State of Utah
GARY R. HERBERT
Governor

SPENCER J. COX
Lieutenant Governor

Department of
Environmental Quality

Alan Matheson
Executive Director

DIVISION OF WATER QUALITY
Erica Brown Gaddis, PhD
Director

DEC - 5 2017

CERTIFIED MAIL
(Return Receipt Requested)

Mr. Ken Fleck, Manager
Interwest Mining Co Deer Creek Mine
PO Box 310
Huntington, Utah 84528
Kenneth.Fleck@pacificorp.com

Subject: Issuance of Modified Permit for Utah Pollutant Discharge Elimination System (UPDES) Permit No. UT0023604, Interwest Mining Co. Deer Creek Mine

Dear Mr. Fleck:

Enclosed are the modified UPDES Permit No.UT0023604 and Fact Sheet Statement of Basis (FSSOB) for the Deer Creek Mine. The draft permit and FSSOB were public noticed in the Emery County Progress and on the Division of Water Quality's (DWQ) website from May 30, 2017 through June 30, 2017. Comments were received by DWQ during the public notice period. This letter will serve as the official response to your comments as received on June 28, 2017.

Your comments were editorial in nature to help clarify the outfall descriptions and correct typographical errors. As such, these comments have been incorporated in the final modified permit and FSSOB as per *Utah Administrative Code (UAC) R317-8-5.6(3).* Based on our review of the comments received in accordance with *UAC R317-8-6.10(5)*, none of the comments were found to warrant further changes to the draft modified permit. Therefore, DWQ has issued the modified permit effective December 1, 2017, subject to the right to challenge this decision in accordance with the provisions of *UAC R317-9.*

As the State agency charged with the administration of 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 www.waterquality.utah.gov and click on the "Feedback" link on the 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.

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

Sincerely,

Matthew Garn, P.E., Manager
UPDES Surface Water Section

MG/JS/blj

Enclosures (3):
1. UPDES Modified Permit UT0023604 (DWQ-2017-006762)
2. Final Fact Sheet Statement of Basis (DWQ-2017-011682)
3. Wasteload Analysis (DWQ-2017-003076)
4. Anti-degradation Review (DWQ-2017-003560)
5. Reasonable Potential Analysis (DWQ-2017-002342)
6. Line Drawing of New Outfall 003 (DWQ-2017-006752)

cc: Amy Clark, EPA Region VIII, via email w/enclosure
Brady Bradford, Southeastern Utah District Health Department, via email w/enclosure
Scott Hacking, District Engineer, via email w/enclosure
Steve Christensen, DOGM, via email w/enclosure
Monique Bridges, DWQ, via email

DWQ-2017-011684

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"*),

PACIFICORP - DEER CREEK MINE

is hereby authorized to discharge from its facility located approximately eight miles northwest of Huntington, Utah in Emery County, from outfalls located as indicated in the permit, to receiving waters named

DEER CREEK AND RILDA CANYON TRIBUTARIES TO HUNTINGTON CREEK (LOCATED WITHIN THE COLORADO RIVER BASIN)

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

This modified permit shall become effective on December 1, 2017.

This permit and the authorization to discharge shall expire on January 31, 2020.

Signed this 1st day of December, 2017.

Kim Shelley
Acting 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. "Coal pile runoff" means the rainfall runoff from or through any coal storage pile.

8. "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.

9. "*CWA*" means *The Federal Water Pollution Control Act*, as amended, by *The Clean Water Act of 1987*.

10. "Daily Maximum" (Daily Max.) is the maximum value allowable in any single sample or instantaneous measurement.

11. "EPA" means the United States Environmental Protection Agency.

12. "Director" means the Director of the Utah Division of Water Quality.

13. "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.

14. Grab" sample, for monitoring requirements, is defined as a single "dip and take" sample collected at a representative point in the discharge stream.

15. "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.

16. An "instantaneous" measurement, for monitoring requirements, is defined as a single reading, observation, or measurement.

17. "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.

18. "Runoff coefficient" means the fraction of total rainfall that will appear at a conveyance as runoff.

19. "*Section 313* water priority chemical" means 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.

20. "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.

21. "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.

22. "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*).

23. "Storm water" means storm water runoff, snowmelt runoff, and surface runoff and drainage.

24. "Time-weighted composite" means a composite sample consisting of a mixture of equal volume aliquots collected at a constant time interval.

25. "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.

26. "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
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	Location of Discharge Point
001	Sedimentation pond for surface water runoff, discharges to Deer Creek at latitude 39°21'36" and longitude 111°06'35".
002	Mine water discharge to Deer Creek at latitude 39°21'29" and longitude 111°06'57".
003	Mine water enters pipeline at first right portal, pipeline runs down Rilda Canyon to Huntington Creek, mine water in pipeline discharges to Huntington Creek at Latitude 39° 23' 23" N, Longitude 111°05'23"W.

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 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.1.*through *I.D.5.*

Effluent Characteristics	Effluent Limitations				Monitoring Requirements	
	30 Day Average	7 Day Average	Daily Minimum	Daily Maximum	Sample Frequency	Sample Type
Flow, [1]MGD Outfall 001 Outfall 002	 0.19 5.0	 [2]NA NA	 NA NA	 NA NA	 Monthly Monthly	 Measured Continuous Recorder
TSS, mg/L Outfall 001 Outfall 002	 25 15	 35 25	 NA NA	 70 NA	 Monthly Monthly	 Grab Grab
Total Iron, mg/L	NA	NA	NA	1.00	Monthly	Grab
Oil & Grease, mg/L a/	NA	NA	NA	10	Monthly	Grab
TDS, mg/L b/	NA	NA	NA	1200	Monthly	Grab
TDS, lbs/day c/	NA	NA	NA	2000	Monthly	Grab
pH, standard units	NA	NA	6.5	9.0	Monthly	Grab
Sanitary Waste d/	NA	NA	NA	None	Monthly	Visual
Oil and Grease, floating solids, visible foam, a/	NA	NA	NA	None	Monthly	Visual

[1] *MGD: million gallons per day* [2] *NA: not applicable*

a/ In addition to monthly sampling for oil and grease, a visual inspection for oil and grease, floating solids, and visible foam shall be performed 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.

b/ The TDS concentration shall be sampled in Deer Creek just downstream of Outfall 001 at latitude N. 39°21'42.2" and longitude W. 111°06'30.9". The TDS shall not exceed a daily maximum of 1200 mg/L. A sample shall be taken monthly by grab sample.

c/ No tons per day loading limit will be applied if the concentration of TDS in Deer Creek (the compliance point mentioned above in footnote e) 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 at this compliance point, then the permittee cannot discharge more than 1 ton per day at that compliance point. If the permittee cannot achieve one ton per day, the permittee will be required to remove salinity/TDS in excess of one ton per day by developing a treatment process, participating in a salinity off-set program, or developing some type of mechanism to remove the salinity/TDS. The selection of a salinity control program must be approved by the Director of the Division of Water Quality and implemented within one year of the effective date of the permit.

d/ There shall be no discharge of sanitary waste and visual observations performed at least monthly shall be conducted.

2. Effective immediately and lasting the duration of this permit, the permittee is authorized to discharge from Outfall 003. Such

discharges shall be limited and monitored by the permittee as specified below in *Parts I.D.2.*through *I.D.5*

Effluent Characteristics	Effluent Limitations				Monitoring Requirements	
	30 Day Average	7 Day Average	Daily Minimum	Daily Maximum	Sample Frequency	Sample Type
Flow, [1]MGD	NA	[2]NA	NA	0.72a/	Monthly	Measured
TSS, mg/L	25	35	NA	NA	Monthly	Grab
Total Iron, mg/L	3.5	NA	NA	7.0	Monthly	Grab
Dissolved oxygen mg/L	6.5b/	NA	NA	NA	Monthly	Grab
Oil & Grease, mg/L c/	NA	NA	NA	10	Monthly	Grab
TDS, mg/L	NA	NA	NA	1200	Monthly	Grab
TDS lbs/day d/	NA	NA	NA	2000d/	Monthly	Grab
pH, standard units	NA	NA	6.5	9.0	Monthly	Grab
Sanitary Waste e/	NA	NA	NA	None	Monthly	Visual
Oil and Grease, floating solids, visible foam, c/	NA	NA	NA	None	Monthly	Visual
Total Arsenic, 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 Selenium, mg/L f/	NA	NA	NA	NA	Quarterly	Grab
Total Silver, mg/L f/	NA	NA	NA	NA	Quarterly	Grab
Total Zinc, mg/L f/	NA	NA	NA	NA	Quarterly	Grab
Total Boron, mg/L f/	NA	NA	NA	NA	Quarterly	Grab

[1] *MGD: million gallons per day* [2] *NA: not applicable*

a/ For intermittent discharges, the duration of the discharge shall also be reported.

b/ Dissolved oxygen is a thirty day minimum average.

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 monthly. 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/ Total dissolved solids (TDS) are limited according to Water Quality Standards and policies established by the Colorado River Basin Salinity Control Forum. TDS are limited by both mass loading and concentration requirements as described below:
Since discharges eventually reach the Colorado River, TDS mass loading is limited according to policies established by the Colorado River Basin Salinity Control Forum (Forum), as authorized in *UAC R317-2-4* to further control salinity in the Utah portion of the Colorado River Basin. On February 28, 1977 the Forum produced the *"Policy For Implementation of Colorado River Salinity*

Standards Through the NPDES Permit Program" (Policy), with the most current subsequent triennial revision dated October 2014. The TDS loading required by the salinity forum, and included in this permit is one ton per day as a sum from all discharge points, unless the concentration of TDS is 500 mg/L or less. If the concentration of TDS is less than or equal to 500 mg/L at all discharge points, no loading limit applies. If one ton per day cannot be achieved the permittee will be required to remove salinity/TDS in excess of one ton per day by developing a treatment process, participating in a salinity off-set program, or developing some type of mechanism to remove the salinity/TDS. The selection of a salinity control program, if needed, must be approved by the Director of the Division of Water Quality and implemented within one year of the effective date of approval.

e/ There shall be no discharge of sanitary waste.

f/ The permittee is required to get the lowest detection limit possible using standard methods and certified laboratories.

3. The permitee is required to sample and submit results for one acute WET test of discharge water from Outfall 003. The sample should be collected prior to discharge into Huntington Creek. This UPDES permit may be re-opened and modified (See Part V.P of this permit) based on the results of this sample. The permittee should contact State certified WET laboratories for direction on sampling. Use of a grab sample is appropriate.

4. Samples collected in compliance with the monitoring requirements specified above shall be collected at Outfalls 001, 002 and 003 prior to mixing with the receiving water. For TDS at the Deer Creek portal, at the compliance point downstream in Deer Creek (see Part I.D.1e).

5. 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 limitation for the TSS limitations contained in *Part I.D.1*:

Effluent Characteristics	Daily Minimum	Daily Maximum
Settleable solids (SS), ml/L	NA	0.5

In addition to the monitoring requirements specified under Part I.D.1, all effluent samples collected during storm water discharge events shall also be analyzed for settleable solids. Such analyses shall be conducted on either grab or composite samples. All other effluent limitations must be achieved concurrently as indicated in Part I.D.1.

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 001, comply with the following

limitation instead of the otherwise applicable limitations contained in *Part I.D.1*:

Effluent Characteristics	Daily Minimum	Daily Maximum
pH, SU	6.5	9.0

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.1*. Such analyses shall be conducted on either grab or composite samples.

6. 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.5*. The alternate limitations in *Part I.D.5* shall not apply to treatment systems that treat only underground mine water (i.e. Outfalls 002 & 003).

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

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 IV.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 un-staffed. The facility must maintain a certification with the pollution prevention plan stating that the site is inactive and un-staffed 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 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 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.

3. 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 WET testing, a WET limitation, a compliance schedule, a compliance date, additional or modified numerical limitations, or any other conditions related to the control of toxicants if toxicity is detected during the life of this permit.

f:\wp\pacificorp deer creek mine\deer creek permit draft #1 10-16-12.doc
DWQ-2017-006762

FACT SHEET STATEMENT OF BASIS (FSSOB)
PACIFICORP DEER CREEK MINE
UTAH POLLUTANT DISCHARGE ELIMINATION SYSTEM (UPDES)
PERMIT NUMBER: UT0023604
PERMIT MODIFICATION: ADDITION OF DISCHARGE POINT
MINOR INDUSTRIAL FACILITY

FACILITY CONTACTS

Facility Contact:	Ken Fleck
Position:	Geology and Environmental Affairs Manager
	(435) 687- 4712

DESCRIPTION OF PERMIT MODIFICATION

Facility Name:	Pacificorp Deer Creek Mine
Mailing Address:	P.O. Box 310
	Huntington Utah 84528
Physical Location:	15 North Main Street, Hunntington, Utah 84528
Coordinates:	Latitude: 39° 23' 23 N., Longitude: 111° 5' 23 W.

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

Deer Creek Mine is an underground coal mine which ceased production in January of 2015. The Deer Creek portals and south half of the mine were sealed on April 18, 2015. Discharge from the mine at Outfalls 001 and 002 ceased at the time of mine closure. Sealing the Deer Creek portal divided the underground workings into two halves each of which are filling up with water. Eventually there will be discharge from the Deer Creek portal where during the sealing a discharge collection system and piping was installed to allow post mine gravity discharge flow from Outfall 002. Water from the northern half of the mine will eventually flow out by gravity through the Rilda Canyon Portals. Outfall flow to Rilda Canyon is estimated to be about 300 to 500 gallons per minute (GPM). In the north half of the mine there is more pyrite in the coal and the discharge out of Rilda Canyon portal may contain elevated levels of iron which should dissipate over time.

Discharge is not allowed in the Rilda Canyon area because it is within Forest Service boundaries (UAC R317-2-3.2). Deer Creek decided to build a pipeline from the Rilda Canyon Portal area to the raw water pond at the Huntington Power Plant. The water would then be used consumptively for cooling water at the plant. The projected life of the power plant is through the year 2043. At that time if a discharge is still occurring from Rilda Canyon Portals, the discharge will be moved from the power plant to Huntington Creek. As a result Deer Creek is applying for a modification to the Deer Creek Mine UPDES permit (UT0023604) to add an additional discharge point labeled Outfall 003 for discharge to Huntington Creek.

The existing Deer Creek Portal permit has two discharge points. Outfall 001 is from a sedimentation pond which is now in the process of reclamation and will be completely removed during the 2017 and 2018 field seasons. Outfall 002 is discharge from the mine which has been sealed with a water collection system and piping to allow post mine gravity discharge flow at Outfall 002.

DESCRIPTION OF DISCHARGE

The modified permit for the Deer Creek Mine will contain the addition of Outfall 003 and will have a total of three discharge points. The outfalls in the modified permit are as follows:

Outfall	Description of Discharge Point
001	Sedimentation pond for surface water runoff, discharge to Deer Creek at Latitude 39° 21' 36" N, Longitude 111°06'35"W..
002	Mine water discharge to Deer Creek at, Latitude 39° 21' 36" N, Longitude 111°06'57"W.
003	Mine water discharge from Rilda Canyon to Huntington Creek at Latitude 39° 23' 23" N, Longitude 111°05'23"W.

RECEIVING WATERS AND STREAM CLASSIFICATION

Huntington Creek is the receiving stream for the new Outfall 003 and Deer Creek for the existing Outfalls 001 and 002. Based on Utah Administrative Code (UAC) R317-2-12.2, Huntington Creek has the follow classifications:

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

WASTE LOAD ANALYSIS, ANTIDEGRADATION REVIEW AND REASONABLE POTENTIAL ANALYSIS FOR OUTFALL 003

Effluent limitations may be derived using a Waste Load Analysis (WLA), which is appended to this statement of basis as Addendum I. The WLA incorporates Secondary Treatment Standards, Water Quality Standards, Anti-degradation Reviews (ADR), as appropriate and designated uses into a water quality model that projects the effects of discharge concentrations on receiving water quality. Effluent limitations are those that the model demonstrates are sufficient to meet State water quality standards in the receiving waters. During this UPDES renewal permit development, a WLA and ADR were performed. An ADR Level I review was performed and concluded that an ADR Level II review was required. The WLA indicates that the effluent limitations should be sufficiently protective of water quality, in order to meet State water quality standards in the receiving waters.

A Level II ADR was required since it is a new outfall and discharge to Huntington Creek. The completed Level II ADR is attached as an Addendum to this FSSOB. The selected treatment alternative, which was determined to be the least degrading, feasible alternative, was in-mine sedimentation. In addition, the water from the Rilda Canyon portal will be consumptively used by the Huntington Power Plant during the operational life of the facility.

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

A qualitative RP review was performed on Outfall 003 for the following total metals: arsenic, cadmium, chromium, copper, lead, mercury, nickel, selenium, silver, zinc, boron and iron. The review was conducted to determine if a qualitative reasonable potential was required to determine if the discharge has potential to exceed the applicable water quality standards. The qualitative RP review only requires a quantitative RP analysis to be completed on total iron. Thus the other metals will be monitored quarterly in accordance with the Division's monitoring frequency guidelines. Deer Creek will be required to use the method of analysis providing the lowest detection limit possible using standard methods and certified laboratories.

A quantitative RP analysis was performed on total iron to determine if there was reasonable potential for the discharge to exceed the applicable water quality standards. Based on the RP analysis, the following parameters exceeded the most stringent chronic water quality standard or were determined to have a reasonable potential to exceed the standard: none. Based on 40 CFR 434 Subpart E – Post Mining areas total iron will be monitored for monthly, with a maximum daily effluent limitation for total iron of 7.0 mg/L, and an average monthly effluent limitation for total iron of 3.5 mg/L. A copy of the RP analysis is included in Appendix II.

BASIS FOR EFFLUENT LIMITATIONS AT OUTFALL 003

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

1) Deer Creek's discharge meets the EPA definition of "alkaline mine drainage." As such, it is subject to the technology based effluent limitations in *40 CFR Part 434.45*. Technology based limits used in the permit are listed below.

2) TSS 30-day and 7-day averages are based on Utah Secondary Treatment Standards.

3) Daily minimum and daily maximum limitations on pH are derived from Utah Secondary Treatment Standards and Water Quality Standards.

4) Total dissolved solids (TDS) are limited according to Water Quality Standards and policies established by the Colorado River Basin Salinity Control Forum. TDS are limited by both mass loading and concentration requirements as described below:

    a. Since discharges from Deer Creek Mine eventually reach the Colorado River, TDS mass loading is limited according to policies established by the Colorado River Basin Salinity Control Forum (Forum), as authorized in *UAC R317-2-4* to further control salinity in the Utah portion of the Colorado River Basin. On February 28, 1977 the Forum produced the *"Policy For Implementation of Colorado River Salinity Standards Through the NPDES Permit Program"* (Policy), with the most current subsequent triennial revision dated October 2014. The TDS loading required by the salinity forum, and included in this permit is one ton per day as a sum from all discharge points, unless the concentration of TDS is 500 mg/L or less. If the concentration of TDS is less than or equal to 500 mg/L as a thirty day average no loading limit applies for that Outfall. The one ton per day loading limit applies only to those Outfalls exceeding 500 mg/L as a thirty day average. Those Outfalls exceeding 500 mg/L as a thirty day average, collectively, need to meet the one ton per day limit. If one ton per day cannot be achieved the permittee will be required to remove salinity/TDS in excess of one ton per day by developing a treatment process, participating in a salinity off-set program, or developing some type of mechanism to remove the salinity/TDS. The selection of a salinity control program, if needed, must be approved by the Director of the Division of Water Quality and implemented within one year of the effective date of approval.

b. Based on *UAC R317-2-14, Table 2.14.1*the concentration of TDS in water used for agricultural purposes shall not exceed 1200 mg/L, unless there is a designated site specific standard for TDS which has been incorporated into the State Water Quality Standards. At the present time there are no site specific standards for Huntington Creek in the area where Outfall 003 will discharge. The permittee will be required to meet a daily maximum TDS concentration of 1200 mg/L at Outfall 003.

5) The limitation on total recoverable iron is taken from 40 CFR 434 Subpart E, Post-Mining Areas. The limit is 7.0 mg/L as a daily maximum and 3.5 mg/L for a monthly average. The WLA developed 7.1 mg/L based on the dilution Outfall 003 will have in Huntington Creek. Since 40 CFR had a lower limit than developed through our water quality standard with the WLA, the federal standard was used, because it was more stringent.

6) Oil and Grease are limited to 10 mg/L by BPJ, as this is consistent with other industrial facilities statewide.

7) Dissolved oxygen will be limited to 6.5 mg/L as a minimum thirty day average.

8) Discharge rate from Outfall 003 is not really known. It is projected to be about 300 to 500 gpm or 0.72 million gallons per day.

EFFLUENT LIMITATIONS, SELF-MONITORING, AND REPORTING REQUIREMENTS FOR OUTFALL 003

The effluent limitations and monitoring requirements for Outfall 003 is outlined below. Effluent self-monitoring requirements are developed from the *Utah Monitoring, Recording and Reporting Frequency Guidelines* as effective December 1, 1991 along with the use of BPJ. Reports shall be made via NetDMR and are due 28 days after the end of the monthly monitoring period.

Effluent Characteristics	Effluent Limitations				Monitoring Requirements	
	30 Day Average	7 Day Average	Daily Minimum	Daily Maximum	Sample Frequency	Sample Type
Flow, [1]MGD	NA	[2]NA	NA	0.72a/	Monthly	Measured
TSS, mg/L	25	35	NA	NA	Monthly	Grab
Total Iron, mg/L	3.5	NA	NA	7.0	Monthly	Grab
Dissolved oxygen mg/L	6.5b/	NA	NA	NA	Monthly	Grab
Oil & Grease, mg/L c/	NA	NA	NA	10	Monthly	Grab
TDS, mg/L	NA	NA	NA	1200	Monthly	Grab
TDS lbs/day d/	NA	NA	NA	2000d/	Monthly	Grab
pH, standard units	NA	NA	6.5	9.0	Monthly	Grab

Sanitary Waste e/	NA	NA	NA	None	Monthly	Visual
Oil and Grease, floating solids, visible foam, c/	NA	NA	NA	None	Monthly	Visual
Total Arsenic, 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 Selenium, mg/L f/	NA	NA	NA	NA	Quarterly	Grab
Total Silver, mg/L f/	NA	NA	NA	NA	Quarterly	Grab
Total Zinc, mg/L f/	NA	NA	NA	NA	Quarterly	Grab
Total Boron, mg/L f/	NA	NA	NA	NA	Quarterly	Grab
[1] *MGD: million gallons per day*		[2] *NA: not applicable*				

a/ For intermittent discharges, the duration of the discharge shall also be reported.

b/ Dissolved oxygen is a thirty day minimum average.

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 monthly. 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/ Total dissolved solids (TDS) are limited according to Water Quality Standards and policies established by the Colorado River Basin Salinity Control Forum. TDS are limited by both mass loading and concentration requirements as described below:
Since discharges eventually reach the Colorado River, TDS mass loading is limited according to policies established by the Colorado River Basin Salinity Control Forum (Forum), as authorized in *UAC R317-2-4* to further control salinity in the Utah portion of the Colorado River Basin. On February 28, 1977 the Forum produced the *"Policy For Implementation of Colorado River Salinity Standards Through the NPDES Permit Program"* (Policy), with the most current subsequent triennial revision dated October 2014. The TDS loading required by the salinity forum, and included in this permit is one ton per day as a sum from all discharge points, unless the concentration of TDS is 500 mg/L or less. If the concentration of TDS is less than or equal to 500 mg/L at all discharge points, no loading limit applies. If one ton per day cannot be achieved the permittee will be required to remove salinity/TDS in excess of one ton per day by developing a treatment process, participating in a salinity off-set program, or developing some type of mechanism to remove the salinity/TDS. The selection of a salinity control program, if needed, must be approved by the Director of the Division of Water Quality and implemented within one year of the effective date of approval.

e/ There shall be no discharge of sanitary waste.

f/ The permittee is required to get the lowest detection limit possible using standard methods and certified laboratories.

SIGNIFICANT CHANGES FROM PREVIOUS PERMIT

There are no significant changes because this is a new Outfall.

STORM WATER REQUIREMENTS

Storm water requirements are in the permit that Outfall 003 is being added to. These are sufficient to cover the areas associated with Outfall 003.

PRETREATMENT REQUIREMENTS

This facility does not discharge process wastewater to a sanitary sewer system. Any process wastewater that the facility may discharge to the sanitary sewer, either as a direct discharge or as a hauled waste, is subject to federal, state, and local pretreatment regulations. Pursuant to section 307 of the Clean Water Act, the permittee shall comply with all applicable federal general pretreatment regulations promulgated, found in 40 CFR 403, the state's pretreatment requirements found in UAC R317-8-8, and any specific local discharge limitations developed by the Publicly Owned Treatment Works (POTW) accepting the waste. This includes the notification to the POTW the EPA Regional Waste Management Director, and the State hazardous waste authorities if hazardous waste is discharged by the permittee to a POTW, 40 CFR 403.12 (p)(1).

BIOMONITORING REQUIREMENTS

As part of a nationwide effort to control toxic discharges, biomonitoring requirements are being included in permits for facilities where effluent toxicity is an existing or potential concern. In Utah, this is done in accordance with the *State of Utah Permitting and Enforcement Guidance Document for Whole Effluent Toxicity Control (Biomonitoring (2/1991))*. Authority to require effluent biomonitoring is provided in *UAC R317-8, Utah Pollutant Discharge Elimination System* and *UAC R317-2, Water Quality Standards*.

