



State of Utah

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Governor

SPENCER J. COX
Lieutenant Governor

Department of
Environmental Quality

L. Scott Baird
Executive Director

DIVISION OF WATER QUALITY
Erica Brown Gaddis, PhD
Director

May 29, 2020

Karin Madsen, Engineering Tech
Genwal Resources, Inc.
PO Box 910
East Carbon, UT 84520

Via Email

Subject: Permit Modification Issuance
Genwal Resources, Inc. - Crandall Canyon Mine
UPDES Permit No. UT0024368

Dear Ms. Madsen:

Enclosed for your records is a signed copy of the modified UPDES Permit, as well as the updated Fact Sheet and attachment information, for the facility referenced above. The 30-day public notice period ended May 26, 2020 with no comments received. Therefore the permit has been re-issued as drafted and is effective June 1, 2020, subject to the right to appeal in accordance with the provisions of Utah Administrative Code, Section R317-9.

As the State agency charged with the administration of issuing UPDES Permits, we are continuously looking for ways to improve our quality of service to you. In an effort to improve the State UPDES permitting process we are asking for your input. Please take a few moments to complete an online survey (Go to <https://deq.utah.gov/division-water-quality> and click on the "Feedback" link on the lower right side of page.) The results will be used to improve our quality and responsiveness to our permittees and give us feedback on customer satisfaction. We will address the issues you have identified on an ongoing basis.

Thanks for your continued permit compliance efforts and your efforts to help protect Utah's Water Quality. If you have any questions with regards to this matter, please contact Jeff Studenka at (801) 536-4395 or jstudenka@utah.gov.

Sincerely,

Dan Hall, Acting Manager
UPDES Surface Water Section

DH/JAS/blj

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Permit Modification Issuance

Genwal Resources, Inc. - Crandall Canyon Mine

UPDES Permit No. UT0024368

Enclosures: 1. Signed Modified Permit (DWQ-2020-008791)
 2. Updated Fact Sheet Statement of Basis (DWQ-2020-008789)
 3. Map of Outfall Relocation (DWQ-2020-010004)
 4. Wasteload Analysis (DWQ-2020-010107 & DWQ-2020-010109)

Cc: Via Email w/Enclosures

Amy Clark, US EPA Region VIII

Orion Rogers, Southeast Utah Health Department

Russell Seeley, DEQ SE District Engineer

Steve Christensen, DOGM Coal Program Manager

Chris Cline, US Fish & Wildlife Services

Mike Fowlks, Utah Division of Wildlife Resources

Jason Gipson, Chief, Utah Regulatory Office, US Corps of Engineers

DWQ-2020-009668

FILE: UPDES Section 2

STATE OF UTAH
DIVISION OF WATER QUALITY
DEPARTMENT OF ENVIRONMENTAL QUALITY
SALT LAKE CITY, UTAH
AUTHORIZATION TO DISCHARGE UNDER THE
UTAH POLLUTANT DISCHARGE ELIMINATION SYSTEM
(UPDES)

In compliance with provisions of the *Utah Water Quality Act, Title 19, Chapter 5, Utah Code Annotated (UCA) 1953, as amended* (the "Act"),

GENWAL RESOURCES, INC., CRANDALL CANYON MINE

is hereby authorized to discharge from its facility located in Crandall Canyon (Emery County), approximately 15 miles northwest of Huntington, Utah, with outfalls located as indicated in the permit, to receiving waters named

CRANDALL CREEK AND HUNTINGTON CREEK (TRIBUTARY TO THE COLORADO RIVER)

in accordance with discharge point, effluent limitations, monitoring requirements and other conditions set forth herein.

This modified permit shall become effective on June 1, 2020

This permit and the authorization to discharge shall expire at midnight, January 31, 2023.

Signed this 29th day of May, 2020.



Erica Brown Gaddis, PhD
Director

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I. EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS

A. Definitions.

1. "7-day and weekly average" is the arithmetic average of all samples collected during a consecutive 7-day period or calendar week whichever is applicable. The 7-day and weekly averages are applicable only to those effluent characteristics for which there are 7-day average effluent limitations. The calendar week, beginning on Sunday and ending on Saturday, shall be used for purposes of reporting self-monitoring data on discharge monitoring report forms. Weekly averages shall be calculated for all calendar weeks with Saturdays in the month. If a calendar week overlaps two months (i.e., the Sunday is in one month and the Saturday in the following month), the weekly average calculated for that calendar week shall be included in the data for the month that contains the Saturday.
2. "10-year, 24-hour precipitation event" means the maximum 24-hour precipitation event with a probable recurrence interval of once in 10 years. This information is available in *Weather Bureau Technical Paper No. 40*, May 1961 and *National Oceanographic and Atmospheric Administration Atlas 2*, 1973 for the 11 Western States, and may be obtained from the National Climatic Center of the Environmental Data Service, National Oceanic and Atmospheric Administration, U.S. Department of Commerce.
3. "30-day and monthly average" is the arithmetic average of all samples collected during a consecutive 30-day period or calendar month, whichever is applicable. The calendar month shall be used for purposes of reporting self-monitoring data on discharge monitoring report forms.
4. "*Act*" means the "*Utah Water Quality Act*".
5. "Best Management Practices" (BMP's) means schedules of activities, prohibitions of practices, maintenance procedures, and other management practices to prevent or reduce the pollution of waters of the State. BMP's also include treatment requirements, operating procedures, and practices to control plant site runoff, spillage or leaks, sludge or waste disposal, or drainage from raw material storage.
6. "Bypass" means the intentional diversion of waste streams from any portion of a treatment facility.
7. "Chronic toxicity" occurs when the inhibitory concentration to 25% of the population (IC₂₅) is less than or equal to 77.4% effluent.

8. "Coal pile runoff" means the rainfall runoff from or through any coal storage pile.
9. "Composite samples" shall be flow proportioned. The composite sample shall contain, as a minimum, at least four (4) samples collected over the composite sample period. Unless otherwise specified, the time between the collection of the first sample and the last sample shall not be less than six (6) hours nor more than 24 hours. Acceptable methods for preparation of composite samples are as follows:
 - a. Constant time interval between samples, sample volume proportional to flow rate at time of sampling;
 - b. Constant time interval between samples, sample volume proportional to total flow (volume) since last sample. For the first sample, the flow rate at the time the sample was collected may be used;
 - c. Constant sample volume, time interval between samples proportional to flow (i.e., sample taken every "X" gallons of flow); and,
 - d. Continuous collection of sample, with sample collection rate proportional to flow rate.
10. "CWA" means *The Federal Water Pollution Control Act*, as amended, by *The Clean Water Act of 1987*.
11. "Daily Maximum" (Daily Max.) is the maximum value allowable in any single sample or instantaneous measurement.
12. "EPA" means the United States Environmental Protection Agency.
13. "Director" means Director of the Utah Division of Water Quality.
14. "Flow-weighted composite sample" means a composite sample consisting of a mixture of aliquots collected at a constant time interval, where the volume of each aliquot is proportional to the flow rate of the discharge.
15. "Grab" sample, for monitoring requirements, is defined as a single "dip and take" sample collected at a representative point in the discharge stream.
16. "IC₂₅" is the concentration of toxicant (given in % effluent) that would cause a 25% reduction in mean young per female or a 25% reduction in overall growth for the test population.

17. "Illicit discharge" means any discharge to a municipal separate storm sewer that is not composed entirely of storm water except discharges pursuant to a UPDES permit (other than the UPDES permit for discharges from the municipal separate storm sewer) and discharges from fire fighting activities, fire hydrant flushing, potable water sources including waterline flushing, uncontaminated ground water (including dewatering ground water infiltration), foundation or footing drains where flows are not contaminated with process materials such as solvents, springs, riparian habitats, wetlands, irrigation water, exterior building wash down where there are no chemical or abrasive additives, pavement wash water where spills or leaks of toxic or hazardous materials have not occurred and where detergents are not used, and air conditioning condensate.
18. An "instantaneous" measurement, for monitoring requirements, is defined as a single reading, observation, or measurement.
19. "Point Source" means any discernible, confined, and discrete conveyance, including but not limited to, any pipe, ditch, channel, tunnel, conduit, well, discrete fissure, container, rolling stock, concentrated animal feeding operation, landfill leachate collection system, vessel or other floating craft from which pollutants are or may be discharges. This term does not include return flows from irrigated agriculture or agriculture storm water runoff.
20. "Runoff coefficient" means the fraction of total rainfall that will appear at a conveyance as runoff.
21. "*Section 313* water priority chemical" means a chemical or chemical categories which:
 - a. Are listed at *40 Code of Federal Regulations (CFR) 372.65* pursuant to *Section 313* of *Title III* of the *Emergency Planning and Community Right-to-Know Act (EPCRA)* (also known as *Title III* of the *Superfund Amendments and Reauthorization Act* of 1986);
 - b. Are present at or above threshold levels at a facility subject to *EPCRA, Section 313* reporting requirements, and
 - c. Meet at least one of the following criteria:
 - (1) Are listed in *Appendix D* of *40 CFR 122* on *Table II* (organic priority pollutants), *Table III* (certain metals, cyanides, and phenols) or *Table IV* (certain toxic pollutants and hazardous substances);

- (2) Are listed as a hazardous substance pursuant to *Section 311(b)(2)(A)* of the *CWA* at *40 CFR 116.4*; or
 - (3) Are pollutants for which EPA has published acute or chronic toxicity criteria.
22. "Severe property damage" means substantial physical damage to property, damage to the treatment facilities which causes them to become inoperable, or substantial and permanent loss of natural resources which can reasonably be expected to occur in the absence of a bypass. Severe property damage does not mean economic loss caused by delays in production.
23. "Significant materials" includes, but is not limited to: raw materials; fuels; materials such as solvents, detergents, and plastic pellets; finished materials such as metallic products; raw materials used in food processing or production; hazardous substances designated under *Section 101(14)* of *Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA)*; any chemical the facility is required to report pursuant to *EPCRA Section 313*; fertilizers; pesticides; and waste products such as ashes, slag and sludge that have the potential to be released with storm water discharges.
24. "Significant spills" includes, but is not limited to: releases of oil or hazardous substances in excess of reportable quantities under *Section 311* of the *Clean Water Act* (see *40 CFR 110.10* and *40 CFR 117.21*) or *Section 102* of *CERCLA* (see *40 CFR 302.4*).
25. "Storm water" means storm water runoff, snowmelt runoff, and surface runoff and drainage.
26. "Time-weighted composite" means a composite sample consisting of a mixture of equal volume aliquots collected at a constant time interval.
27. "Upset" means an exceptional incident in which there is unintentional and temporary noncompliance with technology-based permit effluent limitations because of factors beyond the reasonable control of the permittee. An upset does not include noncompliance to the extent caused by operational error, improperly designed treatment facilities, inadequate treatment facilities, lack of preventive maintenance, or careless or improper operation.
28. "Waste pile" means any non-containerized accumulation of solid, non-flowing waste that is used for treatment or storage.

Acronym List

BMP	Best Management Practices
CERCLA	Comprehensive Environmental Response, Compensation, & Liability Act
CFR	Code of Federal Regulations
DMR	Discharge Monitoring Report
DO	Dissolved Oxygen
EPCRA	Emergency Planning & Community Right-to-Know Act
TDS	Total Dissolved Solids
TIE	Toxicity Identification Evaluation
TRE	Toxicity Reduction Evaluation
TSS	Total Suspended Solids
UAC	Utah Administrative Code
UCA	Utah Code Annotated
UPDES	Utah Pollutant Discharge Elimination System
WET	Whole Effluent Toxicity

Unit List

mg/L	milligrams per liter
MGD	million gallons per day
ml/L	milliliters per liter
SU	standard units
µg/L	micrograms per liter

B. Description of Discharge Points.

The authorization to discharge provided under this permit is limited to those outfalls specifically designated below as discharge locations. Discharges at any location not authorized under a UPDES permit are in violation of the *Act* and may be subject to penalties under the *Act*. Knowingly discharging from an unauthorized location or failing to report an unauthorized discharge may be subject to criminal penalties as provided under the *Act*.

Outfall Number

001

Location of Discharge Point

An 18-inch pipe on the east side of the sediment pond discharging directly to Crandall Creek. Coordinates: 39° 27' 38" north, 111° 09' 59" west.

<u>Outfall Number</u>	<u>Location of Discharge Point</u>
002-A (existing)	Spillway of mine water treatment settling basin into a 12-inch discharge pipe to the Crandall Creek bypass culvert. Coordinates: 39° 27' 38" north, 111° 09' 59" west.
002-B (proposed)	Mine water discharges from an 8-inch discharge pipe into Huntington Creek near Crandall Canyon Road, with Coordinates: 39° 27.790' north, 111° 08.725' west, as proposed.

C. Narrative Standard.

It shall be unlawful, and a violation of this permit, for the permittee to discharge or place any waste or other substance in such a way as will be or may become offensive such as unnatural deposits, floating debris, oil, scum or other nuisances such as color, odor or taste, or cause conditions which produce undesirable aquatic life or which produce objectionable tastes in edible aquatic organisms; or result in concentrations or combinations of substances which produce undesirable physiological responses in desirable resident fish, or other desirable aquatic life, or undesirable human health effects, as determined by bioassay or other tests performed in accordance with standard procedures.

D. Specific Limitations and Self-monitoring Requirements.

1. Effective immediately, and lasting through the life of this permit, there shall be no chronic toxicity in Outfalls 001 or 002 as defined in *Parts I.A.7 and I.D.6*, and determined by test procedures described in *Part I.D.6* of this permit.
2. Effective immediately and lasting the duration of this permit, the permittee is authorized to discharge from Outfalls 001 and 002. Such discharges shall be limited and monitored by the permittee as specified below in *Parts I.D.2. through I.D.7.*

Effluent Characteristics	Effluent Limitations				Monitoring Requirements	
	30 Day Average	7 Day Average	Daily Minimum	Daily Maximum	Sample Frequency	Sample Type
Flow, ¹ MGD a/	0.73	² NA	NA	Report	Monthly	Continuous Recorder
TSS, mg/L	25	35	NA	70	Monthly	Grab
Total Iron, mg/L b/	NA	NA	NA	1.24/3.5	Monthly	Grab
Total Selenium, mg/L b/	NA	NA	NA	Report	Quarterly	Grab
Oil & Grease, mg/L c/	NA	NA	NA	10	Monthly	Grab
Total Aluminum, mg/L b/	NA	NA	NA	1.12	Monthly	Grab
TDS, mg/L d/	Report	NA	NA	1200	Monthly	Grab
pH, standard units	NA	NA	6.5	9.0	Monthly	Grab
DO, mg/L	NA	NA	5.5	NA	Monthly	Grab
Sanitary Waste e/	NA	NA	NA	None	Monthly	Visual
Chronic Whole Effluent Toxicity ³	NA	NA	NA	Pass, IC ₂₅ > 77.4% effluent	Quarterly	Composite
Total Arsenic, mg/L f/	NA	NA	NA	NA	Quarterly	Grab
Total Boron, mg/L f/	NA	NA	NA	NA	Quarterly	Grab
Total Cadmium, mg/L f/	NA	NA	NA	NA	Quarterly	Grab
Total Chromium, mg/L f/	NA	NA	NA	NA	Quarterly	Grab
Total Copper, mg/L f/	NA	NA	NA	NA	Quarterly	Grab
Total Lead, mg/L f/	NA	NA	NA	NA	Quarterly	Grab
Total Mercury, mg/L f/	NA	NA	NA	NA	Quarterly	Grab
Total Nickel, mg/L f/	NA	NA	NA	NA	Quarterly	Grab
Total Silver, mg/L f/	NA	NA	NA	NA	Quarterly	Grab
Total Cyanide, mg/L f/	NA	NA	NA	NA	Quarterly	Grab
Total Zinc, mg/L f/	NA	NA	NA	NA	Quarterly	Grab

¹ MGD: million gallons per day ² NA: not applicable ³ See Biomonitoring Requirements

a/ Flow is limited to 0.73 MGD as a thirty day average for Outfalls 001 and 002 combined. If no flow from Outfall 001, Outfall 002 can have the total flow 30-day average of 0.73 MGD.

b/ Total Iron concentrations shall be limited at 1.24 mg/L for existing Crandall Canyon Outfalls 001 & 002-A. Total Iron concentrations shall be limited to 3.5 mg/L for the new Outfall 002-B into Huntington Creek.

Total Selenium shall be monitored quarterly at Outfall 002(A&B) only.

Total Aluminum shall be limited and monitored monthly at Outfall 002(A&B) only.

c/ In addition to monthly sampling for oil and grease, a visual inspection for oil and grease, floating solids, and visible foam shall be performed at least twice per month at 001 and 002. There shall

be no sheen, floating solids, or visible foam in other than trace amounts. If sheen is observed, a sample of the effluent shall be collected immediately thereafter and oil and grease shall not exceed 10 mg/L in concentration.

- d/ The TDS concentration from each of the outfalls shall not exceed 1200 mg/L as a daily maximum limit. No tons per day loading limit will be applied if the concentration of TDS in the discharge is equal to or less than 500 mg/L as a thirty-day average. However, if the 30-day average concentration exceeds 500 mg/L, then the permittee cannot discharge more than 1 ton per day as a sum from all discharge points. Upon previous determinations by the Director that the permittee is not able to meet the 500 mg/L 30-day average or the 1 ton per day loading limit, the permittee is required to continue to participate in and/or fund a salinity offset project to include the TDS offset credits as appropriate.

The salinity-offset project shall include TDS credits on a ton-for-ton basis for which the permittee is over the 1 ton per day loading limit. The tonnage reduction from the offset project must be calculated by a method similar to one used by the Natural Resources Conservation Service, Colorado River Basin Salinity Control Forum, or other applicable agency.

If the permittee will be participating in the construction and 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.

- e/ There shall be no discharge of sanitary waste and visual observations performed at least monthly shall be conducted.
- f/ These metals shall be monitored as required at both outfalls if discharge occurs. The permittee is required to get the lowest detection limit possible using standard methods and certified laboratories.

3. Should any discharge or increase in the volume of a discharge caused by precipitation within any 24-hour period that is less than or equal to the 10-year, 24-hour precipitation event (or snowmelt of equivalent volume) may, at outfall 001, substitute the following limitations for the limitations contained in *Part I.D.2*. All other limitations and monitoring not listed below remain the same.

Parameter	Alternative Effluent Limitations			
	Average Monthly	Average Weekly	Minimum Daily	Maximum Daily
Flow, MGD	Report			Report
pH, standard units			6.5	9.0
Settleable solids (SS), milliliter/liter				0.5
Total Suspended Solids (TSS), mg/L	Report	Report		Report
Total Iron, mg/L				Report
Total Dissolved Solids (TDS) mg/L b/	Report			Report

In order to substitute the above limitations, the sample collected during the storm event must be analyzed for all permitted parameters specified under *Part I.D.2*. Such analyses shall be conducted on either grab or composite samples. All manual pond dewatering must meet all limitations of *Part I.D.2*.

4. Should any discharge or increase in the volume of a discharge caused by precipitation within any 24-hour period that is greater than the 10-year, 24-hour precipitation event (or snowmelt of equivalent volume) may, at outfall 002, substitute the following limitations for the limitations contained in *Part I.D.2*. All other limitations and monitoring not listed below remain the same.

Parameter	Alternative Effluent Limitations			
	Average Monthly	Average Weekly	Minimum Daily	Maximum Daily
Flow, MGD	Report			Report
pH, standard units			6.5	9.0
Settleable solids (SS), milliliter/liter				Report
Total Suspended Solids (TSS), mg/L	Report	Report		Report
Total Iron, mg/L				Report
Total Dissolved Solids (TDS) mg/L b/	Report			Report

In order to substitute the above limitation, the sample collected during the storm event must be analyzed for all permitted parameters specified under *Part I.D.2*. Such analyses shall be conducted on either grab or composite samples. All manual pond dewatering must meet all limitations of *Part I.D.2*.

- 5 The operator shall have the burden of proof that the increase in discharge was caused by the applicable precipitation event described in *Part I.D.3* and *I.D.4*. The alternate limitations in *Part I.D.3* and *I.D.4* shall not apply to treatment systems that treat exclusively underground mine water (i.e. Outfall 002). The alternate limitations apply to Outfall 001 only.

For rainfall, to waive TSS and total iron limitations, the permittee must prove that the discharge occurred during the precipitation event, or within 48 hours after measurable precipitation has stopped. In addition, to waive settleable solids limitations, the permittee must prove that the discharge occurred during the precipitation event, or within 48 hours after precipitation greater than the 10-year, 24-hour event has stopped.

For snowmelt, to waive TSS and total iron limitations, the permittee must prove that the discharge occurred during pond inflow from the snow melt event, or within 48 hours after pond inflow has stopped. In addition, to waive settleable solids limitations, the permittee must prove that the discharge occurred during pond inflow from the snow melt event, or within 48 hours after pond inflow volume greater than the 10-year, 24-hour event has stopped.

