



October 28, 2015

Submitted via Electronic Mail

Mr. Ervin Lane
North Carolina Department of Environmental Quality
Division of Waste Management - Solid Waste Section
1646 Mail Service Center
Raleigh, NC 27699-1646

**Re: Request for Modified Sampling Frequency
JMN/Cleveland Container Landfill
Cleveland County, North Carolina, Permit # 23-02**

Dear Mr. Lane:

On behalf of Republic Services of North Carolina, LLC, Jett Environmental Consulting is submitting a request to the North Carolina Department of Environmental Quality (NCDEQ) to modify the groundwater monitoring frequency for the JMN/Cleveland Container Landfill.

Background

The JMN/Cleveland Container Landfill was granted official closure in an NCDEQ (formerly NCDENR) letter dated September 26, 2005. At that time, the NCDEQ directed the site to continue groundwater monitoring for an additional 5 years (until 2010). On August 10, 2010, NCDEQ issued a letter stating groundwater monitoring should continue an additional 5 years, and the need for continued monitoring would be re-evaluated at the end of the 5 year period (2015).

Current Data

The groundwater monitoring well network is designed to detect potential effects on groundwater from the facility and has been sampled on semi-annual frequency. The designated upgradient monitoring wells, MW-1B and MW-1C, are positioned to monitor background groundwater quality for the facility. The remaining five wells (MW-4, MW-5, MW-6A, MW-7A, and MW-8) are positioned in the downgradient position around the base of the landfill footprint.

The surface water monitoring network is designed to detect potential effects on surface water from the facility and has been sampled on a semi-annual frequency. The designated upgradient point, SW-3, is positioned to monitor background surface water quality for the facility. The designated downgradient point, SW-4, is positioned to monitor surface water quality downstream from the landfill.

The attached **Figure 1** provides a potentiometric surface map utilizing water level data from the Second Semi-Annual 2015 event. Groundwater flow direction was to the south-southeast, consistent with past events. The groundwater flow rate was estimated to range from 0.08 feet/day (29 feet/year) to 0.25 feet/day (91 feet/year) for the Second Semi-Annual 2015 event, consistent with past events.

Five years have now passed since the August 10, 2010 NCDEQ letter, therefore the site can re-evaluate groundwater quality to determine if cessation of monitoring is warranted. Review of the 2015 groundwater data indicates that NC 2L Standards are only exceeded for one well (cadmium and tetrachloroethylene at MW-8). The cadmium and tetrachloroethylene detections at MW-8 are below the MCLs and not trending upward (see attached graphs and data summary table). Wells located along the downgradient perimeter of waste (MW-5, MW-6A, and MW-7A) do not exhibit NC 2L exceedances or upward trends.

Potential Environmental Receptors

According to a Site Hydrogeologic Report, dated July 5, 2001 by Bunnell-Lammons Engineering, Inc., a residential well reconnaissance was completed in 2000 to identify the locations of private and public water supply wells within 2 miles of the site. The Report stated the Cleveland County Regional Water System supplies most of the residences near the site with potable water, although many of the residences had private wells. In 2000, there were 32 residences in the vicinity of the landfill connected to the water system, and 15 residences and two nearby churches not connected to the public water system, which instead used private well water. Within 2 miles downgradient of the landfill, the Report identified only 1 residence with a private well and not connected to the county water system.

In summary, only 1 private well is likely to exist within 2 miles downgradient of the landfill. Therefore, minimal water supply wells are likely present in the downgradient vicinity of the landfill.

As displayed on **Figure 1**, Buffalo Creek is located approximately 630 feet downgradient (to the southeast) of the landfill. The site has routinely sampled Buffalo Creek semi-annually (SW-4) with no confirmed impacts to date. Wells MW-5, MW-6A, and MW-7 are located between the landfill and Buffalo Creek. As stated above, the typical maximum groundwater flow rate is approximately 91 feet/year. Any impacts to groundwater would likely be exhibited in wells MW-5, MW-6A, and MW-7 years before impacts would reach the Buffalo Creek.

Proposed Monitoring Frequency

Due to the slow groundwater flow rate, minimal environmental receptors, lack of downgradient perimeter well exceedances, and presence of wells and surface water sampling points between the landfill and potential receptors, the site respectfully requests NCDEQ approval to modify the frequency of groundwater sampling to annually. The reduced sampling frequency is in effort to specify a more appropriate sampling and analysis program for the closed site. Due to lack of historical exceedances at surface water points SW-3 and SW-4, it is also requested to modify the frequency of surface water monitoring sampling to annually.

The most recent sampling event was conducted during the second semi-annual 2015 event (July 2015). Therefore if approved, the next annual sampling event would occur in July 2016.

In future annual report submittals, the facility will submit a determination if continued groundwater (and surface water) monitoring is recommended.

Should you have any questions or concerns, please contact Mr. Mike Gurley at (704) 262-6019 or Steve Jett at (314) 496-4654.

Sincerely,

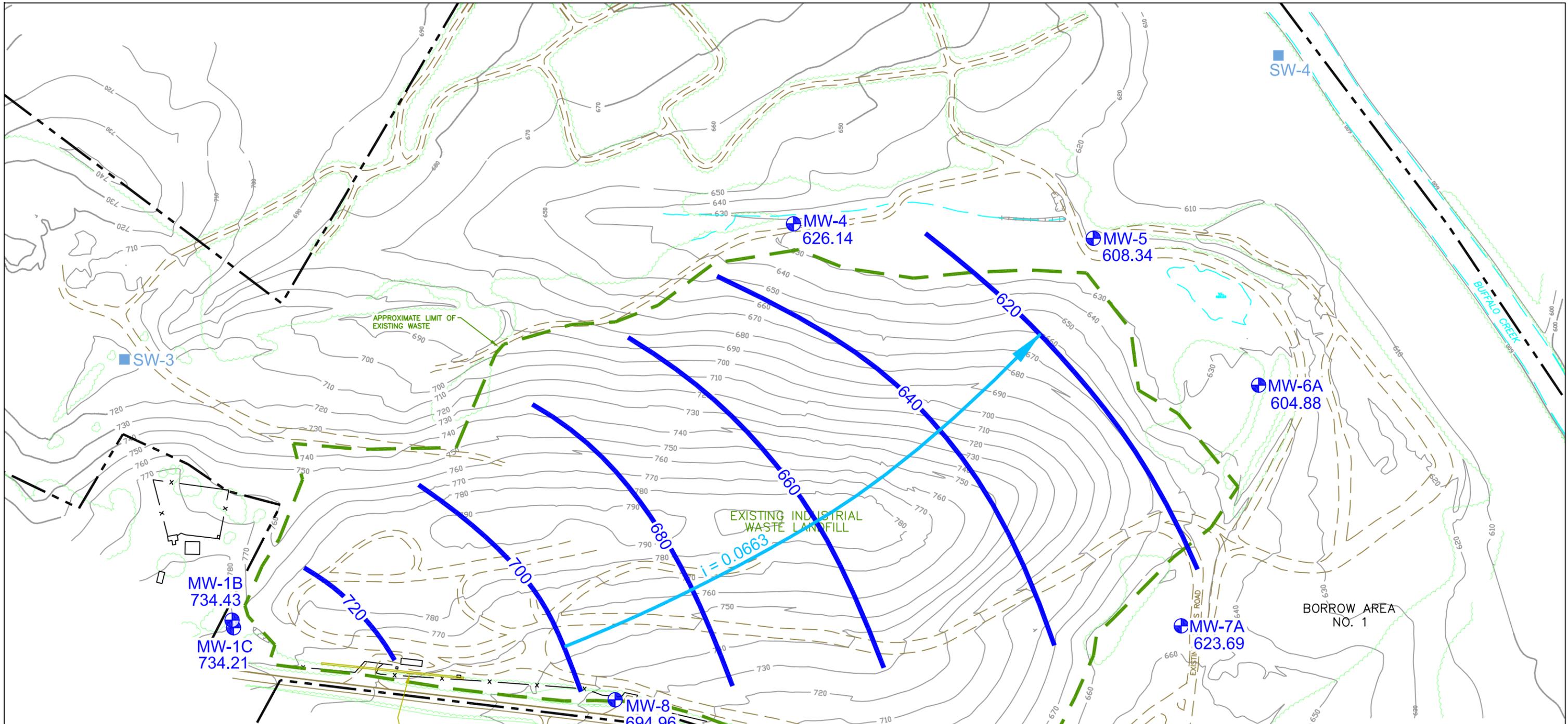


Steve Jett, LG #1825
Owner, Jett Environmental Consulting, PLLC (C-517)

*Attachments: Figure 1 – Potentiometric Surface Map
Time Series Graphs & Data Summary Table*

*cc: Mike Gurley, Republic Services, Inc. (1 Hardcopy)
Dan Lockett, Republic Services, Inc. (PDF via Email)
Joe Montello, Republic Services, Inc. (PDF via Email)*

Figure



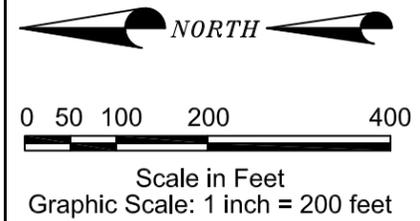
LEGEND

- MW-4 Groundwater Monitoring Well
- 626.14 Groundwater Elevation (fmsl)
- 700— Potentiometric Surface Contour
- ← $i = 0.0666$ Groundwater Flow Direction & Hydraulic Gradient

- SW-3 Surface Water Monitoring Point
- - - Property Boundary

Note1: Basemap provided by Hodges, Harbin, Newberry & Tribble, Inc. Aerial topography photo taken May 15, 2002.

Note2: Water levels measured by Analytical Services, Inc. on July 21, 2015.

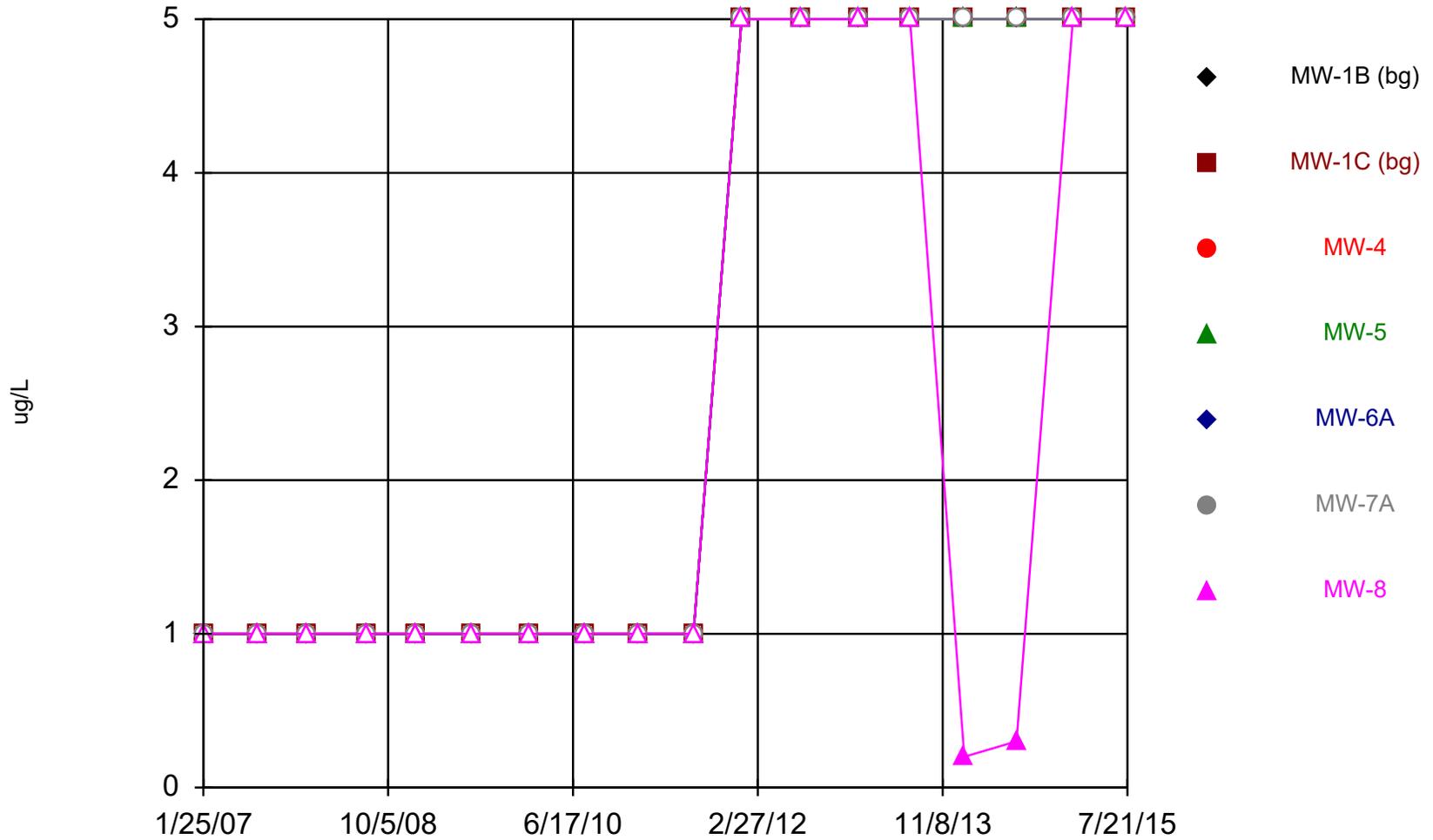


10 Quiet Brook Court
 St. Charles, MO 63303
 314-496-4654
 www.jettenviro.com

**Figure 1, July 2015 Event, Potentiometric Surface Map
 JMN / Cleveland Container Landfill, Cleveland County, North Carolina**

