2018 Animas River Water Quality Monitoring

Rotary Park, Durango, CO

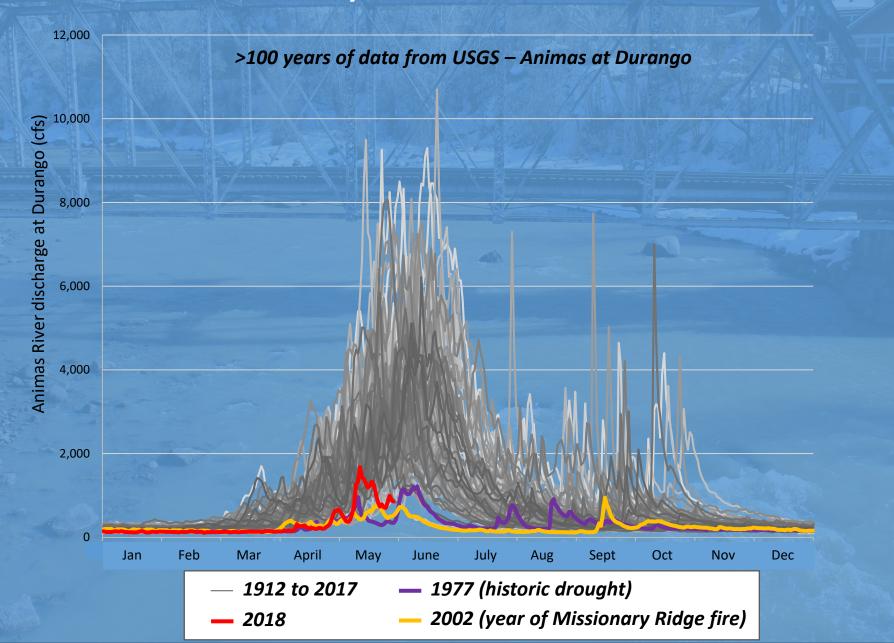


- Weekly sampling in May 2018 during spring runoff
- Expedited lab analysis to deliver results to public as quickly as possible

Please keep in mind these results are from one location along the Durango stretch of the Animas River and may not be representative of other reaches of the Animas River.



Monitoring results should be viewed in context of the drought conditions and historically low Animas River levels so far in 2018



EXPLORE MONITORING RESULTS:





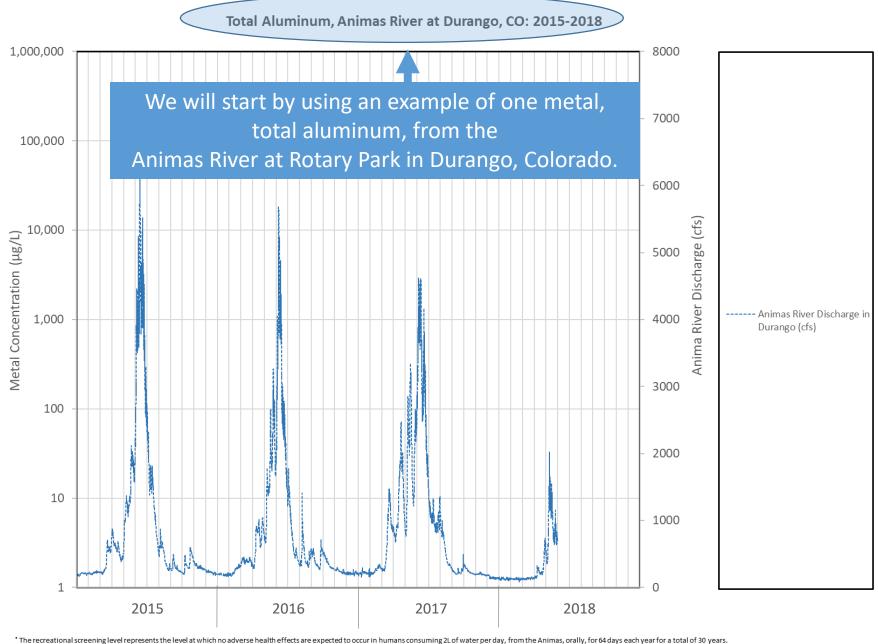


Guide to graph interpretation (click here)

OR

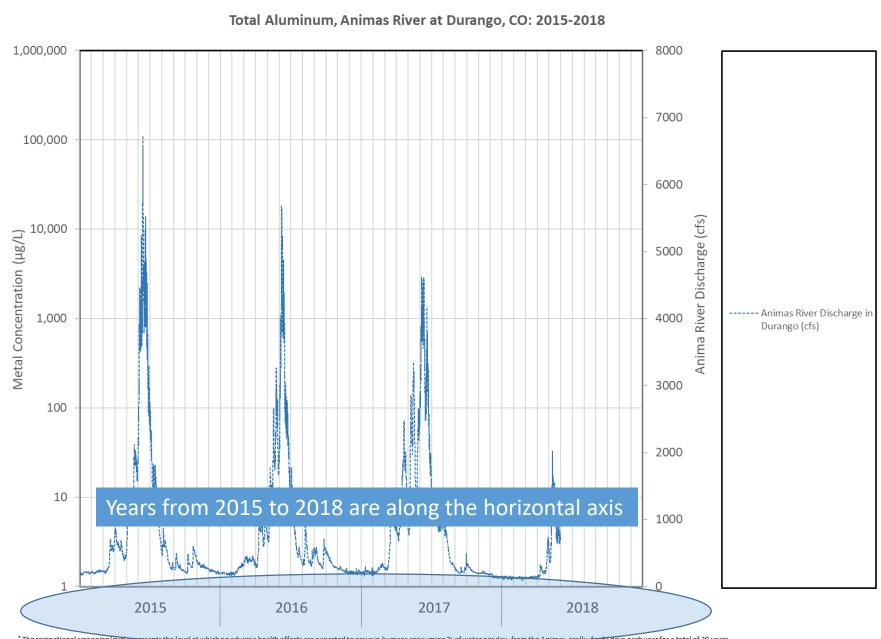
Graphs with data and summary (click here)

