

Summary of Public Comments on Revised Draft Permit WY0002062 and WDEQ Response:

	<u>Summary of Public Comments</u>	<u>WDEQ Response</u>
1	<p><b>Economic impacts: By not allowing an increase in discharge from the facility, the project cannot expand. This will result in economic harm to the facility, the surrounding communities, and overall state revenues:</b> Many comments raised the concern that reverting to the previously permitted salt load limit of 908 tons per month would effectively shut down all new drilling in the lease area, and accelerate closure of the field. Far-ranging potential economic impacts were cited, including layoffs, reduction in contractor workforce, impacts to local businesses and non-profits, reduction in county tax revenues and reduction in state tax revenues.</p>	<p>WDEQ understands the current challenges of the permittee and other oil and gas operators around the state. At the same time, WDEQ must address the specific water quality issues associated with each facility. The intent of this permit is not to restrict drilling, but to prevent adverse water quality impacts to the receiving waters. Surface discharge is one water management option for this facility. In addition, the operator can pursue underground injection, evaporation pits, and/or land application of the produced water.</p> <p>Through the course of developing this permit renewal, WDEQ became aware of water quality impacts on the immediate receiving waters Alkali Creek and Badwater Creek. The permittee is working to correct those problems. WDEQ is currently limiting the effluent output to its historic level of 908 tons per month for total dissolved solids (TDS). In addition, WDEQ is working in collaboration with EPA Region 8, the discharge permitting authority on the Wind River Reservation, to ensure that the existing uses of all waters in the watershed, including Boysen Reservoir and the Wind River, are protected if discharge volumes are increased. This is in response to specific concerns raised by oil and gas interests on the reservation, with regard to future development.</p>
2	<p><b>Too many restrictions and requirements in permit, especially since no increase in discharge is being permitted at this time:</b> These comments focused on multiple conditions of the draft permit, and their general message was that if the permit is not going to allow an expansion of discharges for untreated water, then the permit should also revert to all or most of its previous conditions as well. Specific requests were made for removal of: the total sulfide effluent limit, barium effluent limit, final chloride effluent limit, WET testing, all instream monitoring below the project area, and screening for multiple well additive chemicals. Commenters also noted that the newly proposed sulfide effluent limit of 20 µg/L is below the practical detection limit for sulfide (50 µg/L).</p>	<p>Overall, the conditions in the permit reflect necessary updates to address instream water quality standards of the receiving waters. 40 CFR 122.44(d)(1)(iii) requires that when a “discharge causes, has the reasonable potential to cause, or contributes to an in-stream excursion above the allowable ambient concentration of a state numeric criteria within a state water quality standard for an individual pollutant, the permit must contain effluent limits for that pollutant.” All of the water quality based effluent limits in this permit are for pollutants that have either caused exceedances of instream standards, or have a reasonable potential to cause an exceedance if not controlled.</p>

	<u>Summary of Public Comments</u>	<u>WDEQ Response</u>
3	<p><b>Final chloride limit of 230 mg/L is incorrectly applied, and too stringent:</b> Comments received from the permittee and several other parties objected to the permit renewal’s inclusion of a 230 mg/L final chloride limit for protection of Badwater Creek, a class 2AB water. Along with the final effluent limit, the permit includes a 4-year compliance schedule (grace period) to meet the chloride limit at the facility. These objections varied in detail, but the general complaints were that water treatment will be expensive, Badwater Creek should not be a class 2AB water; that it was misclassified in 1990, does not support game fish, and the water quality standard of 230 mg/L for chloride is therefore being inappropriately applied. Remedies sought in these comments included raising the chloride limit above 2,400 mg/L to reflect historic discharge concentrations, delaying compliance with the limit for 14 years, or eliminating the chloride effluent limit in the permit altogether.</p>	<p>The water quality standard for chloride is 230 mg/L for all class 2 waters in Wyoming, except for class 2A streams. The chloride standard does not vary based on whether the fish are game fish or non-game fish. Currently an investigation is underway on Badwater Creek to determine if a site-specific (alternative) standard for chloride is appropriate for Badwater Creek. WDEQ began work on this study in 2018, in collaboration with Aethon Energy. The permit currently establishes a 4-year compliance schedule for meeting the final effluent limit of 230 mg/L for chloride. If the study results in a site-specific chloride standard above 230 mg/L for Badwater Creek, the permit will be modified accordingly.</p> <p>WDEQ has determined that a 4-year compliance schedule for chloride is reasonable and appropriate for this facility.</p>
