


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

**Date:** October 1, 2015  
**Prepared by:** Dave Wham   
Standards and Technical Services Section  
**Facility:** Anderson Geneva Development, Inc.  
UPDES No. UT0000361  
**Receiving water:** Utah Lake (2B, 3C, 3D, 4)

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

**Discharge**

Outfall 001: All wastewater, groundwater, and storm-water generated at the facility is discharged to Utah Lake through a 1500 foot long, 24 inch diameter diffuser with 20, 6" portals with a design capacity of 20 MGD.

The mean monthly design discharge is 5.00 MGD for the facility.

**Receiving Water**

The receiving water for Outfall 001 is Utah Lake. Per UAC R317-2-13.12, the designated beneficial uses for Utah Lake 2B, 3C, 3D, and 4.

- *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 3C - Protected for warm water species of game fish and other warm water aquatic life, including the necessary aquatic organisms in their food chain.*
- *Class 3D - Protected for waterfowl, shore birds and other water-oriented wildlife not included in Classes 3A, 3B, or 3C, including the necessary aquatic organisms in their food chain.*

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

#### TMDL

Utah Lake is listed as impaired total phosphorous (TP) and total dissolved solids (TDS) according to the 2012 303(d) list. A TMDL has not been developed for either constituent. No numeric criteria are available for TP. The water quality standard for TDS is 1200 mg/l. Since no assimilative capacity exists for this constituent, the standard of 1200 mg/l will need to be met at end-of-pipe.

#### Mixing Zone

The maximum allowable mixing zone for discharge to lakes is 35 feet for acute conditions and 200 feet for chronic conditions, per UAC R317-2-5. Water quality standards must be met at the end of the mixing zone. Mixing zone calculations were made using the Utah Lake Model. The simplifying (and conservative) assumption of a single discharge from a 24" diameter inch pipe was used in developing effluent limits.

#### Parameters of Concern

The potential parameters of concern identified for the discharge/receiving water were total dissolved solids and ammonia 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<sub>50</sub> (lethal concentration, 50%) percent effluent for acute toxicity and the IC<sub>25</sub> (inhibition concentration, 25%) percent effluent for chronic toxicity, as determined by the WET test, needs to be below the WET limits, as determined by the WLA. The WET limit for LC<sub>50</sub> is typically 100% effluent and does not need to be determined by the WLA.

**Table 2: WET Limits for IC<sub>25</sub>**

<b>Outfall</b>	<b>Percent Effluent</b>
Outfall 001	3.5%

#### Wasteload Allocation Methods

Effluent limits were determined for conservative constituents using a simple mass balance mixing analysis. 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 Utah Lake Model uses mixing and ammonia decay to determine ammonia effluent limits. The mass balance analysis and resulting effluent limits are summarized in Appendix A.

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Wasteload Analysis  
Anderson Geneva.  
UPDES No. UT0000361**

Models and supporting documentation are available for review upon request.

Antidegradation Level I Review

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

A Level II Antidegradation Review (ADR) is not required for this facility, as there is no increase in concentration or load over that authorized in the current permit.

Documents:

WLA Document: Anderson-Geneva\_WLA\_9-10-15.docx

Wasteload Analysis: Anderson-Geneva\_WLA\_9-15-15.xlsm

**WASTELOAD ANALYSIS [WLA]  
Addendum: Statement of Basis  
SUMMARY**

**Discharging Facility:** Anderson Geneva  
 UPDES No: 0000361  
 Current Flow: 5.00 MGD Design Flow  
 Design Flow 5.00 MGD

**Receiving Water:** Utah Lake  
 Lake Classification: 2B, 3B, 3D, 4

TDS (mg/l) 1058.00 Average  
 Hardness (mg/l) 400.00 Average  
 pH 8.40 Average  
 Temp (C) 12 Average

<b>Selected Effluent Limit Summary:</b>		<b>WQ Standard:</b>
Flow, MGD:	5.00 MGD	Design Flow
BOD, mg/l:	25.0 All Season	5 Indicator
Dissolved Oxygen, mg/l:	5.00 All Season	5.50 30 Day Average
TNH3, Acute, mg/l:	14.90 All Season	Varies Function of pH and Temperature
TDS, mg/l:	1200.00 All Season	1200 Receiving water is impaired for TDS
Zinc, ug/l	1191.87 All Season	Varies Function of Hardness
Copper, ug/l	151.37 All Season	Varies Function of Hardness

