



# State of Utah

## DEPARTMENT OF ENVIRONMENTAL QUALITY DIVISION OF WATER QUALITY

### Water Quality Board

K.C. Shaw, P.E.  
Chairman

William R. Williams  
Vice Chairman

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Governor

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Executive Director

Don A. Ostler, P.E.  
Director

288 North 1460 West  
P.O. Box 144870  
Salt Lake City, Utah 84114-4870  
(801) 538-6146  
(801) 538-6016 Fax  
(801) 536-4414 T.D.D.  
www.deq.state.ut.us Web

February 26, 2001

### CERTIFIED MAIL (Return Receipt Requested)

Salina Sun  
3 East Main  
Salina, UT 84654-1333

ATTN: Legal Advertising Department

This letter will confirm authorization to publish the attached NOTICE in the Salina Sun in the first available edition. Please mail the invoice and affidavit of publication to:

Department of Environmental Quality  
Division of Water Quality  
Attn: Stacy Carroll  
P.O. 144870  
Salt Lake City, Utah 84114-4870

If there are any questions, please contact Mike Herkimer at (801) 538-6058. Thank you for your assistance.

Sincerely,

Gayle J. Smith, P.E., Environmental Engineer  
Permits & Compliance Section

GJS:MH:cc

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March 1, 2001

### DIVISION OF WATER QUALITY UTAH DEPARTMENT OF ENVIRONMENTAL QUALITY

#### PUBLIC NOTICE OF RENEWAL OF UPDES PERMIT

#### PURPOSE OF PUBLIC NOTICE

THE PURPOSE OF THIS PUBLIC NOTICE IS TO DECLARE THE STATE OF UTAH'S INTENTION TO ISSUE A UTAH POLLUTANT DISCHARGE ELIMINATION SYSTEM (UPDES) PERMIT UNDER AUTHORITY OF THE UTAH WATER POLLUTION CONTROL ACT, SECTION 19-5-104 AND 107, UTAH CODE ANNOTATED 1953, AS AMENDED. SAID "PERMIT" REFERS TO UPDES PERMIT AND THE STATEMENT OF BASIS.

#### PERMIT INFORMATION

PERMITTEE NAME:	Canyon Fuel Co, LLC - SUFCO
MAILING ADDRESS:	397 South 800 West, Salina, UT 84654
TELEPHONE NUMBER:	(435) 286-4880
FACILITY LOCATION:	UP Convulsion Canyon East of Salina on I-70 at Exit #72
UPDES PERMIT NO.:	UT0022918

#### BACKGROUND

Underground coal mining operation which discharges to Quitchapah Creek and a tributary of Quitchapah Creek (East Spring Canyon).

#### PUBLIC COMMENTS

Public comments are invited any time prior to April 1, 2001. Comments may be directed to the Department of Environmental Quality, Division of Water Quality, 288 North 1460 West, P.O. Box 144870, Salt Lake City, Utah 84114-4870. All comments received prior to April 1, 2001 will be considered in the formulation of final determinations to be imposed in the renewal permit. A public hearing will be held if response to this Notice indicates significant public interest. A public hearing may be held if written requests are received within the first 15 days of this public comment period that demonstrate significant public interest and substantive issues exist to warrant holding a hearing.

#### FURTHER INFORMATION

Additional information may be obtained upon request by calling (801) 538-6146 or by writing the aforementioned address. All information appropriate to this permit renewal is available for review at the Division of Water Quality, 288 North 1460 West, Salt Lake City, Utah.



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# State of Utah

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# COPY

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February 26, 2001

### CERTIFIED MAIL (Return Receipt Requested)

Mr. Mike Davis, Environmental and Construction Supervisor.  
Canyon Fuel Co., LLC - SUFCO  
397 South 800 West  
Salina, UT 84654

Dear Mr. Davis:

Subject: Draft UPDES Permit UT0022918, Canyon Fuel Co., LLC - SUFCO

Enclosed is a copy of the Draft UPDES Permit No. UT0022918, the Statement of Basis, and the Public Notice for your facility.

If you have any questions with regards to this matter, please contact Mike Herkimer at (801) 538-6058.

Sincerely,

Gayle J. Smith, P.E., Manager  
Permits & Compliance Section

GJS:MDH:st

Enclosure

- cc: Linda Himmelbauer, EPA Region VIII (W/encl)
- Bruce Costa, Central Utah Public Health Dept. (W/encl)
- Roger Foisy, DEQ District Engineer (W/encl)
- Bill Bradwisch, Aquatic Habitat Coordinator, DWR (W/encl)
- Betty Grizzle, US Fish & Wildlife Service (W/encl)
- Pam Grubaugh-Littig, Division of Oil Gas & Mining (W/encl)

MHERIMER\WP\CANYONFUEL\PN-SUFCO

*Call*  
*Copy PFD*  
~~\_\_\_\_\_~~  
~~\_\_\_\_\_~~  
*Letter to Mike S.*

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MAILING ADDRESS:	397 South 800 West, Salina, UT 84654
TELEPHONE NUMBER:	(435) 286-4880
FACILITY LOCATION:	UP Convulsion Canyon East of Salina on I-70 at Exit #72
UPDES PERMIT NO.:	UT0022918

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Underground coal mining operation which discharges to Quitchapah Creek and a tributary of Quitchapah Creek (East Spring Canyon).

#### PUBLIC COMMENTS

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**STATEMENT OF BASIS**

**SOUTHERN UTAH FUEL COMPANY (SUFCO)**

**UPDES PERMIT NO. UT0022918**

**RENEWAL PERMIT FOR MAJOR INDUSTRIAL FACILITY**

**FACILITY CONTACT:** Mike Davis, Environmental and Construction Supervisor  
397 South 800 West  
Salina, Utah 84654

Phone: (435) 286 - 4880 Fax: (435) 286-4499

**DESCRIPTION OF FACILITY:** This is an underground coal mining facility located up Convulsion Canyon east of Salina on I-70 at exit #72. SUFCO mines about six and one-half million tons of coal per year by use of one longwall and two continuous mining units. The mine employs around 250 people.

The Standard Industrial Classification (SIC) code is 1222.

**DESCRIPTION OF DISCHARGES:** SUFCO has three discharge points known as 001, 002 and 003. Outfall 003 discharges mine water on a continuous basis from a mine breakout point. The discharge travels several hundred feet downhill before impacting several large boulders and entering Quitchapah Creek. Outfall 002 is from a sedimentation pond which drains the entire disturbed area. Discharge from Outfall 002 goes to East Spring Canyon which is a tributary of Quitchapah Creek. Outfall 001 has not discharged in several years. If discharge were to occur, it would also go to East Spring Canyon.

<u>Outfall</u>	<u>Description of Discharge Point</u>
001	Discharge of mine water from an eight inch pipe, located at latitude 38 54'54" and longitude 111 24'54".
002	A twelve inch discharge pipe serving as an outlet to the sedimentation pond. Located at latitude 38 54'52" and longitude 111 54'58"
003	Twenty four inch discharge pipe at a mine breakout. Located at latitude 38 57'26" and longitude 111 23'06".

**STREAM CLASSIFICATIONS:** East Spring Canyon, a tributary of Quitchupah Creek, as well as Quitchupah Creek are classified under Utah Administrative Code (UAC) R317-2-13 as 2B, 3A and 4.

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

Class 3A - protection 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.

**BASIS FOR EFFLUENT LIMITATIONS:** Technology standards for Coal Mining Point Source Category are found in 40 CFR 434. Based on these technology standards Total Suspended Solids (TSS) shall not exceed 70 mg/L as a maximum for any one day. These technology standards are also the basis for the storm water settleable solids limitation of 0.5 ml/L.

State secondary treatment standards are found in R317-1-3.2. These standards limit the 5-day Biochemical Oxygen Demand (BOD<sub>5</sub>), TSS and pH. It is doubtful BOD<sub>5</sub> is of concern because there should be very little oxidizable organic matter in the mine water. Noted in the Statement of Basis (SOB) five years ago was the fact that two samples for BOD<sub>5</sub> were taken at 003 and both were below detection limits. As the water leaves the mine it falls several hundred feet and impacts a number of large boulders before entering Quitchupah Creek. This provides a large amount of aeration. Therefore, due to the low BOD<sub>5</sub> concentrations and high aeration, neither BOD<sub>5</sub> nor DO limits shall be included in the permit. Utah secondary treatment standards also require TSS and pH permit limitations.

Dissolved iron shall be limited to 1.0 mg/L as required by a Wasteload Allocation (WLA) which is appended to this SOB. A review of effluent data appended to this SOB indicates that SUFCO can meet a 1.0 mg/L total iron effluent limitation. Dissolved iron is by definition some fraction of total iron. A specific ratio between total iron and dissolved iron cannot be determined because of the variability in the total and dissolved iron ratio. If total iron is limited to 1.0 mg/L, then a dissolved iron of 1.0 mg/L will be protected. Therefore, 1.0 mg/L total iron will be included as the iron effluent limitation. The Executive Secretary will consider modification of the permit to adjust this limit if SUFCO can provide convincing data to establish a specific correlation between total and dissolved iron.

Based on the WLA total dissolved solids shall have the same limit at each of the discharge points as contained in the previous permit, TDS is limited to 1200 mg/L at 001 and 003 and one (1) ton per day at 002.

Long wall mining fluids are potential contaminants from the mining operation. Therefore, this permit will require a visual observation of the effluent twice per month to determine if an oil sheen or emulsified oil is present. If a sheen is present or there is any other reason to believe oil is present, a sample of oil and grease must be taken. Experience over the years and BPJ indicate that an effluent limit on oil and grease of 10 mg/L as a daily maximum at all discharge points is appropriate. Therefore, if a sample needs to be taken, it shall not exceed 10 mg/L in concentration.

A summary of the limitations discussed in this portion of the statement of basis follows:

<u>Parameter</u>	<u>30-Day Average</u>	<u>7-Day Average</u>	<u>Daily Min.</u>	<u>Daily Max.</u>
TSS, mg/L	25	35	NA	70
Oil & Grease, mg/L <u>a/</u>	NA	NA	NA	10
pH, Standard Units	NA	NA	6.5	9.0
Total Iron, mg/L	NA	NA	NA	1.0
TDS, mg/L <u>b/</u>	NA	NA	NA	1200

a/ A sample for oil and grease shall be taken if a sheen is present or there is some other reason to believe emulsified oil or some other oil is present in the discharge. If an oil and grease sample is taken it shall not exceed 10 mg/L in concentration as a daily maximum.

b/ TDS shall be limited to a loading of 2000 lbs per day at discharge point 002. Discharge points 001 and 003 shall not exceed 1200 mg/L.

**SUBSTANTIVE CHANGES:** There are no changes from the previous permit.

**BEST MANAGEMENT PRACTICES:** The permittee is required to minimize the discharge of salt by using the largest practicable amount of saline water for process and dust control. In addition the permittee shall use BMPs to assure there is no discharge of water from the salt storage area(s). There shall be no use of gypsum for rock dusting in the mine.

**WHOLE EFFLUENT TOXICITY (WET) TESTING REQUIREMENTS:** Over the last five years SUFCO has not failed acute WET testing. A chronic WET test was completed at 003 and no chronic toxicity was detected. Therefore, SUFCO will continue acute WET testing quarterly with alternating species and no acute WET limit.

**STORM WATER REQUIREMENTS:** The previous permit contained requirements on the development of a storm water pollution prevention plan. SUFCO has complied with the requirements and developed a storm water pollution prevention plan. In 1998 multi-sector general storm water permits came into existence. SUFCO will need to obtain a multi-sector general storm water permit. Please coordinate with Tom Rushing of the Division of Water Quality at (801) 538-6951 in order to obtain the multi-sector general storm water permit.

