

South Fork Payette River

Idaho Department of Environmental Quality

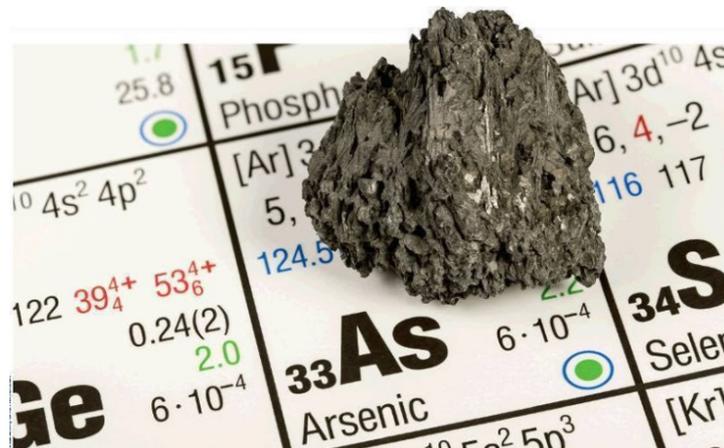
Docket No. 58-0102-1801 Revision of Idaho's Human Health Criteria for Arsenic Negotiated Rulemaking

July 23, 2019
Jason Pappani



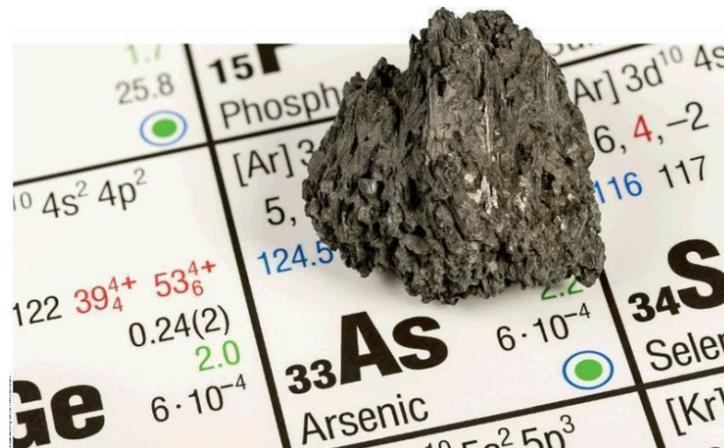
Outline

- Review
- 2019 Monitoring
- Next Steps

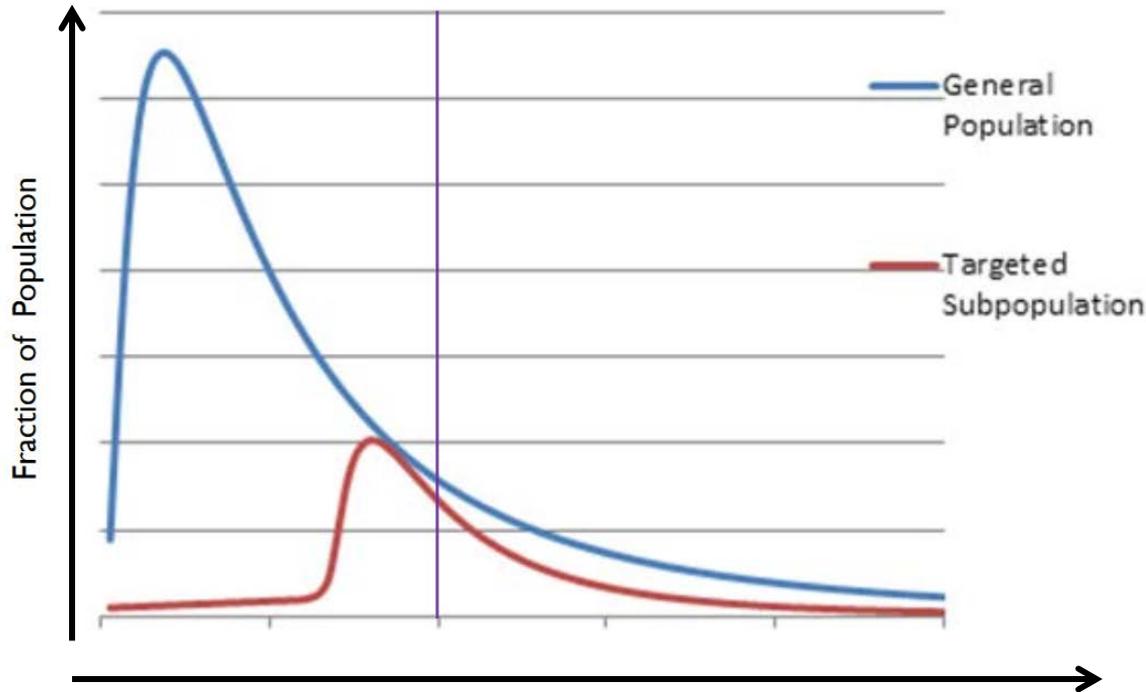


Overview of Rulemaking

- Previous Meetings
 - April 19, 2018
 - May 23, 2018
 - June 27, 2018



Human Health



Body Weight (BW)
Drinking water intake (DI)
Fish consumption (FI)

