

Docket No. 58-0102-1701

Idaho Aquatic Life Criteria for Selenium



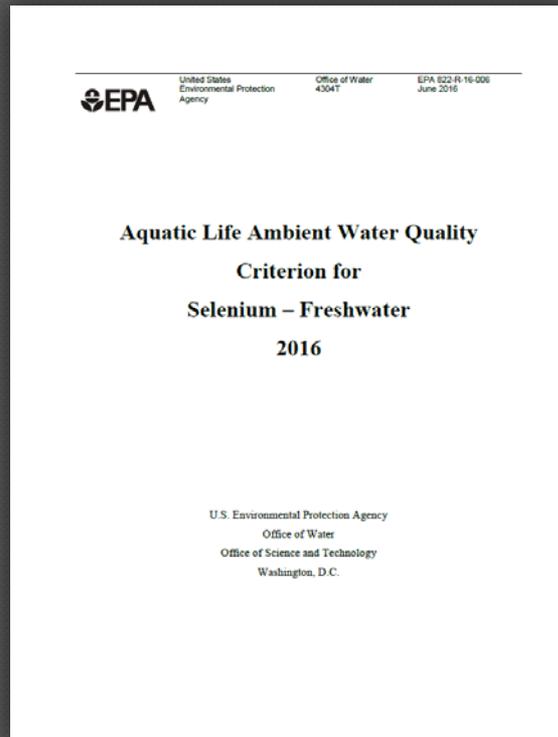
Presented to:
Idaho Board of Environmental Quality

Barry N. Burnell
Stephanie Jenkins
November 16, 2017



Idaho Aquatic Life Criteria for Selenium

- Proposed rule adopting the EPA 304(a) recommended criterion
- Proposals for site-specific criteria



Idaho Aquatic Life Criteria for Selenium

- ◉ Proposed rule adopting the EPA 304(a) recommended criterion
- ◉ Proposals for site-specific criteria

Revised

Proposed Site-Specific Selenium Criterion for Hoopes Spring, Sage Creek, and Crow Creek near the Smoky Canyon Mine

October 2017

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PROPOSAL FOR SITE-SPECIFIC SELENIUM CRITERIA
Upper Blackfoot River and Georgetown Creek Watersheds

November 2017

Justification for Site-Specific Selenium Criterion for Aquatic Life in Portions of Idaho



State of Idaho
Department of Environmental Quality
Water Quality Division
1410 N. Hilton
Boise, Idaho 83706

November 2017

Outline

- Why Update?
- Background on Fish Tissue Criterion
- Proposed Statewide Se Criterion
- Proposed Site-Specific Se Criteria
- Negotiated Rulemaking and Guidance Development History
- Outstanding Issues

Why Update Selenium Criteria?

NWEA Lawsuit against EPA

Failure to Consult
on Idaho's WQS

EPA Response

Consultation with
NOAA and USFWS

Biological Opinions

2014 NOAA
2015 USFWS

Why Update Selenium Criteria?

NOAA and USFWS Biological Opinions

Found jeopardy and adverse modification of critical habitat

Reasonable and Prudent Alternative

No less stringent than EPA's 2016 304(a) selenium criterion

New Criterion - May 2018

Why Update Selenium Criteria?

- New information about selenium in aquatic environments
 - Bioaccumulative
 - Most sensitive taxa are fish
 - Negatively impacts reproduction and survival of young

EPA 2016 304(a) Se Criterion

One Criterion

304(a) Chronic
Criterion for
Selenium

Two Media

Fish-Tissue
Based

Water-Based

Four Elements

Fish Egg-Ovary

Fish Whole-
Body or Muscle

Water Column
Monthly (Lentic
and Lotic)

Water Column
Intermittent
(Lentic or Lotic)