**PRETREATMENT REQUIREMENTS:** SUFCO does not discharge process wastewater to any public sanitary sewer system. However, any process wastewater that SUFCO may haul to a public sanitary sewer is subject to federal, state and local pretreatment regulations. Pursuant to section 307 of the Clean Water Act SUFCO shall comply with all applicable federal pretreatment regulations promulgated in 40 CFR Section 403, the state pretreatment requirements found in UAC R317-8-8, and any specific local discharge limitations developed by the wastewater treatment plant accepting any process wastewater from SUFCO.

**SELF-MONITORING AND REPORTING REQUIREMENTS:** All monitoring requirements are BPJ. Frequency of sampling, sample type and units for all parameters included in the permit are shown below:

<u>Parameter</u>	<u>Sampling Frequency</u>	<u>Sample Type</u>	<u>Units</u>
Total Flow <u>a/</u>	2 X Month	Measured	GPD or MGD
TSS	2 X Month	Grab	mg/L
Oil & Grease <u>b/</u>	2 X Month	visual	yes/no
Oil & Grease	When Sheen Observed	Grab	mg/L
pH	2 X Month	Grab	S.U.
Total Iron	2 X Month	Grab	mg/L
TDS	2 X Month	Grab	mg/L
Acute Toxicity	Quarterly	Grab	Pass/Fail

a/ Flow measurement of effluent volume shall be made in such a manner that the permittee affirmatively demonstrates that representative values are being obtained.

b/ A sample for oil and grease shall be taken if a sheen is present or there is some other reason to believe emulsified oil or other oil is present in the discharge.

**SPECIAL CONDITIONS:** In 40 CFR Part 434 Subpart F - Miscellaneous Provision, some alternate discharge provisions are made. In the case of SUFCO these limitations shall only apply to the 002 discharge point (not applicable to discharges from underground workings of

underground mines that are not commingling with other discharges eligible for these alternate limits). There are two alternate discharge proposals; one covering variation in effluent limits based on less than the 10-year 24-hour precipitation event and the other covering variation in effluent limits based on greater than the 10-year 24-hour precipitation event.

Any discharge or increase in the volume of a discharge caused by precipitation within any 24-hour period less than the 10-year 24-hour precipitation event (or snowmelt of equivalent volume) shall comply with a settleable solids value of 0.5 ml/L as a daily maximum and a pH value of 6.5 to 9.0. All other parameters of the permit shall be monitored and reported as required by the permit, but the only effluent limit in effect would be settleable solids and pH.

Any discharge or increase in the volume of a discharge caused by precipitation within any 24-hour period greater than the 10-year 24-hour precipitation event (or snowmelt of equivalent volume) may comply with the following limitation only:

pH must be in the range of 6.5 to 9.0

All of the effluent parameters must be monitored, including settleable solids, but the only effluent limit in effect would be pH.

The operator has the burden of proof that the discharge or increase in discharge was caused by the appropriate precipitation event.

Statement of Basis and permit drafted by Mike Herkimer, Environmental Scientist, Division of Water Quality, January 23, 2001.

**Wasteload Analysis - Total Maximum Daily Load (TMDL)**

1/10/2001
3:30 PM

**Facilities:** SUFCO 02 2001 Sed Pond  
**Discharging to:** Quitchupah Creek

**UPDES No:** UT- 0022918

**I. Introduction**

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

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

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

**II. Receiving Water and Stream Classification**

Quitchupah Creek

2B, 3A, 4

**III. Numeric Stream Standards for Protection of Aquatic Wildlife**

Total Ammonia (TNH3)

Function of Temperature and pH

Summer June, July, August	0.58 mg/l as N (4 Day Average) 3.61 mg/l as N (1 Hour Average) 20.00 @ Temperature, Deg. C. 8.20 @ pH
Fall/Spring September, October, November March, April May	0.83 mg/l as N (4 Day Average) 4.50 mg/l as N (1 Hour Average) 12.00 @ Temperature, Deg. C. 8.10 @ pH
Winter December, January, February	1.29 mg/l as N (4 Day Average) 5.68 mg/l as N (1 Hour Average) 4.00 @ Temperature, Deg. C. 8.00 @ pH

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 mg/l

Maximum Boron

750 mg/l

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

Parameter	4 Day Average (Chronic) Standard		1 Hour Average (Acute) Standard		
	Concentration	Load*	Concentration		Load*
Aluminum	87.00 ug/l**	0.726 lbs/day	750.00	ug/l	6.254 lbs/day
Arsenic	190.00 ug/l	1.585 lbs/day	360.00	ug/l	3.002 lbs/day
Cadmium	2.69 ug/l	0.022 lbs/day	13.54	ug/l	0.113 lbs/day
Chromium III	508.97 ug/l	4.247 lbs/day	4270.10	ug/l	35.605 lbs/day
ChromiumVI	11.00 ug/l	0.092 lbs/day	16.00	ug/l	0.133 lbs/day
Copper	30.23 ug/l	0.252 lbs/day	49.90	ug/l	0.416 lbs/day
Iron			1000.00	ug/l	8.338 lbs/day
Lead	12.88 ug/l	0.107 lbs/day	330.60	ug/l	2.757 lbs/day
Mercury	0.0120 ug/l	0.000 lbs/day	2.40	ug/l	0.020 lbs/day
Nickel	399.37 ug/l	3.332 lbs/day	3592.47	ug/l	29.955 lbs/day
Selenium	5.00 ug/l	0.042 lbs/day	20.00	ug/l	0.167 lbs/day
Silver	ug/l	lbs/day	26.86	ug/l	0.224 lbs/day
Zinc	268.87 ug/l	2.243 lbs/day	296.85	ug/l	2.475 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 300 mg/l as CaCO3

**Organics [Pesticides]**

Parameter	4 Day Average (Chronic) Standard		1 Hour Average (Acute) Standard		
	Concentration	Load*	Concentration		Load*
Aldrin			1.500	ug/l	0.013 lbs/day
Chlordane	0.0043 ug/l	0.036 lbs/day	1.200	ug/l	0.010 lbs/day
DDT, DDE	0.001 ug/l	0.008 lbs/day	0.550	ug/l	0.005 lbs/day
Dieldrin	0.0019 ug/l	0.016 lbs/day	1.250	ug/l	0.010 lbs/day
Endosulfan	0.056 ug/l	0.467 lbs/day	0.110	ug/l	0.001 lbs/day
Endrin	0.0023 ug/l	0.019 lbs/day	0.090	ug/l	0.001 lbs/day
Guthion			0.010	ug/l	0.000 lbs/day
Heptachlor	0.0038 ug/l	0.032 lbs/day	0.260	ug/l	0.002 lbs/day
Lindane	0.08 ug/l	0.667 lbs/day	1.000	ug/l	0.008 lbs/day
Methoxychlor			0.030	ug/l	0.000 lbs/day
Mirex			0.010	ug/l	0.000 lbs/day
Parathion			0.040	ug/l	0.000 lbs/day
PCB's	0.014 ug/l	0.117 lbs/day	2.000	ug/l	0.017 lbs/day
Pentachlorophenol	13.00 ug/l	108.468 lbs/day	20.000	ug/l	0.167 lbs/day
Toxephene	0.0002 ug/l	0.002 lbs/day	0.730	ug/l	0.006 lbs/day

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

	4 Day Average (Chronic) Standard		1 Hour Average (Acute) Standard	
	Concentration	Load*	Concentration	Load*
TDS			1200.0 mg/l	5.00 tons/day
Arsenic			100.0 ug/l	lbs/day
Boron			750.0 ug/l	lbs/day
Cadmium			10.0 ug/l	0.04 lbs/day
Chromium			100.0 ug/l	lbs/day
Copper			200.0 ug/l	lbs/day
Lead			100.0 ug/l	lbs/day
Selenium			50.0 ug/l	lbs/day

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

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

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

**Maximum Conc., ug/l - Acute Standards**

Toxic Organics	Class 1C		Class 3A, 3B	
	[2 Liters/Day for 70 Kg Person over 70 Yr.]		[6.5 g for 70 Kg Person over 70 Yr.]	
Acenaphthene	ug/l	lbs/day	2700 ug/l	22.53 lbs/day
Acrolein	ug/l	lbs/day	780 ug/l	6.51 lbs/day
Acrylonitrile	ug/l	lbs/day	0.66 ug/l	0.01 lbs/day
Benzene	ug/l	lbs/day	71 ug/l	0.59 lbs/day
Benzidine	ug/l	lbs/day	0.00054 ug/l	0.00 lbs/day
Carbon tetrachloride	ug/l	lbs/day	4.4 ug/l	0.04 lbs/day
Chlorobenzene	ug/l	lbs/day	21000 ug/l	175.22 lbs/day
1,2,4-Trichlorobenzene				
Hexachlorobenzene	ug/l	lbs/day	0.00077 ug/l	0.00 lbs/day
1,2-Dichloroethane	ug/l	lbs/day	99 ug/l	0.83 lbs/day
1,1,1-Trichloroethane				
Hexachloroethane	ug/l	lbs/day	8.9 ug/l	0.07 lbs/day

1,1-Dichloroethane				
1,1,2-Trichloroethane	ug/l	lbs/day	42 ug/l	0.35 lbs/day
1,1,2,2-Tetrachloroethan	ug/l	lbs/day	11 ug/l	0.09 lbs/day
Chloroethane			ug/l	lbs/day
Bis(2-chloroethyl) ether	ug/l	lbs/day	1.4 ug/l	0.01 lbs/day
2-Chloroethyl vinyl ether	ug/l	lbs/day	ug/l	lbs/day
2-Chloronaphthalene	ug/l	lbs/day	4300 ug/l	35.88 lbs/day
2,4,6-Trichlorophenol	ug/l	lbs/day	6.5 ug/l	0.05 lbs/day
p-Chloro-m-cresol			ug/l	lbs/day
Chloroform (HM)	ug/l	lbs/day	470 ug/l	3.92 lbs/day
2-Chlorophenol	ug/l	lbs/day	400 ug/l	3.34 lbs/day
1,2-Dichlorobenzene	ug/l	lbs/day	17000 ug/l	141.84 lbs/day
1,3-Dichlorobenzene	ug/l	lbs/day	2600 ug/l	21.69 lbs/day
1,4-Dichlorobenzene	ug/l	lbs/day	2600 ug/l	21.69 lbs/day
3,3'-Dichlorobenzidine	ug/l	lbs/day	0.077 ug/l	0.00 lbs/day
1,1-Dichloroethylene	ug/l	lbs/day	3.2 ug/l	0.03 lbs/day
1,2-trans-Dichloroethyler	ug/l	lbs/day	ug/l	lbs/day
2,4-Dichlorophenol	ug/l	lbs/day	790 ug/l	6.59 lbs/day
1,2-Dichloropropane	ug/l	lbs/day	39 ug/l	0.33 lbs/day
1,3-Dichloropropylene	ug/l	lbs/day	1700 ug/l	14.18 lbs/day
2,4-Dimethylphenol	ug/l	lbs/day	2300 ug/l	19.19 lbs/day
2,4-Dinitrotoluene	ug/l	lbs/day	9.1 ug/l	0.08 lbs/day
2,6-Dinitrotoluene	ug/l	lbs/day	ug/l	lbs/day
1,2-Diphenylhydrazine	ug/l	lbs/day	0.54 ug/l	0.00 lbs/day
Ethylbenzene	ug/l	lbs/day	29000 ug/l	241.97 lbs/day
Fluoranthene	ug/l	lbs/day	370 ug/l	3.09 lbs/day
4-Chlorophenyl phenyl ether				
4-Bromophenyl phenyl ether				
Bis(2-chloroisopropyl) etl	ug/l	lbs/day	170000 ug/l	1418.43 lbs/day
Bis(2-chloroethoxy) metf	ug/l	lbs/day	ug/l	lbs/day
Methylene chloride (HM)	ug/l	lbs/day	1600 ug/l	13.35 lbs/day
Methyl chloride (HM)	ug/l	lbs/day	ug/l	lbs/day
Methyl bromide (HM)	ug/l	lbs/day	ug/l	lbs/day
Bromoform (HM)	ug/l	lbs/day	360 ug/l	3.00 lbs/day
Dichlorobromomethane(l	ug/l	lbs/day	22 ug/l	0.18 lbs/day
Chlorodibromomethane (	ug/l	lbs/day	34 ug/l	0.28 lbs/day
Hexachlorobutadiene(c)	ug/l	lbs/day	50 ug/l	0.42 lbs/day
Hexachlorocyclopentadic	ug/l	lbs/day	17000 ug/l	141.84 lbs/day
Isophorone	ug/l	lbs/day	600 ug/l	5.01 lbs/day
Naphthalene				
Nitrobenzene	ug/l	lbs/day	1900 ug/l	15.85 lbs/day
2-Nitrophenol	ug/l	lbs/day	ug/l	lbs/day
4-Nitrophenol	ug/l	lbs/day	ug/l	lbs/day
2,4-Dinitrophenol	ug/l	lbs/day	14000 ug/l	116.81 lbs/day
4,6-Dinitro-o-cresol	ug/l	lbs/day	765 ug/l	6.38 lbs/day
N-Nitrosodimethylamine	ug/l	lbs/day	8.1 ug/l	0.07 lbs/day
N-Nitrosodiphenylamine	ug/l	lbs/day	16 ug/l	0.13 lbs/day
N-Nitrosodi-n-propylamir	ug/l	lbs/day	1.4 ug/l	0.01 lbs/day
Pentachlorophenol	ug/l	lbs/day	8.2 ug/l	0.07 lbs/day
Phenol	ug/l	lbs/day	4.6E+06 ug/l	3.84E+04 lbs/day
Bis(2-ethylhexyl)phthalat	ug/l	lbs/day	5.9 ug/l	0.05 lbs/day
Butyl benzyl phthalate	ug/l	lbs/day	5200 ug/l	43.39 lbs/day
Di-n-butyl phthalate	ug/l	lbs/day	12000 ug/l	100.12 lbs/day
Di-n-octyl phthlate				