$$AWQC = RSD * \left(\frac{BW}{DI + (FI * BAF)} \right) * 1000$$



Human Health

Recreation

Domestic Water
Supply

Fish Only

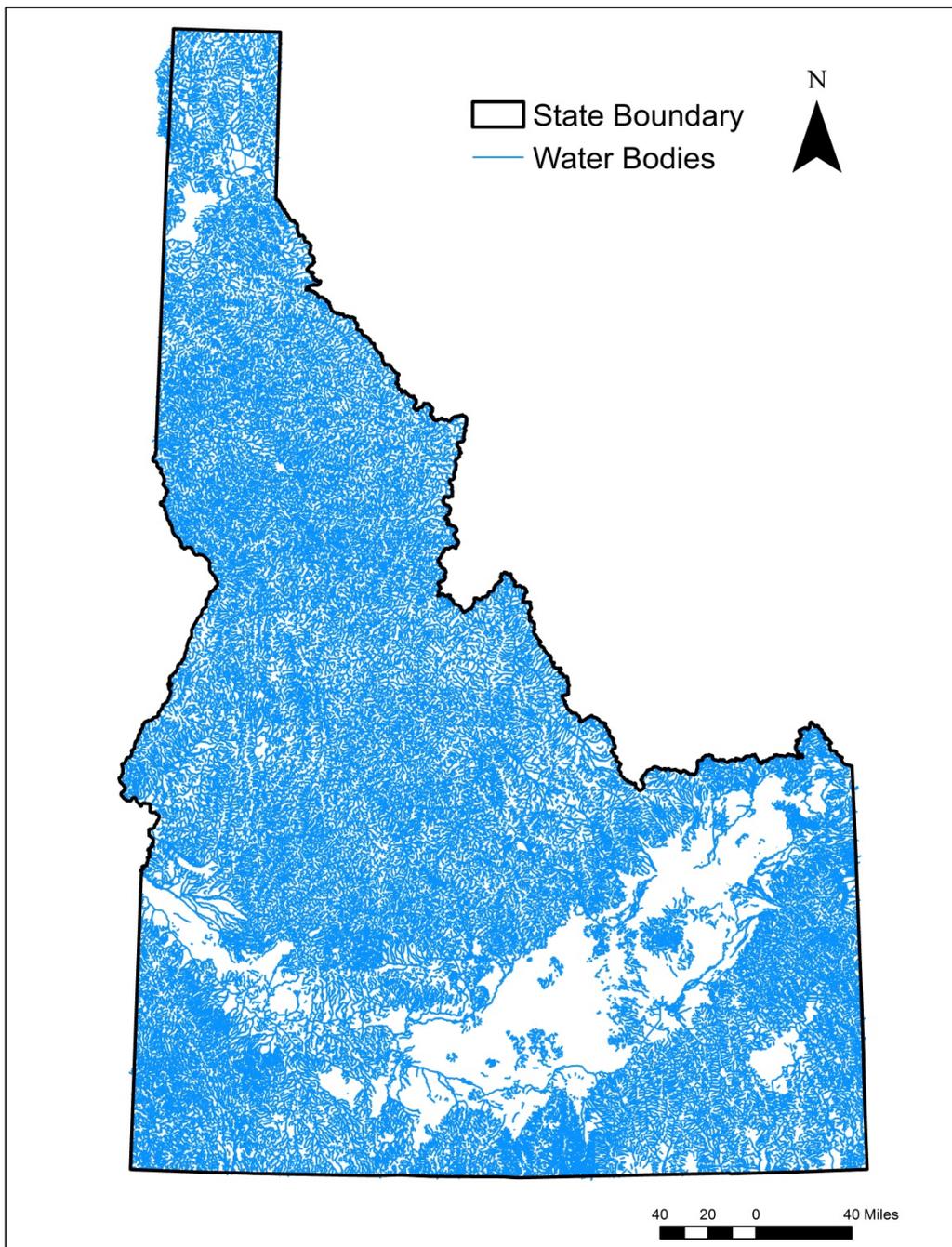
Fish + Water



+



Idaho Department of Environmental

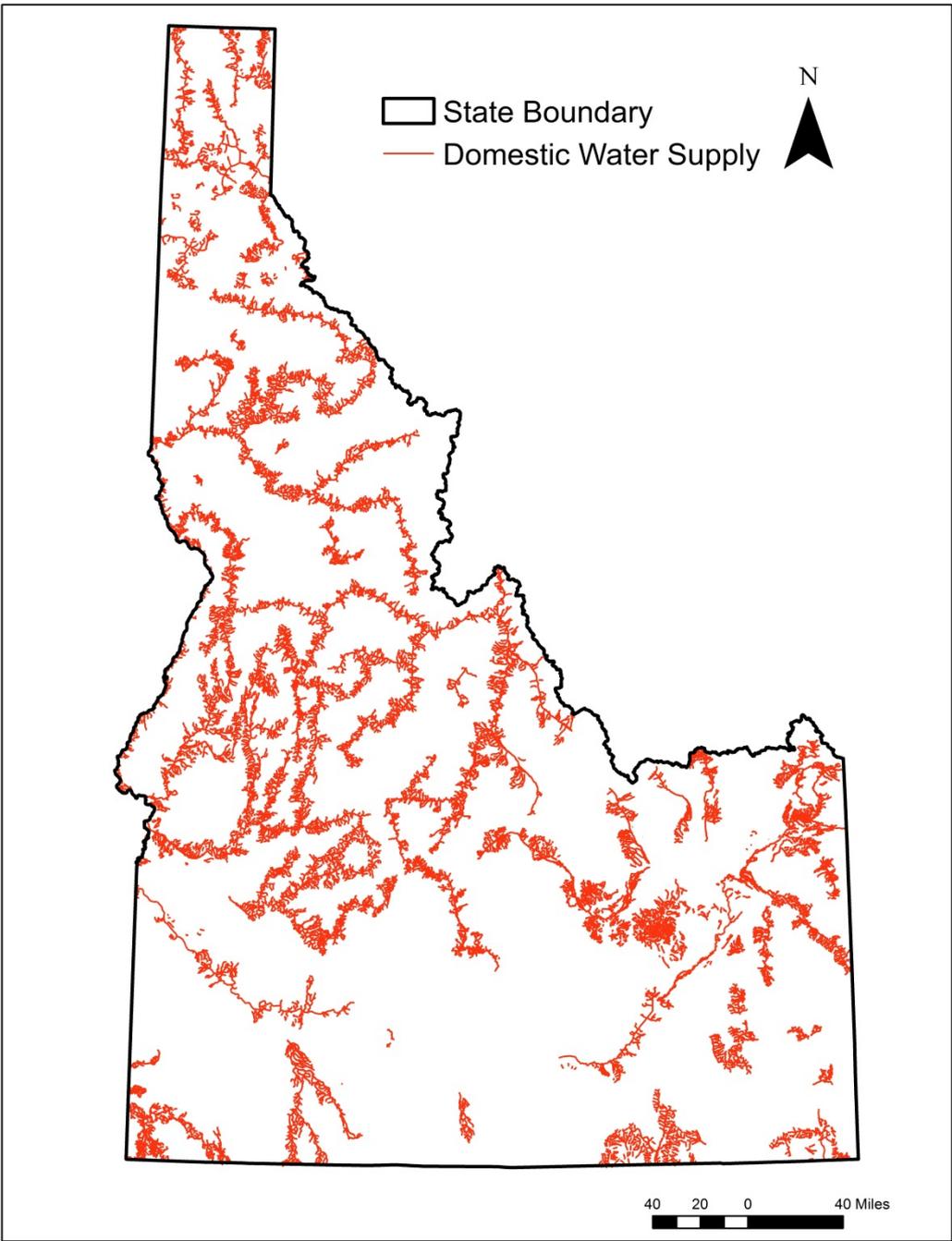


~96,490 stream miles designated (or presumed) for Recreation Uses (Fish Only criteria)

Recreation

Fish Only





