Atlantic Richfield Company

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March 31, 2014

CERTIFIED – RETURN RECEIPT REQUESTED

Ms. Mary Capdeville, Esq.
MT Department of Environmental Quality
P. O. Box 200901
Helena, Montana 59620-0901

Mr. Henry Elsen, Esq.
U.S. Environmental Protection Agency
Federal Building
10 West 15th Street, Suite 3200
Helena, Montana 59626-0096

Re: Warm Springs Ponds Operable Units of the Silver Bow Creek Area NPL Site, Docket No. CERCLA-VIII-91-25, Transmittal of Annual Summary Graphs and Tables

Dear Mary and Henry:

Please find enclosed the following tables and graphs that were requested by the EPA on an annual basis in their December 5, 2003 request for additional work letter:

- Table displaying number of measurements, number of exceedences, and percent of values exceeding final daily standards;
- Table displaying number of measurements, number of exceedences, and percent of values exceeding final monthly standards;
- Table displaying minimum, maximum and average concentrations of all regulated constituents entering and leaving the pond system;
- Flow hydrographs for the inlet and outlet stations; and
- Quarterly water quality graphs for each of the regulated parameters (total recoverable; dissolved parameters are no longer sampled).

As agreed to by EPA in 2005, these graphs and tables will be submitted on an annual basis by March 31 of each year so that the entire calendar year of data can be included.

If you have any questions regarding this letter or require additional information, please contact me at (406) 723-1813 or via email at shannon.dunlap@bp.com.

Sincerely,

Shannon Dunlap
Operations Project Manager

Attachment

cc (via electronic transmittal):

Brad Archibald - Pioneer
Jim Chatham - Atlantic Richfield
John Davis - ESQ, PR&R
Kristine Edwards - EPA
Dave Griffis - Pioneer
Ron Halsey - Atlantic Richfield
Jenni Harris - Atlantic Richfield
Daryl Reed - MT DEQ
Brian Wilkins - Pioneer

file: 71.01.110.1 (w/certs.)
71.01.160.1
Chronological

TABLE 1: 2013 DAILY PERFORMANCE STANDARDS EXCEEDENCE SUMMARY

Constituent	Final Daily Maximum Standards January 1, 2013 - December 31, 2013		
	No of Measurments	No. of Exceedences	% of Exceedences
TSS	104	0	0.00%
pH (1)	105	17	16.19%
Arsenic	104	42	40.38%
Cadmium	104	0	0.00%
Copper	104	1	0.96%
Iron	104	0	0.00%
Lead	104	0	0.00%
Mercury (2)	104	0	0.00%
Selenium	24	0	0.00%
Silver	24	0	0.00%
Zinc	104	0	0.00%

Notes:

(1) pH measurments at SS-5 greater than 9.0 result from natural biological activity.

(2) Mercury as total analysis, all other metals as total recoverable analysis.

TABLE 2: 2013 MONTHLY PERFORMANCE STANDARDS EXCEEDENCE SUMMARY

Constituent	Monthly Average Standards January 1, 2013 - December 31, 2013		
	No of Measurments	No. of Exceedences	% of Exceedences
TSS	12	0	0.00%
Arsenic	12	5	41.67%
Cadmium	12	0	0.00%
Copper	12	1	8.33%
Iron	12	0	0.00%
Lead	12	0	0.00%
Mercury (1)	12	0	0.00%
Selenium	12	0	0.00%
Silver	12	See note 2.	
Zinc	12	0	0.00%

Notes:

(1) Mercury as total analysis, all other metals as total recoverable analysis.

(2) The detection limit for silver is greater than the monthly average standard of 0.00012 mg/L.

Table 3

Minimum, Maximum, and Average Concentration of Regulated Constituents Entering and Leaving the Warm Springs Ponds, January, 2008 through December, 2013. (mg/L)

Constituent	Date	SS-1			SS-5		
		Min.	Max.	Avg.	Min.	Max.	Avg.
pH	2009	7.0	9.1	8.0	8.1	10.0	9.1
	2010	7.2	8.4	8.0	7.6	9.8	8.8
	2011	7.1	9.7	8.0	7.7	10.0	9.2
	2012	7.2	9.1	8.2	8.3	10.1	9.2
	2013	6.6	9.1	8.1	7.5	10.3	8.9
TSS	2009	<3.50	170	29.7	<3.50	12	3.5
	2010	<3.50	1238	80.4	<3.50	19	2.6
	2011	<3.50	206	31.5	<3.50	22	3.9
	2012	<3.74	155.00	24.83	<3.74	24.00	4.12
	2013	<3.74	226.00	27.32	<3.50	39.00	4.69
Arsenic	2009	0.0058	0.0469	0.0144	0.0111	0.0631	0.0294
	2010	0.0070	0.1180	0.0180	0.0078	0.0538	0.0267
	2011	0.0074	0.0772	0.0143	0.0108	0.0561	0.0291
	2012	0.0048	0.0318	0.0104	0.0097	0.0608	0.0296
	2013	0.0039	0.0427	0.0099	0.0077	0.0484	0.0222
Cadmium	2009	0.00025	0.00536	0.00092	<0.00003	0.00035	0.00011
	2010	0.00018	0.01070	0.00143	<0.00003	0.00053	0.00010
	2011	0.00029	0.00364	0.00086	<0.00003	0.00049	0.00016
	2012	0.00018	0.00220	0.00063	<0.00003	0.00048	0.00012
	2013	0.00020	0.00758	0.00064	<0.00003	0.00076	0.00013
Copper	2009	0.0134	0.3400	0.0834	0.0054	0.0257	0.0106
	2010	0.0264	1.1000	0.1383	0.0044	0.0337	0.0110
	2011	0.0272	0.6240	0.0795	0.0058	0.0498	0.0152
	2012	0.0182	0.2250	0.0477	0.0048	0.0317	0.0099
	2013	0.0174	0.6650	0.0521	0.0023	0.0421	0.0089
Iron	2009	0.036	6.010	1.295	0.064	0.633	0.195
	2010	0.225	39.800	2.538	0.036	0.737	0.198
	2011	0.209	13.400	1.492	0.021	0.708	0.248
	2012	0.127	7.620	0.954	0.037	0.755	0.206
	2013	0.229	9.300	1.035	<0.020	1.020	0.206
Mercury	2009	<0.0001000	0.0008600	0.0001660	<0.0000149	0.0001300	<0.0001000
	2010	<0.0000123	0.0031600	0.0002340	<0.0000123	0.0001000	<0.0001000
	2011	<0.0000123	0.0006000	0.0000896	<0.0000123	0.0001600	0.0000200
	2012	<0.0000123	0.0007700	0.0000460	<0.0000123	0.0000900	0.0000178
	2013	<0.0000123	0.0001400	0.0000283	<0.0000123	0.0001500	0.0000263
Lead	2009	<0.00100	0.08910	0.01761	<0.00051	0.00670	0.00142
	2010	0.00230	0.34900	0.03383	0.00028	0.00661	0.00125
	2011	0.00276	0.19100	0.01828	<0.00051	0.00773	0.00219
	2012	0.00104	0.06130	0.00928	0.00041	0.00833	0.00168
	2013	0.00208	0.08010	0.00912	0.00018	0.01150	0.00134
Selenium	2009	<0.000528	0.0020	0.0008	<0.000528	0.0015	0.0007
	2010	<0.0007	0.0032	0.0011	<0.0007	0.0031	0.0008
	2011	<0.0007	0.0023	0.0009	<0.0007	0.0019	0.0007
	2012	<0.0007	0.0038	0.0012	<0.0007	0.0049	0.0012
	2013	<0.0007	0.0038	0.0009	<0.0007	0.0030	0.0008
Silver	2009	<0.0010	0.0016	0.0005	<0.0010	0.0010	0.0005
	2010	<0.0004	0.0057	0.0010	<0.0004	<0.0004	0.0002
	2011	<0.0004	0.0014	0.0006	<0.0004	<0.0004	0.0005
	2012	<0.0004	0.0008	<0.0004	<0.0004	<0.0004	<0.0004
	2013	<0.0004	0.0017	<0.0004	<0.0004	<0.0004	<0.0004
Zinc	2009	0.072	1.380	0.260	0.005	0.054	0.018
	2010	0.075	2.490	0.342	<0.009	0.070	0.016
	2011	0.061	0.910	0.213	<0.009	0.070	0.024
	2012	0.063	0.466	0.153	<0.011	0.075	0.015
	2013	0.058	2.360	0.152	<0.011	0.086	0.016

