Department of Environmental Quality

To protect, conserve and enhance the quality of Wyoming's environment for the benefit of current and future generations.

Mark Gordon, Governor

Todd Parfitt, Director

December 17, 2019

Ms. Andrea Taylor
Aethon Energy Operating LLC
450 S. Federal
Riverton, WY 82501

RE: Letter of Violation: WYPDES Permit WY0002062

Dear Ms. Taylor:

Since April 2019, the Wyoming Department of Environmental Quality (DEQ) has been collecting water quality data on Alkali, Badwater, Bridger, and Dry Creeks on an approximately monthly basis to determine whether the designated uses and water quality criteria applicable to Badwater Creek are appropriate and attainable. At DEQ's request, Aethon has also collected and submitted water quality data as part of this effort. Throughout the 2019 sampling season, WDEQ personnel documented the presence of black sediment on the bottom of the stream channel of Alkali Creek near its confluence with Badwater Creek, as well as Badwater Creek downstream of Alkali Creek. Staff also noted the presence of foam on the water surface at these locations. On August 27, 2019 and September 24, 2019, samples of foam as well as black sediment were collected by the DEQ to determine their chemical makeup and potential origin. Staff also collected samples from the three primary Aethon outfalls (001, 006, and 009) on August 27. At that time, foam was observed in the channels below each outfall and free oil accumulations were observed in wire weirs below outfall 006.

The DEQ has evaluated the currently available data and our analyses have identified the following violations:

Black sediment deposits are present in channels below outfalls 001, 006, and 009; Alkali Creek below the Moneta Divide oil and gas field, and; Badwater Creek for approximately seven miles downstream of its confluence with Alkali Creek. These deposits were identified as iron sulfide by applying hydrogen peroxide and watching the color disappear as FeS is converted to aqueous FeSO4 and by applying hydrochloric acid and noting the release of H2S gas. The deposits were not observed elsewhere in the Badwater Creek watershed and appear to be created when sulfide reacts with iron. In addition, precipitate mineral deposits covering the substrate materials were identified below the outfalls and in Alkai and Badwater Creeks.

Part I A.1 of Permit WY0002062 states that "There shall be no deposition of substances in quantities that could result in significant aesthetic degradation, or degradation of habitat for aquatic life, plant life or wildlife; or which could adversely affect public water supplies or those intended for agricultural or industrial use."

Foam was observed on the water surface below outfalls 001, 006 and 009; in Alkali Creek above its confluence with Badwater Creek, and; in Badwater Creek downstream of Alkali Creek. The foam was confirmed to be an anionic surfactant using a methylene blue activated substances (MBAS) colorimetric test. Water surface foams were not observed elsewhere in the Badwater Creek watershed. Free oil accumulations were observed in wire

weirs below outfall 006. In addition, petroleum hydrocarbons were identified in Alkali Creek sediments below outfall 6 and at the Downstream Monitoring Point (DMP).

Part I A.1 of Permit WY0002062 also states that "There shall be no discharge of floating solids or visible foam in other than trace amounts, nor shall the discharge cause formation of a visible sheen or visible hydrocarbon deposits on the bottom or shoreline of the receiving water."

The DEQ's review of currently available data indicates the following water quality criteria may have also been impacted by the permitted discharge: chloride concentrations, temperature changes, dissolved oxygen concentrations, and turbidity in Badwater Creek below its confluence with Alkali Creek. The DEQ will continue to evaluate these parameters as part of its ongoing investigation into designated uses and water quality criteria applicable to Badwater Creek. The department noted the presence of benzene, ethylbenzene, toluene and xylene in outfall samples collected by Aethon, however, samples collected at the DMP indicate the concentrations were within allowable limits.

The Water Quality Division is attempting to resolve these violations through conference and conciliation. Aethon should provide a written response within 30 days of the date of this letter presenting its plans and schedule to implement corrective measures to resolve these violations.

The intent of this letter is to provide an opportunity for your company to show good faith efforts toward resolving the problem and to prevent the need for more formal enforcement action by this office. I am requesting that Aethon provide a written response within 30 days of the date of this letter presenting its plans and schedule to implement corrective measures to resolve these violations. Failure to provide a written response may result in elevated enforcement actions and may include penalties.

Should you have any questions concerning this letter, please contact Kevin Wells at 307-777-8669 or Kevin.Wells@wyo.gov.

Thank you for your time and attention to this matter.

Sincerely,

Kevin Frederick
Administrator
Water Quality Division

KF/SG

cc: Todd Parfitt, Director
Kevin Wells, WYPDES Inspections and Compliance Supervisor
David Waterstreet, Watershed Section Manager
Jason Thomas, WYPDES Section Manager (Acting)