~22,957 miles
 currently designated
 for Domestic Water
 Supply
 (Fish + Water Criteria)

Domestic Water
Supply

Fish + Water



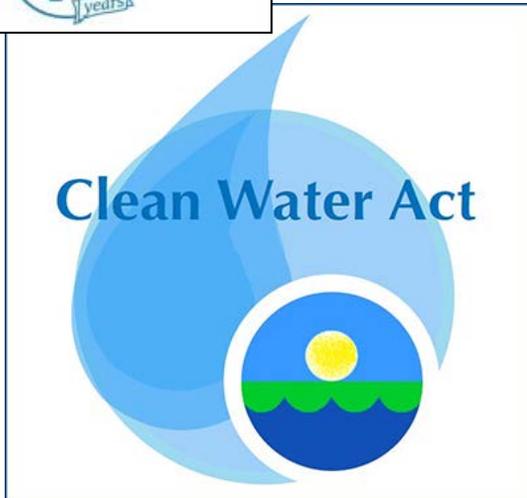
+



A (very) brief history of Arsenic Criteria in Idaho



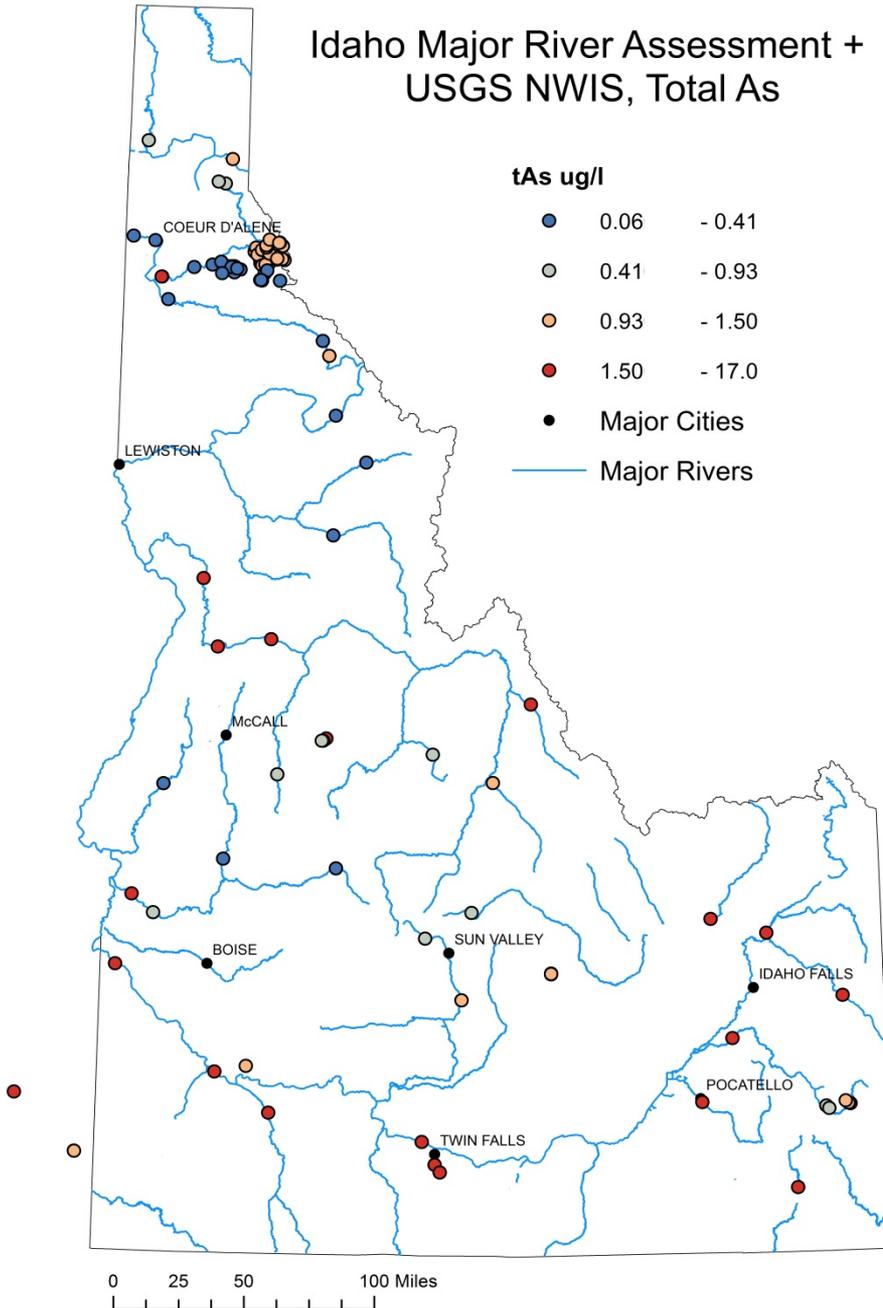
CWA vs SDWA, implementation



- CWA does not allow consideration of treatability and economics
- Implementation tools