Time Series Graphs & Data Summary Page

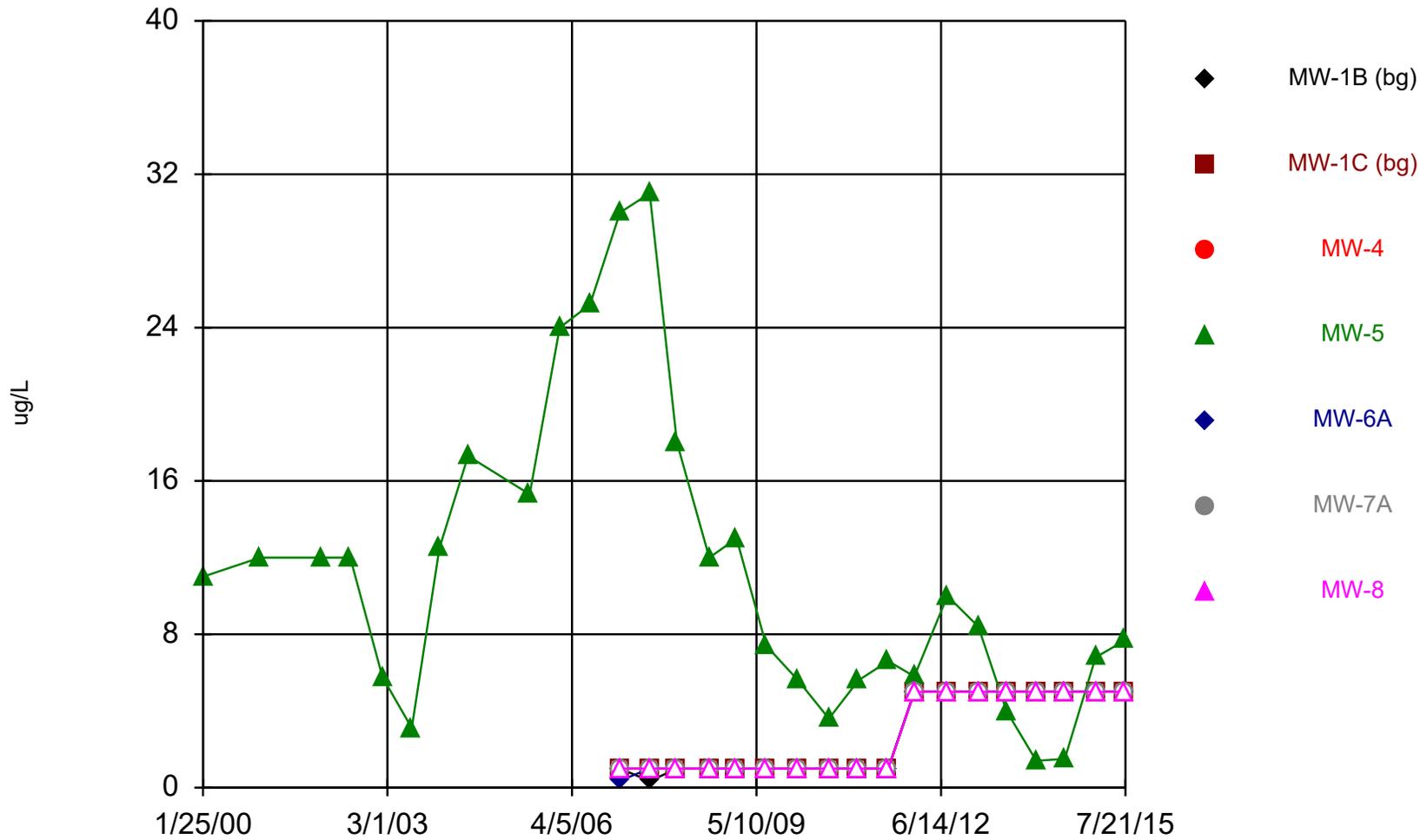
Time Series



Constituent: 11-Dichloroethane Analysis Run 8/24/2015 11:54 AM

Ellis-Scott LF Client: RSI Data: JMN

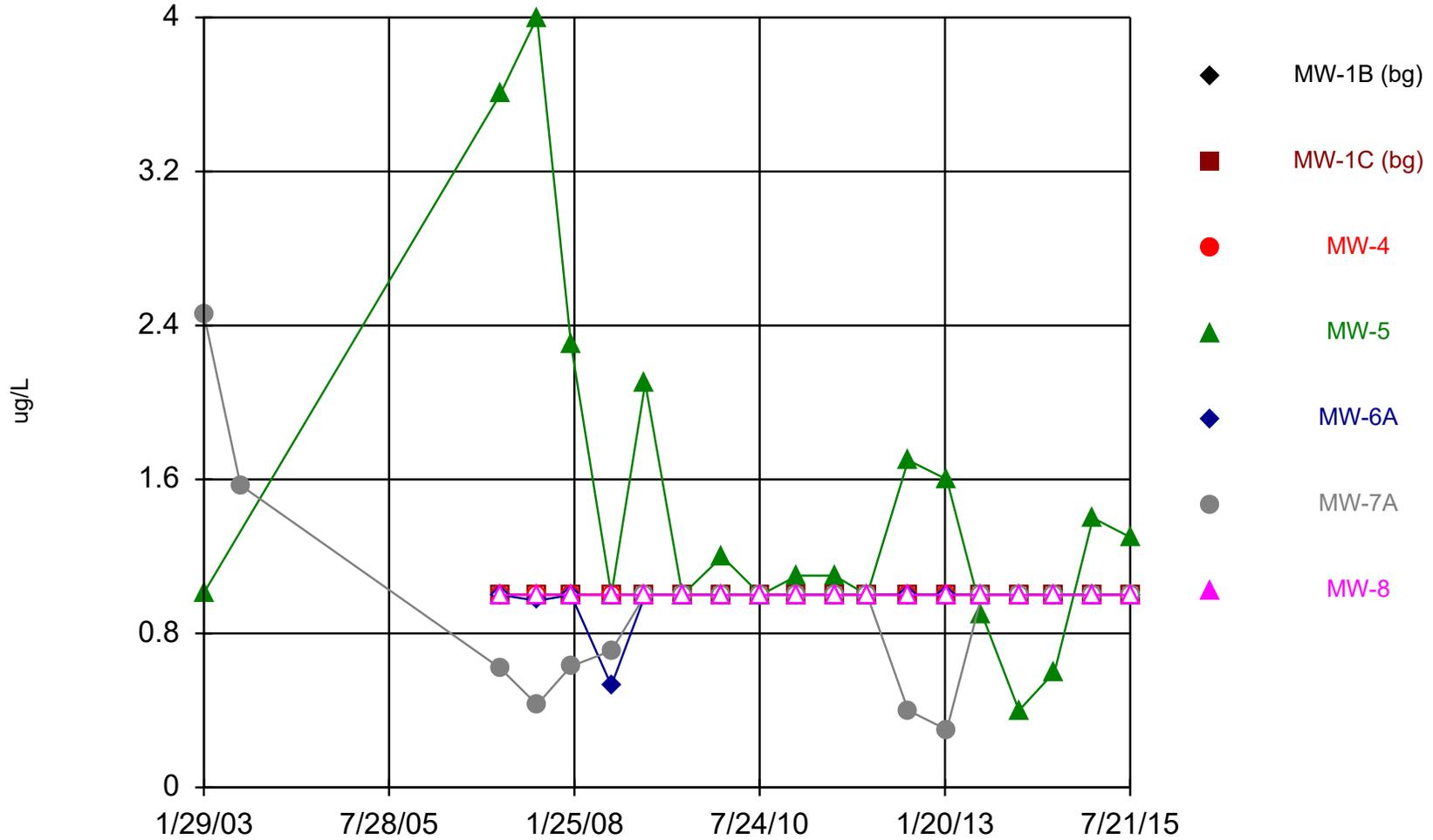
Time Series



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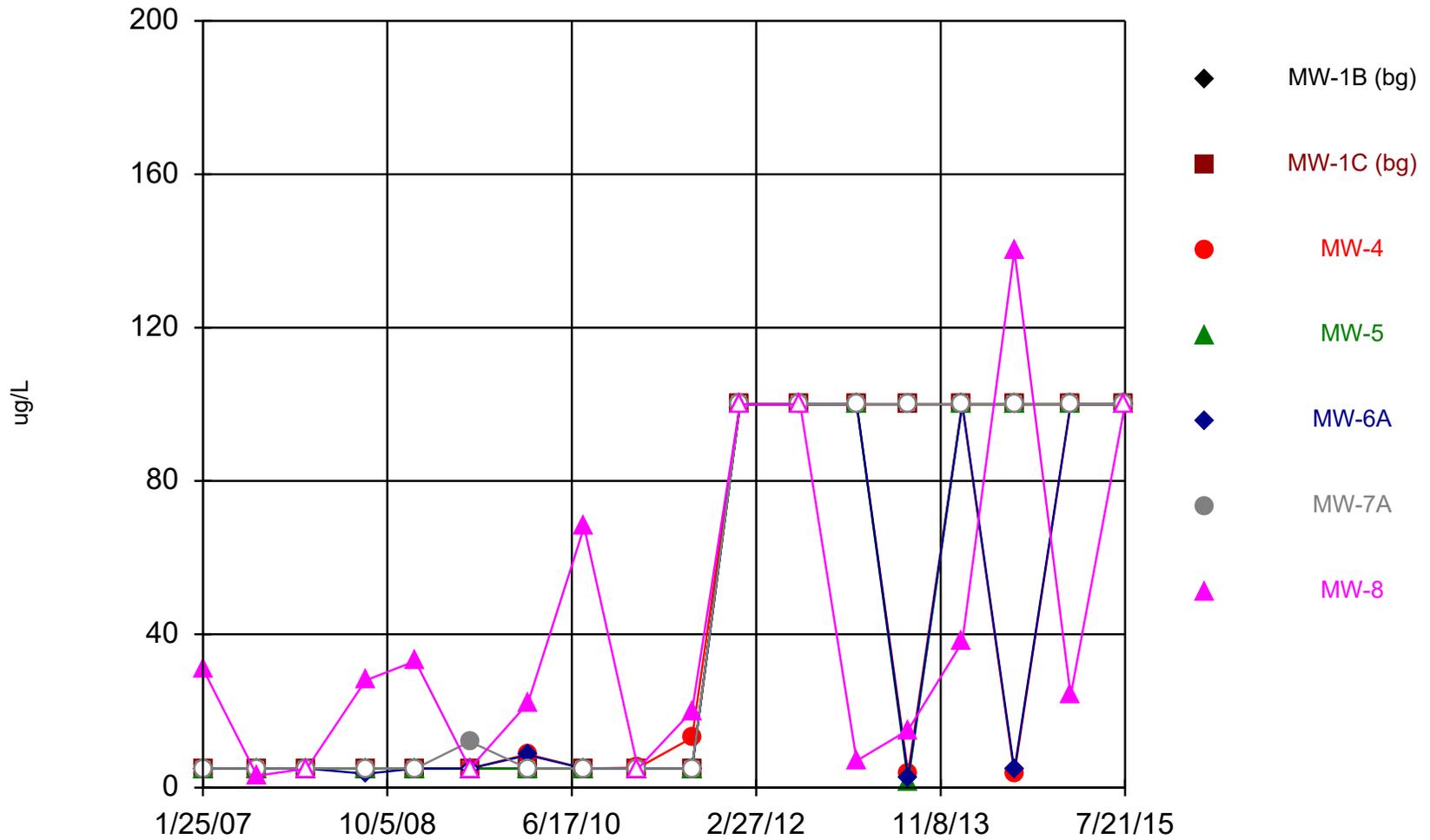
Time Series



