir trap monitoring and evaluation plan report)
- Temperature monitoring data for the five long-term sites as well as remaining sites monitored through the Bull Trout Emigration Study; due December 1, 2023
- Annual Work Summary; Downstream Program; due December 1, 2023

### *PIT-Monitoring Station Operation and Maintenance*

- Annual Work Summary; PIT Technology (2023); due December 1, 2023

### *Graves Creek Bull Trout Translocation Project*

- Decision regarding M&E Plan objectives and implementation mechanism; due June 1,

2023

- Translocation Plan (likely update to this project plan); final due November 1, 2023
- Final M&E Plan; final due June 1, 2024
- Comprehensive Project Report; Translocation Project; final due date (likely 2026) and format to be determined
- Annual Work Summary; Translocation Project; due December 1, 2023

*Fish Capture Facilities Operation, Development, and Testing*

- Annual Work Summary; Fish Capture Facilities (2023); due December 1, 2023

*Graves Creek Permanent Weir Trap Enhancements*

- Annual Work Summary; due December 1, 2023

*Cabinet Gorge Fish Passage Facility Minor Modifications*

- Annual Work Summary; CGFPF Minor Modifications (2023); due December 1, 2023

**2023 Appendix C Annual Operations Fund Budget**

<b>Budget Summary</b>	
Unexpended funds with interest	\$1,494,616
2023 contribution (including GDP inflation rate)	\$910,589
<b>Total available</b>	<b>\$2,405,205</b>
2023 MC-approved budget	\$1,644,554
<b>Unobligated funds</b>	<b>\$760,651</b>

<b>2023 Project</b>	<b>Carryover<sup>1</sup></b>	<b>2023 Budget</b>
Upstream Fish Passage Program	\$119,600	\$780,100
Westslope Cutthroat Trout Transport Evaluation	\$42,000	\$46,300
Native Salmonid Restoration Plan Five-Year Plan	\$0	\$10,000
Tributary Trapping and Downstream Juvenile Bull Trout Transport Program	\$165,060	\$418,292
PIT-Monitoring Station Operation and Maintenance	\$14,000	\$41,250
Graves Creek Bull Trout Translocation Project	\$0	\$2,500
Stream Gage Monitoring (cost share; see Appendix B project plan)	\$0	\$5,452
<b>Total</b>	<b>\$340,660</b>	<b>\$1,303,894</b>
<b>MC-approved budget</b>		<b>\$1,644,554</b>

<sup>1</sup> Estimated carryover of unexpended, approved funds as of January 1.

## 2023 Appendix C Facilities Fund Budget

Budget Summary	
Unexpended funds with interest <sup>1</sup>	-\$35,989,450
2023 contribution (including GDP inflation rate)	\$661,048
<b>Total available<sup>1</sup></b>	<b>-\$35,328,402</b>
2023 MC-approved budget	\$1,618,988
<b>Unobligated funds<sup>1</sup></b>	<b>-\$36,947,390</b>

<sup>1</sup> Negative figures represent the amount that Avista has spent in excess of the sum of the annual contributions to date. Pursuant to the CFSA, Avista will fund the actual cost of permanent fish passage facility construction in the event the facilities budget is not adequate.

2023 Project	Carryover <sup>1</sup>	2023 Budget
Fish Capture Facilities Operation, Development, and Testing	\$1,353,988	\$0
Graves Creek Permanent Weir Trap Enhancements	\$0	\$145,000
Cabinet Gorge Fish Hatchery Spring Water Collection System Upgrade (cost share; see Appendix T project plan)	\$0	\$120,000
<b>Total</b>	<b>\$1,353,988</b>	<b>\$265,000</b>
<b>MC-approved budget</b>		<b>\$1,618,988</b>

<sup>1</sup> Estimated carryover of unexpended, approved funds as of January 1.

### 2023 Appendix C Cabinet Minor Modifications Fund Budget

Budget Summary	
Unexpended funds <sup>1</sup>	\$938,751
<b>Total available</b>	<b>\$938,751</b>
2023 MC-approved budget	\$500,000
<b>Unobligated funds</b>	<b>\$438,751</b>

<sup>1</sup> A one-time commitment of up to \$938,751 made available beginning in 2023 and not subject to interest.

2023 Project	Carryover <sup>1</sup>	2023 Budget
Cabinet Gorge Fish Passage Facility Minor Modifications	\$0	\$500,000
<b>Total</b>	<b>\$0</b>	<b>\$500,000</b>
<b>MC-approved budget</b>		<b>\$500,000</b>

<sup>1</sup> Estimated carryover of unexpended, approved funds as of January 1.



## **2023 PROJECT PLAN**

### **Upstream Fish Passage Program**

#### **Project Contact**

Shana Bernall, Avista, (406) 847-1293, [Shana.Bernall@avistacorp.com](mailto:Shana.Bernall@avistacorp.com)

#### **Project History**

The Upstream Fish Passage Program is a continuing project that was originally approved by the Management Committee (MC) in 2001. The scope and budget for this project are reviewed by the MC annually. Bull Trout have been transported upstream annually since 2001 and Westslope Cutthroat Trout have been transported upstream annually since 2015.

#### **Background**

Bull Trout have been captured downstream of Cabinet Gorge Dam and transported upstream of lower Clark Fork River mainstem dams annually since 2001. Bull Trout are transported upstream and released at designated locations based on either a genetic assignment or other approved transport criteria.

Bull Trout were initially transported upstream of Cabinet Gorge Dam as part of an experiment that was conducted from 2001 through 2003. Over 100 adult Bull Trout were transported upstream of Cabinet Gorge Dam with release into Cabinet Gorge Reservoir during this time frame. In 2004, Avista worked closely with a genetics laboratory that was able to use genetic testing to determine a Bull Trout's most likely tributary of origin, and this method has been utilized annually since then to help guide upstream transport decision making (DeHaan et al. 2011). During the early years of experimental transport, radio-tagged Bull Trout were observed migrating into tributaries during the spawning period, providing evidence to continue the transport program. In addition, a genetic study implemented from 2008 through 2010 and again in 2020 in two Montana tributaries confirmed the reproductive contribution of Bull Trout following upstream transport (DeHaan and Bernall 2013, Adams and Bernall 2021).

The experimental transport of Westslope Cutthroat Trout upstream of Cabinet Gorge Dam was initiated in 2015 and has been approved annually by the MC since that time. The goal for this program is to reestablish connectivity for Westslope Cutthroat Trout utilizing Lake Pend Oreille, Idaho for growth and rearing and attempting to return to Montana tributaries to spawn.

Transported fish were implanted with radio transmitters from 2015 through 2018 to monitor the movements of these fish following upstream transport. The primary indicator of the success of this project was documenting Westslope Cutthroat Trout entering potential spawning tributaries to Cabinet Gorge Reservoir during the spring spawning period. The percentage of Westslope Cutthroat Trout that entered spawning tributaries in the spring, following release from mid-March through June, ranged from 23 percent in 2015 to 40 percent in 2016 (Bernall et. al 2021). Based on these results, and evaluations of movements of fish at different release locations and different times of the year, the decision was made to begin moving Westslope Cutthroat Trout upstream of Cabinet Gorge Dam without radio transmitters in 2019. All Westslope Cutthroat Trout released in Cabinet Gorge Reservoir since 2019 were implanted with Passive Integrated Transponders (PIT) tags to monitor movement into the Bull River and fallback downstream of

Cabinet Gorge Dam. Seventeen percent in 2019, 25 percent in 2020, 6 percent in 2021, and 15 percent in 2022 were detected ascending the Bull River during the spawning period following their release (Avista, unpublished data).

The primary methods used to capture Bull Trout downstream of Cabinet Gorge Dam up until 2022 were night electrofishing, the Cabinet Gorge Hatchery ladder trap, and hook-and-line sampling. Only night electrofishing and hook-and-line sampling have been used to capture Westslope Cutthroat Trout. A permanent fish trap has been constructed below Cabinet Gorge Dam and became operational the summer/fall of 2022. This trap “the Cabinet Gorge Fish Passage Facility” (CGFPF) will be operated and tested again in 2023. One of the testing mechanisms is the implementation of the CGFPF Monitoring and Evaluation (M&E) Plan. The CGFPF will be the primary method used to capture Bull Trout and Westslope Cutthroat Trout downstream of Cabinet Gorge Dam for upstream transport in 2023. Other capture methods used in previous years will be used again in 2023 to provide an opportunity to capture and PIT tag additional fish to better understand the number of Bull Trout in the lower Clark Fork River.

Pathogen testing of species targeted for upstream transport has occurred annually since 2013. Avista is required to conduct this testing to obtain an import permit that allows transport of target fish from the lower Clark Fork River, Idaho upstream into the state of Montana. Bull Trout captured as bycatch during Lake Pend Oreille, Idaho Lake Trout suppression efforts are used annually to fulfill this requirement for Bull Trout transport. Westslope Cutthroat Trout, Rainbow Trout, Westslope Cutthroat Trout and Rainbow Trout hybrids, and up to 30 kokanee are collected annually in the lower Clark Fork River to fulfill the requirement for Westslope Cutthroat Trout transport.

## **Goal**

Reconnect migratory native salmonid populations in the lower Clark Fork River to increase the viability of these populations (Bull Trout and Westslope Cutthroat Trout) in the lower Clark Fork River, its tributaries, and Lake Pend Oreille.

## **Objectives**

1. Capture adult Bull Trout downstream of Cabinet Gorge Dam and transport those deemed appropriate upstream to Montana tributaries.
2. Capture mature Westslope Cutthroat Trout downstream of Cabinet Gorge Dam and transport those deemed appropriate upstream of Cabinet Gorge Dam.
3. Implement the CGFPF M&E Plan to evaluate and improve the effectiveness of the CGFPF.
4. Quantify Rainbow Trout and Yellowstone Cutthroat Trout introgression levels in the group of Westslope Cutthroat Trout transported and released upstream of Cabinet Gorge Dam.
5. If deemed appropriate by the CGFPF Subgroup, evaluate Bull Trout presence downstream of Noxon Rapids Dam.

6. Conduct pathogen testing required for upstream transport of Bull Trout and Westslope Cutthroat Trout in 2024.
7. Maintain a PIT tag database that includes information on all PIT tagged fish in the Avista Project area to allow transfer of information among various Avista programs.
8. Continue to develop a lower Clark Fork River fish capture database.

### **Tasks**

1. Operate the CGFPF in the spring (late-March/early April) through mid-October (dependent on environmental conditions) as defined in the M&E Plan (except during periods where lower Clark Fork River flows exceed 52,000 cfs). When lower Clark Fork River flows exceed 52,000 cfs the CGFPF will be shut down until flows stabilize below 52,000 cfs (Objectives 1, 2 and 3)
2. Coordinate genetic analysis of fin tissue samples for “rapid response” and other projects with the Abernathy Fish Technology Center (AFTC). Fin tissue samples will be collected from all Bull Trout captured downstream of Cabinet Gorge Dam and will be sent to AFTC for processing. In addition, approximately 200 juvenile Bull Trout fin tissue samples will be collected and sent to AFTC for annual baseline updates. Fin tissue samples collected from Westslope Cutthroat Trout transported upstream of Cabinet Gorge Dam will also be analyzed. A contract with AFTC for the proposed genetics work along with additional analyzes proposed under this or other Appendices will be developed. (Objectives 1, 2 and 4)
3. Provide upstream transport for appropriate adult Bull Trout captured downstream of Cabinet Gorge Dam. Utilize the CGFPF to capture adult Bull Trout ( $\geq 300$  mm in length) in the Clark Fork River downstream of Cabinet Gorge Dam. Adult Bull Trout will be held at the Cabinet Gorge Fish Handling Facility located at the Cabinet Gorge Hatchery. Fish that genetically assign to Montana populations, or were previously captured as juveniles in Montana tributaries, or as deemed appropriate, will be transported upstream. Bull Trout transported to Region 2 (Cabinet Gorge Reservoir or tributaries) will be released in Bull River Bay until temperatures exceed 16°C or intermittency issues are a concern. At that time fish will be released into the Bull River, East Fork Bull River or Rock Creek depending on the tributary they genetically assign to and the time of year. Bull Trout transported to Region 3 (Noxon Reservoir tributaries) will be released directly into the tributary they genetically assign to. Transport and release of Bull Trout to Region 4 (upstream of Thompson Falls Dam) will be coordinated with Montana Fish, Wildlife and Parks (MFWP). (Objective 1)
4. Bull Trout genetically assigning to Lightning Creek and its tributaries (Region 1) that are captured downstream of Cabinet Gorge Dam during time periods when the mouth of Lightning Creek is dry will be transported and released into the East Fork Bull River. If genetic testing concludes a Bull Trout captured prior to this event is the offspring of a

Lightning Creek adult that spawned in the East Fork Bull River that fish will be transported upstream (Objective 1)

5. Implement the CGFPF M&E Plan and if deemed appropriate and agreed to by the CGFPF subgroup adjust operation of the CGFPF to optimize the capture of Bull Trout. Implementation of the M&E Plan will include installation and operation of submersible PIT antennas in the lower Clark Fork River and the use of other methods (e.g., night electrofishing, Cabinet Gorge Hatchery ladder trap, etc.) to capture and PIT tag additional fish to help evaluate the CGFPF. (Objective 3)
6. Water temperature in the CGFPF will be monitored as denoted in Table 1.

Table 1. Location of temperature monitoring equipment in the CGFPF.

Stream	Site name	River km	Latitude	Longitude
Lower Clark Fork River	CGFPF	14.4	48.085704	-116.058163

7. Westslope Cutthroat Trout ( $\geq 340$  mm in total length) captured in the CGFPF in the spring will be transported upstream and released near the Big Eddy boat ramp in Cabinet Gorge Reservoir through June 15, dependent on environmental conditions. These fish will be implanted with a 23 mm Full Duplex (FDX) PIT tag, unless they already have a 12 mm FDX PIT tag. Then they will be implanted with a 23 mm Half Duplex (HDX) PIT tag. They will also be marked with a floy tag. All other Westslope Cutthroat Trout captured downstream of Cabinet Gorge Dam will be implanted with a 12 mm FDX PIT tag and will be released near their capture location. A photo will be taken, and a fin tissue sample will be collected from all transported Westslope Cutthroat Trout. Any Westslope Cutthroat Trout that are recaptured downstream of Cabinet Gorge Dam during the transport period will be transported upstream a maximum of two times in 2023. (Objective 2)
8. If deemed appropriate by the CGFPF subgroup, investigate and potentially hire contractor to look at the feasibility of cooling water entering the CGFPF holding pool (Objective 3).
9. If deemed appropriate by the CGFPF subgroup, deploy and operate a number of 3' circular PIT antennas downstream of Noxon Rapids Dam (Objective 5).
10. The required number of fish, of the appropriate species, identified by the Pathogen Technical Subcommittee, will be tested for pathogens in 2023. The results will be used to apply for a MFWP import permit in 2024. (Objective 6)
11. Maintain a PIT tag database and process data requests for all PIT tagged fish in the Avista project area. (Objective 7)
12. Work with outside contractor and internal personnel to continue to develop a database that houses information on all fish capture events in the lower Clark Fork River downstream of Cabinet Gorge Dam (night electrofishing, Cabinet Gorge Hatchery ladder

trap, hook-and-line sampling, Twin Creek weir, waterfall trap, mobile trap and other experimental traps). (Objective 8)

### **Work Products**

- Annual Work Summary; due December 1, 2023
- Comprehensive Project Report; Upstream Fish Passage Program (2001 – 2021 data); final due December 1, 2023 (including Upstream Fish Passage Program 2019, 2020 and 2021 data)
- Annual Project Update; Upstream Fish Passage Program (2022 data); final due December 1, 2023
- Annual Project Update; Upstream Fish Passage Program (2023 data); final due December 1, 2024
- Annual Project Update; Abernathy Fish Technology Center Genetics Report (2022 data); final due November 1, 2023
- Annual Project Update; Abernathy Fish Technology Center Genetics Report (2023 data); final due November 1, 2024
- Annual Project Update; Idaho Fish Health Center Pathogen Report (2022 data); final due July 1, 2023
- Annual Project Update; Idaho Fish Health Center Pathogen Report (2023 data); final due July 1, 2024
- Temperature monitoring data for the CGFPF; due December 1, 2023

### **Permitting Requirements**

A MFWP import permit is required to transport Bull Trout and Westslope Cutthroat Trout into Montana. A collection permit and fish transport permit are required from Idaho Department of Fish and Game (IDFG) to target and collect Bull Trout and Westslope Cutthroat Trout downstream of Cabinet Gorge Dam.

Endangered Species Act consultation for this project plan is associated with the 2019 Biological Opinion on the effects of continued operation of the Clark Fork Hydroelectric Project on Bull Trout and designated Bull Trout critical habitat. Incidental take reporting for this project plan will be included in the annual Biological Opinion report as required by Term and Conditions 15–18 of the 2019 Incidental Take Statement.

### **Cultural/Historic Resource Review**

Not applicable for the tasks proposed in this project plan, there are no ground and/or vegetation disturbing activities, or proposed impacts to cultural/historic resources.

### **Benefit to the Resource**

This program aligns with Avista’s responsibility in complying with the Clark Fork Settlement Agreement (CFSA) and Native Salmonid Restoration Plan (NSRP) (Kleinschmidt and Pratt 1998). The NSRP identified a need to “establish and maintain connectivity in the Clark Fork Basin for migratory trout” with Bull Trout and Westslope Cutthroat Trout listed as the primary target species (Avista 1999, Kleinschmidt and Pratt 1998). The NSRP also called for conducting experimental upstream passage of adult fish to test the feasibility of larger-scale programs and permanent fish passage facilities. Montana Fish, Wildlife and Parks and IDFG are supportive of

Bull Trout and Westslope Cutthroat Trout passage as detailed in their current state-wide management plans (MFWP 2019, IDFG 2019). Additionally, the U. S. Fish and Wildlife Service describes fragmentation of the lower Clark Fork River by mainstem dams as one of the primary threats to Bull Trout under their Columbia Headwaters recovery unit implementation plan (U. S. Fish and Wildlife Service 2015). Bull Trout are listed as “threatened” under the Endangered Species Act and Westslope Cutthroat Trout are a “species of special concern” (MFWP and IDFG designation). Implementation of Bull Trout and Westslope Cutthroat Trout upstream passage programs re-establishes connectivity for migratory populations in the lower Clark Fork River which allows access to quality spawning and rearing habitat in Montana tributaries.

## Budget

Item	Estimated Carryover <sup>1</sup>	2023 Budget Request
Labor for operation of the CGFPF, implementation of the CGFPF M&E Plan, fish transport, data entry and analysis and report writing (statistician assistance) (1 biologist FTE, 1 entry level biologist FTE, 2 technician FTE, 2 seasonal employees [9 months] and \$20,000 for statistician help)	\$60,000	\$510,000
CGFPF: planned and unforeseen maintenance needs (Cabinet support); FHF maintenance needs	\$30,000	\$90,000
Electrical, phone, cell, and internet: CGFPF and FHF	\$3,000	\$25,000
Riverwatcher Daily (Annual fee \$2,600); plus cell booster	\$600	\$2,600
Genetic Analysis: contract with AFTC (Bull Trout and Westslope Cutthroat Trout transports and baseline analysis)	\$0	\$47,500
Pathogen sampling: USFWS contract (\$6,500) and Avista time (0.01 technician FTE)	\$2,000	\$14,500
Evaluation of feasibility of cooling CGFPF holding pool water	\$0	\$10,000
Modification of ladder trap to improve retention (cone/fingers)	\$0	\$5,000
Purchase of 3' circular PIT antennas	\$0	\$35,000
Equipment: camera, waders, rain gear, In Reach charges, etc.	\$0	\$5,000
Equipment for fish work up: PIT tag reader, PIT tags, syringes, Aqual-S 20E (\$700 annual fee), measuring board, etc.	\$2,000	\$3,000
Vehicle and boat: maintenance, repair, and fuel	\$5,000	\$20,000
Database development: contract and labor (data entry form)	\$15,000	\$10,000
Meetings and Training	\$2,000	\$2,500
<b>Total</b>	<b>\$119,600</b>	<b>\$780,100</b>
<b>Anticipated Expenditures</b>		<b>\$899,700</b>

<sup>1</sup> Estimated carryover of unexpended, approved funds as of January 1.

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## **2023 PROJECT PLAN**

### **Westslope Cutthroat Trout Transport Evaluation**

#### **Project Contact**

Travis Rehm, Montana Fish, Wildlife and Parks (MFWP), (406) 382-3032, [rehm.travis@mt.gov](mailto:rehm.travis@mt.gov)

#### **Project History**

This is a continuing project that was first approved by the Management Committee (MC) in 2022. The scope and budget will be reviewed and approved by the MC annually.

#### **Background**

Cabinet Gorge Dam blocks upstream fish passage into tributaries within the lower Clark Fork River in Montana that were historically available to Westslope Cutthroat Trout. Pratt and Huston (1993) interviewed locals that lived in Sanders County concerning fisheries in the area prior to when the hydroelectric dams were built on the mainstem Clark Fork River. Large, presumably migratory Westslope Cutthroat Trout or “redbellies” were common in most Montana tributaries of the lower Clark Fork River and were directly mentioned as being present in several Cabinet Gorge tributaries including the Blue Creek, Elk Creek, Bull River, Pilgrim Creek and Rock Creek (Pratt and Huston 1993). Currently stream-resident, non-hybridized Westslope Cutthroat Trout populations occur in all major drainages to Cabinet Gorge Reservoir as well as some of the minor tributaries. Prior to this experimental passage, migratory (fluvial) Westslope Cutthroat Trout were only present in the Bull River drainage, post dam construction. (WWP 1996; Chadwick 2000; Moran 2006; Moran and Storaasli 2015).

The experimental transport of Westslope Cutthroat Trout upstream of Cabinet Gorge Dam was initiated in 2015 and has occurred in the lower Clark Fork River drainage over the last eight years (2015-2022), as part of the Upstream Fish Passage Program. The goal for this program is to reestablish connectivity for Westslope Cutthroat Trout utilizing Lake Pend Oreille, Idaho for growth and rearing and attempting to return to Montana tributaries to spawn. Westslope Cutthroat Trout have been captured in the lower Clark Fork River in Idaho in the vicinity of Cabinet Gorge Dam and subsequently transported into Cabinet Gorge Reservoir in Montana.

Over this period, 271 Westslope Cutthroat Trout have been transported into Montana. Transported fish were implanted with radio transmitters from 2015 through 2018 to monitor the movements of these fish following upstream transport. These radio-tagged Westslope Cutthroat Trout were observed migrating into tributaries during the spawning period. The percentage of Westslope Cutthroat Trout passed into Cabinet Gorge Reservoir that entered a spawning tributary over those years ranged from 23-40%, with a mean of 31% (2015= 23%, 2016= 40%, 2017= 37.5%, 2018= 25%; Bernall and Johnson 2016, 2017, 2018; Bernall et al. 2021). Fish were documented entering Blue Creek, Bull River, Pilgrim Creek and Rock Creek. Each year that Westslope Cutthroat Trout were tracked, at least five fish entered the Bull River drainage, 3 of 4 years at least one fish has entered Rock Creek and Pilgrim Creek, and 2 of 4 years one fish entered Blue Creek. The percentage of fish passed into CGR that have been detected entering the Bull River has ranged from 13-25%, with a mean of 20% (2015= 13% (n=5), 2016= 25% (n=9), 2017= 22% (n=9), 2018= 21% (n=5)).

All Westslope Cutthroat Trout released in Cabinet Gorge Reservoir in 2019-2022 were implanted with Passive Integrated Transponders (PIT) tags to monitor movement into the Bull River and fallback downstream of Cabinet Gorge Dam. Seventeen percent in 2019 (n=4), 25 percent in 2020 (n=10), 12 percent in 2021 (n=2), and 11 percent (n=3) in 2022 were detected ascending the Bull River during the spawning period following their release (Avista, unpublished data). Since 2015, a total of 49 fish have been detected moving into the Bull River during the spawning period. Offspring of migratory life histories of Westslope Cutthroat remain in their natal stream from 1-4 years (McIntyre and Rieman 1995). If a migratory life history persists then offspring of transported Westslope Cutthroat fish from year-classes between 2019-2022 could be detected.

To date, there has been no evaluation of transported Westslope Cutthroat Trout potential reproduction in Montana tributaries or their contribution to recreational fisheries. This project will facilitate the collection of baseline data at current levels of passage of Westslope Cutthroat Trout into Montana. The Cabinet Gorge Dam Fish Passage Facility became operational the summer/fall of 2022, and it is likely that numbers of Westslope Cutthroat Trout transported upstream of Cabinet Gorge Dam will increase as a result. Results of this project will help inform future passage decisions associated with weighing the benefits to Westslope Cutthroat Trout populations and recreational fisheries against risks of disease transmission upstream of Cabinet Gorge Dam.

### **Goal**

Monitor the efficacy of the Upstream Fish Passage Program to reconnect migratory Westslope Cutthroat Trout populations in the Lower Clark Fork River.

### **Objectives**

1. Determine if any Westslope Cutthroat Trout transported upstream of Cabinet Gorge Dam have successfully reproduced in the Bull River.
2. Determine the contribution of Westslope Cutthroat Trout upstream transported over Cabinet Gorge Dam to recreational fisheries in Montana.

### **Methods**

#### *Genetic Monitoring*

Genetic monitoring will continue to occur at sites in Bull River and its tributaries. Specifically, sampling will be focused on areas identified as spawning locations for Westslope Cutthroat Trout transported above Cabinet Gorge Dam (Bernall et al. 2021), the mainstem Bull River downstream of those areas, and Bull River tributary sites being monitored by the Habitat Restoration Monitoring and Native Salmonid Abundance Monitoring Plan. The primary methods used to capture fish in Montana tributaries will be drift-boat mounted and backpack electrofishing and hook-and-line sampling in the mainstem of the Bull River. Sampling locations will be informed by results from 2022 genetic monitoring. Tissue samples (up to 1000) from all Westslope Cutthroat Trout captured during these activities will be collected in 2023. Activities conducted under the Montana Tributary Habitat Acquisition and Recreational Fishery Enhancement Program (Appendix B), Habitat Restoration Monitoring and Native Salmonid

Abundance Monitoring Plan will also be used to help facilitate collection of tissue samples. Genetic analysis of fin tissue samples collected in 2023 will be coordinated with University of Montana Fish Conservation Genetics Lab. Tissue samples of all Westslope Cutthroat Trout passed over Cabinet Gorge Dam (2015-present) were taken at the time of transfer. The transfer of tissue samples from all Westslope Cutthroat Trout passed over Cabinet Gorge Dam from Abernathy Fish Technology Center to the University of Montana Fish Conservation Genetics Lab was coordinated in 2022. Parentage-based tagging, a widely used method to describe reproductive success of known origin salmonid fish throughout the Columbia River basin (e.g., Steele et al. 2019), will be used to determine if any fish collected in 2023 are offspring of those transport fish. All individual fish will be genotyped using a RAD Capture (Ali et al. 2015) panel specifically designed for Westslope Cutthroat Trout; that panel includes more than 500 polymorphic SNPs for parentage in this region, thereby providing high power for accurate parentage inference. Furthermore, the panel also includes more than 1600 species diagnostic markers (i.e., Westslope, Rainbow and Yellowstone) to assess individual ancestry of all migratory adults and juveniles sampled in tributaries (a secondary added benefit of project activities).

#### *Fisheries Monitoring*

Floy tags will be deployed in all Westslope Cutthroat Trout transported upstream of Cabinet Gorge Dam in 2023. A subsample of resident salmonids will also be Floy tagged in the Bull River. Tag return rates of both sets of tagged fish will be used to evaluate angler catch rates of transported Westslope Cutthroat Trout. A pre-existing tag line will be printed on all tags for anglers to report their catches. Additionally, a news release about the project and signage at traditional access points will be utilized to inform anglers and encourage tag reporting. Local outfitters will also be contacted, made aware of the project, and encouraged to report any tags encountered.

#### **Work Products**

- Mid-year report; due to the Appendix C Implementation Staff Lead; August 1, 2023
- Annual Work Summary; due to the Appendix C Implementation Staff Lead; November 15, 2023
- University of Montana Conservation Genetics Laboratory Report for 2022; final due May 1, 2023
- University of Montana Conservation Genetics Laboratory Report for 2023; final due May 1, 2024
- Project Completion Report; final due December 31, 2024

#### **Permitting Requirements**

No permits are required for fisheries sampling work as all work will be conducted and/or overseen by MFWP fisheries biologists.

Endangered Species Act consultation for this project plan is associated with the 2019 Biological Opinion on the effects of continued operation of the Clark Fork Hydroelectric Project on Bull Trout and designated Bull Trout critical habitat (BiOp), and the USFWS-MFWP Cooperative Agreement pursuant to Section 6 of the Act. This project plan is consistent with the analysis and conclusions contained in the 2019 BiOp and the USFWS-MFWP Cooperative Agreement and

will adhere to all appropriate Terms and Conditions designed to reduce the extent and effects of incidental take on Bull Trout. Incidental take reporting for this project plan will be included in the annual Biological Opinion report as required by Term and Conditions 15–18 of the 2019 Incidental Take Statement, as well as MFWP’s annual Section 6 report to the USFWS.

### **Cultural/Historic Resource Review**

Not applicable for the tasks proposed in this project plan, there are no ground and/or vegetation disturbing activities, or proposed impacts to cultural/historic resources.

### **Benefit to the Resource**

This project is primarily being implemented to evaluate the effectiveness of the experimental transport of Westslope Cutthroat Trout upstream of Cabinet Gorge Dam implemented under Avista’s CFSA Native Salmonid Restoration Plan (Kleinschmidt and Pratt 1998). The goal of the Upstream Fish Passage Program is to establish and maintain connectivity in the Clark Fork River basin for migratory trout. Westslope Cutthroat Trout are a “species of special concern” in both Idaho and Montana. Montana Fish, Wildlife and Parks and Idaho Department of Fish and Game are supportive of reconnecting Bull Trout and Westslope Cutthroat Trout populations in their current state-wide management plans (MFWP 2019, IDFG 2019).

### **Budget**

<b>Item</b>	<b>Estimated Carryover<sup>1</sup></b>	<b>2023 Budget Request</b>
Genetic Analysis	\$40,000	\$40,000
Genetic vials, boxes, and ethanol	\$0	\$1,000
Boat: maintenance, repair, and set up	\$1,000	\$2,000
Field gear (e.g., nets, waders, scales)	\$0	\$2,000
Tagging equipment (e.g., floy tags, tag guns)	\$1,000	\$1,000
Signs and news release	\$0	\$300
<b>Total</b>	<b>\$42,000</b>	<b>\$46,300</b>
<b>Anticipated Expenditures</b>		<b>\$88,300</b>

<sup>1</sup> Estimated carryover of unexpended, approved funds as of January 1.

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## **2023 PROJECT PLAN**

### **Native Salmonid Restoration Plan Five-Year Plan**

#### **Project Contact**

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#### **Project History**

This a new project proposed for 2023.

#### **Background**

In the mid-1990s, Avista and a group of stakeholders formed the Clark Fork Relicensing Team which included federal and state agencies, five Indian tribes, special interest groups, conservation groups, and property owners. The Relicensing Team established the Fisheries Working Group (FWG, a technical subcommittee) to examine fish passage on the Lower Clark Fork River (LCFR) within the context of relicensing for the Avista projects. In July 1998, the FWG and Avista consultants completed the Native Salmonid Restoration Plan (NSRP, Kleinschmidt Associates and K.L. Pratt 1998) which was adopted into the Clark Fork Settlement Agreement (CFSA) when a new Federal Energy Regulatory Commission (FERC) license was issued to Avista in 2000 (Avista 1999). Appendix C of the CFSA addresses fish passage components of the NSRP. Other major components of the NSRP were divided among three major interrelated programs agreed to in the CFSA and authorized in the FERC license: Appendix A (Idaho Tributary Habitat Acquisition and Fishery Enhancement Program), Appendix B (Montana Tributary Habitat Acquisition and Recreational Fishery Enhancement Program), and Appendix F5 (Dissolved Gas Supersaturation Control, Mitigation, and Monitoring Program).

The FERC license, by inclusion of the CFSA, provided for establishment of a Management Committee (MC) which has oversight responsibilities pertaining to mitigation activity implementation. On September 24, 2007, the Fish Passage Subcommittee (a subcommittee of the MC) accepted by consensus an assessment of the first nine years of implementation of the NSRP in the “Clark Fork River Native Salmonid Restoration Program Review, 1998–2006” (Kleinschmidt Consultants 2007; hereafter, “NSRP review”). The Fish Passage Subcommittee agreed that “...the review of the NSRP is an accurate representation of the activities for the first nine years of implementation and that the recommendations listed in the document lay the foundation for development of a plan for implementation of the NSRP for the next five years” (Avista 2008).

Additionally in 2007, the MC convened an Expert Fish Passage Panel (Panel) to review 10 years of fish passage research and planning at Cabinet Gorge and Noxon Rapids dams. The Panel submitted their final findings and recommendations report to the MC in February of 2009. The Panel report (GEI Consultants 2009) and the NSRP Review are two documents that assisted in forming the technical basis for the development of the 2011–2015 Five-Year Plan [Aquatic Implementation Team (AIT) 2012]. An updated Five-Year Plan was developed and implemented from 2019 to the present (). The four-year delay in the update to that Five-Year Plan occurred while stakeholders were developing Amendment No.1 to the CFSA.

The purpose of this Project Plan is to work with stakeholders to renew/update the current Five-Year Plan for implementation starting in 2024. The Five-Year Plan provides the MC with continued and consistent guidance for implementation of the Fish Passage/NSRP Plan (Appendix C) and appendices A, B, and F5. The Five-Year Plan is anticipated to guide work to be implemented from 2024 through 2028; however, the actual time period will be dependent on when the MC approves the final plan. This document will help guide CFSA implementers, the AIT, WRTAC, and MC with Annual Implementation Plan development.

### **Goal**

Develop a plan to guide implementation of aquatic programs under the CFSA.

### **Objectives**

1. Develop and get MC approval of an updated NSRP Five-Year Plan.

### **Tasks**

1. Work with appropriate stakeholders and potentially a contractor to update the NSRP Five-Year Plan and submit to the MC for consideration. Address any MC comments and concerns and finalize the MC-approved document.

### **Work Products**

- Annual Work Summary; due December 1, 2023
- Native Salmonid Restoration Plan Five-Year Plan; final due May 1, 2024

### **Permitting Requirements**

Not applicable for the tasks proposed in this project plan.

Endangered Species Act consultation for this project plan is associated with the 2019 Biological Opinion on the effects of continued operation of the Clark Fork Hydroelectric Project on Bull Trout and designated Bull Trout critical habitat (BiOp), and the USFWS-IDFG Cooperative Agreement pursuant to Section 6 of the Act. This project plan is consistent with the analysis and conclusions contained in the 2019 BiOp and the USFWS-IDFG Cooperative Agreement, and will adhere to all appropriate Terms and Conditions designed to reduce the extent and effects of incidental take on Bull Trout. Incidental take reporting for this project plan will be included in the annual Biological Opinion report as required by Term and Conditions 15–18 of the 2019 Incidental Take Statement, as well as IDFG’s annual Section 6 report to the USFWS.

### **Cultural/Historic Resource Review**

Not applicable for the tasks proposed in this project plan. The proposed project does not involve any vegetation and/or ground disturbing activities, or proposed impacts to cultural/historic resources.

### **Benefit to the Resource**

The NSRP is a guiding document that was developed during the relicensing of Cabinet Gorge and Noxon Rapids dams to address fish passage and other fisheries related effects of operation of the dams. With over 20 years of project implementation occurring since the NSRP was first

contemplated and as noted in the Kleinschmidt Consultants (2007) review of the first nine years of implementation of the NSRP, there is a need to review project goals and objectives and policies on a more frequent basis. This Five-Year Plan will help guide the next five years of implementation of the NSRP and associated appendices.

### Budget

Item	Estimated Carryover <sup>1</sup>	2023 Budget Request
Planning and coordination	\$0	\$10,000
<b>Total</b>	<b>\$0</b>	<b>\$10,000</b>
<b>Anticipated Expenditures</b>		<b>\$10,000</b>

<sup>1</sup> Estimated carryover of unexpended, approved funds as of January 1.

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Kleinschmidt Consultants. 2007. Clark Fork River Native Salmonid Restoration Program Review 1998 – 2006. Prepared for The Clark Fork Management Committee (Avista Corp., Spokane, Washington).



## **2023 PROJECT PLAN**

### **Tributary Trapping and Downstream Juvenile Bull Trout Transport Program**

#### **Project Contact**

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#### **Project History**

The Tributary Trapping and Downstream Juvenile Bull Trout Transport Program (hereafter, “Downstream Program”) is a continuing project that was originally approved by the Management Committee (MC) in 2000. The scope and budget for this project are reviewed by the MC annually.

#### **Background**

The original goal of the Downstream Program was to test the feasibility of tributary trapping and downstream transport of emigrating juvenile Bull Trout, and subsequently, to assess if such actions resulted in higher returns of adult Bull Trout following maturation in Lake Pend Oreille. Since that time, through annual evaluation of the program and an experimental study, it has been generally agreed upon that the transport and release of juvenile Bull Trout downstream of Cabinet Gorge Dam results in greater adult returns to natal streams (due, in part, to the Upstream Fish Passage Program) when compared to the volitional emigration of juvenile fish out of natal streams. Therefore, in 2012, the MC approved the transport of all trapped, downstream-moving juvenile Bull Trout to the Clark Fork River downstream of Cabinet Gorge Dam.

In 2000, juvenile transport operations were conducted in the Bull River and Rock Creek drainages. The program was expanded to the Vermilion River, Swamp, Pilgrim, and Graves creeks in 2002 and 2003, and to the Prospect Creek drainage in 2005. At present, data suggests the East Fork Bull River, Graves Creek, and Vermilion River are the only Montana tributaries within the Avista project area containing meaningful numbers of Bull Trout that naturally exhibit an adfluvial life history (Oldenburg 2017; Lacy et al. 2016; Oldenburg et al. 2015; Zymonas 2006; hereafter, these three tributaries are collectively referred to as the “Montana adfluvial streams”). Transport operations are currently limited to the Montana adfluvial streams.

Traditionally, tributary trapping has been conducted with temporary weir and screw traps. Following a feasibility investigation, Avista constructed a reinforced, concrete-bedded weir trap (hereafter, “permanent weir”) in Graves Creek in 2012. Operation of the permanent weir began in 2013 and was anticipated to facilitate higher capture efficiencies for emigrating juvenile Bull Trout, particularly during periods of high discharge that proved difficult to trap using temporary weir and screw traps. A Graves Creek Monitoring and Evaluation (M&E) Plan was completed in 2013 and updated in 2016 (Oldenburg et al. 2016). The M&E Plan was designed to evaluate the operation and fish capture effectiveness of the permanent weir. Associated monitoring suggested that the permanent weir improved the capture probability for juvenile Bull Trout, but that additional modifications could further enhance the capture probabilities of both juvenile and adult Bull Trout. Thus, the permanent weir has been iteratively evaluated and improved since that time. Among these improvements, a prototype drop-height element was incorporated into the downstream-capture component of the trap during 2016. Monitoring during 2016 and 2017

suggested the prototype was extremely effective for capturing both juvenile and adult downstream-moving Bull Trout. During 2017, the Aquatic Implementation Team (AIT) reviewed the performance of the weir and agreed that the prototype was achieving the desired results. Avista began working with engineers to develop plans to replace the prototype with a more robust engineered version of this concept. Design for the permanent weir trap enhancements was finalized during 2019. The enhancements to the trap were completed on November 3, 2021. In addition, the Graves Creek Fish Handling Facility was completed in early 2021. The enhancements have been successful in increasing effectiveness of the trap. However, additional modifications (i.e., a traveling screen in the trap box) are needed to make the trap more robust to high debris loads.

East Fork Bull River trapping was conducted using two weir traps and two screw traps during 2022. A drop-height element similar to the permanent weir prototype was integrated into the weir trap at the primary East Fork Bull River trap site (upper south channel) from 2017 through 2020. Results from this experimental trap have been inconclusive because too few juvenile Bull Trout have been outmigrating to formally evaluate the performance. However, it is believed the new configuration has markedly increased catchability. A more robust entrance for the south channel trap was constructed in 2020 and a more robust trap box with lifting frame and five pipe supports were constructed to increase the effectiveness and ease of operation of the trap (as well as to prevent mink from entering the trap box) in 2021. The new components have been very efficient during those times that flow and debris loads allow the weir trap to be fished. The north channel will continue to be evaluated for opportunities to enhance trapping efforts and potentially fabricate new trap parts similar to the south channel. Fall stream electrofishing was used to augment East Fork Bull River juvenile transports in 2021 and 2022 and is again being proposed for 2023.

As in the past few years, the Vermilion River will be electrofished during late October or early November for the purpose of capturing juvenile transports. A new electrofishing unit was purchased for this purpose and first utilized during 2020. The primary goal behind the new unit was to reduce the number of fish injured and killed by stream electrofishing. The new unit has been successful in reducing electrofishing related injury and mortality in fish. In addition, anecdotally, the new unit appears to have just as great or greater capture probability when compared to the old unit.

The methods used to capture juvenile Bull Trout also capture other juvenile and adult fishes. These data provide important life history information, such as the timing and magnitude of upstream and downstream movements, trends in fish size, condition, and abundance among years, and the verification of movement for fish transported under other programs. The Downstream Program has also assisted in the implementation of the Non-Native Fish Suppression Project in the East Fork Bull River from 2007 through the present time.

## **Goal**

Protect and enhance migratory Bull Trout local populations in the East Fork Bull River, Vermilion River, and Graves Creek by transporting appropriate individuals captured within these streams downstream to rear and grow in Lake Pend Oreille.

## Objectives

1. Capture and transport juvenile Bull Trout and post-spawn adult Bull Trout that were transported under the Upstream Fish Passage Program to the Clark Fork River downstream of Cabinet Gorge Dam.
2. Evaluate and implement the Graves Creek M&E Plan to evaluate and improve permanent weir trap capture and passage probabilities.
3. Provide support to related projects including the East Fork Bull River Morphology, Connectivity, and Habitat Enhancement Project; Graves Creek Permanent Weir Trap Enhancements; Graves Creek Bull Trout Translocation Project; Upstream Fish Passage Program; and, implementation of the EFBR beaver management plan.

## Tasks

1. All sites: Procure equipment and acquire necessary permits to install and operate fish traps in Graves Creek and East Fork Bull River, and to electrofish in the Vermilion River and East Fork Bull River. (Objectives 1 and 2)
2. All sites: If deemed necessary, consult statistician for help with varying data analyses. (Objectives 1 and 2)
3. General protocols: Unless otherwise specified, the following general protocols will be followed. All Bull Trout greater than 99 mm in length that are captured through Downstream Program efforts will be implanted with a *full-duplex* PIT tag (unless a previous PIT tag is detected). Those fish less than 350 mm will receive a 12-mm tag. Those fish greater than 349 mm will receive a 23-mm tag. If a greater than 349 mm Bull Trout is captured that only has a 12-mm PIT tag, a 23-mm PIT tag of the opposite technology (i.e., half duplex versus full duplex) will be implanted. When possible, juvenile transports will be held in tanks at the Cabinet Gorge Fish Handling Facility and acclimated to lower Clark Fork River water for about 24 hours prior to release during those times in which the facility is operational. All fish will be scanned prior to release to ensure PIT tags were retained. Adult Bull Trout captured in traps will be released in the appropriate direction (or transported to the Clark Fork River downstream of Cabinet Gorge Dam) depending on their origin (reservoir type or upstream transport), direction of travel, and time of year (pre-spawn or post-spawn). The release location downstream of Cabinet Gorge Dam will be adjacent to the Cabinet Gorge Fish Handling Facility for all transports during all times of the year. (Objectives 1 and 2)
4. Graves Creek: Conduct permanent weir trapping and transport operations in Graves Creek from mid-March through June 30 and September 4 through November 22 (dates may be slightly modified by the AIT or due to environmental conditions; the AIT may choose to trap the period from November 27 until December 15; traps will be disabled during the Labor Day and Thanksgiving holidays). Transport eligible (i.e., 120–300 mm and captured moving downstream) Bull Trout to the Clark Fork River downstream of Cabinet Gorge Dam. With regard to adult upstream transports that are captured in the permanent weir trap following the spawn, the AIT will evaluate data to determine

whether these fish should be released on site or transported back to Lake Pend Oreille (the default will be to release half on site and transport half to Lake Pend Oreille). Any non-native fishes captured attempting to move upstream greater than 99 mm will be implanted with a PIT tag and released downstream of the trap. A block design will be implemented in which the trap will be operated with no volitional passage versus volitional upstream passage on alternating weeks. (Objectives 1 and 2)

5. Graves Creek: The AIT will evaluate the Graves Creek M&E Plan during 2024 and modify it (if warranted due to trap enhancements). Implement the Graves Creek M&E Plan. Collect data to evaluate fish behavior upstream and downstream of the trap and iteratively apply operational or physical design modifications to overcome any documented problems. (Objective 2)
6. Graves Creek: Provide support for the Graves Creek Permanent Weir Trap Enhancement project. (Objective 3)
7. East Fork Bull River: Conduct trapping operations in the East Fork Bull River from late March through June 30 and September 4 through November 22 (dates may be slightly modified by the AIT or due to environmental conditions; the AIT may choose to trap the period from November 27 until December 15; traps will be disabled during the Labor Day and Thanksgiving holidays). During periods of high discharge, two screw traps will be operated in the south channel. If a suitable location can be identified, one of these traps may be moved to the north channel. When discharge declines to appropriate levels, the screw traps will be removed and temporary weir traps will be installed and operated within both channels. The weir trap with the drop-height feature will be fished at the upper south channel site and further evaluated. The AIT may elect to slightly move the upper north channel trapping site pursuant to appropriate permits. Rather than run exclusion weir traps at the lower sites in the fall, the weir traps at the upper sites may include additional fortification and more frequent cleaning. All non-native fishes captured in East Fork Bull River traps will be PIT tagged (if greater than 99 mm) and transported to the lower Bull River property. All Westslope Cutthroat Trout greater than 99 mm that are captured in traps will receive a PIT tag and a genetics sample taken. All captured post-spawn adult Bull Trout that were formerly upstream transports will be transported back to Lake Pend Oreille. (Objectives 1 and 3)
8. East Fork Bull River: If deemed appropriate by the AIT and the new south channel trap components continue to meet expectations in 2023, we will fabricate similar components for the north channel. In the event similar components are not deemed necessary for the north channel, new all-aluminum boxes will be fabricated for the north channel to reduce or eliminate mink predation.
9. East Fork Bull River: Finalize design for the flow management through the engineered split in the East Fork Bull River (this task was transferred here from the 2022 Appendix B project plan, “East Fork Bull River Morphology, Connectivity, and Habitat Enhancement Project”). (Objective 1)

10. East Fork Bull River: Following the spring freshet, sandbag the engineered split in the East Fork Bull River so that the potential effects associated with task 9 can be visually evaluated. (Objective 3)
11. East Fork Bull River: Conduct backpack stream electrofishing to capture and transport eligible (i.e., 120-250 mm) Bull Trout from the East Fork Bull River. Electrofishing will be conducted during mid to late October or November following the Bull Trout spawn. Electrofishing will not occur: (1) within 30 yards of Bull Trout redds; (2) if any adult Bull Trout are observed in the area; or (3) around complex structures where visibility may be poor (e.g., large logjams or deep undercut banks). Electrofishing will be conducted for five days and all eligible Bull Trout will be transported to Idaho. If adequate data regarding return rates of juvenile transports that were captured by means of electrofishing are obtained in 2023, the AIT may elect to discontinue or expand this effort (Objective 1)
12. East Fork Bull River: Implement the beaver management plan as necessary. This will primarily be comprised of periodically monitoring for new beaver activity and acting when appropriate. (Objective 3)
13. East Fork Bull River: Work with the U.S. Forest Service and, if approved, purchase and outfit a trailer to be used as a mobile fish handling facility. (Objective 1)
14. Vermilion River: Conduct crawdad stream electrofishing to capture and transport eligible (i.e., 120–250 mm) Bull Trout from the Vermilion River downstream of China Gorge to the confluence with Noxon Reservoir. Electrofishing will be conducted during mid to late October or November following the Bull Trout spawn. Electrofishing will not occur: (1) within 30 yards of Bull Trout redds; (2) if adult Bull Trout are observed in the area; or (3) around complex structures where visibility may be poor (e.g., large logjams or deep undercut banks). Electrofishing will be conducted for up to 10 days and all eligible Bull Trout will be transported to Idaho. If adequate data regarding return rates of juvenile transports that were captured by means of electrofishing are obtained in 2023, the AIT may elect to discontinue or expand this effort. (Objective 1)
15. Monitor water temperature at the locations listed in Table 1.

Table 1. Location of temperature data loggers on Graves Creek, Vermilion River, Bull River, and East Fork Bull River.

Stream	Site	River		
		Kilometer	Latitude	Longitude
Graves Creek	PIT-monitoring station	0.6	47.685435	-115.405419
Vermilion River	PIT-monitoring station	2.8	47.827698	-115.533157
Bull River	PIT-monitoring station	4.4	48.056506	-115.824622
East Fork Bull River	North channel trap site	0.7	48.113290	-115.776710
	South channel trap site	0.7	48.112850	-115.775180

## **Work Products**

- Comprehensive Project Report; Tributary Trapping and Downstream Juvenile Bull Trout Transport Program (2018-2022 data; final due July 1, 2023 and includes Graves Creek permanent weir trap monitoring and evaluation plan report)
- Annual Project Update; Tributary Trapping and Downstream Juvenile Bull Trout Transport Program (2023 data; final due October 1, 2024 and includes Graves Creek permanent weir trap monitoring and evaluation plan report)
- Temperature monitoring data for the five long-term sites as well as remaining sites monitored through the Bull Trout Emigration Study; due December 1, 2023
- Annual Work Summary; Downstream Program; due December 1, 2023

## **Permitting Requirements**

Several permits are required to implement the Downstream Program. A scientific collection permit is required from MFWP and an import permit is required by Idaho Department of Fish and Game. These applications are submitted annually during January or February. In addition, USFS Special Use Authorizations and Montana Department of Environmental Quality (Green Mountain Conservation District) 310 permits are maintained for tributary traps and PIT tag array(s). If the EFBR fish handling shed is approved, this will be added to the USFS Special Use Authorization.

Endangered Species Act consultation for this project plan is associated with the 2019 Biological Opinion on the effects of continued operation of the Clark Fork Hydroelectric Project on Bull Trout and designated Bull Trout critical habitat. Incidental take reporting for this project plan will be included in the annual Biological Opinion report as required by Term and Conditions 15–18 of the 2019 Incidental Take Statement.

## **Cultural/Historic Resource Review**

If the need for ground or vegetation disturbances arises, Avista cultural staff will coordinate a cultural/historic review for the project. The work product for this review will be confidential due to the sensitive nature of the content.

## **Benefit to the Resource**

Appendix C of the Clark Fork Settlement Agreement calls for implementation of the Native Salmonid Restoration Plan and associated Five-Year Plan. The Five-Year Plan specifically calls for implementation of the Downstream Program. The capture and downstream transport of juvenile Bull Trout appears to have directly increased the number of adult Bull Trout that return downstream of Cabinet Gorge Dam by reconnecting their historic migratory corridor and increasing survival during migrations through the lower Clark Fork River and into Lake Pend Oreille. In addition to completing the migratory life cycle, downstream transported juvenile Bull Trout that reach Lake Pend Oreille are known to grow at an increased rate, attain larger sizes, and contain more eggs than fish that complete their life cycle within the reservoirs. Continued evaluation and modification of tributary-specific capture techniques has increased the efficacy of these techniques and presumably increased the overall survival among Bull Trout within these systems. The Graves Creek permanent weir trap has increased the period of weir operation and increased the annual number of juvenile Bull Trout captured. Monitoring fish population trends and timing of fish movements throughout the system with tributary traps and PIT arrays allows

managers to gain additional information to adaptively manage these populations.

These efforts are consistent with direction from the U.S. Fish and Wildlife Service through the Bull Trout Recovery Plan, Biological Opinion for the Clark Fork Projects FERC license, and informal consultation through the CFSA process. These actions also align with MFWP management plan and dual mission by reducing conflict between managing for the recovery of native species while also managing for popular sport fisheries in Noxon and Cabinet Gorge reservoirs. Increasing the number of sub-adult Bull Trout in Lake Pend Oreille directly supports the Idaho Fish and Game goal of maintaining and enhancing this metapopulation.

## Budget

Item	Estimated Carryover <sup>1</sup>	2023 Budget Request
Labor: 0.80 biologist and 2.50 technician FTEs	\$85,000	\$295,040
0.50 FTE database technician support	\$10,500	\$38,012
Four professional conferences	\$1,000	\$3,000
Four professional trainings	\$1,000	\$3,000
Crew safety: InReach subscription	\$0	\$480
Permitting labor and fees	\$0	\$5,000
Mileage and vehicle maintenance	\$2,000	\$40,000
Aqui-S (fish anesthesia)	\$0	\$200
PIT tags (10 pre-load trays)	\$2,910	\$2,910
Tributary trap maintenance (e.g., replacement parts)	\$5,000	\$5,000
EFBR entrance, trap box, and pipe support fabrication	\$35,000	\$0
Field gear (e.g., nets, traps, waders, scales, efishing handles)	\$2,000	\$5,000
Mobile fish handling trailer	\$0	\$15,000
Graves Creek HOA fees	\$650	\$650
Statistical consultation	\$20,000	\$0
Finalize EFBR engineered split design	\$0	\$5,000
<b>Total</b>	<b>\$165,060</b>	<b>\$418,292</b>
<b>Anticipated Expenditures</b>		<b>\$583,352</b>

<sup>1</sup> Estimated carryover of unexpended, approved funds as of January 1.

Staff time budgeted through this project plan will also assist with the related projects outlined in Objective 3.

## Literature Cited

Lacy, S. D., J. R. Stover, and E. W. Oldenburg. 2016. Tributary Trapping and Downstream Juvenile Bull Trout Transport Program annual progress report — 2015. Avista document identification number 2016-0390. Avista, Noxon, Montana.

Oldenburg, E. W. 2017. Tributary Trapping and Downstream Juvenile Bull Trout Transport Program Annual Project Update — 2016. Avista document identification number 2017-0331. Avista, Noxon, Montana.

Oldenburg, E., J. Blakney, K. Bouwens, and W. Fredenberg. 2016. Graves Creek permanent weir

trap monitoring and evaluation plan. Fish Passage/Native Salmonid Restoration Program. Avista document identification number 2016-141700. Avista Corporation, Spokane, Washington.

Oldenburg, E. W., S. D. Lacy, and J. R. Stover. 2015. Tributary Trapping and Downstream Juvenile Bull Trout Transport Program annual progress report — 2014. Avista document identification number 2015-0426. Avista, Noxon, Montana.

Zymonas, N. D. 2006. Age structure, growth, and factors affecting relative abundance of life history forms of Bull Trout in the Clark Fork River drainage, Montana and Idaho. Master's Thesis, Montana State University, Bozeman.

## **2023 PROJECT PLAN**

### **PIT-Monitoring Station Operation and Maintenance**

#### **Project Contact**

Eric Oldenburg, Avista, (406) 847-1290, [Eric.Oldenburg@avistacorp.com](mailto:Eric.Oldenburg@avistacorp.com)

#### **Project History**

This is a continuing project that was first approved by the Management Committee (MC) in 2019. The scope and budget for this project are reviewed by the MC annually.

#### **Background**

Passive Integrated Transponder (PIT) monitoring stations have been installed and operated at a number of locations under various Clark Fork Settlement Agreement (CFSA) programs. These stations are installed for various reasons; although, the primary reason is to passively monitor movements of fish in tributaries. These movements help delineate migration timing for fish and can also be used to evaluate trap capture efficiency by monitoring movements of fish near tributary traps. The operation and maintenance of PIT-monitoring stations includes costs associated with power, fiber, communications, permitting, and operation and maintenance costs. This project plan was developed to compile all costs associated with operation and maintenance of monitoring stations into one project plan. This eliminates the need to break out charges on invoices to multiple projects and allow for the tracking of costs associated with the use of this technology.

#### **Goal**

Monitor movements of PIT-tagged fish in key tributaries to the lower Clark Fork River.

#### **Objectives**

1. Operate and maintain PIT-monitoring stations in tributaries to the lower Clark Fork River, in Montana.

#### **Tasks**

1. Pay all invoices associated with operation of PIT-monitoring stations in Graves Creek, East Fork Bull River, Bull River, and Vermilion River (i.e., electric use, internet fees, Biomark data service fees, Graves Creek cellular internet fees, and permit fees). The Prospect Creek station was cooperatively purchased with NorthWestern Energy who paid all associated fees during the first two years. The Biomark data service fee was funded through this project plan in 2021 and 2022. (Objective 1)
2. Repair damage to PIT-monitoring stations, if necessary. (Objective 1)
3. Purchase additional antennas or hardware as needed. We will be purchasing two additional “spare” nodes in 2023 to minimize down time associated with future equipment malfunctions. (Objective 1)

## Work Products

- Annual Work Summary; PIT Technology (2023); due December 1, 2023

## Permitting Requirements

If maintenance or repair of a PIT array is required, Avista personnel will determine which, if any, permits are required for the proposed work.

Endangered Species Act consultation for this project plan is associated with the 2019 Biological Opinion on the effects of continued operation of the Clark Fork Hydroelectric Project on Bull Trout and designated Bull Trout critical habitat. Incidental take reporting for this project plan will be included in the annual Biological Opinion report as required by Term and Conditions 15–18 of the 2019 Incidental Take Statement.

## Cultural/Historic Resource Review

If maintenance and/or repair of a PIT-monitoring station will cause ground disturbance, Avista will coordinate a cultural/historic resource review for the project. The work product for this review will be confidential due to the sensitive nature of the content.

## Benefit to the Resource

Restoration of Bull Trout and Westslope Cutthroat Trout populations is an important component of Avista’s Native Salmonid Restoration Plan (NSRP) which is an integral part of the CFSA. The NSRP addresses issues affecting native salmonid populations in the lower Clark Fork River, and actions needed to improve their habitat and likelihood of persistence. The NSRP also identifies a need to “establish and maintain connectivity in the Clark Fork Basin for migratory trout” in an effort to increase native salmonid numbers in tributaries to the Clark Fork River. The use of PIT arrays is a valuable tool that allows passive monitoring of movements of fish in the project area. Fish that are tagged and detected at arrays provide information that can be used to evaluate and improve programs that are currently being implemented under the CFSA. This leads to more effective implementation and more efficient use of funds available for these programs.

## Budget

Item	Estimated Carryover <sup>1</sup>	2023 Budget Request
PIT-monitoring station maintenance	\$12,000	\$25,000
Biomark BioLogic plus cell (Graves; 12 mo. exp. 4/15/2023)	\$0	\$1,800
Biomark BioLogic (Bull; 12 mo. expires 4/15/2023)	\$0	\$1,600
Biomark BioLogic (EFBR; 12 mo. expires 4/15/2023)	\$0	\$1,600
Biomark BioLogic (Vermilion; 12 mo. expires 4/15/2023)	\$0	\$1,600
Biomark BioLogic plus cell (CGFPF; 12 mo. exp. 4/15/2023)	\$0	\$1,800
Electric use (Northern Lights bills for all sites except Prospect)	\$1,000	\$4,400
Internet use (Blackfoot bills for Bull, EFBR, and Vermilion)	\$1,000	\$3,300
Montana DNRC land-use permit annual fee (Bull River)	\$0	\$150
<b>Total</b>	\$14,000	\$41,250
<b>Anticipated Expenditures</b>		\$55,250

<sup>1</sup> Estimated carryover of unexpended, approved funds as of January 1.

The Prospect Creek PIT-monitoring station was purchased through Appendix B and Northwestern Energy. Thus, operation and maintenance for this station is cost share and Northwestern Energy funded BioLogic and electric use in 2019 and 2020. NorthWestern Energy will fund the BioLogic fees for the foreseeable future as a mechanism to offset costs associated with transporting Thompson River Bull Trout from the Graves Creek Fish Handling Facility downstream to lower Clark Fork River release site.



## **2023 PROJECT PLAN**

### **Graves Creek Bull Trout Translocation Project**

#### **Project Contacts**

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Josh Schulze, U.S. Forest Service, (406) 822-3919, [joshua.schulze@usda.gov](mailto:joshua.schulze@usda.gov) and  
Ken Bouwens, Idaho Department of Fish and Game, (208) 770-3766, [ken.bouwens@idfg.gov](mailto:ken.bouwens@idfg.gov)

#### **Project History**

This is a new project being proposed for 2023. This will be a multi-year project and only those funds required to complete the 2023 work are being requested at this time.

#### **Background**

Over the past two decades, a high proportion of Clark Fork Settlement Agreement efforts to recover and enhance local populations of Bull Trout have been focused on Graves Creek. These efforts have ranged from perpetual protections afforded by land purchases to immediate benefits realized through habitat improvement projects. Perhaps most important was the purchase of land on both banks of Graves Creek near the mouth and subsequent investment in a permanent weir trap on this site. The permanent weir trap enhanced capture efficiency and our ability to safely get juvenile Bull Trout downstream to Lake Pend Oreille to the point where mainstem connectivity no longer limits this local population; rather, tributary habitat availability is likely the limiting factor. In 2019, juvenile Bull Trout densities within Graves Creek were greater than observed in any other tributary to the lower Clark Fork River, including direct tributaries to Lake Pend Oreille (Blakney et al. 2021; Frawley et al. 2020; Lewis 2021). The Graves Creek local population of Bull Trout is thriving.

The presently available Bull Trout habitat within Graves Creek is limited to about four kilometers. Juvenile Bull Trout generally only occupy the reaches from the mouth of Thorne Creek (rkm 1.5) to Graves Creek Falls (rkm 5.5) which is a natural barrier to upstream fish passage (Figure 1). Despite only having access to four kilometers of suitable habitat, the overall estimated abundance of age-1 and older sub-adult Bull Trout in Graves Creek was 2,371 fish in 2019 and 1,836 fish in 2020 (Lewis 2021). These high densities suggest conditions in Graves Creek are conducive to optimal Bull Trout survival and growth. However, there is not very much of this habitat presently available.

A graduate research study was focused on the Graves Creek local Bull Trout population during 2019 and 2020 (Lewis 2021). This study was focused on outmigration dynamics of juvenile Bull Trout. One important finding from this research was that an inordinate proportion of juveniles outmigrated from Graves Creek when record densities were observed in 2019 and that age at outmigration was negatively correlated with Bull Trout density. Thus, a high proportion of individuals leave at age 1 when densities are high and that proportion shifts to juveniles outmigrating at older ages as densities decrease (i.e., they stay in the stream and grow to larger sizes prior to outmigrating when resources are not limited). This is important because previous



Figure 1. Graves Creek Falls.

research has clearly demonstrated that juvenile to adult return rates have a strong positive correlation with fish length at the time of juvenile transport (Oldenburg 2017; Figure 2). Thus, there are diminishing returns associated with instream juvenile Bull Trout densities. When densities are high, more total juveniles outmigrate, but they do so at a younger average age and have lower expected likelihoods of surviving and returning as mature adults. When instream densities are low, fewer total juveniles outmigrate, but they do so at an older average age and have greater expected likelihoods of surviving and returning as mature adults.

Despite the West Lolo Complex wildfire that burned at high severity across most of the upper Graves Creek watershed in 2021 (figures 3 and 4), it is believed that the eight-kilometer reach from the falls upstream to the Lawn Lake trailhead (rkm 13.5) offers a similar quality of Bull Trout habitat relative to the reaches downstream of the falls. Presently, the reaches from the falls to the Lawn Lake trailhead support a robust population of Westslope Cutthroat Trout and low densities of Brook Trout (Rehm et al., in prep). Further, the temperature profile throughout Graves Creek has remained optimal for Bull Trout following the fire. In the summer of 2022, the maximum observed temperature was 14.5°C at Graves Creek Falls, 13.1°C at the second bridge (rkm 10.5) and 10.6°C at the Lawn Lake Trailhead.

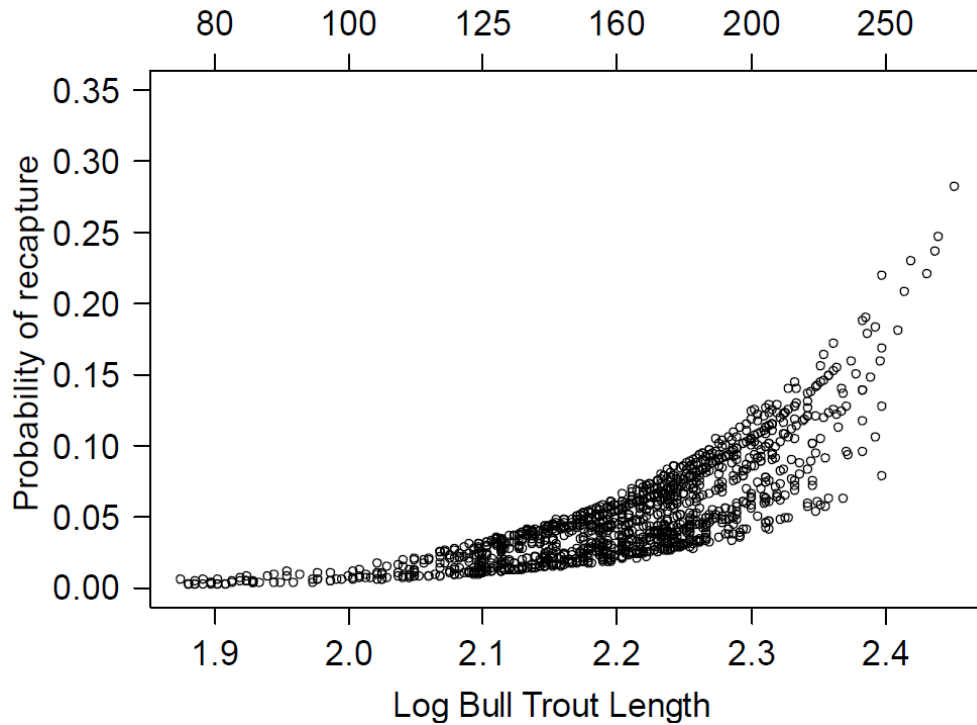


Figure 2. Probability of transport-to-adult return by length (top x-axis) and  $\log_{10}$  fish length (bottom x-axis).



Figure 3. Graves Creek upstream of the falls in July 2022 showing effects from the fall 2021 wildfire.