Idaho Major River Assessment + USGS NWIS, Total As

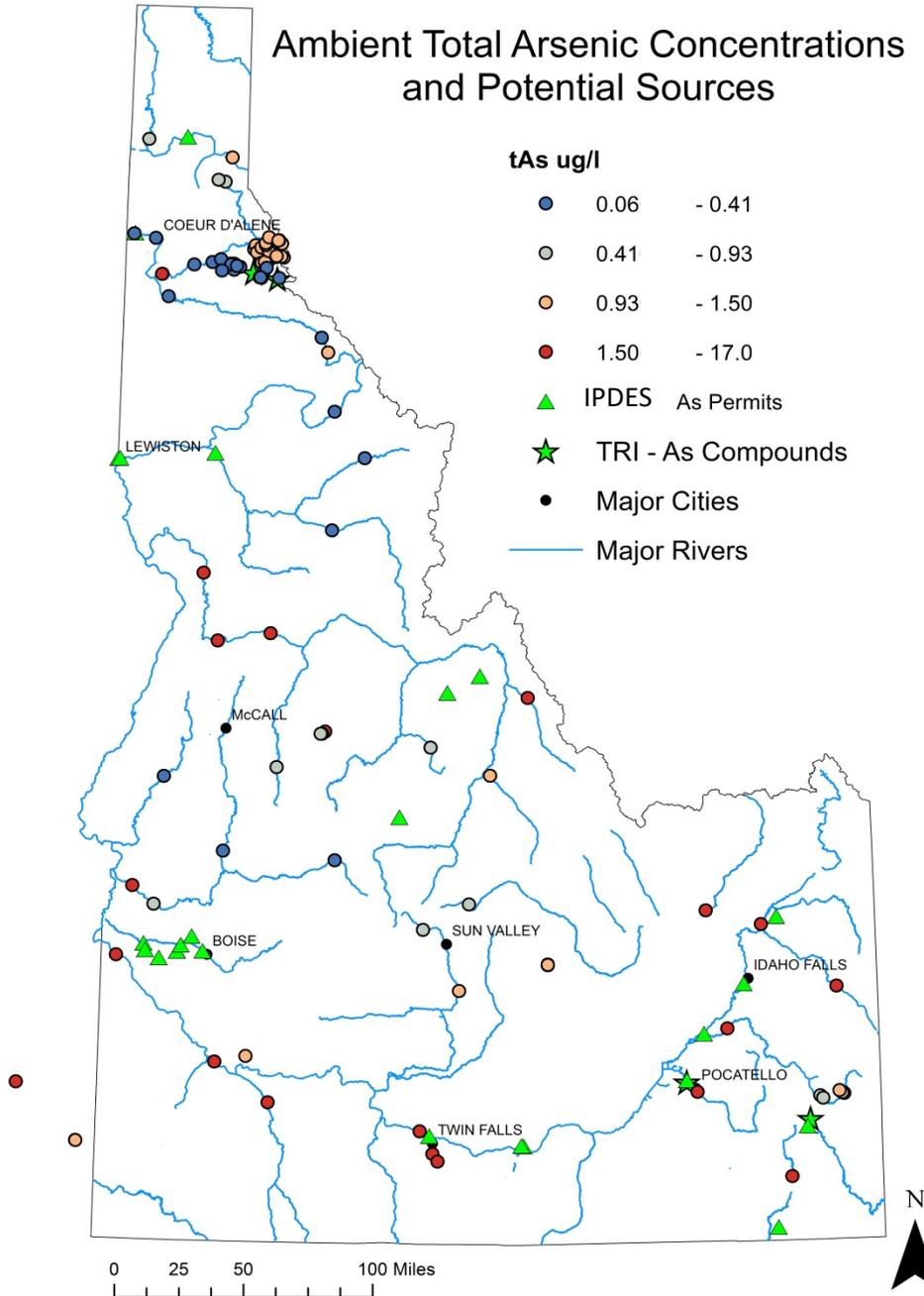


Inorganic As ($\mu\text{g/L}$)

	DEQ	USGS Filtered & Estimated
Range	0.02 – 12.00	0.07 – 4.51
Mean	1.75	0.81
Median	1.12	0.67
75 th %ile	2.13	1.11* (4.74)



Ambient Total Arsenic Concentrations and Potential Sources



- 34 IPDES permits with either As limits or monitoring requirements
- Most are municipal WWTP
- 4 Facilities on Toxic Release Inventory for As Compounds

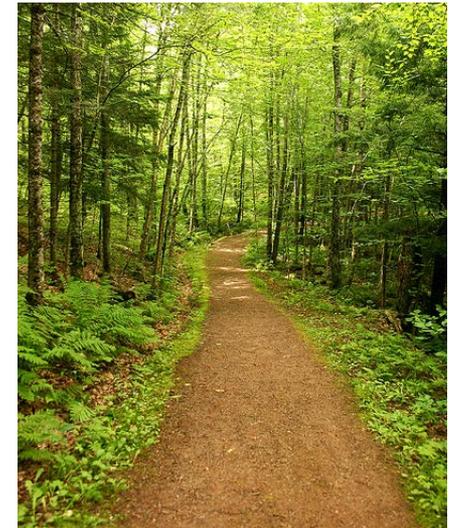
Potential Approach

- Modify using Idaho Specific Inputs (based on 2015 HHC)
 - BW = 80 kg
 - DI = 2.4 L/day
 - FCR = 66.5 g/day
 - Cancer Risk Factor = 10^{-5}
- Identify appropriate BCF / BAF
- Inorganic Fraction?