The permittee must submit documentation that the treatment facilities were properly operated and maintained prior to and during the storm event with any request for relief from primary limitations. The division shall determine the adequacy of proof. As part of this determination, the division shall evaluate whether the permittee could have controlled the discharge in such a manner that primary limitations could have been met, whether proper sediment storage levels were maintained and the ponds had sufficient water and sediment capacity for the storm event, plus other relevant factors. All manual pond dewatering must meet all limitations of *Part I.D.2*.

All data/documentation required by the permittee which cannot be reported on applicable discharge monitoring report forms (DMRs) shall be reported in a letter as an attachment to the DMR. Submittal of documentation of containment, maintenance and precipitation records above does not exempt the permittee from the notification requirements of this permit.

6. Whole Effluent Testing - Chronic Toxicity. Starting on the effective date of this permit, the permittee shall quarterly conduct chronic short-term toxicity tests on a composite sample of the final effluent. The sample shall be collected at outfalls 001 and/or 002 depending on which are discharging.

The monitoring frequency shall be quarterly. Samples shall be collected on a two-day progression; i.e., if the first sample is on a Monday, during the next sampling period, sampling shall be on a Wednesday. If chronic toxicity is detected, the test shall be repeated in less than four weeks from the date the initial sample was taken. The need for any additional samples, and/or a Toxicity Reduction Evaluation (TRE) (*see Part I.D.7.*) shall be determined by the Director. If the second test shows no chronic toxicity, routine monitoring shall be resumed.

The chronic toxicity tests shall be conducted in general accordance with the procedures set out in the latest revision of *Short-Term Methods for Estimating the Chronic Toxicity of Effluents and Receiving Water to Freshwater Organisms, Fourth Edition, October 2002, EPA-821-R-02-013* as per *40 CFR 136.3(a) TABLE IA-LIST OF APPROVED BIOLOGICAL METHODS*. Tests will be conducted quarterly using both Ceriodaphnia dubia and Pimephales promelas (fathead minnow) species. A CO₂ atmosphere may be used (in conjunction with an unmodified test) in order to account for pH drift.

Chronic toxicity occurs when the IC₂₅ is less than or equal to an effluent concentration of 77.4%. If any of the acceptable control performance criteria are not met, the test shall be considered invalid.

Quarterly test results shall be reported along with the Discharge Monitoring Report Form (DMR) submitted for the end of the reporting calendar quarter. For example, biomonitoring results for the calendar quarter ending March 31st shall be reported with the standard DMR due April 28th, with the remaining biomonitoring quarterly reports submitted with standard DMR due the next month after each quarter. Biomonitoring results shall be reported on a biomonitoring DMR form, shall be consistent with the latest revision of the *Region VIII NPDES Whole Effluent Toxics Control Program*, and shall include all chemical and physical data as specified.

If the results for a minimum of ten consecutive testing events indicate no chronic toxicity, the permittee may request a reduction in testing frequency and/or reduction to one species. The Director may approve, partially approve, or deny the request based on results and other available information. If approval is given, the modification may take place without a public notice.

The current Utah whole effluent toxicity (WET) policy is in the process of being updated and revised to assure its consistency with the Environmental Protection Agency's national and regional WET policy. When the revised WET policy has been finalized and officially adopted, this permit may be reopened and modified to incorporate satisfactory follow-up chronic toxicity language (chronic pattern of toxicity, preliminary toxicity investigation, and/or toxicity identification evaluation (TIE)/TRE, etc.) without a public notice, as warranted and appropriate.

7. Toxicity Reduction Evaluation. If toxicity is detected during the life of this permit and it is determined by the Director that a TRE is necessary, the permittee shall be so notified and shall initiate a TRE immediately thereafter. The purpose of the TRE will be to establish the cause of the toxicity, locate the source(s) of the toxicity, and control or provide treatment for the toxicity.

A TRE may include but is not limited to one, all, or a combination of the following:

- a. Phase I - Toxicity Characterization
- b. Phase II - Toxicity Identification Procedures
- c. Phase III - Toxicity Control Procedures
- d. Any other appropriate procedures for toxicity source elimination and control

If the TRE establishes that the toxicity cannot be eliminated immediately, the permittee shall submit a proposed compliance plan to the Director. The plan shall include the proposed approach to control toxicity and a proposed compliance schedule for achieving control. If the approach and schedule are acceptable to the Director, this permit may be reopened and modified.

If the TRE shows that the toxicity is caused by a toxicant(s) that may be controlled with specific numerical limitations, the permittee may:

- a. Submit an alternative control program for compliance with the numerical requirements.
- b. If necessary, provide a modified biomonitoring protocol that compensates for the pollutant(s) being controlled numerically.

If acceptable to the Director, this permit may be reopened and modified to incorporate any additional numerical limitations, a modified compliance schedule if judged necessary by the Director, and/or a modified biomonitoring protocol.

Failure to conduct an adequate TRE, or failure to submit a plan or program as described above, or the submittal of a plan or program judged inadequate by the Director, shall be considered a violation of this permit.

II. STORM WATER DISCHARGE REQUIREMENTS

A. Coverage of This Section.

1. Discharges Covered Under This Section. The requirements listed under this section shall apply to storm water discharges from the industrial facility.
 - a. Site Coverage. This section covers discharges of storm water associated with industrial activity to waters of the State from the confines of the facility listed on the cover page. Specific monitoring requirements have been included and are based on the requirements of the UPDES Multi Sector General Permit for Storm Water Discharges Associated with Industrial Activity, Permit No. UTR000000.

B. Prohibition of Non-Storm Water Discharges.

The following non-storm water discharges may be authorized under this permit provided the non-storm water component of the discharge is in compliance with this section; discharges from fire fighting activities; fire hydrant flushing; potable water sources including waterline flushing; drinking fountain water; irrigation drainage and lawn watering; routine external building wash down water where detergents or other compounds have not been used in the process; pavement wash waters where spills or leaks of toxic or hazardous materials (including oils and fuels) have not occurred (unless all spilled material has been removed) and where detergents are not used; air conditioning condensate; uncontaminated compressor condensate; uncontaminated springs; uncontaminated ground water; and foundation or footing drains where flows are not contaminated with process materials such as solvents.

C. Storm Water Pollution Prevention Plan Requirements: Contents of the Plan. The plan shall include, at a minimum, the following:

1. Pollution Prevention Team. Each plan shall identify a specific individual or individuals within the facility organization as members of a storm water Pollution Prevention Team who are responsible for developing the storm water pollution prevention plan and assisting the facility or plant manager in its implementation, maintenance, and revision. The plan shall clearly identify the responsibilities of each team member. The activities and responsibilities of the team shall address all aspects of the facility's storm water pollution prevention plan.

2. Description of Potential Pollutant Sources. Each plan shall provide a description of potential sources which may reasonably be expected to add significant amounts of pollutants to storm water discharges or which may result in the discharge of pollutants during dry weather from separate storm sewers draining the facility. Each plan shall identify all activities and significant materials, which may be reasonably expected to have the potential as a significant pollutant source. Each plan shall include, at a minimum:
 - a. Drainage. A site map must be maintained indicating drainage areas and storm water outfalls. For each area of the facility that generates storm water discharges associated with the waste water treatment related activity with a reasonable potential for containing significant amounts of pollutants, a prediction of the direction of flow and an identification of the types of pollutants that are likely to be present in storm water discharges associated with the activity. Factors to consider include the toxicity of the pollutant; quantity of chemicals used, produced or discharged; the likelihood of contact with storm water; and history of significant leaks or spills of toxic or hazardous pollutants. Flows with a significant potential for causing erosion shall be identified. The site map shall include but not be limited to:
 - (1) Drainage direction and discharge points from all wastewater associated discharges.
 - (2) Location of any erosion and sediment control structure or other control measures utilized for reducing pollutants in storm water runoff.
 - (3) Location of any handling, loading, unloading or storage of chemicals or potential pollutants such as caustics, hydraulic fluids, lubricants, solvents or other petroleum products, or hazardous wastes and where these may be exposed to precipitation.
 - (4) Locations where any major spills or leaks of toxic or hazardous materials have occurred
 - (5) Location of any sand or salt piles.

- (6) Location of fueling stations or vehicle and equipment maintenance and cleaning areas that are exposed to precipitation.
 - (7) Location of receiving streams or other surface water bodies.
 - (8) Locations of outfalls and the types of discharges contained in the drainage areas of the outfalls.
- b. Inventory of Exposed Materials. An inventory of the types of materials handled at the site that potentially may be exposed to precipitation. Such inventory shall include a narrative description of significant materials that have been handled, treated, stored or disposed in a manner to allow exposure to storm water between the time of 3 years prior to the effective date of this permit; method and location of onsite storage or disposal; materials management practices employed to minimize contact of materials with storm water runoff between the time of 3 years prior to the effective date of this permit and the present; the location and a description of existing structural and nonstructural control measures to reduce pollutants in storm water runoff; and a description of any treatment the storm water receives.
- c. Spills and Leaks. A list of significant spills and significant leaks of toxic or hazardous pollutants that occurred at areas that are exposed to precipitation or that otherwise drain to a storm water conveyance at the facility after the date of 3 years prior to the effective date of this permit. Such list shall be updated as appropriate during the term of the permit.
- d. Sampling Data. A summary of existing discharge sampling data describing pollutants in storm water discharges from the facility, including a summary of sampling data collected during the term of this permit.
- e. Summary of Potential Pollutant Sources and Risk Assessment. A narrative description of the potential pollutant sources from the following activities associated with treatment works: access roads/rail lines; loading and unloading operations; outdoor storage activities; material handling sites; outdoor vehicle storage or maintenance sites; significant dust or particulate generating processes;

and onsite waste disposal practices. Specific potential pollutants shall be identified where known.

3. Measures and Controls. The facility shall develop a description of storm water management controls appropriate for the facility, and implement such controls. The appropriateness and priorities of controls in a plan shall reflect identified potential sources of pollutants at the facility. The description of storm water management controls shall address the following minimum components, including a schedule for implementing such controls:
 - a. Good Housekeeping. All areas that may contribute pollutants to storm waters discharges shall be maintained in a clean, orderly manner. These are practices that would minimize the generation of pollutants at the source or before it would be necessary to employ sediment ponds or other control measures at the discharge outlets. Areas where good housekeeping practices should be implemented are storage areas for raw materials, waste materials and finished products; loading/unloading areas and waste disposal areas for hazardous and non-hazardous wastes. Examples of good housekeeping measures include; sweeping; labeling drums containing hazardous materials; and preventive monitoring practices or equivalent measures.
 - b. Preventive Maintenance. A preventive maintenance program shall involve timely inspection and maintenance of storm water management devices (e.g., cleaning oil/water separators, catch basins) as well as inspecting and testing facility equipment and systems to uncover conditions that could cause breakdowns or failures resulting in discharges of pollutants to surface waters, and ensuring appropriate maintenance of such equipment and systems.
 - c. Spill Prevention and Response Procedures. Areas where potential spills that can contribute pollutants to storm water discharges can occur, and their accompanying drainage points, shall be identified clearly in the storm water pollution prevention plan. Where appropriate, specifying material handling procedures, storage requirements, and use of equipment such as diversion valves in the plan should be considered. Procedures and equipment for cleaning up spills shall be identified in the plan and made available to the appropriate personnel.

- d. Inspections. In addition to the comprehensive site evaluation required under *Part II.D.*, qualified facility personnel shall be identified to inspect designated equipment and areas of the facility on a periodic basis. The following areas shall be included in all inspections: loading and unloading areas for all significant materials; storage areas, including associated containment areas; waste management units; and vents and stacks from industrial activities. A set of tracking or follow-up procedures shall be used to ensure that appropriate actions are taken in response to the inspections. Records of inspections shall be maintained. The use of a checklist developed by the facility is encouraged.
- e. Employee Training. Employee training programs shall inform personnel responsible for implementing activities identified in the storm water pollution prevention plan or otherwise responsible for storm water management at all levels of responsibility of the components and goals of the storm water pollution prevention plan. Training should address topics such as spill response, good housekeeping and material management practices. The pollution prevention plan shall identify how often training will take place, but training should be held at least annually (once per calendar year). Employee training must, at a minimum, address the following areas when applicable to a facility: petroleum product management; process chemical management; spill prevention and control; fueling procedures; general good housekeeping practices; proper procedures for using fertilizers, herbicides and pesticides.
- f. Record Keeping and Internal Reporting Procedures. A description of incidents (such as spills, or other discharges), along with other information describing the quality and quantity of storm water discharges shall be included in the plan required under *Part II.C.* Inspections and maintenance activities shall be documented and records of such activities shall be incorporated into the plan.
- g. Non-storm Water Discharges.
- (1) Certification. The plan shall include a certification that the discharge has been tested or evaluated for the presence of non-storm water discharges. The certification shall include the identification of

potential significant sources of non-storm water at the site, a description of the results of any test and/or evaluation for the presence of non-storm water discharges, the evaluation criteria or testing method used, the date of any testing and/or evaluation, and the onsite drainage points that were directly observed during the test. Certifications shall be signed in accordance with *Part V.G.* of this permit.

- (2) Exceptions. Except for flows from fire fighting activities, sources of non-storm water listed in *Part II.B. (Prohibition of Non-storm Water Discharges)* that are combined with storm water discharges associated with industrial activity must be identified in the plan. The plan shall identify and ensure the implementation of appropriate pollution prevention measures for the non-storm water component(s) of the discharge.
 - (3) Failure to Certify. Any facility that is unable to provide the certification required (testing for non-storm water discharges), must notify the Director within 180 days of the effective date of this permit. If the failure to certify is caused by the inability to perform adequate tests or evaluations, such notification shall describe: the procedure of any test conducted for the presence of non-storm water discharges; the results of such test or other relevant observations; potential sources of non-storm water discharges to the storm sewer; and why adequate tests for such storm sewers were not feasible. Non-storm water discharges to waters of the State that are not authorized by a UPDES permit are unlawful, and must be terminated.
- h. Sediment and Erosion Control. The plan shall identify areas, which, due to topography, activities, or other factors, have a high potential for significant soil erosion, and identify structural, vegetative, and/or stabilization measures to be used to limit erosion.
 - i. Management of Runoff. The plan shall contain a narrative consideration of the appropriateness of traditional storm water management practices (practices other than those which control the generation or source(s) of pollutants)

used to divert, infiltrate, reuse, or otherwise manage storm water runoff in a manner that reduces pollutants in storm water discharges from the site. The plan shall provide that measures that the permittee determines to be reasonable and appropriate shall be implemented and maintained. The potential of various sources at the facility to contribute pollutants to storm water discharges associated with industrial activity (*see Part II.C.2, Description of Potential Pollutant Sources*) shall be considered when determining reasonable and appropriate measures. Appropriate measures or other equivalent measures may include: vegetative swales and practices, reuse of collected storm water (such as for a process or as an irrigation source), inlet controls (such as oil/water separators), snow management activities, infiltration devices, wet detention/retention devices and discharging storm water through the waste water facility for treatment.

D. Comprehensive Site Compliance Evaluation.

Qualified personnel shall conduct site compliance evaluations at appropriate intervals specified in the plan, but in no case less than once a year. Such evaluations shall provide:

1. Areas contributing to a storm water discharge associated with industrial activity shall be visually inspected for evidence of, or the potential for, pollutants entering the drainage system. Measures to reduce pollutant loadings shall be evaluated to determine whether they are adequate and properly implemented in accordance with the terms of the permit or whether additional control measures are needed. Structural storm water management measures, sediment and erosion control measures, and other structural pollution prevention measures identified in the plan shall be observed to ensure that they are operating correctly. A visual inspection of equipment needed to implement the plan, such as spill response equipment, shall be made.
2. Based on the results of the evaluation, the description of potential pollutant sources identified in the plan in accordance with *Part II.C.2. (Description of Potential Pollutant Sources)* and pollution prevention measures and controls identified in the plan in accordance with *Part II.C.3. (Measures and Controls)* shall be revised as appropriate within 2 weeks of such evaluation and shall provide for implementation of any changes to the plan in a timely manner, but in no case more than 12 weeks after the evaluation.

3. A report summarizing the scope of the evaluation, personnel making the evaluation, the date(s) of the evaluation, major observations relating to the implementation of the storm water pollution prevention plan, and actions taken in accordance with *Part II.C.3.i.* shall be made and retained as part of the storm water pollution prevention plan for at least 3 years after the date of the evaluation. The report shall identify any incidents of noncompliance. Where a report does not identify any incidents of noncompliance, the report shall contain a certification that the facility is in compliance with the storm water pollution prevention plan and this permit. The report shall be signed in accordance with *Part V.G (Signatory Requirements)* of this permit.
4. Deadlines for Plan Preparation and Compliance. The facility shall prepare and implement a plan in compliance with the provisions of *Part II* of this permit within 270 days of the permit effective date.
5. Keeping Plans Current. The facility shall amend the plan whenever there is a change in design, construction, operation, or maintenance, that has a significant effect on the potential for the discharge of pollutants to the waters of the state or if the storm water pollution prevention plan proves to be ineffective in eliminating or significantly minimizing pollutants from sources identified by the plan, or in otherwise achieving the general objective of controlling pollutants in storm water discharges associated with the activities at the facility.

E. Monitoring and Reporting Requirements

1. Quarterly Visual Examination of Storm Water Quality. The facility shall perform and document a visual examination of a storm water discharge associated with industrial activity from each outfall, except discharges exempted below. The examination must be made at least once in each of the following designated periods during daylight hours unless there is insufficient rainfall or snow melt to produce a runoff event: January through March; April through June; July through September; and October through December.
 - a. Sample and Data Collection. Examinations shall be made of samples collected within the first 30 minutes (or as soon thereafter as practical, but not to exceed 1 hour) of when the runoff or snowmelt begins discharging. The examinations shall document observations of color, odor, clarity, floating solids, settled solids, suspended solids, foam, oil sheen, and other obvious indicators of storm

water pollution. The examination must be conducted in a well-lit area. No analytical tests are required to be performed on the samples. All such samples shall be collected from the discharge resulting from a storm event that is greater than 0.1 inches in magnitude and that occurs at least 72 hours from the previously measurable (greater than 0.1 inch rainfall) storm event. Where practicable, the same individual should carry out the collection and examination of discharges for entire permit term.

- b. Visual Storm Water Discharge Examination Reports. Visual examination reports must be maintained onsite in the pollution prevention plan. The report shall include the examination date and time, examination personnel, the nature of the discharge (i.e., runoff or snow melt), visual quality of the storm water discharge (including observations of color, odor, clarity, floating solids, settled solids, suspended solids, foam, oil sheen, and other obvious indicators of storm water pollution), and probable sources of any observed storm water contamination.
- c. Representative Discharge. If the permittee reasonably believes multiple outfalls discharge substantially identical effluents, based on a consideration of industrial activity, significant materials, and management practices and activities within the area drained by an outfall, the permittee may collect a sample of effluent from one such outfall and report that the observation data also applies to the substantially identical outfall(s) provided that the permittee includes in the storm water pollution prevention plan a description of the location of the outfalls and explains in detail why the outfalls are expected to discharge substantially identical effluents. In addition, for each outfall that the permittee believes is representative, an estimate of the size of the drainage area (in square feet) and an estimate of the runoff coefficient of the drainage area [e.g., low (under 40 percent), medium (40 to 65 percent), or high (above 65 percent)] shall be provided in the plan.
- d. Adverse Conditions. When a discharger is unable to collect samples over the course of the visual examination period as a result of adverse climatic conditions, the discharger must document the reason for not performing the visual examination and retain this documentation onsite with the results of the visual examination. Adverse weather conditions, which may prohibit the collection of samples,

include weather conditions that create dangerous conditions for personnel (such as local flooding, high winds, hurricane, tornadoes, electrical storms, etc.) or otherwise make the collection of a sample impracticable (drought, extended frozen conditions, etc.).

- e. Inactive and Unstaffed Site. When a discharger is unable to conduct visual storm water examinations at an inactive and unstaffed site, the operator of the facility may exercise a waiver of the monitoring requirement as long as the facility remains inactive and unstaffed. The facility must maintain a certification with the pollution prevention plan stating that the site is inactive and unstaffed so that performing visual examinations during a qualifying event is not feasible.

F. EPCRA Section 313 Requirements.

- 1. In areas where *Section 313* water priority chemicals are stored, processed or otherwise handled, appropriate containment, drainage control and/or diversionary structures shall be provided. At a minimum, one of the following preventive systems or its equivalent shall be used:
 - a. Curbing, culverting, gutters, sewers, or other forms of drainage control to prevent or minimize the potential for storm water run-on to come into contact with significant sources of pollutants; or
 - b. Roofs, covers or other forms of appropriate protection to prevent storage piles from exposure to storm water and wind.
- 2. No tank or container shall be used for the storage of a *Section 313* water priority chemical unless its material and construction are compatible with the material stored and conditions of storage such as pressure and temperature, etc.