Deer Creek is a minor facility discharging ground water from an inactive mine. The northern portion of the mine has deposits elevated in pyrite which causes total iron content to elevate in the discharge water. The discharge from Outfall 003 only makes up 8.4 % of the final flow downstream after mixing. Therefore, if any WET testing is done it will be acute. All mine discharges are required to complete at least one WET test. The northern section of the mine has undergone sampling for metals and organics for Reasonable Potential analysis and appears to have no problems with potential toxicity. However, Deer Creek will be required to obtain at least one

acute WET test of the mine water discharge. This acute WET test shall be taken prior to discharge into Huntington Creek.

PERMIT DURATION

This modified permit will be in effect until midnight January 31, 2020, the expiration date of the originally issued individual permit.

Drafted by Mike Herkimer
Environmental Scientist
Utah Division of Water Quality
March 20, 2017

ADDENDUMS

I. Waste Load Analysis
II. Anti-Degradation II Review (ADR II)
III. RP analysis.

PUBLIC NOTICE INFORMATION

The draft Fact Sheet Statement of Basis, wasteload allocation and draft modified permit were public noticed in the Emery County Progress and also under "Public Participation" on the Division of Water Quality Web Site at www.waterquality.utah.gov, from May 30, 2017 through June 30, 2017. Comments were received and addressed separately with no substantial changes being made to the permit as a result.

Permit Writer: Jeff Studenka Date: November 27, 2017

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

Date: **February 28, 2017**

Prepared by: **Dave Wham**
Standards and Technical Services

Facility: **Pacificorp Deer Creek Mine; Discharge 003**
UPDES No. UT0023604

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

UPDES Discharge Point 003, Mine water discharge with an estimated mean monthly discharge of 0.72 MGD (1.12 cfs).

Receiving Water

Huntington Creek. Per UAC R317-2-13.1(b), the designated beneficial uses of Huntington Creek and tributaries from Highway 10 crossing to USFS boundary are 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, the 20th percentile of available flow measurements was calculated for the period of record to approximate the 7Q10 low flow condition. Flow data for the receiving water was obtained from Emery Water Conservancy District for their site *Huntington River below Power Plant* from the period 2012-2017. This station is below the Power Plant diversion but above other significant diversions like Huntington North Reservoir. Ambient water quality was characterized using data from DWQ station #4930530, Huntington Creek above UP&L Diversion from the period 2007-2013.

The critical low flow condition for discharges 003 is 12.1 cfs.

TMDL

According to the Utah's 2016 303(d) Water Quality Assessment, the assessment unit for this section of Huntington Creek, Huntington Creek and tributaries from Highway 10 crossing to USFS boundary (UT14060009-004) was listed as impaired for pH (Classes 1C, 2B, 3A, 4), dissolved oxygen (Class 3A), temperature (Class 3A) and total dissolved solids (Class 4).

Review of the listing data show that the temperature impairment was based on results from stations located in Bear Creek, a tributary to Huntington Creek located upstream from the proposed discharge. As a result, the proposed discharge cannot cause or contribute to that impairment.

Data from two monitoring stations above and below Deer Creek on Huntington Creek show impairments for pH and dissolved oxygen (DO). As a result, the proposed discharge must meet applicable Water Quality Standards (WQS) at end of pipe for these constituents (6.5 mg/l DO, and pH 6.5-9.0 pH).

Review of the listing data show that the total dissolved solids (TDS) impairment was based on results from the Huntington Creek at U10 crossing monitoring station. In order to protect downstream uses, and to avoid causing or contributing to that impairment, effluent limits for TDS should be set at the WQS of 1200 mg/l TDS.

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.

Mixing zone modeling showed 100 % mixing within 15 minutes travel time, and acute limits defaulted to 50% of the seasonal critical low flow.

Parameters of Concern

The potential parameters of concern identified for the discharge/receiving water were temperature, pH, dissolved oxygen, TDS, and iron, 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 LC_{50} (lethal concentration, 50%) percent effluent for acute toxicity and the IC_{25} (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.

LC50 WET Limits for Outfall 003 should be based on 61.4% effluent.
IC25 WET limits for Outfalls 003 should be based on 8.4% effluent.

Wasteload Allocation Methods

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

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

Models and supporting documentation are available for review upon request.

Antidegradation Level I Review

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

An amended Level II Antidegradation Review (ADR) is required for this facility. The receiving stream for the proposed discharge is a Class 1C drinking water source.

Documents:

WLA Document: *DeerCk_003_WLADoc_2-27-17.docx*
Wasteload Analysis and Addendums: *DeerCk_003_WLA_2-27-17.xlsm*

References:

Emery County Water Conservancy District. http://www.ewcd.org/canals/huntington-drainage/
Utah Division of Water Quality. 2012. *Utah Wasteload Analysis Procedures Version 1.0.*

Utah Division of Water Quality
Salt Lake City, Utah

WASTELOAD ANALYSIS [WLA]
Addendum: Statement of Basis
SUMMARY

Discharging Facility:	**Deer Creek 003 Discharge**		
UPDES No:	UT-0023604		
Current Flow:	0.72	MGD	Design Flow
Design Flow	0.72	MGD	

Receiving Water:	**Huntington Creek**		
Stream Classification:	1C, 2B, 3A, 4		
Stream Flows [cfs]:	12.10	Summer (July-Sept)	20th Percentile
	12.10	Fall (Oct-Dec)	20th Percentile
	12.10	Winter (Jan-Mar)	20th Percentile
	12.10	Spring (Apr-June)	20th Percentile
	50.0	Average	
Stream TDS Values:	213.0	Summer (July-Sept)	Average
	265.0	Fall (Oct-Dec)	Average
	307.0	Winter (Jan-Mar)	Average
	230.0	Spring (Apr-June)	Average

Effluent Limits:				**WQ Standard:**
Flow, MGD:	0.72	MGD	Design Flow	
BOD, mg/l:	25.0	Summer	5.0	Indicator
Dissolved Oxygen, mg/l	6.5	Summer	6.5	30 Day Average
TNH3, Chronic, mg/l:	16.2	Summer	Varies	Function of pH and Temperature
TDS, mg/l:	11922.1	Summer	1200.0	

Modeling Parameters:	
Acute River Width:	50.0%
Chronic River Width:	100.0%

Level 1 Antidegradation Level Completed: Amended Level II Review required.

Date: 2/27/2017

Permit Writer: _____ _____

WLA by:  3/30/17

WQM Sec. Approval: _____ _____

TMDL Sec. Approval: _____ _____

WASTELOAD ANALYSIS [WLA]
Addendum: Statement of Basis

27-Feb-17
4:00 PM

Facilities: **Deer Creek 003 Discharge** **UPDES No: UT-0023604**
Discharging to: **Huntington Creek**

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 interms 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. Amended Level II review 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 Concentration	Load*	1 Hour Average (Acute) Standard Concentration	Load*
Aluminum	87.00 ug/l**	0.523 lbs/day	750.00 ug/l	4.511 lbs/day
Arsenic	190.00 ug/l	1.143 lbs/day	340.00 ug/l	2.045 lbs/day
Cadmium	0.52 ug/l	0.003 lbs/day	5.25 ug/l	0.032 lbs/day
Chromium III	178.07 ug/l	1.071 lbs/day	3725.58 ug/l	22.410 lbs/day
ChromiumVI	11.00 ug/l	0.066 lbs/day	16.00 ug/l	0.096 lbs/day
Copper	19.89 ug/l	0.120 lbs/day	32.26 ug/l	0.194 lbs/day
Iron			1000.00 ug/l	6.015 lbs/day
Lead	9.83 ug/l	0.059 lbs/day	252.25 ug/l	1.517 lbs/day
Mercury	0.0120 ug/l	0.000 lbs/day	2.40 ug/l	0.014 lbs/day
Nickel	110.39 ug/l	0.664 lbs/day	992.91 ug/l	5.973 lbs/day
Selenium	4.60 ug/l	0.028 lbs/day	20.00 ug/l	0.120 lbs/day
Silver	N/A ug/l	N/A lbs/day	17.38 ug/l	0.105 lbs/day
Zinc	253.86 ug/l	1.527 lbs/day	253.86 ug/l	1.527 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 242.57 mg/l as CaCO3

Organics [Pesticides]

Parameter	4 Day Average (Chronic) Standard Concentration	Load*	1 Hour Average (Acute) Standard Concentration	Load*
Aldrin			1.500 ug/l	0.009 lbs/day
Chlordane	0.004 ug/l	0.306 lbs/day	1.200 ug/l	0.007 lbs/day
DDT, DDE	0.001 ug/l	0.071 lbs/day	0.550 ug/l	0.003 lbs/day
Dieldrin	0.002 ug/l	0.135 lbs/day	1.250 ug/l	0.008 lbs/day
Endosulfan	0.056 ug/l	3.988 lbs/day	0.110 ug/l	0.001 lbs/day
Endrin	0.002 ug/l	0.164 lbs/day	0.090 ug/l	0.001 lbs/day
Guthion			0.010 ug/l	0.000 lbs/day
Heptachlor	0.004 ug/l	0.271 lbs/day	0.260 ug/l	0.002 lbs/day
Lindane	0.080 ug/l	5.698 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	0.997 lbs/day	2.000 ug/l	0.012 lbs/day
Pentachlorophenol	13.00 ug/l	925.894 lbs/day	20.000 ug/l	0.120 lbs/day
Toxephene	0.0002 ug/l	0.014 lbs/day	0.7300 ug/l	0.004 lbs/day

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	2.26 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	3.61 tons/day

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

	4 Day Average (Chronic) Standard		1 Hour Average (Acute) Standard	
Metals	**Concentration**	**Load***	**Concentration**	**Load***
Arsenic			50.0 ug/l	3.561 lbs/day
Barium			1000.0 ug/l	71.223 lbs/day
Cadmium			10.0 ug/l	0.712 lbs/day
Chromium			50.0 ug/l	3.561 lbs/day
Lead			50.0 ug/l	3.561 lbs/day
Mercury			2.0 ug/l	0.142 lbs/day
Selenium			10.0 ug/l	0.712 lbs/day
Silver			50.0 ug/l	3.561 lbs/day
Fluoride (3)			1.4 ug/l	0.100 lbs/day
to			2.4 ug/l	0.171 lbs/day
Nitrates as N			10.0 ug/l	0.712 lbs/day
Chlorophenoxy Herbicides				
2,4-D			100.0 ug/l	7.122 lbs/day
2,4,5-TP			10.0 ug/l	0.712 lbs/day
Endrin			0.2 ug/l	0.014 lbs/day
ocyclohexane (Lindane)			4.0 ug/l	0.285 lbs/day
Methoxychlor			100.0 ug/l	7.122 lbs/day
Toxaphene			5.0 ug/l	0.356 lbs/day

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

	Maximum Conc., ug/l - Acute Standards			
	Class 1C		**Class 3A, 3B**	
Toxic Organics	[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	85.47 lbs/day	2700.0 ug/l	192.30 lbs/day
Acrolein	320.00 ug/l	22.79 lbs/day	780.0 ug/l	55.55 lbs/day
Acrylonitrile	0.06 ug/l	0.00 lbs/day	0.7 ug/l	0.05 lbs/day
Benzene	1.20 ug/l	0.09 lbs/day	71.0 ug/l	5.06 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	0.02 lbs/day	4.4 ug/l	0.31 lbs/day
Chlorobenzene	680.00 ug/l	48.43 lbs/day	21000.0 ug/l	1495.67 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	0.03 lbs/day	99.0 ug/l	7.05 lbs/day

1,1,1-Trichloroethane				
Hexachloroethane	1.90 ug/l	0.14 lbs/day	8.9 ug/l	0.63 lbs/day
1,1-Dichloroethane				
1,1,2-Trichloroethane	0.61 ug/l	0.04 lbs/day	42.0 ug/l	2.99 lbs/day
1,1,2,2-Tetrachloroethai	0.17 ug/l	0.01 lbs/day	11.0 ug/l	0.78 lbs/day
Chloroethane			0.0 ug/l	0.00 lbs/day
Bis(2-chloroethyl) ether	0.03 ug/l	0.00 lbs/day	1.4 ug/l	0.10 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	121.08 lbs/day	4300.0 ug/l	306.26 lbs/day
2,4,6-Trichlorophenol	2.10 ug/l	0.15 lbs/day	6.5 ug/l	0.46 lbs/day
p-Chloro-m-cresol			0.0 ug/l	0.00 lbs/day
Chloroform (HM)	5.70 ug/l	0.41 lbs/day	470.0 ug/l	33.47 lbs/day
2-Chlorophenol	120.00 ug/l	8.55 lbs/day	400.0 ug/l	28.49 lbs/day
1,2-Dichlorobenzene	2700.00 ug/l	192.30 lbs/day	17000.0 ug/l	1210.78 lbs/day
1,3-Dichlorobenzene	400.00 ug/l	28.49 lbs/day	2600.0 ug/l	185.18 lbs/day
1,4-Dichlorobenzene	400.00 ug/l	28.49 lbs/day	2600.0 ug/l	185.18 lbs/day
3,3'-Dichlorobenzidine	0.04 ug/l	0.00 lbs/day	0.1 ug/l	0.01 lbs/day
1,1-Dichloroethylene	0.06 ug/l	0.00 lbs/day	3.2 ug/l	0.23 lbs/day
1,2-trans-Dichloroethyle	700.00 ug/l	49.86 lbs/day	0.0 ug/l	0.00 lbs/day
2,4-Dichlorophenol	93.00 ug/l	6.62 lbs/day	790.0 ug/l	56.27 lbs/day
1,2-Dichloropropane	0.52 ug/l	0.04 lbs/day	39.0 ug/l	2.78 lbs/day
1,3-Dichloropropylene	10.00 ug/l	0.71 lbs/day	1700.0 ug/l	121.08 lbs/day
2,4-Dimethylphenol	540.00 ug/l	38.46 lbs/day	2300.0 ug/l	163.81 lbs/day
2,4-Dinitrotoluene	0.11 ug/l	0.01 lbs/day	9.1 ug/l	0.65 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	0.00 lbs/day	0.5 ug/l	0.04 lbs/day
Ethylbenzene	3100.00 ug/l	220.79 lbs/day	29000.0 ug/l	2065.46 lbs/day
Fluoranthene	300.00 ug/l	21.37 lbs/day	370.0 ug/l	26.35 lbs/day
4-Chlorophenyl phenyl ether				
4-Bromophenyl phenyl ether				
Bis(2-chloroisopropyl) e	1400.00 ug/l	99.71 lbs/day	170000.0 ug/l	12107.84 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	0.33 lbs/day	1600.0 ug/l	113.96 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	0.31 lbs/day	360.0 ug/l	25.64 lbs/day
Dichlorobromomethane	0.27 ug/l	0.02 lbs/day	22.0 ug/l	1.57 lbs/day
Chlorodibromomethane	0.41 ug/l	0.03 lbs/day	34.0 ug/l	2.42 lbs/day
Hexachlorobutadiene(c)	0.44 ug/l	0.03 lbs/day	50.0 ug/l	3.56 lbs/day
Hexachlorocyclopentadi	240.00 ug/l	17.09 lbs/day	17000.0 ug/l	1210.78 lbs/day
Isophorone	8.40 ug/l	0.60 lbs/day	600.0 ug/l	42.73 lbs/day
Naphthalene				
Nitrobenzene	17.00 ug/l	1.21 lbs/day	1900.0 ug/l	135.32 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	4.99 lbs/day	14000.0 ug/l	997.12 lbs/day
4,6-Dinitro-o-cresol	13.00 ug/l	0.93 lbs/day	765.0 ug/l	54.49 lbs/day
N-Nitrosodimethylamine	0.00069 ug/l	0.00 lbs/day	8.1 ug/l	0.58 lbs/day
N-Nitrosodiphenylamine	5.00 ug/l	0.36 lbs/day	16.0 ug/l	1.14 lbs/day
N-Nitrosodi-n-propylami	0.01 ug/l	0.00 lbs/day	1.4 ug/l	0.10 lbs/day
Pentachlorophenol	0.28 ug/l	0.02 lbs/day	8.2 ug/l	0.58 lbs/day

Phenol	2.10E+04 ug/l	1.50E+03 lbs/day	4.6E+06 ug/l	3.28E+05 lbs/day
Bis(2-ethylhexyl)phthala	1.80 ug/l	0.13 lbs/day	5.9 ug/l	0.42 lbs/day
Butyl benzyl phthalate	3000.00 ug/l	213.67 lbs/day	5200.0 ug/l	370.36 lbs/day
Di-n-butyl phthalate	2700.00 ug/l	192.30 lbs/day	12000.0 ug/l	854.67 lbs/day
Di-n-octyl phthlate				
Diethyl phthalate	23000.00 ug/l	1638.12 lbs/day	120000.0 ug/l	8546.71 lbs/day
Dimethyl phthlate	3.13E+05 ug/l	2.23E+04 lbs/day	2.9E+06 ug/l	2.07E+05 lbs/day
Benzo(a)anthracene (P/	0.0028 ug/l	0.00 lbs/day	0.0 ug/l	0.00 lbs/day
Benzo(a)pyrene (PAH)	0.0028 ug/l	0.00 lbs/day	0.0 ug/l	0.00 lbs/day
Benzo(b)fluoranthene (F	0.0028 ug/l	0.00 lbs/day	0.0 ug/l	0.00 lbs/day
Benzo(k)fluoranthene (F	0.0028 ug/l	0.00 lbs/day	0.0 ug/l	0.00 lbs/day
Chrysene (PAH)	0.0028 ug/l	0.00 lbs/day	0.0 ug/l	0.00 lbs/day
Acenaphthylene (PAH)				
Anthracene (PAH)	9600.00 ug/l	683.74 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	0.00 lbs/day
Indeno(1,2,3-cd)pyrene	0.0028 ug/l	0.00 lbs/day	0.0 ug/l	0.00 lbs/day
Pyrene (PAH)	960.00 ug/l	68.37 lbs/day	11000.0 ug/l	783.45 lbs/day
Tetrachloroethylene	0.80 ug/l	0.06 lbs/day	8.9 ug/l	0.63 lbs/day
Toluene	6800.00 ug/l	484.31 lbs/day	200000 ug/l	14244.52 lbs/day
Trichloroethylene	2.70 ug/l	0.19 lbs/day	81.0 ug/l	5.77 lbs/day
Vinyl chloride	2.00 ug/l	0.14 lbs/day	525.0 ug/l	37.39 lbs/day
			0.0	0.00 lbs/day
Pesticides			0.0	0.00 lbs/day
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	0.07 lbs/day	2.0 ug/l	0.14 lbs/day
beta-Endosulfan	0.9300 ug/l	0.07 lbs/day	2.0 ug/l	0.14 lbs/day
Endosulfan sulfate	0.9300 ug/l	0.07 lbs/day	2.0 ug/l	0.14 lbs/day
Endrin	0.7600 ug/l	0.05 lbs/day	0.8 ug/l	0.06 lbs/day
Endrin aldehyde	0.7600 ug/l	0.05 lbs/day	0.8 ug/l	0.06 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 12/	0.000044 ug/l	0.00 lbs/day	0.0 ug/l	0.00 lbs/day
PCB-1254 (Arochlor 12!	0.000044 ug/l	0.00 lbs/day	0.0 ug/l	0.00 lbs/day
PCB-1221 (Arochlor 12:	0.000044 ug/l	0.00 lbs/day	0.0 ug/l	0.00 lbs/day
PCB-1232 (Arochlor 12:	0.000044 ug/l	0.00 lbs/day	0.0 ug/l	0.00 lbs/day
PCB-1248 (Arochlor 12/	0.000044 ug/l	0.00 lbs/day	0.0 ug/l	0.00 lbs/day
PCB-1260 (Arochlor 12(	0.000044 ug/l	0.00 lbs/day	0.0 ug/l	0.00 lbs/day
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	1.00 lbs/day		
Arsenic	50.0 ug/l	3.56 lbs/day	4300.00 ug/l	306.26 lbs/day
Asbestos	7.00E+06 ug/l	4.99E+05 lbs/day		
Beryllium				
Cadmium				
Chromium (III)				
Chromium (VI)				
Copper				
Cyanide	1.30E+03 ug/l	92.59 lbs/day	2.2E+05 ug/l	15668.97 lbs/day
Lead	700.0 ug/l	49.86 lbs/day		
Mercury			0.15 ug/l	0.01 lbs/day
Nickel			4600.00 ug/l	327.62 lbs/day
Selenium	0.1 ug/l	0.01 lbs/day		
Silver	610.0 ug/l	43.45 lbs/day		
Thallium			6.30 ug/l	0.45 lbs/day
Zinc				

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

VII. Mathematical Modeling of Stream Quality

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

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

(1) The Utah River Model, Utah Division of Water Quality, 1992. Based upon STREAMDO IV (Region VIII) and Supplemental Ammonia Toxicity Models; EPA Region VIII, Sept. 1990 and QUAL2E (EPA, Athens, GA).

(2) Utah Ammonia/Chlorine Model, Utah Division of Water Quality, 1992.

(3) AMMTOX Model, University of Colorado, Center of Limnology, and EPA Region 8

(4) Principles of Surface Water Quality Modeling and Control. Robert V. Thomann, et.al. Harper Collins Publisher, Inc. 1987, pp. 644.

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

(1) Rates, Constants, and Kinetics Formulations in Surface Water Quality Modeling. Environmental Research Laboratory, Office of Research and Development, U.S. Environmental Protection Agency, Athens Georgia. EPA/600/3-85/040 June 1985.

(2) Principles of Surface Water Quality Modeling and Control. Robert V. Thomann, et.al. Harper Collins Publisher, Inc. 1987, pp. 644.

VIII. Modeling Information

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

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

Other Conditions

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

Model Inputs

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

Current Upstream Information

	Stream Critical Low Flow cfs	Temp. Deg. C	pH	T-NH3 mg/l as N	BOD5 mg/l	DO mg/l	TRC mg/l	TDS mg/l
Summer (Irrig. Season)	12.10	12.0	8.5	0.01	0.05	7.64	0.00	213.0
Fall	12.10	2.1	8.4	0.01	0.05	---	0.00	265.0
Winter	12.10	1.0	8.3	0.01	0.05	---	0.00	307.0
Spring	12.10	7.3	8.4	0.01	0.05	---	0.00	230.0

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	13.67	0.50	0.06	1.77	3.975*	0.95	15.2	0.35

Dissolved Metals	Hg ug/l	Ni ug/l	Se ug/l	Ag ug/l	Zn ug/l	Boron ug/l	
All Seasons	0.0000	2.50	0.92	0.25	7.12	20.1	* ~80% MDL

Projected Discharge Information

Season	Flow, MGD	Temp.	TDS mg/l	TDS tons/day
Summer	0.72000	13.9	542.00	1.62697
Fall	0.72000	13.9		
Winter	0.72000	13.9		
Spring	0.72000	13.9		

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	0.720 MGD	1.114 cfs
Fall	0.720 MGD	1.114 cfs
Winter	0.720 MGD	1.114 cfs
Spring	0.720 MGD	1.114 cfs

Flow Requirement or Loading Requirement

The calculations in this wasteload analysis utilize the maximum effluent discharge flow of 0.72 MGD. If the discharger is allowed to have a flow greater than 0.72 MGD during 7Q10 conditions, and effluent limit concentrations as indicated, then water quality standards will be violated. In order to prevent this from occuring, the permit writers must include the discharge flow limititation 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 segements if the values below are met.

