

STATE OF COLORADO

John W. Hickenlooper, Governor
Larry Wolk, MD, MSPH
Executive Director and Chief Medical Officer

Dedicated to protecting and improving the health and environment of the people of Colorado

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Colorado Department
of Public Health
and Environment

December 19, 2013

Michael J. Gardner
WPX Energy Rocky Mountain LLC
1058 County Road 215
Parachute, CO 81635

**RE: Modification to Certification, Colorado Discharge Permit System – Produced Water Treatment Facilities
Permit Number COG840000 Certification Number: COG840014**

Dear Mr. Gardner:

Enclosed please find a copy of the permit certification for the Mautz Ranch Treatment facility, discharging to an intermittent stream tributary to the Colorado River, which was issued under the Colorado Water Quality Control Act. **Please read the enclosed permit and certification, as well as this letter, which outline the requirements under this permit, and the explanation of how certain limitations were developed.** The Division holds the permittee legally liable for all permit requirements.

Minor Modification 2013

This Minor Modification 1 is necessary to correct the company name from WXP Energy Rocky Mountain LLC as indicated on the original permit application received January 16, 2013 and re-signed March 1, 2013 to WPX Energy Rocky Mountain LLC as indicated on the revised application received via email on November 20, 2013.

The following information describes how the limitations and permit requirements were developed.

Facility Information:

• **Industry Description**

The Mautz Ranch Treatment facility (WWTF) will treat produced water and flow back water from a non-conventional natural gas and Natural Gas Liquids (NGL) production operation. This will be a new facility designed to treat 10,000 barrels water per day (bwpd) or 0.42 million gallons per day (MGD).

This facility may be subject to Colorado Department of Public Health and Environment Solid Waste Unit regulations pertaining to solid waste sites and facilities and may need a Certificate of Designation. The facility may also be subject to permitting by the Air Pollution Control Division. The discharge of treated water to adjacent surface waters requires a discharge permit from the Water Quality Control Division (WQCD).

• **Treatment Facility Description**

The proposed process consists of two primary treatment systems: pretreatment and desalination by reverse osmosis technology. The pretreatment will consist of electrocoagulation, tube settling clarification, spiral wound ultrafiltration and weak acid cation exchange softening. The desalination system consists of a primary reverse osmosis system, a brine recovery reverse osmosis system, and chemical feed for pH adjustment and remineralization prior to discharge. The maximum anticipated flow rate to be discharged is estimated at 0.42 MGD.

- **Chemical Usage**

The permit application states that the following chemicals are used in the treatment process. The ion exchange process uses sodium hydroxide, hydrochloric acid and membrane cleaner. The reverse osmosis system uses antiscalant and pH neutralizer. The calcium chloride is added to the treated discharge. The MSDS documents for these chemicals are provided in the permit application. The MSDS sheets have been reviewed and the following chemicals have been approved for use.

Chemical Name	Purpose	Constituents of Concern
30% Sodium Hydroxide	Ion Exchange Resin Regeneration, Membrane Cleaning, pH Adjustment	Sodium hydroxide
General Purpose Antiscalant Dispersant	Antiscalant, Silica Dispersant	Acidic (pH)
30% Hydrochloric Acid	Ion Exchange Resin Regeneration, Membrane Cleaning	Hydrochloric acid
30-35% Calcium Chloride Liquid	Sodium Absorption Ratio (SAR) Adjustment	Calcium chloride

Chemicals deemed acceptable for use in waters that will or may be discharged to waters of the State are acceptable only when used in accordance with all state and federal regulations, and in strict accordance with the manufacturer's site-specific instructions.

Basis of Certification Limitations:

- **Stream Segment Information**

The discharge is to Ryan Gulch, within Segment COLCWH16 of the White River Sub-basin, Lower Colorado River Basin, found in the Classifications and Numeric Standards for the Lower Colorado River Basin (Regulation No. 37; last update effective September 30, 2013). Segment 16 is undesignated and is classified for the following beneficial uses: Recreation Class P, Aquatic Life Class 2 Warm, and Agriculture with a full suite of aquatic life-based standards.

