Groundwater & Environmental Services, Inc.

MARYLAND OFFICE

October 1, 2018

Ms. Ellen Jackson
Oil Control Program
Maryland Department of the Environment
1800 Washington Blvd.
Baltimore, Maryland 21230

RE: **POST-REMEDIATION EVALUATION REPORT**
Former Citgo/ Carroll Wally's
19200 Middletown Road
Parkton, Maryland
OCP Case #2006-0319-BA

Dear Ms. Jackson,

Groundwater & Environmental Services, Inc. (GES), on behalf of Carroll Independent Fuel Co. (Carroll), respectfully submits this *Post-Remediation Evaluation Report* for the abovementioned facility (Site). This report also contains updated System Restart Criteria Summary tables for benzene and methyl tert-butyl ether (MTBE) related to the Third Quarter 2018 (3Q2018) monitoring event conducted at the Site from August 20-24, 2018.

Several key observations and conclusions presented in the attached *Post-Remediation Evaluation Report* are as follows:

- No assigned system restart criteria for benzene or MTBE were exceeded for the 3Q2018 monitoring event. It is concluded that the Wally's groundwater system has stabilized since the deactivation of the Wally's groundwater pump and treat (P&T) remediation system in November 2016 and that no significant constituent "rebound" conditions, which could affect surrounding potable well water quality, are expected to occur in the future.

- Review of Mann-Kendall statistical analyses for benzene and MTBE indicate no increasing trends for either constituent within the Wally's monitoring network for data collected since the Wally's P&T system shutdown event occurring November 2016.

- Onsite monitoring well MW-5, which has demonstrated historically variable concentrations of benzene and MTBE, appears to be locally isolated and gradually reducing in CoC concentration over time. Well MW-5 does not appear a significant source to adjacent monitoring wells and offsite potable wells.

- Review of isocontour plots of MTBE concentration in monitoring and potable wells comprising the Wally's network, from 2005 to present (3Q2018), indicate a significant reduction in MTBE "footprint" which has continued to reduce after the November 2016 P&T remediation system shutdown event.

Based on the observations and conclusions presented in the attached report, GES, on behalf of Carroll, proposes significant modifications to the current Wally's monitoring program which includes:

- the removal of 24 monitoring wells from the monitoring well network including MW-5B, 7B, 8A, 8B, 9A, 9B, 10B, 11A, 12B, 13A, 13B, 14A, 16A, 17A, 18A, 19A, 19B, 20B, 21, 23, 24B, 25B, 1608R and RW-3,
- the removal of two (2) former recover wells RW-1 and RW-2,
- quarterly monitoring for ten (10) wells including MW-4, 5, 7A, 11B, 15, 16B, 17B, 18B, 22 and RW-4,
- annual monitoring for seven (7) wells including MW-1, 2, 3, 6, 10A, 14B and 20A,
- the removal of nine (9) potable wells from the monitoring program including 1614, 1616, 1620, 1624 and 1717 Rayville and 19119, 19124, 19201 and 19222 Middletown Road,
- the removal of Carroll from maintenance responsibility for the 1612 Rayville Road POET system (to remain quarterly influent sampling only); and
- the transition to low-flow sampling procedures for all remaining wells in the Wally's monitoring program.

In addition, GES requests permission to start decommission activities for the inactive Wally's P&T groundwater remediation system which currently occupies the Wally's site but includes infrastructure which extends to offsite properties including 1606 and 1608 Rayville Road.

GES appreciates the MDE's time to review the *Post-Remediation Evaluation Report* and the Department's consideration of the significant modifications to the Wally's monitoring program presented herein. If you have further questions or require any additional information, please contact the undersigned at 800-220-3606, extension 3726, or Herb Meade at 410-261-5450.

Sincerely,

Peter Reichardt
Project Manager

Enclosure

c: Ellen Jackson – MDE (3 additional hard copies & CDs)
Kevin Koepenick – Baltimore County DEPS (CD)
Herb Meade – Carroll Independent Fuel (e-copy)
Jerry Phillips – 19200 Middletown Road (CD)
File – GES-MD (PSID # 715790)

Carroll Independent Fuels Co.