Constituent: 14-Dichlorobenzene Analysis Run 8/24/2015 11:54 AM

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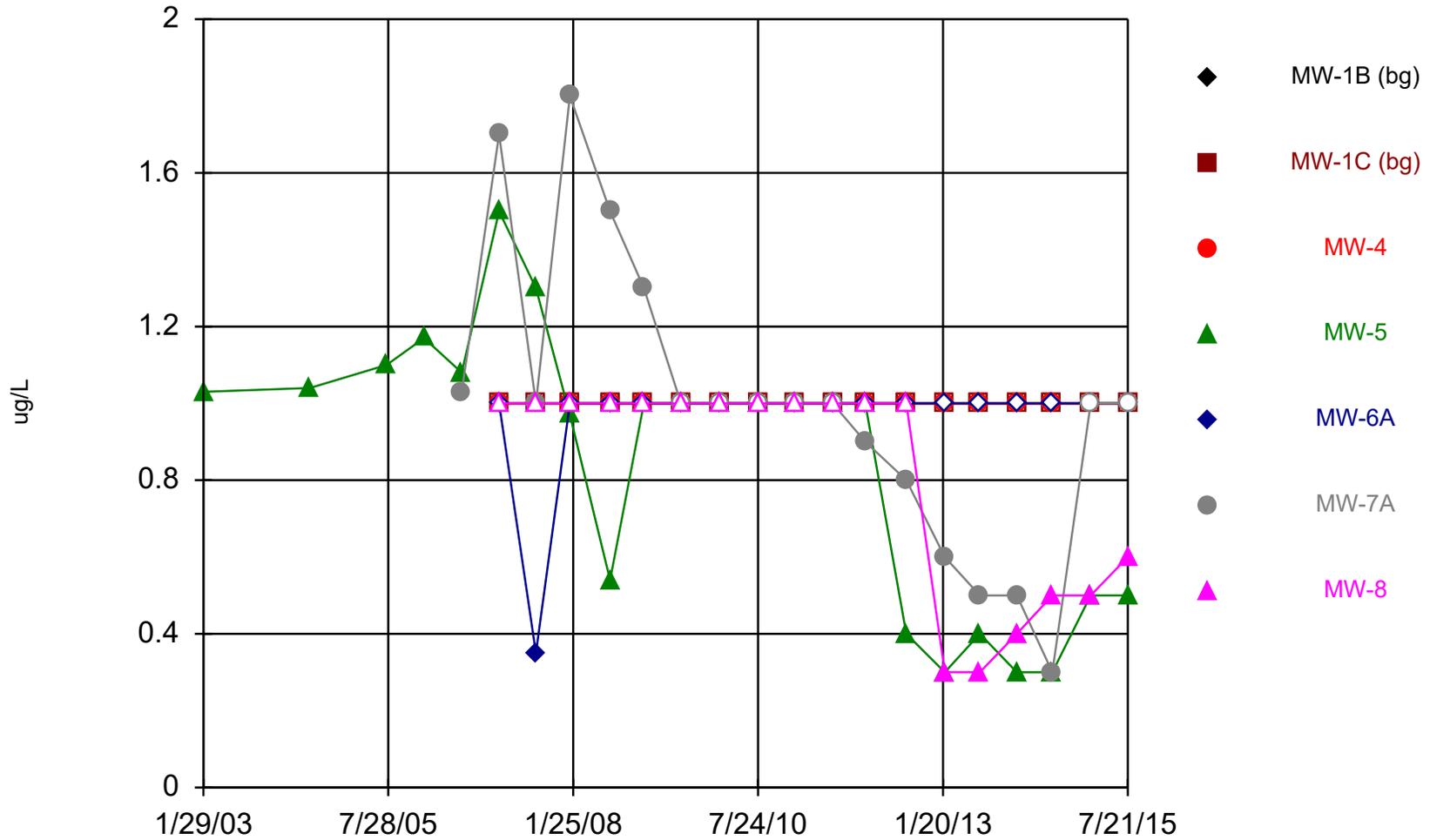
Time Series



Constituent: Acetone Analysis Run 8/24/2015 11:54 AM

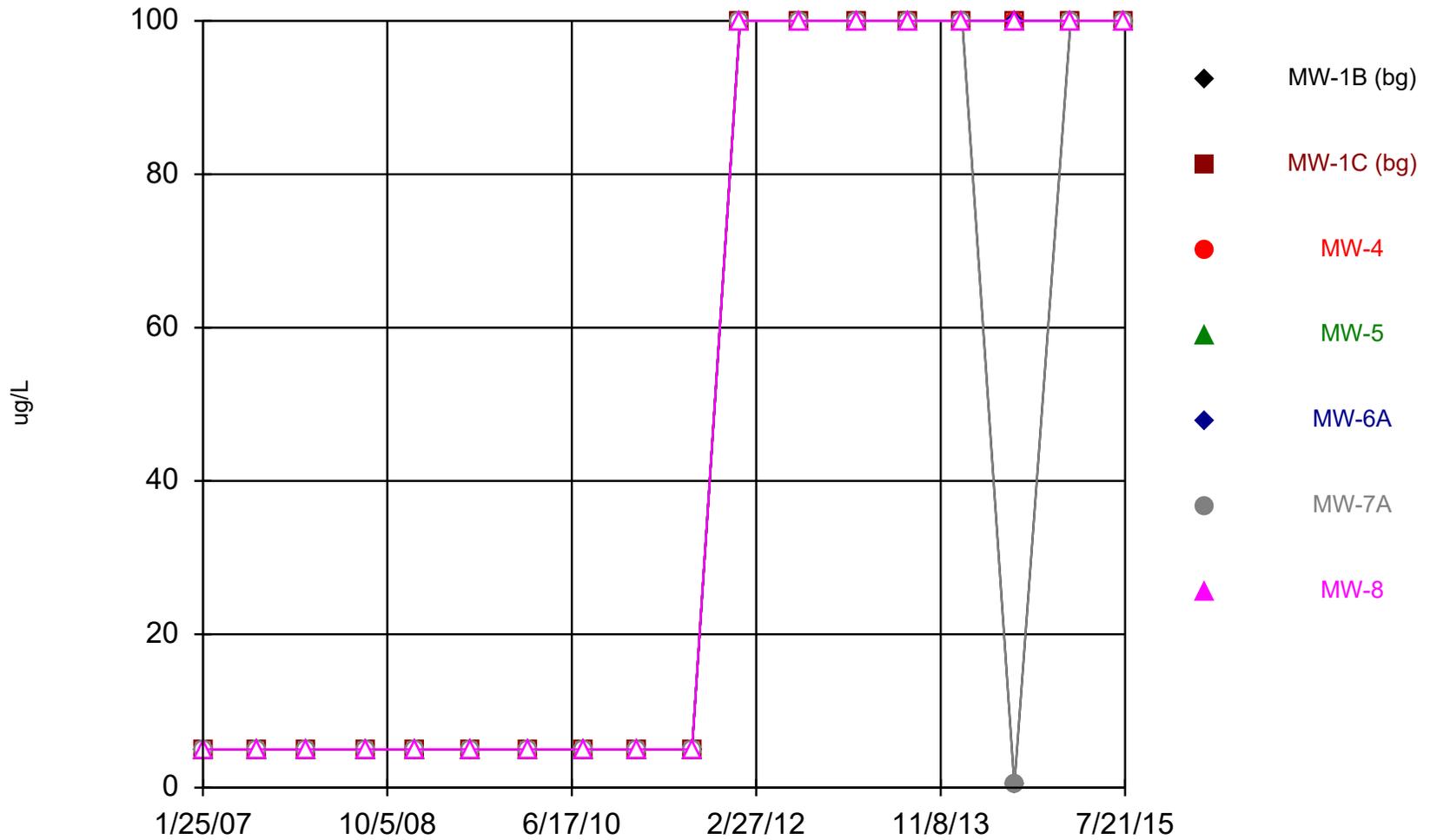
Ellis-Scott LF Client: RSI Data: JMN

Time Series



Constituent: Benzene Analysis Run 8/24/2015 11:54 AM
Ellis-Scott LF Client: RSI Data: JMN

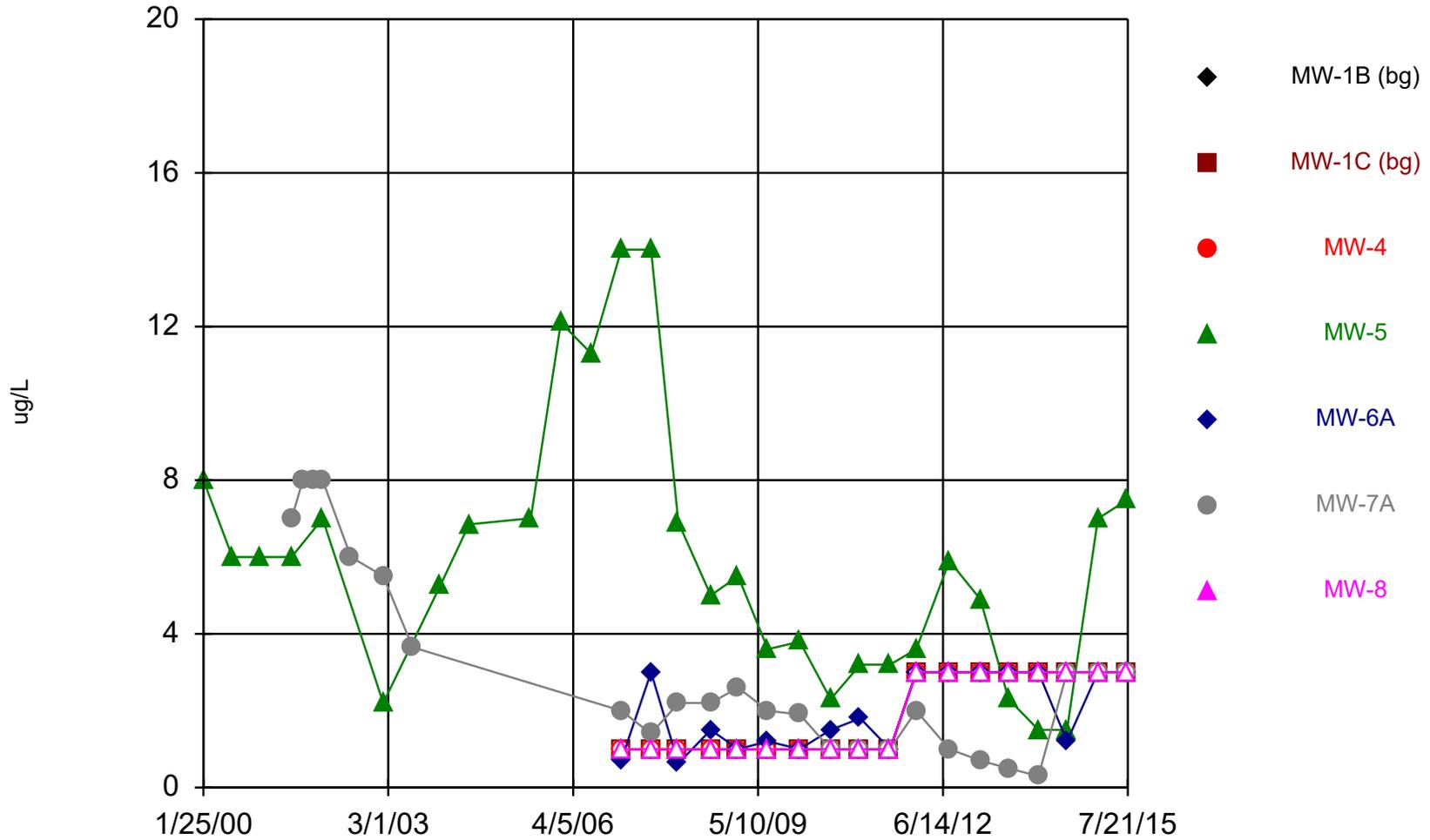
Time Series



Constituent: Carbon disulfide Analysis Run 8/24/2015 11:54 AM

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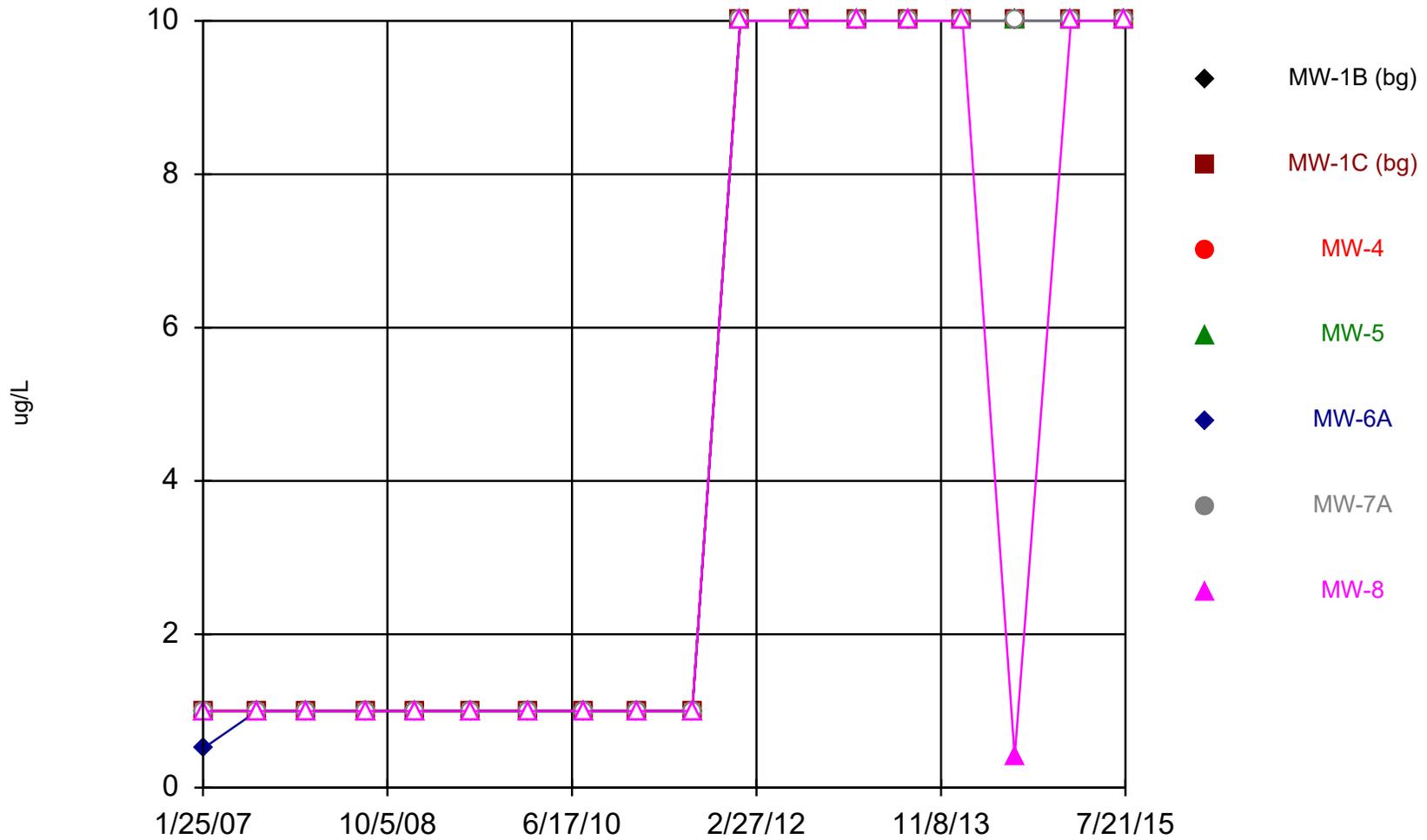
Time Series