**Modeling Parameters:**

Acute Dilution Ratio 4.94 to 1  
 Chronic Dilution Ratio: 28.21 to 1

**Level 1 Antidegradation Level Completed: Level II Review not required -  
 No increase over In concentration or load of pollutants over previous permit**

Date: 10/1/2015

Permit Writer:

WLA by:

WQM Sec. Approval:

TMDL Sec. Approval:

*[Handwritten Signature]*

*10-1-15*

Wasteload Analysis - Total Maximum Daily Load (Lake TMDL)

10/1/2015 13:41

Facility: Anderson Geneva  
 Discharging to: Utah Lake

UPDES No: UT- 0000361

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 lake water quality. The wasteload analysis does not take 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 water quality parameters of concern may include metals (as a function of hardness), total dissolved solids (TDS), total residual chlorine (TRC), unionized ammonia (as a function of pH and temperature, measured and evaluated in terms of total ammonia), and dissolved oxygen.

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

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

II. Receiving Water and Lake / Reservoir Classification

Utah Lake 2B, 3B, 3D, 4

III. Numeric Water Quality Standards for Protection of Aquatic Wildlife

Total Ammonia (TNH3)	Function of Temperature and pH	pH	Temp
	0.72 mg/l as N (4 Day Average)	8.56	21.9
	3.02 mg/l as N (1 Hour Average)	8.53	20.2
Chronic Total Residual Chlorine (TRC)	0.011 mg/l (4 Day Average)		
	0.019 mg/l (1 Hour Average)		
Chronic Dissolved Oxygen (DO)	5.50 mg/l (30 Day Average)		
	4.00 mg/l (7Day Average)		
	3.00 mg/l (1 Day Average)		
Maximum Total Dissolved Solids [Class 4 Ag]	1200 mg/l		
Maximum Boron [Class 4 Ag]	750 mg/l		

Acute and Chronic Heavy Metals (Dissolved)

Parameter	4 Day Average (Chronic) Standard Concentration	1 Hour Average (Acute) Standard Concentration
Aluminum	87.000 ug/l	750 ug/l
Antimony	ug/l	ug/l
Arsenic	190.000 ug/l	360.00 ug/l

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Asbestos	ug/l		ug/l
Barium	ug/l	1000.00	ug/l
Beryllium	ug/l		ug/l
Cadmium	0.723 ug/l	8.31	ug/l
Chromium III	255.438 ug/l	5344.26	ug/l
Chromium VI	11.000 ug/l	16.00	ug/l
Copper	28.985 ug/l	48.86	ug/l
Cyanide	5.200 ug/l	22.00	ug/l
Iron	ug/l	1000.00	ug/l
Lead	17.223 ug/l	441.97	ug/l
Mercury	0.012 ug/l	2.40	ug/l
Nickel	271.06 ug/l	1441.36	ug/l
Selenium	5.000 ug/l	20.00	ug/l
Silver	ug/l	37.07	ug/l
Thallium			
Zinc	368.725 ug/l	368.73	ug/l

Based upon a Hardness of 376.85 mg/l as CaCO<sub>3</sub>

Based upon 380.86 mg/l as CaCO<sub>3</sub>

Organics [Pesticides]

	4 Day Average (Chronic) Standard Parameter Concentration	1 Hour Average (Acute) Standard Concentration	
Aldrin		1.500	ug/l
Chlordane	0.0043 ug/l	1.200	ug/l
DDT, DDE	0.001 ug/l	0.550	ug/l
Dieldrin	0.0056 ug/l	0.240	ug/l
Endosulfan, a & b	0.056 ug/l	0.110	ug/l
Endrin	0.036 ug/l	0.086	ug/l
Guthion			
Heptachlor & H. epoxide	0.0038 ug/l	0.260	ug/l
Lindane	0.08 ug/l	1.000	ug/l
Methoxychlor		0.030	ug/l
Mirex		0.001	ug/l
Parathion	0.0130 ug/l	0.066	ug/l
PCB's	0.014 ug/l		
Pentachlorophenol	15.00 ug/l	19.000	ug/l
Toxephene	0.0002 ug/l	0.730	ug/l