Post-Remediation Evaluation Report

Former Citgo / Carroll Wally's
19200 Middletown Rd., Parkton, Baltimore Co., MD 21120

October 1, 2018

Post Remediation Evaluation Report

Former Citgo/ Carroll Wally's
19200 Middletown Rd.
Parkton, Baltimore Co., Maryland 21120

Prepared for:
Carroll Independent Fuel Co.
2700 Loch Raven Blvd.
Baltimore, MD 21228

Maryland Department of the Environment
-Oil Control Program
1800 Washington Blvd.
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MDE Case No.
2006-0319-BA

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Date:
October 1, 2018

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Acronyms

3Q2018	Third Quarter 2018
CoC	Constituent-of-Concern
GES	Groundwater & Environmental Services, Inc.
GWSDAT	Groundwater Spatio-Temporal Data Analysis Tool
HRGWUA	High Risk Groundwater Use Area
MDE	Maryland Department of the Environment
MTBE	Methyl tert-butyl ether
P&T	Pump and Treat
µg/L	micrograms per liter

1 Executive Summary

Since the shutdown of the Wally's pump and treat (P&T) groundwater remediation system on November 2, 2016, seven (7) comprehensive monitoring and potable sampling events have been completed, which has established a significant analytical dataset to evaluate the post–remedial water quality conditions occurring within the Wally's study area.

Review of the post-remedial analytical dataset for the Site, including data recently finalized for the Third Quarter 2018 (3Q2018) monitoring event indicate that the "rebound" of target constituents-of-concern (CoCs), including methyl tert-butyl ether (MTBE) and benzene in groundwater, has been relatively muted since the shutdown of the Wally's P&T system. In addition, the groundwater regime within the Wally's study area appears stabilized with ongoing reductions to CoCs. This observation of stable and reducing CoC analytical trends is support by Mann-Kendall statistical analyses performed for all monitoring, former recovery and potables wells that had detectable concentrations of benzene and methyl tert-butyl ether since the shutdown of the Wally's P&T system on November 2, 2016. (Wells with a history of non-detect CoC values were not evaluated via Mann-Kendall.)

In addition, a time-series isocontour plot of MTBE concentrations for all monitoring and potable wells, from a period of 2005 to 2018, is included with this report. These time-series plots demonstrate that the historical MTBE plume footprint associated to the Wally's case has reduced significantly over time and that MTBE concentrations in groundwater have continued to reduce after the Wally's P&T system went offline in November 2016.

Of primary significance to this report is the observation that surrounding potable wells routinely sampled since the November 2016 system shutdown event have not demonstrated any significant increases of target CoCs in influent concentrations.

In summary, there are no indications that the deactivation of the Wally's groundwater P&T remediation treatment system in November 2016 has created an unsafe condition for surrounding potable wells. The observations and conclusions presented in this report will support Carroll's petition to the Maryland Department of the Environment (MDE) to: 1) make further modifications and reductions to the existing Wally's monitoring program and, 2) to remove the inactive groundwater P&T system at the Site.

2 Introduction

Currently, the post-remedial monitoring program maintained by Groundwater & Environmental Services, Inc. (GES), on behalf of Carroll Independent Fuel (Carroll), for the Former Citgo/ Wally's BP facility, 19200 Middletown Rd, Parkton, Maryland (Site), includes the following:

- forty-three (43) onsite and offsite monitoring and former recovery wells,
- two (2) point-of-entry treatment (POET) residential water supply systems; and
- seven (7) potable supply wells.