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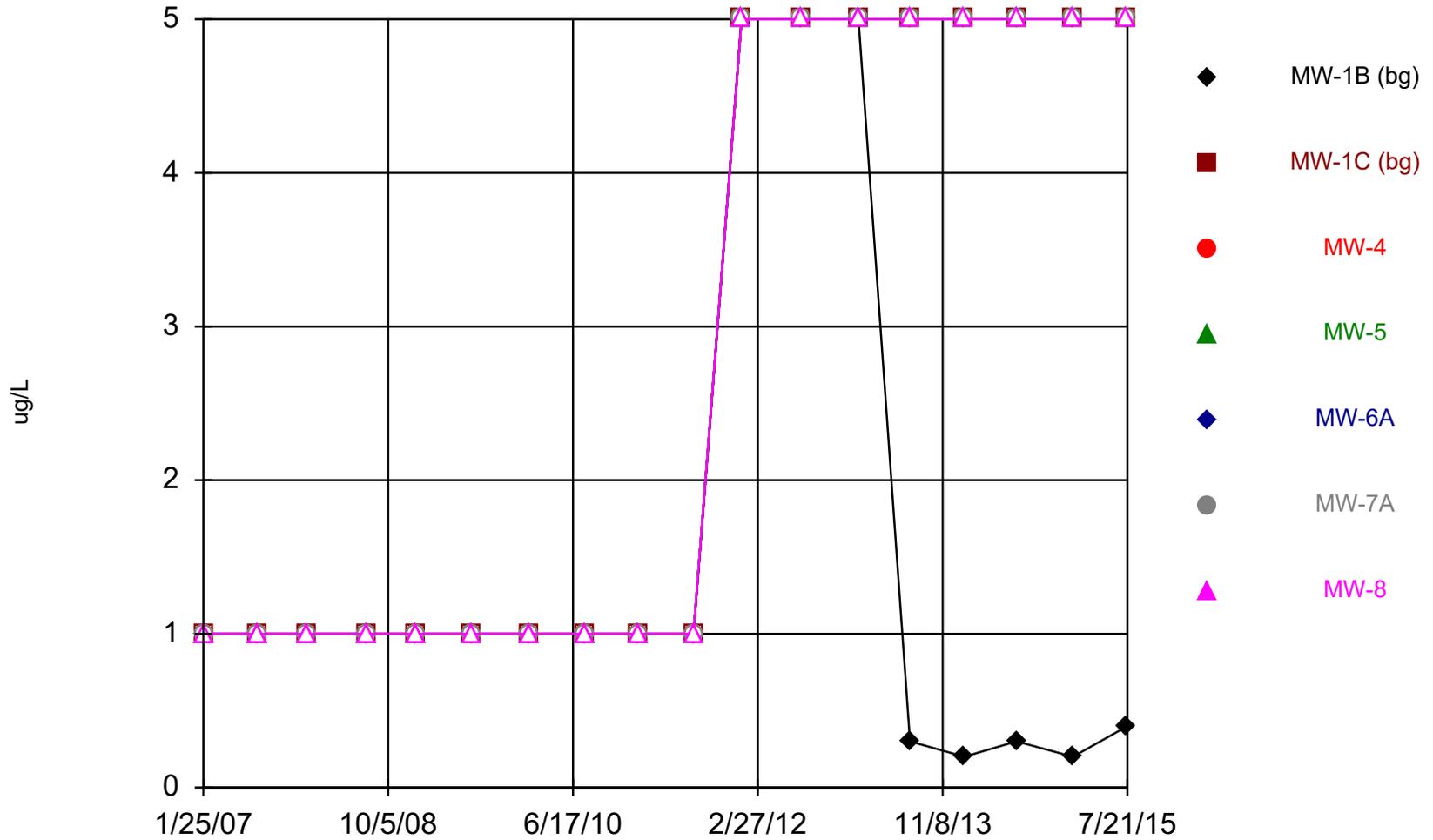
Time Series



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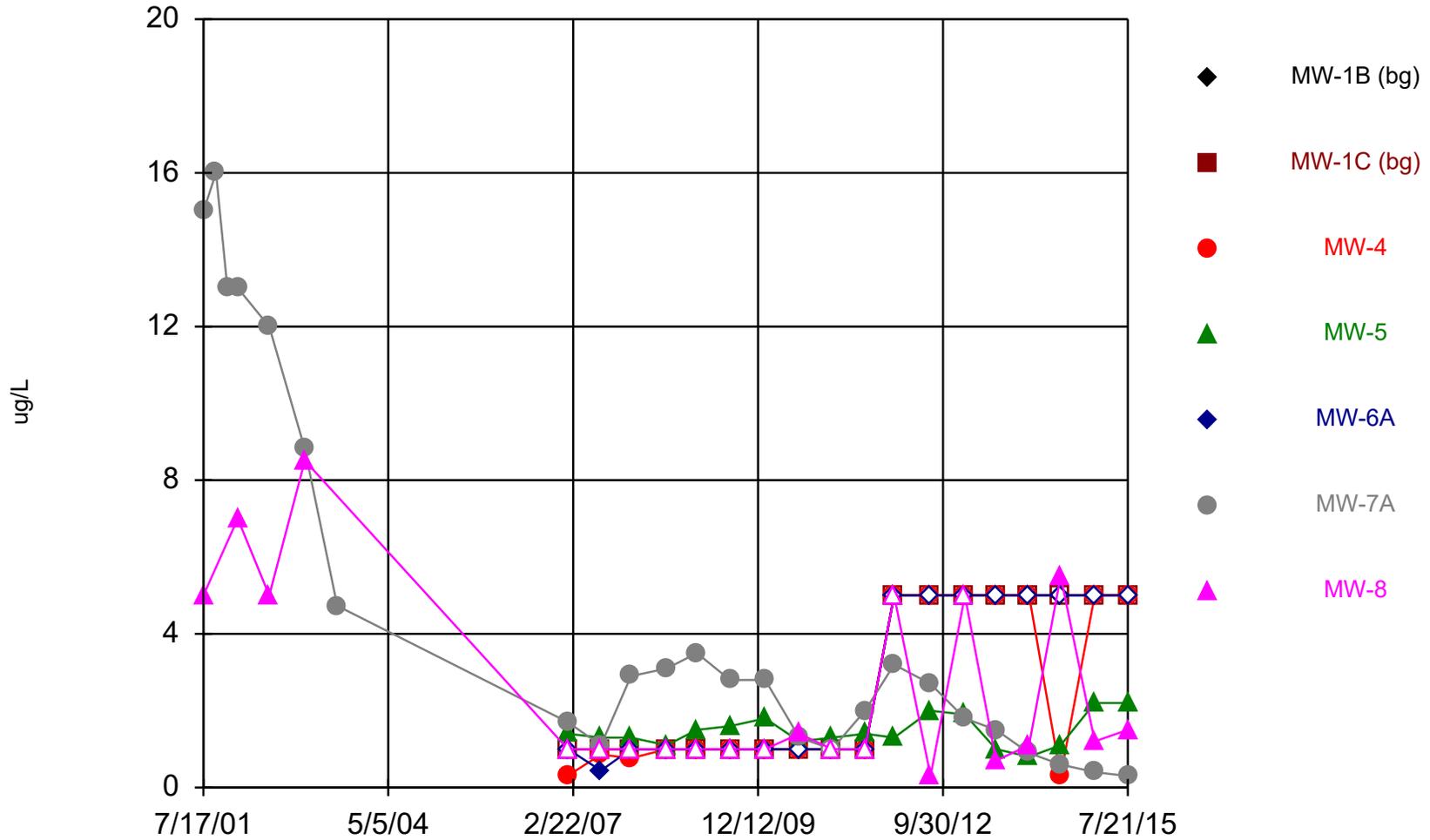
Ellis-Scott LF Client: RSI Data: JMN

Time Series



Constituent: Chloroform Analysis Run 8/24/2015 11:54 AM
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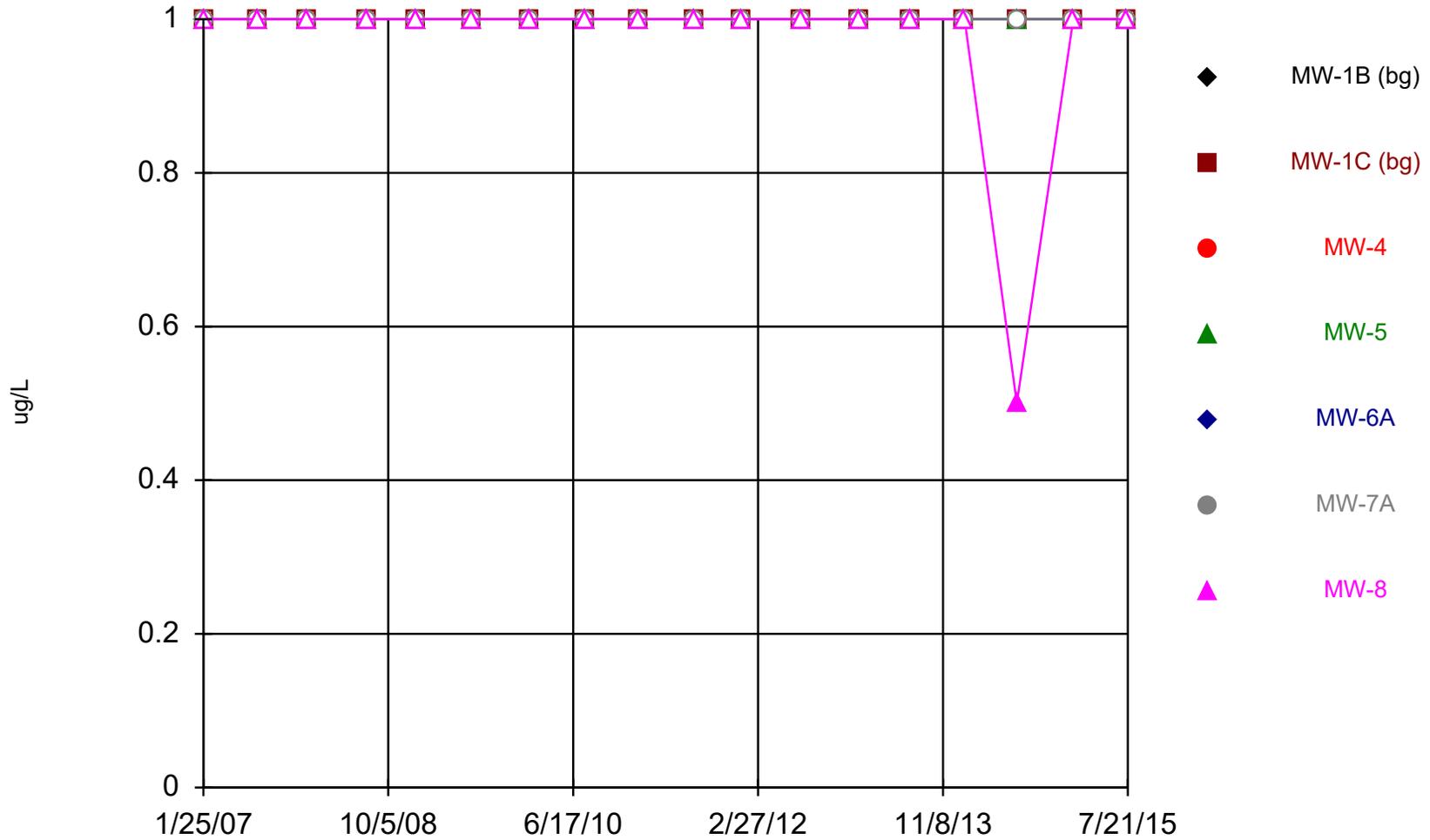
Time Series