Current and Proposed Criteria Comparison

Selenium Criterion Version	Chronic					Short-term
	Fish Tissue (<i>mg/kg dw</i>)			Water Column ($\mu\text{g/L}$)		Water Column ($\mu\text{g/L}$)
	Egg-Ovary	Whole Body	Muscle	Water (Lentic)	Water (Lotic)	Water
Current	--	--	--	5 (4 day)	5 (4 day)	20 (Instantaneous)
Proposed	15.1	8.5	11.3	1.5 (30 day)	3.1 (30 day)	Intermittent exposure equation

EPA 2016 304(a) Criterion Calculation Approach

Four most sensitive genera used in EPA criterion

Genus	Rank	Egg-Ovary
Acipenser	1	15.6
Lepomis	2	20.6
Salmo	3	21
Oncorhynchus	4	25.3
Micropterus	5	26.3
Cyprinodon	6	27
Esox	7	34
Salvelinus	8	56.2

Genus	Rank	Whole Body
Acipenser	1	9.2
Lepomis	2	9.9
Oncorhynchus	3	11.6
Salmo	4	13.2
Esox	5	14.2
Micropterus	6	18.5
Cyprinodon	7	22.6
Salvelinus	8	34.9

Genus	Rank	Muscle
Acipenser	1	11.9
Oncorhynchus	2	14.3
Lepomis	3	15.9
Salmo	4	18.5
Esox	5	21.7
Micropterus	6	22.2
Cyprinodon	7	28.7
Salvelinus	8	44.5

*Fish tissue concentration units (mg/kg dw)

Portions of Idaho

Site-specific criterion - 287.05

Recalculating without White Sturgeon

Genus	Rank	Egg-Ovary
Acipenser	1	15.6
Lepomis	2	20.6
Salmo	3	21
Oncorhynchus	4	25.3
Micropterus	5	26.3
Cyprinodon	6	27
Esox	7	34
Salvelinus	8	56.2

Genus	Rank	Whole Body
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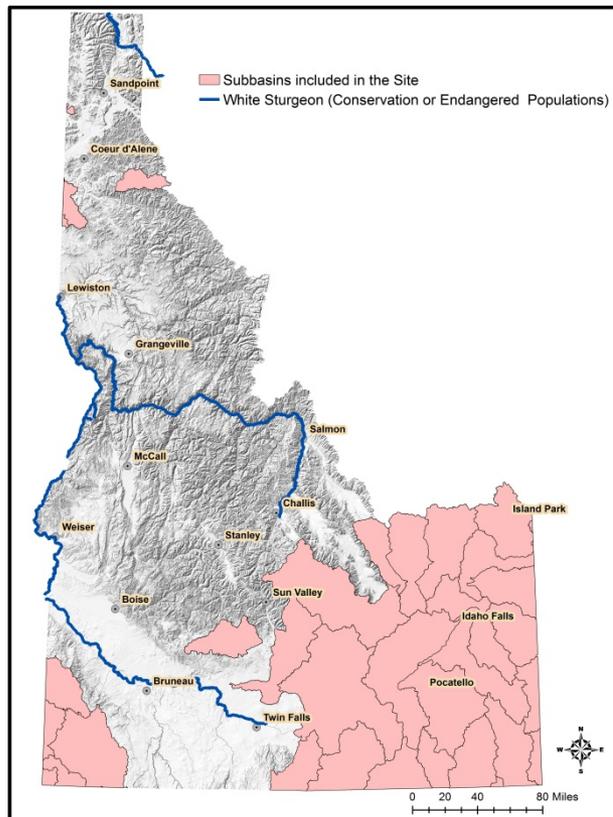
*Fish tissue concentration units (mg/kg dw)

Recalculation Procedure: (US EPA, 2013)