The most recent monitoring event held for the Site occurred from August 20 to 24, 2018 as the 3Q2018 monitoring event. (A full report of the 3Q2018 monitoring event will be submitted to the MDE by November 15, 2018.) A preliminary presentation of benzene and MTBE analytical results for all monitoring and former recovery wells sampled during the 3Q2018 monitoring event can be reviewed in the updated System Restart Criteria Summary tables included with this correspondence as **Table 1A** and **Table 1B**, respectively. Updated monitoring well and potable well concentration hydrographs for benzene and MTBE through the 3Q2018 are also included as **Appendix A**.

3 System Restart Criteria – Post-Remedial Monitoring Period

GES has conducted seven (7) comprehensive (full list) monitoring events through 3Q2018 since the Wally's P&T remediation system was deactivated on November 2, 2016 (noting that an eighth event occurring 3Q2017 was completed using the reduced "semi-annual" well list.) For each quarterly period since deactivation, GES has submitted System Restart Criteria Summary tables to the MDE, which have provided an initial analytical assessment of benzene and MTBE concentrations occurring in monitoring wells for a given period. (The MDE has also been kept abreast of quarterly potable supply well analytical results related to the Wally's monitoring program as the Department is copied on all report correspondence sent to the tested property owners.) The most recent System Restart Criteria Summary tables for 3Q2018 monitoring period are included as **Tables 1A** and **1B**.

Review of the 3Q2018 System Restart Criteria Summary tables indicate that no exceedances of system restart criteria for benzene or MTBE occurred at any monitoring wells for the period. It is noted that no restart criteria exceedances have occurred since the 2Q2017 monitoring period.

4 Mann-Kendall Statistical Trend Analysis

The Mann-Kendall analysis is a statistical method used to identify monotonic upward or downward trend in a dataset from a common population. A series of Mann-Kendall trend analyses were performed for benzene and MTBE concentrations at those monitoring, former recovery and potable wells which have elicited detectable concentrations (i.e. >non-detect) since system shutdown on November 2, 2016. The Mann-Kendall analyses for select monitoring, recovery and potable wells are included as **Appendix B**.

4.1 MTBE Trend Evaluation

A series of "short-term" Mann-Kendall analyses for MTBE was performed for 32 monitoring and former recovery wells and for all 14 potable wells as these specific wells had demonstrated at least one detectable concentration of MTBE since the November 2016 shutdown of the Wally's P&T system.

In summary:

- eight (8) monitoring wells (MW-3, MW-5, MW-7A, MW-7B, MW-14B, MW-15, MW-16A, MW-22), one (1) recovery well (RW-2) and three (3) potable wells (PW-01, 1612 and 1616 Rayville Rd.) exhibited a "decreasing" trend with a 95% or greater confidence factor,
- six (6) monitoring wells (MW-2, MW-8A, MW-16B, MW-23, RW-3, 1608R), one (1) recovery well (RW-1) and two (2) potable wells (1717 Rayville Road and 19119 Middletown Road) demonstrated "probably decreasing" trend with a confidence factor of greater than 90% but less than 95%.

The remaining wells analyzed for MTBE trend via Mann-Kendall demonstrated either "stable" or "no trend" determinations. It is noted that no increasing MTBE trends were determined among any of the monitoring, former recovery or potable wells datasets evaluated via Mann-Kendall.

4.2 Benzene Trend Evaluation

For benzene, 16 monitoring and former recovery wells were evaluated via Mann-Kendall as these specific wells had demonstrated at least one detectable concentration of benzene since the November 2016 shutdown of the Wally's P&T system. (No potable wells demonstrated any detections of benzene during the last seven monitoring events and therefore were not evaluated via Mann-Kendall.)

In summary:

- three (3) monitoring wells (MW-10B, MW-15 and MW-16A) exhibited a "decreasing" benzene trend with a 95% or greater confidence factor; and
- two (2) monitoring wells (MW-5, and MW-22) demonstrated "probably decreasing" trend with a confidence interval of greater than 90% but less than 91%.

The remaining eleven (11) wells analyzed for benzene trend via Mann-Kendall demonstrated either "stable" or "no trend" determinations. No increasing benzene trends were noted among any of the monitoring well datasets evaluated via Mann-Kendall.

