

**FACT SHEET AND STATEMENT OF BASIS  
HIAWATHA COAL COMPANY, INC. – HIAWATHA MINE  
DISCHARGE RENEWAL PERMIT  
UPDES PERMIT NUMBER: UT0023094  
MINOR INDUSTRIAL FACILITY**

**FACILITY CONTACT INFORMATION**

Contact Name: Charles Reynolds  
Position: Mine Manager  
Phone Number: (801) 857-0399  
Mailing Address: PO Box 1240  
Huntington, Utah 84528

**DESCRIPTION OF FACILITY**

The Hiawatha Coal Company's Hiawatha Mine (Mine) is an inactive underground coal mine operation with *Standard Industrial Classification 1222, for bituminous underground coal mining operations*. The Mine is near the town of Hiawatha, Utah, and is located in Township 16 South, Range 8 East in Emery County and is also located in Township 15 South, Range 8 East in neighboring Carbon County. The Mine currently has a total of 11 outfalls which are authorized to discharge under this UPDES permit. Discharge of mine water drains continuously via Outfall 001. A portion of that mine water from Outfall 001 is piped to Hiawatha for drinking water. The surplus drinking water that is not used is discharged from Outfall 002. The remaining discharge points, Outfalls 003 to 013, are either from sedimentation ponds that collect storm water, or other identified discharge points throughout the Mine facility. These remaining outfalls have not discharged in many years.

**SUMMARY OF CHANGES FROM PREVIOUS PERMIT**

Three changes have been made from the previous permit. First, the Storm Water permit provisions have been removed as part of a programmatic separation of the previously combined UPDES industrial permit. The Mine will now be required to apply for and obtain separate UPDES Industrial Storm Water Permit coverage under the MSGP No. UTR000000, as described further in the Storm Water section of this Fact Sheet. The second change is that Outfalls 005 and 007 have been removed from service and therefore have been removed from this renewal permit as well. The third change is the inclusion of Turbidity monitoring as described in Self-Monitoring & Reporting Requirements section of the permit and Fact Sheet. All other permit provisions remain unchanged.

**DISCHARGE INFORMATION**

**DESCRIPTION OF OUTFALLS**

The permitted discharging outfalls are as follows:

Outfall Numbers

001

Location of Discharge Outfall(s)

Mohrland Portal Discharge: T16S, R8E SLBM, Sec. 8, at longitude 111°03'0" and latitude

39°27'50". The discharge is from mine water to Cedar Creek.

002 Culinary Water Overflow: T15S, R8E SLBM, Sec. 34, at longitude 111°01'0" and latitude 39°28'50". The discharge is overflow from the Hiawatha drinking water system to Miller Creek.

003 Hiawatha Sediment Pond D003: T15S, R8E SLBM, Sec 27, at longitude 111°0'50" and latitude 39°29'0". The discharge is surface runoff from the Upper Rail Storage Yard Borrow area to Miller Creek.

004 Slurry Pond #1 Sediment Pond: T15S, R8E SLBM, Sec 26, at longitude 111°0'10" and latitude 39°29'20". The discharge is surface runoff from the disturbed area of the Ridge Borrow area to Miller Creek.

006 Hiawatha Sediment Pond D006: T15S, R8E SLBM, Sec 34, at longitude 111°0'15" and latitude 39°28'35". The discharge is surface runoff from slurry pond #5 cell 5A to Miller Creek.

008 Middle Fork Sediment Pond: T15S, R8E SLBM, Sec 29, at longitude 111°02'40" and latitude 39°29'0". The discharge is surface runoff from the Middle Fork Mine Yard to Miller Creek.

009 South Fork Mine Yard: T15S, R8E SLBM, Sec 19, at longitude 111°02'35" and latitude 39°28'50". The Discharge is surface runoff from the South Fork Mine Yard to Miller Creek.

010 King 4 Mine Discharge: T15S, R7E SLBM, Sec 32, at longitude 111°03'45" and latitude 39°32'15". The Discharge is from sump locations within the mine to Miller Creek.

011 South Fork Truck Loading Facility: T15S, R8E SLBM, Sec 33, at longitude 111°02'28" and latitude 39°28'47". The Discharge is surface runoff from the South Fork Loading facility to Miller Creek

012 Mohrland Pipeline Drain: T15S, R8E SLBM, Sec 10, at longitude 111°0'45" and latitude

39°26'30". The discharge is from a valve on the Mohrland Pipeline to Miller Creek.

013

King 6 Water Tank Overflow: T15S, R8E SLBM, Sec 32, at longitude 111°03'07" and latitude 39°29'0". The discharge is from an overflow pipe from the King 6 water tank in South Fork Canyon to Miller Creek.

### RECEIVING WATERS AND STREAM CLASSIFICATION

Outfall 001 discharges to Cedar Creek which flows to Huntington Creek. Outfall 002 discharges to Miller Creek, then to the Price River. Outfalls 003 through 013 discharges are to Miller Creek but have not discharged during the past ten years or more. The receiving waters as designated by *Utah Administrative Code (UAC) R317-2-13* are as follows:

Class 2B – protected for secondary contact recreation such as boating, wading, or similar uses.

Class 3C – protected for nongame fish and other aquatic life, including the necessary aquatic organisms in their food chain.

Class 4 – protected for agricultural uses including irrigation of crops and stock watering.

### BASIS FOR EFFLUENT LIMITATIONS

In accordance with regulations promulgated in *40 Code of Federal Regulations (CFR) Part 122.44* and in *Utah Administrative Code (UAC) R317-8-4.2*, effluent limitations are derived from technology-based effluent limitations guidelines, Utah Secondary Treatment Standards (*UAC R317-1-3.2*) or Utah Water Quality Standards (*UAC R317-2*). In cases where multiple limits have been developed, those that are more stringent apply. In cases where no limits or multiple limits have been developed, Best Professional Judgment (BPJ) of the permitting authority may be used where applicable. "Best Professional Judgment" refers to a discretionary, best professional decision made by the permit writer based upon precedent, prevailing regulatory standards or other relevant information.

Permit limits can also be derived from the Wasteload Analysis (WLA), which incorporates Secondary Treatment Standards, Water Quality Standards, including Total Maximum Daily Load (TMDL) impairments as appropriate, Antidegradation Review (ADR) and designated uses into a water quality model that projects the effects of discharge concentrations on receiving water quality. Effluent limitations are those that the model demonstrates are sufficient to meet State water quality standards in the receiving waters. During this UPDES renewal permit development, a WLA and ADR were completed. An ADR Level I review was performed and concluded that an ADR Level II review was not required this time since there are no proposed increases in flow or concentrations from the previous permit. The WLA indicates that the effluent limitations will be sufficiently protective of water quality, in order to meet State water quality standards in the receiving waters. The WLA and ADR are attached as an addendum to this Fact Sheet.

The following list is the basis of the effluent limitations for permit parameters:

- 1) Since the Mine discharge meets the EPA definition of “alkaline mine drainage,” the permittee is subject to the technology based effluent limitations in *40 CFR Part 434.45*. Applicable technology based limits included in the permit are as follows:
  - a. Total suspended solids (TSS) daily maximum limit of 70 mg/L.
  - b. For discharges composed of surface water or mine water commingled with surface water, *40 CFR Part 434.63* allows alternate effluent limits to be applied when discharges result from specific runoff events, detailed below and in the permit. The Mine has the burden of proof that the described runoff event occurred as described in the permit.
    - i. For runoff events (rainfall or snowmelt) less than or equal to a 10-year 24-hour precipitation event, settleable solids may be substituted for TSS and shall be limited to 0.5 milliliters per liter (ml/L). All other effluent limitations must be achieved concurrently, as described in the permit.
- 2) Daily minimum and daily maximum limitations on pH are derived from Utah Secondary Treatment Standards and Water Quality Standards.
- 3) Total dissolved solids (TDS) are limited by both mass loading and concentration requirements as described below:
  - a. Since discharges from the Mine are within the Colorado River Basin, TDS mass loading is limited according to policies established by the Colorado River Basin Salinity Control Forum (Forum), as authorized in *UAC R317-2-4* to further control salinity in the Utah portion of the Colorado River Basin. On February 28, 1977 the Forum produced the “*Policy For Implementation of Colorado River Salinity Standards Through the NPDES Permit Program*” (Policy), with the most current subsequent triennial revision dated October 2020. Based on Forum Policy, salinity-offset provisions have previously been included in the permit to account for any TDS loading in excess of the permit requirement. These provisions and requirements, as described further in both the permit and in this Fact Sheet, will remain in the Mine’s renewal permit as appropriate.
  - b. TDS concentrations are limited by Water Quality Standards in *UAC R317-2-14*, which includes site specific criterion for impaired water bodies as developed through the total maximum daily load (TMDL) process. A TMDL standard has previously been established with a site specific TDS effluent limit of 981 mg/L for the Mine point source discharges, as taken from the *Price River, San Rafael River and Muddy Creek TMDLs for Dissolved Solids –West Colorado Watershed Management Unit, Utah, August 2004*.
- 4) Limitation on total iron is water quality based as presented in the WLA.
- 5) Oil and Grease concentrations are limited to 10 mg/L by BPJ of the permitting authority to be consistent with other industrial facilities statewide.
- 6) The flow limitation is based upon the maximum design effluent flow for the main mine water discharges as previously provided by the facility.

**Reasonable Potential Analysis**

Since January 1, 2016, DWQ has conducted reasonable potential analysis (RP) on all new and renewal applications received after that date. RP for this permit renewal was conducted following DWQ's September 10, 2015 Reasonable Potential Analysis Guidance (RP Guidance). There are four outcomes defined in the RP Guidance: Outcome A, B, C, or D. These outcomes, as detailed further in the attached RP Analysis, provide a frame work for what routine monitoring and/or effluent limitations will be required.