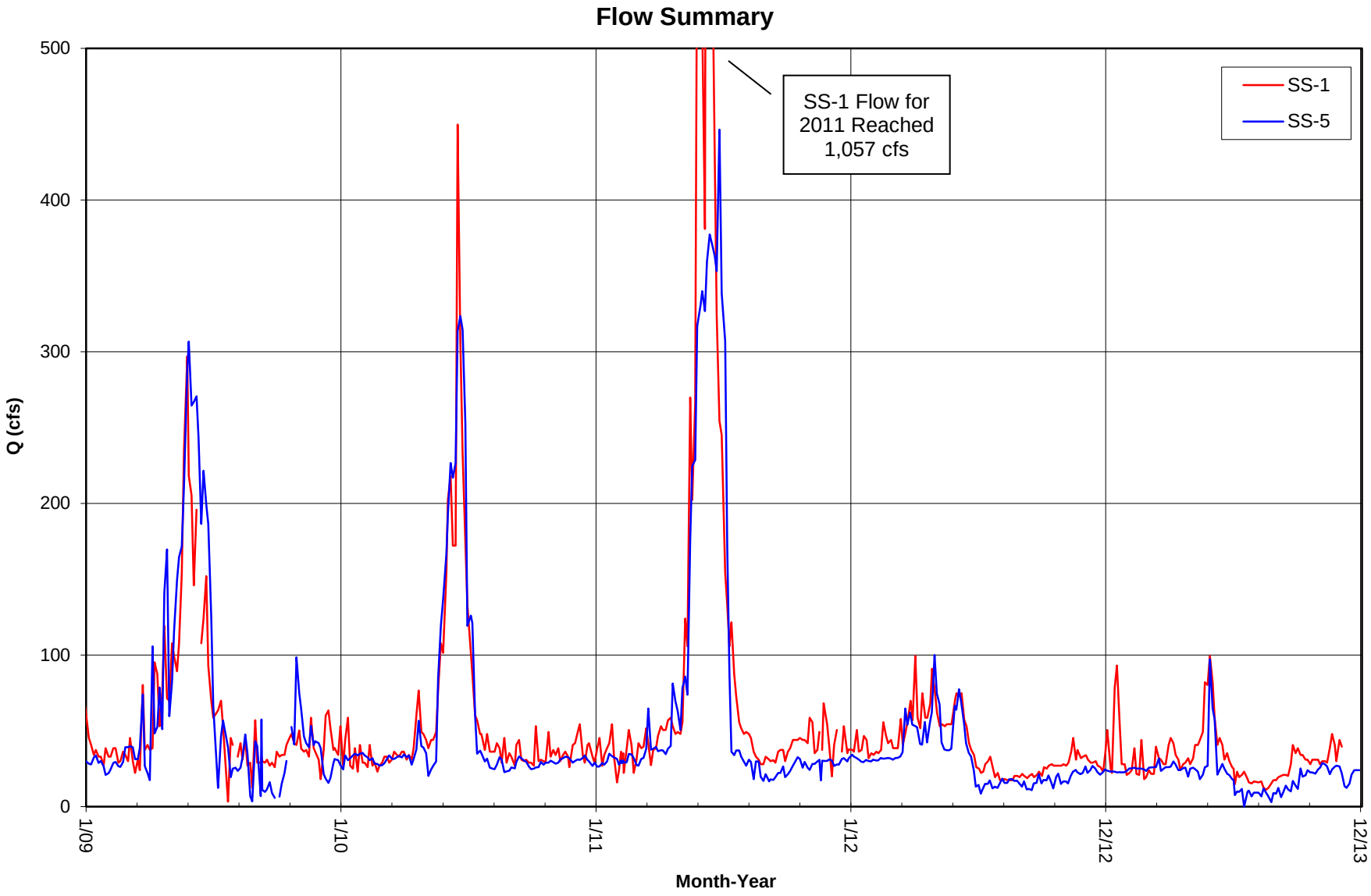

Figure 1. Comparison of influent (SS-1) and effluent (SS-5) hydrographs for time span shown.

