

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

Date: April 11, 2023

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Facility: Park City Corporation Spiro and Judge Tunnels
UPDES Permit No. UT0025461

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

Discharge

Outfall 001: Golf Course Pond 18 monitoring location which includes blended flows from Three Kings water treatment plant (WTP) into Pond 14, raw Spiro Tunnel discharge, Thiriot Springs and raw Rockport discharge: 3,000 GPM (4.32 MGD).

Outfall 002: North Ditch monitoring location which includes raw Spiro Tunnel discharge and raw Rockport discharge: 1,500 GPM (2.16 MGD)

Receiving Water

These waters discharge directly into either the North Ditch or the Three Kings WTP which flows through a series of ponds on Park City Municipal Corporation's golf course. Thereafter, flows enter McCleod Creek and through diversion structures into East Canyon Creek and/or Silver Creek drainages.

Per UAC R317-2-13.4, the designated beneficial uses *Weber River and tributaries, from Stoddard diversion to headwaters, except as listed below* are: 1C, 2B, 3A, 4. Silver Creek and tributaries, from confluence with Tollgate Creek to headwaters, hold these same beneficial use designations, with the addition of a site-specific standard for TDS.

- *Class 1C – Protected for domestic purposes with prior treatment by treatment processes as required by the Utah Division of Drinking Water.*
- *Class 2B - Protected for infrequent primary contact recreation. Also protected for secondary contact recreation where there is a low likelihood of ingestion of water or a*

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low degree of bodily contact with the water. Examples include, but are not limited to, wading, hunting, and fishing.

- *Class 3A - Protected for cold water species of game fish and other cold water aquatic life, including the necessary aquatic organisms in their food chain..*
- *Class 4 - Protected for agricultural uses including irrigation of crops and stock watering.*

Flow

Typically, the critical flow for the receiving water in a wasteload analysis is considered the lowest stream flow for seven consecutive days with a ten year return frequency (7Q10). Because the Spiro Tunnel and Judge Tunnel discharge forms the headwaters of McCleod Creek and is an intermittent stream, the annual critical low flow was determined to be zero. As a result, water quality based effluent limits revert to end-of-pipe water quality standards.

Dissolved Oxygen 3A (cold water aquatic life) Early Life Stages

The Division of Water Quality staff has determined that ELS are present throughout the year in East Canyon Creek (Summit County, Utah). Per Utah R317-2-14, the Dissolved Oxygen 3A ELS criteria are as follows: Minimum instantaneous DO: 8.0 mg/L, 7-day Average DO: 9.5 mg/L.

When 110% of these criteria cannot be met at 100% saturation due to elevation and water temperature, the applicable criterion is DO concentration at 90% saturation. (USEPA 1986). The seasonal mixed background and effluent water temperatures were used in the WLA model.

Total Maximum Daily Load (TMDL)

According to the Utah's [Final 2022 Integrated Report on Water Quality](#) dated December 9, 2022, the receiving water for the discharge, "Weber River and tributaries, from Stoddard diversion to headwaters (Assessment Unit UT16020102-027_00)" was listed as "Not Supporting" for Arsenic. DWQ has not completed a TMDL for Arsenic in this area and has set the development priority as "Low".

Silver Creek and tributaries, from the confluence with Weber River to below the confluence with Tollgate Creek (Assessment Unit UT16020101-020_01) have the following impairments: E. coli, Nitrate, Nitrate/Nitrite as N, Total Dissolved Solids, Benthic Macroinvertebrates Bioassessment, Arsenic, Cadmium, Zinc.

A Total Maximum Daily Load for this segment of Silver Creek addressing the Zinc and Cadmium impairments was approved August 4th, 2004. No load allocation was given to the Spiro Tunnel discharge at that time because it was determined to be a small source compared to much larger Zinc and Cadmium loadings downstream. End-of-pipe water quality standards apply.

East Canyon Creek and tributaries from East Canyon Reservoir to headwaters, except Murnin Creek and Toll Canyon (UT16020102-026_01) was listed as "Not Supporting but has Approved TMDL for some parameters". The parameters not meeting criteria are Temperature, Total Dissolved Solids, and Total Phosphorus. A TMDL addressing the Total Phosphorus impairment

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was completed and approved for East Canyon Creek and Reservoir on September 14th, 2010 (UDWQ 2010). The TMDL identified an annual load limit of 895 kg applied to ECWRF for TP.