WET Requirements	LC50 >	61.4% Effluent	[Acute]
	IC25 >	8.4% Effluent	[Chronic]

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	150.1 lbs/day
Fall	25.0 mg/l as BOD5	150.1 lbs/day
Winter	25.0 mg/l as BOD5	150.1 lbs/day
Spring	25.0 mg/l as BOD5	150.1 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	6.50
Fall	6.50
Winter	6.50
Spring	6.50

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	16.2	mg/l as N	97.1	lbs/day
	1 Hour Avg. - Acute	25.5	mg/l as N	153.2	lbs/day
Fall	4 Day Avg. - Chronic	18.2	mg/l as N	109.0	lbs/day
	1 Hour Avg. - Acute	25.0	mg/l as N	150.3	lbs/day
Winter	4 Day Avg. - Chronic	19.9	mg/l as N	119.2	lbs/day
	1 Hour Avg. - Acute	28.7	mg/l as N	172.2	lbs/day
Spring	4 Day Avg. - Chronic	17.2	mg/l as N	103.2	lbs/day
	1 Hour Avg. - Acute	25.0	mg/l as N	150.3	lbs/day

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

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	0.119	mg/l	0.72	lbs/day
	1 Hour Avg. - Acute	0.117	mg/l	0.70	lbs/day
Fall	4 Day Avg. - Chronic	0.119	mg/l	0.72	lbs/day
	1 Hour Avg. - Acute	0.117	mg/l	0.70	lbs/day
Winter	4 Day Avg. - Chronic	0.119	mg/l	0.72	lbs/day
	1 Hour Avg. - Acute	0.117	mg/l	0.70	lbs/day
Spring	4 Day Avg. - Chronic	0.119	mg/l	0.00	lbs/day
	1 Hour Avg. - Acute	0.117	mg/l	0.00	lbs/day

Effluent Limitations for Total Dissolved Solids based upon Water Quality Standards

Season		Concentration		Load	
Summer	Maximum, Acute	11922.1	mg/l	35.79	tons/day
Fall	Maximum, Acute	11357.2	mg/l	34.09	tons/day
Winter	Maximum, Acute	10900.9	mg/l	32.72	tons/day
Spring	4 Day Avg. - Chronic	11737.4	mg/l	35.23	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 242.57 mg/l):

	4 Day Average Concentration		Load	1 Hour Average Concentration		Load
Aluminum*	N/A		N/A	4,749.5	ug/l	28.6 lbs/day
Arsenic*	2,248.60	ug/l	8.7 lbs/day	2,184.0	ug/l	13.1 lbs/day
Cadmium	5.55	ug/l	0.0 lbs/day	33.5	ug/l	0.2 lbs/day
Chromium III	2,093.33	ug/l	8.1 lbs/day	23,952.1	ug/l	144.1 lbs/day
Chromium VI*	87.31	ug/l	0.3 lbs/day	81.3	ug/l	0.5 lbs/day
Copper	225.72	ug/l	0.9 lbs/day	202.4	ug/l	1.2 lbs/day
Iron*	N/A		N/A	7,072.1	ug/l	42.5 lbs/day
Lead	112.87	ug/l	0.4 lbs/day	1,620.5	ug/l	9.7 lbs/day
Mercury*	0.14	ug/l	0.0 lbs/day	15.4	ug/l	0.1 lbs/day
Nickel	1,282.47	ug/l	5.0 lbs/day	6,372.5	ug/l	38.3 lbs/day
Selenium*	44.61	ug/l	0.2 lbs/day	123.7	ug/l	0.7 lbs/day
Silver	N/A	ug/l	N/A lbs/day	110.4	ug/l	0.7 lbs/day

Zinc	2,934.28 ug/l	11.4 lbs/day	1,594.1	ug/l	9.6 lbs/day
Cyanide*	61.69 ug/l	0.2 lbs/day	141.5	ug/l	0.9 lbs/day

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

Effluent Limitations for Heat/Temperature based upon Water Quality Standards

Summer	35.7 Deg. C.	96.3 Deg. F
Fall	25.8 Deg. C.	78.5 Deg. F
Winter	24.7 Deg. C.	76.5 Deg. F
Spring	31.0 Deg. C.	87.8 Deg. F

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

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

	4 Day Average Concentration	Load	1 Hour Average Concentration		Load
Aldrin			1.5E+00	ug/l	1.40E-02 lbs/day
Chlordane	4.30E-03 ug/l	2.58E-02 lbs/day	1.2E+00	ug/l	1.12E-02 lbs/day
DDT, DDE	1.00E-03 ug/l	6.00E-03 lbs/day	5.5E-01	ug/l	5.12E-03 lbs/day
Dieldrin	1.90E-03 ug/l	1.14E-02 lbs/day	1.3E+00	ug/l	1.16E-02 lbs/day
Endosulfan	5.60E-02 ug/l	3.36E-01 lbs/day	1.1E-01	ug/l	1.02E-03 lbs/day
Endrin	2.30E-03 ug/l	1.38E-02 lbs/day	9.0E-02	ug/l	8.38E-04 lbs/day
Guthion	0.00E+00 ug/l	0.00E+00 lbs/day	1.0E-02	ug/l	9.31E-05 lbs/day
Heptachlor	3.80E-03 ug/l	2.28E-02 lbs/day	2.6E-01	ug/l	2.42E-03 lbs/day
Lindane	8.00E-02 ug/l	4.80E-01 lbs/day	1.0E+00	ug/l	9.31E-03 lbs/day
Methoxychlor	0.00E+00 ug/l	0.00E+00 lbs/day	3.0E-02	ug/l	2.79E-04 lbs/day
Mirex	0.00E+00 ug/l	0.00E+00 lbs/day	1.0E-02	ug/l	9.31E-05 lbs/day
Parathion	0.00E+00 ug/l	0.00E+00 lbs/day	4.0E-02	ug/l	3.72E-04 lbs/day
PCB's	1.40E-02 ug/l	8.41E-02 lbs/day	2.0E+00	ug/l	1.86E-02 lbs/day
Pentachlorophenol	1.30E+01 ug/l	7.80E+01 lbs/day	2.0E+01	ug/l	1.86E-01 lbs/day
Toxephene	2.00E-04 ug/l	1.20E-03 lbs/day	7.3E-01	ug/l	6.79E-03 lbs/day

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	30.1 lbs/day
Nitrates as N	4.0 mg/l	24.1 lbs/day
Total Phosphorus as P	0.05 mg/l	0.3 lbs/day
Total Suspended Solids	90.0 mg/l	541.4 lbs/day

Note: Pollution indicator targets are for information purposes only.

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

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

	Maximum Concentration Concentration	Load
Toxic Organics		
Acenaphthene	1.42E+04 ug/l	8.55E+01 lbs/day
Acrolein	3.80E+03 ug/l	2.28E+01 lbs/day
Acrylonitrile	7.00E-01 ug/l	4.20E-03 lbs/day
Benzene	1.42E+01 ug/l	8.55E-02 lbs/day
Benzidine	ug/l	lbs/day
Carbon tetrachloride	2.97E+00 ug/l	1.78E-02 lbs/day
Chlorobenzene	8.07E+03 ug/l	4.84E+01 lbs/day
1,2,4-Trichlorobenzene		
Hexachlorobenzene	8.90E-03 ug/l	5.34E-05 lbs/day
1,2-Dichloroethane	4.51E+00 ug/l	2.71E-02 lbs/day
1,1,1-Trichloroethane		
Hexachloroethane	2.25E+01 ug/l	1.35E-01 lbs/day
1,1-Dichloroethane		
1,1,2-Trichloroethane	7.24E+00 ug/l	4.34E-02 lbs/day
1,1,2,2-Tetrachloroethane	2.02E+00 ug/l	1.21E-02 lbs/day
Chloroethane		
Bis(2-chloroethyl) ether	3.68E-01 ug/l	2.21E-03 lbs/day
2-Chloroethyl vinyl ether		
2-Chloronaphthalene	2.02E+04 ug/l	1.21E+02 lbs/day
2,4,6-Trichlorophenol	2.49E+01 ug/l	1.50E-01 lbs/day
p-Chloro-m-cresol		
Chloroform (HM)	6.76E+01 ug/l	4.06E-01 lbs/day
2-Chlorophenol	1.42E+03 ug/l	8.55E+00 lbs/day
1,2-Dichlorobenzene	3.20E+04 ug/l	1.92E+02 lbs/day
1,3-Dichlorobenzene	4.75E+03 ug/l	2.85E+01 lbs/day

1,4-Dichlorobenzene	4.75E+03 ug/l	2.85E+01 lbs/day
3,3'-Dichlorobenzidine	4.75E-01 ug/l	2.85E-03 lbs/day
1,1-Dichloroethylene	6.76E-01 ug/l	4.06E-03 lbs/day
1,2-trans-Dichloroethylene1		
2,4-Dichlorophenol	1.10E+03 ug/l	6.62E+00 lbs/day
1,2-Dichloropropane	6.17E+00 ug/l	3.70E-02 lbs/day
1,3-Dichloropropylene	1.19E+02 ug/l	7.12E-01 lbs/day
2,4-Dimethylphenol	6.41E+03 ug/l	3.85E+01 lbs/day
2,4-Dinitrotoluene	1.30E+00 ug/l	7.83E-03 lbs/day
2,6-Dinitrotoluene		
1,2-Diphenylhydrazine	4.75E-01 ug/l	2.85E-03 lbs/day
Ethylbenzene	3.68E+04 ug/l	2.21E+02 lbs/day
Fluoranthene	3.56E+03 ug/l	2.14E+01 lbs/day
4-Chlorophenyl phenyl ether		
4-Bromophenyl phenyl ether		
Bis(2-chloroisopropyl) ether	1.66E+04 ug/l	9.97E+01 lbs/day
Bis(2-chloroethoxy) methane		
Methylene chloride (HM)	5.58E+01 ug/l	3.35E-01 lbs/day
Methyl chloride (HM)		
Methyl bromide (HM)		
Bromoform (HM)	5.10E+01 ug/l	3.06E-01 lbs/day
Dichlorobromomethane(HM)	3.20E+00 ug/l	1.92E-02 lbs/day
Chlorodibromomethane (HM)	4.86E+00 ug/l	2.92E-02 lbs/day
Hexachlorocyclopentadiene	2.85E+03 ug/l	1.71E+01 lbs/day
Isophorone	9.97E+01 ug/l	5.98E-01 lbs/day
Naphthalene		
Nitrobenzene	2.02E+02 ug/l	1.21E+00 lbs/day
2-Nitrophenol		
4-Nitrophenol		
2,4-Dinitrophenol	8.30E+02 ug/l	4.99E+00 lbs/day
4,6-Dinitro-o-cresol	1.54E+02 ug/l	9.26E-01 lbs/day
N-Nitrosodimethylamine	8.19E-03 ug/l	4.91E-05 lbs/day
N-Nitrosodiphenylamine	5.93E+01 ug/l	3.56E-01 lbs/day
N-Nitrosodi-n-propylamine	5.93E-02 ug/l	3.56E-04 lbs/day
Pentachlorophenol	3.32E+00 ug/l	1.99E-02 lbs/day
Phenol	2.49E+05 ug/l	1.50E+03 lbs/day
Bis(2-ethylhexyl)phthalate	2.14E+01 ug/l	1.28E-01 lbs/day
Butyl benzyl phthalate	3.56E+04 ug/l	2.14E+02 lbs/day
Di-n-butyl phthalate	3.20E+04 ug/l	1.92E+02 lbs/day
Di-n-octyl phthlate		
Diethyl phthalate	2.73E+05 ug/l	1.64E+03 lbs/day
Dimethyl phthlate	3.71E+06 ug/l	2.23E+04 lbs/day
Benzo(a)anthracene (PAH)	3.32E-02 ug/l	1.99E-04 lbs/day
Benzo(a)pyrene (PAH)	3.32E-02 ug/l	1.99E-04 lbs/day
Benzo(b)fluoranthene (PAH)	3.32E-02 ug/l	1.99E-04 lbs/day
Benzo(k)fluoranthene (PAH)	3.32E-02 ug/l	1.99E-04 lbs/day
Chrysene (PAH)	3.32E-02 ug/l	1.99E-04 lbs/day
Acenaphthylene (PAH)		
Anthracene (PAH)		
Dibenzo(a,h)anthracene (PAH)	3.32E-02 ug/l	1.99E-04 lbs/day
Indeno(1,2,3-cd)pyrene (PAH)	3.32E-02 ug/l	1.99E-04 lbs/day

Pyrene (PAH)	1.14E+04 ug/l	6.84E+01 lbs/day
Tetrachloroethylene	9.49E+00 ug/l	5.70E-02 lbs/day
Toluene	8.07E+04 ug/l	4.84E+02 lbs/day
Trichloroethylene	3.20E+01 ug/l	1.92E-01 lbs/day
Vinyl chloride	2.37E+01 ug/l	1.42E-01 lbs/day
Pesticides		
Aldrin	1.54E-03 ug/l	9.26E-06 lbs/day
Dieldrin	1.66E-03 ug/l	9.97E-06 lbs/day
Chlordane	6.76E-03 ug/l	4.06E-05 lbs/day
4,4'-DDT	7.00E-03 ug/l	4.20E-05 lbs/day
4,4'-DDE	7.00E-03 ug/l	4.20E-05 lbs/day
4,4'-DDD	9.85E-03 ug/l	5.91E-05 lbs/day
alpha-Endosulfan	1.10E+01 ug/l	6.62E-02 lbs/day
beta-Endosulfan	1.10E+01 ug/l	6.62E-02 lbs/day
Endosulfan sulfate	1.10E+01 ug/l	6.62E-02 lbs/day
Endrin	9.02E+00 ug/l	5.41E-02 lbs/day
Endrin aldehyde	9.02E+00 ug/l	5.41E-02 lbs/day
Heptachlor	2.49E-03 ug/l	1.50E-05 lbs/day
Heptachlor epoxide		
PCB's		
PCB 1242 (Arochlor 1242)	5.22E-04 ug/l	3.13E-06 lbs/day
PCB-1254 (Arochlor 1254)	5.22E-04 ug/l	3.13E-06 lbs/day
PCB-1221 (Arochlor 1221)	5.22E-04 ug/l	3.13E-06 lbs/day
PCB-1232 (Arochlor 1232)	5.22E-04 ug/l	3.13E-06 lbs/day
PCB-1248 (Arochlor 1248)	5.22E-04 ug/l	3.13E-06 lbs/day
PCB-1260 (Arochlor 1260)	5.22E-04 ug/l	3.13E-06 lbs/day
PCB-1016 (Arochlor 1016)	5.22E-04 ug/l	3.13E-06 lbs/day
Pesticide		
Toxaphene	8.66E-03 ug/l	5.20E-05 lbs/day
Metals		
Antimony	166.09 ug/l	1.00 lbs/day
Arsenic	587.73 ug/l	3.53 lbs/day
Asbestos	8.30E+07 ug/l	4.99E+05 lbs/day
Beryllium		
Cadmium		
Chromium (III)		
Chromium (VI)		
Copper	15422.32 ug/l	92.59 lbs/day
Cyanide	8304.32 ug/l	49.86 lbs/day
Lead	0.00	0.00
Mercury	1.66 ug/l	0.01 lbs/day
Nickel	7236.63 ug/l	43.45 lbs/day
Selenium	0.00	0.00
Silver	0.00	0.00
Thallium	20.17 ug/l	0.12 lbs/day
Zinc		

Dioxin		
Dioxin (2,3,7,8-TCDD)	1.54E-07 ug/l	9.26E-10 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		4749.5				4749.5	N/A
Antimony			166.1	51012.3		166.1	
Arsenic	1186.3	2184.0	587.7		0.0	587.7	2248.6
Barium					11863.3	11863.3	
Beryllium						0.0	
Cadmium	118.0	33.5			0.0	33.5	5.5
Chromium (III)		23952.1			0.0	23952.1	2093.3
Chromium (VI)	1167.2	81.3			0.0	81.32	87.31
Copper	2362.4	202.4	15422.3			202.4	225.7
Cyanide		141.5	2609930.3			141.5	61.7
Iron		7072.1				7072.1	
Lead	1182.6	1620.5			0.0	1182.6	112.9
Mercury		15.44	1.7	1.78	0.0	1.66	0.142
Nickel		6372.5	7236.6	54571.3		6372.5	1282.5
Selenium	583.2	123.7			0.0	123.7	44.6
Silver		110.4			0.0	110.4	
Thallium			20.2	74.7		20.2	
Zinc		1594.1				1594.1	2934.3
Boron	8679.1					8679.1	
Sulfate	23726.6					23726.6	

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	4749.5	N/A	
Antimony	166.09		
Arsenic	587.7	2248.6	Acute Controls
Asbestos	8.30E+07		
Barium			
Beryllium			
Cadmium	33.5	5.5	
Chromium (III)	23952.1	2093	
Chromium (VI)	81.3	87.3	Acute Controls
Copper	202.4	225.7	Acute Controls

Cyanide	141.5	61.7	
Iron	7072.1		
Lead	1182.6	112.9	
Mercury	1.661	0.142	
Nickel	6372.5	1282	
Selenium	123.7	44.6	
Silver	110.4	N/A	
Thallium	20.2		
Zinc	1594.1	2934.3	Acute Controls
Boron	8679.14		
Sulfate	23726.6		N/A at this Waterbody

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 because the receiving water for the discharge is a Class 1C Drinking Water Source.

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.

Antidegradation Review Form

Part A: Applicant Information

Facility Name: Deer Creek Mine

Facility Owner: PacifiCorp, Interwest Mining Company

Facility Location: South of Hwy 31 (8 miles northwest of Huntington)

Form Prepared By: Interwest Mining Company

Outfall Number: 003

Receiving Water: Huntington Creek

What Are the Designated Uses of the Receiving Water (R317-2-6)?
Domestic Water Supply: 1C
Recreation: 2B - Secondary Contact
Aquatic Life: 3A - Cold Water Aquatic Life
Agricultural Water Supply: 4
Great Salt Lake: None

Category of Receiving Water (R317-2-3.2, -3.3, and -3.4): Category 3

UPDES Permit Number (if applicable): UT0023604

Effluent Flow Reviewed: 0.72 mgd average, 0.72 mgd maximum
Typically, this should be the maximum daily discharge at the design capacity of the facility. Exceptions should be noted.

What is the application for? (check all that apply)

☒ A UPDES permit for a new facility, project, or outfall.

☐ A UPDES permit renewal with an expansion or modification of an existing wastewater treatment works.

☐ A UPDES permit renewal requiring limits for a pollutant not covered by the previous permit and/or an increase to existing permit limits.

☐ A UPDES permit renewal with no changes in facility operations.

Part B. Is a Level II ADR required?

This section of the form is intended to help applicants determine if a Level II ADR is required for specific permitted activities. In addition, the Executive Secretary may require a Level II ADR for an activity with the potential for major impact on the quality of waters of the state (R317-2-3.5a.1).

B1. The receiving water or downstream water is a Class 1C drinking water source.

☒ **Yes** A Level II ADR is required (Proceed to Part C of the Form)

☐ **No** (Proceed to Part B2 of the Form)

B2. The UPDES permit is new or is being renewed and the proposed effluent concentration and loading limits are higher than the concentration and loading limits in the previous permit and any previous antidegradation review(s).

☐ **Yes** (Proceed to Part B3 of the Form)

☐ **No** No Level II ADR is required and there is no need to proceed further with review questions.

B3. Will any pollutants use assimilative capacity of the receiving water, i.e. do the pollutant concentrations in the effluent exceed those in the receiving waters at critical conditions? For most pollutants, effluent concentrations that are higher than the ambient concentrations require an antidegradation review? For a few pollutants such as dissolved oxygen, an antidegradation review is required if the effluent concentrations are less than the ambient concentrations in the receiving water. (Section 3.3.3 of Implementation Guidance)

☐ **Yes** (Proceed to Part B4 of the Form)

☐ **No** No Level II ADR is required and there is no need to proceed further with review questions.

B4. Are water quality impacts of the proposed project temporary and limited (Section 3.3.4 of Implementation Guidance)? Proposed projects that will have temporary and limited effects on water quality can be exempted from a Level II ADR.

☐ **Yes** Identify the reasons used to justify this determination in Part B4.1 and proceed to Part G. No Level II ADR is required.

☒ **No** A Level II ADR is required (Proceed to Part C)

B4.1 Complete this question only if the applicant is requesting a Level II review exclusion for temporary and limited projects (see R317-2-3.5(b)(3) and R317-2-3.5(b)(4)). For projects requesting a temporary and limited exclusion please indicate the factor(s) used to justify this determination (check all that apply and provide details as appropriate) (Section 3.3.4 of Implementation Guidance):

☐ Water quality impacts will be temporary and related exclusively to sediment or turbidity and fish spawning will not be impaired.

Factors to be considered in determining whether water quality impacts will be temporary and limited:

a) The length of time during which water quality will be lowered:
b) The percent change in ambient concentrations of pollutants:
c) Pollutants affected:
d) Likelihood for long-term water quality benefits:
e) Potential for any residual long-term influences on existing uses:
f) Impairment of fish spawning, survival and development of aquatic fauna excluding fish removal efforts:

Additional justification, as needed:

Level II ADR

Part C, D, E, and F of the form constitute the Level II ADR Review. The applicant must provide as much detail as necessary for DWQ to perform the antidegradation review. Questions are provided for the convenience of applicants; however, for more complex permits it may be more effective to provide the required information in a separate report. Applicants that prefer a separate report should record the report name here and proceed to Part G of the form.

Optional Report Name: *Attachment A - Supplemental to Approved Antidegradation Review and Statement of Social, Environmental, and Economic Importance: Deer Creek Mine*

Part C. Is the degradation from the project socially and economically necessary to accommodate important social or economic development in the area in which the waters are located?

The applicant must provide as much detail as necessary for DWQ to concur that the project is socially and economically necessary when answering the questions in this section. More information is available in Section 6.2 of the Implementation Guidance.

C1. Describe the social and economic benefits that would be realized through the proposed project, including the number and nature of jobs created and anticipated tax revenues.

See Attachment A

C2. Describe any environmental benefits to be realized through implementation of the proposed project.

See Attachment A

C3. Describe any social and economic losses that may result from the project, including impacts to recreation or commercial development.

See Attachment A

C4. Summarize any supporting information from the affected communities on preserving assimilative capacity to support future growth and development.

See Attachment A

C5. Please describe any structures or equipment associated with the project that will be placed within or adjacent to the receiving water.

See Attachment A

Part D. Identify and rank (from increasing to decreasing potential threat to designated uses) the parameters of concern. *Parameters of concern are parameters in the effluent at concentrations greater than ambient concentrations in the receiving water. The applicant is responsible for identifying parameter concentrations in the effluent and DWQ will provide parameter concentrations for the receiving water. More information is available in Section 3.3.3 of the Implementation Guidance.*

Parameters of Concern:

Rank	Pollutant	Ambient Concentration	Effluent Concentration
1	Iron	0.0152 mg/L dissolved	<2.65 mg/L total, <0.03 dissolved Outfall 003
2	Total dissolved solids	254 mg/L	542 mg/L Outfall 003
3	pH	8.4	7.2 - 7.5 Outfall 003
4	Dissolved Oxygen	7.64 mg/L	7.45 mg/L ave. Outfall 003
5	Temperature	5.6 Deg C ave, 1 - 12 Deg C Range	13.9 Deg C Outfall 003

Pollutants Evaluated that are not Considered Parameters of Concern:

Pollutant	Ambient Concentration	Effluent Concentration	Justification
Oil and grease	No data	Not detected in historical monitoring	Not detected in historical monitoring
Arsenic, cadmium, chromium, lead, mercury, etc.	See Attachment A	See Attachment A	Effluent is below ambient concentrations or not detected

Part E. Alternative Analysis Requirements of a Level II Antidegradation Review.

Level II ADRs require the applicant to determine whether there are feasible less-degrading alternatives to the proposed project. More information is available in Section 5.5 and 5.6 of the Implementation Guidance.

E1. The UPDES permit is being renewed without any changes to flow or concentrations. Alternative treatment and discharge options including changes to operations and maintenance were considered and compared to the current processes. No economically feasible treatment or discharge alternatives were identified that were not previously considered for any previous antidegradation review(s).

☐ **Yes** (Proceed to Part F)

☒ **No or Does Not Apply** (Proceed to E2)

E2. Attach as an appendix to this form a report that describes the following factors for all alternative treatment options (see 1) a technical description of the treatment process, including construction costs and continued operation and maintenance expenses, 2) the mass and concentration of discharge constituents, and 3) a description of the reliability of the system, including the frequency where recurring operation and maintenance may lead to temporary increases in discharged pollutants. Most of this information is typically available from a Facility Plan, if available.

Report Name: *Supplemental to Approved Antidegradation Review and Statement of Social, Environmental, and Economic ImportanceAntidegradation Review and Statement of Social, Environmental, and Economic Importance: Deer Creek Mine*

E3. Describe the proposed method and cost of the baseline treatment alternative. The baseline treatment alternative is the minimum treatment required to meet water quality based effluent limits (WQBEL) as determined by the preliminary or final wasteload analysis (WLA) and any secondary or categorical effluent limits.

E4. Were any of the following alternatives feasible and affordable?

Alternative	Feasible	Reason Not Feasible/Affordable
Pollutant Trading	Yes	TDS Offset Credits if necessary for discharge
Water Recycling/Reuse	No	Mine facility will be closed and reclaimed
Land Application	No	Suitable land is not available near the mine
Connection to Other Facilities	No	Mine facility will be closed and reclaimed
Upgrade to Existing Facility	No	Mine is closing, facilities will be reclaimed
Total Containment	No	Containment bulkheads denied by MSHA
Improved O&M of Existing Systems	No	Mine is closing, facilities will be reclaimed
Seasonal or Controlled Discharge	No	Mine operation requires year round discharge
New Construction	Yes	Treatment facility to remove iron can be constructed if necessary after power plant closure
No Discharge	No	Mine closure requires water discharge (MSHA and UDOGM)

E5. From the applicant's perspective, what is the preferred treatment option?

Outfall 003 in-mine sedimentation, transport via pipeline to Huntington Power Plant through pipeline for consumption. Discharge into Huntington Creek after Power Plant closure or if water quality meets permit standards.

E6. Is the preferred option also the least polluting feasible alternative?

☒ **Yes**

☐ **No**

If no, what were less degrading feasible alternative(s)?

If no, provide a summary of the justification for not selecting the least polluting feasible alternative and if appropriate, provide a more detailed justification as an attachment.

Part F. Optional Information

F1. Does the applicant want to conduct optional public review(s) in addition to the mandatory public review? Level II ADRs are public noticed for a thirty day comment period. More information is available in Section 3.7.1 of the Implementation Guidance.

☒ **No**

☐ **Yes**

F2. Does the project include an optional mitigation plan to compensate for the proposed water quality degradation?

☒ **No**

☐ **Yes**

Report Name: ☐

Part G. Certification of Antidegradation Review

G1. Applicant Certification

The form should be signed by the same responsible person who signed the accompanying permit application or certification.

Based on my inquiry of the person(s) who manage the system or those persons directly responsible for gathering the information, the information in this form and associated documents is, to the best of my knowledge and belief, true, accurate, and complete.

Print Name: KENNETH S. FLECK

Signature: Kenneth S. Fleck

Date: APRIL 25, 2017

G2. DWQ Approval

To the best of my knowledge, the ADR was conducted in accordance with the rules and regulations outlined in UAC R-317-2-3.