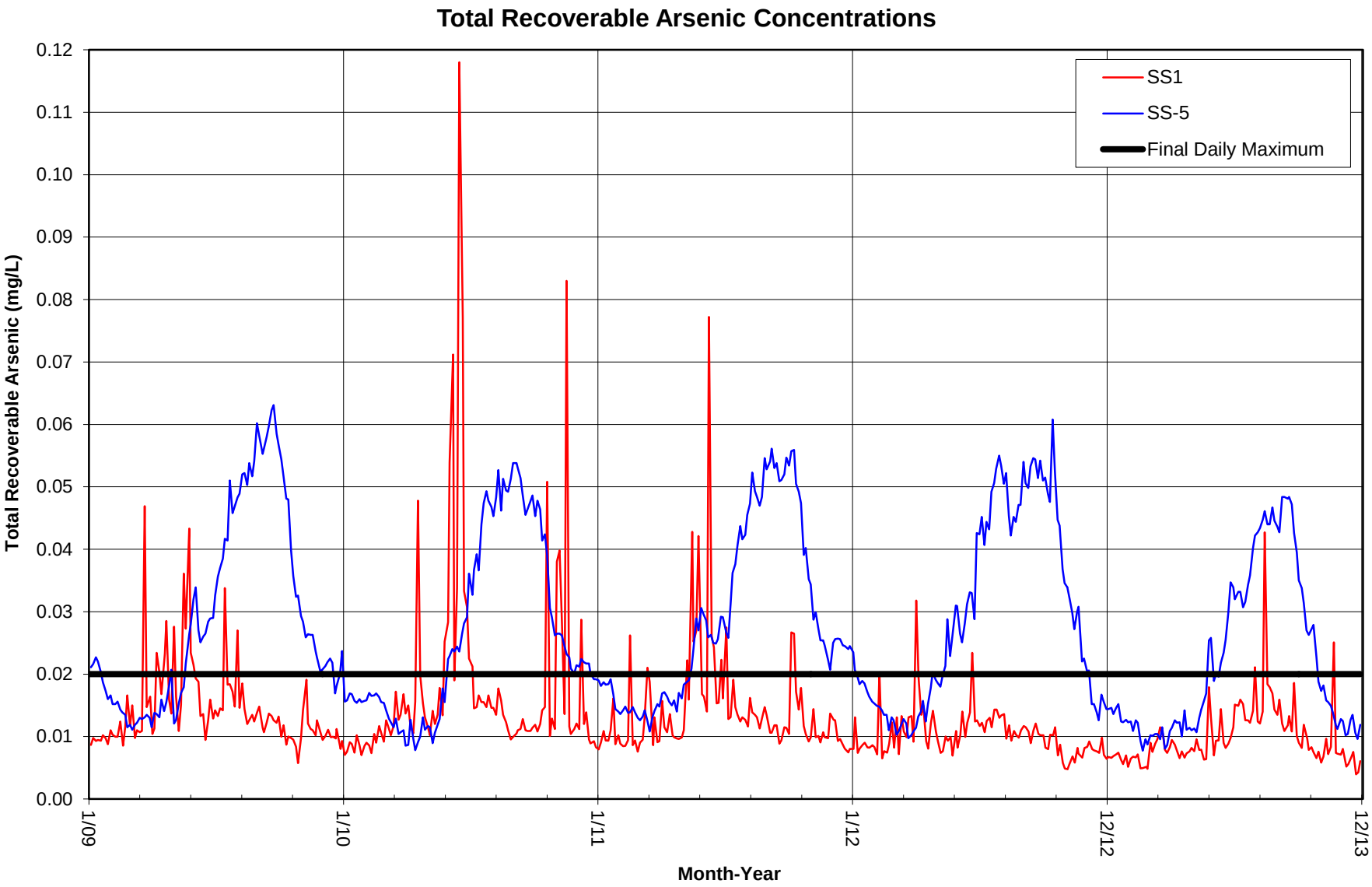

Figure 2. Comparison of influent (SS-1) and effluent (SS-5) total recoverable arsenic concentrations for time span shown with final daily perfomance standard.

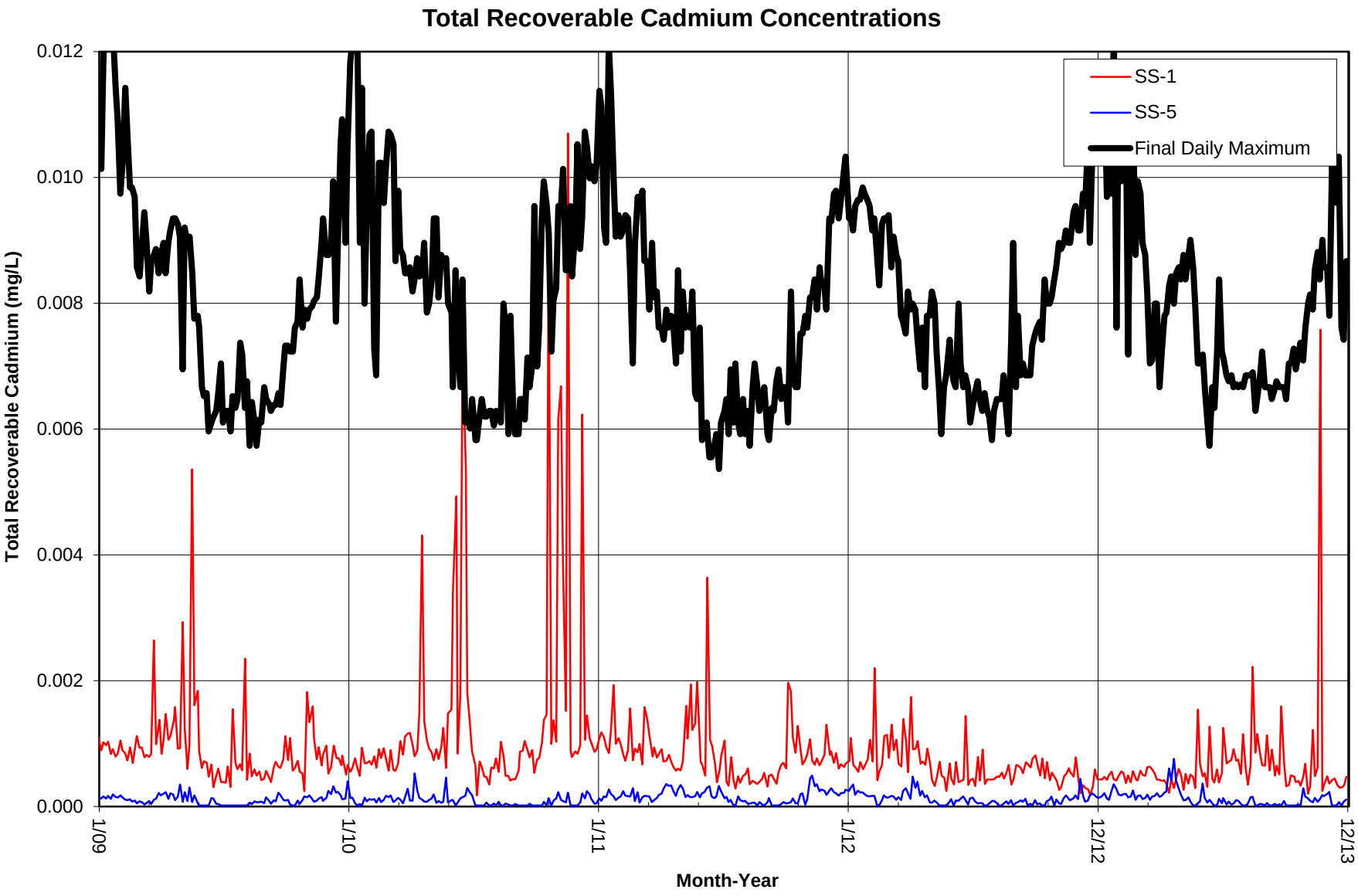

Figure 3. Comparison of influent (SS-1) and effluent (SS-5) total recoverable cadmium concentrations for time span shown with final daily performance standard.