4	<p><b>The permit renewal sets a bad precedent:</b> Several concerns were raised, that by denying an expansion of untreated flows from this facility, and adding new conditions to the permit, WDEQ is effectively changing the rules for oil and gas operators in Wyoming. The primary concern was that the impacts of this kind of regulation would reach beyond Moneta Divide and into other areas of the state.</p>	<p>The Moneta Divide project is unique in its scale, water quality challenges, and the added complexity of other pollution sources within the Boysen Basin. WDEQ looks at each facility around the state individually when setting permit conditions. WYPDES permits are reviewed every five years and updated as appropriate, based on new discharge information and standards. These updates to WYPDES permits appropriately and consistently implement existing rules for oil and gas operators.</p>
5	<p><b>This facility has been discharging for nearly 60 years, and no damage has occurred. No new permit conditions are needed:</b> Multiple comments cited the history of the project and the clean track record of the facility under its various owners over the years. These comments posed the question: If there has been no damage to Badwater Creek and Boysen Reservoir from the discharge, why not allow more of that type of discharge, and why add new conditions to the permit?</p>	<p>The new conditions in the permit (effluent limits and monitoring listed in the statement of basis) reflect the reality that there have been impacts to Badwater Creek from the facility, and some of those impacts are ongoing. The permittee is currently working to resolve water quality and compliance issues on Alkali Creek and Badwater Creek. Certain added conditions are necessary, as noted in the permit.</p>
6	<p><b>Very little of this discharge reaches Boysen Reservoir. Impact on the reservoir and Wind River Canyon below the dam is therefore negligible:</b> Several commenters noted the distance of the project from the reservoir, and their own observations that Badwater Creek is dry for much of the year at its confluence with Boysen Reservoir. The concern was that the permit is setting unnecessarily stringent conditions when the “affected water bodies” listed in the permit are not accurate.</p>	<p>This permit sets effluent limits to comply with water quality standards in all four receiving water bodies: Alkali Creek, Badwater Creek, Boysen Reservoir, and the Wind River below Boysen Dam. While WDEQ has also observed that flows from Badwater Creek into Boysen Reservoir are intermittent, we do know that that Badwater Creek flows into the lake at least 3 – 4 months out of the year.</p>

	<u>Summary of Public Comments</u>	<u>WDEQ Response</u>
7	<b>The discharge will be treated, so there should be no problem:</b> This was an assertion that appeared in several sets of comments advocating for expansion of discharge volumes and objecting to conditions established in the revised draft permit. The comments reference the Neptune treatment plant as an added measure that will ensure high quality discharges.	While it is true that the facility did employ a reverse osmosis treatment unit (Neptune treatment plant) beginning in 2016, the plant was shut down indefinitely by the operator in March of 2019. The permit conditions are therefore based on the assumption that the downstream water bodies will receive only passively treated water from settling and skimming pits.
8	<b>Other contributing waters in the basin are worse, so why restrict Moneta Divide?:</b> Several comments noted that existing non-point pollution sources in the basin are a larger contributor of pollutants such as salt and nutrients than Moneta Divide is. The cited non-point sources were agricultural runoff from grazing and farming, as well as natural hot spring water inflows near Thermopolis.	For point source discharges, we control pollution output through permit conditions, pursuant to Chapters 1 and 2 of the Wyoming Water Quality Regulations. The contribution of agricultural runoff and mineral hot spring water within the basin does not relieve point source dischargers from meeting their respective permit conditions. In no case does WDEQ set effluent limits which are more stringent than natural background water quality.
9	<b>The discharge water is important for livestock and wildlife:</b> Several local landowners and ranching families noted that their livestock depends on the discharge water, through the course of its flow path down Alkali Creek and Badwater Creek. In addition, hunters cited the importance of the discharge water in supporting deer and antelope populations in the otherwise arid environment around Lysite, WY. The primary concern was that if the permit becomes too restrictive and burdensome, the gas field may shut down altogether and water production would cease.	WDEQ understands the importance of supplying water for livestock and wildlife, and protecting water quality for that use. The intent of this permit is to ensure that all downstream uses are also protected.