Liquid storage areas for *Section 313* water priority chemicals shall be operated to minimize discharges of *Section 313* chemicals. Appropriate measures to minimize discharges of *Section 313* chemicals may include secondary containment provided for at least the entire contents of the largest single tank plus sufficient freeboard to allow for precipitation, a strong spill contingency and integrity testing plan, and/or other equivalent measures.

3. Material storage areas for *Section 313* water priority chemicals other than liquids that are subject to runoff, leaching, or wind shall incorporate drainage or other control features that will minimize the discharge of *Section 313* water priority chemicals by reducing storm water contact with *Section 313* water priority chemicals.
4. Truck and rail car loading and unloading areas for liquid *Section 313* water priority chemicals shall be operated to minimize discharges of *Section 313* water priority chemicals. Protection such as overhangs or door skirts to enclose trailer ends at truck loading/unloading docks shall be provided as appropriate. Appropriate measures to minimize discharges of *Section 313* chemicals may include: the placement and maintenance of drip pans (including the proper disposal of materials collected in the drip pans) where spillage may occur (such as hose connections, hose reels and filler nozzles) for use when making and breaking hose connections; a strong spill contingency and integrity testing plan; and/or other equivalent measures.
5. Processing equipment and materials handling equipment shall be operated so as to minimize discharges of *Section 313* water priority chemicals. Materials used in piping and equipment shall be compatible with the substances handled. Drainage from process and materials handling areas shall minimize storm water contact with *Section 313* water priority chemicals. Additional protection such as covers or guards to prevent exposure to wind, spraying or releases from pressure relief vents from causing a discharge of *Section 313* water priority chemicals to the drainage system shall be provided as appropriate. Visual inspections or leak tests shall be provided for overhead piping conveying *Section 313* water priority chemicals without secondary containment.
6. Drainage from areas covered by *Parts II.F. 1, 2, 3, or 4* should be restrained by valves or other positive means to prevent the discharge of a spill or other excessive leakage of *Section 313* water priority chemicals. Where containment units are employed, such units may be emptied by pumps or ejectors; however, these shall be manually activated.

Flapper-type drain valves shall not be used to drain containment areas. Valves used for the drainage of containment areas should, as far as is practical, be of manual, open-and-closed design. If facility drainage is not engineered as above, the final discharge of all in-facility storm sewers shall be equipped to be equivalent with a diversion system that could, in the event of an uncontrolled

spill of *Section 313* water priority chemicals, return the spilled material to the facility.

Records shall be kept of the frequency and estimated volume (in gallons) of discharges from containment areas.

7. Other areas of the facility (those not addressed in *Parts II.F. 1, 2, 3, or 4*, from which runoff that may contain *Section 313* water priority chemicals or spills of *Section 313* water priority chemicals could cause a discharge shall incorporate the necessary drainage or other control features to prevent discharge of spilled or improperly disposed material and ensure the mitigation of pollutants in runoff or leachate.
8. All areas of the facility shall be inspected at specific intervals identified in the plan for leaks or conditions that could lead to discharges of *Section 313* water priority chemicals or direct contact of storm water with raw materials, intermediate materials, waste materials or products. In particular, facility piping, pumps, storage tanks and bins, pressure vessels, process and material handling equipment, and material bulk storage areas shall be examined for any conditions or failures that could cause a discharge. Inspection shall include examination for leaks, wind blowing, corrosion, support or foundation failure, or other forms of deterioration or non-containment. Inspection intervals shall be specified in the plan and shall be based on design and operational experience. Different areas may require different inspection intervals. Where a leak or other condition is discovered that may result in significant releases of *Section 313* water priority chemicals to waters of the State, action to stop the leak or otherwise prevent the significant release of *Section 313* water priority chemicals to waters of the State shall be immediately taken or the unit or process shut down until such action can be taken. When a leak or non-containment of a *Section 313* water priority chemical has occurred, contaminated soil, debris, or other material must be promptly removed and disposed in accordance with Federal, State, and local requirements and as described in the plan.
9. Facilities shall have the necessary security systems to prevent accidental or intentional entry that could cause a discharge. Security systems described in the plan shall address fencing, lighting, vehicular traffic control, and securing of equipment and buildings.
10. Facility employees and contractor personnel that work in areas where *Section 313* water priority chemicals are used or stored shall

be trained in and informed of preventive measures at the facility. Employee training shall be conducted at intervals specified in the plan, but not less than once per year. Training shall address: pollution control laws and regulations, the storm water pollution prevention plan and the particular features of the facility and its operation that are designed to minimize discharges of *Section 313* water priority chemicals. The plan shall designate a person who is accountable for spill prevention at the facility and who will set up the necessary spill emergency procedures and reporting requirements so that spills and emergency releases of *Section 313* water priority chemicals can be isolated and contained before a discharge of a *Section 313* water priority chemical can occur. Contractor or temporary personnel shall be informed of facility operation and design features in order to prevent discharges or spills from occurring.

III. MONITORING, RECORDING AND REPORTING REQUIREMENTS

- A. Representative Sampling. Samples taken in compliance with the monitoring requirements established under *Part I* shall be collected from the effluent stream prior to discharge into the receiving waters. Samples and measurements shall be representative of the volume and nature of the monitored discharge. Sludge samples shall be collected at a location representative of the quality of sludge immediately prior to the use-disposal practice.
- B. Monitoring Procedures. Monitoring must be conducted according to test procedures approved under *Utah Administrative Code (UAC) R317-2-10*, unless other test procedures have been specified in this permit.
- C. Penalties for Tampering. The *Act* provides that any person who falsifies, tampers with, or knowingly renders inaccurate, any monitoring device or method required to be maintained under this permit shall, upon conviction, be punished by a fine of not more than \$10,000 per violation, or by imprisonment for not more than six months per violation, or by both.
- D. Reporting of Monitoring Results. Monitoring results obtained during the previous month shall be summarized for each month and reported either using NetDMR or on a DMR Form (EPA No. 3320-1), post-marked no later than the 28th day of the month following the completed reporting period. If no discharge occurs during the reporting period, "no discharge" shall be reported. Legible copies of these, and all other reports including WET test reports required herein, shall be signed and certified in accordance with the requirements of *Signatory Requirements (Part V.G.)*, and submitted by NetDMR, or submitted to the Division of Water Quality at the following address:
- original to: Department of Environmental Quality
Division of Water Quality
195 North 1950 West
PO Box 144870
Salt Lake City, Utah 84114-4870
- E. Compliance Schedules. Reports of compliance or noncompliance with, or any progress reports on, interim and final requirements contained in any Compliance Schedule of this permit shall be submitted no later than 14 days following each schedule date.
- F. Additional Monitoring by the Permittee. If the permittee monitors any parameter more frequently than required by this permit, using test procedures approved under *UAC R317-2-10* or as otherwise specified in

this permit, the results of this monitoring shall be included in the calculation and reporting of the data submitted in the DMR. Such increased frequency shall also be indicated. Only those parameters required by the permit need to be reported.

G. Records Contents. Records of monitoring information shall include:

1. The date, exact place, and time of sampling or measurements;
2. The individual(s) who performed the sampling or measurements;
3. The date(s) and time(s) analyses were performed;
4. The individual(s) who performed the analyses;
5. The analytical techniques or methods used; and,
6. The results of such analyses.

H. Retention of Records. The permittee shall retain records of all monitoring information, including all calibration and maintenance records and all original strip chart recordings for continuous monitoring instrumentation, copies of all reports required by this permit, and records of all data used to complete the application for this permit, for a period of at least three years from the date of the sample, measurement, report or application. This period may be extended by request of the Director at any time. A copy of this UPDES permit must be maintained on site during the duration of activity at the permitted location.

I. Twenty-four Hour Notice of Noncompliance Reporting.

1. The permittee shall (orally) report any noncompliance that may seriously endanger health or environment as soon as possible, but no later than 24 hours from the time the permittee first became aware of circumstances. The report shall be made to the Division of Water Quality, (801) 536-4300, or 24-hour answering service (801) 536-4123.
2. The following occurrences of noncompliance shall be reported by telephone (801) 536-4123 as soon as possible but no later than 24 hours from the time the permittee becomes aware of the circumstances:
 - a. Any noncompliance that may endanger health or the environment;
 - b. Any unanticipated bypass that exceeds any effluent limitation in the permit (*see Part IV.G, Bypass of Treatment Facilities.*);

- c. Any upset which exceeds any effluent limitation in the permit (*see Part IV.H, Upset Conditions.*); or,
 - d. Violation of a maximum daily discharge limitation for any of the pollutants listed in the permit.
 3. A written submission shall also be provided within five days of the time that the permittee becomes aware of the circumstances. The written submission shall contain:
 - a. A description of the noncompliance and its cause;
 - b. The period of noncompliance, including exact dates and times;
 - c. The estimated time noncompliance is expected to continue if it has not been corrected; and,
 - d. Steps taken or planned to reduce, eliminate, and prevent reoccurrence of the noncompliance.
 - e. Steps taken, if any, to mitigate the adverse impacts on the environment and human health during the noncompliance period.
 4. The Director may waive the written report on a case-by-case basis if the oral report has been received within 24 hours by the Division of Water Quality, (801) 536-4300.
 5. Reports shall be submitted to the addresses in *Part III.D, Reporting of Monitoring Results.*
- J. Other Noncompliance Reporting. Instances of noncompliance not required to be reported within 24 hours shall be reported at the time that monitoring reports for *Part III.D* are submitted. The reports shall contain the information listed in *Part III.I.3.*
- K. Inspection and Entry. The permittee shall allow the Director, or an authorized representative, upon the presentation of credentials and other documents as may be required by law, to:
 1. Enter upon the permittee's premises where a regulated facility or activity is located or conducted, or where records must be kept under the conditions of the permit;

2. Have access to and copy, at reasonable times, any records that must be kept under the conditions of this permit;
3. Inspect at reasonable times any facilities, equipment (including monitoring and control equipment), practices, or operations regulated or required under this permit; and,
4. Sample or monitor at reasonable times, for the purpose of assuring permit compliance or as otherwise authorized by the *Act*, any substances or parameters at any location.

IV. COMPLIANCE RESPONSIBILITIES

- A. Duty to Comply. The permittee must comply with all conditions of this permit. Any permit noncompliance constitutes a violation of the Act and is grounds for enforcement action; for permit termination, revocation and re-issuance, or modification; or for denial of a permit renewal application. The permittee shall give advance notice to the Director of any planned changes in the permitted facility or activity that may result in noncompliance with permit requirements.
- B. Penalties for Violations of Permit Conditions. The *Act* provides that any person who violates a permit condition implementing provisions of the *Act* is subject to a civil penalty not to exceed \$10,000 per day of such violation. Any person who willfully or negligently violates permit conditions of the Act is subject to a fine not exceeding \$25,000 per day of violation; Any person convicted under *UCA 19-5-115(2)* a second time shall be punished by a fine not exceeding \$50,000 per day. Except as provided at *Part IV.G, Bypass of Treatment Facilities* and *Part IV.H, Upset Conditions*, nothing in this permit shall be construed to relieve the permittee of the civil or criminal penalties for noncompliance.
- C. Need to Halt or Reduce Activity not a Defense. It shall not be a defense for a permittee in an enforcement action that it would have been necessary to halt or reduce the permitted activity in order to maintain compliance with the conditions of this permit.
- D. Duty to Mitigate. The permittee shall take all reasonable steps to minimize or prevent any discharge in violation of this permit that has a reasonable likelihood of adversely affecting human health or the environment.
- E. Proper Operation and Maintenance. The permittee shall at all times properly operate and maintain all facilities and systems of treatment and control (and related appurtenances) which are installed or used by the permittee to achieve compliance with the conditions of this permit. Proper operation and maintenance also includes adequate laboratory controls and quality assurance procedures. This provision requires the operation of back-up or auxiliary facilities or similar systems that are installed by a permittee only when the operation is necessary to achieve compliance with the conditions of the permit.
- F. Removed Substances. Collected screening, grit, solids, sludge, or other pollutants removed in the course of treatment shall be buried or disposed of in such a manner to prevent any pollutant from entering any waters of the state or creating a health hazard. Sludge/digester supernatant and filter

backwash shall not directly enter either the final effluent or waters of the state by any other direct route.

G. Bypass of Treatment Facilities.

1. Bypass Not Exceeding Limitations. The permittee may allow any bypass to occur which does not cause effluent limitations to be exceeded, but only if it also is for essential maintenance to assure efficient operation. These bypasses are not subject to *Parts IV.G.2. and IV.G.3.*
2. Prohibition of Bypass.
 - a. Bypass is prohibited, and the Director may take enforcement action against a permittee for bypass, unless:
 - (1) Bypass was unavoidable to prevent loss of human life, personal injury, or severe property damage;
 - (2) There were no feasible alternatives to bypass, such as the use of auxiliary treatment facilities, retention of untreated wastes, or maintenance during normal periods of equipment downtime. This condition is not satisfied if adequate backup equipment should have been installed in the exercise of reasonable engineering judgment to prevent a bypass which occurred during normal periods of equipment downtime or preventive maintenance, and
 - (3) The permittee submitted notices as required under *Part IV.G.3.*
 - b. The Director may approve an anticipated bypass, after considering its adverse effects, if the Director determines that it will meet the three conditions listed in *Part IV.G.2a. (1), (2) and (3).*
3. Notice.
 - a. Anticipated bypass. Except as provided in *Part IV.G.2. and Part IV.G.3.b,* if the permittee knows in advance of the need for a bypass, it shall submit prior notice, at least ninety days before the date of bypass. The prior notice shall include the following unless otherwise waived by the Director:

- (1) Evaluation of alternative to bypass, including cost-benefit analysis containing an assessment of anticipated resource damages:
 - (2) A specific bypass plan describing the work to be performed including scheduled dates and times. The permittee must notify the Director in advance of any changes to the bypass schedule;
 - (3) Description of specific measures to be taken to minimize environmental and public health impacts;
 - (4) A notification plan sufficient to alert all downstream users, the public and others reasonably expected to be impacted by the bypass;
 - (5) A water quality assessment plan to include sufficient monitoring of the receiving water before, during and following the bypass to enable evaluation of public health risks and environmental impacts; and
 - (6) Any additional information requested by the Director.
- b. Emergency Bypass. Where ninety days advance notice is not possible, the permittee must notify the Director, and the Director of the Department of Natural Resources, as soon as it becomes aware of the need to bypass and provide to the Director the information in *Part IV.G.3.a.(1)* through *(6)* to the extent practicable.
- c. Unanticipated bypass. The permittee shall submit notice of an unanticipated bypass to the Director as required under *Part III.I., Twenty-four-Hour Notice of Non-Compliance Reporting*. The permittee shall also immediately notify the Director of the Department of Natural Resources, the public and downstream users and shall implement measures to minimize impacts to public health and environment to the extent practicable.

H. Upset Conditions.

1. Effect of an upset. An upset constitutes an affirmative defense to an action brought for noncompliance with technology based permit effluent limitations if the requirements of *Part IV.H.2.* are met. Director's administrative determination regarding a claim of upset cannot be judiciously challenged by the permittee until such time as an action is initiated for noncompliance.
 2. Conditions necessary for a demonstration of upset. A permittee who wishes to establish the affirmative defense of upset shall demonstrate, through properly signed, contemporaneous operating logs, or other relevant evidence that:
 - a. An upset occurred and that the permittee can identify the cause(s) of the upset;
 - b. The permitted facility was at the time being properly operated;
 - c. The permittee submitted notice of the upset as required under *Part III.I, Twenty-four Hour Notice of Noncompliance Reporting*; and,
 - d. The permittee complied with any remedial measures required under *Part IV.D, Duty to Mitigate.*
 3. Burden of proof. In any enforcement proceeding, the permittee seeking to establish the occurrence of an upset has the burden of proof.
- I. Toxic Pollutants. The permittee shall comply with effluent standards or prohibitions established under *Section 307(a) of The Water Quality Act of 1987* for toxic pollutants within the time provided in the regulations that establish those standards or prohibitions, even if the permit has not yet been modified to incorporate the requirement.
- J. Changes in Discharge of Toxic Substances. Notification shall be provided to the Director as soon as the permittee knows of, or has reason to believe:

1. That any activity has occurred or will occur that would result in the discharge, on a routine or frequent basis, of any toxic pollutant which is not limited in the permit, if that discharge will exceed the highest of the following "notification levels":
 - a. One hundred micrograms per liter (100 µg/L);
 - b. Two hundred micrograms per liter (200 µg/L) for acrolein and acrylonitrile; five hundred micrograms per liter (500 µg/L) for 2,4-dinitrophenol and for 2-methyl-4, 6-dinitrophenol; and one milligram per liter (1 mg/L) for antimony;
 - c. Five (5) times the maximum concentration value reported for that pollutant in the permit application in accordance with *UAC R317-8-3.4(7)* or (10); or,
 - d. The level established by the Director in accordance with *UAC R317-8-4.2(6)*.
 2. That any activity has occurred or will occur which would result in any discharge, on a non-routine or infrequent basis, of a toxic pollutant which is not limited in the permit, if that discharge will exceed the highest of the following "notification levels":
 - a. Five hundred micrograms per liter (500 µg/L);
 - b. One milligram per liter (1 mg/L) for antimony;
 - c. Ten (10) times the maximum concentration value reported for that pollutant in the permit application in accordance with *UAC R317-8-3.4(9)*; or,
 - d. The level established by the Director in accordance with *UAC R317-8-4.2(6)*.
- K. Industrial Pretreatment. Any wastewaters discharged to the sanitary sewer, either as a direct discharge or as a hauled waste, are subject to Federal, State and local pretreatment regulations. Pursuant to *Section 307 of The Water Quality Act of 1987*, the permittee shall comply with all applicable federal General Pretreatment Regulations promulgated at *40 CFR 403*, the State Pretreatment Requirements at *UAC R317-8-8*, and any specific local discharge limitations developed by the Publicly Owned Treatment Works (POTW) accepting the wastewaters.

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).

V. GENERAL REQUIREMENTS

- A. Planned Changes. The permittee shall give notice to the Director as soon as possible of any planned physical alterations or additions to the permitted facility. Notice is required only when the alteration or addition could significantly change the nature or increase the quantity of pollutants discharged. This notification applies to pollutants that are not subject to effluent limitations in the permit. In addition, if there are any planned substantial changes to the permittee's existing sludge facilities or their manner of operation or to current sludge management practices of storage and disposal, the permittee shall give notice to the Director of any planned changes at least 30 days prior to their implementation.
- B. Anticipated Noncompliance. The permittee shall give advance notice to the Director of any planned changes in the permitted facility or activity that may result in noncompliance with permit requirements.
- C. Permit Actions. This permit may be modified, revoked and reissued, or terminated for cause. The filing of a request by the permittee for a permit modification, revocation and re-issuance, or termination, or a notification of planned changes or anticipated noncompliance, does not stay any permit condition.
- D. Duty to Reapply. If the permittee wishes to continue an activity regulated by this permit after the expiration date of this permit, the permittee shall apply for and obtain a new permit. The application shall be submitted at least 180 days before the expiration date of this permit.
- E. Duty to Provide Information. The permittee shall furnish to the Director, within a reasonable time, any information which the Director may request to determine whether cause exists for modifying, revoking and reissuing, or terminating this permit, or to determine compliance with this permit. The permittee shall also furnish to the Director, upon request, copies of records this permit requires to be kept.
- F. Other Information. When the permittee becomes aware that it failed to submit any relevant facts in a permit application, or submitted incorrect information in a permit application or any report to the Director, it shall promptly submit such facts or information.
- G. Signatory Requirements. All applications, reports or information submitted to the Director shall be signed and certified.
 - 1. All permit applications shall be signed by either a principal executive officer or ranking elected official.

2. All reports required by the permit and other information requested by the Director shall be signed by a person described above or by a duly authorized representative of that person. A person is a duly authorized representative only if:
 - a. The authorization is made in writing by a person described above and submitted to the Director, and,
 - b. The authorization specifies either an individual or a position having responsibility for the overall operation of the regulated facility, such as the position of plant manager, superintendent, position of equivalent responsibility, or an individual or position having overall responsibility for environmental matters. (A duly authorized representative may thus be either a named individual or any individual occupying a named position.)
3. Changes to authorization. If an authorization under *Part V.G.2.* is no longer accurate because a different individual or position has responsibility for the overall operation of the facility, a new authorization satisfying the requirements of *Part V.G.2.* must be submitted to the Director prior to or together with any reports, information, or applications to be signed by an authorized representative.
4. Certification. Any person signing a document under *Part V.G.* shall make the following certification:

"I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations."