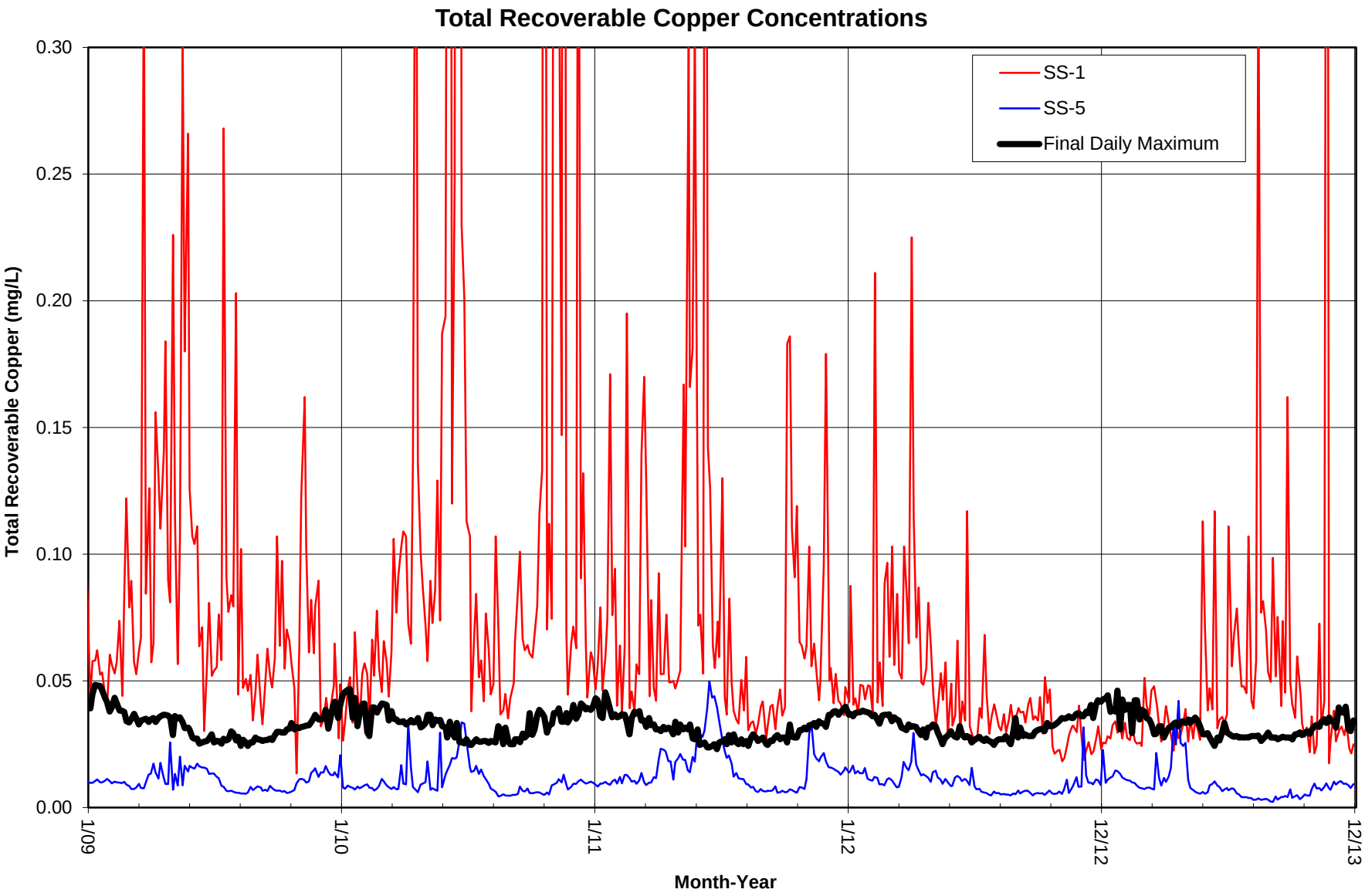

Figure 4. Comparison of influent (SS-1) and effluent (SS-5) total recoverable copper concentrations for time span shown with final daily performance standard.

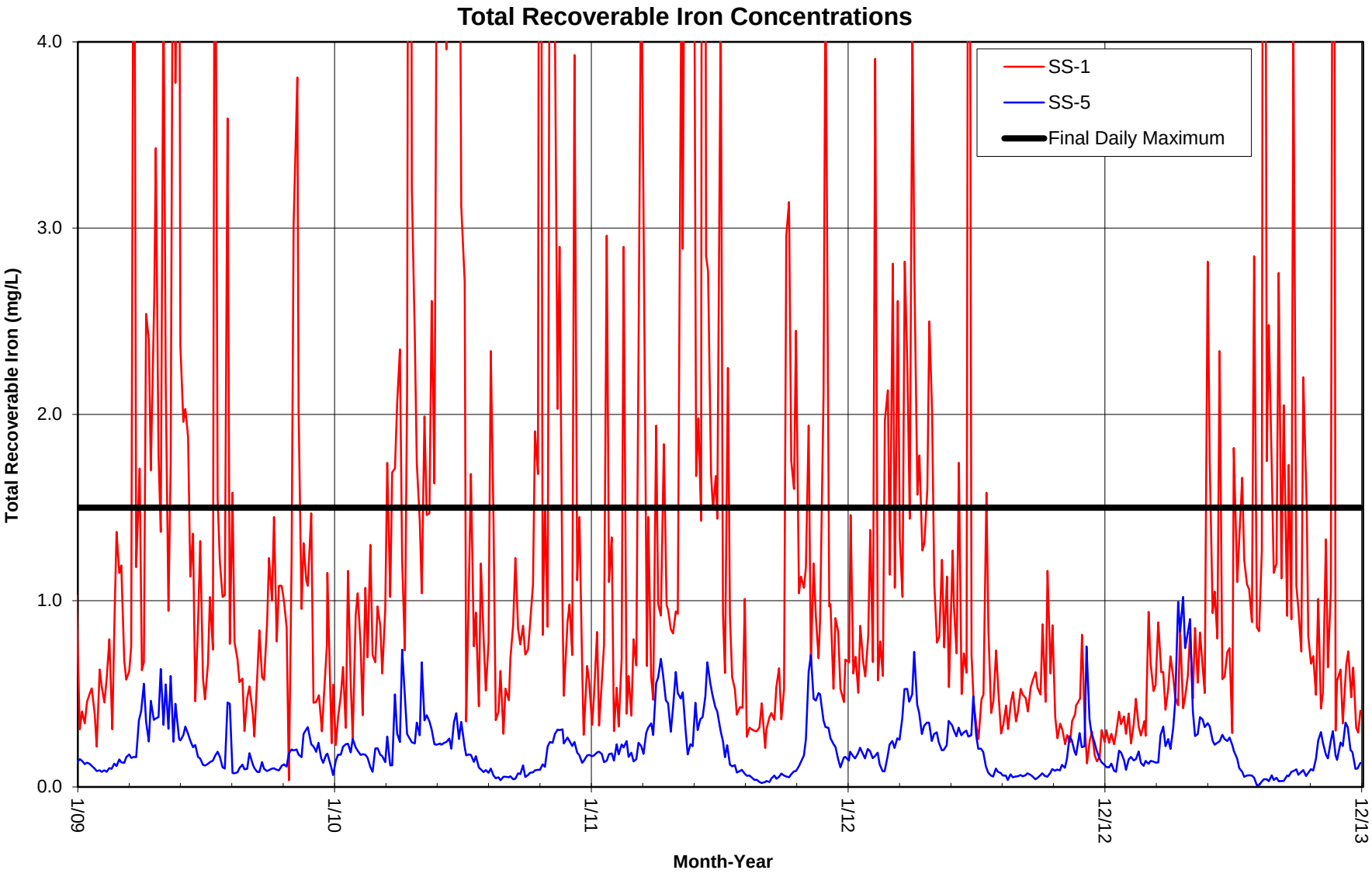

Figure 5. Comparison of influent (SS-1) and effluent (SS-5) total recoverable iron concentrations for time span shown with final daily performance standard.

