Nogales IWTP

Pre-Treatment Analysis

June 2016

Table 1

AHL Based on Average Influent Flow of 14.74 MGD (645 lps)

Bolded shows limiting

Bolded italicized shows limiting with 25% safety factor

		MAHL KG/DAY				MAHL KG/MOS				
Pollutant	MAHL - Safety (lb/day)	AHL_{eff} (kg/day)	AHL_{inh} (kg/day)	AHL_{solids} (kg/day)	MAHL - Safety (kg/day)	AHL_{eff} (kg/30 days)	AHL_{inh} (kg/30 days)	AHL_{solids} (kg/30 days)	MAHL - Safety (kg/30 day)	Exceedance first impacts:
Arsenic	2.3	5.07	5.57	**1.39**	***1.04***	152	167	**42**	***31.3***	*solids*
Cadmium	0.41	0.82	289.95	**0.25**	***0.19***	25	8699	**7**	***5.58***	*solids*
Chromium	1.69	45.23	60.22	**1.02**	***0.77***	1357	1807	**31**	***23.0***	*solids*
Copper	12.64	**7.65**	15.05	41.82	***5.73***	**229**	452	1254	***172***	*effluent*
Cyanide	5.03	**3.04**	23.42	-	***2.28***	**91**	703		***68.4***	*effluent*
Lead	1.47	**0.89**	27.88	1.37	***0.67***	**27**	836	41	***20.0***	*effluent*
Mercury	0.08	**0.050**	30.67	0.054	***0.04***	**1.5**	920	1.6	***1.09***	*effluent*
Nickel	13.83	9.62	21.19	**8.36**	***6.27***	288	636	**251**	***188***	*solids*
Selenium	0.55	0.37	-	**0.34**	***0.25***	11	-	**10**	***7.48***	*solids*
Silver	1.84	1.47	-	**1.12**	***0.83***	44	-	**33**	***25.0***	*solids*
Zinc	26.74	-	**16.17**	79.40	***12.1***	-	**485**	2382	***364***	*inhibition*
1,4-Dichlorobenzene	8.87	**5.36**	278.80	5.70	***4.02***	**161**	8364	171	***121***	*effluent*

Table 2: 1st quarter of 2016
AHL based on recorded flows
Reflects daily average in which pretreatment monitoring took place
Highlight/bold contaminants and loadings where exceedances are taking place

Loadings Summary and Processes Impacted Based on Daily Average

Pollutant	Average Arizona Contribution (LPS)	Average Sonora Contribution (LPS)	Average NIWTP INF (LPS)	MAHL Arizona (kg/day)	MAHL Sonora (kg/day)	MAHL TOTAL (kg/day)	Average Loading Arizona (kg/day)	Average Loading Sonora (kg/day)	Average Loading Total (kg/day)	Processes Impacted by Total Loadings*
Arsenic	93.72	476.5	570.2	0.151	0.770	0.921	0.031	0.165	0.201	**Solids**
Cadmium				0.027	0.137	0.164	0.001	0.008	0.009	
Chromium				0.111	**0.566**	**0.677**	0.043	**0.863**	**0.914**	
Copper				0.832	4.230	5.062	0.301	3.150	3.505	
Cyanide				0.331	1.683	2.014	0.000	0.000	0.000	
Lead				0.097	0.492	0.589	0.084	0.205	0.305	
Mercury				0.005	0.027	0.032	0.002	0.007	0.010	
Nickel				0.910	4.629	5.539	0.379	4.051	4.510	
Selenium				0.036	0.184	0.220	-0.003	0.019	0.015	
Silver				0.121	0.616	0.737	0.000	0.054	0.045	
Zinc				1.760	8.949	10.709	1.470	6.396	8.145	
1,4-Dichlorobenzene				0.584	2.969	3.552	0.000	0.000	0.000	

Table 2: 2nd quarter of 2016

AHL based on recorded flows

Reflects daily average in which pretreatment monitoring took place

Highlight/bold contaminants and loadings where exceedances are taking place

Loadings Summary and Processes Impacted Based on Daily Average

Pollutant	Average Arizona Contribution (LPS)	Average Sonora Contribution (LPS)	Average NIWTP INF (LPS)	MAHL Arizona (kg/day)	MAHL Sonora (kg/day)	MAHL TOTAL (kg/day)	Average Loading Arizona (kg/day)	Average Loading Sonora (kg/day)	Average Loading Total (kg/day)	Processes Impacted by Total Loadings*
Arsenic	67.20	446.6	513.8	0.109	0.721	0.830	0.036	0.152	0.199	
Cadmium				0.019	0.129	0.148	0.003	0.010	0.015	
Chromium				0.080	0.530	**0.610**	0.097	0.833	**0.958**	Solids
Copper				0.597	3.965	**4.561**	1.011	3.843	**5.154**	Effluent
Cyanide				0.237	1.578	1.815	0.000	0.000	0.000	
Lead				0.069	0.461	0.530	0.058	0.171	0.247	
Mercury				0.004	0.025	0.029	0.007	0.009	0.018	
Nickel				0.653	4.338	**4.991**	0.000	5.034	**5.000**	Solids
Selenium				0.026	0.173	0.198	0.006	0.018	0.025	
Silver				0.087	0.577	0.664	0.000	0.060	0.015	
Zinc				1.262	8.387	**9.649**	3.114	6.629	**10.690**	Inhibition
1,4-Dichlorobenzene				0.419	2.782	3.201	0.000	0.000	0.000	