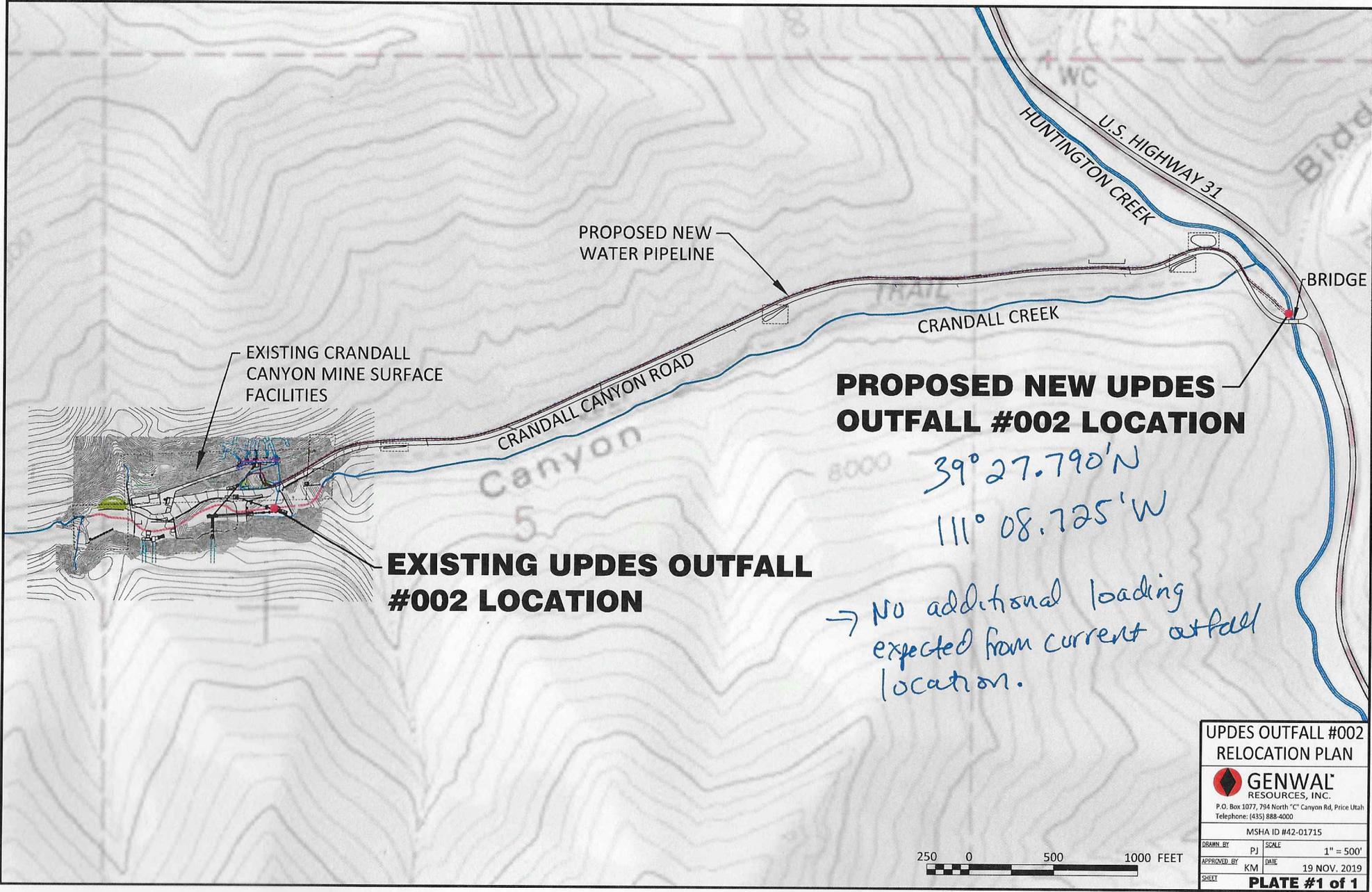
- H. Penalties for Falsification of Reports. The *Act* provides that any person who knowingly makes any false statement, representation, or certification in any record or other document submitted or required to be maintained

under this permit, including monitoring reports or reports of compliance or noncompliance shall, upon conviction be punished by a fine of not more than \$10,000.00 per violation, or by imprisonment for not more than six months per violation, or by both.

- I. Availability of Reports. Except for data determined to be confidential under *UAC R317-8-3.2*, all reports prepared in accordance with the terms of this permit shall be available for public inspection at the office of Director. As required by the *Act*, permit applications, permits and effluent data shall not be considered confidential
- J. Oil and Hazardous Substance Liability. Nothing in this permit shall be construed to preclude the permittee of any legal action or relieve the permittee from any responsibilities, liabilities, or penalties to which the permittee is or may be subject under the *Act*.
- K. Property Rights. The issuance of this permit does not convey any property rights of any sort, or any exclusive privileges, nor does it authorize any injury to private property or any invasion of personal rights, nor any infringement of federal, state or local laws or regulations.
- L. Severability. The provisions of this permit are severable, and if any provision of this permit, or the application of any provision of this permit to any circumstance, is held invalid, the application of such provision to other circumstances, and the remainder of this permit, shall not be affected thereby.
- M. Transfers. This permit may be automatically transferred to a new permittee if:
 - 1. The current permittee notifies the Director at least 20 days in advance of the proposed transfer date;
 - 2. The notice includes a written agreement between the existing and new permittees containing a specific date for transfer of permit responsibility, coverage, and liability between them; and,
 - 3. The Director does not notify the existing permittee and the proposed new permittee of his or her intent to modify, or revoke and reissue the permit. If this notice is not received, the transfer is effective on the date specified in the agreement mentioned in *Part V.M.2*.
- N. State Laws. Nothing in this permit shall be construed to preclude the institution of any legal action or relieve the permittee from any responsibilities, liabilities, or penalties established pursuant to any

applicable state law or regulation under authority preserved by *UCA 19-5-117*.

- O. Water Quality-Reopener Provision. This permit may be reopened and modified (following proper administrative procedures) to include the appropriate effluent limitations and compliance schedule, if necessary, if one or more of the following events occurs:
1. Water Quality Standards for the receiving water(s) to which the permittee discharges are modified in such a manner as to require different effluent limits than contained in this permit.
 2. A final wasteload allocation is developed and approved by the State and/or EPA for incorporation in this permit.
 4. A revision to the current Water Quality Management Plan is approved and adopted which calls for different effluent limitations than contained in this permit.
- P. Toxicity Limitation-Re-opener Provision. This permit may be reopened and modified (following proper administrative procedures) to include whole effluent toxicity (WET) limitations, a compliance date, a compliance schedule, a change in whole effluent toxicity protocol, additional or modified numerical limitations, or any other conditions related to the control of toxicants if one or more of the following events occur;
1. Toxicity is detected, as per Part I. D. 6 through I.D. 7 of this permit, during the duration of this permit.
 2. The TRE results indicate that the toxicant(s) represent pollutant(s) that may be controlled with specific numerical limits, and the Director agrees that numerical controls are the most appropriate course of action.
 3. Following the implementation of numerical control(s) of toxicant(s), the Director agrees that a modified biomonitoring protocol is necessary to compensate for those toxicant(s) that are controlled numerically.
 4. The TRE reveals other unique conditions or characteristics, which in the opinion of the permit issuing authority justify the incorporation of unanticipated special conditions in the permit.



**UPDES OUTFALL #002
RELOCATION PLAN**

GENWAL
RESOURCES, INC.
P.O. Box 1077, 794 North "C" Canyon Rd, Price Utah
Telephone: (435) 888-4000

MSHA ID #42-01715

DRAWN BY	PJ	SCALE	1" = 500'
APPROVED BY	KM	DATE	19 NOV. 2019
SHEET PLATE #1 of 1			



G:\Current Drawings\9898_HuntCreek\Map\Crandall_Canyon\Map\Plate 03_REV.dwg, Layout1, 11/18/2019 2:09:28 PM

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

Date: March, 22, 2020

Prepared by: Suzan Tahir
Standards and Technical Services Section

Facility: Genwal Resources, Inc. – Crandall Canyon Mine
UPDES No. UT0024368

Receiving water: Huntington Creek (1C, 2B, 3A, 4)

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

Outfall 002: Mine Water Discharge.
Design flow is 0.73 mgd.

Receiving Water

The receiving water for these discharges is Huntington Creek.

Per UAC R317-2-13.2(b), Huntington Creek and tributaries, from Highway U-10 crossing to headwaters is 1C, 2B, 3A, 4.

- *Class 1C - Protected for domestic purposes with prior treatment by treatment processes as required by the Utah Division of Drinking Water.*
- *Class 2B - Protected for infrequent primary contact recreation. Also protected for secondary contact recreation where there is a low likelihood of ingestion of water or a low degree of bodily contact with the water. Examples include, but are not limited to, wading, hunting, and fishing.*
- *Class 3A - Protected for cold water species of game fish and other cold water aquatic life, including the necessary aquatic organisms in their food chain.*

- *Class 4 - Protected for agricultural uses including irrigation of crops and stock watering.*

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). Due to a lack of flow records for Huntington Creek, the average flow measurement was calculated for all the data set on an annual basis. The source of flow data was AWQMS sampling site 4930770 (2000-2019).

Table 1: Annual critical low flow (cfs)

Storet	Site Name	Flow Annual (cfs)
4930770	HUNTINGTON CK BL CNFL/ L FK HUNTINGTON CK	58.9

Huntington Creek water quality was characterized based on sampling site 4930770 (2000-2019) from AWQMS.

TMDL

According to Utah’s 2016 303(d) Water Quality Assessment Report, the receiving water for the discharges, Huntington Creek-3 (Assessment Unit UT14060009-003_00), is listed for dissolved oxygen, pH, and temperature (3A aquatic life use). There have been no updates to the 2004 TMDL.

Mixing Zone

The maximum allowable mixing zone is 15 minutes of travel time for acute conditions, not to exceed 50% of stream width, and 2,500 feet for chronic conditions, 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 creek at 2500 feet. 100% of the seasonal critical flow was used to calculate chronic limits. Acute limits were calculated using 50% of the seasonal critical low flow.

Parameters of Concern

The potential parameters of concern identified for the discharge/receiving water were iron, TDS and aluminum as determined in consultation with the UPDES Permit Writer.

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 LC₅₀ (lethal concentration, 50%) percent effluent for acute toxicity and the IC₂₅ (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 LC₅₀ is typically 100% effluent and does not need to be determined by the WLA.

Table 2: WET Limits for IC₂₅ (Outfall 002)

Outfall	Percent Effluent
002	1.9 %

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 Appendix A.

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).

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 for this facility at this time because a previous level II ADR was completed in 2017.

Documents:

WLA Document: *Genwal_WLADoc_03-22-20.docx*

Wasteload Analysis: *Genwal Coal WLA_04_20_2020.xlsm*

References:

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

Lewis, B., J. Saunders, and M. Murphy. 2002. *Ammonia Toxicity Model (AMMTOX, Version2): A Tool for Determining Effluent Ammonia Limits*. University of Colorado, Center for Limnology.

Utah Division of Water Quality
Salt Lake City, Utah

WASTELOAD ANALYSIS [WLA]
Addendum: Statement of Basis

20-Mar-20
4:00 PM

Facilities: Genwal Resources Inc.
Discharging to: Huntington Creek

UPDES No: UT-0024368

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

Huntington Creek: 1C, 2B, 3A, 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)	6.50 mg/l (30 Day Average) 5.00 mg/l (7Day Average) 4.00 mg/l (1 Day Average)
Maximum Total Dissolved Solids	1200.0 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**	0.531 lbs/day	750.00	ug/l	4.574 lbs/day
Arsenic	190.00 ug/l	1.159 lbs/day	340.00	ug/l	2.074 lbs/day
Cadmium	0.46 ug/l	0.003 lbs/day	4.41	ug/l	0.027 lbs/day
Chromium III	154.75 ug/l	0.944 lbs/day	3237.63	ug/l	19.746 lbs/day
ChromiumVI	11.00 ug/l	0.067 lbs/day	16.00	ug/l	0.098 lbs/day
Copper	17.18 ug/l	0.105 lbs/day	27.45	ug/l	0.167 lbs/day
Iron			1000.00	ug/l	6.099 lbs/day
Lead	7.90 ug/l	0.048 lbs/day	202.80	ug/l	1.237 lbs/day
Mercury	0.0120 ug/l	0.000 lbs/day	2.40	ug/l	0.015 lbs/day
Nickel	95.49 ug/l	0.582 lbs/day	858.89	ug/l	5.238 lbs/day
Selenium	4.60 ug/l	0.028 lbs/day	20.00	ug/l	0.122 lbs/day
Silver	N/A ug/l	N/A lbs/day	12.94	ug/l	0.079 lbs/day
Zinc	219.54 ug/l	1.339 lbs/day	219.54	ug/l	1.339 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 204.36 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	0.009 lbs/day
Chlordane	0.004 ug/l	1.391 lbs/day	1.200	ug/l	0.007 lbs/day
DDT, DDE	0.001 ug/l	0.324 lbs/day	0.550	ug/l	0.003 lbs/day
Dieldrin	0.002 ug/l	0.615 lbs/day	1.250	ug/l	0.008 lbs/day
Endosulfan	0.056 ug/l	18.119 lbs/day	0.110	ug/l	0.001 lbs/day
Endrin	0.002 ug/l	0.744 lbs/day	0.090	ug/l	0.001 lbs/day
Guthion			0.010	ug/l	0.000 lbs/day
Heptachlor	0.004 ug/l	1.230 lbs/day	0.260	ug/l	0.002 lbs/day
Lindane	0.080 ug/l	25.885 lbs/day	1.000	ug/l	0.006 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	4.530 lbs/day	2.000	ug/l	0.012 lbs/day
Pentachlorophenol	13.00 ug/l	4206.254 lbs/day	20.000	ug/l	0.122 lbs/day
Toxephene	0.0002 ug/l	0.065 lbs/day	0.7300	ug/l	0.004 lbs/day

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

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	2.29 lbs/day
Cadmium			10.0 ug/l	0.03 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			1200.0 mg/l	3.66 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			50.0 ug/l	16.178 lbs/day
Barium			1000.0 ug/l	323.558 lbs/day
Cadmium			10.0 ug/l	3.236 lbs/day
Chromium			50.0 ug/l	16.178 lbs/day
Lead			50.0 ug/l	16.178 lbs/day
Mercury			2.0 ug/l	0.647 lbs/day
Selenium			10.0 ug/l	3.236 lbs/day
Silver			50.0 ug/l	16.178 lbs/day
Fluoride (3) to			1.4 ug/l	0.453 lbs/day
Nitrates as N			2.4 ug/l	0.777 lbs/day
			10.0 ug/l	3.236 lbs/day

Chlorophenoxy Herbicides

2,4-D	100.0 ug/l	32.356 lbs/day
2,4,5-TP	10.0 ug/l	3.236 lbs/day
Endrin	0.2 ug/l	0.065 lbs/day
cyclohexane (Lindane)	4.0 ug/l	1.294 lbs/day
Methoxychlor	100.0 ug/l	32.356 lbs/day
Toxaphene	5.0 ug/l	1.618 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	1200.00 ug/l	388.27 lbs/day	2700.0 ug/l	873.61 lbs/day
Acrolein	320.00 ug/l	103.54 lbs/day	780.0 ug/l	252.38 lbs/day
Acrylonitrile	0.06 ug/l	0.02 lbs/day	0.7 ug/l	0.21 lbs/day
Benzene	1.20 ug/l	0.39 lbs/day	71.0 ug/l	22.97 lbs/day
Benzidine	0.00012 ug/l	0.00 lbs/day	0.0 ug/l	0.00 lbs/day
Carbon tetrachloride	0.25 ug/l	0.08 lbs/day	4.4 ug/l	1.42 lbs/day
Chlorobenzene	680.00 ug/l	220.02 lbs/day	21000.0 ug/l	6794.72 lbs/day
1,2,4-Trichlorobenzene				
Hexachlorobenzene	0.00075 ug/l	0.00 lbs/day	0.0 ug/l	0.00 lbs/day
1,2-Dichloroethane	0.38 ug/l	0.12 lbs/day	99.0 ug/l	32.03 lbs/day
1,1,1-Trichloroethane				
Hexachloroethane	1.90 ug/l	0.61 lbs/day	8.9 ug/l	2.88 lbs/day
1,1-Dichloroethane				
1,1,2-Trichloroethane	0.61 ug/l	0.20 lbs/day	42.0 ug/l	13.59 lbs/day
1,1,2,2-Tetrachloroethane	0.17 ug/l	0.06 lbs/day	11.0 ug/l	3.56 lbs/day
Chloroethane			0.0 ug/l	0.00 lbs/day
Bis(2-chloroethyl) ether	0.03 ug/l	0.01 lbs/day	1.4 ug/l	0.45 lbs/day
2-Chloroethyl vinyl ether	0.00 ug/l	0.00 lbs/day	0.0 ug/l	0.00 lbs/day
2-Chloronaphthalene	1700.00 ug/l	550.05 lbs/day	4300.0 ug/l	1391.30 lbs/day
2,4,6-Trichlorophenol	2.10 ug/l	0.68 lbs/day	6.5 ug/l	2.10 lbs/day
p-Chloro-m-cresol			0.0 ug/l	0.00 lbs/day
Chloroform (HM)	5.70 ug/l	1.84 lbs/day	470.0 ug/l	152.07 lbs/day
2-Chlorophenol	120.00 ug/l	38.83 lbs/day	400.0 ug/l	129.42 lbs/day
1,2-Dichlorobenzene	2700.00 ug/l	873.61 lbs/day	17000.0 ug/l	5500.49 lbs/day
1,3-Dichlorobenzene	400.00 ug/l	129.42 lbs/day	2600.0 ug/l	841.25 lbs/day
1,4-Dichlorobenzene	400.00 ug/l	129.42 lbs/day	2600.0 ug/l	841.25 lbs/day
3,3'-Dichlorobenzidine	0.04 ug/l	0.01 lbs/day	0.1 ug/l	0.02 lbs/day
1,1-Dichloroethylene	0.06 ug/l	0.02 lbs/day	3.2 ug/l	1.04 lbs/day
1,2-trans-Dichloroethylene	700.00 ug/l	226.49 lbs/day	0.0 ug/l	0.00 lbs/day
2,4-Dichlorophenol	93.00 ug/l	30.09 lbs/day	790.0 ug/l	255.61 lbs/day
1,2-Dichloropropane	0.52 ug/l	0.17 lbs/day	39.0 ug/l	12.62 lbs/day
1,3-Dichloropropylene	10.00 ug/l	3.24 lbs/day	1700.0 ug/l	550.05 lbs/day