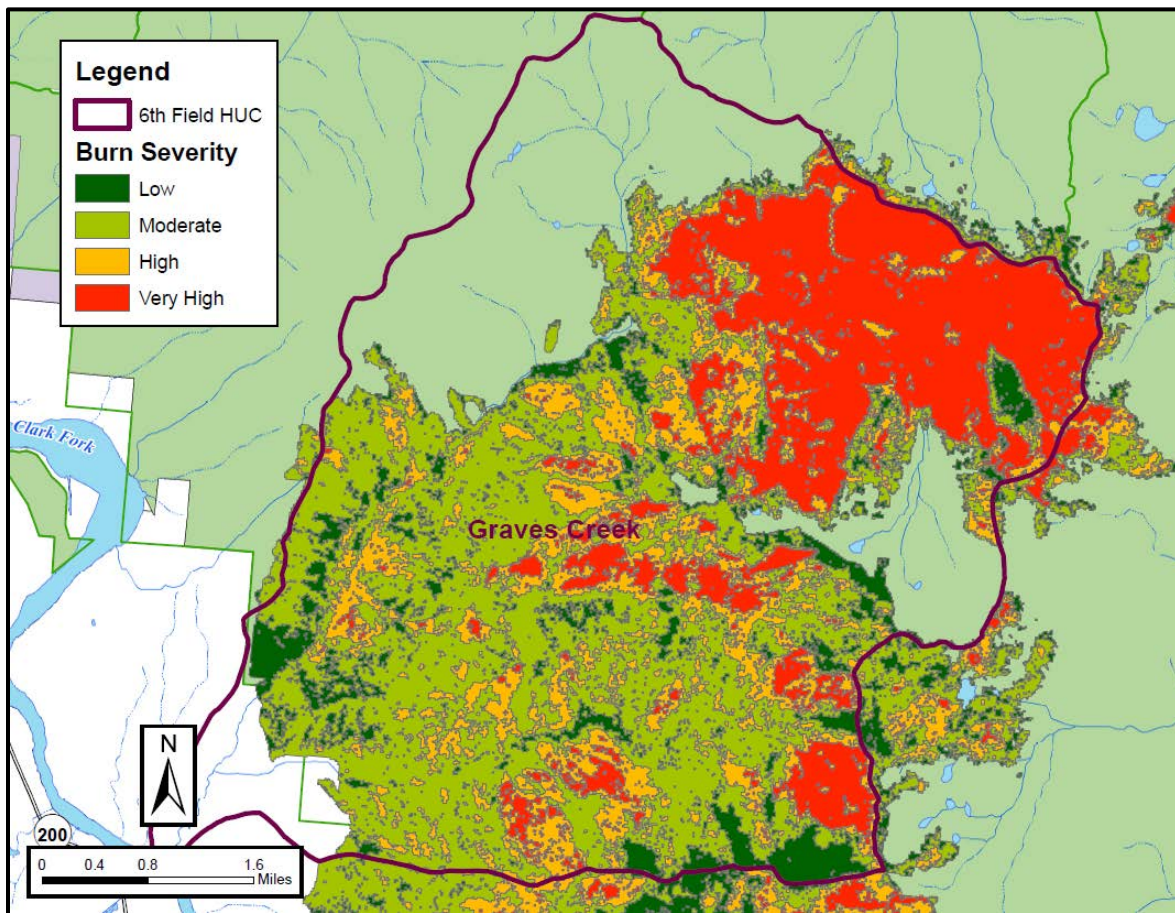


Figure 4. Burn severity in the Graves Creek watershed (6<sup>th</sup> Field HUC) from the West Lolo Complex fire in 2021.

In late 2021, the concept of translocating Bull Trout upstream of Graves Creek Falls was initially conceived and met with overwhelming collaborative support. A group of representatives from Avista, Idaho Department of Fish and Game, Montana Fish, Wildlife & Parks, the U.S. Fish and Wildlife Service, and U.S. Forest Service met at Graves Creek in the summer of 2022 and decided, very enthusiastically, to pursue this concept (Figure 5). The concept is to capture a sample of age-1 Bull Trout from Graves Creek when densities are high (likely beginning in 2024) and translocate them upstream of Graves Creek Falls. There is a perceived double benefit of this action: (1) expand the range and overall abundance of Bull Trout within Graves Creek, and (2) increase the juvenile-to-adult return rates of those fish that remain downstream of the falls due to the reduced densities and associated larger average size at the time of outmigration. There are numerous implications associated with the former. First, providing Bull Trout access upstream of Graves Creek Falls would roughly triple the amount of habitat available to this local population where habitat has been identified as a limiting factor. Some of these individuals could potentially carry out a stream-resident life history and establish a self-sustaining population. Conversely, some individuals are likely to grow rapidly and then outmigrate at large sizes. Further, establishing Bull Trout in the colder water higher in drainage would provide thermal refugia against climate change as modelled temperatures are expected to remain extremely cold for at least the next six decades (Figure 6; Isaak et al. 2016).



Figure 5. The top of Graves Creek Falls during the first official meeting to develop the Graves Creek Bull Trout Translocation Project during the summer of 2022.

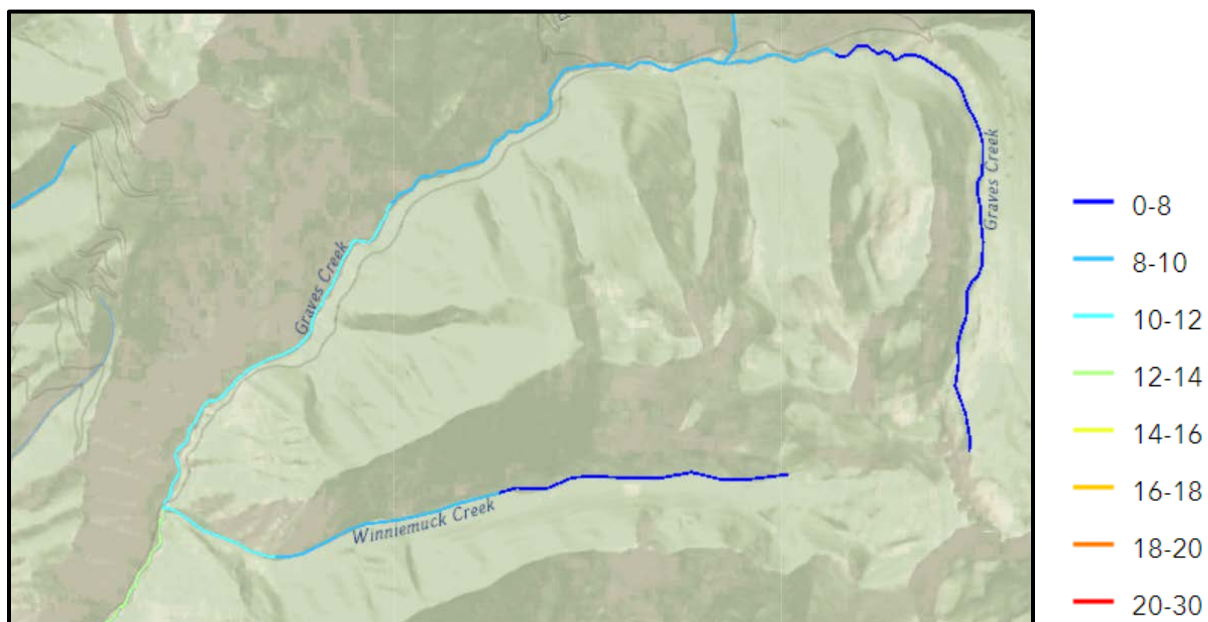


Figure 6. Modelled stream temperatures (°C) for upper Graves Creek in the year 2080 (Isaak et al. 2016). Optimal water temperatures for Bull Trout growth and survival are below 12°C.

## **Goal**

The goal of this project is to expand the range and abundance of the Graves Creek local population of Bull Trout.

## **Objectives**

1. Develop a Bull Trout translocation plan and associated Monitoring and Evaluation (M&E) Plan.
2. Implement the translocation plan.
3. Implement the M&E Plan.

## **Tasks**

1. Identify roles and responsibilities among the project partners.
2. Research and develop the Bull Trout translocation plan. Factors that will need to be considered include (1) length or age criteria for translocated fish, (2) timing of translocation, (3) release locations, (4) genetic implications (e.g., number of individuals translocated), (5) increasing knowledge of the expected range to be occupied/identifying barriers or other concerns, (6) capture methods and locations, (7) risk to the local population, (8) how will each component be implemented (e.g., who will take on each responsibility). (Objective 1; 2022 task)
3. Develop general M&E Plan objectives. Initial ideas for the questions to be addressed include evaluating survival, post-translocation dispersal and distribution, life history expression, and survival over Graves Creek Falls (if fish emigrate over the falls). (Objective 1; 2022 task)
4. Determine mechanism to implement M&E plan (e.g., implemented by a project partner, graduate research project, etc.). Ideally, this task should be complete by June 1 so that the formal M&E Plan can be developed and vetted prior to implementation in 2024. If required, a consent mail will be utilized to seek approval of the objectives and mechanism by which the M&E plan will be implemented.
5. Identify and start to pursue any permits necessary to implement the translocation plan.
6. Implement the translocation plan (Objective 2; likely beginning in 2024)
7. Implement M&E Plan (Objective 3; likely beginning in 2024)

## **Work Products**

- Decision regarding M&E Plan objectives and implementation mechanism; due June 1, 2023
- Translocation Plan (likely update to this project plan); final due November 1, 2023
- Final M&E Plan; final due June 1, 2024
- Comprehensive Project Report; Translocation Project; final due date (likely 2026) and format to be determined
- Annual Work Summary; Translocation Project; due December 1, 2023

## **Permitting Requirements**

The physical work associated with this project will not occur until 2023. One of the tasks associated with the 2023 work will be to identify (and potentially procure) any necessary permits that are identified as the scope is being developed.

Endangered Species Act consultation for this project plan is associated with the 2019 Biological Opinion on the effects of continued operation of the Clark Fork Hydroelectric Project on Bull Trout and designated Bull Trout critical habitat (BiOp), and the USFWS-IDFG Cooperative Agreement pursuant to Section 6 of the Act. This project plan is consistent with the analysis and conclusions contained in the 2019 BiOp and the USFWS-IDFG Cooperative Agreement, and will adhere to all appropriate Terms and Conditions designed to reduce the extent and effects of incidental take on Bull Trout. Incidental take reporting for this project plan will be included in the annual Biological Opinion report as required by Term and Conditions 15–18 of the 2019 Incidental Take Statement, as well as IDFG’s annual Section 6 report to the USFWS.

## **Cultural/Historic Resource Review**

The activities proposed for 2023 do not involve any vegetation and/or ground disturbing activities, or proposed impacts to cultural/historic resources.

## **Benefit to the Resource**

This project represents a novel approach toward meeting the goals of the Clark Fork Settlement Agreement. Generally, Appendix C has been focused on addressing mainstem connectivity by re-establishing connectivity for migratory native salmonids and Appendix B has been focused on providing higher quality stream habitat for these species through protections afforded by acquisitions and easements or benefits associated with habitat restoration and enhancement. However, appendices B and C share the overarching goals to “secure the long-term population viability of those native salmonid species affected by the Projects, and which depend on tributary habitats for one or more stages of their life cycle” and “assist with meeting the broader goal of protecting and enhancing native salmonid populations throughout the lower Clark Fork River system”. This project greatly contributes to achieving those broader goals and offers a unique approach toward “increasing the long-term viability of native salmonids” not by protecting or enhancing habitat, but by making more habitat available to the Graves Creek local population of Bull Trout. This project is expected to expand both the range and abundance as well as provide additional robustness for this local population.

These efforts are consistent with direction from the U.S. Fish and Wildlife Service through the Bull Trout Recovery Plan, Biological Opinion for the Clark Fork Projects FERC license, and

informal consultation through the CFSA process. These actions also align with MFWP management plan by managing for the recovery of native species. Increasing the number of sub-adult Bull Trout in Lake Pend Oreille directly supports the Idaho Fish and Game goal of maintaining and enhancing this metapopulation. This project would likewise benefit the Lolo National Forest management goal of contributing to the recovery of federally listed species according to Forest Plan Standard 27 (USDA 1986) and Section 7(a)(1) of the Endangered Species Act.

### Budget

This is being proposed as a multi-year project; however, only the funding for the first year of implementation are being requested at this time.

Item	Estimated Carryover <sup>1</sup>	2023 Budget Request
Obtain any required permits	\$0	\$5,000
<b>Total</b>	<b>\$0</b>	<b>\$5,000</b>
<b>Anticipated Expenditures</b>		<b>\$5,000</b>

<sup>1</sup> Estimated carryover of unexpended, approved funds as of January 1.

This project is a 50:50 cost share with Appendix B; thus, one half of the above expenditures will be paid from each appendix. Additional labor support will be funded through the Appendix C “Tributary Trapping and Downstream Juvenile Bull Trout Transport Program”. Similarly, this project will benefit from in-kind contributions from the partnering agencies. We are currently working to identify any grant opportunities to provide additional support for this project.

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## **2023 PROJECT PLAN**

### **Fish Capture Facilities Operation, Development, and Testing**

#### **Project Contact**

Shana Bernall, Avista, (406) 847-1293, [Shana.Bernall@avistacorp.com](mailto:Shana.Bernall@avistacorp.com)

#### **Project History**

The Fish Capture Facilities Operation, Development, and Testing is a continuing project. The scope and budget for this project are reviewed by the Management Committee (MC) annually.

#### **Background**

The Clark Fork River Native Salmonid Restoration Plan provides an outline for experimenting with adult fish passage techniques, which in turn has led to development and testing of fish capture and transport systems (Kleinschmidt Associates and Pratt 1998). The ultimate outcome of evaluations of these capture and transport systems was a proposal to develop a permanent adult fish collection facility below Cabinet Gorge Dam. As part of this facility, Avista constructed a fish handling facility near the Cabinet Gorge Fish Hatchery in 2015. The Cabinet Gorge Fish Handling Facility (FHF) is used annually to hold Bull Trout and Westslope Cutthroat Trout prior to transport upstream of the Clark Fork River dams. The FHF is also used to process and sort fish captured at the fish passage facility that was constructed and commissioned below Cabinet Gorge Dam in 2022.

Support for the development of a permanent fish collection facility below Cabinet Gorge Dam was codified in the MC approved Amendment No. 1 to the Clark Fork Settlement Agreement (CFSA) (Amendment) on September 26, 2017 (Avista 2017a). The approval of the Amendment provided stakeholder agreement to move forward with final design, permitting, and construction of a permanent fish collection facility below Cabinet Gorge Dam, referred to as the Cabinet Gorge Fish Passage Facility (CGFPF). Construction of the CGFPF was initiated in 2019 and became operational the fall of 2022. Operation and evaluation (including implementation of the Monitoring and Evaluation Plan) of the CGFPF is described in the Appendix C “Upstream Fish Passage Program” 2023 Project Plan.

Several minor modifications to the CGFPF were identified towards the end of construction and during the first few months of operation of the CGFPF that are needed to improve operation of the trap and to prevent fish injury. These modifications include blocking off the areas above the auxiliary water supply diffuser racks to prevent fish from getting entrained during higher flows, adding padding and material to areas where fish are likely to get impinged or injured, improving the Vee trap area to prevent fish impingement, adding additional supports to the siphon pipes, along with a number of other items. The majority of these minor modifications will be complete prior to CGFPF startup in 2023 and are considered to be part of the construction phase of the project to improve operation of the CGFPF and or prevent fish injury. Future modifications to the CGFPF will be identified and funded through the Appendix C “Cabinet Gorge Dam Fish Passage Facility Minor Modifications” 2023 Project Plan. Other activities planned for 2023 include hydraulic monitoring, addressing warranty items, reporting, and other end of construction tasks required to complete construction of the CGFPF.

The development of a permanent fish collection facility below Noxon Rapids Dam has also been contemplated since the signing of the CFSA. Based on past evaluations, and as codified in the Amendment, the MC had decided that “a decision related to the final design and the need to construct a permanent fish collection facility below Noxon Rapids Dam, shall be deferred for an interim period ending no sooner than December 31, 2021”. During the interim period, the MC may consider and approve alternative(s) to a permanent fish collection facility. With 2022 being the first year of operation of the CGFPF and efforts being made to refine capture and transport of juvenile Bull Trout from Montana tributaries, discussion of a fish collection facility at Noxon Rapids Dam will not be reinitiated in 2023. In the interim, if deemed appropriate by management agencies, stakeholders will work to establish a date to reinitiate these conversations and one of the tasks under the Appendix C “Upstream Fish Passage Program” project plan for 2023 includes purchasing and deploying 3’ circular PIT antennas downstream of Noxon Rapids Dam to learn more about Bull Trout presence in this area, if deemed appropriate.

### **Goal**

Develop, operate, and test the feasibility of permanent fish passage facilities as an option for fish passage at Cabinet Gorge and Noxon Rapids dams to provide safe, timely, and efficient upstream passage for native salmonids.

### **Objectives**

1. Complete construction of the CGFPF below Cabinet Gorge Dam.
2. Continue discussions on the need for a fish passage facility at Noxon Rapids Dam.

### **Tasks**

1. Complete final construction tasks including addressing any warranty items. (Objective 1)
2. Determine if additional information is needed to decide on a new date to reinitiate discussions on the need for a fish passage facility at Noxon Rapids Dam (Objective 3).

### **Work Products**

- Annual Work Summary; Fish Capture Facilities (2023); due December 1, 2023

### **Permitting Requirements**

Following the approval of the Amendment, Avista submitted an application to the Federal Energy Regulatory Commission (FERC) for a license amendment to construct and operate the CGFPF (Avista 2017b). The FERC order amending Avista’s License to include construction and operation of the CGFPF was issued on August 8, 2019 and includes an amendment of the License to incorporate the updated terms and conditions of the February 6, 2019 Biological Opinion, submitted by the U. S. Fish and Wildlife Service under section 7 of the Endangered Species Act (FERC 2019).

Endangered Species Act consultation for this project plan is associated with the 2019 Biological Opinion on the effects of continued operation of the Clark Fork Hydroelectric Project on Bull Trout and designated Bull Trout critical habitat. Incidental take reporting for this project plan

will be included in the annual Biological Opinion report as required by Term and Conditions 15–18 of the 2019 Incidental Take Statement.

### Cultural/Historic Resource Review

In 2013 and 2018, the Cultural Resources Management Group reviewed and approved the CGFPF design. If maintenance and/or modifications of the CGFPF will cause ground disturbance or change the overall exterior of the site, Avista cultural staff will coordinate a cultural/historic resource review for the project. The work product for this review will be confidential due to the sensitive nature of the content.

### Benefit to the Resource

Efforts outlined under this project plan are in line with Avista’s requirement under the CFSA to test the feasibility of permanent fish passage facilities as an option for fish passage. Permanent fish passage facilities are proposed to be built in an effort to capture a larger number of fish for upstream transport which is an important part of Avista’s Native Salmonid Restoration Plan (Kleinschmidt and Pratt 1998). The target species for fish passage in the lower Clark Fork River are Bull Trout and Westslope Cutthroat Trout. Bull Trout are listed as “threatened” under the Endangered Species Act and Westslope Cutthroat Trout are a “species of special concern” in both Idaho and Montana. Montana Fish, Wildlife and Parks (MFWP) and IDFG are supportive of reconnecting Bull Trout and Westslope Cutthroat Trout populations in their current state-wide management plans (MFWP 2019, IDFG 2019). Additionally, the U. S. Fish and Wildlife Service describes fragmentation of the lower Clark Fork River by mainstem dams as one of the primary threats to Bull Trout under their Columbia Headwaters recovery unit implementation plan (U. S. Fish and Wildlife Service 2015). The capture of a larger number of Bull Trout and Westslope Cutthroat Trout through the operation of the CGFPF will result in an increase in the number of fish transported upstream and reconnected to upstream populations. Increasing the number of migratory Bull Trout and Westslope Cutthroat Trout available to spawn in Montana tributaries will likely increase the abundance of these species in upstream populations and enhance the migratory life-history of these species.

### Budget

Item	Estimated Carryover <sup>1</sup>	2023 Budget Request
Complete construction of the CGFPF (final tasks and reporting)	\$1,353,988	\$0
<b>Total</b>	\$1,353,988	\$0
<b>Anticipated Expenditures</b>		\$1,353,988

<sup>1</sup> Estimated carryover of unexpended, approved funds as of January 1.

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## **2023 PROJECT PLAN**

### **Graves Creek Permanent Weir Trap Enhancements**

#### **Project Contact**

Eric Oldenburg, Avista, (406) 847-1290, [eric.oldenburg@avistacorp.com](mailto:eric.oldenburg@avistacorp.com)

#### **Project History**

This is a continuing project that was originally approved through the consent mail process on December 9, 2019. Additionally, the Management Committee (MC) approved funding the design for this project through the 2017 and 2018 Tributary Trapping and Downstream Juvenile Bull Trout Transport Program (hereafter, “Downstream Program”) project plans as well as a 2018 consent mail (November 7). Funding for the construction of the Graves Creek Fish Handling Facility was also supplemented through a July 31, 2020 consent mail. Construction to the Fish Handling Facility and enhancements to the trap are complete and both are fully functional. The 2023 request is for funding to install a traveling screen to address a new challenge associated with debris clogging the trap box.

#### **Background**

A fundamental goal of the Fish Passage/Native Salmonid Restoration Plan [Appendix C of the Clark Fork Settlement Agreement (CFSA)] is to restore mainstem connectivity for local populations of adfluvial Bull Trout for which migrations would otherwise be blocked by Noxon Rapids and Cabinet Gorge dams. Two problems must be addressed to achieve this goal: (1) safely pass returning adult Bull Trout so they can spawn in their natal streams, and (2) safely pass outmigrating juvenile Bull Trout around the dams and reservoirs to Lake Pend Oreille where growth and survival rates are high. The Downstream Program was developed to address the latter.

The original Graves Creek Permanent weir trap was installed in 2012 and began fishing in 2013. The permanent weir trap greatly improved Bull Trout catchability compared to previous years of trapping with rotary screw traps and temporary weir traps. However, numerous improvement needs were identified through a rigorous monitoring and evaluation plan. Thus, design for enhancements to the permanent weir trap commenced in 2018 and construction of the enhancements was completed in late 2021. Based on the first year of operation and evaluation, the enhanced permanent weir trap is performing very well. However, one shortcoming remains in that the trap box now filters a high enough proportion of the total flow that it clogs with debris during times of moderate to high instream debris loads (see figures 1 and 2). Thus, we are proposing to install a traveling screen on the downstream end of the primary trap box that is located within the vault. The traveling screen will function in a manner to continuously remove debris from the trap box while retaining fish.



Figure 1. Inside of the trap box after 24-h of fishing during a time of moderate instream debris loads.



Figure 2. Graves Creek permanent weir trap overtopping as a result of clogged panels and trap box.

## **Goal**

The goal of this project is to enhance the effectiveness and efficiency of the Graves Creek permanent weir trap and other infrastructure in the interest of safely capturing, handling, and transporting Bull Trout from Graves Creek to Lake Pend Oreille.

## **Objectives**

1. Purchase or design and fabricate a traveling screen to prevent the vault trap box from clogging with debris.
2. Contract Neal Structural Repair to modify and retrofit the trap box to receive the traveling screen.

## **Tasks**

1. Identify whether we can purchase an off-the-shelf traveling screen or if we need to have one designed and fabricated.
2. Purchase or fabricate a traveling screen.
3. Contract Neal Structural repair to complete any retrofits necessary for the existing trap box to receive the traveling screen.
4. Contract Neal Structural repair to complete the installation.

## **Work Products**

- Annual Work Summary; due December 1, 2023

## **Permitting Requirements**

Not applicable for the tasks proposed in this project plan. This work will occur strictly within the existing vault and no permits will be required.

Endangered Species Act consultation for this project plan is associated with the 2019 Biological Opinion on the effects of continued operation of the Clark Fork Hydroelectric Project on Bull Trout and designated Bull Trout critical habitat. Incidental take reporting for this project plan will be included in the annual Biological Opinion report as required by Term and Conditions 15–18 of the 2019 Incidental Take Statement.

## **Cultural/Historic Resource Review**

Not applicable for the tasks proposed in this project plan. In 2005, the Cultural Resources Management Group reviewed the Graves Creek land acquisition and in 2010 they reviewed the original Graves Creek permanent weir trap design. This is a carryover project and the cultural/historic resource review for enhancements to the permanent weir trap site was completed in 2020 by the Cultural Resources Management Group. The presently proposed work will occur completely within the vault. Thus, the project does not involve any vegetation and/or ground disturbing activities, or proposed impacts to cultural/historic resources.

### Benefit to the Resource

Appendix C of the calls for implementation of the Native Salmonid Restoration Plan and associated Five-Year Plan. The Five-Year Plan specifically calls for implementation of the Downstream Program. Additionally, permanent downstream tributary traps, as appropriate, were called for in Amendment No. 1 to the CFSA. The capture and downstream transport of juvenile Bull Trout appears to have directly increased the number of adult Bull Trout that return downstream of Cabinet Gorge Dam by reconnecting their historic migratory corridor and increasing survival during migrations through the lower Clark Fork River and into Lake Pend Oreille. In addition to completing the migratory life cycle, downstream transported juvenile Bull Trout that reach Lake Pend Oreille are known to grow at an increased rate, attain larger sizes, and contain more eggs than fish that complete their life cycle within the reservoirs. Continued evaluation and enhancements to the permanent weir trap have increased the efficacy of the trap and presumably increased the overall survival for this local population of Bull Trout (i.e., the local population is growing). The Graves Creek permanent weir trap has increased the period of weir operation and increased the annual number of juvenile Bull Trout captured.

These efforts are consistent with direction from the U.S. Fish and Wildlife Service through the Bull Trout Recovery Plan, Biological Opinion for the Clark Fork Projects FERC license, and informal consultation through the CFSA process. These actions also align with Montana Fish, Wildlife & Parks management plan and dual mission by reducing conflict between managing for the recovery of native species while also managing for popular sport fisheries in Noxon and Cabinet Gorge reservoirs. Increasing the number of sub-adult Bull Trout in Lake Pend Oreille directly supports the Idaho Fish and Game goal of maintaining and enhancing the robustness of this metapopulation.

### Budget

Item	Estimated Carryover <sup>1</sup>	2023 Budget Request
Purchase and install a traveling screen	\$0	\$145,000
<b>Total</b>	<b>\$0</b>	<b>\$145,000</b>
<b>Anticipated Expenditures</b>		<b>\$145,000</b>

<sup>1</sup> Estimated carryover of unexpended, approved funds as of January 1.

## **2023 PROJECT PLAN**

### **Cabinet Gorge Fish Passage Facility Minor Modifications**

#### **Project Contact**

Shana Bernall, Avista, (406) 847-1293, [Shana.Bernall@avistacorp.com](mailto:Shana.Bernall@avistacorp.com)

#### **Project History**

The Cabinet Gorge Dam Fish Passage Facility Minor Modifications is a new project for 2023. The scope and budget for this project are reviewed by the Management Committee (MC) annually.

#### **Background**

The Clark Fork River Native Salmonid Restoration Plan provides an outline for experimenting with adult fish passage techniques, which in turn has led to development and testing of fish capture and transport systems (Kleinschmidt Associates and Pratt 1998). The ultimate outcome of evaluations of these capture and transport systems was a proposal to develop a permanent adult fish collection facility below Cabinet Gorge Dam.

Construction of the Cabinet Gorge Fish Passage Facility (CGFPF) was complete in 2022 with only a few warranty items and modifications that are slated to be addressed prior to startup of the CGFPF in 2023. A few additional minor modifications to the CGFPF have already been identified that could improve operation and fish health. As defined in Amendment No. 1 to the Clark Fork Settlement Agreement, the cost of proposed modifications (engineering, design, labor and materials) shall not exceed a combined total of 5% of the construction cost of the CGFPF itself (not including the coffer dam, railroad crossing, or other non-fishway costs), or \$500,000, whichever is greater. Based on the cost of construction (final construction cost was \$18,775,012), Avista would fund up to \$938,751 for modifications through the Cabinet Minor Modifications fund. The MC may consider funding minor modifications in excess of the above cap by re-programming other funding requirements for that purpose. On March 14, 2023, the MC delegated authority to the Fish Passage Subgroup to review and approve proposed minor modifications. The spending authority is limited to the MC-approved budget and decisions must be made by consensus. If consensus cannot be reached among the subgroup regarding any proposed minor modification, the issue will be brought to the MC for decision.

#### **Goal**

Optimize the operation of the CGFPF including fish capture efficiency and fish health of Bull Trout and Westslope Cutthroat Trout captured in the CGFPF.

#### **Objectives**

1. Make minor modifications to the CGFPF, as deemed appropriate, to improve Bull Trout capture efficiency and prevent fish injury.

#### **Tasks**

1. Work with appropriate stakeholders to identify any minor modifications needed to improve operation, Bull Trout capture efficiency, and/or prevent fish injury at the

## CGFPF. (Objective 1)

### **Work Products**

- Annual Work Summary; CGFPF Minor Modifications (2023); due December 1, 2023

### **Permitting Requirements**

Following the approval of Amendment No. 1 to the Clark Fork Settlement Agreement, Avista submitted an application to the Federal Energy Regulatory Commission (FERC) for a license amendment to construct and operate the CGFPF (Avista 2017). The FERC order amending Avista's License to include construction and operation of the CGFPF was issued on August 8, 2019 and includes an amendment of the License to incorporate the updated terms and conditions of the February 6, 2019 Biological Opinion, submitted by the U. S. Fish and Wildlife Service under section 7 of the Endangered Species Act (FERC 2019).

Endangered Species Act consultation for this project plan is associated with the 2019 Biological Opinion on the effects of continued operation of the Clark Fork Hydroelectric Project on Bull Trout and designated Bull Trout critical habitat. Incidental take reporting for this project plan will be included in the annual Biological Opinion report as required by Term and Conditions 15–18 of the 2019 Incidental Take Statement.

### **Cultural/Historic Resource Review**

In 2013 and 2018, the Cultural Resources Management Group reviewed and approved the CGFPF design. If maintenance and/or modifications of the CGFPF will cause ground disturbance or change the overall exterior of the site, Avista cultural staff will coordinate a cultural/historic resource review for the project. The work product for this review will be confidential due to the sensitive nature of the content.

### **Benefit to the Resource**

Efforts outlined under this project plan are in line with Avista's requirement under the CFSA to test the feasibility of permanent fish passage facilities as an option for fish passage. Permanent fish passage facilities are proposed to be built in an effort to capture a larger number of fish for upstream transport which is an important part of Avista's Native Salmonid Restoration Plan (Kleinschmidt and Pratt 1998). The target species for fish passage in the lower Clark Fork River are Bull Trout and Westslope Cutthroat Trout. Bull Trout are listed as "threatened" under the Endangered Species Act and Westslope Cutthroat Trout are a "species of special concern" in both Idaho and Montana. Montana Fish, Wildlife and Parks (MFWP) and IDFG are supportive of reconnecting Bull Trout and Westslope Cutthroat Trout populations in their current state-wide management plans (MFWP 2019, IDFG 2019). Additionally, the U. S. Fish and Wildlife Service describes fragmentation of the lower Clark Fork River by mainstem dams as one of the primary threats to Bull Trout under their Columbia Headwaters recovery unit implementation plan (U. S. Fish and Wildlife Service 2015). The capture of a larger number of Bull Trout and Westslope Cutthroat Trout through the operation of the CGFPF will result in an increase in the number of fish transported upstream and reconnected to upstream populations. Increasing the number of migratory Bull Trout and Westslope Cutthroat Trout available to spawn in Montana tributaries will likely increase the abundance of these species in upstream populations and enhance the migratory life-history of these species.

### Budget

Item	Estimated Carryover <sup>1</sup>	2023 Budget Request
Funds for minor modifications to the CGFPF	\$0	\$500,000
<b>Total</b>	<b>\$0</b>	<b>\$500,000</b>
<b>Anticipated Expenditures</b>		<b>\$500,000</b>

<sup>1</sup> Estimated carryover of unexpended, approved funds as of January 1.

### Literature Cited

Avista. 2017. Clark Fork Project, FERC No. 2058 Cabinet Gorge Hydroelectric Development. Avista Corporation's Request for Non-Capacity License Amendment and Submittal of Amendment No. 1 to the Clark Fork Settlement Agreement. Avista document identification number 2017-0309. Avista, Noxon, Montana.

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Montana Fish, Wildlife and Parks. 2019. Montana Statewide Fisheries Management Plan 2019 – 2027. <http://fwp.mt.gov/fishAndWildlife/management/fisheries/statewidePlan/>

U.S. Fish and Wildlife Service. 2015. Columbia Headwaters Recovery Unit Implementation Plan for Bull Trout (*Salvelinus confluentus*).



## **2023 ANNUAL IMPLEMENTATION PLAN SUMMARY – APPENDIX D**

### **Clark Fork Project, FERC No. 2058 Cabinet Gorge and Noxon Rapids Hydroelectric Developments**

#### **Title**

Bull Trout Protection and Public Education Project

#### **Implementation Staff Lead**

Sean Moran, Avista, (406) 847-1291, [sean.moran@avistacorp.com](mailto:sean.moran@avistacorp.com)

#### **Background**

The purpose of this project is to protect Bull Trout, a federally listed species (threatened), through a combination of enhanced law enforcement efforts by the states of Idaho and Montana, coupled with a public education outreach program. This will increase the numbers and population viability of Bull Trout by reducing intentional and incidental illegal harvest and increased public awareness concerning Bull Trout life history, habitat needs, identifying characteristics, and the potential for adverse impacts due to land use and other human activities.

Bull Trout are a key-target resource associated with the Lake Pend Oreille–lower Clark Fork River system. Widespread declines in numbers and distribution resulted in the 1998 listing of the species as threatened under the Endangered Species Act. During the consultation process for the relicensing of the Cabinet Gorge and Noxon Rapids projects, the State of Idaho identified illegal harvest of the highly vulnerable Bull Trout spawning run as a significant threat to the Lake Pend Oreille (LPO) population(s).

Given the immediate and ongoing threat that illegal harvest represented to the LPO Bull Trout populations, Idaho requested and the Clark Fork Relicensing Team agreed that an enhanced and focused law enforcement effort be supported and funded by Avista in 1998, and be considered as a relicensing Protection, Mitigation, and Enhancement (PM&E) measure. Avista subsequently provided Idaho Department of Fish and Game (IDFG) with funding which, along with additional funds provided by other groups, allowed for two years (1998 and 1999) of enhanced law enforcement effort focused on protecting LPO Bull Trout. It was also agreed that a plan should be developed for continuing this enforcement effort on a long-term basis, and it should include a specific public education and outreach component. Therefore, in addition to the second year of enhanced law enforcement effort that IDFG implemented in 1999, Avista also supported the development of a plan for a longer-term Bull Trout Protection and Public Education Project that was approved by the Management Committee (MC) and began implementation in the year 2000.

In 2004, IDFG, Montana Fish, Wildlife and Parks (MFWP), Panhandle Chapter Trout Unlimited (PCTU), and Avista began the revision of the 2000 Implementation Plan for the Bull Trout Protection and Public Education Project while incorporating aspects of the 2000 Cooperative Action Plan for the Bull Trout Protection and Public Education Project in the Lower Clark Fork – Pend Oreille Basin. In March of 2005, 2010, 2015, and again in 2020, the MC approved updated Five-year Implementation Plans for the Bull Trout Protection and Public Education Project.

Previously grouped components of each of the three implementers of the Bull Trout Enforcement and Public Education Project (i.e., MFWP, IDFG, and PCTU) annual Project Plans have been broken-out as individual Project Plans to better account for cost-by-task associated with each and of the Program as a whole.

### **2023 Project Plans**

1. Idaho Bull Trout Protection and Education Officer Support
2. Montana Bull Trout Education and Communication Support
3. Montana Bull Trout Education Outreach Support
4. Montana Game Warden Support
5. Trout Unlimited Bull Trout Education Outreach
6. Pend Oreille Water Festival

### **Work Products**

#### *Idaho Bull Trout Protection and Education Officer Support*

- Mid-year report; due to Avista; August 1, 2023
- Annual Work Summary; due to Ken Bouwens, IDFG; November 15, 2023

#### *Montana Bull Trout Education and Communication Support*

- Mid-year report; due to Avista; August 1, 2023
- Annual Work Summary; due to Avista; November 15, 2023

#### *Montana Bull Trout Education Outreach Support*

- Mid-year report; due to Avista; August 1, 2023
- Annual Work Summary; due to Avista; November 15, 2023

#### *Montana Game Warden Support*

- Mid-year report; due to Avista; August 1, 2023
- Annual Work Summary; due to Avista; November 15, 2023

#### *Trout Unlimited Bull Trout Education Outreach*

- Mid-year report; due to Avista; August 1, 2023
- Annual Work Summary; due to Ken Bouwens, IDFG; November 15, 2023

#### *Pend Oreille Water Festival*

- Mid-year report; due to Avista; August 1, 2023
- Annual Work Summary; due to Ken Bouwens, IDFG; November 1, 2023

## 2023 Appendix D Budget

<b>Budget Summary</b>	
Unexpended funds with interest	\$235,957
2023 contribution (including GDP inflation rate)	\$203,824
<b>Total available</b>	<b>\$439,781</b>
2023 MC-approved budget	\$258,740
<b>Unobligated funds</b>	<b>\$181,041</b>

<b>2023 Project</b>	<b>Carryover<sup>1</sup></b>	<b>2023 Budget</b>
Idaho Bull Trout Protection and Education Officer Support	\$43,848	\$115,005
Montana Bull Trout Education and Communication Support	\$0	\$6,496
Montana Bull Trout Education Outreach Support	\$24,350	\$29,316
Montana Game Warden Support	\$0	\$0
Trout Unlimited Bull Trout Education Outreach	\$12,995	\$21,735
Pend Oreille Water Festival	\$0	\$4,995
<b>Total</b>	<b>\$81,193</b>	<b>\$177,547</b>
<b>MC-approved budget</b>		<b>\$258,740</b>

<sup>1</sup> Estimated carryover of unexpended, approved funds as of January 1.



## 2023 PROJECT PLAN

### Idaho Bull Trout Protection and Education Officer Support

#### Project Contact

Dustin Masin, Idaho Department of Fish and Game (IDFG), (208) 608-8651;  
[Dustin.Masin@idfg.idaho.gov](mailto:Dustin.Masin@idfg.idaho.gov), and Ken Bouwens IDFG, (208) 769-1414;  
[ken.bouwens@idfg.idaho.gov](mailto:ken.bouwens@idfg.idaho.gov)

#### Project History

This is a continuing project that was initially developed through the 1999 Clark Fork Settlement Agreement (CFSA). The scope and budget for this project are reviewed by the Management Committee (MC) annually. Beginning in 2020, this position has been funded under a cost share arrangement with Appendix F5.

#### Background

The Idaho CFSA Protection and Education (P&E) Officer position was created in 1999 to address illegal Bull Trout harvest through direct law enforcement action taken on Lake Pend Oreille (LPO) and its tributaries. The CFSA recognized that illegal harvest of Bull Trout was a significant threat; specifically, poaching of spawning fish could greatly impact the spawning population of a stream. It was determined that in addition to traditional enforcement action, public education would be an effective approach to reduce illegal and inadvertent harvest of Bull Trout (Avista 1999). Education currently comprises approximately 35% of the annual work performed by the P&E Officer. The evaluation and the adaptive management of this project is outlined in a Five-Year Implementation Plan.

The combination of targeted law enforcement and Bull Trout-specific education has been highly effective in reducing Bull Trout harvest. Although few violations are detected annually, enforcement patrols continue to be an important component of this program. Officer presence in areas known to be poaching hot spots has deterred illegal activities in these areas. Although also difficult to quantify, it is apparent this project has shown a measurable reduction in accidental and illegal Bull Trout harvest through Bull Trout identification education. For example, in 2006 the Lake Trout Angler Incentive Program (AIP) produced 49 Bull Trout that were unwittingly submitted by anglers to the program. Since that time, the total number of anglers submitting Bull Trout to the AIP has dropped to a handful each year, despite angler reports stating that Bull Trout are commonly caught incidentally in the Lake Trout fishery. It is important to continue this highly successful program to maintain the current level of compliance.

#### Goal

The goal of this project is to reduce the intentional and unintentional harvest of Bull Trout in the Idaho portion of the project area through directed law enforcement and public education.

#### Objectives

1. Patrol LPO tributaries known to support Bull Trout.

2. Patrol the LPO, Clark Fork River, and Pend Oreille River fisheries in areas where Bull Trout may be encountered by anglers.
3. Increase anglers' knowledge of LPO specific fishing regulations, especially with respect to Bull Trout.
4. Educate the public on the topics relating to Bull Trout such as effective catch and release techniques, distinguishing characteristics from other LPO fishes, and their life history and habitat requirements.
5. Develop educational materials, both physical and electronic, to educate the public on fishery management practices and fish identification.

### **Tasks**

1. Continue to focus enforcement efforts, possibly including undercover and/or plain clothes surveillance patrols, on vulnerable Bull Trout tributary locations such as staging holes and spawning areas. (Objective 1)
2. Place electronic monitoring equipment at locations along tributaries with a known history of Bull Trout poaching activity. Document violations and pursue avenues of locating and charging violators as appropriate. (Objective 1)
3. Continue to conduct enforcement patrols on LPO to monitor regulation compliance, catch rates, and incidental harvest. Focus time and efforts at vulnerable locations for Bull Trout such as near tributary mouths. (Objective 2)
4. Continue to help monitor streams and riparian habitat for unlawful development or alterations. (Objectives 1 and 2)
5. As allowed by CDC guidelines, continue student-focused educational programs in local classrooms, the Pend Oreille and Coeur d'Alene Water Festivals, the Waterlife Discovery Center, and the Trestle Creek Interpretive Site. Include messages regarding Bull Trout identification characteristics, life history of Bull Trout, and catch-and-release methods at these events. (Objective 3 and 4)
6. Attend research efforts, events, or trainings to better understand dynamics of the Pend Oreille fishery, impacts on Bull Trout in the system, and to be more informed when educating the public about Bull Trout. (Objectives 1–4)
7. Develop electronic and physical media elements for interpretive panels, trailer materials, handouts, swag, online videos, and teacher resources to be made available for area school districts, homeschooled students, and recreaters. (Objective 3, 4, and 5)

### **Work Products**

- Mid-year report; due to Avista; August 1, 2023
- Annual Work Summary; due to Ken Bouwens, IDFG; November 15, 2023

### **Permitting Requirements**

Not applicable for the tasks proposed in this project plan.

Endangered Species Act consultation for this project plan is associated with the 2019 Biological Opinion on the effects of continued operation of the Clark Fork Hydroelectric Project on Bull Trout and designated Bull Trout critical habitat (BiOp), and the USFWS-IDFG Cooperative Agreement pursuant to Section 6 of the Act. This project plan is consistent with the analysis and conclusions contained in the 2019 BiOp and the USFWS-IDFG Cooperative Agreement and will adhere to all appropriate Terms and Conditions designed to reduce the extent and effects of incidental take on Bull Trout. Incidental take reporting for this project plan will be included in the annual Biological Opinion report as required by Term and Conditions 15–18 of the 2019 Incidental Take Statement, as well as IDFG’s annual Section 6 report to the USFWS. No incidental take is expected as part of the implementation of this plan.

### **Cultural/Historic Resource Review**

Not applicable for the tasks proposed in this project plan, there are no ground and/or vegetation disturbing activities, or proposed impacts to cultural/historic resources.

### **Benefit to the Resource**

Reducing Bull Trout mortality by anglers is consistent with the Idaho Tributary Habitat Acquisition and Fishery Enhancement Program (Appendix A of the CFSA). As such, it is also consistent with goals of the Fish Passage/Native Salmonid Restoration Plan Protection Mitigation, and Enhancement measure (Appendix C), and the Dissolved Gas Supersaturation Control, Mitigation, and Monitoring Program (Appendix F5). Providing an enforcement presence in the area also supports programs conducted under the terrestrial portions of the CFSA.

This proposed project is entirely consistent with the Idaho Department of Fish and Game Fisheries Management Plan (IDFG 2019), the Management Plan for the Conservation of Westslope Cutthroat Trout in Idaho (IDFG 2013), Columbia Headwaters Recovery Unit Implementation Plan for Bull Trout (*Salvelinus confluentus*) (USFWS 2015), and the Native Salmonid Restoration Plan (NSRP) (Kleinschmidt and Pratt 1998), as it supports the enforcement and management of the LPO fishery, especially with respect to Bull Trout and Westslope Cutthroat Trout conservation.

## Budget

Item	Estimated Carryover <sup>1</sup>	2023 Budget Request
Payroll (0.75 FTE)	\$18,000	\$51,450
IDFG (benefits)	\$11,000	\$22,875
Payroll and benefits overhead, estimated at 34.65%	\$10,048	\$25,754
Communication Services	\$500	\$1,088
Training	\$200	\$563
Travel (Hotels, Per Diem, Etc.)	\$200	\$900
Specific use supplies (gear, education materials, etc.)	\$1,400	\$3,750
Renting Operating leases and Maintenance (Boat and vehicle)	\$1,500	\$7,500
Avista support (0.05 FTE)	\$1,000	\$1,125
<b>Total</b>	<b>\$43,848</b>	<b>\$115,005</b>
<b>Anticipated Expenditures</b>		<b>\$158,853</b>

<sup>1</sup> Estimated carryover of unexpended, approved funds as of January 1.

As proposed, it is anticipated that approximately 75% of the Idaho P&E Officer's time will be dedicated to Bull Trout-specific activities (Appendix D) and 25% of their time will be dedicated to broader LPO issues, focusing on those species that are expected to directly benefit from other CFSA-sponsored projects (Appendix F5).

## Literature Cited

Avista Corporation. 1999. Settlement Agreement (Clark Fork Settlement Agreement (CFSA)). Volume III, Application for New License, submitted to the Federal Energy Regulatory Commission (FERC). Avista Corporation, Spokane, Washington.

IDFG (Idaho Department of Fish and Game). 2013. Management Plan for the Conservation of Westslope Cutthroat Trout in Idaho. Fisheries Bureau, Boise, ID.

IDFG (Idaho Department of Fish and Game). 2019. Fisheries Management Plan 2019-2024. Boise, ID.

Kleinschmidt Associates and K. L. Pratt. 1998. Clark Fork River Native Salmonid Restoration Plan. Report to Washington Water Power Co., Spokane, Washington.

USFWS (United States Fish and Wildlife Service). 2015. Columbia Headwaters Recovery Unit Implementation Plan for Bull Trout (*Salvelinus confluentus*). Prepared by Montana Ecological Services Office and Northern Idaho Field Office, Portland, Oregon.

## **2023 PROJECT PLAN**

### **Montana Bull Trout Education and Communication Support**

#### **Project Contact**

Dillon Tabish, Montana Fish, Wildlife and Parks (MFWP) Regional Information/Education Program Manager, Kalispell (406) 751-4564, [dillon.tabish@mt.gov](mailto:dillon.tabish@mt.gov)

#### **Project History**

This is a component of a continuing project that has been annually reviewed and approved by the Management Committee (MC) since 2001. No changes to the scope or budget are being requested.

#### **Background**

Public education and outreach are outlined in the Clark Fork Settlement Agreement (CFSA) Appendix D as appropriate PM&E efforts. Following adoption of the expanded PM&E in 2001, the MC has approved updated 5-year Implementation plans for the Project for IDFG, MFWP, and PCTU in 2005, 2010, 2015 and 2020. As per the original PM&E, these 5-year plans have specified that resources for law enforcement will be distributed between IDFG and MFWP and that no less than 15% of annual funding be dedicated to public education.

This Project Plan is a yearly goal setting document to guide MFWP efforts in public education of Bull Trout through radio announcements, social media ads, and website information.

#### **Goal**

The goal of this Education Component Project Plan of the Bull Trout Protection and Public Education Program – MFWP is to increase the areas' knowledge of Bull Trout identification, regulations, proper catch-and-release techniques, and habitat requirements to decrease angler mortality and increase appreciation for this threatened species.

#### **Objective**

1. Reduce angler mortality on vulnerable Bull Trout populations by educating the fishing public, students, and others regarding Bull Trout identification, biology, and management. Additionally, continue to bolster youth interest in fishing and the outdoors through angling programs to instill a conservation ethic into younger generations.

#### **Tasks**

1. Continue media contacts (radio, television, and newspaper) in Sanders County to keep the restoration efforts before the public.
2. Monitor the Bull Trout identification/testing section on the MFWP website and improve its effectiveness in helping anglers properly identify Bull Trout.
3. Continue consultation and cooperation with Avista, IDFG, and PCTU in public education on Bull Trout and native fish conservation as required in the contractual agreement.

4. Inform and educate anglers through targeted radio spots and social media advertising in spring, summer and fall.

### **Work Products**

- Mid-year report; due to Avista; August 1, 2023
- Annual Work Summary; due to Avista; November 15, 2023

### **Permitting Requirements**

Not applicable for the tasks proposed in this project plan.

Endangered Species Act consultation for this project plan is associated with the 2019 Biological Opinion on the effects of continued operation of the Clark Fork Hydroelectric Project on Bull Trout and designated Bull Trout critical habitat (BiOp). This project plan is consistent with the analyses and conclusions contained in the 2019 BiOp and will adhere to all appropriate Terms and Conditions designed to reduce the extent and effects of incidental take on Bull Trout. No incidental take of Bull Trout is anticipated as a result of this project plan; therefore, no take reporting is required.

### **Cultural/Historic Resource Review**

Not applicable for the tasks proposed in this project plan, there are no ground and/or vegetation disturbing activities, or proposed impacts to cultural/historic resources.

### **Benefit to the Resource**

Enforcement and Education are outlined in Appendix D of the CFSA as appropriate PM&E efforts. This plan also supports native salmonid benefitting actions conducted under appendices B and C and supports State of Montana and U.S Fish and Wildlife Service laws and management plans for Bull Trout and other fish in the area. This project strives to educate the fishing public, students, and others regarding Bull Trout identification, biology and management. Through yearly implementation of the project, a community awareness of the value of Bull Trout conservation is fostered.

### **Benefit to the Resource**

Education and Communication are outlined in Appendix D of the CFSA as appropriate Protection Mitigation and Enhancement (PM&E) efforts. This plan also supports native salmonid benefitting actions conducted under appendices B and C and supports State of Montana and U.S Fish and Wildlife Service laws and management plans for Bull Trout and other fish in the area. This project strives to educate the fishing public, students, and others regarding Bull Trout biology and management. Through yearly implementation of the project, a community awareness of the value of Bull Trout conservation is fostered.

**Budget**

<b>Item</b>	<b>Estimated Carryover<sup>1</sup></b>	<b>2023 Budget Request</b>
771 radio spots (Boners Ferry, Sandpoint, Noxon, TFalls)	\$0	\$2,520
396 radio spots (Flathead and Mission Valleys	\$0	\$1,386
Social media advertising (targeted Facebook posts)	\$0	\$1,500
Annual electricity to power state line radio message transmitter	\$0	\$420
Overhead (11.5%)	\$0	\$670
<b>Total</b>	<b>\$0</b>	<b>\$6,496</b>
<b>Anticipated Expenditures</b>		<b>\$6,496</b>

<sup>1</sup> Estimated carryover of unexpended, approved funds as of January 1.



## **2023 PROJECT PLAN**

### **Montana Bull Trout Education Outreach Support**

#### **Project Contacts**

Abigail Maddigan, Montana Fish, Wildlife and Parks (MFWP), (406) 382-3034, [abigail.maddigan@mt.gov](mailto:abigail.maddigan@mt.gov), Travis Rehm, MFWP, (406) 382-3032, [travis.rehm@mt.gov](mailto:travis.rehm@mt.gov) and Dillon Tabish, MFWP, (406) 751-4564, [dillon.tabish@mt.gov](mailto:dillon.tabish@mt.gov)

#### **Project History**

This is a continuing project that has been annually reviewed and approved by the Management Committee (MC) since 2001. Periodic evaluation and adjustment of this and the other principal components of this Protection Mitigation and Enhancement (PM&E) measure implemented by Idaho Department of Fish and Game (IDFG) and the Panhandle Chapter of Trout Unlimited (PCTU) are outlined in a 5-year plan for this program, the last of which, for the 2020– 2024 period, was approved by the MC in March 2020.

#### **Background**

Enforcement and Enhancement are outlined in the Clark Fork Settlement Agreement (CFSA) Appendix D as appropriate PM&E measure efforts. Following adoption of the expanded PM&E measure in 2001, the MC has approved updated 5-year implementation plans for the Project for IDFG, MFWP, and PCTU in 2005, 2010, 2015, and 2020. As per the original PM&E measure, these 5-year plans have specified that resources for law enforcement will be distributed between IDFG and MFWP and that no less than 15% of annual funding be dedicated to public education.

This Project Plan for Bull Trout Protection and Public Education is a yearly goal setting document to guide MFWP efforts in public education, restoration, and protection of Bull Trout. Listed below are the objectives and tasks for the year 2023. A component of the education aspect of this project has been the annual outreach and education to area schoolchildren through classroom visitation and exercises, fishing days, area festival and fair exhibits, and updating Bull Trout identification signage along popular angler access sites in the area. Hooked on Fishing dollars are used to provide educational materials in classrooms. Additionally, the Hooked on Fishing curriculum presented throughout MFWP Region 1 incorporates Bull Trout education and is complimentary to the educational program of Appendix D. Listed below are the objectives and tasks for the year 2023. Included in the below tasks and budget are additional signs and outreach materials to further educational efforts in the project area.

#### **Goal**

The goal of this Project Plan is to increase the areas' schoolchildren and angling public's knowledge of Bull Trout identification, regulations, proper catch-and-release techniques, and habitat requirements to decrease angler mortality of Bull Trout and increase appreciation for this threatened species.

#### **Objective**

1. Reduce angler caused mortality to vulnerable Bull Trout populations by educating the fishing public, students, and others regarding Bull Trout identification, biology, and

management. Additionally, continue to bolster youth interest in fishing and the outdoors through angling programs to instill a conservation ethic into younger generations.

### **Tasks**

1. Review the educational efforts conducted for Bull Trout in the lower Clark Fork drainage and adjust to improve future educational efforts methods in 2023.
2. Continue consultation and cooperation with Avista, IDFG, and PCTU in public education on Bull Trout and native fish conservation as required in the contractual agreement.
3. Involve a minimum of three public schools in Sanders County in the Hooked-On-Fishing Program in 2023.
4. Make a minimum of six public (or virtual) presentations at schools and/or civic groups in Sanders County, Montana in 2023.
5. Provide public educational outreach in a booth at the Trout Creek Huckleberry Festival 2023, and Sanders County Fair 2023.
6. Work with appropriate landowners to install and maintain “Anglers You’re in Bull Trout Country” signs at public access sites, including the state highway bridge are on the Bull River.
7. Work with MFWP biologists to post signs on key Bull Trout tributaries alerting anglers to bait and harvest restrictions, as well as the legality of building small dams in the creeks.
8. Continue maintenance and improvements to the Bull Trout Education Trailer (i.e., new graphics, Trailer Maintenance, new flat screen TV) in 2023.
9. Cooperatively with other MFWP, Avista, and USFS staff, hold annual Kid’s Fishing Day in 2023 at Triangle Pond and Thompson Falls State Park Pond.

### **Work Products**

- Mid-year report; due to Avista; August 1, 2023
- Annual Work Summary; due to Avista; November 15, 2023

### **Permitting Requirements**

Montana Fish, Wildlife and Parks will acquire all necessary permits for the tasks proposed in this project plan.

Endangered Species Act consultation for this project plan is associated with the 2019 Biological Opinion on the effects of continued operation of the Clark Fork Hydroelectric Project on Bull Trout and designated Bull Trout critical habitat (BiOp). This project plan is consistent with the analyses and conclusions contained in the 2019 BiOp and will adhere to all appropriate Terms and Conditions designed to reduce the extent and effects of incidental take on Bull Trout. No

incidental take of Bull Trout is anticipated as a result of this project plan; therefore, no take reporting is required.

### Cultural/Historic Resource Review

Montana Fish, Wildlife and Parks will coordinate Montana State Historic Preservation Office review for those tasks that may require ground disturbance prior to implementing the project. The work product for this review will be confidential due to the sensitive nature of the content.

### Benefit to the Resource

Enforcement and Enhancement are outlined in Appendix D of the CFSA as appropriate Protection Mitigation and Enhancement (PM&E) measure efforts. This plan also supports native salmonid benefitting actions conducted under appendices B and C and supports State of Montana and U.S Fish and Wildlife Service laws and management plans for Bull Trout and other fish in the area. This project strives to educate the fishing public, students, and others regarding Bull Trout biology and management. Through yearly implementation of the project potential sources of Bull Trout mortality are reduced and a community awareness of the value of Bull Trout conservation is fostered. Additionally, angling programs strive to increase youth involvement and fishing and the outdoors which is necessary to ensure that conservation is a priority of future generations.

### Budget

Item	Estimated Carryover <sup>1</sup>	2023 Budget Request
Education Travel: 2,000 miles @ \$0.41/mile + \$249.60/monthly base rate (for 3 months)	\$500	\$1,569
624 hours salary and benefits (0.3 FTE, education)	\$21,500	\$20,405
Overhead (11.5%)	\$2,350	\$2,527
Bull Trout Country signs/swimming hole dams	\$0	\$200
Sign hanging materials/hardware	\$0	\$100
Huckleberry Festival Event Sponsorship	\$0	\$200
Outreach booth at Sanders County Fair	\$0	\$215
Miscellaneous classroom supplies	\$0	\$200
Bull Trout Trailer new tires and packed bearings	\$0	\$1,000
Bull Trout Trailer new chiller, filter, and plumbing	\$0	\$800
Bull Trout Trailer new flat screen TV	\$0	\$400
Miscellaneous Bull Trout Trailer updates	\$0	\$200
Promotional items (koozies, stickers, etc.)	\$0	\$1,500
<b>Total</b>	<b>\$24,350</b>	<b>\$29,316</b>
<b>Anticipated Expenditures</b>		<b>\$53,666</b>

<sup>1</sup> Estimated carryover of unexpended, approved funds as of January 1.



## **2023 PROJECT PLAN**

### **Montana Game Warden Support**

#### **Project Contacts**

Travis Johnson, Montana Fish, Wildlife and Parks (MFWP), (406) 240-2271, [travis.johnson2@mt.gov](mailto:travis.johnson2@mt.gov), Dillon Tabish, MFWP, (406) 751-4564, [dillon.tabish@mt.gov](mailto:dillon.tabish@mt.gov), and Travis Rehm, MFWP, (406) 382-3032, [travis.rehm@mt.gov](mailto:travis.rehm@mt.gov)

#### **Project History**

This is a component of a continuing project that has been annually reviewed and approved by the Management Committee (MC) since 2001. Beginning in 2021, as per the MC-approved 5-year implementation plan, this project was ranked by the WRTAC.

In 2021, MFWP, while committed to providing enforcement presence in the project area and working closely with Avista, did so without utilizing Clark Fork Settlement Agreement (CFSA) funds as approved by CFSA Management Committee in March 2021. Wardens patrolled the area and documented contacts and violations and will continue to do so but have no longer tracked Avista-specific hours and expenses for reimbursement. Annual reporting will follow MFWP format but will be included in Avista's annual reporting for this project to document compliance of this enforcement effort.

#### **Background**

Public education and outreach are outlined in the Clark Fork Settlement Agreement (CFSA) Appendix D as appropriate Protection, Mitigation and Enhancement (PM&E) efforts. Following adoption of the expanded PM&E measure in 2001, the MC has approved updated 5-year implementation plans for the Project for Idaho Department of Fish and Game (IDFG), MFWP, and Panhandle Chapter Trout Unlimited (PCTU) in 2005, 2010, 2015, and 2020. As per the original PM&E measure, these 5-year plans have specified that resources for law enforcement will be distributed between IDFG and MFWP and that no less than 15% of annual funding be dedicated to public education.

This Project Plan is a yearly goal setting document to guide MFWP efforts in public education and protection of Bull Trout. This Project Plan represents the enforcement component of this project. Enforcement is implemented by committed warden time patrolling area waters by a variety of means with an emphasis on visiting areas and/or patrolling in particular seasons when Bull Trout are known to be particularly susceptible to angling.

#### **Goal**

The goal of this Project Plan is to decrease intentional and unintentional angler caused mortality of Bull Trout in the Montana waters of the Lower Clark Fork River; while at the same time through angler contact, to increase the angling public's knowledge of Bull Trout identification, regulations, proper catch-and-release techniques, and habitat requirements.

## **Objective**

1. Reduce angler caused mortality of vulnerable Bull Trout populations and illegal impacts to habitats by targeted enforcement presence throughout the Montana portion of the Avista Project Area.

## **Tasks**

1. Conduct uniformed and plain-clothes patrols in the project area.
2. Continue use of specialized remote video/camera surveillance equipment as required. Wardens will continue to work with MFWP and Avista biologists and technicians to keep informed of current Bull Trout movements, staging areas, suspect mortalities, trapping sites and other areas of concern to provide for more effective patrols.
3. Monitor in mid-to-late-summer for “swimming hole” type small-scale dams and investigate other potential illegal activities in Bull Trout drainages.

## **Work Products**

- Mid-year report; due to Avista; August 1, 2023
- Annual Work Summary; due to Avista; November 15, 2023

## **Permitting Requirements**

Not applicable for the tasks proposed in this project plan.

Endangered Species Act consultation for this project plan is associated with the 2019 Biological Opinion on the effects of continued operation of the Clark Fork Hydroelectric Project on Bull Trout and designated Bull Trout critical habitat (BiOp). This project plan is consistent with the analyses and conclusions contained in the 2019 BiOp and will adhere to all appropriate Terms and Conditions designed to reduce the extent and effects of incidental take on Bull Trout. No incidental take of Bull Trout is anticipated as a result of this project plan; therefore, no take reporting is required.

## **Cultural/Historic Resource Review**

Not applicable for the tasks proposed in this project plan, there are no ground and/or vegetation disturbing activities, or proposed impacts to cultural/historic resources.

## **Benefit to the Resource**

Enforcement and Enhancement are outlined in Appendix D of the CFSA as appropriate PM&E efforts. This plan also supports native salmonid benefitting actions conducted under appendices B and C and supports State of Montana and U.S Fish and Wildlife Service laws and management plans for Bull Trout and other fish in the area. Providing an enforcement presence in the area also supports programs conducted under appendices G, H and K of the CFSA. The enforcement portion of the project provides a deterrent to illegal harvest or harassment of Bull Trout. In addition, enforcement provides the option of directly stopping illegal harvest and saving individual Bull Trout, which are highly vulnerable in small spawning streams or in the cool water plumes of tributary mouths.

**Budget**

<b>Item</b>	<b>Estimated Carryover<sup>1</sup></b>	<b>2023 Budget Request</b>
Patrols/operations travel, per diem and other support items covered by MFWP	\$0	\$0
<b>Total</b>	\$0	\$0
<b>Anticipated Expenditures<sup>2</sup></b>		\$0

<sup>1</sup> Estimated carryover of unexpended, approved funds as of January 1.

<sup>2</sup> This budget request covers the period of April 1, 2023, through March 31, 2024, and Montana Fish, Wildlife and Parks wardens will not charge for warden support from CFSA Appendix D funds.



## **2023 PROJECT PLAN**

### **Trout Unlimited Bull Trout Education Outreach**

#### **Project Contact**

Bill Love, Panhandle Chapter Trout Unlimited, (208) 597-1710, [info@panhandlechaptertu.org](mailto:info@panhandlechaptertu.org), Amy Anderson, Panhandle Chapter Trout Unlimited (PCTU) Bull Trout Education Coordinator, (850) 585-8512, [tubulltroutcoordinator@gmail.com](mailto:tubulltroutcoordinator@gmail.com), and Ken Bouwens, Idaho Department of Fish and Game (IDFG), (208) 769-1414, [Ken.bouwens@idfg.idaho.gov](mailto:Ken.bouwens@idfg.idaho.gov)

#### **Project History**

This is a continuing project that was originally approved in its current form by the Management Committee (MC) in 2021. The scope and budget for this project are reviewed by the MC annually.

#### **Background**

The purpose of this plan is to support the overall education goals of the implementation plan, namely to reduce the incidental harvest of Bull Trout and increase public awareness concerning the life history, habitat needs, identifying characteristics and potential vulnerability to human activities of Bull Trout and other native fish. This is done through multipronged and engaging outreach to anglers, students and the general public with information about Bull Trout and Westslope Cutthroat Trout identification efforts, proper catch-and-release techniques and sound, science based fisheries management (including ongoing predatory species management) information. This effort augments other programs funded under the Clark Fork Settlement Agreement that are intended to result in greater numbers of Bull Trout in the Lower Clark Fork River and Lake Pend Oreille basin than would otherwise be the case and support other efforts to protect and restore the basin's aquatic resources.

Over the past decade, the PCTU has contracted with a Bull Trout Education Coordinator to organize the Trout and About Festival, organize and staff booths at other events, conduct on-line outreach, and procure promotional materials to help spread educational messages about Bull Trout and native fish habitat. The festival was suspended during 2021 due to time constraints caused by a transition in leadership as well as the unpredictability of COVID-19 protocol and restrictions. As a result of the disruption caused by COVID-19, PCTU and other implementation partners discussed restructuring options. In general, the emphasis has shifted from specific events to coordination of field trips at locations such as the Trestle Creek interpretive site and the Waterlife Discovery Center, and identifying and staffing opportunities to reach other audiences with the assistance of the teaching tools and materials provided by the Native Fisheries Education Trailer. The education outreach efforts will focus on the areas of emphasis in the latest five-year implementation plan (Avista et al. 2020).

The PCTU Bull Trout Education Coordinator will work with the IDFG officer to organize and schedule field trips for student groups and identify opportunities to reach other target audiences such as visiting anglers. Visiting anglers have been responsible for recent cases of misidentification of Bull Trout, and therefore are an area of emphasis in the implementation plan (Avista et al. 2020). In addition, the PCTU coordinator will work with the IDFG officer to

develop curriculum that can be used on the Idaho Bull Trout website and help spread Bull Trout and native fisheries education messaging through social media and other on-line or printed media outlets. Finally, the PCTU Coordinator will develop and order educational promotional materials and distribute those promotional items during outreach events, or through partner outlets, such as North 40's fly shop, marine shops, and boat inspection stations. To assess the efficacy of this effort, the total number of contacts made at each field trip and outreach event will be recorded and reported. Promotional materials distribution will be tracked, as well. Online metrics will be recorded to determine the level of engagement in social media posts or on-line curricula.

### **Goal**

The goal is to increase Bull Trout abundance through decreased angler induced mortality, to promote advocacy for the species and its habitat, and to create a culture of public awareness that continually supports these efforts.

### **Objectives**

1. Develop a student-oriented strategy/curriculum with a focus on field trips. Coordinate field trips for student groups and assist in instruction.
2. Incorporate Native Fisheries Education Trailer in overall outreach strategy.
3. Coordinate in-person and on-line outreach with IDFG Bull Trout Education and Enforcement Officer (officer).
4. Conduct Bull Trout education via PCTU social media Facebook platform.
5. Develop and disseminate Bull Trout merchandise and educational materials (stickers, brochures, pamphlets and other materials free to public) to further the message of Bull Trout protection.

### **Tasks**

1. Regular planning meetings with IDFG Bull Trout Education Officer (Objectives 1-5)
2. Coordinate with schools and IDFG officer to schedule field trips (Objectives 1, 2 and 3)
3. Develop/update curriculum for in-person outreach and/or on-line (Objectives 1, 2 and 3)
4. Conduct on-line outreach using social media (Objectives 3 and 4)
5. Develop educational materials and develop/order merchandise for education & outreach (Objective 5)
6. Administration and reporting (Objectives 1–5)

## Work Products

- Mid-year report; due to Avista; August 1, 2023
- Annual Work Summary; due to Ken Bouwens, IDFG; November 15, 2023

## Permitting Requirements

Not applicable for the tasks proposed in this project plan

Endangered Species Act consultation for this project plan is associated with the 2019 Biological Opinion on the effects of continued operation of the Clark Fork Hydroelectric Project on Bull Trout and designated Bull Trout critical habitat (BiOp), and the USFWS-IDFG Cooperative Agreement pursuant to Section 6 of the Act. This project plan is consistent with the analysis and conclusions contained in the 2019 BiOp and the USFWS-IDFG Cooperative Agreement, and will adhere to all appropriate Terms and Conditions designed to reduce the extent and effects of incidental take on Bull Trout. Incidental take reporting for this project plan will be included in the annual Biological Opinion report as required by Term and Conditions 15–18 of the 2019 Incidental Take Statement, as well as IDFG’s annual Section 6 report to the USFWS.

