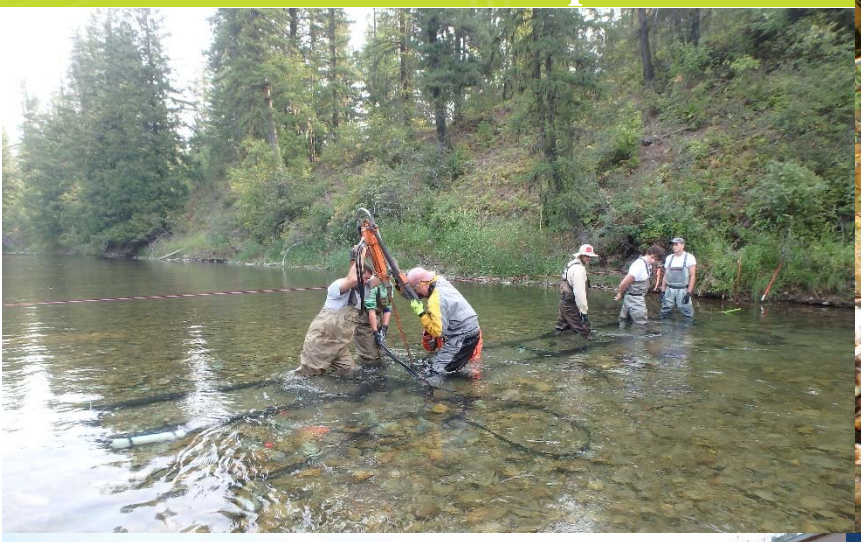
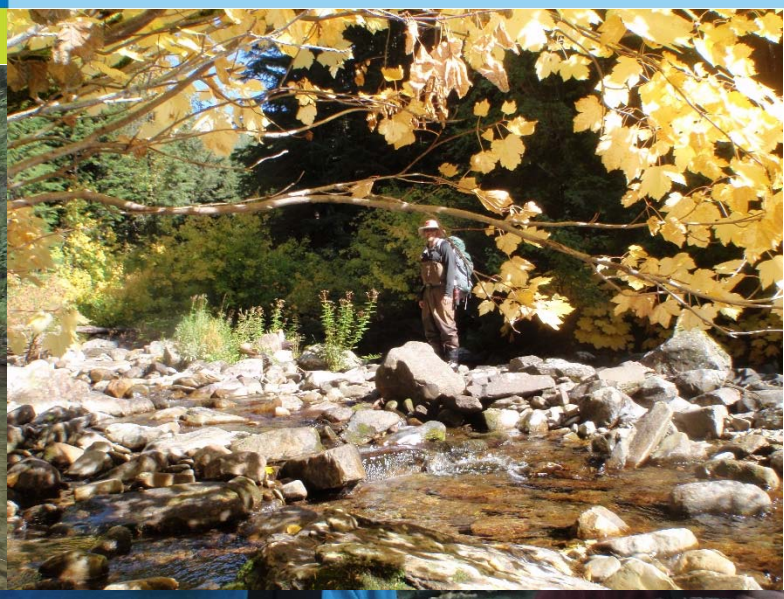
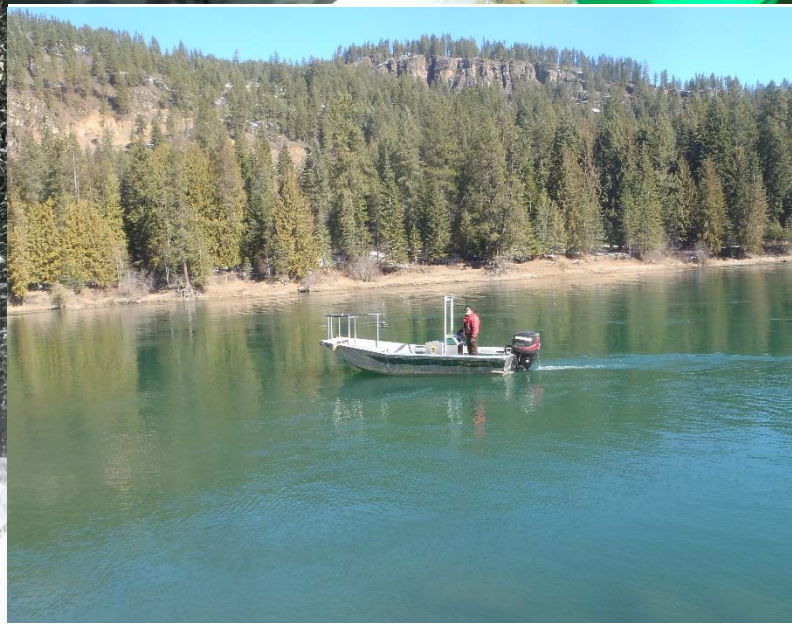
The Clark Fork Project
FERC Project No. 2058

2018 Annual Report







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Section 1: Introduction

1.1 Document Background and Purpose

Avista owns and operates the Noxon Rapids and Cabinet Gorge hydroelectric developments [hereafter, "HEDs"; Clark Fork Project, Federal Energy Regulatory Commission (FERC) License No. 2058]. Operation of the Clark Fork Project is conditioned by the Clark Fork Settlement Agreement (CFSA), signed in 1999, and FERC License No. 2058, effective March 1, 2001. In 2018, Avista implemented the terms and conditions of the CFSA in consultation with, and full approval of, the Management Committee (MC) for the twentieth consecutive year and the terms and conditions of the FERC License for the eighteenth consecutive year.

As specified in this report, Avista, in consultation with members of the MC, which is comprised of State and Federal agencies, non-governmental organizations, and five Native American Tribes, continued to implement the current protection, mitigation, and enhancement (PM&E) measures identified in the CFSA and FERC license. The MC, Terrestrial Resources Technical Advisory Committee (TRTAC), Water Resources Technical Advisory Committee (WRTAC), and Cultural Resources Management Group (CRMG) continued to meet in 2018.

1.2 Summary

Parties to the CFSA successfully completed the twentieth year of implementing PM&E measures. Among the 22 PM&E measures, implementation of more than 100 projects to benefit aquatic, terrestrial, and cultural resources were completed. The following paragraphs provide select highlights from 2018 efforts.

At the March meeting, the MC members discussed and approved the 2017 CFSA Budget Report and 2018 Annual Implementation Plans (AIPs) with associated funding for all active 22 PM&E measures identified in the CFSA and the Clark Fork License.

During the September meeting, MC members received updates on the PM&E measure activities; approved a habitat protection project; the construction of the Lower Bull River Day Use – Boat Access Project; 5-year update to the Native Salmonid Restoration Plan (NSRP); support of an online Bull Trout database; and received a required status update of lands held by Avista. During the second day of the meeting, MC members toured CFSA implementation projects in Idaho.

Avista, through CFSA Appendix R, continued to work with State Historic Preservation offices, the U.S. Forest Service (USFS), and representatives from five Native American tribes, collectively referred to as the CRMG, to preserve and protect cultural and historic resources associated with the Clark Fork Project. In 2018, the Avista Cultural Resource Specialist and/or the CRMG reviewed 50 CFSA-related projects with proposed ground disturbance and/or projects related to the Noxon Rapids and Cabinet Gorge HEDs.

Based on approval by the MC at the fall meeting, construction of the Lower Bull River Day Use – Boat Access Project began in 2018 on property owned by Avista. Construction of an access road, parking, and non-motorized boat ramp were completed. Additional features such as picnic tables and a vault toilet will be installed in spring 2019. Interpretive signage is also planned for the site. One of two Passive Integrated Transponder (PIT)-antennae array monitoring stations in the Bull River drainage is located on this property.

As noted earlier, the MC approved the updated Five-Year NSRP (Plan) at the fall 2018 meeting. The purpose of this updated Plan is to provide the MC with continued and consistent guidance for implementation of the Fish Passage/NSRP Program for 2019 through 2023. This guidance will help Avista funded staff, the cooperating agencies, the Aquatic Implementation Team and MC subcommittees (WRTAC, etc.) during formulation of draft AIPs presented for approval by the MC. A review of the goals of each CFSA Appendix contemplated in the previous 2011-2015 Five-Year Plan, findings from implementation of those Appendices and lessons learned are described at the end of the document in the "Assessment of Past Implementation" section.

Bull Trout were captured downstream of Cabinet Gorge Dam and transported upstream of Clark Fork River dams through the CFSA Appendix C program for the eighteenth consecutive year. Avista staff transport adult Bull Trout to Montana tributaries based on genetic assignment, previous capture history, or other approved criteria. Sixty-three adult Bull Trout meeting the length requirement for transport were captured downstream of Cabinet Gorge Dam in 2018. Thirty-six of these fish had genetic assignments to Montana tributaries and were transported upstream to Montana. This number is comparable to the mean number of Bull Trout transported upstream from 2004 through 2017. In addition to these 36 transports, 15 Bull Trout genetically assigning to Lightning Creek tributaries, located downstream of Cabinet Gorge Dam, were also transported upstream and released in the East Fork Bull River. The decision was made to move these fish to the East Fork Bull River since the mouth of Lightning Creek was dry, and historically, prior to the construction of Cabinet Gorge Dam, these fish had the opportunity to migrate upstream and enter a Montana tributary. The photo below shows a redd in the East Fork Bull River that was likely made by the transported Lightning Creek Bull Trout.

Eighteen of the 24 adult Bull Trout captured downstream of Cabinet Gorge Dam that were transported to Graves Creek had been previously captured as juveniles in Graves Creek. As juveniles, these fish were transported downstream and released in the Clark Fork River, in Idaho near the Cabinet Gorge Fish Hatchery. This was a record number of adult transports to Graves Creek and resulted in a record number of Bull Trout redds (20) counted in this tributary.

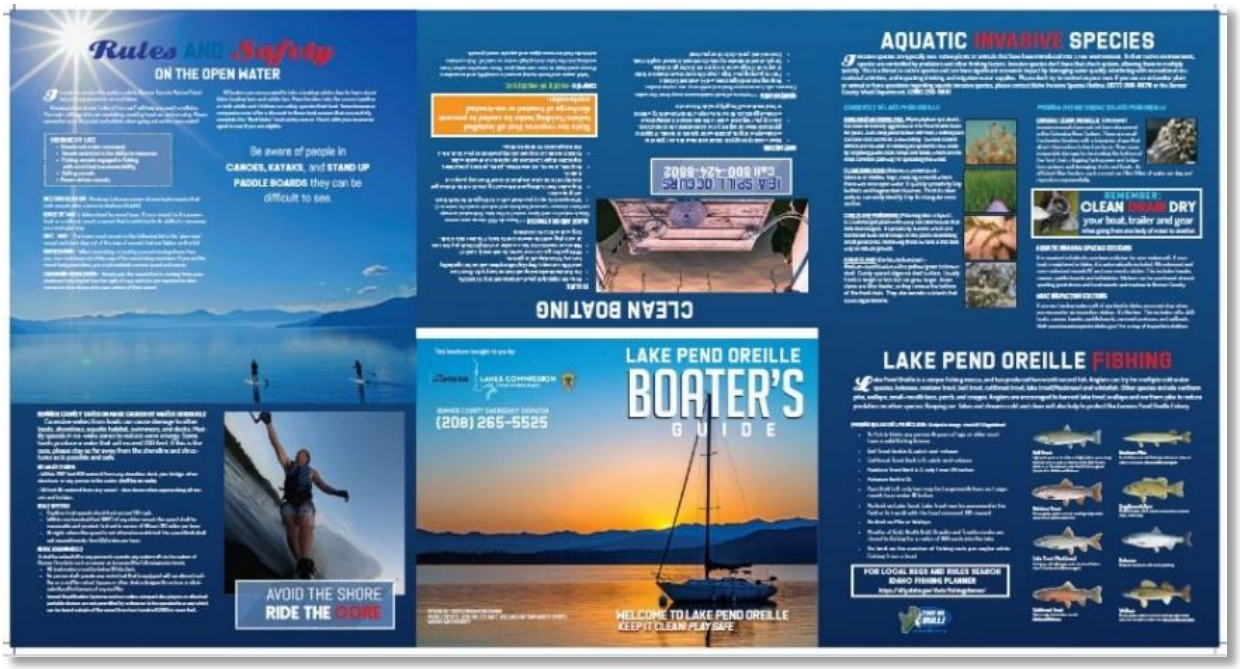
Significant investments have been made in developing the ability to remotely detect PIT-tagged fish in important tributaries to the Clark Fork River and Lake Pend Oreille (LPO). The PIT-monitoring stations have been operated in Trestle Creek and Granite Creek for the past several years and state-of-the-art PIT-monitoring stations are now operating in Prospect Creek, Graves Creek, East Fork Bull River, and the lower Bull River. An additional PIT-monitoring station will likely be installed in the Vermilion River during 2019. These stations are collecting valuable information that informs the adaptive management of CFSA programs.

The Graves Creek permanent weir trap was constructed in 2012 and started fishing in 2013. From the onset, the permanent weir has been very effective in achieving the primary goal of capturing a high proportion of juvenile Bull Trout that emigrate from Graves Creek. Despite this success, the permanent weir trap has been extensively evaluated and opportunities to improve the trap have been identified. Thus, the permanent weir trap has been iteratively improved since 2013. In 2018, CFSA staff began working with an engineering firm to fine tune the design of the permanent weir trap. The goals of these enhancements are to further increase the capture probabilities of both upstream- and downstream-moving fish, as well as to integrate the ability to allow the volitional passage of upstream-moving fish without compromising the capture probability of downstream-moving fish. Construction of the enhancements is planned for the summer of 2019.

Cabinet Gorge Dam Fishway (CGDF) activities in 2018 were to finalize design, hire a contractor to build the structure, and secure permits for construction and operation. The design is complete, a contactor was selected, and approval and permitting is ongoing. Staging of material and roadwork will be initiated in March 2019, with in-water work starting post runoff. Completion of

the project, barring major delays related to flows or other conditions beyond our control, is fall of 2021.

Montana Fish, Wildlife and Parks (MFWP), Idaho Department of Fish and Game (IDFG), and the Panhandle Chapter Trout Unlimited continued wide-ranging Bull Trout protection and education efforts throughout the Avista Project Area under the CFSA Appendix D Program. A notable project completed under this PM&E measure in 2018 was the development and printing of a new Lake Pend Oreille (LPO) Boater's Guide. Increasing popularity and a need to inform the public on Bull Trout identification, Aquatic Invasive Species, and other concerns provided the impetus to update the original LPO Boater's Guide developed in 2004. Ten-thousand copies of the new LPO Boater's Guide were printed in June and distribution began in July at venues including the three Bonner County Idaho Watercraft Inspection Stations, the IDFG Waterlife Discovery Center, Lakes Commission Meetings, and relevant outreach events.

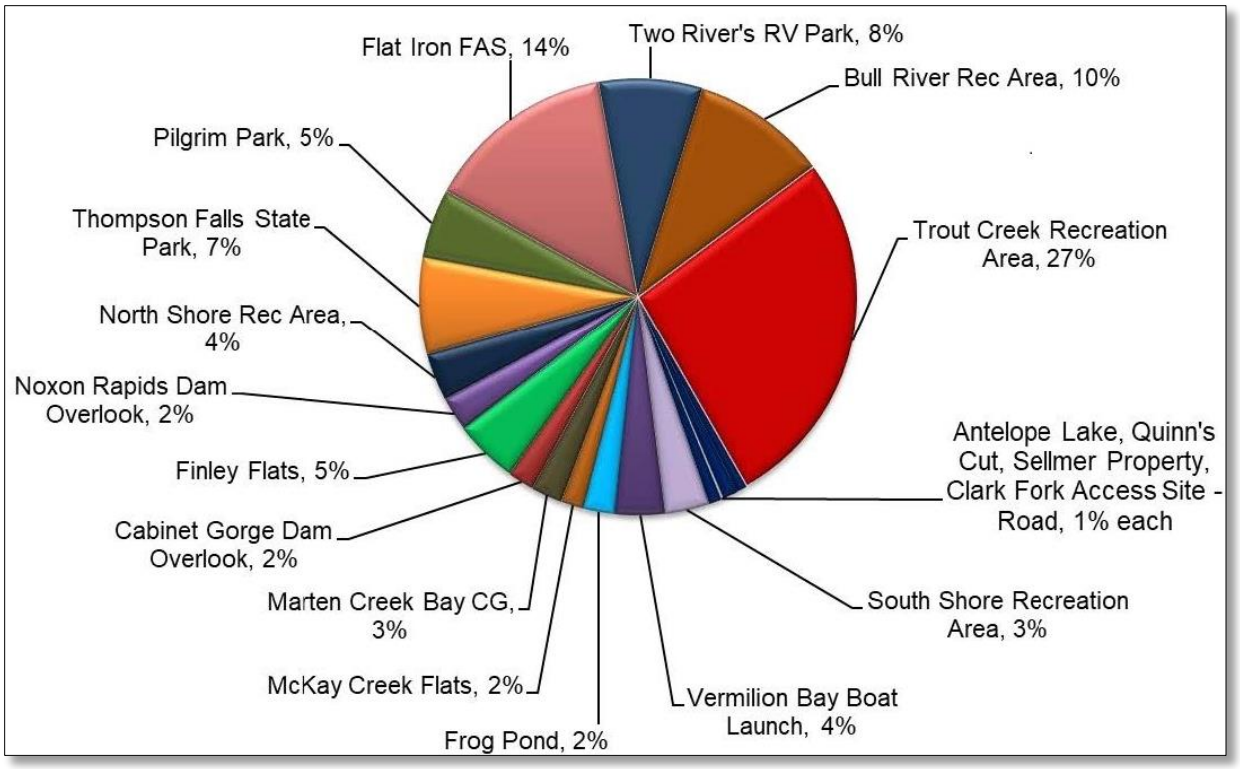


Sustained high flows on the Clark Fork River in 2018 allowed Avista to evaluate the effectiveness of the recently modified Cabinet Gorge Dam spillways 1 and 3 in reducing total dissolved gas (TDG) below Cabinet Gorge Dam. The tests indicate that the modifications were successful. Decisions for any additional modifications will occur pending discussions with the Gas Supersaturation Subcommittee.

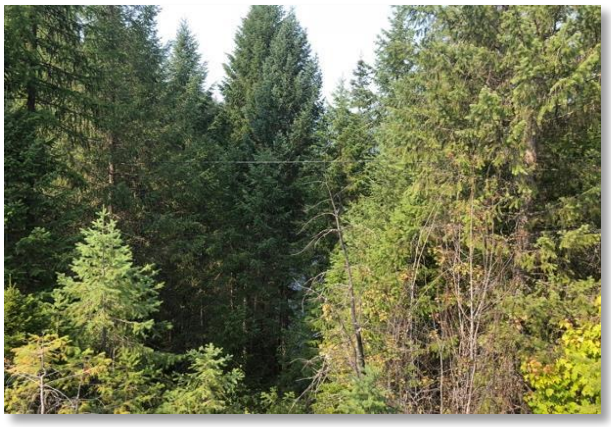
Walleye, illegally introduced into Noxon Reservoir approximately 30 years ago, are now well established throughout Noxon and Cabinet Gorge reservoirs and have reached LPO. An expanding Walleye population has the potential to put several fish populations in LPO at risk through direct predation and competition. A new project was approved under CFSA Appendix F5 in 2018 to gain information to help assess the current status of the Walleye population, evaluate the opportunities for management (suppression), and estimate the likely scope of their influence on the current fish community in LPO. Utilizing radio telemetry tags in 21 Walleye, it was determined that Walleye were concentrated at two main areas during the spring: the Clark Fork River and delta, and the Pack River area west to the eastern edge of Oden Bay. Walleye were more widely distributed during the summer period with loose concentrations of fish located in the Clark Fork River and delta, in shallow warmer bays including Denton Slough, Oden and Kootenai Bay, and downstream near the Sandpoint Bridge into the Pend Oreille River. Additionally, gillnetting proved to be a very effective method for capturing walleye during the prespawn period. Walleye were concentrated in shallow water and catch rates were high while by-catch was low. A total of 1,233 Walleye were removed, with the majority of these fish donated to the local food bank.

Avista continued to protect and manage project lands utilizing the CFSA Appendix G Land Use Management Plan through the issuance of private recreational, commercial and special use permits, annual monitoring, and implementation of the Pesticide and Herbicide Application Plan. Under the Private Recreation Permit Program, there were 212 permits issued for 2018, representing an increase of two permits from 2017.

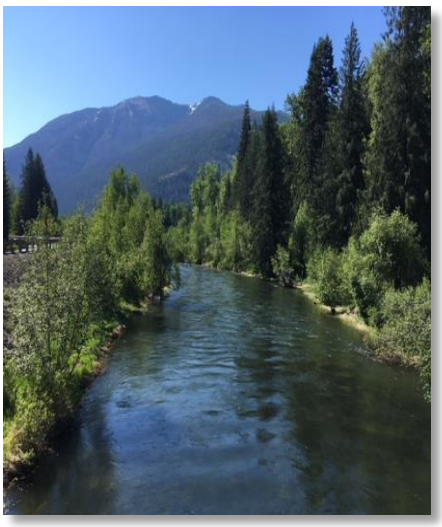
Clark Fork Settlement Agreement Appendix H implementers operated and maintained 28 recreation sites within the Clark Fork Project area to provide safe, diverse, and accessible recreation opportunities. Automated traffic counters monitor visitation at 19 of these sites between Memorial Day and Labor Day. The Trout Creek Recreation Area once again hosted the highest proportion of visitors, with 29% of all visits occurring at this site. Flat Iron Fishing Access Site accounted for nearly 14% of total use, while Bull River Recreation Area hosted 13% of all recorded use. The overall trend from 2014 through 2018 has shown a modest overall increase in visitation, although visitation in 2018 was slightly lower. Avista will continue to conduct standardized monitoring to gauge the overall trend and guide future management decisions related to recreation use of the corridor.



The five-year update of the Aesthetics Management Plan comparing the 41 key viewpoints to past conditions was completed in 2018. The scenic class remained the same for 39 out of 41 viewpoints from 2013–2018. The Highway 200 scenic turnout was downgraded due to tree growth obstructing views from the site. The Burr Knob viewpoint also changed, coinciding with having a different view shed related to the relocation of the trail and scenic viewpoint in 2018. The pictures below depict vegetative growth from 1998 (left) and 2018 (right) at the Highway 200 Blue Creek viewpoint. Overall the viewpoints remained similar to past years and represents the continued rural and rustic character of the shoreline.



Two habitat protection acquisitions were completed in 2018. The first, under CFSA Appendix K, was a purchase of a conservation easement held by Kaniksu Land Trust. The conservation easement is on 85.5 acres along the East Fork Bull River (EFBR) and adjacent to a 138.95 acre parcel already protected by a conservation easement. The conservation easement prevents subdivision, and limits development, grazing and timber harvest on the property.



The second project was a cost share between CFSA appendices B and K, and included funding for the purchase of a conservation easement, held by Kaniksu Land Trust, on approximately 126 acres along the mainstem Bull River. The conservation easement prohibits subdivision, development, and new road building; and allows timber or grazing only with an approved management plan. In addition to providing protection of 0.5 miles of mainstem Bull River, the conservation easement protects riparian and mature forest stands that provide exceptional wildlife values. The property is adjacent to USFS lands on the east and west, and provides a wildlife travel corridor linking the east and west Cabinet Mountains.