IV. Numeric Water Quality Standards for Protection of Agriculture

TDS	1200	mg/l
Arsenic	100	ug/l
Boron	750	ug/l
Cadmium	10	ug/l
Chromium	100	ug/l
Copper	200	ug/l
Lead	100	ug/l
Selenium	50	ug/l

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

Metals  
Arsenic  
Barium

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Cadmium  
 Chromium  
 Lead  
 Mercury  
 Selenium  
 Silver  
 Fluoride (3)  
 to  
 Nitrates as N

Chlorophenoxy Herbicides  
 2,4-D  
 2,4,5-TP  
 Methoxychlor

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

	Maximum Conc., ug/l - Acute Standards	
	Class 1C [2 Liters/Day for 70 Kg Person over 70 Yr.	Class 3A, 3B, 3C, 3D [6.5 g for 70 Kg Person over 70 Yr.]
Antimony	5.6 ug/l	640 ug/l
Arsenic	A	A
Beryllium	C	C
Cadmium	C	C
Chromium III	C	C
Chromium VI	C	C
Copper	1,300 ug/l	
Lead	C	C
Mercury	A	A
Nickel	100 ug/l	4,600 ug/l
Selenium	A	4,200 ug/l
Silver		
Thallium	0.24 ug/l	6.3 ug/l
Zinc	7400 ug/l	26,000 ug/l
Cyanide	140 ug/l	220,000 ug/l
Asbestos	7.00E+06 Fibers/L	
2,3,7,8-TCDD Dioxin	5.0 E-9 ug/l	5.1 E-9 ug/l
Acrolein	190 ug/l	290 ug/l
Acrylonitrile	0.051 ug/l	0.25 ug/l
Alachlor	2 ug/l	
Benzene	2.2 ug/l	51 B ug/l
Bromoform	4.3 ug/l	140.00 ug/l
Carbofuran	40	
Carbon Tetrachloride	0.23 ug/l	1.60 ug/l
Chlorobenzene	100 ug/l	21,000 ug/l
Chlorodibromomethane	0.4 ug/l	13.00 ug/l
Chloroethane		
2-Chloroethylvinyl Ether		
Chloroform	5.7 ug/l	470.00 ug/l
Dalapon	200 ug/l	
Di(2ethylhexyl)adipate	400 ug/l	
Dichlorobromopropane	0.2	

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Dichlorobromomethane	0.55 ug/l	17.00 ug/l
1,1-Dichloroethane		
1,2-Dichloroethane	0.38 ug/l	37.00 ug/l
1,1-Dichloroethylene	7 ug/l	3.20 ug/l
Dichloroethylene (cis-1,2)	70	
Dinoseb	7	
Diquat	20	
1,2-Dichloropropane	0.5 ug/l	15.00 ug/l
1,3-Dichloropropene	0.34 ug/l	1,700 ug/l
Endothall	100	
Ethylbenzene	530 ug/l	29,000 ug/l
Ethylidibromide	0.05 ug/l	
Glyphosate	700 ug/l	
Haloacetic acids	60 ug/l E	
Methyl Bromide	47 ug/l	1,500 ug/l
Methyl Chloride	F	F
Methylene Chloride	4.6 ug/l	590.00 ug/l
Ocamyl (vidate)	200 ug/l	
Picloram	500 ug/l	
Simazine	4 ug/l	
Styrene	100 ug/l	
1,1,2,2-Tetrachloroethane	0.17 ug/l	4.00 ug/l
Tetrachloroethylene	0.69 ug/l	3.30 ug/l
Toluene	1000 ug/l	200,000 ug/l
1,2 -Trans-Dichloroethylene	100 ug/l	140,000 ug/l
1,1,1-Trichloroethane	200 ug/l	F
1,1,2-Trichloroethane	0.59 ug/l	16.00 ug/l
Trichloroethylene	2.5 ug/l	30.00 ug/l
Vinyl Chloride	0.025 ug/l	530.00 ug/l
Xylenes	10000 ug/l	
2-Chlorophenol	81 ug/l	150 ug/l
2,4-Dichlorophenol	77 ug/l	290 ug/l
2,4-Dimethylphenol	380 ug/l	850 ug/l
2-Methyl-4,6-Dinitrophenol	13 ug/l	280 ug/l
2,4-Dinitrophenol	69 ug/l	5,300 ug/l
2-Nitrophenol		
4-Nitrophenol		
3-Methyl-4-Chlorophenol		
Penetachlorophenol	0.27 ug/l	3.00 ug/l
Phenol	21000 ug/l	1,700,000 ug/l
2,4,6-Trichlorophenol	1.4 ug/l	2.40 ug/l
Acenaphthene	670 ug/l	990 ug/l
Acenaphthylene	ug/l	ug/l
Anthracene	8300 ug/l	40,000 ug/l
Benzidine	0.000086 ug/l	0.00 ug/l
BenzoaAnthracene	0.0038 ug/l	0.02 ug/l
BenzoaPyrene	0.0038 ug/l	0.02 ug/l
BenzobFluoranthene	0.0038 ug/l	0.02 ug/l
BenzoghiPerylene	ug/l	
BenzokFluoranthene	0.0038 ug/l	0.02 ug/l
Bis2-ChloroethoxyMethane	ug/l	
Bis2-ChloroethylEther	0.03 ug/l	0.53 ug/l
Bis2-Chloroisopropyl Ether	1400 ug/l	65,000 ug/l
Bis2-EthylhexylPhthalate	1.2 ug/l	2.20 ug/l