Ryan Gulch is a direct tributary to Piceance Creek which is a tributary to the White River. The Mautz Ranch facility will discharge to Ryan Gulch at a location approximately 8 miles above the confluence with Piceance Creek and approximately 20 miles upstream of the White River.

- **Technology Based Standards**

The limitations for BOD₅ and total suspended solids are from Regulation No. 62, which apply to all discharges that would be covered under this General Permit.

Limitations for oil and grease are in accordance with the federal effluent limit guideline developed by the EPA for the Oil and Gas Extraction Industry for the protection of Agricultural and Wildlife Water Use in 40 CFR 435 Subpart E. Note, in accordance with Regulation No. 62 at 62.4(2), this federal limit overrides the Colorado limit.

- **Water Quality Standards**

Effluent limitations for metals and inorganics are based on the water quality standards specific to stream segment COLCWH16. Metals standards are based on the aquatic life Table Value Standards (TVS) which are mostly hardness-based equations. Hardness data was assessed from 2007 data collected by the WQCD at station 11627, Ryan Gulch above Piceance Creek at 24 Road, and Shell Oil at station CR456, Ryan Gulch near mouth. The mean hardness was capped at 400 mg/l. The resulting TVS at a hardness of 400 mg/l are presented in the table below.

There are no currently identified drinking water intakes on Ryan Gulch, or immediately downstream of this discharge; therefore, water supply based limitations will not be applied.

For organic parameters, the aquatic life limits in Regulation No. 31 will be applied.

Several parameters were evaluated which are not typically pollutants of concern for this type of facility. BOD₅, ammonia and Total Residual Chlorine (TRC) are more typically of concern for domestic facilities; however, data provided by the permittee indicates the presence of these constituents at or above effluent limits. Values for BOD and TRC have led to the inclusion of numeric limits. Ammonia values have resulted in a reporting requirement for this permit term. It should be noted an *E.coli* limit was evaluated for this facility due to the listing of Ryan Gulch on the Colorado Monitoring and Evaluation List for *E.coli*. It is anticipated due to reasonable potential that the Mautz Ranch facility will not discharge *E.coli* at levels requiring a limit.

Temperature limits will not be applied as the receiving stream is assumed to be a zero low flow stream in all months. The temperature of the discharge into Ryan Gulch is unlikely to affect Piceance Creek 8 miles downstream.

Effluent limits for certification under this general permit are set at the water quality standard without allowances for dilution.

Parameter	In-Stream Water Quality Standard		TVS Formula: Hardness (mg/l) as CaCO ₃ =	400
Aluminum, Total Recoverable	Acute	10071 µg/l	$e^{(1.3695(\ln(\text{hardness}))+1.8308)}$	
	Chronic	1438 µg/l	$e^{(1.3695(\ln(\text{hardness}))-0.1158)}$	
Cadmium, Dissolved	Acute	9.1 µg/l	$[1.136672-0.041838\ln(\text{hardness})]e^{(0.9151(\ln(\text{hardness}))-3.1485)}$	
	Chronic	1.2 µg/l	$[1.101672-0.041838\ln(\text{hardness})]e^{(0.7998(\ln(\text{hardness}))-4.4451)}$	
Trivalent Chromium, Dissolved	Acute	1773 µg/l	$e^{(0.819(\ln(\text{hardness}))+2.5736)}$	
	Chronic	231 µg/l	$e^{(0.819(\ln(\text{hardness}))+0.5340)}$	
Hexavalent Chromium, Dissolved	Acute	16 µg/l	Numeric standards provided, formula not applicable	
	Chronic	11 µg/l	Numeric standards provided, formula not applicable	
Copper, Dissolved	Acute	50 µg/l	$e^{(0.9422(\ln(\text{hardness}))-1.7408)}$	
	Chronic	29 µg/l	$e^{(0.8545(\ln(\text{hardness}))-1.7428)}$	
Lead, Dissolved	Acute	281 µg/l	$[1.46203-0.145712\ln(\text{hardness})]e^{(1.273(\ln(\text{hardness}))-1.46)}$	
	Chronic	11 µg/l	$[1.46203-0.145712\ln(\text{hardness})]e^{(1.273(\ln(\text{hardness}))-4.705)}$	
Manganese, Dissolved	Acute	4738 µg/l	$e^{(0.3331(\ln(\text{hardness}))+6.4676)}$	
	Chronic	2618 µg/l	$e^{(0.3331(\ln(\text{hardness}))+5.8743)}$	
Nickel, Dissolved	Acute	1513 µg/l	$e^{(0.846(\ln(\text{hardness}))+2.253)}$	
	Chronic	168 µg/l	$e^{(0.846(\ln(\text{hardness}))+0.0554)}$	
Selenium, Dissolved	Acute	18.4 µg/l	Numeric standards provided, formula not applicable	
	Chronic	4.6 µg/l	Numeric standards provided, formula not applicable	
Silver, Dissolved	Acute	22 µg/l	$\frac{1}{2} e^{(1.72(\ln(\text{hardness}))-6.52)}$	
	Chronic	3.5 µg/l	$e^{(1.72(\ln(\text{hardness}))-9.06)}$	
Zinc, Dissolved	Acute	467 µg/l	$0.978e^{(0.8525(\ln(\text{hardness}))+1.0617)}$	
	Chronic	405 µg/l	$0.986 e^{(0.8525(\ln(\text{hardness}))+0.9109)}$	

