UTAH DEPARTMENT *of*
ENVIRONMENTAL QUALITY
WATER
QUALITY

Proposed updated aquatic life aluminum criteria

Water Quality Standards Workgroup 1/11/22
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Overview

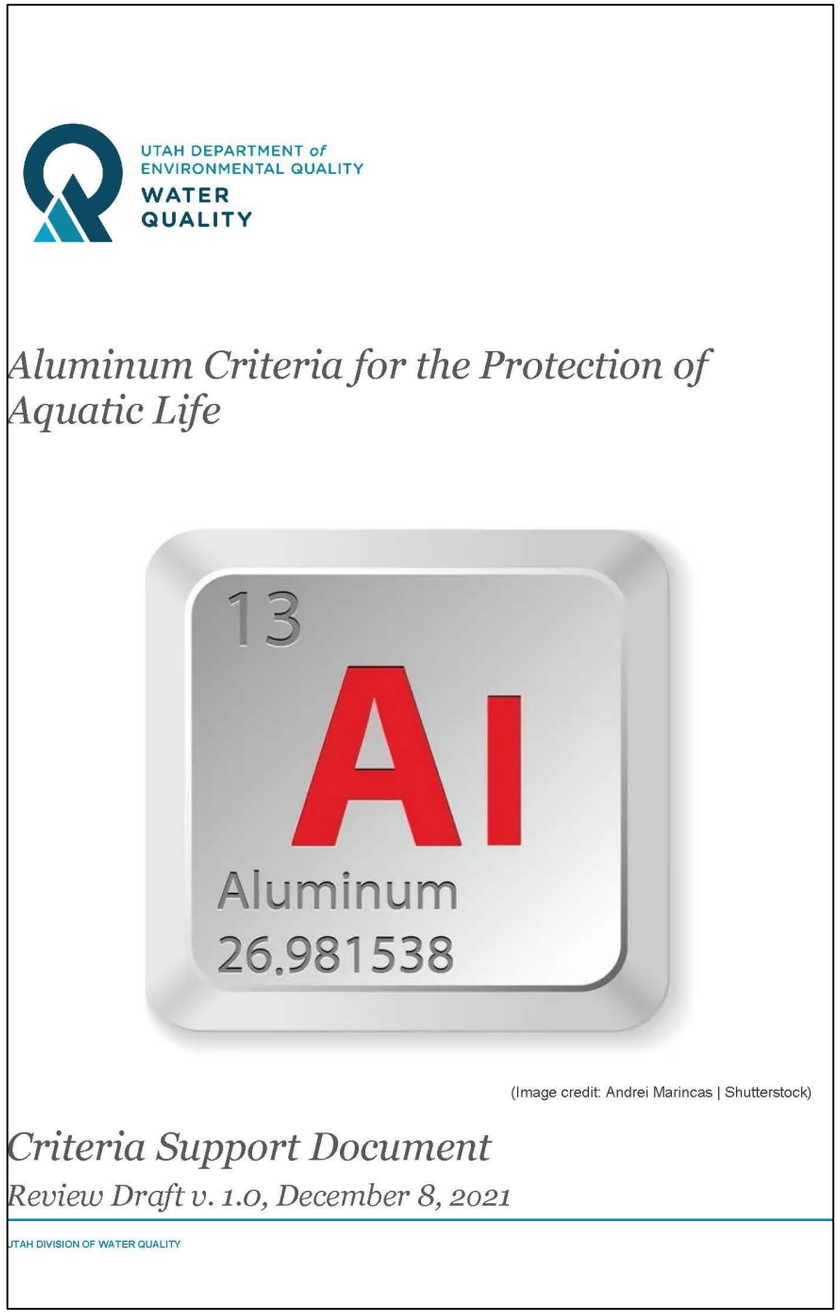
DWQ recommends adoption of EPA (2018) aluminum criteria

Aluminum Criteria for the Protection of Aquatic Life, Criteria Support Document

December 8, 2021

Today, summarize recommendations

Workgroup review of proposed criteria and implementation before next meeting



EPA (2018) Criteria

Multiple linear regression model, EPA published calculator

1. Hardness
2. pH
3. Dissolved organic carbon

Total recoverable aluminum

1.Permit effluent limits based on approved methods in 40 CFR Part 136

2. Assessments can be based on analytical method that is more representative of bioavailable fraction

Utah Current criteria:

Total recoverable

Acute criterion of 750 µg/l applies when pH ≥ 7.0 and hardness ≥ 50 mg/l CaCO3

Chronic 87 µg/l

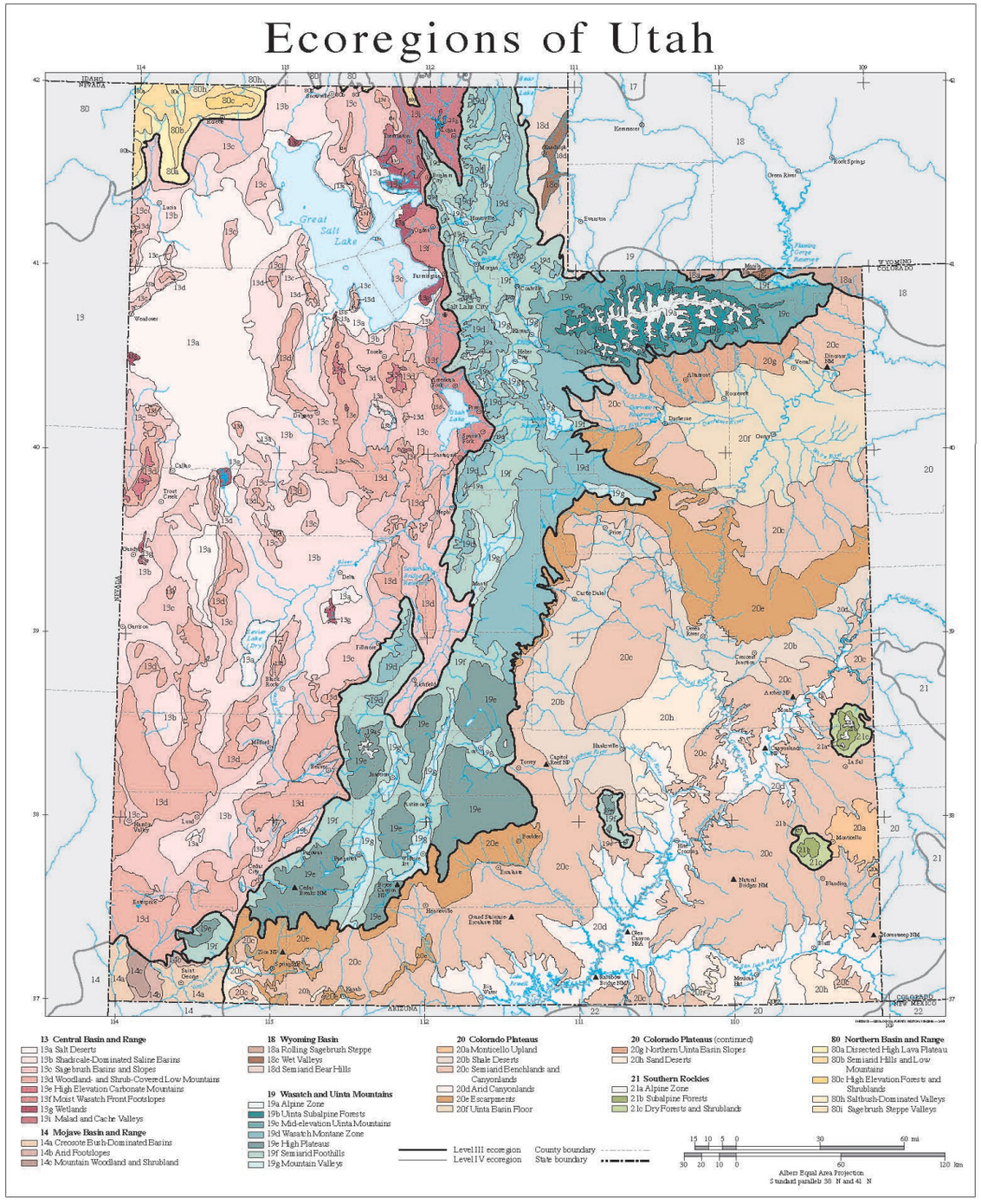
Utah implementation for permits

Site-specific DOC data recommended.

