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

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Facility: **NRP Jones, LLC (formerly Nephi Rubber)**
UPDES Permit No. UT0025097

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: Plant discharge to Nephi Irrigation Ditch. The design flow rate is 0.08 MGD. The annual average flow rate is 0.08 MGD and the maximum daily flow rate is 0.06 MGD.

Receiving Water
These waters are purported to discharge directly into the Nephi Irrigation Ditch, which is ephemeral, discharging into the subsurface.

Per UAC R317-2-13.9, the designated beneficial uses *All irrigation canals and ditches statewide, except as otherwise designated: 2B,3E,*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 3E - Severely habitat-limited waters. Narrative standards will be applied to protect these waters for aquatic wildlife.*

- *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 receiving water is a seasonally dry irrigation canal, the 7Q10 is assumed to be zero and effluent limits revert to end-of-pipe (EOP) water quality standards.

Receiving water quality data was not available for Nephi Irrigation Ditch. Data inputs for temperature, pH, TDs and hardness were estimated using from monitoring location DWQ 4995350 SALT CK AT CANYON MOUTH AT USGS GAGE 10145400, which flows into the Nephi Irrigation Ditch.

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, "Currant Creek, from Mona Reservoir to headwaters (Assessment Unit UT16020201-014_00)" was listed as "Not Supporting" for Temperature and that a TMDL is "Needed" with a "Low Priority".

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. In this case, because the 7Q10 was assumed to be zero, no mixing zone was considered.

Individual mixing zones may be disallowed in consideration of site-specific factors. For the project location, there appears to be no source of surface water discharge. Therefore, no mixing zone is granted for this effluent discharge point source.

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: Temperature, TDS, pH, and hydrocarbons.

WET Limits

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

WET limits for Outfall 001 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 the water quality standard for acute ammonia toxicity is dependent on pH. Background data from monitoring location DWQ 4995350 SALT CK AT CANYON MOUTH AT USGS GAGE 10145400 were used in the analysis for hardness, pH, and surface water temperature. These values are representative of regional water quality conditions. To evaluate effluent discharge water quality, the NRP Jones, LLC. discharge monitoring report (DMR) and data from monitoring location DWQ 4995330 NEPHI RUBBER PRODUCTS 001 were used.

Models and supporting documentation are available for review upon request.

Antidegradation Level I Review

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

A Level II Antidegradation Review (ADR) is not required for this facility. The permit is a continuation of the existing permit with no new discharge or additional flow or concentration of pollutants over those authorized.

Documents:

WLA Document*: NRPJones_EOP_WLA_2023 23.docx*
Wasteload Analysis and Addendums: *NRPJones_EOP_WLA_2023.xlsx*

References:

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

WASTELOAD ANALYSIS [WLA] Date: 11/9/2023

Appendix A: Mass Balance Mixing Analysis for Conservative Constituents

A Level II Antidegradation Review (ADR) is required for this facility.

Discharging Facility:	NRP Jones, Nephi Rubber		
UPDES No:	UT0025097		
	DWQ 4995330, 'DMR		
Permit Flow [MGD]:	0.08000	Annual	Max. Daily
	0.08000	Annual	Max. Monthly
Receiving Water:	Nephi Irrigation Ditch -> subsurface		
Stream Classification:	2B,3E,4		
Stream Flows [cfs]:	0.00	All Seasons	Critical Low Flow
	-	All Seasons	Critical Low Flow (20th %)
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 0.08 MGD. If the discharger is allowed to have a flow greater than 0.08 MGD during 7Q10 conditions, and effluent limit concentrations as indicated, then water quality standards will be violated. In order to prevent this from occuring, the permit writers must include the discharge flow limititation as indicated above; or, include loading effluent limits in the permit.

Effluent 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) (R317-2-14.21)

Physical Parameter	Concentration Minimum	Maximum
pH	6.5	9.0
Turbidity Increase (NTU)		10.0
Temperature (deg C)		20
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	Chronic (30-day ave)	Acute (1-hour ave)
Parameter		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)		
	ELS Present					
Season	Standard	Background	Limit	Standard	Background	Limit
Summer	1.9		1.9	4.3		4.3
Fall	2.0		2.0	4.3		4.3
Winter	2.0		2.0	4.4		4.4
Spring	1.6		1.6	3.3		3.3

	ELS Absent					
Season	Standard	Background	Limit	Standard	Background	Limit
Summer	1.9		1.9	4.3		4.3
Fall	3.2		3.2	4.3		4.3
Winter	3.3		3.3	4.4		4.4
Spring	2.1		2.1	3.3		3.3

Metals-Total Recoverable

	Chronic (4-day ave)			Acute (1-hour ave)		
Parameter	Standard[1]	Background	Limit	Standard[1]	Background	Limit
Aluminum (µg/L)	87.0		87.0	750.0		750.0
Arsenic (µg/L)	150.0		150.0	340.0		340.0
Cadmium (µg/L)	1.6		1.6	4.6		4.6
Chromium VI (µg/L)	11.0		11.0	16.0		16.0
Chromium III (µg/L)	180.7		180.7	3781.2		3,781
Copper (µg/L)	20.2		20.2	32.8		32.8
Cyanide (µg/L)[2]	5.2		5.2	22.0		22.0
Iron (µg/L)				1000.0		1,000
Lead (µg/L)	10.1		10.1	258.1		258.1
Mercury (µg/L)[2]	0.0		0.012	2.4		2.4
Nickel (µg/L)	112.1		112.1	1008.2		1,008
Selenium (µg/L)	4.6		4.6	18.4		18.4
Silver (µg/L)				17.9		17.9
Tributylin (µg/L)[2]	0.1		0.072	0.5		0.46
Zinc (µg/L)	257.8		257.8	257.8		257.8

1: Based upon a Hardness of 247 mg/l as CaCO3

2: Background concentration assumed 67% of chronic standard

Organics [Pesticides]

	Chronic (4-day ave)		Acute (1-hour ave)	
Parameter	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	**Maximum Concentration**
Parameter	**Standard**
Gross Alpha (pCi/L)	15

Effluent Limitations for Protection of Agricultural Water (Class 4 Waters) (R317-2-14.1)

Physical Parameter	Concentration Minimum	Maximum
pH	6.5	9.0

Metals-Dissolved Maximum

Parameter	Standard'	Maximum Background	Limit
Arsenic (µg/L)	100.0		100.0
Cadmium (µg/L)	10.0		10.0
Chromium (µg/L)	100.0		100.0
Copper (µg/L)	200.0		200.0
Lead (µg/L)	100.0		100.0
Selenium (µg/L)	50.0		50.0

Inorganics-Maximum

Parameter	Standard'	Maximum Background	Limit
Boron (mg/L)	0.75		0.75

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