- Antidegradation**

Because the receiving water is undesignated or “reviewable”, an antidegradation evaluation is applicable to this discharge. In accordance with the Master General Permit COG840000, Regulation No. 31 and the Division’s Antidegradation Significance Determination Guidance Document, water quality based permit limits will be set at the water quality standard and in addition, antidegradation-based limits will be set at the Significant Concentration Threshold (SCT) or in this case at 15% of the water quality standard. The antidegradation-based limits will be implemented at a 2 year rolling average interval. Note that any future renewals of this certification which include additional parameters will also have limits set equal to the SCT.

In addition to establishing effluent limits at the SCT, Mercury must be evaluated for effluent limits set at the Threshold Load (TL) since it is a bioaccumulative toxic pollutant. The Threshold Load is established based on Baseline Water Quality which in the case of mercury in the Colorado River is non-detect. The Threshold Load is set at 10% of the Baseline Water Quality Load. As detection limits have changed over the years, it is difficult to determine the actual concentration of mercury in Ryan Gulch at baseline conditions. The Division routinely characterizes water quality parameter concentrations below the Practical Quantitation Level as zero. The Division will not establish an effluent limit set at 10% of zero; therefore, the Division would require an effluent limit set to non-detect for mercury analyses using a PQL of 0.003 µg/l. The mercury analysis PQL is included in Part I Section E (3) of the General Permit COG840000.

Since the antidegradation-based mercury effluent limit was already evaluated at the SCT to be 0.0015 µg/l, the limit evaluated at the TL would be higher at 0.003 µg/l; therefore, the chosen limit in the permit will be the 0.0015 µg/l. Note, the Division also evaluated using half the detection limit to establish a baseline water quality concentration. The limit set at 10% of that baseline load was also still higher than the 0.0015 µg/l SCT limit.

- TMDL**

Stream segment COLCWH16 is not on the State’s 303(d) list, and therefore TMDLs do not apply. Segment COLCWH16, Ryan Gulch portion, is on the Monitoring and Evaluation List for *E.coli*.

- Salinity – Colorado River Basin Regulations**

As the discharge is to the Colorado River basin, reduced salt loading is required through Regulation No.39 and its’ implementing requirements in Regulation No. 61. For industrial sources, the no-salt discharge requirement may be waived where the salt load reaching the mainstem of the Colorado River is less than 1 ton per day, or 350 tons per year. In

addition, the maximum TDS concentration considered to be fresh water is 500 mg/l for discharges to the Colorado River. See Regulation No. 61.8(2)(l)(i)(A) for more information.

Based on data submitted by the permittee, the 500 mg/l, 1 ton per day or 366 tons per year criteria can be met and therefore report only requirements will be required during this permit term.

- **Narrative Standards**

Section 31.11(1)(a)(iv) of The Basic Standards and Methodologies for Surface Waters (Regulation No. 31) includes the narrative standard that State surface waters shall be free of substances that are harmful to the beneficial uses or toxic to humans, animals, plants, or aquatic life.