Diethyl phthalate	ug/l	lbs/day	120000 ug/l	1001.25 lbs/day
Dimethyl phthalate	ug/l	lbs/day	2.9E+06 ug/l	2.42E+04 lbs/day
Benzo(a)anthracene (PAH)	ug/l	lbs/day	0.031 ug/l	0.00 lbs/day
Benzo(a)pyrene (PAH)	ug/l	lbs/day	0.031 ug/l	0.00 lbs/day
Benzo(b)fluoranthene (P)	ug/l	lbs/day	0.031 ug/l	0.00 lbs/day
Benzo(k)fluoranthene (P)	ug/l	lbs/day	0.031 ug/l	0.00 lbs/day
Chrysene (PAH)	ug/l	lbs/day	0.031 ug/l	0.00 lbs/day
Acenaphthylene (PAH)				
Anthracene (PAH)	ug/l	lbs/day	ug/l	lbs/day
Dibenzo(a,h)anthracene	ug/l	lbs/day	0.031 ug/l	0.00 lbs/day
Indeno(1,2,3-cd)pyrene (	ug/l	lbs/day	0.031 ug/l	0.00 lbs/day
Pyrene (PAH)	ug/l	lbs/day	11000 ug/l	91.78 lbs/day
Tetrachloroethylene	ug/l	lbs/day	8.9 ug/l	0.07 lbs/day
Toluene	ug/l	lbs/day	200000 ug/l	1668.74 lbs/day
Trichloroethylene	ug/l	lbs/day	81 ug/l	0.68 lbs/day
Vinyl chloride	ug/l	lbs/day	525 ug/l	4.38 lbs/day
				lbs/day
				lbs/day
<b>Pesticides</b>				
Aldrin	ug/l	lbs/day	0.00014 ug/l	0.00 lbs/day
Dieldrin	ug/l	lbs/day	0.00014 ug/l	0.00 lbs/day
Chlordane	ug/l	lbs/day	0.00059 ug/l	0.00 lbs/day
4,4'-DDT	ug/l	lbs/day	0.00059 ug/l	0.00 lbs/day
4,4'-DDE	ug/l	lbs/day	0.00059 ug/l	0.00 lbs/day
4,4'-DDD	ug/l	lbs/day	0.00084 ug/l	0.00 lbs/day
alpha-Endosulfan	ug/l	lbs/day	2 ug/l	0.02 lbs/day
beta-Endosulfan	ug/l	lbs/day	2 ug/l	0.02 lbs/day
Endosulfan sulfate	ug/l	lbs/day	2 ug/l	0.02 lbs/day
Endrin	ug/l	lbs/day	0.81 ug/l	0.01 lbs/day
Endrin aldehyde	ug/l	lbs/day	0.81 ug/l	0.01 lbs/day
Heptachlor	ug/l	lbs/day	0.00021 ug/l	0.00 lbs/day
Heptachlor epoxide				
<b>PCB's</b>				
PCB 1242 (Arochlor 124)	ug/l	lbs/day	0.000045 ug/l	0.00 lbs/day
PCB-1254 (Arochlor 125)	ug/l	lbs/day	0.000045 ug/l	0.00 lbs/day
PCB-1221 (Arochlor 122)	ug/l	lbs/day	0.000045 ug/l	0.00 lbs/day
PCB-1232 (Arochlor 123)	ug/l	lbs/day	0.000045 ug/l	0.00 lbs/day
PCB-1248 (Arochlor 124)	ug/l	lbs/day	0.000045 ug/l	0.00 lbs/day
PCB-1260 (Arochlor 126)	ug/l	lbs/day	0.000045 ug/l	0.00 lbs/day
PCB-1016 (Arochlor 101)	ug/l	lbs/day	0.000045 ug/l	0.00 lbs/day
<b>Pesticide</b>				
Toxaphene	ug/l		ug/l	lbs/day
<b>Dioxin</b>				
Dioxin (2,3,7,8-TCDD)	ug/l	lbs/day		
<b>Metals</b>				
Antimony	ug/l	lbs/day		
Arsenic	ug/l	lbs/day	4300.00 ug/l	35.88 lbs/day
Asbestos	ug/l	lbs/day		
Beryllium				
Cadmium				

Chromium (III)				
Chromium (VI)				
Copper				
Cyanide	ug/l	lbs/day	2.2E+05 ug/l	1835.62 lbs/day
Lead	ug/l	lbs/day		
Mercury			0.15 ug/l	0.00 lbs/day
Nickel			4600.00 ug/l	38.38 lbs/day
Selenium	ug/l	lbs/day		
Silver	ug/l	lbs/day		
Thallium			6.30 ug/l	0.05 lbs/day
Zinc				

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

## VII. Mathematical Modeling of Stream Quality

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

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

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

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

(3) 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.

**Upstream Information**

	Stream Flow	Temp.	pH*	T-NH3	BOD	DO	TRC	TDS
	cfs	Deg. C		mg/l as N	mg/l	mg/l	mg/l	mg/l
Summer	0.0	20.0	8.2	0.05	0.10	6.36		
Fall/Spring	0.0	12.0	8.1	0.05	0.10	---		
Winter	0.0	4.0	8.0	0.05	0.10	---		
Dissolved Metals	Al ug/l	As ug/l	Cd ug/l	CrIII ug/l	CrVI ug/l	Copper ug/l	Fe ug/l	Pb ug/l
All Seasons	1.59*	0.53*	0.053*	0.53*	2.65*	0.53*	0.83*	0.53*
All Seasons	Hg 0.0001	Ni 0.53*	Se 1.06*	Ag 0.1*	Zn 0.053*	Boron 10.0		* 1/4 MDL

\*Note: pH values are for downstream after mixing. The stream is effluent dominated, therefore, pH values are lower than default values.

**Discharge Information**

Season	Flow, MGD	Temp.
Summer	1.00000	20.0
Fall/Spring	1.00000	18.0
Winter	1.00000	15.0

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:

All Seasons		
Not to Exceed:	1.00 MGD	Daily Average
	1.55 cfs	Daily Average

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

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

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

All Seasons [Based upon Summer Conditions]		
Concentration		
30 Day Average	15.0 mg/l as BOD5	125.1 lbs/day
30 Day Average	12.0 mg/l as COD	100.1 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:

All Seasons [Based upon Summer Conditions]	
Concentration	
30 Day Average	5.0 mg/l

**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:

<b>Season</b>	<b>4 Day Average [Chronic]</b>	<b>Load</b>
	<b>Concentration</b>	

Summer	0.58 mg/l as N	4.9 lbs/day
Fall/Spring	0.83 mg/l as N	7.0 lbs/day
Winter	1.29 mg/l as N	10.8 lbs/day

Season	1 Hour Average [Acute] Concentration	Load
Summer	3.6 mg/l as N	30.1 lbs/day
Fall/Spring	4.5 mg/l as N	37.5 lbs/day
Winter	5.7 mg/l as N	47.4 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	4 Day Average [Chronic] Concentration	Load
Summer	0.01 mg/l	0.1 lbs/day
Fall/Spring	0.01 mg/l	0.1 lbs/day
Winter	0.01 mg/l	0.1 lbs/day

Season	1 Hour Average [Acute] Concentration	Load
Summer	0.02 mg/l	0.2 lbs/day
Fall/Spring	0.02 mg/l	0.2 lbs/day
Winter	0.02 mg/l	0.2 lbs/day

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

*Note: TRC limitation not required for facilities utilizing UV disinfection.*

### 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 300 mg/l):

	4 Day Average		1 Hour Average		
	Concentration	Load	Concentration	Load	
Aluminum	N/A ug/l	N/A lbs/day	750.5	ug/l	4.0 lbs/day
Arsenic	190.12 ug/l	1.0 lbs/day	360.2	ug/l	1.9 lbs/day
Cadmium	2.69 ug/l	0.0 lbs/day	13.6	ug/l	0.1 lbs/day
Chromium III	509.30 ug/l	2.7 lbs/day	4,272.9	ug/l	23.0 lbs/day
Chromium VI	11.00 ug/l	0.1 lbs/day	16.0		
Copper	30.25 ug/l	0.2 lbs/day	49.9	ug/l	0.3 lbs/day
Iron			1,000.6	ug/l	5.4 lbs/day
Lead	12.89 ug/l	0.1 lbs/day	330.8	ug/l	1.8 lbs/day

Mercury	0.01 ug/l	0.0 lbs/day	2.4	ug/l	0.0 lbs/day
Nickel	399.63 ug/l	2.2 lbs/day	3,594.8	ug/l	19.4 lbs/day
Selenium	5.00 ug/l	0.0 lbs/day	20.0	ug/l	0.1 lbs/day
Silver	N/A ug/l	N/A lbs/day	26.9	ug/l	0.1 lbs/day
Zinc	269.04 ug/l	1.5 lbs/day	297.0	ug/l	1.6 lbs/day
Cyanide	5.20 mg/l	0.0 lbs/day	4.0	ug/l	0.0 lbs/day
TDS, mg/l			1,200.8	mg/l	3.2 tons/day
			371.1	mg/l	@ 1.0 tons/day
<b>TDS Effluent Limitation: ----&gt;</b>			<b>1,200.0</b>	<b>mg/l</b>	