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4-Bromophenyl Phenyl Ether	ug/l		
Butylbenzyl Phthalate	1500 ug/l		1,900 ug/l
2-Chloronaphthalene	1000 ug/l		1,600 ug/l
4-Chlorophenyl Phenyl Ether	ug/l		
Chrysene	0.0038 ug/l		0.02 ug/l
Dibenzo, hAnthracene	0.0038 ug/l		0.02 ug/l
1,2-Dichlorobenzene	420 ug/l		17,000 ug/l
1,3-Dichlorobenzene	320 ug/l		960 ug/l
1,4-Dichlorobenzene	63 ug/l		2,600 ug/l
3,3-Dichlorobenzidine	0.021 ug/l		0.03 ug/l
Diethyl Phthalate	17000 ug/l		44,000 ug/l
Dimethyl Phthalate	270000 ug/l		1,100,000 ug/l
Di-n-Butyl Phthalate	2000 ug/l		4,500 ug/l
2,4-Dinitrotoluene	0.11 ug/l		3.40 ug/l
2,6-Dinitrotoluene	ug/l		
Di-n-Octyl Phthalate	ug/l		
1,2-Diphenylhydrazine	0.036 ug/l		0.20 ug/l
Fluoranthene	130 ug/l		140.00 ug/l
Fluorene	1100 ug/l		5,300 ug/l
Hexachlorobenzene	0.00028 ug/l		0.00029 B ug/l
Hexachlorobutidine	0.44 ug/l		18.00 ug/l
Hexachloroethane	1.4 ug/l		3.30 ug/l
Hexachlorocyclopentadiene	40 ug/l		17,000 ug/l
Ideno 1,2,3-cdPyrene	0.0038 ug/l		0.02 ug/l
Isophorone	35 ug/l	B	960.00 ug/l
Naphthalene			
Nitrobenzene	17 ug/l		690 ug/l
N-Nitrosodimethylamine	0.00069 ug/l		3.00 ug/l
N-Nitrosodi-n-Propylamine	0.005 ug/l		0.51 ug/l
N-Nitrosodiphenylamine	3.3 ug/l		6.00 ug/l
Phenanthrene			
Pyrene	830 ug/l		4,000 ug/l
1,2,4-Trichlorobenzene	260 ug/l		940 ug/l
Aldrin	0.000049 ug/l		0.000050 ug/l
alpha-BHC	0.0026 ug/l		0.00 ug/l
beta-BHC	0.0091 ug/l		0.02 ug/l
gamma-BHC (Lindane)	0.2 ug/l		0.06 ug/l
delta-BHC			
Chlordane	0.0008 ug/l		0.00 ug/l
4,4-DDT	0.00022 ug/l		0.00 ug/l
4,4-DDE	0.00022 ug/l		0.00 ug/l
4,4-DDD	0.00031 ug/l		0.00 ug/l
Dieldrin	0.000052 ug/l	B	0.000054 ug/l
alpha-Endosulfan	62 ug/l		89 ug/l
beta-Endosulfan	62 ug/l		89 ug/l
Endosulfan Sulfate	62 ug/l		89 ug/l
Endrin	0.059 ug/l		0.81 ug/l
Endrin Aldehyde	0.29 ug/l		0.30 ug/l
Heptachlor	0.000079 ug/l	B	0.000079 ug/l
Heptachlor Epoxide	0.000039 ug/l	B	0.000039 ug/l
Polychlorinated Biphenyls	0.000064 ug/l	B,D	0.000064 ug/l
Toxaphene	0.00028 ug/l		0.00028 ug/l

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 Water Quality 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) 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.