1.3 Acronyms and Abbreviations

AIP	Annual Implementation Plan
BMP	Best Management Practices
CFS	cubic feet per second
CFSA	Clark Fork Settlement Agreement
CGDF	Cabinet Gorge Dam Fishway
CRMG	Cultural Resources Management Group
EFBR	East Fork Bull River
EWM	Eurasian watermilfoil
FERC	Federal Energy Regulatory Commission
GDP	Gross Domestic Product
GSCP	Gas Supersaturation Control Program
HED	hydroelectric development
IDFG	Idaho Department of Fish and Game
LCFWG	Lower Clark Fork Watershed Group
LPO	Lake Pend Oreille
LUMP	Land Use Management Plan
MC	Management Committee
MFWP	Montana Fish, Wildlife and Parks
NEPA	National Environmental Policy Act
NSRP	Native Salmonid Restoration Plan
PIT	passive integrated transponder
PM&E	protection, mitigation, and enhancement
RPMs	Reasonable and Prudent Measures
RRMP	Recreation Resource Management Plan
TDG	total dissolved gas
TRTAC	Terrestrial Resources Technical Advisory Committee
USFS	U.S. Forest Service
USFWS	U.S. Fish and Wildlife Service
WRTAC	Water Resources Technical Advisory Committee

Section 2: Management Committee

2.1 Purpose

Paragraph 26 of the CFSA established a MC composed of representatives from each of the CFSA signatories. The MC oversees all PM&E measures. The MC shall have the authority, subject to such FERC approvals as may be necessary in appropriate cases, to:

- Approve plans developed by Avista and the appropriate technical committee for the implementation of PM&E measures, including funding;
- Approve modifications of PM&E measures;
- Oversee the implementation of all PM&E measures by Avista and the appropriate committees;
- Establish such committees as it deems necessary for the purpose of implementing the CFSA and PM&E measures, and determine, as appropriate, the size, membership, and procedures of such committees;
- Establish appropriate procedures for conducting its activities, including procedures for proxy voting and teleconferencing methods;
- Permit additional entities to execute the CFSA and thereby become members of the MC, and, as appropriate, permit the addition of such new MC members on terms different from those of the original signatories to the CFSA;
- Resolve all disputes regarding implementation of approved PM&E measures and all disputes brought to it for resolution by any of the members or committees;
- Amend the CFSA including the PM&E measures, in accordance with the voting provisions set forth in the CFSA.

2.2 List of Representatives

In 2018, the MC consisted of representatives from 27 members of the CFSA. Member representatives are verified bi-annually through the sign-in sheet distributed at each MC meeting. The 2018 MC Representatives are listed below:

Avista	Nate Hall
Bull River Watershed Council	Kathy Ferguson
Cabinet Resource Group	Jim Nash
Coeur d'Alene Tribe	Phillip Cernera
Confederated Salish and Kootenai Tribes	Les Evarts
Elk Creek Watershed Council	Mike Miller
Green Mountain Conservation District	Terry Hightower
Idaho Department of Environmental Quality	Tom Herron/Bob Steed
Idaho Department of Fish and Game	Chip Corsi/Andy Dux
Idaho Rivers United	Kevin Lewis
Kalispel Tribe	Joe Maroney/Ray Entz
Kootenai Tribe of Idaho	Scott Soults/Norm Merz
Lake Pend Oreille Idaho Club	Ryan Roslak/David Gillespie
Montana Bass Federation	Bob Beberg
Montana Department of Environmental Quality	Jason Garber
Montana Fish, Wildlife and Parks	Jim Williams/Mike Hensler

Montana State Historic Preservation Office	Stan Wilmoth
Noxon-Cabinet Shoreline Coalition	Rick Robinson
Panhandle Chapter Trout Unlimited	Loren Albright/Bill Love
Rock Creek Alliance	Mary Crowe-Costello
Sanders County, Montana	Tony Cox
U.S. Fish and Wildlife Service	Ben Conard
U.S. Forest Service	John Gubel

Management Committee representatives not designated in 2018:

Alliance for the Wild Rockies
Idaho Department of Parks and Recreation
Idaho State Historic Preservation Office
Montana Department of Natural Resources and Conservation

2.3 Meeting and Activity Summary

In accordance with the requirements of Paragraph 28 of the CFSA, the MC met two times. The two required meetings, held on March 13, 2018 and September 25, 2018, were open to the public; meeting information was placed on Avista's Clark Fork Project website, and notices were placed in the local newspaper.

2.3.1 2018 Consent Mails

Throughout 2018, the MC reviewed a number of proposals received through the Consent Mail request process established by the Clark Fork Management Committee Procedures. Consent Mail requests are a business process utilized for decision making between MC meetings. Proposals that are approved move forward, while those that are not approved are discussed at the next regularly scheduled MC meeting. The following proposals were received by Consent Mail, and approved:

- August 6, 2018 request for approval of funding for Crow Creek LiDAR and Prospect Creek PIT array costs (CFSA Appendix B; approved on August 27, 2018).
- November 7, 2018 request for reallocation of funds for designing improvements to the Graves Creek permanent weir trap (CFSA Appendix C; approved on December 3, 2018).
- November 7, 2018 request for approval of the "Lake Pend Oreille Experimental Walleye Angler Incentive Program" project plan (CFSA Appendix F5; approved on December 3, 2018).

2.3.2 Other 2018 Activities

- September 25, 2018 request for funds for Online Digital Bull Trout Library.
  - ***Completed per MC Approved 2018 Project Plan****; see Section 2.4*

- September 25, 2018 request for management plan approval and funding to develop Lower Bull River 5-acre parcel for public day-use.
  - ***Completed per MC Approved 2018 Project Plan****; see Section 2.4*

- CFSA appendices B and K provided funding for the acquisition of a conservation easement on 126 acres along the mainstem Bull River.
  - ***Completed per MC Approved 2018 Project Plan****; see Section 2.4*

2.4 Key 2018 References

Avista. 2018. Management Committee meeting minutes from March 13, 2018. Avista document identification number 2018-0307. Avista, Noxon, Montana.

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

Avista. 2018. Public webpage for the Clark Fork Project. https://www.myavista.com/about-us/our-environment/federal-licensing (December 2018).

Avista. 2018. Consent Mail for approval of funding for Crow Creek LiDAR and Prospect Creek PIT array costs (August 6, 2018). Avista document identification number 2018-0416. Avista, Noxon, Montana.

Avista. 2018. Consent Mail for approval of Lake Pend Oreille Experimental Walleye Angler Incentive Program and for reallocation of funds for designing improvements to the Graves Creek permanent weir trap (November 7, 2018). Avista document identification number 2018-0354. Avista, Noxon, Montana.

Sanders County Ledger. 2018. Public meeting notice for the March MC Meeting (March 8, 2018). Avista document identification number 2018-0083. Sanders County, Montana.

Sanders County Ledger. 2018. Public meeting notice for the September MC Meeting (September 25, 2018). Avista document identification number 2018-0363. Sanders County, Montana.

Section 3: Water Resources Technical Advisory Committee

3.1 Purpose

The WRTAC is one of two technical advisory committees designated by Paragraph 32 of the CFSA. The WRTAC provides technical review of water-related PM&E measures (Section 3.2), including those dealing with fishery resources, water quality, and water quantity. The WRTAC is consulted in the development of appropriate implementation plans for water resources PM&E measures and related funding recommendations.

3.2 Water Related PM&E Measures

PM&E	CFSA Appendix	Clark Fork License Article
Idaho Tributary Habitat Acquisition and Fishery Enhancement Program	A	404
Montana Tributary Habitat Acquisition and Recreational Fishery Enhancement Program	B	405
Fish Passage / Native Salmonid Restoration Plan	C	406
Bull Trout Protection and Public Education Project	D	407
Watershed Councils Program	E	408
Clark Fork River Water Quality Monitoring Program	F1	409
Monitoring of Noxon Reservoir Stratification and Mobilization of Sediment Nutrients/Metals	F2	410
Aquatic Organism Tissue Analysis	F3	411
Water Quality Protection and Monitoring Plan for Maintenance, Construction and Emergency Activities	F4	412
Dissolved Gas Supersaturation Control, Mitigation, and Monitoring	F5	413
Project Operations Package	T	429/430/431

3.3 List of Representatives

The WRTAC consists of representatives appointed by MC members. The 2018 representatives are listed below:

Avista	Eric Oldenburg
Bull River Watershed Council	Kathy Ferguson
Cabinet Resource Group	Jim Nash
Coeur d'Alene Tribe	Phillip Cernera
Confederated Salish and Kootenai Tribes	Craig Barfoot
Elk Creek Watershed Council	Mike Miller
Green Mountain Conservation District	Terry Hightower
Idaho Department of Environmental Quality	Tom Herron
Idaho Department of Fish and Game	Ken Bouwens
Kalispel Tribe	Ken Merrill
Montana Bass Federation	Bob Beberg

Montana Department of Environmental Quality	Randy Apfelbeck
Montana Fish, Wildlife and Parks	Ryan Kreiner
Montana State Historic Preservation Office	Stan Wilmoth
Noxon-Cabinet Shoreline Coalition	Rick Robinson
Panhandle Chapter Trout Unlimited	Bill Love
U.S. Fish and Wildlife Service	Kevin Aceituno
U.S. Forest Service	Doug Grupenhoff

The following parties to the CFSA did not designate WRTAC representatives in 2018:

Alliance for the Wild Rockies
Idaho Department of Parks and Recreation
Idaho Rivers United
Idaho State Historic Preservation Office
Kootenai Tribe of Idaho
Lake Pend Oreille Idaho Club
Montana Department of Natural Resources and Conservation
Rock Creek Alliance
Sanders County, Montana

3.4 Meeting and Activity Summary

The WRTAC met twice in 2018, on January 23 and September 11. Both meetings were open to the public. Notices of the meetings were placed in the local newspaper and posted on Avista's Clark Fork Project website. In addition, the Aquatic Implementation Team scored all the ranked projects and provided the recommended scores to the WRTAC, which were subsequently modified and/or approved during the January 23 meeting.

3.5 Key 2018 References

Avista. 2018. Water Resources Technical Advisory Committee Meeting Minutes from January 23, 2018. Avista document identification number 2018-0128. Avista, Noxon, Montana.

Avista. 2018. Water Resources Technical Advisory Committee Meeting Minutes from September 11, 2018. Avista document identification number 2018-0374. Avista, Noxon, Montana.

Avista. 2018. Public webpage for the Clark Fork Project. https://www.myavista.com/about-us/our-environment/federal-licensing (December 2018).

Sanders County Ledger. 2018. Public meeting notice for the January WRTAC Meeting (January 18, 2018). Avista document identification number 2018-0049. Sanders County, Montana.

Sanders County Ledger. 2018. Public meeting notice for the September WRTAC Meeting (September 6, 2018). Avista document identification number 2018-0255. Sanders County, Montana.

Section 4: Terrestrial Resources Technical Advisory Committee

4.1 Purpose

The TRTAC is one of two technical advisory committees designated by Paragraph 32 of the CFSA. The TRTAC provides technical review of terrestrial-related PM&E measures (Section 4.2), including those dealing with wildlife, botanical resources, wetlands, land use, recreation, and aesthetics. The TRTAC is consulted in the development of appropriate implementation plans for terrestrial resource PM&E measures and related funding recommendations.

4.2 Terrestrial Related PM&E Measures

PM&E	CFSA Appendix	Clark Fork License Article
Implementation of the Land Use Management Plan	G	414
Implementation of the Recreation Resource Management Plan	H	415
Implementation of the Aesthetics Management Plan	I	416
Development and Implementation of the Wildlife, Botanical and Wetland Management Plan	J	417
Wildlife Habitat Acquisition, Enhancement and Management Program	K	418
Black Cottonwood Habitat Protection and Enhancement	L	419
Wetlands Protection and Enhancement Program	M	420
Forest Habitat Protection and Enhancement	P	425
Reservoir Island Protection	Q	426
Erosion Fund and Shoreline Stabilization Guidelines Program	S	428

4.3 List of Representatives

The TRTAC consists of representatives appointed by MC members. The 2018 representatives are listed below:

Avista	Nate Hall
Bull River Watershed Council	Kathy Ferguson
Cabinet Resource Group	Jim Nash
Coeur d'Alene Tribe	Phillip Cernera
Elk Creek Watershed Council	Judy Hutchins
Green Mountain Conservation District	Terry Hightower
Idaho Department of Environmental Quality	Bob Steed
Idaho Department of Fish and Game	Kathy Cousins
Kalispel Tribe	Ray Entz
Kootenai Tribe of Idaho	Norm Merz
Montana Bass Federation	Bob Beberg
Montana Department of Environmental Quality	Craig Jones
Montana Fish, Wildlife and Parks	Dave Landstrom/Bruce Sterling
Montana State Historic Preservation Office	Stan Wilmoth

Noxon-Cabinet Shoreline Coalition	Rick Robinson
Rock Creek Alliance	Mary Crowe Costello
Sanders County, Montana	Tony Cox
U.S. Fish and Wildlife Service	Wayne Kasworm
U.S. Forest Service	Les Raynor

The following parties to the CFSA did not designate TRTAC representatives in 2018:

Alliance for the Wild Rockies
Confederated Salish and Kootenai Tribes
Idaho Department of Parks and Recreation
Idaho Rivers United
Idaho State Historic Preservation Office
Lake Pend Oreille Idaho Club
Montana Department of Natural Resources and Conservation
Panhandle Chapter Trout Unlimited

4.4 Meeting and Activity Summary

The TRTAC met twice in 2018, on January 24 and September 12. Both meetings were open to the public. Notices of the meetings were placed in the local newspaper and posted on Avista's Clark Fork Project website.

4.5 Key 2018 References

Avista. 2018. Terrestrial Resources Technical Advisory Committee Meeting Minutes from January 24, 2018. Avista document identification number 2018-0355. Noxon, Montana.

Avista. 2018. Terrestrial Resources Technical Advisory Committee Meeting Minutes from September 12, 2018. Avista document identification number 2018-0351. Noxon, Montana.

Avista. 2018. Public webpage for the Clark Fork Project. https://www.myavista.com/about-us/our-environment/federal-licensing (December 2018).

Sanders County Ledger. 2018. Public meeting notice for the January TRTAC Meeting (January 18, 2018). Avista document identification number 2018-0049. Sanders County, Montana.

Sanders County Ledger. 2018. Public meeting notice for the September TRTAC Meeting (September 6, 2018). Avista document identification number 2018-0255. Sanders County, Montana.

Section 5: Cultural Resources Management Group (License Article 427 – CFSA Appendix R)

5.1 Purpose and Resource Benefit

The CRMG was formed in support of CFSA Appendix R (Clark Fork Heritage Resource Program). Appendix R of the CFSA corresponds to Article 427 in the FERC License for Clark Fork Project No. 2058.

The CRMG consists of representatives from Coeur d'Alene, Kootenai, Confederated Salish and Kootenai, and Kalispel Tribes, Idaho and Montana State Historic Preservation offices, USFS, and Avista. Individual representatives of each tribe and agency may vary from meeting to meeting. Due to confidentiality requirements, these meetings are not open to the public. The CRMG reviews all ground-disturbing activities that may impact cultural or historic resources, and uses the Clark Fork Heritage Resource Management Plan (Plan) to guide implementation of management efforts.

The purpose of CFSA Appendix R is to provide directives for all eligible properties associated with the Clark Fork Project, including dam sites, homesteading-era properties, pre-historic properties, and sites with traditional cultural significance. The Plan helps to support many of the projects in other CFSA PM&E measures. It also helps to ensure that historic properties are protected and managed. The Plan is intended to extend beyond a mere "treatment plan" and provides the flexibility to be useful to a variety of audiences. The Plan includes public education goals, objectives, and action strategies as important focuses.

5.2 Meeting and Activity Summary

On March 21, the CRMG held a meeting to discuss the 2018 AIPs for aquatic and terrestrial resources, ground disturbance, various land use permits, and annual site monitoring results. This meeting was held in Spokane, Washington with attendees representing Confederated Salish and Kootenai Tribes, U.S. Forest Service Kootenai National Forest, Coeur d'Alene Tribe, Idaho State Historical Preservation Office, and Avista.

5.3 2018 Annual Implementation Plan Project Plans

- Clark Fork Heritage Resource Management Program
  - ***Completed per 2018 AIP*** [1, 2, 3]

5.4 Other 2018 Activities

Other projects not specifically tied to aquatic or terrestrial PM&E measures reviewed by the Avista Cultural Resource Specialist and/or the CRMG include:

- Maintenance projects for Noxon Rapids and Cabinet Gorge dams and associated facilities
- Security gate replacement for the Cabinet Gorge Dam
- Gantry crane refurbishment for the Cabinet Gorge Dam
- Spillway electrical motor control center roof for the Cabinet Gorge Dam

5.5 Key 2018 References

[1] Avista. CRMG Meeting Summary (Public Version) from May 1, 2017. Avista document identification number 2017-0443. Avista, Spokane, Washington.

[2] Avista. CRMG Meeting Summary (Public Version) from October 12, 2017. Avista document identification number 2017-0444. Avista, Noxon, Montana.

[3] Avista. *In prep*. CRMG Meeting Summary (Public Version) from March 21, 2018. Avista, Spokane, Washington.

Section 6: Water Resources PM&E Measures Implementation Efforts

6.1 Idaho Tributary Habitat Acquisition and Fishery Enhancement Program (License Article 404 – CFSA Appendix A)

6.1.1 Purpose and Resource Benefit

The purpose of this program is to offset the power peaking impacts of the Cabinet Gorge Development to native salmonid species (i.e., Bull Trout, Westslope Cutthroat Trout, and Mountain Whitefish). Resource benefits are accomplished through watershed restoration and enhancement, fishery monitoring and management support, and a public education and enforcement initiative focused on Bull Trout in Idaho.

6.1.2 2018 Annual Implementation Plan Project Plans

Tributary Habitat Acquisition and Enhancement

- Habitat Restoration Scoping Allocation
  - ***Completed per 2018 AIP*** [1, 2]
- Habitat Restoration and Acquired Property Maintenance and Monitoring Allocation
  - ***Completed per 2018 AIP*** [1]
- Priority Native Salmonid Habitat Acquisition and Conservation Allocation
  - ***Completed per 2018 AIP*** [1]
- Lightning Creek Rootwad Salvage
  - ***Completed per 2018 AIP*** [1, 3, 4]
- Habitat Prioritization Evaluation for Trestle Creek
  - ***Completed per 2018 AIP*** [1, 5]
- Habitat Prioritization Evaluation for Caribou and Hellroaring Creeks
  - ***Completed per 2018 AIP*** [1, 6]
- Pack River Temperature Monitoring
  - ***Variance*** [1, 7, 8]*; see Section 6.1.4*
- Spring and Mosquito Creeks Pathogen Survey
  - ***Variance*** [1, 9]*; see Section 6.1.4*
- Idaho Field Station Planning
  - ***Variance*** [1, 10, 11]*; see Section 6.1.4*
- Lightning Creek Large Woody Debris and Recruitment Project
  - ***Completed per 2018 AIP*** [1, 12, 13]

- Idaho Land Conservation Strategy
  - ***Variance*** [1]*; see Section 6.1.4*

- Twin Creek Restoration Revegetation
  - ***Variance*** [1]*; see Section 6.1.4*

Fishery Resource Monitoring, Enhancement, and Management

- Fish Resource Monitoring, Enhancement, and Management Plan
  - ***Variance*** [1, 14, 15, 16, 17, 18, 19]*; see Section 6.1.4*

6.1.3 Other 2018 Activities

- September 25, 2018 request for funds for Online Digital Bull Trout Library.
  - ***Completed per MC Approved 2018 Project Plan*** [20, 21]

6.1.4 Projects with Significant Variances

Project Plan	Variances
Pack River Temperature Monitoring	The decision was made by IDFG and Avista that it would be most efficient to discontinue the project for a period of time, reevaluate the program, and re-request approval in the future with more specific goals and objectives if determined appropriate. All temperature loggers were pulled between October 1 and October 12, 2018.
Spring and Mosquito Creeks Pathogen Survey	A project completion report was not completed by IDFG on November 1, 2018 due to a lack of staffing resources. The new anticipated due date is November 1, 2019.
Idaho Field Station Planning	A technical memorandum, including a site plan and preliminary cost estimates, by location, as well as an alternatives analysis was due March 30, 2018. In lieu of this document, a comparison of the Cabinet Gorge Fish Hatchery and Trestle Creek sites was produced on November 1, 2017. A technical memorandum, including building plans, refined cost estimates, and permitting requirements was due October 1, 2018. This document was not completed. The new anticipated due date is October 1, 2019. These deadlines have been adjusted to allow for additional analysis of sites and additional discussion between Avista and IDFG.
Idaho Land Conservation Strategy	The final report from the contractor for this project was received on June 13, 2018 rather than May 1, 2018 as outlined in the 2018 AIP.
Twin Creek Restoration Revegetation	Planting occurred in the fall rather than the spring in anticipation of better survivability. The IDFG determined that fencing potted plants was not appropriate in this case due to heavy snow loads and the sparse nature of the planting.

Project Plan	Variances
Fish Resource Monitoring, Enhancement, and Management Plan	The IDFG 2017 Tributary Monitoring Annual Project Update Report was scheduled to be completed by November 1, 2018. The new anticipated due date is March 1, 2019.

6.1.5 Key 2018 References

[1] Bouwens, K. A. 2018. Idaho Tributary Habitat Acquisition and Fishery Enhancement Program Appendix A 2018 Annual Work Summary. Avista document identification number 2018-0352. Idaho Department of Fish and Game, Coeur d'Alene, Idaho. Prepared for Avista, Noxon, Montana.

[2] McFall, J. 2018. Site Visit Summary, Johnson Creek on August 30, 2018. Avista document identification number 2018-0337. Technical memorandum to the Idaho Department of Fish and Game, Boise, Idaho and Avista, Noxon, Montana.

[3] United States Forest Service. 2018. Lightning Creek Rootwad Salvage NEPA Documentation. Avista document identification number 2018-0345. United States Forest Service, Sandpoint, Idaho.

[4] United States Forest Service. *In prep*. Project Completion Report for the Lightning Creek Rootwad Salvage. Report to Avista, Noxon, Montana.

[5] Alta Science & Engineering, Inc. *In prep.* Habitat Prioritization Evaluation for Trestle Creek Project Completion Report. Report to Avista, Noxon, Montana.

[6] GeoEngineers, Inc. *In prep.* Habitat Prioritization Evaluation for Caribou and Hellroaring Creeks Project Completion Report. Report to Avista, Noxon, Montana.

[7] Erickson, J. 2018. Annual Pack River temperature monitoring report 2018. Avista document identification number 2018-0315. Idaho Department of Fish and Game, Coeur d'Alene, Idaho, and the Pack River Watershed Council, Sandpoint, Idaho. Report to Avista, Noxon, Montana.

[8] Pack River temperature data; for more information on these data contact Paul Kusnierz (paul.kusnierz@avistacorp.com).

[9] Bouwens, K. A., R. Jakubowski, and L. Sprague. *In prep*. Spring and Mosquito creeks pathogen investigations, 2015-2017. Report to Avista, Noxon, Montana and the Idaho Department of Fish and Game, Boise, Idaho.

[10] Sommer, M. 2017. Idaho Field Office Comparison - Idaho Office Site Parameters Table. Avista document identification number 2017-0451. American Public Lands Exchange, Missoula, Montana. Report to Avista, Noxon, Montana.

[11] Avista. *In prep*. Building plans, refined cost estimates, and permitting requirements for Idaho fisheries program office for Noxon Rapids and Cabinet Gorge Hydroelectric Projects. Report to Avista, Noxon, Montana.

[12] Durham, M. 2018. Lightning Creek large woody debris and recruitment project construction plans. Avista document identification number 2018-0339. Natural Resources and Conservation Service, Sandpoint, Idaho.

[13] Natural Resources Conservation Service. 2018. Project Completion Report and photos for the Lightning Creek large woody debris and recruitment project. Avista document identification number 2018-0421. Report to Avista, Noxon, Montana.

[14] Jakubowski, R., and K.A. Bouwens. 2018. 2017 Pend Oreille Basin Bull Trout Redd Monitoring Project Update. Avista document identification number 2018-0391. Report to Avista, Noxon, Montana and the Idaho Department of Fish and Game, Boise, Idaho.

[15] Bouwens, K. A., R. Jakubowski, and S. Frawley. *In prep*. 2017 Pend Oreille basin tributary monitoring Project Update. Report to Avista, Noxon, Montana and the Idaho Department of Fish and Game, Boise, Idaho.

[16] Baker, W. D., Bouwens, K. A., and R. Jakubowski. 2018. 2017 Lower Clark Fork River Salmonid Abundance Monitoring Project Update. Avista document identification number 2018-0390. Report to Avista, Noxon, Montana and the Idaho Department of Fish and Game, Boise, Idaho.

[17] Jakubowski, R., and K. A. Bouwens. *In prep*. 2018 Pend Oreille Basin Bull Trout Redd Monitoring Project Update. Report to Avista, Noxon, Montana and the Idaho Department of Fish and Game, Boise, Idaho.

[18] Bouwens, K. A., R. Jakubowski, and S. Frawley. *In prep*. 2009–2018 Pend Oreille Basin Tributary Monitoring Comprehensive Project Report. Report to Avista, Noxon, Montana and the Idaho Department of Fish and Game, Boise, Idaho.

[19] Bouwens, K. A., R. Jakubowski, and S. Frawley. *In prep*. Lower Clark Fork River Salmonid Abundance Estimates Comprehensive Project Report. Report to Avista, Noxon, Montana and the Idaho Department of Fish and Game, Boise, Idaho.