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Salt Lake City, Utah**

2,4-Dimethylphenol	540.00 ug/l	174.72 lbs/day	2300.0 ug/l	744.18 lbs/day
2,4-Dinitrotoluene	0.11 ug/l	0.04 lbs/day	9.1 ug/l	2.94 lbs/day
2,6-Dinitrotoluene	0.00 ug/l	0.00 lbs/day	0.0 ug/l	0.00 lbs/day
1,2-Diphenylhydrazine	0.04 ug/l	0.01 lbs/day	0.5 ug/l	0.17 lbs/day
Ethylbenzene	3100.00 ug/l	1003.03 lbs/day	29000.0 ug/l	9383.18 lbs/day
Fluoranthene	300.00 ug/l	97.07 lbs/day	370.0 ug/l	119.72 lbs/day
4-Chlorophenyl phenyl ether				
4-Bromophenyl phenyl ether				
Bis(2-chloroisopropyl) e	1400.00 ug/l	452.98 lbs/day	170000.0 ug/l	55004.86 lbs/day
Bis(2-chloroethoxy) met	0.00 ug/l	0.00 lbs/day	0.0 ug/l	0.00 lbs/day
Methylene chloride (HM)	4.70 ug/l	1.52 lbs/day	1600.0 ug/l	517.69 lbs/day
Methyl chloride (HM)	0.00 ug/l	0.00 lbs/day	0.0 ug/l	0.00 lbs/day
Methyl bromide (HM)	0.00 ug/l	0.00 lbs/day	0.0 ug/l	0.00 lbs/day
Bromoform (HM)	4.30 ug/l	1.39 lbs/day	360.0 ug/l	116.48 lbs/day
Dichlorobromomethane	0.27 ug/l	0.09 lbs/day	22.0 ug/l	7.12 lbs/day
Chlorodibromomethane	0.41 ug/l	0.13 lbs/day	34.0 ug/l	11.00 lbs/day
Hexachlorobutadiene(c)	0.44 ug/l	0.14 lbs/day	50.0 ug/l	16.18 lbs/day
Hexachlorocyclopentadi	240.00 ug/l	77.65 lbs/day	17000.0 ug/l	5500.49 lbs/day
Isophorone	8.40 ug/l	2.72 lbs/day	600.0 ug/l	194.13 lbs/day
Naphthalene				
Nitrobenzene	17.00 ug/l	5.50 lbs/day	1900.0 ug/l	614.76 lbs/day
2-Nitrophenol	0.00 ug/l	0.00 lbs/day	0.0 ug/l	0.00 lbs/day
4-Nitrophenol	0.00 ug/l	0.00 lbs/day	0.0 ug/l	0.00 lbs/day
2,4-Dinitrophenol	70.00 ug/l	22.65 lbs/day	14000.0 ug/l	4529.81 lbs/day
4,6-Dinitro-o-cresol	13.00 ug/l	4.21 lbs/day	765.0 ug/l	247.52 lbs/day
N-Nitrosodimethylamine	0.00069 ug/l	0.00 lbs/day	8.1 ug/l	2.62 lbs/day
N-Nitrosodiphenylamine	5.00 ug/l	1.62 lbs/day	16.0 ug/l	5.18 lbs/day
N-Nitrosodi-n-propylami	0.01 ug/l	0.00 lbs/day	1.4 ug/l	0.45 lbs/day
Pentachlorophenol	0.28 ug/l	0.09 lbs/day	8.2 ug/l	2.65 lbs/day
Phenol	2.10E+04 ug/l	6.79E+03 lbs/day	4.6E+06 ug/l	1.49E+06 lbs/day
Bis(2-ethylhexyl)phthala	1.80 ug/l	0.58 lbs/day	5.9 ug/l	1.91 lbs/day
Butyl benzyl phthalate	3000.00 ug/l	970.67 lbs/day	5200.0 ug/l	1682.50 lbs/day
Di-n-butyl phthalate	2700.00 ug/l	873.61 lbs/day	12000.0 ug/l	3882.70 lbs/day
Di-n-octyl phthlate				
Diethyl phthalate	23000.00 ug/l	7441.83 lbs/day	120000.0 ug/l	38826.96 lbs/day
Dimethyl phthlate	3.13E+05 ug/l	1.01E+05 lbs/day	2.9E+06 ug/l	9.38E+05 lbs/day
Benzo(a)anthracene (P)	0.0028 ug/l	0.00 lbs/day	0.0 ug/l	0.01 lbs/day
Benzo(a)pyrene (PAH)	0.0028 ug/l	0.00 lbs/day	0.0 ug/l	0.01 lbs/day
Benzo(b)fluoranthene (F	0.0028 ug/l	0.00 lbs/day	0.0 ug/l	0.01 lbs/day
Benzo(k)fluoranthene (F	0.0028 ug/l	0.00 lbs/day	0.0 ug/l	0.01 lbs/day
Chrysene (PAH)	0.0028 ug/l	0.00 lbs/day	0.0 ug/l	0.01 lbs/day
Acenaphthylene (PAH)				
Anthracene (PAH)	9600.00 ug/l	3106.16 lbs/day	0.0 ug/l	0.00 lbs/day
Dibenzo(a,h)anthracene	0.0028 ug/l	0.00 lbs/day	0.0 ug/l	0.01 lbs/day
Indeno(1,2,3-cd)pyrene	0.0028 ug/l	0.00 lbs/day	0.0 ug/l	0.01 lbs/day
Pyrene (PAH)	960.00 ug/l	310.62 lbs/day	11000.0 ug/l	3559.14 lbs/day
Tetrachloroethylene	0.80 ug/l	0.26 lbs/day	8.9 ug/l	2.88 lbs/day
Toluene	6800.00 ug/l	2200.19 lbs/day	200000 ug/l	64711.60 lbs/day
Trichloroethylene	2.70 ug/l	0.87 lbs/day	81.0 ug/l	26.21 lbs/day
Vinyl chloride	2.00 ug/l	0.65 lbs/day	525.0 ug/l	169.87 lbs/day
			0.0	0.00 lbs/day
			0.0	0.00 lbs/day
Pesticides				
Aldrin	0.0001 ug/l	0.00 lbs/day	0.0 ug/l	0.00 lbs/day
Dieldrin	0.0001 ug/l	0.00 lbs/day	0.0 ug/l	0.00 lbs/day
Chlordane	0.0006 ug/l	0.00 lbs/day	0.0 ug/l	0.00 lbs/day
4,4'-DDT	0.0006 ug/l	0.00 lbs/day	0.0 ug/l	0.00 lbs/day
4,4'-DDE	0.0006 ug/l	0.00 lbs/day	0.0 ug/l	0.00 lbs/day
4,4'-DDD	0.0008 ug/l	0.00 lbs/day	0.0 ug/l	0.00 lbs/day
alpha-Endosulfan	0.9300 ug/l	0.30 lbs/day	2.0 ug/l	0.65 lbs/day
beta-Endosulfan	0.9300 ug/l	0.30 lbs/day	2.0 ug/l	0.65 lbs/day
Endosulfan sulfate	0.9300 ug/l	0.30 lbs/day	2.0 ug/l	0.65 lbs/day
Endrin	0.7600 ug/l	0.25 lbs/day	0.8 ug/l	0.26 lbs/day
Endrin aldehyde	0.7600 ug/l	0.25 lbs/day	0.8 ug/l	0.26 lbs/day
Heptachlor	0.0002 ug/l	0.00 lbs/day	0.0 ug/l	0.00 lbs/day
Heptachlor epoxide				
PCB's				
PCB 1242 (Arochlor 124	0.000044 ug/l	0.00 lbs/day	0.0 ug/l	0.00 lbs/day
PCB-1254 (Arochlor 124	0.000044 ug/l	0.00 lbs/day	0.0 ug/l	0.00 lbs/day
PCB-1221 (Arochlor 124	0.000044 ug/l	0.00 lbs/day	0.0 ug/l	0.00 lbs/day
PCB-1232 (Arochlor 124	0.000044 ug/l	0.00 lbs/day	0.0 ug/l	0.00 lbs/day
PCB-1248 (Arochlor 124	0.000044 ug/l	0.00 lbs/day	0.0 ug/l	0.00 lbs/day
PCB-1260 (Arochlor 124	0.000044 ug/l	0.00 lbs/day	0.0 ug/l	0.00 lbs/day

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PCB-1016 (Arochlor 10)	0.000044 ug/l	0.00 lbs/day	0.0 ug/l	0.00 lbs/day
Pesticide				
Toxaphene	0.000750 ug/l	0.00	0.0 ug/l	0.00 lbs/day
Dioxin				
Dioxin (2,3,7,8-TCDD)	1.30E-08 ug/l	0.00 lbs/day	1.40E-08	0.00
Metals				
Antimony	14.0 ug/l	4.53 lbs/day		
Arsenic	50.0 ug/l	16.18 lbs/day	4300.00 ug/l	1391.30 lbs/day
Asbestos	7.00E+06 ug/l	2.26E+06 lbs/day		
Beryllium				
Cadmium				
Chromium (III)				
Chromium (VI)				
Copper				
Cyanide	1.30E+03 ug/l	420.63 lbs/day	2.2E+05 ug/l	71182.76 lbs/day
Lead	700.0 ug/l	226.49 lbs/day		
Mercury			0.15 ug/l	0.05 lbs/day
Nickel			4600.00 ug/l	1488.37 lbs/day
Selenium	0.1 ug/l	0.05 lbs/day		
Silver	610.0 ug/l	197.37 lbs/day		
Thallium			6.30 ug/l	2.04 lbs/day
Zinc				

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

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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.

Current Upstream Information

	Stream								
	Critical Low								
	Flow	Temp.	pH	T-NH3	BOD5	DO	TRC	TDS	
	cfs	Deg. C		mg/l as N	mg/l	mg/l	mg/l	mg/l	
Summer (Irrig. Season)	58.9	8.0	8.7	0.01	0.50	7.89	0.00	197.0	
Fall	58.9	8.0	8.7	0.01	0.50	---	0.00	197.0	
Winter	58.9	8.0	8.7	0.01	0.50	---	0.00	197.0	
Spring	58.9	8.0	8.7	0.01	0.50	---	0.00	197.0	
Dissolved Metals	Al ug/l	As ug/l	Cd ug/l	CrIII ug/l	CrVI ug/l	Copper ug/l	Fe ug/l	Pb ug/l	
All Seasons	1.59*	0.53*	0.053*	0.53*	2.65*	0.53*	0.83*	0.53*	
Dissolved Metals	Hg ug/l	Ni ug/l	Se ug/l	Ag ug/l	Zn ug/l	Boron ug/l			
All Seasons	0.0000	0.53*	1.06*	0.1*	0.053*	10.0	* 1/2 MDL		

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Projected Discharge Information

Season	Flow, MGD	Temp.	TDS mg/l	TDS tons/day
Summer	0.73000	11.7	619.00	1.88392
Fall	0.73000	11.7		
Winter	0.73000	11.7		
Spring	0.73000	11.7		

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	0.730 MGD	1.129 cfs
Fall	0.730 MGD	1.129 cfs
Winter	0.730 MGD	1.129 cfs
Spring	0.730 MGD	1.129 cfs

Flow Requirement or Loading Requirement

The calculations in this wasteload analysis utilize the maximum effluent discharge flow of 0.73 MGD. If the discharger is allowed to have a flow greater than 0.73 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 >	12.8% Effluent	[Acute]
	IC25 >	1.9% 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	152.2 lbs/day
Fall	25.0 mg/l as BOD5	152.2 lbs/day
Winter	25.0 mg/l as BOD5	152.2 lbs/day
Spring	25.0 mg/l as BOD5	152.2 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	5.50
Fall	5.50
Winter	5.50
Spring	5.50

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	41.7 mg/l as N	253.8 lbs/day
	1 Hour Avg. - Acute	37.0 mg/l as N	225.1 lbs/day
Fall	4 Day Avg. - Chronic	41.7 mg/l as N	253.8 lbs/day
	1 Hour Avg. - Acute	37.0 mg/l as N	225.1 lbs/day
Winter	4 Day Avg. - Chronic	41.7 mg/l as N	253.8 lbs/day
	1 Hour Avg. - Acute	37.0 mg/l as N	225.1 lbs/day
Spring	4 Day Avg. - Chronic	41.7 mg/l as N	253.8 lbs/day
	1 Hour Avg. - Acute	37.0 mg/l as N	225.1 lbs/day

Acute limit calculated with an Acute Zone of Initial Dilution (ZID) to be equal to 50.%.

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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	0.532	mg/l	3.24	lbs/day
	1 Hour Avg. - Acute	0.487	mg/l	2.97	lbs/day
Fall	4 Day Avg. - Chronic	0.532	mg/l	3.24	lbs/day
	1 Hour Avg. - Acute	0.487	mg/l	2.97	lbs/day
Winter	4 Day Avg. - Chronic	0.532	mg/l	3.24	lbs/day
	1 Hour Avg. - Acute	0.487	mg/l	2.97	lbs/day
Spring	4 Day Avg. - Chronic	0.532	mg/l	0.00	lbs/day
	1 Hour Avg. - Acute	0.487	mg/l	0.00	lbs/day

Effluent Limitations for Total Dissolved Solids based upon Water Quality Standards

Season		Concentration		Load	
Summer	Maximum, Acute	53512.2	mg/l	162.86	tons/day
Fall	Maximum, Acute	53512.2	mg/l	162.86	tons/day
Winter	Maximum, Acute	53512.2	mg/l	162.86	tons/day
Spring	4 Day Avg. - Chronic	53512.2	mg/l	162.86	tons/day

Colorado Salinity Forum Limits Determined by Permitting Section

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 204.36 mg/l):

	4 Day Average		1 Hour Average		
	Concentration	Load	Concentration		Load
Aluminum*	N/A	N/A	20,246.2	ug/l	123.5 lbs/day
Arsenic*	10,058.13 ug/l	39.6 lbs/day	9,185.7	ug/l	56.0 lbs/day
Cadmium	20.28 ug/l	0.1 lbs/day	117.4	ug/l	0.7 lbs/day
Chromium III	8,184.29 ug/l	32.2 lbs/day	87,647.4	ug/l	534.5 lbs/day
Chromium VI*	377.39 ug/l	1.5 lbs/day	329.6	ug/l	2.0 lbs/day
Copper	871.85 ug/l	3.4 lbs/day	722.6	ug/l	4.4 lbs/day
Iron*	N/A	N/A	27,045.3	ug/l	164.9 lbs/day
Lead	378.62 ug/l	1.5 lbs/day	5,470.7	ug/l	33.4 lbs/day
Mercury*	0.64 ug/l	0.0 lbs/day	65.0	ug/l	0.4 lbs/day
Nickel	5,034.46 ug/l	19.8 lbs/day	23,236.1	ug/l	141.7 lbs/day
Selenium*	161.59 ug/l	0.6 lbs/day	500.1	ug/l	3.0 lbs/day
Silver	N/A ug/l	N/A lbs/day	350.4	ug/l	2.1 lbs/day
Zinc	11,665.87 ug/l	45.9 lbs/day	5,942.7	ug/l	36.2 lbs/day
Cyanide*	276.41 ug/l	1.1 lbs/day	595.7	ug/l	3.6 lbs/day

*Limits for these metals are based on the dissolved standard.

Effluent Limitations for Heat/Temperature based upon Water Quality Standards

Summer	62.2 Deg. C.	143.9 Deg. F
Fall	62.2 Deg. C.	143.9 Deg. F
Winter	62.2 Deg. C.	143.9 Deg. F
Spring	62.2 Deg. C.	143.9 Deg. F

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**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:

	4 Day Average		1 Hour Average		Load
	Concentration	Load	Concentration	Load	
Aldrin			1.5E+00	ug/l	1.42E-02 lbs/day
Chlordane	4.30E-03 ug/l	2.62E-02 lbs/day	1.2E+00	ug/l	1.13E-02 lbs/day
DDT, DDE	1.00E-03 ug/l	6.09E-03 lbs/day	5.5E-01	ug/l	5.19E-03 lbs/day
Dieldrin	1.90E-03 ug/l	1.16E-02 lbs/day	1.3E+00	ug/l	1.18E-02 lbs/day
Endosulfan	5.60E-02 ug/l	3.41E-01 lbs/day	1.1E-01	ug/l	1.04E-03 lbs/day
Endrin	2.30E-03 ug/l	1.40E-02 lbs/day	9.0E-02	ug/l	8.49E-04 lbs/day
Guthion	0.00E+00 ug/l	0.00E+00 lbs/day	1.0E-02	ug/l	9.43E-05 lbs/day
Heptachlor	3.80E-03 ug/l	2.31E-02 lbs/day	2.6E-01	ug/l	2.45E-03 lbs/day
Lindane	8.00E-02 ug/l	4.87E-01 lbs/day	1.0E+00	ug/l	9.43E-03 lbs/day
Methoxychlor	0.00E+00 ug/l	0.00E+00 lbs/day	3.0E-02	ug/l	2.83E-04 lbs/day
Mirex	0.00E+00 ug/l	0.00E+00 lbs/day	1.0E-02	ug/l	9.43E-05 lbs/day
Parathion	0.00E+00 ug/l	0.00E+00 lbs/day	4.0E-02	ug/l	3.77E-04 lbs/day
PCB's	1.40E-02 ug/l	8.52E-02 lbs/day	2.0E+00	ug/l	1.89E-02 lbs/day
Pentachlorophenol	1.30E+01 ug/l	7.91E+01 lbs/day	2.0E+01	ug/l	1.89E-01 lbs/day
Toxephene	2.00E-04 ug/l	1.22E-03 lbs/day	7.3E-01	ug/l	6.89E-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	30.5 lbs/day
Nitrates as N	4.0 mg/l	24.4 lbs/day
Total Phosphorus as P	0.05 mg/l	0.3 lbs/day
Total Suspended Solids	90.0 mg/l	548.9 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:

Toxic Organics	Maximum Concentration	
	Concentration	Load
Acenaphthene	6.38E+04 ug/l	3.88E+02 lbs/day
Acrolein	1.70E+04 ug/l	1.04E+02 lbs/day
Acrylonitrile	3.14E+00 ug/l	1.91E-02 lbs/day
Benzene	6.38E+01 ug/l	3.88E-01 lbs/day
Benzidine	ug/l	lbs/day
Carbon tetrachloride	1.33E+01 ug/l	8.09E-02 lbs/day
Chlorobenzene	3.61E+04 ug/l	2.20E+02 lbs/day
1,2,4-Trichlorobenzene		
Hexachlorobenzene	3.99E-02 ug/l	2.43E-04 lbs/day
1,2-Dichloroethane	2.02E+01 ug/l	1.23E-01 lbs/day
1,1,1-Trichloroethane		
Hexachloroethane	1.01E+02 ug/l	6.15E-01 lbs/day
1,1-Dichloroethane		
1,1,2-Trichloroethane	3.24E+01 ug/l	1.97E-01 lbs/day
1,1,2,2-Tetrachloroethane	9.04E+00 ug/l	5.50E-02 lbs/day
Chloroethane		
Bis(2-chloroethyl) ether	1.65E+00 ug/l	1.00E-02 lbs/day
2-Chloroethyl vinyl ether		
2-Chloronaphthalene	9.04E+04 ug/l	5.50E+02 lbs/day
2,4,6-Trichlorophenol	1.12E+02 ug/l	6.79E-01 lbs/day
p-Chloro-m-cresol		
Chloroform (HM)	3.03E+02 ug/l	1.84E+00 lbs/day
2-Chlorophenol	6.38E+03 ug/l	3.88E+01 lbs/day
1,2-Dichlorobenzene	1.44E+05 ug/l	8.74E+02 lbs/day
1,3-Dichlorobenzene	2.13E+04 ug/l	1.29E+02 lbs/day
1,4-Dichlorobenzene	2.13E+04 ug/l	1.29E+02 lbs/day
3,3'-Dichlorobenzidine	2.13E+00 ug/l	1.29E-02 lbs/day
1,1-Dichloroethylene	3.03E+00 ug/l	1.84E-02 lbs/day
1,2-trans-Dichloroethylene1		
2,4-Dichlorophenol	4.94E+03 ug/l	3.01E+01 lbs/day
1,2-Dichloropropane	2.76E+01 ug/l	1.68E-01 lbs/day
1,3-Dichloropropylene	5.32E+02 ug/l	3.24E+00 lbs/day
2,4-Dimethylphenol	2.87E+04 ug/l	1.75E+02 lbs/day
2,4-Dinitrotoluene	5.85E+00 ug/l	3.56E-02 lbs/day
2,6-Dinitrotoluene		
1,2-Diphenylhydrazine	2.13E+00 ug/l	1.29E-02 lbs/day
Ethylbenzene	1.65E+05 ug/l	1.00E+03 lbs/day
Fluoranthene	1.59E+04 ug/l	9.71E+01 lbs/day
4-Chlorophenyl phenyl ether		
4-Bromophenyl phenyl ether		
Bis(2-chloroisopropyl) ether	7.44E+04 ug/l	4.53E+02 lbs/day
Bis(2-chloroethoxy) methane		
Methylene chloride (HM)	2.50E+02 ug/l	1.52E+00 lbs/day
Methyl chloride (HM)		
Methyl bromide (HM)		
Bromoform (HM)	2.29E+02 ug/l	1.39E+00 lbs/day
Dichlorobromomethane(HM)	1.44E+01 ug/l	8.74E-02 lbs/day

