



State of Utah

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Environmental Quality

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DIVISION OF WATER QUALITY  
Erica Brown Gaddis, PhD  
Director

July 21, 2020

Karin Madsen, Environmental Engineering Technician  
UtahAmerican Energy, Inc. – Lila & Crandall Canyon Mines  
PO Box 910 East  
Carbon, Utah 84520

**Via Email**

Subject: **Approval of Salinity Offset Plan for the Lila & Crandall Canyon Mine Facilities  
UPDES Permit Nos. UT0024368, UT0026018 & UTG040024**

Dear Ms. Madsen:

The Division of Water Quality (DWQ) is in receipt of your plan entitled; ***“2020 Colorado River Salinity Offset Program Participation Plan, Utah American Energy, Inc.”*** submitted via email on July 13, 2020 (Plan). Upon review of the Plan, DWQ has determined that it meets the salinity offset provision requirements in of the applicable UPDES permits referenced above. Therefore, the Salinity Offset Program Participation Plan as submitted and attached hereto is hereby approved.

The Plan will be included with the applicable UPDES permit files and along with all of the requirements, conditions and limitations of the existing UPDES permit, remain in full force and effect. Subsequent to the Plan approval, DWQ will propose a separate Funding Agreement to account for the salinity-offset credits to be purchased as appropriate.

Thank you for your continued compliance efforts in protecting Utah’s Water Quality. If you have any questions with regard to this matter, please contact Jeff Studenka of this office at (801) 536-4395 or [jstudenka@utah.gov](mailto:jstudenka@utah.gov).

Sincerely,

Erica Brown Gaddis, PhD  
Director

EBG/DH/JAS/blj

Enclosures: 1. Salinity Offset Plan (DWQ-2020-014764)

Page 2

UtahAmerican Energy, Inc. – Lila & Crandall Canyon Mines  
UPDES Permit Nos. UT0024368, UTG040024 & UT0026018

Cc: Via Email

Amy Clark, EPA Region VIII  
Orion Rogers, SE Utah District Health Department  
Russell Seeley, DEQ District Engineer  
Steve Christensen, Division of Oil Gas & Mining  
Mark Quilter, Utah Department of Agriculture and Food

DWQ-2020-014766

# 2020 Colorado River Salinity Offset Program Participation Plan

## Utah American Energy, Inc.

### Introduction

UtahAmerican Energy, Inc. (UEI), through its Utah subsidiaries, operates two coal facilities that hold active Utah Pollutant Discharge Elimination Systems (UPDES) Individual Permits for discharging intercepted groundwater and/or storm water runoff to waters of the State. The UPDES permit program is operated by the Utah Department of Environmental Quality's Division of Water Quality (DWQ). Because the receiving waters for all of these facilities are ultimately tributary to the Colorado River, the UPDES permits also incorporate Colorado River Basin Salinity Control Forum (CRBSCF) salinity standards and relevant implementation policies.

The two UtahAmerican Energy facilities are: the Genwal Resources, Inc. Crandall Canyon Mine, and the UtahAmerican Energy Inc., Lila Canyon Mine. Both mines are owned by Murray Energy/UtahAmerican Energy, Inc. (UEI). The UPDES individual Permits for these facilities are listed below.

<b>FACILITY</b>	<b>UPDES PERMIT No.</b>	<b>RECEIVING WATER</b>
Crandall Canyon Mine	UT0024368	Crandall Creek
Lila Canyon Mine	UT0026018 (formerly UTG040024)	Grassy Wash

Each of these permits incorporates a CRBSCF requirement that limits salt load to no more than one ton/day. Salt load is a function of the quantity (rate) of water discharged and its total dissolved solids (TDS) concentration. All water that has been discharged historically at the UEI mines is groundwater that has been intercepted during mining. This groundwater must be pumped out of mine workings in order to maintain a safe and viable mine operation. (Although permitted discharge outfalls are also in place at each facility to discharge storm water runoff, they have never been used because all runoff has been stored in sediment retention ponds located upstream of the outfalls.) As will be discussed later, the one ton/day salt load limit has become difficult to meet at these mines.

DWQ and the CRBSCF recognize that neither the quantity nor quality of groundwater intercepted by mines can be easily controlled. They also recognize that discharging intercepted groundwater is a different situation than discharging other industrial wastewaters. One of the CRBSCF implementation policies that apply to intercepted groundwater is to allow salinity offset. The DWQ administers a Colorado River Salinity Offset Program wherein salinity credits can be purchased as offsets against UPDES-permitted discharges. This program enables mines to continue to operate when salt load limits cannot be met. The Individual UPDES permits for both facilities stipulate that if the TDS load limit cannot be met, participation in the Offset Program must be pursued.