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

[21] *In prep*. Internet link to the online Bull Trout digital library. Link shared with Avista, Noxon, Montana.

6.2 Montana Tributary Habitat Acquisition and Recreational Fishery Enhancement Program (License Article 405 – CFSA Appendix B)

6.2.1 Purpose and Resource Benefit

The purpose of this program is to offset the impacts of the power peaking and reservoir operational impacts of the Clark Fork Project to native salmonids and recreational fisheries in Montana. This is achieved through a multiple-component program 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. These programmatic efforts benefit tributary habitats within the project area and the native salmonid and recreational fisheries associated with them.

6.2.2 2018 Annual Implementation Plan Project Plans

Tributary Habitat Acquisition and Enhancement

- Habitat Restoration Monitoring and Native Salmonid Abundance Monitoring Plan
  - ***Variance [1, 2, 3, 4, 5]***; *see Section 6.2.4*
- Miners Gulch Stream and Riparian Restoration Project
  - ***Variance [1, 6]***; *see Section 6.2.4*
- Vermilion River Sims Reach Restoration Survey and Design
  - ***Variance [1, 7]***; *see Section 6.2.4*
- Mainstem Bull River Reforestation on Forest Service Lands and NEPA Process
  - ***Completed per 2018 AIP [1]***
- Match Funds for Outreach in Bull River Revegetation (Section 319 Project)
  - ***Variance [1, 8]***; *see Section 6.2.4*
- Stream Gage Monitoring
  - ***Variance [1, 9, 10, 11, 12, 13, 14, 15]***; *see Section 6.2.4*
- Cabinet Ranger District Automated Snow Recording Site Operation and Maintenance
  - ***Completed per 2018 AIP [1]***
- Crow Creek Bull Trout Investigation
  - ***Completed per 2018 AIP [1, 16]***
- Lolo National Forest Priority Native Salmonid Habitat Restoration Assessment and Planning
  - ***Variance [1, 17, 18]***; *see Section 6.2.4*

- Graves Creek Pilot Habitat Enhancement Project
  - ***Variance*** [1, 17]*; see Section 6.2.4*

- East Fork Blue Reach 2 Survey and Design – Phase I
  - ***Completed per 2018 AIP*** [1, 19]

- Dry Creek Sediment Reduction, National Environmental Policy Act (NEPA) Compliance
  - ***Variance*** [1]*; see Section 6.2.4*

- Lower Clark Fork Watershed Group Project Coordination
  - ***Variance*** [8, 20, 21]*; see Section 6.2.4*

- Land Conservation Strategy for Noxon Rapids and Cabinet Gorge Hydroelectric Projects
  - ***Variance*** [1]*; see Section 6.2.4*

- Habitat Restoration Monitoring, Maintenance and Contingency Allocation
  - ***Completed per 2018 AIP*** [1, 8]

- Habitat Restoration, Property Acquisition, and Conservation Easement Contingency Allocation
  - ***Completed per 2018 AIP*** [1]

- Clark Fork River Westslope Cutthroat Trout Experimental Transport Program
  - ***Variance*** [22, 23, 24]*; see Section 6.2.4*

- Crow Creek Restoration Design
  - ***Completed per 2018 AIP*** [1, 25]

Recreational Fishery Enhancement

- Cabinet Gorge and Noxon Reservoir Fisheries Monitoring Plan
  - ***Variance*** [1, 26, 27, 28]*; see Section 6.2.4*

- Managing Aquatic Invasive Plants on Noxon and Cabinet Gorge Reservoirs
  - ***Completed per 2018 AIP*** [1, 29]

- Eurasian watermilfoil Literature Review and Noxon Reservoir Existing Data Analysis
  - ***Variance*** [1, 30]*; see Section 6.2.4*

- Mountain Lake Fisheries Monitoring Project
  - ***Completed per 2018 AIP*** [1]

- Thompson Falls Field Station Facility Feasibility Study
  - ***Completed per 2018 AIP*** [1]

- Lower Bull River Day Use Boat Access Plan and Final Design
  - ***Variance*** [1, 31]*; see Section 6.2.4*

- Noxon Reservoir Boat Ramp Improvements
  - ***Variance*** [1]*; see Section 6.2.4*

6.2.3 Other 2018 Activities

- August 6, 2018 request for approval of funding for Crow Creek LiDAR and Prospect Creek PIT array costs (CFSA Appendix B; approved on August 27, 2018).
  - ***Completed per Consent Mail*** [1, 32]

- September 25, 2018 request for management plan approval and funding to develop Lower Bull River 5-acre parcel for public day-use.
  - ***Completed per MC Approved 2018 Project Plan*** [1, 31]

- September 25, 2018 request for CFSA appendices B and K provided funding for the acquisition of a conservation easement on 126 acres along the mainstem Bull River.
  - ***Completed per MC Approved 2018 Project Plan*** [1, 31]

- September 25, 2018 request for funds for Online Digital Bull Trout Library.
  - ***Completed per MC Approved 2018 Project Plan*** [31, 33]

6.2.4 Projects with Significant Variances

Project Plan	Variances
Habitat Restoration Monitoring and Native Salmonid Abundance Monitoring Plan	Although not specifically listed in the 2018 Project Plan, the Native Salmonid Abundance and Tributary Habitat Restoration Monitoring: Comprehensive Report, 2014–2016, was not finalized in 2018 and will be finalized by MFWP in 2019. Additionally, MFWP did not complete the Annual Project Update (2017 data) in 2018 and will be finalized in 2019. Originally proposed in 2017 by MFWP, Evans Gulch was not sampled in 2018, and will not be sampled in the foreseeable future.
Miners Gulch Stream and Riparian Restoration Project	A USFS project completion report was not completed by January 1, 2019. The updated completion date has been scheduled for 2019.
Vermilion River Sims Reach Restoration Survey and Design	A USFS project completion report including survey results and design recommendations was not completed by October 1, 2018. The updated completion date has been scheduled for 2019.
Match Funds for Outreach in Bull River Revegetation (Section 319 Project)	Opposition during the public scoping period prevented completion of the road decommissioning task of this project. Revegetation along the Bull River has proceeded; however, the USFS has no plans to pursue road decommissioning in the Dry Creek drainage.

Project Plan	Variances
Stream Gage Monitoring	Annual Water Year Reports and associated data for each stream except Rock Creek were completed by January 2019. The 2018 water year deliverables for Rock Creek will be completed by July 2019.
Lolo National Forest Priority Native Salmonid Habitat Restoration Assessment and Planning	The summary and design report for Graves Creek was not completed by the contractor in 2018 and will be completed by August 1, 2019. The NEPA analysis for upper Prospect Creek and Graves Creek was not completed by the USFS in 2018. The updated completion date has been scheduled for 2019.
Graves Creek Pilot Habitat Enhancement Project	The design report for Graves Creek was not completed by the contractor due to identified additional design considerations. The Lower Clark Fork Watershed Group (LCFWG) will oversee the design, permitting, contractor selection, and construction to be completed in 2019.
Dry Creek Sediment Reduction, National Environmental Policy Act (NEPA) Compliance	The Environmental Assessment was not completed in 2018, due to opposition during the public scoping period, and the USFS has no plans to pursue this project.
Lower Clark Fork Watershed Group Project Coordination	The dates for both the Lower Clark Fork Stream Restoration Summary 2011 – 2018 and Lower Clark Fork Tributaries Watershed Restoration Plan have been extended by the LCFWG to 2019 to allow additional time for stakeholder input.
Land Conservation Strategy for Noxon Rapids and Cabinet Gorge Hydroelectric Projects	A completion report including supporting maps and other documents was not completed by the contractor on May 1, 2018. This document was finalized and received in late-June 2018.
Clark Fork River Westslope Cutthroat Trout Experimental Transport Program	The goal was for Avista to radio-tag and transport 40 Westslope Cutthroat Trout; although, flows exceeding 90,000 cubic feet per second (cfs) downstream of Cabinet Gorge Dam for a one-month period in the spring complicated efforts to capture fish. As a result, Avista only radio-tagged and transported 24 Westslope Cutthroat Trout in 2018.
Cabinet Gorge and Noxon Reservoir Fisheries Monitoring Plan	The Reservoir Monitoring Project Update – 2017 was not completed by MFWP in October 2018; however, it is planned to be finalized in 2019.
Eurasian watermilfoil Literature Review and Noxon Reservoir Existing Data Analysis	The portion of the project investigating ecology of Eurasian watermilfoil (EWM) in relation to fish and their habitats is ongoing and Avista revised the due date from February 1, 2019 to December 1, 2020.

Project Plan	Variances
Lower Bull River Day Use Boat Access Plan and Final Design	Avista did not complete technical memorandum listing development goal and options by May 15, 2018. However, this information was developed and utilized to create a final design and interim management goals approved by the Management Committee. All necessary permits were obtained and construction was initiated in the fall of 2018.
Noxon Reservoir Boat Ramp Improvements	Work on this proposal by Avista and MFWP, including a technical memorandum or other work product, was not completed in 2018. This work is anticipated to continue in 2019.

6.2.5 Key 2018 References

[1] Blakney, J. 2018. Montana Tributary Habitat Acquisition and Recreational Fishery Enhancement Program Annual Work Summary 2018. Avista document identification number 2018-0392. Prepared by Montana Fish, Wildlife and Parks, Thompson Falls, Montana. Prepared for Avista, Noxon Montana.

[2] Blakney, J., and T. Tholl. *In prep.* Native Salmonid Abundance and Tributary Habitat Restoration Monitoring: Comprehensive Project Report; 2014 – 2016. Avista, Noxon Montana.

[3] Blakney, J., and T. Tholl. *In prep*. Native Salmonid Abundance and Tributary Habitat Restoration Monitoring: Annual Project Update – 2017. Avista, Noxon, Montana.

[4] Blakney, J., S. Moran, J. Storaasli, and T. Tholl. *In prep*. Native Salmonid Abundance and Tributary Habitat Restoration Monitoring: Annual Project Update – 2018. Avista, Noxon, Montana.

[5] Biomark. 2018. Prospect Creek PIT Array, PIT-Tag Interrogation Array Installation Report. Avista document identification number 2018-0253. Report to Northwestern Energy, Butte, Montana, and Avista, Noxon, Montana.

[6] Neesvig, C. *In prep.* Vermilion River Miners Gulch Restoration post runoff monitoring report. U.S. Forest Service, Kootenai National Forest, Cabinet Ranger District, Trout Creek, Montana.

[7] Neesvig, C. *In prep.* Vermilion River Sims Reach Restoration Survey and Design report. U.S. Forest Service, Kootenai National Forest, Cabinet Ranger District, Trout Creek, Montana.

[8] Olson, B. 2018. Lower Clark Fork Watershed Group Project Coordination 2018 Annual Work Summary. Avista document identification number 2018-0389. Prepared for Avista, Noxon, Montana.

[9] Temperature and discharge data at 30 minute intervals; *In prep*. Excel workbooks for Bull River, East Fork Bull River, Trout Creek and Vermilion River and Graves Creek. For more information on this data, contact Eric Oldenburg (Eric.Oldenburg@avistacorp.com).

[10] USFS. *In prep*. Water - Temperature - Data Report, WY 2018, Rock Creek at Hwy 200 – Noxon, Montana. USFS, Trout Creek, Montana.

[11] USFS. 2018. Water - Temperature - Data Report, WY 2018, Graves Creek at Blue Slide Road – Thompson Falls, Montana. Avista document identification number 2018-0443. USFS, Trout Creek, Montana.

[12] USFS. 2018. Water - Sediment - Temperature - Data Report, WY 2018, Vermilion River at red bridge – Trout Creek, Montana. Avista document identification number 2018-0442. USFS, Trout Creek, Montana.

[13] USFS. 2018. Water - Sediment - Temperature - Data Report, WY 2018, Trout Creek at 214 bridge – Trout Creek, Montana. Avista document identification number 2018-0441. USFS, Trout Creek, Montana.

[14] USFS. 2018. Water - Temperature - Bed Sediment - Data Report, WY 2018, East Fork of the Bull River – Noxon, Montana. Avista document identification number 2018-0444. USFS, Trout Creek, Montana.

[15] USFS. 2018. Water - Temperature - Data Report, WY 2018, Bull River @ historic USGS Gaging Station – Noxon, Montana. Avista document identification number 2018-0440. USFS, Trout Creek, Montana.

[16] Blakney, J. *In prep.* Crow Creek Bull Trout Investigations. Comprehensive Project Report; 2016 – 2017. Avista, Noxon, Montana.

[17] Brissette, C., and P. Parsons. *In prep.* Summary and Design Report for Graves Creek Large Woody Debris on Forest Service lands. Avista, Noxon, Montana.

[18] USFS. *In prep.* National Environmental Policy Act (NEPA) Analysis for stream restoration in the upper Prospect Creek and Graves Creek drainages. Avista, Noxon, Montana.

[19] Neesvig, C. 2018. East Fork Blue Creek Reach 2 Stream Restoration Preliminary Design. U.S. Forest Service, Cabinet Ranger District, Trout Creek, Montana. Avista document identification number 2018-0378. Prepared for Montana Fish, Wildlife and Parks, Thompson Falls, Montana, and Avista, Noxon, Montana.

[20] Bowman, S., and B. Olson. *In prep*. Lower Clark Fork Tributary Watershed Restoration Plan. Project Completion Report. Avista, Noxon, Montana.

[21] Olson, B., and S. Bowman. *In prep*. Lower Clark Fork Stream Restoration Summary 2011–2018. Project Completion Report. Avista, Noxon, Montana.

[22] Bernall, S., and J. Johnson. 2018. Clark Fork River Westslope Cutthroat Trout Experimental Transport Program. Annual Project Update – 2017. Avista document identification number 2018-0350. Avista, Noxon, Montana.

[23] Bernall, S., and J. Johnson. *In prep.* Clark Fork River Westslope Cutthroat Trout Experimental Transport Program. Annual Project Update – 2018. Avista, Noxon, Montana.

[24] Biomark. 2018. Bull River PIT Array, PIT-Tag Interrogation Array Installation Report. Avista document identification number 2018-0251. Report to Avista, Noxon, Montana.

[25] River Design Group. 2018. Preliminary design concepts Crow Creek phase 2 restoration project. Avista document identification number 2018-0409. Report to NorthWestern Energy, Butte, Montana and Avista, Noxon, Montana.

[26] Kreiner, R., J. Blakney, and T. Tholl. 2018. Noxon and Cabinet Gorge Reservoir Fisheries Monitoring, Annual Progress update – 2016. Montana Fish, Wildlife and Parks, Thompson Falls, Montana. Avista document identification number 2018-0123. Prepared for Avista, Noxon Montana.

[27] Kreiner, R., and T. Tholl. *In prep.* Noxon and Cabinet Gorge Reservoirs Fisheries Monitoring, Annual Project Update – 2017. Avista, Noxon Montana.

[28] Kreiner, R., and T. Tholl. *In prep.* Noxon and Cabinet Gorge Reservoirs Fisheries Monitoring, Annual Project Update – 2018. Avista, Noxon Montana.

[29] Lack, L., and K. Bergstrom. 2018. Managing Aquatic Invasive Plants on Noxon and Cabinet Gorge Reservoirs. 2018 Annual Project Update. Avista document identification number 2018-0388. Prepared for Montana Fish, Wildlife and Parks, Thompson Falls, Montana.

[30] Kusnierz, P. *In prep*. EWM invasion, establishment, and persistence as it relates to fish habitat and what effects may be observed under differing EWM control scenarios. Avista, Noxon, Montana.

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

[32] Avista. 2018. Consent Mail for Crow Creek LiDAR survey and Prospect PIT array funding requests (August 6, 2018). Avista document identification number 2018-0416. Avista, Noxon, Montana.

[33] *In prep*. Internet link to the online Bull Trout digital library. Link shared with Avista, Noxon, Montana.

6.3 Fish Passage/Native Salmonid Restoration Plan (License Article 406 – CFSA Appendix C)

6.3.1 Purpose and Resource Benefit

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 the resource benefit is "to increase the long-term population viability of native Salmonids in the Lake Pend Oreille (LPO)-lower Clark Fork River system" (FERC License Article 406). This goal is accomplished through the aggressive implementation of the Clark Fork River Native Salmonid Restoration Plan (NSRP).

6.3.2 2018 Annual Implementation Plan Project Plans

- Native Salmonid Restoration Plan Five-Year Plan
  - ***Completed per 2018 AIP*** [1, 2]
- Upstream Fish Passage Program
  - ***Variance*** [3, 4, 5, 6, 7, 8, 9]*; see Section 6.3.4*
- Tributary Trapping and Downstream Juvenile Bull Trout Transport Program
  - ***Variance*** [2, 10, 11, 12, 13, 14]*; see Section 6.3.4 and Section 3.5*
- Bull Trout Emigration Study
  - ***Completed per 2018 AIP*** [15]
- East Fork Bull River Bedload Sediment Sampling 2016–2020
  - ***Completed per 2018 AIP*** [16]
- Fish Abundance Monitoring
  - ***Variance*** [17, 18, 19, 20]*; see Section 6.3.4*
- Non-Native Fish Suppression Project in the East Fork Bull River
  - ***Completed per 2018 AIP*** [21, 22]
- Fish Capture Facilities Operation, Development, and Testing
  - ***Completed per 2018 AIP*** [23, 24]

6.3.3 Other 2018 Activities

- September 25, 2018 request for funds for Online Digital Bull Trout Library.
  - ***Completed per MC Approved 2018 Project Plan*** [2, 25]
- November 7, 2018 Consent Mail request for reallocation of funds for designing improvements to the Graves Creek permanent weir trap (CFSA Appendix C; approved on December 3, 2018).
  - ***Completed per Consent Mail*** [26]

6.3.4 Projects with Significant Variances

Project Plan	Variances
Upstream Fish Passage Program	The 2017 Abernathy Fish Technology Center genetics report was due in July 2018, and completed in November.
Tributary Trapping and Downstream Juvenile Bull Trout Transport Program	The 2017 Annual Project Update was due in July, but not completed by Avista until December. Note that the Annual Project Update for the Graves Creek Monitoring and Evaluation Plan was included as an appendix to the aforementioned report. In addition, a new transport protocol for post-spawn adult Bull Trout in Graves Creek was developed in September. The Aquatic Implementation Team defined this protocol and informed the WRTAC and MC during their fall meetings.
Fish Abundance Monitoring	Due to the consolidation of all Montana tributary salmonid abundance monitoring electrofishing under CFSA Appendix B, the 2018 sampling of lower Graves Creek will be reported by MFWP through CFSA Appendix B.

6.3.5 Key 2018 References

[1] Aquatic Implementation Team. 2018. Clark Fork River Native Salmonid Restoration Plan. Five-Year Plan (2019–2023). Avista document identification number 2018-0318. Prepared for The Clark Fork Management Committee.

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

[3] Adams, B., M. Piteo, and J. Von Bargen. 2018. Genetic Analysis of Native Salmonids from the Lake Pend Oreille and Clark Fork River System, Idaho and Montana. Annual Report for Calendar Year 2017. Avista document identification number 2018-0317. Prepared for Avista, Noxon, Montana.

[4] Adams, B., M. Piteo, and J. Von Bargen. *In prep*. Genetic Analysis of Native Salmonids from the Lake Pend Oreille and Clark Fork River System, Idaho and Montana. Annual Report for Calendar Year 2018. Prepared for Avista, Noxon, Montana.

[5] Bernall, S., and K. Duffy. 2018. Upstream Fish Passage Program – Bull Trout. Annual Project Update – 2017. Avista document identification number 2018-0319. Avista, Noxon, Montana.

[6] Bernall, S., and K. Duffy. *In prep*. Upstream Fish Passage Program – Bull Trout. Comprehensive Project Report – 2018. Avista, Noxon, Montana.

[7] Sprague, L. 2018. 2017 Survey for Selected Fish Pathogens in the Lower Clark Fork River and Lake Pend Oreille in Idaho. Avista document identification number 2018-0316. Prepared for Avista, Noxon, Montana.

[8] Sprague, L. *In prep*. 2018 Survey for Selected Fish Pathogens in the Lower Clark Fork River and Lake Pend Oreille in Idaho. Prepared for Avista, Noxon, Montana.

[9] Avista. Passive Integrated Transponder (PIT) Tag Database; for more information on this database contact Shana Bernall (Shana.Bernall@avistacorp.com).

[10] Oldenburg, E. W. 2018. Tributary Trapping and Downstream Juvenile Bull Trout Transport Program Annual Project Update – 2017. Avista document identification number 2018-0415. Avista, Noxon, Montana.

[11] Oldenburg, E. W. *In prep*. Tributary Trapping and Downstream Juvenile Bull Trout Transport Program Comprehensive Project Report – 2018. Avista, Noxon, Montana.

[12] Oldenburg, E., J. Blakney, K. Bouwens, and W. Fredenberg. 2016. Graves Creek Permanent Weir Trap Monitoring and Evaluation Plan. Avista document identification number 2016-0389. Avista, Noxon, Montana.

[13] Oldenburg, E. W. *In prep*. Graves Creek permanent weir trap monitoring and evaluation plan Annual Project Update – 2018. Avista, Noxon, Montana.

[14] Biomark. 2018. East Fork Bull River PIT-tag interrogation array installation report. Avista document identification number 2018-0252. Prepared for Avista, Noxon, Montana.

[15] Avista. 2018. Bull Trout Emigration Study Annual Work Summary. Avista document identification number 2018-0414. Avista, Noxon, Montana.

[16] USFS. 2018. Water - Temperature - Bed Sediment - Data Report, WY 2018, East Fork of the Bull River – Noxon, Montana. Avista document identification number 2018-0444. USFS, Trout Creek, Montana.

[17] Moran, S., and J. Storaasli. 2018. Fisheries Survey of the Blue Creek and Prospect Creek drainages, Montana – 2017. Avista document identification number 2018-0286. Avista, Noxon, Montana.

[18] Storaasli, J. 2018. Lower Clark Fork River, Montana – Avista Project Area – 2017 Annual Bull Trout and Brown Trout Redd Survey. Annual Project Update. Avista document identification number 2018-0057. Avista, Noxon, Montana.

[19] Storaasli, J. *In prep.* Lower Clark Fork River, Montana – Avista Project Area – 2018 Annual Bull Trout and Brown Trout Redd Survey. Annual Project Update. Avista, Noxon, Montana.

[20] Blakney, J., S. Moran, J. Storaasli, and T. Tholl. *In prep*. Native salmonid abundance and tributary habitat restoration monitoring: Annual Project Update – 2018. Avista, Noxon, Montana.

[21] Storaasli, J., and S. Moran. 2018. Non-Native Fish Suppression Project in the East Fork Bull River Drainage, Montana: 2015–2018. Annual Project Update – 2017. Avista document identification number 2018-0122. Avista, Noxon, Montana.

[22] Moran, S., and J. Storaasli. *In prep.* Non-Native Fish Suppression Project in the East Fork Bull River Drainage, Montana: 2007–2018. Project Completion Report. Avista, Noxon, Montana.

[23] Bernall, S. 2018. CFSA Appendix C – Fish Capture Facilities Operation, Development, and Testing 2018 Annual Work Summary. Avista document identification number 2018-0410. Avista, Noxon, Montana.

[24] Bernall, S. 2018. Cabinet Gorge Dam Forebay Temperature Monitoring – 2017. Avista document identification number 2018-0254. Avista, Noxon, Montana.

[25] *In prep*. Internet link to the online Bull Trout digital library. Link shared with Avista, Noxon, Montana.

[26] Avista. 2018. Consent Mail for approval of Lake Pend Oreille Experimental Walleye Angler Incentive Program and for reallocation of funds for designing improvements to the Graves Creek permanent weir trap (November 7, 2018). Avista document identification number 2018-0354. Avista, Noxon, Montana.

6.4 Bull Trout Protection and Public Education Project (License Article 407 – CFSA Appendix D)

6.4.1 Purpose and Resource Benefit

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 project will increase the numbers and population viability of Bull Trout by reducing intentional and incidental illegal harvest. In addition, the project increases public awareness on Bull Trout life history, habitat needs, identifying characteristics, and the potential for adverse impacts due to land use and other human activities.