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Chlorodibromomethane (HM)	2.18E+01 ug/l	1.33E-01 lbs/day
Hexachlorocyclopentadiene	1.28E+04 ug/l	7.77E+01 lbs/day
Isophorone	4.47E+02 ug/l	2.72E+00 lbs/day
Naphthalene		
Nitrobenzene	9.04E+02 ug/l	5.50E+00 lbs/day
2-Nitrophenol		
4-Nitrophenol		
2,4-Dinitrophenol	3.72E+03 ug/l	2.26E+01 lbs/day
4,6-Dinitro-o-cresol	6.91E+02 ug/l	4.21E+00 lbs/day
N-Nitrosodimethylamine	3.67E-02 ug/l	2.23E-04 lbs/day
N-Nitrosodiphenylamine	2.66E+02 ug/l	1.62E+00 lbs/day
N-Nitrosodi-n-propylamine	2.66E-01 ug/l	1.62E-03 lbs/day
Pentachlorophenol	1.49E+01 ug/l	9.06E-02 lbs/day
Phenol	1.12E+06 ug/l	6.79E+03 lbs/day
Bis(2-ethylhexyl)phthalate	9.57E+01 ug/l	5.82E-01 lbs/day
Butyl benzyl phthalate	1.59E+05 ug/l	9.71E+02 lbs/day
Di-n-butyl phthalate	1.44E+05 ug/l	8.74E+02 lbs/day
Di-n-octyl phthlate		
Diethyl phthalate	1.22E+06 ug/l	7.44E+03 lbs/day
Dimethyl phthlate	1.66E+07 ug/l	1.01E+05 lbs/day
Benzo(a)anthracene (PAH)	1.49E-01 ug/l	9.06E-04 lbs/day
Benzo(a)pyrene (PAH)	1.49E-01 ug/l	9.06E-04 lbs/day
Benzo(b)fluoranthene (PAH)	1.49E-01 ug/l	9.06E-04 lbs/day
Benzo(k)fluoranthene (PAH)	1.49E-01 ug/l	9.06E-04 lbs/day
Chrysene (PAH)	1.49E-01 ug/l	9.06E-04 lbs/day
Acenaphthylene (PAH)		
Anthracene (PAH)		
Dibenzo(a,h)anthracene (PAH)	1.49E-01 ug/l	9.06E-04 lbs/day
Indeno(1,2,3-cd)pyrene (PAH)	1.49E-01 ug/l	9.06E-04 lbs/day
Pyrene (PAH)	5.10E+04 ug/l	3.11E+02 lbs/day
Tetrachloroethylene	4.25E+01 ug/l	2.59E-01 lbs/day
Toluene	3.61E+05 ug/l	2.20E+03 lbs/day
Trichloroethylene	1.44E+02 ug/l	8.74E-01 lbs/day
Vinyl chloride	1.06E+02 ug/l	6.47E-01 lbs/day
Pesticides		
Aldrin	6.91E-03 ug/l	4.21E-05 lbs/day
Dieldrin	7.44E-03 ug/l	4.53E-05 lbs/day
Chlordane	3.03E-02 ug/l	1.84E-04 lbs/day
4,4'-DDT	3.14E-02 ug/l	1.91E-04 lbs/day
4,4'-DDE	3.14E-02 ug/l	1.91E-04 lbs/day
4,4'-DDD	4.41E-02 ug/l	2.69E-04 lbs/day
alpha-Endosulfan	4.94E+01 ug/l	3.01E-01 lbs/day
beta-Endosulfan	4.94E+01 ug/l	3.01E-01 lbs/day
Endosulfan sulfate	4.94E+01 ug/l	3.01E-01 lbs/day
Endrin	4.04E+01 ug/l	2.46E-01 lbs/day
Endrin aldehyde	4.04E+01 ug/l	2.46E-01 lbs/day
Heptachlor	1.12E-02 ug/l	6.79E-05 lbs/day
Heptachlor epoxide		
PCB's		
PCB 1242 (Arochlor 1242)	2.34E-03 ug/l	1.42E-05 lbs/day
PCB-1254 (Arochlor 1254)	2.34E-03 ug/l	1.42E-05 lbs/day
PCB-1221 (Arochlor 1221)	2.34E-03 ug/l	1.42E-05 lbs/day
PCB-1232 (Arochlor 1232)	2.34E-03 ug/l	1.42E-05 lbs/day
PCB-1248 (Arochlor 1248)	2.34E-03 ug/l	1.42E-05 lbs/day
PCB-1260 (Arochlor 1260)	2.34E-03 ug/l	1.42E-05 lbs/day
PCB-1016 (Arochlor 1016)	2.34E-03 ug/l	1.42E-05 lbs/day
Pesticide		
Toxaphene	3.88E-02 ug/l	2.36E-04 lbs/day
Metals		
Antimony	744.18 ug/l	4.53 lbs/day
Arsenic	2616.32 ug/l	15.93 lbs/day
Asbestos	3.72E+08 ug/l	2.26E+06 lbs/day
Beryllium		
Cadmium		
Chromium (III)		
Chromium (VI)		
Copper	69102.46 ug/l	420.63 lbs/day
Cyanide	37209.02 ug/l	226.49 lbs/day
Lead	0.00	0.00

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Salt Lake City, Utah**

Mercury	7.44 ug/l	0.05 lbs/day
Nickel	32425.00 ug/l	197.37 lbs/day
Selenium	0.00	0.00
Silver	0.00	0.00
Thallium	90.36 ug/l	0.55 lbs/day
Zinc		
Dioxin		
Dioxin (2,3,7,8-TCDD)	6.91E-07 ug/l	4.21E-09 lbs/day

**Metals Effluent Limitations for Protection of All Beneficial Uses
Based upon Water Quality Standards and Toxics Rule**

	Class 4 Acute Agricultural ug/l	Class 3 Acute Aquatic Wildlife ug/l	Acute Toxics Drinking Water Source ug/l	Acute Toxics Wildlife ug/l	1C Acute Health Criteria ug/l	Acute Most Stringent ug/l	Class 3 Chronic Aquatic Wildlife ug/l
Aluminum		20246.2				20246.2	N/A
Antimony			744.2	228569.7		744.2	
Arsenic	5315.6	9185.7	2616.3		0.0	2616.3	10058.1
Barium					53155.7	53155.7	
Beryllium						0.0	
Cadmium	527.4	117.4			0.0	117.4	20.3
Chromium (III)		87647.4			0.0	87647.4	8184.3
Chromium (VI)	5274.1	329.6			0.0	329.59	377.39
Copper	10589.7	722.6	69102.5			722.6	871.9
Cyanide		595.7	11694263.0			595.7	276.4
Iron		27045.3				27045.3	
Lead	5274.1	5470.7			0.0	5274.1	378.6
Mercury		64.99	7.4	7.97	0.0	7.44	0.638
Nickel		23236.1	32425.0	244516.4		23236.1	5034.5
Selenium	2574.9	500.1			0.0	500.1	161.6
Silver		350.4			0.0	350.4	
Thallium			90.4	334.9		90.4	
Zinc		5942.7				5942.7	11665.9
Boron	39866.8					39866.8	

Summary Effluent Limitations for Metals [Wasteload Allocation, TMDL]

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

	WLA Acute ug/l	WLA Chronic ug/l	
Aluminum	20246.2	N/A	
Antimony	744.18		
Arsenic	2616.3	10058.1	Acute Controls
Asbestos	3.72E+08		
Barium			
Beryllium			
Cadmium	117.4	20.3	
Chromium (III)	87647.4	8184	
Chromium (VI)	329.6	377.4	Acute Controls
Copper	722.6	871.9	Acute Controls
Cyanide	595.7	276.4	
Iron	27045.3		
Lead	5274.1	378.6	
Mercury	7.441	0.638	
Nickel	23236.1	5034	
Selenium	500.1	161.6	
Silver	350.4	N/A	
Thallium	90.4		
Zinc	5942.7	11665.9	Acute Controls
Boron	39866.81		

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 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.

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 down-stream segments, will not occur for the evaluated parameters of concern as discussed above if the effluent limitations indicated above are met.

Utah Division of Water Quality
Salt Lake City, Utah

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.

Utah Division of Water Quality
801-538-6052
File Name: Genwal Coal WLA 04-20-2020.xls

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

APPENDIX - Coefficients and Other Model Information

CBOD Coeff. (Kd)20 1/day 1.000	CBOD Coeff. FORCED (Kd)/day 0.000	CBOD Coeff. (Ka)T 1/day 0.576	REAER. Coeff. (Ka)20 (Ka)/day 6.511	REAER. Coeff. FORCED 1/day 0.000	REAER. Coeff. (Ka)T 1/day 4.899	NBOD Coeff. (Kn)20 1/day 0.250	NBOD Coeff. (Kn)T 1/day 0.099
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 2.305	NO2+NO3 LOSS (K6)20 1/day 0.000	NO2+NO3 (K6)T 1/day 0.000	TRC Decay K(Cl)20 1/day 32.000	TRC K(Cl)(T) 1/day 15.903
BENTHIC DEMAND (SOD)20 gm/m2/day 1.000	BENTHIC DEMAND (SOD)T gm/m2/day 0.470						
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(Cl) 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 the proposed discharge will require a Level II Antidegradation Review.

**FACT SHEET STATEMENT OF BASIS
GENWAL RESOURCES, INC.
UTAH POLLUTANT DISCHARGE ELIMINATION SYSTEM (UPDES)
UPDES PERMIT NUMBER: UT0024368
PERMIT MODIFICATION
MINOR INDUSTRIAL FACILITY**

FACILITY CONTACT INFORMATION

Contact: Karin Madsen
Position: Engineering Tech
Phone: (435)-888-4026

Mailing Address: PO Box 910
East Carbon, UT 84520

Facility Address: Approximately 15 miles northwest of Huntington, Utah in Crandall Canyon (1.5 miles west of Utah Highway 31 in Emery County)

Coordinates: Latitude: 39° 27' 38", Longitude: 111° 09' 59"

Standard Industrial Classification (SIC): 1222 - *Bituminous Coal Underground Mining (NAICS 212112)*

DESCRIPTION OF FACILITY

Genwal Resources, Inc. (Genwal) is an inactive underground coal mining facility located in Crandall Canyon, a tributary to Huntington Canyon, within the Manti-La Sal National Forest in Emery County, Utah. Genwal previously extracted coal from the Wasatch Plateau Coal Field using a combination of continuous and long-wall mining techniques. Production from the Crandall Canyon Mine ceased in August 2007 following a tragic collapse. Mine water continues to flow out of the portals however, and therefore a UPDES discharge permit is required.

DESCRIPTION OF PERMIT MODIFICATION

Genwal has requested the relocation of Outfall 002 from its current discharge location in Crandall Canyon into a proposed new buried 8-inch pipeline discharging directly into Huntington Creek (see attached map) as part of a final reclamation plan with the Utah Division of Oil, Gas & Mining. Since the existing Outfall 002 location will initially remain in place until after the modified outfall re-location is operational, this change will be accomplished by identifying the UPDES permitted discharge locations as Outfall 002-A (existing location) and Outfall 002-B (proposed re-location). Therefore the coordinates and descriptions for Outfall 002, along with the associated effluent limitations, are being updated accordingly in the permit. Specifically the total iron limitation has been modified to account for the outfall relocation into Huntington Creek and is based upon best professional judgment of the permitting authority as derived from *40 CFR 434 Subpart E, Post-Mining Areas and Alkaline Mine Drainage*, which is a

more protective limitation for total iron than the Wasteload Analysis effluent limitations as attached. Therefore the total iron concentration limitations for the proposed relocated Outfall 002-B shall be 3.5 mg/L and is consistent with a similar UPDES permit in the area. The total iron concentration limitations for existing Outfalls 001 & 002-A remain unchanged as appropriate.

Additionally as per the existing permit conditions, selenium monitoring for Outfall 002 has been evaluated and determined by the permitting authority that the initial monthly sampling, as required during the first permit year, shall now be quarterly sampling as appropriate. This is based on all the monthly selenium concentrations being below the method detection limits as reported. Therefore, the previous monthly monitoring for total selenium has been reduced to quarterly monitoring and with no effluent limitation requirements at this time. This will be re-evaluated, along with all other parameters, during the next permit renewal process as appropriate. These changes are the only changes being proposed with this permit modification and subject to public comment during the public notice period. All other permit provisions remain unopened and unchanged.

DISCHARGE INFORMATION

DESCRIPTION OF DISCHARGES

<u>Outfall</u>	<u>Description</u>
001	Surface water drainage from the mine facilities. Outfall 001 is an 18-inch pipe on the east side of the sediment pond discharging directly to Crandall Creek. Coordinates: 39° 27' 38" north, 111° 09' 59" west.
002-A	Spillway of mine water treatment settling basin into a 12-inch discharge pipe to the Crandall Creek bypass culvert. Coordinates: 39° 27' 38" north, 111° 09' 59" west.
002-B	Mine water discharges to be from an 8-inch discharge pipe into Huntington Creek near Crandall Canyon Road, with Coordinates: 39° 27.790' north, 111° 08.725' west, as proposed.

RECEIVING WATERS AND STREAM CLASSIFICATION

Huntington Creek and Crandall Canyon Creek are classified as 1C, 2B, 3A, and 4 according to *Utah Administrative Code (UAC) R317-2-13*.

Class 1C	-Protected for domestic purposes with prior treatment by treatment processes as required by the Utah Division of Drinking Water.
Class 2B	-Protected for secondary contact recreation such as boating, wading, or similar uses.
Class 3A	-Protected for cold-water species of game fish and other cold-water aquatic life, including the necessary aquatic organisms in their food chain.

Class 4 -Protected for agricultural uses including irrigation of crops and stock watering.

Genwal is authorized to discharge from Outfalls 001 and 002(A&B) and shall be limited and monitored by the permittee as specified below:

Effluent Characteristics	Effluent Limitations				Monitoring Requirements	
	30 Day Average	7 Day Average	Daily Minimum	Daily Maximum	Sample Frequency	Sample Type
Flow, ¹ MGD a/	0.73	² NA	NA	Report	Monthly	Continuous Recorder
TSS, mg/L	25	35	NA	70	Monthly	Grab
Total Iron, mg/L b/	NA	NA	NA	1.24/3.5	Monthly	Grab
Total Selenium, mg/L b/	NA	NA	NA	Report	Quarterly	Grab
Oil & Grease, mg/L c/	NA	NA	NA	10	Monthly	Grab
Total Aluminum, mg/L b/	NA	NA	NA	1.12	Monthly	Grab
TDS, mg/L d/	Report	NA	NA	1200	Monthly	Grab
pH, standard units	NA	NA	6.5	9.0	Monthly	Grab
DO, mg/L	NA	NA	5.5	NA	Monthly	Grab
Sanitary Waste e/	NA	NA	NA	None	Monthly	Visual
Chronic Whole Effluent Toxicity ³	NA	NA	NA	Pass, IC ₂₅ > 77.4% effluent	Quarterly	Composite
Total Arsenic, mg/L f/	NA	NA	NA	NA	Quarterly	Grab
Total Boron, mg/L f/	NA	NA	NA	NA	Quarterly	Grab
Total Cadmium, mg/L f/	NA	NA	NA	NA	Quarterly	Grab
Total Chromium, mg/L f/	NA	NA	NA	NA	Quarterly	Grab
Total Copper, mg/L f/	NA	NA	NA	NA	Quarterly	Grab
Total Lead, mg/L f/	NA	NA	NA	NA	Quarterly	Grab
Total Mercury, mg/L f/	NA	NA	NA	NA	Quarterly	Grab
Total Nickel, mg/L f/	NA	NA	NA	NA	Quarterly	Grab
Total Silver, mg/L f/	NA	NA	NA	NA	Quarterly	Grab
Total Cyanide, mg/L f/	NA	NA	NA	NA	Quarterly	Grab
Total Zinc, mg/L f/	NA	NA	NA	NA	Quarterly	Grab

¹ MGD: million gallons per day ² NA: not applicable ³ See Biomonitoring Requirements

a/ Flow is limited to 0.73 MGD as a thirty day average for Outfalls 001 and 002 combined. If no flow from Outfall 001, Outfall 002 can have the total flow 30-day average of 0.73 MGD.

b/ Total Iron concentrations shall be limited at 1.24 mg/L for existing Crandall Canyon Outfalls 001 & 002-A. Total Iron concentrations shall be limited to 3.5 mg/L for the new Outfall 002-B into Huntington Creek.

Total Selenium shall be monitored quarterly at Outfall 002(A&B) only.
Total Aluminum shall be limited and monitored monthly at Outfall

002(A&B) only.

- c/ In addition to monthly sampling for oil and grease, a visual inspection for oil and grease, floating solids, and visible foam shall be performed at least twice per month at 001 and 002. There shall be no sheen, floating solids, or visible foam in other than trace amounts. If sheen is observed, a sample of the effluent shall be collected immediately thereafter and oil and grease shall not exceed 10 mg/L in concentration.
- d/ The TDS concentration from each of the outfalls shall not exceed 1200 mg/L as a daily maximum limit. No tons per day loading limit will be applied if the concentration of TDS in the discharge is equal to or less than 500 mg/L as a thirty-day average. However, if the 30-day average concentration exceeds 500 mg/L, then the permittee cannot discharge more than 1 ton per day as a sum from all discharge points. Upon previous determinations by the Director that the permittee is not able to meet the 500 mg/L 30-day average or the 1 ton per day loading limit, the permittee is required to continue to participate in and/or fund a salinity offset project to include the TDS offset credits as appropriate.

The salinity-offset project shall include TDS credits on a ton-for-ton basis for which the permittee is over the 1 ton per day loading limit. The tonnage reduction from the offset project must be calculated by a method similar to one used by the Natural Resources Conservation Service, Colorado River Basin Salinity Control Forum, or other applicable agency.

If the permittee will be participating in the construction and 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.

- e/ There shall be no discharge of sanitary waste and visual observations

performed at least monthly shall be conducted.

- f/ These metals shall be monitored as required at both outfalls if discharge occurs. The permittee is required to get the lowest detection limit possible using standard methods and certified laboratories.

PERMIT DURATION

It is recommended that this modified permit be effective for the remainder of the five (5) year permit cycle, which is set to expire at midnight on January 31, 2023.

Drafted by
Jeff Studenka, Environmental Scientist
Utah Division of Water Quality (DWQ)
April 20, 2020

PUBLIC NOTICE INFORMATION (updated May 27, 2020)

Began: April 24, 2020
Ended: May 26, 2020

The 30-day Public Notice of the modified permit was published on DWQ's website as per Utah Administrative Code (UAC) R317-8-6.5.

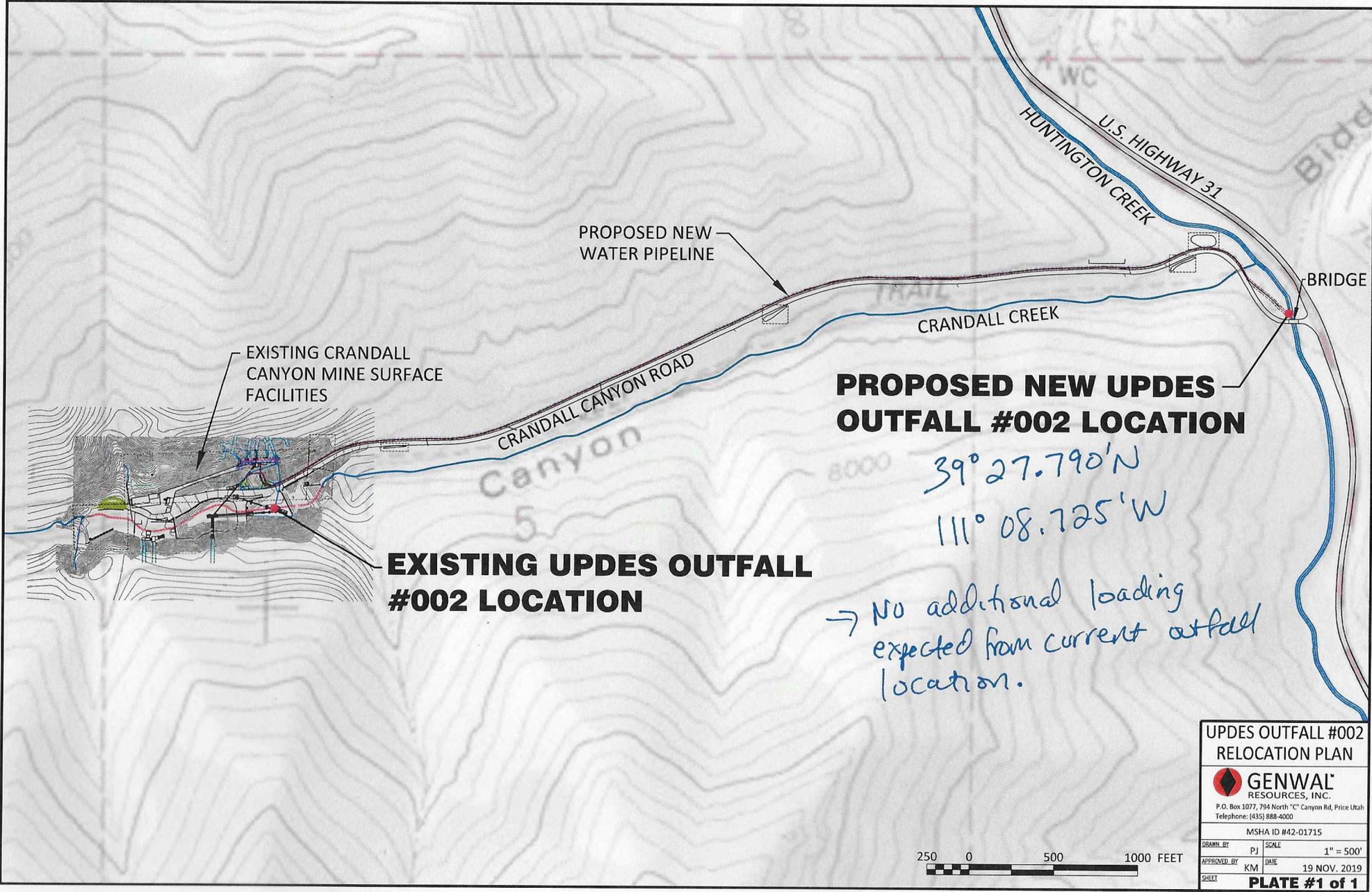
During the public comment period provided under UAC R317-8-6.5, any interested person may submit written comments on the draft permit and may request a public hearing, if no hearing has already been scheduled. A request for a public hearing shall be in writing and shall state the nature of the issues 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. No comments or requests were received. Staff recommends issuance of the modified permit as drafted.