Constituent: cis-12-Dichloroethylene Analysis Run 8/24/2015 11:54 AM

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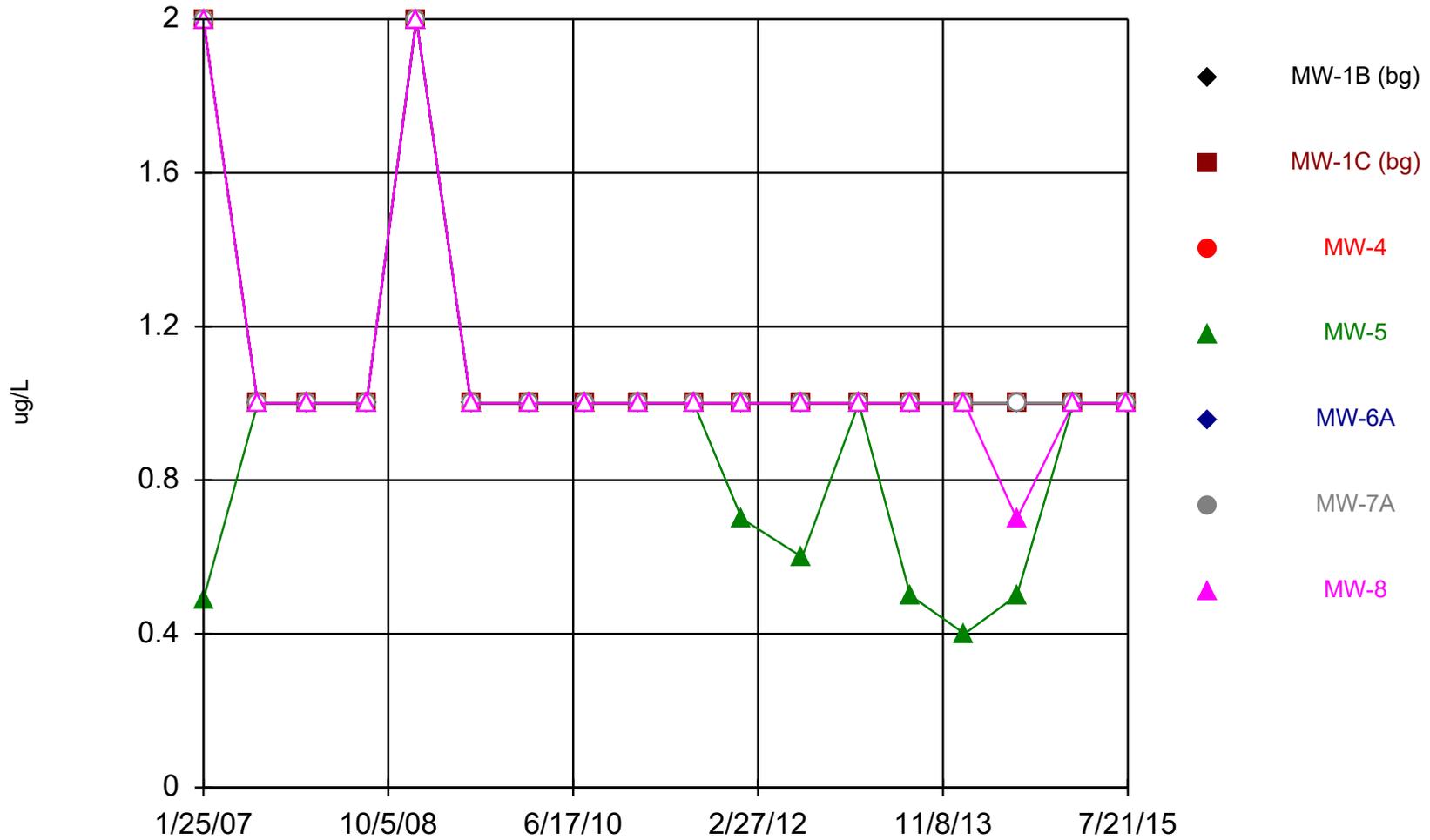
Time Series



Constituent: Ethylbenzene Analysis Run 8/24/2015 11:54 AM

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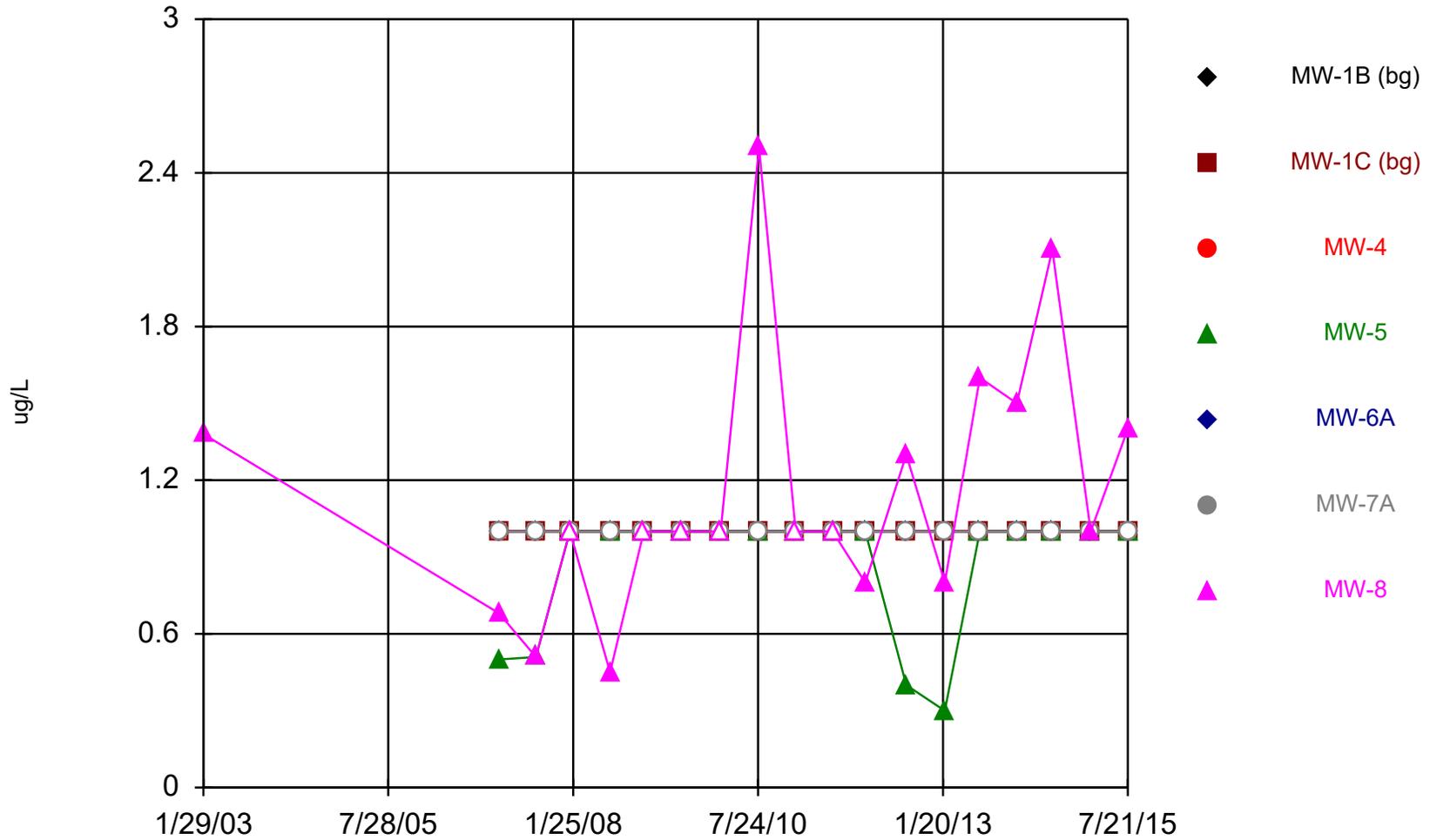
Time Series



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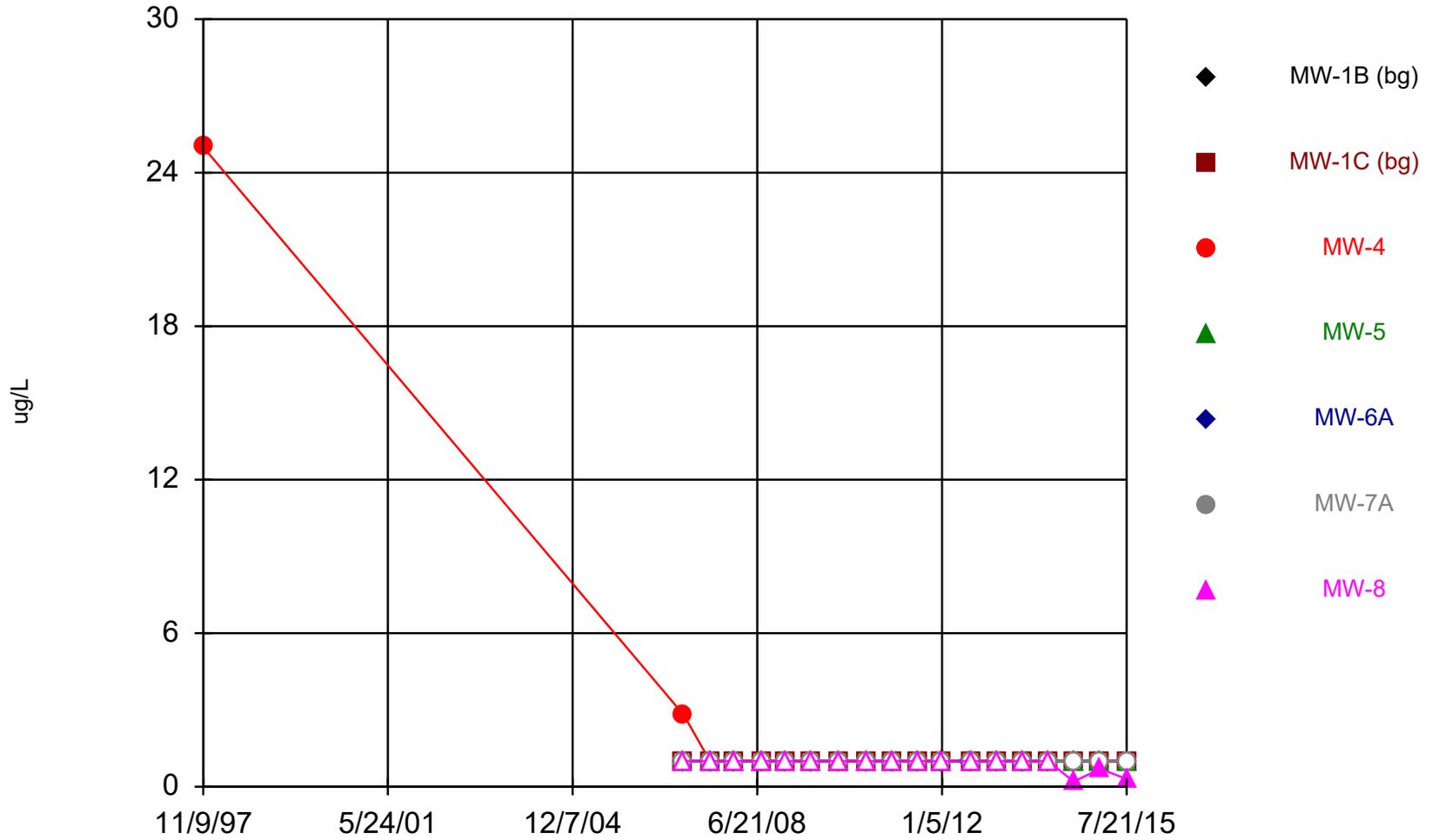
Time Series



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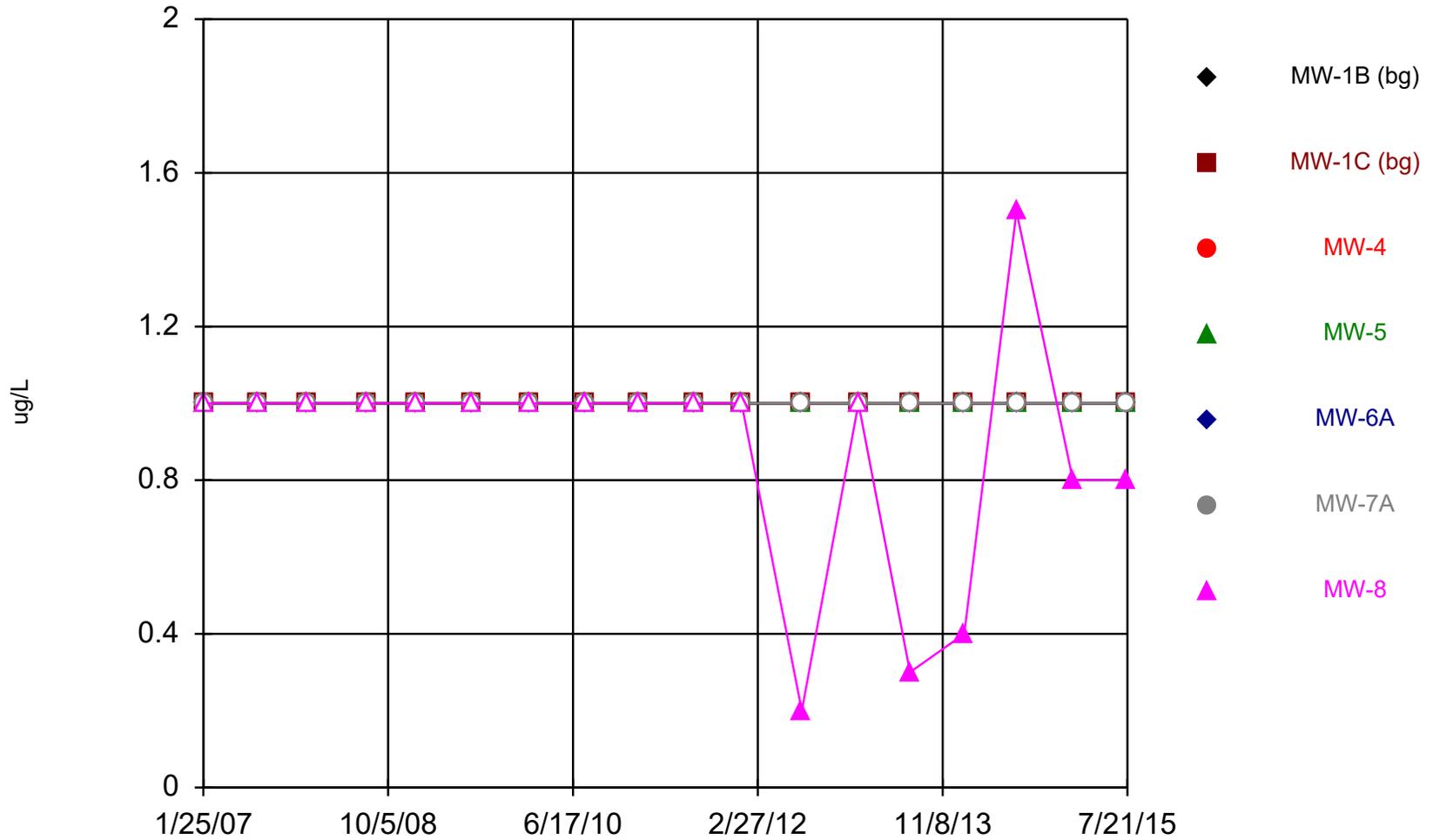
Time Series