Latest data point = 5/30/18



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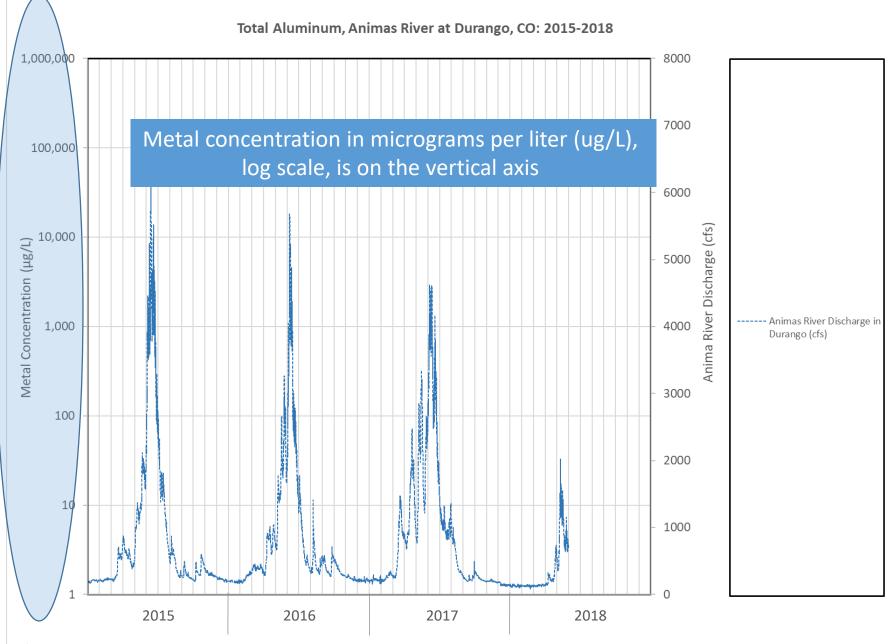
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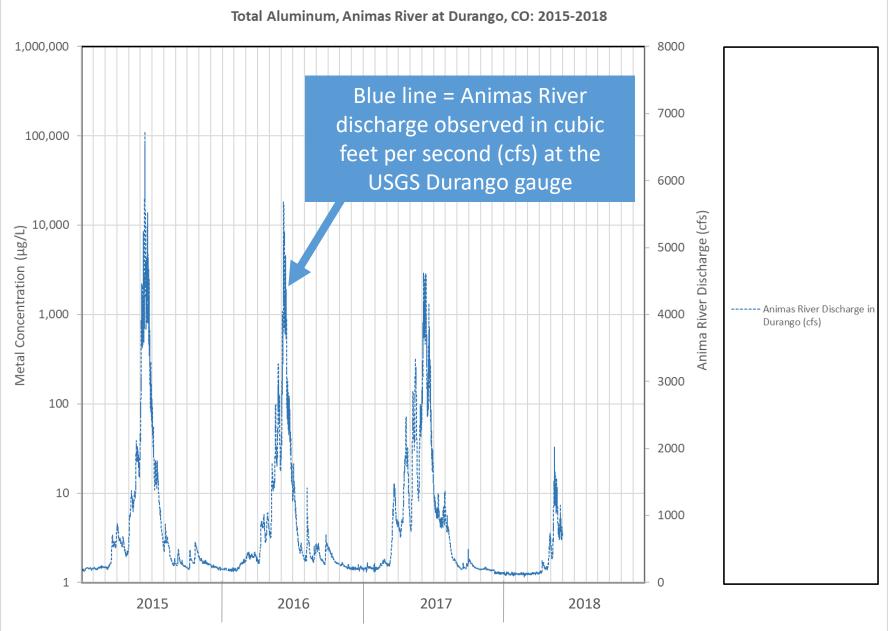
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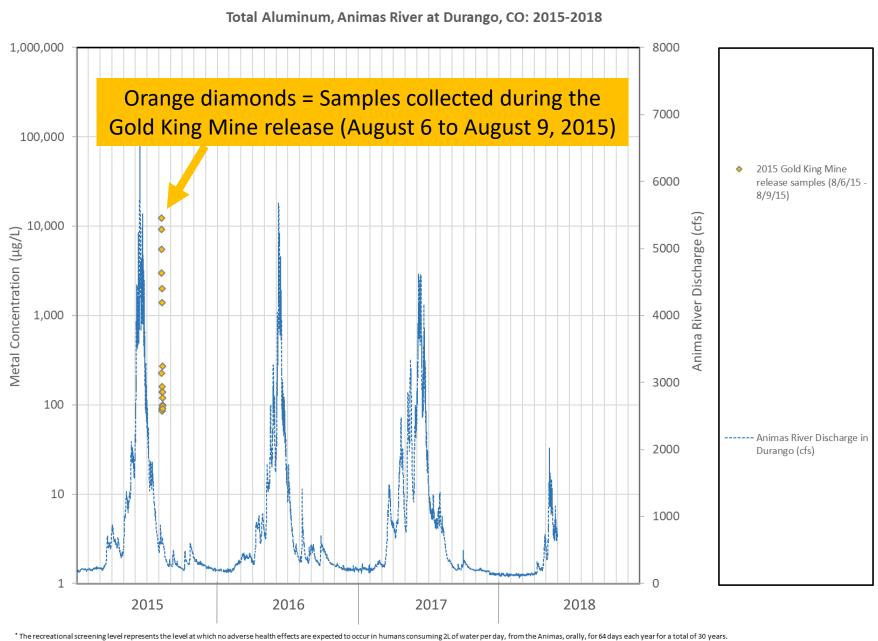
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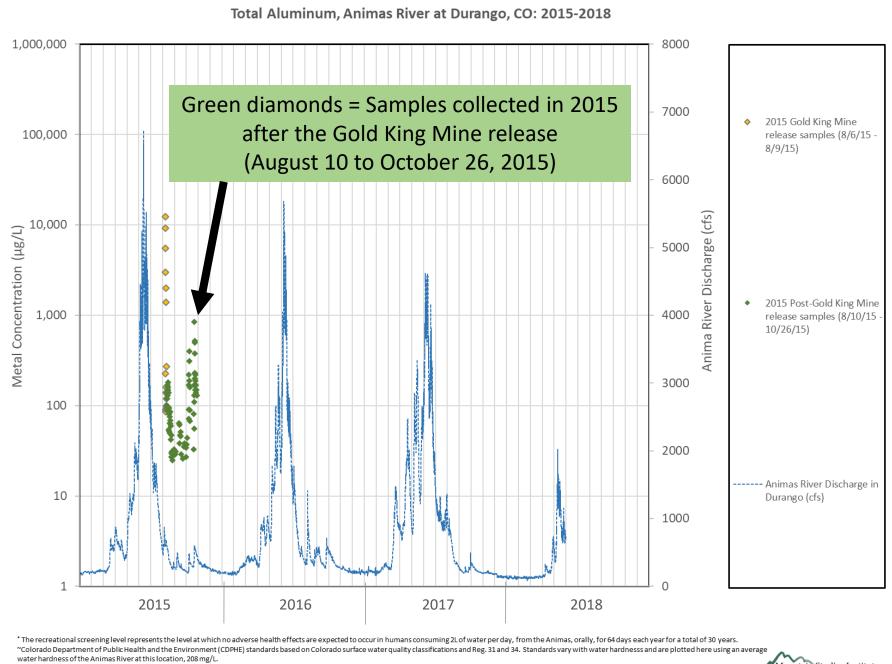
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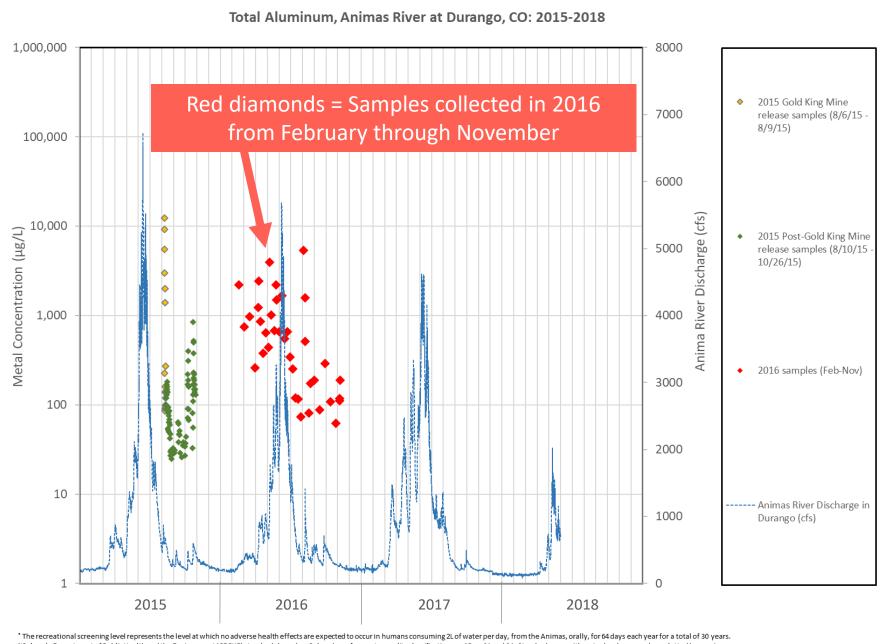