10	<b>Permit should not be renewed because the facility is in violation of existing permit conditions:</b> This comment cited Chapter 2, Section 10 of the Wyoming Water Quality Rules and Regulations which requires WDEQ to ensure, among other things, “that the permittee is in compliance with or has substantially complied with all terms and conditions of the expiring permit or authorization.” The comment referenced a letter of violation issued by WDEQ to Aethon Energy on December 17, 2019 for black sediment deposits, along with oil and surfactant found in the creek below the discharge points. In addition, the comment cited 15 effluent exceedances reported by the company in their discharge monitoring reports during the period 2015 – 2018, which were not associated with the letter of violation issued in December. Based on this, the commenter maintained that the permit cannot legally be renewed.	While WDEQ concurs that violations have occurred at this facility, WDEQ does not agree that the permit cannot be renewed. The permittee is working in good faith with WDEQ to correct outstanding water quality issues, and the permittee has substantially complied with all terms and conditions of the expiring permit.

	<u>Summary of Public Comments</u>	<u>WDEQ Response</u>
11	<p><b>The discharge water is not of good enough quality for livestock and wildlife, and WDEQ has not demonstrated that the water is actually being put to that use:</b> This objection relates to requirements under Chapter 2, Appendix H of the Wyoming Water Quality Rules and Regulations, as well as 40 CFR Part 435 Subpart E. Those regulations stipulate, among other things, that “The produced water discharged into surface waters of the state shall have use in agriculture or wildlife propagation. The produced water shall be of good enough quality to be used for wildlife or livestock watering or other agricultural uses and actually be put to such use during periods of discharge.” The commenter theorized that the discharge is too high in salt (TDS) for healthy livestock and wildlife watering, since the permit does not establish a concentration limit for TDS. The TDS level in the discharge is generally around 6,000 mg/L and most other oil and gas permits in Wyoming establish a limit of 5,000 mg/L, based on Chapter 2, Appendix H requirements. The commenter further questioned the validity and sufficiency of the landowner’s written statement that the produced water is actually being put to use in livestock watering.</p>	<p>The produced water is of good enough quality for livestock and wildlife watering, and the produced water is being put to that use. Facilities which were discharging prior to 1978 are eligible for modified effluent limits for total dissolved solids, on a case-by-case basis (Ch. 2, Appendix H(c)(i)). This facility has been discharging since the 1960’s, and the landowner has submitted a letter which indicates they are using the produced water for livestock, and wish to continue in that practice. The permit renewal complies with all requirements of Chapter 2, Appendix H. These rules have been reviewed and approved by EPA, originally in 1979, and reaffirmed in 2004.</p>
12	<p><b>The permit’s use of grandfathering to exempt the outfalls from a TDS concentration limit is not legally justified; and even if WDEQ does attempt to justify it, outfalls 013 – 016 were constructed after 1978 and have no eligibility for it:</b> This objection centered on the legality of using grandfathering in a discharge permit at all, and cited EPA guidance from 1986 which stated that grandfathering effluent limits for existing facilities is inconsistent with the Clean Water Act. The commenter further asserted that outfalls 013 – 016 are not eligible for consideration of exempted or modified TDS effluent limits even under state rules, because those outfalls did not exist prior to 1978.</p>	<p>As discussed above, the permit establishes an effluent limit of 908 tons per month TDS as a sum total for the whole facility. This limit is established in lieu of a 5,000 mg/L effluent limit for TDS at each outfall. This is allowable under provisions of Ch. 2, Appendix H(c)(i). EPA approved WDEQ’s promulgation of Chapter 2 in 2004, with no objection to the above provision for modified effluent limits in oil and gas discharges pre-dating 1978. In addition, EPA did not object to WDEQ’s use of the 1978 provision in the revised draft permit renewal. Regarding outfalls 013 – 016, WDEQ agrees that those outfalls were constructed after 1978. However, they are part of the same permitted facility. Given that the effluent limit for TDS in this permit is a facility-wide limit (908 tons per month), and not a concentration limit applied at each outfall, inclusion of outfalls 013 – 016 in the sum effluent limit for the facility is appropriate, and meets the intent of the provision.</p>

	<u>Summary of Public Comments</u>	<u>WDEQ Response</u>