An initial screening RP analysis was performed on the existing parameters of concern (POCs) and effluent data to determine if there was reasonable potential for the Mine water discharges to exceed the applicable water quality standards. The identified POCs include total iron, TDS, TSS and pH as derived from the previous permits, the TMDL and/or WLA. Based on the RP analysis, none of the POCs exceeded the most stringent water quality standard or were determined to have a reasonable potential to exceed the standard. However, a more complete RP analysis could not be conducted on any other metals, because historically metals monitoring has not been required and has only recently been included in the previous permit on an annual basis (except for iron which remains in the permit with a limit). Therefore, this renewal permit will require that the permittee obtain more metals data by continuing to monitor the mine water discharges for total concentrations of arsenic, boron, cadmium, chromium, copper, lead, mercury, nickel, silver, selenium and zinc, so that a more thorough RP analyses can be performed in the future. A copy of the RP analysis is included as an attachment at the end of this Fact Sheet.

The permittee is expected to be able to continue complying with the permit limitations as follows:

Parameter, Units	Effluent Limitations *a			
	Maximum Monthly Average	Maximum Weekly Average	Daily Minimum	Daily Maximum
Total Effluent Flow, MGD, *b	--	--	--	1.0
Total Iron, mg/L	--	--	--	1.0
Total Suspended Solids (TSS), mg/L	--	--	--	70
Total Dissolved Solids (TDS), mg/L, *c	Report	--	--	981
TDS, tons/day/year, *c	--	--	--	1.0/366 *c
pH, Standard Units(SU)	--	--	6.5	9.0
Oil & Grease, mg/L, *d	--	--	--	10

mg/L – milligrams per liter;                      MGD – million gallons per day

**SELF-MONITORING AND REPORTING REQUIREMENTS**

The following self-monitoring requirements are the same as in the previous permit. The permit will require reports to be submitted monthly as applicable, on Discharge Monitoring Report (DMR) forms due 28 days after the end of the monitoring period. Effective January 1, 2017, monitoring results must be submitted using NetDMR unless the permittee has successfully petitioned for an exception. Lab reports for biomonitoring, as well as lab reports for metals and toxic organics, if required in the future must be submitted with the applicable DMRs. A review of the past 5 years of quarterly DMR data reveals that the Mine has had no significant permit exceedances and should be able to continue complying with the permit provisions as included.

Self-Monitoring and Reporting Requirements *a			
Parameter	Frequency	Sample Type	Units
Total Flow, *b	Quarterly	Measured	MGD
Total Iron	Quarterly	Grab	mg/L
TSS	Quarterly	Grab	mg/L
TDS, *c	Quarterly	Grab, Calculated	mg/L & tons/day/year
pH	Quarterly	Grab	SU
Turbidity, *f	Quarterly	Grab	NTU
Oil & Grease, *d	Quarterly	Visual, Grab	Yes/No, mg/L
Total Metals, *e	Annually	Grab	mg/L

There shall be no visible sheen or floating solids or visible foam in other than trace amounts upon any discharges and there shall be no discharge of any sanitary wastes at any time.

\*a See Definitions, Permit Part V.A, for definition of terms.

\*b If the rate of discharge is controlled, such as from intermittent discharging outfalls, the rate and duration of discharge shall be reported. Flow measurements of effluent volumes from all outfalls shall be made in such a manner that the permittee can affirmatively demonstrate that representative values are being obtained.

\*c The TDS concentration from each of the outfalls shall not exceed 981 mg/L as a daily maximum limit. No tons per day TDS loading limit will be applied if the concentration of TDS in the discharge is equal to or less than 500 mg/L as a 30-day average. However, if the 30-day average concentration exceeds 500 mg/L, then the permittee cannot discharge more than 1.0 ton per day or 366 tons per year as a sum from all discharge points. Upon determination from the Director that the permittee is not able to meet the 1.0 ton per day or 366 tons per year loading limit, then the permittee is required to participate in and/or fund a salinity offset project to include the TDS offset credits as appropriate.

The salinity-offset project shall include an approved plan with TDS credits on a ton-for-ton basis for which the permittee is over the 1.0 ton per day or 366 tons per year loading limit. The tonnage reduction from the offset project must be calculated by a method similar to one used by the NRCS, Colorado River Basin Salinity Control Forum, or other applicable agency.

If the permittee will be participating in the construction or implementation of a new salinity-offset project, then a project description and implementation schedule shall be submitted to the Director at least six (6) months prior to the implementation date of the project, which will then be reviewed for approval. The salinity offset project description and implementation schedule must be approved by the Director and shall be appended to this permit.

If the permittee will be funding any additional salinity-offset projects through third parties, the permittee shall provide satisfactory evidence to the Director that the required funds have been deposited to the third party within six (6) months of project approval by the Director. A monitoring and adjustment plan to track the TDS credits shall continue to be submitted to the Director for each monthly monitoring period during the life of this permit. Any changes to the monitoring and adjustment plan must be approved by the Director and upon approval shall be appended to this permit.

\*d Oil and grease monitoring shall initially be a visual test. If any oil and/or grease sheens are observed visually, or there is any other reason to believe that oil and/or grease may be present in the discharge, then a grab sample of the effluent must be immediately taken and this sample shall not exceed 10 mg/L.

\*e Annual total metals monitoring is required from the mine water discharge at Outfall 001 and includes arsenic, boron, cadmium, chromium, copper, lead, mercury, nickel, silver, selenium and zinc.

\*f Turbidity monitoring shall be conducted quarterly whenever possible from all discharging Outfalls to ensure that there is not an increase of more than 10 NTU over the receiving waters, if applicable.

### **STORM WATER REQUIREMENTS**

As mentioned previously, the Storm Water provisions have been omitted from this UPDES permit. However, based on the type of industrial activities occurring at the facility, the permittee is required to maintain separate permit coverage, or an appropriate exclusion, under the Multi-Sector General Permit (MSGP) for Storm Water Discharges Associated with Industrial Activities (UTR000000). If the facility has not already done so, it has 30 days from when this permit is issued to submit the appropriate Notice of Intent (NOI) for the MSGP, or exclusion documentation. This can be accomplished online at: <https://deq.utah.gov/water-quality/general-multi-sector-industrial-storm-water-permit-updes-permits>.

In addition, separate permit coverage under the Construction General Storm Water Permit (CGP) may be required for any non-mining related construction at the facility which disturb an acre or more, or is part of a common plan of development or sale that is an acre or greater. A Notice of Intent (NOI) is required to obtain a construction storm water permit prior to the period of construction. This can also be accomplished online at: <https://deq.utah.gov/water-quality/general-construction-storm-water-updes-permits>.

### **PRETREATMENT REQUIREMENTS**

This facility does not discharge process wastewater to a sanitary sewer system. Any process wastewater that the facility may discharge to the sanitary sewer, either as a direct discharge or as a hauled waste, is subject to federal, state, and local pretreatment regulations. Pursuant to section 307 of the Clean Water Act, the permittee shall comply with all applicable federal general pretreatment regulations promulgated, found in 40 CFR 403, the state's pretreatment requirements found in UAC R317-8-8, and any specific local discharge limitations developed by the Publicly Owned Treatment Works (POTW) accepting the waste.

In addition, in accordance with *40 CFR 403.12(p)(1)*, the permittee must notify the POTW, the EPA Regional Waste Management Director, and the State hazardous waste authorities, in writing, if they discharge any substance into a POTW which if otherwise disposed of would be considered a hazardous waste under *40 CFR 261*. This notification must include the name of the hazardous waste, the EPA hazardous waste number, and the type of discharge (continuous or batch).

### **BIOMONITORING REQUIREMENTS**

A nationwide effort to control toxic discharges where effluent toxicity is an existing or potential concern is regulated in accordance with the Utah Pollutant Discharge Elimination System Permit and Enforcement Guidance Document for Whole Effluent Toxicity Control (biomonitoring), dated February 2018. Authority to require effluent biomonitoring is provided in *Permit Conditions UAC R317-8-4.2*, *Permit Provisions UAC R317-8-5.3* and *Water Quality Standards UAC R317-2-5* and *UAC R317-2-7.2*.

The permittee is not classified as a major facility or a significant minor facility and discharges from the Mine are from intercepted ground water and/or storm water only, in which toxicity has not been an existing or a potential concern. This information, along with the fact that the Mine discharges have previously and consistently been used for local drinking water with no observable or reported ill effects, brings the conclusion that no toxicity is present in the effluent. Based on these considerations, there is no reasonable potential for toxicity in the facility's discharge. As such, there will be no numerical WET limitations or WET monitoring requirements in this permit. However, the permit will contain a toxicity limitation re-opener provision that allows for modification of the permit at any time in the future should additional information indicate the presence of toxicity in the discharge.

### **PERMIT DURATION**

It is recommended that this permit be effective for a duration of five (5) years, as authorized in *UAC R317-8-5.1(1)*.

Drafted and reviewed by:

Jeff Studenka, Discharge & Colorado River Basin Salinity Control  
Lonnie Shull, Biomonitoring  
Lisa Stevens, Storm Water  
Jen Robinson, Pretreatment  
Amy Dickey, Watershed/TMDL  
Suzan Tahir, Wasteload Analysis & ADR

Utah Division of Water Quality, (801) 536-4300  
October 14, 2020

### **PUBLIC NOTICE INFORMATION (to be updated after)**

Began:  
Ended:

The Public Notice of the draft renewal permit will be published on DWQ's website for at least 30 days as per Utah Administrative Code (UAC) R317-8-6.5.