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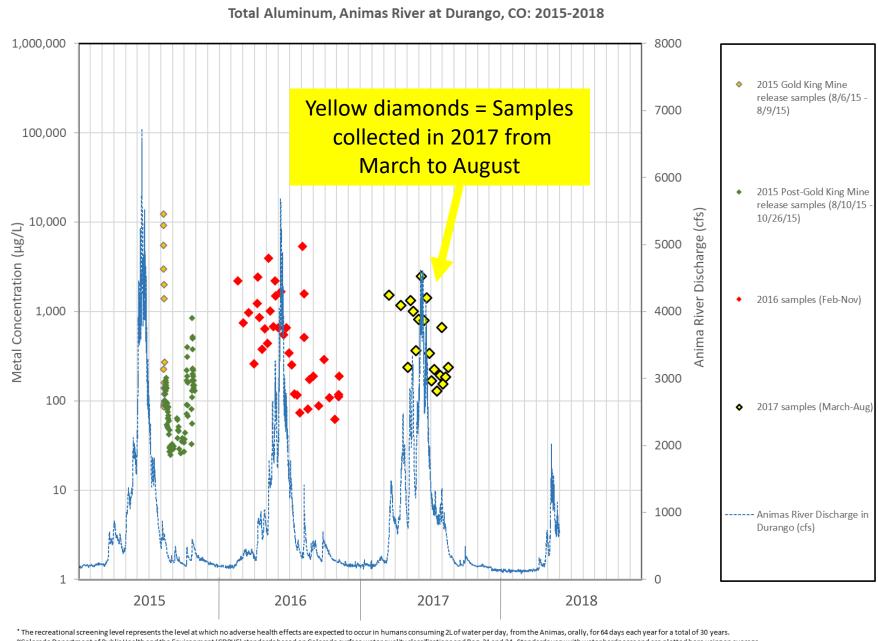


Mountain Studies Institute SAN JUAN MOUNTAINS, CO



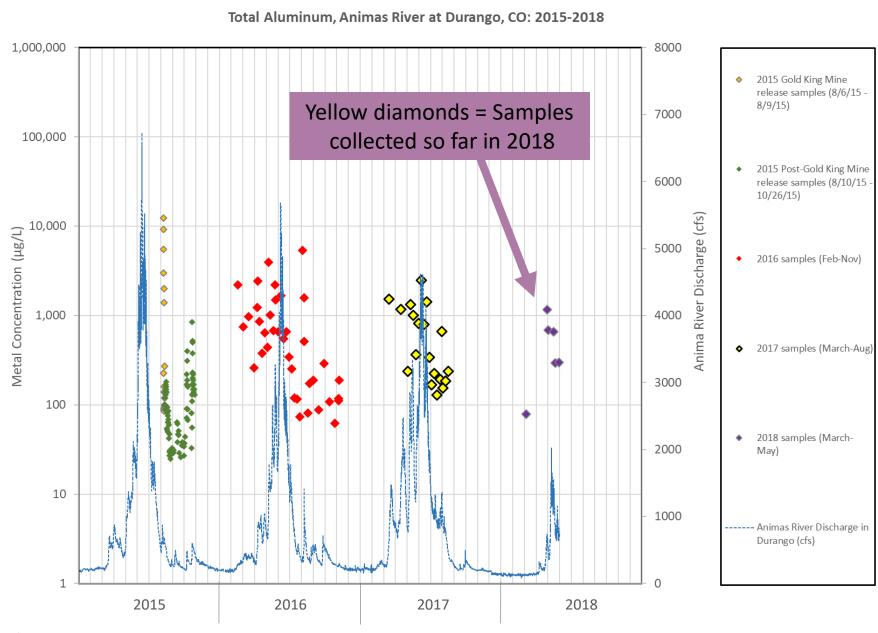
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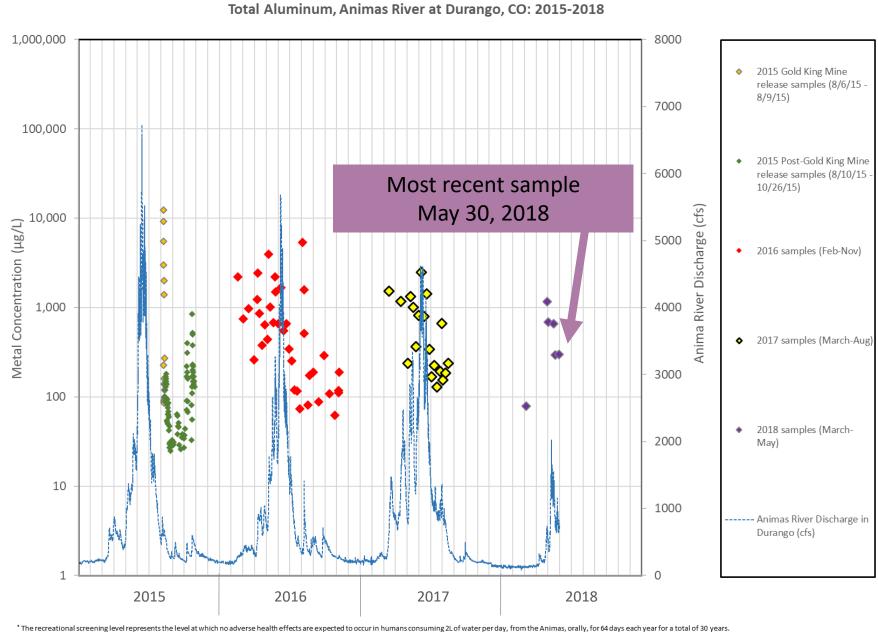
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Questions we will be asking as the season unfolds:

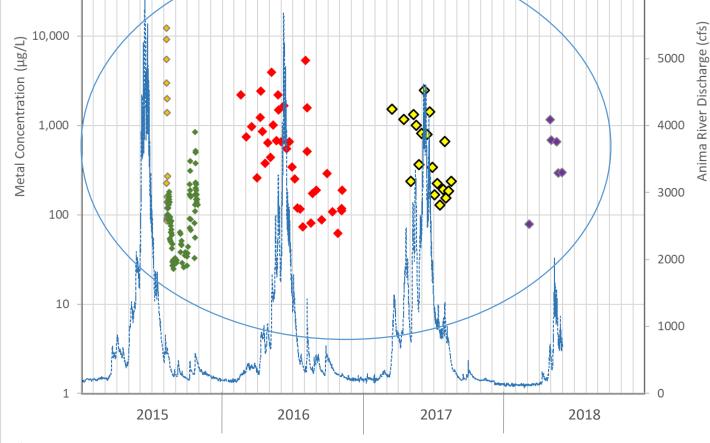
How do metal concentrations during the drought conditions of 2018 compare to previous years?



- 2015 Post-Gold King Mine release samples (8/10/15 -10/26/15)
- 2016 samples (Feb-Nov)

2017 samples (March-Aug)

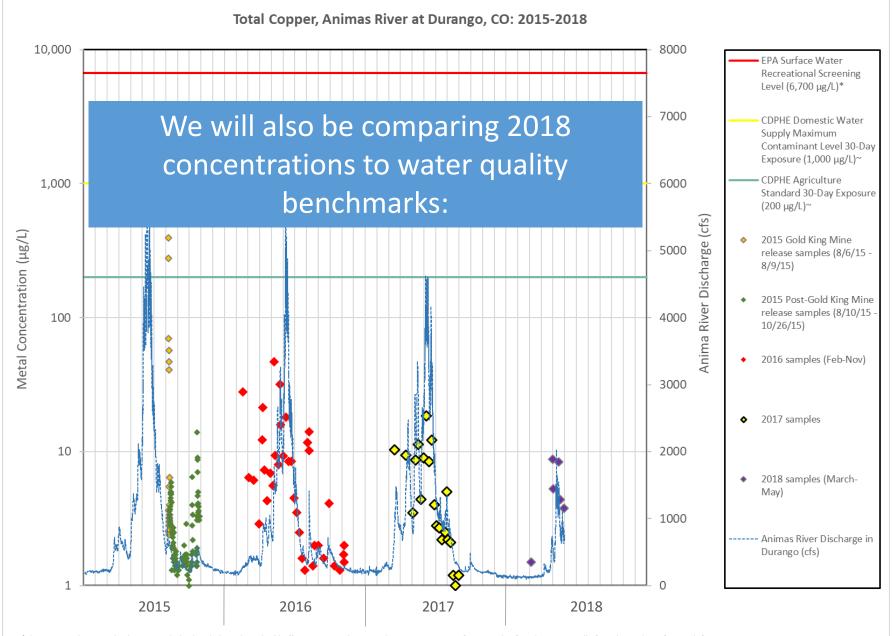
- 2018 samples (March-May)
- --- Animas River Discharge in Durango (cfs)



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Total Copper, Animas River at Durango, CO: 2015-2018 10,000 8000 EPA Surface Water Recreational Screening Level (6,700 µg/L)* 7000 CDPHF Domestic Water Supply Maximum Environmental Protection Agency – Contaminant Level 30-Day Exposure (1,000 μg/L)~ Recreational Screening Level CDPHE Agriculture 1,000 6000 Standard 30-Day Exposure $(200 \mu g/L)^{\sim}$ Anima River Discharge (cfs) Set to protect use of the Animas River for recreation Metal Concentration (μg/L) 2015 Gold King Mine 5000 release samples (8/6/15 -8/9/15) Protective of users who accidentally swallow river water 2015 Post-Gold King Mine (swimmers, rafters, tubers) or users who intentionally release samples (8/10/15 4000 100 10/26/15) ingest river water (backpackers, overnight river users) 2016 samples (Feb-Nov) 3000 2017 samples 10 2000 2018 samples (March-May) 1000 - Animas River Discharge in Durango (cfs)

2017

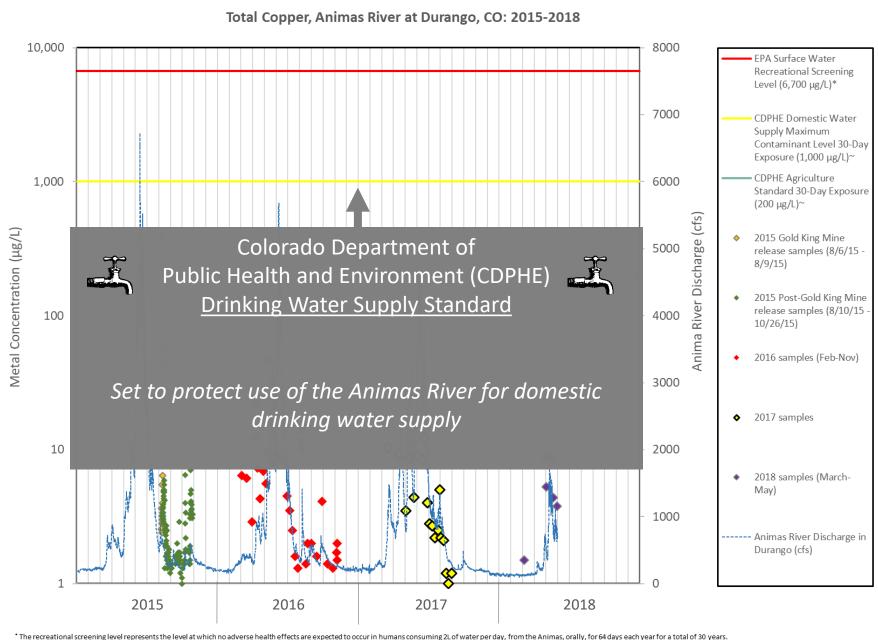
2018

2016

2015

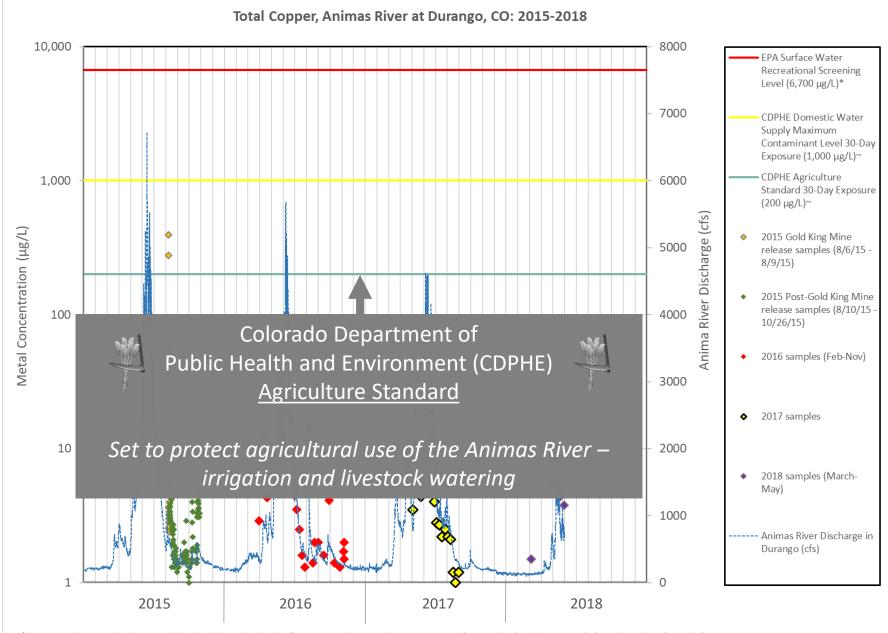


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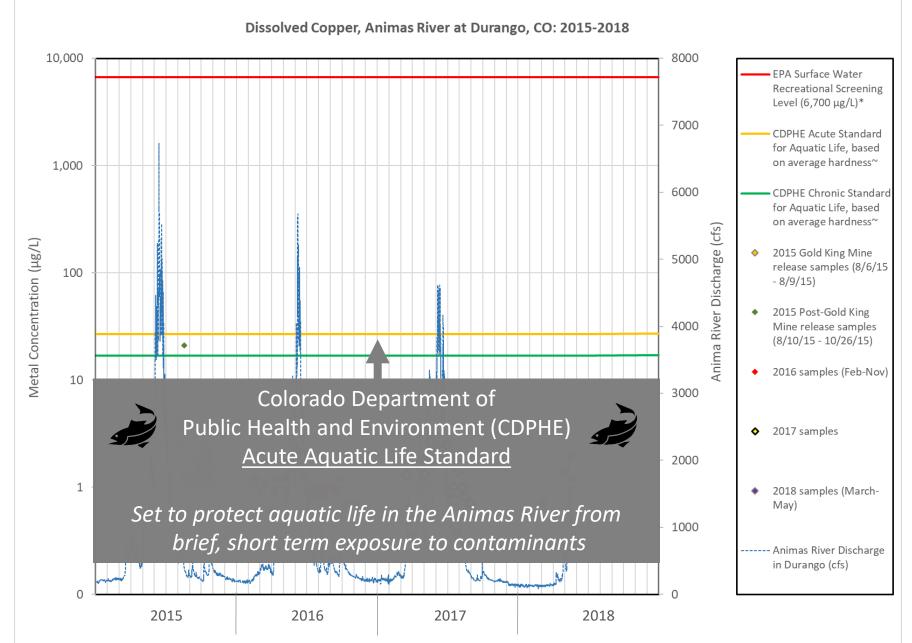
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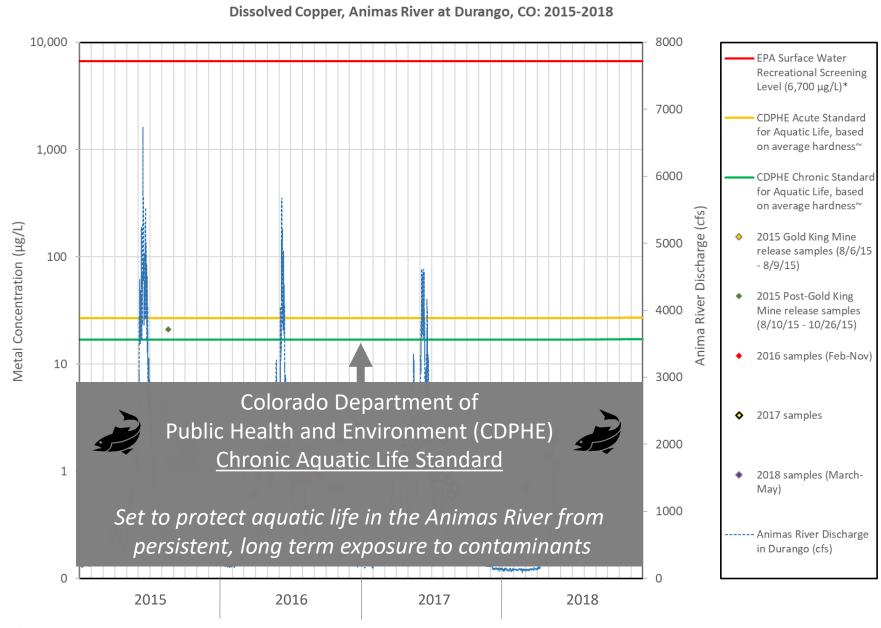
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2018 Animas River Water Quality Monitoring

The following graphs depict metal concentrations from 2015 to 2018 in context of water quality benchmarks that are set to protect use of the Animas River for agriculture, recreation, and aquatic life.





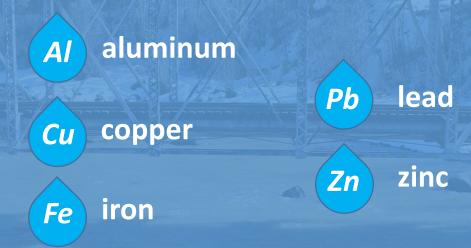


For additional interpretation of Animas River water quality and aquatic life, please visit www.mountainstudies.org/AnimasRiver

Latest data point = 5/30/18



MSI Rotary Park monitoring program includes analysis of:



Total and dissolved metals

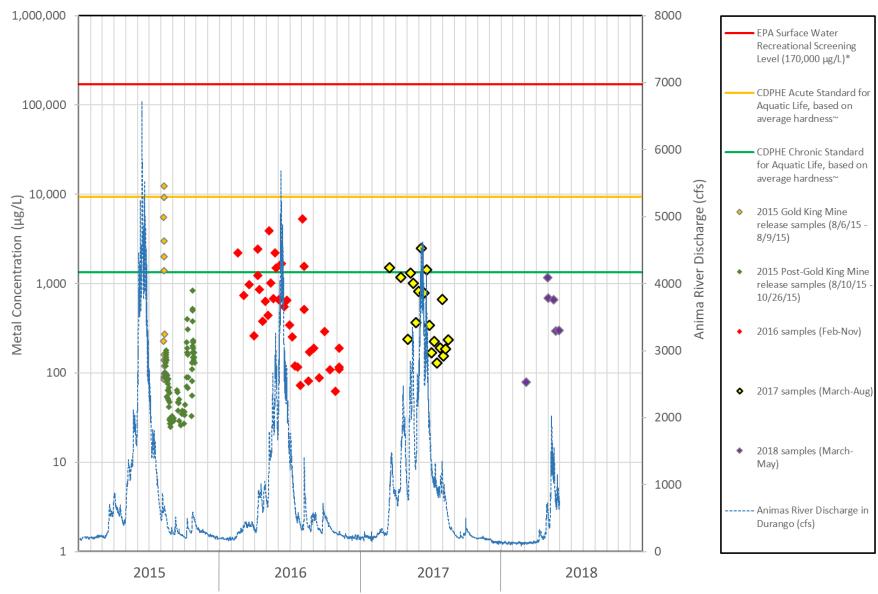
MSI analyzed for the total and dissolved fraction of metals. Why?

The pH of water is the main driver of whether a metal is present

in a dissolved state or a solid particulate state. This is important because

metals are generally more bioavailable and toxic to aquatic life in a dissolved state.

Total Aluminum, Animas River at Durango, CO: 2015-2018

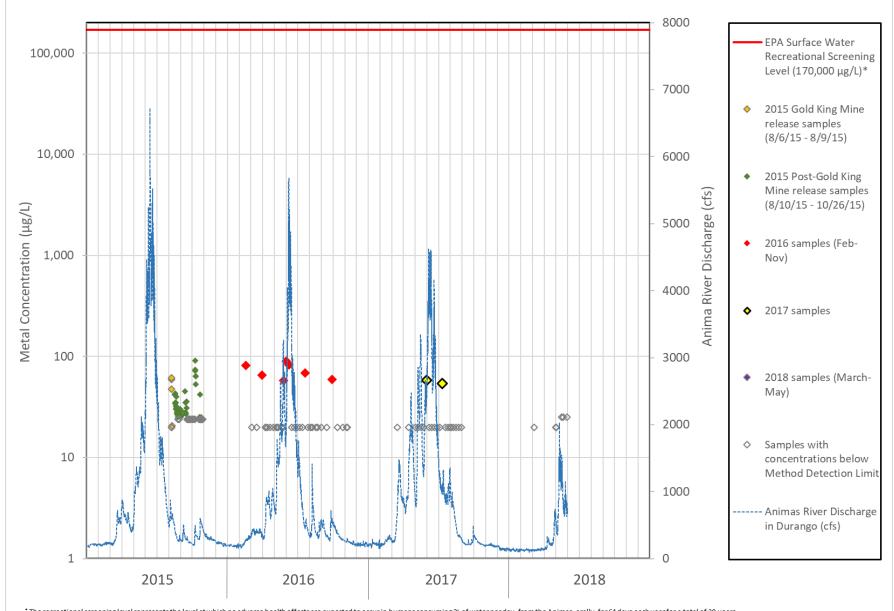


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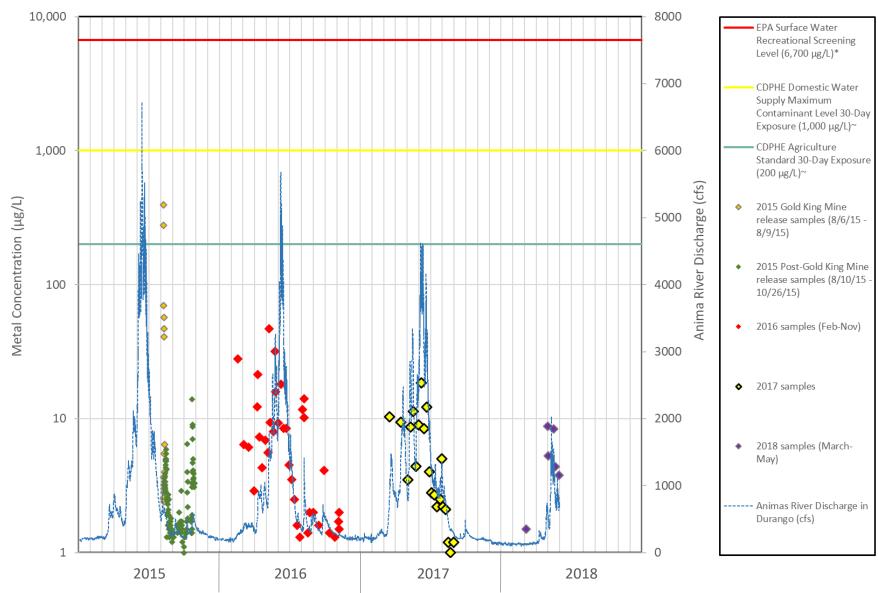
Dissolved Aluminum, Animas River at Durango, CO: 2015-2018



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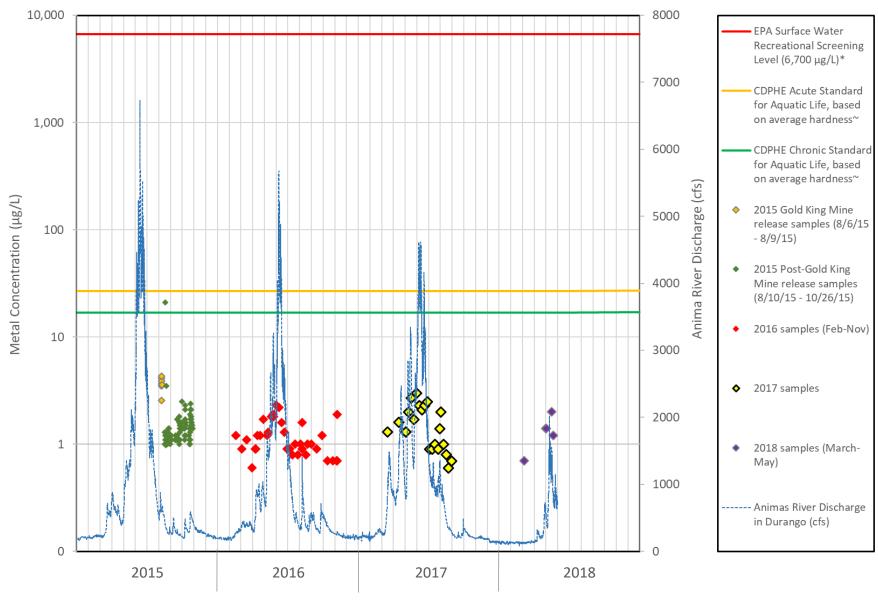
Total Copper, Animas River at Durango, CO: 2015-2018



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Dissolved Copper, Animas River at Durango, CO: 2015-2018

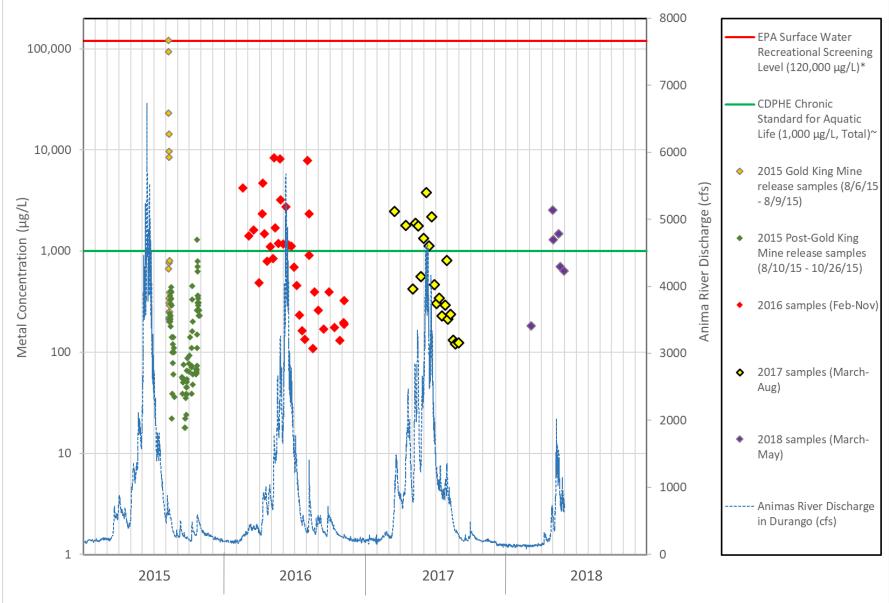


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Total Iron, Animas River at Durango, CO: 2015-2018

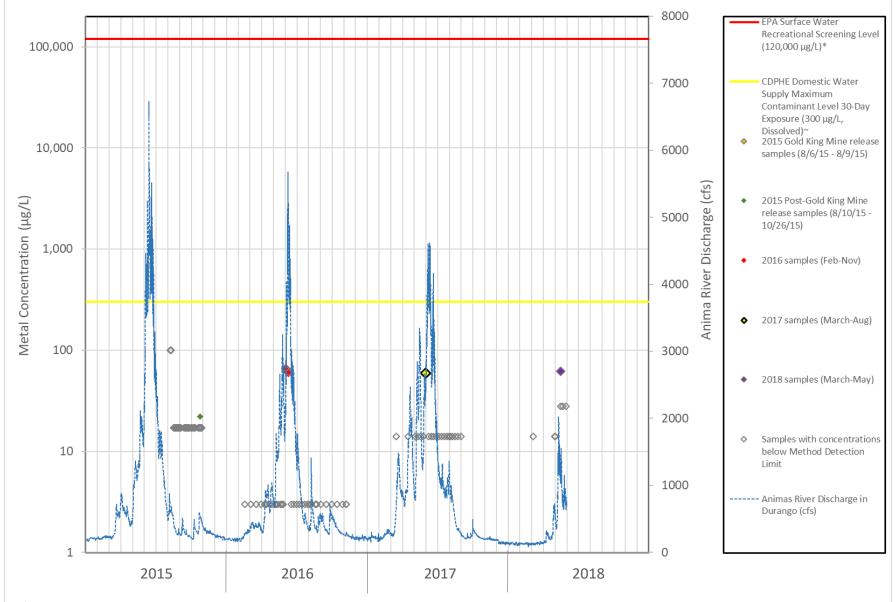


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 $^{^{\}sim} Colorado\ Department\ of\ Public\ Health \ and\ the\ Environment\ (CDPHE)\ standards\ based\ on\ Colorado\ surface\ water\ quality\ classifications\ and\ Reg.\ 31\ and\ 34.$

Dissolved Iron, Animas River at Durango, CO: 2015-2018

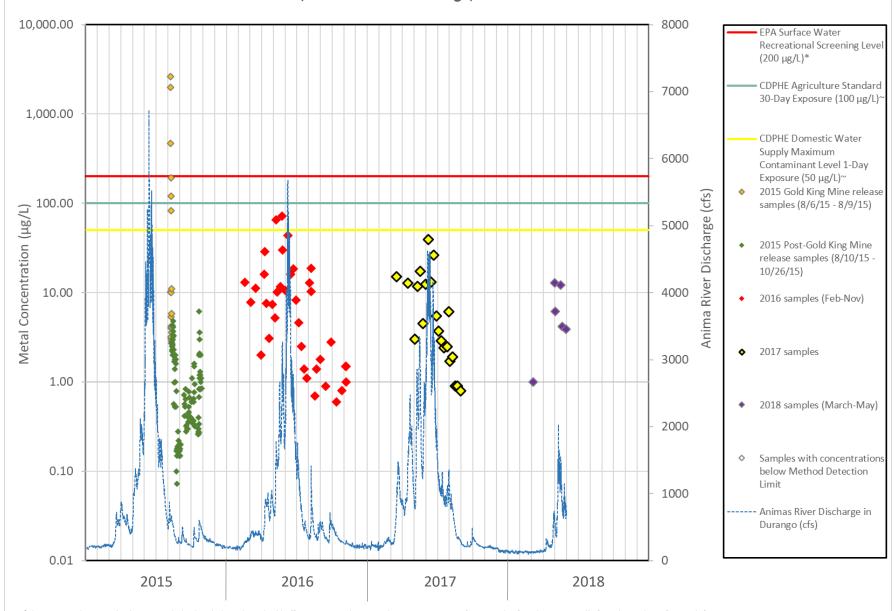


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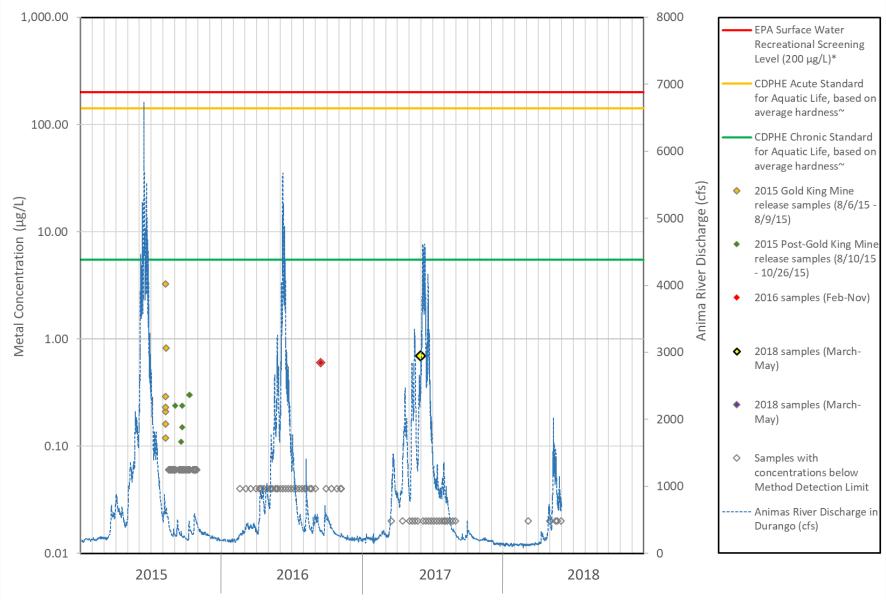
Total Lead, Animas River at Durango, CO: 2015-2018



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Dissolved Lead, Animas River at Durango, CO: 2015-2018



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Total Zinc, Animas River at Durango, CO: 2015-2018 100,000 8000 EPA Surface Water Recreational Screening Level (50,000 μg/L)* 7000 CDPHE Domestic Water Supply Maximum Contaminant Level 30-Day 10,000 Exposure (5,000 μg/L)~ CDPHE Agriculture Standard 6000 30-Day Exposure (2,000 μg/L)~ Anima River Discharge (cfs) Metal Concentration (μg/L) 2015 Gold King Mine release 5000 samples (8/6/15 - 8/9/15) 1,000 2015 Post-Gold King Mine release samples (8/10/15 -4000 10/26/15) 2016 samples (Feb-Nov) 100 3000 2017 samples (March-Aug) 2000 10 2018 samples (March-May) 1000 ----- Animas River Discharge in Durango (cfs)

2017

2018

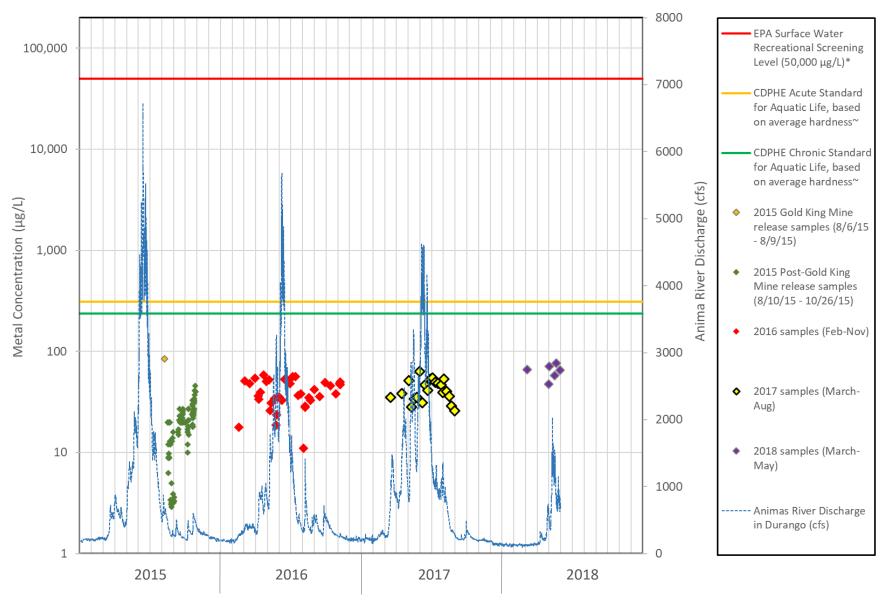
2016

2015



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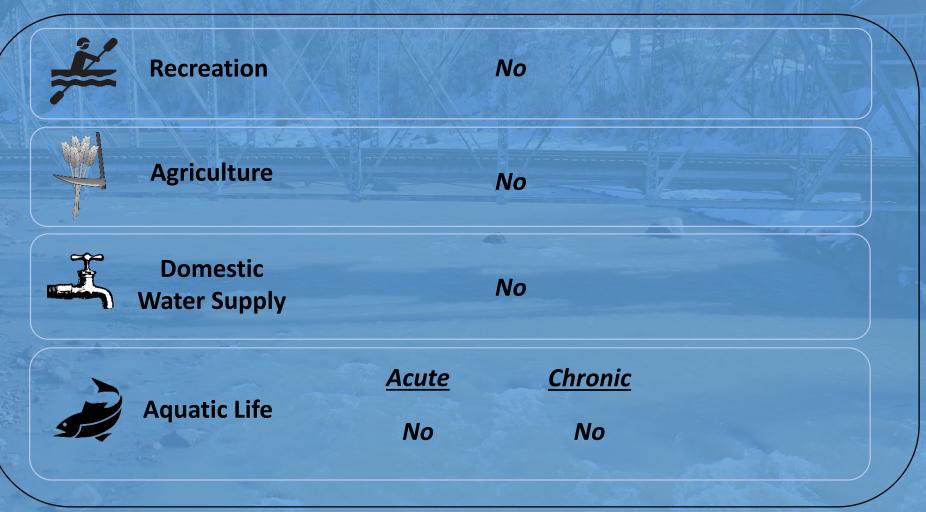
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So far, did metal concentrations in 2018 at Rotary Park surpass water quality benchmarks?















But, there were some concerns:



In 2016, 2017, and 2018, concentrations of aluminum and iron approached levels that could be harmful to aquatic life. These elevated levels occurred during spring runoff and were lower in late summer. High levels of aluminum and iron are not unprecedented, and are consistent with levels observed in previous years.

It is important to note that there are large natural sources of aluminum and iron in the Animas River watershed that are not related to mining activities.

Mountain Studies Institute, Colorado Parks and Wildlife, Southern Ute Indian Tribe, and other organizations will continue to monitor aquatic life to assess overall river health.