13	<p><b>Permit violates state anti-degradation requirements:</b> This comment cited requirements in Chapter 1, Section 8 of the Wyoming Water Quality Rules and Regulations, which stipulate that in order to permit a new source of pollution, WDEQ must ensure that: 1) the quality of the receiving water is not lowered beyond applicable standards; 2) all existing water uses are fully maintained and protected; 3) the highest statutory and regulatory requirements for all new and existing point sources are implemented; 4) the lowered water quality is necessary to accommodate important economic or social development in the area in which the waters are located.</p> <p>The commenter alleges that WDEQ has violated all four conditions with regard to Alkali Creek and Badwater Creek, citing existing impacts on those streams, and lack of demonstration in the permit that the facility is important for economic or social development. Additionally, the commenter questioned WDEQ's conclusions regarding anti-degradation in Boysen Reservoir, asked to see data on historic salt loads from the facility, and disagreed with WDEQ's assertion in the permit that because the discharge pre-dates designation of the Wind River below Boysen Dam as a Class 1 water (1990), the discharge itself represents a background condition for that stream. The commenter instead characterized the discharge as contributing to an impairment of the water body.</p>	<p>The Statement of Basis in the permit summarizes WDEQ's anti-degradation review for each of the four receiving waters below the facility. The anti-degradation review was conducted and summarized in accordance with requirements in Chapter 1, Section 8 of the Wyoming Water Quality Rules and Regulations. This permit renewal does not authorize a new or increased source of pollution. The final water quality based effluent limits in the permit are set in accordance with a Tier 1 level of anti-degradation protection for Alkali Creek (class 3B), a Tier 2 level of anti-degradation protection for Badwater Creek and Boysen Reservoir (class 2AB), and a Tier 3 level of anti-degradation protection for the Wind River below Boysen Dam (class 1).</p> <p>With regard to impacts on Alkali Creek and Badwater Creek, ADD LANGUAGE .WDEQ is also currently assessing those streams in order to determine if they are appropriately classified and attaining their designated uses. Those findings may result in modification of the permit to address any water quality issues.</p> <p>Regarding the assertion that the discharge is contributing to an impairment of the Wind River below Boysen Dam, WDEQ disagrees. Water quality monitoring data does indicate that any current impairments associated with the discharge. by discharges.</p> <p>This permit does not propose or establish any exemptions from instream water quality standards. The conditions in this permit comply with all statutory and regulatory requirements.</p>

	<u>Summary of Public Comments</u>	<u>WDEQ Response</u>
14	<p><b>Alkali Creek and Badwater Creek are impaired and should be listed on the state’s 303(d) list of impaired waters:</b> Section 303(d) of the Clean Water Act, and Title 40 part 130 of the Code of Federal Regulations (40 CFR part 130) require each state to develop a list of waters that are not attaining water quality standards and are not expected to meet state water quality standards even after application of technology-based controls for point sources or other control requirements, such as best management practices (BMPs) for nonpoint sources of pollution.</p> <p>The comments regarding impairment of Alkali Creek and Badwater Creek do not specify what water quality standards they are impaired for, but do discuss chloride in detail as it relates to the discharge in both of those receiving streams. While Alkali Creek and Badwater Creek are not listed as impaired for any water quality standards, the comments argue that they should be; and that the permit should be conditioned accordingly.</p>	<p>This renewal is a permit action, not a water quality standards action. A decision of impairment and 303(d) listing for a stream can only be made when adequate assessment of the stream has been undertaken to a conclusive point. The assessment of Badwater Creek and Alkali creek is currently underway and is expected to be finalized by the end of 2022. The study will assist in determining whether all designated uses in those streams (livestock and wildlife watering, industrial use, recreational use, aquatic life habitat, and for Badwater Creek, fish and drinking water) are being attained, and that all designated uses on those waterbodies are appropriately assigned.</p>
15	<p><b>WDEQ needs to conduct a reasonable potential analysis to determine if a chloride effluent limit is needed for Alkali Creek:</b> This comment acknowledges that WDEQ applied a final effluent limit for chloride on Badwater Creek, based on a reasonable potential analysis, but argues that WDEQ needs to do the same for Alkali Creek. The commenter maintains that the absence of a Chapter 1 numeric water quality criterion for chloride in class 3B waters does not relieve the agency from conducting a reasonable potential analysis for that stream. The comment cites chloride as a risk to aquatic life, regardless of whether Chapter 1 applies the chloride standard of 230 mg/L to class 3B waters or not.</p>	<p>40 CFR 122.44(d)(1)(iii) requires that when a “discharge causes, has the reasonable potential to cause, or contributes to an in-stream excursion above the allowable ambient concentration of a state numeric criteria within a state water quality standard for an individual pollutant, the permit must contain effluent limits for that pollutant.”</p> <p>There is no state numeric water quality criterion for chloride in class 3B waters such as Alkali Creek. However, the permit controls chloride with a final effluent limit of 230 mg/L at all outfalls to protect Badwater Creek (class 2AB). Since a reasonable potential analysis informs the decision on whether or not to include an effluent limit for the pollutant in question, and the final effluent limit is already included in this permit, nothing would change in the permit as a result of including Alkali Creek in that analysis.</p>