The Utah Reservoir and Lake Model is a simple round jet model which was received from EPA Region 8. It assumes a discharge expands into the receiving water as a 1/2 cone from the point of discharge with the appropriate dilution.

The dilution ratios for this wasteload analysis are as follows:

Acute Dilution Ratio:	4.9 to 1
Chronic Dilution Ratio:	28.2 to 1

## VIII. Modeling Information

The required information for the model may include the following information for both the lake and effluent conditions:

Temperature, Deg. C.	Total Residual Chlorine (TRC), mg/l
pH	Total NH <sub>3</sub> -N, mg/l
BOD <sub>5</sub> , mg/l	Total Dissolved Solids (TDS), mg/l
Metals, ug/l	Toxic Organics of Concern, ug/l

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D.O. mg/l

**Other Conditions**

In addition to the lake 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**

<b>Lake Information</b>	<b>Temp.</b> Deg. C	<b>pH</b>	<b>T-NH3</b> mg/l as N	<b>BOD</b> mg/l	<b>DO</b> mg/l	<b>TRC</b> mg/l	<b>TDS</b> mg/l	<b>Metals</b> ug/l
	22.3	8.6	0.00	N/A	N/A	0.00	1058.0	0.0
<b>Discharge Information</b>	<b>Season</b> All Seasons		<b>Flow,</b> 5.0	<b>Temp.</b> 12.0				

**IX. Effluent Limitations based upon Water Quality Standards**

**Effluent Limitation for Flow**

All Seasons Not to Exceed:	5.00 MGD 7.74 cfs	Daily Average Daily Average
WET Requirements	As determined by Permits & Compliance Branch	

**Effluent Limitation for Biological Oxygen Demand (BOD)**

30 Day Average	Concentration 25.0 mg/l as BOD5
30 Day Average	20.0 mg/l as CBOD5

**Effluent Limitation for Dissolved Oxygen (DO)**

	Concentration 1 Day Average (Acute)
30 Day Average	5.00 mg/l

**Effluent Limitation for Total Ammonia**

4 Day Average [Chronic] Concentration	Load
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All Seasons 202.94 mg/l as N 8460.8 lbs/day

1 Hour Average [Acute]  
Concentration

Load

14.9 mg/l as N

621.3 lbs/day

Effluent Limitation for Total Residual Chlorine

4 Day Average [Chronic]  
Concentration

Load

All Seasons

0.310 mg/l

12.9 lbs/day

1 Hour Average [Acute]  
Concentration

Load

0.094 mg/l

3.9 lbs/day

Effluent Limitations for Metals

	4 Day Average (Chronic)		1 Hour Average (Acute)	
	Concentration	Load	Concentration	Load
Aluminum	1862.42 ug/l*	50.2 lbs/day	3616.87 ug/l	97.5 lbs/day
Arsenic	3885.86 ug/l	104.7 lbs/day	1628.47 ug/l*	43.9 lbs/day
Barium			4936.66 ug/l	133.0 lbs/day
Cadmium	8.61 ug/l*	0.2 lbs/day	23.59 ug/l	0.6 lbs/day
Chromium III	2834.79 ug/l*	76.4 lbs/day	5767.84 ug/l	155.4 lbs/day
Chromium VI	235.48 ug/l	6.3 lbs/day	68.16 ug/l*	1.8 lbs/day
Copper	454.44 ug/l	12.2 lbs/day	151.37 ug/l*	4.1 lbs/day
Cyanide	25.67		108.61	
Iron			106.67 ug/l	2.9 lbs/day
Lead	151.46 ug/l*	4.1 lbs/day	844.42 ug/l	22.8 lbs/day
Mercury	0.26 ug/l*	0.007 lbs/day	11.84 ug/l	0.3 lbs/day
Nickel	2139.92 ug/l*	57.7 lbs/day	4893.81 ug/l	131.9 lbs/day
Selenium	69.90 ug/l*	1.9 lbs/day	82.17 ug/l	2.2 lbs/day
Silver			58.17 ug/l	1.6 lbs/day
Zinc	46228.59 ug/l	1,245.9 lbs/day	1191.87 ug/l*	32.1