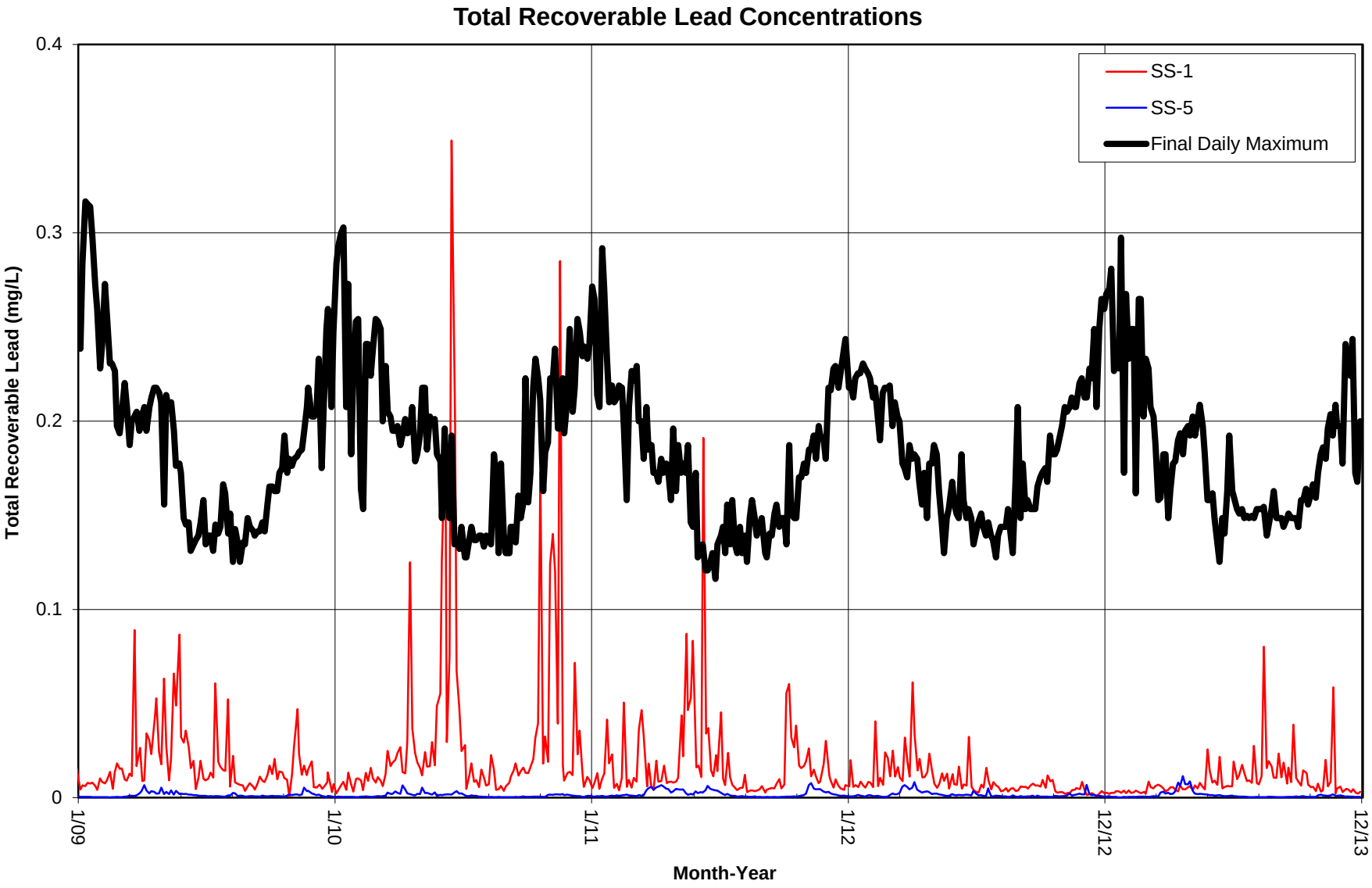

Figure 6. Comparison of influent (SS-1) and effluent (SS-5) total recoverable lead concentrations for time span shown with final daily performance standard.