	<u>Summary of Public Comments</u>	<u>WDEQ Response</u>
16	<p><b>The permit’s four-year compliance schedule for chloride is not justified. It should be shorter:</b> Variations of this comment ranged from asking WDEQ to force immediate compliance with the applicable chloride standard of 230 mg/L for Badwater Creek, to allowing 1 -3 years instead of four. The comments cited existing chloride violations on Badwater Creek and questioned the adequacy of a permit which allows that to continue for four more years.</p>	<p>40 CFR 122.47 provides that a compliance schedule can be included in a permit to allow a reasonable opportunity for the permittee to achieve compliance with new permit conditions. The length of a compliance schedule is left to the discretion of the permitting authority. For this permit, WDEQ consulted with EPA to ensure that the compliance schedule met the intent of the 40 CFR 122.47 provision. EPA has confirmed that this permit’s compliance schedule is acceptable under federal regulations. WDEQ determined that a 4-year compliance schedule for the final chloride effluent limit of 230 mg/L in this permit is reasonable and appropriate.</p>
17	<p><b>Additional instream monitoring point should be added on lower Badwater Creek:</b> This comment was based on a technical analysis of the discharge, and proposes that the effluent pH may rise to potentially problematic levels instream, after CO2 off-gassing occurs during the course of the effluent’s travel down Badwater Creek and into Boysen Reservoir. The comment proposed an additional instream monitoring point on lower Badwater Creek between Lysite and the reservoir.</p>	<p>While WDEQ does agree that pH in produced water effluents can rise during the course of stream travel, the permit already requires pH monitoring at stations DMP1 (Alkali Creek) and BWC1 (Badwater Creek below Alkali Creek confluence). Preliminary WDEQ data from 2019 sampling events in Badwater Creek indicate that pH is relatively stable between the Alkali confluence (median pH 8.4) and the lowermost assessment point above Badwater Bay (median pH 8.3). More agency data collection will continue, however, WDEQ has not identified a necessity for an additional monitoring point in the permit.</p>

	<u>Summary of Public Comments</u>	<u>WDEQ Response</u>
18	<p><b>The sulfide effluent limit should be based on worst-case pH in the effluent, not median pH:</b> This comment is based on the permit’s analysis of the effluent in deriving a limit for total sulfide in the discharge. The permit concludes that, on average, 10% of the total sulfide in the discharge exists as the regulated pollutant hydrogen sulfide. WDEQ based this conclusion on an empirically derived function for chemical speciation of sulfide at a range of pH levels. WDEQ reviewed the discharge data and used the long term median pH of the effluent to find, on average, how much of the total sulfide in the effluent is hydrogen sulfide. This was necessary because Chapter 1 establishes a numeric criterion for hydrogen sulfide (not total sulfide) but hydrogen sulfide is difficult to measure directly in water due to its volatility. As described in the permit, the higher the pH of the effluent, the less hydrogen sulfide exists in it, and other less harmful forms of sulfide predominate. The comment did not dispute the overall approach or the need to control hydrogen sulfide in the permit. The comment did dispute the validity of using a median pH value for the effluent characterization however, and suggested that WDEQ use a worst case, or lowest 10<sup>th</sup> percentile pH value as a conservative measure to ensure that the final effluent limit for total sulfide is adequately protective.</p>	<p>Because the applied water quality standard of 2 µg/L for hydrogen sulfide is a chronic standard (Chapter 1, Appendix B of the Wyoming Water Quality Rules and Regulations), using a median pH is appropriate. The proposal to use a worst-case pH in characterizing the effluent might be applicable to an acute standard. However, conservatism is already built into a chronic standard because it is developed with the assumption of long-term exposure to the affected organisms. If the target number is based on long-term exposure, then the effluent characterization when applying a chronic standard, should also be based on long-term effluent characteristics (i.e., median pH). Using the lowest 10<sup>th</sup> percentile of pH values does not represent the effluent over the long term. The effluent limit for total sulfide in this permit is correctly derived.</p>