Therefore, UEI plans to participate in the program by funding a salinity offset project during the periods of mine operation. This will generate TDS credits so that mine operations can continue. The following information describes how UEI proposes to meet the requirements.

### **Discharge History**

The Salinity Offset Program operates on a ton-for-ton basis. This means that offset needs (over the above and allowable one ton/day) must be estimated for each facility using existing or projected discharge rate and TDS concentration data. Each of the facilities and their discharge history is briefly described below.

#### **Crandall Canyon Mine**

The Crandall Canyon Mine began operation in the early 1990s. The mine is covered by an individual UPDES Permit (#UT0024368), and the current permit term is May 1, 2016 to April 30, 2021. There are two permitted discharge outfalls for this facility: Outfall 001 is located immediately downstream from the sediment pond that collects all surface runoff from the mine surface facilities; and Outfall 002 collects and discharges intercepted groundwater from several underground sumps in various locations of the underground mine. Outfall 001 has rarely discharged. Outfall 002 has essentially discharged continuously for the past 10 years. Both outfalls currently discharge into Crandall Creek, which is tributary to Huntington Creek in Emery County, Utah.

Since January 2000, average monthly discharges have ranged from about 135 gallons per minute (GPM) to about 940 GPM, with a recent average of about 350 GPM. Over that time period, though there have been some fluctuations in flow, as expressed by the range, there has been no trend toward either increasing or decreasing flows.

TDS of the groundwater intercepted by the Crandall Canyon Mine has averaged about 440 mg/L since January 2000, but in the last few years, has often be in the mid-500 mg/L range. Under the UPDES permit terms there is no TDS load limit in effect during months when the average monthly TDS is 500 mg/L or less. During the past year, about half of the months were less than 500 mg/L and half were greater than 500 mg/L.

When TDS is greater than 500 mg/L, the one ton/day salt load limit is typically exceeded by Crandall Canyon's discharge.

#### **Lila Canyon Mine**

The Lila Canyon Mine has been in operation since 2008. It is adjacent to the old Horse Canyon Mine which closed in the mid 1990's, and has been operating under the UPDES General Permit No. UTG40024 as well as UPDES Permit No. UT0026018. However, these two UPDES permits will be combined into one permit, UT0026018 upon re-issuance sometime later in 2020.

There are 2 discharge points, Outfall 001 at the Sediment Pond that discharges to Grassy Wash, and Outfall 002 which is Mine Portal Water that discharges to Grassy Wash. Grassy Wash is an ephemeral channel that connects to the Price River Basin. The water that is estimated to leave the mine site will dissipate prior to, and never enter the Price River Basin.

The water being discharged from Lila Canyon Mine will be a mixture of water that has built up in the old Horse Canyon workings, which has higher dissolved solids concentration than Crandall Canyon Mine, and the Longwall District One water that drips naturally within the Lila Canyon workings. The water will combine within the mine, and run through a Reverse Osmosis system and then be discharged from the mine. We are anticipating approximately 2000 ppm TDS.

Due to the TDS concentrations, Lila Canyon Mine will have difficulties meeting the one ton/day salt load limit. To help control higher concentrations of Total Suspended Solids, a coagulation chemical (such as Ultrion 8187) may be injected in the mine and the water is allowed to settle out prior to discharging from the 002 point.

### **Offset Plan Elements**

UEI, after discussions with DWQ staff, proposes to participate in the Salinity Offset Program by contributing monies to the state's special revenue Salinity Offset Fund. This alternative has been chosen over the other potential mechanism for obtaining salt offset credits – that of designing, constructing, and implementing and offset project. Funds provided by UEI. will be used to finance salinity reduction projects that will be provided to result in a ton-for-ton salt reduction.

There are three steps to determine the funding amount that UEI. must provide:

- 1) UEI. must **estimate the salt load** it will add to receiving waters in excess of the allowable one ton/day.
- 2) DWQ will use various numeric formulas and published figures (including basin-specific efficiency ratios of leaching fractions), factoring in amortization, engineering uncertainty, and administrative costs, to **determine a current, project-specific salinity removal cost.**
- 3) Numbers generated during the first two steps will then dictate the **total sum** that UEI will need to contribute to the Offset Fund.