During the public comment period provided under UAC R317-8-6.5, any interested person may submit written comments on the draft permit and may request a public hearing, if no hearing has already been scheduled. A request for a public hearing shall be in writing and shall state the nature of the issues proposed to be raised in the hearing. All comments will be considered in making the final decision and shall be answered as provided in UAC R317-8-6.12.

**ADDENDUM TO FSSOB**

**ATTACHMENTS (2):** I. Wasteload Analysis and Antidegradation Review  
II. Reasonable Potential Analysis Summary

DWQ-2020-020922

PND DRAFT

**ATTACHMENT 1**

*Wasteload Analysis and Antidegradation Review*

PND DRAFT

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**Utah Division of Water Quality  
Statement of Basis  
ADDENDUM  
Wasteload Analysis and Antidegradation Level I Review**

**Date:** September 23, 2020

**Prepared by:** Suzan Tahir  
Standards and Technical Services

**Facility:** Hiawatha Mine, UPDES Permit No. UT0023094

**Receiving water(s):** CEDAR CREEK (2B, 3C and 4) → Tributary to Huntington Creek  
MILLER CREEK (2B, 3C and 4) → Tributary to Price River

This addendum summarizes the wasteload analysis that was performed to determine water quality based effluent limits (WQBEL) for this discharge. Wasteload analyses are performed to determine point source effluent limitations necessary to maintain designated beneficial uses by evaluating projected effects of discharge concentrations on in-stream water quality. The wasteload analysis also takes into account downstream designated uses (UAC R317-2-8). Projected concentrations are compared to numeric water quality standards to determine acceptability. The numeric criteria in this wasteload analysis may be modified by narrative criteria and other conditions determined by staff of the Division of Water Quality.

Discharge

001	Outfall (Ground Water)	0.1601 MGD (maximum daily discharge)
002	Outfall (Ground Water)	0.1928 MGD
003	Outfall (Surface Runoff)	0.000 MGD
004	Outfall (Surface Runoff)	0.000 MGD
006	Outfall (Surface Runoff)	0.000 MGD
008	Outfall (Surface Runoff)	0.000 MGD
009	Outfall (Surface Runoff)	0.000 MGD
010	Outfall (Ground Water)	0.000 MGD
011	Outfall (Surface Runoff)	0.000 MGD
012	Outfall (Ground Water)	0.000 MGD
013	Outfall (Ground Water)	0.000 MGD

Receiving Water

The receiving waters (Cedar Creek and Miller Creek) as designated by Utah Administrative Code (UAC) R317-2-13 are 2B, 3C and 4.

- *Class 2B -Protected for infrequent primary contact recreation and for secondary contact recreation (boating, wading, hunting, fishing and similar uses).*
- *Class 3C -Protected for nongame fish and other aquatic life, including the necessary aquatic organisms in their food chain.*
- *Class 4 -Protected for agricultural uses including irrigation of crops and stock watering.*

**Utah Division of Water Quality  
Wasteload Analysis  
Hiawatha Mine, UPDES Permit No.UT0023094**

**Flow**

Typically, the critical flow for the wasteload analysis is considered the lowest stream flow for seven consecutive days with a ten year return frequency (7Q10). The receiving water bodies are intermittent, therefore flow was assumed to be 0.001 cfs because the model needs a flow value to run the calculations. These values are displayed in Table 1.

Table 1. Seasonal Flow Values (20<sup>th</sup> percentile)

Season	20 <sup>th</sup> percentile (cfs)
Summer	0.001
Fall	0.001
Winter	0.001
Spring	0.001

The Ambient receiving water bodies are intermittent therefore it was not possible to characterize the ambient water quality.

Discharge data was characterized using data from the Utah Division of Oil, Gas and Mining sampling station # UT0023094-001(HIAWATHA COMPLEX, MOHRLAND MINE PORTAL) for the period 1979-2019.

Total Maximum Daily Load (TMDL)

According to the Utah's 2016 303(d) Water Quality Assessment Report, the receiving water for the discharge Huntington Creek-3 (UT14060009-003\_00) is not supporting all assessed uses and exhibits evidence of water quality impairment for pH, Dissolved Oxygen and Total Dissolved Solids (TDS). There have been no updates to the EPA approved West Colorado Watershed 2004 TMDL ([link](#)).

Mixing Zone

The maximum allowable mixing zone is 15 minutes of travel time for acute conditions, not to exceed 50% of stream width, and for chronic conditions is 2500 ft, per UAC R317-2-5. Water quality standards must be met at the end of the mixing zone.

Based on the results of the mixing zone modeling, plume width was 100 % of the river at 2500 feet. 100 % of the seasonal critical low flow was used to calculate chronic limits. Acute limits were calculated using 50% of the seasonal critical low flow.

Parameters of Concern

TDS was identified as the primary potential parameter of concern based on review of the impairment status of the receiving waters and review of the previous permit.

WET Limits

The percent of effluent in the receiving water in a fully mixed condition, and acute and chronic dilution in a not fully mixed condition are calculated in the WLA in order to generate WET limits. The LC<sub>50</sub> (lethal concentration, 50%) percent effluent for acute toxicity and the IC<sub>25</sub> (inhibition concentration, 25%) percent effluent for chronic toxicity, as determined by the WET test, needs to be below the WET limits, as determined by the WLA. The WET limit for LC<sub>50</sub> is typically 100% effluent and does not need to be determined by the WLA.

**Utah Division of Water Quality  
Wasteload Analysis  
Hiawatha Mine, UPDES Permit No.UT0023094**

IC25 WET limits for Outfall 001 should be based on 99.9 % effluent.

Wasteload Allocation Methods

Effluent limits were determined for conservative constituents using a simple mass balance mixing analysis (UDWQ 2012). The mass balance analysis is summarized in the Wasteload Addendums.

The water quality standard for chronic ammonia toxicity is dependent on temperature and pH, and the water quality standard for acute ammonia toxicity is dependent on pH. The AMMTOX Model developed by University of Colorado and adapted by Utah DWQ and EPA Region VIII was used to determine ammonia effluent limits (Lewis et al. 2002). The analysis is summarized in the Wasteload Addendum.

Models and supporting documentation are available for review upon request.

Antidegradation Level I Review

The objective of the Level I ADR is to ensure the protection of existing uses, defined as the beneficial uses attained in the receiving water on or after November 28, 1975. No evidence is known that the existing uses deviate from the designated beneficial uses for the receiving water. Therefore, the beneficial uses will be protected if the discharge remains below the WQBELs presented in this wasteload.

A Level II Antidegradation Review (ADR) is not required. The proposed permit is a simple renewal of an existing UPDES permit. No increase in flow or concentration of pollutants over those authorized in the existing permit is being requested.

Documents:

WLA Document: *Hiawatha Mine\_WLA\_2020.docx*

Wasteload Analysis and Addendums: *Hiawatha\_WLA\_09-17-2020.xlsm*

References:

Utah Division of Water Quality. 2012. *Utah Wasteload Analysis Procedures Version 1.0.*

DWQ-2020-019735

Utah Division of Water Quality  
Salt Lake City, Utah

WASTELOAD ANALYSIS [WLA]  
Addendum: Statement of Basis

20-Aug-20  
4:00 PM

Facilities: Hiawatha Coal Company  
Discharging to: Cedar Creek and Miller Creek

UPDES No: UT-UT0023094

I. Introduction

Wasteload analyses are performed to determine point source effluent limitations necessary to maintain designated beneficial uses by evaluating projected effects of discharge concentrations on in-stream water quality. The wasteload analysis also takes into account downstream designated uses [R317-2-8, UAC]. Projected concentrations are compared to numeric water quality standards to determine acceptability. The anti-degradation policy and procedures are also considered. The primary in-stream parameters of concern may include metals (as a function of hardness), total dissolved solids (TDS), total residual chlorine (TRC), un-ionized ammonia (as a function of pH and temperature, measured and evaluated in terms of total ammonia), and dissolved oxygen.

Mathematical water quality modeling is employed to determine stream quality response to point source discharges. Models aid in the effort of anticipating stream quality at future effluent flows at critical environmental conditions (e.g., low stream flow, high temperature, high pH, etc).

The numeric criteria in this wasteload analysis may always be modified by narrative criteria and other conditions determined by staff of the Division of Water Quality.

II. Receiving Water and Stream Classification

Cedar Creek and Miller Creek: 2B, 3C, 4  
Antidegradation Review: Level I review completed. Level II review not required.

III. Numeric Stream Standards for Protection of Aquatic Wildlife

Total Ammonia (TNH3)	Varies as a function of Temperature and pH Rebound. See Water Quality Standards
Chronic Total Residual Chlorine (TRC)	0.011 mg/l (4 Day Average) 0.019 mg/l (1 Hour Average)
Chronic Dissolved Oxygen (DO)	5.00 mg/l (30 Day Average) N/A mg/l (7Day Average) 3.00 mg/l (1 Day Average)
Maximum Total Dissolved Solids	981.0 mg/l

**Utah Division of Water Quality  
Salt Lake City, Utah**

**Acute and Chronic Heavy Metals (Dissolved)**

Parameter	4 Day Average (Chronic) Standard		1 Hour Average (Acute) Standard		
	Concentration	Load*	Concentration		Load*
Aluminum	87.00 ug/l**	0.725 lbs/day	750.00	ug/l	6.254 lbs/day
Arsenic	190.00 ug/l	1.584 lbs/day	340.00	ug/l	2.835 lbs/day
Cadmium	1.04 ug/l	0.009 lbs/day	13.56	ug/l	0.113 lbs/day
Chromium III	382.31 ug/l	3.188 lbs/day	7998.62	ug/l	66.695 lbs/day
ChromiumVI	11.00 ug/l	0.092 lbs/day	16.00	ug/l	0.133 lbs/day
Copper	44.15 ug/l	0.368 lbs/day	77.70	ug/l	0.648 lbs/day
Iron			1000.00	ug/l	8.338 lbs/day
Lead	32.23 ug/l	0.269 lbs/day	827.18	ug/l	6.897 lbs/day
Mercury	0.0120 ug/l	0.000 lbs/day	2.40	ug/l	0.020 lbs/day
Nickel	243.05 ug/l	2.027 lbs/day	2186.11	ug/l	18.229 lbs/day
Selenium	4.60 ug/l	0.038 lbs/day	20.00	ug/l	0.167 lbs/day
Silver	N/A ug/l	N/A lbs/day	86.46	ug/l	0.721 lbs/day
Zinc	559.61 ug/l	4.666 lbs/day	559.61	ug/l	4.666 lbs/day

\* Allowed below discharge

\*\*Chronic Aluminum standard applies only to waters with a pH < 7.0 and a Hardness < 50 mg/l as CaCO3

Metals Standards Based upon a Hardness of 616.6 mg/l as CaCO3

**Organics [Pesticides]**

Parameter	4 Day Average (Chronic) Standard		1 Hour Average (Acute) Standard		
	Concentration	Load*	Concentration		Load*
Aldrin			1.500	ug/l	0.013 lbs/day
Chlordane	0.004 ug/l	0.036 lbs/day	1.200	ug/l	0.010 lbs/day
DDT, DDE	0.001 ug/l	0.008 lbs/day	0.550	ug/l	0.005 lbs/day
Dieldrin	0.002 ug/l	0.016 lbs/day	1.250	ug/l	0.010 lbs/day
Endosulfan	0.056 ug/l	0.467 lbs/day	0.110	ug/l	0.001 lbs/day
Endrin	0.002 ug/l	0.019 lbs/day	0.090	ug/l	0.001 lbs/day
Guthion			0.010	ug/l	0.000 lbs/day
Heptachlor	0.004 ug/l	0.032 lbs/day	0.260	ug/l	0.002 lbs/day
Lindane	0.080 ug/l	0.667 lbs/day	1.000	ug/l	0.008 lbs/day
Methoxychlor			0.030	ug/l	0.000 lbs/day
Mirex			0.010	ug/l	0.000 lbs/day
Parathion			0.040	ug/l	0.000 lbs/day
PCB's	0.014 ug/l	0.117 lbs/day	2.000	ug/l	0.017 lbs/day
Pentachlorophenol	13.00 ug/l	108.468 lbs/day	20.000	ug/l	0.167 lbs/day
Toxephene	0.0002 ug/l	0.002 lbs/day	0.7300	ug/l	0.006 lbs/day



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**IV. Numeric Stream Standards for Protection of Agriculture**

	4 Day Average (Chronic) Standard		1 Hour Average (Acute) Standard	
	Concentration	Load*	Concentration	Load*
Arsenic			100.0 ug/l	lbs/day
Boron			750.0 ug/l	lbs/day
Cadmium			10.0 ug/l	0.04 lbs/day
Chromium			100.0 ug/l	lbs/day
Copper			200.0 ug/l	lbs/day
Lead			100.0 ug/l	lbs/day
Selenium			50.0 ug/l	lbs/day
TDS, Summer			981.0 mg/l	4.09 tons/day

**V. Numeric Stream Standards for Protection of Human Health (Class 1C Waters)**

Metals	4 Day Average (Chronic) Standard		1 Hour Average (Acute) Standard	
	Concentration	Load*	Concentration	Load*
Arsenic			ug/l	lbs/day
Barium			ug/l	lbs/day
Cadmium			ug/l	lbs/day
Chromium			ug/l	lbs/day
Lead			ug/l	lbs/day
Mercury			ug/l	lbs/day
Selenium			ug/l	lbs/day
Silver			ug/l	lbs/day
Fluoride (3)			ug/l	lbs/day
to			ug/l	lbs/day
Nitrates as N			ug/l	lbs/day
<b>Chlorophenoxy Herbicides</b>				
2,4-D			ug/l	lbs/day
2,4,5-TP			ug/l	lbs/day
Endrin			ug/l	lbs/day
cyclohexane (Lindane)			ug/l	lbs/day
Methoxychlor			ug/l	lbs/day
Toxaphene			ug/l	lbs/day

**VI. Numeric Stream Standards the Protection of Human Health from Water & Fish Consumption [Toxics]**

Toxic Organics	Maximum Conc., ug/l - Acute Standards			
	Class 1C		Class 3A, 3B	
	[2 Liters/Day for 70 Kg Person over 70 Yr.]		[6.5 g for 70 Kg Person over 70 Yr.]	
Acenaphthene	ug/l	lbs/day	2700.0 ug/l	22.53 lbs/day
Acrolein	ug/l	lbs/day	780.0 ug/l	6.51 lbs/day
Acrylonitrile	ug/l	lbs/day	0.7 ug/l	0.01 lbs/day
Benzene	ug/l	lbs/day	71.0 ug/l	0.59 lbs/day
Benzidine	ug/l	lbs/day	0.0 ug/l	0.00 lbs/day
Carbon tetrachloride	ug/l	lbs/day	4.4 ug/l	0.04 lbs/day
Chlorobenzene	ug/l	lbs/day	21000.0 ug/l	175.22 lbs/day
1,2,4-Trichlorobenzene				
Hexachlorobenzene	ug/l	lbs/day	0.0 ug/l	0.00 lbs/day
1,2-Dichloroethane	ug/l	lbs/day	99.0 ug/l	0.83 lbs/day
1,1,1-Trichloroethane				
Hexachloroethane	ug/l	lbs/day	8.9 ug/l	0.07 lbs/day
1,1-Dichloroethane				
1,1,2-Trichloroethane	ug/l	lbs/day	42.0 ug/l	0.35 lbs/day
1,1,2,2-Tetrachloroethane	ug/l	lbs/day	11.0 ug/l	0.09 lbs/day
Chloroethane			0.0 ug/l	0.00 lbs/day
Bis(2-chloroethyl) ether	ug/l	lbs/day	1.4 ug/l	0.01 lbs/day
2-Chloroethyl vinyl ether	ug/l	lbs/day	0.0 ug/l	0.00 lbs/day
2-Chloronaphthalene	ug/l	lbs/day	4300.0 ug/l	35.88 lbs/day

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2,4,6-Trichlorophenol	ug/l	lbs/day	6.5 ug/l	0.05 lbs/day
p-Chloro-m-cresol			0.0 ug/l	0.00 lbs/day
Chloroform (HM)	ug/l	lbs/day	470.0 ug/l	3.92 lbs/day
2-Chlorophenol	ug/l	lbs/day	400.0 ug/l	3.34 lbs/day
1,2-Dichlorobenzene	ug/l	lbs/day	17000.0 ug/l	141.84 lbs/day
1,3-Dichlorobenzene	ug/l	lbs/day	2600.0 ug/l	21.69 lbs/day
1,4-Dichlorobenzene	ug/l	lbs/day	2600.0 ug/l	21.69 lbs/day
3,3'-Dichlorobenzidine	ug/l	lbs/day	0.1 ug/l	0.00 lbs/day
1,1-Dichloroethylene	ug/l	lbs/day	3.2 ug/l	0.03 lbs/day
1,2-trans-Dichloroethylene	ug/l	lbs/day	0.0 ug/l	0.00 lbs/day
2,4-Dichlorophenol	ug/l	lbs/day	790.0 ug/l	6.59 lbs/day
1,2-Dichloropropane	ug/l	lbs/day	39.0 ug/l	0.33 lbs/day
1,3-Dichloropropylene	ug/l	lbs/day	1700.0 ug/l	14.18 lbs/day
2,4-Dimethylphenol	ug/l	lbs/day	2300.0 ug/l	19.19 lbs/day
2,4-Dinitrotoluene	ug/l	lbs/day	9.1 ug/l	0.08 lbs/day
2,6-Dinitrotoluene	ug/l	lbs/day	0.0 ug/l	0.00 lbs/day
1,2-Diphenylhydrazine	ug/l	lbs/day	0.5 ug/l	0.00 lbs/day
Ethylbenzene	ug/l	lbs/day	29000.0 ug/l	241.97 lbs/day
Fluoranthene	ug/l	lbs/day	370.0 ug/l	3.09 lbs/day
4-Chlorophenyl phenyl ether				
4-Bromophenyl phenyl ether				
Bis(2-chloroisopropyl) e	ug/l	lbs/day	170000.0 ug/l	1418.43 lbs/day
Bis(2-chloroethoxy) met	ug/l	lbs/day	0.0 ug/l	0.00 lbs/day
Methylene chloride (HM)	ug/l	lbs/day	1600.0 ug/l	13.35 lbs/day
Methyl chloride (HM)	ug/l	lbs/day	0.0 ug/l	0.00 lbs/day
Methyl bromide (HM)	ug/l	lbs/day	0.0 ug/l	0.00 lbs/day
Bromoform (HM)	ug/l	lbs/day	360.0 ug/l	3.00 lbs/day
Dichlorobromomethane	ug/l	lbs/day	22.0 ug/l	0.18 lbs/day
Chlorodibromomethane	ug/l	lbs/day	34.0 ug/l	0.28 lbs/day
Hexachlorobutadiene(c)	ug/l	lbs/day	50.0 ug/l	0.42 lbs/day
Hexachlorocyclopentadi	ug/l	lbs/day	17000.0 ug/l	141.84 lbs/day
Isophorone	ug/l	lbs/day	600.0 ug/l	5.01 lbs/day
Naphthalene				
Nitrobenzene	ug/l	lbs/day	1900.0 ug/l	15.85 lbs/day
2-Nitrophenol	ug/l	lbs/day	0.0 ug/l	0.00 lbs/day
4-Nitrophenol	ug/l	lbs/day	0.0 ug/l	0.00 lbs/day
2,4-Dinitrophenol	ug/l	lbs/day	14000.0 ug/l	116.81 lbs/day
4,6-Dinitro-o-cresol	ug/l	lbs/day	765.0 ug/l	6.38 lbs/day
N-Nitrosodimethylamine	ug/l	lbs/day	8.1 ug/l	0.07 lbs/day
N-Nitrosodiphenylamine	ug/l	lbs/day	16.0 ug/l	0.13 lbs/day
N-Nitrosodi-n-propylami	ug/l	lbs/day	1.4 ug/l	0.01 lbs/day
Pentachlorophenol	ug/l	lbs/day	8.2 ug/l	0.07 lbs/day
Phenol	ug/l	lbs/day	4.6E+06 ug/l	3.84E+04 lbs/day
Bis(2-ethylhexyl)phthala	ug/l	lbs/day	5.9 ug/l	0.05 lbs/day
Butyl benzyl phthalate	ug/l	lbs/day	5200.0 ug/l	43.39 lbs/day
Di-n-butyl phthalate	ug/l	lbs/day	12000.0 ug/l	100.12 lbs/day
Di-n-octyl phthlate				
Diethyl phthalate	ug/l	lbs/day	120000.0 ug/l	1001.25 lbs/day
Dimethyl phthlate	ug/l	lbs/day	2.9E+06 ug/l	2.42E+04 lbs/day
Benzo(a)anthracene (P)	ug/l	lbs/day	0.0 ug/l	0.00 lbs/day
Benzo(a)pyrene (PAH)	ug/l	lbs/day	0.0 ug/l	0.00 lbs/day
Benzo(b)fluoranthene (F	ug/l	lbs/day	0.0 ug/l	0.00 lbs/day
Benzo(k)fluoranthene (F	ug/l	lbs/day	0.0 ug/l	0.00 lbs/day
Chrysene (PAH)	ug/l	lbs/day	0.0 ug/l	0.00 lbs/day
Acenaphthylene (PAH)				
Anthracene (PAH)	ug/l	lbs/day	0.0 ug/l	0.00 lbs/day
Dibenzo(a,h)anthracene	ug/l	lbs/day	0.0 ug/l	0.00 lbs/day
Indeno(1,2,3-cd)pyrene	ug/l	lbs/day	0.0 ug/l	0.00 lbs/day
Pyrene (PAH)	ug/l	lbs/day	11000.0 ug/l	91.78 lbs/day
Tetrachloroethylene	ug/l	lbs/day	8.9 ug/l	0.07 lbs/day
Toluene	ug/l	lbs/day	200000 ug/l	1668.74 lbs/day
Trichloroethylene	ug/l	lbs/day	81.0 ug/l	0.68 lbs/day
Vinyl chloride	ug/l	lbs/day	525.0 ug/l	4.38 lbs/day

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				lbs/day
<b>Pesticides</b>				lbs/day
Aldrin	ug/l	lbs/day	0.0 ug/l	0.00 lbs/day
Dieldrin	ug/l	lbs/day	0.0 ug/l	0.00 lbs/day
Chlordane	ug/l	lbs/day	0.0 ug/l	0.00 lbs/day
4,4'-DDT	ug/l	lbs/day	0.0 ug/l	0.00 lbs/day
4,4'-DDE	ug/l	lbs/day	0.0 ug/l	0.00 lbs/day
4,4'-DDD	ug/l	lbs/day	0.0 ug/l	0.00 lbs/day
alpha-Endosulfan	ug/l	lbs/day	2.0 ug/l	0.02 lbs/day
beta-Endosulfan	ug/l	lbs/day	2.0 ug/l	0.02 lbs/day
Endosulfan sulfate	ug/l	lbs/day	2.0 ug/l	0.02 lbs/day
Endrin	ug/l	lbs/day	0.8 ug/l	0.01 lbs/day
Endrin aldehyde	ug/l	lbs/day	0.8 ug/l	0.01 lbs/day
Heptachlor	ug/l	lbs/day	0.0 ug/l	0.00 lbs/day
Heptachlor epoxide				
<b>PCB's</b>				
PCB 1242 (Arochlor 1242)	ug/l	lbs/day	0.0 ug/l	0.00 lbs/day
PCB-1254 (Arochlor 1254)	ug/l	lbs/day	0.0 ug/l	0.00 lbs/day
PCB-1221 (Arochlor 1221)	ug/l	lbs/day	0.0 ug/l	0.00 lbs/day
PCB-1232 (Arochlor 1232)	ug/l	lbs/day	0.0 ug/l	0.00 lbs/day
PCB-1248 (Arochlor 1248)	ug/l	lbs/day	0.0 ug/l	0.00 lbs/day
PCB-1260 (Arochlor 1260)	ug/l	lbs/day	0.0 ug/l	0.00 lbs/day
PCB-1016 (Arochlor 1016)	ug/l	lbs/day	0.0 ug/l	0.00 lbs/day
<b>Pesticide</b>				
Toxaphene	ug/l		0.0 ug/l	0.00 lbs/day
<b>Dioxin</b>				
Dioxin (2,3,7,8-TCDD)	ug/l	lbs/day		
<b>Metals</b>				
Antimony	ug/l	lbs/day		
Arsenic	ug/l	lbs/day	4300.00 ug/l	35.88 lbs/day
Asbestos	ug/l	lbs/day		
Beryllium				
Cadmium				
Chromium (III)				
Chromium (VI)				
Copper				
Cyanide	ug/l	lbs/day	2.2E+05 ug/l	1835.62 lbs/day
Lead	ug/l	lbs/day		
Mercury			0.15 ug/l	0.00 lbs/day
Nickel			4600.00 ug/l	38.38 lbs/day
Selenium	ug/l	lbs/day		
Silver	ug/l	lbs/day		
Thallium			6.30 ug/l	0.05 lbs/day
Zinc				

**There are additional standards that apply to this receiving water, but were not considered in this modeling/waste load allocation analysis.**

## VII. Mathematical Modeling of Stream Quality

Model configuration was accomplished utilizing standard modeling procedures. Data points were plotted and coefficients adjusted as required to match observed data as closely as possible.

The modeling approach used in this analysis included one or a combination of the following models.

- (1) The Utah River Model, Utah Division of Water Quality, 1992. Based upon STREAMDO IV (Region VIII) and Supplemental Ammonia Toxicity Models; EPA Region VIII, Sept. 1990 and QUAL2E (EPA, Athens, GA).
- (2) Utah Ammonia/Chlorine Model, Utah Division of Water Quality, 1992.
- (3) AMMTOX Model, University of Colorado, Center of Limnology, and EPA Region 8
- (4) Principles of Surface Water Quality Modeling and Control. Robert V. Thomann, et.al. Harper Collins Publisher, Inc. 1987, pp. 644.

Coefficients used in the model were based, in part, upon the following references:

- (1) Rates, Constants, and Kinetics Formulations in Surface Water Quality Modeling. Environmental Research Laboratory, Office of Research and Development, U.S. Environmental Protection Agency, Athens Georgia. EPA/600/3-85/040 June 1985.
- (2) Principles of Surface Water Quality Modeling and Control. Robert V. Thomann, et.al. Harper Collins Publisher, Inc. 1987, pp. 644.

## VIII. Modeling Information

The required information for the model may include the following information for both the upstream conditions at low flow and the effluent conditions:

Flow, Q, (cfs or MGD)	D.O. mg/l
Temperature, Deg. C.	Total Residual Chlorine (TRC), mg/l
pH	Total NH3-N, mg/l
BOD5, mg/l	Total Dissolved Solids (TDS), mg/l
Metals, ug/l	Toxic Organics of Concern, ug/l

### Other Conditions

In addition to the upstream and effluent conditions, the models require a variety of physical and biological coefficients and other technical information. In the process of actually establishing the permit limits for an effluent, values are used based upon the available data, model calibration, literature values, site visits and best professional judgement.

### Model Inputs

The following is upstream and discharge information that was utilized as inputs for the analysis. Dry washes are considered to have an upstream flow equal to the flow of the discharge.

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**Current Upstream Information  
Stream  
Critical Low**

	<b>Flow cfs</b>	<b>Temp. Deg. C</b>	<b>pH</b>	<b>T-NH3 mg/l as N</b>	<b>BOD5 mg/l</b>	<b>DO mg/l</b>	<b>TRC mg/l</b>	<b>TDS mg/l</b>
Summer (Irrig. Season)	0.0	18.0	8.1	0.03	1.00	9.58	0.00	1200.0
Fall	0.0	10.0	8.0	0.03	1.00	---	0.00	1200.0
Winter	0.0	6.0	8.0	0.03	1.00	---	0.00	1200.0
Spring	0.0	12.0	8.0	0.03	1.00	---	0.00	1200.0
Dissolved Metals All Seasons	Al ug/l 1.59*	As ug/l 0.53*	Cd ug/l 0.053*	CrIII ug/l 0.53*	CrVI ug/l 2.65*	Copper ug/l 0.53*	Fe ug/l 0.83*	Pb ug/l 0.53*
Dissolved Metals All Seasons	Hg ug/l 0.0000	Ni ug/l 0.53*	Se ug/l 1.06*	Ag ug/l 0.1*	Zn ug/l 0.053*	Boron ug/l 10.0		* 1/2 MDL

**Projected Discharge Information**

<b>Season</b>	<b>Flow, MGD</b>	<b>Temp.</b>	<b>TDS mg/l</b>	<b>TDS tons/day</b>
Summer	1.00000	12.8	775.57	3.23348
Fall	1.00000	12.0		
Winter	1.00000	11.7		
Spring	1.00000	12.3		

All model numerical inputs, intermediate calculations, outputs and graphs are available for discussion, inspection and copy at the Division of Water Quality.

**IX. Effluent Limitations**

Current State water quality standards are required to be met under a variety of conditions including in-stream flows targeted to the 7-day, 10-year low flow (R317-2-9).

Other conditions used in the modeling effort coincide with the environmental conditions expected at low stream flows.

**Effluent Limitation for Flow based upon Water Quality Standards**

In-stream criteria of downstream segments will be met with an effluent flow maximum value as follows:

Season	Daily Average	
Summer	1.000 MGD	1.547 cfs
Fall	1.000 MGD	1.547 cfs
Winter	1.000 MGD	1.547 cfs
Spring	1.000 MGD	1.547 cfs

**Flow Requirement or Loading Requirement**

The calculations in this wasteload analysis utilize the maximum effluent discharge flow of 1 MGD. If the discharger is allowed to have a flow greater than 1 MGD during 7Q10 conditions, and effluent limit concentrations as indicated, then water quality standards will be violated. In order to prevent this from occurring, the permit writers must include the discharge flow limitation as indicated above; or, include loading effluent limits in the permit.

**Effluent Limitation for Whole Effluent Toxicity (WET) based upon WET Policy**

Effluent Toxicity will not occur in downstream segments if the values below are met.

WET Requirements	LC50 >	EOP Effluent	[Acute]
	IC25 >	99.9% Effluent	[Chronic]

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**Effluent Limitation for Biological Oxygen Demand (BOD) based upon Water Quality Standards or Regulations**

In-stream criteria of downstream segments for Dissolved Oxygen will be met with an effluent BOD limitation as follows:

Season	Concentration	
Summer	25.0 mg/l as BOD5	208.5 lbs/day
Fall	25.0 mg/l as BOD5	208.5 lbs/day
Winter	25.0 mg/l as BOD5	208.5 lbs/day
Spring	25.0 mg/l as BOD5	208.5 lbs/day

**Effluent Limitation for Dissolved Oxygen (DO) based upon Water Quality Standards**

In-stream criteria of downstream segments for Dissolved Oxygen will be met with an effluent D.O. limitation as follows:

Season	Concentration
Summer	5.00
Fall	5.00
Winter	5.00
Spring	5.00

**Effluent Limitation for Total Ammonia based upon Water Quality Standards**

In-stream criteria of downstream segments for Total Ammonia will be met with an effluent limitation (expressed as Total Ammonia as N) as follows:

Season		Concentration	Load
Summer	4 Day Avg. - Chronic	4.4 mg/l as N	37.1 lbs/day
	1 Hour Avg. - Acute	18.9 mg/l as N	157.9 lbs/day
Fall	4 Day Avg. - Chronic	5.6 mg/l as N	46.4 lbs/day
	1 Hour Avg. - Acute	28.1 mg/l as N	234.6 lbs/day
Winter	4 Day Avg. - Chronic	7.8 mg/l as N	65.2 lbs/day
	1 Hour Avg. - Acute	62.8 mg/l as N	523.6 lbs/day
Spring	4 Day Avg. - Chronic	5.6 mg/l as N	0.0 lbs/day
	1 Hour Avg. - Acute	28.1 mg/l as N	0.0 lbs/day

Acute limit calculated with an Acute Zone of Initial Dilution (ZID) to be equal to 100.%.

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**Effluent Limitation for Total Residual Chlorine based upon Water Quality Standards**

In-stream criteria of downstream segments for Total Residual Chlorine will be met with an effluent limitation as follows:

Season		Concentration		Load	
Summer	4 Day Avg. - Chronic	0.011	mg/l	0.09	lbs/day
	1 Hour Avg. - Acute	0.019	mg/l	0.16	lbs/day
Fall	4 Day Avg. - Chronic	0.011	mg/l	0.09	lbs/day
	1 Hour Avg. - Acute	0.019	mg/l	0.16	lbs/day
Winter	4 Day Avg. - Chronic	0.011	mg/l	0.09	lbs/day
	1 Hour Avg. - Acute	0.019	mg/l	0.16	lbs/day
Spring	4 Day Avg. - Chronic	0.011	mg/l	0.00	lbs/day
	1 Hour Avg. - Acute	0.019	mg/l	0.00	lbs/day

**Effluent Limitations for Total Dissolved Solids based upon Water Quality Standards**

Season		Concentration		Load	
Summer	Maximum, Acute	980.9	mg/l	4.09	tons/day
Fall	Maximum, Acute	980.9	mg/l	4.09	tons/day
Winter	Maximum, Acute	980.9	mg/l	4.09	tons/day
Spring	4 Day Avg. - Chronic	980.9	mg/l	4.09	tons/day

Colorado Salinity Forum Limits      Determined by Permitting Section  
Concentration limit is based on limits developed in the West Colorado Watershed TMDL,  
approved by EPA in 2004.

**Effluent Limitations for Total Recoverable Metals based upon Water Quality Standards**

In-stream criteria of downstream segments for Dissolved Metals will be met with an effluent limitation as follows (based upon a hardness of 616.6 mg/l):

	4 Day Average		1 Hour Average		Load
	Concentration	Load	Concentration	Load	
Aluminum	N/A	N/A	750.5	ug/l	6.3 lbs/day
Arsenic	190.12 ug/l	1.0 lbs/day	340.2	ug/l	2.8 lbs/day
Cadmium	1.04 ug/l	0.0 lbs/day	13.6	ug/l	0.1 lbs/day
Chromium III	382.55 ug/l	2.1 lbs/day	8,003.8	ug/l	66.7 lbs/day
Chromium VI	11.00 ug/l	0.1 lbs/day	16.0	ug/l	0.1 lbs/day
Copper	44.17 ug/l	0.2 lbs/day	77.8	ug/l	0.6 lbs/day
Iron	N/A	N/A	1,000.6	ug/l	8.3 lbs/day
Lead	32.25 ug/l	0.2 lbs/day	827.7	ug/l	6.9 lbs/day
Mercury	0.01 ug/l	0.0 lbs/day	2.4	ug/l	0.0 lbs/day
Nickel	243.21 ug/l	1.3 lbs/day	2,187.5	ug/l	18.2 lbs/day
Selenium	4.60 ug/l	0.0 lbs/day	20.0	ug/l	0.2 lbs/day
Silver	N/A	N/A	86.5	ug/l	0.7 lbs/day
Zinc	559.97 ug/l	3.0 lbs/day	560.0	ug/l	4.7 lbs/day
Cyanide	5.20 ug/l	0.0 lbs/day	22.0	ug/l	0.2 lbs/day

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**Effluent Limitations for Heat/Temperature based upon  
Water Quality Standards**

Summer	22.0 Deg. C.	71.6 Deg. F
Fall	14.0 Deg. C.	57.2 Deg. F
Winter	10.0 Deg. C.	50.0 Deg. F
Spring	16.0 Deg. C.	60.8 Deg. F

**Effluent Limitations for Organics [Pesticides]  
Based upon Water Quality Standards**

In-stream criteria of downstream segments for Organics [Pesticides]  
will be met with an effluent limit as follows:

	<b>4 Day Average</b>		<b>1 Hour Average</b>		
	<b>Concentration</b>	<b>Load</b>	<b>Concentration</b>		<b>Load</b>
Aldrin			1.5E+00	ug/l	1.93E-02 lbs/day
Chlordane	4.30E-03 ug/l	3.59E-02 lbs/day	1.2E+00	ug/l	1.55E-02 lbs/day
DDT, DDE	1.00E-03 ug/l	8.34E-03 lbs/day	5.5E-01	ug/l	7.09E-03 lbs/day
Dieldrin	1.90E-03 ug/l	1.58E-02 lbs/day	1.3E+00	ug/l	1.61E-02 lbs/day
Endosulfan	5.60E-02 ug/l	4.67E-01 lbs/day	1.1E-01	ug/l	1.42E-03 lbs/day
Endrin	2.30E-03 ug/l	1.92E-02 lbs/day	9.0E-02	ug/l	1.16E-03 lbs/day
Guthion	0.00E+00 ug/l	0.00E+00 lbs/day	1.0E-02	ug/l	1.29E-04 lbs/day
Heptachlor	3.80E-03 ug/l	3.17E-02 lbs/day	2.6E-01	ug/l	3.35E-03 lbs/day
Lindane	8.00E-02 ug/l	6.67E-01 lbs/day	1.0E+00	ug/l	1.29E-02 lbs/day
Methoxychlor	0.00E+00 ug/l	0.00E+00 lbs/day	3.0E-02	ug/l	3.87E-04 lbs/day
Mirex	0.00E+00 ug/l	0.00E+00 lbs/day	1.0E-02	ug/l	1.29E-04 lbs/day
Parathion	0.00E+00 ug/l	0.00E+00 lbs/day	4.0E-02	ug/l	5.16E-04 lbs/day
PCB's	1.40E-02 ug/l	1.17E-01 lbs/day	2.0E+00	ug/l	2.58E-02 lbs/day
Pentachlorophenol	1.30E+01 ug/l	1.08E+02 lbs/day	2.0E+01	ug/l	2.58E-01 lbs/day
Toxephene	2.00E-04 ug/l	1.67E-03 lbs/day	7.3E-01	ug/l	9.42E-03 lbs/day



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**Effluent Targets for Pollution Indicators  
Based upon Water Quality Standards**

In-stream criteria of downstream segments for Pollution Indicators will be met with an effluent limit as follows:

	1 Hour Average	
	Concentration	Loading
Gross Beta (pCi/l)	50.0 pCi/L	
BOD (mg/l)	5.0 mg/l	41.7 lbs/day
Nitrates as N	4.0 mg/l	33.4 lbs/day
Total Phosphorus as P	0.05 mg/l	0.4 lbs/day
Total Suspended Solids	90.0 mg/l	750.4 lbs/day

Note: Pollution indicator targets are for information purposes only.

**Effluent Limitations for Protection of Human Health [Toxics Rule]  
Based upon Water Quality Standards (Most stringent of 1C or 3A & 3B as appropriate.)**

In-stream criteria of downstream segments for Protection of Human Health [Toxics] will be met with an effluent limit as follows:

	Maximum Concentration	
	Concentration	Load
<b>Toxic Organics</b>		
Acenaphthene	2.70E+03 ug/l	2.25E+01 lbs/day
Acrolein	7.81E+02 ug/l	6.51E+00 lbs/day
Acrylonitrile	6.60E-01 ug/l	5.51E-03 lbs/day
Benzene	7.10E+01 ug/l	5.92E-01 lbs/day
Benzidine	ug/l	lbs/day
Carbon tetrachloride	4.40E+00 ug/l	3.67E-02 lbs/day
Chlorobenzene	2.10E+04 ug/l	1.75E+02 lbs/day
1,2,4-Trichlorobenzene		
Hexachlorobenzene	7.70E-04 ug/l	6.42E-06 lbs/day
1,2-Dichloroethane	9.91E+01 ug/l	8.26E-01 lbs/day
1,1,1-Trichloroethane		
Hexachloroethane	8.91E+00 ug/l	7.43E-02 lbs/day
1,1-Dichloroethane		
1,1,2-Trichloroethane	4.20E+01 ug/l	3.50E-01 lbs/day
1,1,2,2-Tetrachloroethane	1.10E+01 ug/l	9.18E-02 lbs/day
Chloroethane		
Bis(2-chloroethyl) ether	1.40E+00 ug/l	1.17E-02 lbs/day
2-Chloroethyl vinyl ether		
2-Chloronaphthalene	4.30E+03 ug/l	3.59E+01 lbs/day
2,4,6-Trichlorophenol	6.50E+00 ug/l	5.42E-02 lbs/day
p-Chloro-m-cresol		
Chloroform (HM)	4.70E+02 ug/l	3.92E+00 lbs/day
2-Chlorophenol	4.00E+02 ug/l	3.34E+00 lbs/day
1,2-Dichlorobenzene	1.70E+04 ug/l	1.42E+02 lbs/day
1,3-Dichlorobenzene	2.60E+03 ug/l	2.17E+01 lbs/day
1,4-Dichlorobenzene	2.60E+03 ug/l	2.17E+01 lbs/day
3,3'-Dichlorobenzidine	7.70E-02 ug/l	6.42E-04 lbs/day
1,1-Dichloroethylene	3.20E+00 ug/l	2.67E-02 lbs/day
1,2-trans-Dichloroethylene1		
2,4-Dichlorophenol	7.91E+02 ug/l	6.59E+00 lbs/day
1,2-Dichloropropane	3.90E+01 ug/l	3.25E-01 lbs/day
1,3-Dichloropropylene	1.70E+03 ug/l	1.42E+01 lbs/day
2,4-Dimethylphenol	2.30E+03 ug/l	1.92E+01 lbs/day
2,4-Dinitrotoluene	9.11E+00 ug/l	7.59E-02 lbs/day
2,6-Dinitrotoluene		
1,2-Diphenylhydrazine	5.40E-01 ug/l	4.51E-03 lbs/day
Ethylbenzene	2.90E+04 ug/l	2.42E+02 lbs/day
Fluoranthene	3.70E+02 ug/l	3.09E+00 lbs/day
4-Chlorophenyl phenyl ether		
4-Bromophenyl phenyl ether		
Bis(2-chloroisopropyl) ether	1.70E+05 ug/l	1.42E+03 lbs/day
Bis(2-chloroethoxy) methane		
Methylene chloride (HM)	1.60E+03 ug/l	1.33E+01 lbs/day
Methyl chloride (HM)		
Methyl bromide (HM)		
Bromoform (HM)	3.60E+02 ug/l	3.00E+00 lbs/day

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Dichlorobromomethane(HM)	2.20E+01 ug/l	1.84E-01 lbs/day
Chlorodibromomethane (HM)	3.40E+01 ug/l	2.84E-01 lbs/day
Hexachlorocyclopentadiene	1.70E+04 ug/l	1.42E+02 lbs/day
Isophorone	6.00E+02 ug/l	5.01E+00 lbs/day
Naphthalene		
Nitrobenzene	1.90E+03 ug/l	1.59E+01 lbs/day
2-Nitrophenol		
4-Nitrophenol		
2,4-Dinitrophenol	1.40E+04 ug/l	1.17E+02 lbs/day
4,6-Dinitro-o-cresol	7.65E+02 ug/l	6.38E+00 lbs/day
N-Nitrosodimethylamine	8.11E+00 ug/l	6.76E-02 lbs/day
N-Nitrosodiphenylamine	1.60E+01 ug/l	1.33E-01 lbs/day
N-Nitrosodi-n-propylamine	1.40E+00 ug/l	1.17E-02 lbs/day
Pentachlorophenol	8.21E+00 ug/l	6.84E-02 lbs/day
Phenol	4.60E+06 ug/l	3.84E+04 lbs/day
Bis(2-ethylhexyl)phthalate	5.90E+00 ug/l	4.92E-02 lbs/day
Butyl benzyl phthalate	5.20E+03 ug/l	4.34E+01 lbs/day
Di-n-butyl phthalate	1.20E+04 ug/l	1.00E+02 lbs/day
Di-n-octyl phthlate		
Diethyl phthalate	1.20E+05 ug/l	1.00E+03 lbs/day
Dimethyl phthlate	2.90E+06 ug/l	2.42E+04 lbs/day
Benzo(a)anthracene (PAH)	3.10E-02 ug/l	2.59E-04 lbs/day
Benzo(a)pyrene (PAH)	3.10E-02 ug/l	2.59E-04 lbs/day
Benzo(b)fluoranthene (PAH)	3.10E-02 ug/l	2.59E-04 lbs/day
Benzo(k)fluoranthene (PAH)	3.10E-02 ug/l	2.59E-04 lbs/day
Chrysene (PAH)	3.10E-02 ug/l	2.59E-04 lbs/day
Acenaphthylene (PAH)		
Anthracene (PAH)		
Dibenzo(a,h)anthracene (PAH)	3.10E-02 ug/l	2.59E-04 lbs/day
Indeno(1,2,3-cd)pyrene (PAH)	3.10E-02 ug/l	2.59E-04 lbs/day
Pyrene (PAH)	1.10E+04 ug/l	9.18E+01 lbs/day
Tetrachloroethylene	8.91E+00 ug/l	7.43E-02 lbs/day
Toluene	2.00E+05 ug/l	1.67E+03 lbs/day
Trichloroethylene	8.11E+01 ug/l	6.76E-01 lbs/day
Vinyl chloride	5.25E+02 ug/l	4.38E+00 lbs/day

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**Pesticides**

Aldrin	1.40E-04 ug/l	1.17E-06 lbs/day
Dieldrin	1.40E-04 ug/l	1.17E-06 lbs/day
Chlordane	5.90E-04 ug/l	4.92E-06 lbs/day
4,4'-DDT	5.90E-04 ug/l	4.92E-06 lbs/day
4,4'-DDE	5.90E-04 ug/l	4.92E-06 lbs/day
4,4'-DDD	8.41E-04 ug/l	7.01E-06 lbs/day
alpha-Endosulfan	2.00E+00 ug/l	1.67E-02 lbs/day
beta-Endosulfan	2.00E+00 ug/l	1.67E-02 lbs/day
Endosulfan sulfate	2.00E+00 ug/l	1.67E-02 lbs/day
Endrin	8.11E-01 ug/l	6.76E-03 lbs/day
Endrin aldehyde	8.11E-01 ug/l	6.76E-03 lbs/day
Heptachlor	2.10E-04 ug/l	1.75E-06 lbs/day
Heptachlor epoxide		

**PCB's**

PCB 1242 (Arochlor 1242)	4.50E-05 ug/l	3.75E-07 lbs/day
PCB-1254 (Arochlor 1254)	4.50E-05 ug/l	3.75E-07 lbs/day
PCB-1221 (Arochlor 1221)	4.50E-05 ug/l	3.75E-07 lbs/day
PCB-1232 (Arochlor 1232)	4.50E-05 ug/l	3.75E-07 lbs/day
PCB-1248 (Arochlor 1248)	4.50E-05 ug/l	3.75E-07 lbs/day
PCB-1260 (Arochlor 1260)	4.50E-05 ug/l	3.75E-07 lbs/day
PCB-1016 (Arochlor 1016)	4.50E-05 ug/l	3.75E-07 lbs/day

**Pesticide**

Toxaphene	7.50E-04 ug/l	6.26E-06 lbs/day
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**Metals**

Antimony	ug/l	lbs/day
Arsenic	ug/l	lbs/day
Asbestos	ug/l	lbs/day
Beryllium		
Cadmium		
Chromium (III)		
Chromium (VI)		
Copper	ug/l	lbs/day
Cyanide	ug/l	lbs/day
Lead		
Mercury	ug/l	lbs/day
Nickel	ug/l	lbs/day
Selenium		
Silver		
Thallium	ug/l	lbs/day
Zinc		

**Dioxin**

Dioxin (2,3,7,8-TCDD)	1.40E-08 ug/l	1.17E-10 lbs/day
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**Metals Effluent Limitations for Protection of All Beneficial Uses  
Based upon Water Quality Standards and Toxics Rule**

	<b>Class 4 Acute Agricultural ug/l</b>	<b>Class 3 Acute Aquatic Wildlife ug/l</b>	<b>Acute Toxics Drinking Water Source ug/l</b>	<b>Acute Toxics Wildlife ug/l</b>	<b>1C Acute Health Criteria ug/l</b>	<b>Acute Most Stringent ug/l</b>	<b>Class 3 Chronic Aquatic Wildlife ug/l</b>
Aluminum		750.5				750.5	N/A
Antimony				4302.8		4302.8	
Arsenic	100.1	340.2			0.0	100.1	190.1
Barium						0.0	
Beryllium						0.0	
Cadmium	10.0	13.6			0.0	10.0	1.0
Chromium (III)		8003.8			0.0	8003.8	382.6
Chromium (VI)	100.1	16.0			0.0	16.01	11.00
Copper	200.1	77.8				77.8	44.2
Cyanide		22.0	220142.2			22.0	5.2
Iron		1000.6				1000.6	
Lead	100.1	827.7			0.0	100.1	32.3
Mercury		2.40		0.15	0.0	0.15	0.012
Nickel		2187.5		4603.0		2187.5	243.2
Selenium	50.0	20.0			0.0	20.0	4.6
Silver		86.5			0.0	86.5	
Thallium				6.3		6.3	
Zinc		560.0				560.0	560.0
Boron	750.5					750.5	

**Summary Effluent Limitations for Metals [Wasteload Allocation, TMDL]**

[If Acute is more stringent than Chronic, then the Chronic takes on the Acute value.]

	<b>WLA Acute ug/l</b>	<b>WLA Chronic ug/l</b>	
Aluminum	750.5	N/A	
Antimony	4302.78		
Arsenic	100.1	190.1	Acute Controls
Asbestos	0.00E+00		
Barium			
Beryllium			
Cadmium	10.0	1.0	
Chromium (III)	8003.8	383	
Chromium (VI)	16.0	11.0	
Copper	77.8	44.2	
Cyanide	22.0	5.2	
Iron	1000.6		
Lead	100.1	32.3	
Mercury	0.150	0.012	
Nickel	2187.5	243	
Selenium	20.0	4.6	
Silver	86.5	N/A	
Thallium	6.3		
Zinc	560.0	560.0	
Boron	750.48		

Other Effluent Limitations are based upon R317-1.

E. coli 126.0 organisms per 100 ml

**X. Antidegradation Considerations**

The Utah Antidegradation Policy allows for degradation of existing quality where it is determined that such lowering of water quality is necessary to accommodate important economic or social development in the area in which the waters are protected [R317-2-3]. It has been determined that certain chemical parameters introduced by this discharge will cause an increase of the concentration of said parameters in the receiving waters. Under no conditions will the increase in concentration be allowed to interfere with existing instream water uses.

The antidegradation rules and procedures allow for modification of effluent limits less than those based strictly upon mass balance equations utilizing 100% of the assimilative capacity of the receiving water. Additional factors include considerations for "Blue-ribbon" fisheries, special recreational areas, threatened and endangered species, and drinking water sources.

An Antidegradation Level I Review was conducted on this discharge and its effect on the receiving water. Based upon that review, it has been determined that an Antidegradation Level II Review is **not** required.

**XI. Colorado River Salinity Forum Considerations**

Discharges in the Colorado River Basin are required to have their discharge at a TDS loading of less than 1.00 tons/day unless certain exemptions apply. Refer to the Forum's Guidelines for additional information allowing for an exceedence of this value. This doesn't apply to facilities that do not discharge to the Colorado River Basin.

**XII. Summary Comments**

The mathematical modeling and best professional judgement indicate that violations of receiving water beneficial uses with their associated water quality standards, including important downstream segments, will not occur for the evaluated parameters of concern as discussed above if the effluent limitations indicated above are met.

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**XIII. Notice of UPDES Requirement**

This Addendum to the Statement of Basis does not authorize any entity or party to discharge to the waters of the State of Utah. That authority is granted through a UPDES permit issued by the Utah Division of Water Quality. The numbers presented here may be changed as a function of other factors. Dischargers are strongly urged to contact the Permits Section for further information. Permit writers may utilize other information to adjust these limits and/or to determine other limits based upon best available technology and other considerations provided that the values in this wasteload analysis [TMDL] are not compromised. See special provisions in Utah Water Quality Standards for adjustments in the Total Dissolved Solids values based upon background concentration.

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File Name: Hiawatha\_WLA\_09-17-2020

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**APPENDIX - Coefficients and Other Model Information**

CBOD Coeff. (Kd)20 1/day 2.000	CBOD Coeff. FORCED (Kd)/day 0.000	CBOD Coeff. (Ka)T 1/day 0.805	REAER. Coeff. (Ka)20 (Ka)/day 1637.103	REAER. Coeff. FORCED 1/day 0.000	REAER. Coeff. (Ka)T 1/day 1023.130	NBOD Coeff. (Kn)20 1/day 0.600	NBOD Coeff. (Kn)T 1/day 0.131
Open Coeff. (K4)20 1/day 0.000	Open Coeff. (K4)T 1/day 0.000	NH3 LOSS (K5)20 1/day 4.000	NH3 (K5)T 1/day 1.610	NO2+NO3 LOSS (K6)20 1/day 0.000	NO2+NO3 (K6)T 1/day 0.000	TRC Decay K(CI)20 1/day 32.000	TRC K(CI)(T) 1/day 10.083
BENTHIC DEMAND (SOD)20 gm/m2/day 1.000	BENTHIC DEMAND (SOD)T gm/m2/day 0.287						
K1 CBOD {theta} 1.0	K2 Reaer. {theta} 1.0	K3 NH3 {theta} 1.1	K4 Open {theta} 1.0	K5 NH3 Loss {theta} 1.0	K6 NO2+3 {theta} 1.0	K(CI) TRC {theta} 1.1	S Benthic {theta} 1.1

**Antidegradation Review**

An antidegradation review (ADR) was conducted to determine whether the proposed activity complies with the applicable antidegradation requirements for receiving waters that may be affected. The Level I ADR evaluated the criteria of R317-2-3.5(b) and determined that a Level II antidegradation Review is not required.



**ATTACHMENT 2**

*Reasonable Potential Analysis*

## REASONABLE POTENTIAL ANALYSIS

DWQ has worked to improve our reasonable potential (RP) analysis for the inclusion of limits for parameters in the permit by utilizing an EPA approved method and RP guidance document. As a result, more parameters and/or limits may be included in the renewal permit. There are four resulting outcomes for the RP Analyses<sup>1</sup> as listed below;

- Outcome A: A new effluent limitation will be placed in the permit.
- Outcome B: No new effluent limitation. Routine monitoring requirements will be placed or increased from what they are in the permit,
- Outcome C: No new effluent limitation. Routine monitoring requirements maintained as they are in the permit,
- Outcome D: No limitation or routine monitoring requirements are in the permit.

The Initial RP Screening Table is included below for the parameters of concern (POCs), as derived from the previous permits, the TMDL and/or WLA. Note that the full RP analysis model was not utilized at this time due to the results of the initial screening results below, as well as the limited metals data.

**RP Initial Screening Table for Hiawatha Mine Water (UT0023094)  
2015-2019 Data Summary Results & RP Analysis (Outfall 001)**

Parameter	No. of Samples	MEC* mg/L	Water Quality Standards MAC**			Result
			WLA mg/L	Acute mg/L	Chronic mg/L	
Total Iron	20	0.36	1.0	1.0	NA	MEC ≤ MAC
TSS	20	24	NA	70	NA	MEC ≤ MAC
pH	20	7.2-8	6.5-9	NA	NA	MEC ≤ MAC
TDS	20	754	981	1200	1200	MEC ≤ MAC

Notes: NA = not applicable.

\*MEC = Maximum expected effluent concentration as determined from existing data set.

\*\*MAC = Maximum allowable concentration from Water Quality Standards and/or Wasteload Analysis.

MEC less than or equal ( $\leq$ ) to MAC, no additional Acute or Chronic limits required.

Result: From the table above, the RP analysis results of the mine water discharge via Outfall 001 for the listed POCs is: MEC less than or equal ( $\leq$ ) to MAC with no additional Acute or Chronic limits required. This equates to **RP Outcome C: No new effluent limitation. Routine monitoring requirements maintained as they are in the permit.**

Summary: Based upon the policy “Reasonable Potential Analysis Guidance” developed by the Utah Division of Water Quality on September 10, 2015 and subsequently implemented beginning January 1, 2016 for all new and renewal permits; it was determined not to include any additional effluent limits in this 2020 renewal permit. This is because all the data points reviewed did not exceed, or come close to exceeding the applicable Water Quality Standards (see table above). Therefore, no RP currently exists at the facility for the identified POCs and a more quantitative RP analysis was not applicable at this time. However, annual monitoring for the additional metals (Aluminum, Arsenic, Cadmium, Chromium, Copper, Lead, Mercury, Nickel, Selenium, Silver, and Zinc) will be once again be included as detailed in the Fact Sheet and permit for the mine water discharging from Outfall 001, so that a more thorough RP analysis can be conducted in the future. This will be re-evaluated in subsequent years as appropriate.

<sup>1</sup> See Reasonable Potential Analysis Guidance for further definitions of terms