Path Forward

- Monitoring to:
 - Determine appropriate BAF and (i)As:(T)As for Idaho Waters
 - Estimate background conditions for As in Idaho waters



Revised Rulemaking Schedule

Action	Date
Notice of Negotiated Rulemaking published in Idaho Administrative Bulletin	4/4/18
1 st negotiated rulemaking meeting	4/19/18
Continue negotiated rulemaking meetings until summer 2022	
Deadline for submitting Proposed Rule to Office of Administrative Rules for publication in the Bulletin	Summer 2022
Proposed Rule published in Bulletin; comment period begins	Fall 2022
End of comment period.	Fall 2022
Mail final proposal to Board members	October 2022
Board meeting – consideration of final proposal for adoption of pending rule	November 2022
Notice of Adoption of Pending Rule published in Idaho Administrative Bulletin	January 2023
Pending rule reviewed by Legislature	January 2023
Pending rule becomes final and effective if approved by Legislature	2023 sine die

Review of Comments Received

June 2018 Rulemaking

- Association of Idaho Cities
- Idaho Association of Commerce and Industry
- Idaho Mining Association
- Simplot



Review of Comments Received

June 2018 Rulemaking

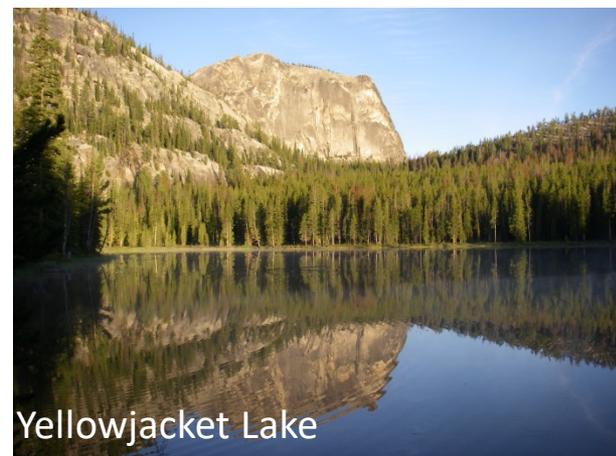
- Simplot (July 16, 2019)



Issues to Consider

- Toxicity and bioaccumulation
- Elevated in surface waters
- Relationship of inorganic arsenic to total arsenic

[(i)As:(T)As]



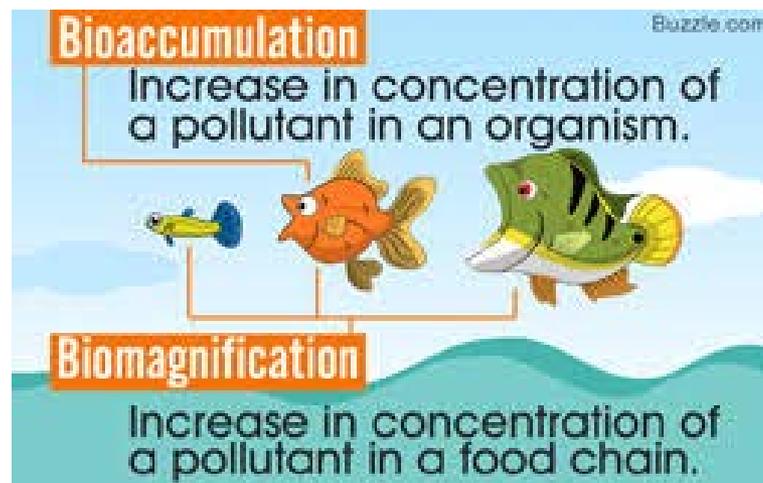
Toxicity

- IRIS reassessment



Bioaccumulation

- BAF – includes dietary uptake (field based)
 - Calculated as the ratio of chemical in fish tissue vs. water
 - Often based on total arsenic