An investigation of the TDS impairment in East Canyon Creek was conducted by DWQ from 2015-2017 (UDWQ 2018). Multiple sites were sampled and assessed throughout the watershed for the study. These data demonstrate that the water quality standard for TDS is being met in the headwater tributaries and on the main stem of East Canyon Creek sites all the way to East Canyon Reservoir. The study found two previously unassessed tributaries (Murnin Creek and Toll Canyon Creek) that exceed the standard.

Mixing Zone

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

Because the critical low flow for the receiving water is zero, no mixing zone was considered in this wasteload analysis. In addition, individual mixing zones may be disallowed in consideration of site-specific factors. For this location, biologically important areas such as fish spawning/nursery areas or segments with occurrences of federally listed threatened or endangered species may be present (R317-2-5.1.b.). In addition, early life species (ELS) are present in this reach of McLeod Creek.

Parameters of Concern

The potential parameters of concern identified for the discharge/receiving water were determined in consultation with the UPDES Permit Writer, the Utah Water Quality Assessment Reports, and the industry SIC codes from <https://www.osha.gov/data/sic-search>. The potential parameters of concern for this facility include: Antimony, Arsenic, Cadmium, Zinc, Benthic Macroinvertebrates Bioassessment, E. coli, Dissolved Oxygen, Lead, Mercury, Nitrate/Nitrite as N, pH, and Total Dissolved Solids.

WET Limits

The percent of effluent in the receiving water in a fully mixed condition, and acute and chronic dilution in a not fully mixed condition are calculated in the WLA in order to generate WET limits. The LC₅₀ (lethal concentration, 50%) percent effluent for acute toxicity and the IC₂₅ (inhibition concentration, 25%) percent effluent for chronic toxicity, as determined by the WET test, needs to be below the WET limits, as determined by the WLA. The WET limit for LC₅₀ is typically 100% effluent and does not need to be determined by the WLA.

Because the critical low flow of the receiving water was determined to be zero, WET limits for Outfall 001 and Outfall 002 for IC₂₅ should be based on 100% effluent.

Wasteload Allocation Methods

Effluent limits were determined for conservative constituents using a simple mass balance mixing analysis (UDWQ 2021). The mass balance analysis is summarized in the Wasteload Addendum.

The water quality standard for chronic ammonia toxicity is dependent on temperature and pH, and

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the water quality standard for acute ammonia toxicity is dependent on pH. However, temperature, pH, and ammonia concentration of the effluent were not explicitly provided. Background temperature and pH values were used in the analysis. The analysis is summarized in the Wasteload Addendum.

Models and supporting documentation are available for review upon request.

Effluent Limits

The water quality standards for some metals are dependent on hardness (total as CaCO₃). Spiro Tunnel effluent data provided by Park City from 2014-2022 showed an average hardness of 411 mg/l for the 001 Bulkhead discharge and 516 mg/l for the 002 Portal discharge. Judge Tunnel effluent data provided by Park City from 2014-2022 showed an average hardness of 188 mg/l. The data indicated that the North Ditch average hardness was 474 mg/l. The Rockport Reservoir water supplement showed an average hardness of 199 mg/l.

Because the four water sources (raw Judge Tunnel discharge, raw Spiro Tunnel discharge, Thiriot Springs, and raw Rockport discharge) will be managed and blended at Three Kings water treatment plant (WTP) and discharged into Pond 14 or the North Ditch, the combined average hardness was used in the calculations. While the Judge Tunnel discharge and the Rockport discharge indicated a hardness less than 200 mg/l, the blended management of the water and the lack of these sources providing full flow justify using the blended hardness. For Outfall 001, the average hardness of 516 mg/l from Spiro 002 Portal discharge data supplied by Park City was used. For Outfall 002, the combination of North Ditch data supplied by Park City was used for an average hardness of 474 mg/l.

As per R317-2-14.2(7), a hardness value of 400 mg/l will be used for calculating metals standards for waters having hardness greater than 400 mg/l. This value was used for determining total recoverable metals effluent limits.

Because of the impairment status of the receiving water, in addition to the hardness-based calculated metals limits, the effluent limits in Table 1 also apply:

Table 1.