ADDENDUM TO FSSOB

- ATTACHMENTS (2):**
1. Map of Outfall 002 Relocation
 2. Wasteload Analysis for Proposed Outfall 002 Relocation

ATTACHMENT 1

Map of Outfall 002 Relocation



G:\Current\Drawings\989\Map\Crandall Canyon\Water to Huntington Creek\Deliverables\Task 5\989\Plate 5-1 REV\0.dwg, Layout1, 11/18/2019 2:09:28 PM

UPDES OUTFALL #002 RELOCATION PLAN	
 GENWAL RESOURCES, INC. P.O. Box 1077, 794 North "C" Canyon Rd, Price Utah Telephone: (435) 888-4000	
MSHA ID #42-01715	
DRAWN BY	PJ
SCALE	1" = 500'
APPROVED BY	KM
DATE	19 NOV. 2019
PLATE #1 of 1	

ATTACHMENT 2

Wasteload Analysis

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

Date: March, 22, 2020

Prepared by: Suzan Tahir
Standards and Technical Services Section

Facility: Genwal Resources, Inc. – Crandall Canyon Mine
UPDES No. UT0024368

Receiving water: Huntington Creek (1C, 2B, 3A, 4)

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

Outfall 002: Mine Water Discharge.
Design flow is 0.73 mgd.

Receiving Water

The receiving water for these discharges is Huntington Creek.

Per UAC R317-2-13.2(b), Huntington Creek and tributaries, from Highway U-10 crossing to headwaters is 1C, 2B, 3A, 4.

- *Class 1C - Protected for domestic purposes with prior treatment by treatment processes as required by the Utah Division of Drinking Water.*
- *Class 2B - Protected for infrequent primary contact recreation. Also protected for secondary contact recreation where there is a low likelihood of ingestion of water or a low degree of bodily contact with the water. Examples include, but are not limited to, wading, hunting, and fishing.*
- *Class 3A - Protected for cold water species of game fish and other cold water aquatic life, including the necessary aquatic organisms in their food chain.*

- *Class 4 - Protected for agricultural uses including irrigation of crops and stock watering.*

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). Due to a lack of flow records for Huntington Creek, the average flow measurement was calculated for all the data set on an annual basis. The source of flow data was AWQMS sampling site 4930770 (2000-2019).

Table 1: Annual critical low flow (cfs)

Storet	Site Name	Flow Annual (cfs)
4930770	HUNTINGTON CK BL CNFL/ L FK HUNTINGTON CK	58.9

Huntington Creek water quality was characterized based on sampling site 4930770 (2000-2019) from AWQMS.

TMDL

According to Utah’s 2016 303(d) Water Quality Assessment Report, the receiving water for the discharges, Huntington Creek-3 (Assessment Unit UT14060009-003_00), is listed for dissolved oxygen, pH, and temperature (3A aquatic life use). There have been no updates to the 2004 TMDL.

Mixing Zone

The maximum allowable mixing zone is 15 minutes of travel time for acute conditions, not to exceed 50% of stream width, and 2,500 feet for chronic conditions, 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 creek at 2500 feet. 100% of the seasonal critical flow was used to calculate chronic limits. Acute limits were calculated using 50% of the seasonal critical low flow.

Parameters of Concern

The potential parameters of concern identified for the discharge/receiving water were iron, TDS and aluminum as determined in consultation with the UPDES Permit Writer.

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 LC₅₀ (lethal concentration, 50%) percent effluent for acute toxicity and the IC₂₅ (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 LC₅₀ is typically 100% effluent and does not need to be determined by the WLA.

Table 2: WET Limits for IC₂₅ (Outfall 002)

Outfall	Percent Effluent
002	1.9 %

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 Appendix A.

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).

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 for this facility at this time because a previous level II ADR was completed in 2017.

Documents:

WLA Document: *Genwal_WLADoc_03-22-20.docx*

Wasteload Analysis: *Genwal Coal WLA_04_20_2020.xlsm*

References:

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

Lewis, B., J. Saunders, and M. Murphy. 2002. *Ammonia Toxicity Model (AMMTOX, Version2): A Tool for Determining Effluent Ammonia Limits.* University of Colorado, Center for Limnology.

Utah Division of Water Quality
Salt Lake City, Utah

WASTELOAD ANALYSIS [WLA]
Addendum: Statement of Basis

20-Mar-20
4:00 PM

Facilities: Genwal Resources Inc.
Discharging to: Huntington Creek

UPDES No: UT-0024368

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

Huntington Creek: 1C, 2B, 3A, 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)	6.50 mg/l (30 Day Average) 5.00 mg/l (7Day Average) 4.00 mg/l (1 Day Average)
Maximum Total Dissolved Solids	1200.0 mg/l

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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**	0.531 lbs/day	750.00	ug/l	4.574 lbs/day
Arsenic	190.00 ug/l	1.159 lbs/day	340.00	ug/l	2.074 lbs/day
Cadmium	0.46 ug/l	0.003 lbs/day	4.41	ug/l	0.027 lbs/day
Chromium III	154.75 ug/l	0.944 lbs/day	3237.63	ug/l	19.746 lbs/day
ChromiumVI	11.00 ug/l	0.067 lbs/day	16.00	ug/l	0.098 lbs/day
Copper	17.18 ug/l	0.105 lbs/day	27.45	ug/l	0.167 lbs/day
Iron			1000.00	ug/l	6.099 lbs/day
Lead	7.90 ug/l	0.048 lbs/day	202.80	ug/l	1.237 lbs/day
Mercury	0.0120 ug/l	0.000 lbs/day	2.40	ug/l	0.015 lbs/day
Nickel	95.49 ug/l	0.582 lbs/day	858.89	ug/l	5.238 lbs/day
Selenium	4.60 ug/l	0.028 lbs/day	20.00	ug/l	0.122 lbs/day
Silver	N/A ug/l	N/A lbs/day	12.94	ug/l	0.079 lbs/day
Zinc	219.54 ug/l	1.339 lbs/day	219.54	ug/l	1.339 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 204.36 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	0.009 lbs/day
Chlordane	0.004 ug/l	1.391 lbs/day	1.200	ug/l	0.007 lbs/day
DDT, DDE	0.001 ug/l	0.324 lbs/day	0.550	ug/l	0.003 lbs/day
Dieldrin	0.002 ug/l	0.615 lbs/day	1.250	ug/l	0.008 lbs/day
Endosulfan	0.056 ug/l	18.119 lbs/day	0.110	ug/l	0.001 lbs/day
Endrin	0.002 ug/l	0.744 lbs/day	0.090	ug/l	0.001 lbs/day
Guthion			0.010	ug/l	0.000 lbs/day
Heptachlor	0.004 ug/l	1.230 lbs/day	0.260	ug/l	0.002 lbs/day
Lindane	0.080 ug/l	25.885 lbs/day	1.000	ug/l	0.006 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	4.530 lbs/day	2.000	ug/l	0.012 lbs/day
Pentachlorophenol	13.00 ug/l	4206.254 lbs/day	20.000	ug/l	0.122 lbs/day
Toxephene	0.0002 ug/l	0.065 lbs/day	0.7300	ug/l	0.004 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	2.29 lbs/day
Cadmium			10.0 ug/l	0.03 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			1200.0 mg/l	3.66 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			50.0 ug/l	16.178 lbs/day
Barium			1000.0 ug/l	323.558 lbs/day
Cadmium			10.0 ug/l	3.236 lbs/day
Chromium			50.0 ug/l	16.178 lbs/day
Lead			50.0 ug/l	16.178 lbs/day
Mercury			2.0 ug/l	0.647 lbs/day
Selenium			10.0 ug/l	3.236 lbs/day
Silver			50.0 ug/l	16.178 lbs/day
Fluoride (3) to			1.4 ug/l	0.453 lbs/day
Nitrates as N			2.4 ug/l	0.777 lbs/day
			10.0 ug/l	3.236 lbs/day

Chlorophenoxy Herbicides

2,4-D	100.0 ug/l	32.356 lbs/day
2,4,5-TP	10.0 ug/l	3.236 lbs/day
Endrin	0.2 ug/l	0.065 lbs/day
cyclohexane (Lindane)	4.0 ug/l	1.294 lbs/day
Methoxychlor	100.0 ug/l	32.356 lbs/day
Toxaphene	5.0 ug/l	1.618 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	1200.00 ug/l	388.27 lbs/day	2700.0 ug/l	873.61 lbs/day
Acrolein	320.00 ug/l	103.54 lbs/day	780.0 ug/l	252.38 lbs/day
Acrylonitrile	0.06 ug/l	0.02 lbs/day	0.7 ug/l	0.21 lbs/day
Benzene	1.20 ug/l	0.39 lbs/day	71.0 ug/l	22.97 lbs/day
Benzidine	0.00012 ug/l	0.00 lbs/day	0.0 ug/l	0.00 lbs/day
Carbon tetrachloride	0.25 ug/l	0.08 lbs/day	4.4 ug/l	1.42 lbs/day
Chlorobenzene	680.00 ug/l	220.02 lbs/day	21000.0 ug/l	6794.72 lbs/day
1,2,4-Trichlorobenzene				
Hexachlorobenzene	0.00075 ug/l	0.00 lbs/day	0.0 ug/l	0.00 lbs/day
1,2-Dichloroethane	0.38 ug/l	0.12 lbs/day	99.0 ug/l	32.03 lbs/day
1,1,1-Trichloroethane				
Hexachloroethane	1.90 ug/l	0.61 lbs/day	8.9 ug/l	2.88 lbs/day
1,1-Dichloroethane				
1,1,2-Trichloroethane	0.61 ug/l	0.20 lbs/day	42.0 ug/l	13.59 lbs/day
1,1,2,2-Tetrachloroethane	0.17 ug/l	0.06 lbs/day	11.0 ug/l	3.56 lbs/day
Chloroethane			0.0 ug/l	0.00 lbs/day
Bis(2-chloroethyl) ether	0.03 ug/l	0.01 lbs/day	1.4 ug/l	0.45 lbs/day
2-Chloroethyl vinyl ether	0.00 ug/l	0.00 lbs/day	0.0 ug/l	0.00 lbs/day
2-Chloronaphthalene	1700.00 ug/l	550.05 lbs/day	4300.0 ug/l	1391.30 lbs/day
2,4,6-Trichlorophenol	2.10 ug/l	0.68 lbs/day	6.5 ug/l	2.10 lbs/day
p-Chloro-m-cresol			0.0 ug/l	0.00 lbs/day
Chloroform (HM)	5.70 ug/l	1.84 lbs/day	470.0 ug/l	152.07 lbs/day
2-Chlorophenol	120.00 ug/l	38.83 lbs/day	400.0 ug/l	129.42 lbs/day
1,2-Dichlorobenzene	2700.00 ug/l	873.61 lbs/day	17000.0 ug/l	5500.49 lbs/day
1,3-Dichlorobenzene	400.00 ug/l	129.42 lbs/day	2600.0 ug/l	841.25 lbs/day
1,4-Dichlorobenzene	400.00 ug/l	129.42 lbs/day	2600.0 ug/l	841.25 lbs/day
3,3'-Dichlorobenzidine	0.04 ug/l	0.01 lbs/day	0.1 ug/l	0.02 lbs/day
1,1-Dichloroethylene	0.06 ug/l	0.02 lbs/day	3.2 ug/l	1.04 lbs/day
1,2-trans-Dichloroethylene	700.00 ug/l	226.49 lbs/day	0.0 ug/l	0.00 lbs/day
2,4-Dichlorophenol	93.00 ug/l	30.09 lbs/day	790.0 ug/l	255.61 lbs/day
1,2-Dichloropropane	0.52 ug/l	0.17 lbs/day	39.0 ug/l	12.62 lbs/day
1,3-Dichloropropylene	10.00 ug/l	3.24 lbs/day	1700.0 ug/l	550.05 lbs/day

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2,4-Dimethylphenol	540.00 ug/l	174.72 lbs/day	2300.0 ug/l	744.18 lbs/day
2,4-Dinitrotoluene	0.11 ug/l	0.04 lbs/day	9.1 ug/l	2.94 lbs/day
2,6-Dinitrotoluene	0.00 ug/l	0.00 lbs/day	0.0 ug/l	0.00 lbs/day
1,2-Diphenylhydrazine	0.04 ug/l	0.01 lbs/day	0.5 ug/l	0.17 lbs/day
Ethylbenzene	3100.00 ug/l	1003.03 lbs/day	29000.0 ug/l	9383.18 lbs/day
Fluoranthene	300.00 ug/l	97.07 lbs/day	370.0 ug/l	119.72 lbs/day
4-Chlorophenyl phenyl ether				
4-Bromophenyl phenyl ether				
Bis(2-chloroisopropyl) e	1400.00 ug/l	452.98 lbs/day	170000.0 ug/l	55004.86 lbs/day
Bis(2-chloroethoxy) met	0.00 ug/l	0.00 lbs/day	0.0 ug/l	0.00 lbs/day
Methylene chloride (HM)	4.70 ug/l	1.52 lbs/day	1600.0 ug/l	517.69 lbs/day
Methyl chloride (HM)	0.00 ug/l	0.00 lbs/day	0.0 ug/l	0.00 lbs/day
Methyl bromide (HM)	0.00 ug/l	0.00 lbs/day	0.0 ug/l	0.00 lbs/day
Bromoform (HM)	4.30 ug/l	1.39 lbs/day	360.0 ug/l	116.48 lbs/day
Dichlorobromomethane	0.27 ug/l	0.09 lbs/day	22.0 ug/l	7.12 lbs/day
Chlorodibromomethane	0.41 ug/l	0.13 lbs/day	34.0 ug/l	11.00 lbs/day
Hexachlorobutadiene(c)	0.44 ug/l	0.14 lbs/day	50.0 ug/l	16.18 lbs/day
Hexachlorocyclopentadi	240.00 ug/l	77.65 lbs/day	17000.0 ug/l	5500.49 lbs/day
Isophorone	8.40 ug/l	2.72 lbs/day	600.0 ug/l	194.13 lbs/day
Naphthalene				
Nitrobenzene	17.00 ug/l	5.50 lbs/day	1900.0 ug/l	614.76 lbs/day
2-Nitrophenol	0.00 ug/l	0.00 lbs/day	0.0 ug/l	0.00 lbs/day
4-Nitrophenol	0.00 ug/l	0.00 lbs/day	0.0 ug/l	0.00 lbs/day
2,4-Dinitrophenol	70.00 ug/l	22.65 lbs/day	14000.0 ug/l	4529.81 lbs/day
4,6-Dinitro-o-cresol	13.00 ug/l	4.21 lbs/day	765.0 ug/l	247.52 lbs/day
N-Nitrosodimethylamine	0.00069 ug/l	0.00 lbs/day	8.1 ug/l	2.62 lbs/day
N-Nitrosodiphenylamine	5.00 ug/l	1.62 lbs/day	16.0 ug/l	5.18 lbs/day
N-Nitrosodi-n-propylami	0.01 ug/l	0.00 lbs/day	1.4 ug/l	0.45 lbs/day
Pentachlorophenol	0.28 ug/l	0.09 lbs/day	8.2 ug/l	2.65 lbs/day
Phenol	2.10E+04 ug/l	6.79E+03 lbs/day	4.6E+06 ug/l	1.49E+06 lbs/day
Bis(2-ethylhexyl)phthala	1.80 ug/l	0.58 lbs/day	5.9 ug/l	1.91 lbs/day
Butyl benzyl phthalate	3000.00 ug/l	970.67 lbs/day	5200.0 ug/l	1682.50 lbs/day
Di-n-butyl phthalate	2700.00 ug/l	873.61 lbs/day	12000.0 ug/l	3882.70 lbs/day
Di-n-octyl phthlate				
Diethyl phthalate	23000.00 ug/l	7441.83 lbs/day	120000.0 ug/l	38826.96 lbs/day
Dimethyl phthlate	3.13E+05 ug/l	1.01E+05 lbs/day	2.9E+06 ug/l	9.38E+05 lbs/day
Benzo(a)anthracene (P)	0.0028 ug/l	0.00 lbs/day	0.0 ug/l	0.01 lbs/day
Benzo(a)pyrene (PAH)	0.0028 ug/l	0.00 lbs/day	0.0 ug/l	0.01 lbs/day
Benzo(b)fluoranthene (F	0.0028 ug/l	0.00 lbs/day	0.0 ug/l	0.01 lbs/day
Benzo(k)fluoranthene (F	0.0028 ug/l	0.00 lbs/day	0.0 ug/l	0.01 lbs/day
Chrysene (PAH)	0.0028 ug/l	0.00 lbs/day	0.0 ug/l	0.01 lbs/day
Acenaphthylene (PAH)				
Anthracene (PAH)	9600.00 ug/l	3106.16 lbs/day	0.0 ug/l	0.00 lbs/day
Dibenzo(a,h)anthracene	0.0028 ug/l	0.00 lbs/day	0.0 ug/l	0.01 lbs/day
Indeno(1,2,3-cd)pyrene	0.0028 ug/l	0.00 lbs/day	0.0 ug/l	0.01 lbs/day
Pyrene (PAH)	960.00 ug/l	310.62 lbs/day	11000.0 ug/l	3559.14 lbs/day
Tetrachloroethylene	0.80 ug/l	0.26 lbs/day	8.9 ug/l	2.88 lbs/day
Toluene	6800.00 ug/l	2200.19 lbs/day	200000 ug/l	64711.60 lbs/day
Trichloroethylene	2.70 ug/l	0.87 lbs/day	81.0 ug/l	26.21 lbs/day
Vinyl chloride	2.00 ug/l	0.65 lbs/day	525.0 ug/l	169.87 lbs/day
			0.0	0.00 lbs/day
			0.0	0.00 lbs/day
Pesticides				
Aldrin	0.0001 ug/l	0.00 lbs/day	0.0 ug/l	0.00 lbs/day
Dieldrin	0.0001 ug/l	0.00 lbs/day	0.0 ug/l	0.00 lbs/day
Chlordane	0.0006 ug/l	0.00 lbs/day	0.0 ug/l	0.00 lbs/day
4,4'-DDT	0.0006 ug/l	0.00 lbs/day	0.0 ug/l	0.00 lbs/day
4,4'-DDE	0.0006 ug/l	0.00 lbs/day	0.0 ug/l	0.00 lbs/day
4,4'-DDD	0.0008 ug/l	0.00 lbs/day	0.0 ug/l	0.00 lbs/day
alpha-Endosulfan	0.9300 ug/l	0.30 lbs/day	2.0 ug/l	0.65 lbs/day
beta-Endosulfan	0.9300 ug/l	0.30 lbs/day	2.0 ug/l	0.65 lbs/day
Endosulfan sulfate	0.9300 ug/l	0.30 lbs/day	2.0 ug/l	0.65 lbs/day
Endrin	0.7600 ug/l	0.25 lbs/day	0.8 ug/l	0.26 lbs/day
Endrin aldehyde	0.7600 ug/l	0.25 lbs/day	0.8 ug/l	0.26 lbs/day
Heptachlor	0.0002 ug/l	0.00 lbs/day	0.0 ug/l	0.00 lbs/day
Heptachlor epoxide				
PCB's				
PCB 1242 (Arochlor 124	0.000044 ug/l	0.00 lbs/day	0.0 ug/l	0.00 lbs/day
PCB-1254 (Arochlor 124	0.000044 ug/l	0.00 lbs/day	0.0 ug/l	0.00 lbs/day
PCB-1221 (Arochlor 124	0.000044 ug/l	0.00 lbs/day	0.0 ug/l	0.00 lbs/day
PCB-1232 (Arochlor 124	0.000044 ug/l	0.00 lbs/day	0.0 ug/l	0.00 lbs/day
PCB-1248 (Arochlor 124	0.000044 ug/l	0.00 lbs/day	0.0 ug/l	0.00 lbs/day
PCB-1260 (Arochlor 124	0.000044 ug/l	0.00 lbs/day	0.0 ug/l	0.00 lbs/day

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PCB-1016 (Arochlor 10)	0.000044 ug/l	0.00 lbs/day	0.0 ug/l	0.00 lbs/day
Pesticide				
Toxaphene	0.000750 ug/l	0.00	0.0 ug/l	0.00 lbs/day
Dioxin				
Dioxin (2,3,7,8-TCDD)	1.30E-08 ug/l	0.00 lbs/day	1.40E-08	0.00
Metals				
Antimony	14.0 ug/l	4.53 lbs/day		
Arsenic	50.0 ug/l	16.18 lbs/day	4300.00 ug/l	1391.30 lbs/day
Asbestos	7.00E+06 ug/l	2.26E+06 lbs/day		
Beryllium				
Cadmium				
Chromium (III)				
Chromium (VI)				
Copper				
Cyanide	1.30E+03 ug/l	420.63 lbs/day	2.2E+05 ug/l	71182.76 lbs/day
Lead	700.0 ug/l	226.49 lbs/day		
Mercury			0.15 ug/l	0.05 lbs/day
Nickel			4600.00 ug/l	1488.37 lbs/day
Selenium	0.1 ug/l	0.05 lbs/day		
Silver	610.0 ug/l	197.37 lbs/day		
Thallium			6.30 ug/l	2.04 lbs/day
Zinc				

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

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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.

