WYOMING GAME AND FISH DEPARTMENT

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WER 11797.02
Wyoming Department of Environmental Quality
WYPDES Permit
Aethon Energy Operating LLC.
Frenchie Draw Permit #1 WY0002062
Natrona and Fremont Counties

Jason Thomas
Wyoming Department of Environmental Quality
Water Quality Division
200 West 17th Street
Cheyenne, WY 82002

Dear Mr. Thomas,

The staff of the Wyoming Game and Fish Department (Department) has reviewed the proposed WYPDES Permit for the Aethon Energy Operating LLC. Frenchie Draw Permit #1 (WY0002062) located in Natrona and Fremont Counties. We offer the following comments for your consideration.

Boysen Reservoir

Boysen Reservoir is an 802,000 acre-feet impoundment that supports a regionally important fishery for a wide range of species. Game fish populations consist of Walleye, Sauger, Yellow Perch, Black Crappie, Burbot, Channel Catfish, Black Bullhead, Stonecat, Bluegill, Mountain Whitefish, Brown Trout, and Rainbow Trout. Sauger, Burbot, Channel Catfish, Stonecat and Mountain Whitefish are native to the drainage while the other species have been introduced by Departmental stocking. All non-native game fish populations, with exception of Rainbow Trout, are maintained by natural reproduction in the reservoir. Native non-game species include Flathead Chub, Lake Chub, Longnose Dace, Longnose Sucker, Shorthead Redhorse, River Carpsucker, Sand Shiner, and White Sucker. Non-native non-game fish species are Common Carp, Emerald Shiner, Spottail Shiner, Golden Shiner, Johnny Darter, and Northern Plains Killifish.

Sauger and Burbot are Species of Greatest Conservation Need (SGCN), having a State Wildlife Action Plan (SWAP) ranking of Tier 2, meaning their population status is vulnerable and limiting factors are severe. Flathead Chub is also a SGCN with a SWAP ranking of Tier 3. This ranking indicates vulnerable populations with moderate limiting factors.

Badwater and Poison Creek Bays

Badwater and Poison Creek Bays are important juvenile nursery habitat for Sauger and Walleye. The bays support unique sand substrate habitats preferred by these juvenile Percids, as well as the aquatic invertebrates they use for forage. The relative abundance of age-0 Sauger and Walleye is annually monitored by the Department in September with night shoreline electrofishing. The 2018 Catch per Unit Effort (CPUE) was 48 Sauger/hour and 45 Walleye/hour in Poison Creek Bay. The CPUE for Badwater Bay was 26 Sauger/hour and 42 Walleye/hour. These areas of the reservoir are critical to Sauger and Walleye life history and any physical and/or chemical changes to these habitats could cause significant negative impacts to their populations. The Department is committed to annual fall abundance monitoring of juvenile Sauger and Walleye (as well as other species) in Badwater and Poison Creek Bays and will provide results to the Wyoming Department of Environmental Quality (DEQ) to be incorporated into the annual biological assessment reports.

Badwater Creek Drainage

The Badwater Creek drainage supports nine native fish species and six non-native species. Two native species, Brassy Minnow and Flathead Chub, are Tier 3 SGCN species. A comprehensive fish assemblage survey was completed in the Badwater drainage during 2013 and 2014. A total of 35 sites were visited, 18 of which had water. Fish were captured in only 10 of the 18 sites with water. Of the sites sampled, three were in Alkali Creek and five in Badwater Creek. The remaining sites were tributaries to Badwater Creek. No fish were observed or captured in Alkali Creek. Fish were present at all sites on Badwater Creek with five native species and three nonnative species captured. However, neither SGCN species was documented. High numbers of fish were caught in the four Badwater Creek sampling sites upstream from the Alkali Creek confluence (n=481), while only three fish were captured in the two sites downstream of Alkali Creek. These results were similar to those reported by Oasis Environmental (2010), who captured fish at three sites upstream from the Alkali Creek confluence but not at six sites downstream from the Alkali Creek confluence. The lack of fish at sites downstream from the Alkali Creek confluence may have been influenced by historic produced water discharge into Alkali Creek. Another comprehensive Badwater drainage fish survey is being conducted in 2019 by the Department's Aquatic Assessment crew and DEQ personnel.

Recommended Monitoring

The Department is very concerned about fish and aquatic macroinvertebrate exposure to produced water in Badwater Creek and Badwater Bay. If not properly diluted, the produced water may cause short-term mortality to aquatic organisms and long-term exposure may have negative effects on growth and reproduction.

In order for the Department to determine whether the addition of produced water into Badwater Bay will or will not have an impact on juvenile Sauger and Walleye, the Department recommends a comprehensive monitoring plan be developed directly after the permit is issued. This monitoring plan should include two years of baseline macroinvertebrate studies using multiple Hester-Dendy Multiplate Invertebrate Samplers and multiple Ponar Dredge samples. The baseline studies should be completed before additional produced water is discharged into Alkali Creek. Macroinvertebrate studies should restart after gaging stations in Badwater Creek indicate that produced water is about to enter Badwater Bay.

We also recommend monitoring macroinvertebrates in Badwater Creek. This sampling may only occur if both the Department can find areas of Badwater Creek that have long term perennial flows or pools.

The monitoring plan should also include a set of triggers that can be used to curtail the flow of produced water entering Badwater Bay if the macroinvertebrate studies show an impact. Additional triggers should be developed if macroinvertebrate sampling occurs in Badwater Creek.

Moneta Divide Channel Stability Monitoring and Mitigation

We recommend the August 12, 2011 Moneta Divide Channel Stability Monitoring and Mitigation Protocol be updated before the permit is issued. The updated protocol should include additional stream gaging stations in Badwater Creek downstream of Lysite, Wyoming.

The Department looks forward to working with DEQ and Aethon to develop the Badwater Bay and Badwater Creek macroinvertebrate monitoring plan and updating the channel stability monitoring and mitigation protocol.

Thank you for the opportunity to comment. If you have any questions or concerns please contact Craig Amadio, Lander Region Fisheries Supervisor, at 307-332-7723 or Rick Huber, Habitat Protection Biologist, at 307-777-4558.

Sincerely,

Angi Bruce
Deputy Director

AB/rh/ml

cc: U.S. Fish and Wildlife Service
Alan Osterland, Wyoming Game and Fish Department
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Literature Cited

Oasis Environmental. 2010. Phased Environmental Monitoring, Modeling and Analysis of Erosion Control Approach for the Gun Barrel Unit. Prepared for: Encana Oil & Gas (USA) Inc.