

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

**Date:** November 28, 2014

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UPDES Permit Section

**Facility:** Autoliv, ASP, Inc.  
UPDES No. UT0024911

**Receiving water:** Blue Creek (2B, 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: Blue Creek → Bear River Migratory Bird Refuge → Bear River Bay of Great Salt Lake

The mean monthly design discharge is 0.03 MGD for the facility.

Receiving Water

The receiving water for Outfall 001 and 002 is Blue Creek, which is tributary to the Bear River Migratory Bird Refuge, and Bear River Bay of the Great Salt Lake.

Per UAC R317-2-13.7(a), the designated beneficial uses for Blue Creek and tributaries, from Great Salt Lake to Blue Creek Reservoir is 2B, 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 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.*

Utah Division of Water Quality  
Wasteload Analysis  
Autoliv ASP, Inc.  
UPDES No. UT0024911

- *Class 4 - Protected for agricultural uses including irrigation of crops and stock watering.*

Typically, the critical flow for the wasteload analysis is considered the lowest stream flow for seven consecutive days with a ten year return frequency (7Q10). Due to a lack of flow records for Blue Creek, the 20<sup>th</sup> percentile of flow measurements was calculated on an annual basis. The source of flow data was from DWQ sampling at 4960740 Blue Creek above ATK at U83 Crossing. In addition, ATK Launch Systems provided flow data from the same location collected as part of the study to determine site specific standards for TDS.

**Table 1: Annual critical low flow (cfs)**

Season	Blue Creek at UT-83 above ATK
Annual	2.4

Blue Creek water quality was characterized based on samples collected from monitoring station 4960740 Blue Creek above ATK at U83 Crossing from 2000 to 2010.

TMDL

The receiving water and downstream waterbodies are not listed as impaired for any parameters according to the 2010 303(d) list.

Mixing Zone

The maximum allowable mixing zone is 15 minutes of travel time for acute conditions, not to exceed 50% of stream width, and 2,500 feet for chronic conditions, per UAC R317-2-5. Water quality standards must be met at the end of the mixing zone.

The actual length of the mixing zone was not determined; however, it was presumed to remain within the maximum allowable mixing zone dimensions. Acute limits were calculated using 50% of the seasonal critical low flow.

Parameters of Concern

The potential parameters of concern identified for the discharge/receiving water were BOD<sub>5</sub>, total ammonia, dissolved metals, and pH, as determined in consultation with the UPDES Permit Writer.

**Utah Division of Water Quality  
Wasteload Analysis  
Autoliv ASP, Inc.  
UPDES No. UT0024911**

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<sub>50</sub> (lethal concentration, 50%) percent effluent for acute toxicity and the IC<sub>25</sub> (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<sub>50</sub> is typically 100% effluent and does not need to be determined by the WLA.

**Table 2: WET Limits for IC<sub>25</sub>**

<b>Outfall</b>	<b>Percent Effluent</b>
Outfall 001	2%

Wasteload Allocation Methods

Since both Autoliv and ATK Launch Systems and discharge to Blue Creek, the wasteload allocation evaluated the combined effects of each discharge. The permitted concentration was allocated proportionally to the flow, i.e. the same concentration limit was applied to each outfall.

Effluent limits were determined for conservative constituents using a simple mass balance mixing analysis (UDWQ 2012). The mass balance analysis is summarized in Appendix A.

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 AMMTOX Model developed by University of Colorado and adapted by Utah DWQ and EPA Region VIII was used to determine ammonia effluent limits (Lewis et al. 2002). The analysis is summarized in Appendix B.

Due to lack of monitoring data, the effects of TP, TN, DO and BOD<sub>5</sub> in the effluent on the DO in the downstream receiving waters was not assessed; therefore, it is presumed that previous permit limits for these constituents, if applicable, would be sufficiently protective of the receiving water. Additional data should be collected during the permit cycle to support evaluation of compliance with the DO criteria.

Utah Division of Water Quality  
Wasteload Analysis  
Autoliv ASP, Inc.  
UPDES No. UT0024911

Effluent Limits

**Table 3: Water Quality Based Effluent Limits Summary**

Effluent Constituent	Acute			Chronic		
	Standard	Limit	Averaging Period	Standard	Limit	Averaging Period
Flow Outfall 001 (MGD)		0.03	1 day		0.03	30 days
Ammonia (mg/L) <sup>1</sup>	Varies		1 hour	Varies		30 days
Summer (Jul-Sep)		14			5	
Fall (Oct-Dec)		15			9	
Winter (Jan-Mar)		13			11	
Spring (Apr-Jun)		16			6	

1: Ammonia limit due to toxicity requirements for both outfalls.

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 required for this facility because it is a new discharge permit application.

Documents:

WLA Document: *Autoliv\_wla\_2014\_revised.docx*  
Wasteload Analysis: *atk\_autoliv\_wla\_2014.xlsm*  
AMMTOX Model: *atk\_autoliv\_ammtox\_reach\_model\_2014.xls*

References:

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