

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

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Facility: Saratoga Springs Pool
UPDES No. UT0025321

Receiving water: Utah Lake

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: The pool discharge flows at an average of 0.43 GPM or 0.062 MGD. The combined flow at the point of compliance before entering Utah Lake is 0.5 MGD. The combined flow enters a man-made water course on their property to dissipate chlorine and introduce oxygen. The water course terminates into a grated sump and enters a 6 inch green PVC pipe that discharges directly into Utah Lake.

Receiving Water

Per UAC R317-2-13.12, the beneficial uses for Utah Lake are 2A, 3B, 3D and 4:

- *Class 2A: Protected for frequent primary contact recreation where there is a high likelihood of ingestion of water or a high degree of bodily contact with the water. Examples include, but are not limited to, swimming, rafting, kayaking, diving, and water skiing.*
- *Class 3B: Protected for warm water species of game fish and other warm water aquatic life, including the necessary aquatic organisms in their food chain.*
- *Class 3D: Protected for waterfowl, shore birds and other water-oriented wildlife not included in Classes 3A, or 3C, including the necessary aquatic organisms in their food chain.*
- *Class 4 -- Protected for agricultural use including irrigation of crops and stock watering.*

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Protection of Downstream Uses

Per UAC R317-2-8, all actions to control waste discharges under these rules shall be modified as necessary to protect downstream designated uses. The effluent limits derived to support the uses in Utah Lake are considered protective of downstream uses.

Parameters of Concern

The only additive to the water prior to the discharge will be chlorine for disinfection purposes as mandated by the Utah County Health Department. Saratoga Springs is a naturally occurring geothermal springs which historically surfaced and drained to Utah Lake. The springs are naturally high in total dissolved solids (TDS) and have elevated temperature. As per UAC R317-1-3.4 - Pollutants In Diverted Water Returned To Stream - a user of surface water diverted from waters of the State will not be required to remove any pollutants which such user has not added before returning the diverted flow to the original watercourse. As a result, no effluent limits were calculated for TDS or temperature.

Impaired Waters and TMDL

Per the 303(d) list of impaired waters in *Utah's 2016 Intergrated Report* (UDWQ 2017), Utah Lake other than Provo Bay was listed as impaired for harmful algal blooms (HAB), PCBs in fish tissue, total dissolved solids, and total phosphorus. No TMDLs have been approved for Utah Lake.

Mixing Zone

Per UAC R317-2-5, the maximum allowable mixing zone in lakes and reservoirs shall not exceed 200 feet for chronic conditions and shall not exceed 35 feet for acute conditions. Water quality standards must be met at the end of the mixing zone.

The previous permit and WLA included an end-of-pipe total residual chlorine (TRC) limit of 0.019 mg/L (acute criterion). Consistent with this approach, and because TRC is the only identified parameter of concern, no mixing zone was allowed.

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. In this case, there is no dilution, and the percent effluent is assumed as 100%.

The WET limit for LC₅₀ is typically 100% effluent and does not need to be determined by the WLA.

Wasteload Allocation Methods

The total residual chlorine (TRC) limit is based on the acute TRC water quality criterion at end-of-pipe and is retained from the previous permit. The dissolved oxygen (DO) limit is based on

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the minimum DO water quality criterion at end-of-pipe and is retained from the previous permit.

Effluent Limits

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

Table 1: Water Quality Based Effluent Limits

Effluent Constituent	Standard	Limit	Averaging Period
Flow (MGD)		0.504	30 days
Total Residual Chlorine (mg/L)	0.019	0.019	1 hour
Dissolved Oxygen (mg/L)	4.0	4.0	Minimum

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 because it is a simple renewal with no increase in load or concentration from the previous permit.

Documents

WLA Document: *SaratogaSpringsPoolWLA_2020-08-07.docx*
Analysis: *None*

References:

Utah Division of Water Quality. 2012. *Utah Wasteload Analysis Procedures Version 1.0*. State of Utah, Department of Environmental Quality.

Utah Division of Water Quality. 2016. *Utah's 2016 Integrated Report*. State of Utah, Department of Environmental Quality.