

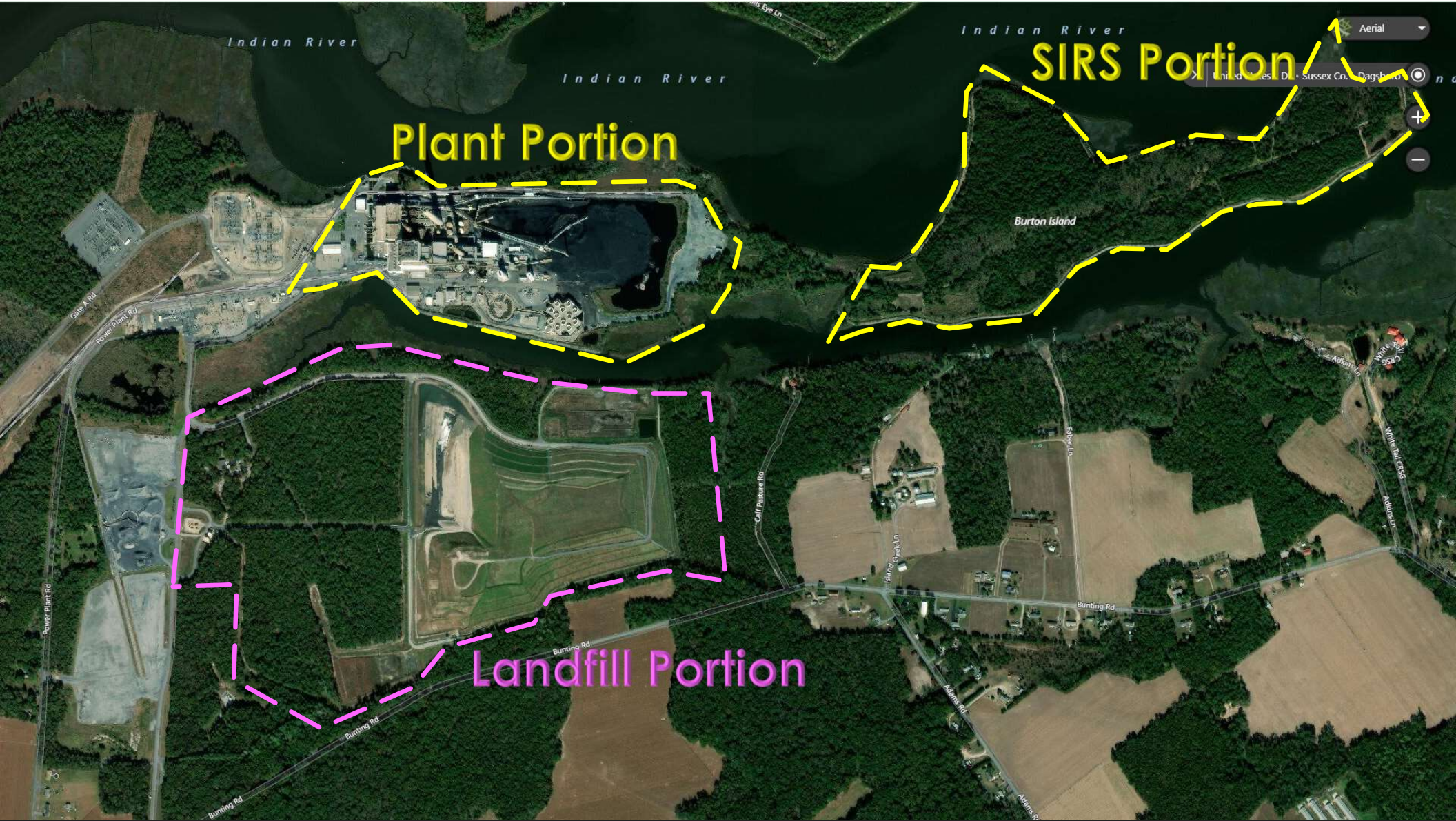
NRG Energy – Indian River Power Plant

Center for the Inland Bays Citizen Advisory Committee Meeting January 17, 2019

Alison Kiliszek, Engineer

Delaware Department of Natural Resources and Environmental Control

Solid and Hazardous Waste Management Section



Plant Portion

SIRS Portion

Landfill Portion

Indian River

Indian River

Indian River

Burton Island

Bunting Rd

Bunting Rd

Bunting Rd

Cliff Pasture Rd

Island Creek Ln

Adrian Rd

Bunting Rd

Island Creek Ln

Adrian Rd

Adrian Rd

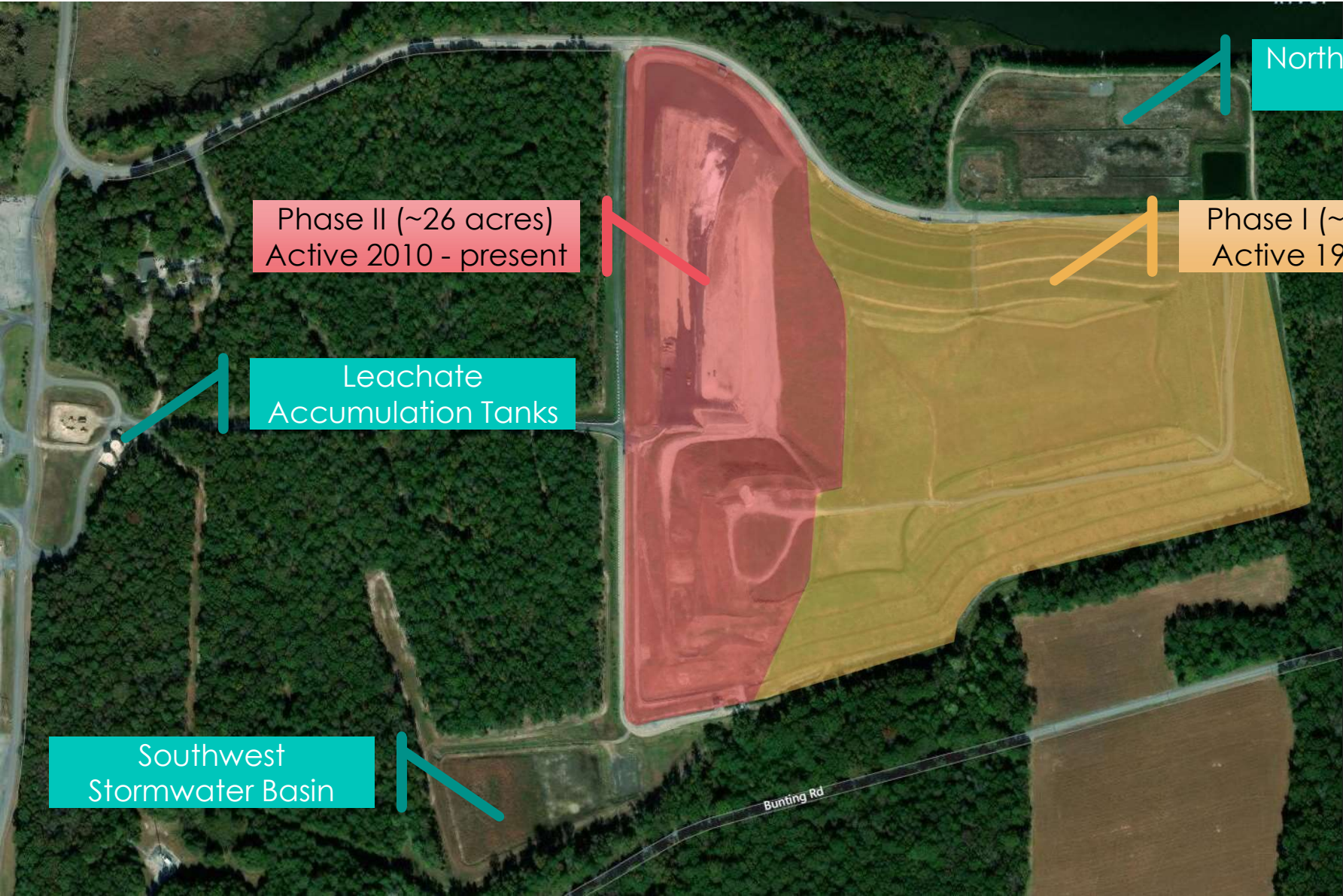
Adrian Rd

Aerial

United States, DE, Sussex Co., Dagsboro

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Northern Stormwater Basin

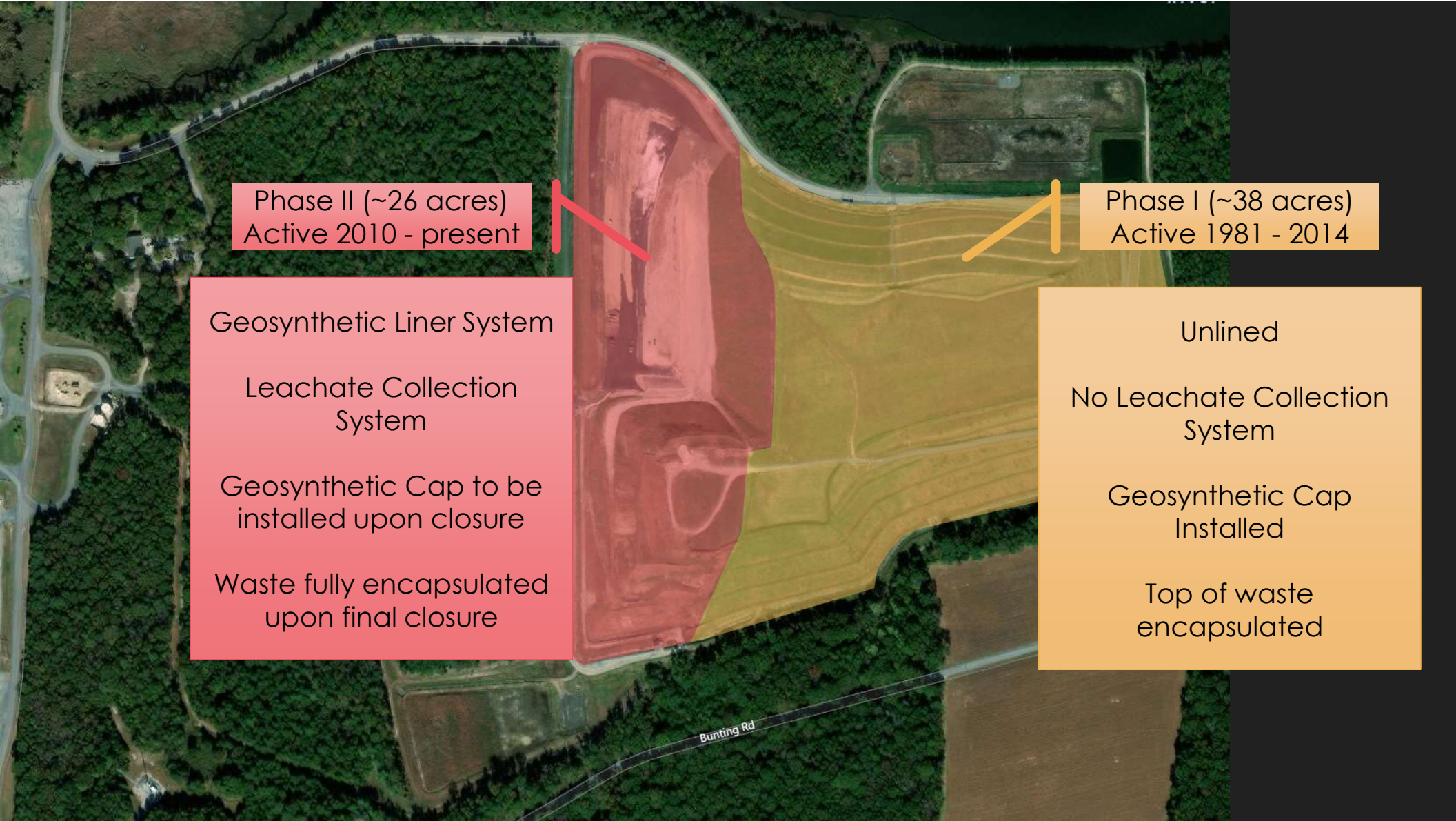
Phase I (~38 acres)
Active 1981 - 2014

Phase II (~26 acres)
Active 2010 - present

Leachate Accumulation Tanks

Southwest Stormwater Basin

Bunting Rd



Phase II (~26 acres)
Active 2010 - present

Geosynthetic Liner System
Leachate Collection System
Geosynthetic Cap to be installed upon closure
Waste fully encapsulated upon final closure

Phase I (~38 acres)
Active 1981 - 2014

Unlined
No Leachate Collection System
Geosynthetic Cap Installed
Top of waste encapsulated

Federal Coal Combustion Residual (CCR) Rule

- Published in April 2015
- Required CCR Landfills/Surface Impoundments to adhere to regulations similar to Municipal Solid Waste Landfills
- Required a determination of background and/or statistically significant increases in a number of constituents in groundwater

Periodic Monitoring Frequency

- Groundwater: Semi-Annual in April and October
 - Quarterly 2015-2017 for Federal CCR Rule
- Surface Water: Semi-Annual in April and October
- Stormwater: Twice per year and at least four (4) months apart



1 Groundwater Locations

1 Surface Water Locations

1 Stormwater Locations

Monitoring Result Influences

- Seasonal influences
- Tidal influences
- Surface Water and Groundwater Interface influences

Monitored Parameters

Appendix III to Part 257—Constituents for Detection Monitoring

Common name ¹

Boron
 Calcium
 Chloride
 Fluoride
 pH
 Sulfate
 Total Dissolved Solids (TDS)

Appendix IV to Part 257—Constituents for Assessment Monitoring

Common name ¹

Antimony
 Arsenic
 Barium
 Beryllium
 Cadmium
 Chromium
 Cobalt
 Fluoride
 Lead
 Lithium
 Mercury
 Molybdenum
 Selenium
 Thallium
 Radium 226 and 228 combined

	Alkalinity	Antimony	Arsenic	Barium	Beryllium	Boron	Cadmium	Calcium	Chloride	Chromium	Cobalt	Copper*	Fluoride	Iron	Lead	Lithium	Magnesium	Manganese	Mercury	Molybdenum	pH	Potassium	Radium 226 & 228	Selenium	Sodium	Sulfate	Thallium	TDS	TOC	
2010	X		X					X	X					X			X	X	X		X	X		X	X	X		X	X	
2011	X		X					X	X					X			X	X	X		X	X		X	X	X		X	X	
2012	X		X					X	X					X			X	X	X		X	X		X	X	X		X	X	
2013	X		X					X	X					X			X	X	X		X	X		X	X	X		X	X	
2014	X		X					X	X					X			X	X	X		X	X		X	X	X		X	X	
2015	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
2016	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
2017	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
2018	X		X			X		X	X				X	X			X	X			X	X		X	X	X		X	X	

* NOT REQUIRED BY PERMIT OR EPA

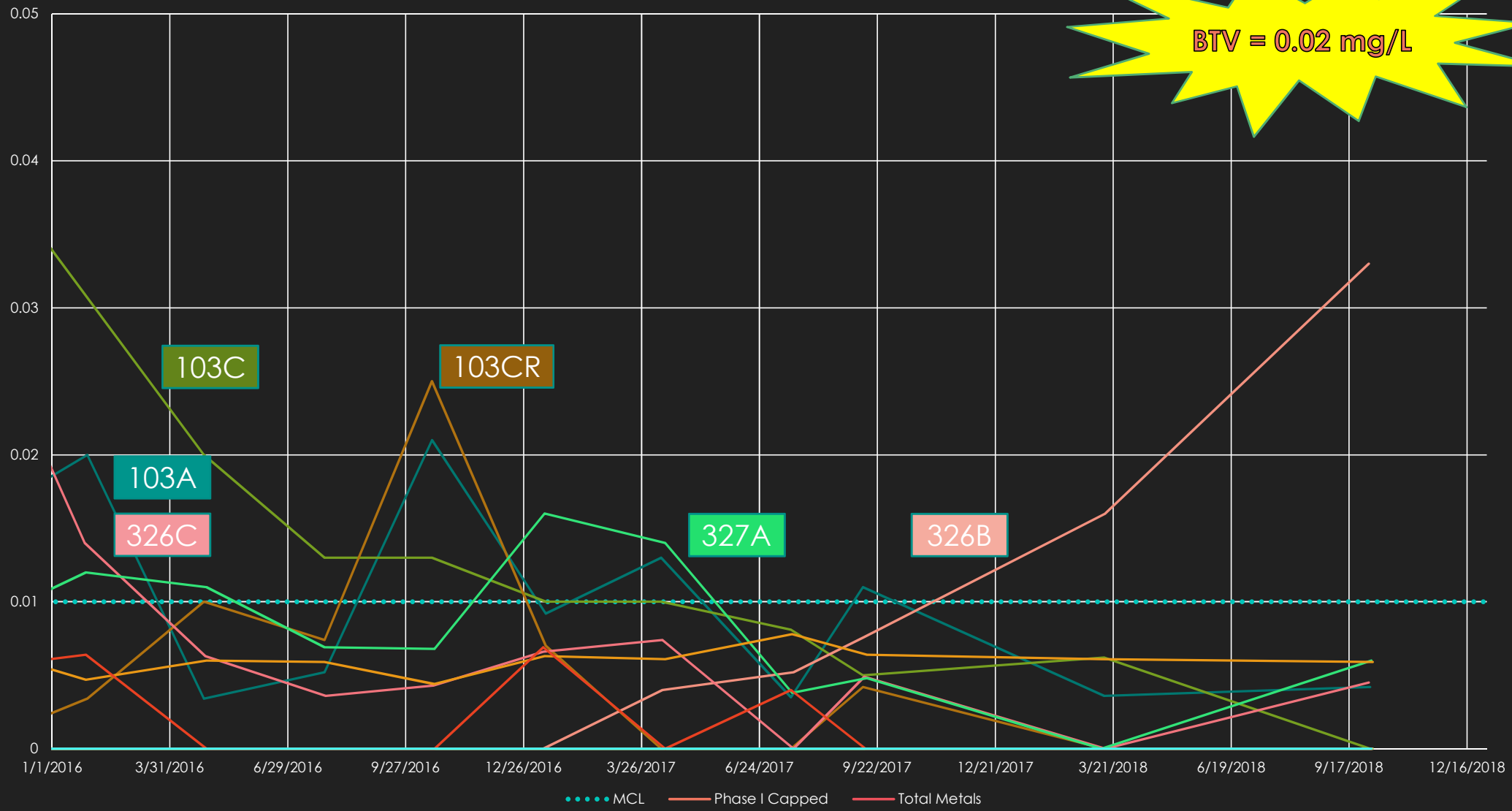
Periodic Monitoring Reporting

- Groundwater, Surface Water, and Stormwater Monitoring results are reported to the Department within sixty (60) days of sampling event
- An updated hydrogeological report is submitted annually
- Groundwater Background Report submitted November 2017 for Federal Coal Combustion Residual Rule

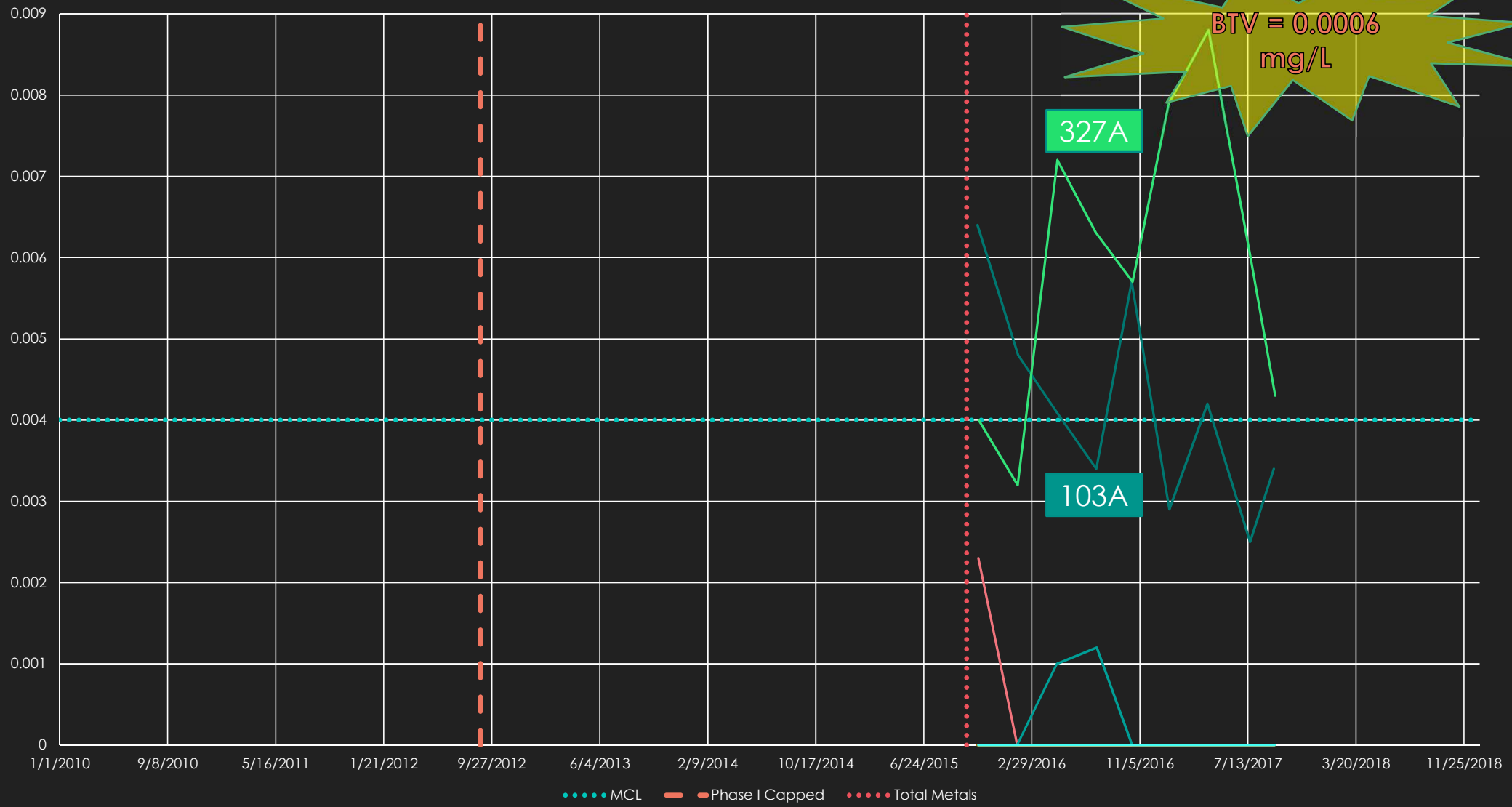
Plot of Select Parameters

Arsenic (mg/L) (focus on 2016 – 2018 data only)

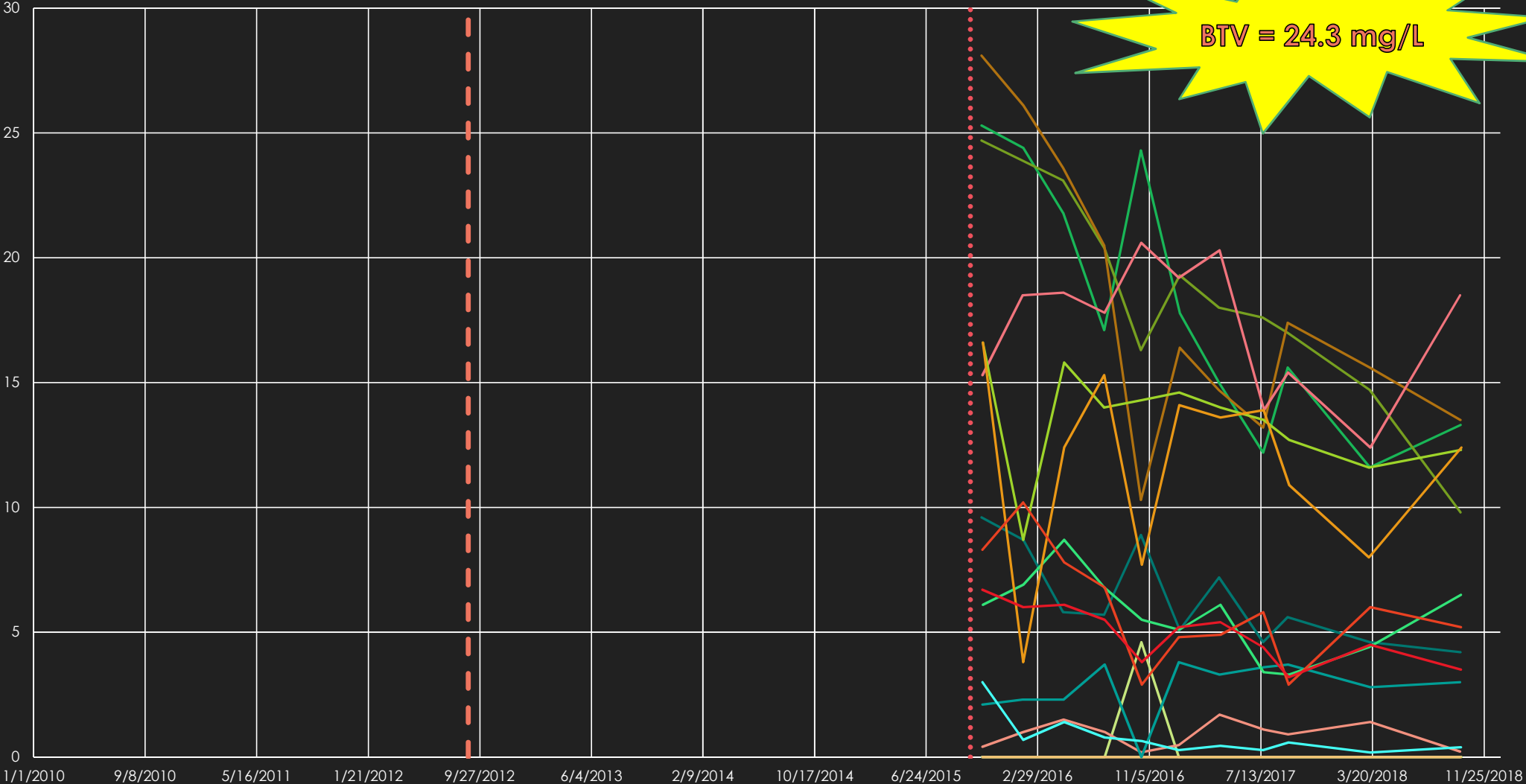
BTV = 0.02 mg/L



Beryllium (mg/L) (CCR Rule only)

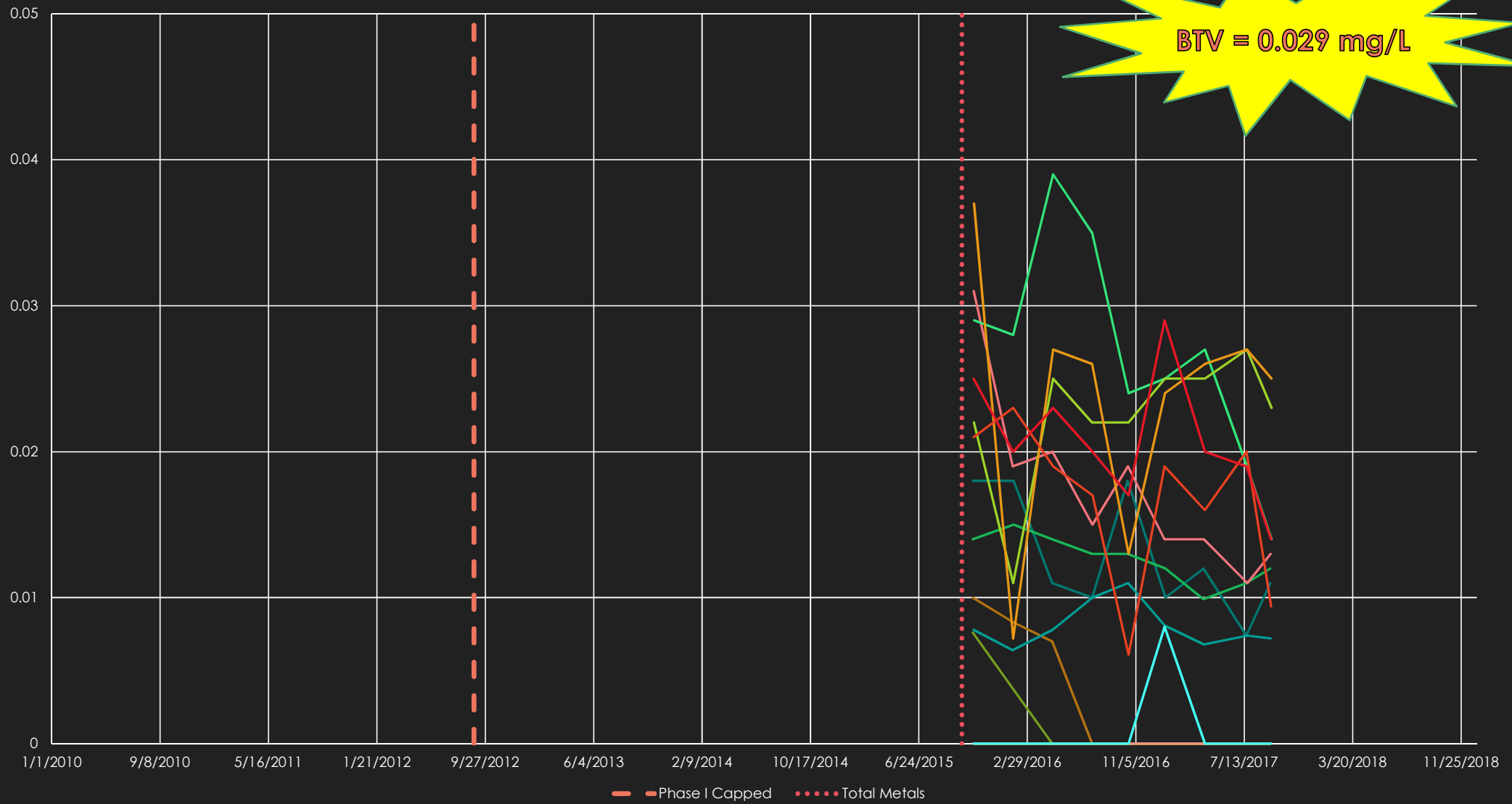


Boron (mg/L) (CCR Rule to present)

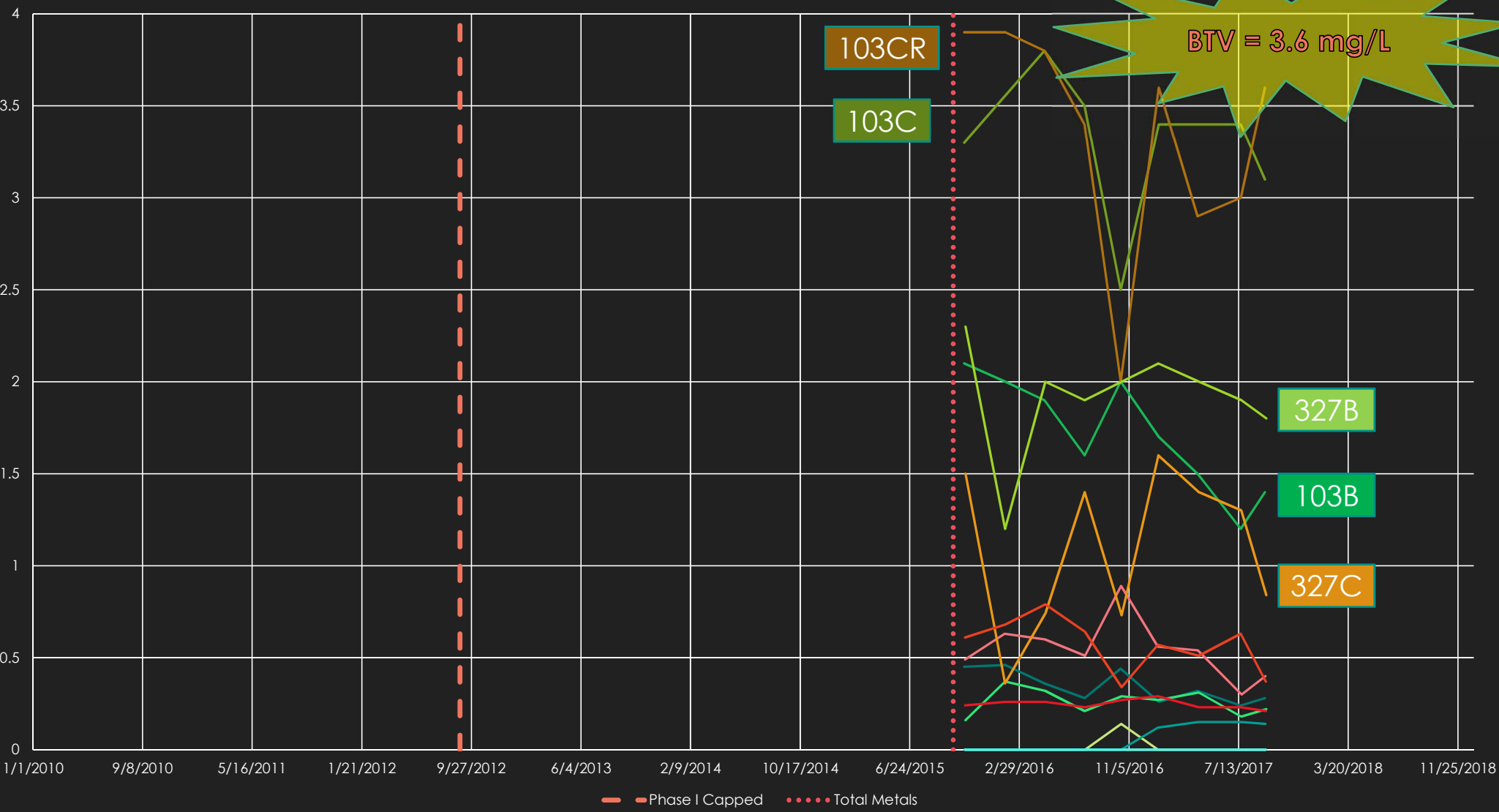


Phase I Capped Total Metals

Cobalt (mg/L) (CCR Rule only)

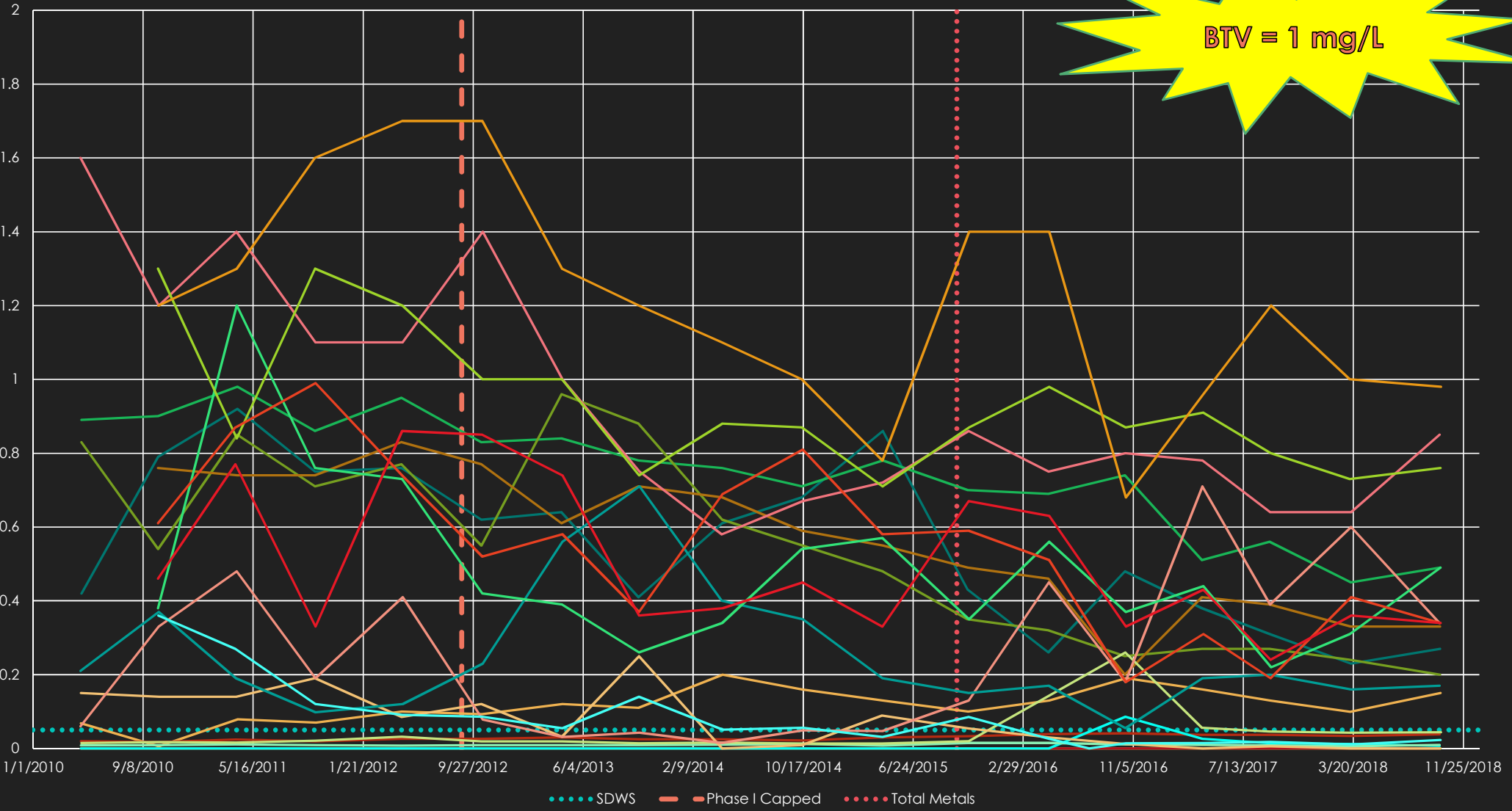


Lithium (mg/L) (CCR Rule only)



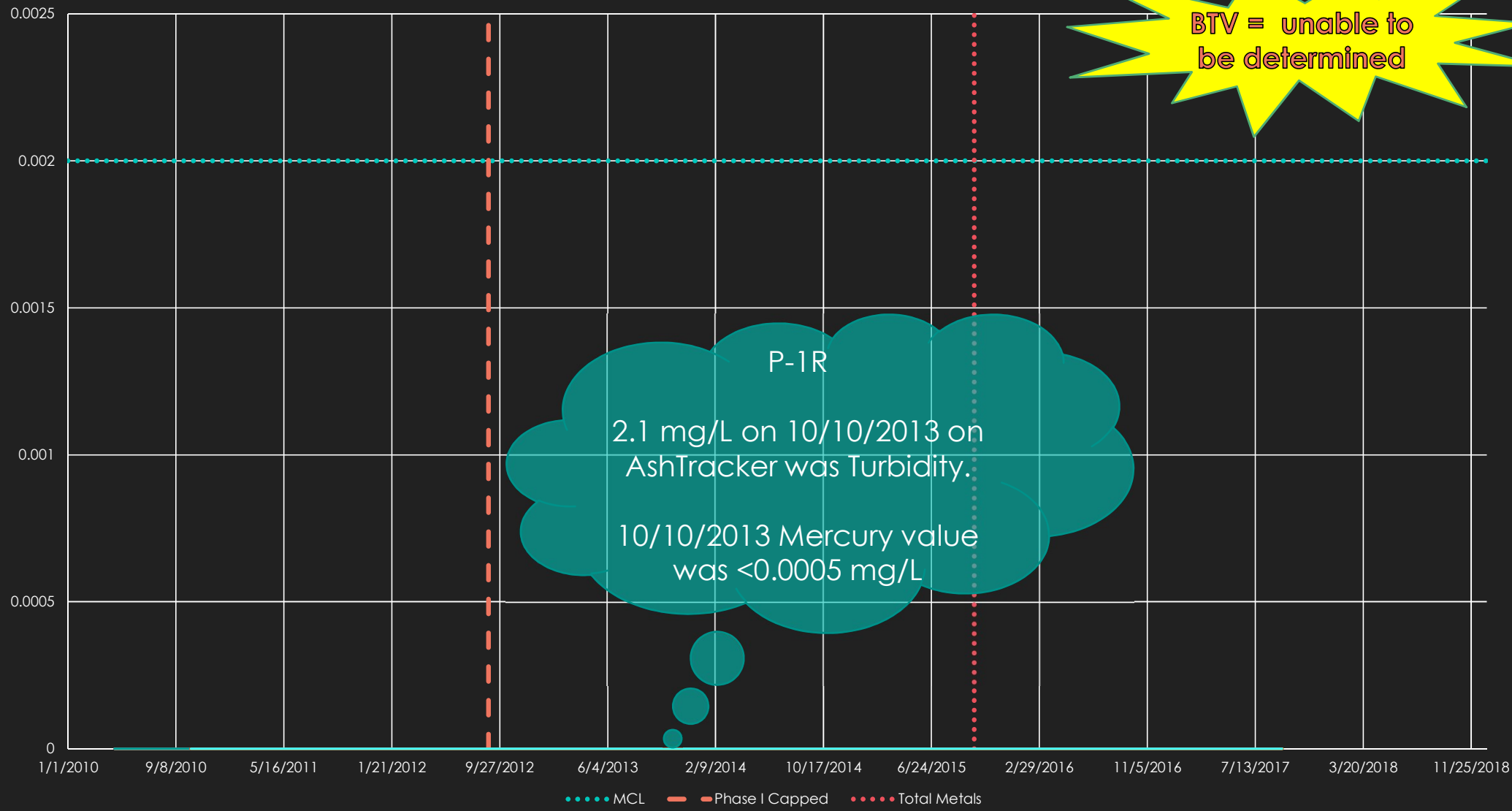
Manganese (mg/L)

BTV = 1 mg/L

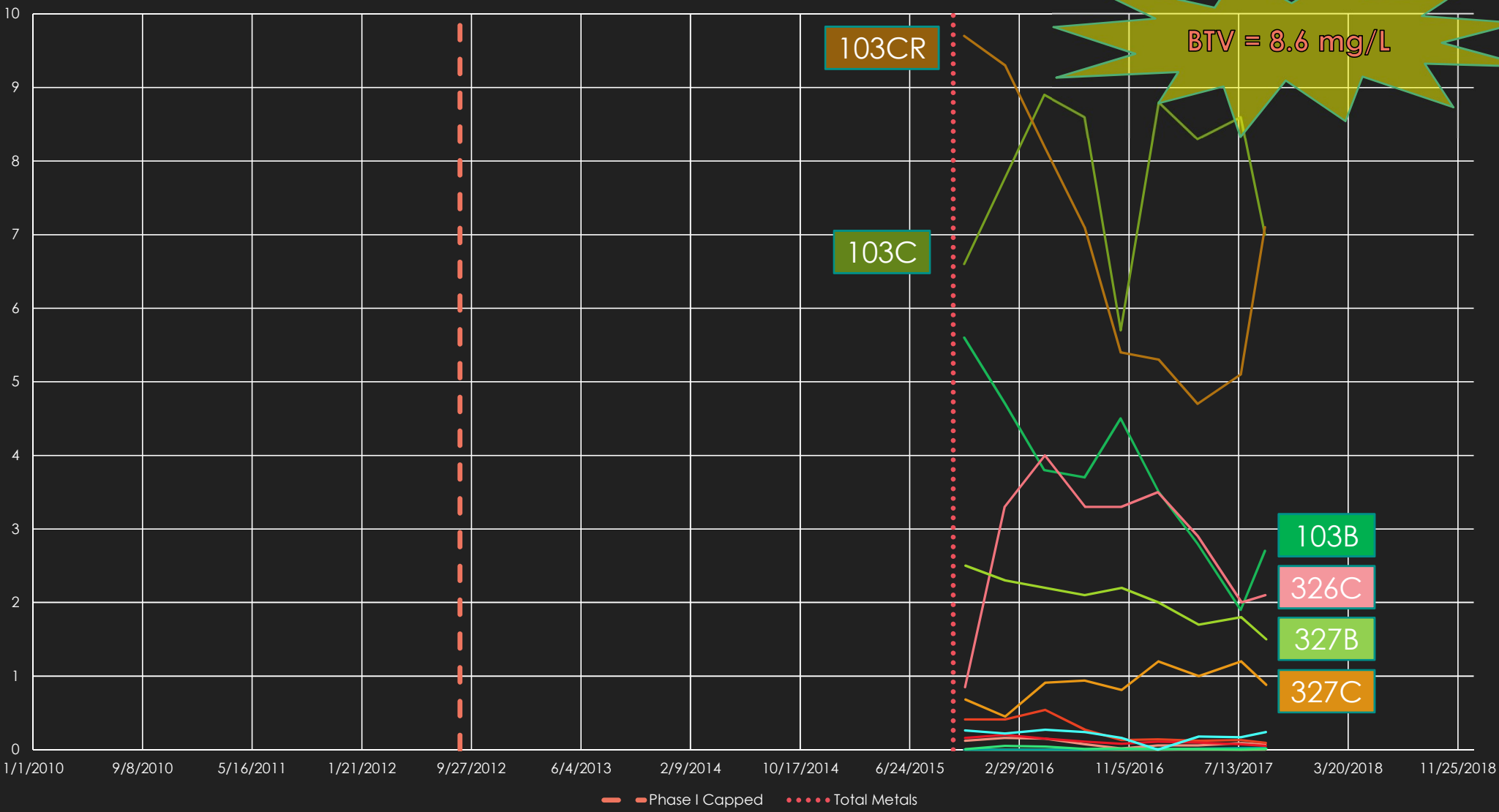


Mercury (mg/L) (Analysis Ceased 2018)

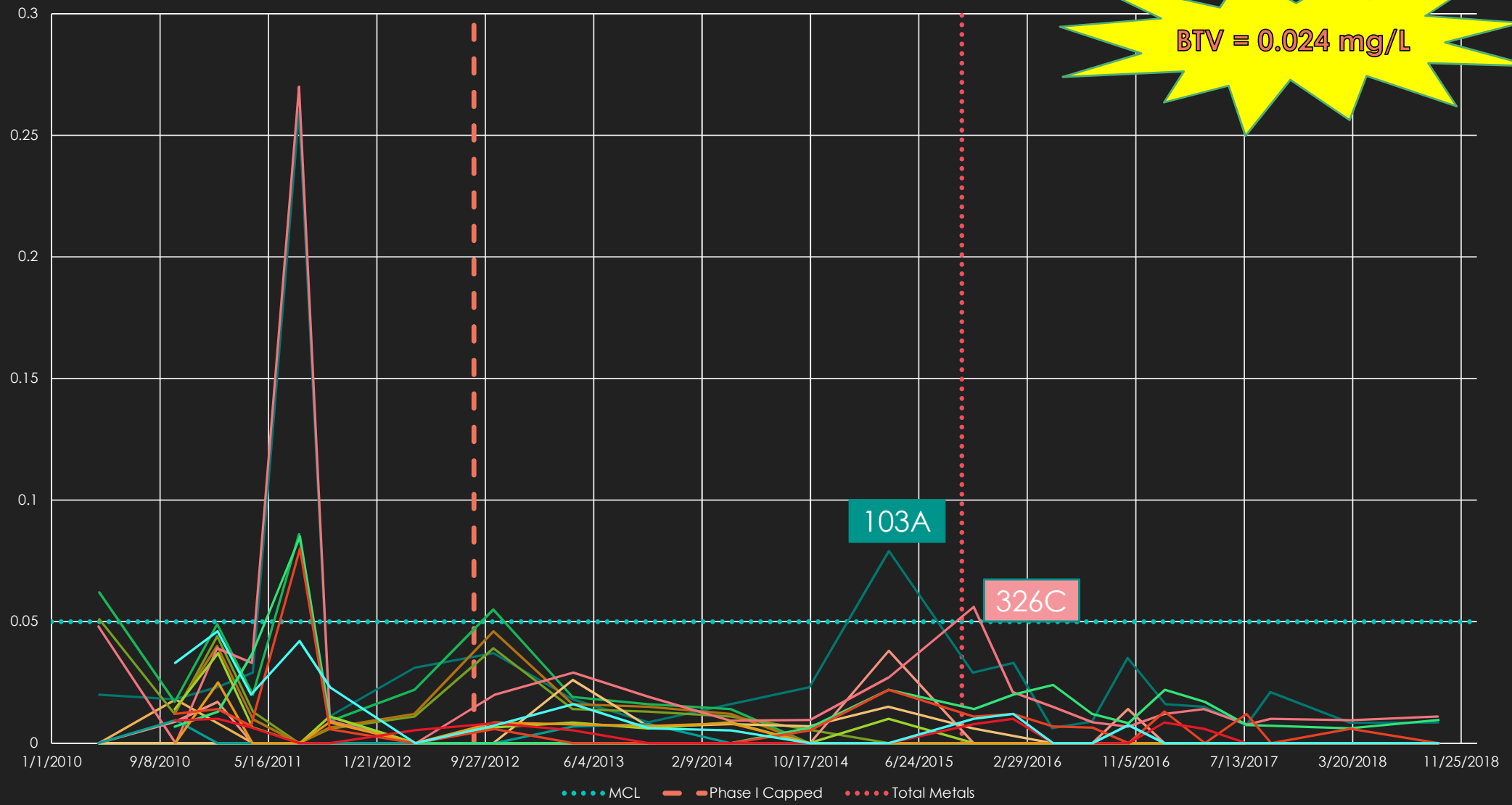
BTV = unable to be determined



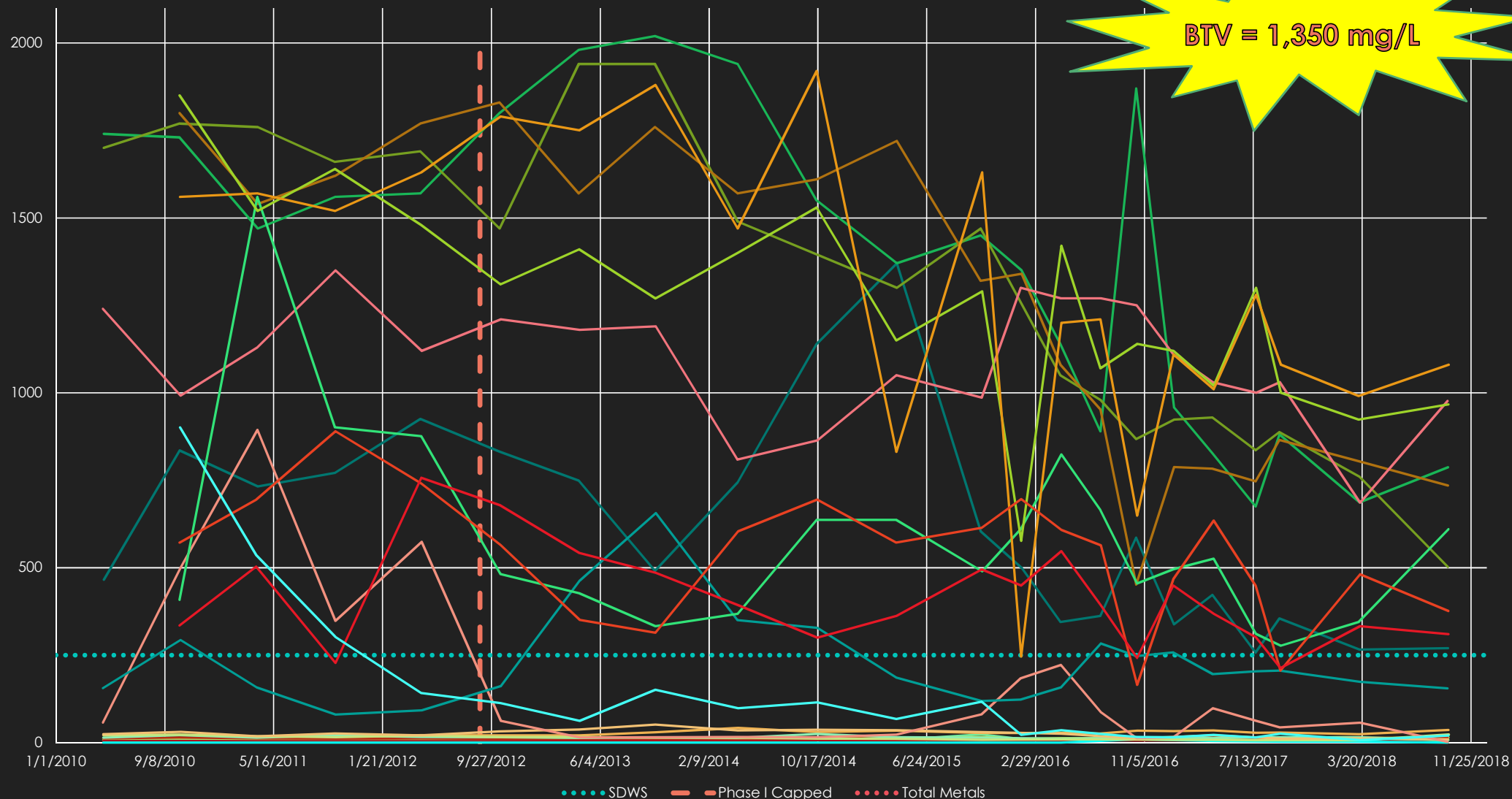
Molybdenum (mg/L) (CCR Rule only)



Selenium (mg/L)



Sulfate (mg/L)



Compliance History 2010 - present

- **April 15, 2014 NOV** – temporary interior slopes not compliant with operations plan
 - RTC January 9, 2014 (compliance achieved prior to NOV being issued)
- **December 9, 2014 NOV** – failure to conduct hazardous waste determination
 - RTC October 29, 2014 (compliance achieved prior to NOV being issued)
- **February 15, 2017 LOW** – prohibited waste accumulated in Phase II
 - RTC March 14, 2017

Looking Toward the Future...

- Rising sea level has the potential to impact the landfill units
 - Seasonal influences
 - Tidal influences
 - Surface Water and Groundwater Interface influences
- Monitoring is expected to occur until the end of the Post-Closure Care period

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