In the absence of site-specific DOC data, DWQ will use EPA ecoregional 10th percentile

Utah has 5 ecoregions

10th percentile DOC concentrations range from 1.5 to 4.3 mg/l



Proposed aluminum criteria

Utah EPA Eco Region	10th percentile DOC	Existing Utah Criteria[1]	EPA (2018)[2]	EPA (2018)[3]	EPA (2018)[4]	EPA (2018)[5]
13	1.5	750	**700**	1,100	**720**	1,100
18	4.31	750	820	1,100	850	1,000
19	1.8	750	**720**	1,100	**740**	1,000
20	3.0	750	770	1,100	810	1,000
80	1.81	750	**720**	1,100	**740**	1,100

Notes
DOC – dissolved organic carbon, mg/l
Criteria are µg/l total recoverable
[1]Hardness ≥50 mg/l and pH≥7.0; one hour
[2]Hardness 200 mg/l and pH 7.5; 4 day
[3]Hardness 200 mg/l and pH 8; 4 day
[4]Hardness 400 mg/l and pH 7.5; 4 day
[5]Hardness 400 mg/l and pH 8; 4 day

Implementation for assessments

750 µg/l acute when pH ≥ 7.0 and hardness ≥ 50 mg/l $CaCO_3$

87 µg/l chronic for other situations

2022 draft IR impairments

- San Juan River (acute)
- Bear River (chronic)
- Beaver Creek (chronic)
- Farmington Creek (chronic)
- Provo River (chronic)

Implementation of chronic because hardness less than 50 mg/l

New criteria less stringent but may require DOC data

Proposed Rule Language Table 2.14.2

METALS				
(TOTAL RECOVERABLE, UG/L)				
Aluminum (4) (5)				
4 Day Average	87	87	87	87
1 Hour Average	750	750	750	750
METALS, METALLOIDS, AND DISSOLVED SUBSTANCES (4)				
(DISSOLVED, UG/L) ~~(5)~~ (4) (6)				
~~Aluminum~~				
~~4 Day Average (6)~~	~~87~~	~~87~~	~~87~~	~~87~~
~~1 Hour Average~~	~~750~~	~~750~~	~~750~~	~~750~~

Proposed rule

(4) Where criteria are listed as 4-day average and 1-hour average concentrations, these concentrations should not be exceeded more often than once every three years on the average.

~~(5) The dissolved metals method involves filtration of the sample in the field, acidification of the sample in the field, no digestion process in the laboratory, and analysis by EPA approved laboratory methods for the required detection levels.~~ [Now footnote (6)]

5) The criterion for aluminum will be implemented as follows:

~~Where the pH is equal to or greater than 7.0 and the hardness is equal to or greater than 50 ppm as CaC03 in the receiving water after mixing, the 87 ug/l chronic criterion (expressed as total recoverable) will not apply, and aluminum will be regulated based on compliance with the 750 ug/l acute aluminum criterion (expressed as total recoverable).~~

Where the pH is equal to or greater than 7.0 and the hardness is equal to or greater than 50 ppm as CaC03 in the receiving water after mixing, the 87 ug/1 chronic criterion (expressed as total recoverable) will not apply, and aluminum will be regulated based on compliance with the 750 ug/1 acute aluminum criterion. After no later than [*DATE 3 years from Board approval*], the one-hour and four-day aluminum criteria are incorporated by reference from Appendix K, Recommended Criteria for Various Water Chemistry Conditions, Final Ambient Water Quality Criteria for Aluminum 2018, EPA-822-R-18-001.

5(a) For water chemistry conditions not specifically listed in Appendix K, the criteria are the more stringent of the criteria bracketed by the two most similar water chemistry conditions or may be interpolated using the same equations used to create the Appendix K tables.

5(b) Criteria based on ambient water chemistry conditions must protect the water body over the full range of water chemistry conditions, including during conditions when aluminum is most toxic.

EPA Resources

EPA FINAL AQUATIC LIFE AMBIENT WATER QUALITY CRITERIA FOR ALUMINUM 2018

EPA Draft Technical Support Document: Implementing the 2018 Recommended Aquatic Life Water Quality Criteria for Aluminum

Path forward

Workgroup provided a copy of the December 8, 2021 Criteria Support Document.

Workgroup comments should be submitted to Chris Bittner prior to next workgroup meeting.

If appropriate, DWQ may recommend to the Water Quality Board some time after the next workgroup meeting.