Current Upstream Information

	Stream								
	Critical Low								
	Flow	Temp.	pH	T-NH3	BOD5	DO	TRC	TDS	
	cfs	Deg. C		mg/l as N	mg/l	mg/l	mg/l	mg/l	
Summer (Irrig. Season)	58.9	8.0	8.7	0.01	0.50	7.89	0.00	197.0	
Fall	58.9	8.0	8.7	0.01	0.50	---	0.00	197.0	
Winter	58.9	8.0	8.7	0.01	0.50	---	0.00	197.0	
Spring	58.9	8.0	8.7	0.01	0.50	---	0.00	197.0	
Dissolved Metals	Al ug/l	As ug/l	Cd ug/l	CrIII ug/l	CrVI ug/l	Copper ug/l	Fe ug/l	Pb ug/l	
All Seasons	1.59*	0.53*	0.053*	0.53*	2.65*	0.53*	0.83*	0.53*	
Dissolved Metals	Hg ug/l	Ni ug/l	Se ug/l	Ag ug/l	Zn ug/l	Boron ug/l			
All Seasons	0.0000	0.53*	1.06*	0.1*	0.053*	10.0	* 1/2 MDL		

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Projected Discharge Information

Season	Flow, MGD	Temp.	TDS mg/l	TDS tons/day
Summer	0.73000	11.7	619.00	1.88392
Fall	0.73000	11.7		
Winter	0.73000	11.7		
Spring	0.73000	11.7		

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	0.730 MGD	1.129 cfs
Fall	0.730 MGD	1.129 cfs
Winter	0.730 MGD	1.129 cfs
Spring	0.730 MGD	1.129 cfs

Flow Requirement or Loading Requirement

The calculations in this wasteload analysis utilize the maximum effluent discharge flow of 0.73 MGD. If the discharger is allowed to have a flow greater than 0.73 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 >	12.8% Effluent	[Acute]
	IC25 >	1.9% 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	152.2 lbs/day
Fall	25.0 mg/l as BOD5	152.2 lbs/day
Winter	25.0 mg/l as BOD5	152.2 lbs/day
Spring	25.0 mg/l as BOD5	152.2 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	5.50
Fall	5.50
Winter	5.50
Spring	5.50

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	41.7 mg/l as N	253.8	lbs/day
	1 Hour Avg. - Acute	37.0 mg/l as N	225.1	lbs/day
Fall	4 Day Avg. - Chronic	41.7 mg/l as N	253.8	lbs/day
	1 Hour Avg. - Acute	37.0 mg/l as N	225.1	lbs/day
Winter	4 Day Avg. - Chronic	41.7 mg/l as N	253.8	lbs/day
	1 Hour Avg. - Acute	37.0 mg/l as N	225.1	lbs/day
Spring	4 Day Avg. - Chronic	41.7 mg/l as N	253.8	lbs/day
	1 Hour Avg. - Acute	37.0 mg/l as N	225.1	lbs/day

Acute limit calculated with an Acute Zone of Initial Dilution (ZID) to be equal to 50.%.

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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	0.532	mg/l	3.24	lbs/day
	1 Hour Avg. - Acute	0.487	mg/l	2.97	lbs/day
Fall	4 Day Avg. - Chronic	0.532	mg/l	3.24	lbs/day
	1 Hour Avg. - Acute	0.487	mg/l	2.97	lbs/day
Winter	4 Day Avg. - Chronic	0.532	mg/l	3.24	lbs/day
	1 Hour Avg. - Acute	0.487	mg/l	2.97	lbs/day
Spring	4 Day Avg. - Chronic	0.532	mg/l	0.00	lbs/day
	1 Hour Avg. - Acute	0.487	mg/l	0.00	lbs/day

Effluent Limitations for Total Dissolved Solids based upon Water Quality Standards

Season		Concentration		Load	
Summer	Maximum, Acute	53512.2	mg/l	162.86	tons/day
Fall	Maximum, Acute	53512.2	mg/l	162.86	tons/day
Winter	Maximum, Acute	53512.2	mg/l	162.86	tons/day
Spring	4 Day Avg. - Chronic	53512.2	mg/l	162.86	tons/day

Colorado Salinity Forum Limits Determined by Permitting Section

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 204.36 mg/l):

	4 Day Average		1 Hour Average		
	Concentration	Load	Concentration		Load
Aluminum*	N/A	N/A	20,246.2	ug/l	123.5 lbs/day
Arsenic*	10,058.13 ug/l	39.6 lbs/day	9,185.7	ug/l	56.0 lbs/day
Cadmium	20.28 ug/l	0.1 lbs/day	117.4	ug/l	0.7 lbs/day
Chromium III	8,184.29 ug/l	32.2 lbs/day	87,647.4	ug/l	534.5 lbs/day
Chromium VI*	377.39 ug/l	1.5 lbs/day	329.6	ug/l	2.0 lbs/day
Copper	871.85 ug/l	3.4 lbs/day	722.6	ug/l	4.4 lbs/day
Iron*	N/A	N/A	27,045.3	ug/l	164.9 lbs/day
Lead	378.62 ug/l	1.5 lbs/day	5,470.7	ug/l	33.4 lbs/day
Mercury*	0.64 ug/l	0.0 lbs/day	65.0	ug/l	0.4 lbs/day
Nickel	5,034.46 ug/l	19.8 lbs/day	23,236.1	ug/l	141.7 lbs/day
Selenium*	161.59 ug/l	0.6 lbs/day	500.1	ug/l	3.0 lbs/day
Silver	N/A ug/l	N/A lbs/day	350.4	ug/l	2.1 lbs/day
Zinc	11,665.87 ug/l	45.9 lbs/day	5,942.7	ug/l	36.2 lbs/day
Cyanide*	276.41 ug/l	1.1 lbs/day	595.7	ug/l	3.6 lbs/day

*Limits for these metals are based on the dissolved standard.

Effluent Limitations for Heat/Temperature based upon Water Quality Standards

Summer	62.2 Deg. C.	143.9 Deg. F
Fall	62.2 Deg. C.	143.9 Deg. F
Winter	62.2 Deg. C.	143.9 Deg. F
Spring	62.2 Deg. C.	143.9 Deg. F

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**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:

	4 Day Average		1 Hour Average		Load
	Concentration	Load	Concentration	Load	
Aldrin			1.5E+00	ug/l	1.42E-02 lbs/day
Chlordane	4.30E-03 ug/l	2.62E-02 lbs/day	1.2E+00	ug/l	1.13E-02 lbs/day
DDT, DDE	1.00E-03 ug/l	6.09E-03 lbs/day	5.5E-01	ug/l	5.19E-03 lbs/day
Dieldrin	1.90E-03 ug/l	1.16E-02 lbs/day	1.3E+00	ug/l	1.18E-02 lbs/day
Endosulfan	5.60E-02 ug/l	3.41E-01 lbs/day	1.1E-01	ug/l	1.04E-03 lbs/day
Endrin	2.30E-03 ug/l	1.40E-02 lbs/day	9.0E-02	ug/l	8.49E-04 lbs/day
Guthion	0.00E+00 ug/l	0.00E+00 lbs/day	1.0E-02	ug/l	9.43E-05 lbs/day
Heptachlor	3.80E-03 ug/l	2.31E-02 lbs/day	2.6E-01	ug/l	2.45E-03 lbs/day
Lindane	8.00E-02 ug/l	4.87E-01 lbs/day	1.0E+00	ug/l	9.43E-03 lbs/day
Methoxychlor	0.00E+00 ug/l	0.00E+00 lbs/day	3.0E-02	ug/l	2.83E-04 lbs/day
Mirex	0.00E+00 ug/l	0.00E+00 lbs/day	1.0E-02	ug/l	9.43E-05 lbs/day
Parathion	0.00E+00 ug/l	0.00E+00 lbs/day	4.0E-02	ug/l	3.77E-04 lbs/day
PCB's	1.40E-02 ug/l	8.52E-02 lbs/day	2.0E+00	ug/l	1.89E-02 lbs/day
Pentachlorophenol	1.30E+01 ug/l	7.91E+01 lbs/day	2.0E+01	ug/l	1.89E-01 lbs/day
Toxephene	2.00E-04 ug/l	1.22E-03 lbs/day	7.3E-01	ug/l	6.89E-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	30.5 lbs/day
Nitrates as N	4.0 mg/l	24.4 lbs/day
Total Phosphorus as P	0.05 mg/l	0.3 lbs/day
Total Suspended Solids	90.0 mg/l	548.9 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:

Toxic Organics	Maximum Concentration	
	Concentration	Load
Acenaphthene	6.38E+04 ug/l	3.88E+02 lbs/day
Acrolein	1.70E+04 ug/l	1.04E+02 lbs/day
Acrylonitrile	3.14E+00 ug/l	1.91E-02 lbs/day
Benzene	6.38E+01 ug/l	3.88E-01 lbs/day
Benzidine	ug/l	lbs/day
Carbon tetrachloride	1.33E+01 ug/l	8.09E-02 lbs/day
Chlorobenzene	3.61E+04 ug/l	2.20E+02 lbs/day
1,2,4-Trichlorobenzene		
Hexachlorobenzene	3.99E-02 ug/l	2.43E-04 lbs/day
1,2-Dichloroethane	2.02E+01 ug/l	1.23E-01 lbs/day
1,1,1-Trichloroethane		
Hexachloroethane	1.01E+02 ug/l	6.15E-01 lbs/day
1,1-Dichloroethane		
1,1,2-Trichloroethane	3.24E+01 ug/l	1.97E-01 lbs/day
1,1,2,2-Tetrachloroethane	9.04E+00 ug/l	5.50E-02 lbs/day
Chloroethane		
Bis(2-chloroethyl) ether	1.65E+00 ug/l	1.00E-02 lbs/day
2-Chloroethyl vinyl ether		
2-Chloronaphthalene	9.04E+04 ug/l	5.50E+02 lbs/day
2,4,6-Trichlorophenol	1.12E+02 ug/l	6.79E-01 lbs/day
p-Chloro-m-cresol		
Chloroform (HM)	3.03E+02 ug/l	1.84E+00 lbs/day
2-Chlorophenol	6.38E+03 ug/l	3.88E+01 lbs/day
1,2-Dichlorobenzene	1.44E+05 ug/l	8.74E+02 lbs/day
1,3-Dichlorobenzene	2.13E+04 ug/l	1.29E+02 lbs/day
1,4-Dichlorobenzene	2.13E+04 ug/l	1.29E+02 lbs/day
3,3'-Dichlorobenzidine	2.13E+00 ug/l	1.29E-02 lbs/day
1,1-Dichloroethylene	3.03E+00 ug/l	1.84E-02 lbs/day
1,2-trans-Dichloroethylene1		
2,4-Dichlorophenol	4.94E+03 ug/l	3.01E+01 lbs/day
1,2-Dichloropropane	2.76E+01 ug/l	1.68E-01 lbs/day
1,3-Dichloropropylene	5.32E+02 ug/l	3.24E+00 lbs/day
2,4-Dimethylphenol	2.87E+04 ug/l	1.75E+02 lbs/day
2,4-Dinitrotoluene	5.85E+00 ug/l	3.56E-02 lbs/day
2,6-Dinitrotoluene		
1,2-Diphenylhydrazine	2.13E+00 ug/l	1.29E-02 lbs/day
Ethylbenzene	1.65E+05 ug/l	1.00E+03 lbs/day
Fluoranthene	1.59E+04 ug/l	9.71E+01 lbs/day
4-Chlorophenyl phenyl ether		
4-Bromophenyl phenyl ether		
Bis(2-chloroisopropyl) ether	7.44E+04 ug/l	4.53E+02 lbs/day
Bis(2-chloroethoxy) methane		
Methylene chloride (HM)	2.50E+02 ug/l	1.52E+00 lbs/day
Methyl chloride (HM)		
Methyl bromide (HM)		
Bromoform (HM)	2.29E+02 ug/l	1.39E+00 lbs/day
Dichlorobromomethane(HM)	1.44E+01 ug/l	8.74E-02 lbs/day

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Chlorodibromomethane (HM)	2.18E+01 ug/l	1.33E-01 lbs/day
Hexachlorocyclopentadiene	1.28E+04 ug/l	7.77E+01 lbs/day
Isophorone	4.47E+02 ug/l	2.72E+00 lbs/day
Naphthalene		
Nitrobenzene	9.04E+02 ug/l	5.50E+00 lbs/day
2-Nitrophenol		
4-Nitrophenol		
2,4-Dinitrophenol	3.72E+03 ug/l	2.26E+01 lbs/day
4,6-Dinitro-o-cresol	6.91E+02 ug/l	4.21E+00 lbs/day
N-Nitrosodimethylamine	3.67E-02 ug/l	2.23E-04 lbs/day
N-Nitrosodiphenylamine	2.66E+02 ug/l	1.62E+00 lbs/day
N-Nitrosodi-n-propylamine	2.66E-01 ug/l	1.62E-03 lbs/day
Pentachlorophenol	1.49E+01 ug/l	9.06E-02 lbs/day
Phenol	1.12E+06 ug/l	6.79E+03 lbs/day
Bis(2-ethylhexyl)phthalate	9.57E+01 ug/l	5.82E-01 lbs/day
Butyl benzyl phthalate	1.59E+05 ug/l	9.71E+02 lbs/day
Di-n-butyl phthalate	1.44E+05 ug/l	8.74E+02 lbs/day
Di-n-octyl phthlate		
Diethyl phthalate	1.22E+06 ug/l	7.44E+03 lbs/day
Dimethyl phthlate	1.66E+07 ug/l	1.01E+05 lbs/day
Benzo(a)anthracene (PAH)	1.49E-01 ug/l	9.06E-04 lbs/day
Benzo(a)pyrene (PAH)	1.49E-01 ug/l	9.06E-04 lbs/day
Benzo(b)fluoranthene (PAH)	1.49E-01 ug/l	9.06E-04 lbs/day
Benzo(k)fluoranthene (PAH)	1.49E-01 ug/l	9.06E-04 lbs/day
Chrysene (PAH)	1.49E-01 ug/l	9.06E-04 lbs/day
Acenaphthylene (PAH)		
Anthracene (PAH)		
Dibenzo(a,h)anthracene (PAH)	1.49E-01 ug/l	9.06E-04 lbs/day
Indeno(1,2,3-cd)pyrene (PAH)	1.49E-01 ug/l	9.06E-04 lbs/day
Pyrene (PAH)	5.10E+04 ug/l	3.11E+02 lbs/day
Tetrachloroethylene	4.25E+01 ug/l	2.59E-01 lbs/day
Toluene	3.61E+05 ug/l	2.20E+03 lbs/day
Trichloroethylene	1.44E+02 ug/l	8.74E-01 lbs/day
Vinyl chloride	1.06E+02 ug/l	6.47E-01 lbs/day

Pesticides

Aldrin	6.91E-03 ug/l	4.21E-05 lbs/day
Dieldrin	7.44E-03 ug/l	4.53E-05 lbs/day
Chlordane	3.03E-02 ug/l	1.84E-04 lbs/day
4,4'-DDT	3.14E-02 ug/l	1.91E-04 lbs/day
4,4'-DDE	3.14E-02 ug/l	1.91E-04 lbs/day
4,4'-DDD	4.41E-02 ug/l	2.69E-04 lbs/day
alpha-Endosulfan	4.94E+01 ug/l	3.01E-01 lbs/day
beta-Endosulfan	4.94E+01 ug/l	3.01E-01 lbs/day
Endosulfan sulfate	4.94E+01 ug/l	3.01E-01 lbs/day
Endrin	4.04E+01 ug/l	2.46E-01 lbs/day
Endrin aldehyde	4.04E+01 ug/l	2.46E-01 lbs/day
Heptachlor	1.12E-02 ug/l	6.79E-05 lbs/day
Heptachlor epoxide		

PCB's

PCB 1242 (Arochlor 1242)	2.34E-03 ug/l	1.42E-05 lbs/day
PCB-1254 (Arochlor 1254)	2.34E-03 ug/l	1.42E-05 lbs/day
PCB-1221 (Arochlor 1221)	2.34E-03 ug/l	1.42E-05 lbs/day
PCB-1232 (Arochlor 1232)	2.34E-03 ug/l	1.42E-05 lbs/day
PCB-1248 (Arochlor 1248)	2.34E-03 ug/l	1.42E-05 lbs/day
PCB-1260 (Arochlor 1260)	2.34E-03 ug/l	1.42E-05 lbs/day
PCB-1016 (Arochlor 1016)	2.34E-03 ug/l	1.42E-05 lbs/day

Pesticide

Toxaphene	3.88E-02 ug/l	2.36E-04 lbs/day
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Metals

Antimony	744.18 ug/l	4.53 lbs/day
Arsenic	2616.32 ug/l	15.93 lbs/day
Asbestos	3.72E+08 ug/l	2.26E+06 lbs/day
Beryllium		
Cadmium		
Chromium (III)		
Chromium (VI)		
Copper	69102.46 ug/l	420.63 lbs/day
Cyanide	37209.02 ug/l	226.49 lbs/day
Lead	0.00	0.00

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Mercury	7.44 ug/l	0.05 lbs/day
Nickel	32425.00 ug/l	197.37 lbs/day
Selenium	0.00	0.00
Silver	0.00	0.00
Thallium	90.36 ug/l	0.55 lbs/day
Zinc		
Dioxin		
Dioxin (2,3,7,8-TCDD)	6.91E-07 ug/l	4.21E-09 lbs/day

**Metals Effluent Limitations for Protection of All Beneficial Uses
Based upon Water Quality Standards and Toxics Rule**

	Class 4 Acute Agricultural ug/l	Class 3 Acute Aquatic Wildlife ug/l	Acute Toxics Drinking Water Source ug/l	Acute Toxics Wildlife ug/l	1C Acute Health Criteria ug/l	Acute Most Stringent ug/l	Class 3 Chronic Aquatic Wildlife ug/l
Aluminum		20246.2				20246.2	N/A
Antimony			744.2	228569.7		744.2	
Arsenic	5315.6	9185.7	2616.3		0.0	2616.3	10058.1
Barium					53155.7	53155.7	
Beryllium						0.0	
Cadmium	527.4	117.4			0.0	117.4	20.3
Chromium (III)		87647.4			0.0	87647.4	8184.3
Chromium (VI)	5274.1	329.6			0.0	329.59	377.39
Copper	10589.7	722.6	69102.5			722.6	871.9
Cyanide		595.7	11694263.0			595.7	276.4
Iron		27045.3				27045.3	
Lead	5274.1	5470.7			0.0	5274.1	378.6
Mercury		64.99	7.4	7.97	0.0	7.44	0.638
Nickel		23236.1	32425.0	244516.4		23236.1	5034.5
Selenium	2574.9	500.1			0.0	500.1	161.6
Silver		350.4			0.0	350.4	
Thallium			90.4	334.9		90.4	
Zinc		5942.7				5942.7	11665.9
Boron	39866.8					39866.8	

Summary Effluent Limitations for Metals [Wasteload Allocation, TMDL]

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

	WLA Acute ug/l	WLA Chronic ug/l	
Aluminum	20246.2	N/A	
Antimony	744.18		
Arsenic	2616.3	10058.1	Acute Controls
Asbestos	3.72E+08		
Barium			
Beryllium			
Cadmium	117.4	20.3	
Chromium (III)	87647.4	8184	
Chromium (VI)	329.6	377.4	Acute Controls
Copper	722.6	871.9	Acute Controls
Cyanide	595.7	276.4	
Iron	27045.3		
Lead	5274.1	378.6	
Mercury	7.441	0.638	
Nickel	23236.1	5034	
Selenium	500.1	161.6	
Silver	350.4	N/A	
Thallium	90.4		
Zinc	5942.7	11665.9	Acute Controls
Boron	39866.81		

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 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.

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 down-stream 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.

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801-538-6052
File Name: Genwal Coal WLA 04-20-2020.xls

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APPENDIX - Coefficients and Other Model Information

CBOD Coeff. (Kd)20 1/day 1.000	CBOD Coeff. FORCED (Kd)/day 0.000	CBOD Coeff. (Ka)T 1/day 0.576	REAER. Coeff. (Ka)20 (Ka)/day 6.511	REAER. Coeff. FORCED 1/day 0.000	REAER. Coeff. (Ka)T 1/day 4.899	NBOD Coeff. (Kn)20 1/day 0.250	NBOD Coeff. (Kn)T 1/day 0.099
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 2.305	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 15.903
BENTHIC DEMAND (SOD)20 gm/m2/day 1.000	BENTHIC DEMAND (SOD)T gm/m2/day 0.470						
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 the proposed discharge will require a Level II Antidegradation Review.