Table 3: 1st quarter of 2016

AHL based on recorded flows

Reflects monthlhy average in which pretreatment monitoring took place

Highlight/bold contaminants and loadings where exceedances are taking place

Loadings Summary and Processes Impacted Based on Monthly Totals

Pollutant	MAHL Arizona (kg/mo)	MAHL Sonora (kg/mo)	MAHL TOTAL (kg/mo)	Actual Loadings Arizona (kg/mo)	Actual Loadings Sonora (kg/mo)	Actual Loadings Sonora Exc (kg)	Actual Loadings Sonora Exc (%)	Actual Loadings Total (kg/mo)	Processes Impacted by Total Loadings*
Arsenic	4.54	23.09	27.63	0.92	4.94			6.03	
Cadmium	0.81	4.12	4.93	0.04	0.24			0.28	
Chromium	3.34	16.97	20.31	1.30	25.90	**8.94**	**53%**	27.42	Solids
Copper	24.96	126.91	151.87	9.02	94.50			105.15	
Cyanide	9.93	50.50	60.43	0.00	0.00			0.00	
Lead	2.90	14.76	17.66	2.51	6.16			9.14	
Mercury	0.16	0.80	0.96	0.06	0.22			0.29	
Nickel	27.31	138.86	166.17	11.38	121.54			135.31	
Selenium	1.09	5.52	6.61	-0.10	0.56			0.44	
Silver	3.63	18.47	22.11	0.00	1.61			1.34	
Zinc	52.80	268.47	321.28	44.10	191.89			244.36	
1,4-Dichlorobenzene	17.52	89.06	106.57	0.00	0.00			0.00	

Table 3: 2nd quarter of 2016

AHL based on recorded flows
Reflects monthlhy average in which pretreatment monitoring took place
Highlight/bold contaminants and loadings where exceedances are taking place

Loadings Summary and Processes Impacted Based on Monthly Totals

Pollutant	MAHL Arizona (kg/mo)	MAHL Sonora (kg/mo)	MAHL TOTAL (kg/mo)	Actual Loadings Arizona (kg/mo)	Actual Loadings Sonora (kg/mo)	Actual Loadings Sonora Exc (kg)	Actual Loadings Sonora Exc (%)	Actual Loadings Total (kg/mo)	Processes Impacted by Total Loadings*
Arsenic	3.26	21.64	24.90	1.08	4.57			5.97	
Cadmium	0.58	3.86	4.44	0.10	0.30			0.44	
Chromium	2.39	15.90	18.30	2.90	25.00	**9.10**	**57%**	28.73	Solids
Copper	17.90	118.94	136.84	30.32	115.30			154.61	
Cyanide	7.12	47.33	54.45	0.00	0.00			0.00	
Lead	2.08	13.83	15.91	1.75	5.12			7.42	
Mercury	0.11	0.75	0.87	0.20	0.28			0.54	
Nickel	19.58	130.14	149.72	-0.34	151.03	**20.89**	**16%**	149.99	Solids
Selenium	0.78	5.18	5.95	0.18	0.54			0.76	
Silver	2.61	17.31	19.92	0.00	1.80			0.44	
Zinc	37.86	251.62	289.48	93.43	198.87			320.71	
1,4-Dichlorobenzene	12.56	83.46	96.02	0.00	0.00			0.00	

Change by Quarter - Mx

Table 4: 1st quarter of 2016
Shows loading changes over time for Sonora

	Last Quarter		Current Quarter		Change		
Pollutant	**Average Loadings Sonora (kg/day)**	**Total Loadings Sonora (kg/mo)**	**Average Loadings Sonora (kg/day)**	**Total Loadings Sonora (kg/mo)**	**Average Loadings Sonora (kg/day)**	**Total Loadings Sonora (kg/mo)**	**% change**
Arsenic	0.145	4.351	0.165	4.935	0.01951	0.584	13%
Cadmium	0.007	0.224	0.008	0.239	0.00098	0.015	14%
Chromium	1.363	40.882	0.863	25.904	-0.49953	-14.978	-37%
Copper	2.987	89.6	3.150	94.500	0.163	4.9	5%
Cyanide	0.017	0.525	0.000	0.000	-0.01700	-0.525	-100%
Lead	0.203	6.102	0.205	6.160	0.002	0.058	1%
Mercury	0.009	0.271	0.007	0.216	-0.002	-0.055	-20%
Nickel	5.760	172.805	4.051	121.535	-1.70882	-51.270	-30%
Selenium	0.037	0.149	0.019	0.557	-0.01842	0.408	-50%
Silver	0.039	1.172	0.054	1.607	0.01458	0.435	37%
Zinc	6.160	184.8	6.396	191.888	0.236	7.1	4%
1,4-Dichlorobenzene	0.000	0.000	0.000	0.000	0.00000	0.000	0%

Change by Quarter - Mx

Table 4: 2nd quarter of 2016
Shows loading changes over time for Sonora

	Last Quarter		Current Quarter		Change		
Pollutant	**Average Loadings Sonora (kg/day)**	**Total Loadings Sonora (kg/mo)**	**Average Loadings Sonora (kg/day)**	**Total Loadings Sonora (kg/mo)**	**Average Loadings Sonora (kg/day)**	**Total Loadings Sonora (kg/mo)**	**%change**
Arsenic	0.145	4.351	0.152	4.571	0.00736	0.220	5%
Cadmium	0.007	0.224	0.010	0.303	0.00311	0.079	44%
Chromium	1.363	40.882	0.833	25.002	-0.52959	-15.880	-39%
Copper	2.987	89.6	3.843	115.299	0.856	25.7	29%
Cyanide	0.000	0.000	0.000	0.000	0.00000	0.000	0%
Lead	0.203	6.102	0.171	5.120	-0.032	-0.982	-16%
Mercury	0.009	0.271	0.009	0.278	0.000	0.007	3%
Nickel	5.760	172.805	5.034	151.030	-0.72568	-21.775	-13%
Selenium	0.037	0.149	0.018	0.543	-0.01889	0.394	-51%
Silver	0.039	1.172	0.060	1.801	0.02105	0.629	54%
Zinc	6.160	184.8	6.629	198.867	0.469	14.1	8%
1,4-Dichlorobenzene	0.000	0.000	0.000	0.000	0.00000	0.000	0%

Change by Quarter - Az

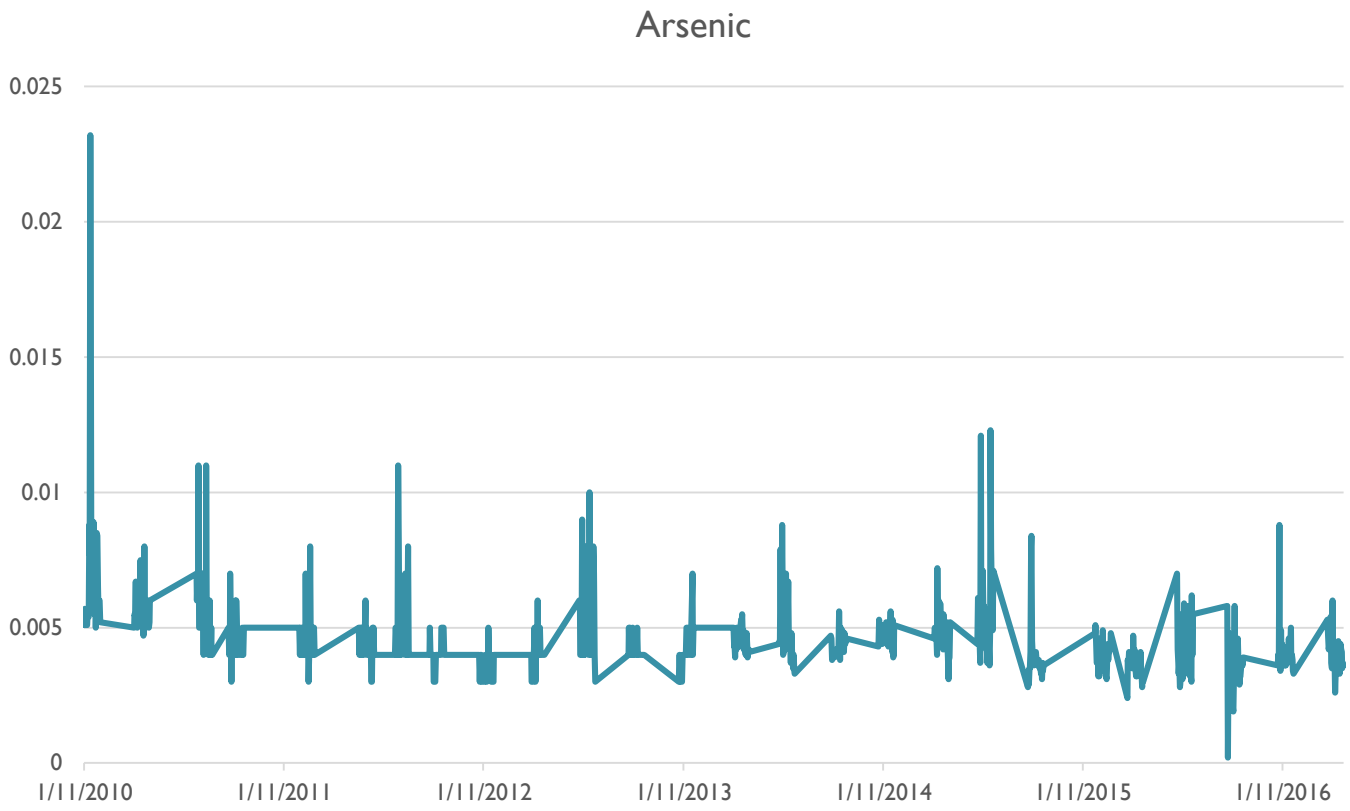
Table 5: 1st quarter of 2016
Shows loading changes over time for Arizona

	Last Quarter		Current Quarter		Change		
Pollutant	**Average Loadings AZ (kg/day)**	**Total Loadings AZ (kg/mo)**	**Average Loadings AZ (kg/day)**	**Total Loadings AZ (kg/mo)**	**Average Loadings AZ (kg/day)**	**Total Loadings AZ (kg/mo)**	**%change**
Arsenic	0.057	1.722	0.031	0.920	-0.026	-0.802	-46%
Cadmium	0.003	0.081	0.001	0.036	-0.002	-0.045	-60%
Chromium	0.033	1.002	0.043	1.299	0.010	0.297	31%
Copper	0.324	9.732	0.301	9.024	-0.023	-0.708	-7%
Cyanide	0.000	0.000	0.000	0.000	0.000	0.000	
Lead	0.054	1.631	0.084	2.506	0.030	0.875	55%
Mercury	0.002	0.069	0.002	0.063	0.000	-0.006	4%
Nickel	0.000	0.000	0.379	11.382	0.379	11.382	
Selenium	0.018	0.547	-0.003	-0.101	-0.021	-0.648	-119%
Silver	0.000	0.000	0.000	0.000	0.000	0.000	
Zinc	1.966	58.981	1.470	44.099	-0.496	-14.882	-25%
1,4-Dichlorobenzene	0.000	0.000	0.000	0.000	0.000	0.000	

Change by Quarter - Az

Table 5: 2nd quarter of 2016
Shows loading changes over time for Arizona

	Last Quarter		Current Quarter		Change		
Pollutant	**Average Loadings AZ (kg/day)**	**Total Loadings AZ (kg/mo)**	**Average Loadings AZ (kg/day)**	**Total Loadings AZ (kg/mo)**	**Average Loadings AZ (kg/day)**	**Total Loadings AZ (kg/mo)**	**% change**
Arsenic	0.057	1.722	0.036	1.080	-0.021	-0.642	-37%
Cadmium	0.003	0.081	0.003	0.101	0.000	0.020	12%
Chromium	0.033	1.002	0.097	2.897	0.064	1.895	193%
Copper	0.324	9.732	1.011	30.320	0.687	20.588	212%
Cyanide	0.000	0.000	0.000	0.000	0.000	0.000	
Lead	0.054	1.631	0.058	1.751	0.004	0.120	8%
Mercury	0.002	0.069	0.007	0.202	0.005	0.133	237%
Nickel	0.000	0.000	0.000	-0.339	0.000	-0.339	
Selenium	0.018	0.547	0.006	0.176	-0.012	-0.371	-67%
Silver	0.000	0.000	0.000	0.000	0.000	0.000	
Zinc	1.966	58.981	3.114	93.433	1.148	34.452	58%
1,4-Dichlorobenzene	0.000	0.000	0.000	0.000	0.000	0.000	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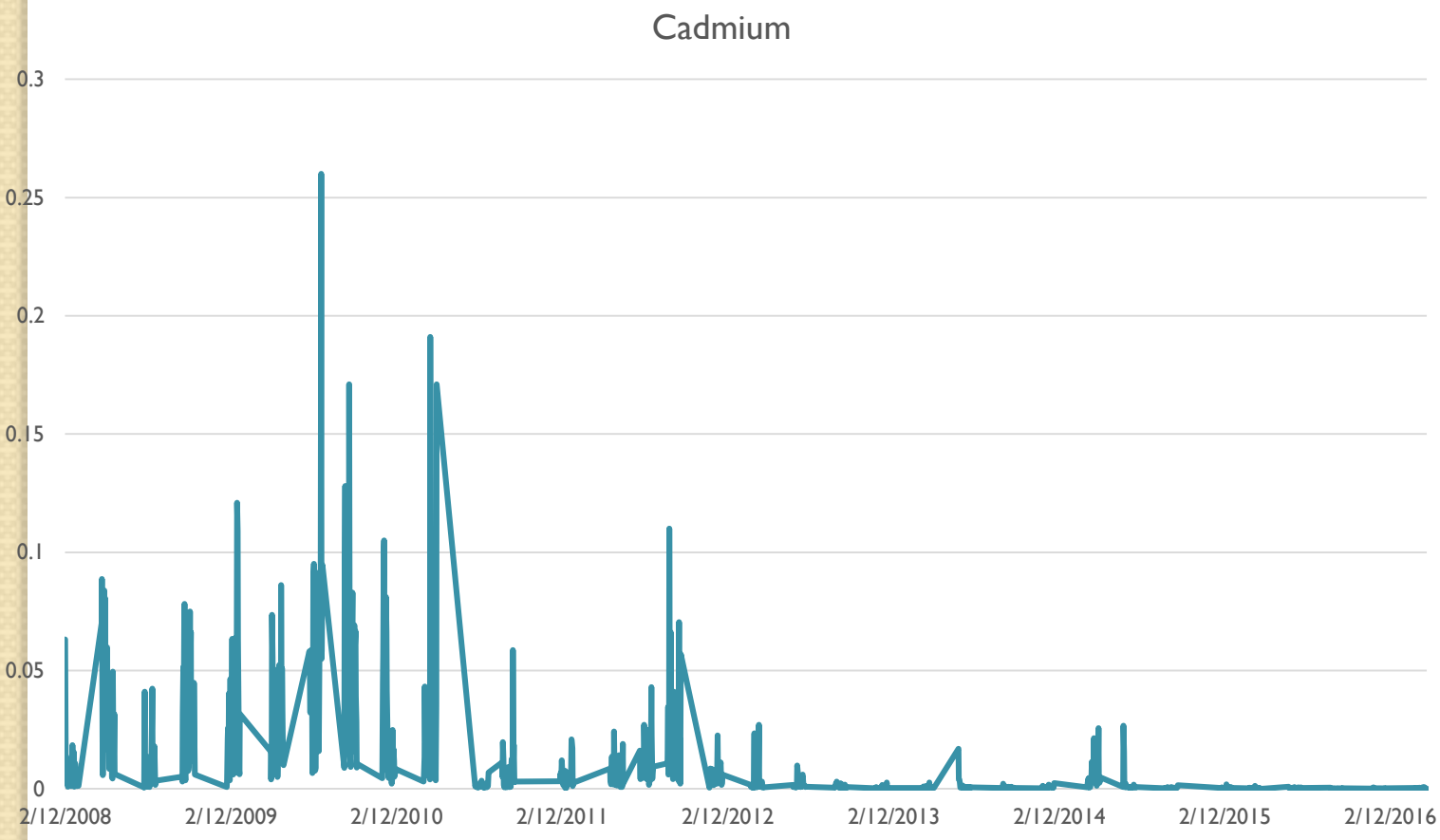
1/11/2016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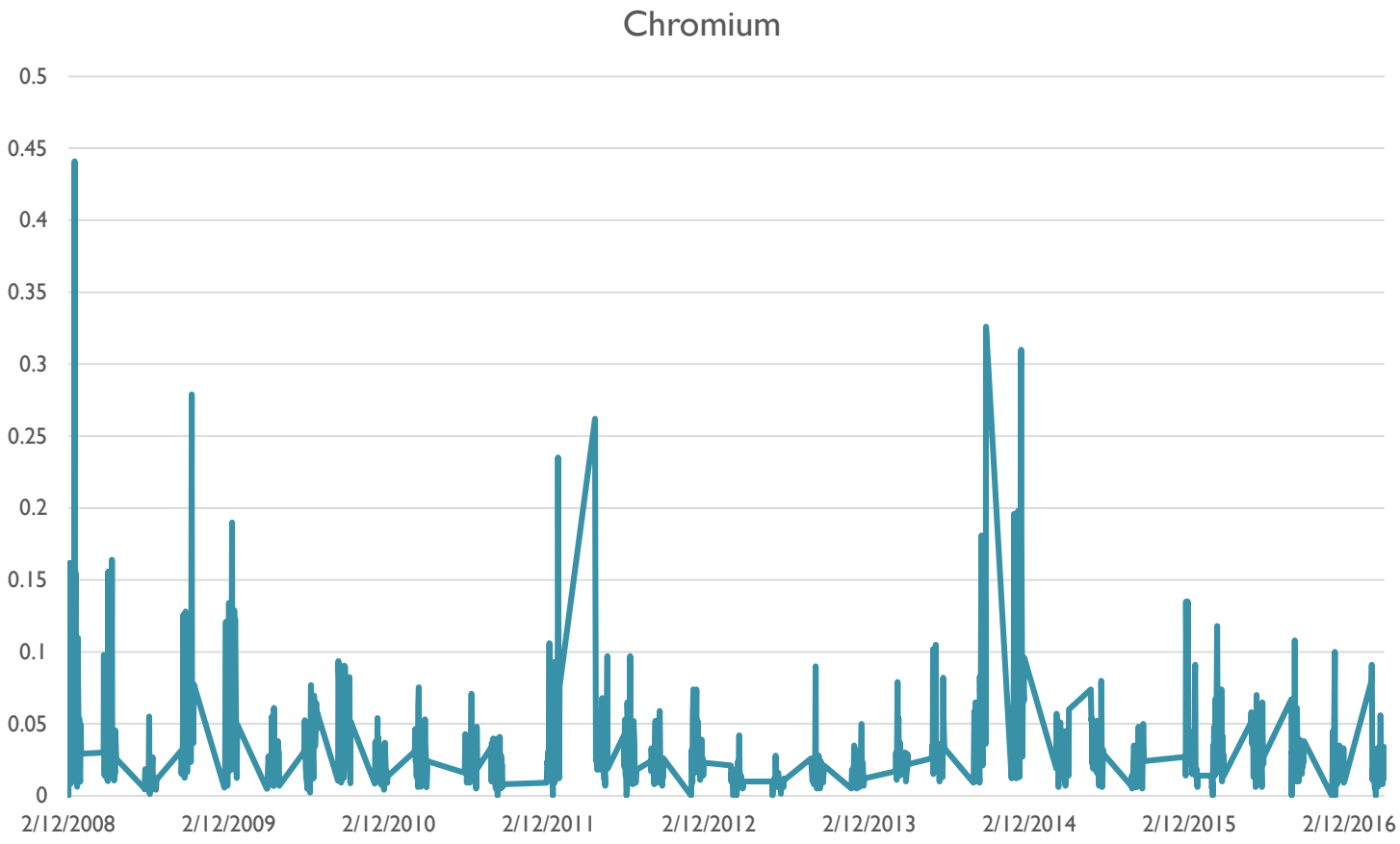
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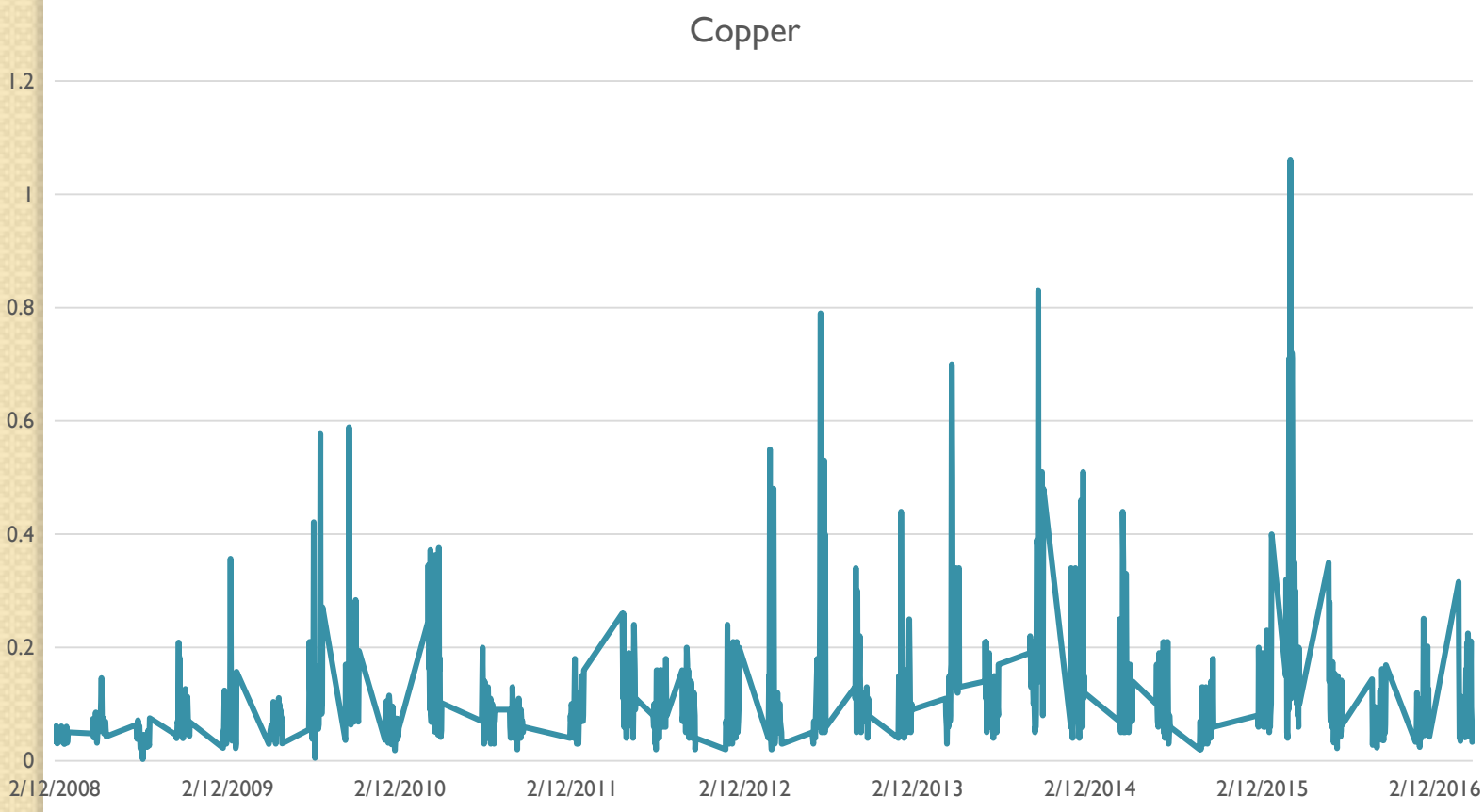
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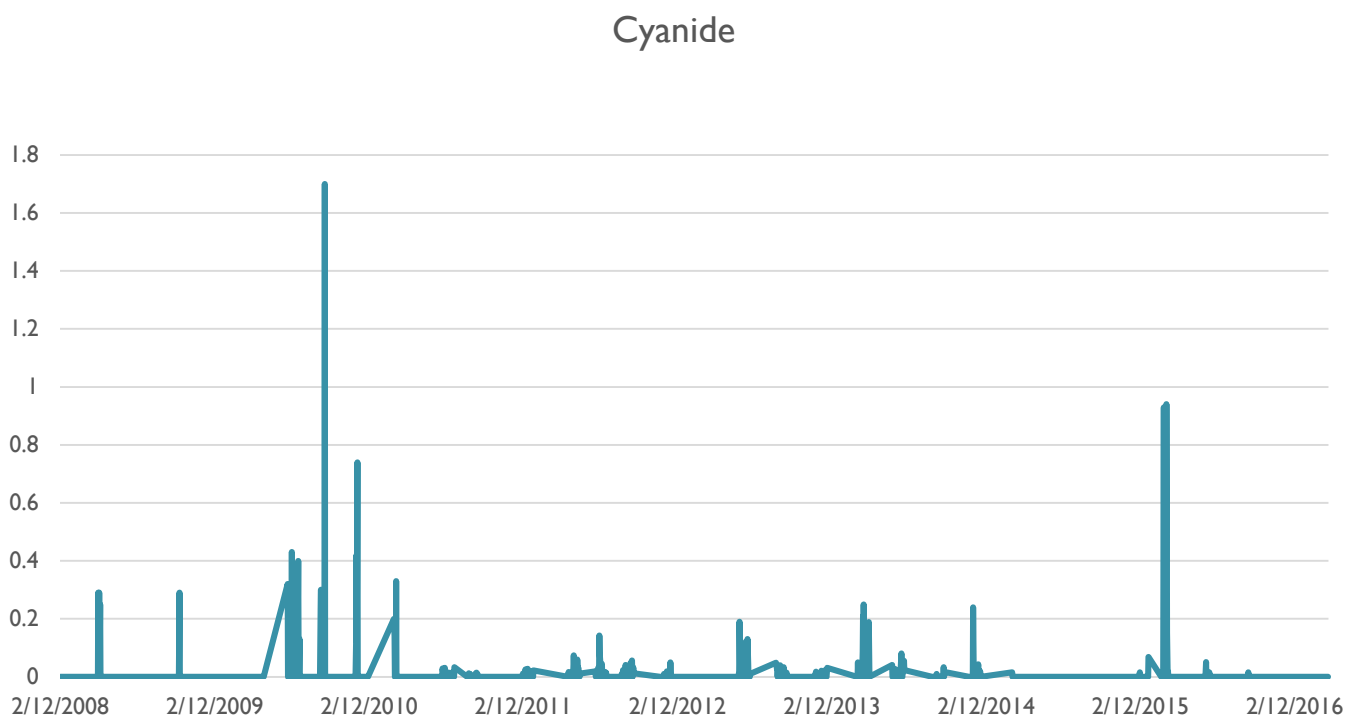
2/12/2015
2/12/2016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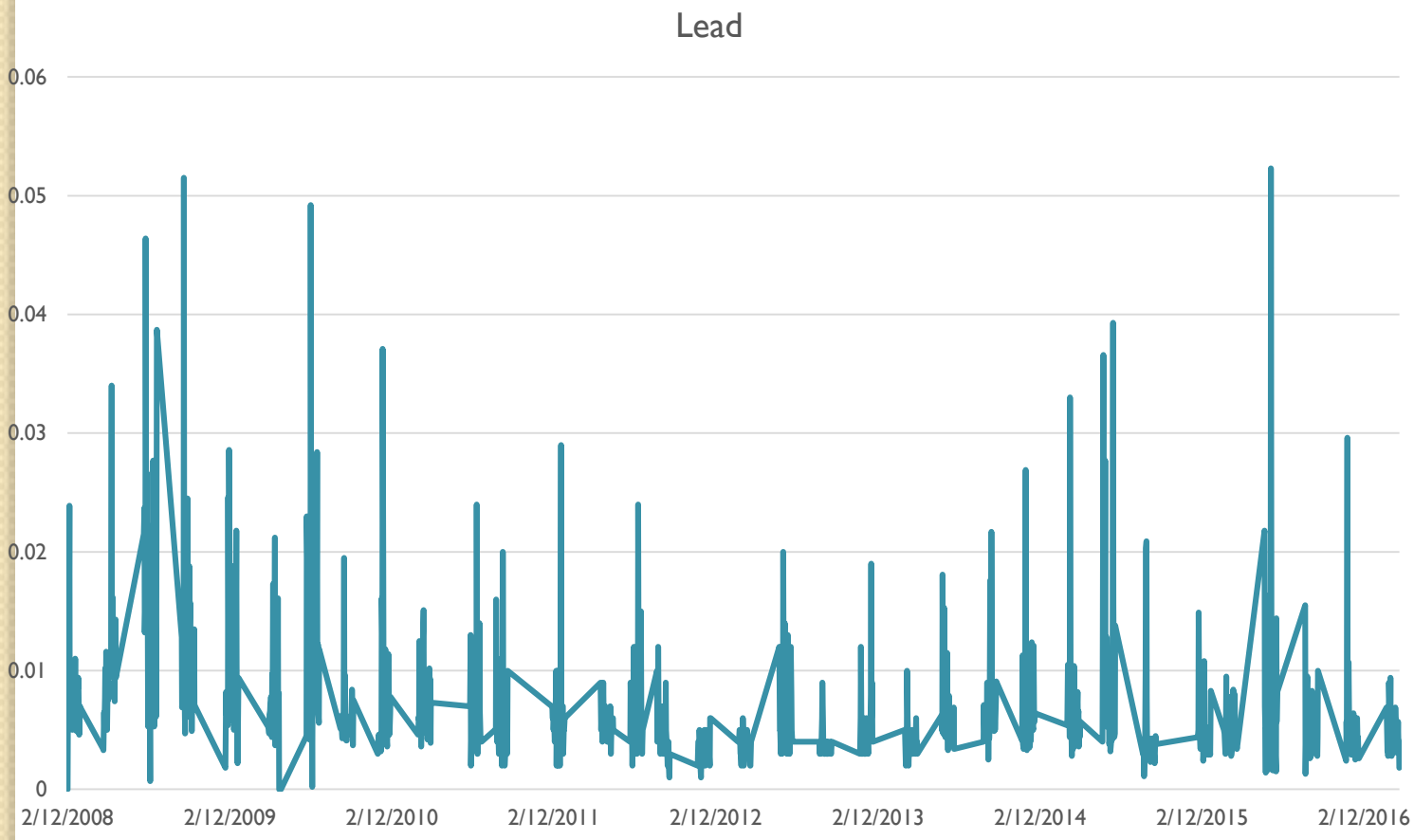
2/12/2016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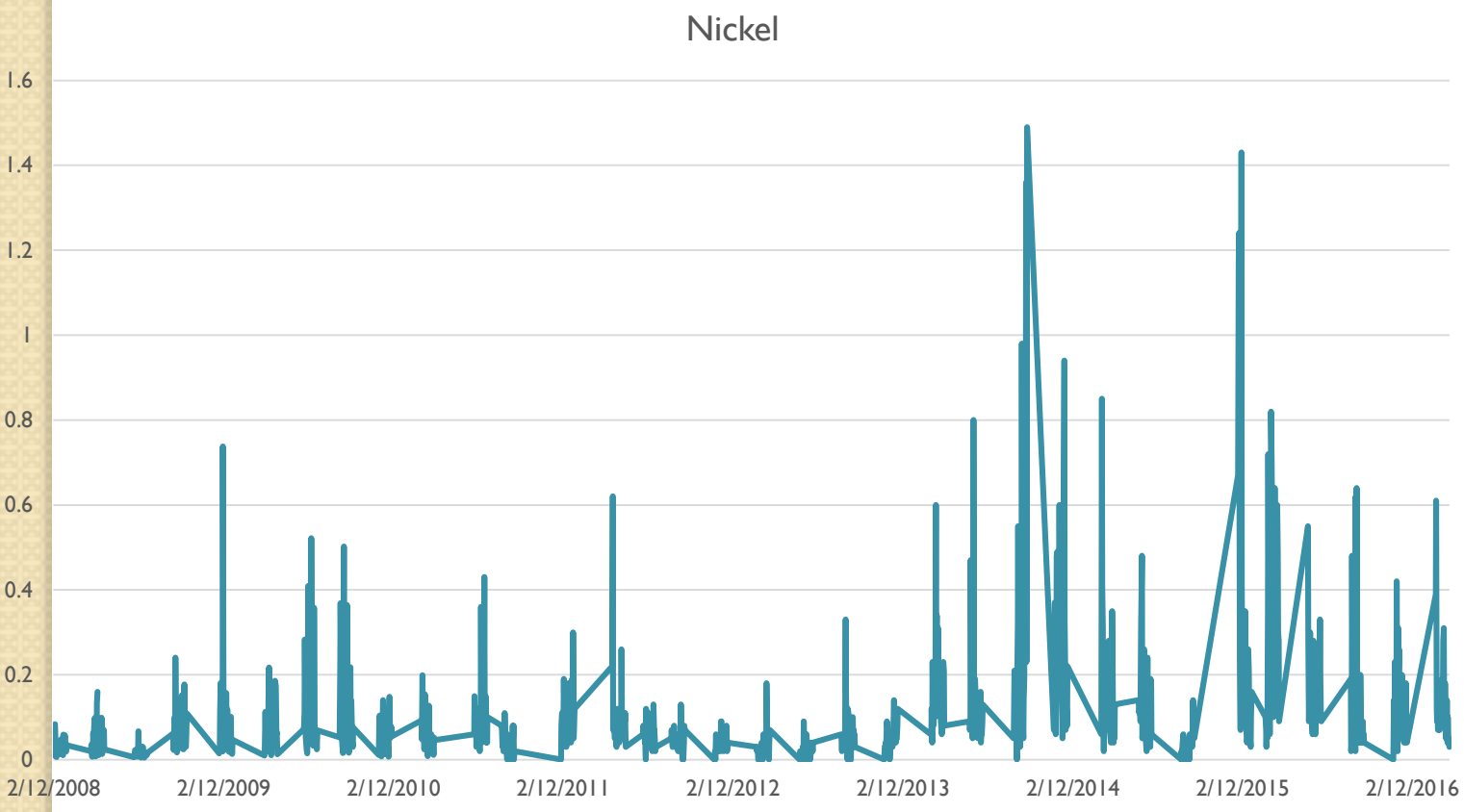
2/12/2015
2/12/2016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0.2
0
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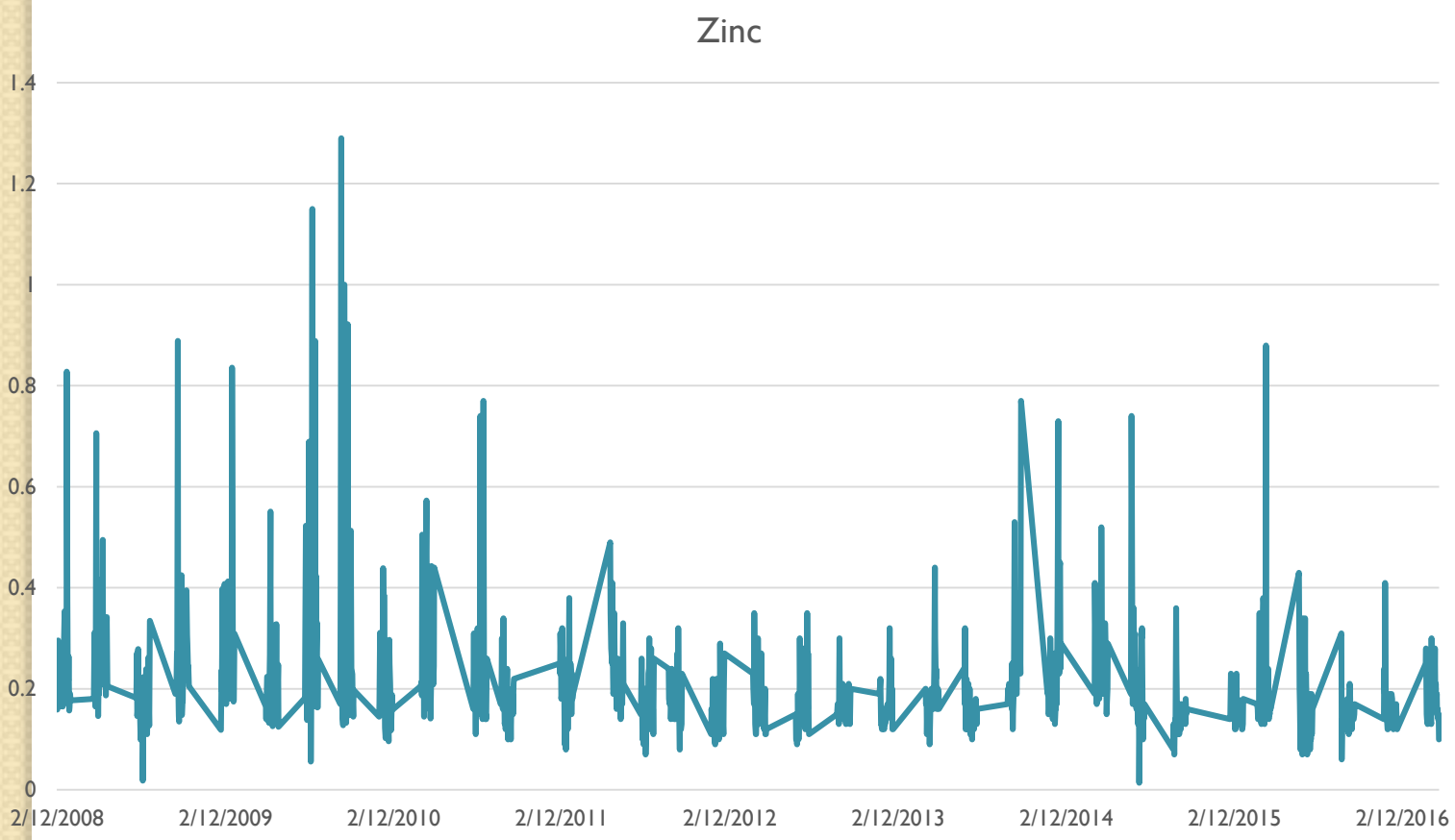
2/12/2014
2/12/2015
2/12/2016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0
2/12/2008
2/12/2009
2/12/2010
2/12/2011
2/12/2012
2/12/2013
2/12/2014
2/12/2015
2/12/2016

Permit Exceedances

2008	**January**	Cadmium
		Copper
		Chromium VI
		Chromium IV
	February	Copper
		Mercury
	March	Cadmium
		Copper
	April	Copper
	May	Cyanide
		Cadmium
		Copper
		Mercury
	June	Cadmium
		Copper
		Chromium Hexavalent
		Mercury
	July	Cadmium
	August	None
	September	None
	October	Cadmium
	November	Cadmium
	December	Cadmium

2009	**January**	Cadmium
		Copper
		Mercury
	February	Cadmium
		Copper
		cyanide
	March	Cadmium
	April	Cadmium
	May	Cyanide
	June	Cyanide
	July	Cyanide
		Cadmium
	August	Cyanide
		Cadmium
	Sept	Cyanide
	October	Cadmium
	November	Cadmium
	December	Cyanide
		cadmium

2010	**January**	Cadmium
	February	None
	March	Cyanide
	April	None
	May	Cadmium
	June	Cadmium
	July	None
	August	None
	September	None
	October	None
	November	None
	December	None
2011	**January**	Cyanide
	February	None
	March	Nickel
	April	None
	May	None
	June	None
	July	None
	August	Cadmium
	September	Cadmium
	October	Cadmium
	November	None
	December	None

2012	**January**	None
	February	Selenium
	March	None
	April	None
	May	None
	June	None
	July	None
	August	Cyanide
	September	None
	October	Copper
	November	None
	December	Copper
2013	**January**	None
	February	Copper
	March	None
	April	Nickel
	May	None
	June	None
	July	None
	August	None
	September	None
	October	None
	November	Nickel
	December	None

2014	**January**	Nickel
	February	None
	March	Nickel
	April	Nickel
	May	None
	June	None
	July	None
	August	None
	September	None
	October	None
	November	None
	December	None
2015	**January**	Nickel
	February	Nickel
	March	Nickel
		copper
	April	Nickel
		Copper
	May	Nickel
	June	Nickel
	July	Nickel

2015	**August**	None
	September	None
	October	None
	November	None
	December	None
2016	**January**	None
	February	None
	March	None
	April	None

Questions?