\* Most stringent between Chronic & Acute Effluent Limitations

Effluent Limitations for Organics [Pesticides]

Pesticide	4 Day Average		1 Hour Average	
	Concentration	Load	Concentration	Load
Aldrin			7.4050 ug/l	0.200 lbs/day
Chlordane	0.1213 ug/l*	0.003 lbs/day	5.9240 ug/l	0.160 lbs/day
DDT, DDE	0.0282 ug/l*	0.001 lbs/day	2.7152 ug/l	0.073 lbs/day
Dieldrin	0.1580 ug/l*	0.004 lbs/day	1.1848 ug/l	0.032 lbs/day
Endosulfan	1.5797 ug/l	0.043 lbs/day	0.5430 ug/l*	0.015 lbs/day

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Endrin	1.0155 ug/l	0.027 lbs/day	0.4246 ug/l*	0.011 lbs/day
Guthion			0.0000 ug/l	0.000 lbs/day
Heptachlor	0.1072 ug/l*	0.003 lbs/day	1.2835 ug/l	0.035 lbs/day
Lindane	2.2568 ug/l*	0.061 lbs/day	4.9367 ug/l	0.133 lbs/day
Methoxychlor			0.1481 ug/l	0.004 lbs/day
Mirex			0.0049 ug/l	0.000 lbs/day
Parathion			0.3258 ug/l	0.009 lbs/day
PCB's	0.3949 ug/l	0.011 lbs/day	0.0000 ug/l*	0.000 lbs/day
Pentachlorophenol	423.1422 ug/l	11.404 lbs/day	93.7965 ug/l*	2.528 lbs/day
Toxephene	0.0056 ug/l*	0.000 lbs/day	3.6038 ug/l	0.097 lbs/day

**Effluent Limitations for Protection of Human Health (Class 1C Waters)**

<b>Metals</b>	<b>1 Hour Average (Acute) Standard Concentration</b>	<b>Standard Load</b>
Arsenic		
Barium		
Cadmium		
Chromium		
Lead		
Mercury		
Selenium		
Silver		
Fluoride		
to		
Nitrates as N		
<b>Pesticides</b>		
2,4-D		
2,4,5-TP		
Methoxychlor		

**Effluent Limitations for Protection of Human Health [Toxics Rule]**

**Based upon Water Quality Standards (Most stringent of 1C or 3A & 3B as appropriate.)**

<b>Toxics Rule Parameters</b>	<b>Maximum Conc., ug/l - Acute Standards</b>	
	<b>Class 1C</b> [2 Liters/Day for 70 Kg Person over 70 Yr.]	<b>Class 3A, 3B</b> [6.5 g for 70 Kg Person over 70 Yr. Period]
Antimony		27.65 ug/l
Arsenic		0.7 lbs/day
Beryllium		
Cadmium		
Chromium III		
Chromium VI		
Copper		6417.66 ug/l
Lead		173.0 lbs/day
Mercury		493.67 ug/l
Nickel		13.3 lbs/day
Selenium		36531.28 ug/l
Silver		984.5 lbs/day
Thallium		691.13 ug/l
		18.6 lbs/day