Portions of Idaho

Site-specific criterion - 287.05

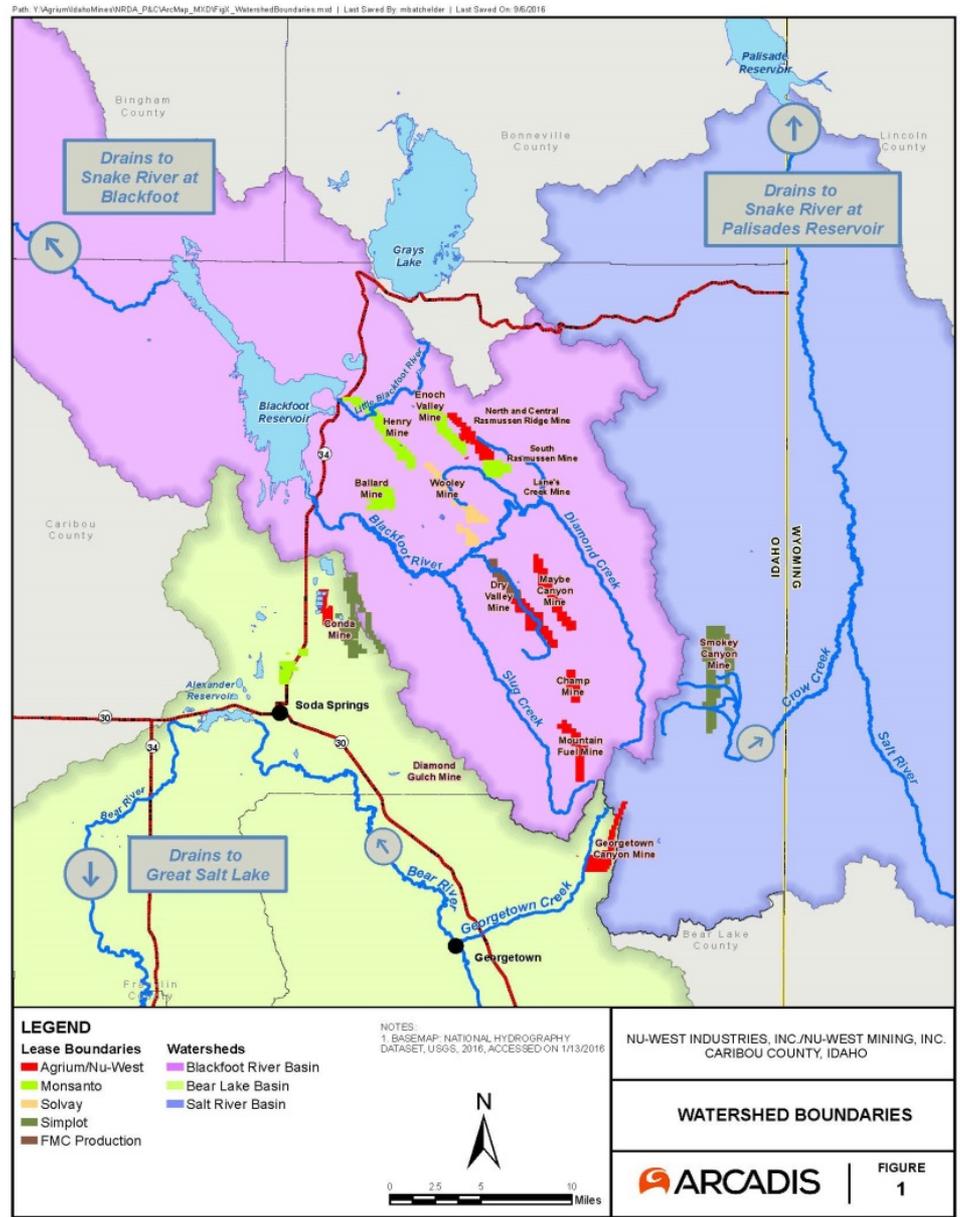
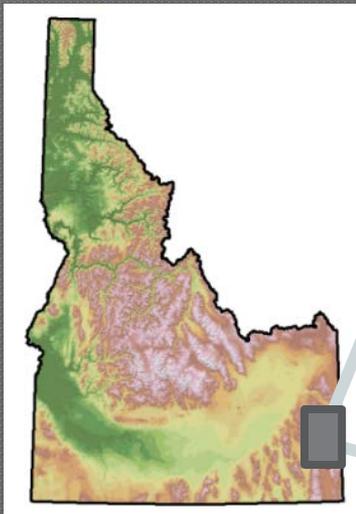
Non-Sturgeon Waters SSC