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

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

	4 Day Average		1 Hour Average	
	Concentration	Load	Concentration	Load
Aldrin	ug/l	lbs/day	1.5E+00	ug/l 1.25E-02 lbs/day
Chlordane	4.30E-03 ug/l	3.59E-02 lbs/day	1.2E+00	ug/l 1.00E-02 lbs/day
DDT, DDE	1.00E-03 ug/l	8.34E-03 lbs/day	5.5E-01	ug/l 4.59E-03 lbs/day
Dieldrin	1.90E-03 ug/l	1.58E-02 lbs/day	1.3E+00	ug/l 1.04E-02 lbs/day
Endosulfan	5.60E-02 ug/l	4.67E-01 lbs/day	1.1E-01	ug/l 9.17E-04 lbs/day
Endrin	2.30E-03 ug/l	1.92E-02 lbs/day	9.0E-02	ug/l 7.50E-04 lbs/day
Guthion	ug/l	lbs/day	1.0E-02	ug/l 8.34E-05 lbs/day
Heptachlor	3.80E-03 ug/l	3.17E-02 lbs/day	2.6E-01	ug/l 2.17E-03 lbs/day
Lindane	8.00E-02 ug/l	6.67E-01 lbs/day	1.0E+00	ug/l 8.34E-03 lbs/day
Methoxychlor	ug/l	lbs/day	3.0E-02	ug/l 2.50E-04 lbs/day
Mirex	ug/l	lbs/day	1.0E-02	ug/l 8.34E-05 lbs/day
Parathion	ug/l	lbs/day	4.0E-02	ug/l 3.34E-04 lbs/day
PCB's	1.40E-02 ug/l	1.17E-01 lbs/day	2.0E+00	ug/l 1.67E-02 lbs/day
Pentachlorophenol	1.30E+01 ug/l	1.08E+02 lbs/day	2.0E+01	ug/l 1.67E-01 lbs/day
Toxephene	2.00E-04 ug/l	1.67E-03 lbs/day	7.3E-01	ug/l 6.09E-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	27.0 lbs/day
Nitrates as N	4.0 mg/l	21.6 lbs/day
Total Phosphorus as P	0.1 mg/l	0.3 lbs/day
Total Suspended Solids	90.0 mg/l	0.2 tons/day

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

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

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

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

#### Pesticides

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

#### PCB's

PCB 1242 (Arochlor 1242)	4.50E-05 ug/l	3.75E-07 lbs/day
PCB-1254 (Arochlor 1254)	4.50E-05 ug/l	3.75E-07 lbs/day

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

**Pesticide**

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

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

**Dioxin**

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

	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	Chronic Most Stringent ug/l
Aluminum		750.5				750.5		
Antimony				4302.8		4302.8		
Arsenic	100.1	360.2				100.1	190.1	190.1
Asbestos								
Barium								
Beryllium								
Cadmium	10.0	13.6				10.0	2.7	2.7
Chromium (III)		4272.9				4272.9	509.3	509.3
Chromium (VI)	100.1	16.0				16.0	11.0	11.0
Copper	200.1	49.9				49.9	30.3	30.3
Cyanide			220142.2			220142.2		
Iron		1000.6				1000.6		

Lead	100.1	330.8		100.1	12.9	12.9
Mercury		2.4	0.2	0.2	0.0	0.0
Nickel		3594.8	4603.0	3594.8	399.6	399.6
Selenium	50.0	20.0		20.0	5.0	5.0
Silver		26.9		26.9		
Thallium			6.3	6.3		
Zinc		297.0		297.0	269.0	269.0
Boron	750.5			750.5		

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

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

	WLA Acute ug/l	WLA Chronic ug/l
Aluminum	750.5	
Antimony	4302.78	
Arsenic	100.1	190.1
Asbestos		
Barium		
Beryllium		
Cadmium	10.0	2.7
Chromium (III)	4272.9	509
Chromium (VI)	16.0	11.0
Copper	49.9	30.3
Cyanide	220142.2	
Iron	1000.6	
Lead	100.1	12.9
Mercury	0.150	0.012
Nickel	3594.8	400
Selenium	20.0	5.0
Silver	26.9	
Thallium	6.3	
Zinc	297.0	269.0
Boron	750.48	

Adjustments to the above numbers are allowed in accordance with R317-1.3.4 titled *Pollutants in Diverted Water Returned to A Stream*.

Other Effluent Limitations may be based upon other provisions of R317-1.

### X. Flow Requirement or Loading Requirement

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

### XI. 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.

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 recreational areas, and drinking water sources.

## **XII. 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.

## **XIII. Water Quality Certification**

Pursuant to Section 401(a)(1) of the Federal Water Pollution Control Act, as amended in 1987, it is hereby indicated that the discharge from this facility should not cause a violation of applicable water quality standards if the effluent limitation values as indicated above are incorporated into the UPDES permit associated with this Statement of basis and to the best of my knowledge, will comply with applicable provision of Sections 301, 302, 303, 306, and 307 of said Act.

## **XIV. 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.

## **XV. 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.

Prepared by:  
William O. Moellmer, Ph.D.  
Utah Division of Water Quality  
801-538-6329

SUFCO 03 2001

# Wasteload Analysis - Total Maximum Daily Load (TMDL)

1/10/2001
3:30 PM

Facilities: SUFCO 03 Portal  
Discharging to: Quitchupah Creek

UPDES No: UT- 0022918

## I. Introduction

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

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

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

## II. Receiving Water and Stream Classification

Quitchupah Creek

2B, 3A, 4

## III. Numeric Stream Standards for Protection of Aquatic Wildlife

Total Ammonia (TNH3)

Function of Temperature and pH

Summer June, July, August	0.58 mg/l as N (4 Day Average) 3.61 mg/l as N (1 Hour Average) 20.00 @ Temperature, Deg. C. 8.20 @ pH
Fall/Spring September, October, November March, April May	0.84 mg/l as N (4 Day Average) 4.50 mg/l as N (1 Hour Average) 12.00 @ Temperature, Deg. C. 8.10 @ pH
Winter December, January, February	1.30 mg/l as N (4 Day Average) 5.68 mg/l as N (1 Hour Average) 4.00 @ Temperature, Deg. C. 8.00 @ pH

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 mg/l

Maximum Boron

750 mg/l

### Acute and Chronic Heavy Metals (Dissolved)

Parameter	4 Day Average (Chronic) Standard		1 Hour Average (Acute) Standard		
	Concentration	Load*	Concentration		Load*
Aluminum	87.00 ug/l**	4.107 lbs/day	750.00	ug/l	34.396 lbs/day
Arsenic	190.00 ug/l	8.970 lbs/day	360.00	ug/l	16.510 lbs/day
Cadmium	2.69 ug/l	0.127 lbs/day	13.54	ug/l	0.621 lbs/day
Chromium III	508.97 ug/l	24.028 lbs/day	4270.10	ug/l	195.830 lbs/day
ChromiumVI	11.00 ug/l	0.519 lbs/day	16.00	ug/l	0.734 lbs/day
Copper	30.23 ug/l	1.427 lbs/day	49.90	ug/l	2.289 lbs/day
Iron			1000.00	ug/l	45.861 lbs/day
Lead	12.88 ug/l	0.608 lbs/day	330.60	ug/l	15.162 lbs/day
Mercury	0.0120 ug/l	0.001 lbs/day	2.40	ug/l	0.110 lbs/day
Nickel	399.37 ug/l	18.854 lbs/day	3592.47	ug/l	164.753 lbs/day
Selenium	5.00 ug/l	0.236 lbs/day	20.00	ug/l	0.917 lbs/day
Silver	ug/l	lbs/day	26.86	ug/l	1.232 lbs/day
Zinc	268.87 ug/l	12.693 lbs/day	296.85	ug/l	13.614 lbs/day

\* Allowed below discharge

\*\*Chronic Aluminum standard applies only to waters with a pH < 7.0 and a Hardness < 50 mg/l as CaCO<sub>3</sub>

Metals Standards Based upon a Hardness of 300 mg/l as CaCO<sub>3</sub>

### Organics [Pesticides]

Parameter	4 Day Average (Chronic) Standard		1 Hour Average (Acute) Standard		
	Concentration	Load*	Concentration		Load*
Aldrin			1.500	ug/l	0.069 lbs/day
Chlordane	0.0043 ug/l	0.203 lbs/day	1.200	ug/l	0.055 lbs/day
DDT, DDE	0.001 ug/l	0.047 lbs/day	0.550	ug/l	0.025 lbs/day
Dieldrin	0.0019 ug/l	0.090 lbs/day	1.250	ug/l	0.057 lbs/day
Endosulfan	0.056 ug/l	2.644 lbs/day	0.110	ug/l	0.005 lbs/day
Endrin	0.0023 ug/l	0.109 lbs/day	0.090	ug/l	0.004 lbs/day
Guthion			0.010	ug/l	0.000 lbs/day
Heptachlor	0.0038 ug/l	0.179 lbs/day	0.260	ug/l	0.012 lbs/day
Lindane	0.08 ug/l	3.777 lbs/day	1.000	ug/l	0.046 lbs/day
Methoxychlor			0.030	ug/l	0.001 lbs/day
Mirex			0.010	ug/l	0.000 lbs/day
Parathion			0.040	ug/l	0.002 lbs/day
PCB's	0.014 ug/l	0.661 lbs/day	2.000	ug/l	0.092 lbs/day
Pentachlorophenol	13.00 ug/l	613.708 lbs/day	20.000	ug/l	0.917 lbs/day
Toxephene	0.0002 ug/l	0.009 lbs/day	0.730	ug/l	0.033 lbs/day

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

	4 Day Average (Chronic) Standard		1 Hour Average (Acute) Standard	
	Concentration	Load*	Concentration	Load*
TDS			1200.0 mg/l	27.52 tons/day
Arsenic			100.0 ug/l	lbs/day
Boron			750.0 ug/l	lbs/day
Cadmium			10.0 ug/l	0.23 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

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

Metals	4 Day Average (Chronic) Standard		1 Hour Average (Acute) Standard	
	Concentration	Load*	Concentration	Load*
Arsenic			ug/l	lbs/day
Barium			ug/l	lbs/day
Cadmium			ug/l	lbs/day
Chromium			ug/l	lbs/day
Lead			ug/l	lbs/day
Mercury			ug/l	lbs/day
Selenium			ug/l	lbs/day
Silver			ug/l	lbs/day
Fluoride (3)			ug/l	lbs/day
to			ug/l	lbs/day
Nitrates as N			ug/l	lbs/day

**Chlorophenoxy Herbicides**

2,4-D			ug/l	lbs/day
2,4,5-TP			ug/l	lbs/day
Endrin			ug/l	lbs/day
γ-cyclohexane (Lindane)			ug/l	lbs/day
Methoxychlor			ug/l	lbs/day
Toxaphene			ug/l	lbs/day

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

**Maximum Conc., ug/l - Acute Standards**

Toxic Organics	Class 1C		Class 3A, 3B	
	[2 Liters/Day for 70 Kg Person over 70 Yr.]		[6.5 g for 70 Kg Person over 70 Yr.]	
Acenaphthene	ug/l	lbs/day	2700 ug/l	127.46 lbs/day
Acrolein	ug/l	lbs/day	780 ug/l	36.82 lbs/day
Acrylonitrile	ug/l	lbs/day	0.66 ug/l	0.03 lbs/day
Benzene	ug/l	lbs/day	71 ug/l	3.35 lbs/day
Benzidine	ug/l	lbs/day	0.00054 ug/l	0.00 lbs/day
Carbon tetrachloride	ug/l	lbs/day	4.4 ug/l	0.21 lbs/day
Chlorobenzene	ug/l	lbs/day	21000 ug/l	991.37 lbs/day
1,2,4-Trichlorobenzene				
Hexachlorobenzene	ug/l	lbs/day	0.00077 ug/l	0.00 lbs/day
1,2-Dichloroethane	ug/l	lbs/day	99 ug/l	4.67 lbs/day
1,1,1-Trichloroethane				
Hexachloroethane	ug/l	lbs/day	8.9 ug/l	0.42 lbs/day