## Cultural/Historic Resource Review

Not applicable for the tasks proposed in this project plan, there is no ground and/or vegetation disturbing activities, or proposed impacts to cultural/historic resources.

## Benefit to the Resource

Reducing angler mortality to Bull Trout and instilling the importance of habitat preservation is important to realize the potential of other ongoing CFSA PM&E measures including the Fish Passage/Native Salmonid Restoration Plan (Appendix C) and the Idaho Tributary Habitat Acquisition and Fishery Enhancement Program (Appendix A). The efforts of this continuing program support IDFG and U.S Fish and Wildlife Service (USFWS) management plans for Bull Trout in the Lake Pend Oreille (LPO) area. This project provides direct benefits to conservation of Bull Trout being managed by Avista, MFWP, IDFG, and USFWS by reducing the incidence of unintentional mortality to Bull Trout due to misidentification and/or improper angling and release techniques, and increasing public awareness on the importance of high quality habitat.

## Budget

Item	Estimated Carryover <sup>1</sup>	2023 Budget Request
Bull Trout Education Coordinator 620 hours @ \$20/hr.	\$5,000	\$12,400
Promotional & Educational materials	\$4,500	\$1,500
Field Trip Supplies	\$0	\$1,500
Mileage & Trailer Towing	\$1,800	\$2,000
Insurance for Fisheries Education Trailer	\$0	\$1,500
Administration & Reporting (15%)	\$1,695	\$2,835
<b>Total</b>	<b>\$12,995</b>	<b>\$21,735</b>
<b>Anticipated Expenditures</b>		<b>\$34,730</b>

<sup>1</sup> Estimated carryover of unexpended, approved funds as of January 1.

The PCTU had a membership of 340 and is committed to involving its members and other volunteers in

outreach efforts and estimates contributing 360 hours of volunteer labor, valued at \$8,114 over the course of the year. Volunteers would assist with field trips, outreach/trailer events, and administration.

### **Literature Cited**

Avista; Idaho Department of Fish and Game; Montana Fish, Wildlife and Parks; Panhandle Chapter Trout Unlimited, 2020. Implementation Plan for the Bull Trout Protection and Public Education Project 2020-2024.

## **2023 PROJECT PLAN**

### **Pend Oreille Water Festival**

#### **Project Contact**

Gail Bolin, Bonner Soil & Water Conservation District (BSWCD), (208) 627-3292, [Waterfestival.bonner@gmail.com](mailto:Waterfestival.bonner@gmail.com), and Ken Bouwens, Idaho Department of Fish and Game (IDFG), (208) 769-1414, [ken.bouwens@idfg.idaho.gov](mailto:ken.bouwens@idfg.idaho.gov)

#### **Project History**

The Pend Oreille Water Festival is not a new project. The first Project Plan submitted by the Bonner Soil & Water Conservation District We requested and received funding from Appendix D for the 2021 Water Festival. Prior to this the Pend Oreille Water Festival (Water Festival) received funding under annual Panhandle Trout Unlimited project plans. As per the Management Committee-approved 5-year implementation plan, this project was ranked by the WRTAC on January 20, 2021 and scored 20 of 26 in project ranking criteria.

#### **Background**

The Pend Oreille Water Festival is an annual multidisciplinary water resource education program for all fifth grade students (approximately 450) from private and public schools in Bonner County, Idaho. The Water Festival includes interactive in-class lessons and culminates with a two-day outdoor field trip in mid-May at Riley Creek Recreation Area on the Pend Oreille River.

The first Water Festival in Bonner County was held in May 1996. It was a joint effort between the Pend Oreille Conservation District in Newport, WA, and Bonner Soil and Water Conservation District (BSWCD) in Sandpoint, Idaho. The steering committee was organized and coordinated by Ruth Watkins, director of Tri-States Water Quality Council. Later the joint Water Festival separated into two separate programs, and Tri-States became the lead organization for the Water Festival in Bonner County. Tri-States closed in 2012 and the Water Festival then came under the direction of BSWCD.

A steering committee comprised of representatives from BSWCD, US Army Corps of Engineers, Lakes Commission, Pack River Watershed Council, Idaho Fish & Game, and Idaho Master Naturalists oversee the project, and works with the Festival Coordinator to implement the program.

The Water Festival's unique outdoor classroom provides students the opportunity to gain first-hand experience and creatively think about the dynamic world around them. Approximately 450 fifth graders (225 each day) from 14 public and private schools attend. These young people will engage with over 80 professionals focusing on the area's water resources and the Clark Fork-Pend Oreille Watershed. The Water Festival provides students the opportunity to learn through hands-on, interactive, and fun activities. Sandpoint High Schools students under the direction of their teacher act as guides and mentors as they rotate through five educational stations.

- **Fisheries:** Identification of Bull Trout and other fish found in the local lakes using real fish, migration patterns, life cycles, habitat needs, and survival requirements.

- **Water Quality:** Using live macroinvertebrates students learn classification methods, the physical, chemical, and biological properties that determine water quality as well as impacts caused by aquatic invasive species.
- **Watershed:** An EnviroScape model is used to visualize a watershed, pollutants that may be found there, create rain and runoff, and demonstrate erosion and pollution impacts on water quality.
- **Animal Tracks:** Animal gait/track identification, wildlife dependence on water resources creation of a track guide using life-size animal tracks stamped onto bandanas that they take home.
- **Fur Trapping Era:** Explores the lives and impacts of the early fur traders in the Northwest through demonstrations complete with traps, beaver pelts, and an antique musket rifle.

All students attending the Water Festival live in rural Bonner County where over half of all elementary students qualify for free or reduced lunches. Because this is a low-income community, funding for creative out-of-the classroom science-based education, such as the Water Festival provides is extremely limited. Bonner County is rich in water, and the Water Festival offers dynamic lessons of how to be good stewards of this resource and what actions students and their families might take to protect water quality for current and future generations.

Additionally, the Water Festival provides the framework to generate enthusiasm and spark an interest in the sciences for our area's youth at no cost (to the students or to the school districts). Through exposure to hands-on and fun outdoor science lab experiences, we anticipate that some of these young students will become interested in pursuing natural resource careers.

Over time, the Water Festival has become a mainstay in the science curriculum of fifth grade classrooms throughout the county. The teachers value the in-class lesson as well as the Water Festival's unique outdoor classroom. They repeatedly comment that the educational value of the program is exceptional.

All fifth grade students are given pre- and post-festival tests. Test questions are keyed to correspond with concepts taught during the in-class lessons and the outdoor field trip. All tests are graded. The results from the 2022 Water Festival showed a 53.08% improvement in knowledge after participating in the Water Festival program.

Pre-test results: 8.38 % scored 80% or above.

Post-test results: 61.42% scored 80% or above.

Additionally, field trip instructors and fifth grade teachers post-evaluate the event's instructional topics, logistics, and educational effectiveness. These evaluations are used by the steering committee and the Coordinator to adjust the program, if needed, for the following year.

## **Goal**

To empower children with the knowledge to appreciate, respect and protect our water resources.

## **Objectives**

1. Build knowledge, appreciation, and a culture of stewardship of the area's water resources and their benefits.

2. Promote community collaboration by involving a cross-section of natural resource professionals, teachers, students, parents, and community members in a shared environmental educational event.

### **Tasks**

1. Set the date in coordination with US Army Corps of Engineers for the use of Riley Creek Recreational Area. (Objectives 1 and 2), October 2022.
2. Contact schools for participation and number of students (Objectives 1 and 2), November–December 2022.
3. Develop budget, outline funding sources, and schedule steering committee meetings (Objectives 1 and 2), October 2022–May 2023.
4. Secure permit from the US Army Corps of Engineers for use of Riley Creek Recreation area (Objectives 1 and 2), February–March 2023.
5. Schedule and teach in-classroom lessons (Objectives 1 and 2), March–May 2023.
6. Recruit instructors and volunteers (Objectives 1 and 2), January–May 2023.
7. Secure adequate materials and supplies (Objectives 1), January–April 2023.
8. Schedule instructors and schools for the outdoor field trip (Objectives 1 and 2), March–May 2023.
9. Transport equipment and supplies to Riley Creek, set up 11 large canopies (Objectives 1 and 2) May 17, 2023.
10. Hold the Water Festival Field Trip at Riley Creek (Objectives 1 and 2), May 18 and 19, 2023.
11. Grade pre- and post-festival tests, send thank you letters to volunteers and donors, prepare grant reports, and hold wrap-up meeting (Objectives 1 and 2), May–July 2023.

### **Work Products**

- Mid-year report; due to Avista; August 1, 2023
- Annual Work Summary; due to Ken Bouwens, IDFG; November 15, 2023

### **Permitting Requirements**

The Water Festival Coordinator will acquire the permit for the use of Riley Creek Campground from the US Army Corps of Engineers.

Endangered Species Act consultation for this project plan is associated with the 2019 Biological Opinion on the effects of continued operation of the Clark Fork Hydroelectric Project on Bull

Trout and designated Bull Trout critical habitat (BiOp), and the USFWS-IDFG Cooperative Agreement pursuant to Section 6 of the Act. This project plan is consistent with the analysis and conclusions contained in the 2019 BiOp and the USFWS-IDFG Cooperative Agreement and will adhere to all appropriate Terms and Conditions designed to reduce the extent and effects of incidental take on Bull Trout. Incidental take reporting for this project plan will be included in the annual Biological Opinion report as required by Term and Conditions 15–18 of the 2019 Incidental Take Statement, as well as IDFG’s annual Section 6 report to the USFWS.

### Cultural/Historic Resource Review

Not applicable for the tasks proposed in this project plan, there are no ground and/or vegetation disturbing activities, or proposed impacts to cultural/historic resources.

### Benefit to the Resource

Reducing angler mortality to Bull Trout and instilling the importance of habitat preservation is important to realize the potential of other ongoing CFSA PM&E measures including the Fish Passage/Native Salmonid Restoration Plan (Appendix C) and the Idaho Tributary Habitat Acquisition and Fishery Enhancement Program (Appendix A). The efforts of this continuing program support IDFG and U.S Fish and Wildlife Service (USFWS) management plans for Bull Trout in the Lake Pend Oreille (LPO) area. This project provides direct benefits to conservation of Bull Trout being managed by Avista, MFWP, IDFG, and USFWS by reducing the incidence of unintentional mortality to Bull Trout due to misidentification and/or improper angling and release techniques and increasing public awareness on the importance of high quality fish habitat.

### Budget

Item	Estimated Carryover <sup>1</sup>	2023 Budget Request
Festival Coordination (\$23 an hour for 150 hours)	\$0	\$3,450
Mileage	\$0	\$400
Supplies and refreshments	\$0	\$450
Administration fee	\$0	\$370
Station and directional signs for use at Riley Creek	\$0	\$325
<b>Total</b>	\$0	\$4,995
<b>Anticipated Expenditures</b>		\$4,995

<sup>1</sup> Estimated carryover of unexpended, approved funds as of January 1.

The projected budget for the 2023 Water Festival is \$11,920.00. Additional funding is expected from the following sources: Angels Over Sandpoint \$400 (pending), Bonner County Sportsmen \$100 (pending), Cloudsledge Conservation Trust \$1,000 (pending), Cocolalla Lake Assoc. \$100 (pending), Community Assistance League \$500 (pending), Equinox \$2,400 (secured), Idaho Fish & Wildlife Foundation \$500 (pending), Lake Pend Oreille Idaho Club \$500 (pending), Selkirk Association of Realtors \$400 (secured), Panhandle Alliance for Education \$300 (secured), Northern Lights \$100 (pending), plus donations from individuals \$625 (pending).

The Water Festival also benefits from approximately \$16,000 of in-kind contributions (time and materials) from local non-profits as well as from state and federal agencies: U.S. Army Corps of Engineers, Natural Resources Conservation Services, Idaho Fish & Game, UI-Extension-Water

Resources, Kaniksu Land Trust, Lakes Commission, Pack River Watershed Council, Panhandle Health District, Bonner County Emergency Management, Idaho Dept. of Agriculture, Idaho Master Naturalists – Pend Oreille Chapter, and Trout Unlimited – Panhandle Chapter.



## 2023 ANNUAL IMPLEMENTATION PLAN SUMMARY – APPENDIX E

### Clark Fork Project, FERC No. 2058 Cabinet Gorge and Noxon Rapids Hydroelectric Developments

#### **Title**

Watershed Councils Program

#### **Implementation Staff Lead**

Sean Moran, Avista, (406) 847-1291, [sean.moran@avistacorp.com](mailto:sean.moran@avistacorp.com)

#### **Background**

The purpose of this program is to facilitate the protection and restoration of tributary stream habitat in the Lake Pend Oreille – lower Clark Fork River watershed. This will improve conditions for aquatic life, including macroinvertebrate communities and the native fish species (i.e., Bull Trout, Westslope Cutthroat Trout, and Mountain Whitefish) most affected by the construction and continued operation of the Clark Fork Projects.

Prior to 1999, two watershed councils (WCs) already existed within the lower Clark Fork River drainage, one in the Elk Creek drainage (tributary to Cabinet Gorge Reservoir) and one in the Prospect Creek drainage (tributary to Noxon Reservoir). The Elk Creek WC had already implemented a number of stream assessment, protection and enhancement measures. The degree of local stakeholder interest and success of this WC was a catalyst for developing and establishing this Watershed Councils Program. The Prospect Creek WC began on-the-ground restoration in 1999, in part through funds from the Montana Tributary Habitat Acquisition and Recreational Fishery Enhancement Program (Appendix B of the Clark Fork Settlement Agreement [CFSA]).

This Watershed Councils Program was initiated in 1999. In the initial year of implementation for this program, efforts focused on developing and disseminating informational materials about WCs and this program, designing a decision-making process for reviewing WC related funding needs and requests and new WC formation. Since 1999, Rock Creek, Whitepine Creek, Trout Creek, Pilgrim Creek, Little Beaver Creek, and the Bull River WCs were formed. Beginning in 2000, Avista entered into an agreement with the Green Mountain Conservation District (GMCD), which allowed GMCD to directly administer these program funds in Montana.

In 2001, the Pack River WC formed in Idaho. Subsequently in 2002, Avista entered into an agreement with Bonner Soil and Water Conservation District (BSWCD), which allowed BSWCD to directly administer these program funds for the Pack River WC.

The Lower Clark Fork Watershed Group (LCFWG, an umbrella and organizational group for the Montana WCs) was officially formed early in 2004 and received its 501-3C status from the IRS in 2005. The LCFWG now facilitates all activities for the Montana WCs, helps coordinate Avista's restoration efforts with other state and/or federal activities, as well as seeking non-CFSA funding for watershed activities.

If needed, developed ranking criteria can be utilized to prioritize providing administrative funding or other support to facilitate the formation and initial development of new WC and to support existing WC.

## 2023 Project Plans

1. Pack River Watershed Council, Bonner Soil and Water Conservation District
2. Lower Clark Fork Watershed Council Projects

## Work Products

*Pack River Watershed Council, Bonner Soil and Water Conservation District*

- Mid-year report; due to Avista; August 1, 2023
- Annual Newsletter (Fall 2023)
- Annual Work Summary (including financial report); due to Avista; November 15, 2023

*Lower Clark Fork Watershed Council Projects*

- Mid-year report; due to Avista; August 1, 2023
- Annual Work Summary; due to Avista; November 15, 2023

## 2023 Appendix E Budget

Budget Summary	
Unexpended funds with interest <sup>1</sup>	\$20,000
2023 contribution (including GDP inflation rate)	\$16,305
<b>Total available</b>	<b>\$36,305</b>
2023 MC-approved budget	\$17,535
<b>Unobligated funds</b>	<b>\$18,770</b>

<sup>1</sup> Pursuant to the CFSA, unexpended funds with interest in any one year shall not exceed \$20,000.

2023 Project	Carryover <sup>1</sup>	2023 Budget
Pack River Watershed Council, Bonner Soil and Water Conservation District	\$2,310	\$4,400
Lower Clark Fork Watershed Council Projects	\$0	\$10,825
<b>Total</b>	<b>\$2,310</b>	<b>\$15,225</b>
<b>MC-approved budget</b>		<b>\$17,535</b>

<sup>1</sup> Estimated carryover of unexpended, approved funds as of January 1.

## 2023 PROJECT PLAN

### Pack River Watershed Council, Bonner Soil and Water Conservation District

#### Project Contact

Sarah Garcia, Bonner Soil and Water Conservation District, 208.263.5310 ext.100,  
[Sarah.Garcia@id.nacdn.net](mailto:Sarah.Garcia@id.nacdn.net) and Jessica Erickson, Watershed Coordinator, Pack River  
Watershed Council, [bluedeleeuw@gmail.com](mailto:bluedeleeuw@gmail.com)

#### Project History

This is a continuing project that, as administered by Bonner County Soil and Water Conservation District (BSWCD), was originally approved by the Management Committee (MC) in 2002. The scope and budget for this project are reviewed by the MC annually.

#### Background

The Tri-State Water Quality Council, in conjunction with the Bonner Soil & Water Conservation District and the Natural Resources Conservation Service (NRCS), formed the Pack River Watershed Council (PRWC) in the spring of 2001. The PRWC is the only active watershed council in the Lake Pend Oreille area. As such, it provides coordination between private landowners and various agencies towards the continued development of stream habitat improvement and watershed restoration opportunities in this important Lake Pend Oreille tributary. The PRWC received initial grant funding from Environmental Protection Agency (EPA) and the River Network in 2001, and funding from Avista (through Appendix E of the Clark Fork Settlement Agreement) from 2002 through 2022.

We are requesting funding assistance for PRWC in 2023. Watershed coordination work will include continuing our partnership with the U.S. Forest Service, U.S. Fish and Wildlife Service, and Avista to develop a channel restoration project in Grouse Creek. The PRWC will also continue to work closely with the NRCS to connect with willing landowners who would be interested in fisheries habitat enhancement projects. Additional efforts will focus on continuing to develop outreach strategies to identify and engage willing landowners in conservation efforts and habitat enhancement projects in the Pack River watershed as identified in recent habitat assessments (GeoEngineers 2019, 2020).

#### Goal

The mission of the Pack River Watershed Council is to improve water quality and riparian habitat in the Pack River watershed for people, fish, and wildlife through education, collaboration, and cooperative projects.

#### Objectives

1. Address the Pack River Watershed Council's management actions identified by the Technical Advisory Council in the Pack River Watershed Management Plan to enhance the quality of the Pack River watershed's natural resources, increase available habitat, and ensure the success of restoration efforts.

2. Engage stakeholders, land owners, and the public in watershed enhancement projects in the Pack River watershed.
3. Coordinate communication, activities, education, and funding between landowners and agencies.
4. Identify available resources to support watershed projects in the Pack River watershed.

### **Tasks**

1. Promote the development and implementation of watershed restoration/enhancement /conservation projects. (Objectives 1, 2, and 3).
2. Promote education on healthy watersheds. (Objectives 1, 2, and 3).
3. Develop community outreach efforts: including an annual newsletter and maintaining a link on the Bonner Soil and Water Conservation District website. (Objectives 1, 2, and 3).
4. Facilitate meetings between stakeholders and landowners; prepare meeting agendas, and compose meeting summaries. (Objectives 1, 2, and 3).
5. Provide general administrative work to support the development and implementation of watershed projects. (Objectives 1, 2, 3, and 4).
6. Collaborate with the Clark Fork Grant writer to leverage funding for watershed projects in the Pack River watershed. (Objective 4).
7. Attend relevant training opportunities, conferences, and meetings to improve the coordinator's ability to complete the above tasks. (Objectives 1, 2, 3, and 4).

### **Work Products**

- Mid-year report; due to Avista; August 1, 2023
- Annual Newsletter (Fall 2023)
- Annual Work Summary (including financial report); due to Avista; November 15, 2023

### **Permitting Requirements**

Not applicable for the tasks proposed in this project plan.

Endangered Species Act consultation for this project plan is associated with the 2019 Biological Opinion on the effects of continued operation of the Clark Fork Hydroelectric Project on Bull Trout and designated Bull Trout critical habitat (BiOp). This project plan is consistent with the analyses and conclusions contained in the 2019 BiOp and will adhere to all appropriate Terms and Conditions designed to reduce the extent and effects of incidental take on Bull Trout. No incidental take of Bull Trout is anticipated as a result of this project plan; therefore, no take reporting is required.

### Cultural/Historic Resource Review

Not applicable for the tasks proposed in this project plan, there are no ground and/or vegetation disturbing activities, or proposed impacts to cultural/historic resources.

### Benefit to the Resource

This project is consistent with the Watershed Councils Program (Appendix E), as well as the Idaho Tributary Habitat Acquisition and Fishery Enhancement Program (Appendix A), as education and outreach from this project facilitates the development of tributary habitat enhancement projects and identification of future enhancement opportunities. The Pack River is the second largest tributary to Lake Pend Oreille and is ranked as a high-priority for restoration and protection under the lake's Key Watershed Bull Trout Problem Assessment (PBAT 1998). The assessment also ranks the Pack River as having a high potential to increase Bull Trout numbers. Because the Pack River watershed is impaired and largely in private ownership, maintaining landowner involvement in the PRWC and TMDL implementation process (BSWCD 2006) is critical to successful restoration efforts.

### Budget

Item	Estimated Carryover <sup>1</sup>	2023 Budget Request
Watershed Coordination	\$1,900	\$3,500
Bulk mail, postage & processing	\$200	\$400
Meeting supplies; copies	\$0	\$100
Administration Fee (10%)	\$210	\$400
<b>Total</b>	<b>\$2,310</b>	<b>\$4,400</b>
<b>Anticipated Expenditures</b>		<b>\$6,710</b>

<sup>1</sup> Estimated carryover of unexpended, approved funds as of January 1.

### Literature Cited

BSWCD (Bonner Soil and Water Conservation District, Pack River Technical Advisory Committee, Pack River Watershed Council). 2006. Pack River Watershed Management Plan and TMDL Implementation Plan.

GeoEngineers. 2019. Habitat Prioritization Evaluation for Caribou and Hellroaring Creeks. Report to IDFG and Avista. Avista Document Number 2019-0216.

GeoEngineers. 2020. Habitat Prioritization Evaluation for McCormick Creek and Upper Pack River. Report to IDFG and Avista. Avista Document Number 2020-0171.

PBTAT (Panhandle Bull Trout Technical Advisory Team). 1998. Lake Pend Oreille Key Watershed Bull Trout Problem Assessment. Prepared for Lake Pend Oreille Watershed Advisory Group and the State of Idaho. Boise, Idaho.



## 2023 PROJECT PLAN

### Lower Clark Fork Watershed Council Projects

#### Project Contact

Brita Olson, Lower Clark Fork Watershed Group (LCFWG), (208) 304-3852, [brita@lcfwg.org](mailto:brita@lcfwg.org), Sarah Busmire, LCFWG, (406) 203-4725, [Sarah.Busmire@lcfwg.org](mailto:Sarah.Busmire@lcfwg.org), and Sean Moran, Avista, (406) 847-1291, [sean.moran@avistacorp.com](mailto:sean.moran@avistacorp.com)

#### Project History

The LCFWG was formed in 2004 and has received continuing support from Clark Fork Settlement Agreement (CFSA) Appendix E in addition to funding under Appendix B as annually approved by the Management Committee.

#### Background

The organization began as an umbrella group to assist the eight watershed councils in the Lower Clark Fork (LCF): Elk Creek, Prospect Creek, Rock Creek, Whitepine Creek, Bull River, Trout Creek, Pilgrim Creek and Little Beaver Creek. As local landowner involvement waxes and wanes, the LCFWG provides consistent follow-through and is instrumental in bringing local landowners and other resources to the table to assist Avista Corporation (Avista) and other technical agencies with planning, developing, and implementing fish habitat and watershed restoration projects in the CFSA project area. The LCFWG provides administrative support, coordination, technical assistance, and resources to area landowners and watershed councils, and other stakeholders in the LCF project area.

The workload associated with each task (outlined below) is variable depending on activities in the watershed in a given year. The LCFWG requests that funding for each task is kept flexible in order to maximize the productivity achieved with these dollars. The principal project contact Brita Olson is transitioning out of her role as LCFWG Coordinator and will only be available on a part-time basis through June 2023. In the interim, Sarah Busmire will be assuming many of Brita's duties as required by current grants, projects and contracts. Sarah will be assisted by Brita, Sean Moran (Avista and LCFWG Board Member), and other project partners on this and other project plans. The work of the LCFWG is ongoing, in support of many other projects going on in the LCF watershed. It is most closely tied to funding received from CFSA Appendix B for the coordination of LCF projects. Historically, there has been much overlap between these two proposals, and while effort was made in 2017 to distinguish the proposals, there will inevitably continue to be some overlap. For example, this project will fund some grant writing activities, which are often closely tied to the coordination of LCF projects funded by Appendix B.

Additionally, we work to leverage other resources for our work in the LCF watershed. This allows us to expand our capacity and improve the quality of our work. Outside resources and administration funds will complement the work funded through this project. The funds provided through this project plan provide a base level of capacity support that ensures year-to-year resiliency in LCFWG coordination and programming focused on on-the-ground accomplishments, directly in line with or in complement to the goals of multiple Appendices of the Clark Fork Settlement.

## **Goal**

The goal of this project plan is to support the ongoing engagement of LCF watershed stakeholders collaborating in support of the CFSA, leverage additional administrative, technical and financial resources, and increase the effectiveness of LCF projects through greater collaboration.

## **Objectives**

1. Engage stakeholders, landowners, and public in watershed projects in the LCF watershed.
2. Facilitate collaboration by providing a forum for watershed stakeholders to interact, work together and share ideas, experiences, and knowledge.
3. Communicate with stakeholders and partners regarding watershed projects and opportunities in the LCF watershed.
4. Leverage resources for LCF projects.

## **Tasks**

1. Hold formal biannual LCFWG meetings, generally in late spring/early summer and late fall/early winter to provide an opportunity for watershed partners to review upcoming work and/or annual accomplishments. LCFWG moved from quarterly to biannual meetings in 2022. One of the most valuable aspects of past quarterly meetings had long been not the meeting content, but informal networking invited by an in-person meeting environment. As the world has gone virtual, this benefit has been difficult to sustain on a web conference platform. Instead, biannual meetings focus on content delivery suitable for a web conference or hybrid platform, and the (still extremely important) networking aspect of these meetings will be fostered under Task 2. (Objectives 1, 2, and 3)
2. When opportunity arises or impetus exists, coordinate additional stakeholder meetings for partners, landowners, or public. In 2022, in addition to project or need specific meetings, the LCFWG tested out new models for foster regular networking and community building among watershed partners, including informal happy hours and other meet-ups, that adapted to the interest of landowner contacts and watershed partners as well as public health concerns. (Objectives 1, 2, and 3)
3. Collaborate with Clark Fork Grant writer to leverage funding to support LCF projects or coordination of LCF activities. (Objective 4)
4. Provide general administrative work in support of LCF watershed projects or watershed council activities. (Objectives 1, 2, 3, and 4)
5. LCFWG staff will attend appropriate training opportunities, conferences, and meetings to acquire skills to improve capacity to complete the above tasks and to bring knowledge into the LCF watershed to better projects and work products. A focus in 2023 will be completing online training and implementing some improved technological upgrades/solutions to help support and improve LCFWG's capacity for project

management and coordination. The focus in 2022 training was in line with the objectives of a capacity grant from the Montana Watershed Coordination Council Watershed Fund, “Expanding the Restoration Toolkit for the Bull River”, aimed at supporting research to further restoration efforts in the Bull River drainage, where the LCFWG has been most successful at maintaining engagement from private landowners. In 2023, the LCFWG Coordinator will be supported by both a part-time Watershed Technician (and Green Mountain Conservation District Administrator) in completing LCFWG’s program of work as well as a Big Sky Watershed Corps (BSWC) member (AmeriCorps member cohosted in Western Sanders County by the Green Mountain Conservation District and LCFWG). The additional capacity will be greatly aided by the effective implementation of technical solutions that help facilitate collaborate project management. Training pursued will focus on the Microsoft 365 suite and Microsoft Project, and will include transitioning LCFWG project records to a shared online work environment. Additionally, LCFWG staff will participate in River Restoration Northwest (supplemented by a professional development stipend) February 6-10, 2023 and a wide breadth of virtual nonprofit trainings offered by the Montana Nonprofit Association. This will help generate shared institutional knowledge, train new staff, and help increase the resiliency of LCFWG programs into the future. (Objectives 1, 2, 3, and 4)

6. Develop outreach efforts in the local community: develop press releases on current activities, website updates, mailings, events, or other deliverables as appropriate. This work will be complemented by additional capacity provided by the BSWC Member. Specific plans for deliverables will be developed in early 2023 when the BSWC Member begins work with Green Mountain Conservation District (GMCD) and LCFWG.
7. Continue supporting and developing a Private Land Stewardship Program, in collaboration with the GMCD, Natural Resource Conservation Service (NRCS), and other stakeholders. In 2023, this ongoing program will continue to be supported by a grant from the Department of Natural Resources and Conservation Watershed Management Grant Program. GMCD has an additional grant pending with the DNRC Conservation Projects Program to support this objective, including the BSWC Member. (Objectives 1, 3, and 4)

### **Work Products**

- Mid-year report; due to Avista; August 1, 2023
- Annual Work Summary; due to Avista; November 15, 2023

### **Permitting Requirements**

Not applicable for the tasks proposed in this project plan.

Endangered Species Act consultation for this project plan is associated with the 2019 Biological Opinion on the effects of continued operation of the Clark Fork Hydroelectric Project on Bull Trout and designated Bull Trout critical habitat (BiOp). This project plan is consistent with the analyses and conclusions contained in the 2019 BiOp and will adhere to all appropriate Terms and Conditions designed to reduce the extent and effects of incidental take on Bull Trout. No incidental take of Bull Trout is anticipated as a result of this project plan; therefore, no take

reporting is required.

### Cultural/Historic Resource Review

Not applicable for the tasks proposed in this project plan, there are no ground and/or vegetation disturbing activities, or proposed impacts to cultural/historic resources.

### Benefit to the Resource

This project is consistent with the Watershed Councils Program (Appendix E), as well as the Montana Tributary Habitat Acquisition and Recreational Fishery Enhancement Program (Appendix B) of the CFSA, as tasks from this project facilitates the development of tributary habitat enhancement projects and identification of future enhancement opportunities. This project exists to support stream protection and enhancement projects in the LCF watershed. The LCFWG serves as a point of contact for long-term follow through with landowners and past projects as well as helps leverage resources to maximize the positive impact of CFSA dollars in the watershed. By facilitating projects that improve riparian and instream habitat, this project also benefits Appendices C and K, state water quality prescriptions, and when located along streams with native salmonids, are consistent with Federal and State of Montana management plans for these species.

### Budget

Item	Estimated Carryover <sup>1</sup>	2023 Budget Request
LCFWG staff time, approx. 160 hours (Task 1-5)	\$0	\$4,240
Training registration and associated costs (Task 5)	\$0	\$548
Travel (Task 5)	\$0	\$563
LCFWG staff time, approx. 80 hours (Task 6)	\$0	\$2,120
LCFWG staff time, approx. 80 hours (Task 7)	\$0	\$2,120
Miscellaneous materials, software, and supplies (All tasks)	\$0	\$250
Administration fee, 10%	\$0	\$984
<b>Total</b>	<b>\$0</b>	<b>\$10,825</b>
<b>Anticipated Expenditures</b>		<b>\$10,825</b>

<sup>1</sup> Estimated carryover of unexpended, approved funds as of January 1.

Task 5 will be complemented by:

- In-kind contributions from Sandpoint Computers (providing technical support and training resources)
- A professional development stipend awarded to Sarah Busmire to attend River Restoration Northwest, covering the cost of registration and lodging.
- A District Development Grant awarded to Green Mountain Conservation District which will fund a portion of Sarah's time in attending River Restoration Northwest.

Task 6 & 7 will also be matched by the following sources:

- Montana Department of Natural Resources and Conservation (DNRC) Watershed Management Grant Program (Up to \$7,500 is expended through December 31, 2023)
- DNRC Conservation Project grant pending for a total of \$18,606 which would support approximately 50% of BSWC member host-site fee and GMCD staff wages in providing oversight for BSWC member and program support for Bull River revegetation efforts, community outreach, etc.

## 2023 ANNUAL IMPLEMENTATION PLAN SUMMARY– APPENDIX F1

### Clark Fork Project, FERC No. 2058 Cabinet Gorge and Noxon Rapids Hydroelectric Developments

#### **Title**

Clark Fork River Water Quality Monitoring Program

#### **Implementation Staff Lead**

Paul Kusnierz, Avista, (406) 847-1274, [paul.kusnierz@avistacorp.com](mailto:paul.kusnierz@avistacorp.com)

#### **Background**

The purpose of this measure is to provide for the systematic, long-term monitoring of nutrients and metals in the lower Clark Fork River as part of the former Tri-State Water Quality Council (TSWQC) Monitoring Program. Excessive nutrient loading and metals contamination in the middle and upper portions of the Clark Fork River were cause for water quality concerns in the lower Clark Fork River - Lake Pend Oreille (LCFR-LPO) system. Interest in monitoring long-term trends in the quality of water entering and exiting the reservoirs, and a desire for a better understanding of how the reservoirs may be functioning as nutrient or metals “sinks” led to consensus that a systematic, long-term, and coordinated nutrient and metals monitoring program for the lower Clark Fork waters should be implemented.

During the collaborative relicensing process and development of the Settlement Agreement, it was agreed that support and use of the TSWQC program to meet the long-term water quality monitoring needs associated with the Clark Fork projects would facilitate a coordinated approach to long-term water quality monitoring of the LCFR-LPO system.

As part of the overall TSWQC program, Appendix F1 supported data collection, analysis and reporting of nutrient and metals data at three sampling locations on the lower Clark Fork River. This included: monthly sampling above Noxon Reservoir, downstream of Noxon Rapids Dam and downstream of Cabinet Gorge Dam, and additional peak flow sampling (six samples during the peak flow period each year) at the Cabinet Gorge site. This data, along with data generated at 29 other sites on the Clark Fork River, was used to assess the status of and trends in water quality (utilizing concentrations and loads) basin-wide. A monitoring program report was prepared annually that summarizes data collection and analysis for each field season (calendar year), and at every five-year interval an evaluation of the data was conducted to assess water quality trends and the effectiveness of water quality measures in the watershed.

In addition, data collected at the Cabinet Gorge site was used to estimate nutrient loading to Lake Pend Oreille from the Clark Fork (Montana) watershed. The Montana/Idaho Border Nutrient Load Agreement (2002) sets a target for total phosphorus to protect open lake water quality of Lake Pend Oreille and also sets load allocations for Montana and local Idaho sources to meet that target. For the purposes of determining that the allocation for Montana (259,500 kg/year total phosphorus) is not being exceeded, the Agreement sets forth monitoring objectives for evaluating nutrient data from the Clark Fork River at the border (i.e., the Cabinet Gorge site).

Therefore, the samples collected below Cabinet Gorge Dam are integral to achieving key objectives of the Clark Fork-Pend Oreille watershed management plan.

At every five-year interval, a review of data is conducted to evaluate water quality trends and the effectiveness of water quality measures in the watershed. These ‘trend reports’ were completed in 2004, 2008, 2012, and 2019. These evaluations resulted in an analysis of spatial trends in concentration and load, time series trends, statistical comparisons with applicable water quality targets, and an overall interpretation of the water quality health of the three-state basin. Avista staff participated on the TSWQC Monitoring Committee (since 2012 on the Clark Fork River Water Quality Monitoring Committee; CFRWQMC) and assisted in the design and scope of work of the five-year evaluations to ensure consistency with the long-term water quality monitoring needs of the Clark Fork projects.

Because of past exceedances of water quality standards, Idaho Department of Environmental Quality (DEQ) developed and adopted Total Maximum Daily Loads (TMDL) for the Lower Clark Fork River sub-basin in 2007. In order to support TMDL-related data needs as well as monitor potential impacts of future activities that could impact the water quality of the Lower Clark Fork River, Idaho DEQ and other members of the TSWQC Monitoring Committee, including Avista staff, identified metals of concern as copper, zinc, and cadmium to be included in the 2008–2012 monitoring program. These metals have not been collected since 2012.

In October 2012 TSWQC officially closed its doors. This closure was due in large part to decreasing administrative dollars as well as state and federal grants, and also affected the 2012 monitoring program with no monthly sampling occurring in September through November. Without the coordination and facilitation functions once provided by the TSWQC, it was now incumbent upon those active monitoring participants to continue the three state water quality monitoring activities.

In December 2012, the CFRWQMC consisting of Montana DEQ, Idaho DEQ, Missoula Wastewater Treatment Facility, University of Montana, and Avista met to review the previous monitoring program and to devise a more sustainable program. The Washington Department of Ecology continued to maintain their two monitoring sites on the Pend Oreille River. Plum Creek Timber Company and the U.S. Forest Service no longer contribute funds to the program. This group continues to meet annually to review the previous year’s sampling efforts, review annual work products, coordinate the upcoming monitoring season, and plan future activities. Beginning in 2015, through a contractual agreement between Montana DEQ and the Clark Fork Coalition (CFC), the CFC has now taken the lead for the group’s coordination, facilitation, and the production of the annual water quality reports.

In recent years, irregularities in the discharge hydrograph have occurred in the lower Clark Fork River at the Montana-Idaho border as measured at U.S. Geological Survey (USGS) Gaging Station 12391950 Clark Fork River below Cabinet Gorge Dam. The irregularities include runoff beginning earlier than historically “normal” and a stunted peak flow. These irregularities have spurred discussion among the group regarding the number and timing of sample collection during peak flow monitoring. In 2016, the group requested the contractor conduct an analysis to review historical data to address concerns and provide recommendations on how to move

forward with the peak flow monitoring. In 2017 the CFRWQMC agreed to the following changes in Avista's sampling plan: 1) water quality sampling downstream of Thompson Falls Dam (site number CFR 28) and Noxon Rapids Dam (site number CFR 29) will only occur July–September, and 2) the annual field quality control review will be discontinued. These changes were implemented in a manner to reduce costs to a level that are congruent to Avista's Appendix F1 obligation without the loss of important water quality data.

## 2023 Project Plans

1. Clark Fork River Water Quality Monitoring Program

## Work Products

### Clark Fork River Water Quality Monitoring Program

- Estimate of 2022 nutrient loads from the Clark Fork River into Lake Pend Oreille, technical memorandum; final due June 1, 2023
- Annual Project Update: 2022 monitoring report to be prepared by the Clark Fork Coalition; final due October 1, 2023
- Annual Work Summary; due December 1, 2023

## 2023 Appendix F1 Budget

Budget Summary	
Unexpended funds with interest	\$16,749
2023 contribution (including GDP inflation rate)	\$24,460
2023 periodic contribution unexpended funds <sup>1</sup>	\$10,000
<b>Total available</b>	<b>\$51,209</b>
2023 MC-approved budget	\$44,338
<b>Unobligated funds</b>	<b>\$6,871</b>

<sup>1</sup>The Appendix F1 periodic contribution is made available once every five years. This funding is for a private sector consultant to assist in evaluating the monitoring results. For the current 5-year period (2023-2027), this money was made available through the 2022 AIP process so that work could commence in early 2023.

2023 Project	Carryover <sup>1</sup>	2023 Budget
Clark Fork River Water Quality Monitoring Program	\$13,000	\$31,338
<b>Total</b>	<b>\$13,000</b>	<b>\$31,338</b>
<b>MC-approved budget</b>		<b>\$44,338</b>

<sup>1</sup> Estimated carryover of unexpended, approved funds as of January 1.



## 2023 PROJECT PLAN

### Clark Fork River Water Quality Monitoring Program

#### Project Contact

Paul Kusnierz, Avista, (406) 847-1274, [paul.kusnierz@avistacorp.com](mailto:paul.kusnierz@avistacorp.com)

#### Project History

The Clark Fork River Water Quality Monitoring Program is a continuing project that has been implemented since 1998. The scope and budget for this project are reviewed by the Management Committee (MC) annually.

#### Background

The purpose of this measure is to provide for the systematic, long-term monitoring of nutrients and metals in the lower Clark Fork River as part of the former Tri-State Water Quality Council Monitoring Program. Excessive nutrient loading and metals contamination in the middle and upper portions of the Clark Fork River were cause for water quality concerns in the lower Clark Fork River - Lake Pend Oreille system. Interest in monitoring long-term trends in the quality of water entering and exiting the reservoirs, and a desire for a better understanding of how the reservoirs may be functioning as nutrient or metals “sinks” led to consensus that a systematic, long-term, and coordinated nutrient and metals monitoring program for the lower Clark Fork waters should be implemented.

Data collected at the Cabinet Gorge site are used to estimate nutrient loading to Lake Pend Oreille from the Clark Fork (Montana) watershed. The 2002 Montana/Idaho Border Nutrient Load Agreement ([https://www.deq.idaho.gov/media/468512-water\\_data\\_reports\\_surface\\_water\\_water\\_bodies\\_pend\\_oreille\\_lake\\_nutrient\\_moa.pdf](https://www.deq.idaho.gov/media/468512-water_data_reports_surface_water_water_bodies_pend_oreille_lake_nutrient_moa.pdf)) sets a target for total phosphorus to protect open lake water quality of Lake Pend Oreille and also sets load allocations for Montana and local Idaho sources to meet that target. Therefore, the samples collected below Cabinet Gorge Dam are integral to achieving key objectives of the Clark Fork-Pend Oreille watershed management plan.

At every five-year interval, a review of data is conducted to evaluate water quality trends and the effectiveness of water quality measures in the watershed. These trend reports were completed in 2004, 2008, 2012, and 2019. These evaluations contain analysis of spatial trends in concentration and load, time series trends, statistical comparisons with applicable water quality targets, and an overall interpretation of the water quality health of the three-state basin.

#### Goal

The goal of this project is to provide for systematic, long-term monitoring of nutrients which enter, are retained in, and which pass the Noxon Rapids and Cabinet Gorge Projects.

#### Objectives

1. Provide a long-term dataset for nutrients in the lower Clark Fork River.
2. Collect nutrient data that can be used to estimate nutrient loading to Lake Pend Oreille.

## Tasks

1. Continue to implement, in an *ad-hoc* fashion, the overall nutrient monitoring effort by collecting the water quality constituents listed in Table 1. (Objectives 1 and 2)

Table 1. Water quality constituents collected from the Clark Fork River for this project plan.

Analyte	Method	Project Required Quantitation Limit
Total Phosphorus (TP)	EPA 365.1	2 µg/l
Total Persulfate Nitrogen (TPN)	A4500 N-C	50 µg/l
Soluble Nitrate + Nitrite-Nitrogen (NO <sub>2</sub> +NO <sub>3</sub> -N)	EPA 353.2	2 µg/l
Soluble Ammonia-Nitrogen (NH <sub>3</sub> +NH <sub>4</sub> -N)	EPA 350.1	10 µg/l
Soluble Reactive Phosphorus (SRP)	EPA 365.1	2 µg/l

2. Continue funding and personnel needs for the water quality sampling program which includes monthly March through November sampling and peak flow sampling at CFR Station 30 and monthly July through September sampling at CFR Station 28 and CFR Station 29, QA/QC assistance (contract assistance), sample shipment, and water sample analysis (contract assistance).

Specific methods for this project can be found in MDEQ (2020). (Objectives 1 and 2)

## Work Products

- Estimate of 2022 nutrient loads from the Clark Fork River into Lake Pend Oreille, technical memorandum; final due June 1, 2023
- Annual Project Update: 2022 monitoring report to be prepared by the Clark Fork Coalition; final due October 1, 2023
- Annual Work Summary; due December 1, 2023

## Permitting Requirements

Not applicable for the tasks proposed in this project plan.

Endangered Species Act consultation for this project plan is associated with the 2019 Biological Opinion on the effects of continued operation of the Clark Fork Hydroelectric Project on Bull Trout and designated Bull Trout critical habitat (BiOp). This project plan is consistent with the analyses and conclusions contained in the 2019 BiOp and will adhere to all appropriate Terms and Conditions designed to reduce the extent and effects of incidental take on Bull Trout. No incidental take of Bull Trout is anticipated as a result of this project plan; therefore, no take reporting is required.

## Cultural/Historic Resource Review

Not applicable for the tasks proposed in this project plan, there are no ground and/or vegetation disturbing activities, or proposed impacts to cultural/historic resources.

### Benefit to the Resource

This project is the direct implementation of Appendix F1 under the Clark Fork Settlement Agreement (Avista 1999). It also provides data that the states of Montana and Idaho can use in implementation of the Federal Clean Water Act.

Idaho water quality standards are based upon support of beneficial uses, and in particular “Cold Water Aquatic Life.” Continued water quality monitoring is critical to evaluating the health of all native fisheries in the lower Clark Fork River and Lake Pend Oreille.

### Budget

Item	Estimated Carryover <sup>1</sup>	2023 Budget Request
Technician (0.04 FTE)	\$1,000	\$4,000
Biologist (0.01 FTE)	\$0	\$1,500
Supplies	\$1,000	\$1,500
Laboratory Analysis	\$0	\$10,000
QA/QC, Nutrient Load Evaluation, Meetings and Technical Consultation	\$1,000	\$14,338
2018–2022 5-year trends analysis	\$10,000	\$0
<b>Total</b>	<b>\$13,000</b>	<b>\$31,338</b>
<b>Anticipated Expenditures</b>		<b>\$44,338</b>

<sup>1</sup> Estimated carryover of unexpended, approved funds as of January 1.

### Literature Cited

Avista Corporation. 1999. Application for New License, Volume III Settlement Agreement.  
Avista Corporation. Spokane, Washington.

MDEQ (Montana Department of Environmental Quality). 2020. Clark Fork River-Pend Oreille Watershed Water Quality Monitoring Program from Headwaters to Below Cabinet Gorge Dam – Quality Assurance Project Plan (QAPP), Update for 2018-2022 Sampling Program. Montana Department of Environmental Quality: Helena, Montana.



## **2023 ANNUAL IMPLEMENTATION PLAN SUMMARY – APPENDIX F2**

### **Clark Fork Project, FERC No. 2058 Cabinet Gorge and Noxon Rapids Hydroelectric Developments**

#### **Title**

Monitoring of Noxon Reservoir Stratification and Mobilization of Sediment Nutrients/Metals

#### **Implementation Staff Lead**

Paul Kusnierz, Avista, (406) 847-1274, [paul.kusnierz@avistacorp.com](mailto:paul.kusnierz@avistacorp.com)

#### **Background**

The purpose of this monitoring effort is to collect data concerning the potential for nutrients or metals deposited in Noxon Reservoir sediments to remobilize back into the water column during periods of reservoir stratification.

Elevated nutrient levels and metals contamination are high-priority water quality concerns within the Clark Fork River – Lake Pend Oreille (CFR-LPO) system. The available information on sediment, nutrient, and metals transport and deposition in the CFR-LPO system indicates that Noxon Reservoir acts as a beneficial sediment, nutrient, and metals “sink” of varying efficiency, limiting the degree to which they are transported downstream into Lake Pend Oreille. The Water Resources Work Group, now known as the Water Resources Technical Advisory Committee (WRTAC), identified an information need related to whether low oxygen conditions in deeper waters of the reservoir during the rare periods of reservoir stratification might allow for the remobilization of nutrients or metals previously deposited and retained in reservoir sediments. Therefore, it was decided that, in conjunction with the Tri-State Water Quality Council (TSWQC) monitoring program, a better understanding of the stratification related limnologic processes in Noxon Reservoir would further improve the overall understanding and management of water quality issues, concerns, and needs in the CFR-LPO system. Appendix F2 called for the monitoring to be conducted three times during the term of the FERC license.

As per this appendix, average daily inflows to Noxon Reservoir are monitored, via the USGS website, during the July 1 through September 30 period. If outflow from Noxon is equal to or less than 8,000 cfs for at least 4 out of 7 consecutive days during the noted time period, water column monitoring will commence. This monitoring “trigger” was first reached on August 22, 2000. Avista contracted with PBS&J, Inc. (formerly Land & Water Consulting, Inc.), the same contractor involved in the overall TSWQC monitoring program, to: a) monitor reservoir stratification, b) develop water sampling protocols, c) perform analytical quality assurance and quality controls, and d) perform data management and reporting. Reservoir water column monitoring continued throughout the month of September 2000. The reservoir did thermally stratify; however, low dissolved oxygen conditions were not detected at depth, the trigger for intensive nutrient and metals sampling.

Based upon the 2000 sampling effort, and considering the low flow situation in 2001, a similar sampling effort began on July 26, 2001, before the predetermined flow trigger was met. This

2001 sampling effort detected both thermal and oxygen stratification, and therefore nutrient and metals samples were taken, and subsequently analyzed (Noxon Rapids Reservoir, Fall 2001 Stratification Monitoring Results, September 2002, Land & Water Consulting, Inc.). Listed below are several of PBS&J's conclusions:

- The potential for widespread mobilization of nutrients or metals from reservoir sediments due to reducing conditions associated with stratification appeared to be low.
- Ongoing monthly surface water monitoring by the Tri-State Water Quality Council will continue to document upstream and downstream differences in nutrient concentrations at the Noxon HED, thus independent summer stratification monitoring by Avista for nutrient components is probably unnecessary.
- Metals mobilization from reservoir sediments did not appear to be an issue of concern in Noxon Rapids HED. Consequently, further sampling for metals does not appear justified and the Avista stratification monitoring for metals effects should be discontinued.

As per this appendix, collection of additional data, concerning the potential for nutrients or metals deposited in Noxon Reservoir sediments to remobilize back into the water column during periods of reservoir stratification, was to occur as many as three different years of stratified reservoir conditions over the term of the new license. Reservoir sampling occurred in 2000 and 2001. In 2023, stratification sampling will occur in Noxon Reservoir if outflow from Noxon Rapids Dam is less than or equal to 8,000 cfs on 2 out of 7 consecutive days when inflow and flow forecasts indicate that the average daily outflow of equal to or less than 8,000 cfs for 4 out of 7 consecutive days will be met. The trigger must be met between July 1 and August 7.

### **2023 Project Plans**

1. Monitoring of Noxon Reservoir Stratification and Mobilization of Sediment Nutrients/Metals

### **Work Products**

*Monitoring of Noxon Reservoir Stratification and Mobilization of Sediment Nutrients/Metals*

- Annual Work Summary; due December 1, 2023
- Comprehensive Project Report (if stratification sampling occurs); final due May 1, 2024

As approved by the Management Committee on 3/14/2023

## 2023 Appendix F2 Budget

Budget Summary	
2023 contribution (estimate) <sup>1</sup>	\$71,107
<b>Total available</b>	<b>\$71,107</b>
2023 MC-approved budget	\$71,107
<b>Unobligated funds</b>	<b>\$0</b>

<sup>1</sup> Estimated costs are projections made now; however, Avista will pay the actual costs as approved by the Management Committee.

2023 Project	Carryover <sup>1</sup>	2023 Budget
Monitoring of Noxon Reservoir Stratification and Mobilization of Sediment Nutrients/Metals	\$55,107	\$16,000
<b>Total</b>	<b>\$55,107</b>	<b>\$16,000</b>
<b>MC-approved budget</b>		<b>\$71,107</b>

<sup>1</sup> Estimated carryover of unexpended, approved funds as of January 1.



## 2023 PROJECT PLAN

### Monitoring of Noxon Reservoir Stratification and Mobilization of Sediment Nutrients/Metals

#### Project Contact

Paul Kusnierz, Avista, (406) 847-1274, [paul.kusnierz@avistacorp.com](mailto:paul.kusnierz@avistacorp.com)

#### Project History

This is a continuing project that has been implemented since 1999 with stratification sampling occurring in 2000 and 2001. The scope and budget for this project are reviewed by the Management Committee (MC) annually. We are requesting that the project plan for the stratification sampling be carried forward in 2023 with a \$16,000 increase in budget to accommodate increased equipment rental prices and contractor rates. In 2017, Avista contracted with HydroSolutions, Inc to perform the work outlined in this project plan. The quality assurance project plan for the stratification sampling was completed in September of 2017 (Hydrosolutions 2017). The flow trigger was not met by the required time period in any year 2017–2022 and as a result no stratification sampling occurred. The sampling will occur in 2023 if the flow trigger is met.

#### Background

Appendix F2 of the Clark Fork Settlement Agreement (Avista 1999) called for stratification monitoring of Noxon Reservoir to be conducted three times during the term of FERC license no. 2058. The purpose of this monitoring effort is to collect data concerning the potential for nutrients or metals deposited in Noxon Reservoir sediments to remobilize back into the water column during periods of reservoir stratification. Sampling for this appendix occurred in 2000 and 2001 with the data suggesting that there is low potential for widespread mobilization of nutrients or metals from Noxon Reservoir sediments (Land & Water 2002).

Data collected in 2000 suggested that stratification of Noxon Reservoir occurs prior to the flow trigger (outflow from Noxon Rapids Dam is equal to or less than 8,000 cfs for at least 4 out of 7 consecutive days) being met. In keeping with sampling performed in 2001, when outflow from Noxon Rapids Dam is equal to or less than 8,000 cfs for at least 2 out of 7 consecutive days when inflow and flow forecasts indicate that the average daily outflow of equal to or less than 8,000 cfs for 4 out of 7 consecutive days will be met, reservoir stratification sampling will commence. The outflow value of equal to or less than 8,000 cfs must be due to flow conditions and not due to work at one of the dams or other non-flow-related event. In 2017, the timing requirements for the flow trigger to initiate stratification sampling were changed by the MC via Consent Mail. This change specified that the time period during which the flow trigger must occur to commence stratification sampling will be from July 1 to August 7. If the third stratification sampling event has not occurred within 10 years prior to the FERC license expiring, the Water Resources Technical Advisory Committee will re-evaluate having this constraint placed on the sampling trigger and make change recommendations to the MC.

In 15 of the 21 years since 2001, the flow trigger (outflow from Noxon Rapids Dam equal to or less than 8,000 cfs for at least 4 out of 7 consecutive days during July 1 through September 30) has been reached. This project plan calls for stratification sampling if the flow trigger is expected

to be achieved in 2023. If stratification sampling yields a surface to bottom temperature differential greater than 5 °C and dissolved oxygen concentration less than 4.0 mg/l near the bottom, nutrients and metals sampling will occur as well.

### **Goal**

The goal of this project is to perform the final of the three stratification monitoring events called for in Appendix F2 of the Clark Fork Settlement Agreement.

### **Objectives**

1. Document whether mobilization of nutrients and metals occurs in Noxon Reservoir when low flow, temperature, and dissolved oxygen triggers are achieved.

### **Methods**

Outflow from Noxon Rapids Dam will be monitored from July 1 through September 30. Reservoir stratification sampling will first occur within 7 days of flow being equal to or less than 8,000 cfs for at least 2 out of 7 consecutive days. Stratification sampling will occur every 10-14 days thereafter with no more than 2 sampling events occurring each month. This sampling will continue until Noxon Reservoir average daily outflow increases to greater than 12,000 cfs for 4 out of 7 consecutive days or September 30, whichever comes first. This will result in 0–6 stratification sampling events occurring depending on when and if the flow trigger is reached in 2023.

Sampling will consist of collecting vertical profiles of water temperature, dissolved oxygen, pH, and conductivity and a Secchi disk depth at three sites on Noxon Reservoir in 2023 (T27A, RRxing, and MT Hwy 200; Figure 1). These three sites were among five established during reservoir stratification sampling in 2000 (Land & Water 2001) and were sampled again in 2001 (Land & Water 2002). These three sites have been specifically selected for this project because they are the three deepest, had the greatest temperature differentials in 2001 sampling and were the only three to have dissolved oxygen less than 4.0 mg/l in 2001 (Land & Water 2002). This third sampling event will be the final sampling needed to fulfill Avista's mitigation obligation for Clark Fork Settlement Agreement Appendix F2 and FERC License Article 410.

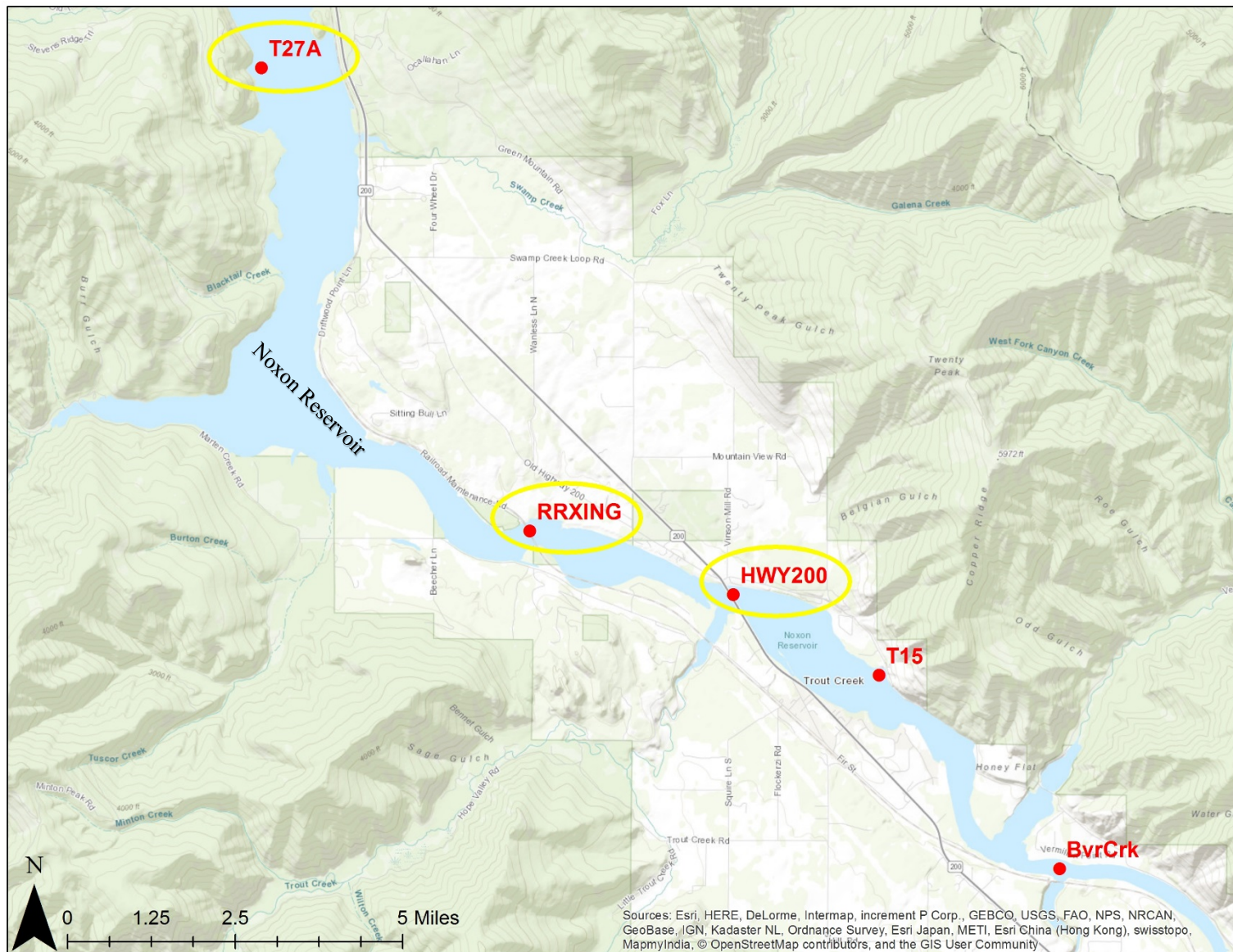


FIGURE 1. Five sites established for reservoir stratification sampling in 2000. The three sites within the yellow ovals are proposed for sampling in 2023 if the flow trigger occurs.

When reservoir stratification monitoring at a site yields a surface to bottom temperature differential greater than 5 °C and dissolved oxygen concentration less than 4.0 mg/l near the bottom, nutrients and metals samples will also be collected. No more than two water sampling efforts will be conducted at a station in the same year.

Nutrients and metals samples (Table 1) will be collected by a contractor from two water depths:

- 1) A grab sample at 2 m above the bottom; and
- 2) A composite sample from within the near surface zone equal to twice the observed Secchi depth.

These samples will then be shipped to a laboratory for analysis.

TABLE 1. Proposed analyte list for 2023 nutrient and metals sampling.

Analyte <sup>1</sup>	Method <sup>2</sup>	Required Reporting Limit (µg/l) <sup>3</sup>
Total phosphorus	EPA 365.1	3
Soluble Reactive Phosphorus	EPA 4500-P-G	2
Total Persulfate Nitrogen	SM 4500-N(C)	40
Total Ammonia Nitrogen	EPA 350.1	50
Nitrate + Nitrite-Nitrogen	EPA 353.2	10
Arsenic	EPA 200.8	1
Cadmium	EPA 200.8	0.03
Copper	EPA 200.8	1
Lead	EPA 200.8	0.3
Zinc	EPA 200.7	8
Chlorophyll-a	A 10200H 2	Not listed

<sup>1</sup> Metals samples will be collected for both total recoverable and dissolved fractions.

<sup>2</sup> With the exception of soluble reactive phosphorus these are the preferred methods listed in MDEQ (2012).

<sup>3</sup> With the exception of soluble reactive phosphorus these are the required reporting limits listed in MDEQ (2012).

## Work Products

- Annual Work Summary; due December 1, 2023
- Comprehensive Project Report (if stratification sampling occurs); final due May 1, 2024

## Permitting Requirements

Not applicable for the tasks proposed in this project plan.

Endangered Species Act consultation for this project plan is associated with the 2019 Biological Opinion on the effects of continued operation of the Clark Fork Hydroelectric Project on Bull Trout and designated Bull Trout critical habitat (BiOp). This project plan is consistent with the analyses and conclusions contained in the 2019 BiOp and will adhere to all appropriate Terms and Conditions designed to reduce the extent and effects of incidental take on Bull Trout. No incidental take of Bull Trout is anticipated as a result of this project plan; therefore, no take reporting is required.

### Cultural/Historic Resource Review

Not applicable for the tasks proposed in this project plan, there are no ground and/or vegetation disturbing activities, or proposed impacts to cultural/historic resources.

### Benefit to the Resource

This project is the direct implementation of Appendix F2 under the Clark Fork Settlement Agreement (Avista 1999). It also provides data that the states of Montana and Idaho can use in implementation of the Federal Clean Water Act.

Idaho and Montana water quality standards are based upon support of beneficial uses, and in particular “Cold Water Aquatic Life.” In addition there are fish consumption advisories for both Noxon and Cabinet Gorge reservoirs related to metals. A third year of stratification sampling in Noxon Reservoir will further clarify whether anoxic conditions resulting from stratification in Noxon Reservoir result in the release of nutrients and metals from reservoir sediments.

Understanding the dynamics of this potential occurrence is important to evaluating the health of fishes and other aquatic life in the lower Clark Fork River and Lake Pend Oreille.

### Budget

Item	Estimated Carryover <sup>1</sup>	2023 Budget Request
Contractor Stratification Sampling, Laboratory Analysis, and Reporting	\$55,107	\$16,000
<b>Total</b>	\$55,107	\$16,000
<b>Anticipated Expenditures</b>		\$71,107

<sup>1</sup> Estimated carryover of unexpended, approved funds as of January 1.

### Literature Cited

Avista Corporation. 1999. Application for New License, Volume III Settlement Agreement.

Avista Corporation. Spokane, Washington.

Hydrosolutions. 2017. Noxon Reservoir Stratification Sampling: Sampling and Analysis Plan Quality Assurance Project Plan. Hydrosolutions: Helena, Montana.

Land & Water (Land & Water Consulting, Inc.). 2001. Avista Noxon Reservoir, Fall 2000 Stratification Monitoring Results. Land & Water Consulting, Inc.: Missoula, Montana.

Land & Water (Land & Water Consulting, Inc.). 2002. Noxon Rapids Reservoir, Fall 2001 Stratification Monitoring Results. Land & Water Consulting, Inc.: Missoula, Montana.

MDEQ (Montana Department of Environmental Quality). 2012. Water Quality Planning Bureau Field Procedures Manual for Water Quality Assessment Monitoring. Montana Department of Environmental Quality: Helena, Montana.



## **2023 ANNUAL IMPLEMENTATION PLAN SUMMARY – APPENDIX F3**

### **Clark Fork Project, FERC No. 2058 Cabinet Gorge and Noxon Rapids Hydroelectric Developments**

#### **Title**

Aquatic Organism Tissue Analysis

#### **Implementation Staff Lead**

Paul Kusnierz, Avista, (406) 847-1274, [paul.kusnierz@avistacorp.com](mailto:paul.kusnierz@avistacorp.com)

#### **Background**

The purpose of this measure is to provide for a commitment on the part of Avista to fund the collection and analysis of fish or other aquatic organism tissue samples from Noxon or Cabinet Gorge reservoirs for the presence of heavy metals or other substances of concern. While the Water Resources Technical Advisory Committee (WRTAC) agreed that tissue analysis was not warranted in reservoir waters on a routine basis, they were interested in seeing metals analysis included in the former Tri-State Water Quality Council's monitoring along the lower Clark Fork River (provided for in Appendix F1). Therefore, this appendix retains a commitment from Avista to fund tissue analysis should public health or other concerns arise in the future.

In 2004, and in response to a previous WRTAC request, an annotated bibliography on Clark Fork River-Lake Pend Oreille bed sediment and fish tissue information was produced and distributed. Information from the state of Montana pertaining to acceptable toxin levels in fish tissue was also made available. Also in 2004, fish were collected during the fall Noxon Reservoir sampling conducted through Appendix B activities and the 2003/2004 experimental trap netting operations on Lake Pend Oreille conducted through Appendix F5 activities. Based upon results (non-Clark Fork Settlement Agreement funded) obtained in 2005, both Montana Fish, Wildlife, and Parks (MFWP) and Idaho Department of Health and Welfare issued fish consumption advisories to the angling public based upon fish tissue mercury and/or PCB levels.

During the fall 2010 reservoir sampling conducted through Appendix B activities, MFWP staff collected fish and crayfish tissue samples from both Noxon and Cabinet Gorge reservoirs for mercury analysis. Based upon results (non-Clark Fork Settlement Agreement funded) obtained in 2011, MFWP updated fish consumption advisories (see: [fwp.mt.gov](http://fwp.mt.gov)) to the angling public based upon fish and crayfish tissue mercury and/or PCB levels.

During spring 2014, MFWP and Avista staff collected Northern Pike, Walleye, Smallmouth Bass, and Yellow Perch tissue samples from Noxon Reservoir for PCB's dioxin and furan analysis, with a final report produced by MFWP in 2015.

During the spring and fall 2015 reservoir sampling, MFWP and Avista staff again collected Northern Pike, Walleye, Smallmouth Bass and Yellow Perch tissue samples from both Noxon and Cabinet Gorge reservoirs for mercury (Hg) analysis, with a final report being produced in December, 2017.

## 2023 Project Plans

1. Noxon and Cabinet Gorge Reservoirs Fish Mercury Study

## Work Products

### *Noxon and Cabinet Gorge Reservoirs Fish Mercury Study*

- Annual Work Summary; due December 1, 2023
- Lab report on fish tissue analysis; final due May 1, 2023
- Comprehensive Project Report; final due November 1, 2023
- Incorporation of results into Montana's fish consumption guidelines; final due May 1, 2023 (if Montana's new online system is available)

## 2023 Appendix F3 Budget

Budget Summary	
Unexpended funds	\$15,000
2023 contribution (periodic) <sup>1</sup>	\$0
<b>Total available</b>	<b>\$15,000</b>
2023 MC-approved budget	\$10,000
<b>Unobligated funds</b>	<b>\$5,000</b>

<sup>1</sup> Avista will pay the actual costs in an amount not to exceed \$15,000 during any five-year period, as defined in the CFSA. The \$15,000 for the current five-year cycle was first made available in 2020.