19	<p><b>Whole Effluent Toxicity (WET) testing requirements in the permit are inadequate as written:</b> The comment cites a technical review of the effluent along with results of preliminary WET tests at the facility to conclude that the effluent will likely continue to exert a toxic effect on the aquatic communities in the receiving streams. The commenter recommends quarterly instead of annual WET testing, addition of chronic WET testing, and analysis of several chemical parameters in the effluent to coincide with WET test sampling events.</p>	<p>After consultation with EPA, and review of the EPA-issued permits in this watershed, WDEQ determined that the current requirements are appropriate and consistent for oil and gas discharges in this area.</p>



	<u>Summary of Public Comments</u>	<u>WDEQ Response</u>
20	<p><b>Effluent limit should be established for BTEX organics in the permit, not just monitoring:</b> Commenter cited preliminary results of testing for Benzene, Toluene, Ethylbenzene, and Xylene at the facility to conclude that reasonable potential already exists for these effluent parameters to exceed instream numeric standards, and recommends effluent limits.</p>	<p>The cited results for these parameters were not representative of the effluent being discharged. Most of the BTEX samples were taken either from raw intake water prior to treatment, or from finished water that had been fully treated by the Neptune reverse osmosis plant. Neither of those water stages represents the effluent that will be discharged under the renewed permit. Discharge under the renewed permit will be from skimming and clarifier pits where volatile organics will have a chance to off-gas prior to discharge. This permit renewal does include new routine sampling requirements for BTEX parameters at the outfalls, and at the uppermost instream monitoring station (DMP1). Consistent with EPA’s approach in addressing reasonable potential, the data generated from that sampling will be used to evaluate the validity of WDEQ’s reasonable potential analysis and modify the permit, if necessary.</p>
21	<p><b>Effluent limits should be established for all well additive and frac chemicals currently listed in the permit:</b> The permit establishes a semi-annual sampling requirement for certain well chemicals potentially used by the permittee, which is intended to detect any flowback water or well maintenance chemicals that might be commingling with the produced water. The commenter recommends strengthening this requirement to include actual effluent limits for those chemicals, rather than just sampling.</p>	<p>Oil and gas discharge permits in Wyoming prohibit the inclusion of drilling and stimulation fluids, and flowback water in the produced water discharge. This requirement is consistent with recent EPA chemical screenings of certain oil and gas facilities in this same basin. The well chemicals listed in the permit do not have numeric water quality standards in Chapter 1, and there are no federal effluent limitation guidelines for those chemicals. In addition, there is no acceptable level for these chemicals in the discharge, since they are prohibited entirely under the requirements of the permit. As indicated in the permit, the purpose of the semi-annual sampling is to verify that the permit conditions are being met.</p>
22	<p><b>More analysis should be done up front for parameters listed in permit as reasonable potential analytes:</b> The commenter references Part I.A.1.a of the permit, which lists all parameters to be sampled at the outfalls on a routine basis. Of the 35 parameters listed, only 11 are given established effluent limits at this time. The remaining 24 parameters are to be sampled. The commenter proposes that many of those should have been analyzed sufficiently by the permittee and WDEQ prior to renewal of the permit, so that a reasonable potential analysis could be done as a part of the review process for this permit renewal.</p>	<p>It is not uncommon in a discharge permit to collect data on potential pollutants as opposed to setting permit limits.. This is consistent with EPA’s permits within the same watershed. The permit contains a re-opener provision to ensure that, if results of the monitoring indicate a need for additional effluent limits, WDEQ can modify the permit accordingly at any time.</p>

	<u>Summary of Public Comments</u>	<u>WDEQ Response</u>
23	<p><b>908 tons per month for allowable salt load is too high. This limit should be scaled back over time:</b> These comments were related to the permit’s effluent limit of 908 tons per month for total dissolved solids for the facility. The concern was that impacts have already been observed on Alkali Creek and Badwater Creek; and additional unmeasured impacts could already be occurring in Boysen Reservoir and in the Wind River below Boysen Dam. The comments did not recommend a specific lower number, but generally indicated that WDEQ should calculate some load limit lower than the existing limit of 908 tons per month.</p>	<p>908 tons per month is the historic salt load output from the project. The impacts noted above on Alkali Creek and Badwater Creek are not related to load levels of total dissolved solids. The impacts are more specifically associated with sulfides, low dissolved oxygen levels, temperature, and surfactants. As discussed above, those issues are currently being addressed by the permittee, as well as in certain conditions of the renewed permit. WDEQ has determined that the effluent limit of 908 tons per month for total dissolved solids is appropriate and consistent with state water quality regulations.</p>