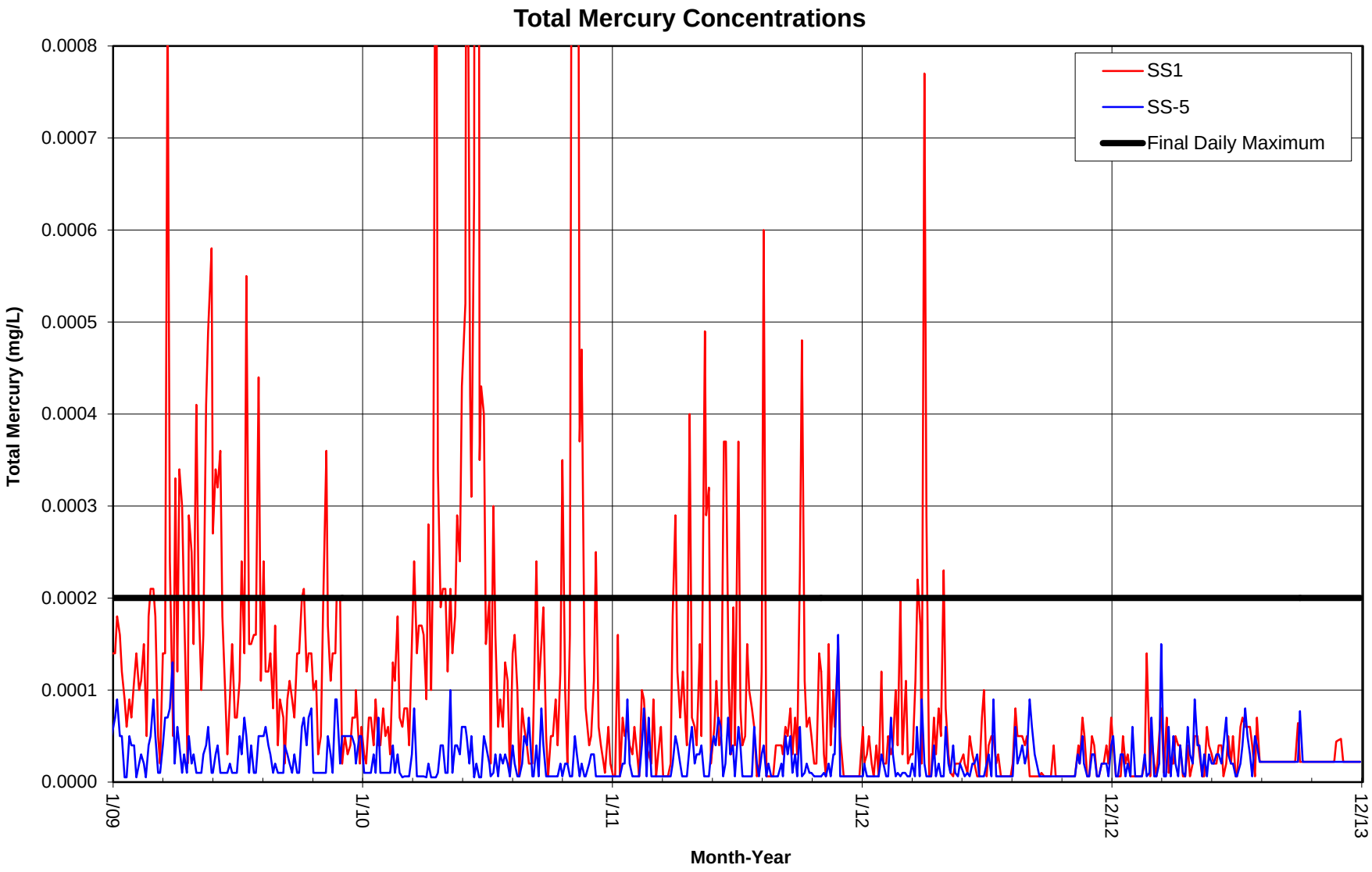

Figure 7. Comparison of influent (SS-1) and effluent (SS-5) total mercury concentrations for time span shown with final daily performance standard.

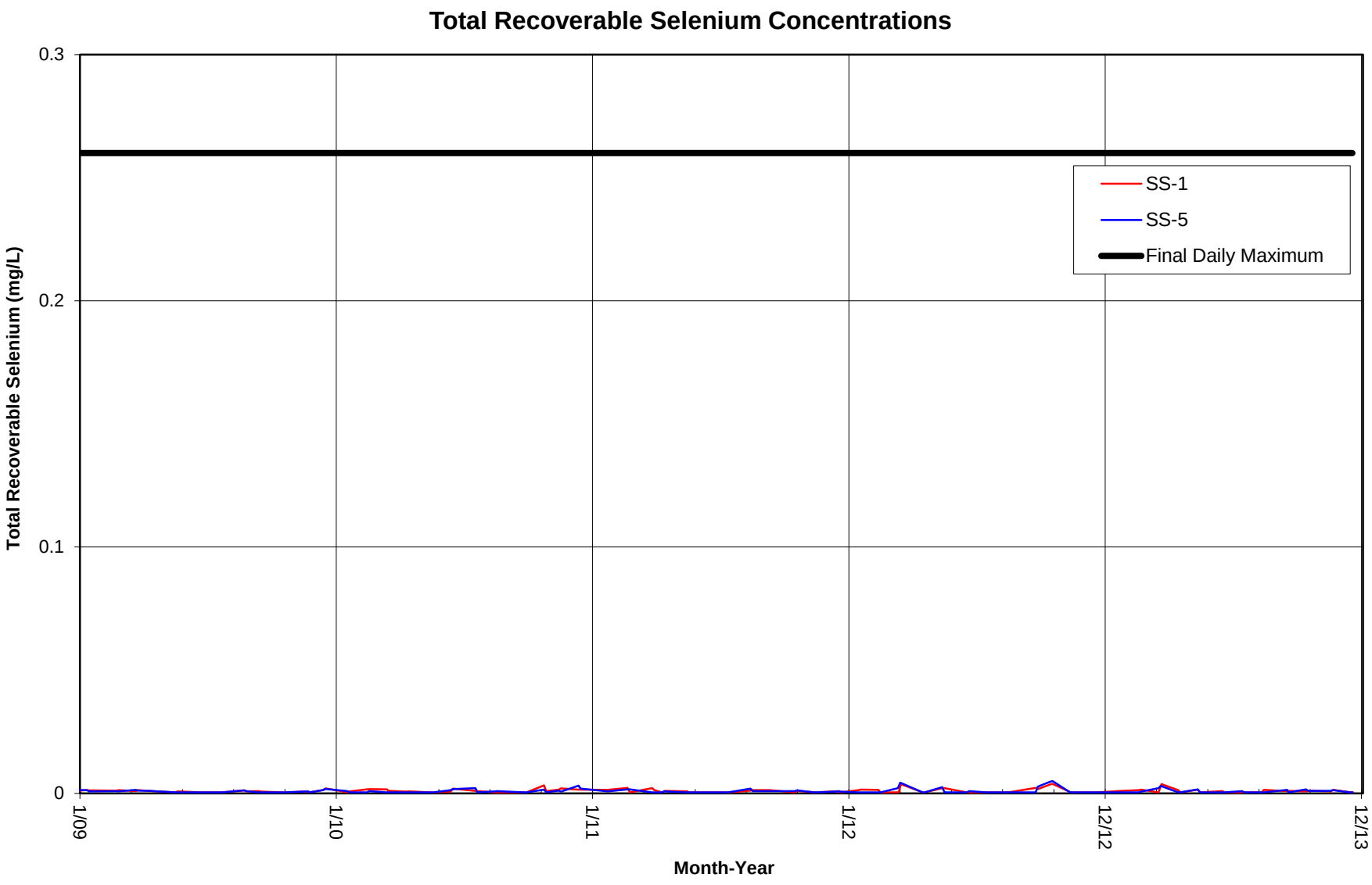

Figure 8. Comparison of influent (SS-1) and effluent (SS-5) total recoverable selenium concentrations for time span shown with final daily performance standard.