Selenium Criterion Version	Chronic		
	Fish Tissue (<i>mg/kg dw</i>)		
	Egg-Ovary	Whole Body	Muscle
Idaho Proposed	15.1	8.5	11.3
Portions	19.0	9.5	13.1

Site Specific Criteria

287.01-287.04



Upper Blackfoot River and Georgetown Creek Watersheds

Proposed Selenium Criterion	Chronic					Short-term
	Fish Tissue (<i>mg/kg dw</i>)			Water Column ($\mu\text{g/L}$) (30 Day Ave)		Water Column ($\mu\text{g/L}$)
	Egg-Ovary	Whole Body	Muscle	Water (Lentic)	Water (Lotic)	Water

Most Sensitive Species: **Rainbow Trout**

Upper Blackfoot	24.5	12.5	12.8	*	$\frac{\text{Tissue}_{\text{criterion}}}{\text{BAF}}$	*
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Most Sensitive Species: **Brown Trout** (EO), **Rainbow Trout** (WB, M)

Georgetown	21.0	12.5	12.8	*	$\frac{\text{Tissue}_{\text{criterion}}}{\text{BAF}}$	*
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* Statewide Rule Applies

Upper Blackfoot River and Georgetown Creek Watersheds

Proposed Selenium Criterion	Chronic					Short-term
	Fish Tissue (<i>mg/kg dw</i>)			Water Column ($\mu\text{g/L}$) (30 Day Ave)		Water Column ($\mu\text{g/L}$)
	Egg-Ovary	Whole Body	Muscle	Water (Lentic)	Water (Lotic)	Water

Most Sensitive Species: **Rainbow Trout**

Upper Blackfoot	24.5	12.5	12.8	*	11.9**	*
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Most Sensitive Species: **Brown Trout** (EO), **Rainbow Trout** (WB, M)

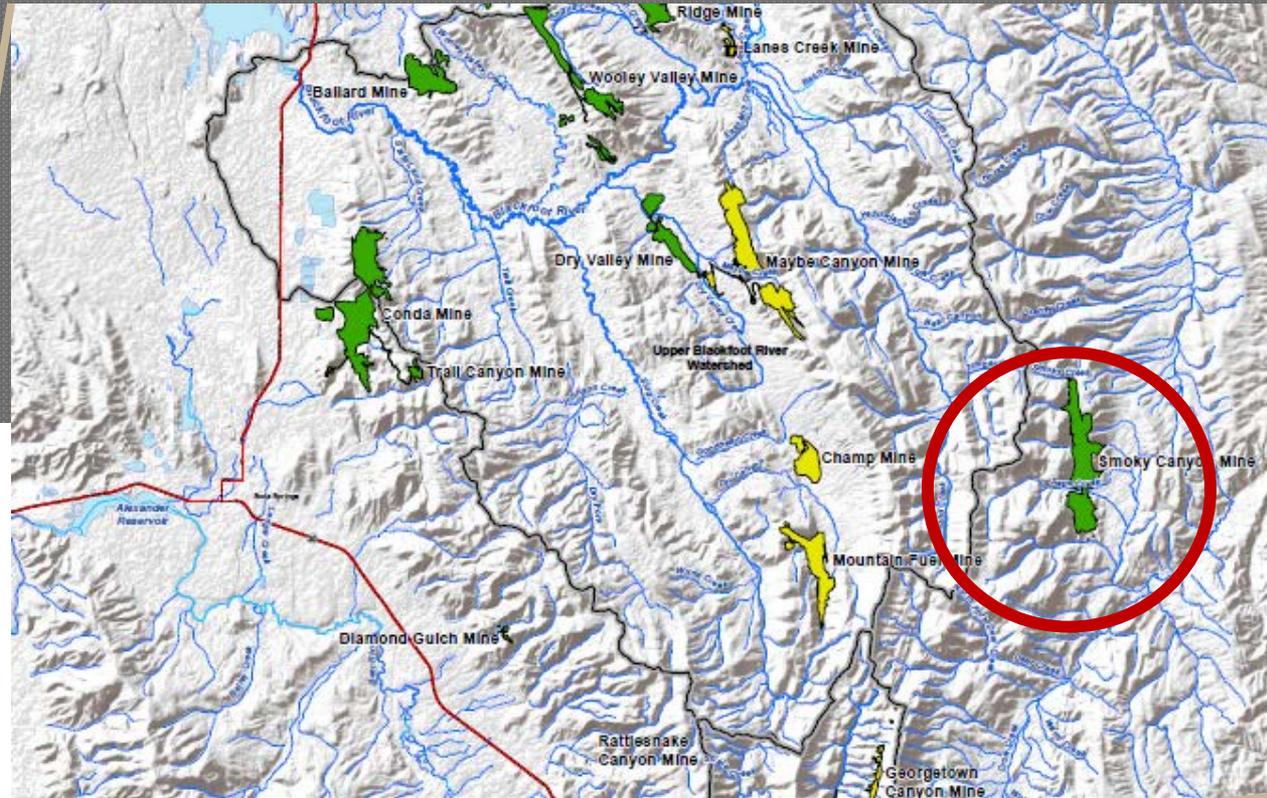
Georgetown	21.0	12.5	12.8	*	3.8**	*
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*Statewide Rule Applies