2023 Project	Carryover <sup>1</sup>	2023 Budget
Noxon and Cabinet Gorge Reservoirs Fish Mercury Study	\$10,000	\$0
<b>Total</b>	<b>\$10,000</b>	<b>\$0</b>
<b>MC-approved budget</b>		<b>\$10,000</b>

<sup>1</sup> Estimated carryover of unexpended, approved funds as of January 1.

## **2023 PROJECT PLAN**

### **Noxon and Cabinet Gorge Reservoirs Fish Mercury Study**

#### **Project Contacts**

Jason Blakney, Montana Fish, Wildlife and Parks (MFWP), (406) 382-3033, [jblakney@mt.gov](mailto:jblakney@mt.gov) and

Trevor Selch, MFWP, (406) 444-5686, [tselch@mt.gov](mailto:tselch@mt.gov)

#### **Project History**

This is a continuing project that has been implemented on a recurring basis with funding approved by the Management Committee (MC) in 2005, 2010, 2014, and 2015. The scope and budget for this project are reviewed by the MC each time the project is submitted. This project was not implemented in 2020 due to COVID-19 concerns preventing gillnetting of Noxon and Cabinet Gorge reservoirs. It was implemented as planned in 2021.

#### **Background**

The reservoirs on the lower Clark Fork River are “sinks” for contaminants, largely mercury (Hg). Elevated Hg levels found in fish are due to many factors, including the physio-chemical dynamics of the reservoirs, and the food habits and growth rates in fish. Unfortunately, Noxon and Cabinet Gorge reservoirs contain fish with some of the highest Hg concentrations in Montana. Analyses from 2015 found Hg concentrations as high as 2.6 ppm in large Walleye (Selch 2017). Any fish Hg concentration greater than 1.18 ppm is considered unsafe for consumption for women and children.

Sampling waterbodies that contain fish with elevated Hg concentrations routinely is important to understand the risks to human health from fish consumption and assess the variability that occurs between sampling events. Mercury accumulation in fishes is influenced primarily by their diet. As a result, seasonal and ontogenetic changes in diet composition and prey contaminant levels can have an important influence on Hg concentration in predatory fishes. Typically, as young, piscivorous fish switch from small, invertebrate prey to larger, vertebrate prey (e.g., other fishes), their Hg consumption (and accumulation) increases. Some populations of piscivorous fish (e.g., Walleye, bass) rely heavily on benthic sources throughout their life cycle particularly when fish prey are limited. In these cases, Hg concentrations can be variable, depending on prey contaminant levels and consumption rates by the predator.

Seasonal-related variation in Hg concentration of fishes can have important implications for standardized monitoring efforts and fish consumption advisories. Spring-spawning fish allocate the majority of their energy into reproductive growth during the fall and winter months. Mercury consumed during this time period is stored in the muscle tissue (protein) with no dilution occurring through somatic growth, often resulting in elevated spring Hg concentrations compared to summer and fall. Thus, seasonal patterns of Hg in fish can be highly variable between systems and a single annual Hg sample is not representative of the population throughout the year and should be accounted for when classifying and comparing lakes, or when developing standardized sampling protocols.

Noxon Walleye generally had higher Hg concentrations in 2005 and 2015 than in 2010 (Figure 1). However (and based on a smaller sample size), Cabinet Gorge Walleye had higher concentrations in 2010. Northern Pike samples were more consistent over time, although Hg concentrations in the two largest size groups declined in 2015. Additionally, spring and fall samples were collected for the first time in 2015. In 14 of the 17 species/size groups which were compared, between season mean values were higher in the spring (Selch 2017). However, only in four of those groups would more restrictive guidelines have resulted.

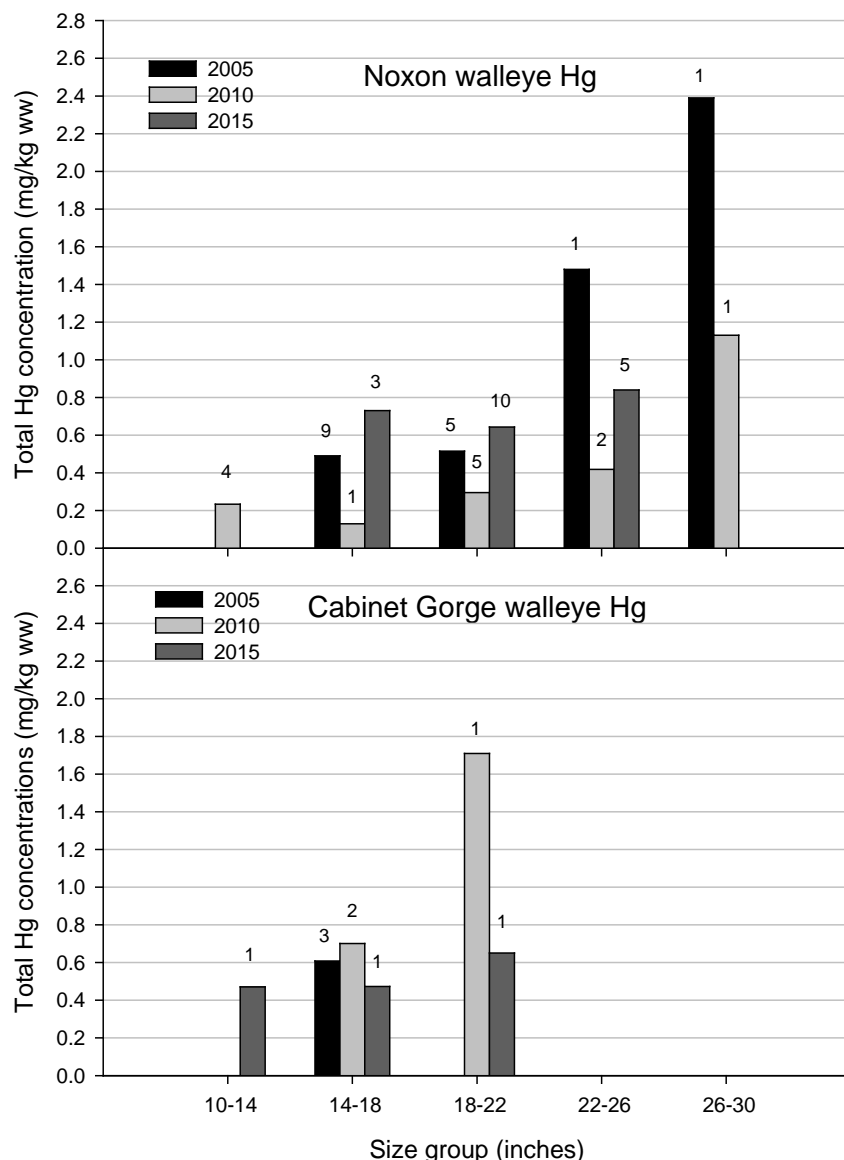


FIGURE 1. Mean fall total mercury (Hg) concentrations from Noxon (upper) and Cabinet Gorge (lower) reservoirs Walleye for five, four-inch size groups. Numbers above each bar represent the fish sample size.

## **Goal**

The goal of this project is to document Hg concentrations in different size groups of popular sport fish in Noxon and Cabinet Gorge reservoirs.

## **Objectives**

1. Collect fish from Noxon and Cabinet Gorge reservoirs for Hg testing.

## **Methods**

The field season of 2020 represented five-years since the last Hg sample events on Noxon and Cabinet Gorge reservoirs. However, sampling did not occur in 2020. Sampling all available size groups of Smallmouth Bass, Northern Pike, Walleye, and Yellow Perch in the fall 2021 would allow us to compare changes in fish Hg concentrations over a 15-year period. Most fish will be collected during routine fall gillnetting in both reservoirs. We will also opportunistically collect fish during spring electrofishing to continue to evaluate some seasonal differences.

Specific targets for this project are as follows:

- (1) Collect (10–15) Northern Pike from each of 6 size groups, including 10–14, 14–18, 18–22, 22–26, 26–30, and 30+ inches. Within each size group, fish muscle tissues will be excised and composited in groups for analysis (3 composites of 5 fish).
- (2) Collect (10–15) Smallmouth Bass from each of 3 size groups, including 10–14, 14–18, and 18–22 inches. Within each size group, fish muscle tissues will be excised and composited in groups for analysis (3 composites of 5 fish).
- (3) Collect (10–15) Walleye from each of 5 size groups, including 10–14, 14–18, 18–22, 22–26, 26–30 inches. Within each size group, fish muscle tissues will be excised and composited in groups for analysis (3 composites of 5 fish). Attempts will be made to capture Largemouth Bass of similar size groups to compare between the two species, given their diets are likely not analogous for at least portions of the year. However, attempts to capture an adequate number of Largemouth Bass via electrofishing and using gillnets have been unsuccessful in the past.
- (4) Collect (10–15) Yellow Perch from each of 2 size groups, including 6–10, and 10–14 inches. Within each size group, fish muscle tissues will be excised and composited in groups for analysis (3 composites of 5 fish).

## **Work Products**

- Annual Work Summary; due December 1, 2023
- Lab report on fish tissue analysis; final due May 1, 2023
- Comprehensive Project Report; final due November 1, 2023
- Incorporation of results into Montana's fish consumption guidelines; final due May 1, 2024 (if Montana's new online system is available)

## **Permitting Requirements**

Not applicable for the tasks proposed in this project plan. Fish will be collected during existing MFWP sampling.

Endangered Species Act consultation for this project plan is associated with the 2019 Biological Opinion on the effects of continued operation of the Clark Fork Hydroelectric Project on Bull

Trout and designated Bull Trout critical habitat (BiOp), and the USFWS-MFWP Cooperative Agreement pursuant to Section 6 of the Act. This project plan is consistent with the analysis and conclusions contained in the 2019 BiOp and the USFWS- MFWP Cooperative Agreement, and will adhere to all appropriate Terms and Conditions designed to reduce the extent and effects of incidental take on Bull Trout. Incidental take reporting for this project plan will be included in the annual Biological Opinion report as required by Term and Conditions 15–18 of the 2019 Incidental Take Statement, as well as MFWP’s annual Section 6 report to the USFWS.

### Cultural/Historic Resource Review

Not applicable for the tasks proposed in this project plan, there are no ground and/or vegetation disturbing activities, or proposed impacts to cultural/historic resources.

### Benefit to the Resource

Sampling waterbodies that contain fish with elevated Hg concentrations recurrently (e.g., every five years) is important to understand the risks to human health from fish consumption and assess the variability that occurs between sampling events. The reservoirs created by Avista’s dams have created mercury “sinks” which have exacerbated the concentrations of these contaminants. They have also enhanced habitats for non-native piscivores which are typically sought after for food, but which accumulate contaminants at a high rate. Appendix F3 of the Clark Fork Settlement Agreement was created specifically for this purpose.

### Budget

The maximum total cost if all size groups are sampled in the spring and fall would be \$10,000. In most years, only about two-thirds of those size groups have been filled, so the actual cost may be less.

Item	Estimated Carryover <sup>1</sup>	2023 Budget Request
Lab analysis of 50–100 composites Yellow Perch, Northern Pike, Walleye, and Smallmouth Bass from Noxon and Cabinet Gorge reservoirs <sup>2</sup>	\$10,000	\$0
<b>Total</b>	<b>\$10,000</b>	<b>\$0</b>
<b>Anticipated Expenditures</b>		<b>\$10,000</b>

<sup>1</sup> Estimated carryover of unexpended, approved funds as of January 1.

<sup>2</sup> Largemouth Bass may also be incorporated into this lab analysis if an adequate sample size can be obtained.

### Literature Cited

Selch, T. 2017. Mercury and Selenium Assessment in Fish from Noxon Rapids and Cabinet Gorge Reservoirs. Project Completion Report. Aquatic Organism Tissue Analysis, Appendix F3. Prepared for Avista and Montana Fish, Wildlife and Parks.

## 2023 ANNUAL IMPLEMENTATION PLAN SUMMARY – APPENDIX F4

### Clark Fork Project, FERC No. 2058 Cabinet Gorge and Noxon Rapids Hydroelectric Developments

#### **Title**

Water Quality Protection and Monitoring Plan for Maintenance, Construction, and Emergency Activities

#### **Implementation Staff Lead**

Eric Oldenburg, Avista, (406) 847-1290, [eric.oldenburg@avistacorp.com](mailto:eric.oldenburg@avistacorp.com)

#### **Background**

In the past, greater than normal reservoir drawdown and/or restricted discharge at the Cabinet Gorge Project have occasionally been required during emergency situations (e.g., drowning or a vehicle in the river) or for maintenance purposes (e.g., tailrace and dam inspections). In discussing the types of activities that have required unusual project operations in the past or that might require them in the future, the WRTAC agreed that a standardized set of policies and procedures for dealing with these activities would help to ensure that impacts to water quality or aquatic resources are minimized or avoided.

The purpose of this measure was to provide for the development and implementation of a Water Quality Protection and Monitoring Plan for Maintenance, Construction, and Emergency Activities (Plan). The goal of the Plan is to minimize or eliminate negative effects associated with project related maintenance, construction, and emergency activities on Clark Fork River water quality and associated resources. The intent was to have clearly defined policies and plans for notification of, and consultation with, resource agencies prior to undertaking planned maintenance or construction activities that require a change from normal project discharge or reservoir levels (i.e., other than as provided for in the General Operating Limits for Noxon Rapids, and Cabinet Gorge, Project Operations Package PM&E, Settlement Agreement Appendix T). The Plan was also to include standardized agency notification guidelines, as well as water quality and resource protection and monitoring actions that will be implemented in the event of unforeseen and sudden changes to project operations due to emergency or other unforeseen circumstances.

After nearly 16 months of work by Avista staff and involved WRTAC members, the Management Committee (MC) approved the final Plan in September of 2001. As part of Avista's required annual reporting process, the MC approved Plan was submitted to FERC on April 15, 2002, which also began Plan implementation.

In 2010, Avista believed it was time to revise the original 2002 Plan and the MC concurred at their March 2010 meeting. At their September 2010 meeting, the WRTAC decided to have the original WRTAC entities (USFS, Kalispel Tribe, IDFG, MFWP, Idaho DEQ, and Montana DEQ) that worked on producing the first plan review the 2010 final draft Plan. The MC approved the revised 2010 Plan via consent mail on December 3, 2010. The FERC approved the 2010 Plan by Order dated June 23, 2011.

Implementation of the Water Quality Protection and Monitoring Plan for Maintenance, Construction, and Emergency Activities is limited to a small number of tasks and all costs are borne by Avista. Thus, all required elements are listed below and a formal Project Plan is not necessary.

### 2023 Project Plans

- Avista Hydro Generation and Production and Environmental Affairs staff will regularly communicate to review and discuss planned maintenance and/or construction activities that may affect Cabinet Gorge minimum flow and/or reservoir elevation general operating limits.
- Pursuant to USFS 4(e) Condition 6 in Avista's FERC license, Avista will identify those activities which may affect recreational use or access and provide notification no less than 60 days prior to construction activities, 30 days prior to maintenance activities, and as soon as possible for emergency activities. Proper implementation of the Water Quality Protection and Monitoring Plan ensures this condition will be met.
- In the event that standard operating procedures for the Clark Fork Project (minimum flow and/or reservoir elevations) are interrupted, implement the MC approved, Water Quality Protection and Monitoring Plan for Maintenance, Construction, and Emergency Activities at the Cabinet Gorge and Noxon Rapids HEDs, including its protocol for agency notification, monitoring, and Best Management Practices.
- Annually update the designated contacts for the Plan, as needed.

### Work Products

- There are no reports or work products associated with the Water Quality Protection and Monitoring Plan for Maintenance, Construction, and Emergency Activities.

### 2023 Appendix F4 Budget

Budget Summary	
Unexpended funds	\$0
2023 contribution	\$0
<b>Total available<sup>1</sup></b>	<b>\$0</b>
2023 MC-approved budget	\$0
<b>Unobligated funds</b>	<b>\$0</b>

<sup>1</sup> Costs associated with monitoring and best management practice implementation will be borne by Avista.

## **2023 ANNUAL IMPLEMENTATION PLAN SUMMARY – APPENDIX F5**

### **Clark Fork Project, FERC No. 2058 Cabinet Gorge and Noxon Rapids Hydroelectric Developments**

#### **Title**

Dissolved Gas Supersaturation Control, Mitigation, and Monitoring

#### **Implementation Staff Leads**

Paul Kusnierz, Avista, (406) 847-1274, [paul.kusnierz@avistacorp.com](mailto:paul.kusnierz@avistacorp.com) and  
Ken Bouwens, Idaho Department of Fish and Game (IDFG), (208) 770-3766,  
[ken.bouwens@idfg.idaho.gov](mailto:ken.bouwens@idfg.idaho.gov)

#### **Background**

The purpose of this measure is to provide for the study, control, mitigation, and monitoring of gas supersaturation and the associated impacts to biological resources in the lower Clark Fork River-Lake Pend Oreille (LCFR-LPO) system related to spill at the Clark Fork Projects. In 1999, this measure committed Avista to multiple actions and activities for achieving this purpose, including: 1) selective use of specific spillways at both Noxon Rapids and Cabinet Gorge dams, 2) a comprehensive total dissolved gas (TDG) monitoring program, 3) intensive study of the effects of gas supersaturation to fish inhabiting the LCFR-LPO system, 4) a comprehensive feasibility analysis of structural alterations or other engineering alternatives for reducing excessive TDG levels due to spill at Cabinet Gorge Dam, and 5) development and implementation of a Gas Supersaturation and Control Program that addresses the issue of excessive TDG levels downstream of the Cabinet Gorge Dam.

Through 2002, Avista worked with IDFG, Idaho DEQ, Montana DEQ, Idaho Rivers United, the Kalispel Tribe and the USFWS on all aspects of this Program, including physical and biological TDG monitoring efforts and interpretation of results, engineering alternatives and subsequent engineering options, and continued efforts on the finalization of the Gas Supersaturation and Control Program (GSCP). As per the requirements of this Program, in December of 2002 Avista submitted a proposed GSCP to Idaho DEQ for their "... review, modification, and approval." As per other FERC requirements, the proposed GSCP was also submitted to the USFWS and FERC. Per an agreement dated February 10, 2004, Idaho DEQ approved the GSCP, as did the USFWS by letter dated February 25, 2004. Avista began implementation of the GSCP in 2004, even though FERC did not issue the order approving the GSCP until January 1, 2005.

The GSCP included the continued annual TDG monitoring and results reporting at the three permanent TDG monitoring locations, the phased construction of two water conveyance tunnels, and an associated annual mitigation program. The original river bypass tunnels used at the Cabinet Gorge site were planned to be reconstructed into the water conveyance tunnels, thus decreasing the level of spill.

At an August 2007 Workshop at ENSR's labs with the experts from the Project Design Team, the Gas Supersaturation Subcommittee (GSSC) determined by consensus that performance indicators demonstrated that the construction and operation of the bypass tunnel would not meet

the TDG performance levels in the Clark Fork River below Cabinet Gorge Dam anticipated in the GSCP. Design development results indicated there was a ‘fatal flaw’ in the ‘final control and default strategies’ and the tunnels should not be reconstructed. The September 2008 final Design Development Report for the Cabinet Gorge Bypass Tunnels Project documented these final results. The Management Committee agreed with the GSSC conclusion that the GSCP needed to be revised and directed the GSSC to amend the GSCP, such that alternatives were selected that incrementally reduced, offset, or otherwise mitigated TDG due to spill at Cabinet Gorge Dam. At their September 2009 meeting, the Management Committee approved the Final 2009 Addendum to the GSCP, with subsequent FERC approval by Order dated February 19, 2010.

The GSCP Addendum abandoned the original concept of reopening the two diversion tunnels and instead requires Avista to evaluate and, if feasible over the next few years, construct a variety of smaller-capacity options to abate TDG. Feasibility studies on the top five abatement alternatives were completed in 2011, and based upon those studies Avista initiated work on the top two alternatives, power generation on the existing bypass tunnels and spillway modifications. An engineering study for the power generation on the existing bypass tunnel was completed in 2013.

The spillway modification project involves modifying gate bays on the spillway by adding precast-concrete roughness elements (baffle blocks) on the spillway ogee downstream of the gate, configured for maximum effectiveness at a fixed gate opening of approximately 6,000 cfs. A five foot long flip bucket extension to the existing crest was also added. In 2013, a field prototype for the spillway 2 modifications was tested and confirmed a positive performance in reducing TDG downstream of the dam. Cavitation repairs were completed on spillway 2 in 2014. Modeling and engineering of refinements to the spillway 2 design were conducted in 2014.

Construction of modifications on spillways 4 and 5 was initiated in 2015 and completed in spring 2016. The performance of spillways 4 and 5 was tested and confirmed a positive performance in 4 reducing TDG downstream of the dam, but the results for 5 were inconclusive. The river depth is substantially shallower below spillway 5 than 1 through 4 and as a result there may be less of a reduction in TDG when there is minimal spill such as what occurred in 2016. Construction of modifications on spillways 1 and 3 was initiated in July 2017 and completed in October 2017. Performance testing of spillways 1 and 3 was completed in July 2018.

Beginning in 2022, after the completion of the Final 2022 Phase III of the Final Gas Supersaturation Control Program Addendum for the Clark Fork Project, the three distinct funds: “TDG Monitoring”; “TDG Mitigation and Monitoring”; and “GSCP Alternative” were combined so that all Appendix F5 project plans are funded out of a single “TDG Mitigation and Monitoring Program.”

## **2023 Project Plans**

### *Operations*

1. There is no project plan for operations; however, Avista will continue to utilize spillway operations at Noxon Rapids and Cabinet Gorge dams as outlined in the GSCP, amended

in 2009 to include operation of the Ice and Trash spillways, amended in 2013 to include operation of the modified spillway 2 during spill, amended in 2016 to include use of spillways 4 and 5, and amended in 2018 to include use of spillways 1 and 3. The results of the ongoing TDG monitoring program will be utilized to evaluate the effectiveness of the selective spillway usage for reducing TDG levels, and identify any potential changes in spillway usage.

*TDG Mitigation and Monitoring Program*

1. Total Dissolved Gas Monitoring
2. Project Scoping Allocation
3. Analysis of Gas Bubble Disease Monitoring Data
4. Mapping the Potential for Fish to Compensate for Total Dissolved Gas in the Lower Clark Fork River
5. Nutrient Level Impacts on Salmonid Populations in the Lower Clark Fork River
6. Temperature Monitoring Data Compilation
7. Trophic Monitoring in Lake Pend Oreille and Pend Oreille River Idaho
8. Box Canyon Reservoir Northern Pike Suppression
9. Lake Pend Oreille Experimental Walleye Angler Incentive Program
10. Lake Pend Oreille/Clark Fork River Walleye Population Assessment
11. Lake Pend Oreille Lake Trout Angler Incentive Program
12. Lake Pend Oreille Lake Trout Netting Program
13. Lake Pend Oreille Bull Trout Population Monitoring and Evaluation
14. Lake Pend Oreille Nearshore Index Netting
15. Idaho Protection and Education Officer Support
16. Lake Pend Oreille Tributary PIT-Monitoring Station Installation
17. Lake Pend Oreille Tributary PIT-Monitoring Station Operation and Maintenance
18. Clark Fork River Population Monitoring
19. Lower Clark Fork River Flow Model
20. Lake Pend Oreille and Pend Oreille River Creel Survey
21. Lower Clark Fork River Genetics Evaluation (*New*)
22. Gas Supersaturation Control Program Total Dissolved Gas Abatement

**Work Products**

*Operations*

- Annual Work Summary; due December 1, 2023

*Total Dissolved Gas Monitoring*

- Memorandum summarizing discharge, operations, and total dissolved gas; final due November 1, 2023
- Temperature monitoring data for the three sites; due December 1, 2023
- Annual Work Summary; due December 1, 2023

*Project Scoping Allocation*

- Annual Work Summary; due December 1, 2023

*Analysis of Gas Bubble Disease Monitoring Data*

- Annual Work Summary; due December 1, 2023
- Annual Project Update – 2023; final due April 1, 2024 (if sampling occurs)

*Mapping the Potential for Fish to Compensate for Total Dissolved Gas in the Lower Clark Fork River*

- Annual Work Summary; due December 1, 2023
- Project Completion Report; final due May 1, 2024

*Nutrient Level Impacts on Salmonid Populations in the Lower Clark Fork River*

- Annual Work Summary; due December 1, 2023
- Project Completion Report; final due December 1, 2023

*Temperature Monitoring Data Compilation*

- Updated database (2022 data); final due June 1, 2023
- Updated database (2023 data); final due June 1, 2024
- Annual Work Summary; due December 1, 2023

*Trophic Monitoring in Lake Pend Oreille and Pend Oreille River Idaho*

- Annual Work Summary; due December 1, 2023

*Box Canyon Reservoir Northern Pike Suppression*

- Annual Project Update; final due November 1, 2023
- Annual Work Summary; due November 15, 2023
- Comprehensive Project Report 2012–2024; final due November 1, 2024

*Lake Pend Oreille Experimental Walleye Angler Incentive Program*

- Annual Project Update – 2022; final due November 1, 2023
- Annual Work Summary; due December 1, 2023
- Annual Project Update – 2023; final due November 1, 2024

*Lake Pend Oreille/Clark Fork River Walleye Population Assessment*

- Annual Project Update – 2022; final due November 1, 2023
- Annual Work Summary; due December 1, 2023
- Annual Project Update – 2023; final due November 1, 2024

*Lake Pend Oreille Lake Trout Angler Incentive Program*

- Annual Project Update – 2022; final due November 1, 2023
- Annual Work Summary; due December 1, 2023
- Annual Project Update – 2023; final due November 1, 2024

*Lake Pend Oreille Lake Trout Netting Program*

- Annual Project Update – 2022; final due November 1, 2023
- Annual Work Summary; due December 1, 2023
- Annual Project Update – 2023; final due November 1, 2024

*Lake Pend Oreille Bull Trout Population Monitoring and Evaluation*

- Annual Work Summary; due December 1, 2023
- Comprehensive Project Report for data through 2023; final due November 1, 2024

*Lake Pend Oreille Nearshore Index Netting*

- Annual Work Summary; due December 1, 2023
- Project Completion Report; final due December 1, 2023

*Idaho Protection and Education Officer Support*

- Mid-year report; due to Avista; August 1, 2023
- Annual Work Summary; due to Ken Bouwens, IDFG, November 1, 2023

*Lake Pend Oreille Tributary PIT-Monitoring Station Installation*

- Annual Work Summary; due December 1, 2023

*Lake Pend Oreille Tributary PIT-Monitoring Station Operation and Maintenance*

- Temperature monitoring data for the six sites; due December 1, 2023
- Annual Work Summary; due December 1, 2023

*Clark Fork River Population Monitoring*

- Annual Project Update; 2022 Lower Clark Fork River Population Monitoring; final due November 1, 2023
- Annual Project Update; 2023 Lower Clark Fork River Population Monitoring; final due November 1, 2024
- Comprehensive Project Report; Lower Clark Fork River Population Monitoring (through 2021); final due November 1, 2023
- Annual Work Summary; due December 1, 2023

*Lower Clark Fork River Flow Model*

- Annual Work Summary; due December 1, 2023
- Model files including GIS input data and R code; due November 1, 2023
- Comprehensive Project Report; Flow analysis and modeling in the Clark Fork River; final due November 1, 2023

*Lake Pend Oreille and Pend Oreille River Creel Survey*

- Annual Work Summary; due December 1, 2023
- Comprehensive Project Report; final due November 1, 2023

*Lower Clark Fork River Genetics Evaluation*

- Annual Work Summary; due December 1, 2023
- Comprehensive Project Report; Lower Clark Fork River *Oncorhynchus* Genetics Evaluation; final due November 1, 2024

*Gas Supersaturation Control Program Total Dissolved Gas Abatement*

- Annual Work Summary; due December 1, 2023

## 2023 Appendix F5 Mitigation and Monitoring Fund

<b>Budget Summary</b>	
<b>Section 3.1 funding<sup>1</sup></b>	
Unexpended funds with interest	\$1,380,249
2023 contribution (including GDP inflation rate) <sup>2</sup>	\$669,687
Transfer from Section 3.2 funding	\$418,239
<b>Total available</b>	<b>\$2,468,175</b>
2023 MC-approved budget	\$2,468,175
<b>Unobligated funds</b>	<b>\$0</b>
<b>Section 3.2 funding<sup>3</sup></b>	
Unexpended funds	\$932,612
2023 contribution	\$932,612
Transfer to Section 3.1 funding	-\$418,239
<b>Unobligated funds</b>	<b>\$1,446,985</b>

<sup>1</sup> "Section 3.1 funding" refers to the funding mechanism defined in Section 3.1 of the "2022 Phase III of the Final Gas Supersaturation Control Program Addendum for the Clark Fork Project" (hereafter, "Phase III agreement"; approved by the MC on 3/15/2022). Pursuant to the Phase III agreement, all Appendix F5 projects will be funded through Section 3.1. If the 'total available' Section 3.1 funds are exceeded during any given year, the balance will be funded through Section 3.2 funding.

<sup>2</sup> Pursuant to the Phase III agreement, the Gross Domestic Product Implicit Price Deflator (GDP-IPD) annual adjustment will be made to the Section 3.1 annual contribution beginning in 2023.

<sup>3</sup> "Section 3.2 funding" refers to the funding mechanism defined in Section 3.2 of the Phase III agreement. The annual contribution associated with this funding is not subject to GDP inflation and unexpended funds are not subject to interest.

<b>2023 Project</b>	<b>Carryover<sup>1</sup></b>	<b>2023 Budget</b>
Total Dissolved Gas Monitoring	\$25,000	\$83,716
Project Scoping Allocation	\$1,000	\$9,000
Analysis of Gas Bubble Disease Monitoring Data	\$5,000	\$15,800
Mapping the Potential for Fish to Compensate for Total Dissolved Gas in the Lower Clark Fork River	\$20,000	\$0
Nutrient Level Impacts on Salmonid Populations in the Lower Clark Fork River	\$8,624	\$3,000
Temperature Monitoring Data Compilation	\$2,000	\$12,900
Trophic Monitoring in Lake Pend Oreille and Pend Oreille River Idaho	\$2,000	\$13,960
Box Canyon Reservoir Northern Pike Suppression	\$7,900	\$67,623
Lake Pend Oreille Experimental Walleye Angler Incentive Program	\$9,000	\$118,750
Lake Pend Oreille/Clark Fork River Walleye Population Assessment	\$16,000	\$130,000
Lake Pend Oreille Lake Trout Angler Incentive Program	\$10,000	\$150,000
Lake Pend Oreille Lake Trout Netting Program	\$0	\$468,901
Lake Pend Oreille Bull Trout Population Monitoring and Evaluation	\$30,000	\$90,000
Lake Pend Oreille Nearshore Index Netting	\$58,415	\$0
Idaho Protection and Education Officer Support	\$21,237	\$45,351
Lake Pend Oreille Tributary PIT-Monitoring Station Installation	\$406,155	\$75,100
Lake Pend Oreille Tributary PIT-Monitoring Station Operation and Maintenance	\$15,000	\$49,496
Clark Fork River Population Monitoring	\$13,500	\$105,500
Lower Clark Fork River Flow Model	\$45,514	\$42,000
Lake Pend Oreille and Pend Oreille River Creel Survey	\$33,233	\$0
Lower Clark Fork River Genetics Evaluation	\$0	\$68,000
Gas Supersaturation Control Program Total Dissolved Gas Abatement	\$2,000	\$50,000
Idaho Field Station Operation and Maintenance (cost share; see Appendix A project plan)	\$0	\$17,500
Cabinet Gorge Fish Hatchery Spring Water Collection System Upgrade (cost share; see Appendix T project plan)	\$0	\$120,000
<b>Total</b>	<b>\$731,578</b>	<b>\$1,736,597</b>
<b>MC-approved budget</b>		<b>\$2,468,175</b>

<sup>1</sup> Estimated carryover of unexpended, approved funds as of January 1.



## **2023 PROJECT PLAN**

### **Total Dissolved Gas Monitoring**

#### **Project Contact**

Paul Kusnierz, Avista, (406) 847-1274, [paul.kusnierz@avistacorp.com](mailto:paul.kusnierz@avistacorp.com)

#### **Project History**

Total dissolved gas (TDG) monitoring in the lower Clark Fork River during the spring runoff season is a required activity under FERC License No. 2058. This project is a continuation of work that has occurred in the Clark Fork River since 1996 (Latona 2014). The 2004 Gas Supersaturation Control Program (GSCP; Avista 2004) and 2009 GSCP Addendum (Avista 2009) identify the fixed-station TDG monitoring as separate from other aspects of the program (i.e., construction and implementation, mitigation). As such this monitoring had its own fund until 2021. Beginning in 2022, after the completion of the “Final 2022 Phase III of the Final Gas Supersaturation Control Program Addendum for the Clark Fork Project” (Avista 2022), this fund was terminated and now TDG monitoring occurs under the TDG Mitigation and Monitoring Program. The scope and budget for this project are reviewed by the Management Committee annually.

#### **Background**

During the spring runoff season, flow in the lower Clark Fork River can exceed the hydraulic capacity of Cabinet Gorge Dam. When this occurs, it is necessary to spill water over the dam. The physical characteristics of Cabinet Gorge Dam, in particular the deep (about 70 ft) plunge pool and the way in which spill aerates water released from the powerhouse, can lead to TDG supersaturation. Implementation of the TDG monitoring program provides data that informs Avista and Clark Fork Settlement Agreement (CFSA) stakeholders of the circumstances that lead to high TDG and verifies the effectiveness of spillway modifications for TDG reduction.

#### **Goal**

The goal of this project is to monitor total dissolved gas in the Lake Pend Oreille-lower Clark Fork River system to inform the study, control, and mitigation of gas supersaturation and associated biological resource effects.

#### **Objective**

1. Track the TDG conditions throughout the spring runoff season at Cabinet Gorge Dam and collect data that can be used to evaluate modifications made to the Cabinet Gorge Dam spillways and minimize TDG production at Cabinet Gorge Dam.

#### **Tasks**

1. Continue to monitor, in an *ad-hoc* fashion, TDG (temperature is also collected) in the Cabinet Gorge Dam forebay and about one mile downstream of Cabinet Gorge Dam (Table 1) during the spill season (approximately April through July). (Objective 1)
2. Monitor TDG during tests of modified Cabinet Gorge Dam spillways. (Objective 1)

3. Upgrade the shore-based monitoring station so that it is permanent. This will involve installing conduit under the Fish Holding and Handling Facility driveway and running power and internet directly to the station, possibly replacing the existing station box with one that can accommodate two data loggers, and installing metal conduit in the river to house TDG sondes (Objective 1).

Table 1. Sampling locations for TDG and temperature in 2023.

Stream	Site name	River km	Latitude	Longitude
Clark Fork River	Cabinet Gorge Dam Forebay	14.5	48.087813	-116.056333
Clark Fork River	Downstream Cabinet Gorge Shore Station	12.6	48.086725	-116.080346
Clark Fork River	Downstream Cabinet Gorge <sup>1</sup>	12.7	48.086621	-116.079265

<sup>1</sup> The monitoring equipment formerly located at the Noxon Rapids Dam forebay was located about one mile downstream of Cabinet Gorge Dam and provided duplicative data at this site 2015–2022 as per DosSantos (2014). A duplicative sonde will no longer be deployed at this location unless the Shore Station becomes nonoperational and cannot be fixed in a timely manner. Temperature will only be collected at this location if a sonde is deployed.

Monitoring equipment used for this project includes Hydrolab multiprobes (sondes) with TDG and temperature sensors, Comet or Vaisala barometers, and BioMark or Campbell Scientific dataloggers. Deployment of the sonde at the shore station results in the sonde being at least 3 ft below the water surface at a discharge of 3,000 cfs. A brief description of TDG probe placement can be found in Latona (2014). In addition, a protocol for sampling under high flow conditions can be found in Kusnierz (2018).

### Work Products

- Memorandum summarizing discharge, operations, and total dissolved gas; final due November 1, 2023
- Temperature monitoring data for the three sites; due December 1, 2023
- Annual Work Summary; due December 1, 2023

### Permitting Requirements

Not applicable for the tasks proposed in this project plan.

Endangered Species Act consultation for this project plan is associated with the 2019 Biological Opinion on the effects of continued operation of the Clark Fork Hydroelectric Project on Bull Trout and designated Bull Trout critical habitat (BiOp). This project plan is consistent with the analyses and conclusions contained in the 2019 BiOp and will adhere to all appropriate Terms and Conditions designed to reduce the extent and effects of incidental take on Bull Trout. No incidental take of Bull Trout is anticipated as a result of this project plan; therefore, no take reporting is required.

### Cultural/Historic Resource Review

This is a carryover project and the cultural/historic resource review was completed in 2021 for the original shore-based monitoring station. If the project scope varies from the original project, Avista cultural staff will coordinate a cultural/historic resource review for the project. The work product for this review will be confidential due to the sensitive nature of the content.

### Benefit to the Resource

This project is the direct implementation of a portion of Appendix F5 under the CFSA (Avista 1999). It also provides data that can be used to guide operation of Cabinet Gorge Dam so that exceedances of the TDG water quality standard are minimized.

Idaho water quality standards are based upon support of beneficial uses, and in particular “Cold Water Aquatic Life.” Continued TDG monitoring is critical to evaluating the health of all native fisheries in the lower Clark Fork River and Lake Pend Oreille.

### Budget

Item	Estimated Carryover <sup>1</sup>	2023 Budget Request
Technician labor (0.13 FTE)	\$0	\$12,000
Supplies	\$10,000	\$10,000
Annual Project Update and professional consultation	\$0	\$10,000
Biomark BioLogic plus cell (12 months)	\$0	\$1,716
Permanent Shore Station	\$15,000	\$50,000
<b>Total</b>	<b>\$25,000</b>	<b>\$83,716</b>
<b>Anticipated Expenditures</b>		<b>\$108,716</b>

<sup>1</sup> Estimated carryover of unexpended, approved funds as of January 1.

### Literature Cited

Avista Corporation. 1999. Application for New License, Volume III Settlement Agreement.  
Avista Corporation. Spokane, Washington.

Avista Corporation. 2004. Final Gas Supersaturation Control Program for the Clark Fork Project.  
Avista Corporation. Spokane, Washington.

Avista Corporation. 2009. Final 2009 Addendum Final Gas Supersaturation Control Program for the Clark Fork Project. Avista Corporation. Spokane, Washington.

Avista. 2022. Final 2022 Phase III of the Final Gas Supersaturation Control Program Addendum for the Clark Fork Project. Avista. Spokane, Washington.

DosSantos, J. 2014. TDG Monitoring Program – Proposed 2015 Changes. Memorandum to the Gas Supersaturation Subcommittee, December 30, 2014.

Kusnierz, P. 2018. Proposed total dissolved gas monitoring protocol during high flow conditions. Memorandum to the Gas Supersaturation Subcommittee, October 3, 2018.

Latona (Latona Consulting Services, LLC). 2014. Final Report Total Dissolved Gas Monitoring 2014 Cabinet Gorge and Noxon Rapids Dams. Latona Consulting Services, LLC: Seattle, Washington.



## **2023 PROJECT PLAN**

### **Project Scoping Allocation**

#### **Project Contact**

Paul Kusnierz, Avista, (406) 847-1274, [paul.kusnierz@avistacorp.com](mailto:paul.kusnierz@avistacorp.com)

#### **Project History**

This is a continuing project for 2023. This project was originally ranked by the WRTAC on January 21, 2020. The project was first approved by the Management Committee (MC) in 2020. The scope and budget for this project will be reviewed by the MC annually.

#### **Background**

The Appendix F5 mitigation program is “focused on the protection and enhancement of the fishery resources that might be affected by the future occurrence of elevated total dissolved gas levels downstream of the Cabinet Gorge HED (Hydroelectric Development)” (Avista 2004). New project development is an involved scoping process requiring the identification and integration of information regarding management concerns, associated biological limitations, and study design. This allocation will be used to develop full project proposals for MC review and approval.

#### **Goal**

Provide assistance with the development of future Appendix F5 mitigation program projects.

#### **Objective**

1. Provide funding for an Avista fisheries biologist to develop Appendix F5 mitigation program project plans.

#### **Tasks**

Specific tasks will be identified as necessary, but will be performed as part of project plan development.

#### **Work Products**

- Annual Work Summary; due December 1, 2023

#### **Permitting Requirements**

Not applicable for the tasks proposed in this project plan.

Endangered Species Act consultation for this project plan is associated with the 2019 Biological Opinion on the effects of continued operation of the Clark Fork Hydroelectric Project on Bull Trout and designated Bull Trout critical habitat (BiOp). This project plan is consistent with the analyses and conclusions contained in the 2019 BiOp and will adhere to all appropriate Terms and Conditions designed to reduce the extent and effects of incidental take on Bull Trout. No incidental take of Bull Trout is anticipated as a result of this project plan; therefore, no take reporting is required.

### Cultural/Historic Resource Review

Not applicable for the tasks proposed in this project plan, there are no ground and/or vegetation disturbing activities, or proposed impacts to cultural/historic resources.

### Benefit to the Resource

Projects developed using this allocation will benefit the fishes (specifically migratory Bull and Westslope Cutthroat trout) inhabiting Lake Pend Oreille and the lower Clark Fork River. This project plan is appropriate under the Clark Fork Settlement Agreement because it assists in the development of projects that will benefit fishes exposed to elevated total dissolved gas. As such, these projects will also be consistent with goals of the Native Salmonid Restoration Plan (AIT 2018) to restore and enhance migratory forms of native salmonids.

Tasks conducted under this allocation will also be consistent with other established plans including the Lake Pend Oreille Bull Trout Conservation Plan (Resource Planning Unlimited 1999), the USFWS Bull Trout recovery plan (USFWS 2015), and the Idaho Department of Fish and Game Fisheries Management Plan 2019-2024 (IDFG 2019).

Project plan-specific benefits will be identified as a result of the use of this allocation.

### Budget

Item	Estimated Carryover <sup>1</sup>	2023 Budget Request
Biologist labor (0.06 FTE)	\$1,000	\$9,000
<b>Total</b>	\$1,000	\$9,000
<b>Anticipated Expenditures</b>		\$10,000

<sup>1</sup> Estimated carryover of unexpended, approved funds as of January 1.

### Literature Cited

- AIT (Aquatic Implementation Team). 2018. Clark Fork River native salmonid restoration plan five-year plan (2019–2023). Prepared for the Clark Fork Management Committee. 40 pages + appendices.
- Avista. 2004. Final Gas Supersaturation Control Program for the Clark Fork Project. Avista Corporation: Spokane, Washington. 90 pages + appendices.
- IDFG (Idaho Department of Fish and Game). 2019. Fisheries Management Plan 2019-2024. Boise, Idaho.
- Resource Planning Unlimited. 1999. Lake Pend Oreille Bull Trout Conservation Plan. State of Idaho. Boise, Idaho.
- USFWS (U.S. Fish and Wildlife Service). 2015. Recovery plan for the coterminous United States population of bull trout (*Salvelinus confluentus*). Portland, Oregon. xii + 179 pages.

## **2023 PROJECT PLAN**

### **Analysis of Gas Bubble Disease Monitoring Data**

#### **Project Contact**

Paul Kusnierz, Avista, (406) 847-1274, [paul.kusnierz@avistacorp.com](mailto:paul.kusnierz@avistacorp.com)

#### **Project History**

This is a continuing project for 2023. Gas bubble disease (GBD) data have been collected from the lower Clark Fork River during ten spill seasons since 1997 (1997–2000, 2006, 2008, and 2017–2021). The Water Resources Technical Advisory Committee scored this project in 2018 on January 23. The scope and budget for this project are reviewed annually by the Management Committee. The 2023 scope and budget are similar to 2022.

#### **Background**

Gas bubble disease occurs in fish when water becomes supersaturated with gases. This disease causes damage to tissues when gas bubbles form in gills, fins, and eyes. It can lead to death if tissue damage becomes too severe. Gas bubble disease is a concern on the Clark Fork River downstream of Cabinet Gorge Dam because during periods of substantial spill (i.e., high spring flows) the river becomes supersaturated and total dissolved gas (TDG) levels can be in excess of 120% saturation. More than a decade ago Weitkamp et al. (2003a) published a journal article reporting the incidence of GBD in the lower Clark Fork River. In this study they found that the occurrence of GBD in fish collected from the lower Clark Fork River was lower than expected given the TDG levels observed. The authors hypothesized that fish were spending time at depths that can compensate for the effects of GBD and noted the presence of refugia from high TDG levels in tributaries of the lower Clark Fork River and Lake Pend Oreille (Weitkamp et al. 2003a; 2003b).

In 2006, 2008, 2017, and 2018 additional GBD data were collected from fish captured by means of electrofishing in the lower Clark Fork River. In 2018, GBD data from the lower Clark Fork River downstream of Cabinet Gorge Dam in 1997–2000 were combined with data collected in 2006, 2008, 2017, and 2018 into a single spreadsheet. In 2018, these data were combined and used in whole to describe the incidence of GDB in the lower Clark Fork River (Kusnierz 2019). This project plan provided funding to continue GBD data collection as part of night electrofishing activities 2017–2021. Results from this sampling indicate generally low levels of GDB even when TDG values exceed 110% saturation for an extended period of time (Kusnierz 2020; 2022). This project plan proposes to suspend GBD collection as part of regular night-time electrofishing and instead collect it when new or rare conditions (e.g., fish kill, kokanee trawl, extremely high TDG [ $>140\%$ ]) occur. In addition, funding will facilitate annually updating the GBD database and performing analyses when GBD data are collected.

#### **Goal**

The goal of this project is to provide a means to evaluate the health effects of high TDG on fish in the lower Clark Fork River and Lake Pend Oreille and examine whether the relationship between spill, TDG, and GBD incidence has changed over time.

## **Objective**

1. Maintain lower Clark Fork River GBD data collection, organization, and analysis.

## **Tasks**

1. Collect GBD data when new or rare conditions (e.g., fish kill, kokanee trawl, extremely high TDG [ $>140\%$ ]) occur. (Objective 1)
2. Update GBD database annually (if sampling occurs). (Objective 1)
3. Produce a report that updates the analyzes the results of any GBD data collected. (Objective 1)

## **Work Products**

- Annual Work Summary; due December 1, 2023
- Annual Project Update – 2023; final due April 1, 2024 (if sampling occurs)

## **Permitting Requirements**

An Idaho Department of Fish and Game collection permit is required for sampling fish in the lower Clark Fork River. This permit will be obtained as part of the Upstream Fish Passage Program permitting requirements.

Endangered Species Act consultation for this project plan is associated with the 2019 Biological Opinion on the effects of continued operation of the Clark Fork Hydroelectric Project on Bull Trout and designated Bull Trout critical habitat. Incidental take reporting for this project plan will be included in the annual Biological Opinion report as required by Term and Conditions 15–18 of the 2019 Incidental Take Statement.

## **Cultural/Historic Resource Review**

Not applicable for the tasks proposed in this project plan, there are no ground and/or vegetation disturbing activities, or proposed impacts to cultural/historic resources.

## **Benefit to the Resource**

This project compliments the required monitoring of TDG on the lower Clark Fork River as described in Appendix F5 under the CFSA (Avista 1999) and is consistent with the use of the “TDG Alternative Mitigation Fund” described in Section 4.3.2 of the Gas Supersaturation Control Plan (Avista 2004). This project will provide a means to evaluate the health effects of high TDG on fish in the lower Clark Fork River and examine whether the relationship between spill, TDG, and GBD incidence has changed over time. It will also result in a single dataset for GBD incidence in fish captured via electrofishing in the lower Clark Fork River that can be updated annually as data are collected and used to help provide guidance on how Appendix F5 mitigation dollars can be best utilized to benefit the fisheries resources affected by high TDG.

## Budget

Item	Estimated Carryover <sup>1</sup>	2023 Budget Request
Technician labor (0.1 FTE)	\$0	\$10,000
Data compilation, analysis, and summary report (0.03 FTE)	\$5,000	\$5,800
<b>Total</b>	<b>\$5,000</b>	<b>\$15,800</b>
<b>Anticipated Expenditures</b>		<b>\$20,800</b>

<sup>1</sup> Estimated carryover of unexpended, approved funds as of January 1.

## Literature Cited

Avista Corporation. 1999. Application for New License, Volume III Settlement Agreement.  
Avista Corporation. Spokane, Washington.

Avista Corporation. 2004. Final Gas Supersaturation Control Program for the Clark Fork Project.  
Avista Corporation. Spokane, Washington.

Kusnierz, P. 2019. Analysis of gas bubble disease Monitoring data. Annual project update.  
Avista. Noxon, Montana.

Kusnierz, P. 2020. Analysis of gas bubble disease monitoring data. Annual Project Update –  
2020. Avista. Noxon, Montana.

Kusnierz, P. 2022. Analysis of gas bubble disease monitoring data. Annual Project Update –  
2021. Avista. Noxon, Montana.

Weitkamp, D. E., R. D. Sullivan. T. Swant, and J. DosSantos. 2003a. Gas bubble disease in  
resident fish of the lower Clark Fork River. Transactions of the American Fisheries  
Society 132:865–876.

Weitkamp, D. E., R. D. Sullivan. T. Swant, and J. DosSantos. 2003b. Behavior of resident fish  
relative to total dissolved gas supersaturation in the lower Clark Fork River. Transactions  
of the American Fisheries Society 132:856–864.



## **2023 PROJECT PLAN**

### **Mapping the Potential for Fish to Compensate for Total Dissolved Gas in the Lower Clark Fork River**

#### **Project Contact**

Paul Kusnierz, Avista, (406) 847-1274, [paul.kusnierz@avistacorp.com](mailto:paul.kusnierz@avistacorp.com)

#### **Project History**

This is a continuing project for 2023. This project was originally ranked by the WRTAC on January 19, 2022.

#### **Background**

During periods of substantial spill (i.e., high spring discharge), the Clark Fork River downstream of Cabinet Gorge Dam becomes supersaturated with air and total dissolved gas (TDG) levels can be in excess of 120% saturation. This is of concern because high TDG can cause gas bubble disease in fish. This disease causes damage to tissues when gas bubbles form in gills, fins, and eyes and can lead to death. More than a decade ago Weitkamp et al. (2003a) published a journal article reporting the incidence of GBD in the lower Clark Fork River. In this study they found that the occurrence of GBD in fish collected from the lower Clark Fork River was lower than expected given the TDG levels observed. The authors hypothesized that fish were spending time at depths that can compensate for the effects of GBD and noted the presence of refugia from high TDG levels in tributaries of the lower Clark Fork River and Lake Pend Oreille (Weitkamp et al. 2003a, 2003b).

Fish can compensate for high levels of TDG by heading to deeper water. The rate of compensation is about 10% of saturation per meter meaning that a fish in water with TDG of 110% saturation at a depth of 1 m will experience 100% saturation. This project would build upon the work of Weitkamp et al. (2003a, 2003b) by quantifying habitat in the lower Clark Fork River that is available to fish where they can compensate for elevated TDG and demonstrating how the availability changes with discharge. All data used for the proposed project was previously collected and is housed by Avista and the Idaho Department of Fish and Game (IDFG).

#### **Goal**

The goal of this project is to understand the amount of habitat in the lower Clark Fork River where fish can compensate for elevated TDG and how it changes as discharge and TDG vary.

#### **Objective**

1. Use previously collected depth and bathometric data from the lower Clark Fork River to evaluate the amount of habitat where fish can compensate for elevated TDG at a variety of discharges.

#### **Tasks**

1. Procure and organize lower Clark Fork River depth, bathometric, TDG and discharge data collected by Avista and IDFG. (Objective 1)

2. Use either HEC-RAS (or a similar model) or a GIS-based model to identify areas of the lower Clark Fork River where fish can effectively compensate for high TDG values.
3. Use model data to create tables and figures that describe the amount and location of habitat where fish can compensate for elevated TDG at a variety of TDG and discharge values.
4. Produce a report with the results of the analysis and a discussion of potential management implications and actions.
5. Pending the results of the report, a manuscript for submission to a peer-reviewed journal may be produced.

### **Work Products**

- Annual Work Summary; due December 1, 2023
- Project Completion Report; final due May 1, 2024

### **Permitting Requirements**

Not applicable for the tasks proposed in this project plan.

Endangered Species Act consultation for this project plan is associated with the 2019 Biological Opinion on the effects of continued operation of the Clark Fork Hydroelectric Project on Bull Trout and designated Bull Trout critical habitat (BiOp). This project plan is consistent with the analyses and conclusions contained in the 2019 BiOp and will adhere to all appropriate Terms and Conditions designed to reduce the extent and effects of incidental take on Bull Trout. No incidental take of Bull Trout is anticipated as a result of this project plan; therefore, no take reporting is required.

### **Cultural/Historic Resource Review**

Not applicable for the tasks proposed in this project plan, there are no ground and/or vegetation disturbing activities, or proposed impacts to cultural/historic resources.

### **Benefit to the Resource**

This project will facilitate a better understanding of the potential effects of TDG on fishes in the lower Clark Fork River. It could lead to the development of management actions that facilitate stabilization or increases in fish abundance. The proposed activities are consistent with the Dissolved Gas Supersaturation Control, Mitigation, and Monitoring Program (Appendix F5) and the use of the “TDG Alternative Mitigation Fund” described in Section 4.3.2 of the Gas Supersaturation Control Plan (Avista 2004) as they are focused on fish species that are exposed to elevated total dissolved gas levels when spill occurs at Cabinet Gorge Dam. They are also consistent with goals of the Fish Passage/Native Salmonid Restoration Plan (Appendix C), and the Idaho Tributary Habitat Acquisition and Fishery Enhancement Program (Appendix A), through assessment of native salmonid populations, including Bull Trout and Westslope Cutthroat Trout. This project will complement the efforts of the *Clark Fork River Population Monitoring* project plan and its goal of evaluating potential changes in fish abundance in association with discharge, total dissolved gas, and other environmental variables. It also

compliments the *Analysis of Gas Bubble Disease Monitoring Data* project plan and its goal of evaluating the health effects of high TDG on fish in the lower Clark Fork River and Lake Pend Oreille. This project will utilize river depth and bathometric data collected under the *Clark Fork River Water Quality Monitoring Program* project plan and TDG and discharge data collected under the *Total Dissolved Gas Monitoring* project plan. Finally, this work is consistent with the Lake Pend Oreille Bull Trout Conservation Plan (Resource Planning Unlimited 1999) and the Idaho Department of Fish and Game Fisheries Management Plan (IDFG 2019).

### **Budget**

<b>Item</b>	<b>Estimated Carryover<sup>1</sup></b>	<b>2023 Budget Request</b>
Data compilation, analysis, and summary report (0.2 FTE)	\$20,000	\$0
<b>Total</b>	<b>\$20,000</b>	<b>\$0</b>
<b>Anticipated Expenditures</b>		<b>\$20,000</b>

<sup>1</sup> Estimated carryover of unexpended, approved funds as of January 1.

### **Literature Cited**

Avista Corporation. 2004. Final Gas Supersaturation Control Program for the Clark Fork Project. Avista Corporation. Spokane, Washington.

IDFG (Idaho Department of Fish and Game). 2019. Fisheries Management Plan 2019-2024. Boise, Idaho.

Resource Planning Unlimited. 1999. Lake Pend Oreille Bull Trout Conservation Plan. State of Idaho. Boise, Idaho.

Weitkamp, D. E., R. D. Sullivan. T. Swant, and J. DosSantos. 2003a. Gas bubble disease in resident fish of the lower Clark Fork River. *Transactions of the American Fisheries Society* 132:865–876.

Weitkamp, D. E., R. D. Sullivan. T. Swant, and J. DosSantos. 2003b. Behavior of resident fish relative to total dissolved gas supersaturation in the lower Clark Fork River. *Transactions of the American Fisheries Society* 132:856–864.



## **2023 PROJECT PLAN**

### **Nutrient Level Impacts on Salmonid Populations in the Lower Clark Fork River**

#### **Project Contact**

Paul Kusnierz, Avista, (406) 847-1274, [paul.kusnierz@avistacorp.com](mailto:paul.kusnierz@avistacorp.com)  
and

Ken Bouwens, Idaho Department of Fish and Game, (208) 769-1414,  
[ken.bouwens@idfg.idaho.gov](mailto:ken.bouwens@idfg.idaho.gov)

#### **Project History**

This is a continuing project for 2023. This project was originally ranked by the WRTAC on January 19, 2022. Additional money has been requested to attend fisheries conferences in 2023 at which the results of this work will be presented.

#### **Background**

Fish abundance monitoring has occurred periodically on the lower Clark Fork River since 1999. This sampling was performed to evaluate a minimum flow change from 3,000 cfs to 5,000 cfs below Cabinet Gorge Dam. A 10-year study (Ryan and Jakubowski 2012) found no significant changes in abundance and in 2018 the minimum flow requirement was changed back to 3,000 cfs. Although recent surveys suggest increases in trout abundances (Bouwens and Jakubowski 2017, Baker et al. 2018), they are not high enough to support a robust recreational fishery.

The *Clark Fork River Population Monitoring* project plan seeks to continue periodic fish abundance monitoring on the lower Clark Fork River as well as perform a comprehensive evaluation of the last 20+ years of data collected. The proposed project seeks to compliment this established project plan by providing comparisons of potential controlling variables of fish abundance to other locations with known robust salmonid populations. The key variable in this study will be nutrients, which have been collected by Avista below Cabinet Gorge Dam for more than 20 years as part of the *Clark Fork River Water Quality Monitoring Program* (Appendix F1). All data used for the proposed project was previously collected and is housed in U.S. Environmental Protection Agency; Idaho Department of Fish and Game; Montana Fish, Wildlife and Parks; U.S. Geological Survey; and Avista databases.

#### **Goal**

The goal of this project is to evaluate the potential for nutrients to be limiting the population size of salmonids in the lower Clark Fork River.

#### **Objective**

1. Use previously collected nutrients (potential nutrients include total phosphorus, orthophosphate, total nitrogen, ammonia, and nitrate + nitrite) and fish population data from the lower Clark Fork River and multiple rivers in Montana to evaluate the potential for nutrient limitation in the lower Clark Fork River.

#### **Tasks**

1. Procure and organize nutrients data housed on the U.S. Environmental Protection Agency

STORET website; flow and temperature data collected by Avista and the U.S. Geological Survey; and salmonid abundance data collected by the Idaho Department of Fish and Game and Montana Fish, Wildlife and Parks. (Objective 1)

2. Analyze the data potentially using the following techniques:
  - a. Figures comparing the variables across all locations.
  - b. Kruskal-Wallis test with *post hoc* testing for differences in variables between locations.
  - c. A model describing what variables affect fish abundance at the selected locations.
3. Produce a report with the results of the analysis and a discussion of potential management actions.
4. Pending the results of the report, a manuscript for submission to a peer-reviewed journal may be produced.

### **Work Products**

- Annual Work Summary; due December 1, 2023
- Project Completion Report; final due December 1, 2023

### **Permitting Requirements**

Not applicable for the tasks proposed in this project plan.

Endangered Species Act consultation for this project plan is associated with the 2019 Biological Opinion on the effects of continued operation of the Clark Fork Hydroelectric Project on Bull Trout and designated Bull Trout critical habitat (BiOp). This project plan is consistent with the analyses and conclusions contained in the 2019 BiOp and will adhere to all appropriate Terms and Conditions designed to reduce the extent and effects of incidental take on Bull Trout. No incidental take of Bull Trout is anticipated as a result of this project plan; therefore, no take reporting is required.

### **Cultural/Historic Resource Review**

Not applicable for the tasks proposed in this project plan, there are no ground and/or vegetation disturbing activities, or proposed impacts to cultural/historic resources.

### **Benefit to the Resource**

This project will evaluate factors that could be limiting fish abundance in the Clark Fork River downstream of Cabinet Gorge Dam and could lead to management actions that facilitate increases in fish abundance. The proposed activities are consistent with the Dissolved Gas Supersaturation Control, Mitigation, and Monitoring Program (Appendix F5) and the use of the “TDG Alternative Mitigation Fund” described in Section 4.3.2 of the Gas Supersaturation Control Plan (Avista 2004) as they are focused on fish species that are exposed to elevated total dissolved gas levels when spill occurs at Cabinet Gorge Dam. They are also consistent with goals of the Fish Passage/Native Salmonid Restoration Plan (Appendix C), and the Idaho Tributary Habitat Acquisition and Fishery Enhancement Program (Appendix A), through assessment of

native salmonid populations, including Bull Trout and Westslope Cutthroat Trout. This project will complement the efforts of the *Clark Fork River Population Monitoring* project plan and its goal of evaluating potential changes in fish abundance in association with flow, total dissolved gas, and other environmental variables. It will also utilize nutrients data collected under the *Clark Fork River Water Quality Monitoring Program* project plan. Finally, this work is consistent with the Lake Pend Oreille Bull Trout Conservation Plan (Resource Planning Unlimited 1999) and the Idaho Department of Fish and Game Fisheries Management Plan (IDFG 2019).

### Budget

Item	Estimated Carryover <sup>1</sup>	2023 Budget Request
Data compilation, analysis, and summary report (0.1 FTE)	\$8,624	\$0
Professional conferences	\$0	\$3,000
<b>Total</b>	\$8,624	\$3,000
<b>Anticipated Expenditures</b>		\$11,624

<sup>1</sup> Estimated carryover of unexpended, approved funds as of January 1.

### Literature Cited

Avista Corporation. 2004. Final Gas Supersaturation Control Program for the Clark Fork Project. Avista Corporation. Spokane, Washington.

Baker, W. D., Bouwens, K. A., and R. Jakubowski. 2018. 2017 Lower Clark Fork River Salmonid Abundance Monitoring Project Update. Report to Avista, Noxon, Montana and the Idaho Department of Fish and Game, Boise, Idaho.

Bouwens, K. A., and R. Jakubowski. 2017. 2014-2015 Lower Clark Fork River Fishery Assessment Project Update. Report to Avista Corporation, Noxon, Montana and the Idaho Department of Fish and Game, Boise, Idaho.

IDFG (Idaho Department of Fish and Game). 2019. Fisheries Management Plan 2019-2024. Boise, Idaho.

Resource Planning Unlimited. 1999. Lake Pend Oreille Bull Trout Conservation Plan. State of Idaho. Boise, Idaho.

Ryan, R., and R. Jakubowski. 2012. Lower Clark Fork River Fishery Assessment Project Completion Report. Report to Avista Corporation. Noxon, Montana.



## **2023 PROJECT PLAN**

### **Temperature Monitoring Data Compilation**

#### **Project Contact**

Paul Kusnierz, Avista, (406) 847-1274, [paul.kusnierz@avistacorp.com](mailto:paul.kusnierz@avistacorp.com)

#### **Project History**

This is a continuing project for 2023. The Water Resources Technical Advisory Committee ranked this project on January 22, 2019. The project was first approved by the Management Committee (MC) in 2019. The scope and budget will be reviewed annually by the MC. The 2023 scope and budget is similar to 2022. The temperature database described in this project plan was constructed in 2020. In 2022, the database was updated with data collected through 2021.

#### **Background**

Continuous temperature data have been collected as part of projects funded by the Clark Fork Settlement Agreement (CFSA; Avista Corporation 1999) since implementation began in 1999. These data have been collected as part of electrofishing and reservoir sampling data collection in Montana, fish movement and temperature studies in Idaho, and total dissolved gas monitoring downstream of Cabinet Gorge Dam. Up to now, these data have not been housed in a single database, there has been no standard protocol for collecting temperature data using data loggers, and no suite of long-term temperature monitoring sites has been defined. The work in the project plan is proposed to be performed in consultation with the Aquatic Implementation Team (AIT) to ensure that all appropriate datasets are incorporated into a single database and can be effectively accessed. Table 1, found at the end of this project plan contains a list of all sites where temperature monitoring will occur in 2023, the project plan title associated with the site, and the due date for these data to be available for database entry.

#### **Goal**

The goal of this effort is to ensure quality and meaningful data are collected, stored, and readily available to inform restoration and fisheries research and management activities in the lower Clark Fork River and Lake Pend Oreille watershed.

#### **Objectives**

1. Compile historical CFSA-associated temperature data and place them in a single Access database and update the database annually.

#### **Tasks**

1. Enter 2022 data into the updated temperature database. (Objective 1)
2. Enter 2023 data into the updated temperature database. (Objective 1)

#### **Work Products**

- Updated database (2022 data); final due June 1, 2023
- Updated database (2023 data); final due June 1, 2024
- Annual Work Summary; due December 1, 2023

### Permitting Requirements

Not applicable for the tasks proposed in this project plan.

Endangered Species Act consultation for this project plan is associated with the 2019 Biological Opinion on the effects of continued operation of the Clark Fork Hydroelectric Project on Bull Trout and designated Bull Trout critical habitat (BiOp). This project plan is consistent with the analyses and conclusions contained in the 2019 BiOp and will adhere to all appropriate Terms and Conditions designed to reduce the extent and effects of incidental take on Bull Trout. No incidental take of Bull Trout is anticipated as a result of this project plan; therefore, no take reporting is required.

### Cultural/Historic Resource Review

Not applicable for the tasks proposed in this project plan, there are no ground and/or vegetation disturbing activities, or proposed impacts to cultural/historic resources.

### Benefit to the Resource

This project will involve compiling data collected by at least four Appendices of the CFSA and storing it in a single database where it can be updated annually. These data will be easily queried and linked to appropriate metadata describing general sampling techniques and QA/QC performed. The final database will allow CFSA implementers to more easily identify and obtain temperature data. This will increase the ability to use the data to identify locations that could benefit from stream restoration or preservation as well as evaluate the relationships between stream temperature and the fisheries resources of the lower Clark Fork River watershed.

### Budget

Item	Estimated Carryover <sup>1</sup>	2023 Budget Request
Technician labor (0.09 FTE)	\$2,000	\$9,000
Biologist labor (0.02 FTE)	\$0	\$3,900
<b>Total</b>	\$2,000	\$12,900
<b>Anticipated Expenditures</b>		\$14,900

<sup>1</sup> Estimated carryover of unexpended, approved funds as of January 1.

### Literature Cited

Avista Corporation. 1999. Application for New License, Volume III Settlement Agreement.  
Avista Corporation. Spokane, Washington.

Table 1. Temperature monitoring site name, site type, project plan title, and data due date for 2023.