1,1-Dichloroethane				
1,1,2-Trichloroethane	ug/l	lbs/day	42 ug/l	1.98 lbs/day
1,1,2,2-Tetrachloroethan Chloroethane	ug/l	lbs/day	11 ug/l	0.52 lbs/day
Bis(2-chloroethyl) ether	ug/l	lbs/day	ug/l	lbs/day
2-Chloroethyl vinyl ether	ug/l	lbs/day	1.4 ug/l	0.07 lbs/day
2-Chloronaphthalene	ug/l	lbs/day	ug/l	lbs/day
2,4,6-Trichlorophenol	ug/l	lbs/day	4300 ug/l	203.00 lbs/day
p-Chloro-m-cresol	ug/l	lbs/day	6.5 ug/l	0.31 lbs/day
Chloroform (HM)	ug/l	lbs/day	ug/l	lbs/day
2-Chlorophenol	ug/l	lbs/day	470 ug/l	22.19 lbs/day
1,2-Dichlorobenzene	ug/l	lbs/day	400 ug/l	18.88 lbs/day
1,3-Dichlorobenzene	ug/l	lbs/day	17000 ug/l	802.54 lbs/day
1,4-Dichlorobenzene	ug/l	lbs/day	2600 ug/l	122.74 lbs/day
3,3'-Dichlorobenzidine	ug/l	lbs/day	2600 ug/l	122.74 lbs/day
1,1-Dichloroethylene	ug/l	lbs/day	0.077 ug/l	0.00 lbs/day
1,2-trans-Dichloroethyler	ug/l	lbs/day	3.2 ug/l	0.15 lbs/day
2,4-Dichlorophenol	ug/l	lbs/day	ug/l	lbs/day
1,2-Dichloropropane	ug/l	lbs/day	790 ug/l	37.29 lbs/day
1,3-Dichloropropylene	ug/l	lbs/day	39 ug/l	1.84 lbs/day
2,4-Dimethylphenol	ug/l	lbs/day	1700 ug/l	80.25 lbs/day
2,4-Dinitrotoluene	ug/l	lbs/day	2300 ug/l	108.58 lbs/day
2,6-Dinitrotoluene	ug/l	lbs/day	9.1 ug/l	0.43 lbs/day
1,2-Diphenylhydrazine	ug/l	lbs/day	ug/l	lbs/day
Ethylbenzene	ug/l	lbs/day	0.54 ug/l	0.03 lbs/day
Fluoranthene	ug/l	lbs/day	29000 ug/l	1369.04 lbs/day
4-Chlorophenyl phenyl ether			370 ug/l	17.47 lbs/day
4-Bromophenyl phenyl ether				
Bis(2-chloroisopropyl) etl	ug/l	lbs/day	170000 ug/l	8025.41 lbs/day
Bis(2-chloroethoxy) mettr	ug/l	lbs/day	ug/l	lbs/day
Methylene chloride (HM)	ug/l	lbs/day	1600 ug/l	75.53 lbs/day
Methyl chloride (HM)	ug/l	lbs/day	ug/l	lbs/day
Methyl bromide (HM)	ug/l	lbs/day	ug/l	lbs/day
Bromoform (HM)	ug/l	lbs/day	360 ug/l	16.99 lbs/day
Dichlorobromomethane(l	ug/l	lbs/day	22 ug/l	1.04 lbs/day
Chlorodibromomethane (	ug/l	lbs/day	34 ug/l	1.61 lbs/day
Hexachlorobutadiene(c)	ug/l	lbs/day	50 ug/l	2.36 lbs/day
Hexachlorocyclopentadie	ug/l	lbs/day	17000 ug/l	802.54 lbs/day
Isophorone	ug/l	lbs/day	600 ug/l	28.32 lbs/day
Naphthalene				
Nitrobenzene	ug/l	lbs/day	1900 ug/l	89.70 lbs/day
2-Nitrophenol	ug/l	lbs/day	ug/l	lbs/day
4-Nitrophenol	ug/l	lbs/day	ug/l	lbs/day
2,4-Dinitrophenol	ug/l	lbs/day	14000 ug/l	660.92 lbs/day
4,6-Dinitro-o-cresol	ug/l	lbs/day	765 ug/l	36.11 lbs/day
N-Nitrosodimethylamine	ug/l	lbs/day	8.1 ug/l	0.38 lbs/day
N-Nitrosodiphenylamine	ug/l	lbs/day	16 ug/l	0.76 lbs/day
N-Nitrosodi-n-propylamir	ug/l	lbs/day	1.4 ug/l	0.07 lbs/day
Pentachlorophenol	ug/l	lbs/day	8.2 ug/l	0.39 lbs/day
Phenol	ug/l	lbs/day	4.6E+06 ug/l	2.17E+05 lbs/day
Bis(2-ethylhexyl)phthalat	ug/l	lbs/day	5.9 ug/l	0.28 lbs/day
Butyl benzyl phthalate	ug/l	lbs/day	5200 ug/l	245.48 lbs/day
Di-n-butyl phthalate	ug/l	lbs/day	12000 ug/l	566.50 lbs/day
Di-n-octyl phthlate				

Diethyl phthalate	ug/l	lbs/day	120000 ug/l	5665.00 lbs/day
Dimethyl phthalate	ug/l	lbs/day	2.9E+06 ug/l	1.37E+05 lbs/day
Benzo(a)anthracene (PAH)	ug/l	lbs/day	0.031 ug/l	0.00 lbs/day
Benzo(a)pyrene (PAH)	ug/l	lbs/day	0.031 ug/l	0.00 lbs/day
Benzo(b)fluoranthene (PAH)	ug/l	lbs/day	0.031 ug/l	0.00 lbs/day
Benzo(k)fluoranthene (PAH)	ug/l	lbs/day	0.031 ug/l	0.00 lbs/day
Chrysene (PAH)	ug/l	lbs/day	0.031 ug/l	0.00 lbs/day
Acenaphthylene (PAH)				
Anthracene (PAH)	ug/l	lbs/day	ug/l	lbs/day
Dibenzo(a,h)anthracene	ug/l	lbs/day	0.031 ug/l	0.00 lbs/day
Indeno(1,2,3-cd)pyrene (PAH)	ug/l	lbs/day	0.031 ug/l	0.00 lbs/day
Pyrene (PAH)	ug/l	lbs/day	11000 ug/l	519.29 lbs/day
Tetrachloroethylene	ug/l	lbs/day	8.9 ug/l	0.42 lbs/day
Toluene	ug/l	lbs/day	200000 ug/l	9441.66 lbs/day
Trichloroethylene	ug/l	lbs/day	81 ug/l	3.82 lbs/day
Vinyl chloride	ug/l	lbs/day	525 ug/l	24.78 lbs/day
				lbs/day
				lbs/day
<b>Pesticides</b>				
Aldrin	ug/l	lbs/day	0.00014 ug/l	0.00 lbs/day
Dieldrin	ug/l	lbs/day	0.00014 ug/l	0.00 lbs/day
Chlordane	ug/l	lbs/day	0.00059 ug/l	0.00 lbs/day
4,4'-DDT	ug/l	lbs/day	0.00059 ug/l	0.00 lbs/day
4,4'-DDE	ug/l	lbs/day	0.00059 ug/l	0.00 lbs/day
4,4'-DDD	ug/l	lbs/day	0.00084 ug/l	0.00 lbs/day
alpha-Endosulfan	ug/l	lbs/day	2 ug/l	0.09 lbs/day
beta-Endosulfan	ug/l	lbs/day	2 ug/l	0.09 lbs/day
Endosulfan sulfate	ug/l	lbs/day	2 ug/l	0.09 lbs/day
Endrin	ug/l	lbs/day	0.81 ug/l	0.04 lbs/day
Endrin aldehyde	ug/l	lbs/day	0.81 ug/l	0.04 lbs/day
Heptachlor	ug/l	lbs/day	0.00021 ug/l	0.00 lbs/day
Heptachlor epoxide				
<b>PCB's</b>				
PCB 1242 (Arochlor 124)	ug/l	lbs/day	0.000045 ug/l	0.00 lbs/day
PCB-1254 (Arochlor 125)	ug/l	lbs/day	0.000045 ug/l	0.00 lbs/day
PCB-1221 (Arochlor 122)	ug/l	lbs/day	0.000045 ug/l	0.00 lbs/day
PCB-1232 (Arochlor 123)	ug/l	lbs/day	0.000045 ug/l	0.00 lbs/day
PCB-1248 (Arochlor 124)	ug/l	lbs/day	0.000045 ug/l	0.00 lbs/day
PCB-1260 (Arochlor 126)	ug/l	lbs/day	0.000045 ug/l	0.00 lbs/day
PCB-1016 (Arochlor 101)	ug/l	lbs/day	0.000045 ug/l	0.00 lbs/day
<b>Pesticide</b>				
Toxaphene	ug/l		ug/l	lbs/day
<b>Dioxin</b>				
Dioxin (2,3,7,8-TCDD)	ug/l	lbs/day		
<b>Metals</b>				
Antimony	ug/l	lbs/day		
Arsenic	ug/l	lbs/day	4300.00 ug/l	203.00 lbs/day
Asbestos	ug/l	lbs/day		
Beryllium				
Cadmium				

Chromium (III)				
Chromium (VI)				
Copper				
Cyanide	ug/l	lbs/day	2.2E+05 ug/l	10385.83 lbs/day
Lead	ug/l	lbs/day		
Mercury			0.15 ug/l	0.01 lbs/day
Nickel			4600.00 ug/l	217.16 lbs/day
Selenium	ug/l	lbs/day		
Silver	ug/l	lbs/day		
Thallium			6.30 ug/l	0.30 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) 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.

### Upstream Information

	Stream Flow	Temp.	pH*	T-NH3	BOD	DO	TRC	TDS
	cfs	Deg. C		mg/l as N	mg/l	mg/l	mg/l	mg/l
Summer	0.3	20.0	8.2	0.05	0.10	6.36		
Fall/Spring	0.3	12.0	8.1	0.05	0.10	---		
Winter	0.3	4.0	8.0	0.05	0.10	---		
Dissolved Metals	Al	As	Cd	CrIII	CrVI	Copper	Fe	Pb
	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l
All Seasons	1.59*	0.53*	0.053*	0.53*	2.65*	0.53*	0.83*	0.53*
	Hg	Ni	Se	Ag	Zn	Boron		
All Seasons	0.0001	0.53*	1.06*	0.1*	0.053*	10.0		* 1/4 MDL

\*Note: pH values are for downstream after mixing. The stream is effluent dominated, therefore, pH values are lower than default values.