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Zinc	937.97 ug/l	25.3 lbs/day
Cyanide	0.25 ug/l	0.0 lbs/day
Asbestos	21.23 ug/l	0.6 lbs/day
0		
2,3,7,8-TCDD Dioxin	493.67 ug/l	13.3 lbs/day
Acrolein	1.97 ug/l	0.1 lbs/day
Acrylonitrile		
Benzene		
Bromoform	28.14 ug/l	0.8 lbs/day
Carbon Tetrachloride		
Chlorobenzene		
Chlorodibromomethane	1.88 ug/l	0.1 lbs/day
Chloroethane	34.56 ug/l	0.9 lbs/day
2-Chloroethylvinyl Ether	2.47 ug/l	0.1 lbs/day
Chloroform	1.68 ug/l	0.0 lbs/day
Dichlorobromomethane	232.02 ug/l	6.3 lbs/day
1,1-Dichloroethane		
1,2-Dichloroethane	22.71 ug/l	0.6 lbs/day
1,1-Dichloroethylene	0.84 ug/l	0.0 lbs/day
1,2-Dichloropropane	4936.66 ug/l	133.0 lbs/day
1,3-Dichloropropene	2.91 ug/l	0.1 lbs/day
Ethylbenzene	12.34 ug/l	0.3 lbs/day
Methyl Bromide	0.12 ug/l	0.0 lbs/day
Methyl Chloride	399.87 ug/l	10.8 lbs/day
Methylene Chloride	380.12 ug/l	10.2 lbs/day
1,1,2,2-Tetrachloroethane	1875.93 ug/l	50.6 lbs/day
Tetrachloroethylene	64.18 ug/l	1.7 lbs/day
Toluene		
1,2 -Trans-Dichloroethylene		
1,1,1-Trichloroethane	1.33 ug/l	0.0 lbs/day
1,1,2-Trichloroethane	103669.84 ug/l	2793.9 lbs/day
Trichloroethylene	6.91 ug/l	0.2 lbs/day
Vinyl Chloride	3307.56 ug/l	89.1 lbs/day
2-Chlorophenol		
2,4-Dichlorophenol	40974.27 ug/l	1104.3 lbs/day
2,4-Dimethylphenol		
2-Methyl-4,6-Dinitrophenol	0.02 ug/l	0.0 lbs/day
2,4-Dinitrophenol	0.02 ug/l	0.0 lbs/day
2-Nitrophenol	0.02 ug/l	0.0 lbs/day
4-Nitrophenol		
3-Methyl-4-Chlorophenol	0.02 ug/l	0.001 lbs/day
Penetachlorophenol		
Phenol	0.15 ug/l	0.004 lbs/day
2,4,6-Trichlorophenol	6911.32 ug/l	186.260 lbs/day
Acenaphthene		
Acenaphthylene	7404.99 ug/l	199.6 lbs/day
Anthracene	4936.66 ug/l	133.0 lbs/day
Benzidine		
BenzoaAnthracene	0.02 ug/l	0.0 lbs/day
BenzoaPyrene	0.0 ug/l	0.0 lbs/day
BenzobFluoranthene	2073.40 ug/l	55.9 lbs/day
BenzoghiPerylene	1579.73 ug/l	42.6 lbs/day
BenzokFluoranthene		
Bis2-ChloroethoxyMethane		

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Bis2-ChloroethylEther	8.39E+04 ug/l	2.26E+03 lbs/day
Bis2-ChloroisopropylEther	1.33E+06 ug/l	3.59E+04 lbs/day
Bis2-EthylhexylPhthalate	##### ug/l	266.08591 lbs/day
4-Bromophenyl Phenyl Ether	0.54303 ug/l	0.01463 lbs/day
Butylbenzyl Phthalate		
2-Chloronaphthalene		
4-Chlorophenyl Phenyl Ether	0.17772 ug/l	0.00479 lbs/day
Chrysene	641.76565 ug/l	17.29558 lbs/day
Dibenzo, hAnthracene	##### ug/l	146.34725 lbs/day
1,2-Dichlorobenzene	0.00138 ug/l	0.00004 lbs/day
1,3-Dichlorobenzene	2.17213 ug/l	0.05854 lbs/day
1,4-Dichlorobenzene	6.91132 ug/l	0.18626 lbs/day
3,3-Dichlorobenzidine		
Diethyl Phthalate		
Dimethyl Phthalate		
Di-n-Butyl Phthalate		
2,4-Dinitrotoluene	83.923201 ug/l	2.261730 lbs/day
2,6-Dinitrotoluene	0.003406 ug/l	0.000092 lbs/day
Di-n-Octyl Phthalate	0.024683 ug/l	0.000665 lbs/day
1,2-Diphenylhydrazine	16.290974 ug/l	0.439042 lbs/day
Fluoranthene		
Fluorene	4.10E+03 ug/l	1.10E+02 lbs/day
Hexachlorobenzene		
Hexachlorobutidine		
Hexachloroethane		
Hexachlorocyclopentadiene		
Ideno 1,2,3-cdPyrene		
Isophorone		
Naphthalene		
Nitrobenzene		
N-Nitrosodimethylamine		
N-Nitrosodi-n-Propylamine	0.00 ug/l	0.0 lbs/day
N-Nitrosodiphenylamine		
Phenanthrene	306.07 ug/l	8.2 lbs/day
Pyrene		
1,2,4-Trichlorobenzene	306.07 ug/l	8.2 lbs/day
Aldrin	0.29 ug/l	0.0 lbs/day
alpha-BHC		
beta-BHC		
gamma-BHC (Lindane)		
delta-BHC		
Chlordane		
4,4-DDT		
4,4-DDE		
4,4-DDD		
Dieldrin		
alpha-Endosulfan		
beta-Endosulfan		
Endosulfan Sulfate		