24	<p><b>All pollutants limited in the 2019 version of the draft permit should be limited in the final permit:</b> This comment noted (correctly) that the first draft version of the permit, released for public notice in March of 2019, contained a set of chemical constituent effluent limits not found in the second draft version of the permit, which was released for public notice in January of 2020. The commenter recommended keeping them in order to ensure that the permit is fully protective of the downstream receiving waters.</p>	<p>Effluent limits for multiple trace metals and cations were included in the March 2019 draft of the permit renewal. That draft renewal had proposed expansion of the discharge volume by up to 400%. Correspondingly, that draft version anticipated new potential impacts to Boysen Reservoir and the class 1 Wind River below Boysen Dam. However, as discussed in the Statement of Basis, the permit has been revised back to its historic discharge output level. The effluent limits and monitoring required in the permit have been adjusted accordingly. All effluent limits in this permit are based on a reasonable potential analysis of the effluent at its historic discharge rate.</p>
25	<p><b>Fate and transport of the pollutants in the effluent have not been fully characterized:</b> The commenter suggested there could be unknown impacts already occurring because WDEQ has not conducted any kind of tracer studies in the watershed, nor has sampling been conducted within Boysen reservoir or the Wind River below Boysen Dam for a variety of the known pollutants discharged from the facility.</p>	<p>WDEQ uses the conservative estimation that all of the pollutants from the facility will reach those water bodies. The permit further requires instream monitoring to check concentrations of various effluent pollutants in Alkali Creek and Badwater Creek. The effluent limits established in the permit are protective of all downstream receiving waters.</p>
26	<p><b>WDEQ should require the permittee to clean up all existing discharge-affected areas in the receiving streams:</b> This category of comments were related to Alkali and Badwater Creek, and cited the observed deposits of iron sulfide, along with hydrocarbons and surfactants in the streams. Some comments suggested a compliance schedule for stream cleanup. Some argued in favor of requiring the permittee to complete all stream cleanup work prior to re-commencing discharge under the permit renewal.</p>	<p>WDEQ issued a letter of violation for this facility on December 17, 2019. The permittee is working with WDEQ to correct water quality issues in the receiving streams. The permittee is proceeding in accordance with a schedule approved by WDEQ. In addition, certain new conditions in this permit, such as effluent limits for total sulfide and temperature, along with sampling for BTEX, dissolved oxygen, and surfactant are intended to detect and prevent water quality issues in the future.</p>

	<u>Summary of Public Comments</u>	<u>WDEQ Response</u>
27	<p><b>The WET testing language needs clarification:</b>            These were EPA comments relating to whole effluent toxicity test requirements outlined in Part I.A.3 of the permit. The comments suggested updating the method manual referenced in the permit, specifying the sample collection and lab methods for the WET tests to be conducted, providing more explanation on the permit's use of <i>Daphnia magna</i> as the chosen test species for invertebrates, and recommended some clarifications to the TRE-TIE section relating to follow-up investigations for any failed WET tests.</p>	<p>The permit language has been revised accordingly. WDEQ chose not to spell out the full rearing and test methodology in the permit, because the permit already states the required dilution rates for the effluent, the endpoints for the tests, the species to be used for each test, as well as the minimum number of replicates required. The rest of the details are in the referenced method manual. All other recommended clarifications from this comment have been incorporated into the permit. No actual WET test conditions have been changed.</p>
28	<p><b>Basis for the chosen temperature effluent limit is not clear. May not be stringent enough to comply with instream water quality standards:</b> This was EPA's only other comment on the draft permit. Their concern was that WDEQ based the year-round effluent limit of 88 degrees Fahrenheit on a relatively small set of instream temperature measurements within only one season of the year (late summer), and that the assumptions made in calculating the temperature limit may not hold up for other times of the year. The comment also recommended a temperature monitoring requirement more frequent than quarterly.