### Discharge Information

Season	Flow, MGD	Temp.
Summer	5.50000	20.0
Fall/Spring	5.50000	18.0
Winter	5.50000	15.0

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:

All Seasons		
Not to Exceed:	5.50 MGD	Daily Average
	8.51 cfs	Daily Average

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

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

WET Requirements	LC50 >	EOP Effluent	[Acute]
	IC25 >	97.1% 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:

All Seasons [Based upon Summer Conditions]		
Concentration		
30 Day Average	15.0 mg/l as BOD5	687.9 lbs/day
30 Day Average	12.0 mg/l as COD	550.3 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:

All Seasons [Based upon Summer Conditions]	
Concentration	
30 Day Average	5.0 mg/l

**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:

<b>Season</b>	<b>4 Day Average [Chronic]</b>	<b>Load</b>
	<b>Concentration</b>	

Summer	0.58 mg/l as N	26.7 lbs/day
Fall/Spring	0.87 mg/l as N	39.8 lbs/day
Winter	1.33 mg/l as N	61.1 lbs/day

Season	1 Hour Average [Acute] Concentration	Load
Summer	3.6 mg/l as N	165.5 lbs/day
Fall/Spring	4.5 mg/l as N	206.4 lbs/day
Winter	5.7 mg/l as N	260.8 lbs/day

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

### 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	4 Day Average [Chronic] Concentration	Load
Summer	0.01 mg/l	0.5 lbs/day
Fall/Spring	0.01 mg/l	0.5 lbs/day
Winter	0.01 mg/l	0.5 lbs/day

Season	1 Hour Average [Acute] Concentration	Load
Summer	0.02 mg/l	0.9 lbs/day
Fall/Spring	0.02 mg/l	0.9 lbs/day
Winter	0.02 mg/l	0.9 lbs/day

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

*Note: TRC limitation not required for facilities utilizing UV disinfection.*

### 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 300 mg/l):

	4 Day Average		1 Hour Average		
	Concentration	Load	Concentration	Load	
Aluminum	N/A ug/l	N/A lbs/day	750.0	ug/l	22.2 lbs/day
Arsenic	195.56 ug/l	5.8 lbs/day	360.0	ug/l	10.7 lbs/day
Cadmium	2.76 ug/l	0.1 lbs/day	13.5	ug/l	0.4 lbs/day
Chromium III	523.90 ug/l	15.5 lbs/day	4,270.1	ug/l	126.6 lbs/day
Chromium VI	11.21 ug/l	0.3 lbs/day	16.0		
Copper	31.10 ug/l	0.9 lbs/day	49.9	ug/l	1.5 lbs/day
Iron			1,000.0	ug/l	29.6 lbs/day
Lead	13.24 ug/l	0.4 lbs/day	330.6	ug/l	9.8 lbs/day

Mercury	0.01 ug/l	0.0 lbs/day	2.4	ug/l	0.1 lbs/day
Nickel	411.08 ug/l	12.2 lbs/day	3,592.5	ug/l	106.5 lbs/day
Selenium	5.10 ug/l	0.2 lbs/day	20.0	ug/l	0.6 lbs/day
Silver	N/A ug/l	N/A lbs/day	26.9	ug/l	0.8 lbs/day
Zinc	276.76 ug/l	8.2 lbs/day	296.8	ug/l	8.8 lbs/day
Cyanide	5.35 mg/l	0.2 lbs/day	4.0	ug/l	0.1 lbs/day
TDS, mg/l			1,235.3	mg/l	18.3 tons/day
			67.5	mg/l	@ 1.0 tons/day
<b>TDS Effluent Limitation: ---&gt;</b>			<b>1,200.0</b>	<b>mg/l</b>	

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

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

	4 Day Average		1 Hour Average	
	Concentration	Load	Concentration	Load
Aldrin	ug/l	lbs/day	1.5E+00	ug/l 6.88E-02 lbs/day
Chlordane	4.30E-03 ug/l	1.97E-01 lbs/day	1.2E+00	ug/l 5.50E-02 lbs/day
DDT, DDE	1.00E-03 ug/l	4.59E-02 lbs/day	5.5E-01	ug/l 2.52E-02 lbs/day
Dieldrin	1.90E-03 ug/l	8.71E-02 lbs/day	1.3E+00	ug/l 5.73E-02 lbs/day
Endosulfan	5.60E-02 ug/l	2.57E+00 lbs/day	1.1E-01	ug/l 5.04E-03 lbs/day
Endrin	2.30E-03 ug/l	1.05E-01 lbs/day	9.0E-02	ug/l 4.13E-03 lbs/day
Guthion	ug/l	lbs/day	1.0E-02	ug/l 4.59E-04 lbs/day
Heptachlor	3.80E-03 ug/l	1.74E-01 lbs/day	2.6E-01	ug/l 1.19E-02 lbs/day
Lindane	8.00E-02 ug/l	3.67E+00 lbs/day	1.0E+00	ug/l 4.59E-02 lbs/day
Methoxychlor	ug/l	lbs/day	3.0E-02	ug/l 1.38E-03 lbs/day
Mirex	ug/l	lbs/day	1.0E-02	ug/l 4.59E-04 lbs/day
Parathion	ug/l	lbs/day	4.0E-02	ug/l 1.83E-03 lbs/day
PCB's	1.40E-02 ug/l	6.42E-01 lbs/day	2.0E+00	ug/l 9.17E-02 lbs/day
Pentachlorophenol	1.30E+01 ug/l	5.96E+02 lbs/day	2.0E+01	ug/l 9.17E-01 lbs/day
Toxephene	2.00E-04 ug/l	9.17E-03 lbs/day	7.3E-01	ug/l 3.35E-02 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	148.2 lbs/day
Nitrates as N	4.0 mg/l	118.6 lbs/day
Total Phosphorus as P	0.1 mg/l	1.5 lbs/day
Total Suspended Solids	90.0 mg/l	1.3 tons/day

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

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

	Maximum Concentration	
	Concentration	Load
<b>Toxic Organics</b>		
Acenaphthene	2.78E+03 ug/l	1.27E+02 lbs/day
Acrolein	8.03E+02 ug/l	3.68E+01 lbs/day
Acrylonitrile	6.79E-01 ug/l	3.12E-02 lbs/day
Benzene	7.31E+01 ug/l	3.35E+00 lbs/day
Benzidine	ug/l	lbs/day
Carbon tetrachloride	4.53E+00 ug/l	2.08E-01 lbs/day
Chlorobenzene	2.16E+04 ug/l	9.91E+02 lbs/day
1,2,4-Trichlorobenzene		
Hexachlorobenzene	7.93E-04 ug/l	3.64E-05 lbs/day
1,2-Dichloroethane	1.02E+02 ug/l	4.67E+00 lbs/day
1,1,1-Trichloroethane		
Hexachloroethane	9.16E+00 ug/l	4.20E-01 lbs/day
1,1-Dichloroethane		
1,1,2-Trichloroethane	4.32E+01 ug/l	1.98E+00 lbs/day
1,1,2,2-Tetrachloroethane	1.13E+01 ug/l	5.19E-01 lbs/day
Chloroethane		
Bis(2-chloroethyl) ether	1.44E+00 ug/l	6.61E-02 lbs/day
2-Chloroethyl vinyl ether		
2-Chloronaphthalene	4.43E+03 ug/l	2.03E+02 lbs/day
2,4,6-Trichlorophenol	6.69E+00 ug/l	3.07E-01 lbs/day
p-Chloro-m-cresol		
Chloroform (HM)	4.84E+02 ug/l	2.22E+01 lbs/day
2-Chlorophenol	4.12E+02 ug/l	1.89E+01 lbs/day
1,2-Dichlorobenzene	1.75E+04 ug/l	8.03E+02 lbs/day
1,3-Dichlorobenzene	2.68E+03 ug/l	1.23E+02 lbs/day
1,4-Dichlorobenzene	2.68E+03 ug/l	1.23E+02 lbs/day
3,3'-Dichlorobenzidine	7.93E-02 ug/l	3.64E-03 lbs/day
1,1-Dichloroethylene	3.29E+00 ug/l	1.51E-01 lbs/day
1,2-trans-Dichloroethylene1		
2,4-Dichlorophenol	8.13E+02 ug/l	3.73E+01 lbs/day
1,2-Dichloropropane	4.01E+01 ug/l	1.84E+00 lbs/day
1,3-Dichloropropylene	1.75E+03 ug/l	8.03E+01 lbs/day
2,4-Dimethylphenol	2.37E+03 ug/l	1.09E+02 lbs/day
2,4-Dinitrotoluene	9.37E+00 ug/l	4.30E-01 lbs/day
2,6-Dinitrotoluene		
1,2-Diphenylhydrazine	5.56E-01 ug/l	2.55E-02 lbs/day
Ethylbenzene	2.99E+04 ug/l	1.37E+03 lbs/day
Fluoranthene	3.81E+02 ug/l	1.75E+01 lbs/day
4-Chlorophenyl phenyl ether		
4-Bromophenyl phenyl ether		
Bis(2-chloroisopropyl) ether	1.75E+05 ug/l	8.03E+03 lbs/day
Bis(2-chloroethoxy) methane		
Methylene chloride (HM)	1.65E+03 ug/l	7.55E+01 lbs/day
Methyl chloride (HM)		
Methyl bromide (HM)		
Bromoform (HM)	3.71E+02 ug/l	1.70E+01 lbs/day

Dichlorobromomethane(HM)	2.26E+01 ug/l	1.04E+00 lbs/day
Chlorodibromomethane (HM)	3.50E+01 ug/l	1.61E+00 lbs/day
Hexachlorocyclopentadiene	1.75E+04 ug/l	8.03E+02 lbs/day
Isophorone	6.18E+02 ug/l	2.83E+01 lbs/day
Naphthalene		
Nitrobenzene	1.96E+03 ug/l	8.97E+01 lbs/day
2-Nitrophenol		
4-Nitrophenol		
2,4-Dinitrophenol	1.44E+04 ug/l	6.61E+02 lbs/day
4,6-Dinitro-o-cresol	7.87E+02 ug/l	3.61E+01 lbs/day
N-Nitrosodimethylamine	8.34E+00 ug/l	3.82E-01 lbs/day
N-Nitrosodiphenylamine	1.65E+01 ug/l	7.55E-01 lbs/day
N-Nitrosodi-n-propylamine	1.44E+00 ug/l	6.61E-02 lbs/day
Pentachlorophenol	8.44E+00 ug/l	3.87E-01 lbs/day
Phenol	4.74E+06 ug/l	2.17E+05 lbs/day
Bis(2-ethylhexyl)phthalate	6.07E+00 ug/l	2.79E-01 lbs/day
Butyl benzyl phthalate	5.35E+03 ug/l	2.45E+02 lbs/day
Di-n-butyl phthalate	1.24E+04 ug/l	5.66E+02 lbs/day
Di-n-octyl phthlate		
Diethyl phthalate	1.24E+05 ug/l	5.66E+03 lbs/day
Dimethyl phthlate	2.99E+06 ug/l	1.37E+05 lbs/day
Benzo(a)anthracene (PAH)	3.19E-02 ug/l	1.46E-03 lbs/day
Benzo(a)pyrene (PAH)	3.19E-02 ug/l	1.46E-03 lbs/day
Benzo(b)fluoranthene (PAH)	3.19E-02 ug/l	1.46E-03 lbs/day
Benzo(k)fluoranthene (PAH)	3.19E-02 ug/l	1.46E-03 lbs/day
Chrysene (PAH)	3.19E-02 ug/l	1.46E-03 lbs/day
Acenaphthylene (PAH)		
Anthracene (PAH)		
Dibenzo(a,h)anthracene (PAH)	3.19E-02 ug/l	1.46E-03 lbs/day
Indeno(1,2,3-cd)pyrene (PAH)	3.19E-02 ug/l	1.46E-03 lbs/day
Pyrene (PAH)	1.13E+04 ug/l	5.19E+02 lbs/day
Tetrachloroethylene	9.16E+00 ug/l	4.20E-01 lbs/day
Toluene	2.06E+05 ug/l	9.44E+03 lbs/day
Trichloroethylene	8.34E+01 ug/l	3.82E+00 lbs/day
Vinyl chloride	5.40E+02 ug/l	2.48E+01 lbs/day
<b>Pesticides</b>		
Aldrin	1.44E-04 ug/l	6.61E-06 lbs/day
Dieldrin	1.44E-04 ug/l	6.61E-06 lbs/day
Chlordane	6.07E-04 ug/l	2.79E-05 lbs/day
4,4'-DDT	6.07E-04 ug/l	2.79E-05 lbs/day
4,4'-DDE	6.07E-04 ug/l	2.79E-05 lbs/day
4,4'-DDD	8.65E-04 ug/l	3.97E-05 lbs/day
alpha-Endosulfan	2.06E+00 ug/l	9.44E-02 lbs/day
beta-Endosulfan	2.06E+00 ug/l	9.44E-02 lbs/day
Endosulfan sulfate	2.06E+00 ug/l	9.44E-02 lbs/day
Endrin	8.34E-01 ug/l	3.82E-02 lbs/day
Endrin aldehyde	8.34E-01 ug/l	3.82E-02 lbs/day
Heptachlor	2.16E-04 ug/l	9.91E-06 lbs/day
Heptachlor epoxide		
<b>PCB's</b>		
PCB 1242 (Arochlor 1242)	4.63E-05 ug/l	2.12E-06 lbs/day
PCB-1254 (Arochlor 1254)	4.63E-05 ug/l	2.12E-06 lbs/day

