Water Quality Standards Quarterly Meeting

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Agenda

- **Introductions** – WQS Staff, Attendees
- **2014 Review** – Triennial Review, Nutrients Monitoring
- **2015 Legislature Review** – Category A, Cu WER, SB 357
- **Discussion of proposed changes to WQS Rule**– Al, Se, temp
- **Greenbrier Nutrients Study Update** – from Jamie Peterson

2014 Triennial Review

EPA approved changes to 47CSR2 on Sept 18:

- Revised definitions of “cool water lakes” and “warm water lakes”
- Revised human health beryllium criterion from 0.0077µg/L to 4µg/L
- Added Category A use exemption for unnamed tributary of Daugherty Run and Fly Ash Run
- Added Site-specific dissolved zinc criteria in Marr Branch
- Removed Union Carbide variance for chloride in Ward Hollow of Davis Creek
- Removed site-specific DO criterion for Kanawha River & temperature criteria for Bluestone Lake, & Bluestone, East, New, Gauley, & Greenbrier Rivers

DEP Changes to 47CSR2 Authorized

HB 2283, Effective from Passage (March 12, 2015)

7.2.d.19.1. change:
"For the Kanawha River main stem, Zone 1~~, **Water Use Category A shall not apply;** ~~…"

7.2.d.19.2. now says:
"Pursuant to 46 CSR 6, a Copper Water Effect Ratio (WER) of 5.62 shall be applied to The Sanitary Board of the City of Charleston, West Virginia wastewater treatment plant discharge of total recoverable copper to Kanawha River, Zone 1."

Application of Category A

Provided; that the Secretary … shall consider, for the 2017 triennial review, potential alternative applications for the Category A drinking water use designation to the waters of the state, taking into consideration

- Stream flow
- Depth
- Distance to public water intake

Emergency Rule Promulgation

HB 357, Effective 90 days from Passage (June 1, 2015)

"(7) Within thirty days of the effective date of this section, the secretary shall promulgate an emergency rule **revising** the statewide **aluminum water quality criteria** for the protection of aquatic life to incorporate aluminum criteria values **using a hardness-based equation**."

Aluminum Criteria filed in 2013

For water with pH <6.5 or >9.0 (Conversion Factor CF = 1)

Aquatic Life	Acute warm water fishery	Acute warm water fishery	Acute trout streams	Chronic trout streams
Dissolved Al (µg/L)	**750xCF**	**750xCF**	**750xCF**	**87xCF**

For water with pH range of 6.5-9.0 (Conversion Factor CF = 1)

Aquatic Life	Harness-Based Equation
Acute	$Al = e^{(1.3695[\ln(hardness)]+1.8268)} \times CF$
Chronic	$Al = e^{(1.3695[\ln(hardness)]+0.9121)} \times CF$

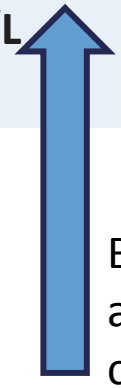
Where hardness is limited to the range of 26mg/L to 220mg/L, even if actual ambient hardness is greater or less than this range

Al Limits Based on Hardness

Dissolved Aluminum that would be allowable at various hardness levels:

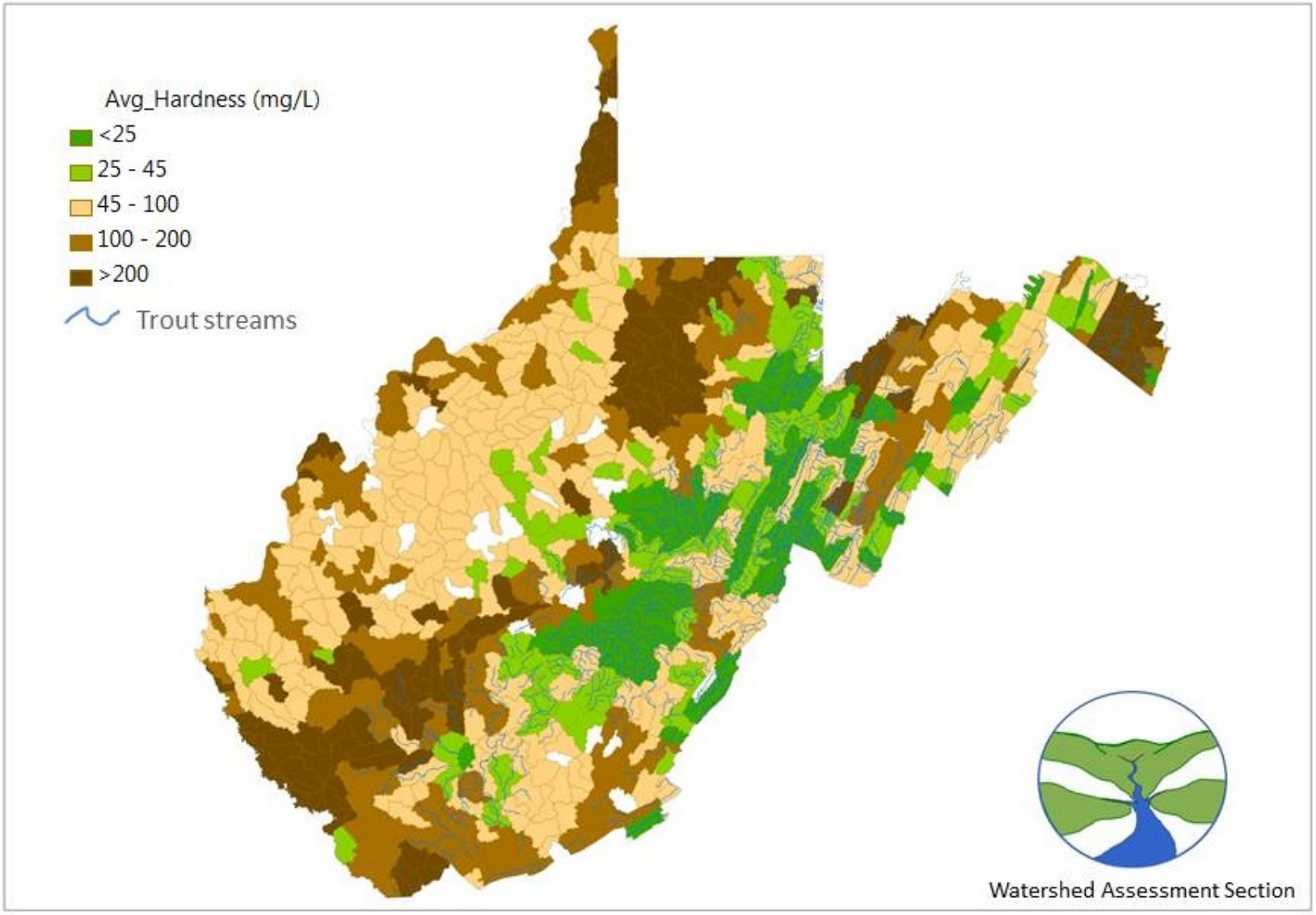
For water with pH range of 6.5-9.0

	Hardness = 25mg/L	Hardness = 50mg/L	Hardness = 100mg/L	Hardness = 150mg/L	Hardness = 200mg/L
Acute Limit	**510 µg/L**	**1319 µg/L**	**3407 µg/L**	**5936 µg/L**	**8803 µg/L**
Chronic Limit	**204 µg/L**	**528 µg/L**	**1365 µg/L**	**2378 µg/L**	**3527 µg/L**



Between hardness 64 & 65 mg/L, chronic allowable Al becomes less stringent than the current 750**µg/L**

Average Hardness of WV Watersheds



Discussion of Aluminum Criteria

What comments and questions do you have regarding Aluminum criteria?