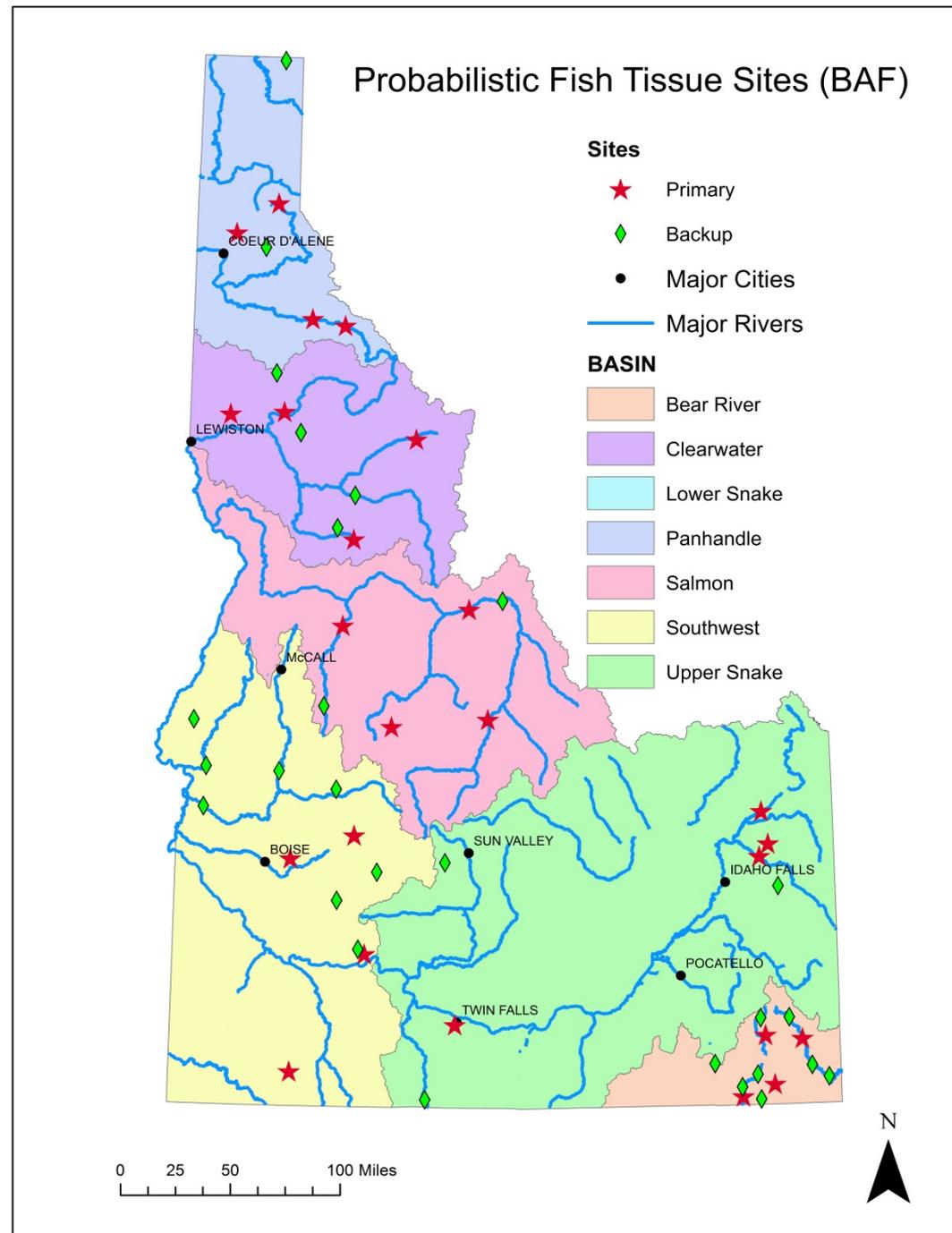
Monitoring

1. What is an appropriate BAF?
2. What is an appropriate (i)As:(T)As?
3. What are current background conditions?



Probabilistic As Accumulation

- 24 total
- 4 sites / Basin
- Target: 2 gamefish species
- 5 fish composite
- Water in fall (2019) and spring (2020)