Constituent: Toluene Analysis Run 8/24/2015 11:54 AM

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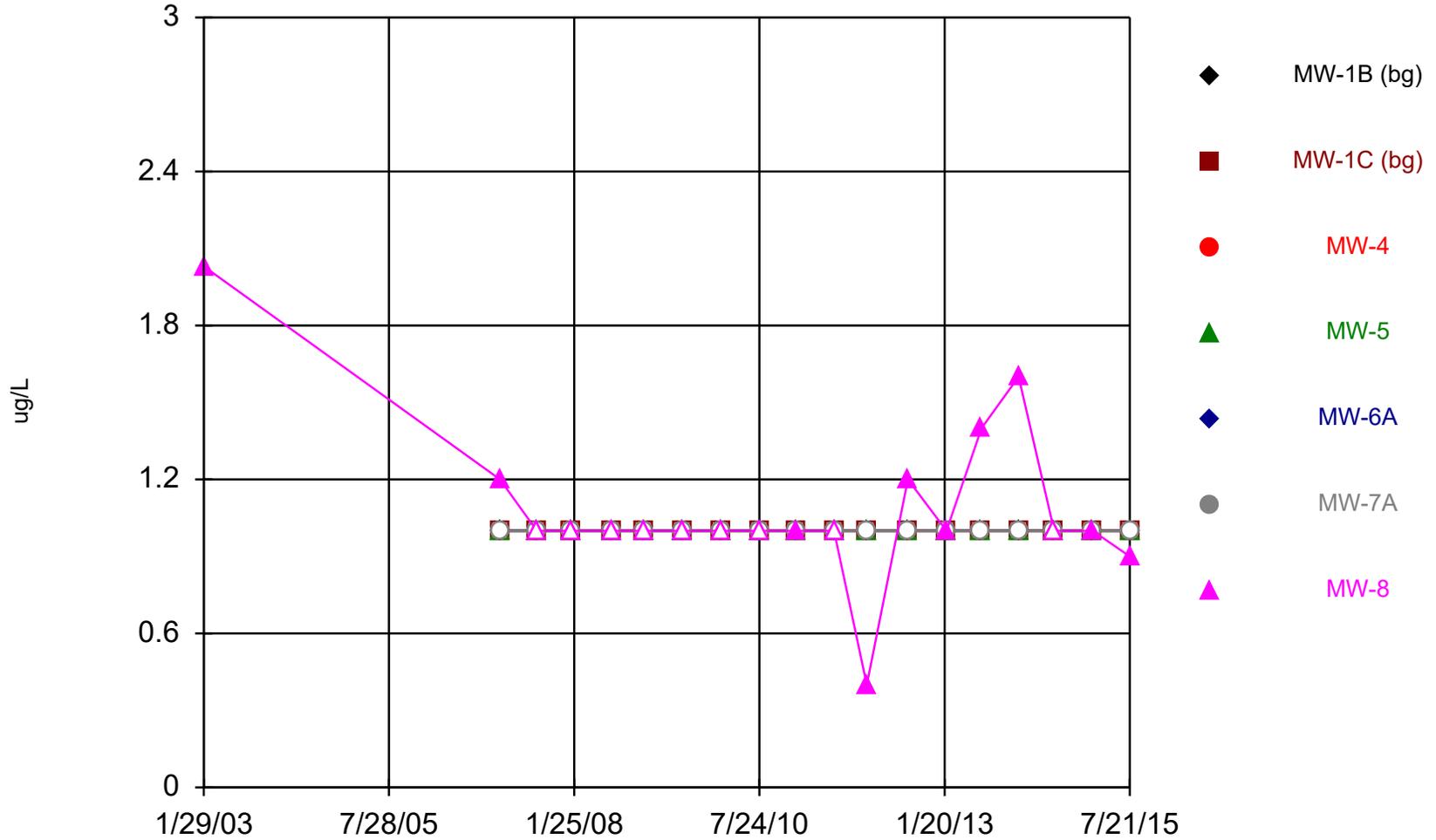
Time Series



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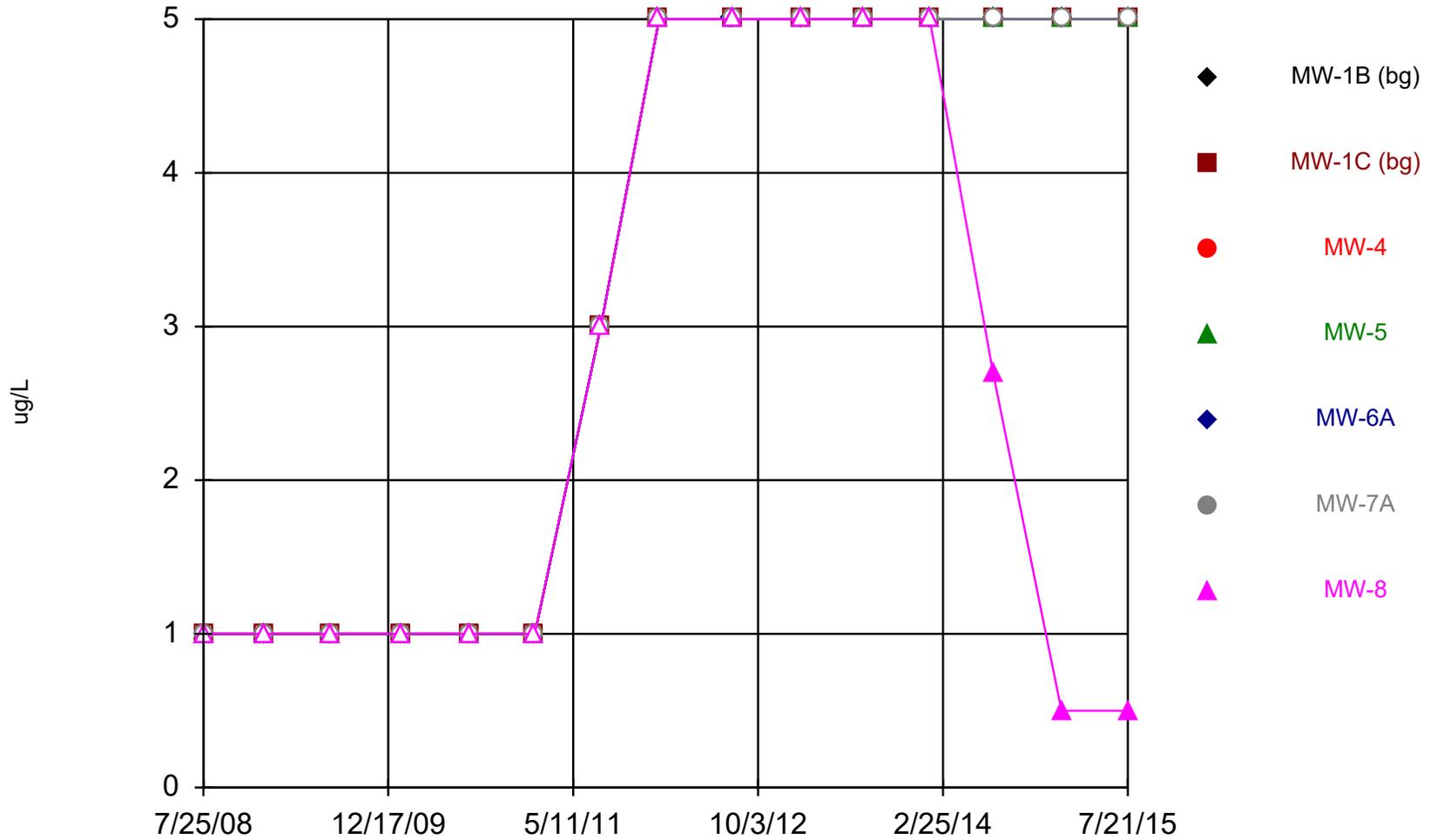
Time Series



Constituent: Vinyl chloride Analysis Run 8/24/2015 11:54 AM

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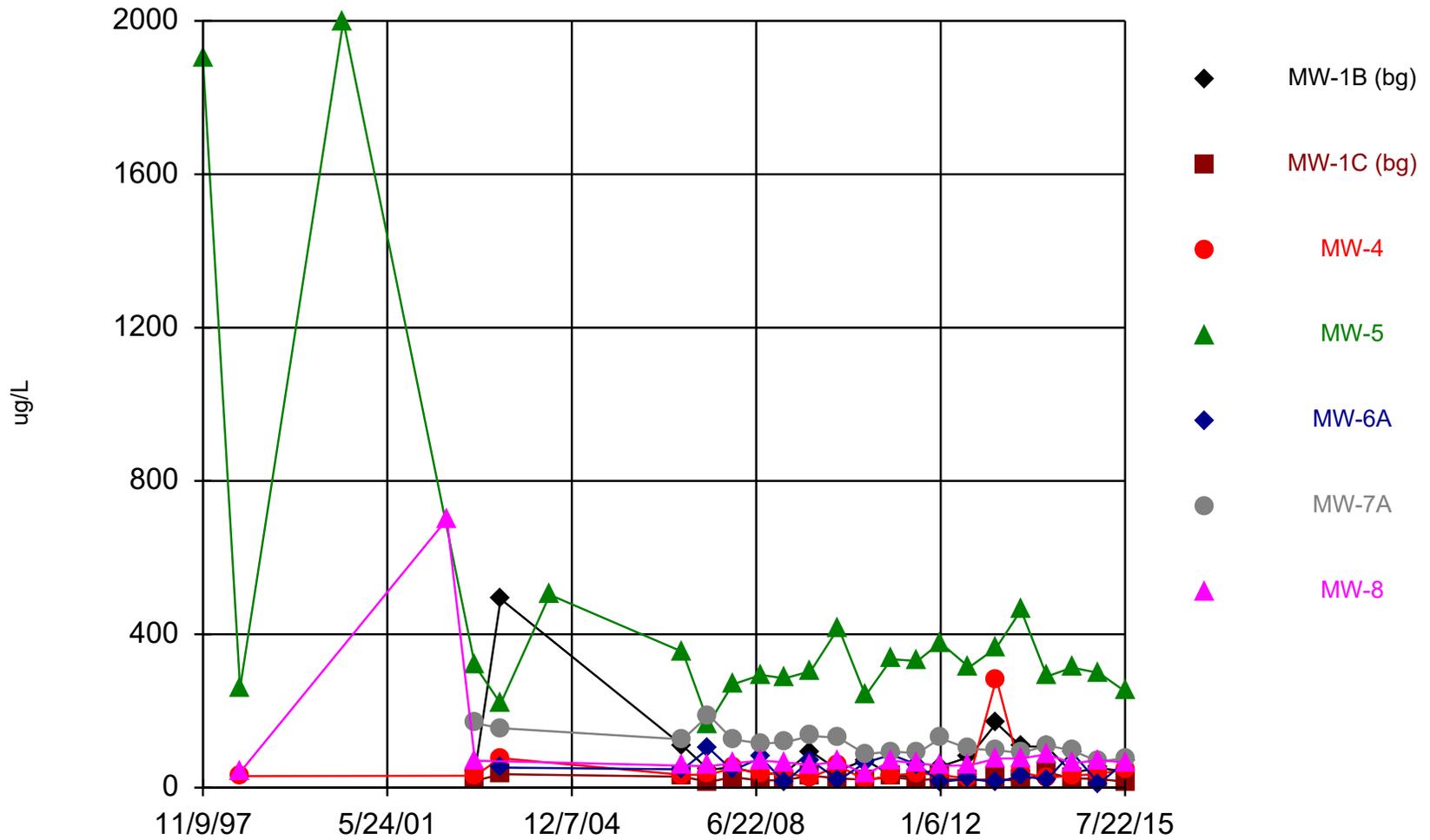
Time Series