Water Quality Management Section

Print Name: NICHOLAS VON STACKELBERG

Signature: Nicholas v Stackelberg

Date: 4/25/2017

Attachment A Supplemental

Supplemental to Approved Antidegradation Review and Statement of Social, Environmental, and Economic Importance: Deer Creek Mine

Deer Creek Mine UPDES Permit No. UT0023604

Approved Date January 2015

Submitted to

Utah Division of Water Quality by

PacifiCorp / Interwest Mining Company

August 2016

Contents

Tables

Exhibit 1: EPA Priority Pollutant List Sampling Results for Outfall 003

Exhibit 2: Baseline Water Quality Sampling Results for Outfall 003

Exhibit 3: Utah Division of Water Quality – Statement of Basis ADDENDUM, Wasteload Analysis and Antidegradation Level I Review – PRELIMINARY, February 28, 2017

Acronyms and Abbreviations

µg/L	microgram per liter
ADR	antidegradation review
C&D	construction and demolition
CFR	*Code of Federal Regulations*
CWA	Clean Water Act
EPA	U.S. Environmental Protection Agency
ft^3	cubic feet
kW	kilowatt
lb/d	pound per day
lb/yr	pound per year
lb-eq/yr	pound equivalent per year
LS	lump sum
mg/L	milligram per liter
mgd	million gallons per day
MW	megawatt
NAAQS	National Ambient Air Quality Standards
O&M	operation and maintenance
POC	parameter of concern
POTW	publicly owned treatment works
RO	reverse osmosis
SEEI	Social, Environmental, and Economic Importance
TDS	total dissolved solids
TRC	total residual chlorine
TSS	total suspended solids
TWF	toxic weighting factor
UAC	Utah Administrative Code
UDWQ	Utah Division of Water Quality
UPDES	Utah Pollutant Discharge Elimination System
ZLD	zero liquid discharge

1.0 Introduction and Purpose

Interwest Mining Company (Interwest), a subsidiary of PacifiCorp, operated the Deer Creek Mine, located about 8 miles northwest of Huntington, Utah. Deer Creek, an underground coal mine produced up to 4 million tons of coal yearly, but terminated production on January 7, 2015 and is in the process of being permanently sealed and closed.

Deer Creek Mine has two sets of main access portals – one located in Deer Creek Canyon (south half of mine), and one at Rilda Canyon (north half of mine). Deer Creek Mine currently has two permitted Utah Pollution Discharge Elimination System (UPDES) outfalls: 001) sediment pond; and 002) mine discharge. Both of these outfalls are located in Deer Creek Canyon.

Deer Creek Canyon portals are within a drainage defined as Category 2 waters, whereas Rilda Canyon portals are within Category 1 waters per UAC R317-2. Definitions of these categories are as follows:

- Category 1 Waters: Waters which have been determined by the Board to be of exceptional recreational or ecological significance or have been determined to be a State or National resource requiring protection, shall be maintained at existing high quality through designation, by the Board after public hearing, as Category 1 Waters. **New point source discharges of wastewater, treated or otherwise, are prohibited in such segments after the effective date of designation.**
- Category 2: Waters are designated surface water segments which are treated as Category 1 Waters except that a point source discharge may be permitted provided that the discharge does not degrade existing water quality.

Since the announcement of the Deer Creek Mine closure in December 2014, PacifiCorp has designed and applied for mine closure approval from various government agencies to prevent a non-approved post-mine gravity discharge of water from the portals located in Rilda Canyon. The original plan was to build water-retaining bulkheads to contain all of the intercepted groundwater in the underground mine workings in perpetuity. Numerous efforts undertaken since late 2014 to obtain permission from the MSHA and the UDOGM to permanently retain intercepted groundwater underground with massive concrete bulkheads and possibly to direct overflow water to the Deer Creek Canyon were finally denied in April of 2016—MSHA and UDOGM will not allow any water retention as part of the Deer Creek closure plans. Intercepted groundwater must now be directed to the portals to flow unimpeded out of the mine. In this case, post-mine discharge will occur at Rilda Canyon. As explained below, the State of Utah and Forest Service anti-degradation policies prohibit new water discharges within the National Forest Boundaries, so the water that flows by gravity to the Rilda Canyon portals must be transferred outside of the Forest lands. The only way to accomplish this is to install a pipeline to at least the Forest boundary, where discharge can take place (with a valid discharge permit).

The last day of production at Deer Creek Mine was January 7, 2015. Efforts began immediately to prepare the mine for closure, including mining equipment removal. By mid-April of 2015, nearly all of the mining equipment, including conveyor belt lines, had been removed, and permission had been granted by the lease holder (BLM), enabling permanent sealing of the south half and northwest quadrants of the mine. The remaining workings of the Rilda Canyon section of the mine are still open with intact power, ventilation, and water systems, pending final resolution of the post-mining water drainage issue.

Compounding the situation of un-approved post-mine discharge of intercepted groundwater at the Rilda Canyon portals is the fact that mining in the northwest quadrant of the mine encountered an elevated sulfur zone in the form of pyrite (FeS_2) in the lower portion of the coal seam. Water accumulating in the northwest quadrant of the mine comes in contact with a high-sulfur/high-iron zone that causes the water to dissolve elevated in total iron above background levels. Based on samples collected of the water that will discharge from the Rilda Canyon portals, the level of total iron in the groundwater will dissipate over a period of time to background levels of the intercepted groundwater. The volume of the intercepted groundwater will follow a similar trend, slowly dissipating due to the lack of recharge from the initial projection of approximately 600 gallons per minute (gpm) to 200 gpm.

To prevent a non-approved post-mine gravity discharge of water from the portals located in Rilda Canyon, PacifiCorp proposes to construct 5.6 miles of a 10-inch high-density polyethylene (HDPE) gravity flow water pipeline from the Deer Creek Mine 1st Right portals to the raw water - settling pond facility at Huntington Power Plant. The pipeline would be constructed within the Emery County Road #306 right-of-way and within the SR-31 right-of-way. Water from the 1st Right portals will not be allowed to discharge into Rilda Creek; rather this water will be transferred via the buried pipeline out of the U.S Forest lands to the Huntington Power Plant where it will be consumed during electric power generation. Governmental agencies requested that PacifiCorp evaluate a potential Deer Creek Mine UPDES outfall for the mine discharge from 1st Right portals directly to the receiving drainage (Huntington Creek) in the event the Huntington Power Plant ceases operation. Even though this scenario is not anticipated in the foreseeable future, PacifiCorp presented this scenario to the Department of Environmental Quality (DWQ). During the discussions, PacifiCorp and DWQ discussed the recently approved Deer Creek Mine UPDES permit (January 2015).

As function of the UPDES renewal process 2012, PacifiCorp completed an Antidegradation review (ADR) in accordance with UAC R317-2-3. The ADR analysis evaluated the discharging intercepted groundwater from the Deer Creek Mine at a single location at the Deer Creek Canyon portals (Outfall 002). Gravity flow drainage form the 1st Right Rilda Canyon portals as a result of MSHA's recent decision not allowing water retention in a mine closure scenario will divide the amount of intercepted groundwater to two separate locations. Groundwater in the southern portion of the mine will accumulate over time and gravity discharge from the portals located in Deer Creek canyon designated as Outfall 002. Groundwater in the northern portion of the mine will be diverted by gravity to the 1st Right Rilda Canyon portals. French drains will be installed at the portals to collect the intercepted groundwater routing the outfall to a buried HDPE pipeline.

As a part of the overall mine closure process and to comply with governmental agencies request, PacifiCorp proposes to amend the approved permit to include an additional outfall to allow intercepted groundwater that will gravity flow from the 1st Right portals in Rilda Canyon to be discharged into Huntington Creek near PacifiCorp's Huntington Power Plant. DWQ recommended that PacifiCorp modify the currently approved UPDES permit to include an additional outfall.

In accordance with UAC R317-2-3, an antidegradation review (ADR) is a permit requirement for any project that will increase the level of pollutants in waters of the State. It is considered one of the first steps in obtaining a new or revised UPDES permit. In this case, PacifiCorp does not anticipate such an increase for its upcoming permit reissuance. However, the additional discharge (proposed Outfall 003) into Huntington Creek, classified as a 1C water body, from Deer Creek Mine, was not anticipated until April 12, 2016. Mine closure plans for diverting all mine water underground to the Deer Creek portals outfall was denied by the Mine Safety and Health Administration (MSHA) and the Utah Division of Oil, Gas, and Mining (DOGM). MSHA and DOGM required that intercepted groundwater from the north portion of the mine be allowed to gravity discharge at the 1st Right portals in Rilda Canyon. Water from the 1st Right portals will not be allowed to discharge into Rilda Creek located within the U.S. Forest Service boundary; rather this water will be transferred via a buried pipeline out of the U.S Forest lands to the Huntington Canyon power plant where it will be consumed during electric power generation. DWQ has requested that PacifiCorp prepare an amendment to the Level II ADR evaluation completed and approved January 2015 for use during the permitting process. A Level II evaluation is also required due to the possibility that consumptive use at the Huntington Canyon Plant may cease at some point in the future and the discharge would be routed directly into Huntington Creek. Existing Outfall 001 is a grandfathered flow, since the outfall was initially permitted in the fall of 1980, before the rule establishing Category 1 waters was promulgated in February 1994. Existing Outfall 002 was authorized as an emergency discharge in 1990 to prevent flooding in the mine and was permitted as a UPDES outfall in 1995. Existing Outfall SUM-A was created as a mechanism for measuring the combined flows of 001 (sediment pond outflow) and 002 (Deer Creek portals discharge) to moderate occasional spikes of TDS from 001 with lower TDS in 002. The new outfall from the Rilda Canyon portals (003) will be a separate outfall consisting of a fraction of the intercepted groundwater that would have been discharged from 002 had the original closure plan been approved.

After the mine closure and sealing is completed (full reclamation anticipated to be completed in 2018), the outfall situation will be changed as follows: The sediment pond will have been reclaimed, eliminating Outfall 001. Outfall 002 will be discharging intercepted groundwater directly from the Deer Creek portals into Deer Creek drainage at the mine site. SUM-A, downstream from the Deer Creek portal reclamation, will no longer be required due to the reclamation of the sediment pond. After reclamation of the mine site including the sediment pond, PacifiCorp will formally request to terminate monitoring of SUM-A in writing to DEQ Water from Outfall 003, emanating from the Rilda Canyon portals, will be transferred through the buried pipeline directly to the settling-raw water pond for the Huntington Plant. This water

will be consumed at the plant. At some future date if consumption ends, this outfall will be directed into Huntington Creek.

A Level II ADR review is intended to review the permitted discharge to ensure that the project is both economically and socially important to local and regional communities and that feasible treatment alternatives have been analyzed. This Antidegradation Review and Statement of Social, Environmental, and Economic Importance: Deer Creek Mine Rilda Canyon Outfall (Attachment A) is intended to supplement the information being provided by PacifiCorp in the Level II ADR application. Specifically, it identifies the parameters of concern (POCs) for the mine effluent, identifies and analyzes treatment alternatives, and provides a justification for the determination that the facility is socially and economically necessary for the local and regional communities.

2.0 Project Description

2.1 Site and Facility Description

The Deer Creek Mine is located in Emery County, about 8 miles northwest of Huntington, Utah. Deer Creek, an underground coal mine had produced coal continuously for over seventy years. On December 15, 2014 PacifiCorp formally announced the closure of the Deer Creek.

The UPDES permit for the Deer Creek Mine authorizes discharge from two outfalls: 1) Outfall 001 is a discharge from a sedimentation pond which treats surface water runoff from the mine site, and 2) Outfall 002 intercepted groundwater discharged by gravity flow out of the mine. After the December 15, 2014 closure announcement, efforts began immediately to prepare the mine for closure, including mining equipment removal. By mid-April of 2015, nearly all of the mining equipment, including conveyor belt lines, had been removed, and permission had been granted by the lease holder (BLM), enabling permanent sealing of the south half and northwest quadrants of the mine. The remaining workings of the Rilda Canyon section of the mine are still open with intact power, ventilation, and water systems, pending final resolution of the post-mining water drainage issue. Groundwater in the southern portion of the mine will accumulate over time and gravity discharge from the portals located in Deer Creek canyon designated as UPDES outfall 002. French drains were installed as part of the approved final portal sealing at the portals. Groundwater in the northern portion of the mine will be diverted by gravity flow to the 1st Right Rilda Canyon portals. French drains will be installed at the portals to collect the intercepted groundwater routing the portal discharge to a buried HDPE pipeline.

Deer Creek Canyon

Two UPDES outfalls; (1) Outfall 001 – Sediment Pond and 2) Outfall 002 – Deer Creek Mine Discharge) discharge to Deer Creek upstream of its confluence with Huntington Creek. The Deer Creek drainage above the mine is an ephemeral stream. The Deer Creek Mine discharge drainage

pre-mine closure resulted in perennial stream below the mine, which supported year-round aquatic life and increased vegetation along the stream banks. Since the portal sealing in Deer Creek Canyon, April 2015, no water has discharged from the southern portion of the mine. PacifiCorp projects post-closure flow for the southern portion of the mine at approximately 100 to 300 gallons per minute (gpm). Water quality characteristics of the discharges relative to background quality in Deer Creek and Huntington Creek are diminished quality due to their total dissolved solids concentration. The mines in the coal fields of the Wasatch Plateau tend to act as interceptor drains. The groundwater that is brought to the surface has a lower dissolved solids content than would have occurred were the water to continue its downward movement through the shale layers, dissolving increased amounts of salt with distance (Danielson, 1981)[1].

Deer Creek Mine 1st Right Rilda Canyon

Water from the 1st Right portals will not be allowed to discharge into Rilda Creek; rather this water will be transferred via a buried pipeline out of the U.S Forest lands to the Huntington Canyon power plant where it will be consumed during electric power generation. In the event the Huntington Canyon Plant ceases operations at some point in the future, discharge from the northern portion of the mine (Rilda Canyon portals) would be routed directly into Huntington Creek near the raw water pond.

As stated in the approved 2015 ADR, the effluent discharges from Deer Creek Mine (Deer Creek Canyon) outfall 002 increase the flow in Huntington Creek that is available to irrigation users along the creek. The flow added to Deer Creek is more beneficial to the stream segment than removing the discharge from the stream. Because of the improvement in Deer Creek water quality and flow resulting from the outfalls, it has been determined[2] that degradation of Deer Creek water quality will not occur with continued discharge, and therefore, the 2015 ADR POC analysis and subsequent ADR should be focused on water quality in Huntington Creek. With the proposed Rilda Canyon portals (northern district) discharging directly to Huntington Creek, the approved ADR focusing on Huntington Creek is applicable to this site in Huntington Creek. The proposed Rilda Canyon to Huntington Creek discharge location is approximately 0.85 miles upstream from the confluence of Deer Creek and Huntington Creek.

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[1] Danielson, T.W., Remillard, M.D., Fuller, R.H., Hydrology of the Coal Resource Areas in the Upper Drainages of Huntington and Cottonwood Creeks, Central Utah, U.S. Geological Survey Water Resource Investigations, Open-file Report 81-539.

[2] This was determined in the September 13, 2012 ADR meeting between Energy West and DWQ in DWQ's Salt Lake City office.

3.0 Identification of the Parameters of Concern

As per Utah Administrative Code (UAC) R317-2.3.5, the 2015 approved ADR reviewed both Level I and Level II on a "parameter-by-parameter basis." Utah Division of Water Quality (UDWQ) provided guidance on the parameters of concern (POCs) for a wastewater discharge. The following technical memorandum provides a list of the parameters that were considered as potential POCs for the Deer Creek Mine and the screening process that was used to select the POCs for the Deer Creek Mine ADR analysis. The analysis conducted during 2013 – 2015 ADR review are applicable to the proposed Rilda Canyon discharge site. The approved 2015 ADR analyzed the pre-closure operations and discharge volumes from the entire Deer Creek Mine complex. The post-closure ADR supplement will analyze the project discharge volumes and quality from Deer Creek Mine from two separate outfalls both reporting to Huntington Creek.

3.1.1 Selection of Potential POCs – Approved 2015 ADR Revised to Include the Proposed Rilda Canyon Outfall

Section 4.0 of the Utah Antidegradation Review Implementation Guidance, Version 2.0 (dated December 2015) (ADR Implementation Guidance, 4.0 Level II ADR: Parameters of Concern) provides considerations that should be addressed when an applicant is considering what pollutants to consider as potential POCs. According to section 4.1, Selecting the Parameters of Concern, the primary group of pollutants that must be considered is the list of priority pollutants provided in the EPA Form 2C – Application for Permit to Discharge Wastewater. In addition to the EPA Form 2C – Application for Permit to Discharge Wastewater submitted as part of the 2013 – 2015 permit renewal process (entire mine complex discharging to the Deer Creek drainage), the 2016 Supplemental document includes a separate EPA Form 2C – Application for Permit to Discharge Wastewater for the Rilda Canyon/Huntington Creek discharge. Based on the nature of operations at underground coal mines such as Deer Creek Mine, the underground mine workings have the potential to discharge priority pollutants in its effluent. Applicable technology based standards for Coal Mining-Alkaline Mine Drainage are found in 40 CFR 434 Subpart D, and establish effluent limits for pH, total iron, and total suspended solids (TSS). These parameters have been included in the list of potential POCs to be considered for the Deer Creek Mine Rilda Canyon ADR analysis. In addition to using the list of priority pollutants, the ADR Implementation Guidance also recommends that the following factors be considered when selecting pollutants to screen as potential POCs:

4.1.1 Characterizing the Effluent

Effluent characteristics have been determined by multiple repeated sampling of water being pumped underground from the area from which the discharge will originate. Effluent characteristics are detailed in Table 3-1-B, and Exhibits 1, 2, and 3.

4.1.2 Characterizing the Ambient Condition of the Receiving Water

The ambient characteristics of the receiving water have been determined by multiple repeated sampling of the water in Huntington Creek upstream from the proposed 003 discharge point. Table 3-1-B and Exhibit 3 show ambient characteristics of the receiving water compared to the effluent characteristics.

4.1.3 Selection Considerations

1. *Is the parameter already included in an existing permit?* The existing Deer Creek Mine UPDES permit contains limits for the following parameters:

    a. Outfall 001 – pH, total iron, oil & grease, total suspended solids (TSS), and total dissolved solids (TDS). With the announcement of the closure of the Deer Creek Mine, Outfall 001 – Sediment Pond, will be removed as a function of the reclamation process scheduled for 2017 – 2018.

    b. Outfall 002 - pH, total iron, oil & grease, total suspended solids (TSS), and total dissolved solids (TDS). Deer Creek portals were completely sealed and backfilled as part of the approved mine closure process. French drains were installed in the main portals to allow for post mine gravity discharge. Deer Creek portals were sealed April 2015.

    c. *c. Proposed Outfall 003 – Temperature, dissolved oxygen, pH, total iron, oil & grease, total suspended solids (TSS), and total dissolved solids (TDS)*Ambient water quality data for Huntington Creek upstream of the confluence with Deer Creek that was collected within the past 10 years was reviewed. These data are compared to Deer Creek Mine - Rilda Canyon effluent data in Table 3-1-B.

    d.

2. *Are there any parameters in the effluent, or expected to be in the effluent, that exceed ambient concentrations in the receiving water? In cases when the available data are limited, comparisons between effluent/permitted and ambient concentrations may be conducted using methods that minimize type II errors, i.e., erroneously concluding that a pollutant will not degrade water quality.* Wastewater effluent from the Deer Creek Mine – Deer Creek Canyon is not expected to exceed the current permit limits. As detailed presentations to UDWQ and previously in the ADR document, mining in the northwest quadrant of the mine encountered an elevated sulfur zone in the form of pyrite (FeS2) in the lower portion of the coal seam. Water accumulating in the northwest quadrant of the mine comes in contact with a high-sulfur/high-iron zone in the coal that causes the water to dissolve elevated in total iron above background levels. Based on samples collected of the water that will discharge from the Rilda Canyon portals, the level of total iron in the groundwater will dissipate over a period of time to background levels of the intercepted groundwater. PacifiCorp proposes to pipe the Rilda Canyon mine discharge to the Huntington Power Plant raw water pond for consumption. PacifiCorp will consume or

treat the water if it is discharged so that the discharge to Huntington Creek is in compliance with limitations set forth by UDWQ.

3. *Are there any parameters that are considered to be important by UDWQ or the general public? For instance, nutrients or bioaccumulative compounds may be of concern for some surface waters. For discharges to Class 1C drinking water sources, any substances potentially deleterious to human health may be considered.* To PacifiCorp's knowledge, there are no parameters/pollutants that have been identified as "important" through public comment or other public input forums for discharges to Huntington Creek. TDS is a POC under the Colorado River Salinity Control Forum.

4. *Is the receiving water listed as impaired for any parameters? Parameters for which the receiving water is listed as impaired and have an ongoing or approved TDML are not considered as part of the ADR and are addressed through the TMDL program.* A downstream segment of Huntington Creek (from Highway 10 to the confluence with Cottonwood Creek) has a site specific TDS criterion of 4,800 mg/L from the 2004 TMDL study and was listed as impaired due to selenium in 2010.Yes, there are several parameters in the Deer Creek Mine effluent discharge that have the potential to degrade the existing beneficial uses of Huntington Creek, including TSS, TDS and Total Iron. However, the post mine gravity discharge (Outfall 002) into Deer Creek will result in a perennial stream downstream of the mine and also increases the flow available to irrigation users located along Huntington Creek. Discharge at the proposed site (Outfall 003) will contribute flow to the Huntington Creek drainage. Post mine closure groundwater gravity discharge from the mine also has a lower TDS concentration than would occur were the water to continue down through the Mancos shale layers and eventually discharge to the surface.

5. *Is the discharge of the parameter temporary and limited?* Water accumulating in the northwest quadrant of the mine comes in contact with a high-sulfur/high-iron zone in the coal that causes the water to dissolve elevated in total iron above background levels. Based on samples collected of the water that will discharge from the Rilda Canyon portals, the level of total iron in the groundwater will dissipate over a period of time to background levels of the intercepted groundwater.

6. *Is the discharge directly to a terminal lake or adjacent tributary water? Additional analysis is required to evaluate the degradation and accumulation of the parameter in the lake environment.* No. The discharge is not into a terminal lake or an adjacent tributary water.

7. *Is the discharge directly to the Great Salt Lake or adjacent tributary water? Parameters of concern will be determined on a case-by-case basis using the best available information regarding ambient conditions and assimilative capacity.* No. The discharge is not into the Great Salt Lake or adjacent tributary water.

Based on the above-referenced considerations, the following list of parameters/pollutants was established as potential POCs for further consideration in the Deer Creek Mine 2015 approved ADR analysis:

1) Total Suspended Solids

2) Totals Dissolved Solids
3) Oil & Grease
4) Iron
5) pH
6) Temperature
7) Metals (As, Cd, Cr, Cu, Pb, Hg, Ni, Se, Zn)
8) Dissolved Oxygen (DO)

3.1.2 Selection of Final POCs for ADR Analysis

The criteria listed in Section 3.1 of the *ADR Implementation Guidance* are used to screen the large number of potential parameters/pollutants that may be present in the facility's wastewater effluent to develop a preliminary list of potential POCs that must be considered for the Deer Creek Mine ADR analysis. To select the final POCs to be incorporated into the Deer Creek Mine ADR analysis from the list of potential parameters listed above, Section 4.0 of the *ADR Implementation Guidance* indicates that "only parameters in the discharge effluent that exceed, or potentially exceed, ambient concentrations [in the receiving water body] should be considered". To assist in the POC's ADR analysis, PacifiCorp sampled water from the northern district of the mine which will contribute to the post mine gravity discharge at the Rilda Canyon portals for the following:

- EPA Priority Pollutant List (40 CFR Part 423, Appendix A)
- Baseline solute

Table 3-1 below provides a summary of the preliminary list of POCs that were considered and whether or not each potential POC was selected as a final POC for the Deer Creek Mine ADR analysis. The final POCs identified in Table 3-1 will be used to aid in the selection of effluent treatment and discharge alternatives that will be analyzed in detail in the final ADR analysis. In addition, the POCs will also be used by UDWQ as a factor in evaluating the potential effects on Huntington Creek from the discharge and in their analysis for permitting an additional outfall for the UPDES permit for the facility.

TABLE 3-1-A
Summary of Final POCs for the Deer Creek Mine ADR Analysis
PacifiCorp Deer Creek Mine – Deer Creek Canyon (Table 3-1 from approved 2015 ADR, revised to reflect current monitoring data)

Potential POC Being Considered	Huntington Creek above HPP Diversion (average 2002 – 2008)[1]	Huntington Creek above Deer Creek (average 2002 – 2016)[2]	Outfall 001 – Sedimentation Pond (average 2008 – 2012)[7]	Outfall 002 – Mine Discharge (average 2002 – 2016)	Final Parameter of Concern (Yes/No)	Rationale
1. Total Suspended Solids (mg/L)	12.8[3]	56	11	3.7	**Yes**	Current permit limit
2. Total Dissolved Solids (mg/L)	236	265	1600	498	**Yes**	Current permit limit
3. Oil & Grease	No data[4]	Non-detect	No visible sheen	No visible sheen	No	Not detected by historical effluent monitoring.
4. pH	7.8 – 8.7	8.0 – 8.6	7.8 – 8.4	7.0 – 8.1	No	Effluent within permit limits and meet WQ criterion
5. Iron (mg/L)	0.013[5]	0.55	0.16	0.61	**Yes**	Current permit limit
6.Temperature (°C)	8.0	8.0 (8.6 below Deer Creek)	8.9	13.1	No	<1° C temperature delta in Huntington Creek
7. Arsenic (mg/L)	0.002[5]	<0.01	No data[4]	0.0006[6]	No	Below ambient concentration
8. Cadmium (mg/L)	0.0003[5]	<0.001	No data[4]	<0.0005[6]	No	Below ambient concentration
9. Chromium (mg/L)	0.005[5]	No data[4]	No data[4]	0.004[6]	No	Below ambient concentration
10. Copper (mg/L)	0.004[5]	<0.01	No data[4]	0.008[6]	**Yes**	Outfall 002 above ambient
11. Lead (mg/L)	0.001[5]	<0.01	No data[4]	0.0006[6]	No	Below ambient concentration
12. Mercury (mg/L)	0.0001[5]	No data[4]	No data[4]	<0.0002[6]	No	Below ambient concentration
13. Nickel (mg/L)	0.0025[5]	No data[4]	No data[4]	0.034[6]	**Yes**	Outfall 002 above ambient
14. Selenium (mg/L)	0.0005[5]	No data[4]	No data[5]	0.0026[6]	**Yes**	Outfall 002 above ambient
15. Zinc (mg/L)	0.013[5]	0.004	No data[4]	No data[4]	No	No data

1. Utah DWQ Station ID 4930530
2. PacifiCorp surface water monitoring location, revised to reflect current data
3. Average of reported values and half of the reporting limit for non-detect results.
4. No monitoring data within the last 10 years.
5. Results are for dissolved metals. Average uses half the reporting limit for non-detect values.
6. Data for Deer Creek Mine potable water supply (2008 – 2011).

TABLE 3-1-A
Summary of Final POCs for the Deer Creek Mine ADR Analysis
*PacifiCorp **Deer Creek Mine – Deer Creek Canyon** (Table 3-1 from approved 2015 ADR, revised to reflect current monitoring data)*

Potential POC Being Considered	Huntington Creek above HPP Diversion (average 2002 – 2008)[1]	Huntington Creek above Deer Creek (average 2002 – 2016)[2]	Outfall 001 – Sedimentation Pond (average 2008 – 2012)[7]	Outfall 002 – Mine Discharge (average 2002 – 2016)	Final Parameter of Concern (Yes/No)	Rationale

7. Sediment pond scheduled for reclamation 2017-2018

TABLE 3-1-B
Summary of Final POCs for the Deer Creek Mine ADR Analysis
PacifiCorp Deer Creek Mine – Projected Rilda Canyon Water Quality – Requested Outfall 003, Huntington Creek Near Power Plant.

Potential POC Being Considered	Huntington Creek above HPP Diversion (average 2002 – 2008)[1]	Huntington Creek above Deer Creek (average 2002 – 2016)[2]	Outfall 003 – Mine Discharge (average 2012 – 2016)	Final Parameter of Concern (Yes/No)	Rationale
1. Total Suspended Solids (mg/L)	12.8[3]	56	NA	**Yes**	Sampled intercepted groundwater
2. Total Dissolved Solids (mg/L)	236	265	542[6]	**Yes**	Current permit limit
3. Oil & Grease	No data[4]	Non-detected	No visible sheen	**No**	No visible sheen detected during sampling
4. pH	7.8 – 8.7	8.0 – 8.6	7.2 – 7.5	**No**	Effluent within permit limits and meet WQ criterion
5. Iron (mg/L)	0.013[5]	0.55	2.65[6]	**Yes**	Current permit limit for Outfall 001, 1.0 mg/L
6.Temperature (°C)	8.0	8.0 (8.6 below Deer Creek)	13.0	**No**	<1° C temperature delta in Huntington Creek
7. Arsenic (mg/L)	0.002[5]	<0.01	<0.01	**No**	Not detected within lab limits
8. Cadmium (mg/L)	0.0003[5]	<0.001	<0.001	**No**	Not detected within lab limits
9. Chromium (mg/L)	0.005[5]	No data[4]	0.0045	**No**	Below ambient concentration
10. Copper (mg/L)	0.004[5]	<0.01	<0.01	**No**	Not detected within lab limits
11. Lead (mg/L)	0.001[5]	<0.01	<0.01	**No**	Not detected within lab limits
12. Mercury (mg/L)	0.0001[5]	No data[4]	<0.0002	**No**	Not detected within lab limits
13. Nickel (mg/L)	0.0025[5]	No data[4]	0.0365	**Yes**	Outfall 003 above ambient
14. Selenium (mg/L)	0.0005[5]	No data[4]	<0.002	**Yes**	Not detected within lab limits
15. Zinc (mg/L)	0.013[5]	0.004	<0.004	**No**	Not detected within lab limits

1. Utah DWQ Station ID 4930530
2. PacifiCorp surface water monitoring location, revised to reflect current data
3. Average of reported values and half of the reporting limit for non-detect results.
4. No monitoring data within the last 10 years.
5. Results are for dissolved metals. Average uses half the reporting limit for non-detect values.
6. Continuing to trend lower

4.0 Alternatives Analysis

As detailed in the 2015 approved ADR, the intent of the Alternative Analysis section is to evaluate whether there are any reasonable nondegrading or less degrading alternatives when compared with the discharge alternative for handling of water from the Deer Creek Mine. The section provided an initial screening of potential alternatives based on their feasibility followed by a detailed screening of those alternatives deemed feasible based on their total financial costs, pollution/POC reduction, and performance based on several criteria, including reliability, operability, maintainability, sustainability, and adaptability to future regulatory changes. The analysis is followed by identification of PacifiCorp's preferred treatment alternative and the justification for selection of that treatment alternative (refer to approved 2015 ADR).

PacifiCorp has submitted a request to supplement the 2015 approved UPDES permit for the Deer Creek Mine to include a secondary outfall for the mine discharge. On December 15, 2014 PacifiCorp announced permanent closure of the Deer Creek Mine. Efforts began immediately to prepare the mine for closure, including mining equipment removal. By mid-April of 2015, nearly all of the mining equipment, including conveyor belt lines, had been removed, and permission had been granted by the lease holder (BLM), enabling permanent sealing of the south half and northwest quadrants of the mine. Formerly, prior to mine closure, Outfall 002 discharged groundwater pumped out of the entire mine complex. Closure of the mine has separated the mine into two distinct; Southern District - Outfall 002, Northern District – Proposed Outfall 003. Groundwater in the southern portion of the mine will accumulate over time and gravity discharge from the portals located in Deer Creek canyon designated as UPDES Outfall 002. French drains were installed as part of the approved final portal sealing at the portals.

The proposed Outfall 003 will be for discharge of intercepted groundwater from the northern portion of the Deer Creek Mine discharging directly to the Huntington Power Plant raw water pond for consumption. In the event of future plant closure, PacifiCorp proposes to install valves in the pipeline to allow for direct division of mine water to Huntington Creek.

Post mine closure ADR analysis, including the request for an additional mine discharge outfall (Proposed Outfall 003), does not alter the conclusions of the 2015 Alternative Analysis section for groundwater discharged from the mine. Addition of the proposed Outfall 003 does not increase the total potential discharge from the mine; simply MSHA's ruling denying water retention in the mine, fractionally distributes the mine discharge at two separate locations.

One facet of the Alternative Analysis review has changed with closure of the mine. Demolition and final reclamation of the disturbed lands in Deer Creek Canyon commencing in 2017 will remove Outfall 001 - Sediment Pond. After the pond is reclaimed, discharge monitoring report SUM-A will no longer be applicable.

As demonstrated in the approved 2015 ADR, providing additional treatment to remove POCs provides limited improvement in the effluent quality and has a high incremental annual cost. The

current in-mine sedimentation alternative more than meets the State's guidance for cost effective treatment and is the recommended treatment approach for the Deer Creek Mine Outfall 002 based on costs considerations. If a 1 tpd TDS limit is established for the site, salinity offset credits are the recommended alternative to reduce the TDS discharged from the site. PacifiCorp has a salinity agreement in place for the Deer Creek Mine. The agreement will expire at the end of 2017.

4.1 Initial Screening of Alternatives –refer to 2015 ADR

The 2015 approved ADR evaluated the requirements found in UAC R317-2-3.5, which stipulates the following alternatives should be considered, evaluated, and implemented to the extent feasible:

a) Innovative or alternative treatment options

b) More effective treatment options or higher treatment levels

c) Connection to other wastewater treatment facilities

d) Process changes or product or raw material substitution

c) Seasonal or controlled discharge options to minimize discharging during critical water quality periods

f) Pollutant trading

g) Water conservation

h) Water recycle and reuse

i) Alternative discharge locations or alternative receiving water bodies

j) Land application

k) Total containment

l) Improved operation and maintenance (O&M) of existing treatment systems

m) Other appropriate alternatives

Section 5.2 of the Implementation Guidance indicates that the feasibility of all treatment alternatives should be examined before the alternatives are included for further consideration as part of the ADR analysis. Based on this requirement, many of the alternatives listed in UAC R317-2-3.5 can be excluded from further consideration as part of this ADR analysis based on their impracticality or inability to be implemented at the Deer Creek Mine. The following are treatment alternatives from the above list that are excluded from further consideration along with the justifications for exclusion:

- **Alternative B – Higher treatment levels**: Ion exchange and reverse osmosis are demonstrated treatment processes for removing TDS from effluent. However, these processes concentrate the salt ions into a reverse osmosis membrane reject stream or an ion

exchange resin regeneration brine, and do not reduce the mass of TDS requiring discharge to surface or disposal by other methods. Due the cost and complexity of managing reject and regeneration wastes, higher level treatment processes were not considered further.

- ***Post Mine Closure:***
  - *In addition, recent testing conducted by PacifiCorp indicates that TDS of the intercepted groundwater (post closure gravity drainage from the mine) is trending below 500 mg/L, fresh water limitation.*

- **Alternative C—Connection to other wastewater treatment facilities:** The Castle Valley Special Service District operates a sanitary wastewater treatment facility near Huntington, UT, which is the only wastewater treatment works facility located in proximity to the Deer Creek Mine. The District's treatment system does not have the capacity or the treatment technology to effectively handle the flow volume from Deer Creek Mine.

- **Alternative D—Process changes or product or raw material substitution:** The Deer Creek Mine is an underground coal mine.
  - ***Post Mine Closure:***
    - *Numerous efforts undertaken since PacifiCorp's announcement to permanently close the Deer Creek Mine in late 2014 to obtain permission from the MSHA and the UDOGM to permanently retain intercepted groundwater underground with massive concrete bulkheads and possibly to direct overflow water to the Deer Creek Canyon were finally denied in April of 2016—MSHA and UDOGM will not allow any water retention as part of the Deer Creek closure plans. Intercepted groundwater must now be directed to the portals to flow unimpeded out of the mine. In this case, post-mine discharge will occur at Deer Creek Canyon (approved Outfall 001) and Rilda Canyon (proposed Outfall 003).*

- **Alternative E—Seasonal or controlled discharge options:** Water cannot be stored within the mine. Water must be allowed to gravity flow from the mine and not be artificially impounded. *Refer to post mine closure update in Alternative D.*

- **Alternative G—Water conservation:** The discharges result from surface runoff and groundwater intercepted by the underground mine workings. Neither source of discharge is controllable. There are no practical options for further water conservation at the mine. *Refer to post mine closure update in Alternative D.*

- **Alternative I—Use of alternative discharge locations or alternative receiving water bodies:** The only receiving water body in proximity to the Deer Creek Mine is Huntington Creek.

- **Alternative J—Land application:** The facility is located in a relatively narrow canyon and property suitable for an effluent storage pond and land application spray fields are not available.

- **Alternative L—Improved operation and maintenance of existing treatment systems:** Not applicable. Outfall 002 relies on sedimentation in mine pools to remove TSS and iron, and does not have the capability to remove TDS.

After excluding these treatment alternatives deemed infeasible from further consideration, the following alternatives listed in UAC R317-2-3.5 are being carried forward for further analysis as part of this ADR:

- **Outfall 001 – Sedimentation Pond – Baseline alternatives for comparison purposes for Outfall remain as documented in the 2015 ADR.**
    - ***Post Mine Closure:*** **Outfall 001 is scheduled for reclamation/restoration in 2017 – 2018.**

Outfall 002 – Mine Discharge

- **Baseline Alternative for Comparison Purposes (hereafter referred to as Outfall 002 Alternative 1):** The existing in-mine sedimentation is the baseline alternative for comparison and evaluation of feasible treatment alternatives.
    - ***Post Mine Closure:***
        - In-mine sedimentation and French drain structures will treat post mine closure gravity drainage from the mine portals.
- **Alternative A – Alternative treatment option (hereafter referred to as Outfall 002 Alternative 2):**
    - ***Post Mine Closure:***
        - Greensand media filtration evaluated in 2015 ADR is applicable in post mine closure scenario (refer to 2015 ADR)
- **Alternative B – Higher treatment option (hereafter referred to as Outfall 002 Alternative 3):**
    - ***Post Mine Closure:***
        - Greensand media filtration followed by enhanced alumina adsorptive media evaluated in 2015 ADR is applicable in post mine closure scenario (refer to 2015 ADR).
- **Alternative F—Pollutant trading (hereafter referred to as Outfall 002 Alternative 4):** The discharge is located within the Colorado River basin and is subject to the Colorado River Basin Salinity Control Forum's policies for TDS. The Forum policy allows permitting authorities to allow industrial sources of salinity to conduct or finance salinity offset projects. Purchasing salinity offsets is a potential alternative to reduce the TDS discharge from the facility.
    - ***Post Mine Closure:***
        - Pollutant trading evaluated in 2015 ADR is applicable in post mine closure scenario (refer to 2015 ADR).

- **Alternative K—Total containment (hereafter referred to as Outfall 002 Alternative 5):** As evaluated in the 2015 ADR options for total containment including an evaporation pond, deep well injection, and thermal evaporation using a mechanical concentrator and crystallizer are not feasible options at the Deer Creek Mine.

As outlined in the 2015 ADR, the four alternatives listed above were analyzed and compared in detail in Section 4.2 based on several criteria, including the following:

- Construction and O&M costs
- Ability to minimize degradation and increase pollutant reduction
- Several performance criteria, including reliability, maintainability, operability, sustainability, and adaptability

4.2 Detailed Analysis of Feasible Alternatives Outfall 001 – refer to 2015 ADR (Analysis applicable until final reclamation/restoration of the Sediment Pond scheduled for 2017 - 2018)

4.3 Detailed Analysis of Feasible Alternatives Outfall 002 – refer to 2015 ADR **(Addition of the proposed Outfall 003 does not increase the total potential discharge from the mine. MSHA's ruling denying water retention in the mine, fractionally distributes the mine discharge at two separate locations)**

4.4 Cost of Achieving Effluent Reduction – refer to 2015 ADR

4.5 Performance Criteria Analysis – refer to 2015 ADR

4.6 Preferred Treatment Alternative

Based on the analysis evaluated in the 2015 ADR, PacifiCorp's preferred alternatives remain the Outfall 001 sedimentation basin and in-mine sedimentation for Outfall 002 which are the current processes at the Deer Creek Mine.

- ***Post Mine Closure:***
  - Outfall 001 – preferred alternative is constant with the 2015 ADR analysis
    - Sediment pond is scheduled for reclamation/restoration in 2017 – 2018.
  - Outfall 002 and Proposed 003 - – preferred alternative is constant with the 2015 ADR analysis

4.6.1 Outfall 001

Based on the comparison of the four treatment alternatives for Outfall 001 against the performance criteria, Alternative 1, the sedimentation basin, is rated as more favorable than the three other alternatives in overall performance—particularly in reliability, maintainability, operability, and sustainability. The incremental annualized cost of the treatment options is 105 (basin liner) to 2,970 percent (ZLD) higher than the annualized cost of the existing sedimentation basin and would remove <1,000 lb/day of TDS and other POCs. The incremental cost of the treatment options exceeds the 20 percent threshold established by Utah regulation. Given that Alternative 1 is the most cost-effective alternative, Alternative 1 (sedimentation basin) is the recommended treatment alternative for Outfall 001 at the Deer Creek Mine until reclamation.

4.6.2 Outfall 002 and Proposed Outfall 003

Based on the comparison of the five treatment alternatives for Outfall 002 against the performance criteria, Alternative 1, in-mine sedimentation, is rated as more favorable than the four other alternatives in overall performance—particularly in reliability, maintainability, operability, and sustainability. The incremental annualized cost of the treatment options is 33 (salinity offsets) to 4,900 percent (ZLD) higher than the operating cost of the existing in mine sedimentation system. The incremental cost of the treatment options exceeds the 20% threshold established by Utah regulation. Given that Alternative 1 is the most cost-effective alternative, Alternative 1 (in-mine sedimentation) is the recommended treatment alternative for Outfall 002 and proposed Outfall 003 at the Deer Creek Mine. If a 1 tpd TDS limit is established for the site, salinity offset credits are the recommended alternative to reduce the TDS discharged from the site. As dissolved oxygen (DO) is one of the parameters of concern identified in the Waste Load Analysis (February 28, 2017), an aeration structure will be included if needed at the end of the outfall 003 pipeline to ensure that the discharge will be oxygenated to the acceptable level prior to entering Huntington Creek.

5.0 Statement of Social, Environmental, and Economic Importance

The requirement for applicants to complete a Statement of Social, Environmental, and Economic Importance (SEEI) originates in the Code of Federal Regulations, Chapter 40, Part 131.12(a)(2) [40 CFR 40.131.12(a)(2)]. It requires applicants to demonstrate that allowing lower water quality is necessary to accommodate social or economic development in the area in which the waters to be degraded are located. In UAC R317-2-3.5(c)(4), the State of Utah defines the minimum information that an applicant must provide to demonstrate that degradation is necessary, which includes the following:

- Impacts on employment

- Increases in production
- Improved community tax base
- Impacts on housing
- Correction of an environmental or public health problem

In addition, the Implementation Guidance further clarifies these minimum considerations as well as further considerations that should be included in an applicant's SEEI analysis, including the following:

- Effects on public and social services, including the identification of public or social services that would be provided to the community or required of the community in the affected area as well as effects on health/nursing care, police/fire protection, infrastructure, housing, and public education
- Effects on public health and safety, including any health and safety services that will be provided or required in the affected areas as well as identification of potential project benefits that will enhance food or drinking water quality, control disease vectors, or improve air quality, industrial hygiene, occupational health, and public safety
- Effects on quality of life of residents of affected area, including educational, cultural, and recreational opportunities, daily life experience (in regards to dust, noise, traffic, etc.), and aesthetics (views cape)
- Effects on employment and tax revenues in the affected areas
- Effects on tourism, including the creation or enhancement of tourist attractions or impacts resulting from elimination or reduction of existing tourist attractions
- The pros and cons of preserving assimilative capacity for future industry and development in the affected areas (which is to include the approval/disapproval of local communities for the proposed project)

The purpose of this section is to provide an SEEI that addresses the requirements provided in state and federal regulations as well as the recommendations provided in the ADR Implementation Guidance in an effort to demonstrate that potential degradation, however minor, of Huntington Creek from the Deer Creek Mine operations is necessary to accommodate economic and social development.

5.1 Description of Affected Communities

Deer Creek Mine is located in Emery County, Utah approximately eight miles northwest of Huntington, Utah. According to the U.S. Census Bureau 2010 census data, the total population of Huntington was 2,129 residents (www.city-data.com/city/Huntington-Utah.html). The 2009 median household income was $39,228. In August 2012, the unemployment rate within incorporated areas of Huntington was 7.5 percent (www.city-data.com/city/Huntington-Utah.html).

Huntington was established near Huntington Creek, which continues to supply irrigation water to the community. Agriculture and mining have been a large part of Huntington's history and the

local economy continues to reflect the trends of these industries. The mine discharge to Huntington Creek increases the quantity of irrigation water available to the community.

5.2 Effects on Community Resources from Deer Creek Mine

PacifiCorp announced permanent closure of the Deer Creek Mine on December 15, 2014. The last day of production at Deer Creek Mine was January 7, 2015. Efforts began immediately to prepare the mine for closure, including mining equipment removal. By mid-April of 2015, nearly all of the mining equipment, including conveyor belt lines, had been removed, and permission had been granted by the lease holder (BLM), enabling permanent sealing of the south half and northwest quadrants of the mine. The remaining workings of the Rilda Canyon area are still open with intact power, ventilation, and water systems, pending final resolution of the post-mining water drainage issue. After final mine closure, PacifiCorp will commence demolition and reclamation of the Deer Creek Mine.

- ***Post Mine Closure:***
  - Demolition and reclamation – three employees

Prior to mine closure, Deer Creek Mine supplied coal to the Huntington Power Plant, which also plays a significant role in the Emery County economy. PacifiCorp has approximately 160 direct employees and 134 contractor and vendor staff working at the Huntington Power Plant. The payroll for PacifiCorp staff is about $12.2 million per year (PacifiCorp, 2012). The wages paid by the utility services sector are significantly higher than Utah average wages (Perlich, Hogue, and Downen, 2010). In addition to direct employment, a power plant has an estimated total employment impact of 7.6 to 1 (Perlich, Hogue, and Downen, 2010). During calendar year 2011, the power plant had purchases of approximately $20,700,000, excluding coal, and paid approximately $1,200,000 in sales tax and $6,200,000 in property taxes (PacifiCorp, 2012). The pipeline will supply clean feed water to the Plant that has had Huntington Creek intake water quality problems since 2012 (the year of the Seely Fire). Water supplied to the Plant through the pipeline will substitute for a similar amount of water that will not be diverted from Huntington Creek, and remain in the Huntington Creek drainage for the benefit of aquatic life, recreation, and downstream water users. After the power plant shuts down permanently, the pipeline and water will be accepted for domestic use by the North Emery Water Users Special Service District, creating a benefit for local residential users.

Coal mining has occurred in Deer Creek Canyon for over 60 years and was an established part of Emery County. Demolition and reclamation operations of the mine is not expected to require additional community services, increase the workforce and place additional infrastructure and education demands on the community, or consume assimilative capacity in Huntington Creek that is needed for other projects. Demolition and reclamation operations of the mine are not expected to impact existing area tourism activities.

6.0 References (refer to 2015 ADR)

Exhibit 1

EPA Priority Pollutant List Sampling Results for Outfall 003

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LABORATORIES

7/6/2016

Work Order: 16F0973
Project: Deer Creek Mine 11th-17th West

Pacificorp - Huntington Plant
Attn: Chuck Sembroski
P.O. Box 680
Huntington, UT 84528

Client Service Contact: 801.262.7299

The analyses presented on this report were performed in accordance with the National Environmental Laboratory Accreditation Program (NELAP) unless noted in the comments, flags, or case narrative. If the report is to be used for regulatory compliance, it should be presented in its entirety, and not be altered.

Approved By:

Reed Hendricks, Senior Project Manager

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Certificate of Analysis

Pacificorp - Huntington Plant
Chuck Sembroski
P.O. Box 680
Huntington, UT 84528

PO#: **3000116867**
Receipt: **6/17/16 14:52 @ 10.60 °C**
Date Reported: **7/6/2016**
Project Name: **Deer Creek Mine 11th-17th West**

Sample ID: Deer Creek Mine 11th-17th West
Matrix: Water
Date Sampled: 6/17/16 10:21
Sampled By: **Chuck Sembroski**
Lab ID: **16F0973-01**

Parameter	Result	Units	Minimum Reporting Limit	Method	Preparation Date/Time	Analysis Date/Time	Flag(s)
Pesticides							
4,4'-DDD	ND	ug/L	0.2	EPA 608	6/21/16	6/28/16	
4,4'-DDE	ND	ug/L	0.1	EPA 608	6/21/16	6/28/16	
4,4'-DDT	ND	ug/L	0.2	EPA 608	6/21/16	6/28/16	
alpha-Chlordane	ND	ug/L	0.1	EPA 608	6/21/16	6/28/16	
Aldrin	ND	ug/L	0.2	EPA 608	6/21/16	6/28/16	
alpha-BHC	ND	ug/L	0.05	EPA 608	6/21/16	6/28/16	
beta-BHC	ND	ug/L	0.1	EPA 608	6/21/16	6/28/16	
delta-BHC	ND	ug/L	0.1	EPA 608	6/21/16	6/28/16	
Dieldrin	ND	ug/L	0.1	EPA 608	6/21/16	6/28/16	
Endosulfan I	ND	ug/L	0.1	EPA 608	6/21/16	6/28/16	
Endosulfan II	ND	ug/L	0.2	EPA 608	6/21/16	6/28/16	
Endosulfan sulfate	ND	ug/L	0.2	EPA 608	6/21/16	6/28/16	
Endrin	ND	ug/L	0.1	EPA 608	6/21/16	6/28/16	
Endrin aldehyde	ND	ug/L	0.2	EPA 608	6/21/16	6/28/16	
gamma-Chlordane	ND	ug/L	0.1	EPA 608	6/21/16	6/28/16	
Heptachlor	ND	ug/L	0.1	EPA 608	6/21/16	6/28/16	
Heptachlor epoxide	ND	ug/L	0.1	EPA 608	6/21/16	6/28/16	
Lindane	ND	ug/L	0.05	EPA 608	6/21/16	6/28/16	
PCB-1016	ND	ug/L	2.0	EPA 608	6/21/16	6/28/16	
PCB-1221	ND	ug/L	2.0	EPA 608	6/21/16	6/28/16	
PCB-1232	ND	ug/L	2.0	EPA 608	6/21/16	6/28/16	
PCB-1242	ND	ug/L	2.0	EPA 608	6/21/16	6/28/16	
PCB-1248	ND	ug/L	2.0	EPA 608	6/21/16	6/28/16	
PCB-1254	ND	ug/L	2.0	EPA 608	6/21/16	6/28/16	
PCB-1260	ND	ug/L	2.0	EPA 608	6/21/16	6/28/16	
Toxaphene	ND	ug/L	2.0	EPA 608	6/21/16	6/28/16	
Semi-Volatile Compounds							
1,2,4-Trichlorobenzene	ND	ug/L	5	EPA 625	6/21/16	6/27/16	
1,2-Dichlorobenzene	ND	ug/L	5	EPA 625	6/21/16	6/27/16	
1,3-Dichlorobenzene	ND	ug/L	5	EPA 625	6/21/16	6/27/16	
1,4-Dichlorobenzene	ND	ug/L	5	EPA 625	6/21/16	6/27/16	
2,4,6-Trichlorophenol	ND	ug/L	5	EPA 625	6/21/16	6/27/16	
2,4-Dichlorophenol	ND	ug/L	5	EPA 625	6/21/16	6/27/16	
2,4-Dimethylphenol	ND	ug/L	5	EPA 625	6/21/16	6/27/16	
2,4-Dinitrophenol	ND	ug/L	10	EPA 625	6/21/16	6/27/16	
2,4-Dinitrotoluene	ND	ug/L	5	EPA 625	6/21/16	6/27/16	
2,6-Dinitrotoluene	ND	ug/L	5	EPA 625	6/21/16	6/27/16	
2-Chloronaphthalene	ND	ug/L	5	EPA 625	6/21/16	6/27/16	
2-Chlorophenol	ND	ug/L	5	EPA 625	6/21/16	6/27/16	
2-Nitrophenol	ND	ug/L	10	EPA 625	6/21/16	6/27/16	
3,3'-Dichlorobenzidine	ND	ug/L	10	EPA 625	6/21/16	6/27/16	
4,6-Dinitro-2-methylphenol	ND	ug/L	10	EPA 625	6/21/16	6/27/16	
4-Bromophenyl phenyl ether	ND	ug/L	5	EPA 625	6/21/16	6/27/16	

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PO#: **3000116067**
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Matrix: **Water**
Lab ID: **16F0973-01**
Date Sampled: **6/17/16 10:21**
Sampled By: **Chuck Sembroski**

Parameter	Result	Units	Minimum Reporting Limit	Method	Preparation Date/Time	Analysis Date/Time	Flag(s)
Semi-Volatile Compounds (cont.)							
4-Chloro-3-methylphenol	ND	ug/L	5	EPA 625	6/21/16	6/27/16	
4-Chlorophenyl Phenyl Ether	ND	ug/L	5	EPA 625	6/21/16	6/27/16	
4-Nitrophenol	ND	ug/L	10	EPA 625	6/21/16	6/27/16	
Acenaphthene	ND	ug/L	5	EPA 625	6/21/16	6/27/16	
Acenaphthylene	ND	ug/L	5	EPA 625	6/21/16	6/27/16	
Anthracene	ND	ug/L	5	EPA 625	6/21/16	6/27/16	
Azobenzene	ND	ug/L	5	EPA 625	6/21/16	6/27/16	
Benzidine	ND	ug/L	10	EPA 625	6/21/16	6/27/16	
Benzo (a) anthracene	ND	ug/L	5	EPA 625	6/21/16	6/27/16	
Benzo (a) pyrene	ND	ug/L	5	EPA 625	6/21/16	6/27/16	
Benzo (b) fluoranthene	ND	ug/L	5	EPA 625	6/21/16	6/27/16	
Benzo (g,h,i) perylene	ND	ug/L	5	EPA 625	6/21/16	6/27/16	
Benzo (k) fluoranthene	ND	ug/L	5	EPA 625	6/21/16	6/27/16	
Bis (2-chloroethoxy) Methane	ND	ug/L	5	EPA 625	6/21/16	6/27/16	
Bis (2-chloroethyl) Ether	ND	ug/L	5	EPA 625	6/21/16	6/27/16	
Bis (2-chloroisopropyl) Ether	ND	ug/L	5	EPA 625	6/21/16	6/27/16	
Bis (2-ethylhexyl) Phthalate	ND	ug/L	10	EPA 625	6/21/16	6/27/16	
Butylbenzylphthalate	ND	ug/L	5	EPA 625	6/21/16	6/27/16	
Chrysene	ND	ug/L	5	EPA 625	6/21/16	6/27/16	
Dibenzo (a,h) anthracene	ND	ug/L	5	EPA 625	6/21/16	6/27/16	
Diethylphthalate	ND	ug/L	5	EPA 625	6/21/16	6/27/16	
Dimethyl phthalate	ND	ug/L	5	EPA 625	6/21/16	6/27/16	
Di-n-butylphthalate	ND	ug/L	5	EPA 625	6/21/16	6/27/16	
Di-n-Octylphthalate	ND	ug/L	5	EPA 625	6/21/16	6/27/16	
Fluoranthene	ND	ug/L	5	EPA 625	6/21/16	6/27/16	
Fluorene	ND	ug/L	5	EPA 625	6/21/16	6/27/16	
Hexachlorobenzene	ND	ug/L	5	EPA 625	6/21/16	6/27/16	
Hexachlorobutadiene	ND	ug/L	5	EPA 625	6/21/16	6/27/16	
Hexachlorocyclopentadiene	ND	ug/L	10	EPA 625	6/21/16	6/27/16	
Hexachloroethane	ND	ug/L	5	EPA 625	6/21/16	6/27/16	
Indeno (1,2,3-cd) pyrene	ND	ug/L	5	EPA 625	6/21/16	6/27/16	
Isophorone	ND	ug/L	5	EPA 625	6/21/16	6/27/16	
Naphthalene	ND	ug/L	5	EPA 625	6/21/16	6/27/16	
Nitrobenzene	ND	ug/L	5	EPA 625	6/21/16	6/27/16	
N-Nitrosodimethylamine	ND	ug/L	10	EPA 625	6/21/16	6/27/16	
N-Nitrosodi-n-propylamine	ND	ug/L	5	EPA 625	6/21/16	6/27/16	
N-Nitrosodiphenylamine	ND	ug/L	5	EPA 625	6/21/16	6/27/16	
Pentachlorophenol	ND	ug/L	5	EPA 625	6/21/16	6/27/16	
Phenanthrene	ND	ug/L	5	EPA 625	6/21/16	6/27/16	
Phenol	ND	ug/L	5	EPA 625	6/21/16	6/27/16	
Pyrene	ND	ug/L	5	EPA 625	6/21/16	6/27/16	
Volatile Organic Compounds							
1,1,1,2-Tetrachloroethane	ND	ug/L	5	EPA 624	6/20/16	6/20/16	

CHEMTECH-FORD LABORATORIES

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Serving the Intermountain West Since 1953

9632 South 500 West
Sandy, UT 84070
O:(801) 262-7299 F: (866) 792-0093
www.ChemtechFord.com

Certificate of Analysis

Pacificorp - Huntington Plant
Chuck Sembroski
P.O. Box 680
Huntington, UT 84528

PO#: **3000116067**
Receipt: **6/17/16 14:52 @ 10.80 °C**
Date Reported: 7/6/2016
Project Name: **Deer Creek Mine 11th-17th West**

Sample ID: **Deer Creek Mine 11th-17th West (cont.)**
Matrix: **Water**
Lab ID: **16F0973-01**
Date Sampled: **6/17/16 10:21**
Sampled By: **Chuck Sembroski**

Parameter	Result	Units	Minimum Reporting Limit	Method	Preparation Date/Time	Analysis Date/Time	Flag(s)
Volatile Organic Compounds (cont.)							
1,1,1-Trichloroethane	ND	ug/L	5	EPA 624	6/20/16	6/20/16	
1,1,2-Trichloroethane	ND	ug/L	5	EPA 624	6/20/16	6/20/16	
1,1-Dichloroethane	ND	ug/L	5	EPA 624	6/20/16	6/20/16	
1,1-Dichloroethene	ND	ug/L	5	EPA 624	6/20/16	6/20/16	
1,2-Dichlorobenzene	ND	ug/L	5	EPA 624	6/20/16	6/20/16	
1,2-Dichloroethane	ND	ug/L	5	EPA 624	6/20/16	6/20/16	
1,2-Dichloropropane	ND	ug/L	5	EPA 624	6/20/16	6/20/16	
1,3-Dichlorobenzene	ND	ug/L	5	EPA 624	6/20/16	6/20/16	
1,4-Dichlorobenzene	ND	ug/L	5	EPA 624	6/20/16	6/20/16	
2-Chloroethyl vinyl ether	ND	ug/L	5	EPA 624	6/20/16	6/20/16	
Acrolein	ND	ug/L	100	EPA 624	6/20/16	6/20/16	
Acrylonitrile	ND	ug/L	50	EPA 624	6/20/16	6/20/16	
Benzene	ND	ug/L	5	EPA 624	6/20/16	6/20/16	
Bromodichloromethane	ND	ug/L	5	EPA 624	6/20/16	6/20/16	
Bromoform	ND	ug/L	5	EPA 624	6/20/16	6/20/16	
Bromomethane	ND	ug/L	5	EPA 624	6/20/16	6/20/16	
Carbon Tetrachloride	ND	ug/L	5	EPA 624	6/20/16	6/20/16	
Chlorobenzene	ND	ug/L	5	EPA 624	6/20/16	6/20/16	
Chloroethane	ND	ug/L	5	EPA 624	6/20/16	6/20/16	
Chloroform	ND	ug/L	5	EPA 624	6/20/16	6/20/16	
Chloromethane	ND	ug/L	5	EPA 624	6/20/16	6/20/16	
cis-1,3-Dichloropropene	ND	ug/L	5	EPA 624	6/20/16	6/20/16	
Dibromochloromethane	ND	ug/L	5	EPA 624	6/20/16	6/20/16	
Ethylbenzene	ND	ug/L	5	EPA 624	6/20/16	6/20/16	
Methylene Chloride	ND	ug/L	5	EPA 624	6/20/16	6/20/16	
Tetrachloroethene	ND	ug/L	5	EPA 624	6/20/16	6/20/16	
Toluene	ND	ug/L	5	EPA 624	6/20/16	6/20/16	
trans-1,2-Dichloroethene	ND	ug/L	5	EPA 624	6/20/16	6/20/16	
trans-1,3-Dichloropropene	ND	ug/L	5	EPA 624	6/20/16	6/20/16	
Trichloroethene	ND	ug/L	5	EPA 624	6/20/16	6/20/16	
Vinyl Chloride	ND	ug/L	5	EPA 624	6/20/16	6/20/16	

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www.ChemtechFord.com

Certificate of Analysis

Pacificorp - Huntington Plant
Chuck Sembroski
P.O. Box 680
Huntington, UT 84528

PO#: **3000116067**
Receipt: **6/17/16 14:52 @ 10.60 °C**
Date Reported: **7/6/2016**
Project Name: **Deer Creek Mine 11th-17th West**

Report Footnotes

Abbreviations

ND = Not detected at the corresponding Minimum Reporting Limit (MRL).
1 mg/L = one milligram per liter or 1 mg/kg = one milligram per kilogram = 1 part per million.
1 ug/L = one microgram per liter or 1 ug/kg = one microgram per kilogram = 1 part per billion.
1 ng/L = one nanogram per liter or 1 ng/kg = one nanogram per kilogram = 1 part per trillion.

TICAL LABORATORY

CHAIN OF CUSTODY

IFST MINING COMPANY
15 NORTH MAIN
UT 84528
FAX: 435-687-2695
PROJECT: DEER CREEK MINE 11TH-17TH WEST
@PACIFICORP.COM

BILLING ADDRESS: 15 North Main Street
BILLING CITY/STATE/ZIP: Huntington UT 84528
PURCHASE ORDER #: 3000116067

CHEMTECH-FORD LABORATORIES

TURNAROUND REQUIRED:* July 1, 2016
* Expedited turnaround subject to additional charge

CLIENT SAMPLE INFORMATION					TESTS REQUESTED	Bacteria			
ON	DATE	TIME	MATRIX	Field: Received Chlorine		Total Coliform + E. coli (Present/Absent)	Total Coliform + E. coli (Enumerated)	HPC (Plate Count)	E. Coli Only
C	6/17/16	10:21			SEE ATTACHED SHEET				
XI	Sampled by: [signature]								

ON ICE NOT ON ICE Temp (C°): 10.6

Samples received outside the EPA recommended temperature range of 0-6 C° may be rejected.

	Date/Time	Received by: [signature]	Date/Time
	6/17/16 @ 11:25		6/17/16 11:25am
	6/17/16 @ 1452		6-17-16 14:52
	Date/Time	Received by: [signature]	Date/Time

801.262.7299 PHONE
866.792.0093 FAX
www.chemtechford.com

Payment Terms are net 30 days OAC. 1.5% interest charge per month (18% per annum). Client agrees to pay collection costs and attorney's fees.

Exhibit 2

Baseline Water Quality Sampling Results for Outfall 003

SGS

Analysis Report

August 16, 2016

PACIFICORP
FIELD OFFICE
PO BOX 1005
HUNTINGTON UT 84528

Client Sample ID:	11W-17W SEALS	**Sample ID By:**	PacifiCorp
Date Sampled:	Jul 12, 2016	**Sample Taken By:**	CAS KSF
Date Received:	Jul 12, 2016	**Time Received:**	1325
Product Description:	WATER	**Time Sampled:**	1021
		Location:	11W-17W SEALS
		Mine:	4
		Field - pH:	7.66 pH units
		Field - Conductivity:	929 UMHOS/CM
		Field - Temperature:	13.4 DEG. C

Comments: Dissolved Metals Filtered at Lab: Total Selenium 200.8 Analyzed at A.W.A.L.

SGS Minerals Sample ID: 782-1638403-001

TESTS	RESULT	UNIT	METHOD	REPORTING LIMIT	ANALYZED DATE	TIME	ANALYST
Hardness, mg equivalent CaCO3/L	304	mg/L	SM2340-B	1	2016-07-26	12:00:00	HF
Acidity	<5	mg/L	D1067	5	2016-08-30	15:00:00	MS
Anions	9.48	meq/L	SM1030E	0	2016-07-26	12:00:00	HF
Balance	-2.24	%	SM1030E	-10	2016-07-26	12:00:00	HF
Cations	9.07	meq/L	SM1030E	0	2016-07-26	12:00:00	HF
Alkalinity, mg CaCO3/L (pH 4.5)	362	mg/L	SM2320-B	5	2016-07-19	10:00:05	MS
Bicarbonate Alkalinity as CaCO3	362	mg/L	SM2320-B	5	2016-07-19	10:00:05	MS
Carbonate Alkalinity as CaCO3	<5	mg/L	SM2320-B	5	2016-07-19	10:00:05	MS
Nitrogen, Ammonia	3.9	mg/L	SM4500-B-D	0.1	2016-07-25	07:30:00	MS
pH	7.39		SM4500-H	0.01	2016-07-03	09:00:00	MS
pH Temperature	20.00	°C	SM4500-H	0.01	2016-07-03	09:00:00	MS
Conductivity	842	µmhos/cm	SM2510	0.1	2016-07-21	11:37:32	MS
Total Dissolved Solids	489	mg/L	SM2540-C	30	2016-07-14	14:30:00	MS
Nitrate	<0.05	mg/L	EPA 300.0	0.05	2016-07-13	12:00:00	HF
Nitrite	<0.05	mg/L	EPA 300.0	0.05	2016-07-13	12:00:00	HF
Chloride, Cl	11	mg/L	EPA 300.0	1	2016-07-13	12:00:00	HF
Sulfate, SO4	93	mg/L	EPA 300.0	1	2016-07-13	12:00:00	HF
Ortho-Phosphate-P	<0.05	mg/L	EPA 300.0	0.05	2016-07-13	12:00:00	HF
Mercury, Hg - Total	<0.2	µg/L	EPA 245.1	0.2	2016-08-04	07:00:00	HF

METALS BY ICP

Lab Supervisor

Domenic Ibanez
Lab Supervisor

SGS

Analysis Report

August 16, 2016

PACIFICORP
FIELD OFFICE
PO BOX 1005
HUNTINGTON UT 84528

Client Sample ID:	11W-17W SEALS	Sample ID By:	PacifiCorp
Date Sampled:	Jul 12, 2016	Sample Taken By:	CAS KSF
Date Received:	Jul 12, 2016	Time Received:	1325
Product Description:	WATER	Time Sampled:	1021
		Location:	11W-17W SEALS
		Mine:	4
		Field - pH:	7.66 pH units
		Field - Conductivity:	929 UMHOS/CM
		Field - Temperature:	13.4 DEG. C

Comments: Dissolved Metals Filtered at Lab: Total Selenium 200.8 Analyzed at A.W.A.L.

SGS Minerals Sample ID: 782-1638403-001

TESTS	RESULT	UNIT	METHOD	REPORTING LIMIT	ANALYZED DATE	TIME	ANALYST
METALS BY ICP (continued)							
Aluminum, Al - Dissolved	0.04	mg/L	EPA 200.7	0.03	2016-07-19	10:00:00	HF
Arsenic, As - Dissolved	<0.01	mg/L	EPA 200.7	0.01	2016-07-19	10:00:00	HF
Arsenic, As - Total	<0.01	mg/L	EPA 200.7	0.01	2016-08-03	10:23:19	HF
Boron, B - Total	0.22	mg/L	EPA 200.7	0.01	2016-08-03	10:23:19	HF
Cadmium, Cd - Dissolved	<0.001	mg/L	EPA 200.7	0.001	2016-07-19	10:00:00	HF
Cadmium, Cd - Total	<0.001	mg/L	EPA 200.7	0.001	2016-08-03	10:23:19	HF
Calcium, Ca - Dissolved	57.96	mg/L	EPA 200.7	0.03	2016-07-19	10:00:00	HF
Chromium, Cr - Total	0.005	mg/L	EPA 200.7	0.001	2016-08-03	10:23:19	HF
Copper, Cu - Dissolved	<0.01	mg/L	EPA 200.7	0.01	2016-07-19	10:00:00	HF
Copper, Cu - Total	<0.01	mg/L	EPA 200.7	0.01	2016-07-14	13:00:00	HF
Iron, Fe - Total	1.35	mg/L	EPA 200.7	0.05	2016-07-14	13:00:00	HF
Iron, Fe - Dissolved	<0.03	mg/L	EPA 200.7	0.03	2016-07-19	10:00:00	HF
Lead, Pb - Dissolved	<0.01	mg/L	EPA 200.7	0.01	2016-07-19	10:00:00	HF
Lead, Pb - Total	<0.01	mg/L	EPA 200.7	0.01	2016-07-14	13:00:00	HF
Magnesium, Mg - Dissolved	38.76	mg/L	EPA 200.7	0.01	2016-07-19	10:00:00	HF
Manganese, Mn - Total	0.020	mg/L	EPA 200.7	0.002	2016-07-14	13:00:00	HF
Manganese, Mn - Dissolved	0.018	mg/L	EPA 200.7	0.002	2016-07-19	10:00:00	HF
Molybdenum, Mo - Dissolved	0.011	mg/L	EPA 200.7	0.005	2016-07-19	10:00:00	HF
Nickel, Ni - Total	0.037	mg/L	EPA 200.7	0.001	2016-07-14	13:00:00	HF
Potassium, K - Dissolved	10.40	mg/L	EPA 200.7	0.14	2016-07-19	10:00:00	HF

Lab Supervisor

Domenic Ibanez
Lab Supervisor

SGS

Analysis Report

August 16, 2016

PACIFICORP
FIELD OFFICE
PO BOX 1005
HUNTINGTON UT 84528

Client Sample ID:	11W-17W SEALS	Sample ID By:	PacifiCorp
Date Sampled:	Jul 12, 2016	Sample Taken By:	CAS KSF
Date Received:	Jul 12, 2016	Time Received:	1325
Product Description:	WATER	Time Sampled:	1021
		Location:	11W-17W SEALS
		Mine:	4
		Field - pH:	7.66 pH units
		Field - Conductivity:	929 UMHOS/CM
		Field - Temperature:	13.4 DEG. C

Comments: Dissolved Metals Filtered at Lab: Total Selenium 200.8 Analyzed at A.W.A.L.

SGS Minerals Sample ID: 782-1638403-001

TESTS	RESULT	UNIT	METHOD	REPORTING LIMIT	ANALYZED DATE	TIME	ANALYST
METALS BY ICP (continued)							
Selenium, Se - Total	<0.02	mg/L	EPA 200.7	0.02	2016-07-14	13:00:00	HF
Selenium, Se - Total	<0.002	mg/L	EPA 200.8	0.002	2016-08-05	13:24:00	DI
Silver, Ag - Total	<0.002	mg/L	EPA 200.7	0.002	2016-08-04	06:00:00	HF
Sodium, Na - Dissolved	62.50	mg/L	EPA 200.7	0.09	2016-07-19	10:00:00	HF
Zinc, Zn - Dissolved	<0.004	mg/L	EPA 200.7	0.004	2016-07-19	10:00:00	HF
Zinc, Zn - Total	<0.004	mg/L	EPA 200.7	0.004	2016-07-14	13:00:00	HF

Lab Supervisor

Domenic Ibanez
Lab Supervisor

SGS

Analysis Report

September 03, 2016

PACIFICORP
FIELD OFFICE
PO BOX 1005
HUNTINGTON UT 84528

Client Sample ID:	11 W 17 W Seals	**Sample ID By:**	PacifiCorp
Date Sampled:	Aug 2, 2016	**Sample Taken By:**	CAS
Date Received:	Aug 2, 2016	**Time Received:**	1300
Product Description:	WATER	**Time Sampled:**	1119
		Location:	11W -17W Seals
		Mine:	4
		Field - pH:	7.57 pH units
		Field - Conductivity:	644 UMHOS/CM
		Field - Temperature:	13.9 DEG. C

Comments: Dissolved Metals Filtered at Lab: Total Selenium 200.8 Analyzed at A.W.A.L.

SGS Minerals Sample ID: 782-1639055-001

TESTS	RESULT	UNIT	METHOD	REPORTING LIMIT	ANALYZED DATE	TIME	ANALYST
Hardness, mg equivalent CaCO3/L	314	mg/L	SM2340-B	1	2016-08-17	13:00:00	HF
Acidity	26	mg/L	D1067	5	2016-08-02	13:15:00	MS
Anions	9.26	meq/L	SM1030E	0	2016-08-17	13:00:00	HF
Balance	-0.31	%	SM1030E	-10	2016-08-17	13:00:00	HF
Cations	9.20	meq/L	SM1030E	0	2016-08-17	13:00:00	HF
Alkalinity, mg CaCO3/L (pH 4.5)	350	mg/L	SM2320-B	5	2016-08-15	12:00:00	HF
Bicarbonate Alkalinity as CaCO3	350	mg/L	SM2320-B	5	2016-08-15	12:00:00	HF
Carbonate Alkalinity as CaCO3	<5	mg/L	SM2320-B	5	2016-08-15	12:00:00	HF
Nitrogen, Ammonia	2.0	mg/L	SM4500-B-D	0.1	2016-08-25	08:00:00	MS
pH	7.40		SM4500-H	0.01	2016-08-02	13:15:00	MS
pH Temperature	16.00	°C	SM4500-H	0.01	2016-08-02	13:15:00	MS
Conductivity	785	µmhos/cm	SM2510	0.1	2016-08-02	13:15:00	MS
Total Dissolved Solids	499	mg/L	SM2540-C	30	2016-08-03	14:00:00	HF
Nitrate	0.05	mg/L	EPA 300.0	0.05	2016-08-02	21:47:00	HF
Nitrite	<0.05	mg/L	EPA 300.0	0.05	2016-08-02	21:47:00	HF
Chloride, Cl	11	mg/L	EPA 300.0	1	2016-08-02	21:47:00	HF
Sulfate, SO4	94	mg/L	EPA 300.0	1	2016-08-02	21:47:00	HF
Ortho-Phosphate-P	<0.05	mg/L	EPA 300.0	0.05	2016-08-02	21:47:00	HF
Mercury, Hg - Total	<0.2	µg/L	EPA 245.1	0.2	2016-08-04	07:00:00	HF

METALS BY ICP

Lab Supervisor

Domenic Ibanez
Lab Supervisor

SGS

Analysis Report

September 03, 2016

PACIFICORP
FIELD OFFICE
PO BOX 1005
HUNTINGTON UT 84528

Client Sample ID:	11 W 17 W Seals	Sample ID By:	PacifiCorp
Date Sampled:	Aug 2, 2016	Sample Taken By:	CAS
Date Received:	Aug 2, 2016	Time Received:	1300
Product Description:	WATER	Time Sampled:	1119
		Location:	11W -17W Seals
		Mine:	4
		Field - pH:	7.57 pH units
		Field - Conductivity:	644 UMHOS/CM
		Field - Temperature:	13.9 DEG. C

Comments: Dissolved Metals Filtered at Lab: Total Selenium 200.8 Analyzed at A.W.A.L.

SGS Minerals Sample ID: 782-1639056-001

TESTS	RESULT	UNIT	METHOD	REPORTING LIMIT	ANALYZED DATE	TIME	ANALYST
METALS BY ICP (continued)							
Aluminum, Al - Dissolved	<0.03	mg/L	EPA 200.7	0.03	2016-08-16	17:00:00	HF
Arsenic, As - Total	<0.01	mg/L	EPA 200.7	0.01	2016-08-08	11:35:00	HF
Arsenic, As - Dissolved	<0.01	mg/L	EPA 200.7	0.01	2016-08-16	17:00:00	HF
Boron, B - Total	0.21	mg/L	EPA 200.7	0.01	2016-08-08	11:35:00	HF
Cadmium, Cd - Total	<0.001	mg/L	EPA 200.7	0.001	2016-08-08	11:35:00	HF
Cadmium, Cd - Dissolved	<0.001	mg/L	EPA 200.7	0.001	2016-08-16	17:00:00	HF
Calcium, Ca - Dissolved	59.54	mg/L	EPA 200.7	0.03	2016-08-16	17:00:00	HF
Chromium, Cr - Total	0.004	mg/L	EPA 200.7	0.001	2016-08-08	11:35:00	HF
Copper, Cu - Total	<0.01	mg/L	EPA 200.7	0.01	2016-08-08	11:35:00	HF
Copper, Cu - Dissolved	<0.01	mg/L	EPA 200.7	0.01	2016-08-16	17:00:00	HF
Iron, Fe - Total	1.48	mg/L	EPA 200.7	0.05	2016-08-08	11:35:00	HF
Iron, Fe - Dissolved	<0.03	mg/L	EPA 200.7	0.03	2016-08-16	17:00:00	HF
Lead, Pb - Total	<0.01	mg/L	EPA 200.7	0.01	2016-08-08	11:35:00	HF
Lead, Pb - Dissolved	<0.01	mg/L	EPA 200.7	0.01	2016-08-16	17:00:00	HF
Magnesium, Mg - Dissolved	40.04	mg/L	EPA 200.7	0.01	2016-08-16	17:00:00	HF
Manganese, Mn - Total	0.021	mg/L	EPA 200.7	0.002	2016-08-08	11:35:00	HF
Manganese, Mn - Dissolved	0.015	mg/L	EPA 200.7	0.002	2016-08-16	17:00:00	HF
Molybdenum, Mo - Dissolved	0.010	mg/L	EPA 200.7	0.005	2016-08-16	17:00:00	HF
Nickel, Ni - Total	0.036	mg/L	EPA 200.7	0.001	2016-08-08	11:35:00	HF
Potassium, K - Dissolved	10.12	mg/L	EPA 200.7	0.14	2016-08-16	17:00:00	HF

Lab Supervisor

Domenic Ibanez
Lab Supervisor

SGS

Analysis Report

September 03, 2016

PACIFICORP
FIELD OFFICE
PO BOX 1005
HUNTINGTON UT 84528

Client Sample ID:	11 W 17 W Seals	Sample ID By:	PacifiCorp
Date Sampled:	Aug 2, 2016	Sample Taken By:	CAS
Date Received:	Aug 2, 2016	Time Received:	1300
Product Description:	WATER	Time Sampled:	1119
		Location:	11W -17W Seals
		Mine:	4
		Field - pH:	7.57 pH units
		Field - Conductivity:	644 UMHOS/CM
		Field - Temperature:	13.9 DEG. C

Comments: Dissolved Metals Filtered at Lab: Total Selenium 200.8 Analyzed at A.W.A.L.

SGS Minerals Sample ID: 782-1639055-001

TESTS	RESULT	UNIT	METHOD	REPORTING LIMIT	ANALYZED DATE	TIME	ANALYST
METALS BY ICP (continued)							
Selenium, Se - Total	<0.02	mg/L	EPA 200.7	0.02	2016-08-08	11:35:00	HF
Selenium, Se - Total	<0.002	mg/L	EPA 200.8	0.002	2016-08-05	13:24:00	DI
Silver, Ag - Total	<0.002	mg/L	EPA 200.7	0.002	2016-08-04	08:00:00	HF
Sodium, Na - Dissolved	61.54	mg/L	EPA 200.7	0.09	2016-08-16	17:00:00	HF
Zinc, Zn - Dissolved	0.012	mg/L	EPA 200.7	0.004	2016-08-16	17:00:00	HF
Zinc, Zn - Total	<0.004	mg/L	EPA 200.7	0.004	2016-08-08	11:35:00	HF

Lab Supervisor

Domenic Ibanez
Lab Supervisor

Exhibit 3

Utah Division of Water Quality – Statement of Basis
ADDENDUM, Wasteload Analysis and Antidegradation Level I Review – PRELIMINARY, February 28, 2017

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

Date: **February 28, 2017**

Prepared by: **Dave Wham**
Standards and Technical Services

Facility: **Pacificorp Deer Creek Mine; Discharge 003**
UPDES No. UT0023604

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

UPDES Discharge Point 003, Mine water discharge with an estimated mean monthly discharge of 0.72 MGD (1.12 cfs).

Receiving Water

Huntington Creek. Per UAC R317-2-13.1(b), the designated beneficial uses of Huntington Creek and tributaries from Highway 10 crossing to USFS boundary are 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, the 20th percentile of available flow measurements was calculated for the period of record to approximate the 7Q10 low flow condition. Flow data for the receiving water was obtained from Emery Water Conservancy District for their site *Huntington River below Power Plant* from the period 2012-2017. This station is below the Power Plant diversion but above other significant diversions like Huntington Reservoir. Ambient water quality was characterized using data from DWQ station #4930530, Huntington Creek above UP&L Diversion from the period 2007-2013.

The critical low flow condition for discharges 003 is 12.1 cfs.

TMDL

According to the Utah's 2016 303(d) Water Quality Assessment, the assessment unit for this section of Huntington Creek, Huntington Creek and tributaries from Highway 10 crossing to USFS boundary (UT14060009-004) was listed as impaired for pH (Classes 1C, 2B, 3A, 4), dissolved oxygen (Class 3A), temperature (Class 3A) and total dissolved solids (Class 4).

Review of the listing data show that the temperature impairment was based on results from stations located in Bear Creek, a tributary to Huntington Creek located upstream from the proposed discharge. As a result, the proposed discharge cannot cause or contribute to that impairment.

Data from two monitoring stations above and below Deer Creek on Huntington Creek show impairments for pH and dissolved oxygen (DO). As a result, the proposed discharge must meet applicable Water Quality Standards (WQS) at end of pipe for these constituents (6.5 mg/l DO, and pH 7.5-9.0 pH).

Review of the listing data show that the total dissolved solids (TDS) impairment was based on results from the Huntington Creek at U10 crossing monitoring station. In order to protect downstream uses, and to avoid causing or contributing to that impairment, effluent limits for TDS should be set at the WQS of 1200 mg/l TDS.

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.

Mixing zone modeling showed 100 % mixing within 15 minutes travel time, and acute limits defaulted to 50% of the seasonal critical low flow.

Parameters of Concern

The potential parameters of concern identified for the discharge/receiving water were temperature, pH, dissolved oxygen, TDS, and iron, 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 LC_{50} (lethal concentration, 50%) percent effluent for acute toxicity and the IC_{25} (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.

LC50 WET Limits for Outfall 003 should be based on 61.4% effluent.
IC25 WET limits for Outfalls 003 should be based on 8.4% effluent.

Wasteload Allocation Methods

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

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

Models and supporting documentation are available for review upon request.

Antidegradation Level I Review

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

An amended Level II Antidegradation Review (ADR) is required for this facility. The receiving stream for the proposed discharge is a Class 1C drinking water source.

Documents:

WLA Document: *DeerCk_003_WLADoc_2-27-17.docx*
Wasteload Analysis and Addendums: *DeerCk_003_WLA_2-27-17.xlsm*

References:

Emery County Water Conservancy District. http://www.ewcd.org/canals/huntington-drainage/
Utah Division of Water Quality. 2012. *Utah Wasteload Analysis Procedures Version 1.0.*

Utah Division of Water Quality
Salt Lake City, Utah

WASTELOAD ANALYSIS [WLA]
Addendum: Statement of Basis
SUMMARY

Discharging Facility:	**Deer Creek 003 Discharge**		
UPDES No:	UT-0023604		
Current Flow:	0.72	MGD	Design Flow
Design Flow	0.72	MGD	

Receiving Water:	**Huntington Creek**		
Stream Classification:	1C, 2B, 3A, 4		
Stream Flows [cfs]:	12.10	Summer (July-Sept)	20th Percentile
	12.10	Fall (Oct-Dec)	20th Percentile
	12.10	Winter (Jan-Mar)	20th Percentile
	12.10	Spring (Apr-June)	20th Percentile
	50.0	Average	
Stream TDS Values:	213.0	Summer (July-Sept)	Average
	265.0	Fall (Oct-Dec)	Average
	307.0	Winter (Jan-Mar)	Average
	230.0	Spring (Apr-June)	Average

Effluent Limits:				**WQ Standard:**
Flow, MGD:	0.72	MGD	Design Flow	
BOD, mg/l:	25.0	Summer	5.0	Indicator
Dissolved Oxygen, mg/l	5.5	Summer	6.5	30 Day Average
TNH3, Chronic, mg/l:	16.2	Summer	Varies	Function of pH and Temperature
TDS, mg/l:	11922.1	Summer	1200.0	

Modeling Parameters:	
Acute River Width:	50.0%
Chronic River Width:	100.0%

Level 1 Antidegradation Level Completed: Amended Level II Review required.

Date: 2/27/2017

Permit Writer: _____ _____

WLA by: _____ _____

WQM Sec. Approval: _____ _____

TMDL Sec. Approval: _____ _____

Utah Division of Water Quality
Salt Lake City, Utah

WASTELOAD ANALYSIS [WLA]
Addendum: Statement of Basis

27-Feb-17
4:00 PM

Facilities: Deer Creek 003 Discharge **UPDES No: UT-0023604**
Discharging to: Huntington Creek

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 interms 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. Amended Level II review 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 Concentration	Load*	1 Hour Average (Acute) Standard Concentration	Load*
Aluminum	87.00 ug/l**	0.523 lbs/day	750.00 ug/l	4.511 lbs/day
Arsenic	190.00 ug/l	1.143 lbs/day	340.00 ug/l	2.045 lbs/day
Cadmium	0.52 ug/l	0.003 lbs/day	5.25 ug/l	0.032 lbs/day
Chromium III	178.07 ug/l	1.071 lbs/day	3725.58 ug/l	22.410 lbs/day
ChromiumVI	11.00 ug/l	0.066 lbs/day	16.00 ug/l	0.096 lbs/day
Copper	19.89 ug/l	0.120 lbs/day	32.26 ug/l	0.194 lbs/day
Iron			1000.00 ug/l	6.015 lbs/day
Lead	9.83 ug/l	0.059 lbs/day	252.25 ug/l	1.517 lbs/day
Mercury	0.0120 ug/l	0.000 lbs/day	2.40 ug/l	0.014 lbs/day
Nickel	110.39 ug/l	0.664 lbs/day	992.91 ug/l	5.973 lbs/day
Selenium	4.60 ug/l	0.028 lbs/day	20.00 ug/l	0.120 lbs/day
Silver	N/A ug/l	N/A lbs/day	17.38 ug/l	0.105 lbs/day
Zinc	253.86 ug/l	1.527 lbs/day	253.86 ug/l	1.527 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 242.57 mg/l as CaCO3

Organics [Pesticides]

Parameter	4 Day Average (Chronic) Standard Concentration	Load*	1 Hour Average (Acute) Standard Concentration	Load*
Aldrin			1.500 ug/l	0.009 lbs/day
Chlordane	0.004 ug/l	0.306 lbs/day	1.200 ug/l	0.007 lbs/day
DDT, DDE	0.001 ug/l	0.071 lbs/day	0.550 ug/l	0.003 lbs/day
Dieldrin	0.002 ug/l	0.135 lbs/day	1.250 ug/l	0.008 lbs/day
Endosulfan	0.056 ug/l	3.988 lbs/day	0.110 ug/l	0.001 lbs/day
Endrin	0.002 ug/l	0.164 lbs/day	0.090 ug/l	0.001 lbs/day
Guthion			0.010 ug/l	0.000 lbs/day
Heptachlor	0.004 ug/l	0.271 lbs/day	0.260 ug/l	0.002 lbs/day
Lindane	0.080 ug/l	5.698 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	0.997 lbs/day	2.000 ug/l	0.012 lbs/day
Pentachlorophenol	13.00 ug/l	925.894 lbs/day	20.000 ug/l	0.120 lbs/day
Toxephene	0.0002 ug/l	0.014 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	2.26 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	3.61 tons/day

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

	4 Day Average (Chronic) Standard		1 Hour Average (Acute) Standard	
Metals	**Concentration**	**Load***	**Concentration**	**Load***
Arsenic			50.0 ug/l	3.561 lbs/day
Barium			1000.0 ug/l	71.223 lbs/day
Cadmium			10.0 ug/l	0.712 lbs/day
Chromium			50.0 ug/l	3.561 lbs/day
Lead			50.0 ug/l	3.561 lbs/day
Mercury			2.0 ug/l	0.142 lbs/day
Selenium			10.0 ug/l	0.712 lbs/day
Silver			50.0 ug/l	3.561 lbs/day
Fluoride (3)			1.4 ug/l	0.100 lbs/day
to			2.4 ug/l	0.171 lbs/day
Nitrates as N			10.0 ug/l	0.712 lbs/day
Chlorophenoxy Herbicides				
2,4-D			100.0 ug/l	7.122 lbs/day
2,4,5-TP			10.0 ug/l	0.712 lbs/day
Endrin			0.2 ug/l	0.014 lbs/day
ocyclohexane (Lindane)			4.0 ug/l	0.285 lbs/day
Methoxychlor			100.0 ug/l	7.122 lbs/day
Toxaphene			5.0 ug/l	0.356 lbs/day

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

	Maximum Conc., ug/l - Acute Standards			
	Class 1C		Class 3A, 3B	
Toxic Organics	[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	85.47 lbs/day	2700.0 ug/l	192.30 lbs/day
Acrolein	320.00 ug/l	22.79 lbs/day	780.0 ug/l	55.55 lbs/day
Acrylonitrile	0.06 ug/l	0.00 lbs/day	0.7 ug/l	0.05 lbs/day
Benzene	1.20 ug/l	0.09 lbs/day	71.0 ug/l	5.06 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	0.02 lbs/day	4.4 ug/l	0.31 lbs/day
Chlorobenzene	680.00 ug/l	48.43 lbs/day	21000.0 ug/l	1495.67 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	0.03 lbs/day	99.0 ug/l	7.05 lbs/day

1,1,1-Trichloroethane				
Hexachloroethane	1.90 ug/l	0.14 lbs/day	8.9 ug/l	0.63 lbs/day
1,1-Dichloroethane				
1,1,2-Trichloroethane	0.61 ug/l	0.04 lbs/day	42.0 ug/l	2.99 lbs/day
1,1,2,2-Tetrachloroetha	0.17 ug/l	0.01 lbs/day	11.0 ug/l	0.78 lbs/day
Chloroethane			0.0 ug/l	0.00 lbs/day
Bis(2-chloroethyl) ether	0.03 ug/l	0.00 lbs/day	1.4 ug/l	0.10 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	121.08 lbs/day	4300.0 ug/l	306.26 lbs/day
2,4,6-Trichlorophenol	2.10 ug/l	0.15 lbs/day	6.5 ug/l	0.46 lbs/day
p-Chloro-m-cresol			0.0 ug/l	0.00 lbs/day
Chloroform (HM)	5.70 ug/l	0.41 lbs/day	470.0 ug/l	33.47 lbs/day
2-Chlorophenol	120.00 ug/l	8.55 lbs/day	400.0 ug/l	28.49 lbs/day
1,2-Dichlorobenzene	2700.00 ug/l	192.30 lbs/day	17000.0 ug/l	1210.78 lbs/day
1,3-Dichlorobenzene	400.00 ug/l	28.49 lbs/day	2600.0 ug/l	185.18 lbs/day
1,4-Dichlorobenzene	400.00 ug/l	28.49 lbs/day	2600.0 ug/l	185.18 lbs/day
3,3'-Dichlorobenzidine	0.04 ug/l	0.00 lbs/day	0.1 ug/l	0.01 lbs/day
1,1-Dichloroethylene	0.06 ug/l	0.00 lbs/day	3.2 ug/l	0.23 lbs/day
1,2-trans-Dichloroethyle	700.00 ug/l	49.86 lbs/day	0.0 ug/l	0.00 lbs/day
2,4-Dichlorophenol	93.00 ug/l	6.62 lbs/day	790.0 ug/l	56.27 lbs/day
1,2-Dichloropropane	0.52 ug/l	0.04 lbs/day	39.0 ug/l	2.78 lbs/day
1,3-Dichloropropylene	10.00 ug/l	0.71 lbs/day	1700.0 ug/l	121.08 lbs/day
2,4-Dimethylphenol	540.00 ug/l	38.46 lbs/day	2300.0 ug/l	163.81 lbs/day
2,4-Dinitrotoluene	0.11 ug/l	0.01 lbs/day	9.1 ug/l	0.65 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	0.00 lbs/day	0.5 ug/l	0.04 lbs/day
Ethylbenzene	3100.00 ug/l	220.79 lbs/day	29000.0 ug/l	2065.46 lbs/day
Fluoranthene	300.00 ug/l	21.37 lbs/day	370.0 ug/l	26.35 lbs/day
4-Chlorophenyl phenyl ether				
4-Bromophenyl phenyl ether				
Bis(2-chloroisopropyl) e	1400.00 ug/l	99.71 lbs/day	170000.0 ug/l	12107.84 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	0.33 lbs/day	1600.0 ug/l	113.96 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	0.31 lbs/day	360.0 ug/l	25.64 lbs/day
Dichlorobromomethane	0.27 ug/l	0.02 lbs/day	22.0 ug/l	1.57 lbs/day
Chlorodibromomethane	0.41 ug/l	0.03 lbs/day	34.0 ug/l	2.42 lbs/day
Hexachlorobutadiene(c)	0.44 ug/l	0.03 lbs/day	50.0 ug/l	3.56 lbs/day
Hexachlorocyclopentadi	240.00 ug/l	17.09 lbs/day	17000.0 ug/l	1210.78 lbs/day
Isophorone	8.40 ug/l	0.60 lbs/day	600.0 ug/l	42.73 lbs/day
Naphthalene				
Nitrobenzene	17.00 ug/l	1.21 lbs/day	1900.0 ug/l	135.32 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	4.99 lbs/day	14000.0 ug/l	997.12 lbs/day
4,6-Dinitro-o-cresol	13.00 ug/l	0.93 lbs/day	765.0 ug/l	54.49 lbs/day
N-Nitrosodimethylamine	0.00069 ug/l	0.00 lbs/day	8.1 ug/l	0.58 lbs/day
N-Nitrosodiphenylamine	5.00 ug/l	0.36 lbs/day	16.0 ug/l	1.14 lbs/day
N-Nitrosodi-n-propylami	0.01 ug/l	0.00 lbs/day	1.4 ug/l	0.10 lbs/day
Pentachlorophenol	0.28 ug/l	0.02 lbs/day	8.2 ug/l	0.58 lbs/day

Phenol	2.10E+04 ug/l	1.50E+03 lbs/day	4.6E+06 ug/l	3.28E+05 lbs/day
Bis(2-ethylhexyl)phthala	1.60 ug/l	0.13 lbs/day	5.9 ug/l	0.42 lbs/day
Butyl benzyl phthalate	3000.00 ug/l	213.67 lbs/day	5200.0 ug/l	370.36 lbs/day
Di-n-butyl phthalate	2700.00 ug/l	192.30 lbs/day	12000.0 ug/l	854.67 lbs/day
Di-n-octyl phthlate				
Diethyl phthalate	23000.00 ug/l	1638.12 lbs/day	120000.0 ug/l	8546.71 lbs/day
Dimethyl phthlate	3.13E+05 ug/l	2.23E+04 lbs/day	2.9E+06 ug/l	2.07E+05 lbs/day
Benzo(a)anthracene (P/	0.0028 ug/l	0.00 lbs/day	0.0 ug/l	0.00 lbs/day
Benzo(a)pyrene (PAH)	0.0028 ug/l	0.00 lbs/day	0.0 ug/l	0.00 lbs/day
Benzo(b)fluoranthene (F	0.0028 ug/l	0.00 lbs/day	0.0 ug/l	0.00 lbs/day
Benzo(k)fluoranthene (F	0.0028 ug/l	0.00 lbs/day	0.0 ug/l	0.00 lbs/day
Chrysene (PAH)	0.0028 ug/l	0.00 lbs/day	0.0 ug/l	0.00 lbs/day
Acenaphthylene (PAH)				
Anthracene (PAH)	9600.00 ug/l	683.74 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	0.00 lbs/day
Indeno(1,2,3-cd)pyrene	0.0028 ug/l	0.00 lbs/day	0.0 ug/l	0.00 lbs/day
Pyrene (PAH)	960.00 ug/l	68.37 lbs/day	11000.0 ug/l	783.45 lbs/day
Tetrachloroethylene	0.80 ug/l	0.06 lbs/day	8.9 ug/l	0.63 lbs/day
Toluene	6800.00 ug/l	484.31 lbs/day	200000 ug/l	14244.52 lbs/day
Trichloroethylene	2.70 ug/l	0.19 lbs/day	81.0 ug/l	5.77 lbs/day
Vinyl chloride	2.00 ug/l	0.14 lbs/day	525.0 ug/l	37.39 lbs/day
			0.0	0.00 lbs/day
Pesticides			0.0	0.00 lbs/day
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	0.0006 ug/l	0.00 lbs/day	0.0 ug/l	0.00 lbs/day
alpha-Endosulfan	0.9300 ug/l	0.07 lbs/day	2.0 ug/l	0.14 lbs/day
beta-Endosulfan	0.9300 ug/l	0.07 lbs/day	2.0 ug/l	0.14 lbs/day
Endosulfan sulfate	0.9300 ug/l	0.07 lbs/day	2.0 ug/l	0.14 lbs/day
Endrin	0.7600 ug/l	0.05 lbs/day	0.8 ug/l	0.06 lbs/day
Endrin aldehyde	0.7600 ug/l	0.05 lbs/day	0.8 ug/l	0.06 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 12/	0.000044 ug/l	0.00 lbs/day	0.0 ug/l	0.00 lbs/day
PCB-1254 (Arochlor 12!	0.000044 ug/l	0.00 lbs/day	0.0 ug/l	0.00 lbs/day
PCB-1221 (Arochlor 12:	0.000044 ug/l	0.00 lbs/day	0.0 ug/l	0.00 lbs/day
PCB-1232 (Arochlor 12:	0.000044 ug/l	0.00 lbs/day	0.0 ug/l	0.00 lbs/day
PCB-1248 (Arochlor 12/	0.000044 ug/l	0.00 lbs/day	0.0 ug/l	0.00 lbs/day
PCB-1260 (Arochlor 12(	0.000044 ug/l	0.00 lbs/day	0.0 ug/l	0.00 lbs/day
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	1.00 lbs/day		
Arsenic	50.0 ug/l	3.56 lbs/day	4300.00 ug/l	306.26 lbs/day
Asbestos	7.00E+06 ug/l	4.99E+05 lbs/day		
Beryllium				
Cadmium				
Chromium (III)				
Chromium (VI)				
Copper				
Cyanide	1.30E+03 ug/l	92.59 lbs/day	2.2E+05 ug/l	15668.97 lbs/day
Lead	700.0 ug/l	49.86 lbs/day		
Mercury			0.15 ug/l	0.01 lbs/day
Nickel			4600.00 ug/l	327.62 lbs/day
Selenium	0.1 ug/l	0.01 lbs/day		
Silver	610.0 ug/l	43.45 lbs/day		
Thallium			6.30 ug/l	0.45 lbs/day
Zinc				

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

VII. Mathematical Modeling of Stream Quality

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

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

(1) The Utah River Model, Utah Division of Water Quality, 1992. Based upon STREAMDO IV (Region VIII) and Supplemental Ammonia Toxicity Models; EPA Region VIII, Sept. 1990 and QUAL2E (EPA, Athens, GA).

(2) Utah Ammonia/Chlorine Model, Utah Division of Water Quality, 1992.

(3) AMMTOX Model, University of Colorado, Center of Limnology, and EPA Region 8

(4) Principles of Surface Water Quality Modeling and Control. Robert V. Thomann, et.al. Harper Collins Publisher, Inc. 1987, pp. 644.

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

(1) Rates, Constants, and Kinetics Formulations in Surface Water Quality Modeling. Environmental Research Laboratory, Office of Research and Development, U.S. Environmental Protection Agency, Athens Georgia. EPA/600/3-85/040 June 1985.

(2) Principles of Surface Water Quality Modeling and Control. Robert V. Thomann, et.al. Harper Collins Publisher, Inc. 1987, pp. 644.

VIII. Modeling Information

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

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

Other Conditions

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

Model Inputs

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

Current Upstream Information

	Stream Critical Low Flow cfs	Temp. Deg. C	pH	T-NH3 mg/l as N	BOD5 mg/l	DO mg/l	TRC mg/l	TDS mg/l
Summer (Irrig. Season)	12.10	12.0	8.5	0.01	0.05	7.64	0.00	213.0
Fall	12.10	2.1	8.4	0.01	0.05	—	0.00	266.0
Winter	12.10	1.0	8.3	0.01	0.05	—	0.00	307.0
Spring	12.10	7.3	8.4	0.01	0.05	—	0.00	230.0

	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		13.67	0.50	0.06	1.77	3.975*	0.95	15.2	0.35

	Dissolved Metals	Hg ug/l	Ni ug/l	Se ug/l	Ag ug/l	Zn ug/l	Boron ug/l	
All Seasons		0.0000	2.50	0.92	0.25	7.12	20.1	* ~80% MDL

Projected Discharge Information

Season	Flow, MGD	Temp.	TDS mg/l	TDS tons/day
Summer	0.72000	13.9	542.00	1.62697
Fall	0.72000	13.9		
Winter	0.72000	13.9		
Spring	0.72000	13.9		

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	0.720 MGD	1.114 cfs
Fall	0.720 MGD	1.114 cfs
Winter	0.720 MGD	1.114 cfs
Spring	0.720 MGD	1.114 cfs

Flow Requirement or Loading Requirement

The calculations in this wasteload analysis utilize the maximum effluent discharge flow of 0.72 MGD. If the discharger is allowed to have a flow greater than 0.72 MGD during 7Q10 conditions, and effluent limit concentrations as indicated, then water quality standards will be violated. In order to prevent this from occuring, the permit writers must include the discharge flow limititation 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 segements if the values below are met.

WET Requirements	LC50 >	61.4% Effluent	[Acute]
	IC25 >	8.4% Effluent	[Chronic]

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	150.1 lbs/day
Fall	25.0 mg/l as BOD5	150.1 lbs/day
Winter	25.0 mg/l as BOD5	150.1 lbs/day
Spring	25.0 mg/l as BOD5	150.1 lbs/day

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

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

Season	Concentration
Summer	5.00
Fall	5.00
Winter	5.00
Spring	5.00

Effluent Limitation for Total Ammonia based upon Water Quality Standards

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

Season		Concentration		Load	
Summer	4 Day Avg. - Chronic	16.2	mg/l as N	97.1	lbs/day
	1 Hour Avg. - Acute	25.5	mg/l as N	153.2	lbs/day
Fall	4 Day Avg. - Chronic	18.2	mg/l as N	109.0	lbs/day
	1 Hour Avg. - Acute	25.0	mg/l as N	150.3	lbs/day
Winter	4 Day Avg. - Chronic	19.9	mg/l as N	119.2	lbs/day
	1 Hour Avg. - Acute	28.7	mg/l as N	172.2	lbs/day
Spring	4 Day Avg. - Chronic	17.2	mg/l as N	103.2	lbs/day
	1 Hour Avg. - Acute	25.0	mg/l as N	150.3	lbs/day

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

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	0.119	mg/l	0.72	lbs/day
	1 Hour Avg. - Acute	0.117	mg/l	0.70	lbs/day
Fall	4 Day Avg. - Chronic	0.119	mg/l	0.72	lbs/day
	1 Hour Avg. - Acute	0.117	mg/l	0.70	lbs/day
Winter	4 Day Avg. - Chronic	0.119	mg/l	0.72	lbs/day
	1 Hour Avg. - Acute	0.117	mg/l	0.70	lbs/day
Spring	4 Day Avg. - Chronic	0.119	mg/l	0.00	lbs/day
	1 Hour Avg. - Acute	0.117	mg/l	0.00	lbs/day

Effluent Limitations for Total Dissolved Solids based upon Water Quality Standards

Season		Concentration		Load	
Summer	Maximum, Acute	11922.1	mg/l	35.79	tons/day
Fall	Maximum, Acute	11357.2	mg/l	34.09	tons/day
Winter	Maximum, Acute	10900.9	mg/l	32.72	tons/day
Spring	4 Day Avg. - Chronic	11737.4	mg/l	35.23	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 242.57 mg/l):

	4 Day Average Concentration		Load	1 Hour Average Concentration		Load
Aluminum*	N/A		N/A	4,749.5	ug/l	28.6 lbs/day
Arsenic*	2,248.60	ug/l	8.7 lbs/day	2,184.0	ug/l	13.1 lbs/day
Cadmium	5.56	ug/l	0.0 lbs/day	33.5	ug/l	0.2 lbs/day
Chromium III	2,093.33	ug/l	8.1 lbs/day	23,952.1	ug/l	144.1 lbs/day
Chromium VI*	87.31	ug/l	0.3 lbs/day	81.3	ug/l	0.5 lbs/day
Copper	225.72	ug/l	0.9 lbs/day	202.4	ug/l	1.2 lbs/day
Iron*	N/A		N/A	7,072.1	ug/l	42.5 lbs/day
Lead	112.87	ug/l	0.4 lbs/day	1,620.5	ug/l	9.7 lbs/day
Mercury*	0.14	ug/l	0.0 lbs/day	15.4	ug/l	0.1 lbs/day
Nickel	1,282.47	ug/l	5.0 lbs/day	6,372.5	ug/l	38.3 lbs/day
Selenium*	44.61	ug/l	0.2 lbs/day	123.7	ug/l	0.7 lbs/day
Silver	N/A	ug/l	N/A lbs/day	110.4	ug/l	0.7 lbs/day

Zinc	2,934.28 ug/l	11.4 lbs/day	1,594.1	ug/l	9.6 lbs/day
Cyanide*	61.69 ug/l	0.2 lbs/day	141.5	ug/l	0.9 lbs/day

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

Effluent Limitations for Heat/Temperature based upon Water Quality Standards

Summer	35.7 Deg. C.	96.3 Deg. F
Fall	25.8 Deg. C.	78.5 Deg. F
Winter	24.7 Deg. C.	76.5 Deg. F
Spring	31.0 Deg. C.	87.8 Deg. F

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

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

	4 Day Average Concentration	Load	1 Hour Average Concentration		Load
Aldrin			1.5E+00	ug/l	1.40E-02 lbs/day
Chlordane	4.30E-03 ug/l	2.58E-02 lbs/day	1.2E+00	ug/l	1.12E-02 lbs/day
DDT, DDE	1.00E-03 ug/l	6.00E-03 lbs/day	5.5E-01	ug/l	5.12E-03 lbs/day
Dieldrin	1.90E-03 ug/l	1.14E-02 lbs/day	1.3E+00	ug/l	1.16E-02 lbs/day
Endosulfan	5.60E-02 ug/l	3.36E-01 lbs/day	1.1E-01	ug/l	1.02E-03 lbs/day
Endrin	2.30E-03 ug/l	1.38E-02 lbs/day	9.0E-02	ug/l	8.38E-04 lbs/day
Guthion	0.00E+00 ug/l	0.00E+00 lbs/day	1.0E-02	ug/l	9.31E-05 lbs/day
Heptachlor	3.80E-03 ug/l	2.28E-02 lbs/day	2.6E-01	ug/l	2.42E-03 lbs/day
Lindane	8.00E-02 ug/l	4.80E-01 lbs/day	1.0E+00	ug/l	9.31E-03 lbs/day
Methoxychlor	0.00E+00 ug/l	0.00E+00 lbs/day	3.0E-02	ug/l	2.79E-04 lbs/day
Mirex	0.00E+00 ug/l	0.00E+00 lbs/day	1.0E-02	ug/l	9.31E-05 lbs/day
Parathion	0.00E+00 ug/l	0.00E+00 lbs/day	4.0E-02	ug/l	3.72E-04 lbs/day
PCB's	1.40E-02 ug/l	8.41E-02 lbs/day	2.0E+00	ug/l	1.86E-02 lbs/day
Pentachlorophenol	1.30E+01 ug/l	7.80E+01 lbs/day	2.0E+01	ug/l	1.86E-01 lbs/day
Toxephene	2.00E-04 ug/l	1.20E-03 lbs/day	7.3E-01	ug/l	6.79E-03 lbs/day

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	30.1 lbs/day
Nitrates as N	4.0 mg/l	24.1 lbs/day
Total Phosphorus as P	0.05 mg/l	0.3 lbs/day
Total Suspended Solids	90.0 mg/l	541.4 lbs/day

Note: Pollution Indicator targets are for information purposes only.

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

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

	Maximum Concentration Concentration	Load
Toxic Organics		
Acenaphthene	1.42E+04 ug/l	8.55E+01 lbs/day
Acrolein	3.80E+03 ug/l	2.28E+01 lbs/day
Acrylonitrile	7.00E-01 ug/l	4.20E-03 lbs/day
Benzene	1.42E+01 ug/l	8.55E-02 lbs/day
Benzidine	ug/l	lbs/day
Carbon tetrachloride	2.97E+00 ug/l	1.78E-02 lbs/day
Chlorobenzene	8.07E+03 ug/l	4.84E+01 lbs/day
1,2,4-Trichlorobenzene		
Hexachlorobenzene	8.90E-03 ug/l	5.34E-05 lbs/day
1,2-Dichloroethane	4.51E+00 ug/l	2.71E-02 lbs/day
1,1,1-Trichloroethane		
Hexachloroethane	2.25E+01 ug/l	1.35E-01 lbs/day
1,1-Dichloroethane		
1,1,2-Trichloroethane	7.24E+00 ug/l	4.34E-02 lbs/day
1,1,2,2-Tetrachloroethane	2.02E+00 ug/l	1.21E-02 lbs/day
Chloroethane		
Bis(2-chloroethyl) ether	3.68E-01 ug/l	2.21E-03 lbs/day
2-Chloroethyl vinyl ether		
2-Chloronaphthalene	2.02E+04 ug/l	1.21E+02 lbs/day
2,4,6-Trichlorophenol	2.49E+01 ug/l	1.50E-01 lbs/day
p-Chloro-m-cresol		
Chloroform (HM)	6.76E+01 ug/l	4.06E-01 lbs/day
2-Chlorophenol	1.42E+03 ug/l	8.55E+00 lbs/day
1,2-Dichlorobenzene	3.20E+04 ug/l	1.92E+02 lbs/day
1,3-Dichlorobenzene	4.75E+03 ug/l	2.85E+01 lbs/day

1,4-Dichlorobenzene	4.75E+03 ug/l	2.85E+01 lbs/day
3,3'-Dichlorobenzidine	4.75E-01 ug/l	2.85E-03 lbs/day
1,1-Dichloroethylene	6.76E-01 ug/l	4.06E-03 lbs/day
1,2-trans-Dichloroethylene1		
2,4-Dichlorophenol	1.10E+03 ug/l	6.62E+00 lbs/day
1,2-Dichloropropane	6.17E+00 ug/l	3.70E-02 lbs/day
1,3-Dichloropropylene	1.19E+02 ug/l	7.12E-01 lbs/day
2,4-Dimethylphenol	6.41E+03 ug/l	3.85E+01 lbs/day
2,4-Dinitrotoluene	1.30E+00 ug/l	7.83E-03 lbs/day
2,6-Dinitrotoluene		
1,2-Diphenylhydrazine	4.75E-01 ug/l	2.85E-03 lbs/day
Ethylbenzene	3.68E+04 ug/l	2.21E+02 lbs/day
Fluoranthene	3.56E+03 ug/l	2.14E+01 lbs/day
4-Chlorophenyl phenyl ether		
4-Bromophenyl phenyl ether		
Bis(2-chloroisopropyl) ether	1.66E+04 ug/l	9.97E+01 lbs/day
Bis(2-chloroethoxy) methane		
Methylene chloride (HM)	5.58E+01 ug/l	3.35E-01 lbs/day
Methyl chloride (HM)		
Methyl bromide (HM)		
Bromoform (HM)	5.10E+01 ug/l	3.06E-01 lbs/day
Dichlorobromomethane(HM)	3.20E+00 ug/l	1.92E-02 lbs/day
Chlorodibromomethane (HM)	4.86E+00 ug/l	2.92E-02 lbs/day
Hexachlorocyclopentadiene	2.85E+03 ug/l	1.71E+01 lbs/day
Isophorone	9.97E+01 ug/l	5.98E-01 lbs/day
Naphthalene		
Nitrobenzene	2.02E+02 ug/l	1.21E+00 lbs/day
2-Nitrophenol		
4-Nitrophenol		
2,4-Dinitrophenol	8.30E+02 ug/l	4.99E+00 lbs/day
4,6-Dinitro-o-cresol	1.54E+02 ug/l	9.26E-01 lbs/day
N-Nitrosodimethylamine	8.19E-03 ug/l	4.91E-05 lbs/day
N-Nitrosodiphenylamine	5.93E+01 ug/l	3.56E-01 lbs/day
N-Nitrosodi-n-propylamine	5.93E-02 ug/l	3.56E-04 lbs/day
Pentachlorophenol	3.32E+00 ug/l	1.99E-02 lbs/day
Phenol	2.49E+05 ug/l	1.50E+03 lbs/day
Bis(2-ethylhexyl)phthalate	2.14E+01 ug/l	1.28E-01 lbs/day
Butyl benzyl phthalate	3.56E+04 ug/l	2.14E+02 lbs/day
Di-n-butyl phthalate	3.20E+04 ug/l	1.92E+02 lbs/day
Di-n-octyl phthlate		
Diethyl phthalate	2.73E+05 ug/l	1.64E+03 lbs/day
Dimethyl phthlate	3.71E+06 ug/l	2.23E+04 lbs/day
Benzo(a)anthracene (PAH)	3.32E-02 ug/l	1.99E-04 lbs/day
Benzo(a)pyrene (PAH)	3.32E-02 ug/l	1.99E-04 lbs/day
Benzo(b)fluoranthene (PAH)	3.32E-02 ug/l	1.99E-04 lbs/day
Benzo(k)fluoranthene (PAH)	3.32E-02 ug/l	1.99E-04 lbs/day
Chrysene (PAH)	3.32E-02 ug/l	1.99E-04 lbs/day
Acenaphthylene (PAH)		
Anthracene (PAH)		
Dibenzo(a,h)anthracene (PAH)	3.32E-02 ug/l	1.99E-04 lbs/day
Indeno(1,2,3-cd)pyrene (PAH)	3.32E-02 ug/l	1.99E-04 lbs/day

Pyrene (PAH)	1.14E+04 ug/l	6.84E+01 lbs/day
Tetrachloroethylene	9.49E+00 ug/l	5.70E-02 lbs/day
Toluene	8.07E+04 ug/l	4.84E+02 lbs/day
Trichloroethylene	3.20E+01 ug/l	1.92E-01 lbs/day
Vinyl chloride	2.37E+01 ug/l	1.42E-01 lbs/day
Pesticides		
Aldrin	1.54E-03 ug/l	9.26E-06 lbs/day
Dieldrin	1.66E-03 ug/l	9.97E-06 lbs/day
Chlordane	6.78E-03 ug/l	4.06E-05 lbs/day
4,4'-DDT	7.00E-03 ug/l	4.20E-05 lbs/day
4,4'-DDE	7.00E-03 ug/l	4.20E-05 lbs/day
4,4'-DDD	9.85E-03 ug/l	5.91E-05 lbs/day
alpha-Endosulfan	1.10E+01 ug/l	6.62E-02 lbs/day
beta-Endosulfan	1.10E+01 ug/l	6.62E-02 lbs/day
Endosulfan sulfate	1.10E+01 ug/l	6.62E-02 lbs/day
Endrin	9.02E+00 ug/l	5.41E-02 lbs/day
Endrin aldehyde	9.02E+00 ug/l	5.41E-02 lbs/day
Heptachlor	2.49E-03 ug/l	1.50E-05 lbs/day
Heptachlor epoxide		
PCB's		
PCB 1242 (Arochlor 1242)	5.22E-04 ug/l	3.13E-06 lbs/day
PCB-1254 (Arochlor 1254)	5.22E-04 ug/l	3.13E-06 lbs/day
PCB-1221 (Arochlor 1221)	5.22E-04 ug/l	3.13E-06 lbs/day
PCB-1232 (Arochlor 1232)	5.22E-04 ug/l	3.13E-06 lbs/day
PCB-1248 (Arochlor 1248)	5.22E-04 ug/l	3.13E-06 lbs/day
PCB-1260 (Arochlor 1260)	5.22E-04 ug/l	3.13E-06 lbs/day
PCB-1016 (Arochlor 1016)	5.22E-04 ug/l	3.13E-06 lbs/day
Pesticide		
Toxaphene	8.66E-03 ug/l	5.20E-05 lbs/day
Metals		
Antimony	166.09 ug/l	1.00 lbs/day
Arsenic	587.73 ug/l	3.53 lbs/day
Asbestos	8.30E+07 ug/l	4.99E+05 lbs/day
Beryllium		
Cadmium		
Chromium (III)		
Chromium (VI)		
Copper	15422.32 ug/l	92.59 lbs/day
Cyanide	8304.32 ug/l	49.86 lbs/day
Lead	0.00	0.00
Mercury	1.66 ug/l	0.01 lbs/day
Nickel	7236.63 ug/l	43.45 lbs/day
Selenium	0.00	0.00
Silver	0.00	0.00
Thallium	20.17 ug/l	0.12 lbs/day
Zinc		

Dioxin		
Dioxin (2,3,7,8-TCDD)	1.54E-07 ug/l	9.26E-10 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		4749.5				4749.5	N/A
Antimony			166.1	51012.3		166.1	
Arsenic	1186.3	2184.0	587.7		0.0	587.7	2248.6
Barium					11863.3	11863.3	
Beryllium						0.0	
Cadmium	118.0	33.5			0.0	33.5	5.5
Chromium (III)		23952.1			0.0	23952.1	2093.3
Chromium (VI)	1187.2	81.3			0.0	81.32	87.31
Copper	2362.4	202.4	15422.3			202.4	225.7
Cyanide		141.5	2609930.3			141.5	61.7
Iron		7072.1				7072.1	
Lead	1182.6	1620.5			0.0	1182.6	112.9
Mercury		15.44	1.7	1.78	0.0	1.66	0.142
Nickel		6372.5	7236.6	54571.3		6372.5	1282.5
Selenium	583.2	123.7			0.0	123.7	44.6
Silver		110.4			0.0	110.4	
Thallium			20.2	74.7		20.2	
Zinc		1594.1				1594.1	2934.3
Boron	8679.1					8679.1	
Sulfate	23726.6					23726.6	

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	4749.5	N/A	
Antimony	166.09		
Arsenic	587.7	2248.6	Acute Controls
Asbestos	8.30E+07		
Barium			
Beryllium			
Cadmium	33.5	5.5	
Chromium (III)	23952.1	2093	
Chromium (VI)	81.3	87.3	Acute Controls
Copper	202.4	225.7	Acute Controls

Cyanide	141.5	61.7	
Iron	7072.1		
Lead	1182.6	112.9	
Mercury	1.661	0.142	
Nickel	6372.5	1282	
Selenium	123.7	44.6	
Silver	110.4	N/A	
Thallium	20.2		
Zinc	1594.1	2934.3	Acute Controls
Boron	8679.14		
Sulfate	23726.6		N/A at this Waterbody

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 because the receiving water for the discharge is a Class 1C Drinking Water Source.

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

Reasonable Potential Analysis for Deer Creek Permit Amendment

Table I below contains data from Rilda Canyon mine water (Outfall 003 mine water)

Table I	Most Stringent WLA	6/16/2016	7/12/2016	8/2/2016	9/6/2016	10/6/2016	11/3/2016
T-Arsenic mg/L	0.5877		<0.01	<0.01	<0.01	<0.01	<0.01
T-Cadmium mg/L	0.0055		<0.001	<0.001	<0.001	<0.001	<0.001
T-Chromium mg/L	0.0813		0.005	0.004	0.003	0.002	0.004
T-Copper mg/L	0.2024		<0.01	<0.01	<0.01	<0.01	<0.01
T-Lead mg/L	0.1129		<0.01	<0.01	<0.01	<0.01	<0.01
T-Mercury ug/L	0.142		<0.2	<0.2	<0.2	<0.2	<0.2
T-Nickel mg/L	1.282		0.037	0.036	0.035	0.035	0.030
T-Selenium mg/L	0.0446		<0.002**	<0.002**	<0.002**	<0.002**	<0.002**
T-Silver mg/L	0.1104		<0.002	<0.002	<0.002	<0.002	<0.002
T-Zinc mg/L	1.5941		<0.004	0.012*	<0.004	<0.004	0.008
T-Boron mg/L	8.67914		0.22	0.21	0.21	0.21	0.19
T-Iron mg/L	7.0721	1.21	1.35	1.48	1.44	1.45	0.61

*Dissolved zinc was <0.004 mg/L.

**MRL using method 200.8, not 200.7.

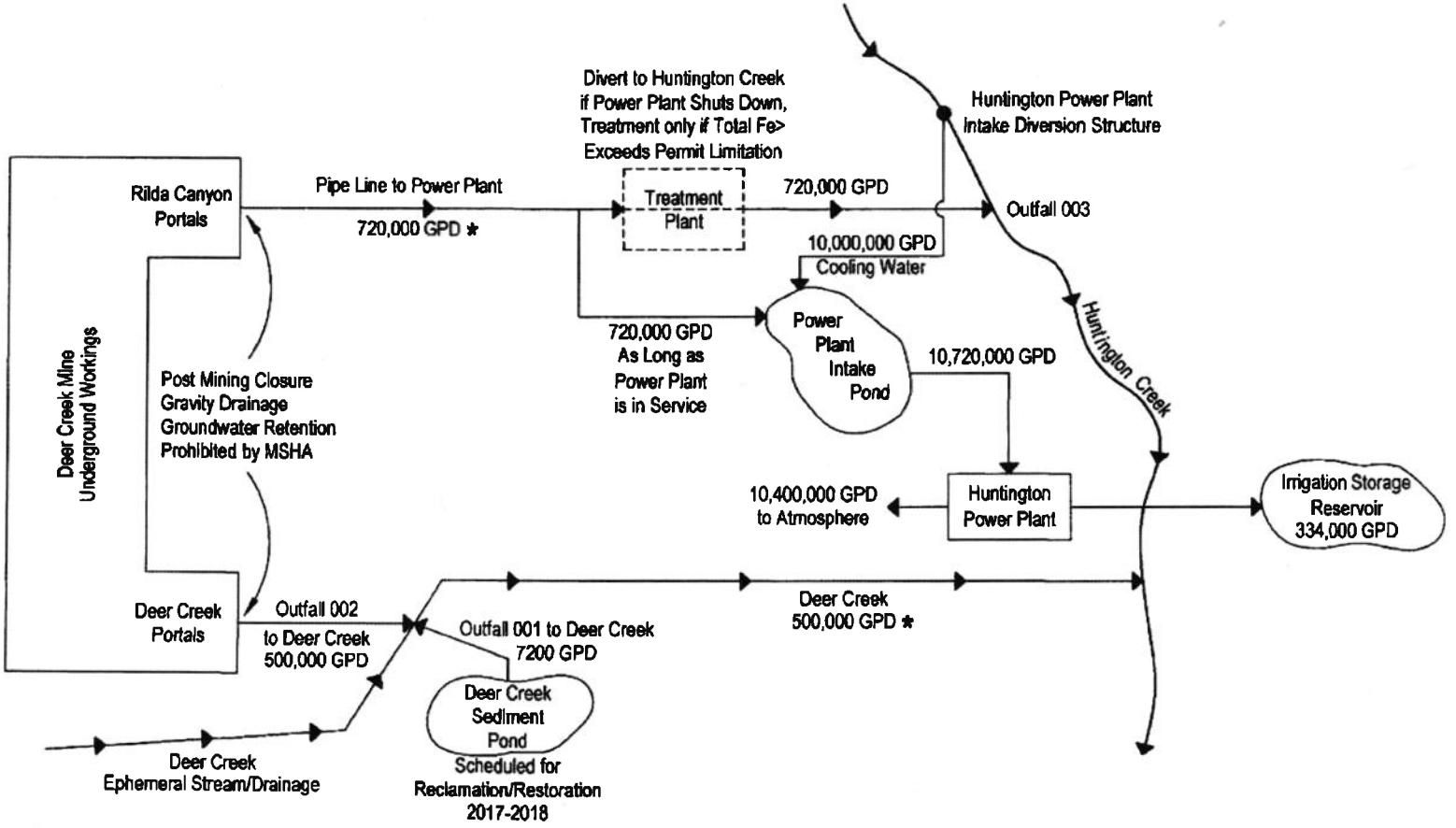
If all of the values reported are below the minimum reportable limit (MRL), no reasonable potential (RP) analysis will be done on that parameter. For parameters with some or all values above the MRL, the permit writer uses the process below to determine if an RP analysis is necessary:

> To determine whether a reasonable potential (RP) analysis is needed the permit writer multiplies the largest value found for each metal by 10. If this value is equal to or close to the determined effluent limit from the wasteload allocation, then an RP analysis is required for that particular parameter.

If an RP analysis is necessary, a computer model obtained from EPA Region VIII will be used to determine if an effluent limit is required, if just monitoring is required or nothing is required at all.

In this case the only parameter requiring RP analysis was total iron. RP analysis indicated that no limit is required in the permit as the values in the effluent are not statistically predicted to exceed the WLA limit of 7.1 mg/L. However based on 40 CFR 434 Subpart E – Post Mining areas a maximum daily effluent limitation for total iron of 7.0 mg/L and an average monthly effluent limitation for total iron of 3.5 mg/L will be incorporated into the permit for Outfall 003. This federal categorical standard is more stringent than the total iron limit developed through the WLA process.

LINE DRAWING



Schematic of Water Flow
PacifiCorp/Deer Creek Mine
UPDES #UT0023604
Huntington, Emery County, Utah

* Flows will Diminish with Time

CAD FILE NAME/DISK#: UPDES DISCHARGE POINTS QUAD MAP

PACIFICORP
A MIDAMERICAN ENERGY HOLDINGS COMPANY

DEER CREEK MINE
UPDES PERMIT #UT0023604
SCHEMATIC OF WATER FLOW

DRAWN BY:	K. LARSEN		
SCALE:	NONE	DRAWING #:	
DATE:	AUGUST 16, 2016	SHEET 1 OF 1	REV. ___

DWQ-2017-006752