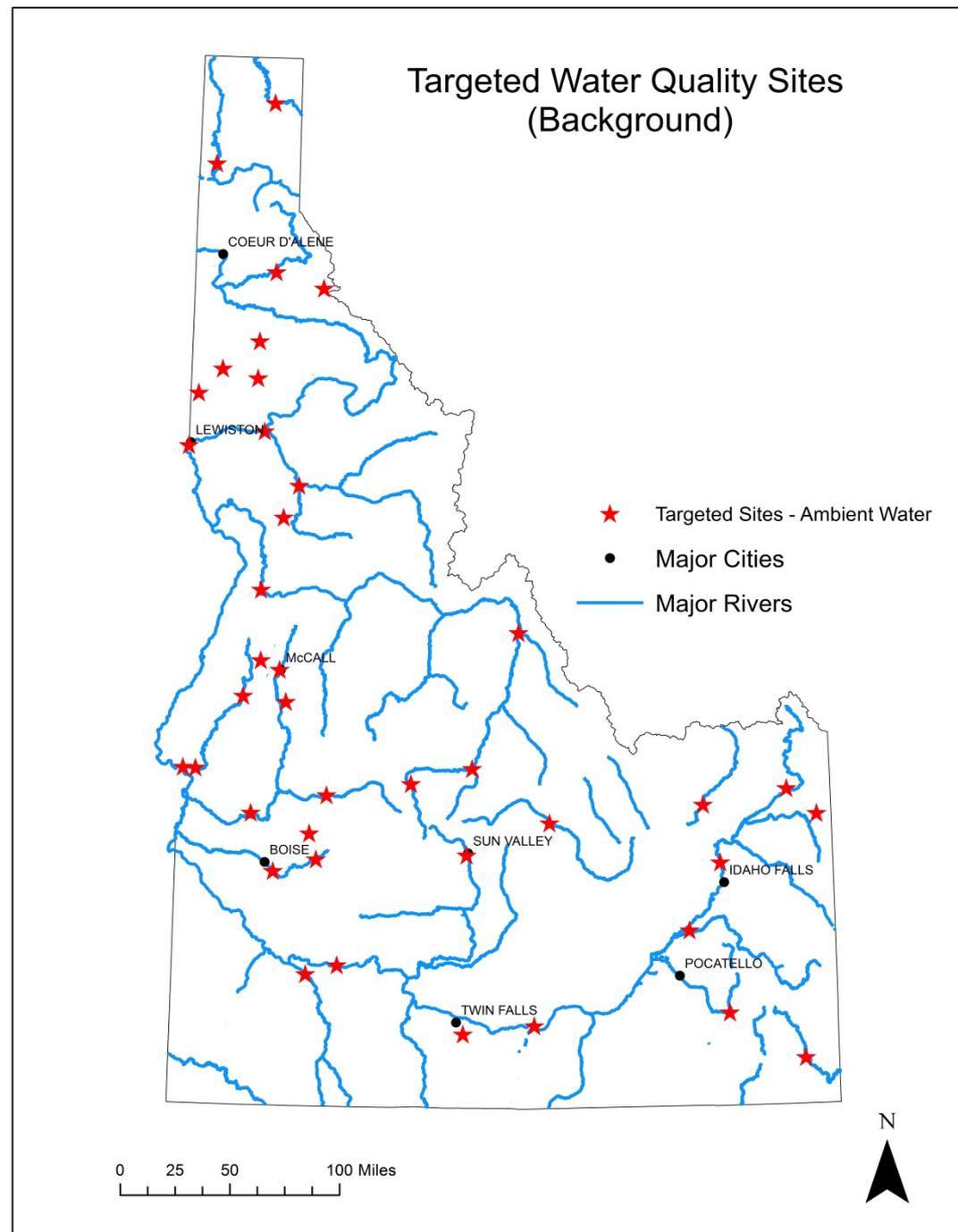
Monitoring - BAF

	Analyte	Analytical Method	MDL	Targeted # of samples
Fish Tissue*	Total As	ICP-MS	0.009 mg/kg	48*
	Inorganic As	EPA-1632	0.004 mg/kg	48*
Water Grab Sample	Total As	ICP-MS	0.011 µg/L	48
	Inorganic As	SOP BAL-4100	0.004 µg/L	48

*Target – 2 composite samples at each of 24 sites. Each composite sample to consist of 5 individual fillets from the same gamefish species; the smallest fish in the composite shall be within 75% of the total length of the largest fish.

Targeted Ambient Arsenic

- Monthly total and inorganic in water
- Easily accessible throughout year
- Areas of interest
- Above major anthropogenic sources
- Spread throughout state



Monitoring - Targeted

Targeted Water (40 sites)	Analyte	Analytical Method	MDL	Targeted # of samples
	Total As	ICP-MS	0.011 µg/L	480
	Inorganic As	SOP BAL-4100	0.004 µg/L	480

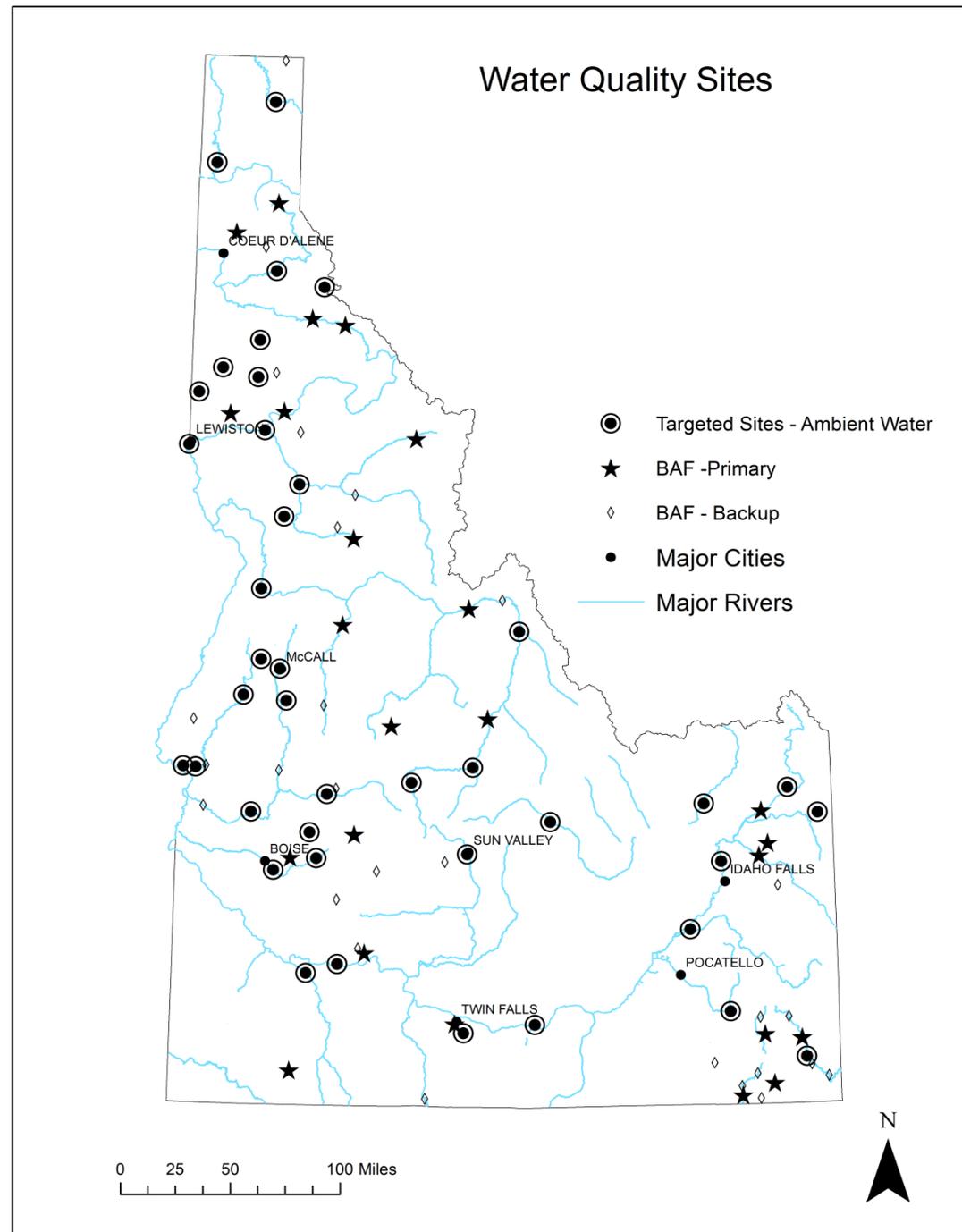


Detection Limits...