Dissolved oxygen	8 mg/l
Nitrates as N	10 mg/l
pH	6.5 -9.0
TDS	1,200 mg/l ^a
^a Silver Creek and tributaries, from confluence with Tollgate Creek to headwaters has a TDS site specific standard of 1,900 mg/L. However discharge waters may also be diverted to the East Canyon Creek drainage which does not currently hold a site specific standard for TDS.	

Antidegradation Level I Review

The objective of the Level I ADR is to ensure the protection of existing uses, defined as the beneficial uses attained in the receiving water on or after November 28, 1975. No evidence is known that the existing uses deviate from the designated beneficial uses for the receiving water.

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Therefore, the beneficial uses will be protected if the discharge remains below the WQBELs presented in this wasteload.

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

Documents:

WLA Document: *230405-Spiro_Judge_ELS_EOP_WLA_2023.docx*

Wasteload Analysis and Addendums: *230405-Spiro_Judge_ELS_EOP_WLA_2023.xlsm*

References:

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

Utah Division of Water Quality. 2010. East Canyon Creek and Reservoir TMDL. SWCA Environmental Consultants.

Utah Division of Water Quality. 2022. *Final 2022 Integrated Report on Water Quality.*

<https://documents.deq.utah.gov/water-quality/monitoring-reporting/integrated-report/DWQ-2022-002386.pdf>

Utah Division of Water Quality. 2021. Utah Wasteload Analysis Procedures Version 2.0.

<https://documents.deq.utah.gov/water-quality/standards-technical-services/DWQ-2021-000684.pdf>

USEPA, 1986. Quality Criteria for Water (“Gold Book”): Office of Water Regulations and Standards, EPA-440/5-86-001, USEPA, Washington DC. <https://www.epa.gov/sites/default/files/2018-10/documents/quality-criteria-water-1986.pdf>

WASTELOAD ANALYSIS [WLA]

Date: 4/27/2023

Appendix D: Mass Balance Mixing Analysis for Conservative Constituents

Discharging Facility:	Park City Municipal Spiro Tunnel		
UPDES No:	UT-0025461		
	Outfall 002		
Permit Flow [MGD]:	2.16000 Annual	Max. Daily	Spiro Outfall 001 North Ditch (<
	2.16000 Annual	Max. Monthly	Spiro Outfall 002 North Ditch (<
			Spiro Outfall 002 North Ditch (
			ND-1 North Ditch Outfall 002 (<
Receiving Water:	Dry Creek into Silver Creek		
Stream Classification:	1C,2B,3A,4		
Stream Flows [cfs]:	0.0 All Seasons	Critical Low Flow	SPIRO TUNNEL
	2.08 All Seasons	Critical Low Flow (20th %)	4925560 SPIRO TUNNEL CK ,
Fully Mixed:	YES		
Acute River Width:	100%		
Chronic River Width:	100%		

Modeling Information

A mass balance mixing analysis was used to determine the effluent limits.

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

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 reflect the environmental conditions expected at low stream flows.

The calculations in this wasteload analysis utilize the maximum effluent discharge flow of 2.16 MGD. If the discharger is allowed to have a flow greater than 2.16 MGD during 7Q10 conditions, and effluent limit concentrations as indicated, then water quality standards will be violated. In order to prevent this from occurring, the permit writers must include the discharge flow limitation as indicated above; or, include loading effluent limits in the permit.

Effluent Limitations for Protection of Drinking Water (Class 1C Waters) (R317-2-14.1)

Physical Parameter	Concentration	
	Minimum	Maximum
pH	6.5	9.0

Bacteriological

E. coli (30 Day Geometric Mean)	206 (#/100 mL)
E. coli (Maximum)	668 (#/100 mL)

Metals-Dissolved Maximum

Parameter	Standard ¹	Maximum Background	Limit
Arsenic (µg/L)	10.0		10.0
Barium (µg/L)	1000.0		1000.3
Beryllium (µg/L)	4.0		4.0
Cadmium (µg/L)	10.0		10.0
Chromium (µg/L)	50.0		50.0
Lead (µg/L)	15.0		15.0
Mercury (µg/L) ^c	2.000		2.001
Selenium (µg/L)	50.0		50.0
Silver (µg/L)	50.0		50.0

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Inorganics-Maximum

Parameter	Standard'	Maximum Background	Limit
Bromate (mg/L)	0.01		0.01
Chlorite (mg/L)	1.0		1.0
Fluoride (mg/L)	4.0		4.0
Nitrates as N (mg/L)	10.0		10.0
Total Dissolved Solids (mg/L)	1900.0		1900.6

Radiological

Parameter	Maximum Concentration Standard
Gross Alpha (pCi/L)	15

Effluent Limitations for Protection of Recreation (Class 2A Waters) (R317-2-14.1)

Physical Parameter	Concentration	
	Minimum	Maximum
pH	6.5	9.0
Turbidity Increase (NTU)		10.0

Bacteriological

E. coli (30 Day Geometric Mean)	126 (#/100 mL)
E. coli (Maximum)	409 (#/100 mL)

Effluent Limitations for Protection of Recreation (Class 2B Waters) (R317-2-14.1)

Physical Parameter	Concentration	
	Minimum	Maximum
pH	6.5	9.0
Turbidity Increase (NTU)		10.0

Bacteriological (R317-2-14.1)

E. coli (30 Day Geometric Mean)	206 (#/100 mL)
E. coli (Maximum)	668 (#/100 mL)

Effluent Limitations for Protection of Aquatic Wildlife (Class 3A Waters) (R317-2-14.2)

Physical Parameter	Concentration	
	Minimum	Maximum
pH	6.5	9.0
Turbidity Increase (NTU)		10.0
Temperature (deg C)		27
Temperature Change (deg C)		2

Dissolved Oxygen (mg/L)

	Minimum Concentration	
	ELS Present	Others Present
Instantaneous	8.0	4.0
30-day Average	6.5	6.5
7-day Average	9.5	5

Inorganics

Parameter	Chronic (30-day ave)	Acute (1-hour ave)
		Standard
Phenol (mg/L)		0.010
Hydrogen Sulfide (Undissociated-mg/L)		0.002
Total Residual Chlorine (mg/L)	0.011	0.019

Ammonia-Total (mg/L)

Season	Chronic (30-day ave)			Acute (1-hour ave)		
	Standard	ELS Present	Limit	Standard	Background	Limit

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Summer	4.5	4.5	13.9	13.9
Fall	3.5	3.5	9.3	9.3
Winter	3.3	3.3	8.6	8.6
Spring	4.4	4.4	13.4	13.4

Season	ELS Absent			Standard	Background	Limit
	Standard	Background	Limit			
Summer	5.6		5.6	13.9		13.9
Fall	5.3		5.3	9.3		9.3
Winter	5.2		5.3	8.6		8.6
Spring	5.8		5.8	13.4		13.4

Metals-Total Recoverable

Parameter	Chronic (4-day ave)			Acute (1-hour ave)		
	Standard ¹	Background	Limit	Standard ¹	Background	Limit
Aluminum (µg/L)	87.0		87.0	750.0		750.2
Arsenic (µg/L)	150.0		150.0	340.0		340.1
Cadmium (µg/L)	2.4		2.4	7.4		7.4
Chromium VI (µg/L)	11.0		11.0	16.0		16.0
Chromium III (µg/L)	268.2		268.3	5611.7		5,613
Copper (µg/L)	30.5		30.5	51.7		51.7
Cyanide (µg/L) ²	5.2		5.2	22.0		22.0
Iron (µg/L)				1000.0		1,000
Lead (µg/L)	18.6		18.6	476.8		477.0
Mercury (µg/L) ²	2.400		2.401	2.400		2.4
Nickel (µg/L)	168.5		168.6	1515.9		1,516
Selenium (µg/L)	4.6		4.6	18.4		18.4
Silver (µg/L)				41.1		41.1
Tributyltin (µg/L) ²	0.072		0.072	0.460		0.46
Zinc (µg/L)	387.8		387.9	387.8		387.9
Antimony (µg/L) ³	5.6		5.6	5.6		5.6
Thallium (µg/L) ³	0.24		0.24	0.24		0.24

1: Based upon a Hardness of 0 mg/l as CaCO₃

2: Background concentration assumed 67% of chronic standard

3: Based on List of Human Health Criteria for consumption (R317-2-14.6)

Organics [Pesticides]

Parameter	Chronic (4-day ave)		Acute (1-hour ave)	
	Standard	Limit	Standard	Limit
Aldrin (µg/L)			1.5	1.5
Chlordane (µg/L)	0.0043	0.0043	1.2	1.2
DDT, DDE (µg/L)	0.001	0.001	0.55	0.55
Diazinon (µg/L)	0.17	0.17	0.17	0.17
Dieldrin (µg/L)	0.0056	0.0056	0.24	0.24
Endosulfan, a & b (µg/L)	0.056	0.056	0.11	0.11
Endrin (µg/L)	0.036	0.036	0.086	0.086
Heptachlor & H. epoxide (µg/L)	0.0038	0.0038	0.26	0.26
Lindane (µg/L)	0.08	0.08	1.0	1.0
Methoxychlor (µg/L)			0.03	0.03
Mirex (µg/L)			0.001	0.001
Nonylphenol (µg/L)	6.6	6.6	28.0	28.0
Parathion (µg/L)	0.0130	0.0130	0.066	0.066
PCB's (µg/L)	0.014	0.014		
Pentachlorophenol (µg/L)	15.0	15.0	19.0	19.0
Toxephene (µg/L)	0.0002	0.0002	0.73	0.73

Radiological

Parameter	Maximum Concentration	
	Standard	
Gross Alpha (pCi/L)	15	

Effluent Limitations for Protection of Aquatic Wildlife (Class 3B Waters) (R317-2-14.2)

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Physical Parameter	Concentration	
	Minimum	Maximum
pH	6.5	9.0
Turbidity Increase (NTU)		10.0
Temperature (deg C)		27
Temperature Change (deg C)		4

Dissolved Oxygen (mg/L)	Minimum Concentration	
	ELS Present	Others Present
Instantaneous	5.0	3.0
30-day Average	5.5	5.5
7-day Average	6.0	4

Inorganics Parameter	Chronic (30-day ave)	Acute (1-hour ave)
		Standard
Phenol (mg/L)		0.010
Hydrogen Sulfide (Undissociated-mg/L)		0.002
Total Residual Chlorine (mg/L)	0.011	0.019

Ammonia-Total (mg/L)

Season	Chronic (30-day ave)			Acute (1-hour ave)		
	Standard	Background	Limit	Standard	Background	Limit
ELS Present						
Summer	4.5		4.5	13.9		13.9
Fall	3.5		3.5	9.3		9.3
Winter	3.3		3.3	8.6		8.6
Spring	4.4		4.4	13.4		13.4
ELS Absent						
Summer	5.6		5.6	13.9		13.9
Fall	5.3		5.3	9.3		9.3
Winter	5.2		5.3	8.6		8.6
Spring	5.8		5.8	13.4		13.4

Metals-Total Recoverable

Parameter	Chronic (4-day ave)			Acute (1-hour ave)		
	Standard ¹	Background	Limit	Standard ¹	Background	Limit
Aluminum (µg/L)	87.0		87.0	750.0		750.2
Arsenic (µg/L)	150.0		150.0	340.0		340.1
Cadmium (µg/L)	2.4		2.4	7.4		7.4
Chromium VI (µg/L)	11.0		11.0	16.0		16.0
Chromium III (µg/L)	268.2		268.3	5,612		5,613
Copper (µg/L)	30.5		30.5	51.7		51.7
Cyanide (µg/L) ²	5.2		5.2	22.0		22.0
Iron (µg/L)				1,000		1,000
Lead (µg/L)	18.6		18.6	476.8		477.0
Mercury (µg/L) ²	0.012		0.012	2.4		2.4
Nickel (µg/L)	168.5		168.6	1,516		1,516
Selenium (µg/L)	4.6		4.6	18.4		18.4
Silver (µg/L)				41.1		41.1
Tributyltin (µg/L) ²	0.072		0.072	0.46		0.46
Zinc (µg/L)	387.8		387.9	387.8		387.9

1: Based upon a Hardness of 400 mg/l as CaCO3

2: Background concentration assumed 67% of chronic standard

Organics [Pesticides]

Parameter	Chronic (4-day ave)		Acute (1-hour ave)	
	Standard	Limit	Standard	Limit
Aldrin (µg/L)			1.5	1.5

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Chlordane (µg/L)	0.0043	0.0043	1.2	1.2
DDT, DDE (µg/L)	0.001	0.001	0.55	0.55
Diazinon (µg/L)	0.17	0.17	0.17	0.17
Dieldrin (µg/L)	0.0056	0.0056	0.24	0.24
Endosulfan, a & b (µg/L)	0.056	0.056	0.11	0.11
Endrin (µg/L)	0.036	0.036	0.086	0.086
Heptachlor & H. epoxide (µg/L)	0.0038	0.0038	0.26	0.26
Lindane (µg/L)	0.08	0.08	1.0	1.0
Methoxychlor (µg/L)			0.03	0.03
Mirex (µg/L)			0.001	0.001
Nonylphenol (µg/L)	6.6	6.6	28.0	28.0
Parathion (µg/L)	0.0130	0.0130	0.066	0.066
PCB's (µg/L)	0.014	0.014		
Pentachlorophenol (µg/L)	15.0	15.0	19.0	19.0
Toxephene (µg/L)	0.0002	0.0002	0.73	0.73

Radiological

Parameter	Maximum Concentration Standard
Gross Alpha (pCi/L)	15

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Effluent Limitations for Protection of Aquatic Wildlife (Class 3D Waters) (R317-2-14.2)

Physical Parameter	Concentration	
	Minimum	Maximum
pH	6.5	9.0
Turbidity Increase (NTU)		15.0
Temperature (deg C)		
Temperature Change (deg C)		

Dissolved Oxygen (mg/L)	Minimum Concentration	
	ELS Present	Others Present
Instantaneous		3.0
30-day Average		5
7-day Average		

Inorganics Parameter	Acute Standard (1 Hour Average)	
	Standard	
Phenol (mg/L)		0.010
Hydrogen Sulfide (Undissociated) [mg/L]		0.002
Total Residual Chlorine (mg/L)	0.011	0.019

Ammonia-Total (mg/L)	Chronic (30-day ave)			Acute (1-hour ave)		
	Season	ELS Present		Standard	Background	Limit
		Standard	Background			
Summer	4.7		4.7	14.9		15.0
Fall	4.6		4.6	14.7		14.7
Winter	3.6		3.6	9.7		9.7
Spring	4.7		4.7	15.2		15.2
	Season	ELS Absent		Standard	Background	Limit
		Standard	Background			
Summer	6.3		6.3	14.9		15.0
Fall	7.0		7.0	14.7		14.7
Winter	5.1		5.1	9.7		9.7
Spring	6.3		6.3	15.2		15.2

Metals-Total Recoverable Parameter	Chronic (4-day ave)			Acute (1-hour ave)		
	Standard ¹	Background	Limit	Standard ¹	Background	Limit
Aluminum (µg/L)	87.0		87.0	750.0		750.2
Arsenic (µg/L)	150.0		150.0	340.0		340.1
Cadmium (µg/L)	2.0		2.0	6.5		6.5
Chromium VI (µg/L)	11.0		11.0	16.0		16.0
Chromium III (µg/L)	230.7		230.7	1,773		1,774
Copper (µg/L)	29.3		29.3	49.6		49.6
Cyanide (µg/L) ^c				22.0		22.0
Iron (µg/L)				1,000		1,000
Lead (µg/L)	10.9		10.9	280.8		280.9
Mercury (µg/L) ^c	0.012		0.012	2.4		2.4
Nickel (µg/L)	168.0		168.1	1,513		1,513
Selenium (µg/L)	4.6		4.6	18.4		18.4
Silver (µg/L)				34.9		34.9
Tributyltin (µg/L) ^c	0.072		0.072	0.46		0.46
Zinc (µg/L)	382.4		382.5	379.3		379.4

1: Based upon a Hardness of 400 mg/l as CaCO3

2: Background concentration assumed 67% of chronic standard

Organics [Pesticides] Parameter	Chronic (4-day ave)		Acute (1-hour ave)	
	Standard	Limit	Standard	Limit

Utah Division of Water Quality

Aldrin (µg/L)			1.5	1.5
Chlordane (µg/L)	0.0043	0.0043	1.2	1.2
DDT, DDE (µg/L)	0.001	0.001	0.55	0.55
Diazinon (µg/L)	0.17	0.17	0.17	0.17