

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

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Facility: Anderson Geneva Development, Inc.
UPDES No. UT0000361

Receiving water: Utah Lake (2B, 3C, 3D, 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: All wastewater, groundwater, and storm-water generated at the facility is discharged to Utah Lake through a 1500 foot long, 24 inch diameter diffuser with 20, 6” portals with a design capacity of 20 MGD.

The mean monthly design discharge is 5.00 MGD for the facility.

Receiving Water

The receiving water for Outfall 001 is Utah Lake. Per UAC R317-2-13.5(c), the designated beneficial uses for Utah Lake are 2B, 3C, 3D, 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 3C - 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, 3B, or 3C, including the necessary aquatic organisms in their food chain.*
- *Class 4 - Protected for agricultural uses including irrigation of crops and stock watering.*

TMDL

Utah Lake is listed for harmful algal blooms, total dissolved solids, total phosphorus and PCBs in fish tissue on the 2016 303(d) list of impaired waterbodies. The receiving waters do not have approved TMDLs for any of these constituents. There is an ongoing Utah Lake Water Quality Study with the objective to develop numeric nutrient criteria for Utah Lake and Provo Bay. The water quality standard for TDS is 1200 mg/l. Since no assimilative capacity exists for this constituent, the standard of 1200 mg/l will need to be met at end-of-pipe.

Mixing Zone

The maximum allowable mixing zone for discharge to lakes is 35 feet for acute conditions and 200 feet for chronic conditions, per UAC R317-2-5. Water quality standards must be met at the end of the mixing zone. Mixing zone calculations were made using the Utah Lake Model. The simplifying (and conservative) assumption of a single discharge from a 24" diameter inch pipe was used in developing effluent limits.

Parameters of Concern

The potential parameters of concern identified for the discharge/receiving water were total dissolved solids and ammonia as determined in consultation with the UPDES Permit Writer.

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. WET requirements were kept from the previous permit development.

Table 2: WET Limits for IC₂₅

Outfall	Percent Effluent
Outfall 001	3.5%

Wasteload Allocation Methods

Effluent limits were determined for conservative constituents using a simple mass balance mixing analysis. 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. The Utah Lake Model uses mixing and ammonia decay to determine ammonia effluent limits. The mass balance analysis and resulting effluent limits are summarized in Appendix A. 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, as there is no increase in concentration or load over that authorized in the current permit.

Documents:

WLA Document: Anderson-Geneva_WLA_11-11-2020.docx
Wasteload Analysis: Anderson_Geneva_WLA_11-11-2020.xls

DWQ-2020-024024264