6.4.2 2018 Annual Implementation Plan Project Plans

- Bull Trout Protection and Public Education Project, Idaho Department of Fish and Game
  - ***Variance*** [1]*; see Section 6.4.3*
- Bull Trout Protection and Public Education Project, Panhandle Chapter Trout Unlimited
  - ***Variance*** [2, 3]*; see Section 6.4.3*
- Bull Trout Protection and Public Education Project, Montana Fish, Wildlife and Parks
  - ***Variance*** [4, 5]*; see Section 6.4.3*
- Lake Pend Oreille Boater's Guide
  - ***Variance*** [6]*; see Section 6.4.3*
- Interpretive Signs and Kiosk Component for Trestle Creek Education Center
  - ***Variance*** [1]*; see Section 6.4.3*

6.4.3 Projects with Significant Variances

Project Plan	Variances
Bull Trout Protection and Public Education Project, Idaho Department of Fish and Game	Participation in the Trout and About Festival in 2018 was not possible as the event was canceled. The event and participation is planned for 2019. The small sign was not installed by the Bull Trout mount in the IDFG office; this sign will be installed in 2019.
Bull Trout Protection and Public Education Project, Panhandle Chapter Trout Unlimited	The Trout and About Festival was cancelled due to issues pertaining to band, venue, and staffing availability. The potential purchase of signage for watercraft inspection stations was not pursued due to inspection station space and staffing constraints. The festival is planned to be held in 2019.

Project Plan	Variances
Bull Trout Protection and Public Education Project, Montana Fish, Wildlife and Parks	The cost per radio spot was greater than that budgeted for in 2018, resulting in an overage of $1,300 beyond the $5,400 originally requested.
Lake Pend Oreille Boater's Guide	The Lakes Commission's goal of having 10,000 copies printed by the spring of 2018 was not met. However, they were printed in July.
Interpretive Signs and Kiosk Component for Trestle Creek Education Center	The Project Plan specified installation of interpretive signs in 2018. While the signs have not been installed, IDFG, Panhandle Chapter Trout Unlimited, and Idaho Master Naturalists have completed initial content and design and are being reviewed by the program implementers.

6.4.4 Key 2018 References

[1] Whalen, T. 2018. Bull Trout Protection and Public Education Project (License Article 407 - Appendix D) Idaho Department of Fish and Game 2018 Annual Work Summary. Avista document identification number. 2018-0380. Prepared for Avista, Noxon, Montana.

[2] Crawford, R. 2018. Bull Trout Protection and Public Education Project (License Article 407 - CFSA Appendix D) Panhandle Chapter Trout Unlimited 2018 Annual Work Summary. Avista document identification number 2018-0383. Prepared for Avista, Noxon, Montana.

[3] Panhandle Chapter Trout Unlimited. Take No Bull! Website for Bull Trout information and identification. Available: http://www.takenobull.org/ (December 2018)

[4] Terrazas, M., D. Tabish, and T. Hinck. 2018. Bull Trout Protection and Public Education Project (License Article 407 - Appendix D) Montana Fish, Wildlife and Parks 2018 Annual Work Summary. Avista document identification number 2018-0382. Prepared for Avista, Noxon, Montana.

[5] Montana Fish, Wildlife and Parks. Bull Trout Identification Program, website for tutorial. Available: http://fwp.mt.gov/education/angler/bullTroutIdProgram/default.html (December 2018)

[6] McCahon, M. 2018. Bull Trout Protection and Public Education Project (License Article 407 - CFSA Appendix D) Lake Pend Oreille Boater's Guide 2018 Annual Work Summary. Avista document identification number 2018-0381. Prepared for Avista, Noxon, Montana.

6.5 Watershed Councils Program (License Article 408 – CFSA Appendix E)

6.5.1 Purpose and Resource Benefit

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 native fish species (Bull Trout, Westslope Cutthroat Trout, and Mountain Whitefish). The associated protection and enhancement of tributary streams and the aquatic life inhabiting them will serve as mitigation and resource enhancements to offset impacts to aquatic life due to continued power peaking operation of the Cabinet Gorge and Noxon Rapids projects.

6.5.2 2018 Annual Implementation Plan Project Plans

- Pack River Watershed Council, Bonner Soil and Water Conservation District
  - ***Variance*** [1, 2]*; see Section 6.5.3*

- Lower Clark Fork Watershed Council Projects
  - ***Completed per 2018 AIP*** [3]

6.5.3 Projects with Significant Variances

Project Plan	Variances
Pack River Watershed Council, Bonner Soil and Water Conservation District	Volunteers were not needed to assist with planting willows at the Clark Fork Delta.

6.5.4 Key 2018 References

[1] Garcia, S. 2018. Watershed Councils Program (License Article 408 – CFSA Appendix E) Pack River Watershed Council 2018 Annual Work Summary. Avista document identification number 2018-0377. Prepared for Avista, Noxon, Montana.

[2] Erickson, J. 2018. Annual Pack River temperature monitoring report 2018. Avista document identification number 2018-0315. Idaho Department of Fish and Game, Coeur d'Alene, Idaho, and the Pack River Watershed Council, Sandpoint, Idaho. Report to Avista, Noxon, Montana.

[3] Olson, B. 2018. Watershed Councils Program (License Article 408 – CFSA Appendix E) Lower Clark Fork Watershed Council Projects 2018 Annual Work Summary. Avista document identification number 2018-0376. Prepared for Avista, Noxon, Montana.

6.6 Clark Fork River Water Quality Monitoring Program (License Article 409 – CFSA Appendix F1)

6.6.1 Purpose and Resource Benefit

The purpose of this program is to provide for the systematic, long-term water quality monitoring of nutrients and metals in the Avista project area. Excessive nutrient loading and metals represent high-priority water quality concerns in the lower Clark Fork River–LPO system. Resource benefits are accomplished through providing valuable information on trends in water quality associated with the project and their reported role as nutrient and/or metals retention "sinks".

6.6.2 2018 Annual Implementation Plan Project Plans

- Clark Fork River Water Quality Monitoring Program
  - ***Variance*** [1, 2, 3, 4, 5, 6]*; see Section 6.6.3*

6.6.3 Projects with Significant Variances

Project Plan	Variances
Clark Fork River Water Quality Monitoring Program	The Annual Project Update: 2017 monitoring report to be prepared by the Clark Fork Coalition, due July 30, was completed in October 2018. The Comprehensive Project Report: 2013–2017 5-year Trends Analysis, due August 2018, was not completed and is anticipated to be completed by December 2019.

6.6.4 Key 2018 References

[1] Kusnierz, P., and G. Paul. 2018. Appendices F1, F2, F3, and F5 2018 Annual Work Summary. Avista document identification number 2018-0393. Avista, Noxon, Montana.

[2] DeArment, J. 2018. Annual water quality and benthic algae monitoring results for the Clark Fork River basin 2017. Avista document identification number 2018-0302. Clark Fork Coalition, Missoula, Montana.

[3] Osborne, L. 2018. Estimate of 2017 nutrient loads from the Clark Fork River into Lake Pend Oreille, technical memorandum. Avista document identification number 2018-0139. HydroSolutions, Helena, Montana. Prepared for Avista, Noxon, Montana.

[4] Montana Department of Environmental Quality. 2018. 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. Avista document identification number 2018-0303. Montana Department of Environmental Quality, Helena, Montana.

[5] Clark Fork Coalition. *In prep.* Annual water quality and benthic algae monitoring results for the Clark Fork River basin 2018. Clark Fork Coalition, Missoula, Montana.

[6] HydroSolutions. *In prep.* Comprehensive Project Report: 2013–2017 5-year trends analysis. HydroSolutions, Helena, Montana.

6.7 Monitoring of Noxon Reservoir Stratification and Mobilization of Sediment Nutrients/Metals (License Article 410 – CFSA Appendix F2)

6.7.1 Purpose and Resource Benefit

The purpose of this measure is to provide for monitoring of Noxon Reservoir during periods when reservoir stratification is possible. If the reservoir stratifies, the program will intensify monitoring of nutrient and metals levels. Resource benefits are accomplished through providing a better understanding of whether nutrients and/or metals in the reservoir sediments are released into the water during periods of low flow and/or high water temperature.

6.7.2 2018 Annual Implementation Plan Project Plans

- Monitoring of Noxon Reservoir Stratification and Mobilization of Sediment Nutrients/Metals
  - ***Completed per 2018 AIP*** [1, 2, 3]

6.7.3 Key 2018 References

[1] Kusnierz, P., and G. Paul. 2018. Appendices F1, F2, F3, and F5 2018 Annual Work Summary. Avista document identification number 2018-0393. Avista, Noxon, Montana.

[2] U.S. Geological Survey. National Water Information System. 12389000 Clark Fork near Plains MT. Available: https://waterdata.usgs.gov/mt/nwis/uv?cb_00060=on&cb_00065=on&format=rdb&site_no=12389000&period=&begin_date=2018-07-01&end_date=2018-09-30 (October 2018).

[3] HydroSolutions. *In prep.* Monitoring of Noxon Reservoir Stratification and Mobilization of Sediment Nutrients/Metals. HydroSolutions, Helena, Montana. Report to Avista, Noxon, Montana.

6.8 Aquatic Organism Tissue Analysis (License Article 411 – CFSA Appendix F3)

6.8.1 Purpose and Resource Benefit

The purpose of this PM&E measure is to ensure that resources are available to monitor aquatic organisms for the presence of heavy metals and/or other substances of concern. It provides funding to collect fish and other aquatic organism tissue samples. These samples are analyzed to determine the presence of heavy metals or other substances. Resource benefits are accomplished through providing information that can be used to develop and refine fish consumption advisories.

6.8.2 2018 Annual Implementation Plan Project Plans

- No work was proposed in 2018.
  - ***Completed per 2018 AIP*** [1]

6.8.3 Key 2018 References

[1] Kusnierz, P., and G. Paul. 2018. Appendices F1, F2, F3, and F5 2018 Annual Work Summary. Avista document identification number 2018-0393. Avista, Noxon, Montana.

6.9 Water Quality Protection and Monitoring Plan for Maintenance, Construction and Emergency Activities (License Article 412 – CFSA Appendix F4)

6.9.1 Purpose and Resource Benefit

The purpose of this PM&E measure is to develop and implement a plan that minimizes the impact of project-related maintenance, construction, and emergency activities to lower Clark Fork River and Lake Pend Oreille water quality. The Water Quality Protection and Monitoring Plan for Maintenance, Construction, and Emergency Activities at the Cabinet Gorge and Noxon Rapids HEDs was developed in 2002 and updated in 2011. The resource benefit is accomplished through water quality, resource protection, and monitoring actions that will be implemented in the event of unforeseen and sudden changes to project operations due to emergencies.

6.9.2 2018 Annual Implementation Plan Project Plans

- Water Quality Protection and Monitoring Plan for Maintenance, Construction, and Emergency Activities
  - ***Completed per 2018 AIP*** [1, 2, 3, 4, 5, 6, 7]

6.9.3 Key 2018 References

[1] Oldenburg, E. W. 2018. Water Quality Protection and Monitoring Plan for Maintenance, Construction, and Emergency Activities Annual Work Summary. Avista document identification number 2018-0412. Avista, Noxon, Montana.

[2] Avista. 2018. Email to the USFS regarding 4e Condition 6 of the Clark Fork License – Noxon closure. Avista document identification number 2018-0138.

[3] Avista. 2018. Email to the USFS regarding 4e Condition 6 of the Clark Fork License – operations meeting. Avista document identification number 2018-0090.

[4] Avista. 2018. Email exchange between Eric Oldenburg and Steve Lentini regarding General Operating Limits and 2018 operations. Avista document identification number 2018-0372.

[5] Avista. 2010. Water Quality Protection and Monitoring Plan. Avista document identification number 2011-0140. Avista, Noxon, Montana.

[6] Avista. 2018. Designated contacts for notification purposes under the Water Quality Protection and Monitoring Plan (June 2018). Avista document identification number 2018-0167.

[7] Avista. 2018. Memoranda and associated information pertaining to the November 17, 2018 no flow event at Cabinet Gorge Dam. Avista document identification number 2018-0342.

6.10 Dissolved Gas Supersaturation Control, Mitigation, and Monitoring (License Article 413 – CFSA Appendix F5)

6.10.1 Purpose and Resource Benefit

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 – LPO system related to spill at the Clark Fork Projects. Resource benefits are accomplished through reducing total dissolved gas (TDG) and mitigating for the potential effects of excess TDG on fish in the Clark Fork River downstream of Cabinet Gorge Dam and in LPO.

6.10.2 2018 Annual Implementation Plan Project Plans

- Operations
  - ***Completed per 2018 AIP*** [1]
- Total Dissolved Gas Monitoring
  - ***Completed per 2018 AIP*** [1, 2]
- Analysis of Gas Bubble Disease Monitoring Data
  - ***Completed per 2018 AIP*** [1, 3]
- Lake Pend Oreille Stock Identification of Bull Trout
  - ***Variance*** [4]*; see Section 6.10.4*
- Lake Pend Oreille/Clark Fork River Walleye Population Assessment
  - ***Completed per 2018 AIP*** [5, 6]
- Lake Pend Oreille Angler Incentive Program
  - ***Variance*** [5, 6, 7, 8, 9]*; see Section 6.10.4*
- Lake Pend Oreille Trap and Gill Net Program
  - ***Variance*** [5, 6, 7, 8, 9]*; see Section 6.10.4*
- Demography of Adfluvial Bull Trout in Lake Pend Oreille
  - ***Variance*** [5, 10, 11]*; see Section 6.10.4*
- LPO/Lower Clark Fork Strontium Isotope Baseline Collection
  - ***Variance*** [5, 12, 13]*; see Section 6.10.4*
- Lake Pend Oreille Bull Trout Survival Study
  - ***Variance*** [5, 14, 15, 16]*; see Section 6.10.4*
- Lake Pend Oreille Nearshore Index Netting
  - ***Variance*** [5, 17]*; see Section 6.10.4*

- Box Canyon Reservoir Northern Pike Suppression
  - ***Variance*** [18, 19]*; see Section 6.10.4*

- Lake Pend Oreille Tributary Creel
  - ***Completed per 2018 AIP*** [5, 20]

- Gas Supersaturation Control Program Total Dissolved Gas Abatement
  - ***Variance*** [1]*; see Section 6.10.4*

6.10.3 2018 Other Activities

- September 25, 2018 request for funds for Online Digital Bull Trout Library.
  - ***Completed per MC Approved 2018 Project Plan*** [21, 22]

- November 7, 2018 Consent Mail request for approval of the "Lake Pend Oreille Experimental Walleye Angler Incentive Program" project plan (CFSA Appendix F5; approved on December 3, 2018).
  - ***Completed per Consent Mail*** [23]

- Clark Fork River Westslope Cutthroat Trout Experimental Transport Program.
  - ***Completed per 2017 AIP*** [24]

6.10.4 Projects with Significant Variances

Project Plan	Variances
Lake Pend Oreille Stock Identification of Bull Trout	The data analysis and comprehensive report were not completed by the Abernathy Fish Technology Center Conservation Genetics Laboratory in 2018. Efforts are underway to complete the development of a database that houses all the information on the LPO netting program. Once this database is complete, the appropriate data can be used for data analysis and report completion which is anticipated to occur in the spring and summer of 2019.
Lake Pend Oreille Angler Incentive Program	The IDFG comprehensive report summarizing data through 2016 was not completed on December 31, 2018. The new due date is December 1, 2019. The IDFG comprehensive report summarizing data through 2017 was not completed on March 1, 2018. The new due date is December 1, 2020.
Lake Pend Oreille Trap and Gill Net Program	The IDFG comprehensive report summarizing data through 2016 was not completed on December 31, 2018. The new due date is December 1, 2019. The IDFG comprehensive report summarizing data through 2017 was not completed on March 1, 2018. The new due date is December 1, 2020.

Project Plan	Variances
Demography of Adfluvial Bull Trout in Lake Pend Oreille	The 2018 Project Plan stipulated that the catch mark release post-release survival and abundance would be reported as part of this document and that the computer code for the integrated population model would be provided by December 1, 2018. These estimates and the code are not yet finalized by IDFG. The new due date is July 1, 2019.
LPO/Lower Clark Fork Strontium Isotope Baseline Collection	A Project Completion Report was due November 1, 2018. The report was not completed by IDFG due to a staffing shortage and the new due date is July 1, 2019.
Lake Pend Oreille Bull Trout Survival Study	A project update report summarizing 2017 data was due November 1, 2018. The report was not completed by IDFG due to a staffing shortage and the new due date is July 1, 2019.
Lake Pend Oreille Nearshore Index Netting	Due to a change in prioritization, no work was completed by IDFG for this project in 2018. The new project timeline consists of fieldwork being completed fall, 2019, and the Project Completion Report being due December 1, 2020.
Box Canyon Reservoir Northern Pike Suppression	A Comprehensive Project Report was due November 30, 2018. A draft was completed by the Kalispel Tribe in December 2018, which will be finalized in the spring of 2019.
Gas Supersaturation Control Program Total Dissolved Gas Abatement	No modifications were constructed on spillway crests #6 and #7 of Cabinet Gorge Dam due to the need for additional discussions with the Gas Supersaturation Subcommittee to determine potential benefits of this action. Decisions for any additional modifications will occur through the AIP process and pending discussions with the Gas Supersaturation Subcommittee.

6.10.5 Key 2018 References

[1] Kusnierz, P., and G. Paul. 2018. Appendices F1, F2, F3, and F5 2018 Annual Work Summary. Avista document identification number 2018-0393. Avista, Noxon, Montana.

[2] Kusnierz, P. 2018. Total dissolved gas monitoring 2018 Cabinet Gorge and Noxon Rapids Dams. Avista document identification number 2018-0249. Memorandum to the Gas Supersaturation Subcommittee; November 6, 2018.

[3] Kusnierz, P. *In prep*. Annual Project Update: Analysis of gas bubble disease monitoring data. Avista, Noxon, Montana.

[4] Adams, B. *In prep*. Comprehensive Project Report: Lake Pend Oreille Stock Identification of Bull Trout. U.S. Fish and Wildlife Service, Longview, Washington.

[5] Bouwens, K.A. 2018. Dissolved Gas Supersaturation Control, Mitigation, and Monitoring Appendix F5 2018 Annual Work Summary. Avista document identification number 2018-0356. Idaho Department of Fish and Game, Coeur d'Alene, Idaho. Prepared for Avista, Noxon, Montana.

[6] *In prep*. 2018 Lake Pend Oreille Predator Control Annual Project Update. Report to Avista, Noxon, Montana.

[7] Rust, P., N. Wahl, M.P. Corsi, W.J. Ament, and W.H. Harryman. 2018. Lake Pend Oreille Research, 2015. Lake Pend Oreille Fishery Recovery Project Annual Progress Report, January 1, 2015 – December 31, 2015. Avista document identification number 2018-0362. Idaho Department of Fish and Game, Boise, Idaho.

[8] *In prep*. Lake Pend Oreille Research, 2016. Annual Report to Bonneville Power Administration. Portland, Oregon. Idaho Department of Fish and Game, Coeur d'Alene, Idaho.

[9] *In prep*. Lake Pend Oreille Research, 2017. Annual Report to Bonneville Power Administration. Portland, Oregon. Idaho Department of Fish and Game, Coeur d'Alene, Idaho.

[10] Graham, N., M. Corsi, M. Hurley, J. McCormick, E. Roche, K.A. Bouwens, and P. Kusnierz. *In prep*. Population dynamics of adfluvial Bull Trout in Lake Pend Oreille. Prepared for Avista, Noxon, Montana and the Idaho Department of Fish and Game, Boise, Idaho.

[11] *In prep.* Code (in language for Program R or similar) for integrated population model. Prepared for Avista, Noxon, Montana and the Idaho Department of Fish and Game, Boise, Idaho.

[12] Bouwens, K.A. *In prep*. Results of water microchemistry sampling in the Lower Clark Fork watershed, 2017. Report to Avista, Noxon, Montana.

[13] Strontium isotope and microchemistry data; for more information on these data contact Paul Kusnierz (paul.kusnierz@avistacorp.com).

[14] Frawley, S., R. Jakubowski, and K.A. Bouwens. *In prep*. 2017 Lake Pend Oreille Survival Study Annual Project Update. Report to Avista, Noxon, Montana and the Idaho Department of Fish and Game, Boise, Idaho.

[15] *In prep*. 2018 Lake Pend Oreille Survival Study Annual Project Update. Report to Avista, Noxon, Montana and the Idaho Department of Fish and Game, Boise, Idaho.

[16] *In prep*. Lake Pend Oreille Survival Study Project Completion Report. Report to Avista, Noxon, Montana and the Idaho Department of Fish and Game, Boise, Idaho.

[17] *In prep*. 2019 Lake Pend Oreille nearshore spring index netting survey. Prepared for Avista, Noxon, Montana and the Idaho Department of Fish and Game, Boise, Idaho.

[18] Harvey, S., and N. Bean. 2018. Box Canyon Reservoir Northern Pike suppression project Annual Work Summary 2018. Avista document identification number 2018-0379. Kalispel Tribe Natural Resources Department. Prepared for Avista, Noxon, Montana.

[19] Harvey, S., and N. Bean. *In prep.* Box Canyon Reservoir Northern Pike suppression project Comprehensive Project Report 2012-2018. Kalispel Tribe Natural Resources Department. Prepared for Avista, Noxon, Montana.

[20] *In prep*. Lake Pend Oreille Tributary Creel Project Completion Report. Prepared for Avista, Noxon, Montana and the Idaho Department of Fish and Game, Boise, Idaho.

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

[22] *In prep*. Internet link to the online Bull Trout digital library. Link shared with Avista, Noxon, Montana.

[23] Avista. 2018. Consent Mail for approval of Lake Pend Oreille Experimental Walleye Angler Incentive Program and for reallocation of funds for designing improvements to the Graves Creek permanent weir trap (November 7, 2018). Avista document identification number 2018-0354. Avista, Noxon, Montana.

[24] Bernall, S., and J. Johnson. 2018. Clark Fork River Westslope Cutthroat Trout Experimental Transport Program. Annual Project Update – 2017. Avista document identification number 2018-0350. Avista, Noxon, Montana.

6.11 Project Operations Package (License Article 429/430/431 – CFSA Appendix T)

6.11.1 Purpose and Resource Benefit

The purpose of this PM&E measure package is to mitigate for the impacts of maintaining flexibility of project operations. This is to be accomplished by implementing measures that enhance native salmonids and provide recreational fishery opportunities. Most of these implementation measures are addressed in other sections of this report; they primarily concern PM&E measures identified in CFSA appendices A, B, D, and E.

The Project Operations Package also establishes general operating limits for the Clark Fork Project and requires Avista to communicate to Albeni Falls, a downstream U.S. Army Corps of Engineers project, forecasts of daily discharge from Cabinet Gorge Dam.

6.11.2 2018 Annual Implementation Plan Project Plans

- Project Operations and Coordination
  - ***Completed per 2018 AIP*** [1, 2, 3, 4, 5, 6, 7, 8, 9]

- Priest River Coldwater Bypass Preliminary Design
  - ***Variance*** [10]*; see Section 6.11.3*

- Cabinet Gorge Fish Hatchery Spring Collection System Upgrade
  - ***Completed per 2018 AIP*** [1]

6.11.3 Projects with Significant Variances

Project Plan	Variances
Priest River Coldwater Bypass Preliminary Design	The Alternatives Analysis was not completed by the contractor by the due date of August 2018. The IDFG has agreed to a new due date of May 30, 2019.

6.11.4 Key 2018 References

[1] Oldenburg, E., and S. Bernall. 2018. Project Operations Package and Cabinet Gorge Hatchery Spring Collection System Upgrade 2018 Annual Work Summary. Avista document identification number 2018-0413. Avista, Noxon, Montana.

[2] U.S. Geological Survey. 2018. National Water Information System. 12391950 Clark Fork River below Cabinet Gorge Dam ID. Available: https://nwis.waterdata.usgs.gov/id/nwis/uv/?cb_00060=on&cb_00065=on&format=gif_default&site_no=12391950&period=&begin_date=2018-01-01&end_date=2018-12-13 (December 2018).

[3] Avista. 2010. Water Quality Protection and Monitoring Plan. Avista document identification number 2011-0140. Avista, Noxon, Montana.

[4] 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.

[5] Avista. 2017. Letter outlining the one-time Avista funding commitment to CFSA Appendix T. Avista document identification number 2017-0432.

[6] FERC. 2017. Order amending minimum flow pursuant to Article 429. Avista document identification number 2017-0382.