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Endrin  
 Endrin Aldehyde  
 Heptachlor  
 Heptachlor Epoxide  
 Polychlorinated Biphenyls  
 0  
 Toxaphene

Specific Parameter: TDS                      0                      1759.01 mg/l                      47.4 tons / day

**Effluent Limitations for the Protection of Agriculture**

**1 Hour Average (Acute) Standard  
 Concentration                      Load**

Arsenic	493.67 ug/l	13.30 lbs / day
Boron	3702.49 ug/l	99.78 lbs / day
Cadmium	49.37 ug/l	1.33 lbs / day
Chromium	493.67 ug/l	13.30 lbs / day
Copper	246.83 ug/l	6.65 lbs / day
Lead	493.67 ug/l	13.30 lbs / day
Selenium	246.83 ug/l	6.65 lbs / day

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

	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		3616.87				3616.87	1862.42
Antimony						0.00	
Arsenic	493.67	1628.47				493.67	3885.86
Asbestos							
Barium		4936.66				4936.66	
Boron							
Cadmium	49.37	23.59				23.59	8.61
Chromium (III)		5767.8				5767.84	2834.79
Chromium (VI)	493.67	68.16				68.16	235.48
Copper	246.83	151.37				151.37	454.44
Cyanide		108.61				108.61	25.67
Iron		106.67				106.67	
Lead	493.67	844.42				493.67	151.46
Mercury		11.8362				11.84	0.2569
Nickel		4893.81				4893.81	2139.92
Selenium	246.83	82.17				82.17	69.90
Silver		58.17				58.17	
Thallium						0.00	
Zinc		1191.87				1191.87	46228.59



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

	ug/l	Acute	Chronic	
		lbs/day	ug/l	lbs/day
Aluminum	3616.87	150.8	1862.42	77.6
Antimony				
Arsenic	493.67	20.6	3885.86	162.0
Asbestos				
Cadmium	23.59	1.0	8.61	0.4
Chromium (III)	5767.84	240.5	2834.79	118.2
Chromium (VI)	68.16	2.8	235.48	9.8
Copper	151.37	6.3	454.44	18.9
Cyanide	108.61	4.5	25.67	1.1
Iron	106.67	4.4		
Lead	493.67	20.6	151.46	6.3
Mercury	11.84	0.5	0.26	0.0
Nickel	4893.81	204.0	2139.92	89.2
Selenium	82.17	3.4	69.90	2.9
Silver	58.17	2.4		
Zinc	1191.87	49.7	46228.59	1927.3

**Effluent Indicators / Targets for Pollution Indicators**

Water quality targets for pollution Indicators will be met with an effluent limit as follows:

	Indicator / Target	Target	
	mg/l	mg/l	lbs/day
Gross Beta (pCi/l)	50.0 pCi/L		
BOD	5.0	24.68	3753.07
Nitrates as N	4.0	19.75	3002.46
Total Phosphorus as P	0.05	0.25	37.53
Total Suspended Solids	90.0	444.30	67555.31

Other Effluent Limitations are based upon R317-1.

**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 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 water users.

Category III waters fall under special rules for the determination of effluent limits. These rules allow more stringent effluent limitations based upon additional factors, including: "blue-ribbon" fisheries, special recreation areas, and drinking water sources.

#### **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 shown that this is not attainable. Refer to the Forum's Guidelines for additional information.

The permit writers may utilize other information to adjust these limits and/or to determine other limits based upon best available technology and other considerations.

#### **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.

The permit writers may utilize other information to adjust these limits or to determine other limits based upon best available technology and other considerations. Under no circumstances however, may those alterations allow for the violation of water quality standards by the permittee.

#### **XIII. Notice of UPDES Requirement**

This Addendum to the Statement of Basis does not authorize any entity or party to discharge to the waters of the State of Utah. That authority is granted through a UPDES permit issued by the Utah Division of Water Quality. The numbers presented here may be changed as a function of other factors. Dischargers are strongly urged to contact the Permits Section for further information.

#### **XIV. Notice of Availability of Information**

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

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