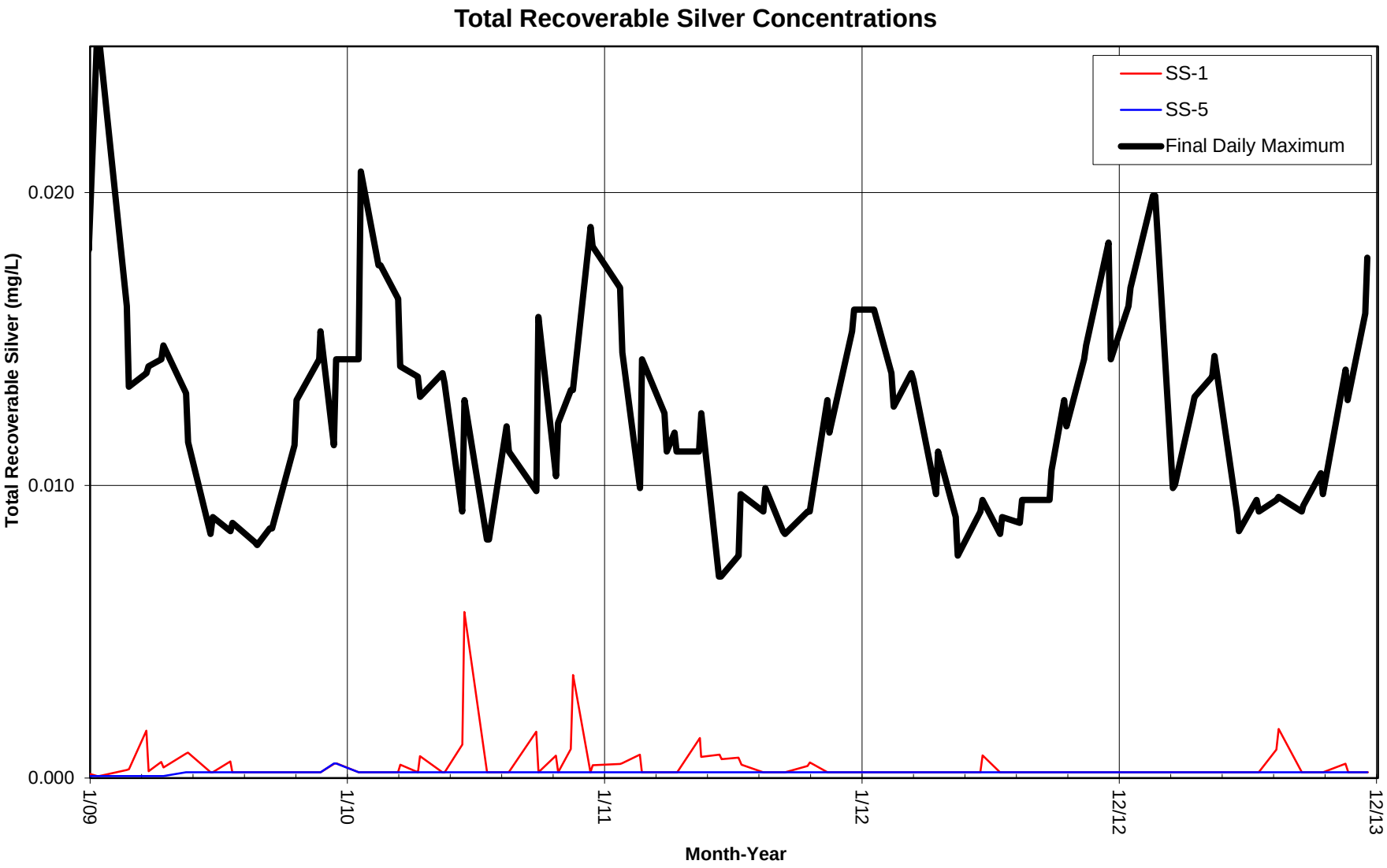

Figure 9. Comparison of influent (SS-1) and effluent (SS-5) total recoverable silver concentrations for time span shown with final daily performance standard.

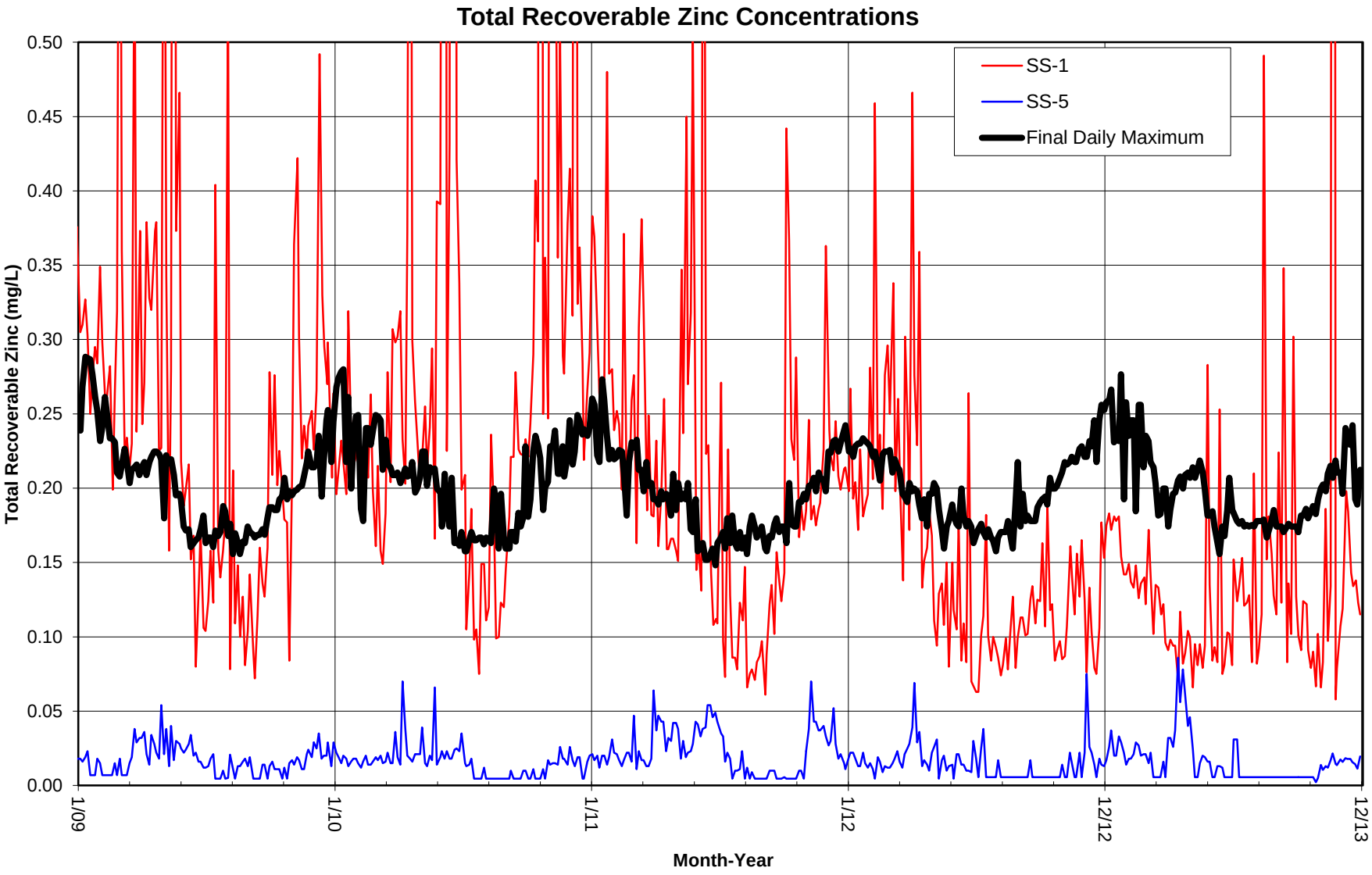

Figure 10. Comparison of influent (SS-1) and effluent (SS-5) total recoverable zinc concentrations for time span shown with final daily performance standard.