PCB-1221 (Arochlor 1221)	4.63E-05 ug/l	2.12E-06 lbs/day
PCB-1232 (Arochlor 1232)	4.63E-05 ug/l	2.12E-06 lbs/day
PCB-1248 (Arochlor 1248)	4.63E-05 ug/l	2.12E-06 lbs/day
PCB-1260 (Arochlor 1260)	4.63E-05 ug/l	2.12E-06 lbs/day
PCB-1016 (Arochlor 1016)	4.63E-05 ug/l	2.12E-06 lbs/day

**Pesticide**

Toxaphene	7.72E-04 ug/l	3.54E-05 lbs/day
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**Metals**

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

**Dioxin**

Dioxin (2,3,7,8-TCDD)	1.44E-08 ug/l	6.61E-10 lbs/day
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**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	Chronic Most Stringent ug/l
Aluminum		750.0				750.0		
Antimony				4426.3		4426.3		
Arsenic	102.9	360.0				102.9	195.6	195.6
Asbestos								
Barium								
Beryllium								
Cadmium	10.3	13.5				10.3	2.8	2.8
Chromium (III)		4270.1				4270.1	523.9	523.9
Chromium (VI)	102.9	16.0				16.0	11.2	11.2
Copper	205.9	49.9				49.9	31.1	31.1
Cyanide			226464.1			226464.1		
Iron		1000.0				1000.0		

Lead	102.9	330.6		102.9	13.2	13.2
Mercury		2.4	0.2	0.2	0.0	0.0
Nickel		3592.5	4735.2	3592.5	411.1	411.1
Selenium	51.4	20.0		20.0	5.1	5.1
Silver		26.9		26.9		
Thallium			6.5	6.5		
Zinc		296.8		296.8	276.8	276.8
Boron	772.0			772.0		

### 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	750.0	
Antimony	4426.34	
Arsenic	102.9	195.6
Asbestos		
Barium		
Beryllium		
Cadmium	10.3	2.8
Chromium (III)	4270.1	524
Chromium (VI)	16.0	11.2
Copper	49.9	31.1
Cyanide	226464.1	
Iron	1000.0	
Lead	102.9	13.2
Mercury	0.154	0.012
Nickel	3592.5	411
Selenium	20.0	5.1
Silver	26.9	
Thallium	6.5	
Zinc	296.8	276.8
Boron	772.04	

Adjustments to the above numbers are allowed in accordance with R317-1.3.4 titled *Pollutants in Diverted Water Returned to A Stream*.

Other Effluent Limitations may be based upon other provisions of R317-1.

### X. Flow Requirement or Loading Requirement

The calculations in this wasteload analysis utilize the maximum effluent discharge flow of 5.5 MGD. If the discharger is allowed to have a flow greater than 5.5 MGD during 7Q10 conditions, at the effluent limit concentrations as indicated, then water quality standards will be violated. In order to prevent this from occurring, the permit writers must include the discharge flow limitation as indicated above; or, utilize the loading effluent limits instead of the concentration limits

### XI. 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.

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 recreational areas, and drinking water sources.

## **XII. 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.

## **XIII. Water Quality Certification**

Pursuant to Section 401(a)(1) of the Federal Water Pollution Control Act, as amended in 1987, it is hereby indicated that the discharge from this facility should not cause a violation of applicable water quality standards if the effluent limitation values as indicated above are incorporated into the UPDES permit associated with this Statement of basis and to the best of my knowledge, will comply with applicable provision of Sections 301, 302, 303, 306, and 307 of said Act.

## **XIV. 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.

## **XV. 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.

Prepared by:  
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Utah Division of Water Quality  
801-538-6329

SUFCO 03 2001

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"),

**CANYON FUEL CO., LLC - SUFCO MINE**

is hereby authorized to discharge from its facility located approximately six and one half miles north of Salina Canyon (east on I-70 to Exit #72) up Convulsion Canyon, Siever County, Utah, with the outfalls located as indicated in this permit, to receiving waters named

Quitcupah Creek and East Spring Canyon a tributary of Quitcupah Creek

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

This permit shall become effective on \_\_\_\_\_.

This permit and the authorization to discharge shall expire at midnight, \_\_\_\_\_.

Signed this \_\_\_\_\_ day of \_\_\_\_\_

\_\_\_\_\_  
Authorized Permitting Official  
Executive Secretary  
Utah Water Quality Board

## TABLE OF CONTENTS

Cover Sheet--Issuance and Expiration DatesPage No.

I.	EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS .....	1
A.	Definitions. ....	1
B.	Description of Discharge Point(s) .....	2
C.	Narrative Standard. ....	2
D.	Specific Limitations and Self-monitoring Requirements. ....	3
II.	MONITORING, RECORDING AND REPORTING REQUIREMENTS .....	8
A.	Representative Sampling .....	8
B.	Monitoring Procedures .....	8
C.	Penalties for Tampering .....	8
D.	Reporting of Monitoring Results .....	8
E.	Compliance Schedules .....	8
F.	Additional Monitoring by the Permittee .....	8
G.	<u>Records Contents</u> .....	8
H.	Retention of Records .....	9
I.	Twenty-four Hour Notice of Noncompliance Reporting .....	9
J.	Other Noncompliance Reporting .....	10
K.	Inspection and Entry .....	10
II	COMPLIANCE RESPONSIBILITIES .....	11
A.	Duty to Comply .....	11
B.	Penalties for Violations of Permit Conditions .....	11
C.	Need to Halt or Reduce Activity not a Defense .....	11
D.	Duty to Mitigate .....	11
E.	Proper Operation and Maintenance .....	11
F.	Removed Substances .....	11
G.	Bypass of Treatment Facilities .....	11
H.	Upset Conditions .....	12
I.	Toxic Pollutants .....	13
J.	Changes in Discharge of Toxic Substances .....	13
K.	Industrial Pretreatment .....	13
IV	GENERAL REQUIREMENTS .....	15
A.	Planned Changes .....	15
B.	Anticipated Noncompliance .....	15
C.	Permit Actions .....	15
D.	Duty to Reapply .....	15
E.	Duty to Provide Information .....	15
F.	Other Information .....	15
G.	Signatory Requirements .....	15
H.	Penalties for Falsification of Reports .....	16
I.	Availability of Reports .....	16
J.	Oil and Hazardous Substance Liability .....	16
K.	Property Rights .....	16
L.	Severability .....	16
M.	Transfers .....	16
N.	State Laws .....	17
O.	Water Quality-Reopener Provision .....	17
P.	Toxicity Limitation -Reopener Provision .....	17

I. EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS

A. Definitions.

1. The "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.
2. The "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 which begins on Sunday and ends 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.
3. "Daily Maximum" ("Daily Max.") is the maximum value allowable in any single sample or instantaneous measurement.
4. A "grab" sample, for monitoring requirements, is defined as a single "dip and take" sample collected at a representative point in the discharge stream.
5. An "instantaneous" measurement, for monitoring requirements, is defined as a single reading, observation, or measurement.
6. "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.
7. "Bypass" means the intentional diversion of waste streams from any portion of a treatment facility.
8. "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.
9. "Executive Secretary" means Executive Secretary of the Utah Water Quality Board.
10. "EPA" means the United States Environmental Protection Agency.
11. "Acute toxicity" occurs when 50 percent or more mortality is observed for either test species at any effluent concentration.
12. "Act" means the "*Utah Water Quality Act*".
13. "Best Management Practices" ("*BMPs*") means schedules of activities, prohibitions of practices, maintenance procedures, and other management practices to prevent or reduce the pollution of

waters of the State. *BMPs* 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.

14. "Coal pile runoff" means the rainfall runoff from or through any coal storage pile.
15. "CWA" means *The Federal Water Pollution Control Act*, as amended, by *The Clean Water Act of 1987*.
16. "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.
17. "10-year, 24-hour precipitation event" means the maximum 24-hour precipitation event with a probable reoccurrence interval of once in 10 years. This information is available in *Weather Bureau Technical Paper No. 40*, May 1961 and *NOAA 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.

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 is a 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*.

<u>Outfall Number</u>	<u>Location of Discharge Points</u>
001	Discharge of mine water from an eight inch pipe, locate at latitude 38 54'54" and longitude 111 24'54".
002	A twelve inch pipe serving as a discharge point for the sedimentation pond, located at a latitude 38 54'52" and longitude of 111 24'58".
003	Twenty four inch discharge pipe at a mine breakout, located at a latitude of 38 54'26" and longitude 111 23'06".

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 Outfall 001, 002 and 003. Such discharges shall be limited and monitored by the permittee as specified below:

<u>Effluent Characteristics</u>	<u>Discharge Limitations a/</u>			<u>Monitoring Requirements</u>	
	<u>Average 30-Day</u>	<u>7-Day</u>	<u>Daily Maximum</u>	<u>Measurement Frequency</u>	<u>Sample Type</u>
Flow, MGD <u>b/</u>	NA	NA	NA	2 X Month	Measured
Oil & Grease, mg/L <u>c/</u>	NA	NA	10	When sheen observed	Grab
Total Suspended Solids, mg/L	25	35	70	2 X Month	Grab
Total Dissolved Solids, mg/L	NA	NA	1200 <u>d/</u>	2 X Month	Grab
Total Iron, mg/L <u>e/</u>	NA	NA	1.0	2 X Month	Grab

The pH shall not be less than 6.5 standard units nor greater than 9.0 standard units in any sample and shall be monitored twice per month by a grab sample.

There shall be no visible sheen or floating solids or visible foam in other than trace amounts.

There shall be no discharge of sanitary wastes.

There shall be no use of gypsum for rock dusting.

The permittee is required to minimize the discharge of salt by using the largest practicable amount of saline water for process and dust control. In addition the permittee shall use BMPs (definition in part I.A) to assure there is no discharge of water from the salt storage area(s).

N.A. - Not Applicable.

a/ See Definitions, *Part I.A* for definition of terms.

b/ Flow measurement of effluent volume shall be made in such a manner that the permittee affirmatively demonstrates that representative values are being obtained.

c/ The effluent shall be visually observed once every two weeks for an oil sheen and the presence of grease. A sample for oil and grease shall be taken if a sheen is present or there is some other reason to believe emulsified oil or some other oil is present in the discharge. If a sample is taken it shall not exceed 10 mg/L in concentration.

d/ The only TDS limit applicable at 002 is that TDS shall not exceed 2000 lbs (one ton) per day.

e/ The Executive Secretary will consider modification of the permit to adjust this limit if SUFCO can provide convincing data to establish a specific correlation between total and dissolved iron.

2. Samples taken in compliance with the monitoring requirements specified above shall be taken at each specified discharge point, in the effluent flow before mixing with the receiving water.
3. Any overflow, increase in volume of a discharge or discharge from a bypass system caused by precipitation within any 24-hour period less than or equal to the 10-year, 24-hour precipitation event (or snowmelt of equivalent volume) at all surface runoff pond outfalls may comply with the following limitations instead of the otherwise applicable limitations contained in Part I.D.1:

<u>Effluent Characteristics</u>	<u>Daily Minimum</u>	<u>Daily Maximum</u>
Settleable Solids	NA	0.5 ml/L
pH	6.5 S.U.	9.0 S.U.

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.

4. Any overflow, increase in volume of a discharge or discharge from a bypass system caused by precipitation within any 24-hour period greater than the 10-year, 24-hour precipitation event (or snowmelt of equivalent volume) at all surface runoff pond outfalls may comply with the following limitation instead of the otherwise applicable limitations:

The pH shall not be less than 6.5 standard units nor greater than 9.0 standard units. However, as stated under Part I.D.3, all effluent samples collected at all surface runoff pond outfalls during storm water discharge events shall be analyzed for settleable solids and the parameters identified under Part I.D.1.