[7] Avista. 2018. Email exchange demonstrating Avista communication of daily discharge forecasts for Cabinet Gorge Dam to the Albeni Falls Project. Avista document identification number 2019-0004.

[8] Avista. 2018. Memoranda and associated information pertaining to the November 17, 2018 no flow event at Cabinet Gorge Dam. Avista document identification number 2018-0342.

[9] Avista. 2018. Email exchange between Eric Oldenburg and Steve Lentini regarding General Operating Limits and 2018 operations. Avista document identification number 2018-0372.

[10] Bouwens, K., and K. Siitari. 2018. Priest River Coldwater Bypass Alternatives Assessment – 2018 Annual Work Summary. Avista document identification number 2018-0375.

Section 7: Terrestrial Resources PM&E Measures Implementation Efforts

7.1 Implementation of Land Use Management Plan (License Article 414 – CFSA Appendix G)

7.1.1 Purpose and Resource Benefit

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 the implementation of the Land Use Management Plan (LUMP). Avista project lands are managed to protect these qualities while still allowing for reasonable public access and other compatible uses.

7.1.2 2018 Annual Implementation Plan Project Plans

Administration of the Land Use Management Plan (LUMP)

- Continue to implement the Private Recreation Permit Program.
  - ***Completed per 2018 AIP*** [1]
- Continue to address property ownership/trespass issues as they arise.
  - ***Completed per 2018 AIP*** [1]
- Avista and USFS will work to determine future management of the abandoned railroad right-of-way from Noxon Rapids Dam to Triangle Pond.
  - ***Variance*** [1]*; see Section 7.1.3*
- Continue to process requests for leases/easements of Avista Project property.
  - ***Completed per 2018 AIP*** [1]
- If a request is received, review and process Rock Creek Mine request to place discharge pipe across Project lands.
  - ***Completed per 2018 AIP*** [1]
- 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.
  - ***Completed per 2018 AIP*** [1]
- Continue implementation of the Pesticide and Herbicide Use Plan in consultation with the MC.
  - ***Completed per 2018 AIP*** [1]

- Continue to participate on the Sanders County Aquatic Invasive Plants Task Force (AIPTF) to implement an Integrated Eurasian watermilfoil (EWM) Management Plan.
  - ***Completed per 2018 AIP*** [1, 2]

- The Land Use Subgroup and other interested parties will complete the 5-year review and update of the LUMP, incorporating information included in the completed Recreation Resource Management Plan update.
  - ***Variance*** [1]*; see Section 7.1.3*

- 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.
  - ***Completed per 2018 AIP*** [1]

Monitoring Associated with the Land Use Management Plan (LUMP)

- 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.
  - ***Completed per 2018 AIP*** [1]

Enforcement Associated with the Land Use Management Plan (LUMP)

- Continue to provide funding for 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.
  - ***Completed per 2018 AIP*** [1]

- 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.
  - ***Completed per 2018 AIP*** [1]

- 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.
  - ***Completed per 2018 AIP*** [1]

7.1.3 Projects with Significant Variances

Project Plans	Variances
Determine Future Management of Abandoned Railroad Right-of-Way	General discussions between USFS and Avista continued in 2018 and with no specific action taken. The abandoned railroad right-of-way continues to be utilized by the public for both motorized and non-motorized recreation.
5-Year Review and Update of the LUMP	Avista's 5-year review and update initiated in 2017, continued in 2018 and will be completed in 2019.

7.1.4 Key 2018 References

[1] Avista. 2018. Terrestrial Resources Annual Work Summary, 2018. Avista document identification number 2018-0445. Avista, Noxon, Montana.

[2] Lack, L., and K. Bergstrom. 2018. Managing Aquatic Invasive Plants on Noxon and Cabinet Gorge Reservoirs. 2018 Annual Project Update. Avista document identification number 2018-0388. Prepared for Montana Fish, Wildlife and Parks, Thompson Falls, Montana.

7.2 Implementation of the Recreation Resource Management Plan (License Article 415 – CFSA Appendix H)

7.2.1 Purpose and Resource Benefit

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 Recreation Resource Management Plan (RRMP). The Land Use, Recreation, and Aesthetics Work Group developed the plan and identified seven goals to be met through its implementation:

- Manage existing recreation resource needs.
- Manage future recreation resource needs.
- Provide adequate and safe public access.
- Preserve recreation resources.
- Coordinate recreation planning and needs.
- Provide cost-effective and desirable recreation opportunities.
- Provide compatible recreation opportunities.

7.2.2 2018 Annual Implementation Plan Project Plans

RRMP Administration and Resource Integration

- Administer the RRMP with Recreational Specialist, clerical, consultant, and technical support.
  - ***Completed per 2018 AIP*** [1]

- Integrate RRMP programs and projects with land use, cultural resources, wildlife, fisheries, aesthetics, and erosion control programs.
  - ***Completed per 2018 AIP*** [1]

RRMP Recreation Facility Development

- Implement the 2018 Recreation Resource Facility Development Plan.
  - ***Completed per 2018 AIP*** [1]

RRMP Monitoring

- Work with the recreation subgroup to implement electronic recreation site evaluations developed as part of the 2017 RRMP update.
  - ***Completed per 2018 AIP*** [1, 2]

- Implement the 2017 RRMP update.
  - ***Completed per 2018 AIP*** [3]

- Continue to utilize up to 20 automated traffic counters to measure use at various developed and dispersed recreation sites and trails.
  - ***Completed per 2018 AIP*** [4]

- Continue utilizing standardized reporting for recreation use at Thompson Falls State Park, North Shore Recreation Area, and Bull River Recreation Area.
  - ***Completed per 2018 AIP*** [4]

- Summarize 2018 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. Also include in this summary will be maps showing dispersed recreation areas along the projects and permitted dock locations (showing dock densities per 0.5 mile segments of shoreline).
  - ***Completed per 2018 AIP*** [4, 5]

Operation and Maintenance of Recreation Facilities

- Maintain Avista controlled recreation facilities and undeveloped recreation sites on Avista lands.
  - ***Completed per 2018 AIP*** [1]

- 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.
  - ***Completed per 2018 AIP*** [1]

- Assist MFWP with the maintenance of Thompson Falls State Park and Flat Iron Ridge Fishing Access Site.
  - ***Completed per 2018 AIP*** [1]

- Provide low cost leases or permits to the community or civic groups providing recreation opportunities (i.e., Thompson Falls Golf Course).
  - ***Completed per 2018 AIP*** [1]

Interpretation and Education Program

- Implementation of the Interpretation and Education Program will be integrated with the measures developed and approved by the CRMG in 2008.
  - ***Completed per 2018 AIP*** [1]

7.2.3 Key 2018 References

[1] Avista. 2018. Terrestrial Resources Annual Work Summary, 2018. Avista document identification number 2018-0445. Avista, Noxon, Montana.

[2] Pinnacle Research and Consulting. 2018. 2018 Lower Clark Fork recreation site and facility inspections. Avista document identification number 2018-0403. Prepared for Avista, Noxon, Montana.

[3] Pinnacle Research and Consulting. 2017. Clark Fork Project Recreation Resource Management Plan, Interim Update. Avista document identification number 2017-0410. Prepared for Avista, Noxon, Montana.

[4] Pinnacle Research and Consulting. 2018. 2018 Clark Fork Recreation Site Visitation. Avista document identification number 2018-0417. Prepared for Avista, Noxon, Montana.

[5] Avista. 2018. Avista Property Use Permits 2018 maps. Summary maps showing dispersed recreation areas along the projects and permitted dock locations (showing dock densities per 0.5 mile segments of shoreline). Avista document identification number 2018-0367. Avista, Noxon, Montana.

7.3 Implementation of the Aesthetics Management Plan (License Article 416 – CFSA Appendix I)

7.3.1 Purpose and Resource Benefit

The purpose of this measure is to provide for the protection and enhancement of aesthetic resources associated with Avista's Clark Fork Project and to mitigate for project related impacts to those resources through the implementation of the Aesthetics Management Plan. Aesthetic guidelines and considerations of the Aesthetics Management Plan are implemented by permit standards and land use classifications of the LUMP, site design and monitoring in the RRMP, 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 Aesthetics Management Plan.

7.3.2 2018 Annual Implementation Plan Project Plans

- Monitor recreation, land management, erosion, and facility construction programs to ensure AMP guidelines are considered.
  - ***Completed per 2018 AIP*** [1]

- Perform 5-year re-inventory of 41 key viewpoints previously visited in 1998, 2003, 2008 and 2013 for a comparison/re-inventory of visual conditions as directed by Section 4.3.2 of the AMP. The 41 key viewpoints will be revisited utilizing GPS points collected in 2013, to ensure that the same points are utilized.
  - ***Completed per 2018 AIP*** [1, 2]

7.3.3 Key 2018 References

[1]Avista. 2018. Terrestrial Resources Annual Work Summary, 2018. Avista document identification number 2018-0445. Avista, Noxon, Montana.

[2] Pinnacle Research and Consulting. 2018. Aesthetics Management Plan Five-Year Inventory Review, 2018. Avista document identification number 2018-0422. Prepared for Avista, Noxon, Montana.

7.4 Implementation of the Wildlife, Botanical, and Wetland Management Plan (License Article 417 – CFSA Appendix J)

7.4.1 Purpose and Resource Benefit

The purpose of this measure is to provide for the organization and presentation of the various wildlife, botanical, and wetland PM&E measures, site-specific plans, and other management activities within a single, comprehensive management plan document.

7.4.2 2018 Annual Implementation Plan Project Plans

- Utilize the Wildlife, Botanical and Wetland Management Plan to help guide implementation of Wildlife, Botanical, and Wetland Protection, Mitigation, and Enhancement programs.
  - ***Completed per 2018 AIP*** [1]

- Continue to update the habitat protection spreadsheet as acquisitions are completed.
  - ***Completed per 2018 AIP*** [2]

- As approved by the Management Committee on March 15, 2016 meeting observations regarding bald eagles, peregrine falcons, and common loons will be reported here annually.
  - ***Completed per 2018 AIP*** [1]

7.4.3 Key 2018 References

[1] Avista. 2018. Terrestrial Resources Annual Work Summary, 2018. Avista document identification number 2018-0445. Avista, Noxon, Montana.

[2] Avista. 2018. Habitat protected through CFSA 2000–2018. Avista document identification number 2018-0395. Avista, Noxon, Montana.

7.5 Wildlife Habitat Acquisition, Enhancement, and Management Program (License Article 418 – CFSA Appendix K)

7.5.1 Purpose and Resource Benefit

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 habitat most significantly affected, such as wetland and riparian habitat. The goal is to provide for 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.

7.5.2 2018 Annual Implementation Plan Project Plans

Operation and Maintenance of Acquired Property and Contingency Fund

- 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.
  - ***Completed per 2018 AIP*** [1]

- Trestle Creek Day Use Site Plan – Implementation of site plan for the old Bear Paw Campground. Area is heavily used during kokanee spawning. Project is being implemented in cooperation with appendices A and D of the Clark Fork Settlement Agreement. Funding for the development of parking and trail improvements, and upgrading the restrooms will be covered by timber receipts from the logging of parcels in the drainage.
  - ***Variance*** [1]*; see Section 7.5.4*

- Trestle Creek Timber Management Plan – Implement the approved timber management plan for all the Avista owned properties as conditions allow.
  - ***Variance*** [1]*; see Section 7.5.4*

- 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 road and parking development, installation of gates, signs, noxious weed control, enforcement, and development of revegetation/wetland enhancement plans for the property.
  - ***Completed per 2018 AIP*** [1]

- 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.
  - ***Completed per 2018 AIP*** [1]

- Monitoring of other Avista owned habitat properties and implementing management measures as needed.
  - ***Completed per 2018 AIP*** [1]

Habitat Acquisition and Conservation and Contingency Fund

- 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.
  - ***Completed per 2018 AIP*** [1]

- As approved by the MC at the September 26, 2017 meeting, continue to contract with KLT to acquire a conservation easement on 85.5 acres along the East Fork Bull River and adjacent to a 138.95 acres parcel currently protected by a conservation servitude.
  - ***Completed per 2018 AIP*** [1]

7.5.3 2018 Other Activities

- CFSA appendices B and K provided funding for the acquisition of a conservation easement on 126 acres along the mainstem Bull River.
  - ***Completed per MC Approved 2018 Project Plan*** [1]*; see Section 2.4*

7.5.4 Projects with Significant Variances

Project Plans	Variances
Trestle Creek Day Use Site Plan	Parking and road work was completed. Work on the walking paths and installing a gate will be completed by the contractor in 2019.
Trestle Creek Timber Management Plan	One timber unit still needs to be harvested, and will be completed by the contractor as ground conditions allow.

7.5.5 Key 2018 References

[1] Avista. 2018. Terrestrial Resources Annual Work Summary, 2018. Avista document identification number 2018-0445. Avista, Noxon, Montana.

7.6 Black Cottonwood Habitat Protection and Enhancement (License Article 419 – CFSA Appendix L)

7.6.1 Purpose and Resource Benefit

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 are protected through the implementation of land use classifications in the Land Use Management Plan (LUMP).

7.6.2 2018 Annual Implementation Plan Project Plans

- Continue to protect black cottonwood stands along the Clark Fork Project through the implementation of the Land Use Management Plan.
  - ***Completed per 2018 AIP*** [1]

- Continue to monitor and maintain the enclosure at Hereford Slough.
  - ***Completed per 2018 AIP*** [1]

- Based on success of the Hereford Slough enclosure, construct two more 80 foot x 80 foot enclosures within this stand.
  - ***Variance*** [1]*; see Section 7.6.3*

7.6.3 Projects with Significant Variances

Project Plans	Variances
Construct Two Enclosures Within the Hereford Slough Stand	Initially proposed in 2017, and identified to be completed in 2018, this project was not completed due to the unavailability of the contractor. The installation of the enclosures will occur in early spring of 2019. Contract and permits are in place for the work.

7.6.4 Key 2018 References

[1] Avista. 2018. Terrestrial Resources Annual Work Summary, 2018. Avista document identification number 2018-0445. Avista, Noxon, Montana.

7.7 Wetlands Protection and Enhancement Program (License Article 420 – CFSA Appendix M)

7.7.1 Purpose and Resource Benefit

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.

7.7.2 2018 Annual Implementation Plan Project Plans

- Investigate the potential for a wetland enhancement project on the 2016 Twin Creek acquisition.
  - ***Variance*** [1]*; see Section 7.7.3*

- Monitor enhancements previously completed at Hereford Slough, McKay Creek, Finley Flats, and Blacktail Bay/Islands.
  - ***Completed per 2018 AIP*** [1]

7.7.3 Projects with Significant Variances

Project Plans	Variances
Investigate the Potential for a Wetland Enhancement Project on the 2016 Twin Creek Acquisition	Initiated discussions with Duck Unlimited engineer to explore potential opportunities on the property. Further evaluation will occur in 2019.

7.7.4 Key 2018 References

[1] Avista. 2018. Terrestrial Resources Annual Work Summary, 2018. Avista document identification number 2018-0445. Avista, Noxon, Montana.

7.8 Forest Habitat Protection and Enhancement (License Article 425 – CFSA Appendix P)

7.8.1 Purpose and Resource Benefit

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.

7.8.2 2018 Annual Implementation Plan Project Plans

- Continue to manage these areas that have been classified as Conservation 1, and as such are afforded the maximum protection provided through the Land Use Management Plan.
  - ***Completed per 2018 AIP*** [1]

- 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.
  - ***Completed per 2018 AIP*** [1]

- Continue to monitor and enforce the road closure to Stevens Creek Point (closure was instituted in 2001).
  - ***Completed per 2018 AIP*** [1]

- Continue to prohibit motorized use of Finley Flats Point.
  - ***Completed per 2018 AIP*** [1]

- 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.
  - ***Completed per 2018 AIP*** [1]

- 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.
  - ***Completed per 2018 AIP*** [1]

- 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.
  - ***Completed per 2018 AIP*** [1]

- Continue to monitor and implement the Swamp Creek Timber Harvest and Management Plan.
  - ***Completed per 2018 AIP*** [1, 2]

- Implement the Two Rivers RV Park & Campground Logging project throughout 2018.
  - ***Completed per 2018 AIP*** [1]

7.8.3 Key 2018 References

[1] Avista. 2018. Terrestrial Resources Annual Work Summary, 2018. Avista document identification number 2018-0445. Avista, Noxon, Montana.

[2] Avista. 2017. Consent Mail request to implement Swamp Creek Timber Harvest and Management Plan (July 25, 2017). Avista document identification number 2017-0234. Avista, Noxon, Montana.

7.9 Reservoir Island Protection (License Article 426 – CFSA Appendix Q)

7.9.1 Purpose and Resource Benefit

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.

7.9.2 2018 Annual Implementation Plan Project Plans

- Continue to ensure restrictions developed for the protection of these areas utilizing the land use classifications described in the Land Use Management Plan.
  - ***Completed per 2018 AIP*** [1]

7.9.3 Key 2018 References

[1] Avista. 2018. Terrestrial Resources Annual Work Summary, 2018. Avista document identification number 2018-0445. Avista, Noxon, Montana.

7.10 Erosion Fund and Shoreline Stabilization Guidelines Program (License Article 428 – CFSA Appendix S)

7.10.1 Purpose and Resource Benefit

The purpose of this measure is to address 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.

7.10.2 2018 Annual Implementation Plan Project Plans

- Address erosion concerns identified by the CRMG.
  - ***Completed per 2018 AIP*** [1]

- Address a site where erosion threatens to go past Avista ownership on Cabinet Gorge Reservoir (Laundry site).
  - ***Completed per 2018 AIP*** [1]

- Continue to evaluate and provide technical assistance for an erosion control project being undertaken by an adjacent landowner on Noxon Reservoir (Vermilion Point Area).
  - ***Completed per 2018 AIP*** [1]

- Utilize a geotechnical contractor to assist with evaluating erosion control proposals received by Avista.
  - ***Completed per 2018 AIP*** [1]

7.10.3 Key 2018 References

[1] Avista. 2018. Terrestrial Resources Annual Work Summary, 2018. Avista document identification number 2018-0445. Avista, Noxon, Montana.

Section 8: Other Clark Fork License Articles

This section specifically addresses annual compliance with articles 432 through 443 of the Clark Fork Project License.

8.1 Threatened and Endangered Species Plan and Annual Report (License Article 432 – Amended June 13, 2003)

8.1.1 Purpose

Article 432 of the Federal Energy Regulatory Commission (FERC) License requires that Avista file a Threatened and Endangered Species Plan (T&E Plan) and Annual Report for Commission approval before April 15 of each year, after consultation with the Management Committee (MC). The T&E Plan must address compliance with the Reasonable and Prudent Measures (RPMs) and associated terms and conditions of the incidental take statement issued by the U.S. Fish and Wildlife Service (USFWS) on August 23, 1999, and attached as Appendix D to the FERC License Order. The plan should include a description of any modifications to Project facilities or operations proposed to minimize take of Bull Trout; documentation of any consultations; copies of comments and recommendations received on the completed plan; and specific descriptions of how entities' comments are accommodated by the plan or Avista's reasons for not including such comments, based on Project-specific information.

In 2002, Avista and USFWS agreed that Article 432's T&E planning requirement, as well as Avista's annual reporting and consultation requirements for several Protection, Mitigation and Enhancement (PM&E) measures, are adequately addressed through the Annual Implementation Plans (AIPs), which are approved by the MC, and by providing the annual activity summaries contained in this section of the Annual Report. Those PM&E measures are:

- Idaho and Montana Tributary Habitat Acquisition and Fishery Enhancement Programs (License Articles 404 and 405).
- Fish Passage/Native Salmonid Restoration Plan (License Article 406).
- Bull Trout Protection and Public Education Project (License Article 407).
- Dissolved Gas Supersaturation Control, Mitigation, and Monitoring (License Article 413).
- Project Operations Package (License Articles 429, 430, and 431).

Section 8.1.2 below provides the 2018 activity report for the PM&E measures listed above, which comprises Avista's T&E Plan and is intended to satisfy Avista's annual reporting requirement for these measures. To assist the Commission and USFWS in evaluating compliance with USFWS's RPMs and their associated terms and conditions, Section 8.1.2 is organized by RPM.

8.1.2 2018 Activity Summary

8.1.2.1 Terms and Conditions to Implement RPM #1 and Corresponding Activities

The incidental take statement's RPM #1 states:

Identify adult bull trout attempting to travel upstream of the dams and in a timely manner, agreed to by Interior, provide fish passage, in accordance with the Native Salmonid Restoration Plan, to facilitate their spawning migrations from Lake Pend Oreille in order to reduce or eliminate incidental take from dam blockage of migrants (Article 406).

The four terms and conditions (a through d) and corresponding 2018 activities associated with RPM #1 are listed below.

a) Through genetic testing and other means determine the likely natal origin of adult bull trout which congregate downstream of Cabinet Gorge Dam.

Genetic sampling and testing was initiated in 1999, and is an ongoing activity for all adult Bull Trout captured downstream of Cabinet Gorge Dam in the lower Clark Fork River. In 2018, 63 individual adult Bull Trout (≥350 mm in length) were captured downstream of Cabinet Gorge Dam. Forty-nine of these individual fish required rapid-response genetic analysis while the other 14 Bull Trout had been captured in previous years and had already been genetically tested. Capture histories and genetic analysis results for these fish were then used to make upstream transport decisions. Juvenile Bull Trout fin tissue samples were also collected from tributaries to the Clark Fork River and Lake Pend Oreille (LPO) to allow for an improvement in the accuracy of the genetic baseline that is used to determine transport locations.

b) In order to positively identify bull trout originating from spawning areas upstream of the dams, institute a permanent fish tagging system for all bull trout handled during monitoring and other fisheries investigation activities in the project area.

A Passive Integrated Transponder (PIT)-tag database, originally developed in 2000, continued to be utilized in 2018 to allow for the storage of information on all Bull Trout PIT tagged in the project area. In an email to Avista on April 16, 2007, the USFWS stated they will not require permanent fish tagging of adult bull trout captured in LPO during fisheries investigations and other fisheries management activities, granting a waiver on this condition [i.e., Clark Fork Settlement Agreement (CFSA) Appendix A activities]. The PIT-tag database is updated annually and data requests are processed upon request.

c) Establish adult bull trout collection facilities, downstream of Cabinet Gorge Dam for the purpose of capturing adult bull trout for transport above the dam.

The MC approved Amendment No. 1 to the CFSA (Amendment) on September 26, 2017. The approval of the Amendment provided stakeholder agreement to move forward with final design, permitting, and construction of the Cabinet Gorge Dam Fishway (CGDF). Following the approval of the Amendment, Avista submitted an application to the FERC for a license amendment to construct and operate the CGDF. As part of this process, Avista prepared a Biological Assessment which formed the basis for FERC's ESA Section 7 Consultation with the USFWS. The consultation process is expected to lead to USFWS's issuance of a new Biological Opinion to include construction and operation of the CGDF. This Biological Opinion is expected to update and supersede the 1999 Biological Opinion on relicensing as well. A number of permits were secured for the CGDF in 2018, including a Montana Department of Environmental Quality Section

401 water quality certification waiver. A number of other permit applications have been submitted and are under review by the permitting agencies.

The final design and specifications for the CGDF were complete in 2018. A contract was developed with the selected contractor in late 2018. Assuming FERC approval of the license amendment and necessary permits are obtained by the end of the first quarter of 2019, construction of the CGDF is anticipated to begin in 2019, with mobilization of the contractor on site in March, and construction of the cofferdam beginning in July, depending on river flows. Construction of the CGDF is anticipated to be complete and operational in the fall of 2021, assuming timely approval of the license amendment and necessary permits.

Other tasks noted in the 2018 Project Plan include working with stakeholders to update the basic monitoring plan, and other documents that need to be updated in preparation for operation of the CGDF. Stakeholders were notified of the need to update the basic monitoring plan at the Water Resource Technical Advisory Committee and MC meetings during the fall of 2018. Avista plans to provide a revised draft to interested stakeholders for review during the 2018–2019 winter. The updated document will then be sent to the MC for final approval. Discussions are also ongoing with Montana Fish, Wildlife, and Parks (MFWP), USFWS, and Idaho Department of Fish and Game (IDFG) to develop transport protocols for Bull Trout and Westslope Cutthroat Trout once the CGDF is operational. These protocols will also be approved by the MC.

In 2018, Avista continued to utilize the Cabinet Gorge Fish Hatchery Ladder, night electrofishing, and hook-and-line sampling to collect adult Bull Trout downstream of Cabinet Gorge Dam (Table 1). In addition, electrofishing occurred during the day and evening hours between May 14 and June 3 to increase the safety of the crew as flows in the lower Clark Fork River exceeded 90,000 cubic feet per second (cfs) during that time period.

Table 1. Number of adult Bull Trout (≥350 mm in length) captured in Idaho in 2018 (not including within year recaptures).

Method of Capture	Dates of Operation	Bull Trout Handled	Adult Bull Trout Transported
Cabinet Gorge Fish Hatchery Ladder	August 7–October 19	30	26
Electrofishing*	March 19–August 30	29	22
Hook-and-Line	April 20–October 7	4	3
	Total	63	51

*Lower Clark Fork River flows exceeded 90,000 cfs for a one-month period in the spring; as a result day and evening electrofishing occurred during that time period to increase the safety of the crew.

d) In a timely manner, agreed to by the Service, for those bull trout determined to have originated from natal areas upstream of Cabinet Gorge Dam, transport these fish captured below Cabinet Gorge Dam to an appropriate location for release in Cabinet Gorge Reservoir.

Bull Trout captured downstream of Cabinet Gorge Dam are genetically tested and transported upstream based on their genetic assignment, previous capture history or other criteria. In 2018, Bull Trout were transported upstream of Cabinet Gorge, Noxon Rapids, and Thompson Falls dams.

Fish Pathogens:

Avista is required to lethally sample 60 Bull Trout collected downstream of Cabinet Gorge Dam for pathogens prior to the issuance of a MFWP import permit. There were no pathogens detected in the group of Bull Trout (captured as bycatch from the LPO Trap and Gill Net Program) tested in 2017, which allowed for the upstream transport of Bull Trout in 2018. In 2018, adult Bull Trout were again collected and analyzed for pathogens. No pathogens were detected and these results will be used to apply for a 2019 MFWP import permit.

Fish Transport:

Protocols for capture, transport, and release of Bull Trout were approved by the MC, including the USFWS. In 2018, 63 individual adult Bull Trout (≥350 mm in length) were captured in the lower Clark Fork River downstream of the Cabinet Gorge Dam. Ten adult Bull Trout were released in Region 1, downstream of Cabinet Gorge Dam, based on genetic assignments. One adult Bull Trout was captured at the very end of the transport season and was released in Region 1 due to the inability to obtain a rapid response genetic assignment (i.e., genetics contract expired). An additional Bull Trout, genetically assigning to a tributary downstream of Cabinet Gorge Dam, was a hook-and-line sampling mortality. Thirty-six Bull Trout were transported upstream to Montana based on genetic assignments or previous capture histories (Table 2). Fifteen Bull Trout genetically assigning to Lightning Creek tributaries in Region 1 were transported upstream and released in Region 2. Based on direction from the management agencies, transport protocols were modified to move these fish to Region 2 because the mouth of Lightning Creek was dry, and historically, prior to the construction of Cabinet Gorge Dam, these fish had the opportunity to migrate upstream and enter a Montana tributary. The MC was notified of this change.

Table 2. Release regions for adult Bull Trout captured in Idaho and either released in Idaho or transported upstream to Montana in 2018 (does not include one mortality).

Release Region	Adult Bull Trout
Lower Clark Fork River (Region 1)	11
Cabinet Gorge Reservoir (Region 2)	19
Noxon Reservoir (Region 3)	27
Thompson Falls Reservoir (Region 4)	5
Total	62

8.1.2.2 Terms and Conditions to Implement RPM #2 and Corresponding Activities

The incidental take statement's RPM #2 states:

Identify juvenile bull trout attempting to travel downstream and provide safe fish passage, in accordance with the Native Salmonid Restoration Plan, to facilitate their migration to Lake Pend Oreille in order to minimize incidental take related to dam effects on juvenile fish from moving through or over the dams (Article 406).

The two terms and conditions (a through b) and corresponding 2018 activities associated with RPM #2 are listed below.

a) During stock assessment and other fisheries investigations in tributary streams to the reservoirs, in a timely manner agreed to by the Service, capture and transport all juvenile bull trout, determined to be migrating downstream, to an appropriate release site downstream of Cabinet Gorge Dam.

Term and condition a) of RPM #2 was fulfilled through Tributary Trapping and Downstream Juvenile Bull Trout Transport Studies. The resultant Tributary Trapping and Downstream Juvenile Bull Trout Transport Program is adaptively managed.

A total of 200 juvenile (i.e., <300 mm) Bull Trout were captured in Montana tributaries and transported to Idaho during 2018 (Table 3). An additional 50 juvenile Bull Trout were captured and released on site because they did not meet one or more of the transport criteria (i.e., fish length or direction of travel) or were captured within Graves Creek and released to facilitate the study of outmigration timing, capture and detection probabilities, and return rates of reservoir-type fish. Following capture, fish were measured (length and weight) and implanted with a PIT tag if they were greater than 99 mm and if a PIT tag was not already present. Thirty-seven juvenile Bull Trout were captured in minnow traps in Graves Creek, implanted with PIT tags, and released on site. In addition, one previously-tagged Bull Trout and one 80-mm Bull Trout were captured in minnow traps. All juvenile transports were released in the lower Clark Fork River at the Cabinet Gorge Fish Hatchery site.

Table 3. Tributary and method of capture for juvenile Bull Trout transported to Idaho under the Tributary Trapping and Downstream Juvenile Bull Trout Transport Program in 2018.

Tributary	Method	Bull Trout Transported
Graves Creek	Permanent Weir	146
Rock Creek	Weir Trap	9
East Fork Bull River	Weir/Screw Trap	35
Vermilion River	Stream Electrofishing	10
	Total	200

b) Implement assessment measures in the Native Salmonid Restoration Plan for determining the feasibility of downstream fishways for minimizing take of migrating juvenile bull trout.

Safe downstream passage of juvenile Bull Trout was implemented and assessed through the Tributary Trapping and Downstream Juvenile Bull Trout Transport Studies. Thus, term and condition b) of RPM #2 was fulfilled through Tributary Trapping and Downstream Juvenile Bull Trout Transport Studies. The resultant Tributary Trapping and Downstream Juvenile Bull Trout Transport Program is adaptively managed.

8.1.2.3 Terms and Conditions to Implement RPM #3 and Corresponding Activities

The incidental take statement's RPM #3 states:

Develop and implement a dissolved gas supersaturation control, mitigation, and monitoring program, in accordance with timing and other provisions agreed to in the Settlement Agreement, to reduce incidental take of bull trout by effects of gas bubble disease (Article 413).

The three terms and conditions (a through c) and corresponding 2018 activities associated with RPM #3 are listed below.

a) Interim operational procedures will be implemented to reduce or minimize total dissolved gas production at Noxon Rapids and Cabinet Gorge Dams during periods of spill.

Interim spillgate procedures were formalized in the 2004 Gas Supersaturation Control Program (GSCP) approved by FERC on January 11, 2005 and the GSCP Addendum approved by FERC on February 19, 2010. Spillway operations at Cabinet Gorge Dam were amended to include the use of spillway 2 in 2014, spillways 4 and 5 in 2016, and spillways 1 and 3 in 2018 after modifications were made to these spillways to reduce total dissolved gas (TDG). The spill protocol was followed to the extent practicable in 2018; however, maintenance activities on spillgate 7 and FERC-required testing resulted in a variance of the spill protocol. Effects to TDG levels were minimal.

The hydraulic capacity of the powerhouse at Noxon Rapids Dam was exceeded on 53 of 153 days between March 1 and July 31, 2018. Spillgates 1 through 6 were used April 27 through July 5 under normal operations. In addition to the spill that resulted due to flow conditions, all eight gates were opened to the maximum height at least once between May 8 and June 7 meeting the FERC requirement that each gate is opened fully at least once every five years and one foot every year. The peak flow recorded at Noxon Rapids Dam in 2018 was 117,468 cfs on May 19.

In 2018, spill occurred from April 24 to July 3 at Cabinet Gorge Dam. All eight gates were opened to the maximum height at least once between May 14 and May 30 meeting the FERC requirement that each gate is opened fully at least once every five years and one foot every year. This process typically took about one-half to three hours. The peak flow recorded at Cabinet Gorge Dam in 2018 was 121,310 cfs on May 19. Spillgate 7 was designated for emergency use only operation until May 23 when repairs were completed and it was again used as called for under the standard spillgate protocol.

b) In order to assess the extent, effect and solution of the gas supersaturation resulting from spill, monitoring of total dissolved gas will be conducted in the project area, biological impact studies will be conducted, and engineering feasibility studies will be conducted to assess options for reduction of gas supersaturation.

Prior to deployment in 2018, TDG monitoring equipment was sent to manufactures for annual maintenance and calibration. Avista personnel deployed TDG probes at two TDG monitoring sites: one in the Cabinet Gorge Dam forebay (March 14) and two approximately one mile downstream of Cabinet Gorge Dam (March 12 and 28). The forebay site was operated until November 13. The downstream site was maintained until May 22 when damage to one probe and high flows necessitated removal of both probes, and then operated again from June 6 until September 18. Avista staff maintained the sites and performed field calibration as needed.

Downstream of Noxon Rapids Dam, April 24 through July 3, TDG in the forebay averaged 112.6% with a minimum of 102.3% and a maximum of 121.4%. During the same time period at the station downstream of Cabinet Gorge Dam, TDG averaged 124.3% with a minimum of 101.6% and a maximum of 144.0%. Total dissolved gas downstream of Cabinet Gorge Dam exceeded 110% on 66 of 71 days from April 24 to July 3 and exceeded 120% on 49 of 57 days from April 29 to June 24. Total discharge as high as 54,000 cfs passed Cabinet Gorge Dam with downstream TDG being less than 110% and flow as high as 68,000 cfs with downstream TDG being less than 120%.

Testing of modified spillways occurred prior to, during, and after sustained spill. These tests consisted of running water through modified and unmodified spillways to evaluate 1) the efficacy of the newly modified spillways 1 and 3 as compared to other modified spillways and those that have not been modified, and 2) the amount of spill that can occur before the water quality standard of 110% and interim target of 120% are exceeded. Testing of spillways 1 and 3 was completed on July 21. Decisions for any additional modifications will occur pending discussions with the Gas Supersaturation Subcommittee.

c) In 2002, a comprehensive Gas Supersaturation Control Program will be submitted to the Service for approval.

The FERC issued an order approving the GSCP on January 11, 2005 and approved the final GSCP Addendum on February 19, 2010. This condition is complete.

8.1.2.4 Terms and Conditions to Implement RPM #4 and Corresponding Activities

The incidental take statement's RPM #4 states:

Increase the minimum dam discharge downstream of Cabinet Gorge Dam to reduce incidental take of bull trout related to the effects of power peaking operations on river level changes that increase susceptibility of downstream migrating juvenile bull trout to predation (Article 429).

The two terms and conditions (a through b) and corresponding 2018 activities associated with RPM #4 are listed below.

a) The instantaneous minimum flow below Cabinet Gorge Dam will be increased to 5,000 cfs.

Clark Fork River discharge (i.e., "flow") is estimated both through the project as well as at the U.S. Geological Survey gage station located approximately 500 meters downstream of the dam. Computers in the Cabinet Gorge control room constantly monitor discharge through turbines and spillgates. Accusonic flow meters located in the penstocks relay individual unit discharge to the control room computers. The Cabinet Gorge Dam minimum flow General Operating Limit was modified in late 2017 and is explained in section "b" below. Briefly, the current General Operating Limit is 3,000 cfs during the period from November 1 through September 14 and 5,000 cfs from September 15 through October 31.

There was one deviation from the Cabinet Gorge Dam minimum flow General Operating Limit during 2018. No flow was released from Cabinet Gorge dam for six hours on Saturday, November 17. This action was necessary to complete a FERC-mandated tailrace safety inspection (i.e., bathymetric survey). The no flow event was planned and implemented pursuant to the CFSA Appendix F4 Water Quality Protection and Monitoring Plan. The "designated contacts" were notified of the need for the event in an October 10 memorandum. Avista received feedback from IDFG that it would be desirable to develop Best Management Practices (BMP) with regard to public notification and ramp rates. Avista worked with IDFG to develop these BMPs and communicated them to the designated contacts through an October 30 memorandum. The BMPs were implemented by Avista and the event was reported on through a November 21 memorandum.

b) The benefit of the increased minimum flow to bull trout and other species will be evaluated for a ten year period and in 2009, or earlier, a recommendation for continuation or change of the minimum flow will be submitted to the Service for approval.

On February 28, 1999, a minimum flow of 5,000 cfs was initiated as the General Operating Limit for Cabinet Gorge Dam under the new project license (minimum flow under the prior license was 3,000 cfs). At that same time, a ten-year monitoring program was undertaken in coordination with Stakeholders including state and federal fisheries agencies to examine whether the increased minimum flow benefited fish abundance and should be maintained for the license term. The results of this ten-year study, which was memorialized in the 2012 Lower Clark Fork River Fishery Assessment, indicated that there was no detectable increase in fish abundance as a result of higher minimum flows. On December 6, 2013, USFWS confirmed in writing that they could support returning to a 3,000 cfs minimum flow for the majority of the year, so long as a 5,000 cfs minimum flow is maintained from September 15 through October 31 each year, and that such a change was not likely to adversely impact Bull Trout. During the September 26, 2017 meeting, the MC approved Amendment No. 1 to the CFSA, which included reducing the minimum flow to 3,000 cfs during the period from November 1 through September 14, while retaining a 5,000 cfs minimum flow from September 15 through October 31 to provide additional protection to migrating juvenile Bull Trout. The FERC issued an order on December 18, 2017 acknowledging the MC's approval of the new minimum flow and approving that change to the project license.

8.1.2.5 Terms and Conditions to Implement RPM #5 and Corresponding Activities

The incidental take statement's RPM #5 states:

Implement provisions of the Native Salmonid Restoration Plan and the Montana Tributary Habitat Acquisition and Recreational Fishery Enhancement Plan that call for evaluating, monitoring, and controlling exotic fishes in order to reduce incidental take of juvenile and sub-adult bull trout through predation and competition in the reservoirs (Articles 405, 406).

The three terms and conditions (a through c) and corresponding 2018 activities associated with RPM #5 are listed below.

a) An assessment of potential impacts on Bull Trout of particular exotic species in the reservoirs and their tributaries will be performed in a timely manner, agreed to by the Service.

An initial assessment of the potential impacts of exotic (non-native) fish on Bull Trout in the reservoirs and tributaries was completed in 2001. Subsequent to the initial assessment, the potential impacts of Northern Pike in Cabinet Gorge Reservoir and of the Noxon Reservoir Walleye population on Bull Trout were also investigated. In addition, Brook Trout in Blossom lakes and creek were identified as a potential threat to Bull Trout and Westslope Cutthroat Trout.

b) Based on the assessment (a., above), evaluation of the site specific need for exotic species control programs will be prepared in a timely manner, agreed to by the Service.

Based on the 2001 assessment and subsequent observations, a non-native fish suppression project was proposed for the East Fork Bull River (EFBR) in 2003. In addition, the Montana Environmental Protection Act process was completed for a Brook Trout removal project in the Blossom Creek drainage. Following review of the Walleye and Northern Pike studies, the management agencies elected not to actively suppress these populations.

c) Exotic species control programs will be developed, implemented, and monitored in coordination with appropriate State management agencies.

The eight-year non-native fish suppression project in the EFBR was implemented from 2007 through 2014. Based on the results of this project and increases in numbers of adult Bull Trout transported to the EFBR (and resultant higher redd counts), an extension of this project using less intensive suppression methods was implemented from 2015 through 2018. The less intensive methods of suppression for the EFBR non-native fish suppression project included the on-site release of non-native trout captured during electrofishing, the transport and release of non-native trout captured in fish traps to the lower Bull River, and sub-sampling of eggs from Brown Trout redds.

Efforts to remove non-native trout in 2018 began with the March 26 installation of fish traps in the lower EFBR under the Tributary Trapping and Downstream Juvenile Bull Trout Transport Program. Additional (exclusion) fish traps were installed near the mouth of the EFBR on the

perennially flowing south channel on October 23 and on the north channel when flow resumed on October 30 to limit access by fall-spawning non-native trout. High rainfall and associated debris disabled both exclusion traps on November 4. A total of 124 non-native salmonids (e.g., Brown, Brook, and Rainbow trout) were captured in all traps. Genetic analysis of eggs sub-sampled from putative Brown Trout redds in 2015 through 2017 confirmed an absence of Bull Trout genetic material. Additional subsamples of eggs were collected from the twenty-two Brown Trout redds identified in the lower EFBR in late November and early December 2018. Genetic results from eggs sampled in 2018 will be available at a later date.

Piscicide (rotenone) treatment of Blossom lakes and creek was implemented in 2009 with a goal of eradicating non-native Brook Trout. Monitoring in 2012 and 2017 did not detect Brook Trout in the stream or lakes.

8.1.2.6 Terms and Conditions to Implement RPM #6 and Corresponding Activities

The incidental take statement's RPM #6 states:

Identify juvenile bull trout attempting to travel downstream from tributary streams through the reservoirs to Lake Pend Oreille and provide safe fish passage, in accordance with the Native Salmonid Restoration Plan, to facilitate their migration to Lake Pend Oreille in order to minimize incidental take related to reservoir effects on migration patterns (Article 406).

The three terms and conditions (a through c) and corresponding 2018 activities associated with RPM #6 are listed below.

a) Conduct a feasibility evaluation of various interim methods for collecting and transporting downstream migrating juveniles from tributary streams to Cabinet Gorge Reservoir.

Term and condition a) of RPM #6 was addressed through the Tributary Trapping and Downstream Juvenile Bull Trout Transport Studies. The resultant program is adaptively managed, implemented, evaluated annually, and approved by the USFWS, as a member of the MC, through the AIP process.

b) Implement and monitor the effectiveness of the interim juvenile transport program (a., above) and investigate permanent long-term solutions to minimize the impact to downstream juvenile migrations.

Term and condition b) of RPM #6 was addressed through the Tributary Trapping and Downstream Juvenile Bull Trout Transport Studies. The resultant program is adaptively managed and is implemented through electrofishing, Graves Creek permanent weir, and temporary screw and weir traps (see Section 8.1.2.2). Annual activities are approved by the USFWS, as a member of the MC, through the AIP process.

c) In a timely manner, agreed to by the Service, propose for Service approval a permanent downstream fishway solution for juvenile migrations.

Continuation and further development of the Tributary Trapping and Downstream Juvenile Bull Trout Transport Program is the permanent downstream fishway solution for juvenile migrations. This program is described in sections 8.1.2.2 and 8.2.2.1.

8.1.2.7 Terms and Conditions to Implement RPM #7 and Corresponding Activities

The incidental take statement's RPM #7 states:

Monitor ongoing bull trout prey species studies and bull trout population trends in Lake Pend Oreille and, when and if appropriate, provide safe fish passage at the dams for prey species (or other mitigation measures) in order to reduce indirect take of bull trout through species interactions related to inadequate prey base (Article 406).

The three terms and conditions (a through c) and corresponding 2018 activities associated with RPM #7 are listed below.

a) In consultation with Idaho Fish and Game and using the best available information, annually prepare and submit to the Service an assessment of the Lake Pend Oreille bull trout population trend (tributary redd counts, etc.).

Bull Trout Redd Surveys in LPO Tributaries:
This is an ongoing activity under CFSA Appendix A. As in past years, the 2018 annual redd count table was provided, by email, to the USFWS from IDFG on October 30, 2018.

Lake Pend Oreille Bull Trout Survival Study:
The LPO Bull Trout Survival Study was initiated in 2011 and involves marking juvenile Bull Trout in both Trestle and Granite creeks using PIT tags. Bull Trout in-lake survival is then estimated through monitoring movement patterns of tagged fish from these LPO tributaries using PIT-tag monitoring stations placed near the outlet of these creeks.

In 2018, no additional Bull Trout or Westslope Cutthroat Trout were implanted with PIT tags. The PIT arrays were maintained to passively monitor movements of these tagged fish. Movements of PIT-tagged Bull Trout were documented both out of and into these tributaries. Movements of PIT-tagged Bull Trout tagged through the LPO Trap and Gill Net Program were also detected in both tributaries. These initial PIT tag detections provide valuable information on the timing of Bull Trout migratory movements within the basin. Monitoring of fish movements will be necessary for at least eight years to adequately account for the detection of returning adult Bull Trout used to estimate survival.

Demography of Adfluvial Bull Trout in LPO:
This was a continuing activity in 2018. The goals of the project are to: 1) quantify the effects of netting bycatch on Bull Trout survival and growth; 2) estimate abundance of Bull Trout in LPO; and 3) develop optimal sampling and statistical methodologies, as well as an integrated population

demographic model to be used for future Bull Trout monitoring. This project will allow IDFG to evaluate scenarios involving recreational fisheries harvest, varying levels of Lake Trout suppression, and techniques to modify Bull Trout bycatch as Lake Trout netting efforts evolve.

In 2018 several meetings were held among the project team, input data were compiled and edited and checked for quality, and modeling work continues. The code and model framework for the integrated population demographic model have been developed and are currently in a testing/modification phase, and survival estimates based on PIT tag data have been generated and are currently being evaluated.

b) In consultation with Idaho Fish and Game, annually prepare and submit to the Service an assessment, based on the best available information, of the Lake Pend Oreille prey base population trends (kokanee and other species) and an evaluation of the need for fish passage (or other measures) to benefit prey species to mitigate dam impacts to prey species.

Idaho Department of Fish and Game continued annual monitoring and assessment of LPO prey base population trends. Based upon 2002 interagency discussions and IDFG management actions, IDFG, in consultation with Avista and USFWS, conducted the thirteenth season of a large-scale spring and fall netting operation on LPO in 2018. Periodic updates of this netting operation are provided to both Avista and USFWS, through email, by IDFG. These program updates will constitute Avista's "assessment" and "evaluation of need" for 2018 (in lieu of submitting a formal report to USFWS). Annual kokanee total abundance estimates associated with the LPO Trap and Gill Net Program provide further insight into the LPO prey base.

c) In a timely manner, agreed to by the Service, propose, for Service approval, fish passage or other measures to offset dam impacts on prey species in Lake Pend Oreille.

A proposal for fish passage (or other measures) to benefit prey species will be addressed in future years, if warranted, following coordination with IDFG. Other ongoing activities that provide direct benefits to the LPO prey base include the LPO/Clark Fork River Walleye Population Assessment, the Walleye and Lake Trout angler incentive programs, and LPO Trap and Gill Net Program, and associated annual kokanee estimates.

Lake Pend Oreille/Clark Fork River Walleye Population Assessment:
Walleye, which were illegally introduced into Noxon Reservoir approximately 30 years ago, have become well established throughout Noxon and Cabinet Gorge reservoirs and have reached LPO. An expanding Walleye population has the potential to put several fish populations in LPO at risk through direct predation and competition. This project was first implemented in 2018 to establish fundamental information to help assess the current 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. There were two major components to this project: 1) tracking acoustic- and radio-tagged Walleye and 2) gillnetting.

From the telemetry efforts, it was determined that Walleye were concentrated at two main areas during the spring: the Clark Fork River and delta, and the Pack River area west to the eastern edge of Oden Bay. Walleye were more widely distributed during the summer period with loose

concentrations of fish located in the Clark Fork River and delta, in shallow warmer bays including Denton Slough, Oden Bay and Kootenai Bay, and downstream to near the Sandpoint Bridges into the Pend Oreille River.

Gillnetting proved to be a very effective method for capturing Walleye during the pre-spawn period. Walleye were concentrated in relatively shallow water and catch rates were relatively high while by-catch was reasonably low. A total of 1,233 Walleye were removed.

This project has been proposed to continue in 2019.

Lake Pend Oreille Angler Incentive Program:
This program has been implemented annually since 2006, in an effort to reduce predator, specifically Lake Trout, abundance in LPO. In 2018, funding of the LPO Angler Incentive Program continued. Anglers participating in the program turned in Lake Trout heads along with information cards at freezers maintained at access points around LPO. In 2018, anglers turned in 2,618 Lake Trout (Table 4), which was the lowest number submitted since the project's inception in 2006.

Lake Pend Oreille Angler Incentive Program funds were also used to sponsor angling derbies on LPO. Sponsorship dollars were used to encourage additional anglers to participate in harvest oriented angling of LPO Lake Trout and to encourage Bull Trout education. In 2018, seven LPO derbies were recipients of sponsorship funding.

Lake Pend Oreille Trap and Gill Net Program:
The goal of this program is to increase kokanee numbers by reducing predator abundance. The focus of this program is Lake Trout reduction and efforts to obtain this goal have been implemented annually in conjunction with the LPO Angler Incentive Program since 2006.

In 2018, the LPO Trap and Gill Net Program was implemented for the thirteenth year and removed 7,876 Lake Trout (Table 4). Since 2006, a combination of angling and netting has removed more than 220,000 Lake Trout. Netting catch rates for Lake Trout have declined substantially since the program was initiated.

Standardized trap net catch rates were the primary index used to track changes in adult Lake Trout abundance since 2006. Idaho Department of Fish and Game discontinued trap net trends in 2018 because they developed a more robust and less expensive assessment tool (cohort analyses) using the harvest data from netting and angler incentive programs, along with an estimation of age structure for each year assessed. They were able to use this tool to estimate the age-specific abundances of lake trout back to 2006. Lake Trout abundances declined an average of 7.5% annually from 2006-2017, however the population stopped declining and stabilized after 2015, which may be a result of a premature reduction of fishing effort that started in 2015. The estimated total abundance of age 4+ Lake Trout was 40,336 fish at the end of 2017. In 2018, IDFG further improved the accuracy of the cohort analysis by collecting age structure information using a randomized assessment gillnetting program, which is designed to avoid the size selectivity problems associated with trap nets and gillnets specifically targeting juveniles.

Table 4. Lake Trout harvested and removed from LPO, Idaho in 2018 by collection method.

Collection Method	Lake Trout Harvested
Angling	2,618
Netting	7,876
Total	10,494

An increase in the kokanee population has been associated with the reduction in the Lake Trout population. Kokanee abundance estimates remained high for the sixth consecutive year. Age-specific abundance estimates are not yet finalized for 2018; however, the total abundance estimated in 2017 for all age classes has increased and is the highest observed since 1995. At present, preliminary data suggest kokanee abundance likely remains at a high level in 2018. Kokanee abundance has steadily increased since the predator reduction program began in 2006.

The Bull Trout population has remained robust. Idaho Department of Fish and Game continues to observe high Bull Trout catch and low mortality in gillnetting operations. The responses observed to date suggest that suppression of Lake Trout can be achieved and provide benefits for both kokanee and Bull Trout. Lake Pend Oreille predator removal success will continue to be monitored by evaluating the population response of Lake Trout, Bull Trout, and kokanee.

8.1.2.8 Terms and Conditions to Implement RPM # 8 and Corresponding Activities

The incidental take statement's RPM #8 states:

Implement reporting and consultation requirements as outlined in the terms and conditions below in order to minimize take of bull trout related to implementation of the Native Salmonid Restoration Plan and other fisheries monitoring activities (Article 406).

The four terms and conditions (a through d) and corresponding 2018 activities associated with RPM #8 are listed below.

a) Annually prepare and submit to the Service a report of the next year's proposed activities under the Native Salmonid Restoration Plan and other fisheries monitoring that may result in intentional as well as incidental take of bull trout. The report will quantify the number of bull trout proposed to be intentionally "taken" by each activity and summarize the extent of intentional take from all previous year's activities.

In 2018, the USFWS reviewed and approved AIPs for the Native Salmonid Restoration Plan and other fisheries monitoring plans that had the potential to result in take of Bull Trout. The USFWS received the final MC approved project plans in April 2018. The USFWS also verified that the information reported in this section is sufficient to cover the requirement for a report quantifying the number of Bull Trout proposed to be intentionally "taken" and the extent of take from all previous year's activities (see discussion under subsection d, below).

b) Upon locating dead, injured, or sick bull trout, or upon observing destruction of redds, notification must be made within 24 hours to the Service's Division of Law Enforcement Special Agent (Richard Branzell, P.O. Box 7488, Missoula, MT., 59807-7488, 406-329-3000). Instructions for proper handling and disposition of such specimens will be issued by the Division of Law Enforcement. Care must be taken in handling sick or injured fish to ensure effective treatment and care, and in handling dead specimens to preserve biological material in the best possible state. In conjunction with the care of sick or injured bull trout, or the preservation of biological materials from a dead trout, the FERC and the applicant have the responsibility to ensure that information relative to the date, time, and location of the fish when found, and possible cause of injury or death of each fish be recorded and provided to the Service. Dead, injured, or sick bull trout should also be reported to the Service's Helena Field Office (406-449-5225).

As directed by the USFWS, notifications were sent to the USFWS representative Kevin Aceituno, located in Creston, Montana, and a yearly summary was prepared (see discussion under subsection d, below).

c) During project implementation the FERC or applicant shall promptly notify the Service of any emergency or unanticipated situations arising that may be detrimental for bull trout relative to the proposed activity.

The USFWS was notified of an incident on September 4, when an adult Bull Trout was captured hook-and-line sampling in the lower Clark Fork River downstream of Cabinet Gorge Dam in Idaho, and died from injuries to the gills.

d) Within 90 days of the end of each year, the FERC or applicant will provide a written report or letter to the Service indicating the actual number of bull trout taken, if any, as well as any relevant biological/habitat data or other pertinent information on bull trout that was collected.

This Annual Report and the summary of activities for a, above, satisfy this condition. This was the eighteenth year of program implementation. Sampling techniques are always being refined, and new techniques employed. During field activities conducted in 2018, the total number of Bull Trout handled and "the extent of intentional take" for Bull Trout is described in Table 5. The number of Bull Trout proposed to be intentionally "taken" by each activity in 2019 is also outlined in Table 5.

The CFSA Appendix F5 LPO Trap and Gill Net and LPO Angler Incentive programs "take" of Bull Trout in 2018 was 1,410 with 337 mortalities and are covered under a separate Section 6 Agreement between the USFWS and IDFG. An additional 59 Bull Trout were captured during gill netting efforts targeting Walleye in LPO under the CFSA Appendix F5 LPO/Clark Fork River Walleye Population Assessment program with 27 incidental Bull Trout mortalities. These mortalities are also covered under the Section 6 agreement between the USFWS and IDFG. Bull Trout "take" numbers reported in Table 5 for the CFSA Appendix A and CFSA Appendix B programs are also reported by MFWP and IDFG personnel as part of their reporting requirements.

Table 5. Bull Trout take and mortalities reported in 2018 along with proposed intentional take for 2019.

Program	Bull Trout Take	Bull Trout Mortalities	Proposed 2019 Bull Trout Take
CFSA Appendix A	112	2	100
CFSA Appendix B	195	0	350
CFSA Appendix C	478	1	1,020
Total	785	3	1,470

8.1.2.9 Terms and Conditions to Implement RPM #9 and Corresponding Activities

The incidental take statement's RPM #9 states:

Investigate and develop a plan, and implement the plan if determined appropriate by the Service, to preserve the genetic variability of Lake Pend Oreille bull trout as represented by migratory stocks present in the Clark Fork River upstream of Cabinet Gorge Dam (Article 406).

The three terms and conditions (a through c) and corresponding 2018 activities associated with RPM #9 are listed below.

a) During stock assessment and other fisheries investigations in tributary streams to the reservoirs, determine the need for measures to preserve the genetic integrity of migratory bull trout stocks.

This term and condition is being met through the routine collection and processing of Bull Trout genetic samples (see Section 8.1.2.1). The need to implement measures to preserve the genetic integrity of migratory Bull Trout stocks beyond upstream transport of Bull Trout is premature at this time, and will be addressed in future years, if warranted.

Fin tissue samples are collected annually from Bull Trout in tributaries to the Clark Fork River and LPO. In 2018, fin tissue samples were collected from over 200 juvenile Bull Trout captured in the project area and will be analyzed and used to update the genetic baseline. The sampling and analysis of fin tissue collected from juvenile Bull Trout allows for an improvement in the accuracy of the genetic baseline that is used to make Bull Trout transport decisions. This analysis also provides an opportunity to assess changes in genetic diversity between and within populations over time.

b) In a timely manner, agreed to by the Service, prepare a plan for genetic conservation of migratory bull trout stocks.

In June 2000, a Bull Trout Genetics Advisory Panel was convened to provide advice on the most appropriate management actions for Bull Trout. After reviewing available information, and following a series of meetings and subsequent discussions, the Panel produced the Genetic Management Plan for Bull Trout in the Lake Pend Oreille–Lower Clark Fork River System.

The panel decided that one of the greatest genetic and conservation management gains could be gained by re-establishing connectivity among all parts of the system. This Plan can be viewed as a guiding document.

c) *If deemed appropriate by the Service, prepare and implement a plan for creating a genetic reserve, or other measures, to be used in conserving and restoring migratory bull trout stocks to the Clark Fork tributary systems.*

The preparation and implementation of a plan for creating a genetic reserve, or other measures, to be used in conserving and restoring migratory Bull Trout stocks to the Clark Fork tributary systems is premature at this time, and will be addressed in future years, if warranted.

8.1.3 Key 2018 References

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8.2 Fishway Plan and Annual Report (License Article 433 – Amended June 13, 2003)

8.2.1 Purpose

Article 433 of the FERC License (License) requires that, on or before April 15 of each year and after consultation with the MC, the Licensee file for Commission approval a Fishway Plan and Annual Report. The Plan must address the Licensee's compliance with the USFWS's Section 18 fishway prescriptions contained in CFSA Appendix C to the License, including a detailed description of any fish passage devices or measures and any proposed modifications to project facilities or operations; documentation of any consultations; copies of comments and recommendations received on the completed plan; and specific descriptions of how entities' comments are accommodated by the Plan or Avista's reasons for not including such comments, based on Project-specific information.

In 2002, Avista and USFWS agreed that Article 433's Fishway Plan requirement, as well as Avista's annual reporting and consultation requirements for CFSA appendices A, B, and C (License Articles 404, 405 and 406) are adequately addressed through the AIPs, which are approved by the MC, and by providing the annual activity summaries contained in this section of the Annual Report. Section 8.2.2 below provides the 2018 activity report for these PM&E measures, which comprises Avista's Fishway Plan and is intended to satisfy Avista's annual reporting requirement for these measures.

8.2.2 2018 Activity Summary

8.2.2.1 Prescription 1 Conditions and Corresponding Activities

Prescription 1 Description

USFWS's Section 18 Prescription 1 states the following:

The licensee shall assess, plan, design, construct, operate, and maintain upstream fishway devices or measures and downstream fish protection devices or measures in accordance with the Native Salmonid Restoration Plan (Plan) (License Application Volume IV.A). Construction, operation, and maintenance of fishways will proceed in a stepwise manner, beginning at the effective date of the Settlement Agreement (License Application Volume III), utilizing the principles of adaptive management (i.e., the ability to change program direction based on new information provided by monitoring and evaluation of experimental measures). Following initial feasibility assessments, and within one year of the effective date of the Settlement Agreement, an experimental fish trap and truck program for the purpose of moving bull trout from below Cabinet Gorge Dam to the Cabinet Gorge Reservoir pool shall be constructed, operated, and maintained. Assessment and implementation of other fish stock enhancement measures shall begin at the effective date of the Settlement Agreement, as described in the Plan. Evaluation of the effectiveness of the fish trap and truck program below Cabinet Gorge, and evaluation of other stock enhancement measures will determine the timing of construction, operation, and maintenance of other upstream fishway facilities and measures and downstream fish entrainment protection devices at Cabinet Gorge and Noxon Rapids Dams.

2018 Activities Associated with Prescription 1

Adult Bull Trout Capture and Transport:

Bull Trout capture efforts downstream of Cabinet Gorge Dam and subsequent upstream transport have occurred annually since 2001. The goal of this program is to reconnect adult Bull Trout with their most likely tributary of origin based on genetic testing or capture history, in order to increase the number of spawning Bull Trout in Montana tributaries. Efforts to collect Bull Trout occurred from late March through mid-October 2018, with a total of 63 individual adult Bull Trout (defined as greater than 350 mm in length for upstream transport purposes) captured in the lower Clark Fork River downstream of Cabinet Gorge Dam utilizing three collection methods: electrofishing, hook-and-line sampling, and the Cabinet Gorge Fish Hatchery Ladder trap. Captured fish were held at the Cabinet Gorge Fish Handling and Holding Facility while awaiting a genetic population assignment from the genetics laboratory. Thirty-six Bull Trout were transported upstream to Montana based on genetic assignments or previous capture histories and were released in: Cabinet Gorge Reservoir or its tributaries (4), Noxon Reservoir or its tributaries (27), or upstream of Thompson Falls Dam (5). In addition, 15 Bull Trout genetically assigning to Lightning Creek tributaries in Region 1 were transported upstream and released in Region 2. Based on direction from the management agencies, transport protocols were modified to move these fish to Region 2 because the mouth of Lightning Creek was dry, and historically, prior to the construction of Cabinet Gorge Dam, these fish had the opportunity to migrate upstream and enter a Montana tributary. The MC was notified of this change.

Westslope Cutthroat Trout Experimental Transport:

This was the fourth year Westslope Cutthroat Trout were captured downstream of Cabinet Gorge Dam and transported upstream to Cabinet Gorge Reservoir. Electrofishing and hook-and-line sampling were utilized to capture 24 fish for transport. Radio transmitters were implanted in these fish prior to upstream transport. The Project Plan for 2018 stated 40 Westslope Cutthroat Trout would be captured and transported upstream of Cabinet Gorge Dam, and although efforts were consistent with previous years, this target was not met. The management goal for passage is to reestablish connectivity and increase the number of large migratory Westslope Cutthroat Trout available to spawn in Montana tributaries. Westslope Cutthroat Trout movements were monitored in 2018 following transport. Fish were transported from late-March through the end of June and were released at the Big Eddy Recreation Area boat ramp in Cabinet Gorge Reservoir.

Cabinet Gorge Dam Permanent Fishway:

The MC approved Amendment No. 1 to the CFSA (Amendment) on September 26, 2017. The approval of the Amendment provided stakeholder agreement to move forward with final design, permitting, and construction of the CGDF. Following the approval of the Amendment, Avista submitted an application to the FERC for a license amendment to construct and operate the CGDF. As part of this process, Avista prepared a Biological Assessment which formed the basis for FERC's ESA Section 7 Consultation with the USFWS. The consultation process is expected to lead to USFWS's issuance of a new Biological Opinion to include construction and operation of the CGDF. This Biological Opinion is expected to update and supersede the 1999 Biological Opinion. A number of permits were secured for the CGDF in 2018, including a Montana Department of Environmental Quality Section 401 water quality certification waiver. A number of other permit applications have been submitted and are under review by the permitting agencies. The final design and specifications for the CGDF were complete in 2018. A contract was developed with the selected contractor in late 2018. Assuming FERC approval of the license

amendment and necessary permits are obtained by the end of the first quarter of 2019, construction of the CGDF is anticipated to begin in 2019, with mobilization of the contractor on site in March, and construction of the cofferdam beginning in July, depending on river flows. Construction of the CGDF is anticipated to be complete and operational in the fall of 2021, assuming timely approval of the license amendment and necessary permits.

Other tasks noted in the 2018 Project Plan include working with stakeholders to update the basic monitoring plan, and other documents that need to be updated in preparation for operation of the CGDF. Stakeholders were notified of the need to update the basic monitoring plan at the Water Resource Technical Advisory Committee and MC meetings during the fall of 2018. Avista plans to provide a revised draft to interested stakeholders for review during the 2018 – 2019 winter. The updated document will then be sent to the MC for final approval. Discussions are also ongoing with MFWP, USFWS, and IDFG to develop transport protocols for Bull Trout and Westslope Cutthroat Trout once the CGDF is operational. These protocols will also be approved by the MC.

Noxon Rapids Dam Permanent Fishway:
No new work was proposed or conducted for the Noxon Rapids Dam Permanent Fishway and fish handling facility project in 2018. Based on agreements made in Amendment No. 1 to the CFSA, final design and construction of the Noxon Rapids Dam Permanent Fishway shall be deferred for an interim period ending no sooner than December 31, 2021 (see previous annual reports for additional information).

Downstream Fish Passage:
Safe downstream passage of Bull Trout is addressed through the Tributary Trapping and Downstream Juvenile Bull Trout Transport Program. Under this program, juvenile Bull Trout are captured in traps during their outmigrations, or through targeted stream electrofishing efforts. Following capture, juvenile Bull Trout are measured, implanted with a PIT tag, and transported to the Clark Fork River downstream of Cabinet Gorge Dam where they are released. In addition, adult Bull Trout that were previously transported upstream and are recaptured in tributaries following the spawn are transported back to the Clark Fork River downstream of Cabinet Gorge Dam.

Fish trapping and transport for the 2018 season began on March 26 with the installation of the Graves Creek permanent weir trap and two screw traps in the EFBR (upper south channel and middle south channel). The Rock Creek screw trap was installed on April 17 (lower site). All traps were disabled on June 29. Trapping resumed on September 5 with the installation of the Graves Creek permanent weir, Rock Creek weir (lower site), and two EFBR weirs (upper north channel [drop-height element incorporated] and upper south channel). The Graves Creek permanent weir trap and EFBR upper south channel trap fished until December 6. The EFBR upper north channel weir was removed on November 21 and the Rock Creek weir trap was removed on November 22. In addition, a screw trap was fished at the middle south channel site of the EFBR from November 3–8 and the south channel exclusion weirs fished in the EFBR from October 24 through November 13. Vermilion River electrofishing was conducted during five days in mid-October. Baited minnow traps were fished in Graves Creek from April 27 through November 21. During these times, four to five traps were fished a total of 900 trap days.

A total of 200 juvenile (i.e., <300 mm) Bull Trout were captured in Montana tributaries and transported to Idaho during 2018 (Table 3). An additional 81 juvenile Bull Trout were captured

and released on site because they did not meet one or more of the transport criteria (i.e., fish length or direction of travel) or captured within Graves Creek and released to facilitate the study of outmigration timing, capture and detection probabilities, and return rates of reservoir-type fish. Following capture, fish were measured (length and weight) and implanted with a PIT tag if they were greater than 99 mm and if a PIT tag was not already present. Thirty-seven juvenile Bull Trout were captured in minnow traps in Graves Creek, implanted with PIT tags, and released on site. In addition, one previously-tagged Bull Trout and one 80-mm Bull Trout were captured in minnow traps. All juvenile transports were released in the lower Clark Fork River at the Cabinet Gorge Fish Hatchery site.

Table 1. Tributary and method of capture for juvenile Bull Trout transported to Idaho under the Tributary Trapping and Downstream Juvenile Bull Trout Transport Program in 2018.

Tributary	Method	Bull Trout Transported
Graves Creek	Permanent Weir	146
Rock Creek	Weir Trap	9
EFBR	Weir/Screw Trap	35
Vermilion River	Stream Electrofishing	10
	Total	200

A comprehensive analysis of the Tributary Trapping and Downstream Juvenile Bull Trout Transport Program was conducted during 2016. Results from this analysis resulted in a few modifications to the program. These actions are intended to increase return rates of transported fish and potentially increase the number of fish that remain within the tributary-reservoir system and survive to maturity. First, a new length criteria for juvenile transports of 120–250 mm was established. In addition, trapping and transport operations no longer take place during July and August. Lastly, all fish are now released in the lower Clark Fork River near the Cabinet Gorge Fish Hatchery.

Following a feasibility investigation, Avista constructed a concrete-bedded weir trap (permanent weir trap) on lower Graves Creek in late 2012 and initiated operation in 2013. Operation of the permanent weir trap was anticipated to facilitate higher capture efficiencies for outmigrating juvenile Bull Trout, particularly during periods of higher streamflow that proved difficult to trap with existing methodologies. The Graves Creek Permanent Weir Trap Monitoring and Evaluation Plan was completed in 2013 and was designed to evaluate the operation and fish capture effectiveness of the permanent weir trap. The plan was updated during 2017 and continues to be implemented.

From the inception of permanent weir operation through 2015, a number of issues were identified and addressed by Avista, MFWP, and USFWS. For 2016, the primary goal was to get the tools in place to thoroughly evaluate and iteratively improve capture and passage rates for adult fish. Thus, a state-of-the-art PIT-monitoring station was purchased and installed at the site. Unfortunately, there were issues with the performance of the array throughout 2016. Thus, limited movement information were collected during 2016 and early 2017. The PIT-monitoring station was optimized in early 2017 and continues to effectively detect and record detections of PIT-tagged fish.

In 2016, a prototype drop-height element was fabricated and incorporated into the trap in an attempt to retain a higher proportion of juvenile Bull Trout. The drop-height was fished again during 2017 and 2018 and capture rates appear to be very high. A more robust version of the drop-height element will likely be incorporated into the permanent weir during 2019. A similar drop height was added to the EFBR south channel weir during 2017 and 2018. The new design captured numerous fish during 2017; however, it appears there was very little Bull Trout movement in the lower EFBR during 2017, and only three Bull Trout within the transport size range were captured. In 2018, a relatively high number of juvenile Bull Trout (i.e., 34) were captured in the modified weir. The drop-height element will be further evaluated and refined during 2019.

8.2.2.2 Prescription 2 Conditions and Corresponding Activities

Prescription 2 Description

USFWS's Section 18 Prescription 2 states the following:

At the effective date of the Settlement Agreement (License Application Volume III), the licensee shall develop and implement a fish passage program in accordance with the terms of the Clark Fork Settlement Agreement and the Native Salmonid Restoration Plan (License Application Volume IV.A). Implementation of the Plan shall include initial project scoping activities resulting in goals and objectives; background information, compilation and updating in areas of fish genetics, fish pathogens, exotic fish control, existing fish populations, stream and mainstem habitat conditions; assessment of suitable fish stock availability, fish transfer options, and fish hatchery options; and implementation of experimental and comprehensive fish passage measures, as appropriate, and a monitoring program to assess the effectiveness of fishways and other measures.

2018 Activities Associated with Prescription 2

Safe, timely, and efficient fish passage continued to be implemented and adaptively managed in 2018. Following approval of the Amendment by the MC, Avista and stakeholders reinitiated development of the next Native Salmonid Restoration Plan Five-Year Plan. The updated Native Salmonid Restoration Plan Five-Year Plan for the 2019–2023 time period was approved at the September 25, 2018 MC meeting. In 2018, the USFWS reviewed and approved AIPs, including those related to Bull Trout passage. The USFWS received the project plans that were approved by the MC, which the USFWS is a member of, in April 2018. The pertinent project plans include:

- Upstream Fish Passage Program
- Clark Fork River Westslope Cutthroat Trout Experimental Transport Program
- Tributary Trapping and Downstream Juvenile Bull Trout Transport Program
- Non-Native Fish Suppression Project in the EFBR
- Fish Abundance Monitoring
- Fish Capture Facilities Operation, Development, and Testing

Assessing and/or improving stream and mainstem habitat conditions and the implementation of a monitoring program to assess the effectiveness of fishways and other measures are activities addressed through the coordinated implementation of CFSA appendices A, B, C, and F5.

8.2.3 Key 2018 References

Adams, B., M. Piteo, and J. Von Bargen. 2018. Genetic Analysis of Native Salmonids from the Lake Pend Oreille and Clark Fork River System, Idaho and Montana. Annual Report for Calendar Year 2017. Avista document identification number 2018-0317. Prepared for Avista, Noxon, Montana.

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8.3 Other Clark Fork License Articles

8.3.1 Purpose

This section of the Annual Report highlights any annual activities (Section 8.3.2) that occurred in 2018 associated with other License Articles for the Clark Fork Project No. 2058 that do not directly tie to a specific CFSA PM&E measures.

8.3.2 2018 Activity Table

License Article Number	License Article Description	2018 Activity
438	Dispute Resolution	No activity occurred
439	Rock Creek Mine Discharge Facility	No activity occurred
440	Revised License Exhibit G	No activity occurred
441	Alterations per Fish and Wildlife Program	No activity occurred
442	Permission for Use and Occupancy of Project Lands and Waters	See Section 8.3.2.1
443	Construction, Operation, and Maintenance of Fishways	See Section 8.2.2.1

8.3.2.1 Permission for use and Occupancy of Project Lands and Waters

In 2018, Avista granted permission for certain types of use and occupancy of Project lands and waters to comply with CFSA appendices G and H (License Articles 414 and 415). Uses and occupancy are included in sections 7.1 and 7.2 of this report. Avista conveyed no new easements in 2018.

8.3.3 Key 2018 References

Avista. 2018. Avista Property Use Permits, 2018. Avista document identification number 2018-0358. Avista, Noxon, Montana.

Section 9: Federal Energy Regulatory Commission Issues and Actions

9.1 Purpose

The purpose of this section is to inform FERC of any "out of the ordinary" issues pertaining to the implementation of the Clark Fork License No. 2058 and any items requiring FERC action through December 31, 2018. The FERC-related activities for 2018 (such as FERC filings, FERC orders, and FERC correspondence), and FERC awareness items (such as Clark Fork Settlement Agreement PM&E measure modifications and clarifications and specific issues of interest) are also included in this section of the Annual Report.

9.2 FERC Activities/Awareness

In 2018, FERC activities related to the Clark Fork Project included the following:

- The FERC's January 22, 2018 Notice of Application Accepted for Filing, Soliciting Motions to Intervene and Protests, Comments, Recommendations, Terms and Conditions, and Fishway Prescriptions.
- The FERC's January 22, 2018 Request for Additional Information.
- The FERC's March 1, 2018 Order Approving Revised Exhibit F Drawings.
- Avista's March 20, 2018 submittal of Approved Exhibit F Drawings.
- Avista's March 21, 2018 submittal of Additional Information for License Amendment Application.
- Avista's March 21, 2018 response to comments from U.S. Fish and Wildlife Service on Draft Biological Evaluation for License Amendment for Cabinet Gorge Dam Fishway.
- The FERC's March 28, 2018 request for formal consultation under the Endangered Species Act.
- Avista's March 30, 2018 submittal of the 2018 Clark Fork Annual Implementation Plans and 2017 Clark Fork Annual Report.
- The FERC's May 29, 2018 Order Approving 2017 Annual Report and 2018 Implementation Plans Per Article 402, Annual Threatened and Endangered Species Plan Per Article 432, and Annual Fishway Plan Per Article 433.
- The USFWS's June 13, 2018 letter to the FERC Acknowledging the FERC's Request for Formal Consultation.
- The FERC's July 16, 2018 response to the U.S. Fish and Wildlife Service's request to reinitiate consultation dated June 13, 2018.

As of December 31, 2018, Avista's November 10, 2017 License Amendment is pending with the FERC.

9.3 Key 2018 References

Avista. 2018. Submittal of Approved Exhibit F Drawings (March 20, 2018). Avista document identification number 2018-0096. Avista, Spokane, Washington.

Avista. 2018. Additional Information for License Amendment Application (March 21, 2018). Avista document identification number 2018-0099. Avista, Noxon, Montana.

Avista. 2018. Response to Comments from U.S. Fish and Wildlife Service on Draft Biological Evaluation for License Amendment for Cabinet Gorge Dam Fishway (March 21, 2018). Avista document identification number 2018-0098. Avista, Noxon, Montana.

Avista. 2018. 2018 Clark Fork Annual Implementation Plans and 2017 Clark Fork Annual Report (March 30, 2018). Avista document identification number 2018-0105. Avista, Noxon, Montana.

FERC. 2018. Notice of Application Accepted for Filing, Soliciting Motions to Intervene and Protests, Comments, Recommendations, Terms and Conditions, and Fishway Prescriptions (January 22, 2018). Avista document identification number 2018-0018. Washington, DC.

FERC. 2018. Letter regarding Request for Additional Information (January 22, 2018). Avista document identification number 2018-0019. Washington, DC.

FERC. 2018. Order Approving Revised Exhibit F Drawings (March 1, 2018). Avista document identification number 2018-0068. Washington, DC.

FERC. 2018. Request for Formal Consultation under the Endangered Species Act (March 28, 2018). Avista document identification number 2018-0104. Washington, DC.

FERC. 2018. Order Approving 2017 Annual Report and 2018 Implementation Plans Per Article 402, Annual Threatened and Endangered Species Plan Per Article 432, and Annual Fishway Plan Per Article 433 (May 29, 2018). Avista document identification number 2018-0152. Washington, DC.

FERC. 2018. The FERC's letter to U.S. Fish and Wildlife Service regarding Response to your request to reinitiate consultation dated June 13, 2018 (July 16, 2018). Avista document identification number 2018-0196. Washington, DC.

USFWS. 2018. The U.S. Fish and Wildlife Service's letter to the FERC Acknowledging the FERC's Request for Formal Consultation (June 13, 2018). Avista document identification number 2018-0168. Helena, Montana.

Section 10: Amendments, Modifications, and Clarification of License Articles

10.1 Purpose

This portion of the Annual Report highlights and summarizes all amendments, modifications, and/or clarifications (other than one-time filing extensions or Exhibits and annual approvals) made to the License for Clark Fork Project No. 2058, through December 31, 2018. Note that terms and conditions of the original license took effect on March 1, 2001.

Each FERC amendment, modification, or clarification to/of an existing license article are included in Section 10.2. The date of each amendment, modification, or clarification is also documented. Highlighted items denote clarifications and modifications that occurred during 2018.

10.2 Amendments/Modifications/Clarifications of License Articles for Clark Fork Project No. 2058

Article Number	Description	Date Amended or Clarified
L-2	Exhibit Drawings	10/29/2013
201	Authorized Installed Capacity and Annual Charges	07/13/2006
201	Authorized Installed Capacity and Annual Charges	10/10/2006
201	Annual Charges and Exhibit A	06/15/2007
201	Authorized Installed Capacity and Annual Charges	04/10/2008
201	Exhibit G Drawings and Annual Charges	02/10/2009
201	Exhibit G Drawings and Annual Charges	10/09/2014
204	Exhibit F and Exhibit G Drawings	01/09/2002
412	Water Quality Protection and Monitoring Plan	12/10/2002
412	Water Quality Protection and Monitoring Plan	06/23/2011
413	Exhibit F Drawings	11/18/2016
413	Exhibit F Drawings	03/01/2018
427	Programmatic Agreement	10/30/2000
429	Minimum Flows	12/18/2017
431	Coordination of Flows with Albeni Falls	11/22/2002
432	Threatened and Endangered Species Plan	06/13/2003
433	Fishway Plan	06/13/2003
434	Erosion Plan	03/04/2003
435	Solid Waste and Waste Water Plan	12/10/2002
436	Oil and Hazardous Substance Plan	12/10/2002
437	Pesticide & Herbicide Use Plan	11/22/2002
438	Dispute Resolution	10/30/2000
438	Dispute Resolution	11/22/2002
442	Use and Occupancy of Project Lands and Waters	11/22/2002
443	Fishway Prescriptions	10/30/2000
n/a	Approval to Replace Transmission Lines	03/05/2014

10.2.1 Order Approving Revised Exhibit F Drawings (March 1, 2018)

On March 1, 2018, the FERC approved Avista's Exhibit drawings F-28 and F-30, which were updated to reflect modified spillway bays at the Cabinet Gorge HED.

10.3 Key 2018 References

FERC. 2018. Order Approving Revised Exhibit F Drawings (March 1, 2018). Avista document identification number 2018-0068. Washington, DC.

Section 11: Clarifications and Modifications to Clark Fork Settlement Agreement and PM&E Measures

11.1 Purpose

This portion of the Annual Report highlights and summarizes all clarifications and modifications to the CFSA and PM&E measures.

Each clarification or modification document are included in Section 11.2, with the date of MC (or, in the case of the Programmatic Agreement, CRMG) approval. Highlighted items denote clarifications and modifications that occurred during the year, however in 2018 there were none.

11.2 Clarifications/Modifications to Clark Fork Settlement Agreement and PM&E Measures

Document or Appendix	Document Title	Date Approved
CFSA ¶ 26	Cost Over-Run Guidelines	09/27/2000
CFSA ¶ 26	Management Committee Membership Application	12/29/2000
CFSA ¶ 26	Management Committee Procedures	09/30/2003
CFSA	Amendment No. 1	09/26/2017
CFSA Appendix C	Clarification of Usage of Funding Sources	09/30/2003
CFSA Appendix C	Joint Agreement Regarding Fish Passage	03/16/2010
CFSA Appendix C	Resolution of O&M Funding for CGDF	09/26/2017
CFSA Appendix F1	Title Revised	10/26/2016
CFSA Appendix N1	Obligation Fulfilled	10/26/2016
CFSA Appendix N2	Obligation Fulfilled	10/26/2016
CFSA Appendix N3	Obligation Fulfilled	10/26/2016
CFSA Appendix O	Obligation Fulfilled	10/26/2016
CFSA Appendix T	Project Operations during Low Inflows	09/26/2001
CFSA Appendix V	Guidelines for Acquisition of Land Interests	03/26/2010
PA	Programmatic Agreement (CRMG) Reporting	04/12/2001
PA	Programmatic Agreement (CRMG) Reporting	11/23/2004

11.3 Key 2018 References

Avista. 2018. Management Committee meeting minutes from March 13, 2018. Avista document identification number 2018-0307. Avista, Noxon, Montana.

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

FERC. 2018. Order Approving 2017 Annual Report and 2018 Implementation Plans Per Article 402, Annual Threatened and Endangered Species Plan Per Article 432, and Annual Fishway Plan Per Article 433 (May 29, 2018). Avista document identification number 2018-0152. Washington, DC.

Section 12: Annual Budget and Grant Summary

12.1 Budget Summary

On the following page is a budget spreadsheet summary of budget activities for each of the PM&E measures for the 2018 calendar year (January – December). The MC approved activity year is from April through March therefore, the following budget spreadsheet summary includes the fourth quarter of 2017 approved activities and the first through third quarters of the 2018 approved activities.

The first dollar amount column in the budget spreadsheet shows funding obligations carried over from 2017 (unspent 2017 dollars plus 1.62% interest). Total carryover (including interest) was $9,166,817.

The "2018 Funding Obligation" column, totaling $4,124,512, details Avista's annual funding obligation per Appendix U (Funding Summary Table) of the CFSA.

Under terms of Paragraph 23 of the CFSA, the "GDP" (Gross Domestic Product) column adjusts certain annual funding obligations for inflation (1.78% for 2018). This equates to an additional $73,415 for 2018.

The "Total Funding Obligation" column is the sum of the "Carryover Funding with Interest" column, plus the "2018 Funding Obligation" column, plus the "GDP Amount" column. For 2018, the "Total Funding Obligation" was $14,328,073. Note that the MC approved the removal of CFSA appendices N1, N2, N3, and O from the ongoing list of CFSA PM&E measures, as Avista has met the obligation under these appendices for the remainder of the current FERC license (see Footnote #1 on the budget spreadsheet).

The "2018 Annual Implementation Plan Budget" column, totaling $13,848,541, shows the implementation budget amounts determined by the TRTAC and WRTAC and approved by the MC. Note that, due to TRTAC, WRTAC, and MC decisions, some 2018 AIP budgets were more or less than the actual 2018 funding obligations. Note there were no approved budgets for CFSA appendices F3, F4, or Q.

The "O&M & Capital Expenditures" column shows expenditures for each of the PM&E measures, totaling $4,232,513.

The "Unspent Dollars" column shows the net of the "O&M & Capital Expenditures" column and the "2018 Funding Obligation" column, totaling $10,410,701.

The "Carryover Dollars" column shows the amount of unspent dollars for certain annual funding obligations totaling $10,878,911. In 2012, expenditures from CFSA Appendix C (Annual Facilities Contribution) Fund exceeded the annual contribution and all carryover dollars were depleted. Since then the dollar amounts represented in the "Appendix C Facilities" row have been represented as negative amounts. The negative amounts accurately reflect the expenditures above and beyond the annual contribution.

Under terms of Paragraph 23 of the CFSA, the "Treas constant maturity 1-year" column adjusts the carryover dollars for interest (2.7% for 2018). This equates to an additional $262,586 for 2018.

The final column on the spreadsheet is the "2018 Dollars with Interest". For more details regarding the current interest rates utilized, refer to both Paragraph 23 and Appendix U (Funding Summary Table) of the CFSA. Total 2018 end-of-year carryover, plus interest, is $11,136,116.

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Year Twenty of CFSA

App.	PM&E - Description	Carryover Funding Oblig w/Int.	Notes	2018 Funding Obligation*	Notes	III qtr GDP 1.78%	GDP*** Amt		Total Funding Obligation	2018 Annual Implementation Plan Budget	Notes	Clearing Spent	Capital Spent	O&M & Capital Expenditures	Unspent Dollars	Carryover Dollars	Treas constant maturity 1-year 30-Nov 2.70%	Interest Amount	2018 Dollars with Interest
A	Idaho Tributary & Fishery Enhancement Program																		
	Tributary Habitat Acquisition & Enhancement	$1,375,924		$550,103		0.0178	$9,792	$559,895	$1,864,561	$330,327	9	-$97,949	$23,067	-$74,882	$1,939,443	$1,939,443	0.0270	$52,365	$1,991,808
	Fish Resource Monitoring, Enhancement & Management	-$23,297		$47,495		0.0178	$845	$48,341	$96,302	$95,700		$91,174		$91,174	$5,129	$5,129	0.0270	$138	$5,267
B	Montana Tributary Habitat Acquisition & Recreational Fishery Enhancement																		
	Tributary Habitat Acquisition & Enhancement	$1,655,005		$391,949		0.0178	$6,977	$398,926	$2,053,931	-$23,732	3,4, 6,7, 9	$52,914	$42,850	$95,764	$1,958,167	$1,958,167	0.0270	$52,871	$2,011,037
	Recreational Fishery Enhancement	$932,483		$261,297		0.0178	$4,651	$265,948	$1,198,432	$398,035	8	$75,055	$52,720	$127,775	$1,070,656	$1,070,656	0.0270	$28,908	$1,099,564
C	Fish Passage/Native Salmonid Restoration Plan																		
	Annual Operation	$1,831,452		$757,765		0.0178	$13,488	$771,254	$2,602,705	$1,485,067	5,6, 9	$9,271	$656,507	$665,779	$1,936,926	$1,936,926	0.0270	$52,297	$1,989,223
	Facilities	-$2,171,006		$550,105		0.0178	$9,792	$559,897	$559,897	$6,120,000			$906,652	$906,652	-$346,755	-$346,755	0.0270	-$9,362	-$2,527,124
D	Bull Trout Protection & Public Education Project	$53,250		$169,617		0.0178	$3,019	$172,636	$225,886	$222,721		$190,641		$190,641	$35,245	$35,245	0.0270	$952	$36,197
E	Watershed Council Program	$10,408		$13,569		0.0178	$242	$13,811	$24,219	$16,750		$15,609		$15,609	$8,610	$8,610	0.0270	$232	$8,843
F1	Clark Fork River Water Quality Monitoring Program	$6,370		$20,356		0.0178	$362	$20,718	$37,088	$30,355		$18,761		$18,761	$18,327	$18,327	0.0270	$495	$18,821
F2	Monitoring Noxon Reservoir Stratification				**				$0	$51,827				$0	$0	$0			
F3	Aquatic Organism Tissue Analysis				****				$0	$0				$0	$0	$0			
F4	Water Quality Protection & Monitoring Plan for Maintenance, Construction & Emergency Activities				****				$0	$0				$0	$0	$0			
F5	Gas Supersaturation																		
	TDG Monitoring				**				$0	$27,500		$18,886	$6,850	$25,736	-$25,736	$0			
	Mitigation	$1,647,214		$821,419		0.0178	$14,621	$836,040	$2,483,254	$884,434	2,9	$595,886	$85,662	$681,547	$1,801,707	$1,801,707	0.0270	$48,646	$1,850,353
	GSCP Alternative				**				$0	$2,080,000		$2,984	$56,584	$59,568	-$59,568	$0			
G	Implementation of Land Use Mgmt Plan				**				$0	$177,500		$86,948		$86,948	-$86,948	$0			
H	Implementation of Recreation Resource Mgmt Plan																		
	Management				**				$0	$211,157		$178,374		$178,374	-$178,374	$0			
	Facilities Fund	$405,612		$209,794		0.0178	$3,734	$213,528	$619,140	$603,400		$49,586	$216,567	$266,152	$352,988	$352,988	0.0270	$9,531	$362,518
I	Implementation of Aesthetics Mgmt Plan				**				$0	$15,000		$7,985		$7,985	-$7,985	$0			
J	Implementation of Wildlife, Botanical & Wetland Mgmt Plan				**				$0	$5,000				$0	$0	$0			
K	Wildlife Habitat Acquisition & Enhancement Fund	$670,958		$273,291		0.0178	$4,865	$278,155	$949,113	$675,000	7	-$172,007	$931,559	$759,553	$189,560	$189,560	0.0270	$5,118	$194,679
L	Black Cottonwood Habitat on Avista Property	$69,881		$6,666		0.0178	$119	$6,784	$76,666	$15,000		-$1,851		-$1,851	$78,517	$78,517	0.0270	$2,120	$80,637
M	Wetlands on Avista Property	$130,164							$130,164	$10,000				$0	$130,164	$130,164	0.0270	$3,514	$133,678
P	Forest Habitat for Selected Avista Lands																		
	Annual Fund				****				$0	$5,000				$0	$0	$0			
	Improvement Fund								$0	$0		$3,912		$3,912	-$3,912	$0			
	Timber Revenue	$206,716							$206,716	$0				$0	$175,103	$175,103			$175,103
Q	Reservoir Islands Owned by Avista								$0	$0				$0	$0	$0			
R	Clark Fork Heritage Resource Program				**				$0	$115,500		$105,686		$105,686	-$105,686	$0			
S	Erosion Fund & Shoreline Stabilization - Guidelines													$0	$0	$0			
	Annual Fund	$194,677		$51,088		0.0178	$909	$51,998	$200,000	$62,000		$18		$18	$199,982	$199,982	0.0270	$5,400	$200,000
T	Project Operating Limits	$0			**				$1,000,000	$235,000		$9,481	$12,132	$21,613	$978,387	$978,387			$978,387
	Total	$9,166,817	1	$4,124,512			$73,415	$4,197,928	$14,328,073	$13,848,541		$1,241,364	$2,991,150	$4,232,513	$10,410,701	$10,878,911		$262,586	$11,136,116

*	Refers to Appendix U "Funding Summary Table"
**	Estimate based on current work level
***	Used Qtr3 GDP for Implicit price deflators.
****	Period one-time costs
App S	Total Fund amount capped at $200,000
Note 1	The totals of "Carryover Funding Obligations w/int", "Unspent Dollars", "Carryover Dollars", and "Carryover Dollars with Interest" columns exclude App C Facilities Fund balance. The negative amounts depict total expenditures exceeding the defined annual App C Facility Fund contribution in the CFSA. If the App C Facility Fund carryover was included in the total it would not accurately reflect the total funding carryover.

CONSENT MAILS:

Note 2	App F5 - Additional $75,250 for the Experimental Walleye Angler Incentive Program (Nov 7, 2018)
Note 3	App B - Additional $10,000 for Prospect Creek PIT - array (Aug 6, 2018)
Note 4	App B - Additional $10,000 for Crow Creek Restoration Design (Aug 6, 2018)
Note 5	App C - $0, reallocate the 2018 approve funding $80k from construction of improvements on the Graves Creek permanent weir trap to completion of the site survey, engineering & design, and permits (Nov 7, 2018)
Note 6	App B & C - $243,200 of total funding obligation was transferred from App B to App C for the WCT Experimental Transport Project. This activity is directly related to the Cabinet Gorge Fish Passage Facility Construction and benefits all three Appendices.

SEPT MC APPROVALS:

Note 7	App B & K - MC approved $700k to purchase of 126 acres along the Bull River, funding to be split 50/50 between App B (Habitat Fund) & App K (Sept 25, 2018)
Note 8	App B - MC approved $100k to secure contracting and initiate construction on the Lower Bull River Day Use Boat Access Site (Sept 25, 2018)
Note 9	App A, B, C & F5 - MC approved $2k, split evening amongst App A (Habitat Restoration & Acquisition Fund), B (Habitat Restoration & Monitoring Fund), C (Operations - Tributary Trapping Fund) & F5 (Mitigation - LPO Stock Identification Project) for an Online Digital Bull Trout Library (Sept 25, 2018)
Fund	refers to dollars that are made available annually. These funds are adjusted annually by the percentage change of the GDP-IDP as reported by the Bureau of Economic Analysis. Unused funds are carried forward to the next year and increased by the yield in percent as reported in the Federal Reserve Statistiacal Release H-15 of US treasury securities as a constant maturity.
Estimate	refers to dollars that are projections made now however; Avista will pay the actual costs of implementation. Unused funds are not carried forward to the next year.
Budget	refers to dollars that support initiatives within programs that are the responsibility of other parties. Avista will pay the actual costs in an amount not to exceed the agreed budget. Unused funds are carried forward to the next year and increased by the yield in percent as reported in the Federal Reserve Statistical Release H-15 of the US treasury securities as a constant maturity.
Periodic	refers to dollars that are periodic or a one-time cost. Avista will pay the actual costs in an amount not to exceed the specified budget.

12.2 Grant Summary

Appendices B and H of the CFSA included a provision intended to leverage PM&E measure funds through grants. Avista has employed a grant writer who pursues creative funding opportunities to match and enhance the financial commitments being made to implement the PM&E measures. It is important to note that any funding received does not reduce Avista's contribution to the implementation effort; rather, the funds create additional protection, mitigation, and enhancement opportunities.

The grant writer coordinates with program leaders, technical committees, MC members and other local constituencies to identify projects for grant funding, research funding sources, prepare grant applications, and conduct grant project follow-up and reporting.

Since project start-up in October 1999, $11,911,491 in federal, state, and private foundation grants have been acquired to assist with implementation of a variety of on the ground aquatic and terrestrial projects.

Grants received in 2018 totaled $613,000.

Grant funding received this year included a $100,000 Bureau of Reclamation Cooperative Watershed Management Program grant to be used for stream restoration planning and design. This grant was received by the LCFWG in partnership with Montana Trout Unlimited and will increase the ability of both organizations to initiate and implement stream restoration projects in the Lower Clark Fork watershed. The LCFWG was awarded a $3,000 Water Quality Mini Grant from Soil & Water Conservation Districts of Montana to support community outreach and develop an interactive website map to improve public engagement while telling the story of watershed restoration.

Restoration work on the Miners Gulch Reach of the Vermilion River, just upstream of the Simms Reach project that is partially funded through a Montana 319 grant received in 2018.

The U.S. Army Corps of Engineers awarded a $200,000 Water Resources Development Act grant to Sanders County, thanks to support from Montana Senator Jon Tester. The grant will be used to combat invasive watermilfoil over the next two seasons in Noxon and Cabinet Gorge reservoirs.

In Idaho, the Kaniksu Land Trust received a $100,000 Recreation Trails Program grant to help purchase the Pine Street Woods, a 160-acre parcel adjacent to Sandpoint, for a community forest. The woods will be used by the public for recreation, health and education purposes, including sustainable forestry. A $10,000 Montana Recreational Trails Program grant was awarded to Cabinet Resource Group for work on trails that access the Cabinet Wilderness. Grant funds will be used for Montana Conservation Corps crews to conduct trail maintenance and construction,

under the supervision of the Cabinet Ranger District on the Kootenai National Forest. Funds also help support a wilderness trails summer intern.

Montana Department of Environmental Quality awarded a $200,000 grant from the 319 Nonpoint Source Program to Green Mountain Conservation District for stream restoration work in the Vermilion River on the Sims Meander reach. The proposed project is immediately downstream of Miners Gulch where significant restoration took place in 2017. Additional grants are being sought to support implementation, which is planned for 2020 and will be coordinated by the LCFWG.

At year's end, several grant proposals were still pending and included a second $200,000 request from Sanders County for Congressional funding to control future invasive watermilfoil on Noxon and Cabinet Gorge reservoirs; and a $510,000 grant application by the City of Ponderay to the Federal BUILD program under the U.S. Department of Transportation to fund the design and engineering of a pedestrian-only railroad underpass to connect the city to the lakeshore and Pend d'Oreille Bay Trail. This project is a "white hat" effort, in which the grant-writer's time is donated by Avista to assist a community organization. In December, the grant writer worked with the LCFWG to prepare a grant application to the MFWP Future Fisheries program to support the proposed Phase II of the Crow Creek stream restoration project.

Along with Avista PM&E measure funds, a variety of partners provide funds and in-kind match support for grant proposals. In 2018, matching partners included:

- Sanders County
- Sanders County Aquatic Invasive Plants Task Force
- NorthWestern Energy
- Montana Trout Unlimited
- Montana Fish, Wildlife & Parks
- USFS
- LCFWG
- GMCD
- Friends of Pend d'Oreille Bay Trail
- City of Ponderay
- Cabinet Resource Group
- Kaniksu Land Trust
- Equinox Foundation
- LOR Foundation
- Private landowners