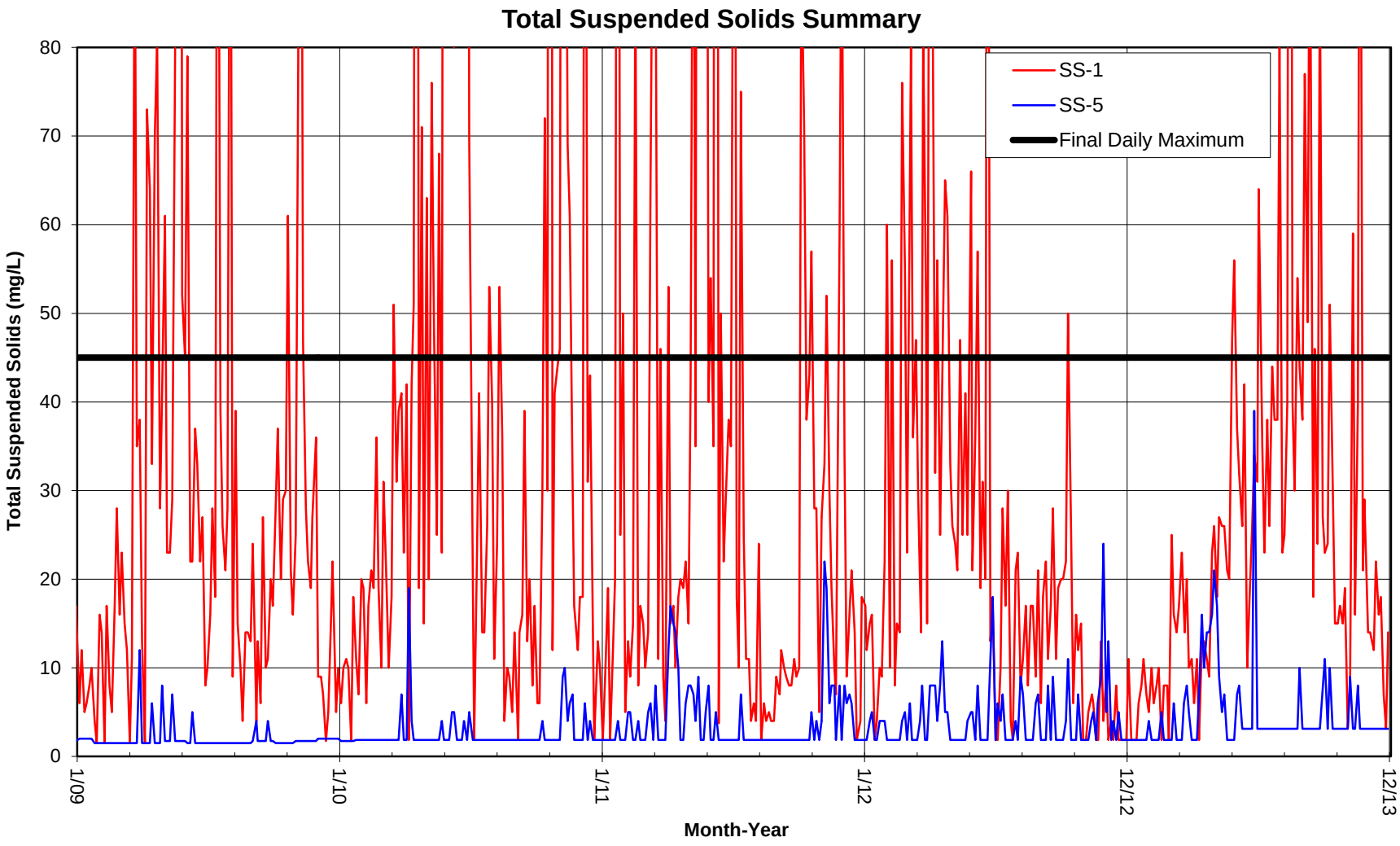

Figure 11. Comparison of influent (SS-1) and effluent (SS-5) total suspended solids concentrations for time span shown with final daily performance standard.

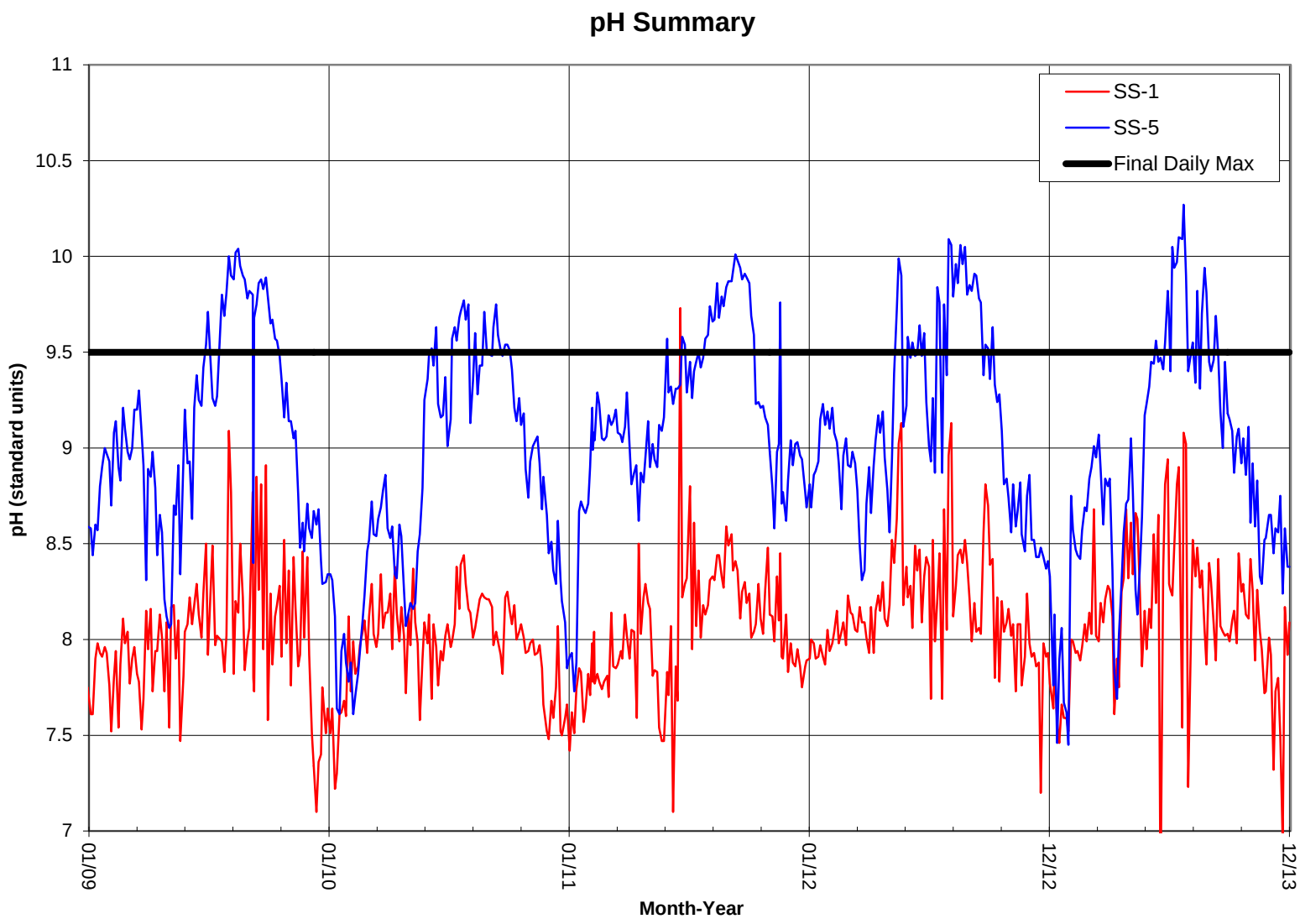

Figure 12. Comparison of influent (SS-1) and effluent (SS-5) pH values for time span shown with final daily performance standard.