</p>	<p>The permit explains how WDEQ derived the effluent limit of 88 degrees Fahrenheit for temperature at the outfalls. The intent of the effluent limit is to prevent the discharge from warming Badwater Creek beyond allowable levels (2 degree Fahrenheit increase). Based on available temperature data, WDEQ estimates that the discharge loses, on average, 20 degrees F during its travel down Alkali Creek. This is a conservative estimate because the stream temperature data was collected in the warmest months of the year, when the water-to-air heat loss gradient is lowest. This represents a minimal heat flux condition as the ambient air temperature approaches the temperature of the effluent. Heat loss of the effluent during stream travel in colder months is likely greater. WDEQ is continuing to monitor temperature on Alkali Creek, as well as on Badwater Creek as part of its ongoing sampling and analysis plan for Badwater Creek. The effluent limit can be revised if necessary, based on data collected in the future. WDEQ has determined that the temperature effluent limit established in the permit is appropriately set.</p>
29	<p><b>Recreational, fish and aquatic life uses in Boysen Reservoir and Wind River Canyon:</b>            Many comments mentioned personal and commercial use of Boysen Reservoir and Wind River Canyon for fishing, swimming, boating and guiding, as well as the need to protect fish and aquatic life habitat there. These comments ranged from general tourism on those water bodies and its economic benefit to nearby communities, to specific concerns about impacts to lake bottom habitat for fish in Badwater Bay. Concerns were presented that these uses might already be impaired from existing discharges, or may become impaired from continued Moneta Divide discharge.</p>	<p>The revised draft permit includes conditions to protect water quality in Boysen Reservoir and the Wind River Canyon. All effluent limits established in this draft permit are set to protect the existing and designated uses within these water bodies, including primary contact recreation, along with fish and aquatic life habitat. The Moneta Divide facility originated in the mid-1960's. The revised draft permit renewal does not allow an expansion of the discharge. The discharge requirements include new routine instream sampling; new effluent limits for temperature, sulfides, radium, barium, chloride; new routine screening of the discharge for frac chemicals and well additives; and new requirements for whole effluent toxicity (WET) testing.</p>

	<u>Summary of Public Comments</u>	<u>WDEQ Response</u>
30	<p><b>Irrigation Water Quality:</b> General comments were submitted reminding WDEQ that Boysen Reservoir is used as an irrigation water supply, and that continued discharge of salts into the lake may eventually result in impacts to irrigated crops and land.</p>	<p>The revised draft permit does not allow for any increase in salt load from the Moneta Divide facility. Irrigation water quality is expected to remain unchanged as a result of this permit renewal.</p>
31	<p><b>Water Management at Facility:</b> Some commenters suggested re-injecting all produced water into disposal wells instead of discharging to the surface. Others wondered why WDEQ does not force Aethon to treat all of the water it is discharging. And many comments expressed surprise and concern that WDEQ issues discharge permits for oil and gas facilities at all.</p>	<p>Discharge permits are a key part of administering the Clean Water Act. WDEQ allows discharge of produced water if the applicant meets all required effluent limits and permit requirements designed to be protective of downstream water quality. If a company or municipality proposes surface discharge for their effluent, then WDEQ sets the necessary conditions on that discharge. The proposed conditions in this permit are established to protect all designated uses on the downstream waters. These conditions are consistent with or more stringent than those for similar EPA-permitted facilities in the same watershed.</p>
32	<p><b>Water Quality risks to Livestock and Wildlife:</b> General concerns were submitted relating to future health of livestock and wildlife if discharges are allowed to continue. These comments focused primarily on Alkali Creek and Badwater Creek, which are the immediate receiving streams below the project area.</p>	<p>All surface waters in Wyoming are protected for livestock and wildlife uses. All effluent limits in this permit are written to ensure that livestock and wildlife uses are maintained in the downstream waters. In addition, the landowner situated in and immediately downstream of the project area does rely on, and has requested, the discharge water for livestock and wildlife watering.</p>
33	<p><b>Erosion:</b> Several comments noted that continued discharge could result in significant erosion below the discharge facility if precautions were not taken to stabilize the stream channels. Erosion would then result in damage to both the eroded/scoured area as well as any affected areas downstream receiving mud and sediment deposits.</p>	<p>Because the discharge facility will be held to its historic flow rate., WDEQ does not expect any added erosion risk from the discharge. In addition, the permit retains its requirement for the operator to monitor and mitigate any erosion that might take place. The permittee has been complying with this requirement and has taken steps to minimize erosion, including recent relocation of the highest flowing outfall (001) to a more stable area.</p>