Stream and site name	Site type	Project Plan title	Data due date
Prospect Creek 17-mile	Long-term	Habitat Restoration Monitoring and Native Salmonid Abundance Monitoring Plan	December 1, 2023
Prospect Creek below Crow	Long-term	Habitat Restoration Monitoring and Native Salmonid Abundance Monitoring Plan	December 1, 2023
Cooper Gulch below Chipmunk	Long-term	Habitat Restoration Monitoring and Native Salmonid Abundance Monitoring Plan	December 1, 2023
Cooper Gulch above long-term site #1	Long-term	Habitat Restoration Monitoring and Native Salmonid Abundance Monitoring Plan	December 1, 2023
Crow Creek below confluence at 2007 restoration reach	Long-term	Habitat Restoration Monitoring and Native Salmonid Abundance Monitoring Plan	December 1, 2023
West Fork Crow Creek 2-3 minutes up WF trail	Long-term	Habitat Restoration Monitoring and Native Salmonid Abundance Monitoring Plan	December 1, 2023
East Fork Crow Creek just upstream of culvert	Project	Habitat Restoration Monitoring and Native Salmonid Abundance Monitoring Plan	December 1, 2023
West Fork Trout Creek lower below 1st creek crossing	Long-term	Habitat Restoration Monitoring and Native Salmonid Abundance Monitoring Plan	December 1, 2023
West Fork Trout Creek middle above Robin Run	Long-term	Habitat Restoration Monitoring and Native Salmonid Abundance Monitoring Plan	December 1, 2023
West Fork Trout Creek upper below South Branch confluence	Long-term	Habitat Restoration Monitoring and Native Salmonid Abundance Monitoring Plan	December 1, 2023
Vermilion River near mouth	Long-term	Habitat Restoration Monitoring and Native Salmonid Abundance Monitoring Plan	December 1, 2023
Vermilion River PIT array	Long-term	Tributary Trapping and Downstream Juvenile Bull Trout Transport Program	December 1, 2023
Vermilion River between Roe Gulch and Canyon Creek	Project	Habitat Restoration Monitoring and Native Salmonid Abundance Monitoring Plan	December 1, 2023
Canyon Creek below bridge	Project	Habitat Restoration Monitoring and Native Salmonid Abundance Monitoring Plan	December 1, 2023
Vermilion River below Cataract Creek	Long-term	Habitat Restoration Monitoring and Native Salmonid Abundance Monitoring Plan	December 1, 2023
Vermilion River ~1.1 km down from Grouse Creek	Project	Habitat Restoration Monitoring and Native Salmonid Abundance Monitoring Plan	December 1, 2023
Sims Creek near mouth access from spur road	Project	Habitat Restoration Monitoring and Native Salmonid Abundance Monitoring Plan	December 1, 2023
Vermilion River above Chapel Slide	Long-term	Habitat Restoration Monitoring and Native Salmonid Abundance Monitoring Plan	December 1, 2023
Vermilion River below Willow Creek	Project	Habitat Restoration Monitoring and Native Salmonid Abundance Monitoring Plan	December 1, 2023
Vermilion River below Frosty/Charred creeks	Project	Habitat Restoration Monitoring and Native Salmonid Abundance Monitoring Plan	December 1, 2023
Vermilion River below Miller Creek	Project	Habitat Restoration Monitoring and Native Salmonid Abundance Monitoring Plan	December 1, 2023
Vermilion River at mouth of Control Creek	Project	Habitat Restoration Monitoring and Native Salmonid Abundance Monitoring Plan	December 1, 2023
Happy Gulch near mouth	Project	Habitat Restoration Monitoring and Native Salmonid Abundance Monitoring Plan	December 1, 2023

Stream and site name	Site type	Project Plan title	Data due date
Miller Creek near mouth	Project	Habitat Restoration Monitoring and Native Salmonid Abundance Monitoring Plan	December 1, 2023
Graves Creek PIT array	Long-term	Tributary Trapping and Downstream Juvenile Bull Trout Transport Program	December 1, 2023
Graves Creek above falls	Long-term	Habitat Restoration Monitoring and Native Salmonid Abundance Monitoring Plan	December 1, 2023
Graves Creek upstream of 2 <sup>nd</sup> USFS bridge	Project	Habitat Restoration Monitoring and Native Salmonid Abundance Monitoring Plan	December 1, 2023
Graves Creek at Lawn Lake trailhead	Project	Habitat Restoration Monitoring and Native Salmonid Abundance Monitoring Plan	December 1, 2023
Rock Creek above West Fork	Long-term	Habitat Restoration Monitoring and Native Salmonid Abundance Monitoring Plan	December 1, 2023
Rock Creek upstream of trail bridge	Long-term	Habitat Restoration Monitoring and Native Salmonid Abundance Monitoring Plan	December 1, 2023
Rock Creek upper cascade		Habitat Restoration Monitoring and Native Salmonid Abundance Monitoring Plan	December 1, 2023
Lower Bull River PIT array	Long-term	Tributary Trapping and Downstream Juvenile Bull Trout Transport Program	December 1, 2023
East Fork Bull River North Channel Trap Site	Long-term	Tributary Trapping and Downstream Juvenile Bull Trout Transport Program	December 1, 2023
East Fork Bull River South Channel Trap Site	Long-term	Tributary Trapping and Downstream Juvenile Bull Trout Transport Program	December 1, 2023
South Fork Bull ~30 m above mouth	Long-term	Habitat Restoration Monitoring and Native Salmonid Abundance Monitoring Plan	December 1, 2023
East Fork Blue Creek	Long-term	Habitat Restoration Monitoring and Native Salmonid Abundance Monitoring Plan	December 1, 2023
Mosquito Creek	Project	Fish Resource Monitoring, Enhancement, and Management Plan	December 1, 2023
Spring Creek	Project	Fish Resource Monitoring, Enhancement, and Management Plan	December 1, 2023
Char Creek	Project	Fish Resource Monitoring, Enhancement, and Management Plan	December 1, 2023
Jeru Creek	Project	Fish Resource Monitoring, Enhancement, and Management Plan	December 1, 2023
Berry Creek	Project	Fish Resource Monitoring, Enhancement, and Management Plan	December 1, 2023
Trestle Creek PIT array	Long-term	Lake Pend Oreille PIT-Monitoring Station Operation and Maintenance	December 1, 2023
Granite Creek PIT array	Long-term	Lake Pend Oreille PIT-Monitoring Station Operation and Maintenance	December 1, 2023
South Gold Creek PIT array	Long-term	Lake Pend Oreille PIT-Monitoring Station Operation and Maintenance	December 1, 2023
Upper Pack River PIT array	Long-term	Lake Pend Oreille PIT-Monitoring Station Operation and Maintenance	December 1, 2023
Lower Pack River PIT array	Long-term	Lake Pend Oreille PIT-Monitoring Station Operation and Maintenance	December 1, 2023
Grouse Creek PIT array	Long-term	Lake Pend Oreille PIT-Monitoring Station Operation and Maintenance	December 1, 2023
Temperature Station 1/Clark Fork River USGS gage	Long-term	Clark Fork River Population Monitoring	December 1, 2023
Clark Fork River FPF	Long-term	Upstream Fish Passage Program	December 1, 2023
Spawning Shelf	Long-term	Clark Fork River Population Monitoring	December 1, 2023
Temperature Station 2	Long-term	Clark Fork River Population Monitoring	December 1, 2023

*As approved by the Management Committee on 3/14/2023*

Stream and site name	Site type	Project Plan title	Data due date
Cabinet Gorge Dam forebay	Project	Total Dissolved Gas Monitoring	December 1, 2023
Downstream Cabinet Gorge <sup>1</sup>	Project	Total Dissolved Gas Monitoring	December 1, 2023
Downstream Cabinet Gorge Shore Station	Project	Total Dissolved Gas Monitoring	December 1, 2023

<sup>1</sup> This is considered a duplicate site to “Downstream Cabinet Gorge Shore Station.” A sonde will not be deployed at this location unless the Shore Station becomes nonoperational and cannot be fixed in a timely manner. Temperature will only be collected at this location if a sonde is deployed.



## **2023 PROJECT PLAN**

### **Trophic Monitoring in Lake Pend Oreille and Pend Oreille River Idaho**

#### **Project Contact**

Kristin Lowell, Idaho Department of Environmental Quality, (208) 769-1422,  
[Kristin.Lowell@deq.idaho.gov](mailto:Kristin.Lowell@deq.idaho.gov)

#### **Project History**

Trophic monitoring on Lake Pend Oreille (LPO) and Pend Oreille River is a continuing project that has been performed regularly since 2005. This project was ranked by the WRTAC and first approved by the Management Committee (MC) in 2013. It was subsequently approved by the MC 2014–2017. Due to other LPO monitoring priorities, trophic monitoring was not conducted in 2018. To maintain continuity in this monitoring program, the project was again proposed 2019–2022 and approved by the MC. The scope and budget for this project are reviewed by the Management Committee (MC) annually. Modifications to the MC-approved scope/budget are being requested and are described in the Background section.

#### **Background**

Existing data suggests that the trophic status of the nearshore areas of the northern region of LPO are progressing to eutrophic conditions more rapidly than the nearshore water in the mid/southern region and open waters and of the lake. The regional trend analysis in the mid- and southern region of the lake shows total phosphorus concentrations and trophic conditions have not changed significantly over time (DEQ 2015a).

The *Total Maximum Daily Load (TMDL) for Nutrients for the Nearshore Waters of the Pend Oreille Lake, Idaho* (Nearshore TMDL) is a prescription for the lake for water quality conditions to support aquatic life (DEQ, 2002). The Nearshore TMDL set an average total phosphorus target of 9.0 µg/L for aquatic life use support. It also set an action threshold target of 12 µg/L that represents an instantaneous total phosphorus concentration to direct future monitoring and to evaluate potential impairment of the monitoring site. A study suggests the TMDL target has not been met in the northern region of the lake but is being met in the southern end of the lake (DEQ 2015a).

After two seasons of a closer look at the northern bays and Pend Oreille River, the Idaho Department of Environmental Quality (DEQ) will return to our long-term trend sampling regime modified from monitoring sites established in the 1990s by Falter et. al (1992). We have also incorporated two Pend Oreille River sites into this long-term trend monitoring plan. Long-term trend monitoring stations are provided in Figure 1 and Table 1. We believe this is the best use of resources and will allow us to build on an already established long-term data set given the few times we go out each year. In addition, we are adding an additional sampling event to give us a more robust data set with which we can run statistics and do reporting. The DEQ will collect water quality data necessary for evaluation of the status and trend in trophic conditions in the long-term trend stations of LPO. The trophic indices will be determined by the Carlson's Trophic Index (Carlson 1977), which is based on concentrations of nutrients, chlorophyll-a, and water clarity. Results of this ongoing investigation will guide implementation of nutrient reduction projects and future National Pollution Discharge Elimination System permitting. Changes in

trophic status can have implications for the LPO foodweb and have the potential to affect fisheries management in the lake.

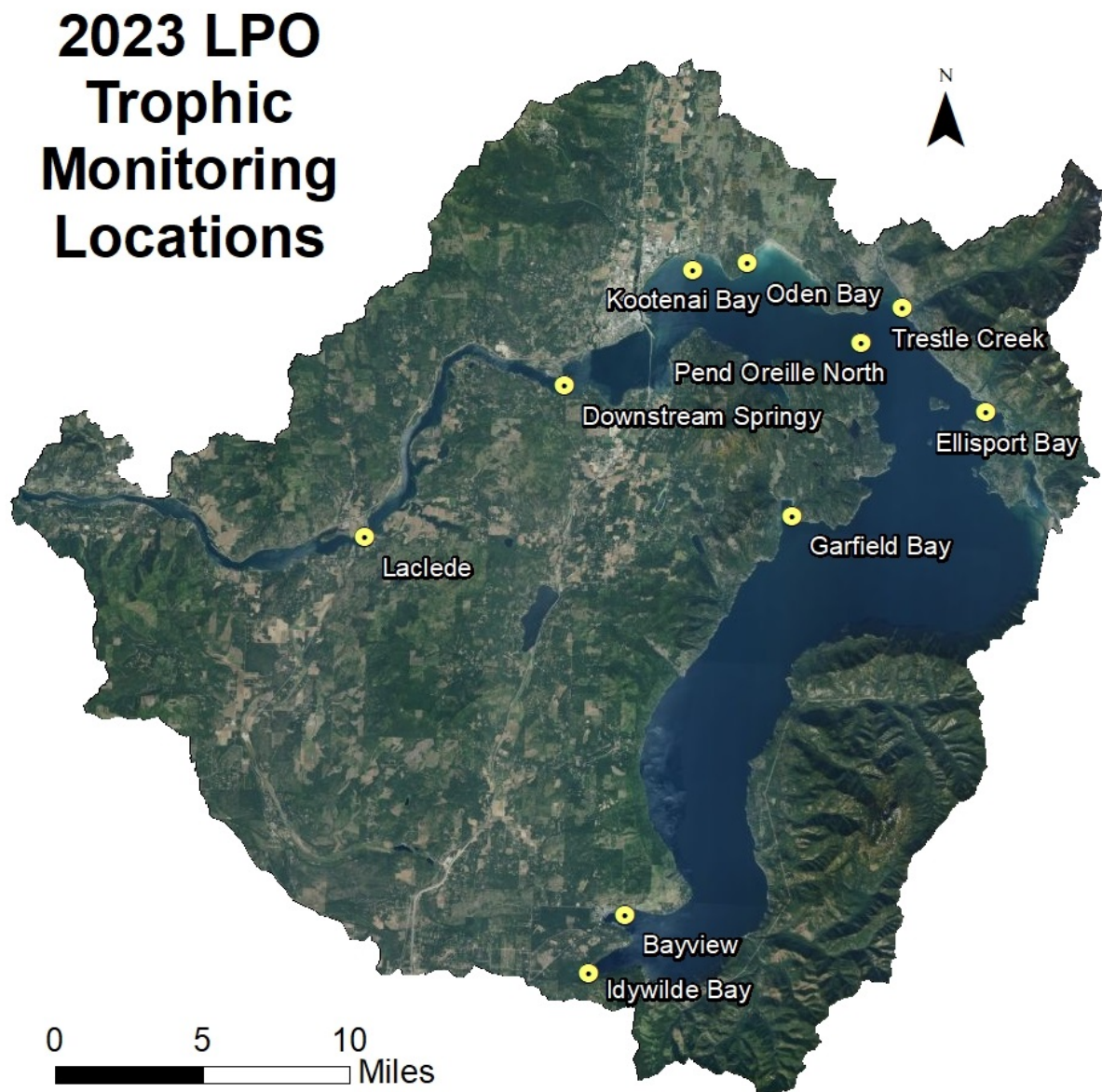


Figure 1. Map of long-term trend trophic monitoring sites.

Table 1. List of long-term trend trophic monitoring sites

Station Name	Type	Latitude (WGS84)	Longitude (WGS84)
Oden Bay	Nearshore	48.30307	-116.469155
Kootenai Bay	Nearshore	48.298833	-116.509866
Trestle Creek	Nearshore	48.283595	-116.354712
Pend Oreille North	Open Water	48.2659	-116.38433
Downstream Springy	River	48.23995	-116.60142
Ellisport Bay	Nearshore	48.233333	-116.290278
Garfield Bay	Nearshore	48.179722	-116.430833
Laclede	River	48.16235	-116.74435
Bayview	Nearshore	47.981389	-116.543333
Idewilde Bay	Nearshore	47.951847	-116.568864

### Goal

The goal of this project is to better understand the relationship between nutrients and trophic status and their variability across regions and long-term trend stations in LPO and Pend Oreille River.

### Objectives

1. Collect routine chemical and physical data in long-term trend stations in LPO and Pend Oreille River.
2. Collect water quality data to understand nutrient speciation and trophic conditions in long-term trend stations in LPO and Pend Oreille River
3. Compare conditions in the northern region of the lake with the mid- and southern regions of the lake using a long-term data set first established in the 1990s.

### Methods

Monitoring conducted by DEQ follows directives outlined in the LPO and River Trophic Monitoring Quality Assurance Project Plan (DEQ 2015b).

### Water Quality Monitoring

Idaho Department of Environmental Quality's 2023 monitoring will include seven nearshore stations, two open water stations, and two Pend Oreille River stations during each sampling event. To obtain a more robust data set, monitoring will take place four times July–September 2022. Monitoring events will be at least 15 days apart. The monitoring sites are shown in Figure 1.

The following is a list of water quality data collected under the routine trophic monitoring program:

- Profiles through the water column of chemical and physical parameters including water temperature, pH, dissolved oxygen, conductivity, and Secchi depth.
- A composite of either five samples taken from equal-depth intervals or depth integrated with a peristaltic pump from the lake surface to a depth as directed by stratification of

the station and the depth of the photic zone. Samples are taken to the analytical laboratory for analysis of total phosphorus, chlorophyll-a, total kjeldahl nitrogen, and nitrate + nitrite (as N). Additionally, the Idaho Department of Fish and Game has asked for analysis of total dissolved phosphorus be added as it will allow them to evaluate overall lake productivity and provide insight to trophic interactions that affect kokanee.

- If the station is stratified, a grab sample at ½ the depth between the hypolimnion knee and the lake bottom. Samples are taken to the analytical laboratory for analysis of total phosphorus, total kjeldahl nitrogen, nitrate + nitrite, and total dissolved phosphorus.

### **Work Products**

- Annual Work Summary; due December 1, 2023

### **Permitting Requirements**

Not applicable for the tasks proposed in this project plan.

Endangered Species Act consultation for this project plan is associated with the 2019 Biological Opinion on the effects of continued operation of the Clark Fork Hydroelectric Project on Bull Trout and designated Bull Trout critical habitat (BiOp). This project plan is consistent with the analyses and conclusions contained in the 2019 BiOp and will adhere to all appropriate Terms and Conditions designed to reduce the extent and effects of incidental take on Bull Trout. No incidental take of Bull Trout is anticipated as a result of this project plan; therefore, no take reporting is required.

### **Cultural/Historic Resource Review**

Not applicable for the tasks proposed in this project plan. There are no ground and/or vegetation disturbing activities, or proposed impacts to cultural/historic resources.

### **Benefit to the Resource**

Fish species that are expected to benefit from the project include Bull Trout (*Salvelinus confluentus*), Westslope Cutthroat Trout (*Oncorhynchus clarkii lewisi*) and kokanee salmon (*Onchrynchus nerka*). This project evaluates the water quality status of habitat affected by elevated total dissolved gas and further develops baseline data against which cumulative impacts can be evaluated. Results from this project could be used to evaluate synergy of trophic status and total dissolved gas on the fish community. Characterizing water quality over time to identify trends helps ensure that project implemented under this protection, mitigation and enhancement measure are optimized for longevity and effectiveness. Water quality monitoring will dovetail with past efforts to track trophic status, nutrient loading, and metals loading from sampling previously approved by the Management Committee. Water quality data will improve interpretation of success of fishery recovery plans.

### **Budget**

#### ***Nutrients: Lab Analysis***

Total Events: 4 (four events from July–September)

Total Stations: 10 stations with 4 events = 40 stations

It is anticipated that 20 stations of the 40 during the monitoring season will be iso-thermal.

It is anticipated that 20 stations of the 40 during the monitoring season will be stratified.

The following analyses will be performed on water quality samples collected at each station (Stratified stations have two samples collected for total phosphorus, nitrate + nitrite, total kjeldahl nitrogen, and total dissolved phosphorus):

**Analysis:**

Total phosphorus (method 4500 PE) = \$45

Nitrate + Nitrite (as N) = \$35

Total Kjeldahl Nitrogen = \$45

Total dissolved phosphorus (method 4500 PE) = \$45

Chlorophyll-a = \$50

Lab Analysis Cost: iso-thermal stations = \$220

Total cost for 20 iso-thermal stations = \$4,400

Lab Analysis Cost: stratified stations = \$390

Total cost for 20 stratified stations = \$7,800

***Quality Assurance Lab Analysis***

Duplicates = 1 each event

Total cost for duplicates x 4 events = \$880

Blanks = 1 each event

Total cost per blank x 4 events = \$880

Total cost for quality assurance = \$1,760

***Total Season Lab Costs***

20 iso-thermal Stations = \$4,400

20 stratified Stations = 7,800

Quality Assurance = \$1,760

Grand Total Cost Lab Analysis: \$13,960

Item	Estimated Carryover <sup>1</sup>	2023 Budget Request
Nutrient lab analysis	\$2,000	\$12,200
Nutrient quality assurance lab analysis	\$0	\$1,760
<b>Total</b>	\$2,000	\$13,960
<b>Anticipated Expenditures</b>		\$15,960

<sup>1</sup> Estimated carryover of unexpended, approved funds as of January 1.

A match of \$14,128 will be provided by DEQ covering employee time spent sampling, data quality control, data management, and writing a summary report as well as the cost of 2–3 days use of the boat used for sampling each event.

### Literature Cited

Carlson, R. E. 1977. A Trophic State Index for Lakes. *Limnology and Oceanography* 22(2):461–369.

DEQ (Idaho Department of Environmental Quality). 2002. *Total Maximum Daily Load (TMDL) for Nutrients for the Nearshore Waters of the Pend Oreille Lake, Idaho*

DEQ (Idaho Department of Environmental Quality). 2015a. *Nutrient TMDL for the Nearshore Waters of Lake Pend Oreille, Idaho TMDL Five-Year Review*.

DEQ (Idaho Department of Environmental Quality). 2015b. *Quality Assurance Project Plan Lake Pend Oreille and River Trophic Monitoring*.

Falter, C.M., D. Olson, and J. Carlson. 1992. *The Nearshore Trophic Status of Lake Pend Oreille, Idaho*. A report submitted to Idaho Division of Environmental Quality. University of Idaho, Department of Fish and Wildlife Resources, College of Forestry, Wildlife & Range Sciences and the Idaho Water Resources Research Institute.

## **2023 PROJECT PLAN**

### **Box Canyon Reservoir Northern Pike Suppression**

#### **Project Contact**

Shane Harvey, Kalispel Tribe of Indians Natural Resources Department, (509) 447-7158,  
[sharvey@knrd.org](mailto:sharvey@knrd.org)

#### **Project History**

The Box Canyon Reservoir (BCR) Northern Pike (NP) Suppression Project was originally approved by the Management Committee in 2012 and has since been annually approved and funded through the Clark Fork Settlement Agreement (CFSA) Appendix F5 program. Initially the project was ranked as a three-year effort and was therefore not ranked 2013–2014. With a reduced scale of activities proposed, it was approved but not ranked by the Water Resources Technical Advisory Committee in 2015–2022. Based on the increased NP catch since 2021, the suppression effort has been scheduled for 8 weeks.

#### **Background**

For the purpose of brevity in this proposed Project Plan, background information on NP biology, status in BCR, and management in Washington State are only briefly summarized. For a more complete background and project description see the initial 2012 proposal for this project and subsequent annual summaries and comprehensive reports submitted (2012–2021; 2022 forthcoming) to Avista.

Northern Pike have been widely distributed outside their native range in the western US, including illegal introduction to the Clark Fork River, Montana (Vashro 2011). They migrated further downstream and become firmly established in BCR, a 55-mile-long impoundment of the Pend Oreille River, WA. First detected in 2004, the BCR population of NP had expanded exponentially from less than 400 individuals in 2006 to over 5,500 individuals in 2010 between Pioneer Park and Riverbend; it was estimated that in excess of 10,000 adult pike existed in the reservoir in 2011(Connor et al. *in prep*). Northern Pike expanded their range within BCR and have continued to expand downstream to Boundary Reservoir, the Pend Oreille and upper Columbia rivers in British Columbia (BC) and Lake Roosevelt (Columbia River) in Washington. Population growth and geographical expansion threatens native species conservation and recovery in the Pend Oreille watershed and the entire Columbia River ecosystem.

In BCR, relative abundance of most other native and non-native fish species declined in the presence of NP. Northern Pike pose threats to Bull Trout (BT) and Westslope Cutthroat Trout (WCT) entrained at Albeni Falls Dam (AFD). No permanent fish passage structure exists at AFD, so temporary upstream passage has been provided since 2007. Northern Pike threatens the survival of these species due to a high degree of habitat overlap, especially when native salmonids seek thermal refuge within the littoral zones. Extensive efforts to increase relative abundance of native salmonids in the lower Pend Oreille through mainstem fish passage projects, tributary restoration and conservation aquaculture are seriously compromised by NP.

Given the potential impacts of NP, Kalispel Tribe of Indians Natural Resources Department

(KNRD) and Washington Department of Fish and Wildlife (WDFW) developed a management position to:

1. Minimize the impacts of NP to native species.
2. Reduce the number of NP in BCR.
3. Reduce the spread of NP downstream and prevent further illegal introduction.

Kalispel Tribe of Indians Natural Resources Department and WDFW developed and implemented measures designed to drastically reduce NP abundance in BCR including the removal of NP as a gamefish in WA, maintaining their designation as a prohibited species, harvest-oriented fishing contests, and implementation of large-scale mechanical suppression projects. Washington Department of Fish and Wildlife also produced a webpage (<https://wdfw.wa.gov/species-habitats/invasive/esox-lucius#invasive>) to share information on the impacts of NP, the management position, and mechanical suppression/survey results. Thus far mechanical suppression (implemented 2012–2022) has been the primary measure leading to the significant reduction of NP in BCR.

In total, more than 18,600 NP have been removed in the over 5,800 gillnet sets since 2012 in BCR. Given the observed catch-per-unit-effort (CPUE) from 2012–2022 Spring Pike Index Netting (SPIN) surveys, the NP population appears to have been largely suppressed in BCR. The adult population south of Riverbend (including sloughs) has been reduced by as much as 93% when compared to pre-suppression levels. However, failure to maintain a depressed population has been shown to increase the recruitment level from an exploited NP population (Colby et al. 1987; Wydoski and Whitney 1999). Reducing the predation risk and competition for available resources has the potential to increase survival rates for juvenile NP.

Monitoring and mechanical suppression of NP is also occurring in the Pend Oreille and Columbia Rivers in BC (AMEC 2017) and Lake Roosevelt (Columbia River in WA; Brent Nichols pers. comm.). Localized spread in disconnected water bodies is also a concern. WDFW has received several reports of lakes containing NP (Randy Osborn and Bill Baker pers. comm.); so far two lakes with NP have been treated with piscicide (Fish Lake in Spokane Co. and Upper/Lower Lead King Lakes in Pend Oreille County). This issue has moved from a localized population problem to a significant regional and international management concern for native and sport fisheries in the blocked area of the Columbia River Basin (above Chief Joseph Dam) and anadromous salmon and steelhead fisheries below the blocked area.

Mechanical suppression of NP, using gillnets, is a well-established management tool (see previous proposals and reports on this project for details). Mechanical suppression of the BCR population of NP began in 2012, with an objective to reduce abundance of the adult population by 87% at the end of 2014. This would occur by reducing the population from 13.2 NP/net night to <1.73 NP/net night in southern ½ of BCR and from 2.9 NP/net night to <0.5 NP/net night in northern ½ of BCR, in the SPIN survey. Although the initial objective was the reduction in NP abundance, a continued effort would be necessary (2015 – on) to prevent a population rebound to pre-suppression levels.

With the population of NP in BCR currently in a depressed state, sexually mature individuals

available to spawn will be limited. Interannual variation in abundance (e.g., increases observed in 2019–2022) is expected periodically, as complete eradication is unlikely in this system. Increases in abundance can lead to potential re-establishment of the population if adequate annual suppression effort is not applied. As such, the level of suppression is modified annually to reflect observed changes in the population or a planned or unexpected decrease in effort, as was the case in the 2020 netting season. Due to the abruptly shortened 2020 season with notable catch, and the increase in NP captured in 2021–2022, it is critical to continue BCR Northern Pike suppression in 2023 at the current level of effort. This effort will also serve to inform biologists to changes in the population, which if observed, may require further in-year or out-year adaptations (e.g., timing, overall effort).

### **Goal**

The goal of the BCR NP Suppression Project is to protect and increase native fish species in the reservoir and adjoining habitats by decreasing predation through the continued implementation of NP suppression.

### **Objectives**

1. Mechanically suppress the BCR NP population to maintain an abundance of <1.7 NP/net night in the core area between Pioneer Park and Riverbend (including all sloughs) and <0.5 NP/net night north of Riverbend, as evaluated during the annual SPIN survey.
2. Monitor any evidence of a NP compensatory response (e.g., increased juvenile survival) to avoid rapid population expansion.

### **Tasks**

1. Obtain necessary permits from WDFW and USFWS. This process will occur outside of the timeframe and funding of this proposed Project Plan but is an integral part of the project. (Objectives 1 and 2).
2. Obtain/prepare equipment: gillnets, buoys/anchors, safety equipment, etc. Gillnets are custom built and along with other equipment will be purchased prior to initiating NP suppression (Objectives 1 and 2).
3. Staff primary field personnel. Two field crews will be required to implement this project. Each field crew consists of a vessel (boat) operator (either Biologist II or Technician III) and two deck crewmen (technicians) (Objectives 1 and 2).
4. Implement mechanical suppression 4 days/week with up to two 3-person crews for a total of 8 weeks. Mechanical suppression will consist of the deployment up to 40 gill nets daily (24-hr sets) from vessels specifically outfitted for gillnetting; nets will have the same specifications as previous years. Beginning at ice-out of sloughs (early March), netting will occur on a weekly schedule; suppression netting is scheduled for February 27 through April 20, 2023. Timing and duration of suppression, location, and netting saturation will be at the discretion of the biologists and field staff on the project (Objectives 1 and 2).

5. Complete SPIN survey to monitor effectiveness of suppression effort. To determine if target abundances of NP have been maintained, A SPIN survey will be implemented May 1–4, 2023; this is an integral component of this project, but not directly funded through the CFSA (Objectives 1 and 2).
6. All NP caught during suppression and SPIN will be selected for biological data collection. Data collection will include total length (mm), weight (g), sex, and maturity. Data will be recorded in the field, then be entered, QA/QC performed, analyzed, and interpreted. All catches will be monitored for an abnormally high percentage of younger (i.e., <350 mm) individuals and potentially, changes in maturation (Objectives 1 and 2).

### **Work Products**

- Annual Project Update; final due November 01, 2023
- Annual Work Summary; due November 15, 2023
- Comprehensive Project Report 2012–2024; final due November 1, 2024

### **Permitting Requirements**

The WDFW Scientific Collection permit application will be submitted December 2022 and will be obtained by March 2023.

Endangered Species Act consultation for this project plan is associated with the 2019 Biological Opinion on the effects of continued operation of the Clark Fork Hydroelectric Project on Bull Trout and designated Bull Trout critical habitat (BiOp), and the Kalispel Tribe's existing permit pursuant to Section 10 of the Act. This project plan is consistent with the analyses and conclusions contained in the 2019 BiOp and the Kalispel Tribe's Section 10 permit and will adhere to all appropriate Terms and Conditions designed to reduce the extent and effects of incidental take on Bull Trout. Incidental take reporting for this project plan will be included in the annual Biological Opinion report as required by Term and Conditions 15–18 of the 2019 Incidental Take Statement, as well as the Kalispel Tribe's annual Section 10 report to the USFWS.

### **Cultural/Historic Resource Review**

Not applicable for the tasks proposed in this project plan, there are no ground and/or vegetation disturbing activities, or proposed impacts to cultural/historic resources.

### **Benefit to the Resource**

This project is consistent with Clark Fork Settlement Agreement, Appendix F5 Gas Saturation Control, Mitigation, and Monitoring Program measures: “The purpose of this measure is to provide for the study, control, mitigation, and monitoring of gas supersaturation and the associated impacts to biological resources in the lower Clark Fork-Lake Pend Oreille (LCFR-LPO) system related to spill at the Clark Fork Projects.” Furthermore, it aligns with other mitigation projects currently funded through the Appendix F5 Program (e.g., Lake Pend Oreille Lake Trout trap netting, gill netting, and angler incentive projects). The project is also consistent with Appendix C “to achieve the goal of increasing the long-term population viability of native salmonids in the Lake Pend Oreille-lower Clark Fork River system”. Component (3) of Appendix C addresses similar threats to native salmonids by implementing the “Non-Native Fish

Suppression Project in the East Fork Bull River”. Outside of the CFSA, this project is further supported by the 2009 Bonneville Power Administration (BPA) Fish and Wildlife Program basin-wide strategies for non-natives (see 2012 proposal for this project). The Intermountain Province Subbasin Plan also clearly supports this project (also see 2012 proposal). This project is also supported by downriver interests (Tribes, WA, OR, BC) and five BPA funded projects sponsored by the Kalispel Tribe.

This project provides direct benefits to recovery and conservation of BT, WCT, Mountain Whitefish, native minnows and suckers, and gamefish in BCR being managed by KNRD, WDFW, and Idaho Department of Fish and Game by reducing predation and competition by NP. Reducing the predatory impact of NP on BT will increase the probability that entrained fish are collected and transported upstream of Albeni Falls Dam to complete their life history and contribute genetic diversity to depressed upstream populations. Reducing the abundance of NP in BCR demonstrates risk management and abatement for future efforts to increase the relative abundance of native salmonids in the lower Pend Oreille through mainstem fish passage projects, tributary restoration, and conservation aquaculture.

### Budget

Item	Estimated Carryover <sup>1</sup>	2023 Budget Request
Vehicle/Boat O&M	\$0	\$8,600
Gillnets, Field Supplies/Equipment, and Personal Protective Equipment X 50%	\$0	\$5,360
Personnel: 1 Biologist III (0.17 FTE), 1 Biologist II (0.25 FTE), 5 Technicians (0.14 FTE each) X 50%	\$7,900	\$40,234
Indirect Costs (24.78% of direct costs)	\$0	\$13,429
Remaining 2022 approved funds as of January 1, 2023 (anticipated to be spent prior to April 1, 2023)	\$0	\$0
<b>Total</b>	<b>\$7,900</b>	<b>\$67,623</b>
<b>Anticipated Expenditures</b>		<b>\$75,523</b>

<sup>1</sup> Estimated carryover of unexpended, approved funds as of January 1.

Implementation of this project will be cost shared by a minimum of \$67,623 (50% of total) through KNRD contracts with BPA (Non-Native Fish Suppression Project) and BIA (Invasive Species Program). An additional BPA-funded KNRD project (Joint Stock Assessment), will contribute up to \$30,000 in permitting, study design, and monitoring of the NP population through the SPIN survey. The WDFW also annually contributes up to \$30,000 in-kind toward the SPIN survey, coordination, outreach, management, technical support, and assistance with data analysis and reporting. It should be noted that the Tribes’ portion of the permitting (i.e., USFWS, WDFW) and monitoring component (SPIN) will be 100% funded outside of this request.

### Literature Cited

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- Colby, P. J., P. A. Ryan, D. H. Schupp, and S. L. Serns. 1987. Interactions in north-temperate lake fish communities. *Canadian Journal of Fisheries and Aquatic Sciences* 44 (Supplement 2):104–128.
- Connor, J. M. *In prep.* Status and management of northern pike in Box Canyon Reservoir, Pend Oreille River, WA: 2008-2010 Update. Progress Report to Bonneville Power Administration, Resident Fish Stock Status above Chief Joseph and Grand Coulee Dams Project No. 199700400, Contract No.51363.
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## **2023 PROJECT PLAN**

### **Lake Pend Oreille Experimental Walleye Angler Incentive Program**

#### **Project Contact**

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#### **Project History**

This is an ongoing project originally approved through consent mail on December 3, 2018 and approved by the Management Committee at the spring meeting since 2019. The scope and budget for this project is reviewed by the Management Committee annually.

#### **Background**

Suppression of piscivorous fishes, including Lake Trout and Rainbow Trout, has been the focus of Lake Pend Oreille (LPO) fishery management since 2006. Previous suppression programs have included incentivized angler harvest of Rainbow Trout (ended in 2013) and Lake Trout (ongoing), as well as commercial netting operations targeting Lake Trout. Through previous research, the IDFG established that reduced kokanee production in LPO, in concert with an over-abundance of upper trophic level predators had created a predator pit that would have likely led to a complete collapse of kokanee in the system (Hansen et al. 2010). The Lake Trout suppression program has been a major success and the kokanee population has responded positively.

Walleye, which were illegally introduced into Noxon Reservoir approximately 30 years ago, have become well-established throughout Noxon and Cabinet Gorge reservoirs. These reservoirs have provided suitable spawning and rearing habitat for Walleye and it is believed that downstream drift has led to subsequent invasions into the Idaho portion of the Clark Fork River, LPO and the Pend Oreille River. An expanding Walleye population has the potential to put several fish populations in LPO at risk through direct predation and competition. Walleye are prolific piscivores and their establishment in other western lentic systems has led to significant fishery management challenges, particularly where they overlap with salmonid fisheries (MFWP 2016). Lake Pend Oreille represents a critical stronghold for Bull Trout within their native range. Westslope Cutthroat Trout populations in LPO are depressed relative to historic abundances, but they appear to be reasonably ubiquitous, thus providing some diversity to the sport fishery as well as life history diversity and conservation value. Rainbow Trout in LPO provide a popular world-class trophy fishery that largely depends on abundant kokanee for forage. Kokanee themselves provide a popular yield fishery on the lake and represent a forage base for adfluvial Bull Trout. Like we are currently observing with Walleye, Lake Trout existed at low abundance in LPO for many years before they became a predation concern. Lake Trout suppression programs were instituted to reduce predation risk when we began to observe rapid population increases, as we are now seeing with Walleye. Should Walleye abundance continue to increase and the scope of their niche expand to include ecologically significant predation on kokanee, Westslope Cutthroat Trout, and juvenile Bull and Rainbow trout, some of the conservation advancement made through previous suppression programs may be at risk.

A Walleye population assessment project is currently being funded through Appendix F5 and includes monitoring, telemetry, and experimental netting. One of the goals of the population assessment project is to evaluate the feasibility of Walleye suppression as a management tool. To supplement this work, this project incentivizes angler harvest of Walleye to determine if this is an effective suppression method. This experimental program is intended to serve several purposes. First, it promotes angler harvest of Walleye in the LPO system, thus reinforcing via management that Walleye are a threat to the existing fishery. Second, it increases the potential for angling to serve as a tool for managing the Walleye threat, which is a common request from anglers. Finally, it will provide an opportunity to evaluate the effect of incentivized harvest on angler exploitation rate. Exploitation will be estimated and compared to previous estimates to assess the influence of incentivized harvest. Ultimately, this information will be useful for evaluating the role that angler harvest can play in the management of Walleye in LPO, particularly with respect to suppression feasibility.

The program is designed to provide rewards for a subset of the heads turned in in contrast to a direct per-fish bounty. A number of Walleye are tagged in the head using coded wire tags that are not visible externally. Tags are uniquely numbered and each has a reward value of \$1,000. Heads are collected throughout the year and scanned for coded wire tags. If a tag is present, the angler receives a \$1,000 reward. Additionally, anglers have their name entered into a monthly drawing for each head submitted. Each month a random drawing is conducted, and ten winners receive a \$100 reward. If less than 10 heads are turned in during a given month, then the number of drawing payouts is limited to the number of heads turned in that month.

The Walleye Angler Incentive program began in March 2019. During its first year of implementation a total of 785 Walleye were removed by 178 unique anglers. No tagged Walleye were turned in during 2019. In 2020, a total of 860 heads were turned in by 182 anglers. In addition, a total of 10 tagged Walleye (1.2% of the number of heads turned in) were submitted for the \$1,000 payment. During 2021, 113 different anglers submitted 757 heads, with five of these being tagged for \$1,000 payments (0.7%). In 2022, 155 different anglers submitted 1,247 heads, with 6 of these being tagged (0.5%; Table 1).

Table 1. Number of Walleye removed and unique anglers participating in the LPO Walleye Angler Incentive Program, by month, 2019–2022.

	2019		2020		2021		2022	
	Heads	Anglers	Heads	Anglers	Heads	Anglers	Heads	Anglers
January			12	4	10	4	21	4
February			17	5	1	1	23	7
March	26	14	60	12	85	12	14	7
April	89	31	53	15	9	3	34	10
May	79	28	71	23	54	19	82	24
June	154	43	121	39	86	28	90	17
July	156	53	137	47	215	39	471	55
August	171	42	206	43	184	28	278	42
September	76	17	130	40	76	15	117	29
October	18	5	25	12	14	7	78	11
November	9	4	14	5	13	6	27	5
December	7	1	14	4	10	2	10	2
Total	785		860		757		1,247	

### Goal

To implement an experimental angler incentive program targeting Walleye in LPO, thereby reducing the threat they pose to native and recreationally important species.

### Objectives

1. Promote angler harvest of Walleye and increase the potential for angling to serve as a tool for regulating Walleye abundance.
2. Evaluate the utility of angler harvest for regulating Walleye population abundance in the LPO system.

### Tasks

1. Conduct public outreach to make anglers aware of this new experimental program. (Objective 1)
2. Fish head freezer drop off locations around the lake will continue to be emptied, at least weekly, and maintained. Submitted fish heads will be processed. (Objective 1)
3. Tag additional Walleye in 2023 to maintain a similar tag return rate to 2022 based on estimates of annual mortality and angler exploitation rates. (Objective 1)
4. Pay anglers \$1,000 for each coded wire-tagged Walleye caught in the LPO system. (Objective 1)
5. Conduct random monthly drawings and award ten \$100 rewards per month to program participants. (Objective 1)

6. Summarized catch data will be submitted to a contractor for disbursement of reward tag payouts and facilitation of monthly random drawings and associated payouts. (Objective 2)

### **Work Products**

- Annual Project Update – 2022; final due November 1, 2023
- Annual Work Summary; due December 1, 2023
- Annual Project Update – 2023; final due November 1, 2024

### **Permitting Requirements**

Not applicable for the tasks proposed in this project plan.

Endangered Species Act consultation for this project plan is associated with the 2019 Biological Opinion on the effects of continued operation of the Clark Fork Hydroelectric Project on Bull Trout and designated Bull Trout critical habitat (BiOp), and the U.S. Fish and Wildlife Service (USFWS)-IDFG Cooperative Agreement pursuant to Section 6 of the Act. This project plan is consistent with the analysis and conclusions contained in the 2019 BiOp and the USFWS-IDFG Cooperative Agreement, and will adhere to all appropriate Terms and Conditions designed to reduce the extent and effects of incidental take on Bull Trout. Incidental take reporting for this project plan will be included in the annual Biological Opinion report as required by Term and Conditions 15–18 of the 2019 Incidental Take Statement, as well as IDFG’s annual Section 6 report to the USFWS.

### **Cultural/Historic Resource Review**

Not applicable for the tasks proposed in this project plan, there are no ground and/or vegetation disturbing activities, or proposed impacts to cultural/historic resources.

### **Benefit to the Resource**

Bull Trout, Westslope Cutthroat Trout, kokanee, and Rainbow Trout are all target species that are potentially negatively impacted by operations at Cabinet Gorge Dam that lead to gas supersaturation. The Appendix F5 TDG Alternative Mitigation Program is “focused on the protection and enhancement of the fishery resources that might be affected by the future occurrence of elevated TDG levels downstream of the Cabinet Gorge HED” (Avista 2004). The goal of this project is to evaluate the feasibility of suppression of the burgeoning Walleye population downstream of Cabinet Gorge Dam as alternative mitigation to potential adverse effects of TDG supersaturation. Further, Walleye have the potential to offset some of the gains in predation management that have been made in the *LPO Lake Trout Netting Program*, which has been the major focus of the CFSA Appendix F5 Alternative Mitigation Program.

This approach is consistent with the Avista Native Salmonid Recovery Plan (NSRP, Appendix C of the CFSA) to restore and enhance migratory forms of native salmonids, and also with the USFWS Bull Trout recovery plan (USFWS 2015). This approach is also consistent with the management objectives outlined for the Clark Fork River and LPO in the Idaho Department of Fish and Game Fisheries Management Plan 2019-2024 (IDFG 2019).

## Budget

Item	Estimated Carryover <sup>1</sup>	2023 Budget Request
Signage, flyers, and misc. outreach materials	\$0	\$250
Coded wire tag rewards	\$2,000	\$50,000
Monthly drawing rewards (10 @ \$100 each)	\$3,000	\$12,000
Avista labor (0.5 FTE)	\$2,000	\$50,000
Vehicle operating costs	\$500	\$2,500
Supplies (freezers, freezer parts, bags, etc.)	\$500	\$2,000
Contractor cost to administer payments	\$1,000	\$2,000
<b>Total</b>	<b>\$9,000</b>	<b>\$118,750</b>
<b>Anticipated Expenditures</b>		<b>\$127,750</b>

<sup>1</sup> Estimated carryover of unexpended, approved funds as of January 1.

NOTE: Although \$50,000 was requested for coded wire tag rewards, our best estimate of angler exploitation and natural mortality suggests  $\leq 10$  of the tagged fish will be caught and submitted for the \$1,000 payment. Thus, the actual angler payout will likely be approximately  $\leq \$10,000$  for tagged fish, making the actual cost to implement the program for one year closer to \$52,000.

A match of approximately \$5,000 of IDFG funds will be allocated towards this project for general administration, public outreach, data analysis, etc.

## Literature Cited

Avista. 2004. Final Gas Supersaturation Control Program for the Clark for Project. Avista Corporation: Spokane, Washington. 90 pages + appendices.

Hansen, M. J., D. Schill, J. Fredericks, and A. Dux. 2010. Salmonid predator-prey dynamics in Lake Pend Oreille, Idaho, USA. *Hydrobiologia* 650:85-100.

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## **2023 PROJECT PLAN**

### **Lake Pend Oreille/Clark Fork River Walleye Population Assessment**

#### **Project Contact**

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#### **Project History**

This is a continuing project first approved in 2018. The scope and budget for this project are reviewed by the Management Committee annually.

#### **Background**

Suppression of piscivorous fishes, including Lake Trout and Rainbow Trout, has been the focus of the Lake Pend Oreille (LPO) fishery recovery since 2006. Previous suppression programs have included incentivized sport harvest of Rainbow Trout (ended in 2013) and Lake Trout (ongoing) as well as commercial trap net and gillnet operations targeting Lake Trout. Through previous research, we had established that reduced kokanee productivity in LPO, in concert with an over-abundance of upper trophic level predators had created a predator pit that would have likely led to a complete collapse of kokanee in the system (Hansen et al. 2010). The predator suppression program has been a major success and the kokanee population has responded positively.

Walleye, which were illegally introduced into Noxon Reservoir approximately 30 years ago, have become well established throughout Noxon and Cabinet Gorge reservoirs. These reservoirs have provided suitable spawning and rearing habitat for Walleye and downstream drift has led to subsequent invasions into the Idaho portion of the Clark Fork River, LPO and the Pend Oreille River. These fish appeared to exist in LPO at low densities in localized habitats, but the densities have nearly doubled every three years from 2011 to 2017 during fall Walleye index netting. Walleye catch rates during targeted Lake Trout netting have generally remained low since 2006, but Walleye catch rates are increasing during Lake Trout netting efforts throughout the northern and southern basins of the lake.

An expanding Walleye population has the potential to put several fish populations in LPO at risk through direct predation and competition. Walleye are prolific piscivores and their establishment in other western lentic systems has led to significant fishery management challenges, particularly where they overlap with salmonid fisheries (MFWP 2016). Lake Pend Oreille represents a critical stronghold for Bull Trout within their native range. Westslope Cutthroat Trout populations in LPO are depressed relative to historic abundances, but they appear to be reasonably ubiquitous, thus providing some diversity to the sport fishery as well as life history diversity and conservation value. Rainbow Trout in LPO provide a popular world-class trophy fishery that largely depends on abundant kokanee for forage. Kokanee themselves often provide a popular yield fishery on the lake and represent a forage base for adfluvial Bull Trout. Like we are currently observing with Walleye, Lake Trout existed at low abundances in LPO for many years before they became a predation concern. Lake Trout suppression programs were instituted

to reduce predation risk when we began to observe rapid population increases, as we are now seeing with Walleye. Should Walleye abundances continue to increase and the scope of their niche expand to include ecologically significant predation on kokanee, Westslope Cutthroat Trout, and juvenile Bull and Rainbow trout, some of the conservation advancements made through previous suppression programs may be at risk.

This project proposes to gather fundamental information to help us assess the status of the Walleye population, to evaluate the opportunities for management (suppression), and estimate the likely scope of their influence on the current fish community in LPO. We will accomplish this by implementing a test fishery approach that increases the scope and resolution of current management tools. We will implement a strategic acoustic telemetry program that will allow us to evaluate the number, location, and spatial extent of spawning aggregations, and we will then attempt to target one or several aggregations using various gear types to collect biological data and assess our fishing power. Finally, we will continue to evaluate Walleye diet and trophic status to determine the scope of their predator interactions. There will be synergy among these approaches that will improve their success. For example, identification of spawning aggregations will not only help clarify opportunities for suppression but will facilitate our understanding of current distribution and life history of Walleye in Lake Pend Oreille.

The Fall Walleye Index Netting Project (FWIN) is completed on a three-year rotation and is planned for the fall of 2023. It is a robust tool that is used to monitor the relative size of the Walleye population in LPO using a randomized netting design to assess and track the relative size of the Walleye population via catch per unit effort estimates (Morgan 2002). Results from the 2020 FWIN broadly suggest that Walleye catch rates in Lake Pend Oreille have decreased since 2017 (Figure 1). Lake Pend Oreille was divided into four zones to compare changes in Walleye catch rates over time among the different regions in the Lake Pend Oreille system that met the FWIN sampling criteria (Morgan 2002, Ryan et al. 2021). Three of the four zones showed relatively consistent catch rates compared to 2017, but the Pend Oreille River zone has continued to show increases in catch rate since 2011 (Ryan et al. 2021). Suppression netting conducted since 2018 coupled with the Walleye AIP program (beginning in 2019) may be partially responsible for the decreased catch rates overall, but suppression netting has focused on the north basin of the lake and most of the Walleye returned during the AIP suggest angling has focused on the north basin of the lake as well. To continue reducing Walleye densities in general and in the Pend Oreille River specifically, we plan to refine our telemetry methods in the Pend Oreille River to better evaluate residency, movements, and areas where Walleye concentrate for potential suppression and to help increase angler exploitation in the river. This may include the addition of more telemetry receivers and equipment to improve the timeliness and efficiency of the data flow from the field to the anglers or netters.

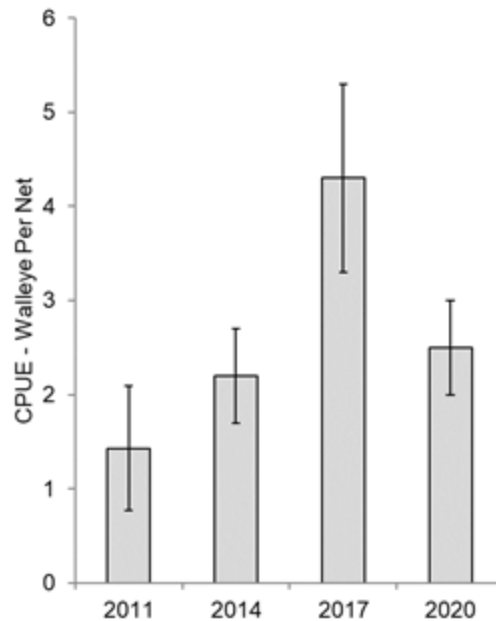


Figure 1. FWIN catch rates, 2011–2020.

Ultimately, this information will be used to establish tolerable management thresholds for Walleye densities and help identify a range of potential management options. Given burgeoning Walleye populations have a track record of negative fishery consequences in western waters, we will be focusing this project on the efficacy of suppression tools, including physical removal and use of emerging suppression technologies including Trojan Y-chromosome hatchery fish (e.g., Schill et al. 2016).

### Goal

Assess and evaluate opportunities for Walleye population management in the LPO watershed.

### Objectives

1. Locate Walleye concentrations and determine their general movement patterns to focus netting and angler effort on areas with high Walleye density to maximize catch rates and exploitation.
2. Evaluate our ability to capture Walleye in various locations during different times using different gear types.
3. Collect biological data from captured Walleye to learn about their growth, diet, origin, and other population parameters.
4. Evaluate our ability to regulate the abundance of the LPO Walleye population.

### Tasks

1. Implant acoustic tags in additional Walleye to add to the fish that are already tagged. (Objective 1)

2. Deploy, maintain, and download fixed acoustic receivers throughout LPO, the Clark Fork River, and the Pend Oreille River to determine seasonal movement patterns. (Objective 1)
3. Actively track tagged Walleye to provide real-time data to inform both targeted netting and angler effort. (Objective 1)
4. Provide timely updates on Walleye locations to the public to increase angler exploitation. (Objective 1)
5. Contract with Hickey Brothers Research, LLC in the spring to use commercial gill netting techniques to target Walleye spawning concentrations. (Objective 2)
6. Experiment with various gear types (gill nets, trap nets, e-fishing) to target Walleye in areas and during times where commercial scale netting is not feasible. (Objective 2)
7. Collect and process biosamples to estimate walleye population parameters and age class strength. (Objectives 2 and 3)
8. Compile and evaluate tracking, catch, and biological data to elucidate trends and direct future efforts. (Objective 4)
9. Continue to survey and process bathymetry data to create detailed bathymetric maps of the Clark Fork River, the Clark Fork Delta, and other areas where Walleye are known to concentrate. (Objective 1 and 2)
10. Use the bathymetric maps to facilitate targeted removal. (Objective 2)
11. Assist with FWIN sampling. (Objectives 3 and 4)

### **Work Products**

- Annual Project Update – 2022; final due November 1, 2023
- Annual Work Summary; due December 1, 2023
- Annual Project Update – 2023; final due November 1, 2024

### **Permitting Requirements**

Not applicable for the tasks proposed in this project plan. Any necessary Endangered Species Act consultation or take reporting will be conducted under Idaho Department of Fish and Game's (IDFG) Section 6 Agreement. Endangered Species Act consultation for this project plan is associated with the 2019 Biological Opinion on the effects of continued operation of the Clark Fork Hydroelectric Project on Bull Trout and designated Bull Trout critical habitat (BiOp), and the U.S. Fish and Wildlife Service (USFWS)-IDFG Cooperative Agreement pursuant to Section 6 of the Act. This project plan is consistent with the analysis and conclusions contained in the 2019 BiOp and the USFWS-IDFG Cooperative Agreement, and will adhere to all appropriate Terms and Conditions designed to reduce the extent and effects of incidental take on Bull Trout. Incidental take reporting for this project plan will be included in the annual Biological Opinion

report as required by Term and Conditions 15–18 of the 2019 Incidental Take Statement, as well as IDFG’s annual Section 6 report to the USFWS.

### Cultural/Historic Resource Review

Not applicable for the tasks proposed in this project plan, there are no ground and/or vegetation disturbing activities, or proposed impacts to cultural/historic resources.

### Benefit to the Resource

Bull Trout, Westslope Cutthroat Trout, kokanee, and Rainbow Trout are all target species that are negatively impacted by operations at Cabinet Gorge Dam that lead to gas supersaturation. The Appendix F5 total dissolved gas (TDG) Alternative Mitigation program is “focused on the protection and enhancement of the fishery resources that might be affected by the future occurrence of elevated TDG levels downstream of the Cabinet Gorge HED [Hydroelectric Development]” (Avista 2004). The goal of this project is to evaluate the potential risk and feasibility of suppression of the burgeoning Walleye population downstream of Cabinet Gorge Dam as alternative mitigation to potential adverse effects of TDG supersaturation. Further, Walleye have the potential to offset some of the gains in predation management that have been made in the *LPO Lake Trout Netting Program* (also funded through Appendix F5 of the CFSA).

Our approach is consistent with the Avista Native Salmonid Restoration Plan (Appendix C of the CFSA) to restore and enhance migratory forms of native salmonids, and also with the USFWS Bull Trout recovery plan (USFWS 2015). This approach is also consistent with the management objectives outlined for the Clark Fork River and Lake Pend Oreille in the Idaho Department of Fish and Game Fisheries Management Plan 2019-2024 (IDFG 2019).

### Budget

Item	Estimated Carryover <sup>1</sup>	2023 Budget Request
Contract with Hickey Bros. LLC for up to three weeks of targeted Walleye netting	\$0	\$55,000
Full Time Benefitted IDFG Technician including overhead (0.67 FTE)	\$14,000	\$30,000
Temporary Non-benefitted IDFG Technician including overhead (0.67 FTE)	\$0	\$20,000
Avista staff time (0.25 FTE)	\$2,000	\$25,000
<b>Total</b>	<b>\$16,000</b>	<b>\$130,000</b>
<b>Anticipated Expenditures</b>		<b>\$146,000</b>

<sup>1</sup> Estimated carryover of unexpended, approved funds as of January 1.

Idaho Department of Fish and Game, using Bonneville Power Administration (BPA) funds, purchased the acoustic tags and receivers for this project. This project will be administered and implemented by IDFG fisheries research staff paid with BPA funds, including Eric Geisthardt (6 mos, ~\$48,000) and Ryan Hardy (2 mo, ~\$16,000). All additional operating costs (boat, fleet rentals, fuel, etc.) will be covered by IDFG using BPA funds.

## **Literature Cited**

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- Ryan, R., M. Corsi, and P. Rust. 2021. Characteristics of an Introduced Walleye Population with Implications for Suppression. *North American Journal of Fisheries Management* 41:1863–1877.
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- USFWS (U.S. Fish and Wildlife Service). 2015. Recovery plan for the coterminous United States population of bull trout (*Salvelinus confluentus*). Portland, Oregon. xii + 179 pages.

## **2023 PROJECT PLAN**

### **Lake Pend Oreille Lake Trout Angler Incentive Program**

#### **Project Contact**

Ken Bouwens, Idaho Department of Fish and Game (IDFG), (208) 769-1414,  
[ken.bouwens@idfg.idaho.gov](mailto:ken.bouwens@idfg.idaho.gov)

#### **Project History**

This is a continuing project that was originally approved by the Management Committee (MC) in 2007. The scope and budget for this project are reviewed by the MC annually.

#### **Background**

The kokanee population of Lake Pend Oreille (LPO) declined dramatically from historic levels due to a variety of habitat and ecological impacts. Historically, the adult population of around five million kokanee supported a sport and commercial fishery averaging one million fish per year. Predation was the primary factor limiting kokanee population recovery. Lake level management, restricted fish passage, and floods have also contributed to the decline of kokanee.

In 2000, the kokanee fishery was closed to increase spawning escapement and limits on Rainbow and Lake trout were liberalized to encourage harvest of Lake Trout and reduce predation on young kokanee. Despite liberalized harvest opportunity, angler exploitation was not keeping up with an expanding Lake Trout population. Non-native Lake Trout were not only recognized as a threat to the kokanee population and the trophy Rainbow Trout fishery, but case studies throughout the intermountain west have clearly demonstrated that Lake Trout also threaten the persistence of Bull Trout.

To address kokanee predation issues in LPO, predator removal using a large-scale netting program and an Angler Incentive Program (AIP) was implemented beginning in 2006. The goal of both the netting and angler harvest programs is to suppress Lake Trout and subsequently increase kokanee survival. The AIP additionally had the goal of reducing Rainbow Trout abundance; however, this component of the program was discontinued in 2013 because of limited success and increased resiliency of the kokanee population.

The responses observed to date suggest that suppression of Lake Trout can be achieved and provide benefits for both kokanee and Bull Trout. A positive response by kokanee has been observed corresponding to a reduction in the Lake Trout population, and kokanee abundance estimates have continued along an increasing trajectory. However, high exploitation of Lake Trout needs to be sustained.

The combined predator removal programs in LPO continue to demonstrate progress (Figure 1). Idaho Department of Fish and Game returned to trophy management of the Rainbow Trout fishery in 2013 and discontinued Rainbow Trout reward payments as part of the AIP. Idaho Department of Fish and Game (IDFG) opened a kokanee harvest fishery in 2013, and in 2014 daily kokanee limits were raised from six to 15 fish. Despite these signs of success, continued pressure on Lake Trout is necessary to insure long-term suppression of the population.

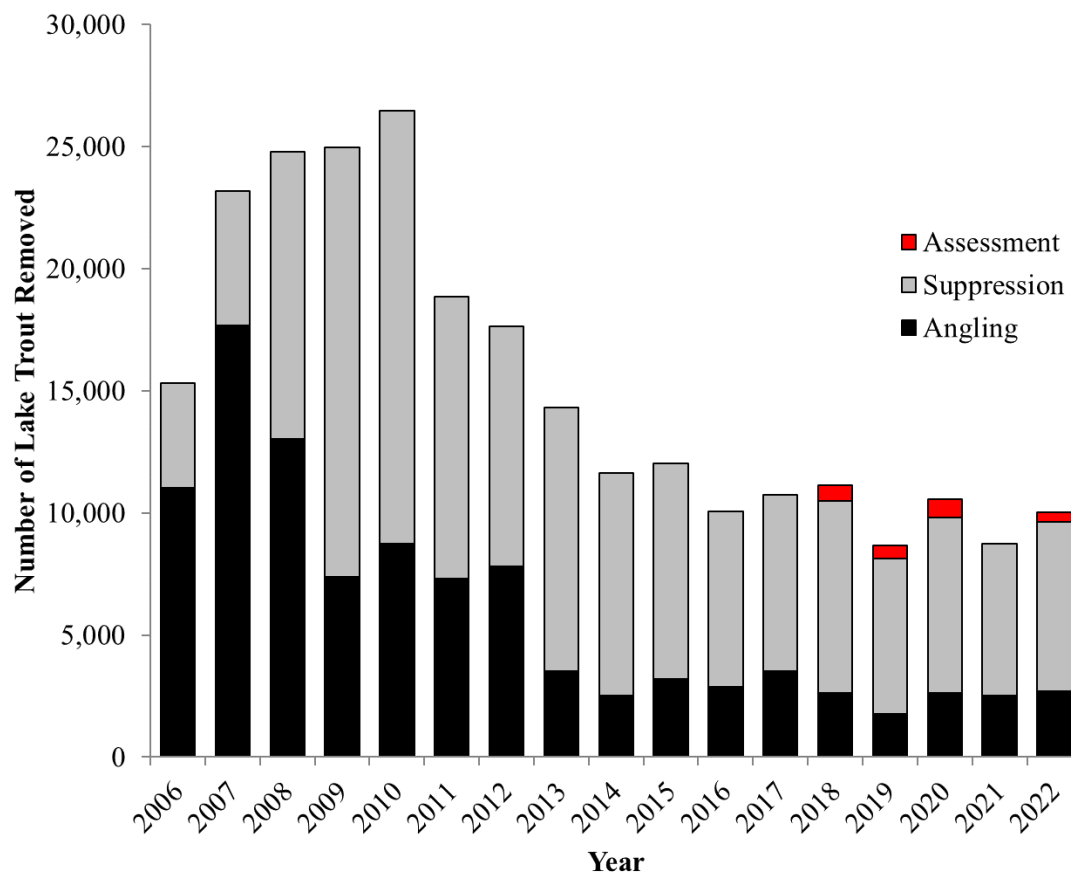


FIGURE 1. Lake Trout harvested and removed from Lake Pend Oreille, Idaho by year and collection method.

Anglers continue to play a necessary role in maintaining high exploitation rates. The efficiency of predator removal has remained at high levels under the combined effort of both netting and angling. Anglers continue to catch intermediate sized Lake Trout that are less vulnerable to netting gear during much of the sampling period as well as significant numbers of other size classes.

### Goal

Improve and maintain favorable forage base for Gerrard Rainbow Trout and Bull Trout in Lake Pend Oreille by reducing Lake Trout abundance to increase kokanee survival.

### Objective

1. Maintain high angling mortality on Lake Trout.

### Tasks

1. Continue paying a \$15/fish bounty on angler caught Lake Trout from LPO. (Objective 1)

2. Fish head freezer drop off locations around the lake will continue to be emptied, at least weekly, and maintained. Submitted fish heads will be processed at the Idaho Field Station. (Objective 1)
3. Summarized catch data will be submitted to a contractor for payment. (Objective 1)
4. All illegally harvested Bull Trout turned in through the program incidentally will be genetically assessed for stream of origin. (Objective 1)
5. Make available up to \$18,000 dollars (\$2,000 per derby maximum) to be used to sponsor LPO angling derbies. (Objective 1)

### **Work Products**

- Annual Project Update – 2022; final due November 1, 2023
- Annual Work Summary; due December 1, 2023
- Annual Project Update – 2023; final due November 1, 2024

### **Permitting Requirements**

Not applicable for the tasks proposed in this project plan.

Endangered Species Act consultation for this project plan is associated with the 2019 Biological Opinion on the effects of continued operation of the Clark Fork Hydroelectric Project on Bull Trout and designated Bull Trout critical habitat (BiOp), and the U.S. Fish and Wildlife Service (USFWS)-IDFG Cooperative Agreement pursuant to Section 6 of the Act. This project plan is consistent with the analysis and conclusions contained in the 2019 BiOp and the USFWS-IDFG Cooperative Agreement, and will adhere to all appropriate Terms and Conditions designed to reduce the extent and effects of incidental take on Bull Trout. Incidental take reporting for this project plan will be included in the annual Biological Opinion report as required by Term and Conditions 15–18 of the 2019 Incidental Take Statement, as well as IDFG’s annual Section 6 report to the USFWS.

### **Cultural/Historic Resource Review**

Not applicable for the tasks proposed in this project plan, there are no ground and/or vegetation disturbing activities, or proposed impacts to cultural/historic resources.

### **Benefit to the Resource**

This project is consistent with the IDFG 2019-2024 Fish Management Plan (IDFG 2019). This project will meet the objectives of the Clark Fork Settlement Agreement Appendices A and F5 mitigation programs by directly reducing predation on kokanee and competition with Bull Trout. The project will also likely result in reduction of predation on Bull Trout and Westslope Cutthroat Trout in LPO to further benefit these species. Our approach is also consistent with the Avista Native Salmonid Restoration Plan (Appendix C) to restore and enhance migratory forms of native salmonids, and also with the USFWS Bull Trout Recovery Plan (USFWS 2015). This project is also consistent with Appendix N1 (Bald Eagle Monitoring and Protection) through enhancement of kokanee, an important food source for wintering eagles. This project provides direct, on-the-ground benefits to resources potentially adversely impacted by elevated TDG

levels in the Clark Fork River and LPO, as well as those impacted by degraded tributary habitat, by reducing competition and predation on kokanee, Bull Trout and Westslope Cutthroat Trout in LPO.

### Budget

Item	Estimated Carryover <sup>1</sup>	2023 Budget Request
Angler incentive award (4,000 fish @ \$15 each)	\$5,000	\$60,000
Avista labor (0.5 FTE)	\$4,000	\$50,000
Vehicle operating costs	\$0	\$10,000
Supplies (freezers, freezer parts, bags, etc.)	\$1,000	\$2,000
Contractor costs to administer payments	\$0	\$6,000
Genetic analysis (10 fish)	\$0	\$4,000
Derby sponsorship	\$0	\$18,000
<b>Total</b>	<b>\$10,000</b>	<b>\$150,000</b>
<b>Anticipated Expenditures</b>		<b>\$160,000</b>

<sup>1</sup> Estimated carryover of unexpended, approved funds as of January 1.

Idaho Department of Fish and Game contributes in-kind cost share to this project for logistics and planning at an estimated cost of approximately \$10,000 annually.

### Literature Cited

IDFG (Idaho Department of Fish and Game). 2019. Fisheries Management Plan 2019-2024. Boise, ID.

USFWS (U.S. Fish and Wildlife Service). 2015. Recovery plan for the coterminous United States population of bull trout (*Salvelinus confluentus*). Portland, Oregon. xii + 179 pages.

## **2023 PROJECT PLAN**

### **Lake Pend Oreille Lake Trout Netting Program**

#### **Project Contact**

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Ken Bouwens, IDFG, (208) 769-1414, [ken.bouwens@idfg.idaho.gov](mailto:ken.bouwens@idfg.idaho.gov)

#### **Project History**

This is a continuing project originally approved by the Management Committee (MC) in 2007. The scope and budget for this project are reviewed by the MC annually (budgets for the subsequent two years are reviewed annually).

#### **Background**

The kokanee population of Lake Pend Oreille (LPO) declined dramatically from historic levels due to a variety of habitat and ecological impacts. Historically, the adult population of around five million kokanee supported a sport and commercial fishery averaging one million fish per year. Predation was the primary factor limiting kokanee population recovery. Lake level management, restricted fish passage, and floods have also contributed to the decline of kokanee.

In 2000, the kokanee fishery was closed to increase spawning escapement and limits on Rainbow and Lake trout were liberalized to encourage harvest on Lake Trout and reduce predation on young kokanee. Despite liberalized harvest opportunity, angler exploitation was not keeping up with an expanding Lake Trout population. Non-native Lake Trout were not only recognized as a threat to the kokanee population and the trophy Rainbow Trout fishery, but case studies throughout the intermountain west have clearly demonstrated that Lake Trout also threaten the persistence of Bull Trout.