- **Agricultural Protection**

For protection of Agricultural uses, the interpretation of these conditions (i.e., “no harm to plants” and “no harm to the beneficial uses”) and how they were to be applied in permits were contemplated by the Division as part of an Agricultural Work Group, and culminated in the most recent policy entitled Implementing Narrative Standards in Discharge Permits for the Protection of Irrigated Crops (hereafter the Narrative Standards policy). There are no identified agricultural diversions in the 8 mile stretch of Ryan Gulch below the discharge; therefore, this policy is not applied.

- **Reasonable Potential**

All parameters were evaluated as part of a Reasonable Potential Analysis based on data provided by the permittee. Parameters without reasonable potential to be present in the discharge were excluded from effluent limitations. Parameters requiring more data to make a definitive evaluation will have a Report only requirement. Data on beryllium were not available; therefore, limits are included in this permit term.

As indicated in the section on water quality standards, *E.coli* is not included as a limit as a result of the reasonable potential analysis.

- **Whole Effluent Toxicity**

This discharge may contain metals and/or salts at concentrations that may be toxic to aquatic life, as well as organics found in the treated water or applied in the chemical usage.

General Information:

- **Permit Action Fees** - There is no fee for this permit action.
- **Changes to the Certification** – Any changes that need to be made to the certification page – changes in outfalls, monitoring requirements, etc., must be submitted using the “Permit and Certification Modification form” available on our website: coloradowaterpermits.com, and signed by the legal contact.
- **Discharge Monitoring Report (DMR)** - forms will be mailed out within the next month. Reports must be submitted **monthly** as long as the certification is in effect. The permittee shall provide the Division with any additional monitoring data on the permitted discharge collected for entities other than the Division. This will be supplied to the Division within 48 hours of the receipt of the data by the permittee. If forms have not been received, please contact the Division at 303-692-3517.
- **Sampling Requirements** - Sampling shall occur at a point after treatment, or after the implementation of any Best Management Practices (BMPs). If BMPs or treatment are not implemented, sampling shall occur where the discharge leaves control of the permittee, and prior to entering the receiving stream or prior to discharge to land. Samples must be representative of what is entering the receiving stream.
- **Termination requirements** - This certification to discharge is effective long term. For termination of permit coverage, the permittee must initiate this by sending the “CDPS Permits Authorization Termination Form”. This form is available on the Division’s web site and must be signed by the legal contact.
- **Certification Records Information** - The following information is what the Division records show for this certification. For any changes to Contacts – Legal, Local, Billing, or DMR – a “Notice of Change of Contacts form” must be submitted to the Division. This form is available on the Division’s web site and must be signed by the legal contact.

Facility: Mautz Ranch WPX Energy Rocky Mountain LLC
Industrial Activities: Impounding and Storing salt water, oil and gas field

Garfield County
SIC Code : 13899909

Legal Contact *Receives all legal documentation, pertaining to the permit certification. [including invoice; is contacted for any questions relating to the facility; and receives DMRs.]*

Michael J. Gardner, Environmental Manager
WPX Energy Rocky Mountain LLC
1058 County Road 215
Parachute, Colorado 81635

Phone number: 970-263-2760
Email: Michael.Gardner@wpxenergy.com

Facility Contact *Contacted for general inquiries regarding the facility*

Peggy Carter, Operations Engineer
WPX Energy Rocky Mountain LLC
1058 County Road 215
Parachute, Colorado 81635

Phone number: 970-263-2750
Email: Peggy.Carter@wpxenergy.com

Billing Contact

Leland Harris, Supervisor Wastewater Operations
WPX Energy Rocky Mountain LLC
1058 County Road 215
Parachute, Colorado 81635

Phone number: 970-263-5304
Email: Leland.Harris@wpxenergy.com

DMR Contact

Same as Legal

If you have any other questions please contact me at 303-692-6318.

Sincerely,



Susan Applegate
Assessment Based Permits Unit
WATER QUALITY CONTROL DIVISION

Enclosures: Certification page; General Permit

xc:

Rio Blanco County, Local County Health Department
Permit File: COG840014