Selenium Criteria Revision

§22 11-6

(3) **The Legislature finds that there are concerns within West Virginia regarding the applicability of the research underlying the federal selenium criteria** to a state such as West Virginia which has high precipitation rates and free-flowing streams and that the alleged environmental impacts that were documented in applicable federal research have not been observed in West Virginia and, further, that **considerable research is required to determine if selenium is having an impact on West Virginia streams**, to validate or determine the proper testing methods for selenium and to better understand the chemical reactions related to selenium mobilization in water.

and

(6) **Within twenty-four months of the effective date of this subdivision, the secretary shall propose rules for legislative approval in accordance with the provisions of article three, chapter twenty-nine of this code which establish a state-specific selenium standard that protects aquatic life.** Concurrent with proposing a legislative rule, the secretary shall also submit the proposed standard and supporting documentation to the Administrator of the Environmental Protection Agency. The secretary shall also consult with and consider research and data from the West Virginia Water Research Institute at West Virginia University, the regulated community, and other appropriate groups in developing the state-specific selenium standard.

Selenium Criteria

- **EPA 2014** – Prepared *External Peer Review Draft Aquatic Life Ambient Water Quality Criterion for Selenium* (updated draft expected later in 2015)
- **Tiered approach –** consideration of tissue & egg/ovary concentration is now recommended
- **GEI Consultants** – prepared WV-specific Freshwater Aquatic Life Criteria for Selenium in 2013, revised March 2015
- **Kentucky Se criteria** – updated in 2014, chronic criteria was approved by EPA
- **Selenium study** involving DEP Division of Mining & Reclamation, Marshall University, and permitees – not complete at this time

Aquatic Life Criteria for Selenium

Parameter	Freshwater Aquatic Life: Acute	Freshwater Aquatic Life: Chronic	
WV Current	**20** µg/l	**5** µg/l	
KY Current (updated 2014)	**258** µg/l (EPA did not approve)	**5** µg/l "Selenium in the water column", OR **8.3** µg/g fish tissue, OR **19.3** µg/g egg/ovary tissue	
GEI Consultants recommended, specific to WV (2013, rev. 2015)	quotient based on selenium fractionation	**2013 version**	**2015 revised version**
		5 µg/l total Selenium, OR	**5** µg/l total Selenium, OR
		8.3 µg/g fish tissue, OR	**9.0** µg/g fish tissue, OR
		19.3 µg/g egg/ovary tissue	**19.5** µg/g egg/ovary tissue
EPA Draft 2014 recommended nationwide	NONE	**1.3** µg/L in lentic (still) aquatic systems **4.8** µg/L in lotic (moving) aquatic systems, 30-day average, "based on dissolved total selenium," OR	
		8.1 µg/g dw in fish whole-body, or **11.8** µg/g dw in fish muscle (skinless, boneless fillet) (Overrides any water column element), OR	
		15.2 µg/g dw in fish eggs or ovaries (Overrides whole-body, muscle, or water column elements)	

Discussion of Selenium Criteria

What comments and questions do you have regarding Selenium criteria?

Temperature Standard

- Evaluating temperature standard for clarification of acute/chronic
- Standard should not be both acute and chronic, basically allows for no mixing zone
- Currently, temperature standard looks like this:

	Aquatic Life	
PARAMETER	**Use Designation Aquatic Life: Acute**	**Use Designation Aquatic Life: Chronic**
Temperature rise shall be limited to no more than 5°F above natural temperature, not to exceed 87°F at any time during months of May through November and not to exceed 73°F at any time during the months of December through April. During any month of the year, heat should not be added to a stream in excess of the amount that will raise the temperature of the water more than 5°F above natural temperature. In lakes and reservoirs, the temperature of the epilimnion should not be raised more than 3°F by the addition of heat of artificial origin. The normal daily and seasonable temperature fluctuations that existed before the addition of heat due to other natural causes should be maintained.		X

Next WQS Quarterly Meeting

- **Will be in July, be prepared to discuss 2017 Triennial Review**

Further Discussion

What other comments and questions do you have?

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