Constituent: Xylenes [Total] Analysis Run 8/24/2015 11:54 AM

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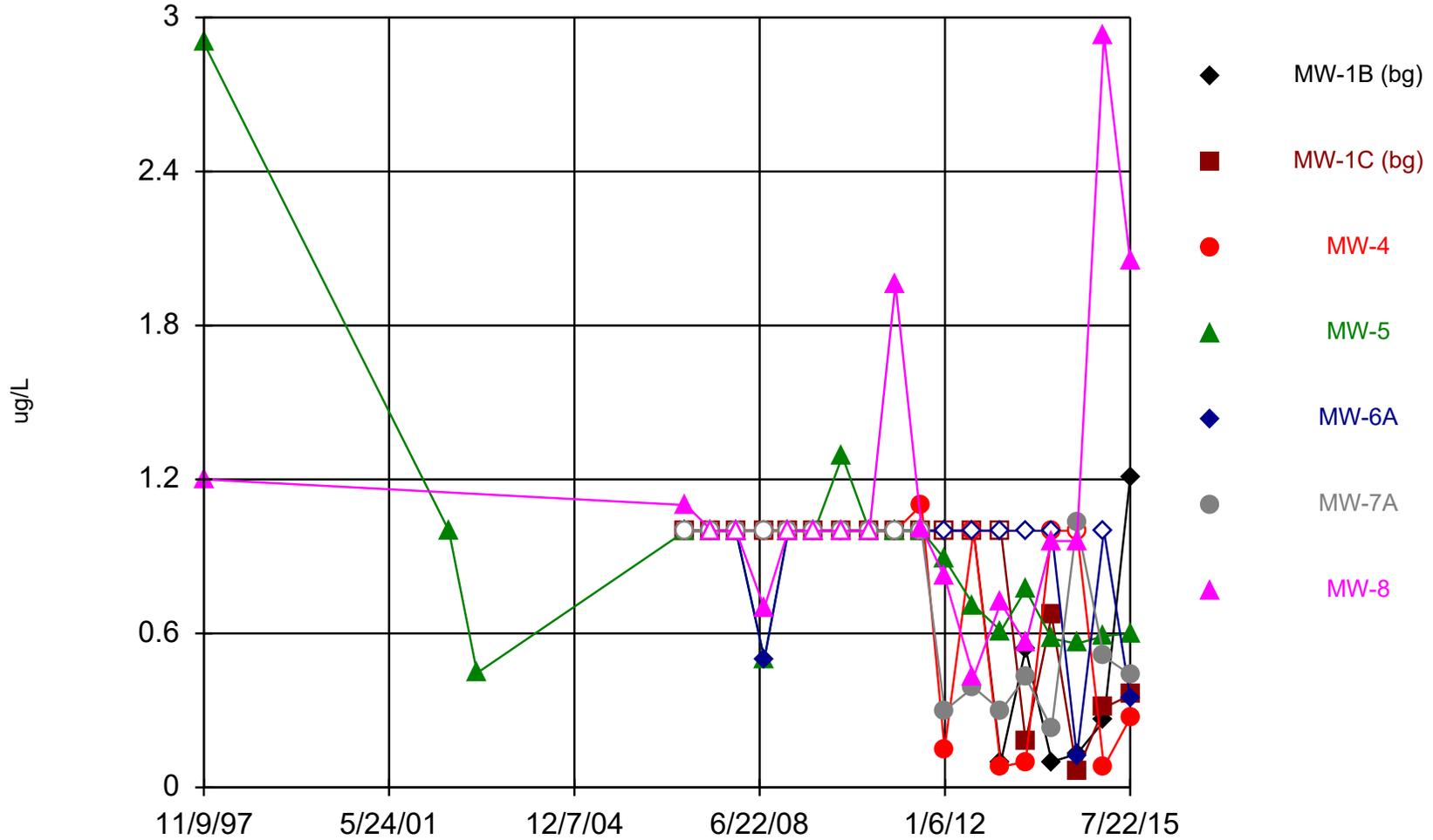
Time Series



Constituent: Barium Total Analysis Run 10/27/2015 3:50 PM

Ellis-Scott LF Client: RSI Data: JMN

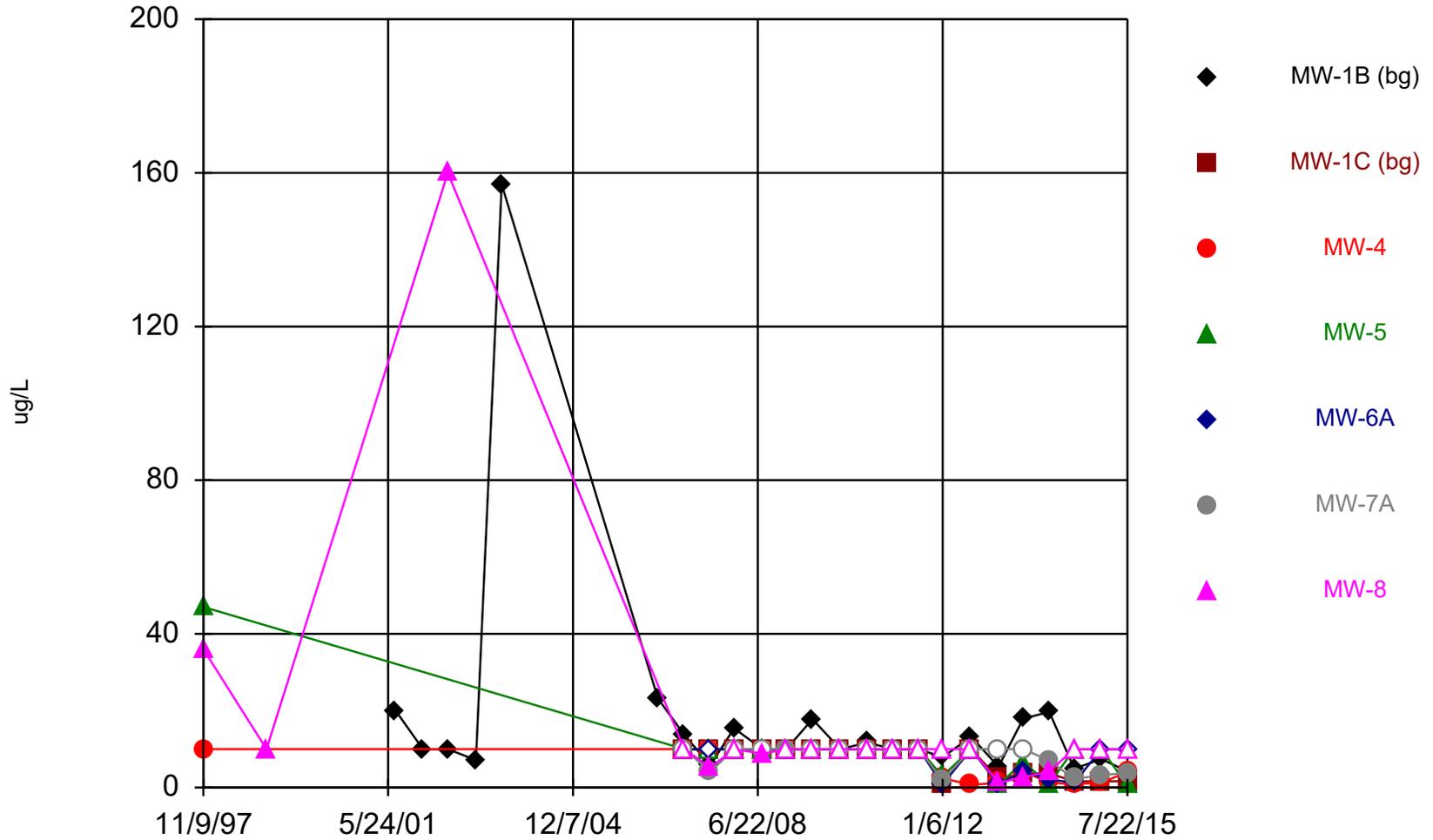
Time Series



Constituent: Cadmium Total Analysis Run 10/27/2015 3:50 PM

Ellis-Scott LF Client: RSI Data: JMN

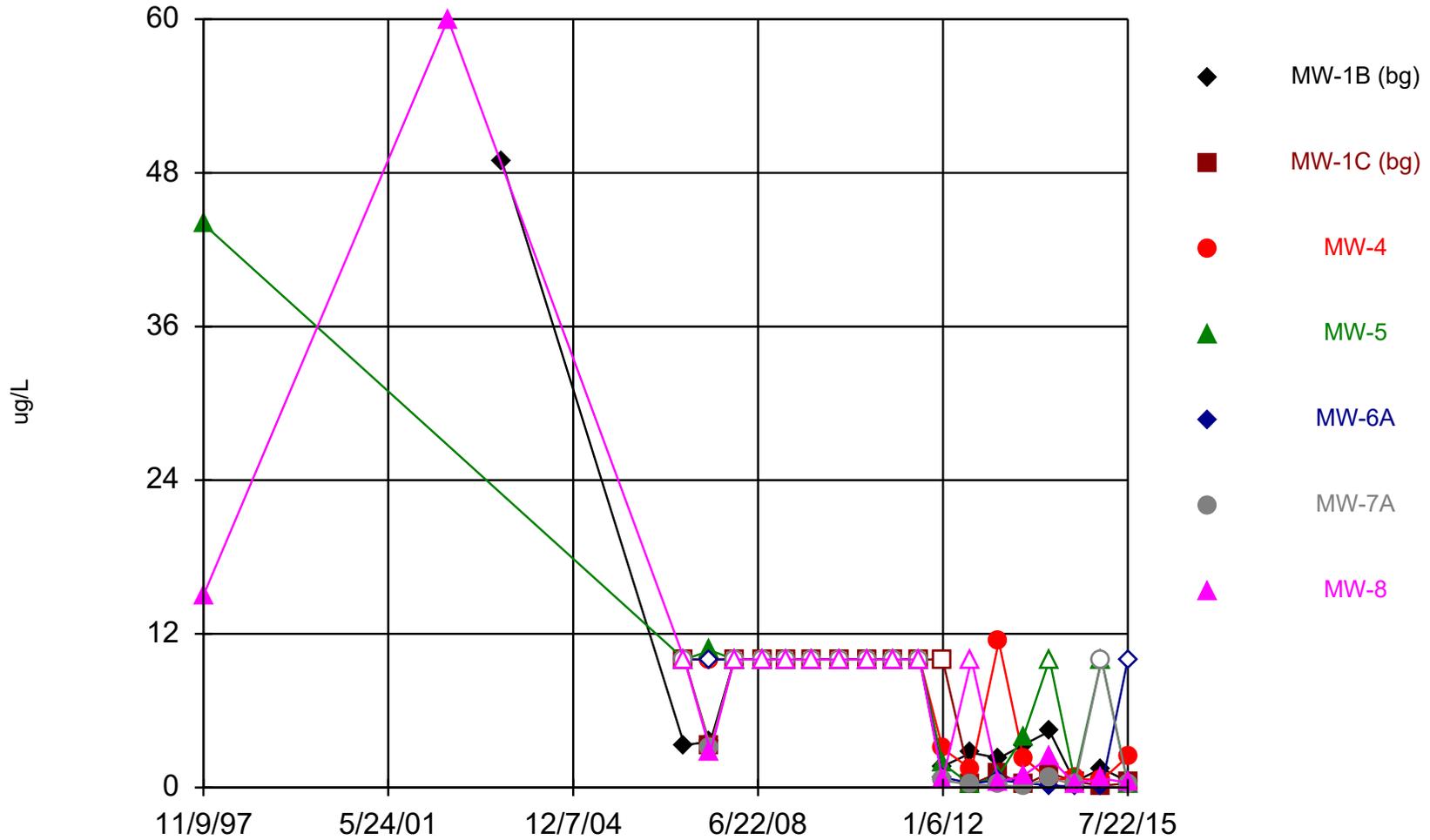
Time Series



Constituent: Chromium Total Analysis Run 10/27/2015 3:50 PM

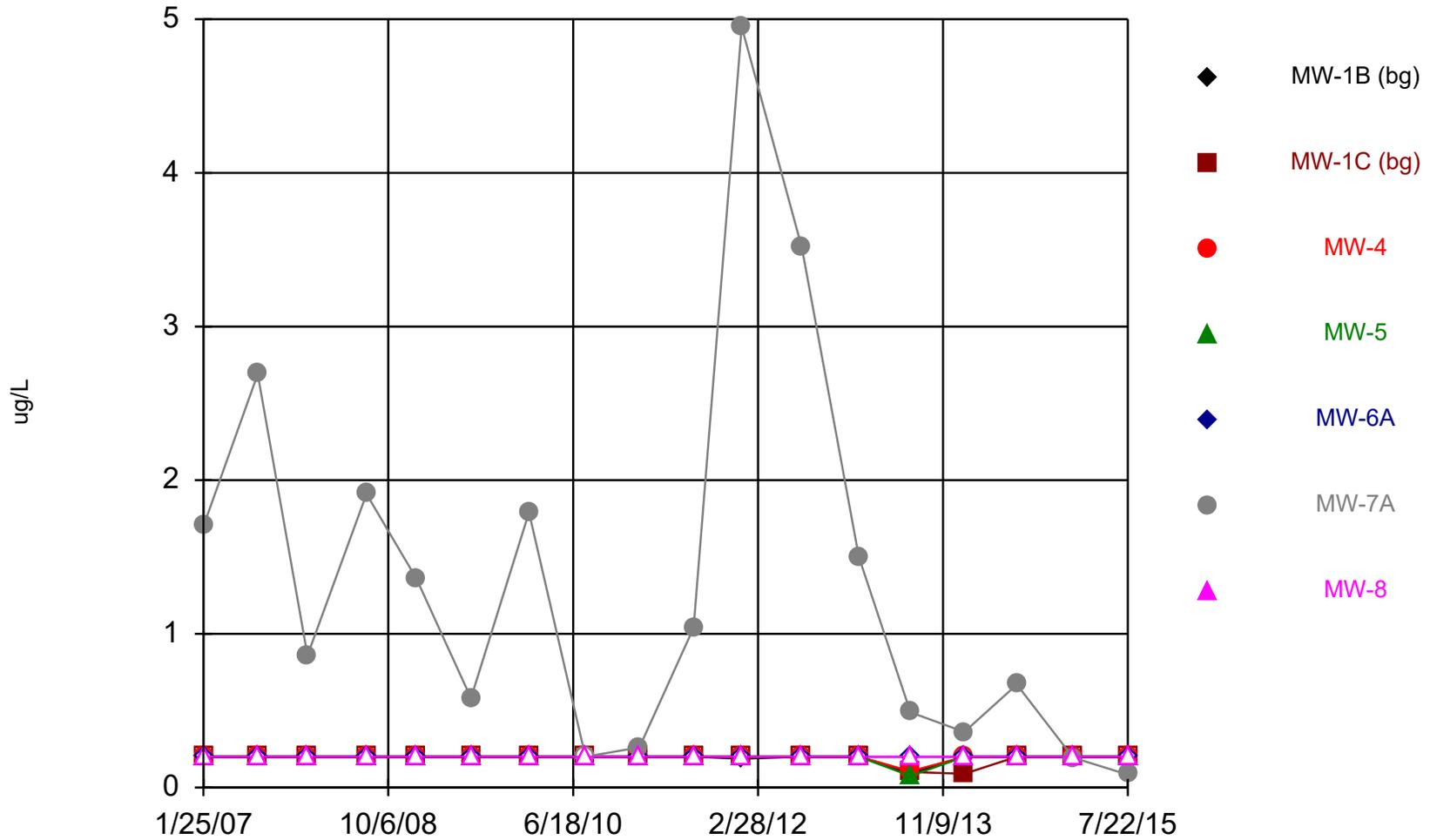
Ellis-Scott LF Client: RSI Data: JMN

Time Series



Constituent: Lead Total Analysis Run 10/27/2015 3:50 PM
Ellis-Scott LF Client: RSI Data: JMN