**Example values for Sheep and Georgetown Creeks only

Sage and Crow Creek Watersheds

287.03-287.04



Sage and Crow Creek Watersheds

287.03-287.04

Proposed Selenium Criterion	Chronic					Short-term
	Fish Tissue (mg/kg dw)			Water Column (µg/L) (30 Day Ave)		Water Column (µg/L)
	Egg-Ovary	Whole Body	Muscle	Water (Lentic)	Water (Lotic)	Water

Most Sensitive Species: **Brown Trout**

Sage	20.5	13.6	*	*	16.7	*
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Most Sensitive Species: **Brown Trout** (EO), **Rainbow Trout** (WB)

Crow	20.5	12.5	*	*	4.2	*
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* Statewide Rule Applies

Proposed Criterion Comparisons

Proposed Selenium Criterion	Chronic					Short-term
	Fish Tissue (<i>mg/kg dw</i>)			Water Column ($\mu\text{g/L}$) (30 Day Ave)		Water Column ($\mu\text{g/L}$)
	Egg-Ovary	Whole Body	Muscle	Water (Lentic)	Water (Lotic)	Water
Statewide	15.1	8.5	11.3	1.5	3.1	Intermittent exposure equation
Portions	19.0	9.5	13.1	*	*	*
Upper Blackfoot	24.5	12.5	12.8	*	$\frac{\text{Tissue}_{\text{criterion}}}{\text{BAF}}$	*
Georgetown	21.0	12.5	12.8	*	$\frac{\text{Tissue}_{\text{criterion}}}{\text{BAF}}$	*
Sage	20.5	13.6	*	*	16.7	*
Crow	20.5	12.5	*	*	4.2	*

Negotiated Rulemaking History

- Three Meetings in 2017
 - 4/27
 - 6/13
 - 7/25
- Posted in September Bulletin: 9/6/2017

Outstanding Issues

- **Statewide Rule**

- Fishless Waters
- Sampling Requirements

- **SSCs**

- 287.05: Resident Species - White Sturgeon stocked outside historic range
 - Not managed by IDFG as a reproducing population of sturgeon
- 287.01 - 287.02: Fish tissue supersedes any WC values when fish are sampled downstream of fishless waters

Questions