To address kokanee predation issues in LPO, predator removal using a large-scale netting program and an Angler Incentive Program (AIP) was implemented beginning in 2006. The goal of both the netting and angler harvest programs is to suppress Lake Trout and subsequently increase kokanee survival. The AIP additionally had the goal of reducing Rainbow Trout abundance; however, this component of the program was discontinued in 2013 because of limited success and increased resiliency of the kokanee population.

The responses observed to date suggest that suppression of Lake Trout can be achieved and provide benefits for both kokanee and Bull Trout. A positive response by kokanee has been observed corresponding to a reduction in the Lake Trout population, and kokanee abundance estimates have continued along an increasing trajectory. However, recent analyses suggest high exploitation of Lake Trout needs to be sustained for several more years to achieve Lake Trout suppression to late 1990's abundances.

The combined predator removal programs in LPO continue to demonstrate progress. The Idaho Department of Fish and Game (IDFG) returned to trophy management of the Rainbow Trout fishery in 2013 and discontinued Rainbow Trout reward payments as part of the AIP. Idaho

Department of Fish and Game opened a kokanee harvest fishery in 2013, and in 2014 daily kokanee limits were raised from six to 15 fish. Despite these signs of success, continued pressure on Lake Trout is necessary to insure long-term suppression of the population.

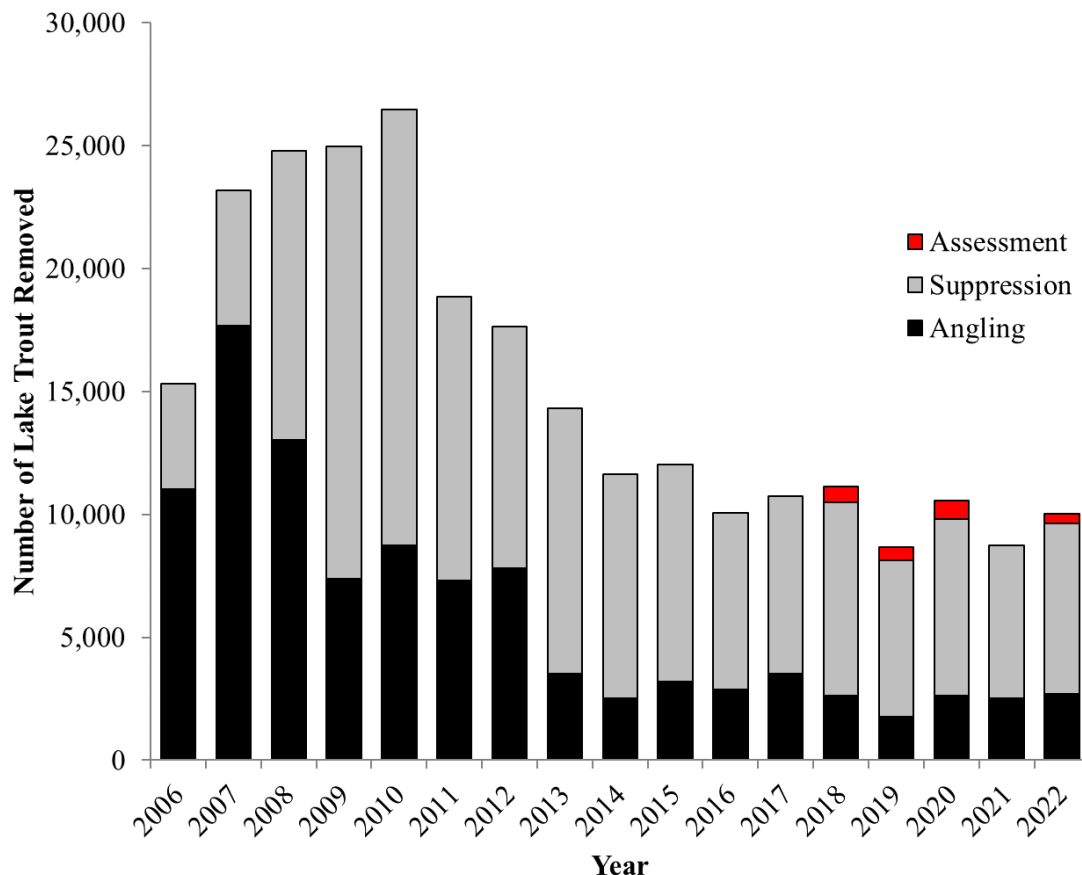


FIGURE 1. Lake Trout harvested and removed from Lake Pend Oreille, Idaho by year and collection method.

Fishing effort will remain high as efforts continue to target juvenile and spawning adult Lake Trout. However, we will continue to modify netting strategies in an attempt to improve catch efficiency and reduce bycatch mortality. We discontinued trap nets for spring fishing in 2010 following a continued decline in trap net efficiency, presumably due to declining adult Lake Trout abundance. We had maintained standardized trap net effort in the fall as a tool for monitoring relative adult Lake Trout and Bull Trout abundance, but we discontinued this effort in 2018 as we have developed improved Lake Trout monitoring tools using gillnets. We intend to continue gill netting efforts that target mature Lake Trout during the fall at spawning sites. Also, we will target juvenile Lake Trout during winter and early spring to capitalize on expected high catch rates. This also acts to focus netting when Bull Trout bycatch and mortality has been low relative to other time periods.

The long-term goal of the Lake Trout suppression program is to reduce fishing effort and transition into a maintenance suppression program that will keep Lake Trout at low density once target densities are achieved. Benefits will include an easier program to implement and reduced

costs. Results from Lake Trout population models (Hansen et al. 2019) developed by Dr. Michael Hansen (USGS, Hammond Bay Biological Station) and IDFG personnel suggest approximately 10 more years of high effort netting will be required to achieve late 1990's abundances. Once management targets are achieved, these models indicate a greatly reduced gillnet effort (~40% of peak gillnet effort) will maintain abundances at or below targets and eventually drive the Lake Trout population to extinction.

Lake Trout netting methods will closely follow those described in Rust et al. (2020). Hickey Brothers Research, LLC will be contracted to remove Lake Trout from Lake Pend Oreille using gill nets during 14 weeks in the winter/spring netting season and 14 weeks in the fall netting season. We will be conducting standardized assessment during the first three weeks of netting in January. In prior years, trap net catch rates were utilized as an index of Lake Trout and Bull Trout abundance. Trap netting was discontinued in 2018 and replaced with the random assessment netting protocol based upon an analysis by Hansen et al. (2019). Data from this program will be utilized to conduct a cohort analysis for Lake Trout, which will provide an annual age-specific abundance estimate.

Bottom-set gill nets with stretch mesh sizes ranging from 3.8 to 14 cm will be used. Each net is 274 m long and several will be tied together to form a gang that is generally set in a serpentine pattern parallel to shore. Gill nets will be set around dawn and retrieved in the late-morning (typically 4–6 hour sets). See Rust et al. (2022) for a more detailed explanation of netting methods.

Except for Lake Whitefish *Coregonus clupeaformis* all game fish captured in gill nets will be enumerated. Because of high catch rates, Lake Whitefish will be enumerated from a stratified random subset of standardized assessment netting locations. Catch rates will be calculated as the number of fish of a particular species captured per 274 m net (box). A time component is not included in these catch rates because Lake Trout catch has typically not increased with the duration of net sets (IDFG, unpublished data).

All captured individuals of target species (e.g., Lake Trout, Northern Pike *Esox lucius*, and Walleye) will be measured for total length and, with few exceptions (i.e., those tagged for research purposes), removed from the population and donated to local food banks or raptor rehabilitation facilities. Sex and maturity will be determined for most of the Lake Trout captured throughout the spawning period (September–November). Otoliths will be removed from a subset of Lake Trout during the fall (late September–December) for ageing purposes. All Bull Trout will be measured for total length, a genetic sample will be taken, and scanned for PIT tags. Previously unmarked Bull Trout will be implanted with a 12-mm full duplex PIT tag, revived in an oxygenated tank if necessary, assigned a condition score, and released. Head length and body depth will be measured, sex and maturity level determined, otoliths, scales, and fin rays will be collected, and stomach contents will be described from all Bull Trout mortalities. Pathogen samples will be taken from a subset of incidental Bull Trout mortalities.

At the spring 2021 MC meeting, approval was granted for funding of the 2022 LPO Lake Trout Netting Program. We request funding one year in advance because it provides some level of certainty in the contracting which allows for continued capital investment by Hickey Brothers Research, LLC to improve the efficiency and effectiveness of the project. Like in past years,

Bonneville Power Administration (BPA) will cover a portion of the costs for 2022. To date, approval for 2023 BPA funds has not been secured; therefore, we are maintaining our request for full Avista funding for 2023. The likelihood of approval on cost sharing in 2023 is high.

### **Goal**

Improve and maintain favorable forage base for Gerrard Rainbow Trout and Bull Trout in Lake Pend Oreille by reducing Lake Trout abundance to increase kokanee survival.

### **Objectives**

1. Maintain high netting mortality on LPO lake Trout.
2. Collect information from incidentally-caught Bull Trout.

### **Tasks**

1. Contract Hickey Brothers Research LLC to provide 28 weeks of netting. (Objective 1)
2. PIT-tag and collect genetics samples from all incidentally-caught Bull Trout. (Objective 2)
3. Collect biological samples from incidentally-caught Bull Trout mortalities. (Objective 2)
4. Provide Avista Technician support to assist with the collection of Bull Trout Pathology samples and to collect biological data from all incidentally-caught Bull Trout mortalities. (Objective 2)

### **Work Products**

- Annual Project Update – 2022; final due November 1, 2023
- Annual Work Summary; due December 1, 2023
- Annual Project Update – 2023; final due November 1, 2024

### **Permitting Requirements**

Not applicable for the tasks proposed in this project plan.

Endangered Species Act consultation for this project plan is associated with the 2019 Biological Opinion on the effects of continued operation of the Clark Fork Hydroelectric Project on Bull Trout and designated Bull Trout critical habitat (BiOp), and the U.S. Fish and Wildlife Service (USFWS)-IDFG Cooperative Agreement pursuant to Section 6 of the Act. This project plan is consistent with the analysis and conclusions contained in the 2019 BiOp and the USFWS-IDFG Cooperative Agreement, and will adhere to all appropriate Terms and Conditions designed to reduce the extent and effects of incidental take on Bull Trout. Incidental take reporting for this project plan will be included in the annual Biological Opinion report as required by Term and Conditions 15–18 of the 2019 Incidental Take Statement, as well as IDFG’s annual Section 6 report to the USFWS.

### **Cultural/Historic Resource Review**

Not applicable for the tasks proposed in this project plan, there are no ground and/or vegetation

disturbing activities, or proposed impacts to cultural/historic resources.

### Benefit to the Resource

This project is consistent with the IDFG 2019–2024 Fish Management Plan (IDFG 2019). This project will meet the objectives of the Clark Fork Settlement Agreement Appendices A and F5 mitigation programs by directly reducing predation on kokanee and competition with Bull Trout. The project will also likely result in reduction of predation on Bull Trout and Westslope Cutthroat Trout in LPO to further benefit these species. Our approach is also consistent with the Avista Native Salmonid Restoration Plan (Appendix C of the Clark Fork Settlement Agreement) to restore and enhance migratory forms of native salmonids, and also with the USFWS Bull Trout Recovery Plan (USFWS 2015). This project is also consistent with Appendix N1 (Bald Eagle Monitoring and Protection) through enhancement of kokanee, an important food source for wintering eagles. This project provides direct, on-the-ground benefits to resources potentially adversely impacted by elevated TDG levels in the Clark Fork River and LPO, as well as those impacted by degraded tributary habitat, by reducing competition and predation on kokanee, Bull Trout and Westslope Cutthroat Trout in LPO.

### 2023 Budget

Item	Estimated Carryover <sup>1</sup>	2023 Budget Request
Hickey Bros. contract Avista cost share	\$0	\$364,901
Avista labor (0.25 FTE)	\$0	\$25,000
PIT tags	\$0	\$4,000
Genetic analysis	\$0	\$75,000
<b>Total</b>	\$0	\$468,901
<b>Anticipated Expenditures</b>		\$468,901

<sup>1</sup> Estimated carryover of unexpended, approved funds as of January 1.

In 2023, the total project cost is expected to be \$644,594. We will again be cost sharing the *LPO Lake Trout Netting Program* with BPA funds administered through the IDFG LPO Resident Fish Mitigation Program. IDFG will provide \$175,693. Therefore, we do not intend to use the full amount approved in 2022 (\$624,000).

## 2024 Budget

Item	Estimated Carryover <sup>1</sup>	2024 Budget Request
Hickey Bros. contract	\$0	\$541,000
Avista labor (0.25 FTE)	\$0	\$25,000
PIT tags	\$0	\$4,000
Genetic analysis	\$0	\$75,000
<b>Total</b>	<b>\$0</b>	<b>\$645,000</b>
<b>Anticipated Expenditures</b>		<b>\$645,000</b>

<sup>1</sup> Estimated carryover of unexpended, approved funds as of January 1.

## Literature Cited

- Hansen, M. J., Corsi, M. P., and A. M. Dux. 2019. Long-term suppression of the Lake Trout (*Salvelinus namaycush*) population in Lake Pend Oreille, Idaho. *Hydrobiologia* 840:335–349.
- IDFG (Idaho Department of Fish and Game). 2019. Fisheries Management Plan 2019-2024. Boise, ID.
- Rust, P. J., N. G. Mucciarone, S. M. Wilson, M. P. Corsi, J. Strait, and W. Harryman. 2022. Lake Pend Oreille Research, 2019. Idaho Department of Fish and Game, Annual Report to Bonneville Power Administration, Contract Number 69290, Report Number 22-04, Portland, Oregon.
- USFWS (U.S. Fish and Wildlife Service). 2015. Recovery plan for the coterminous United States population of bull trout (*Salvelinus confluentus*). Portland, Oregon. xii + 179 pages.

## **2023 PROJECT PLAN**

### **Lake Pend Oreille Bull Trout Population Monitoring and Evaluation**

#### **Project Contact**

Ken Bouwens, Idaho Department of Fish and Game (IDFG), (208) 769-1414, [ken.bouwens@idfg.idaho.gov](mailto:ken.bouwens@idfg.idaho.gov) and  
Ryan Hardy, IDFG, (208) 769-1414, [Ryan.Hardy@idfg.idaho.gov](mailto:Ryan.Hardy@idfg.idaho.gov)

#### **Project History**

This is an ongoing project for 2023. The scope and budget for this project are reviewed annually by the Management Committee.

#### **Background**

This project will provide a mechanism to combine the unique and valuable data that has been collected through the Clark Fork Settlement Agreement (CFSA) over the last 20 years through separate projects into one integrated monitoring program. Many of these data have been collected through previous CFSA-supported projects but also include data collected via other funding mechanisms. Specifically, Bull Trout-specific data collected from the Lake Pend Oreille (LPO) netting programs (Lake Trout and Walleye), angler incentive programs, tributary monitoring, and redd counts will be evaluated together in this project. These data will be utilized together to evaluate the LPO Bull Trout metapopulation.

Two predator suppression programs (Lake Trout and Walleye) have been implemented on LPO to reverse the impacts of an unbalanced predator population on both kokanee and native fish assemblages. However, an average of about 300 (range: ~100–550) Bull Trout have been removed annually as incidental bycatch as part of these efforts since 2006. Every effort was made to collect as much data as possible from these fish. Data collected include total length, head length, body depth, stomach content descriptions, as well as sex, maturity level, and fecundity. Otoliths, scales, fin rays, genetic and pathogen samples were also taken. The majority of these data and samples have been archived with limited analysis to date. In addition, an average of approximately 1,100 (range: ~550–1,500) Bull Trout were released alive annually, with length data collected from and PIT tags implanted in most of these fish. The netting programs and tributary-based PIT arrays serve as interrogation points for these PIT-marked fish. Over the years, marked fish have been re-located almost 2,000 times. These mark-recapture data, in conjunction with annual redd count data, were used to develop an Integrated Population Model (IPM) that will be utilized, updated, and improved to track the overall population trajectory within LPO. This is important to evaluate the overall health of the LPO metapopulation, evaluate the impact of ongoing predator management, and inform future management decisions including a possible harvest fishery. A more complete analysis of these data can be used further inform the IPM by updating our understanding of LPO-specific Bull Trout life history, age and growth, mortality, and recruitment.

These collective data comprise a large and complicated dataset. Idaho Department of Fish and Game (IDFG) has developed a comprehensive database to handle all Lake Pend Oreille monitoring and evaluation data, including those data described above. It is important for these

datasets to be comprehensive and coordinated, in part, because there are numerous opportunities for Bull Trout recaptures across IDFG regional and research programs. One of the IDFG requirements for the development of this database was that it be compatible with, and able to be queried by, IDFG's statewide Lakes and Streams database. The development of this database is nearing completion, but the nearly year-round nature of data entry and collection requires regular database support and management. As this database matures, it will likely represent the most robust Bull Trout life history dataset in the world. Further, these data support management of other CFSA programs, especially Lake Trout suppression, Walleye suppression, Angler Incentive Program, and Fall Walleye Index Netting.

### **Goal**

Monitor and evaluate the LPO Bull Trout metapopulation.

### **Objectives**

1. Compile and organize existing LPO Bull Trout data.
2. Evaluate Bull Trout population life history, age and growth, mortality, and recruitment parameters.

### **Tasks**

1. Enter and organize existing data in a relational LPO-wide database. (Objective 1)
2. Age archived Bull Trout structures. (Objective 2)
3. Evaluate and summarize archived biodata (length, weight, fecundity, diet, etc.). (Objectives 1 and 2)
4. Collect and summarize PIT recapture data from both the suppression netting projects and tributary arrays. (Objectives 1 and 2)
5. Combine available biological, genetic, and PIT data to investigate Bull Trout tributary stray rates, growth, mortality, recruitment, state-based survival, migration timing, and spawning frequency. (Objectives 1 and 2)

### **Work Products**

- Annual Work Summary; due December 1, 2023
- Comprehensive Project Report for data through 2023; final due November 1, 2024

### **Permitting Requirements**

Not applicable for the tasks proposed in this project plan.

Endangered Species Act consultation for this project plan is associated with the 2019 Biological Opinion on the effects of continued operation of the Clark Fork Hydroelectric Project on Bull Trout and designated Bull Trout critical habitat (BiOp), and the U.S. Fish and Wildlife Service (USFWS)-IDFG Cooperative Agreement pursuant to Section 6 of the Act. This project plan is consistent with the analysis and conclusions contained in the 2019 BiOp and the USFWS-IDFG

Cooperative Agreement, and will adhere to all appropriate Terms and Conditions designed to reduce the extent and effects of incidental take on Bull Trout. Incidental take reporting for this project plan will be included in the annual Biological Opinion report as required by Term and Conditions 15–18 of the 2019 Incidental Take Statement, as well as IDFG’s annual Section 6 report to the USFWS.

### Cultural/Historic Resource Review

Not applicable for the tasks proposed in this project plan, there are no ground and/or vegetation disturbing activities, or proposed impacts to cultural/historic resources.

### Benefit to the Resource

The proposed project is entirely consistent with the Dissolved Gas Supersaturation Control, Mitigation, and Monitoring Program (Appendix F5, CFSA), through the monitoring of ongoing dissolved gas mitigation efforts funded under this appendix. As such, it is also consistent with goals of the Fish Passage/Native Salmonid Restoration Plan (Appendix C). The project also relates to Appendix A by complimenting ongoing tributary monitoring efforts in Lake Pend Oreille tributaries. It is also entirely consistent with the IDFG Fisheries Management Plan (IDFG 2019) as it supports the restoration of Bull Trout and suppression of kokanee predators in the LPO system. This project proposal is also consistent with the Lake Pend Oreille Bull Trout Conservation Plan (Resource Planning Unlimited 1999) that provides similar direction for the conservation of Bull Trout in the system.

### Budget

Item	Estimated Carryover <sup>1</sup>	2023 Budget Request
Avista labor (1.0 FTE)	\$10,000	\$90,000
Contract database consultant	\$20,000	\$0
<b>Total</b>	<b>\$30,000</b>	<b>\$90,000</b>
<b>Anticipated Expenditures</b>		<b>\$120,000</b>

<sup>1</sup> Estimated carryover of unexpended, approved funds as of January 1.

This project will be a combined effort between IDFG/Bonneville Power Administration-funded research staff and Avista staff. Thus, we expect an approximately 50% cost share for this project.

### Literature Cited

IDFG (Idaho Department of Fish and Game). 2019. Fisheries Management Plan 2019-2024. Boise, ID.

Resource Planning Unlimited. 1999. Lake Pend Oreille Bull Trout Conservation Plan. State of Idaho. Boise, Idaho.



## **2023 PROJECT PLAN**

### **Lake Pend Oreille Nearshore Index Netting**

#### **Project Contact**

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#### **Project History**

This is a continuing project first approved by the Management Committee (MC) in 2015, and again approved in 2018. This proposal is for the analysis and reporting of the third round of sampling conducted in 2022. No additional funds are requested.

#### **Background**

Native trout population abundance and growth parameters are being monitored long-term on Lake Pend Oreille (LPO) tributaries (Bouwens et al. 2021). Fish assemblage and abundance index data are also periodically being collected targeting Walleye and other demersal species in LPO (Ryan and Fredericks 2012; Watkins et al. 2015 Ryan et al. 2021) However, prior to this project, little data describing Westslope Cutthroat Trout (WCT) population levels or growth characteristics in LPO have been collected. Experimental passage of WCT over Cabinet Gorge Dam has occurred since 2015, and it is hoped that passage of WCT to historic upstream spawning grounds will bolster adfluvial populations both in the spawning reaches and in LPO. In addition, case studies throughout the intermountain west have clearly demonstrated that introduced Lake Trout have threatened the persistence of native fish assemblages including Bull Trout and WCT (Donald and Alger 1993; Fredenberg 2002; Martinez et al. 2009). The *LPO Lake Trout Netting Program* and the *LPO Angler Incentive Program* have worked jointly to remove non-native predatory fish from LPO since 2006, greatly changing the conditions in LPO in a relatively short period of time. The effects of predator management on WCT in LPO are unknown. A program to monitor the success of these projects with respect to WCT in LPO is needed.

This project is a tool to monitor WCT abundance and growth conditions within LPO. Repeated (every 3 years) sampling using standardized floating gillnet gear targeting WCT is planned. Resultant catch rates will provide an index of relative abundance. Age, weight, and length data can provide useful information regarding growing conditions. Data from this sampling event will be compared to data collected in 2015 and 2019 (Bouwens and Jakubowski 2017; Ransom et al., 2021a). This project will provide baseline and ongoing monitoring of relative WCT abundance and growth conditions with respect to transport over Cabinet Gorge Dam and LPO predator management.

In 2015 the survey was performed in the spring. It was proposed that the timing of the netting effort be changed from the spring to the fall in 2019 and beyond. It was recognized that there may be some loss in data comparability between the 2015 event and subsequent events, but migration timing data in Trestle and Granite creeks (Bouwens and Jakubowski 2017; Ransom et al. 2021b) suggested that some WCT may still be in tributaries in early June when the spring sampling was implemented and that fall sampling of spring spawning fish would be more

appropriate. Fall sampling in 2019 provided similar WCT catch rates as spring sampling in 2015, but catch rates on other species such as Northern Pikeminnow *Ptychocheilus oregonensis* and Peamouth Chub *Mylocheilus caurinus* were much reduced, presumably because they were not utilizing nearshore habitat in the fall for spawning (Ransom et al. 2021a). As it is desirable to gather population trend data on these forage fish species, in 2022 we plan to conduct the survey in both the spring and fall of the same year to definitively assess WCT catch rates between seasons. If WCT catches are similar, but we gain more information on other species in our spring sampling, then we propose sampling in the spring in future years.

### Goal

Maintain an ongoing monitoring program assessing the LPO WCT population.

### Objective

1. Monitor LPO surface-oriented nearshore fish assemblage, particularly WCT, relative abundance, growth, and origin.

### Tasks

1. Generally following methods outlined in Ransom et al. (2021a), deploy 60 net/nights of standardized gillnet gear in LPO at randomly chosen near-shore locations. **Completed in 2022**
2. Identify, count, and collect age/weight/length data from all salmonids captured. **Completed in 2022**
3. Collect otoliths for age analysis and future microchemistry processing from all WCT. **Completed in 2022**
4. Analyze and summarize data in a report. **Ongoing**

### Work Products

- Annual Work Summary; due December 1, 2023
- Project Comprehensive Report; final due December 1, 2023

### Permitting Requirements

Not applicable for the tasks proposed in this project plan.

Endangered Species Act consultation for this project plan is associated with the 2019 Biological Opinion on the effects of continued operation of the Clark Fork Hydroelectric Project on Bull Trout and designated Bull Trout critical habitat (BiOp), and the U.S. Fish and Wildlife Service (USFWS)-Idaho Department of Fish and Game (IDFG) Cooperative Agreement pursuant to Section 6 of the Act. This project plan is consistent with the analysis and conclusions contained in the 2019 BiOp and the USFWS-IDFG Cooperative Agreement, and will adhere to all appropriate Terms and Conditions designed to reduce the extent and effects of incidental take on Bull Trout. Incidental take reporting for this project plan will be included in the annual Biological Opinion report as required by Term and Conditions 15–18 of the 2019 Incidental Take Statement, as well as IDFG’s annual Section 6 report to the USFWS.

### Cultural/Historic Resource Review

Not applicable for the tasks proposed in this project plan, there are no ground and/or vegetation disturbing activities, or proposed impacts to cultural/historic resources.

### Benefit to the Resource

The proposed project is entirely consistent with the Dissolved Gas Mitigation and Monitoring Program (Appendix F5, CFSA), through the monitoring of ongoing dissolved gas mitigation efforts funded under this appendix. As such, it is also consistent with goals of the Fish Passage/Native Salmonid Restoration Plan (Appendix C). The project also relates to Appendix A by complimenting ongoing tributary monitoring efforts related to maintenance of habitat for native fish in Lake Pend Oreille tributaries. This proposed project is entirely consistent with the Idaho Department of Fish and Game Fisheries Management Plan (IDFG 2019) as it supports the restoration of WCT and suppression of kokanee predators in the LPO system. This project proposal is also consistent with Native Salmonid Restoration Plan (NSRP) (Kleinshmidt and Pratt 1998). This project would provide a mechanism for evaluation of ongoing efforts in Appendices A, C, and F5 that benefit WCT in LPO and associated tributary streams. This project would also provide additional insight into the role the lake environment plays in regulating WCT abundance throughout the LPO system.

### Budget

Item	Estimated Carryover <sup>1</sup>	2023 Budget Request
Supplies (nets, etc.)	\$0	\$0
Avista Labor (Project admin, report writing, aging, fieldwork, etc.; 0.75 FTE)	\$58,415	\$0
Boat expenses	\$0	\$0
<b>Total</b>	<b>\$58,415</b>	<b>\$0</b>
<b>Anticipated Expenditures</b>		<b>\$58,415</b>

<sup>1</sup> Estimated carryover of unexpended, approved funds as of January 1.

### Literature Cited

- Bouwens, K.A., R. Jakubowski, A. Ransom, J. Johnson, and S. Busmire. 2021. 2020 Idaho Tributary Salmonid Abundance Monitoring Annual Project Update. Avista Doc. No 2021-0162. Report to Avista and the Idaho Department of Fish and Game.
- Bouwens, K. A., and R. Jakubowski. 2017. 2015 Lake Pend Oreille Nearshore Spring Index Netting Survey. Report to Avista Corporation and the Idaho Dept. of Fish and Game. Noxon, Montana.
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- Fredenberg, W. 2002. Further evidence that lake trout displace bull trout in mountain lakes. Intermountain Journal of Sciences 8(3):143-152.

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- Martinez, P. J., P. E. Bigelow, M. A. Deleray, W. A. Fredenberg, B. S. Hansen, N. J. Horner, S. K. Lehr, R. W. Schneidervin, S. A. Tolentino, and A. E. Viola. 2009. Western lake trout woes. *Fisheries* 34:424-442.
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- Ryan, R., M. Corsi, and P. Rust. 2021. Characteristics of an Introduced Walleye Population with Implications for Suppression. *North American Journal of Fisheries Management* 41:1863–1877.
- Watkins, C., R. Ryan, K. Yallaly, K. Bouwens, D. Kaus, J. Fredericks, and A. Dux. 2015. Fishery Management Annual Report, 2014. Panhandle Region. Idaho Dept. of Fish and Game. Boise, Idaho.

## **2023 PROJECT PLAN**

### **Idaho Protection and Education Officer Support**

#### **Project Contacts**

Dustin Masin, Idaho Department of Fish and Game (IDFG), (208) 608-8651, [Dustin.Masin@idfg.idaho.gov](mailto:Dustin.Masin@idfg.idaho.gov) and  
Ken Bouwens IDFG, (208) 769-1414, [ken.bouwens@idfg.idaho.gov](mailto:ken.bouwens@idfg.idaho.gov)

#### **Project History**

This is a continuing project for 2023. The scope and budget will be reviewed annually by the MC. This project plan represents the Clark Fork Settlement Agreement (CFSA) Appendix F5 component of a cost share arrangement with Appendix D to fund this position.

#### **Background**

The Idaho CFSA Protection and Education Officer position was created in 1999 to address illegal Bull Trout harvest through direct law enforcement action taken on Lake Pend Oreille (LPO) and its tributaries. The CFSA recognized that illegal harvest of Bull Trout was a significant threat; specifically, poaching of spawning fish could greatly impact the spawning population of a stream. It was determined that in addition to traditional enforcement action, public education would be an effective approach to reduce illegal and inadvertent harvest of Bull Trout (Avista 1999).

The focus of Appendix D of the CFSA is Bull Trout conservation. The CFSA, specifically through Appendix F5, has invested millions of dollars into projects intended to directly benefit the suite of fishery resources of LPO beyond Bull Trout. It was recognized that the introduced Lake Trout and Walleye populations in LPO directly threaten both native salmonids and desirable non-native species such as kokanee and Gerrard Rainbow Trout, and intensive predator suppression projects have been implemented through the CFSA to address these threats. In addition, Westslope Cutthroat Trout conservation in Idaho is a priority of the CFSA and the IDFG, but is not a species addressed directly under Appendix D.

Giving the Idaho Protection and Education (P&E) Officer the ability to patrol and educate the public on the CFSA's broader objectives will provide both conservation benefits and promote a greater public understanding of the issues surrounding LPO management. For example, much like with Bull Trout, harvest of Westslope Cutthroat Trout is not allowed in the LPO watershed in Idaho and there is a need to educate the public on Westslope Cutthroat Trout identification. Incidental native salmonid harvest, especially of Bull Trout and Westslope Cutthroat Trout, has been associated with the expanding fishery targeting bass and Walleye. This fishery primarily takes place on the northwestern end of LPO near Sandpoint, an area not frequently patrolled by the P&E Officer in the past. In addition, the springtime fishery in the Clark Fork River targeting Gerrard Rainbow Trout is expanding in response to successful LPO predator management and providing the P&E Officer the ability to interact with this fishery is important.

#### **Goal**

The goal of this project is to expand the scope of the Idaho P&E Officer to provide enforcement

and education services with respect to all native and desirable non-native species conservation.

### **Objectives**

1. Patrol LPO tributaries known to support Westslope Cutthroat Trout, kokanee, and Rainbow Trout.
2. Patrol the LPO, Clark Fork River, and Pend Oreille River fisheries.
3. Educate anglers regarding LPO specific fishing regulations.
4. Educate public on the basic ecology of LPO, including predator management objectives, distinguishing characteristics of LPO species including Westslope Cutthroat Trout, and proper catch and release techniques.
5. Develop educational materials, both physical and electronic, to educate the public on fishery management practices and fish identification.

### **Tasks**

1. Conduct enforcement efforts, possibly including undercover and/or plain clothes surveillance patrols, on tributaries of LPO to monitor regulation compliance, catch rates, and incidental harvest. (Objective 1)
2. Utilize remote cameras to monitor popular fishing locations and drainages to note heavy use times to better focus patrol efforts. (Objective 1)
3. Conduct boat patrols, possibly including undercover and/or plain clothes surveillance patrols, on the lake to monitor regulation compliance, catch rates, and incidental harvest. (Objective 2)
4. Direct more enforcement and boating attention to shallower portions of LPO and the Pend Oreille River, especially in the spring when water temperatures are colder and native salmonids are more likely to be found among warmwater fishes. (Objective 2)
5. Monitor streams and riparian habitat for unlawful development or alterations. (Objectives 1 and 2)
6. Continue student-focused educational programs, the Pend Oreille and Coeur d'Alene Water Festivals, the WDC, and the Trestle Creek Interpretive Site. Include messages regarding fish identification and life history requirements, and catch-and-release methods at these events. (Objective 3 and 4)
7. Attend research efforts, events, or trainings to better understand dynamics of the Pend Oreille fishery to be more informed when educating the public. (Objectives 1–4)
8. Develop electronic and physical media elements for interpretive panels, trailer materials, handouts, swag, online videos, and teacher resources to be made available for area

schools districts, homeschooled students, and recreators. (Objectives 3–5)

### **Work Products**

- Mid-year report; due to Avista; August 1, 2023
- Annual Work Summary; Due to Ken Bouwens, IDFG, November 1, 2023

### **Permitting Requirements**

Not applicable for the tasks proposed in this project plan.

Endangered Species Act consultation for this project plan is associated with the 2019 Biological Opinion on the effects of continued operation of the Clark Fork Hydroelectric Project on Bull Trout and designated Bull Trout critical habitat (BiOp), and the U.S. Fish and Wildlife Service (USFWS)-IDFG Cooperative Agreement pursuant to Section 6 of the Act. This project plan is consistent with the analysis and conclusions contained in the 2019 BiOp and the USFWS-IDFG Cooperative Agreement, and will adhere to all appropriate Terms and Conditions designed to reduce the extent and effects of incidental take on Bull Trout. Incidental take reporting for this project plan will be included in the annual Biological Opinion report as required by Term and Conditions 15–18 of the 2019 Incidental Take Statement, as well as IDFG’s annual Section 6 report to the USFWS.

### **Cultural/Historic Resource Review**

Not applicable for the tasks proposed in this project plan; there are no ground and/or vegetation disturbing activities, or proposed impacts to cultural/historic resources.

### **Benefit to the Resource**

This project will provide conservation benefits to native salmonids (Bull Trout and Westslope Cutthroat Trout) and other fish. Appendix F5 of the CFSA is designed to mitigate for the potential impacts of high levels of total dissolved gas (TDG) associated with spill at Noxon Rapids and Cabinet Gorge dams. High TDG can impact all fish species. It is recognized that it is difficult to mitigate directly for TDG impacts, and alternative mitigation is an appropriate use of Appendix F5 funds.

This proposed project is entirely consistent with the IDFG Fisheries Management Plan (IDFG 2019) the Management Plan for the Conservation of Westslope Cutthroat Trout in Idaho (IDFG 2013), Columbia Headwaters Recovery Unit Implementation Plan for Bull Trout (*Salvelinus confluentus*) (USFWS 2015), and the Native Salmonid Restoration Plan (Kleinschmidt and Pratt 1998), as it supports the enforcement and management of the LPO fishery, especially with respect to Bull Trout and Westslope Cutthroat Trout conservation.

## Budget

Item	Estimated Carryover <sup>1</sup>	2023 Budget Request
Payroll (0.25 FTE, benefits, and overhead [34.6%])	\$21,237	\$33,375
University of Idaho Intern	\$0	\$5,000
Communication Services	\$0	\$363
Training	\$0	\$188
Travel (Hotels, Per Diem, Etc.)	\$0	\$300
Specific use supplies (gear, education materials, etc.)	\$0	\$1,250
Renting Operating leases and Maintenance (Boat and vehicle)	\$0	\$2,500
Educational Materials	\$0	\$2,000
Avista support (0.05 FTE)	\$0	\$375
<b>Total</b>	\$21,237	\$45,351
<b>Anticipated Expenditures</b>		\$66,588

<sup>1</sup> Estimated carryover of unexpended, approved funds as of January 1.

As proposed, it is anticipated that approximately 75% of the Idaho P&E Officer's time will be dedicated to Bull Trout-specific activities (Appendix D) and 25% of their time will be dedicated to broader LPO issues, focusing on those species that are expected to directly benefit from other CFSA-sponsored projects (Appendix F5).

## Literature Cited

Avista Corporation. 1999. Settlement Agreement (Clark Fork Settlement Agreement (CFSA)). Volume III, Application for New License, submitted to the Federal Energy Regulatory Commission (FERC). Avista Corporation, Spokane, Washington.

IDFG (Idaho Department of Fish and Game). 2013. Management Plan for the Conservation of Westslope Cutthroat Trout in Idaho. Fisheries Bureau. Boise, Idaho.

IDFG (Idaho Department of Fish and Game). 2019. Fisheries Management Plan 2019-2024. Boise, Idaho.

Kleinschmidt Associates and K. L. Pratt. 1998. Clark Fork River Native Salmonid Restoration Plan. Report to Washington Water Power Co. Spokane, Washington.

USFWS (United States Fish and Wildlife Service). 2015. Columbia Headwaters Recovery Unit Implementation Plan for Bull Trout (*Salvelinus confluentus*). Prepared by Montana Ecological Services Office and Northern Idaho Field Office. Portland, Oregon.

## 2023 PROJECT PLAN

### Lake Pend Oreille Tributary PIT-Monitoring Station Installation

#### Project Contact

Ken Bouwens, Idaho Department of Fish and Game (IDFG), (208) 769-1414,  
[ken.bouwens@idfg.idaho.gov](mailto:ken.bouwens@idfg.idaho.gov)

#### Project History

This is a continuing project for 2023, with changes in both scope and budget.

#### Background

Passive Integrated Transponder (PIT) monitoring stations have been installed and operated at several locations in Idaho under various Clark Fork Settlement Agreement (CFSA) programs. The arrays in Trestle and Granite creeks were originally installed with the intent of estimating in-lake survival of Bull and Westslope Cutthroat trout using Lake Pend Oreille (LPO). This project has come to completion (Ransom et al. 2021). Concurrent with this project, the LPO Lake Trout Netting Program has become an additional tagging interrogation point for PIT tag recovery, and data from these arrays become integral to the LPO Bull Trout Demography model, which we intend to use to annually to evaluate the LPO Bull Trout metapopulation. Expanding our arrays will provide increased precision in our model while simultaneously allowing us to evaluate stream-specific questions like juvenile survival and straying rates. New arrays were installed in Trestle and Granite creeks in 2021, and the Gold Creek array was installed in 2022. Three additional arrays are planned to be installed in the Pack River watershed in 2023.

#### Goal

Monitor movements of PIT-tagged fish in key tributaries to LPO.

#### Objectives

1. Replace existing outdated PIT arrays in Trestle and Granite creeks. (*Completed 2021*)
2. Install a new PIT array on South Gold Creek. (*Completed 2022*)
3. Install a PIT array in the Pack River just downstream of the mouth of Caribou Creek. (*Ongoing*)
4. Install a PIT array in the Pack River near its mouth. (*Ongoing*)
5. Install a PIT array in lower Grouse Creek. (*Ongoing*)

#### Tasks

1. Determine location for arrays in the Pack River watershed. (Objectives 2–5)
2. Gain landowner permission for new array locations. (Objective 2–5)

3. Determine appropriate power/telecom sources for all arrays. (Objective 2–5)
4. Acquire appropriate permits, as necessary. (Objective 2–5)
5. Install new arrays. (Objective 2–5)

### **Work Products**

- Annual Work Summary; due December 1, 2023

### **Permitting Requirements**

Idaho Department of Fish and Game (IDFG) personnel will determine and acquire any permits are required for the proposed work.

Endangered Species Act consultation for this project plan is associated with the 2019 Biological Opinion on the effects of continued operation of the Clark Fork Hydroelectric Project on Bull Trout and designated Bull Trout critical habitat (BiOp), and the U.S. Fish and Wildlife Service (USFWS)-IDFG Cooperative Agreement pursuant to Section 6 of the Act. This project plan is consistent with the analysis and conclusions contained in the 2019 BiOp and the USFWS-IDFG Cooperative Agreement, and will adhere to all appropriate Terms and Conditions designed to reduce the extent and effects of incidental take on Bull Trout. Incidental take is not expected for this project; however, if it does occur it will be included in the annual Biological Opinion report as required by Term and Conditions 15–18 of the 2019 Incidental Take Statement, as well as IDFG's annual Section 6 report to the USFWS.

### **Cultural/Historic Resource Review**

In 2022, the USFS Sandpoint Ranger District included cultural/historic resource review as part of the lower Grouse Creek project review process and issued IDFG a Nominal Effects Letter for this project. The two Pack River project sites are located on private property and there is no requirement for a private landowner to perform a cultural/historic resource review.

### **Benefit to the Resource**

Restoration and enhancement of Bull Trout and Westslope Cutthroat Trout populations as well as other species potentially impacted by dissolved gas supersaturation is an important component of appendices A and F5 of the CFSA. The use of PIT arrays is a valuable tool that allows passive monitoring of movements of fish in the project area. Fish that are tagged and detected at arrays provide information that can be used to evaluate and improve programs that are currently being implemented under the CFSA. This leads to more effective implementation and more efficient use of funds available for these programs.

### Budget

Item	Estimated Carryover <sup>1</sup>	2023 Budget Request
Avista labor (0.25 FTE)	\$17,155	\$0
Equipment (3 @ ~\$78,000 each)	\$225,000	\$9,000
Biomark Installation Labor (3 @ ~\$26,700 each)	\$74,000	\$6,100
Other expenses (Power, telecom, cultural/historic resource review, etc.)	\$90,000	\$60,000
<b>Total</b>	<b>\$406,155</b>	<b>\$75,100</b>
<b>Anticipated Expenditures</b>		<b>\$481,255</b>

<sup>1</sup> Estimated carryover of unexpended, approved funds as of January 1.

### Literature Cited

Ransom, A.L, S, Frawley, R. Jakubowski, and K.A. Bouwens. 2021. 2011-2019 Lake Pend Oreille Bull Trout Survival Study Project Completion Report. Report to Avista Corporation and the Idaho Dept. of Fish and Game. Noxon, Montana. Avista Doc. No. 2021-0161.



## **2023 PROJECT PLAN**

### **Lake Pend Oreille Tributary PIT-Monitoring Station Operation and Maintenance**

#### **Project Contact**

Ken Bouwens, Idaho Department of Fish and Game (IDFG), (208) 769-1414,  
[ken.bouwens@idfg.idaho.gov](mailto:ken.bouwens@idfg.idaho.gov)

#### **Project History**

This is an ongoing project for 2023. The scope and budget are reviewed by the Management Committee annually.

#### **Background**

Passive Integrated Transponder (PIT) monitoring stations have been installed and operated at several locations in Idaho under various Clark Fork Settlement Agreement (CFSA) programs. These stations are installed for various reasons; although, the primary reason is to passively monitor movements of tagged fish in tributaries. These movements help delineate migration timing for fish and can also be used to evaluate survival and trap efficiency. The operation and maintenance of PIT-monitoring stations includes costs associated with power, fiber, communications, permitting, and operation and maintenance costs. This project plan was developed to compile all costs associated with operation and maintenance of monitoring stations into one project plan. This will eliminate the need to break out charges on invoices to multiple projects and allow for the tracking of costs associated with the use of this technology.

#### **Goal**

Monitor movements of PIT-tagged fish in key tributaries to Lake Pend Oreille.

#### **Objectives**

1. Operate PIT-monitoring stations in tributaries to Lake Pend Oreille
2. Perform maintenance as needed to PIT-monitoring stations in tributaries to Lake Pend Oreille.

#### **Tasks**

1. Pay all invoices associated with operation of five PIT-monitoring stations (Trestle Creek, Granite Creek, South Gold Creek, Upper Pack River, Lower Pack River, and Grouse Creek) in Idaho (i.e., electric use, internet fees, Biomark data service fees, cellular internet fees, permit fees, etc.). (Objective 1)
2. A temperature data logger will be deployed at each array (Table 1). (Objective 1)
3. Repair damage to PIT-monitoring stations, if necessary. (Objective 2)
4. Purchase additional antennas or hardware as needed. (Objectives 1 and 2)

Table 1. Location of temperature data loggers at PIT antennas on Trestle, Granite, South Gold, and Grouse creeks, and the Pack River.

Stream	Site name	River Km	Latitude	Longitude
Trestle Creek	PIT array	0.9	48.285057	-116.341734
Granite Creek	PIT array	0.5	48.084050	-116.422041
South Gold Creek	PIT array	0.2	47.970490	-116.452493
Upper Pack River <sup>1</sup>	PIT array	42.0	48.45275	-116.54258
Lower Pack River <sup>1</sup>	PIT array	5.9	48.34417	-116.38913
Grouse Creek <sup>1</sup>	PIT array	10.9	48.43840	-116.39370

<sup>1</sup> River Km, Latitude, and Longitude are estimated until the array is installed.

### Work Products

- Temperature monitoring data for the six sites; due December 1, 2023
- Annual Work Summary; due December 1, 2023

### Permitting Requirements

If maintenance or repair of a PIT array is required, Avista and Idaho Department of Fish and Game (IDFG) personnel will determine and acquire which, if any, permits are required for the proposed work.

Endangered Species Act consultation for this project plan is associated with the 2019 Biological Opinion on the effects of continued operation of the Clark Fork Hydroelectric Project on Bull Trout and designated Bull Trout critical habitat (BiOp), and the U.S. Fish and Wildlife Service (USFWS)-IDFG Cooperative Agreement pursuant to Section 6 of the Act. This project plan is consistent with the analysis and conclusions contained in the 2019 BiOp and the USFWS-IDFG Cooperative Agreement, and will adhere to all appropriate Terms and Conditions designed to reduce the extent and effects of incidental take on Bull Trout. Incidental take is not expected for this project; however, if it does occur it will be included in the annual Biological Opinion report as required by Term and Conditions 15–18 of the 2019 Incidental Take Statement, as well as IDFG's annual Section 6 report to the USFWS.

### Cultural/Historic Resource Review

If maintenance and/or repair of a PIT array will cause ground or vegetation disturbance, Avista cultural staff will coordinate a cultural/historic resource review for the project. The work product for this review will be confidential due to the sensitive nature of the content.

### Benefit to the Resource

Restoration and enhancement of Bull Trout and Westslope Cutthroat Trout populations as well as other species potentially impacted by dissolved gas supersaturation is an important component of Appendix A and F5 of the CFSA. The use of PIT arrays is a valuable tool that allows passive monitoring of movements of fish in the project area. Fish that are tagged and detected at arrays provide information that can be used to evaluate and improve programs that are currently being implemented under the CFSA. This leads to more effective implementation and more efficient use of funds available for these programs.

**Budget**

<b>Item</b>	<b>Estimated Carryover<sup>1</sup></b>	<b>2023 Budget Request</b>
PIT-monitoring station maintenance	\$10,000	\$20,000
Avista labor (0.1 FTE)	\$5,000	\$10,000
Biomark BioLogic plus cell (6 @ \$1,716 each; 12 months)	\$0	\$10,296
Electric use (6 @ \$1,200 each; 12 mo.)	\$0	\$7,200
Other expenses (e.g., temperature data loggers)	\$0	\$2,000
<b>Total</b>	<b>\$15,000</b>	<b>\$49,496</b>
<b>Anticipated Expenditures</b>		<b>\$64,496</b>

<sup>1</sup> Estimated carryover of unexpended, approved funds as of January 1.



## **2023 PROJECT PLAN**

### **Clark Fork River Population Monitoring**

#### **Project Contact**

Ken Bouwens, Idaho Department of Fish and Game (IDFG), (208) 769-1414  
[ken.bouwens@idfg.idaho.gov](mailto:ken.bouwens@idfg.idaho.gov)

#### **Project History**

This is an ongoing project from 2021 with changes to both scope and budget. The scope and budget are reviewed by the Management Committee annually.

#### **Background**

Continued periodic monitoring of fish abundance in the Clark Fork River in Idaho (CFR) was recommended following a 10-year study (1999–2008) describing the abundance of Brown Trout, Mountain Whitefish, Rainbow Trout, and Westslope Cutthroat Trout in the lower Clark Fork River, resulting from a change in minimum flow requirements from 3,000 cfs to 5,000 cfs at Cabinet Gorge Dam. No significant changes or trends in relative abundance were detected during this monitoring period (Ryan and Jakubowski 2012). However, follow-up surveys were conducted in 2014, 2015, and again in 2017 and results suggested increases in trout abundance over past estimates (Bouwens and Jakubowski 2017, Baker et al. 2018). Regardless, an agreement was made to return to the prior minimum flow requirement of 3,000 cfs beginning in 2018 (i.e., Amendment No. 1 of the CFSA).

A comprehensive review of the last 22 year's data (including 2018 and 2021 data that has yet to be analyzed) was planned for 2022. This work is ongoing. This work product was previously associated with the Appendix A project plan titled "Fish Resource Monitoring, Enhancement, and Management Plan." In addition to changes in abundance over time, we intend to also review other population dynamics metrics including growth, recruitment, and mortality and relate them to environmental variable including absolute minimum flow, ramping rates, hydrograph variation, total dissolved gas (TDG) production, and other variables. One analysis will be calculating incremental growth on Mountain Whitefish and relating it to environmental factors after Watkins et al. (2017).

We plan to continue periodic sampling on a three-year rotational basis, with the next estimates scheduled for 2024. However, prior to implementation we will review our existing methods and evaluate if any changes to our methods are required and if any additional data collection is warranted.

To date we have not been collecting any information on non-salmonids in the CFR. Beginning in 2021, we performed some preliminary sampling to determine if it was feasible to conduct a low-effort catch-per-unit-effort (CPUE) electrofishing survey in the CFR to both assess salmonid populations but also to describe the entire fish assemblage in the area. A single pass was made on each bank in mid- September at pre-determined sampling reaches and all fish species of all sizes were collected. We intend to continue this sampling in 2023 and beyond to describe species composition and relative abundance.

In addition, we intend to develop a two-dimensional hydraulic model of the CFR. Habitat quantification will be based on hydraulic model output with mapped locations of areas with lower velocities at multiple flows, including substrate and vegetation mapping. Inclusion of vegetation mapping will improve the accuracy of available habitat maps. The resulting maps will provide quantifiable areas to allow comparison at various flows and allows the development of a water quality model or empirically based relationship between habitat and total dissolved gas (TDG).

### **Goal**

Perform necessary fish resource population monitoring in the CFR downstream of Cabinet Gorge Dam to assess potential changes with respect to minimum flow, TDG, and other environmental variables.

### **Objectives**

1. Perform a comprehensive analysis of 2014–2021 CFR salmonid monitoring data and summarize long-term trends in species-specific abundance, distribution, size, growth, as well as relative species composition with respect to absolute minimum flow, ramping rates, hydrograph variation, fish habitat availability, total dissolved gas (TDG) production, and other variables. (*Ongoing*)
2. Every three years, estimate the abundance of Mountain Whitefish, Brown Trout, Westslope Cutthroat Trout, and Rainbow Trout in the CFR. *Next event: 2024.*
3. Annually, assess species composition and relative abundance of fish populations in the CFR.
4. Review and implement a long-term monitoring plan in the CFR downstream of Cabinet Gorge Dam. (*Ongoing*)

### **Tasks**

1. Catalog and organize existing data and samples. (Objectives 1–3)
2. Age sufficient structures from Brown Trout, Mountain Whitefish, Rainbow Trout, and Westslope Cutthroat Trout to perform a length at age analysis, develop von Bertalanffy growth curves, as well as develop catch curves to estimate mortality for all years that sufficient samples exist for these species. (Objective 1)
3. Measure and back calculate incremental growth on Mountain Whitefish scales as a proxy for growth conditions in the CFR since 1999. (Objective 1)
4. Compile existing and modeled physical data such as minimum flows, ramping rates, hydrograph variation, fish habitat availability, and TDG production. (Objective 1)
5. Summarize pre-2022 data and provide recommendations for future monitoring in a comprehensive report. (Objectives 1,5)

6. Conduct mark-recapture experiments every three years on target salmonid species. (Objective 2)
7. Conduct CPUE surveys annually on all fish species. (Objective 3)
8. Collect temperature data at strategic locations within the lower Clark Fork River. (Objective 4)

Table 1. Temperature data logger locations in the lower Clark Fork River.

Stream	Site name	River Km	Latitude	Longitude
Clark Fork River	Temperature Station 1/Clark Fork River USGS gage	13.0	48.087351	-116.073078
Clark Fork River	Spawning Shelf <sup>1</sup>	12.5	48.086621	-116.079265
Clark Fork River	Temperature Station 2	4.5	48.126804	-116.159274

<sup>1</sup> This is at the same location as the “Downstream Cabinet Gorge” site in the Total Dissolved Gas Monitoring Project Plan.

## Work Products

- Annual Project Update; 2022 Lower Clark Fork River Population Monitoring; final due November 1, 2023
- Annual Project Update; 2023 Lower Clark Fork River Population Monitoring; final due November 1, 2024
- Comprehensive Project Report; Lower Clark Fork River Population Monitoring (through 2021); final due November 1, 2023
- Annual Work Summary; due December 1, 2023

## Permitting Requirements

Not applicable for the tasks proposed in this project plan.

Endangered Species Act consultation for this project plan is associated with the 2019 Biological Opinion on the effects of continued operation of the Clark Fork Hydroelectric Project on Bull Trout and designated Bull Trout critical habitat (BiOp), and the U.S. Fish and Wildlife Service (USFWS)-Idaho Department of Fish and Game (IDFG) Cooperative Agreement pursuant to Section 6 of the Act. This project plan is consistent with the analysis and conclusions contained in the 2019 BiOp and the USFWS-IDFG Cooperative Agreement, and will adhere to all appropriate Terms and Conditions designed to reduce the extent and effects of incidental take on Bull Trout. Incidental take reporting for this project plan will be included in the annual Biological Opinion report as required by Term and Conditions 15–18 of the 2019 Incidental Take Statement, as well as IDFG’s annual Section 6 report to the USFWS.

## Cultural/Historic Resource Review

Not applicable for the tasks proposed in this project plan, there are no ground and/or vegetation disturbing activities, or proposed impacts to cultural/historic resources.

### Benefit to the Resource

The proposed activities are consistent with the Dissolved Gas Supersaturation Control, Mitigation, and Monitoring Program (Appendix F5) as they are focused on fish species that are exposed to elevated total dissolved gas levels when spill occurs at Cabinet Gorge Dam. They are also consistent with goals of the Fish Passage/Native Salmonid Restoration Plan (Appendix C), and the Idaho Tributary Habitat Acquisition and Fishery Enhancement Program (Appendix A), through assessment of native salmonid populations, including Bull Trout and Westslope Cutthroat Trout. Tasks conducted under this fund are also consistent with other established plans including the Lake Pend Oreille Bull Trout Conservation Plan (Resource Planning Unlimited 1999) and the IDFG Fisheries Management Plan (IDFG 2019).

### Budget

Item	Estimated Carryover <sup>1</sup>	2023 Budget Request
Avista labor (1.0 FTE)	\$10,000	\$100,000
Field gear (waders, raingear, gloves, etc.)	\$0	\$1,000
Biological collection supplies (PIT tags, vials, dip nets, etc.)	\$1,000	\$1,000
Lab/Aging supplies	\$2,500	\$2,500
Avista administration	\$0	\$1,000
<b>Total</b>	<b>\$13,500</b>	<b>\$105,500</b>
<b>Anticipated Expenditures</b>		<b>\$119,000</b>

<sup>1</sup> Estimated carryover of unexpended, approved funds as of January 1.

### Literature Cited

- Baker, W. D., Bouwens, K. A., and R. Jakubowski. 2018. 2017 Lower Clark Fork River Salmonid Abundance Monitoring Project Update. Report to Avista, Noxon, Montana and the Idaho Department of Fish and Game, Boise, Idaho.
- Bouwens, K.A. and R. Jakubowski. 2017. 2014-2015 Lower Clark Fork River Fishery Assessment Project Update. Report to Avista Corporation, Noxon, Montana and the Idaho Department of Fish and Game, Boise, Idaho.
- IDFG (Idaho Department of Fish and Game). 2019. Fisheries Management Plan 2019-2024. Boise, Idaho.
- Resource Planning Unlimited. 1999. Lake Pend Oreille Bull Trout Conservation Plan. State of Idaho. Boise, Idaho.
- Ryan, R., and R. Jakubowski. 2012. Lower Clark Fork River Fishery Assessment Project Completion Report. Report to Avista Corporation. Noxon, Montana.
- Watkins, C. J., T. J. Ross, M. C. Quist, and R. S. Hardy. 2017. Response of Fish Population Dynamics to Mitigation Activities in a Large Regulated River. Transactions of the American Fisheries Society 146:703–715.

## 2023 PROJECT PLAN

### Lower Clark Fork River Flow Model

#### Project Contact

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and

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#### Project History

This is a continuing project for 2023. There is no change in scope, but we are requesting an additional \$42,000 for surveys and labor.

#### Background

The lower Clark Fork River extends about 10 miles from Cabinet Gorge Dam downstream to Lake Pend Oreille (Figure 1). This section of river experiences flows ranging from 3,000 cfs during the summer to more than 110,000 cfs during spring runoff. Daily fluctuations of greater than 20,000 cfs due to power peaking are common. In addition, the level of Lake Pend Oreille changes seasonally and the portion of the lower Clark Fork River downstream of Foster Side Channel is riverine during the winter but more lake-like during the summer with transitional periods in the spring and fall. These seasonal and daily fluctuations in flow and stage create a dynamic system for fishes to inhabit.

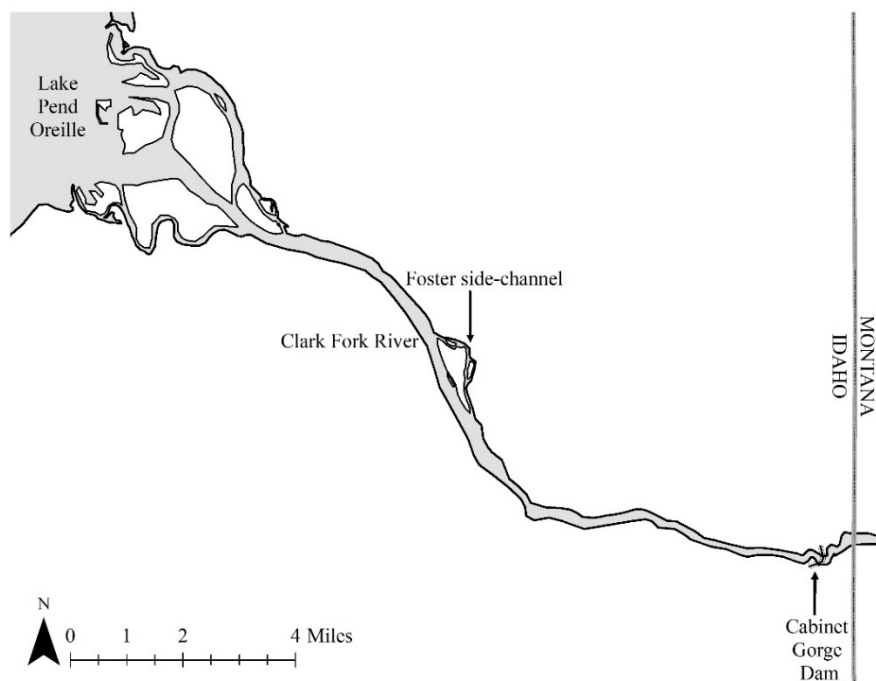


Figure 1. The lower Clark Fork River from Cabinet Gorge Dam downstream to Lake Pend Oreille.

The lower Clark Fork River has been periodically monitored for fish abundance since 1999 (Ryan and Jakubowski 2012; Bouwens and Jakubowski 2017; Baker et al. 2018). In addition, fish have been monitored for gas bubble disease in this portion of the river during times of spill at Cabinet Gorge Dam periodically since 1997 (Kusnierz 2020). The lower Clark Fork River and delta are suspected spawning areas for non-native Walleye. However, despite substantial effort to assess the effectiveness of suppression netting for Walleye in Lake Pend Oreille and the Pend Oreille River, little has been done to directly suppress Walleye in the lower Clark Fork River.

A high-quality flow model of the lower Clark Fork River would allow fisheries managers to better understand suitable fish habitat at a variety of flow levels. Specifically, it would aid in identification and quantification of suitable velocity and where fish could compensate for the effects of high total dissolved gas. In addition, it may facilitate finding areas suitable to target Walleye suppression.

The intent of this project is to develop a two-dimensional hydraulic model of the lower Clark Fork River. This model will be based on bathymetric and substrate data previously collected from the lower Clark Fork River (Figures 2 and 3). Additional data will be collected to fill in areas where data are unavailable and when necessary to develop more robust datasets. Habitat quantification will be based on hydraulic model output with mapped locations of areas with lower velocities at multiple flows, including substrate and vegetation mapping. Inclusion of vegetation mapping will improve the accuracy of available habitat maps. The resulting maps will provide quantifiable areas to allow comparison at various flows. This modeling exercise will provide managers with estimates of where and when habitat conditions are suitable for fish in the lower Clark Fork River and identify potential habitat limitations.

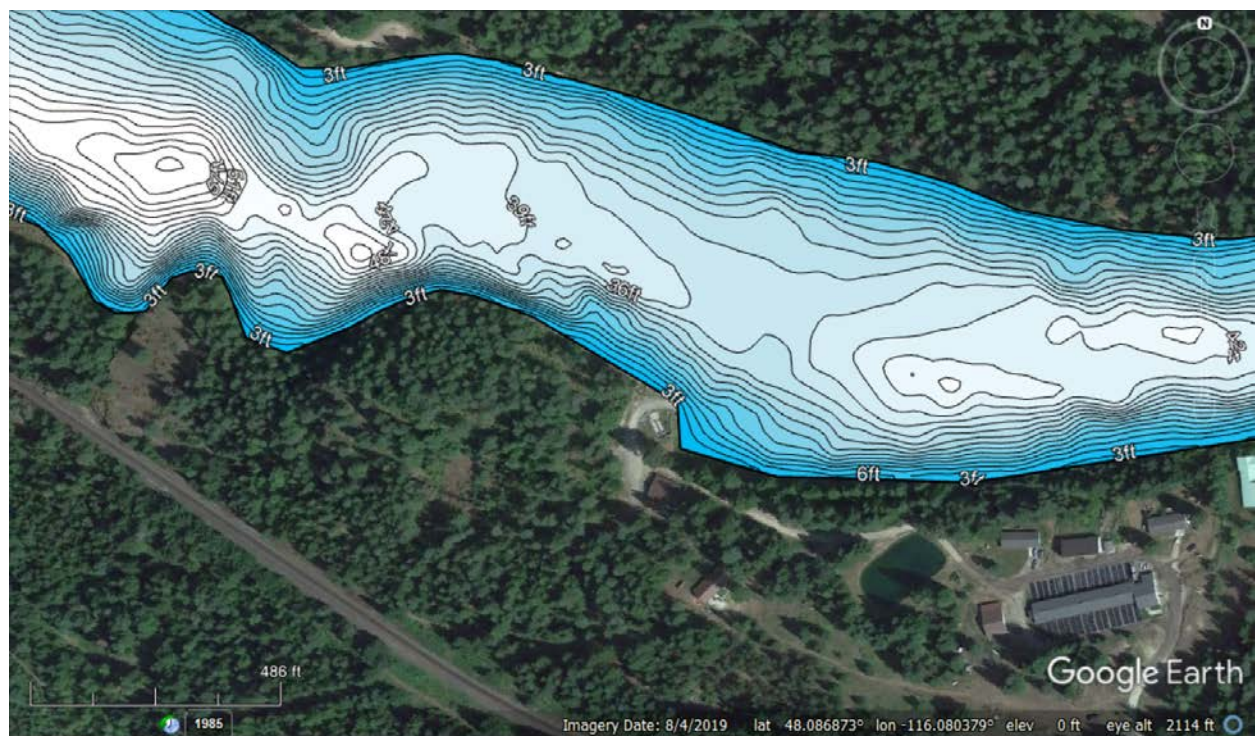


Figure 2. Bathymetry of the lower Clark Fork River near the Clark Fork Hatchery.

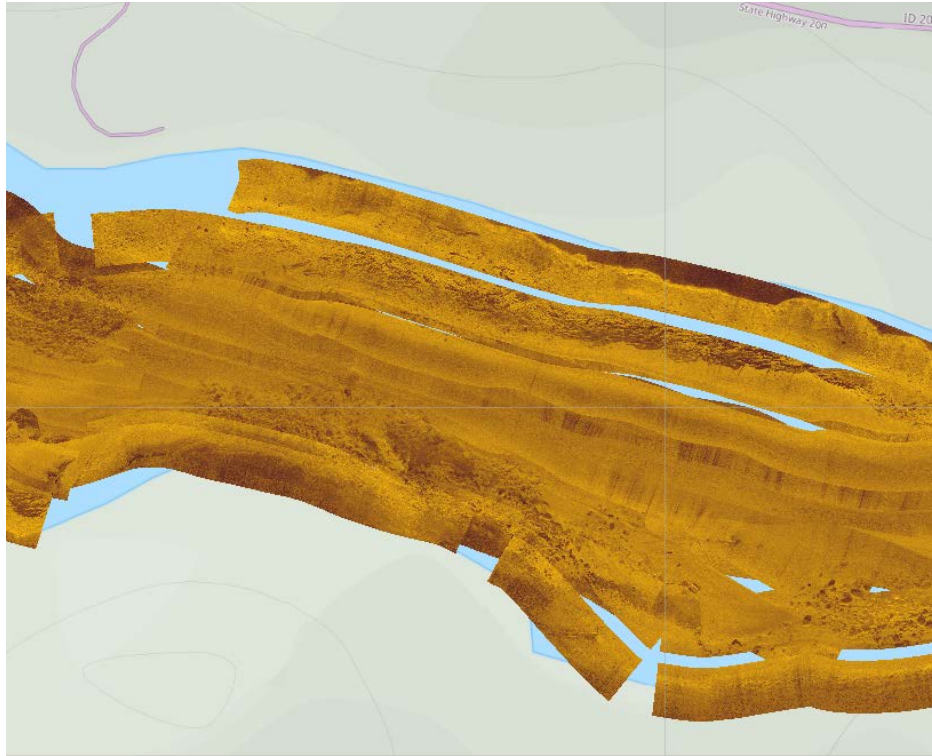


Figure 3. Substrate scans of the lower Clark Fork River near the Clark Fork Hatchery.

### Goal

Develop a high quality, precise flow model extending from Cabinet Gorge Dam downstream to the submerged portion of the Clark Fork River delta.

### Objectives

1. Establish the data resolution necessary to develop a robust model and identify whether HEC-RAS is the appropriate model. (**Completed 2022**)
2. Use high quality bathymetric, substrate, and landform data to construct the model. (**Completed 2022**)
3. Validate the final model and ensure it is appropriately used. (**Ongoing**)
4. Describe flows in the lower Clark Fork River with respect to fish habitat availability, TDG, and other parameters. (**Ongoing**)

### Tasks

1. Meet with consultant to understand whether the objectives can be met with the existing data and using HEC-RAS, and to discuss alternative models. (Objective 1)
2. Review and georeference existing bathymetric data. Collect any new bathymetric data necessary to construct and validate the model. (Objectives 2 and 3)

3. Work with Avista legal to ensure that if requested, the model and input data are not released to the public without Avista oversight. (Objective 3)
4. Validate the final model. (Objective 3)
5. Identify and calculate the amount of area at certain velocities and depths at different discharge levels. (Objective 4)
6. Produce a report that describes model input data, the validation process and results, and fish habitat availability based on velocity and depth. (Objectives 3 and 4).

### **Work Products**

- Annual Work Summary; due December 1, 2023
- Model files including GIS input data and R code; due November 1, 2023
- Comprehensive Project Report; Flow analysis and modeling in the Clark Fork River; final due November 1, 2023

### **Permitting Requirements**

Not applicable for the tasks proposed in this project plan.

Endangered Species Act consultation for this project plan is associated with the 2019 Biological Opinion on the effects of continued operation of the Clark Fork Hydroelectric Project on Bull Trout and designated Bull Trout critical habitat (BiOp), and the U.S. Fish and Wildlife Service (USFWS)-Idaho Department of Fish and Game (IDFG) Cooperative Agreement pursuant to Section 6 of the Act. This project plan is consistent with the analysis and conclusions contained in the 2019 BiOp and the USFWS-IDFG Cooperative Agreement, and will adhere to all appropriate Terms and Conditions designed to reduce the extent and effects of incidental take on Bull Trout. Incidental take reporting for this project plan will be included in the annual Biological Opinion report as required by Term and Conditions 15–18 of the 2019 Incidental Take Statement, as well as IDFG’s annual Section 6 report to the USFWS.

### **Cultural/Historic Resource Review**

Not applicable for the tasks proposed in this project plan, there are no ground and/or vegetation disturbing activities, or proposed impacts to cultural/historic resources.

### **Benefit to the Resource**

This project will facilitate the identification and quantification of areas in the lower Clark Fork River with velocity favorable to fish and where fish can compensate for the effects of high total dissolved gas. As such, this information will be useful for fishery management in the lower Clark Fork River. The proposed activities are consistent with the Dissolved Gas Supersaturation Control, Mitigation, and Monitoring Program (Appendix F5) as they are focused on fish species that are exposed to elevated total dissolved gas levels when spill occurs at Cabinet Gorge Dam. They are also consistent with goals of the Fish Passage/Native Salmonid Restoration Plan (Appendix C), and the Idaho Tributary Habitat Acquisition and Fishery Enhancement Program (Appendix A), through assessment of native salmonid populations, including Bull Trout and

Westslope Cutthroat Trout. Tasks conducted under this fund are also consistent with other established plans including the Lake Pend Oreille Bull Trout Conservation Plan (Resource Planning Unlimited 1999) and the IDFG Fisheries Management Plan (IDFG 2019).

### Budget

Item	Estimated Carryover <sup>1</sup>	2023 Budget Request
Avista labor (0.2 FTE)	\$7,261	\$10,000
Flow Modeling	\$38,253	\$32,000
<b>Total</b>	<b>\$45,514</b>	<b>\$42,000</b>
<b>Anticipated Expenditures</b>		<b>\$87,514</b>

<sup>1</sup> Estimated carryover of unexpended, approved funds as of January 1.

### Literature Cited

- Baker, W. D., Bouwens, K. A., and R. Jakubowski. 2018. 2017 Lower Clark Fork River Salmonid Abundance Monitoring Project Update. Report to Avista, Noxon, Montana and the Idaho Department of Fish and Game, Boise, Idaho.
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## 2023 PROJECT PLAN

### Lake Pend Oreille and Pend Oreille River Creel Survey

#### Project Contact

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#### Project History

This is a continuation of a project approved in 2022. No changes to the scope nor budget are requested.

#### Background

Lake Pend Oreille (LPO) is Idaho's largest (36,000 ha surface) and deepest (360 m) natural lake. The native salmonid species assemblage consists of Bull Trout *Salvelinus confluentus*, Westslope Cutthroat Trout *Oncorhynchus clarkii lewisi*, Mountain Whitefish *Prosopium williamsoni*, and Pygmy Whitefish *P. coulteri*. Lake Pend Oreille supports one of the strongest remaining adfluvial Bull Trout populations in the United States. Lake Pend Oreille also has a substantial non-native sport fish component including Rainbow Trout *O. mykiss*, Lake Trout *S. namaycush*, kokanee *O. nerka*, Smallmouth Bass *Micropterus dolomieu*, Largemouth Bass *M. salmoides*, Yellow Perch *Perca flavescens*, Black Crappie *Pomoxis nigromaculatus*, Lake Whitefish *P. clupeiformis*, Walleye *Sander vitreus*, and two sunfishes *Lepomis spp.* The lake is known for its premier sport fishery for trophy Rainbow Trout, but also supports notable kokanee, Bull Trout and Westslope Cutthroat Trout fisheries, as well as increasingly popular warmwater fisheries.

Kokanee have been the primary driver of the LPO fishery since they were introduced in the 1930s. They serve a dual role by providing both a high-yield sport fishery and the primary prey source for pelagic predators (e.g., Rainbow Trout, Bull Trout) that support trophy fisheries. From the 1950s (when creel surveys began) through the mid-1970s, LPO anglers targeted mainly kokanee, with commensurately high kokanee harvests, and there was an active commercial fishery (Bowles et al. 1986). A world-renowned trophy fishery for Rainbow Trout and Bull Trout also existed during that era. However, kokanee abundance began declining in the mid-1960s and reached a depressed state by the 1970s. The commercial fishery was closed in 1973. Lake Trout, introduced initially in the early part of the 20th century, became increasingly abundant by the early 2000s, and increased predation threatened to collapse the already diminished kokanee population (Wahl et al. 2015). This prompted the implementation of fishing regulation changes intended to balance high predator abundance, specifically Lake Trout and Rainbow Trout, with the declining kokanee prey base. In 2000, the kokanee fishery was closed, Rainbow Trout limits were liberalized, and the limit on Lake Trout was removed. Despite these efforts, the Lake Trout population continued to expand, and the kokanee fishery did not show signs of recovery. Restricted fish passage, zooplankton dynamics, and floods may have also contributed to the decline of kokanee (Corsi et al. 2019).

More intensive predator management became a necessary focus for kokanee recovery in LPO.

Research determined that reduced kokanee productivity in LPO, in concert with an over-abundance of upper trophic level predators, had created a predator pit that would have likely led to a complete collapse of kokanee in the system (Hansen et al. 2010). Beginning in 2006, with support from Avista and the Bonneville Power Administration, predator suppression programs were implemented with the goal of reducing predator abundance in LPO. An Angler Incentive Program (AIP) was introduced to incentivize sport harvest of Rainbow Trout and Lake Trout. In addition, commercial trap net and gill net operations targeting Lake Trout were implemented to further reduce the predator population and increase kokanee survival. The AIP was also intended to reduce Rainbow Trout abundance, but this component of the program was discontinued in 2013 because of limited success and increased resiliency of the kokanee population by that time. The predator suppression program has been a major success and the kokanee population has responded positively (Dux et al. 2019; Rust et al. 2020; Bouwens et al. 2021).

Much like with Lake Trout, an expanding Walleye population has the potential to put several fish populations in LPO at risk through direct predation and competition. Walleye are prolific piscivores and their establishment in other western lentic systems has led to significant fishery management challenges, particularly where they overlap with salmonid fisheries (McMahon and Bennett 1996; MFWP 2016). Lake Trout existed at low abundances in LPO for many years before they became a predation concern, and it is likely a similar situation exists with Walleye. Lake Trout suppression programs were instituted to reduce predation risk when we began to observe rapid population increases, as we are now seeing with Walleye. These similar patterns led to the establishment of an experimental Walleye netting program in 2018 and a Walleye AIP in 2019. Unlike the bounty system established for Lake Trout, the Walleye AIP instead focuses on a small number of tagged fish for a high reward (\$1,000 per fish).

Given the active management of LPO fish populations in recent years, it is important to understand how the fishery has responded to these actions. Additionally, introduced warmwater fish populations have continued to expand within the lake and their influence on the fishery warrants monitoring. The last LPO-wide creel survey was conducted in 2014–2015 (Bouwens and Jakubowski 2016), and the Clark Fork River and major tributaries to LPO were surveyed in 2018 (Bouwens and Jakubowski 2020). However, neither of these surveys captured information on the fishery in the Pend Oreille River (POR) downstream of LPO.

## **Goal**

Understand the fishery in LPO and the POR.

## **Objectives**

1. Evaluate the LPO fishery by estimating angling effort, catch rate, and catch. (*Ongoing*)
2. Evaluate the POR fishery by estimating angling effort, catch rates, and catch. (*Ongoing*)
3. Evaluate trends in the LPO fishery by comparing recent data to historic information. (*Ongoing*)

## **Methods**

Angling effort, catch rate, and catch will be estimated where both effort and catch rate will be

estimated using roving methods (Pollock et al. 1994). The fishery will be stratified into multiple sections. Three creel clerks will be dedicated to this project, although some additional funding will be available for assistance by existing staff to assist as necessary. Lake and river fisheries will be monitored exclusively through vehicular access, with aerial flights utilized for count data.

Days and shifts will be selected using a two-stage design, where days will be stratified by week days and weekend days. Generally, four to five days per week will be sampled, including both weekend days. Once the days are selected, shifts will be selected and will be non-overlapping. When daylight hours are short (i.e., less than 12 hours), the shift may encompass the entire day.

Total angling effort in angler hours on day  $d$  ( $\hat{E}_d$ ) will be estimated as:

$$\hat{E}_d = T_d \bar{I}_d, \quad (1)$$

where  $T_d$  is the total number of hours in the fishing day and  $\bar{I}_d$  is the mean of the angler counts conducted on day  $d$ . Angling effort ( $\hat{E}_k$ ) for the  $k$ th stratum will be estimated as:

$$\hat{E}_k = N_k \frac{\sum_{d=1}^{n_k} \hat{E}_d}{n_k}, \quad (2)$$

where  $N_k$  is the number of days in the stratum and  $n_k$  is the number of days surveyed in the stratum. Estimates of effort among strata will be summed to estimate effort ( $\hat{E}$ ) over the duration of the fishing season or time period of interest. The variance estimator for equation (2) depends on the estimate of within-day variance, which cannot be calculated when only one count is made or one shift is sampled. However, the within-stratum variance ( $\hat{V}(\hat{E}_k)$ ) can be approximated (Pollock et al. 1994; Scheaffer et al. 2006; Su and Clapp 2013) as:

$$\hat{V}(\hat{E}_k) = N_k^2 \left( \frac{s_{\hat{E}_k}^2}{n_k} \right), \quad (3)$$

where  $s_{\hat{E}_k}^2$  is the sample variance which is calculated as:

$$s_{\hat{E}_k}^2 = \frac{\sum_{d=1}^{n_k} (\hat{E}_d - \bar{E}_k)^2}{n_k - 1}, \quad (4)$$

where  $\bar{E}_k$  is the average daily effort estimate over the stratum. Similar to the point estimate, the overall season variance ( $\hat{V}(\hat{E})$ ) is calculated as the sum of the estimated strata variances. A CI for estimated angling effort over the sampling period ( $CI_{\hat{E}}$ ) is estimated as:

$$CI_{\hat{E}} = \hat{E} \pm Z_{\alpha/2} \sqrt{\hat{V}(\hat{E})}, \quad (5)$$

where  $Z_{\alpha/2}$  is the desired critical value for the CI (e.g., 1.96 for a 95% CI).

Mean angler catch rate using the daily estimator in fish per angler-hour on day  $d$  ( $\hat{R}_d$ ) will be

estimated as:

$$\hat{R}_d = \frac{\sum_{i=1}^{j_d} c_{d,i}}{\sum_{i=1}^{j_d} h_{d,i}}, \quad (6)$$

where  $j_d$  is the total number of anglers interviewed on day  $d$ ,  $c_{d,i}$  is the number of fish caught by the  $i$ th angler on day  $d$ , and  $h_{d,i}$  is the total number of hours fished by the  $i$ th angler on day  $d$ . Variance of catch rate will be estimated using bootstrapping methods.

Catch on day  $d$  ( $\hat{C}_d$ ) will be estimated as:

$$\hat{C}_d = \hat{R}_d \hat{E}_d. \quad (7)$$

Catch for the stratum ( $\hat{C}_k$ ) will be estimated as:

$$\hat{C}_k = N_k \frac{\sum_{d=1}^n \hat{C}_d}{n_k}. \quad (8)$$

Estimated catch among strata will be added to estimate season catch. Similar to effort, approximate variance for the stratum can be estimated using equation (3) with catch sample variance substituted for effort variance (estimated using equation [4]). Stratum variance is then summed to estimate season catch variance and CIs.

### **Work Products**

- Annual Work Summary; due December 1, 2023
- Comprehensive Project Report; final due November 1, 2023

### **Permitting Requirements**

Not applicable for the tasks proposed in this project plan.

Endangered Species Act consultation for this project plan is associated with the 2019 Biological Opinion on the effects of continued operation of the Clark Fork Hydroelectric Project on Bull Trout and designated Bull Trout critical habitat (BiOp), and the U.S. Fish and Wildlife Service (USFWS)-IDFG Cooperative Agreement pursuant to Section 6 of the Act. This project plan is consistent with the analysis and conclusions contained in the 2019 BiOp and the USFWS-IDFG Cooperative Agreement, and will adhere to all appropriate Terms and Conditions designed to reduce the extent and effects of incidental take on Bull Trout. Incidental take is not expected for this project; however, if it does occur it will be included in the annual Biological Opinion report as required by Term and Conditions 15–18 of the 2019 Incidental Take Statement, as well as IDFG's annual Section 6 report to the USFWS.

### **Cultural/Historic Resource Review**

Not applicable for the tasks proposed in this project plan; there are no ground and/or vegetation disturbing activities, or proposed impacts to cultural/historic resources.

### Benefit to the Resource

The ultimate measure of ongoing mitigation efforts is their realization in the associated fisheries. The fisheries that we are proposing to assess have been entirely influenced by the operation of Noxon Rapids and Cabinet Gorge dams and subsequent CFSA mitigation activities. For instance, the Rainbow Trout and Bull Trout fisheries have been and will continue to be influenced directly by ongoing predator management activities in LPO and tributary enhancement projects. Minus periodic spawning forays, adults of these species spend the vast majority of their lives in LPO, which is the primary target area of the Appendix F5 Dissolved Gas Supersaturation Control, Mitigation, and Monitoring Program. The goal of the CFSA-supported predator management activities has been to bolster the forage base (kokanee) for these species and it is logical to assess the realization of these efforts on the fishery. An understanding of how these fisheries may contribute to overall estimates of mortality will allow further refinement of population management, especially since these fisheries were virtually non-existent prior to CFSA-related management actions.

Fishing effort and associated success in the proposed project streams has anecdotally been increasing. A more complete understanding of the LPO and POR fishery will allow for enhancement of these resources through more precise management that would otherwise not be possible. Data from this project will be utilized in the management planning and rulemaking processes to determine the level of regulation necessary to allow for reasonable fishing opportunity while also protecting the resource.

### Budget

Item	Estimated Carryover <sup>1</sup>	2023 Budget Request
Aerial flights utilized to collect angler count data	\$28,233	\$0
Avista support (0.05 FTE)	\$5,000	\$0
<b>Total</b>	<b>\$33,233</b>	<b>\$0</b>
<b>Anticipated Expenditures</b>		<b>\$33,233</b>

<sup>1</sup> Estimated carryover of unexpended, approved funds as of January 1.

This project will be a cost share with IDFG and all CFSA-related costs are listed above. The total IDFG contribution is expected to be approximately \$137,000 and will cover three IDFG technicians for three months, three non-benefited creel clerks, and fleet rental trucks. The estimated total budget for this project is \$237,000.

### Literature Cited

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## 2023 PROJECT PLAN

### Lower Clark Fork River Genetics Evaluation

#### Project Contact

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and

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#### Project History

This is a new project for 2023. This project was scored by the WRTAC on January 18, 2023 and the Evaluation and Ranking Criteria scores are included as the last page of this project plan.

#### Background

Across much of their historic range, Westslope Cutthroat Trout (*Oncorhynchus clarki lewisi*; WCT) are threatened by habitat fragmentation and interactions with non-native species. Introgressive hybridization with introduced Rainbow Trout (*O. mykiss*; RBT) is considered one of the primary threats to the long-term persistence of WCT (Leary et al. 1984). In the Clark Fork River system, both threaten the persistence of remaining WCT populations.

The Native Salmonid Restoration Plan (Aquatic Implementation Team 2018) calls for the re-establishment and maintained connectivity of the Clark Fork River across Cabinet Gorge Dam (CGD) for migratory WCT in the lower Clark Fork River. Since 2015, Avista has conducted an Upstream Transport Program (UTP) for migratory WCT to re-establish connectivity between the lower Clark Fork River and spawning tributaries upstream in Montana (Bernall et al. 2021). With the completion of the new Fish Passage Facility (FPF) at CGD, the UTP is expected to increase in its efficiency and effectiveness at moving WCT upstream.

We have been fairly successful at accurately identifying WCT, RBT, and their hybrids and moving pure-strain WCT upstream, while returning RBT and hybrids downstream (Bernall et al. 2021). This practice, while good for maintaining the genetic integrity and life history diversity of upstream WCT populations, raises questions concerning unintended consequences to the lower Clark Fork River fishery and the WCT populations below CGD. One consideration is the effects of selectively removing non-hybridized WCT and returning RBT and hybrids to the lower river, potentially increasing rates of hybridization and introgression with WCT in the lower river.

Another important consideration is the source strain(s) of RBT alleles (coastal vs. Gerrard) in the lower river. Gerrard-strain RBT are an important component of the Lake Pend Oreille fishery and a goal of the IDFG 2019-2024 Fisheries Management Plan is to maintain a trophy Gerrard RBT fishery and conserve and manage native WCT (IDFG 2019). Coastal strain RBT are not managed for and represent both inter- and intraspecific hybridization threat to WCT and Gerrard RBT in the LPO system. Surveys of LPO and its tributaries have (with few exceptions) found only Gerrard RBT genetics (Campbell et al. 2013), however, there has never been a genetic assessment of *Oncorhynchus spp.* in mainstem lower Clark Fork River to evaluate the level of interspecific (WCT x RBT) or intraspecific admixture of RBT (coastal vs Gerrard) that

make up that fishery.

The assumption behind transporting adfluvial WCT to historic spawning tributaries upstream of CGD is that their progeny will return volitionally to Lake Pend Oreille to rear. Over 200 WCT have been transported upstream of CGD since the program began in 2015, and Parental Based Tagging (PBT) combined with age analysis may be a viable tool to evaluate WCT captured in the Clark Fork River below CGD to determine if one or both of their parents were prior transports. Assumably, the number of transports will increase with the operation of the FPF and PBT will be a useful tool to evaluate the efficacy of the WCT UTP.

### **Goal**

Gain an understanding and establish a baseline of the genetic composition of *Oncorhynchus sp.* inhabiting the CFR below CGD.

### **Objectives**

1. Evaluate the species composition (WCT and RBT) and RBT strains (coastal vs Gerrard) of *Oncorhynchus sp.* in the lower CFR.
2. Evaluate rates inter- (WCT x RBT) and intraspecific (coastal x Gerrard RBT) hybridization; and identify source strains of RBT (coastal vs. Gerrard) contributing to the introgression of WCT in the lower CFR system.
3. Evaluate the contribution of WCT transported upstream of CGD to the WCT population in the Clark Fork River downstream of CGD.

### **Methods**

Genetic samples will be process through a laboratory with the capabilities to generate the necessary data to address the above questions. This is to-be-determined since our research questions require a very specific marker set that is not likely to be widely available. Specifically, we will require a set of genetic markers that can differentiate WCT, coastal-hatchery origin RBT, and Gerrard-strain RBT alleles all within a single panel. Furthermore, the marker panel should also contain an appropriate number of polymorphic single nucleotide polymorphisms (SNPs) to address more traditional population genetics questions including parentage-based tagging (PBT). PBT is being conducted for all WCT transported upstream into Montana by Avista and Montana FWP, our SNP marker panel needs to be compatible with these data.

Both Montana Fish, Wildlife, and Parks and IDFG fisheries genetics labs have SNP panels that could address our questions but determining the most appropriate one will require further research and discussion. For example, the Montana Fisheries Conservation Genetics Lab (MFCG) in Missoula has multiple SNP panels available and are planning to use a 4,000 SNP panel for the parentage analysis of WCT transported upstream (Ryan Kovach, personal comm.). The IDFG Eagle Fisheries Genetics Lab has two SNP panels that can address our questions of inter- and intraspecific hybridization, however, it is unlikely these panels will be compatible with the data produced by the MFCG lab to address the question of WCT parentage.

Field collection of samples will occur during the spring, summer, and fall of 2023. Methods will consist of a combination of passive trapping at CGD and boat electrofishing. To understand the

genetic status and species composition of fish attempting upstream migration at CGD, Avista crews will measure total length (mm), collect a fin clip, and release all non-transported *Oncorhynchus spp.* captured in the CGD trap during their normal operating window during the spring 2023. Boat electrofishing surveys will occur during the spring, summer, and fall of 2023 to assess species composition and rates of inter of fish in the mainstem lower Clark Fork River. IDFG/Avista crews will conduct one-week of two-boat electrofishing on the lower Clark Fork River running a single pass from the fish hatchery to Foster Side Channel to collect total length (mm) and a fin clip on all *Oncorhynchus spp.* captured.

We will address the questions of species composition and hybridization by conducting genetic analysis of the tissue samples collected during the sampling periods. Species-diagnostic (WCT vs RBT) SNPs will be used to evaluate the genetic status of WCT in the river and interpret the genetic consequences of passing only non-admixed WCT over CGD while returning hybrids and RBT to the lower river. Strain-specific (coastal vs Gerrard) SNPs will be used to assess the source of RBT alleles into WCT populations and identify and assess any genetic threats to both the WCT populations and the Gerrard-strain fishery of LPO. Last, the remaining polymorphic markers will be used for the PBT analysis. Results and discussion will be provided in a full report.

### **Work Products**

- Annual Work Summary; due December 1, 2023
- Comprehensive Project Report; Lower Clark Fork River *Oncorhynchus* Genetics Evaluation; final due November 1, 2024

### **Permitting Requirements**

Fish collection for this project will either be covered under IDFG authority or through the IDFG collection permit for Appendix C activities.

Endangered Species Act consultation for this project plan is associated with the 2019 Biological Opinion on the effects of continued operation of the Clark Fork Hydroelectric Project on Bull Trout and designated Bull Trout critical habitat (BiOp), and the U.S. Fish and Wildlife Service (USFWS)-Idaho Department of Fish and Game (IDFG) Cooperative Agreement pursuant to Section 6 of the Act. This project plan is consistent with the analysis and conclusions contained in the 2019 BiOp and the USFWS-IDFG Cooperative Agreement, and will adhere to all appropriate Terms and Conditions designed to reduce the extent and effects of incidental take on Bull Trout. Incidental take reporting for this project plan will be included in the annual Biological Opinion report as required by Term and Conditions 15–18 of the 2019 Incidental Take Statement, as well as IDFG’s annual Section 6 report to the USFWS.

### **Cultural/Historic Resource Review**

Not applicable for the tasks proposed in this project plan, there are no ground and/or vegetation disturbing activities, or proposed impacts to cultural/historic resources.

### **Benefit to the Resource**

This project will describe the genetic makeup of *Oncorhynchus spp.* in the lower Clark Fork River. As such, this information will be useful for fishery management in the lower Clark Fork

River with respect to upstream passage of WCT. The proposed activities are consistent with the Dissolved Gas Supersaturation Control, Mitigation, and Monitoring Program (Appendix F5) as they are focused on fish species that are exposed to elevated total dissolved gas levels when spill occurs at Cabinet Gorge Dam. They are also consistent with goals of the Fish Passage/Native Salmonid Restoration Plan (Appendix C), and the Idaho Tributary Habitat Acquisition and Fishery Enhancement Program (Appendix A), through assessment of native salmonid populations. Tasks conducted under this fund are consistent with the goals of the IDFG Fisheries Management Plan (IDFG 2019).

### Budget

Item	Estimated Carryover <sup>1</sup>	2023 Budget Request
Avista labor (0.2 FTE)	\$0	\$15,000
Sample Processing	\$0	\$50,000
Fleet costs (Boat)	\$0	\$2,000
Lab and field supplies	\$0	\$1,000
<b>Total</b>	<b>\$0</b>	<b>\$68,000</b>
<b>Anticipated Expenditures</b>		<b>\$68,000</b>

<sup>1</sup> Estimated carryover of unexpended, approved funds as of January 1.

We expect about \$8,000 of cost share for an IDFG biologist's time.

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**Appendix F5 Mitigation Fund  
Project Evaluation and Ranking Criteria score sheet**

*As scored by the WRTAC on 1/18/2023*

**Project Title: Lower Clark Fork River Genetics Evaluation**

Criteria	Score			
	3	2	1	0
<b>A. Population exposure</b>	<b>Routinely in LPO or LCFR</b>	Routinely from Dover to Box Canyon	Intermittently or occasionally	Population not exposed
<b>B. Species to benefit</b>	Bull Trout and Westslope Cutthroat Trout	<b>Bull Trout or Westslope Cutthroat Trout</b>	Target species but not Bull Trout or Westslope Cutthroat Trout	None
<b>C. Mitigate or evaluate</b>	Mitigates	<b>Evaluates</b>	NA	Not applied to resources affected by TDG
<b>D. Project effectiveness</b>	Solves primary problem	<b>Partially solves or provides all information</b>	Provides some information	Does not address primary problem
<b>E. Cost/benefit</b>	Benefit exceptional relative to cost	Benefit high relative to cost	<b>Benefit consistent with cost</b>	Cost exceeds benefit
<b>F. Outside funding</b>	≥ 50%	25–49%	<b>≤ 24%</b>	Entirely CFSA funded

**Scoring Instructions:**

- When ranking proposals that do not involve on-the-ground implementation but are necessary to the scope of physical projects (e.g., applied research, watershed assessments, NEPA analyses), score them with regard to the “expected” or “average” resultant physical project.
- **A score of “0” in any of the criteria does not necessarily mean the project is ineligible for CFSA funding.** Rather, a score of “0” should be considered an indication that this aspect of the project needs to be thoroughly discussed and considered.
- Although total scores for each proposed project can be summed to get a general idea of the relative strength of each project, **the scoring system should be viewed as an ordinal rather than absolute ranking system.** In light of this and in the interest of maintaining a simple and objective scoring system, only whole numbers will be utilized (e.g., no half points).



## **2023 PROJECT PLAN**

### **Gas Supersaturation Control Program Total Dissolved Gas Abatement**

#### **Project Contact**

Paul Kusnierz, Avista, (406) 847-1274, [paul.kusnierz@avistacorp.com](mailto:paul.kusnierz@avistacorp.com)

#### **Project History**

Total dissolved gas (TDG) abatement in the lower Clark Fork River during the spring runoff season is a required activity under FERC License No. 2058. The original Gas Supersaturation Control Program (GSCP) was approved by all pertinent stakeholders in 2004 (Avista 2004) and FERC issued an order approving the GSCP on January 1, 2005. An addendum to the 2004 GSCP was approved by the Management Committee (MC) in 2009 (Avista 2009). The GSCP Addendum specified that up to \$5,000,000 may be spent on engineering and evaluation and up to \$25,000,000 may be spent on construction and implementation of TDG reduction measures. Until 2021, this project plan had its own fund. Beginning in 2022, after the completion of the “Final 2022 Phase III of the Final Gas Supersaturation Control Program Addendum for the Clark Fork Project” (Avista 2022), this fund was terminated and now TDG abatement occurs under the TDG Mitigation and Monitoring Program. This project is a continuation of work that has occurred at Cabinet Gorge Dam since 2004.

#### **Background**

During the spring runoff season, flow in the lower Clark Fork River can exceed the hydraulic capacity of Cabinet Gorge powerhouse facility. When this occurs, it is necessary to spill water over the dam’s spillway. The physical characteristics of the Cabinet Gorge Dam spillway, in particular the deep (about 70 ft) plunge pool and the way in which spill aerates water released through the powerhouse, can lead to TDG supersaturation. Implementation of the TDG abatement program involves construction of spillway modifications for TDG reduction. The MC was directed by the 2009 Addendum to only approve TDG reduction measures “for which performance evaluations predict passage of a specified capacity of excess flows past Cabinet Gorge Dam which meet the interim TDG Target” (Avista 2009). The TDG reduction measures ultimately approved by the MC consist of adding roughness elements to the spillways (Avista 2012; 2013a; 2013b; 2014). To date, five spillway bays have been modified and TDG monitoring has shown that the modifications of the spillway bays have resulted in reduction of TDG released downstream of the dam.

#### **Goal**

The goal of this project is the implementation of TDG reduction measures as described in the GSCP Addendum in the areas of “Engineering & Evaluation” and “Construction & Implementation.”

#### **Objectives**

1. Meet with the Gas Supersaturation Subcommittee (GSSC), to transition into Phase III of the GSCP Addendum and consider other options to further reduce TDG released downstream of the dam during spring runoff.

2. Conduct ongoing evaluation to address impacts of the use of the modified spillway crests on the powerhouse and on employee safety.

### **Tasks**

1. Convene the GSSC annually to evaluate the previous spring's spill results and any potential for additional TDG reduction measures. (Objective 1)
2. Identify and evaluate the issues resulting from spray created by the use of the modified spillway crests on the powerhouse and on employee safety (e.g., residue buildup on transformers, ice formation on the deck), and propose fixes. (Objective 2)
3. Select and implement fixes to the identified issues. (Objective 2)

### **Work Products**

- Annual Work Summary; due December 1, 2023

### **Permitting Requirements**

Not applicable for the tasks proposed in this project plan.

Endangered Species Act consultation for this project plan is associated with the 2019 Biological Opinion on the effects of continued operation of the Clark Fork Hydroelectric Project on Bull Trout and designated Bull Trout critical habitat (BiOp). This project plan is consistent with the analyses and conclusions contained in the 2019 BiOp and will adhere to all appropriate Terms and Conditions designed to reduce the extent and effects of incidental take on Bull Trout. No incidental take of Bull Trout is anticipated as a result of this project plan; therefore, no take reporting is required.

### **Cultural/Historic Resource Review**

Avista will coordinate cultural/historic resource review for this project prior to implementing the fixes for this project plan. The work product for this review will be confidential due to the sensitive nature of the content.

### **Benefit to the Resource**

This project is the direct implementation of a portion of Appendix F5 under the CFSA (Avista 1999).

Idaho water quality standards are based upon support of beneficial uses, and in particular "Cold Water Aquatic Life." Continued TDG abatement is critical to maintaining the health of all native fisheries in the lower Clark Fork River and Lake Pend Oreille.

## Budget

Item	Estimated Carryover	2023 Budget Request
Biologist labor (0.06 FTE)	\$2,000	\$10,000
Consultant	\$0	\$10,000
Contractor	\$0	\$25,000
Cultural/Historic Resource Review	\$0	\$5,000
<b>Total</b>	<b>\$2,000</b>	<b>\$50,000</b>
<b>Anticipated Expenditures</b>		<b>\$52,000</b>

<sup>1</sup> Estimated carryover of unexpended, approved funds as of January 1.

## Literature Cited

- Avista Corporation. 1999. Application for New License, Volume III Settlement Agreement.  
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- Avista Corporation. 2004. Final Gas Supersaturation Control Program for the Clark Fork Project.  
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## **2023 ANNUAL IMPLEMENTATION PLAN SUMMARY – APPENDIX G**

### **Clark Fork Project, FERC No. 2058 Cabinet Gorge and Noxon Rapids Hydroelectric Developments**

#### **Title**

Implementation of Land Use Management Plan (LUMP)

#### **Implementation Staff Lead**

Arthur D. Potts, Avista, (406) 847-1283, [arthur.potts@avistacorp.com](mailto:arthur.potts@avistacorp.com)

#### **Background**

The purpose of this measure is to provide for the long-term protection and maintenance of sensitive and important resources on Avista owned project lands, including the existing rural and semi-remote character of the shoreline, through implementation of the LUMP. Avista project lands will be managed to protect these qualities while still allowing for reasonable public access and other compatible uses.

Year 2023 work efforts are a continuation of past efforts and remain focused on implementing the three distinct components of the LUMP:

#### **2023 Project Plans**

1. Administration of the LUMP
2. Monitoring Associated with the LUMP
3. Enforcement Associated with the LUMP
4. Managing Aquatic Invasive Plants on Noxon and Cabinet Gorge Reservoirs

#### **Work Products**

##### *Administration of the LUMP*

- Unless a specific document is created for a task, all work associated with this Project Plan will be documented in the 2023 Terrestrial Resources Annual Work Summary. Due Date: December 1, 2023
- Develop annual pesticide and herbicide report to be included in the 2023 Terrestrial Resources Annual Work Summary. Due Date: December 1, 2023

##### *Monitoring Associated with the LUMP*

- All work associated with this Project Plan will be documented in the 2023 Terrestrial Resources Annual Work Summary. Due Date: December 1, 2023

##### *Enforcement Associated with the LUMP*

- All work associated with this Project Plan will be documented in the 2023 Terrestrial Resources Annual Work Summary. Due Date: December 1, 2023
- Annual reports from Idaho Department of Fish and Game will be provided per the MOU agreement. Due Dates: December 1, 2023

*Managing Aquatic Invasive Plants on Noxon and Cabinet Gorge Reservoirs*

- Mid-year report; due to the Terrestrial Program Leader August 1, 2023
- Annual Work Summary; due to the Terrestrial Program Leader November 15, 2023

**2023 Appendix G Land Use Management Plan Budget**

<b>Budget Summary</b>	
2023 contribution (estimate) <sup>1</sup>	\$167,500
<b>Total available</b>	<b>\$167,500</b>
2023 MC-approved budget	\$167,500
<b>Unobligated funds</b>	<b>\$0</b>

<sup>1</sup> Estimated costs are projections made now; however, Avista will pay the actual costs as approved by the Management Committee. The amount needed to implement this PM&E may vary greatly by year depending upon legal/survey needs to address issues related to the management of Avista owned Project lands.

<b>2023 Project</b>	<b>Carryover<sup>1</sup></b>	<b>2023 Budget</b>
Administration of the LUMP	\$0	\$85,000
Monitoring Associated with the LUMP	\$0	\$10,000
Enforcement Associated with the LUMP	\$0	\$45,000
Managing Aquatic Invasive Plants on Noxon and Cabinet Gorge Reservoirs	\$0	\$27,500
<b>Total</b>	<b>\$0</b>	<b>\$167,500</b>
<b>MC-approved budget</b>		<b>\$167,500</b>

<sup>1</sup> Estimated carryover of unexpended, approved funds as of January 1.

## **2023 PROJECT PLAN**

### **Administration of the LUMP**

#### **Project Contact**

Arthur D. Potts, Avista, (406) 847-1283, [arthur.potts@avistacorp.com](mailto:arthur.potts@avistacorp.com)

#### **Project History**

This is a continuing project that has been approved annually by the Management Committee (MC).

#### **Background**

The LUMP establishes appropriated land use classifications and management guidelines to protect identified natural, aesthetic, and cultural resources that occur on Avista owned project lands. It also provides opportunity for public and some private access to project lands and waters where appropriate. The Administration component of this PM&E is in place to ensure that staff and budget are in place to coordinate and implement the following objective. This project is part of the direct implementation of Clark Fork Settlement Agreement Appendix G.

#### **Goal**

The Administration component of this PM&E is in place to ensure that staff and budget are in place to coordinate and implement the following objective.

#### **Objective**

1. The overall goal of the LUMP is to protect sensitive and important resources on Avista owned project lands, including the existing character or the shoreline.

#### **Tasks**

1. Continue to implement the Private Recreation Permit Program
2. Continue to address property ownership/trespass issues as they arise.
3. Continue to process requests for leases/easements of Avista Project property.
4. If a request is received, review and process Rock Creek Mine request to place discharge pipe across Project lands.
5. Ongoing coordination of land use management program among Terrestrial Resource Technical Advisory Committee, Sanders County, and Green Mountain Conservation District, and the cultural resources, wildlife, recreation, aesthetics, and erosion programs.
6. Continue implementation of the Pesticide and Herbicide Use Plan in consultation with the MC. See the attached document outlining 2023 planned pesticide and herbicide use on Avista project property.

7. The Land Use Subgroup will continue working to identify potential changes to the LUMP in preparation for the 5-year review to be completed in 2023.
8. The Special Uses Subgroup and other interested parties will evaluate new requests for special use permits by private, and for-profit rental companies to use Avista owned and managed recreation areas as needed.
9. Replace identification for recreation permit sites throughout Project.

### Work Products

- Unless a specific document is created for a task, all work associated with this Project Plan will be documented in the 2023 Terrestrial Resources Annual Work Summary. Due Date: December 1, 2023
- Develop annual pesticide and herbicide report to be included in the 2023 Terrestrial Resources Annual Work Summary. Due Date: December 1, 2023

### Cultural/Historic Resource Review

Work proposed under this Project Plan will either: 1) not involve any ground disturbing activities or impact historic resources, or 2) will be performed under the cultural assessment associated with the specific proposed project.

### Benefit to the Resource

Provide protection for sensitive and important resources on Avista owned project lands, including the existing character or the shoreline, while providing opportunity for public and some private access to project lands and waters where appropriate.

### Budget

Item	Estimated Carryover <sup>1</sup>	2023 Budget Request
<b>Tasks 1-9: Labor and materials</b>	\$0	\$85,000
<b>Total</b>	\$0	\$85,000
<b>Anticipated Expenditures</b>		\$85,000

<sup>1</sup> Estimated carryover of unexpended, approved funds as of January 1.

### 2023 Pesticide and Herbicide Application Plan

This plan provides a list of known sites that may be treated in any given year depending on infestation rates and overall weather conditions. Additional sites may be treated when a “new” invasive noxious plant species is discovered, and treatment is needed.

### Pesticide Use on Project Property

Pesticides as defined for the purpose of this document are insecticides, fungicides, and rodenticides.

The only application currently occurring under this category is the annual fall application of fungicide (PHNB) on the greens and tee boxes of Thompson Falls Golf Course. The greens keeper employed by the golf course conducts this application.

## Herbicide Use on Project Property

- *Earthen portion of Noxon Rapids Dam:*  
This area is spot treated on an annual basis utilizing an Avista employee who is a licensed applicator. The primary focus of this effort is to treat rush skeleton weed, Dalmatian toadflax, Saint John's wort, and knapweed. Spot treatment will continue as long as needed to prevent any further establishment or spread of these noxious weeds.
- *Road Right-of-Ways:*  
Road rights-of-way leading into both dams and associated facilities are treated annually utilizing an Avista employee who is a licensed applicator. This is done to help prevent the spread of Dalmatian toadflax, knapweed, and Saint John's wort from these traffic areas.
- *Switchyards:*  
Switchyards associated with both Noxon Rapids and Cabinet Gorge dams are treated with a soil sterilant on an annual basis, utilizing an Avista employee. Switchyards must be kept free of all vegetation in order to operate in a safe and reliable manner.
- *Treatment of Leafy Spurge:*  
Avista has treated leafy spurge on the upper end of the Clark Fork Project for over ten years. The goal of this treatment is to limit the spread of leafy spurge to downstream sites. These areas are spot sprayed one to two times a year by a licensed applicator. Primary sites of treatment are at Sandy Beaches Estates, Thompson Falls State Park and Trail, State Trust Lands adjacent to Thompson Falls State Park, Thompson Falls Golf Course and limited spot spraying downstream to Finley Flats as needed.
- *Treatment of Japanese Knotweed:*  
Follow-up monitoring and treatment, if needed, of two infestations of Japanese knotweed growing along Cabinet Gorge Reservoir near Noxon, Montana and a smaller patch near Trestle Creek (Idaho).
- *Thompson Falls Golf Course:*  
The fairways on Thompson Falls Golf Course are treated one to two times a year. No application of pesticide is allowed within 30 yards of the river. The golf course greens keeper will apply these treatments.
- *Pilgrim Creek Park:*  
Avista will continue to take measures to control noxious weeds on the 5-acre grass point. These measures include spraying, mowing, and irrigating the point to decrease the abundance of noxious weeds. A licensed applicator will be utilized to treat these areas as well as the dirt infields of the two baseball fields and the stone dust American Disability Act (ADA) paths to prevent vegetation from growing in these areas. Approval from the CRMG has been obtained for this work (2002).

- *Avista Property Associated with Island Park Subdivision Private Recreation Lease:*  
Activity will include survey of the ten-acre parcel and treatment of any infested areas as needed.
- *Clark Fork Access Site:*  
This recreation site is along the lower Clark Fork River two miles downstream of the Montana – Idaho border. A licensed applicator will be utilized to treat the stone dust ADA paths to prevent vegetation from growing in the trails. There may also be spot treatments for tansy, knapweed, and poison ivy at this site as needed.
- *Heron Boat Ramp:*  
A licensed applicator will treat the site (approximately 2.5 acres) for knapweed as needed.
- *Weed Species of Special Concern to Sanders County, Montana:*  
The Sanders County Weed District is currently attempting to detect and eradicate all rush skeleton weed in the county. Rush skeleton weed has been found on Avista Project Property located on the face of the earthen portion of Noxon Rapids Dam, Pilgrim Creek Park (2015), and the parking area associated with the boat ramp in the town of Noxon. These sites are treated and monitored annually by Avista and Sanders County weed specialist.

Avista will continue control efforts of scotch broom on Avista property. Scotch broom has been detected on Avista property near the Big Eddy and Frog Pond recreation sites, where the plant has invaded from adjacent landowners.

Based on direction from Sanders County Weed District and others, Avista may treat specific populations of yellow flag iris along the reservoirs.

- *Treatment of USFS lands by the USFS:*  
The USFS currently applies herbicides on a limited basis at the USFS-owned and operated recreations sites within the Project Boundary. As part of this Plan, the USFS will provide Avista a summary of herbicides used at these sites to be included in the Clark Fork Project Annual Report. An Avista licensed applicator or a contracted licensed applicator will also treat as needed.
- *Treatment of MFWP sites by MFWP:*  
Montana Fish, Wildlife and Parks currently applies herbicides on a limited basis at Thompson Falls State Park and Flat Iron Fishing Access Site as part of ongoing operations and maintenance. As part of this Plan, MFWP will provide Avista a summary of herbicides used at these sites to be included in the Clark Fork Annual Report. An Avista licensed applicator or a contracted licensed applicator will also treat as needed.
- *Treatment on Bull River Properties:*  
These properties include the Bull River Wildlife Management Area and Wood Duck properties. Although these properties are not Project lands, the acquisition and

management are associated with the CFSA. These areas will be treated as needed by MFWP, Avista or contracted licensed applicator.

- *Treatment of Cultural Sites:*  
There may be a need to treat sites that contain culturally significant plants to protect these areas from invasive noxious weeds. The treatment of these sites will be at the direction of the CRMG, and specific locations will not be disclosed to protect them from vandalism or other damage.
- *Treatment of Dispersed Recreation Sites and Private Recreation Permit Sites:*  
A licensed applicator will treat many of the dispersed recreation sites as time and conditions allow.

Knapweed control may also be needed at some Private Recreation Permit sites. Avista will work with adjoining landowners to control knapweed as appropriate.

- *Treatment of EWM:*  
The AIPTF may continue implementation of limited treatment of EWM on Noxon and Cabinet Gorge reservoirs along public access sites and shoreline dock areas. Herbicide use will only be implemented after the AIPTF has received all necessary permits and satisfied other applicable requirements (public notification, MEPA, etc.), with locations based on pretreatment monitoring of both reservoirs. This is only one facet of an Integrated Management Plan, which may also utilize bottom barriers, hand removal and education components.



## **2023 PROJECT PLAN**

### **Monitoring Associated with the LUMP**

#### **Project Contact**

Arthur D. Potts, Avista, (406) 847-1283, [arthur.potts@avistacorp.com](mailto:arthur.potts@avistacorp.com)

#### **Project History**

This is a continuing project that has been approved annually by the Management Committee since 1999.

#### **Background**

The LUMP establishes appropriated land use classifications and management guidelines to protect identified natural, aesthetic, and cultural resources that occur on Avista owned project lands. It also provides opportunity for public and some private access to project lands and waters where appropriate.

#### **Goal**

The Monitoring component of this PM&E is in place to ensure that staff and budget are in place to coordinate and implement the following objective. This project is part of the direct implementation of Clark Fork Settlement Agreement Appendix G.

#### **Objective**

1. The overall goal of the LUMP is to protect sensitive and important resources on Avista owned project lands, including the existing character or the shoreline.

#### **Task**

1. Continue annual inspections of Avista project lands to assure compliance with permit and lease conditions and assure compliance with acceptable land uses and restrictions as defined by Land Use Classifications.

#### **Work Product**

- All work associated with this Project Plan will be documented in the 2023 Terrestrial Resources Annual Work Summary. Due Date: December 1, 2023

#### **Cultural/Historic Resource Review**

May be needed on a case-by-case basis and will be coordinate with Avista Cultural Resource Specialist.

#### **Benefit to the Resource**

Provide protection for sensitive and important resources on Avista owned project lands, including the existing character or the shoreline, while providing opportunity for public and some private access to project lands and waters where appropriate.

**Budget**

<b>Item</b>	<b>Estimated Carryover<sup>1</sup></b>	<b>2023 Budget Request</b>
Labor and equipment	\$0	\$10,000
<b>Total</b>	\$0	\$10,000
<b>Anticipated Expenditures</b>		\$10,000

<sup>1</sup> Estimated carryover of unexpended, approved funds as of January 1.

## 2023 PROJECT PLAN

### Enforcement Associated with the LUMP

#### Project Contact

Arthur D. Potts, Avista, (406) 847-1283, [arthur.potts@avistacorp.com](mailto:arthur.potts@avistacorp.com)

#### Project History

This is a continuing project that has been approved annually by the Management Committee.

#### Background

The LUMP establishes appropriated land use classifications and management guidelines to protect identified natural, aesthetic, and cultural resources that occur on Avista owned project lands. It also provides opportunity for public and some private access to project lands and waters where appropriate.

#### Goal

The Enforcement component of this PM&E is in place to ensure that staff and budget are in place to coordinate and implement the following objective. This project is part of the direct implementation of Clark Fork Settlement Agreement Appendix G.

#### Objective

1. Continue enforcement to prevent and when appropriate prosecute violations of the law, permit and lease conditions, and other unauthorized uses of project lands and waters. These activities will be coordinated with Avista real-estate, legal, land survey personnel, Montana Fish, Wildlife and Parks (MFWP), Idaho Fish and Game (IDFG), United State Forest Service (USFS), or other law enforcement agencies.

#### Tasks

1. Continue to coordinate with Montana Fish, Wildlife and Parks enforcement personnel to assist in the prevention and when appropriate prosecute violations of the law, permit and lease conditions and other unauthorized uses of project lands and waters.
2. Continue to provide funding for Idaho Fish and Game enforcement personnel to assist in the prevention and when appropriate prosecute violations of the law, permit and lease conditions and other unauthorized uses of project lands and waters.
3. Continue to provide funding for Avista real-estate, legal, land survey, and cultural personnel to assist in the prevention and when appropriate prosecute violations of the law, permit and lease conditions and other unauthorized uses of project lands and waters.

#### Work Products

- All work associated with this Project Plan will be documented in the 2023 Terrestrial Resources Annual Work Summary. Due Date: December 1, 2023
- Annual reports from Idaho Department of Fish and Game will be provided per the MOU agreement. Due Dates: December 1, 2023

### **Cultural/Historic Resource Review**

Work proposed under this fund will either: 1) not involve any ground disturbing activities or impact historic resources, or 2) will be performed under the cultural assessment associated with the original project.

### **Benefit to the Resource**

Provide protection for sensitive and important resources on Avista owned project lands, including the existing character or the shoreline, while providing opportunity for public and some private access to project lands and waters where appropriate.

### **Budget**

<b>Item</b>	<b>Estimated Carryover<sup>1</sup></b>	<b>2023 Budget Request</b>
Montana Enforcement MOU with Montana Fish, Wildlife and Parks	\$0	\$0
Idaho Enforcement MOU with Idaho Department of Fish and Game	\$0	\$5,000
Avista and contract real-estate, legal, land survey, and cultural personnel	\$0	\$40,000
<b>Total</b>	<b>\$0</b>	<b>\$45,000</b>
<b>Anticipated Expenditures</b>		<b>\$45,000</b>

<sup>1</sup> Estimated carryover of unexpended, approved funds as of January 1.

## 2023 PROJECT PLAN

### Managing Aquatic Invasive Plants on Noxon and Cabinet Gorge Reservoirs

#### Project Contacts

Larry Lack, Chair, Sanders County Aquatic Invasive Plants Task Force  
Email: grizzlyadams\_mt@yahoo.com

Kim McMahon, Sanders County Aquatic Invasive Plants Task Force Facilitator  
Phone: (406) 546-2447  
Email: kim.pinnacle.research@gmail.com

#### Project History

This is a continuing project, directed and managed by the Sanders County Aquatic Invasive Plants Task Force (Task Force) to monitor and address the infestation of Eurasian watermilfoil (EWM) in Noxon and Cabinet Gorge reservoirs, and to educate the public about aquatic invasive species. The Management Committee originally began funding this program in 2008 with funding from Appendix G and H. In 2008, the Management Committee approved a small amount of funding from Appendix B for reservoir mapping of EWM. The Management Committee first approved funds for treatment of EWM (from Appendix B) in 2014. Funding for the EWM management and treatment is reviewed and approved annually by the Management Committee.

#### Background

Eurasian watermilfoil and curlyleaf pondweed (CLP) were confirmed in Noxon and Cabinet Gorge reservoirs in 2007; this was the first identified infestation of EWM in Montana. Initial studies indicated that EWM covered 247 acres in Noxon and 117 acres in Cabinet and spread at a rate of about 9.8% annually in the reservoirs.

Eurasian watermilfoil is an aggressive, non-native aquatic weed that poses a serious threat to Montana's rivers and lakes. When introduced into a waterbody, EWM spreads quickly and forms thick beds with dense canopies that crowd out native aquatic plants and threaten fisheries, water quality, drinking and irrigation water supplies and recreational uses. Once established, dense EWM beds can deplete oxygen needed by fish and other aquatic organisms (Madsen 2014). With the exception of bottom barriers, control measures selectively target EWM, thereby maintaining populations of native coontail, elodea, pondweeds and whitewater buttercup.

The Sanders County Commissioners established the Task Force in 2008 to develop and implement an integrated weed management approach to contain and manage infestations of EWM. The annual program has included the following components:

- Controlling priority areas of invasive milfoil stands through a combination of aquatic herbicide treatments, diver dredging (hand removal) in small, narrow plots where herbicides have proven to be less effective or adequate application is problematic, and the use of bottom barriers at high-use docks/ramps (public and private) to reduce the risk of boats transporting weed fragments.

- Conducting annual pre- and post-treatment monitoring to verify treatment effectiveness on targeted invasive species and re-colonization of native aquatic plant species at treated sites. Monitoring services were provided by Montana Fish Wildlife and Parks in 2019 at no cost to Sanders County.
- Monitoring littoral zones of Noxon and Cabinet Gorge reservoirs to determine if and how the composition and density of submersed vegetation and the location of invasive plant stands is changing over time.
- Implementing an education program to raise awareness about aquatic invasive plants and the importance of preventing the spread of aquatic invasive species. The Task Force is currently exploring new ways to conduct outreach after saturating the recreating public with direct outreach at boat launches for nearly ten consecutive years.
- Coordinating with Montana Fish, Wildlife & Parks and Idaho Department of Agriculture on mandatory boat check stations to prevent invasive aquatic plants from being transported to non-infested areas.
- Meeting monthly to evaluate program results and guide adaptive management techniques. Technical expertise includes aquatic resource professionals and representatives of federal, state and local government agencies, nonprofits, tribes and others with knowledge in fisheries, aquatic plant ecology, water resources, water quality and aquatic plant management. A Scientific Review Panel was established in 2018 to further assist the Task Force with review of monitoring results and consideration of control options.

In 2016, the Task Force received funding from the Montana Department of Natural Resources and Conservation (DNRC) to conduct an alternatives analysis (Analysis of Treatment Alternatives 2017) to examine management methods for reducing infestations. The analysis determined that successful management of EWM in Sanders County would contain and control existing aquatic invasive species (AIS) populations and prevention new introductions of AIS within the Noxon and Cabinet Gorge reservoirs. Through this analysis process, the top priority for control was determined to be near public and private access sites, including public and private boating access sites and shoreline dock areas. The second priority for control is large, high density shallow access areas with significant boat traffic.

### **Goal**

The goals of this project are to sustain recreational fisheries as well as native plants and species that rely on riparian and littoral areas and habitats; improve access to water-based recreational opportunities; maintain or improve aesthetic values; and protect hydropower infrastructure and investment.

### **Objectives**

1. Manage aquatic invasive species according to the Sanders County Aquatic Invasive Plant Management Plan.
2. Educate the public and landowners about the need to control and contain aquatic invasive species and keep them informed of the management activities of Sanders County.

3. Ensure that Sanders County interests are represented in the overall statewide management of aquatic invasive species, including the prevention of zebra and quagga mussels through watercraft inspection stations.
4. Monitor the extent and spread of EWM in the Cabinet Gorge and Noxon reservoirs, as well as the effectiveness of control measures.

## **Tasks**

### **Task 1. Control Measures**

Shoreline landowners with docks will be permitted to rake milfoil to remove it. Exact acreages and locations of control measures will be based on information from pre-treatment surveys, with public access and recreation sites taking priority. (Objectives 1, 2, 4)

### **Task 2. Education and Outreach**

The Task Force conducts public education and outreach programs that target boaters, anglers, recreationists, and the general public. The specific activities will be determined by the Task Force and may include creation and distribution of educational materials with information about ways to reduce the spread of aquatic invasive species. The Task Force also updates the public annually about aquatic invasive species management activities. (Objective 2)

### **Task 3: Program Management**

With assistance from the Task Force Facilitator, the Task Force holds monthly meetings to manage all aspects of the annual program. The group works closely with the Scientific Advisory Panel to implement recommendations and advises Sanders County on the selection of any contractor(s), contract development and contractor oversight. Working with its technical advisors, the Task Force evaluates project results and reports those results to funders. Task Force participants include Montana State University Extension Office/Sanders County; Avista; Montana Fish, Wildlife & Parks; Noxon-Cabinet Shoreline Coalition (NCSC); Green Mountain Conservation District; Sanders County Weed District; U.S. Forest Service; Confederated Salish & Kootenai Tribes; NorthWestern Energy; Montana BASS Federation; private industry; and community members. Task Force members provide in-kind support valued at \$40,000 annually to implement the project. (Objectives 1-4)

## **Work Products**

- Mid-year report; due to the Terrestrial Program Leader August 1, 2023
- Annual Work Summary; due to the Terrestrial Program Leader November 15, 2023

## **Permitting Requirements**

A Montana 310 Permit is required for the placement of bottom barriers on the bed of the reservoir, and the Noxon Cabinet Shoreline Coalition has the 310 Permit for this purpose.

A Montana Pesticide Discharge Permit is required for the use of herbicides to treat aquatic invasive species. Sanders County has a current permit, which is in effect through October 26, 2026.

### Cultural/Historic Resource Review

None. When the Environmental Assessment was scoped for EWM herbicide treatments, it was determined that treatments would not involve any new disturbance, therefore no cultural resource surveys were required.

### Benefit to the Resource

Key objectives of this project focus on sustaining the reservoirs' recreational fisheries, improving access to water-based recreational opportunities, maintaining or improving aesthetic values, and protecting sensitive and important resources of Noxon and Cabinet reservoirs. As such, this project supports the CFSA Appendix B Recreational Fishery Enhancement Program (recreational fishery management); CFSA Appendix G Implementation of the Land Use Management Plan (protection and maintenance of sensitive resources, including shorelines); and CFSA Appendix H Implementation of the Recreation Resource Management Plan (management and preservation of recreation resources and public access).

With a focus on control, prevention and education, project activities dovetail with aquatic invasive species efforts on-going across Montana, Idaho and regionally. The program is consistent with the Montana Aquatic Nuisance Management Plan, which seeks to minimize the harmful ecological, economic, and social impacts of aquatic nuisance species through prevention and management, population growth, and dispersal into, within, and from Montana (Montana ANS Technical Committee 2002). The program is also consistent with the state's Wildlife Action Plan, which seeks to avoid spread of aquatic invasive species (Montana Fish, Wildlife & Parks 2015), and the state Aquatic Invasive Species Program, which "seeks to minimize the harmful ecological, economic, and social impact of AIS through prevention and management of introduction, population growth and dispersal of AIS..." (Analysis of Treatment Alternatives 2017).

### Budget

Item	Estimated Carryover <sup>1</sup>	2023 Budget Request
Education & Outreach	\$0	\$3,000
Task Force Facilitation	\$0	\$19,500
Miscellaneous (conferences, training, mileage, permits, meeting expenses)	\$0	\$5,000
<b>Total</b>	<b>\$0</b>	<b>\$27,500</b>
<b>Anticipated Expenditures</b>		<b>\$27,500</b>

<sup>1</sup> Estimated carryover of unexpended, approved funds as of January 1.

The Noxon-Cabinet Shoreline Coalition provides an annual \$2,600 in-kind support from its members for the bottom barrier program. As described above, the county's Task Force members provide in-kind support valued at \$40,000 annually to direct and implement all aspects of the EWM management project. In addition, the Task Force is considering applying to the Montana DNRC under a new AIS funding program for \$25,000 to use for EWM control measures. Of that, \$2,500 may be eligible to cover administrative costs, which could offset the Task Force Facilitation, reducing Avista's contribution to \$17,000 in that line item. Grant awards are expected in the spring of 2023.

**Literature Cited**

DeBruyckere, L.A., T. Pennington. 2017. Analysis of Treatment Alternatives for Invasive Watermilfoil in Noxon Rapids and Cabinet Gorge Reservoirs, Sanders County, Montana.

Madsen, J.D. 2014. Eurasian Watermilfoil. In Biology and Control of Aquatic Plants, A Best Management Practices Handbook. L.A. Gettys, W.T. Haller, and D.G. Petty, editors. Aquatic Ecosystem Restoration Foundation.

Montana Aquatic Nuisance Species Technical Committee. 2002. Montana Aquatic Nuisance Species (ANS) Management Plan. 142pp.

Montana Fish, Wildlife & Parks. 2015. Montana's State Wildlife Action Plan. Helena, MT. 441pp.



## 2023 ANNUAL IMPLEMENTATION PLAN SUMMARY – APPENDIX H

### Clark Fork Project, FERC No. 2058 Cabinet Gorge and Noxon Rapids Hydroelectric Developments

**Title:** Implementation of the Recreation Resource Management Plan (RRMP)

**Implementation Staff Lead:**

Arthur D. Potts, Avista, (406) 847-1283, [arthur.potts@avistacorp.com](mailto:arthur.potts@avistacorp.com)

**Background:** The purpose of this measure is to provide for appropriate and adequate recreational opportunities and facilities associated with the Clark Fork Project through implementation of the RRMP. Seven goals to be met through its implementation include:

1. Manage existing recreation resource needs.
2. Manage future recreation resource needs.
3. Provide adequate and safe public access.
4. Preserve recreation resources.
5. Coordinate recreation planning and needs.
6. Provide cost-effective and desirable recreation opportunities.
7. Provide compatible recreation opportunities.

Year 2023 work efforts are a continuation past efforts and remain focused on implementing the five distinct components of the RRMP:

#### 2023 Project Plans

*Recreation Resource Management Plan*

1. RRMP – Administration and Resource Integration
2. RRMP – Monitoring
3. RRMP – Operation and Maintenance
4. RRMP – Interpretation and Education

*Facilities*

5. RRMP – Recreation Facility Development

#### Work Products

*RRMP – Administration and Resource Integration*

- Unless a specific document is created for a task, all work associated with this Project Plan will be documented in the 2023 Terrestrial Resources Annual Work Summary. Due Date: December 1, 2023

*RRMP – Monitoring*

- Unless a specific document is created for a task, all work associated with this Project Plan will be documented in the 2023 Terrestrial Resources Annual Work Summary. Due Date: December 1, 2023
- Report summarizing data from up to 22 automated traffic counters to measure use at various developed and dispersed recreation sites and trails. January 2024

- Summary maps showing dispersed recreation areas along the projects and permitted dock locations (showing dock densities per 0.5-mile segments of shoreline). *January 2024*
- Report summarizing data from comprehensive Recreation Visitor Survey conducted at 26 recreation sites. *January 2024*

**RRMP – Operation and Maintenance**

- All work associated with this Project Plan will be documented in the 2023 Terrestrial Resources Annual Work Summary. Due Date: December 1, 2023

**RRMP – Interpretation and Education**

- All work associated with this Project Plan will be documented in the 2023 Terrestrial Resources Annual Work Summary. Due Date: December 1, 2023

**RRMP – Recreation Facility Development**

- All work associated with this Project Plan will be documented in the 2023 Terrestrial Resources Annual Work Summary. Due Date: December 1, 2023

**2023 Appendix H Recreation Resource Management Plan Budget**

Budget Summary	
2023 contribution (estimate) <sup>1</sup>	\$379,800
<b>Total available</b>	<b>\$379,800</b>
2023 MC-approved budget	\$379,800
<b>Unobligated funds</b>	<b>\$0</b>

<sup>1</sup> Estimated costs are projections made now; however, Avista will pay the actual costs as approved by the Management Committee. The amount needed to implement this PM&E may vary greatly by year depending upon legal/survey needs to address issues related to the management of Avista owned Project lands.

2023 Project	Carryover <sup>1</sup>	2023 Budget
RRMP - Administration and Resource Integration	\$0	\$0
RRMP - Monitoring	\$0	\$155,000
RRMP - Operation and Maintenance <sup>2</sup>	\$0	\$219,300
RRMP - Interpretation and Education	\$0	\$5,500
<b>Total</b>	<b>\$0</b>	<b>\$379,800</b>
<b>MC-approved budget</b>		<b>\$379,800</b>

<sup>1</sup> Estimated carryover of unexpended, approved funds as of January 1.

<sup>2</sup> This budget reflects projects listed in the Annual Activity Section of the Recreation Resource Facility Development Plan

## 2023 Appendix H Facilities Fund Budget

Budget Summary	
Unexpended funds with interest	\$579,830
2023 contribution (including GDP inflation rate)	\$252,104
<b>Total available</b>	<b>\$831,934</b>
2023 MC-approved budget	\$532,000
<b>Unobligated funds</b>	<b>\$299,934</b>

2023 Project	Carryover <sup>1</sup>	2023 Budget
Recreation Resource Facility Development Plan <sup>2</sup>	\$0	\$532,000
<b>Total</b>	<b>\$0</b>	<b>\$532,000</b>
<b>MC-approved budget</b>		<b>\$532,000</b>

<sup>1</sup> Estimated carryover of unexpended, approved funds as of January 1.

<sup>2</sup>This budget reflects projects listed under Primary and Secondary Recreation Projects in the Recreation Resource Facility Development Plan. More projects are listed than will be completed. This provides for flexibility as projects are delayed due to permitting or other constraints. Projects have also been ranked as primary and secondary in terms of priority. The Recreation Resource Subgroup will evaluate project status on an ongoing basis to adapt implementation as needed.



## 2023 PROJECT PLAN

### RRMP - Administration and Resource Integration

#### Project Contact

Arthur D. Potts, Avista, (406) 847-1283, [arthur.potts@avistacorp.com](mailto:arthur.potts@avistacorp.com)

#### Project History

This is a continuing project that has been approved annually by the Management Committee since 1999.

#### Background

The purpose of the administration and resource integration of the RRMP is to ensure coordination of the activities of this program with those of other recreation providers and will be integrated with Avista's Land Use Management Plan, Cultural Resources, Wildlife, Fisheries, Aesthetics, Erosion, and Americans with Disabilities Act Compliance. Avista will administer this project using a recreation specialist along with clerical, consultant, and technical support as needed.

#### Objective

Ensure the coordination of the implementation of the RRMP with other resource programs and recreation resource providers along the Clark Fork Project.

#### Tasks

1. Administer the RRMP with Recreational Specialist, clerical, consultant, and technical support.
2. Integrate RRMP programs and projects with land use, cultural resources, wildlife, fisheries, aesthetics, and erosion control programs.

#### Work Products

- Unless a specific document is created for a task, all work associated with this Project Plan will be documented in the 2023 Terrestrial Resources Annual Work Summary. Due Date: December 1, 2023

#### Cultural/Historic Resource Review

No ground disturbing activities or impact to historic resources will occur as part of implementing this part of the RRMP.

#### Benefit to the Resource

Ensures the coordination of the implementation of the RRMP with other resource programs and recreation resource providers along the Clark Fork Project.

**Budget**

<b>Item</b>	<b>Estimated Carryover<sup>1</sup></b>	<b>2023 Budget Request</b>
Costs associated with this project plan will be covered under the other components of this PM&E	\$0	\$0
<b>Total</b>	<b>\$0</b>	<b>\$0</b>
<b>Anticipated Expenditures</b>		<b>\$0</b>

<sup>1</sup> Estimated carryover of unexpended, approved funds as of January 1.

## 2023 PROJECT PLAN

### RRMP - Monitoring

#### Project Contact

Arthur D. Potts, Avista, (406) 847-1283, [arthur.potts@avistacorp.com](mailto:arthur.potts@avistacorp.com)

#### Project History

This is a continuing project that has been approved annually by the Management Committee since 1999.

#### Background

The purpose of this project plan is to monitor use at developed and undeveloped sites to document trends of overall use and identify potential management needs. Monitoring will occur at two levels:

1. Annual monitoring utilizing data collected during routine management of recreation resources, and
2. More detailed recreation survey work to occur as needed every five to ten years. Based upon annual monitoring we do not believe use has changed enough to warrant a more in-depth survey at this time.

#### Objective

Through monitoring the use management can be modified if needed to ensure that providing the appropriate and adequate recreational opportunities and facilities associated with the Clark Fork project.

#### Tasks

1. Work with the recreation subgroup to continue to implement electronic recreation site evaluations developed as part of the 2017 RRMP update.
2. Continue to utilize up to 22 automated traffic counters to measure use at various developed and dispersed recreation sites and trails.
3. Continue utilizing standardized reporting for recreation use at Thompson Falls State Park, North Shore Recreation Area, and Bull River Recreation Area.
4. Summarize 2023 recreational use data from Bull River and North Shore campgrounds, MFWP, Thompson Falls State Park, and the Cabinet Gorge Dam and Noxon Rapids Dam viewpoints.
5. Develop maps showing dispersed recreation areas along the projects and permitted dock locations (showing dock densities per 0.5-mile segments of shoreline).
6. Complete comprehensive visitor survey at 26 recreation sites associated with the Clark Fork Project.

### Work Products

- Unless a specific document is created for a task, all work associated with this Project Plan will be documented in the 2023 Terrestrial Resources Annual Work Summary. Due Date: December 1, 2023
- Report summarizing data from up to 22 automated traffic counters to measure use at various developed and dispersed recreation sites and trails. January 2024
- Summary maps showing dispersed recreation areas along the projects and permitted dock locations (showing dock densities per 0.5-mile segments of shoreline). January 2024
- Report summarizing data from comprehensive Recreation Visitor Survey conducted at 26 recreation sites. January 2024

### Cultural/Historic Resources Review

No cultural resource surveys will be needed for this project plan.

### Benefit to the Resource

Through monitoring the use management can be modified if needed to ensure that providing the appropriate and adequate recreational opportunities and facilities associated with the Clark Fork project.

### Budget

Item	Estimated Carryover <sup>1</sup>	2023 Budget Request
Labor and Materials	\$0	\$20,000
Comprehensive Recreation Visitor Survey	\$0	\$135,000
<b>Total</b>	\$0	\$155,000
<b>Anticipated Expenditures</b>		\$155,000

<sup>1</sup> Estimated carryover of unexpended, approved funds as of January 1.

## 2023 PROJECT PLAN

### RRMP – Operation and Maintenance

#### Project Contact

Arthur D. Potts, Avista, (406) 847-1283, [arthur.potts@avistacorp.com](mailto:arthur.potts@avistacorp.com)

#### Project History

This is a continuing project that has been approved annually by the management committee since 1999.

#### Background

The purpose of this project plan is to ensure adequate funding is available to meet the annual operation and maintenance needs associated with the recreation resources and facilities associated with the Clark Fork Project.

#### Objective

Ensure that recreation opportunities and facilities are operated and maintained in a manner to provide for appropriate, adequate and safe use.

#### Tasks

1. Maintain Avista controlled recreation facilities and undeveloped recreation sites on Avista lands.
2. Assist USFS with the maintenance of Finley Flats Recreation Area, North Shore Recreation Area, Marten Creek Recreation Area, Triangle Pond, Bull River Recreation Area, Quinn's Cut Recreation Area, and Big Eddy Recreation Area.
3. Assist MFWP with the maintenance of Thompson Falls State Park and Flat Iron Ridge Fishing Access Site.
4. Provide low-cost leases or permits to the community or civic groups providing recreation opportunities (i.e., Thompson Falls Golf Course).

#### Work Products

- All work associated with this Project Plan will be documented in the 2023 Terrestrial Resources Annual Work Summary. Due Date: December 1, 2023

#### Cultural/Historic Resource Review

If a work specific proposal is developed, Avista will coordinate Cultural Resources Management Group review prior to implementing the project. The work product for this review will be confidential due to the sensitive nature of the content.

### Benefit to the Resource

Providing for the operation and maintenance of recreation opportunities and facilities along the Clark Fork Project will help ensure the appropriate and safe use by the public.

### Budget

Item	Estimated Carryover <sup>1</sup>	2023 Budget Request
Operations & Maintenance – Avista sites	\$0	\$165,000
Operations & Maintenance – USFS sites	\$0	\$32,000
Operations & Maintenance – MFWP – Flat Iron FAS and Thompson Falls State Park	\$0	\$22,300
Provide low-cost permits or leases	\$0	\$0
<b>Total</b>	<b>\$0</b>	<b>\$219,300</b>
<b>Anticipated Expenditures</b>		<b>\$219,300</b>

<sup>1</sup> Estimated carryover of unexpended, approved funds as of January 1.

## 2023 PROJECT PLAN

### RRMP – Interpretation and Education

#### Project Contact

Arthur D. Potts, Avista, (406) 847-1283, [arthur.potts@avistacorp.com](mailto:arthur.potts@avistacorp.com)

#### Project History

This is a continuing project that has been approved annually by the Management Committee since 1999.

#### Background

The purpose of this project plan is to provide funding for the maintenance of existing information and education materials for the recreation resources and facilities associated with the Clark Fork Project.

#### Objective

Ensure that the existing information and education materials associated with the Clark Fork Project recreation resources and facilities are maintained.

#### Tasks

1. Implementation of Interpretation and Education Program will be integrated with the measures developed and approved by the CRMG in 2008. The Interpretation and Education Program is funded through the facility development program. Maintenance dollars will be used to inventory, standardize, and maintain informational kiosks and EWM signs throughout the project.

#### Work Products

- All work associated with this Project Plan will be documented in the 2023 Terrestrial Resources Annual Work Summary. Due Date: December 1, 2023

#### Cultural/Historic Resource Review

If a work specific proposal is developed, Avista will coordinate Cultural Resources Management Group review prior to implementing the project. The work product for this review will be confidential due to the sensitive nature of the content.

#### Benefit to the Resource

Provide information and education materials to the public that recreate on the Clark Fork Project.

#### Budget

Item	Estimated Carryover <sup>1</sup>	2023 Budget Request
Labor and materials	\$0	\$5,500
<b>Total</b>	<b>\$0</b>	<b>\$5,500</b>
<b>Anticipated Expenditures</b>		<b>\$5,500</b>

<sup>1</sup> Estimated carryover of unexpended, approved funds as of January 1.



## **2023 PROJECT PLAN**

### **RRMP - Recreation Facility Development**

#### **Project Contact**

Arthur D. Potts, Avista, (406) 847-1283, [arthur.potts@avistacorp.com](mailto:arthur.potts@avistacorp.com)

#### **Project History**

This is a continuing project that has been approved annually by the Management Committee since 1999.

#### **Background**

The purpose of this project plan is to address both immediate and long-term modification, improvement, expansion, and repair of existing sites and facilities.

#### **Objective**

Provide for appropriate and adequate recreational opportunities and facilities associated with the Clark Fork project.

#### **Tasks**

1. See attached spreadsheet identifying all potential facility development projects for 2023. Also note that more projects are listed than time would allow, which provides for flexibility as projects are delayed due to permitting or other constraints. Projects have also been ranked as primary and secondary in terms of priority.

#### **Work Products**

- All work associated with this Project Plan will be documented in the 2023 Terrestrial Resources Annual Work Summary. Due Date: December 1, 2023

#### **Cultural/Historic Resource Review**

Each project will be evaluated individually to determine if cultural surveys are needed and the responsible agency, or group, to ensure that compliance is met.

#### **Benefit to the Resource**

Provide for appropriate and adequate recreational opportunities and facilities associated with the Clark Fork project.

### Budget

Item	Estimated Carryover <sup>1</sup>	2023 Budget Request
Design, permitting, labor and materials <sup>2</sup>	\$0	\$532,000
<b>Total</b>	\$0	\$532,000
<b>Anticipated Expenditures</b>		\$532,000

<sup>1</sup> Estimated carryover of unexpended, approved funds as of January 1.

<sup>2</sup>This budget reflects projects listed under Primary and Secondary Recreation Projects in the Recreation Resource Facility Development Plan. More projects are listed than will be completed. This provides for flexibility as projects are delayed due to permitting or other constraints. Projects have also been ranked as primary and secondary in terms of priority. The Recreation Resource Subgroup will evaluate project status on an ongoing basis to adapt implementation as needed.

## 2023 Recreation Resources Facility Development Plan

Recreation Sites	Identified Opportunities	Parties Involved	Actions/Need	Est. Cost	Notes/Permits	Project Leader	Ownership
<b>Annual Activity</b>							
<b>Corridor Wide</b>	General clean up, open facilities, end of year cleaning, projects, etc.	Avista, Sanders County, USFS, MFWP	Hire Montana Conservation Corp to work within the Clark Fork Project area (all sites as needed) for one week in the spring.	\$11,000	Time will be split among State, USFS, Sanders County, and Avista sites as needed.	Arthur Potts	Avista, MFWP, USFS, Sanders County
<b>Corridor Wide</b>	Noxious Weed Management/Recreation Sites	Avista, Sanders County, USFS, MFWP	Hire a licensed contractor to assist with weed management/spraying throughout the Clark Fork Project at designated recreation sites.	\$10,000	N/A	Arthur Potts	Avista, MFWP, USFS, Sanders County
<b>Corridor Wide - boat ramps/docks</b>	Invasive Eurasian watermilfoil control	Avista, Sanders County, USFS, MFWP	Control invasive Eurasian watermilfoil at public boat ramps as needed using bottom barriers.	\$6,000	Part of a larger project with Sanders County, MFWP, Montana DNRC, and others.	Arthur Potts	Avista, MFWP, USFS, Sanders County
<b>Corridor Wide</b>	Receive assistance in the removal/installation of docks	Avista	Hire a contractor to install the boat docks in the springs and remove docks in the fall. This would also involve installing/removing 2 swimming areas.	\$3,500	N/A	Arthur Potts	Avista, Sanders County

<b>Finley Flats, Two Rivers RV Park &amp; Campground</b>	Dust control needed	Avista	Apply magnesium chloride or other dust control agent after spring rains.	\$6,500	Work with MFWP / USFS/ Sanders County to choose dust control agent and contractor.	Arthur Potts	Avista
<b>Flat Iron Recreation Area</b>	Dredge boat ramp area	Avista	Have permits and contract in place to take advantage of extended low water levels as they occur.	\$10,000	Permits are in place, when low water occurs we can move forward.	Arthur Potts	Avista, MFWP
<b>Primary Recreation Projects</b>							
<b>Big Eddy Campground</b>	Address access road improvements	Avista, USFS	Lengthen paved apron at access point to Highway 200 and improve interior access road.	\$15,000	Cultural Survey	Les Raynor, Arthur Potts	Avista, USFS
<b>Noxon Dam Upper Viewpoint</b>	Address access road improvements	Avista	Regrade road and address drainage.	\$7,000	Cultural Survey	Arthur Potts	Avista
<b>Noxon Dam Lower Viewpoint</b>	Road repaving	Avista	Repair damaged area at turnoff and repave approach apron.	\$15,000	Cultural Survey	Arthur Potts	Avista
<b>Cabinet Gorge Viewpoint</b>	Repave entrance road	Avista	Tear up and replace pavement from Hwy 200 to day use parking area.	\$180,000	Cultural Survey	Arthur Potts	Avista
<b>Bull River Campground</b>	Address sedimentation issue with potable water tank	Avista, USFS	Evaluate existing tank and determine appropriate actions to address sedimentation issue. Tanks needs to be dug up and reinstalled.	\$30,000	Cultural Survey/NEPA	Les Raynor, Arthur Potts	Avista, USFS
<b>Bull River Campground</b>	Signage for campground	Avista, USFS	Install Vacancy/Campground Full signs.	\$3,000	Cultural Survey	Les Raynor, Arthur Potts	Avista, USFS

<b>Kirby Gulch Boat Ramp</b>	Improve/expand parking lot	Avista	Expand parking lot.	\$10,000	Joint Aquatic Resource Permit Application and Cultural Survey	Arthur Potts	Avista, Sanders County
<b>North Shore Campground</b>	Address paving needs for North Shore Parking lot, day use, campground area	USFS, Avista	Repair and pave several areas at North Shore Campground and day use area. Existing roads, entrance to vault toilets, overflow parking, fee site, and kiosk sign.	\$8,000	Cultural Survey/NEPA	Les Raynor, Arthur Potts	USFS, Avista
<b>Triangle Pond</b>	Complete implementation of master site plan developed in 2019	Avista, USFS	Road work, traffic control structures, parking, picnic tables and fire rings, carry-in launch for kayaks and small water craft, replace existing picnic shelter, 4 small shade structures near beach area, informational signage, concrete sidewalk to ADA restroom. Includes \$30,000 in GAOA funding.	\$100,000	NEPA	Les Raynor, Arthur Potts	USFS
<b>Noxon/Bicentennial Park</b>	Improve boat ramp	Avista	Grout gaps on boat ramp.	\$5,000	MT 310 Maintenance Permit covers the work	Arthur Potts	Avista
<b>South Shore Boat Ramp</b>	Reposition section of boat ramp	Avista	Grout gaps on boat ramp.	\$3,000	MT 310 Maintenance Permit covers the work	Arthur Potts	Avista

<b>Bull River Campground</b>	Valve Replacement	USFS, Avista	Remove malfunction ball valve from potable water system and replace with larger valve. Excavate area to accommodate replacement and larger equipment following OSHA trenching guidelines.	\$10,000	Cultural Survey/NEPA	Les Raynor, Arthur Potts	USFS
<b>Frog Pond</b>	Road grading	Avista	Regrade access road and repair rut damage around mud holes; bring in additional road material if necessary.	\$2,000	Cultural Survey	Arthur Potts	Avista
<b>North Shore Campground</b>	Sample tap/line repair	USFS, Avista	Excavate and repair/replace water line. Sample tap, valve box, and water meter will also be raised approximately 30 inches for easier access.	\$5,000	Cultural Survey/NEPA	Arthur Potts, Caleb Matthew	USFS
<b>Secondary Recreation Projects</b>							
<b>Noxon and Cabinet Gorge Reservoirs</b>	Work with Appendix B to investigate opportunities for low water boat launch opportunities	MFWP, USFS, Avista, Sanders County	Combination of low water events and increased interest in early spring fishing is creating an increased demand for boat ramps that are accessible during low water periods.	\$5,000	Joint Aquatic Resource Permit Application and Cultural Survey	Arthur Potts	MFWP, USFS, Avista, Sanders County
<b>Antelope Lake</b>	Road repairs	Avista, IDFG	Regrade road and address drainage.	\$55,000	Cultural	Arthur Potts	Avista, IDFG

<b>North Shore Campground</b>	Land purchase to expand parking	MFWP, USFS, Avista and Sanders County	Due diligence for potential land purchase (appraisal, survey work, negotiations, etc.). Looking at least 2 acres up to 10 acres.	\$10,000	Once a proposal is firmed up, including commitment from landowner, proposal will be sent to the TRTAC, CRMG, and MC for review and approval.	Arthur Potts	USFS, Avista
<b>Corridor Wide</b>	Evaluate access roads previously blocked off; add boulders as needed	Avista	Identify areas that were previously blocked off from vehicle access and address by bringing in larger boulders or replacing boulders that have been moved.	\$10,000	N/A	Arthur Potts	Avista
<b>Heron, Centennial, Trout Creek, and South Shore Boat Launches</b>	Address bulkhead approaches at docks	Avista, Sanders County	Create more accessible approach onto bulkhead/dock by bringing in gravel and grading.	\$6,000	N/A	Arthur Potts	Avista and Sanders County
<b>Clark Fork Access Site</b>	Entrance and launch ramp grading	Avista	Grade entrance/parking road and boat launch to improve accessibility. Bring in additional material if necessary.	\$1,500	N/A	Arthur Potts	Avista
<b>North Shore Boat Launch</b>	Extend boat dock	Avista, USFS	Add extension to existing dock to enable use of dock during low water levels.	\$50,000	MT 310 Permit	Arthur Potts	Avista

<b>South Shore Recreation Site</b>	Access road	Avista	Regrade access road and repair rut damage around mud holes; bring in additional road material if necessary.	\$1,500	N/A	Arthur Potts	Avista
			<b>EST Available \$732,162</b>	<b>\$579,000.00</b>	<b>TOTAL</b>		

Also note that more projects are listed than possibly time would allow, this provides for flexibility as projects are delayed due to permitting or other constraints. Projects have also been ranked as annual, primary and secondary in terms of priority. The Recreation Resource Subgroup will evaluate project status on an ongoing basis to adapt implementation as needed.

## **2023 ANNUAL IMPLEMENTATION PLAN - APPENDIX I**

### **Clark Fork Project, FERC No. 2058 Cabinet Gorge and Noxon Rapids Hydroelectric Developments**

#### **Title**

Implementation of the Aesthetics Management Plan

#### **Implementation Staff Lead**

Arthur D. Potts, Avista, (406) 847-1283, [arthur.potts@avistacorp.com](mailto:arthur.potts@avistacorp.com)

#### **Project History**

This is a continuing project that has been approved annually by the Management Committee.

#### **Background**

The purpose of this measure is to provide for the protection and enhancement of aesthetic resources associated with Avista's Clark Fork Projects and to mitigate for project related impacts to those resources through the implementation of the Aesthetics Management Plan (AMP). Aesthetic guidelines and considerations of the AMP are implemented by permit standards and land use classifications of the Land Use Management Plan, site design and monitoring in the Recreation Resource Management Plan, and shoreline stabilization guidelines of the Shoreline Stabilization Guidelines Program. Ongoing coordination with other interest groups and agencies will occur as described for in the AMP.

#### **2023 Project Plans**

1. Monitor recreation, land management, erosion, and facility construction programs to ensure AMP guidelines are considered.
2. Continue to investigate measures to restore views and remove vegetation as needed, also addressing any identified issue from the 2018 re-inventory of 41 key viewpoints. Sites will be revisited again in 2023 to take photos to compare to past inventories.

#### **Work Products**

- Unless a specific document is created for a task, all work associated with this Project Plan will be documented in the 2023 Terrestrial Resources Annual Work Summary. Due Date: December 1, 2023

#### **Cultural/Historic Resource Review**

If a work specific proposal is developed, Avista will coordinate Cultural Resources Management Group review prior to implementing the project. The work product for this review will be confidential due to the sensitive nature of the content.

#### **Benefit to the Resource**

Protect the rural and rustic character of the Clark Fork Project shoreline.

### 2023 Appendix I Budget

Budget Summary	
2023 contribution (estimate) <sup>1</sup>	\$7,000
<b>Total available</b>	<b>\$7,000</b>
2023 MC-approved budget	\$7,000
<b>Unobligated funds</b>	<b>\$0</b>

<sup>1</sup> Estimated costs are projections made now; however, Avista will pay the actual costs as approved by the Management Committee.

2023 Project	Carryover <sup>1</sup>	2023 Budget
Implementation of the Aesthetics Management Plan	\$0	\$7,000
<b>Total</b>	<b>\$0</b>	<b>\$7,000</b>
<b>MC-approved budget</b>		<b>\$7,000</b>

<sup>1</sup> Estimated carryover of unexpended, approved funds as of January 1.

## 2023 ANNUAL IMPLEMENTATION PLAN APPENDIX J

### Clark Fork Project, FERC No. 2058 Cabinet Gorge and Noxon Rapids Hydroelectric Developments

**Title:** Implementation of the Wildlife, Botanical and Wetland Management Plan

**Implementation Staff Lead:**

Arthur D. Potts, Avista, (406) 847-1283, [arthur.potts@avistacorp.com](mailto:arthur.potts@avistacorp.com)

**Project History**

This is a continuing project that has been approved annually by the Management Committee.

**Background**

The purpose of this resource protection, mitigation, and enhancement measure is to provide for the organization and presentation of the various wildlife, botanical and wetland management activities and site-specific plans within a single, comprehensive management plan document. The goal is to have a dynamic reference document that the in-field staff, technical advisory committees, and Management Committee can utilize and refer to for guidance in implementing the required PM&Es and overall wildlife, botanical, and wetland resource management program for the Clark Fork Project. When the management plan was developed, it did not fully account for the detailed annual reports that are developed for each of the PM&E's. As a result, the update to the plan has changed direction in primarily being a summary of accomplishments related to habitat protection. These updates will be made available to the various committees and Management Committee as they are completed. Also, with the removal of Appendix N1-N3, it was approved by the Management Committee in 2016 that observations of bald eagles, peregrine falcons and common loons would be included in the annual summary associated with this PM&E.

**2023 Project Plans**

- Utilize the Wildlife, Botanical and Wetland Management Plan to help guide implementation of Wildlife, Botanical, and Wetland Protection, Mitigation, and Enhancement programs.
- Continue to update the habitat protection spreadsheet as acquisitions are completed.
- As approved by the Management Committee at their March 15, 2016 meeting, observations regarding bald eagles, peregrine falcons, and common loons will be reported here annually.

**Work Products**

- Update and provide copies of Habitat Protection Spreadsheet at annual fall Management Committee meeting. Includes discussion of future management of any parcel owned by Avista for more than 10 years, and if continues in Avista ownership after that, each parcel will be revisited every five years after that
- Unless a specific document is created for a task, all work associated with this Project Plan will be documented in the 2023 Terrestrial Resources Annual Work Summary. Due Date: December 1, 2023

### Cultural/Historic Resource Review

If a work specific proposal is developed, Avista will coordinate Cultural Resources Management Group review prior to implementing the project. The work product for this review will be confidential due to the sensitive nature of the content.

### Benefit to the Resource

Provide the Management Committee an ongoing list of properties protected through the implementation of the CFSA so they can make informed decisions as to ongoing management and final disposition of these properties.

### 2023 Appendix J Budget

Budget Summary	
2023 contribution (estimate) <sup>1</sup>	\$5,000
<b>Total available</b>	<b>\$5,000</b>
2023 MC-approved budget	\$5,000
<b>Unobligated funds</b>	<b>\$0</b>

<sup>1</sup> Estimated costs are projections made now; however, Avista will pay the actual costs as approved by the Management Committee.

2023 Project	Carryover <sup>1</sup>	2023 Budget
Implementation of the Wildlife, Botanical and Wetland Management Plan	\$5,000	\$0
<b>Total</b>	<b>\$5,000</b>	<b>\$0</b>
<b>MC-approved budget</b>		<b>\$5,000</b>

<sup>1</sup> Estimated carryover of unexpended, approved funds as of January 1.

## **2023 ANNUAL IMPLEMENTATION PLAN SUMMARY– APPENDIX K**

### **Clark Fork Project, FERC No. 2058 Cabinet Gorge and Noxon Rapids Hydroelectric Developments**

#### **Title**

Wildlife Habitat Acquisition, Enhancement and Management Program

#### **Implementation Staff Lead**

Arthur D. Potts, Avista, (406) 847-1283, [arthur.potts@avistacorp.com](mailto:arthur.potts@avistacorp.com)

#### **Project History**

This is a continuing project that has been approved annually by the Management Committee.

#### **Background**

The purpose of this program is to mitigate for the potential effects to wildlife resources and habitat due to the continued operation of the Clark Fork Project. The program will focus on the types of habitats most significantly affected, such as wetland and riparian habitat.

#### **Goal**

Provide a continuing source of financial resources that will be used to acquire, protect, enhance, and/or manage important wildlife habitat in the vicinity of the projects.

#### **2023 Project Plans**

1. Operation and Maintenance of Acquired Property and Contingency Fund
2. Habitat Acquisition and Conservation and Contingency Fund
3. Wood Duck Re-vegetation Maintenance

#### **Work Products**

##### *Operation and Maintenance of Acquired Property and Contingency Fund*

- All work associated with this Project Plan will be documented in the 2023 Terrestrial Resources Annual Work Summary. Due Date: December 1, 2023

##### *Habitat Acquisition and Conservation and Contingency Fund*

- All work associated with this Project Plan will be documented in the 2023 Terrestrial Resources Annual Work Summary. Due Date: December 1, 2023

##### *Wood Duck Re-vegetation Maintenance*

- Develop draft long-term vegetation management plan to be reviewed by Land Use Subgroup; due to the Terrestrial Program Leader April 1, 2023
- Annual Work Summary; due December 1, 2023

#### **Cultural/Historic Resource Review**

If a work specific proposal is developed, Avista will coordinate Cultural Resources Management Group review prior to implementing the project. The work product for this review will be confidential due to the sensitive nature of the content.

### Benefit to the Resource

Provide protection to those habitats most significantly affected by the continued operation of the Clark Fork Project, such as wetland and riparian habitat.

### 2023 Appendix K Budget

Budget Summary	
Unexpended funds with interest	\$1,122,272
2023 contribution (including GDP inflation rate)	\$328,407
<b>Total available</b>	<b>\$1,450,679</b>
2023 MC-approved budget	\$103,000
<b>Unobligated funds</b>	<b>\$1,347,679</b>

2023 Project	Carryover <sup>1</sup>	2023 Budget
Operation and Maintenance of Acquired Property and Contingency Fund	\$0	\$43,000
Habitat Acquisition and Conservation and Contingency Fund	\$0	\$60,000
Wood Duck Re-vegetation Management	\$0	\$0
<b>Total</b>	<b>\$0</b>	<b>\$103,000</b>
<b>MC-approved budget</b>		<b>\$103,000</b>

<sup>1</sup> Estimated carryover of unexpended, approved funds as of January 1.

## 2023 PROJECT PLAN

### Operation and Maintenance of Acquired Property and Contingency Fund

#### Project Contact

Arthur D. Potts, Avista, (406) 847-1281, [arthur.potts@avistacorp.com](mailto:arthur.potts@avistacorp.com)

#### Project History

This is a continuing project that has been approved annually by the Management Committee.

#### Background

This program is in recognition of the long-term commitment required for the operation and maintenance that comes with purchasing and protecting habitat. These activities include monitoring, weed control, development of infrastructure (roads, parking areas, and fences), vegetation management, enforcement, etc. Without these activities it is possible that the properties would no longer provide the habitat benefits for which the properties were originally protected for.

#### Objectives

1. Provide a funding source for operation and maintenance to ensure that habitat properties continue to provide the resource benefits that the properties were originally protected for.

#### Tasks

1. Operation and maintenance, including fence/gate maintenance, noxious weed treatment, forest management plan development and implementation, public information and management, and taxes on Avista owned and managed habitat protection properties.  
Specific projects include:
  - a. Twin Creek – Continue to develop site plan and install infrastructure that will allow public use of this property that was acquired in 2016. Work will include noxious weed control, enforcement, and development of revegetation/wetland enhancement plans for the property.
  - b. South Fork Bull River Wildlife Management Area complex – Activities include monitoring, weed control, development of infrastructure (roads, parking areas, fences), development of timber management plan, enforcement, etc.
  - c. Monitoring of other Avista owned habitat properties and implementing management measures as needed.

#### Work Products

- All work associated with this Project Plan will be documented in the 2023 Terrestrial Resources Annual Work Summary. Due Date: December 1, 2023

#### Cultural/Historic Resource Review

Work proposed under this Project Plan will either: 1) not involve any ground disturbing activities or impact historic resources, or 2) will be performed under the cultural assessment associated with the specific proposed project.

**Benefit to the Resource**

Helps ensure that habitat properties held by Avista continue to provide the resource benefits for which they were originally protected for.

**Budget**

Item	Estimated Carryover <sup>1</sup>	2023 Budget Request
Contract/Avista Labor and materials (Task 1a, 1b, 1c)	\$0	\$43,000
<b>Total</b>	<b>\$0</b>	<b>\$43,000</b>
<b>Anticipated Expenditures</b>		<b>\$43,000</b>

<sup>1</sup> Estimated carryover of unexpended, approved funds as of January 1.

## 2023 PROJECT PLAN

### Habitat Acquisition and Conservation and Contingency Fund

#### Project Contact

Arthur D. Potts, Avista, (406) 847-1283, [arthur.potts@avistacorp.com](mailto:arthur.potts@avistacorp.com)

#### Project History

This is a continuing project that has been approved annually by the Management Committee.

#### Background

This program is focused on protecting habitat associated with the Clark Fork Project, with a focus on those areas that provide riparian and wetland resource values.

#### Objectives

1. Provide a funding source for due diligence on potential habitat protection projects in order to provide a detailed proposal for Management Committee consideration.
2. Once approved by the Management Committee, provide funding to acquire and protect habitat properties.

#### Tasks

1. Funding is available to conduct due diligence (landowner discussions, property inspection, habitat information, title search, and appraisal), in order to provide the Management Committee a detailed proposal for their consideration. Includes working with partners such as Kaniksu Land Trust on identifying and vetting potential projects.

#### Work Products

- All work associated with this Project Plan will be documented in the 2023 Terrestrial Resources Annual Work Summary. Due Date: December 1, 2023

#### Cultural/Historic Resource Review

Work proposed under this Project Plan will either: 1) not involve any ground disturbing activities or impact historic resources, or 2) will be performed under the cultural assessment associated with the specific proposed project.

#### Benefit to the Resource

Provides mechanism to fully evaluate habitat protection opportunities to ensure that resource benefits are aligned with Clark Fork Settlement Agreement goals and priorities.

#### Budget

Item	Estimated Carryover <sup>1</sup>	2023 Budget Request
Contract/Avista Labor	\$0	\$60,000
<b>Total</b>	\$0	\$60,000
<b>Anticipated Expenditures</b>		\$60,000

<sup>1</sup> Estimated carryover of unexpended, approved funds as of January 1.



## 2023 PROJECT PLAN

### Wood Duck Re-vegetation Maintenance

#### Project Contact

Brita Olson, Lower Clark Fork Watershed Group, (406) 203-4725, [brita@lcfwg.org](mailto:brita@lcfwg.org)  
Arthur D. Potts, Avista, (406) 847-1283, [arthur.potts@avistacorp.com](mailto:arthur.potts@avistacorp.com)

#### Project History

The primary goal of this project is to inform management goals and develop priorities for long-term habitat restoration and enhancement on the Wood Duck property.

#### Background

The Wood Duck property was acquired in 2001 and is protected by a conservation easement held by Kaniksu Land Trust. The property also participates in the Montana FWP Block Management Hunting Program. Beginning in 2010, native vegetation plantings were developed in the riparian areas along the banks of the Bull River and enclosure fencing was installed around the plantings to discourage mammal foraging. The enclosure fencing was removed in 2022 after it was determined the plantings were adequate size to survive occasional browse from ungulates.

#### Objectives

1. In cooperation with the Land Use Subgroup, LCFWG, Kaniksu Land Trust, develop guidance for maintaining previous vegetation plantings and management strategy for additional enhancement projects on the property.
2. Develop Vegetation Management Plan document to be provided to the TRTAC for review, and ultimately presented to the MC for approval.

#### Tasks

1. Funding is available to conduct due diligence (landowner discussions, property inspection, habitat information, title search, and appraisal), in order to provide the Management Committee a detailed proposal for their consideration. Includes working with partners such as Kaniksu Land Trust on identifying and vetting potential projects.

#### Work Products

- Develop draft long-term vegetation management plan to be reviewed by Land Use Subgroup; due to the Terrestrial Program Leader April 1, 2023
- Annual Work Summary; due December 1, 2023

#### Cultural/Historic Resource Review

Work proposed under this Project Plan will either: 1) not involve any ground disturbing activities or impact historic resources, or 2) will be performed under the cultural assessment associated with the specific proposed project.

#### Benefit to the Resource

Provides mechanism to fully evaluate habitat protection opportunities to ensure that resource

benefits are aligned with Clark Fork Settlement Agreement goals and priorities.

**Budget**

<b>Item</b>	<b>Estimated Carryover<sup>1</sup></b>	<b>2023 Budget Request</b>
Contract/Avista Labor	\$0	\$0
<b>Total</b>	<b>\$0</b>	<b>\$0</b>
<b>Anticipated Expenditures</b>		<b>\$0</b>

<sup>1</sup> Estimated carryover of unexpended, approved funds as of January 1.

## **2023 ANNUAL IMPLEMENTATION PLAN SUMMARY– APPENDIX L**

### **Clark Fork Project, FERC No. 2058 Cabinet Gorge and Noxon Rapids Hydroelectric Developments**

#### **Title**

Black Cottonwood Habitat Protection and Enhancement

#### **Implementation Staff Lead**

Arthur D. Potts, Avista, (406) 847-1283, [arthur.potts@avistacorp.com](mailto:arthur.potts@avistacorp.com)

#### **Project History**

This work is a continuation of work previously approved by the Management Committee.

#### **Background**

The purpose of this measure is to provide for the protection of black cottonwood trees and stands on Avista owned project lands through the development of site-specific management and enhancement plans for three specific cottonwood sites identified by the Wildlife, Botanical, and Wetlands Work Group. Additionally, existing stands and trees will be protected through the implementation of land use classifications in the LUMP.

Site-specific management plans were developed in 2000. Efforts in 2023 will focus on the continued protection of black cottonwood stands and trees through the implementation of land use classifications in the LUMP. The site-specific enhancement efforts at Hereford Slough (completed in early 2003 and treated again in 2007) will continue to be monitored to determine response and implement additional management efforts as needed.

An 80 x 80-foot woven wire enclosure was built in the spring of 2015 and a 160 x 160-foot enclosure in December 2020 in the Hereford Slough cottonwood stand. Regeneration occurs from exposed roots, cutoff stumps and seed germination. Efforts in 2023 will include continued monitoring of the enclosures and conduct any needed maintenance to the fence that is needed.

#### **2023 Project Plans**

- Continue to protect black cottonwood stands along the Clark Fork Project through the implementation of the LUMP.
- Continue to monitor and maintain the enclosures at Hereford Slough.

#### **Work Products**

- All work associated with this Project Plan will be documented in the 2023 Terrestrial Resources Annual Work Summary. Due Date: December 1, 2023

#### **Cultural/Historic Resource Review**

Ground and vegetation disturbance will take place in an area previously surveyed for the original enclosure construction in 2015. Therefore, no additional cultural resource surveys will be required.

### Benefit to the Resource

Benefits are protecting and managing existing black cottonwood stands. These stands provide high wildlife value but are relatively limited in distribution along the Clark Fork Project.

### 2023 Appendix L Budget

Budget Summary	
Unexpended funds with interest	\$109,500
2023 contribution (including GDP inflation rate)	\$8,010
<b>Total available</b>	<b>\$117,510</b>
2023 MC-approved budget	\$15,000
<b>Unobligated funds</b>	<b>\$102,510</b>

2023 Project	Carryover <sup>1</sup>	2023 Budget
Black Cottonwood Habitat Protection and Enhancement	\$15,000	\$0
<b>Total</b>	<b>\$15,000</b>	<b>\$0</b>
<b>MC-approved budget</b>		<b>\$15,000</b>

<sup>1</sup> Estimated carryover of unexpended, approved funds as of January 1.

## **2023 ANNUAL IMPLEMENTATION PLAN SUMMARY– APPENDIX M**

### **Clark Fork Project, FERC No. 2058 Cabinet Gorge and Noxon Rapids Hydroelectric Developments**

#### **Title**

Wetland Protection and Enhancement Program

#### **Implementation Staff Lead**

Arthur D. Potts, Avista, (406) 847-1283, [arthur.potts@avistacorp.com](mailto:arthur.potts@avistacorp.com)

#### **Project History**

This is a continuation of work previously approved by the Management Committee (MC).

#### **Background**

The purpose of this measure is to provide for the protection of wetlands occurring on Avista owned project lands, and for the evaluation and potential enhancement of selected wetland areas. The overall goal is to ensure no net loss of wetlands, or of wetland function and values in certain high-priority wetland areas while also evaluating opportunities for enhancements.

#### **2023 Project Plans**

- Continue to explore potential wetland enhancement for the 2016 Twin Creek acquisition.
- Monitor enhancements previously completed at Hereford Slough, McKay Creek, Finley Flats, and Blacktail Bay/Islands.

#### **Work Products**

- All work associated with this Project Plan will be documented in the 2023 Terrestrial Resources Annual Work Summary. Due Date: December 1, 2023
- If it appears either project is feasible, a specific proposal will be developed for MC review

#### **Cultural/Historic Resource Review**

No ground or vegetation disturbance is planned for 2023, therefore no cultural resource surveys will be required.

#### **Benefit to the Resource**

Benefits are preserving or enhancing of certain high value wetland habitat, including their function and values.

## 2023 Appendix M Budget

<b>Budget Summary</b>	
Unexpended funds with interest	\$142,883
2023 contribution (including GDP inflation rate)	\$0
<b>Total available</b>	<b>\$142,883</b>
2023 MC-approved budget	\$12,000
<b>Unobligated funds</b>	<b>\$130,883</b>

<b>2023 Project</b>	<b>Carryover<sup>1</sup></b>	<b>2023 Budget</b>
Continue to develop Twin Creek wetland enhancement plan	\$10,000	\$0
Monitoring previously completed enhancement projects	\$0	\$2,000
<b>Total</b>	<b>\$10,000</b>	<b>\$2,000</b>
<b>MC-approved budget</b>		<b>\$12,000</b>

<sup>1</sup> Estimated carryover of unexpended, approved funds as of January 1.

## **2023 ANNUAL IMPLEMENTATION PLAN SUMMARY– APPENDIX P**

### **Clark Fork Project, FERC No. 2058 Cabinet Gorge and Noxon Rapids Hydroelectric Developments**

#### **Title**

Forest Habitat Protection and Enhancement

#### **Implementation Staff Lead**

Arthur D. Potts, Avista, (406) 847-1283, [arthur.potts@avistacorp.com](mailto:arthur.potts@avistacorp.com)

#### **Project History**

This is a continuation of work previously approved by the Management Committee.

#### **Background**

The purpose of this measure is to provide for the protection and enhancement of specific forest habitat parcels of Avista project land along the reservoirs. The Wildlife, Botanical, and Wetland Work Group identified these parcels as having significant wildlife habitat value.

#### **2023 Project Plans**

1. Continue to manage those areas that have been classified as Conservation 1, and as such are afforded the maximum protection provided through the LUMP.
2. Honey Flats is being managed to minimize impacts to the site (e.g., no motorized vehicles, no timber harvest, and minimize human use of site). The Confederated Salish and Kootenai Tribe and CRMG have expressed an interest in having this site managed for traditional plants and uses. Continue to work with the Confederated Salish and Kootenai Tribe to define management options.
3. Continue to monitor and enforce the road closure to Stevens Creek Point (closure was instituted in 2001).
4. Continue to prohibit motorized use of Finley Flats Point.
5. Continue to utilize the Montana Fish Wildlife and Parks Block Management Program to provide hunter access to the Tuscor, South Fork Bull River, and Wood Duck properties.
6. Continue weekly patrols of the forested lands surrounding the State Shop property and continue to reduce the amount of disturbance and litter in this area.
7. Initiate timber stand improvement efforts in stands that have disease (beetle kill, root rot, mistletoe, etc.), high fire danger or other problems. This work will be evaluated on a case-by-case basis and specific proposals will be presented to the TRTAC and MC as they are developed.

## Work Products

- All work associated with this Project Plan will be documented in the 2023 Terrestrial Resources Annual Work Summary. Due Date: December 1, 2023

## Cultural/Historic Resource Review

If a specific proposal is developed in 2023, it will be evaluated by CRMG to determine cultural resource survey needs.

## Benefit to the Resource

Benefits include the protection, and where appropriate, enhancement of timber stands on specific Avista owned project lands.

## 2023 Appendix P Budget

Budget Summary	
Unexpended Timber Revenue <sup>1</sup>	\$226,796
<b>Total available</b>	<b>\$226,796</b>
2023 MC-approved budget	\$5,000
<b>Unobligated funds</b>	<b>\$221,796</b>

<sup>1</sup> Costs associated with implementing Appendix P projects are generally funded by timber sale revenue. Pursuant to the CFSA, some costs are covered through administration of the Land Use Management Plan (Appendix G).

2023 Project	Carryover <sup>1</sup>	2023 Budget
Timber stand improvement project initiation	\$0	\$5,000
<b>Total</b>	<b>\$0</b>	<b>\$5,000</b>
<b>MC-approved budget</b>		<b>\$5,000</b>

<sup>1</sup> Estimated carryover of unexpended, approved funds as of January 1.

## 2023 ANNUAL IMPLEMENTATION PLAN SUMMARY– APPENDIX Q

### Clark Fork Project, FERC No. 2058 Cabinet Gorge and Noxon Rapids Hydroelectric Developments

#### Title

Reservoir Island Protection

#### Implementation Staff Lead

Arthur D. Potts, Avista, (406) 847-1283, [arthur.potts@avistacorp.com](mailto:arthur.potts@avistacorp.com)

#### Project History

This is a continuation of work previously approved by the Management Committee.

#### Background

The purpose of this measure is to provide for the protection of islands owned by Avista in the project reservoirs. The goal is to maintain the unique and high-quality wildlife habitat functions and values of these islands.

#### 2023 Project Plans

- Continue to ensure restrictions developed for the protection of these areas utilizing the land use classifications described in the LUMP.

#### Work Products

- All work associated with this Project Plan will be documented in the 2023 Terrestrial Resources Annual Work Summary. Due Date: December 1, 2023

#### Cultural/Historic Resource Review

No cultural resource surveys will be needed for this Protection, Mitigation, and Enhancement measure.

#### Benefit to the Resource

Protect and maintain the unique and high-quality wildlife habitat functions and values of these islands.

#### 2023 Appendix Q Budget

Budget Summary	
Unexpended funds	\$0
2023 contribution	\$0
<b>Total available<sup>1</sup></b>	<b>\$0</b>
2023 MC-approved budget	\$0
<b>Unobligated funds</b>	<b>\$0</b>

<sup>1</sup> Pursuant to the CFSA, costs associated with reservoir island protection are covered through administration of the Land Use Management Plan (Appendix G).



## **2023 ANNUAL IMPLEMENTATION PLAN SUMMARY – APPENDIX R**

### **Clark Fork Project, FERC No. 2058 Cabinet Gorge and Noxon Rapids Hydroelectric Developments**

#### **Title**

Clark Fork Heritage Resource Program

#### **Implementation Staff Lead**

Lisa Johnson, Avista, (406) 847-1288, [lisa.johnson@avistacorp.com](mailto:lisa.johnson@avistacorp.com)

#### **Background**

The Clark Fork Heritage Resource Program was an interim program developed in collaboration with the Cultural Resources Management Group (CRMG) during the Clark Fork relicensing process. The program emphasized specific cooperative stewardship strategies for the management of cultural and historic resources, to be implemented by the CRMG following the development of the Clark Fork Heritage Resource Management Plan (HRMP). In 2000, the CRMG developed the HRMP in accordance with the Clark Fork Heritage Resource Program, Clark Fork Settlement Agreement (CFSA), and Programmatic Agreement, to guide the management and mitigation of effects to historic and/or cultural resources associated with the Clark Fork Project. The HRMP was developed to ensure coordination of the protection, mitigation, and enhancement (PM&E) measures associated with the Clark Fork Project with representatives from Coeur d’Alene, Kootenai, Confederated Salish and Kootenai, and Kalispel Tribes, Idaho and Montana State Historic Preservation offices, U.S. Forest Service, and Avista, which collectively make up the CRMG.

#### **2023 Project Plans**

1. Clark Fork Heritage Resource Program

#### **Work Products**

- Annual Work Summary\*; due December 1, 2023

*\*Due to potential confidentiality issues associated with cultural resources, some or all of the information collected may not be available to the Management Committee and/or the general public.*

## 2023 Appendix R Budget

Budget Summary	
2023 contribution (estimate) <sup>1</sup>	\$78,000
<b>Total available</b>	<b>\$78,000</b>
2023 MC-approved budget	\$78,000
<b>Unobligated funds</b>	<b>\$0</b>

<sup>1</sup> Estimated costs are projections made now however; Avista will pay the actual costs as approved by the Management Committee.

2023 Project	Carryover <sup>1</sup>	2023 Budget
Clark Fork Heritage Resource Program	\$25,000	\$53,000
<b>Total</b>	<b>\$25,000</b>	<b>\$53,000</b>
<b>MC-approved budget</b>		<b>\$78,000</b>

<sup>1</sup> Estimated carryover of unexpended, approved funds as of January 1.

## 2023 PROJECT PLAN

### Clark Fork Heritage Resource Program

#### Project Contact

Lisa Johnson, Avista, (406) 847-1288, [lisa.johnson@avistacorp.com](mailto:lisa.johnson@avistacorp.com)

#### Project History

This is a continuing project. In 2000, the Cultural Resources Management Group (CRMG) developed the Clark Fork Heritage Resource Management Plan (HRMP) in accordance with the Clark Fork Heritage Resource Program, Clark Fork Settlement Agreement (CFSA), and Programmatic Agreement, to guide the management and mitigation of effects to historic and/or cultural resources associated with the Clark Fork Project. The scope and budget for this project are reviewed by the Management Committee annually.

#### Background

The Clark Fork Heritage Resource Program was an interim program developed in collaboration with the CRMG during the Clark Fork relicensing process. The program emphasized specific cooperative stewardship strategies for the management of cultural and historic resources, to be implemented by the CRMG following the development of a Programmatic Agreement and the HRMP. The HRMP was developed to ensure coordination of the protection, mitigation, and enhancement (PM&E) measures associated with the Clark Fork Project with representatives from Coeur d'Alene, Kootenai, Confederated Salish and Kootenai, and Kalispel Tribes, Idaho and Montana State Historic Preservation offices, U.S. Forest Service, and Avista, which collectively make up the CRMG.

#### Goal

The goal of this program is to provide cooperative, long-term, and flexible management of eligible historic and prehistoric resources on Avista project lands.

#### Objectives

1. Protect and preserve culturally and historically sensitive areas within the Avista Clark Fork project area.
2. Increase public awareness of the historic evolution to provide future generations the opportunities to better understand and respect the past.
3. Meet legal regulatory obligations and responsibilities of the Programmatic Agreement and CFSA.

#### Tasks

1. Schedule and host CRMG meeting(s). Review project plans for aquatic and terrestrial resources that have the potential to impact historic or cultural resources to determine if additional survey or documentation is necessary prior to the initiation of the project. (Objectives 1 and 3)

2. Continue annual monitoring of culturally-sensitive sites as determined by the CRMG. (Objectives 1 and 3)
3. Continue implementation of the Cultural Interpretation and Education Plan (i.e., camas interpretive display at Cabinet Gorge). (Objectives 2 and 3)
4. Continue working on the Honey Flats Botanical Assessment. (Objectives 1 and 2)
5. Conduct site-specific surveys and/or monitoring for projects, as needed (i.e., projects with proposed ground-disturbing activities, land transactions, and land use requests). Review, assess, and mitigate potential impacts of maintenance and upgrade of Avista's Clark Fork Project historic properties. (Objectives 1 and 3)

### Work Products

- Annual Work Summary\*; due December 1, 2023  
*\*Due to potential confidentiality issues associated with cultural resources, all of the information collected may not be available to the Management Committee and/or the general public.*

### Permitting Requirements

Not applicable for the tasks proposed in this project plan.

### Cultural/Historic Resource Review

Not applicable for the tasks proposed in this project plan, there are no ground disturbing activities or proposed impacts to cultural/historic resources.

### Benefit to the Resource

The CRMG was developed as a result of CFSA Appendix R Clark Fork Heritage Resource Program, and corresponds to the FERC License Article 427 for the Clark Fork Project No. 2058 and Programmatic Agreement. Implementation of the Clark Fork Heritage Resource Program, HRMP, and Programmatic Agreement satisfies Section 106 of the National Historic Preservation Act for the Cabinet Gorge and Noxon Rapids projects.

### Budget

Item	Estimated Carryover <sup>1</sup>	2023 Budget Request
Meeting(s)	\$0	\$15,000
Annual Site Monitoring	\$0	\$35,000
Cultural Interpretation and Education Plan	\$12,500	\$0
Honey Flats Botanical Assessment	\$12,500	\$0
Avista Cultural Resource Specialist conference(s) and professional development training(s)	\$0	\$3,000
<b>Total</b>	<b>\$25,000</b>	<b>\$53,000</b>
<b>Anticipated Expenditures<sup>2</sup></b>		<b>\$78,000</b>

<sup>1</sup> Estimated carryover of unexpended, approved funds as of January 1.

<sup>2</sup> Site-specific surveys and/or monitoring are funded through individual project plans as needed.

## **2023 ANNUAL IMPLEMENTATION PLAN SUMMARY– APPENDIX S**

### **Clark Fork Project, FERC No. 2058 Cabinet Gorge and Noxon Rapids Hydroelectric Developments**

#### **Title**

Erosion Fund and Shoreline Stabilization Guidelines Program

#### **Implementation Staff Lead**

Arthur D. Potts, Avista, (406) 847-1283, [arthur.potts@avistacorp.com](mailto:arthur.potts@avistacorp.com)

#### **Project History**

This is a continuation of work previously approved by the Management Committee.

#### **Background**

The purpose of this measure is to provide funds to ameliorate adverse impacts to resources of interest caused by the continued operation of the Clark Fork Projects. Resources of interest include important cultural or natural resources, and private or public property not covered by applicable easement. The PM&E measure also calls for the distribution of the Erosion Control Guidelines Manual, developed in 2000, to interested individuals.

A geotechnical firm will be retained for review of proposals Avista receives from adjacent landowners for erosion control projects.

#### **2023 Project Plans**

- Address erosion concerns identified by the Cultural Resources Management Group (CRMG).
- Utilize a geotechnical contractor to assist with evaluating erosion control proposals received by Avista.

#### **Work Products**

- Due to the confidential nature of cultural sites, CRMG directed work will not be reported on as part of the public reporting process.
- If received, evaluate erosion control proposals from adjacent landowners with assistance from a geotechnical contractor.
- All work associated with this Project Plan will be documented in the 2023 Terrestrial Resources Annual Work Summary. Due Date: December 1, 2023

#### **Cultural/Historic Resource Review**

Work proposed under this fund will be addressed by the CRMG for each project as they are identified.

### Benefit to the Resource

Benefits are provided by addressing impacts to resources of interest caused by erosion attributed to the continued operation of the Clark Fork Project. Resources of interest include important cultural or natural resources, and private or public property not covered by applicable easement.

### 2023 Appendix S Budget

Budget Summary	
Unexpended funds with interest <sup>1</sup>	\$200,000
2023 contribution (including GDP inflation rate)	\$61,392
<b>Total available</b>	<b>\$200,000</b>
2023 MC-approved budget	\$58,000
<b>Unobligated funds</b>	<b>\$142,000</b>

<sup>1</sup> Annual contributions of \$40,000 plus GDP inflation are contributed to this fund until reaching the \$200,000 cap.

2023 Project	Carryover <sup>1</sup>	2023 Budget
Address erosion concerns identified by CRMG	\$0	\$50,000
Geotechnical support and working with adjacent landowner on Noxon Reservoir	\$0	\$8,000
<b>Total</b>	<b>\$0</b>	<b>\$58,000</b>
<b>MC-approved budget</b>		<b>\$58,000</b>

<sup>1</sup> Estimated carryover of unexpended, approved funds as of January 1.

## **2023 ANNUAL IMPLEMENTATION PLAN SUMMARY – APPENDIX T**

### **Clark Fork Project, FERC No. 2058 Cabinet Gorge and Noxon Rapids Hydroelectric Developments**

#### **Title**

Project Operations Package

#### **Implementation Staff Lead**

Eric Oldenburg, Avista, (406) 847-1290, [eric.oldenburg@avistacorp.com](mailto:eric.oldenburg@avistacorp.com)

#### **Background**

The Project Operations Package outlines the General Operating Limits (minimum flow below the Cabinet Gorge Dam and water level fluctuation limits in both project reservoirs) that were agreed to in the Clark Fork Settlement Agreement (CFSA). Within these limits, Avista utilizes peaking operations at Noxon Rapids and Cabinet Gorge dams. Mitigation for any negative effects of peaking operations within the General Operating Limits is carried out within other Protection, Mitigation, and Enhancement (PM&E) programs (e.g., the Montana and Idaho tributary enhancement programs, the Bull Trout Protection and Public Education Project, and the Watershed Council Program). Therefore, historically, the Project Operations Package has only encompassed maintenance of the General Operating Limits and the requirement to coordinate project operations with the operators of the Albeni Falls Project.

Prior to the CFSA, the minimum discharge requirement through Cabinet Gorge Dam was 3,000 cubic feet per second (cfs). Through the CFSA, this minimum discharge requirement was increased to 5,000 cfs. However, the CFSA also defined a 10-year period of study to evaluate any effects of the change in minimum flow. This evaluation was completed in 2011 and concluded that the increased minimum discharge requirement provided no measurable benefit to fish populations in the lower Clark Fork River when compared to the previous minimum flow of 3,000 cfs (Ryan and Jakubowski 2012). Thus in 2017, as part of the first amendment to the CFSA, the Management Committee (MC) agreed to reinstate the 3,000 cfs minimum flow requirement for Cabinet Gorge Dam from November 1 through September 14 and the minimum flow will remain at 5,000 cfs from September 15 to October 31. An order issued by FERC on December 18, 2017 approved the new minimum flows which are now effective. Along with this agreement, Avista made an additional funding commitment to address any remaining uncertainty over any question of potential effects of the reduced minimum flow. The funding commitment was a one-time addition of \$1,000,000 (not subject to escalation) to the CFSA Appendix T fund, which Avista holds in trust. Use of these dollars is restricted to capital projects and may not be used for operations or maintenance of existing or new sites or facilities. Further, any use of these funds shall be approved by the MC pursuant to the Annual Implementation Plan process.

#### **2023 Project Plans**

1. Project Operations and Coordination
2. Cabinet Gorge Fish Hatchery Spring Water Collection System Upgrade

## Work Products

### *Project Operations and Coordination*

- Annual Work Summary; due December 1, 2023

### *Cabinet Gorge Fish Hatchery Spring Water Collection System Upgrade*

- Technical memoranda describing project progress at appropriate intervals
- As built drawings; due December 30, 2023
- Annual Work Summary; due December 1, 2023
- Avista/IDFG water use agreement; due January 31, 2024

## 2023 Appendix T Budget

Budget Summary	
Unexpended funds <sup>1</sup>	\$466,869
<b>Total available</b>	<b>\$466,869</b>
2023 MC-approved budget	\$706,243
<b>Unobligated funds</b>	<b>-\$239,374</b>

<sup>1</sup> A one-time \$1 million allocation made available beginning in 2018 and not subject to interest. If actual expenditures exceed "Total available" the balance will be funded equally through Appendix C "Facilities" and Appendix F5.

2023 Project	Carryover <sup>1</sup>	2023 Budget
Project Operations and Coordination	\$0	\$0
Cabinet Gorge Fish Hatchery Spring Water Collection System Upgrade	\$659,295	\$46,948
<b>Total</b>	<b>\$659,295</b>	<b>\$46,948</b>
<b>MC-approved budget</b>		<b>\$706,243</b>

<sup>1</sup> Estimated carryover of unexpended, approved funds as of January 1.

## 2023 PROJECT PLAN

### Project Operations and Coordination

#### Project Contact

Eric Oldenburg, Avista, (406) 847-1290, [eric.oldenburg@avistacorp.com](mailto:eric.oldenburg@avistacorp.com)

#### Project History

This is a continuing project that has been implemented since the Clark Fork Settlement Agreement (CFSA) became effective; however, this is the sixth year Project Operations and Coordination have been outlined in a Project Plan.

#### Background

Prior to 2018, project operations and coordination were the only activities conducted under Appendix T. In light of this, and because all associated costs are borne by Avista, these activities were simply described in the Annual Implementation Plan Summary. Now that additional funding has been added and additional projects proposed within Appendix T, the project operations and coordination information has been removed from the Summary and transferred to this Project Plan.

The General Operating Limits for Noxon Rapids (Table 1) and Cabinet Gorge (Table 2) dams were defined in the CFSA and Amendment No. 1 to the CFSA. Any deviations from the General Operating Limits will be conducted in accordance with the Appendix F4 Water Quality Protection and Monitoring Plan. Note the General Operating Limit for Cabinet Gorge Dam minimum discharge was changed from 5,000 cubic feet per second (cfs) to 3,000 cfs in accordance with Amendment No. 1 to the CFSA; however, minimum discharge remains at 5,000 cfs during the “Bull Trout window” from September 15 through October 31.

TABLE 1. Noxon Rapids Dam General Operating Limits

Operation	General Operating Limit
Maximum forebay elevation (feet)	2,331.0
Minimum forebay elevation (feet)	2,327.0 (May 15–Sept. 30) 2,321.0 (Oct. 1–May 14)
Maximum forebay draft rate	2 feet per day (net) 5 feet per week (net)

TABLE 2. Cabinet Gorge Dam General Operating Limits

Operation	General Operating Limit
Maximum forebay elevation (feet)	2,175.0
Minimum forebay elevation (feet)	2,168.0
Minimum discharge (cfs)	3,000 (Nov. 1–Sept. 14) 5,000 (Sept. 15–Oct. 31)

#### Goal

Ensure appropriate operations at Noxon Rapids and Cabinet Gorge dams in the interest of protecting the natural resources and access to those resources.

## **Objective**

1. Ensure appropriate project operations and coordination at Noxon Rapids and Cabinet Gorge dams.

## **Tasks**

1. Maintain operating procedures for Cabinet Gorge Dam that will ensure compliance with the minimum flow (i.e., discharge) General Operating Limit. Ensure that the specified minimum flow was maintained, either through discharge or operational data available at the dam and/or utilizing the USGS Clark Fork River below Cabinet Gorge Dam gaging station data (located approximately ¼ mile downstream of dam). In the event that these operating procedures are interrupted, implement the Water Quality Protection and Monitoring Plan as identified in CFSA Appendix F4.
2. Maintain operating procedures for the Cabinet Gorge and Noxon Rapids dam that will ensure that the reservoir (i.e., forebay) water level fluctuation limitations, as outlined in the General Operating Limits tables above, are maintained. Maintain appropriate documentation of forebay water levels utilizing data available at the dam/powerhouse control room. In the event that these operating procedures are interrupted, implement the Water Quality Protection and Monitoring Plan as identified in CFSA Appendix F4.
3. Continue to provide daily discharge forecasts for Cabinet Gorge to the Albeni Falls (USACE) Project, per a January 7, 1999 Letter of Agreement.

## **Work Products**

- Annual Work Summary; due December 1, 2023

## **Permitting Requirements**

Not applicable for the tasks proposed in this project plan.

Endangered Species Act consultation for this project plan is associated with the 2019 Biological Opinion on the effects of continued operation of the Clark Fork Hydroelectric Project on Bull Trout and designated Bull Trout critical habitat. Incidental take reporting for this project plan will be included in the annual Biological Opinion report as required by Term and Conditions 15–18 of the 2019 Incidental Take Statement.

## **Cultural/Historic Resource Review**

Not applicable for the tasks proposed in this project plan, there are no ground and/or vegetation disturbing activities, or proposed impacts to cultural/historic resources.

## **Benefit to the Resource**

The General Operating Limits and coordination protocols are requirements of the CFSA. The General Operating Limits are designed to minimize negative effects of project operations on fisheries and other natural resources as well as recreational interests.

**Budget**

- All costs associated with this Project Plan are borne by Avista and are not part of any PM&E funds.
- The cost of maintenance of all General Operating Limits and accurate FERC reporting are borne by Avista as part of general project administration and operation costs and are not part of any PM&E funds.
- The costs of developing coordination protocols and providing the daily discharge forecasts for Cabinet Gorge Dam will be borne by Avista as part of general project administration and operation costs and are not part of any PM&E funds.



## 2023 PROJECT PLAN

### Cabinet Gorge Fish Hatchery Spring Water Collection System Upgrade

#### Project Contact

Shana Bernall, Avista, (406) 847-1293, [Shana.Bernall@avistacorp.com](mailto:Shana.Bernall@avistacorp.com) and  
Ken Bouwens, Idaho Department of Fish and Game (IDFG), (208) 769-1414,  
[ken.bouwens@idfg.idaho.gov](mailto:ken.bouwens@idfg.idaho.gov)

#### Project History

This is a carryover project that was originally approved in 2018. In 2022, the Management Committee (MC) approved additional funding to cover the cost of the design/build contract. Additional funding is being requested for 2023 to cover engineering, permitting and project coordination to finish out the project.

#### Background

The Cabinet Gorge Fish Hatchery (hatchery) is located in Idaho, approximately one mile downstream of Cabinet Gorge Dam, and is operated by IDFG. The hatchery utilizes wells and a spring water collection system to supply water for hatchery fish production. The spring water is mixed with well water at the hatchery to provide an optimum water temperature for fish growth. The spring water collection system is also utilized by Avista to operate a fish ladder trap near the hatchery from August through mid-October for the purpose of capturing Bull Trout and for holding adult Bull Trout and Westslope Cutthroat Trout at the Cabinet Gorge Fish Handling Facility (FHF) prior to upstream transport which occurs from late-March through mid-October (Bernall and Duffy 2019). The spring water is also used for acclimating transported Montana subadult Bull Trout to Clark Fork River temperatures prior to release (March through November). The spring water is ideal for short-term holding of salmonid species destined to be transported upstream to Montana along with attracting Bull Trout into the fish ladder trap.

Multiple instances have occurred where spring water availability has been insufficient to supply all three facilities. These instances have been caused by low flow conditions in the Clark Fork River, high groundwater (well water) temperatures, and collection system malfunctions. Low flow conditions resulting in insufficient spring water availability have occurred when minimum flows in the Clark Fork River downstream of Cabinet Gorge Dam are 5,000 cubic feet per second (cfs) and it is not a drought year. In the fall of 2017, the Management Committee (MC) approved the Clark Fork Settlement Agreement amendment modifying the minimum flows below Cabinet Gorge Dam to 3,000 cfs, except for a minimum flow requirement of 5,000 cfs between September 15 and October 31. This change in minimum flow can affect the water level in the spring collection system, especially in years of drought; therefore, reducing the amount of spring water available when the hatchery, the FHF and fish ladder trap are being operated at the same time (August through October time-frame).

The spring water supply to these facilities is monitored closely during low flow conditions to better define what, if any, scenarios lead to issues with the current water supply system. To date, there have been a few instances where spring water supply to the facilities has been limited resulting in a suboptimal amount of water being available to operate the fish ladder trap. One

occurrence took place in 2015. Clark Fork River incoming flows were lower than 5,000 cfs and the amount of spring water available was insufficient to meet the needs of all three facilities. Another occurrence took place in 2019. From mid-August through mid-September flows in the lower Clark Fork River were near the minimum generating limit of 3,000 cfs for a 12-hour period during construction of the Cabinet Gorge Dam Fishway cofferdam. During this period the amount of spring water available in the collection basin was limited, and to compensate for the lack of available water the flow used to operate the fish ladder trap was decreased to 25% of normal. This low flow was not effective at attracting Bull Trout into the fish ladder trap. No Bull Trout were captured in the fish ladder trap until flows were increased to normal operation in mid-September.

In 2021 the water temperatures in the hatchery wells (separate from the spring collection basin) reached a record high and required more spring water from the collection basin to be used than in past years to cool the hatchery well water. This limited the amount of spring water available for use in the fish ladder trap until late September. The fish ladder trap was supplemented with water from the settling pond during this time. Although the settling pond water was cooler than ambient river temperatures, it was much warmer than the spring water temperature (on average 5.8°C warmer than the spring water). There have been other instances when one of the hatchery spring water pumps failed resulting in a limited supply of spring water. In addition, adjusting a valve at any location in the system affects the water flow to the other facilities requiring close communication and coordination between the user groups.

These observations have highlighted the need to improve the existing spring collection basin and develop a solution to increase the reliability of spring water that is available for use at the hatchery, FHF, and fish ladder trap. An investigation was led in 2002 to evaluate options for increasing the spring water supply at the hatchery and provided recommendations to structurally upgrade the system (Land & Water Consulting, Inc, 2002). The first recommendation was to rehabilitate the collection gallery and spring box by installing a drain curtain or deepening the collection gallery to intercept a thicker saturated portion of the water table aquifer.

Avista and IDFG selected an engineer (RivHab) in early 2020 to assist with the project. To get a better understanding of the substrate at the project site, a test pit was dug to the west of the current spring collection system in a location where spring water had been observed exiting the bank in recent years. Pump drawdown tests at the site produced consistent flow ranging up to 100 gpm during 3,000 cfs minimum flows in September. The project team had considered developing this test pit as a water supply for the FHF, but the cost of construction of the project came in higher than budget. A soil boring investigation conducted at the site in the summer of 2021 provided additional information on bedrock and water elevations in the project area that will assist with future design and construction. In 2022 ground penetrating radar was used to further evaluate the location of bedrock in the project area.

The project team has decided to completely redo the current spring collection system that supplies water to the hatchery, FHF, and fish ladder trap with a focus on replacing the spring collection basin. A contractor team was selected in the spring of 2022 to complete the design/build for the project. Design drawings for the project will be completed in early 2023 and construction is anticipated to begin in summer 2023. The construction window for this project is

likely a few months; therefore, IDFG is developing a plan to move fish off site. IDFG and Avista will be working with the engineer to develop design drawings and a project timeline.

This project plan describes the funding needed to continue working with the contractor team on the design, permitting, planning and construction of the project in 2023.

### **Goal**

Maintain a reliable and redundant source of spring water for use at the hatchery, FHF and fish ladder.

### **Objective**

1. Reconstruct the hatchery spring water collection system to maintain reliable spring water available for use at the hatchery, FHF, and fish ladder trap.

### **Tasks**

1. Continue to monitor hatchery spring water availability and operation of pumps that supply spring water during low flows.
2. Procure permits and approvals needed for reconstruction of the hatchery spring water collection system.
3. Make sure contractor has a plan in place to maintain a spring water supply to the FHF during construction.
4. As part of the design/build contract have the contractor develop a backup water supply for the facilities.
5. Work with contractor team to develop drawings, assist with permitting and planning, and ultimately complete reconstruction of the spring water collection system.
6. Develop and sign water use agreement between Avista and IDFG.

### **Work Products**

- Technical memoranda describing project progress at appropriate intervals
- As built drawings; due December 30, 2023
- Annual Work Summary; due December 1, 2023
- Avista/IDFG water use agreement; due January 31, 2024

### **Permitting Requirements**

The engineer hired for this project will assist Avista, IDFG and the design/build team in obtaining the required permits. Required permits may include:

- Northern Lights agreement for power installation
- Joint Application for Permits–U.S. Army Corps of Engineers, Idaho Department of Water Resources, and Idaho Department of Lands (submitted in late December 2022)
- National Pollutant Discharge Elimination System Construction Stormwater Permit–Idaho Department of Environmental Quality (contractor will apply for a Low Erosivity Waiver

- or Notice of Intent)
- Floodplain Development Permit–Bonner County Planning Department (submitted in late December 2022)
- Water Right–Idaho Department of Water Resources (Idaho Department of Fish and Game holds the water right for the project)

Endangered Species Act consultation for this project plan is associated with the 2019 Biological Opinion on the effects of continued operation of the Clark Fork Hydroelectric Project on Bull Trout and designated Bull Trout critical habitat (BiOp). This project plan is consistent with the analyses and conclusions contained in the 2019 BiOp and will adhere to all appropriate Terms and Conditions designed to reduce the extent and effects of incidental take on Bull Trout. No incidental take of Bull Trout is anticipated as a result of this project plan; therefore, no take reporting is required.

### **Cultural/Historic Resource Review**

In 2020, the Cultural Resources Management Group reviewed and approved the test pits and upgrades. Avista cultural staff will coordinate a cultural/historic resource review for the new design. The work product for this review will be confidential due to the sensitive nature of the content.

### **Benefit to the Resource**

Kokanee are reared at the hatchery for stocking in Lake Pend Oreille to assist in restoration of the species, which is important as a prey species for Bull Trout. These efforts are part of the IDFG management plan and continuing to optimize the water supply to the hatchery is essential for continuation of their program (IDFG 2019). The spring collection system is also being utilized at the fish ladder trap to capture Bull Trout and at the FHF to provide cold water for Bull Trout and Westslope Cutthroat Trout that are held prior to upstream transport. The Native Salmonid Restoration Plan (NSRP) is part of the Clark Fork Settlement Agreement (CFSA) and identifies a need to “establish and maintain connectivity in the Clark Fork Basin for migratory trout” (Avista 1999, Kleinschmidt and Pratt 1998). Montana Fish, Wildlife and Parks (MFWP) and IDFG also support reconnecting native salmonid populations in the lower Clark Fork River through fish passage as detailed in their current state-wide management plans (MFWP 2019, IDFG 2019). The U.S. Fish and Wildlife Service describes fragmentation as a threat to Bull Trout recovery, further emphasizing the importance of improving Bull Trout capture and holding conditions in the project area (U.S. Fish and Wildlife Service 2015). This project plan lays out a plan to improve the amount of spring water available to the FHF and fish ladder trap, which will ultimately improve conditions for capture and holding of Bull Trout prior to upstream transport. The funds set aside in Appendix T are to address any remaining uncertainty over effects of the change of minimum flows from 5,000 to 3,000 cfs. This project will directly address one of these potential effects.

## Budget

Item	Estimated Carryover <sup>1</sup>	2023 Budget Request
Design/Build Contract	\$650,295	\$0
Engineering support	\$3,000	\$27,948
Project coordination, planning, permitting and cultural/historic review	\$6,000	\$19,000
<b>Total</b>	<b>\$659,295</b>	<b>\$46,948</b>
<b>Anticipated Expenditures</b>		<b>\$706,243<sup>2</sup></b>

<sup>1</sup> Estimated carryover of unexpended, approved funds as of January 1.

<sup>2</sup> The funds left in the Appendix T budget (\$466,869) may not be sufficient to cover the entire cost of this project. Therefore, funding to cover costs once all funds under Appendix T have been spent will be split between Appendix F5 and the Appendix C “facilities” fund (up to \$240,000).

This project is being supported by outside funding from IDFG. Idaho Department of Fish and Game will cover one half of the cost of the design/build contract (up to \$645,000). This amount is not shown in the budget table above. The Anticipated Expenditures represents only the CFSA contribution for this project.

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