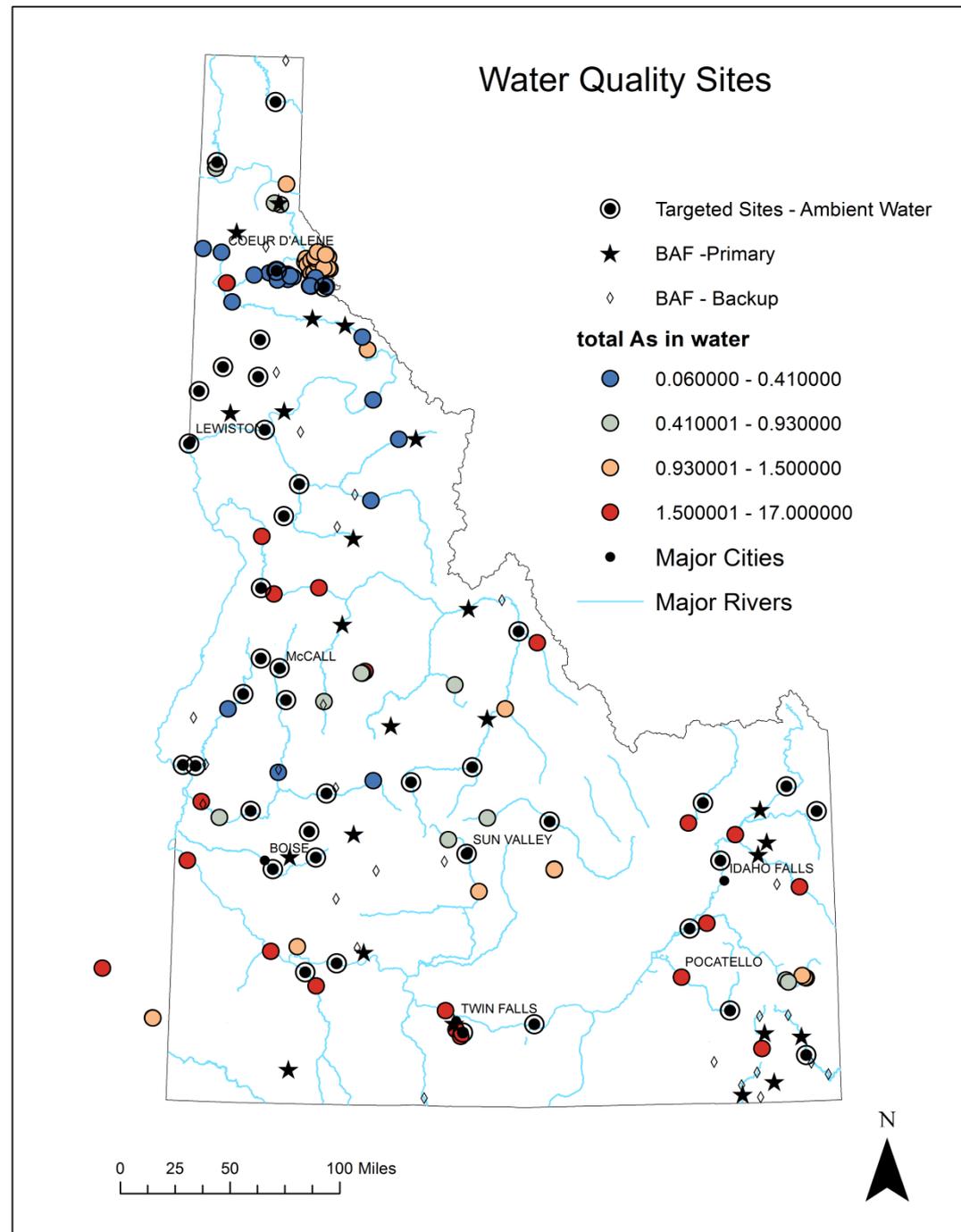
	Analyte	Analytical Method	MDL	Targeted # of samples
Fish Tissue*	Total As	ICP-MS	0.009 mg/kg	48*
	Inorganic As	EPA-1632	0.004 mg/kg	48*
Water Grab Sample	Total As	ICP-MS	0.011 µg/L	48
	Inorganic As	SOP BAL-4100	0.004 µg/L	48



Planned Arsenic Accumulation and Ambient Arsenic Sites

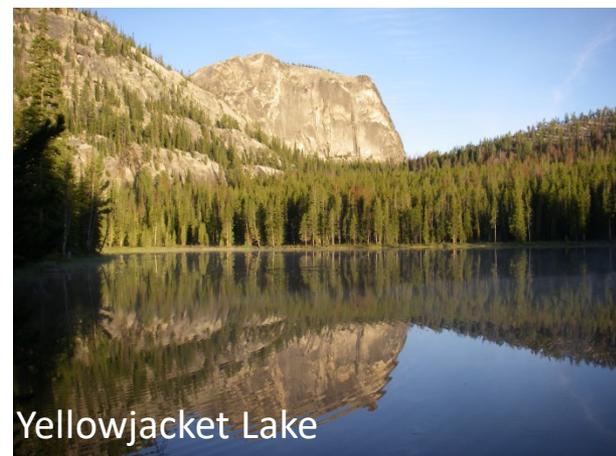


Planned Arsenic Accumulation and Ambient Arsenic Sites with (T)As in water from IMRS and USGS



Issues to Consider

- Toxicity – EPA revising
- Bioaccumulation – BAF monitoring
- Arsenic is naturally elevated – Targeted monitoring
- inorganic vs. total – BAF and targeted monitoring



Next Steps

- Monitoring to begin late summer / fall
 - Revisit targeted locations based on results
- Continue working with the lab to lower MDL



Next Steps

- Comment Deadline: July 31, 2019
 - Monitoring approach
 - Site Selection Process
 - Detection Limits