In deriving the estimate for the first step, UEI has assumed the following:

- The historical discharge rates and TDS concentrations at the facilities are a reasonable predictor of future load needs. The future load estimates are generally based upon the historical averages, while also considering more recent trends.
- Both facilities will participate jointly in the Salinity Offset project. The total combined salt credits needed will be purchased jointly, and used as a common “bank”. The bank will be depleted by each facility according to its need.
- UEI will purchase a sufficient amount of salt credits to cover an assumed 2 year life-of-mine at each operation.

The following table shows the predicted salt load derivation at each facility. It also shows a calculated net total salt offset needed of 8.86 tons/day (after the allowable one ton/day/facility is subtracted). Over a 2 year period 5,840 tons of salt credits that UEI will need to purchase

<b>FACILITY</b>	<b>ASSUMED FUTURE AVERAGE FLOW RATE (gpm)</b>	<b>ASSUMED FUTURE AVERAGE TDS CONCENTRATION (mg/L)</b>	<b>CALCULATED AVERAGE DAILY SALT LOAD (tons/day)</b>
Crandall Canyon Mine	375	555	1.25
Lila Canyon Mine	1000	800	9.61
<b>Total Salt Load</b>			10.86
<b>Net Total of Salt Offset Needed*</b>			8.86

\*(after subtraction of allowable one ton/day/facility)

The unit costs that DWQ will assess to UEI will vary according to the salinity-control unit in which the discharges are located. The Lila Mine and Crandall Canyon Mine are both in the Upper Colorado River Basin's Price-San Rafael Unit.

### **Plan Monitoring Schedule**

In addition to the routine monitoring and reporting via Discharge Monitoring Reports (DMRs) that is required for each of the UPDES permits, UEI will also need to closely track its use of the banked salt credits. The basis for this tracking will be the average daily TDS load for each month, which is reported as tons per day on the monthly DMRs. In addition to both of the facilities submitting their individual DMRs each month, UEI will submit a tracking spreadsheet to DWQ each month. The spreadsheet will be similar to the one attached to this plan. It will include an accounting of the salt credits used by each facility for the current month; a cumulative, running total of salt credits depleted up to and including the current month; and a record of the remaining available salt credits.

The tracking spreadsheet will be evaluated regularly by UEI and by DWQ. UEI and DWQ will review on at least an annual basis beginning in Quarter 4 2020, the salt credits used to date vs. the remaining salt credits available. When and if remaining available salt credits begin to run low, a renewed assessment of future salt credit needed by UEI will be undertaken. This will be done in a timely manner to ensure that there is sufficient time to prepare and obtain approval for a new or updated Salinity Offset Program Participation Plan prior to complete depletion of the available credits. UEI understands that the cost of any additional needed credits will be based on cost data in effect at the time, which is likely to be greater than the cost basis for credits purchased under this current plan. Further, implicit in the current plan is the assumption that, while the best possible estimates were used to derive a total five-year credit need, actual use of the purchased salt credits cannot be predicted exactly. Credits may be depleted at a faster or slower rate than has been assumed. UEI understands that any credits that are purchased, but remain unused, will not be reimbursed. Additional credits may be purchased in batches as needed at a monetary amount to be determined by the Division.

## Program Costs and Payment Schedule

The total cost for UEI to continue participation through 2023 in the Salinity Offset Program by purchasing salt offset credits will be determined by DWQ and assigned upon approval of this Plan and corresponding Funding Agreement.

UEI will contribute this dollar amount to the state’s special revenue Salinity Offset Fund based on the terms set forth in a Funding Agreement to be developed by UEI and DWQ.

2020	Genwal	Lila Canyon	Total Credit
Average Flow Rate (gpm)	500.00	800.00	
Average TDS Concentration	650.00	2,000.00	
Average Calculated Salt Load	1.95	7.00	
Subtract Allowable 1 ton/day	1.00	1.00	
Total Credit	365.00	2,555.00	2,920.00
2021	Genwal	Lila Canyon	Total Credit
Average Flow Rate (gpm)	375.00	800.00	
Average TDS Concentration	555.00	2,000.00	
Average Calculated Salt Load	1.25	7.00	
Subtract Allowable 1 ton/day	1.00	1.00	
Total Credit	365.00	2,555.00	2,920.00
Total for 5 Year plan	Genwal	Lila Canyon	Total Credit
Year 2020	365	2,555	2,920
Year 2021	365	2,555	2,920
Total Credits for 2 years	730	5,110	5,840

Upon written request to DWQ to exercise this provision, UEI will contribute this dollar amount to the state’s special revenue Salinity Offset Fund based upon the terms set forth in a Funding Agreement to be developed by UEI and DWQ, while the mines are actively operating.

DWQ-2020-014764