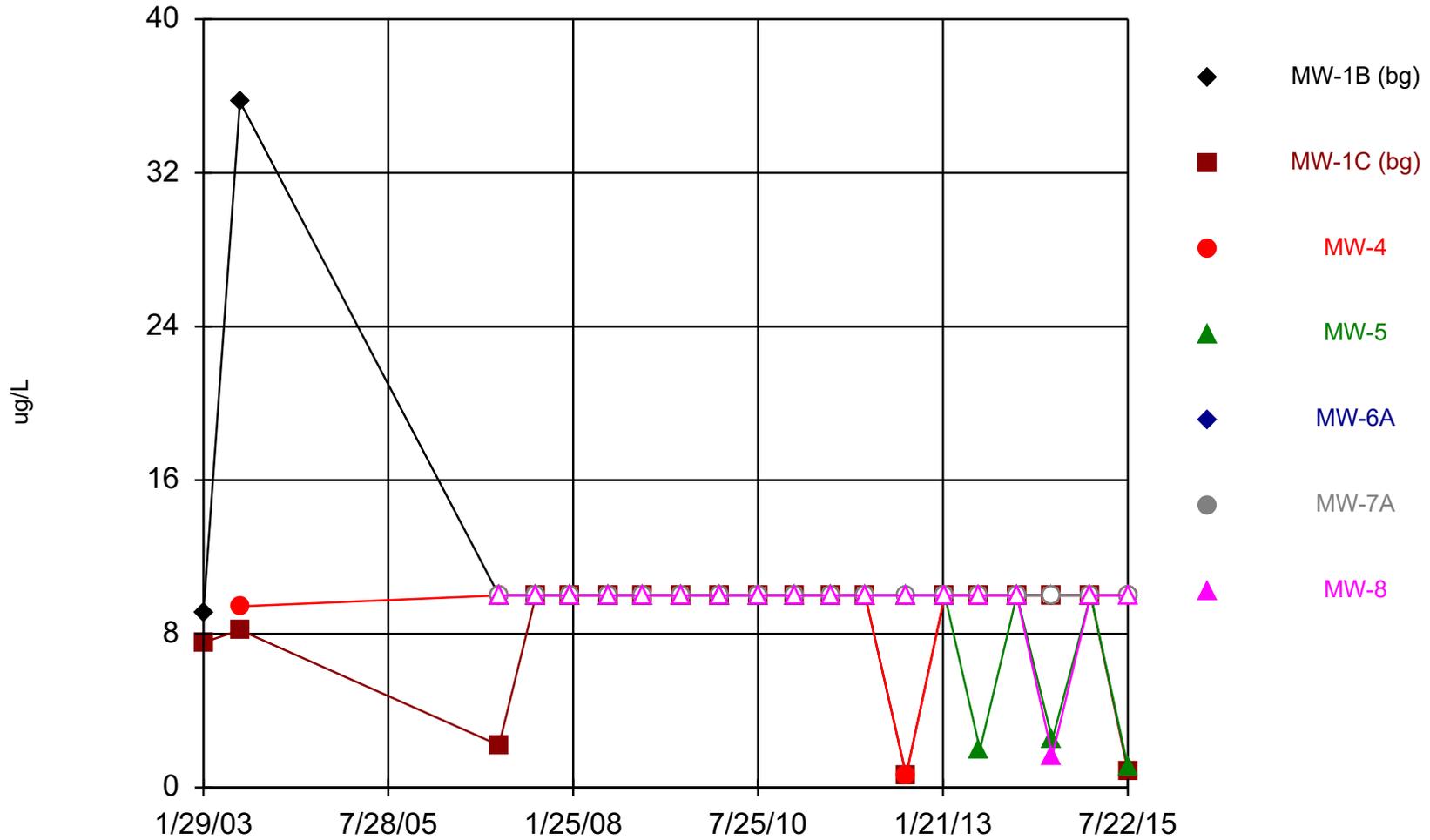
Time Series



Constituent: Mercury Total Analysis Run 10/27/2015 3:50 PM

Ellis-Scott LF Client: RSI Data: JMN

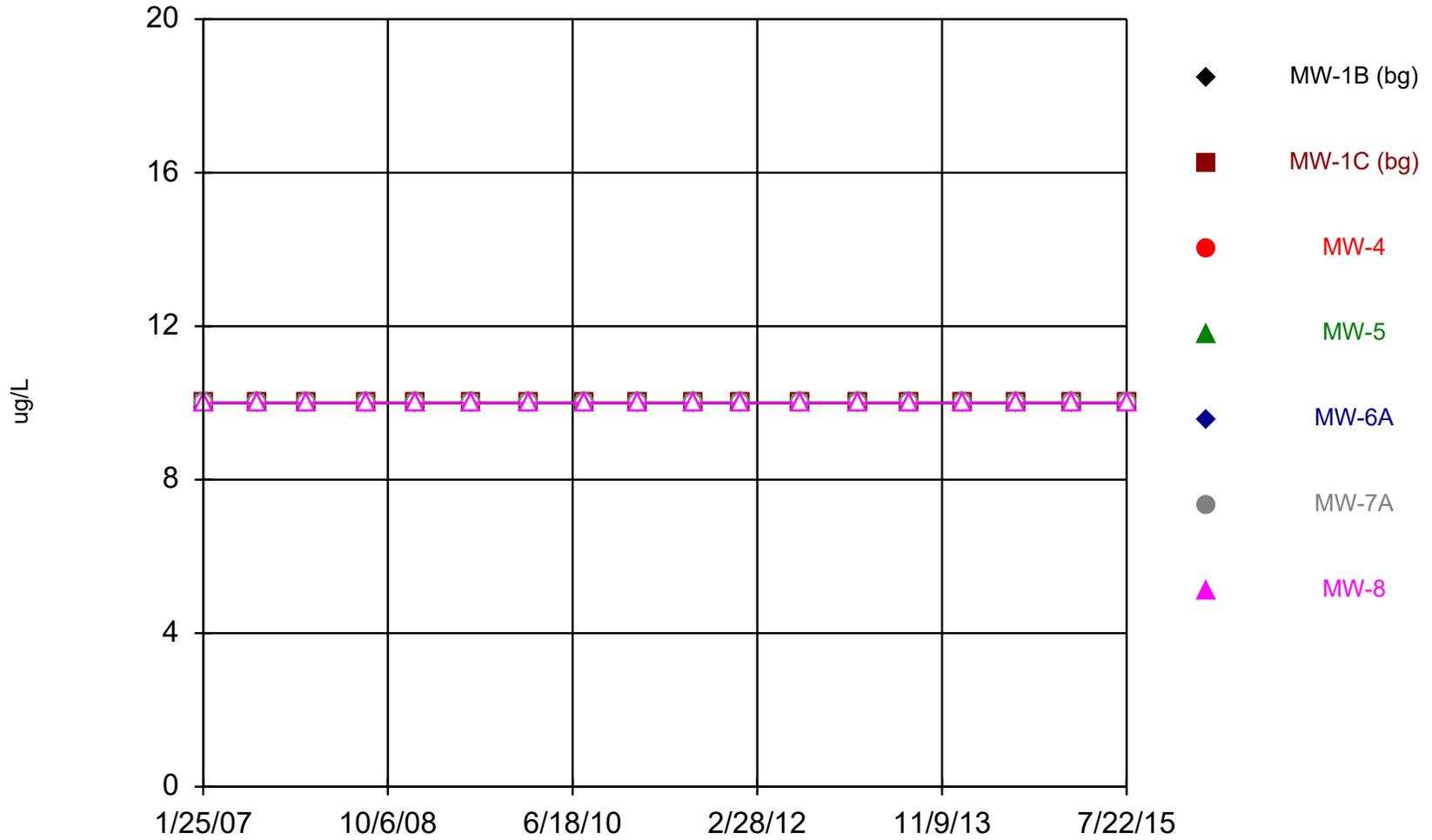
Time Series



Constituent: Selenium Total Analysis Run 10/27/2015 3:50 PM

Ellis-Scott LF Client: RSI Data: JMN

Time Series



Constituent: Silver Total Analysis Run 10/27/2015 3:50 PM
Ellis-Scott LF Client: RSI Data: JMN

**TABLE 1
SECOND SEMI-ANNUAL 2015 EVENT DATA COMPARED TO NC STANDARDS
JMN / CLEVELAND CONTAINER LANDFILL**

GROUNDWATER SAMPLES											
Constituent	Units	NC 2L Standard	MDL	SWSL	MW-1B	MW-1C	MW-4	MW-5	MW-6A	MW-7A	MW-8
Arsenic, Total	ug/L	10	0.75	10	<10.0	<10.0	J 1.51	<10.0	J 1.38	<10.0	J 2.28
Barium, Total	ug/L	700	0.3	100	J 41.9	J 15.1	J 47.8	251	J 67.3	J 77.1	J 65.7
Cadmium, Total	ug/L	2	0.1	1	1.21	J 0.36	J 0.27	J 0.6	J 0.35	J 0.44	2.05
Chromium, Total	ug/L	10	0.43	10	J 4.23	J 1.62	J 4.05	J 0.59	<10.0	J 3.84	<10.0
Lead, Total	ug/L	15	0.08	10	J 0.48	J 0.34	J 2.43	J 0.29	<10.0	J 0.22	J 0.39
Mercury, Total	ug/L	1	0.07	0.2	<0.200	<0.200	<0.200	<0.200	<0.200	J 0.084	<0.200
Selenium, Total	ug/L	20	0.85	10	<10.0	J 0.88	<10.0	J 1.09	<10.0	<10.0	<10.0
Silver, Total	ug/L	20	0.22	10	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0
Field - Dissolved Oxygen	mg/L	NE	NE	NE	0.9	3.71	2.29	4.23	1.44	3.66	0.58
Field - pH	pH Units	NE	NE	NE	5.69	6.37	6.3	5.24	6.08	5.28	4.79
Field - Specific Conductance	umhos/cm	NE	NE	NE	143	267	350	371	303	167	85
Field - Temperature	°C	NE	NE	NE	16.4	17.1	14.4	16	16.9	17.6	18.5
Field - Turbidity	NTU	NE	NE	NE	2.45	2.18	9.48	5.15	1.69	1.65	1.33
Constituent (ug/L)	Units	NC 2L Standard	MDL	SWSL	MW-1B	MW-1C	MW-4	MW-5	MW-6A	MW-7A	MW-8
1,2-Dichlorobenzene	ug/L	20	0.2	5	<5.0	<5.0	<5.0	7.7	<5.0	<5.0	<5.0
1,4-Dichlorobenzene	ug/L	6	0.3	1	<1.0	<1.0	<1.0	1.3	<1.0	<1.0	<1.0
Benzene	ug/L	1	0.2	1	<1.0	<1.0	<1.0	J 0.5	<1.0	<1.0	J 0.6
Chlorobenzene	ug/L	50	0.5	3	<3.0	<3.0	<3.0	7.5	<3.0	<3.0	<3.0
Chloroform	ug/L	70	0.2	5	J 0.4	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
cis-1,2-Dichloroethylene	ug/L	70	0.3	5	<5.0	<5.0	<5.0	J 2.2	<5.0	J 0.3	J 1.5
Tetrachloroethylene	ug/L	0.7	0.3	1	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	1.4
Toluene	ug/L	600	0.2	1	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	J 0.3
Trichloroethylene	ug/L	3	0.4	1	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	J 0.8
Vinyl Chloride	ug/L	0.03	0.4	1	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	J 0.9
Xylenes (Total)	ug/L	500	0.2	5	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	J 0.5
SURFACE WATER SAMPLES											
Constituent	Units	NC 2B Standard	MDL	SWSL	SW-3	SW-4					
Arsenic, Total	ug/L	10	0.75	10	Dry	Dry					
Barium, Total	ug/L	1000	0.3	100	Dry	Dry					
Cadmium, Total	ug/L	2	0.1	1	Dry	Dry					
Chromium, Total	ug/L	20	0.43	10	Dry	Dry					
Lead, Total	ug/L	25	0.08	10	Dry	Dry					
Mercury, Total	ug/L	0.012	0.07	0.2	Dry	Dry					
Selenium, Total	ug/L	5	0.85	10	Dry	Dry					
Silver, Total	ug/L	0.06	0.22	10	Dry	Dry					
Field - Dissolved Oxygen	mg/L	NE	NE	NE	Dry	Dry					
Field - pH	pH Units	NE	NE	NE	Dry	Dry					
Field - Specific Conductance	umhos/cm	NE	NE	NE	Dry	Dry					
Field - Temperature	°C	NE	NE	NE	Dry	Dry					
Field - Turbidity	NTU	NE	NE	NE	Dry	Dry					

NE: Denotes a NC 2L or NC 2B Standard is not established.

Only the VOCs detected during this event are displayed on the table.

J: Denotes Sample result above the MDL but below the SWSL; estimated value; value may not be accurate.

Denotes result above an SWSL and above an NC 2L or NC 2B Standard: