

**Utah Division of Water Quality
ADDENDUM
Statement of Basis
Wasteload Analysis**

Date: October 31, 2016

Facility: Holliday Water Company
Holladay, UT
UPDES No. UT025429

Receiving water: North Fork Spring Creek (2B, 3A, 4)

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

Discharge

Outfall 001: North Fork Spring Creek

The maximum discharge from the facility is 0.025 MGD (0.0385 cfs), as provided by the Holliday Water Company

Receiving Water

The receiving water for Outfall 001 is the North Fork Spring Creek, which is tributary to Spring Creek. Spring Creek enters a storm drain in the vicinity of Holladay Boulevard that drains to the Jordan and Salt Lake Canal. However, some of the time flow is routed to Big Cottonwood Creek and Spring Creek is topographically a tributary of Big Cottonwood Creek. Therefore, Spring Creek is considered a tributary of Big Cottonwood Creek for the purposes of this wasteload allocation. Per Utah Administrative Code R317-2-13.5(a), the designated uses for Big Cottonwood Creek and tributaries, from confluence with Jordan River to Big Cottonwood Water Treatment Plant are 2B, 3A, and 4.

- *Class 2B - Protected for infrequent primary contact recreation. Also protected for secondary contact recreation where there is a low likelihood of ingestion of water or a low degree of bodily contact with the water. Examples include, but are not limited to, wading, hunting, and fishing.*
- *Class 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.*

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Note that under a previous permit, Spring Creek was considered 1C as well. The interpretation for this wasteload is that Spring Creek above the Holliday Water Company intake is 1C and that 1C does not apply below the intake because there are no known culinary water users downstream.

Spring Creek is entirely dewatered by the Holliday Water Company for water supply purposes. The critical flow for the wasteload analysis was considered the lowest stream flow for seven consecutive days with a ten year return frequency (7Q10). The 7Q10 flow for dewatered streams is considered to be zero.

Mixing Zone

The discharge is considered instantaneously fully mixed since there is no background flow in the receiving water during the critical condition. Therefore, no mixing zone is allowed.

Dilution Factor

Since no flow is in the receiving water during critical conditions, no dilution factor was applied.

Parameters of Concern

The potential parameters of concern for the discharge/receiving water identified were total suspended solids (TSS), pH, and total residual chlorine, as determined in consultation with the UPDES Permit Writer.

TMDL

Spring Creek does not have an approved TMDL for any parameters. Big Cottonwood Creek downstream of the confluence with Spring Creek is listed as impaired for E. coli, temperature and biological integrity per the *2012/2014 Utah Integrated Report*. The Jordan River downstream of the confluence with Big Cottonwood Creek is listed as impaired for E. coli, dissolved oxygen and total dissolved solids.

Effluent Limits

Effluent limits for this discharge are water quality standards for the receiving water. The applicable water quality standards and limits are listed in Appendix A and summarized in Table 1.

Table 1: Water quality based effluent limits

Parameter	Acute		Chronic	
	Limit	Averaging Period	Limit	Averaging Period
Total Residual Chlorine (mg/L)	0.019	1 hour	0.011	4 days

Turbidity: The increase of turbidity of the effluent being discharged to Spring Creek shall not exceed 10 NTU's.

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For parameters without a WQBEL, permit limits should be set according to rules found in R317-1-3 and categorical UPDES discharge requirements.

Model and supporting documentation are available for review upon request.

Antidegradation Level I Review

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

A Level II Antidegradation Review (ADR) is not required for this discharge since the pollutant concentration and load is not increasing under this permit renewal.

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Documents:

WLA Document: *holliday_water_wla_2016-10-24.docx*

Analysis Document: *holliday_water_wla_2016.xlsx*

References:

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

2012/2014 Utah Integrated Report. 2016. Utah Division of Water Quality.

WASTELOAD ANALYSIS [WLA]

Date: 8/24/2016

Appendix A: Mass Balance Mixing Analysis for Conservative Constituents

Discharging Facility:	Holliday Water Company		
UPDES No:	UT-0025429		
Permit Flow [MGD]:	0.025 Annual	Max. Daily	
	0.025 Annual	Max. Monthly	
Receiving Water:	North Fork Spring Creek		
Stream Classification:	2B, 3A, 4		
Stream Flows [cfs]:	0.0 All Seasons	Critical Low Flow	
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.

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

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

Bacteriological

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)

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

Temperature (deg C)	Maximum
Instantaneous	20.0
Change	2.0

Dissolved Oxygen (mg/L)	Minimum
Instantaneous	4.0
7-day Average	5.0
30-day Average	6.5

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

Metals-Total Recoverable (µg/L)	Chronic (4-day ave)			Acute (1-hour ave)			
	Parameter	Standard ¹	Background	Limit	Standard ¹	Background	Limit
	Aluminum	87.0		87.0	750.0		750.0
	Arsenic	150.0		150.0	340.0		340.0
	Cadmium	0.4		0.4	3.9		3.9
	Chromium VI	11.0		11.0	16.0		16.0
	Chromium III	130.8		130.8	1005.2		1005.2
	Copper	16.2		16.2	25.8		25.8
	Cyanide	5.2		5.2	22.0		22.0
	Iron				1000.0		1000.0
	Lead	5.3		5.3	136.1		136.1
	Mercury	0.012		0.012	2.4		2.4
	Nickel	93.5		93.5	841.7		841.7
	Selenium	4.6		4.6	18.4		18.4
	Silver				10.6		10.6
	Tributyltin	0.072		0.072	0.46		0.46
	Zinc	212.5		212.5	210.8		210.8

1: Based upon a Hardness of 200 mg/l as CaCO₃

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

Effluent Limitation for Protection of Agriculture (Class 4 Waters)

Parameter	Maximum Concentration		
	Standard	Background	Limit
Total Dissolved Solids (mg/L)	1200		1200
Boron (mg/L)	0.75		0.75
Arsenic, Dissolved (µg/L)	100		100
Cadmium, Dissolved (µg/L)	10		10
Chromium, Dissolved (µg/L)	100		100
Copper, Dissolved (µg/L)	200		200
Lead, Dissolved (µg/L)	100		100
Selenium, Dissolved (µg/L)	50		50
Gross Alpha (pCi/L)	15		15.0