5. The operator shall have the burden of proof that the discharge or increase in discharge was caused by the applicable precipitation event described in Parts I.D.3. and D.4. The alternate limitation in Parts I.D.3. and D.4. shall not apply to treatment systems that treat underground mine water only.
6. Whole Effluent Testing - Acute Toxicity.

Starting immediately, the permittee shall quarterly, conduct acute static replacement toxicity tests on a grab sample of the final effluent. The sample shall be collected at outfalls 001 and 003.

The monitoring frequency for acute tests shall be quarterly unless a sample is found to be acutely toxic during a routine test. If that occurs, the monitoring frequency shall become weekly (See *Part I.D.7, Accelerated Testing*). Samples shall be collected on a two day progression; i.e., if the first sample is on a Monday, during the next sampling period, the sampling shall begin on a Wednesday, etc.

The replacement static acute toxicity tests shall be conducted in general accordance with the procedures set out in the latest revision of *Methods for Measuring the Acute Toxicity of Effluents and Receiving Waters to Freshwater and Marine Organisms. Fourth Edition. August 1993, EPA/600/4-90/027F* as per 40 CFR 136.3(a) TABLE IA-LIST OF APPROVED BIOLOGICAL METHODS, and the *Region VIII EPA NPDES Acute Test Conditions - Static Renewal Whole Effluent Toxicity Test (August, 1997)*. In the case of conflicts, the Region VIII procedures will prevail. The permittee shall conduct the 48-hour static replacement toxicity test using Ceriodaphnia dubia and the acute 96-hour

static replacement toxicity test using Pimephales promelas (fathead minnow) on an alternating basis for each quarter.

Acute toxicity occurs when 50 percent or more mortality is observed for either species at any effluent concentration. Mortality in the control must simultaneously be 10 percent or less for the results to be considered valid. If more than 10 percent control mortality occurs, the test shall be repeated until satisfactory control mortality is achieved. A variance to this requirement may be granted by the Executive Secretary if a mortality of less than 10 percent was observed in higher effluent dilutions.

If the permit contains a total residual chlorine limitation greater than 0.20 mg/L, the permittee may request from the Executive Secretary approval to dechlorinate the sample, or collect the sample prior to chlorination.

Quarterly test results shall be reported along with the Discharge Monitoring Report (DMR) submitted for the end of the reporting calendar month e.g., biomonitoring results for the calendar quarter ending March 31 shall be reported with the DMR due April 28, with the remaining biomonitoring reports submitted with DMRs due each July 28, October 28, and January 28. Monthly test results shall be reported along with the DMR submitted for that month. The format for the report shall be consistent with the latest revision of the *Region VIII Guidance for Acute Whole Effluent Reporting (August, 1997)* and shall include all chemical and physical data as specified.

7. Accelerated Testing.

When acute toxicity is indicated during routine biomonitoring as specified in this permit, the permittee shall notify the Executive Secretary in writing within 5 days after becoming aware of the test result. The permittee shall perform an accelerated schedule of biomonitoring to establish whether a pattern of toxicity exists. Accelerated testing will begin within seven days after the permittee becomes aware of the test result. Accelerated testing shall be conducted as specified under *Part I.D.7, Pattern of Toxicity*. If the accelerated testing demonstrates no pattern of toxicity, routine monitoring shall be resumed.

8. Pattern of Toxicity.

A pattern of toxicity is defined by the results of a series of up to five biomonitoring tests pursuant to the accelerated testing requirements using 100 percent effluent on the single species found to be more sensitive, once every week for up to five consecutive weeks.

If two (2) consecutive tests (not including the scheduled quarterly or monthly test which triggered the search for a pattern of toxicity) do not result in acute toxicity, no further accelerated testing will be required and no pattern of toxicity will be found to exist. The permittee will provide written verification to the Executive Secretary within 5 days, and resume routine monitoring.

A pattern of toxicity is established if one of the following occurs:

1. If two (2) consecutive test results (not including the scheduled quarterly or monthly test which triggered the search for a pattern of toxicity) indicate acute toxicity, this constitutes an established pattern of toxicity.
  2. If consecutive tests continue to yield differing results each time, the permittee will be required to conduct up to a maximum of five (5) acute tests (not including the scheduled quarterly or monthly test which triggered the search for a pattern of toxicity). If three out of five test results indicate acute toxicity, this will constitute an established pattern of toxicity.
9. Preliminary Toxicity Investigation.
1. When a pattern of toxicity is detected the permittee will notify the Executive Secretary in writing within 5 days and begin an evaluation of the possible causes of the toxicity. The permittee will have 15 working days from demonstration of the pattern of toxicity to complete a Preliminary Toxicity Investigation (PTI) and submit a written report of the results to the Executive Secretary. The PTI may include, but is not limited to, additional chemical and biological monitoring, examination of pretreatment program records, examination of discharge monitoring reports, a thorough review of the testing protocol, evaluation of treatment processes and chemical use, inspection of material storage and transfer areas to determine if a spill may have occurred, and similar procedures.
  2. If the PTI identifies a probable toxicant and/or a probable source of toxicity, the permittee shall submit, as part of its final results, written notification of that effect to the Executive Secretary. Within thirty days of completing the PTI the permittee shall submit for approval a control program to control effluent toxicity and shall proceed to implement such plan within seven days following approval. The control program, as submitted to or revised by the Executive Secretary, may be incorporated into the permit.
  3. If no probable explanation for toxicity is identified in the PTI, the permittee shall notify the Executive Secretary as part of its final report, along with a schedule for conducting a Phase I Toxicity Reduction Evaluation (TRE) (See *Part I.D.9, Toxicity Reduction Evaluation*).
  4. If toxicity spontaneously disappears during the PTI, the permittee shall submit written notification to that effect to the Executive Secretary as part of the reporting requirements of paragraph 1 of this section.

10. Toxicity Reduction Evaluation (TRE).

If toxicity is detected and it is determined by the Executive Secretary that a TRE is necessary, the permittee shall be so notified and shall initiate a TRE immediately thereafter. The purpose of the TRE will be establish the cause of the toxicity, locate the source(s) of the toxicity, and control or provide treatment for the toxicity.

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

1. Phase I - Toxicity Characterization
2. Phase II - Toxicity Identification Procedures

3. Phase III - Toxicity Control Procedures
4. Any other appropriate procedures for toxicity source elimination and control

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

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

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

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

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

II. 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 Discharge Monitoring Report Form (EPA No. 3320-1), post-marked no later than the 28th day of the month following the completed reporting period. The first report is due on \_\_\_\_\_. If no discharge occurs during the reporting period, "no discharge" shall be reported. Legible copies of these, and all other reports including whole effluent toxicity (WET) test reports required herein, shall be signed and certified in accordance with the requirements of *Signatory Requirements (see Part IV.G)*, and submitted to the Director, Division of Water Quality and to EPA at the following addresses:
- original to: Department of Environmental Quality  
Division of Water Quality  
288 North 1460 West  
PO Box 144870  
Salt Lake City, Utah 84114-4870
- copy to: Technical Enforcement Program (8ENF-T)  
Office of Enforcement, Compliance Assistance & Environmental Justice  
US EPA Region VIII  
999 18th Street, Suite 500  
Denver, CO 80202-2466
- P. 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 Executive Secretary 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 which may seriously endanger health or environment as soon as possible, but no later than twenty-four (24) hours from the time the permittee first became aware of circumstances. The report shall be made to the Division of Water Quality, (801) 538-6146, 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 which may endanger health or the environment;
    - b. Any unanticipated bypass which exceeds any effluent limitation in the permit (See *Part III.G, Bypass of Treatment Facilities.*);
    - c. Any upset which exceeds any effluent limitation in the permit (See *Part III.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 Executive Secretary 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) 538-6146.
  5. Reports shall be submitted to the addresses in *Part II.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 II.D* are submitted. The reports shall contain the information listed in *Part II.I.3*.
- K. Inspection and Entry. The permittee shall allow the Executive Secretary, 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.

II 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 reissuance, or modification; or for denial of a permit renewal application. The permittee shall give advance notice to the Executive Secretary of any planned changes in the permitted facility or activity which 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 III.G, *Bypass of Treatment Facilities* and Part III.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 which 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 which 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, sludges, or other pollutants removed in the course of treatment shall be buried or disposed of in such a manner so as 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 the provisions of paragraphs 2 and 3 of this section. Return of removed substances, as described in Part III.F, to the discharge stream shall not be considered a bypass under the provisions of this paragraph.
  2. Notice:
    - a. Anticipated bypass. If the permittee knows in advance of the need for a bypass, it shall submit prior notice, if possible at least ten (10) days before the date of the bypass.

- b. Unanticipated bypass. The permittee shall submit notice of an unanticipated bypass as required under *Part II.I, Twenty-four Hour Reporting*.
3. Prohibition of bypass.
    - a. Bypass is prohibited and the Executive Secretary may take enforcement action against a permittee for a bypass, unless:
      - (1) The bypass was unavoidable to prevent loss of life, personal injury, or severe property damage ;
      - (2) There were no feasible alternatives to the 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 back-up 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 paragraph 2 of this section.
    - b. The Executive Secretary may approve an anticipated bypass, after considering its adverse effects, if the Executive Secretary determines that it will meet the three conditions listed above in paragraph 3.a of this section.

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 paragraph 2. of this section are met. Executive Secretary'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 II.I, Twenty-four Hour Notice of Noncompliance Reporting*; and,
  - d. The permittee complied with any remedial measures required under *Part III.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 Executive Secretary as soon as the permittee knows of, or has reason to believe:
1. That any activity has occurred or will occur which 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 ug/L);
    - b. Two hundred micrograms per liter (200 ug/L) for acrolein and acrylonitrile; five hundred micrograms per liter (500 ug/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 Executive Secretary 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 ug/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 Executive Secretary 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).

IV GENERAL REQUIREMENTS

- A. Planned Changes. The permittee shall give notice to the Executive Secretary 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 which 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 Executive Secretary of any planned changes at least 30 days prior to their implementation.
- B. Anticipated Noncompliance. The permittee shall give advance notice to the Executive Secretary of any planned changes in the permitted facility or activity which 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 reissuance, 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 Executive Secretary, within a reasonable time, any information which the Executive Secretary 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 Executive Secretary, upon request, copies of records required to be kept by this permit.
- 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 Executive Secretary, it shall promptly submit such facts or information.
- G. Signatory Requirements. All applications, reports or information submitted to the Executive Secretary 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 Executive Secretary 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 Executive Secretary, 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 paragraph *IV.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 paragraph *IV.G.2* must be submitted to the Executive Secretary 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 this section 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 Executive Secretary. 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 provisions 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 Executive Secretary 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 Executive Secretary 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 paragraph 2 above.
- 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 -Reopener Provision. This permit may be reopened and modified (following proper administrative procedures) to include, whole effluent toxicity (WET) limitations, a compliance date, a compliance schedule, a change in the whole effluent toxicity (biomonitoring) protocol, additional or modified numerical limitations, or any other conditions related to the control of toxicants if one or more of the following events occur;
1. Toxicity is detected, as per Part I.D.6 of this permit, during the duration of this permit.
  2. The TRE results indicate that compliance with the toxic limits will require an implementation schedule past the date for compliance and the Executive Secretary agrees with the conclusion.
  3. The TRE results indicate that the toxicant(s) represent pollutant(s) that may be controlled with specific numerical limits, and the Executive Secretary agrees that numerical controls are the most appropriate course of action.
  4. Following the implementation of numerical control(s) of toxicant(s), the Executive Secretary agrees that a modified biomonitoring protocol is necessary to compensate for those toxicants that are controlled numerically.
  5. The TRE reveals other unique conditions or characteristics which, in the opinion of the Executive Secretary, justify the incorporation of unanticipated special conditions in the permit.