Furthermore, review of the attached **Table 1A – System Restart Criteria Summary** for benzene indicates that none of the forty-three (43) monitoring wells sampled since November 2016 system shutdown have exceeded system restart criteria for benzene (established at 25 micrograms per liter (µg/L) for all monitoring wells.) It is acknowledged that monitoring well MW-5 came close to exceeding its assigned system restart criteria during the 2Q2017 event (reaching a concentration of 24 µg/L). Further discussion of benzene at monitoring well MW-5 is provided in **Section 4.3**.

It is important to emphasize that none of the approximately 100 influent drinking water samples, collected among the case's 14 potables wells, over the last seven (7) events (since the shutdown of the Wally's P&T system in November 2016), have demonstrated any benzene detections.

4.3 Benzene at Monitoring Well MW-5

As was noted in December 12, 2017 MDE correspondence titled *Second Quarter 2017 Monitoring Report – Request to Modify Groundwater Monitoring Response*, benzene at onsite monitoring well MW-5 reached 24 µg/L during the 2Q2017 monitoring event. This benzene concentration of 24 µg/L was close to the assigned system restart criteria set for this well at 25 µg/L. Since the November 2, 2018 system shutdown event, benzene has been sampled at monitoring well MW-5 a total of nine (9) times and has ranged in concentration from a peak value of 24 µg/L (2Q2017) to a value of 1.6 µg/L which occurred during the most recent monitoring event conducted in 3Q2018.

Review of the MW-5 concentration hydrograph presented in **Appendix A** indicates the following:

- both benzene and MTBE concentration in MW-5 rise and fall in tandem over time indicating proximity to a common source zone,
- both constituents have an inverse relationship with depth-to-water level measurements (i.e. water levels rise in a given quarter and benzene and MTBE concentrations reduce); and
- the Wally's groundwater P&T system, over the course of its two operation periods (occurring Nov. 2011 to July 2014 and Feb. 2015 to Nov. 2016) seem to have little, discernable effect on benzene and MTBE trends at the MW-5 monitoring well.

Due to the apparent lack of historical P&T system influence at MW-5, a "long-term" Mann Kendal statistical evaluation of benzene at MW-5 (2Q2009 to 3Q2018) is included with the "short term" Mann-Kendall analyses provided in **Appendix A**. Review of the "long term" Mann-Kendall analysis of benzene at MW-5 indicates a "no trend" determination. (For comparative purposes, a "short term" Mann Kendall evaluation of benzene at MW-5 was discussed in **Section 4.2** and is presented in **Appendix A**.)

Further review of Mann-Kendall analyses of benzene in monitoring wells surrounding/local to MW-5 (when detectable) indicates no evidence of increasing trend. Please see the site map, attached as **Figure 1** – **Location of Proposed Monitoring Program Modifications,** to review those wells in proximity to monitoring well MW-5.

In summary:

- elevated dissolved benzene in groundwater is localized near MW-5 but does not appear to affect surrounding monitoring and potable wells; and,
- the historically variable concentration of benzene at MW-5 is expected to remain below levels of concern (<25 µg/L) and will likely continue to gradually reduce over time, barring no future petroleum releases at the Site.

5 MTBE Time-Series Plots

In order to view the Wally's MTBE groundwater plume behavior over time, GES utilized the open source Groundwater Spatio-Temporal Data Analysis Tool (GWSDAT) to plot quarterly constituent MTBE concentrations at the Site from 2005 to present (3Q2018). The GWSDAT graphical output for the Wally's evaluation is included as **Appendix C**. When reviewing the time-series MTBE plots, please note the following:

- Each plot includes both monitoring well and potable well (influent) concentrations collected within a given period.
- The plot area for a given slide only encompasses those wells active within the monitoring network at that particular time. Therefore, plot slides prior to June 2011 (before the monitoring network was completely established) are reduced in area.
- Historical MTBE was processed in GWSDAT model using threshold criteria of 10 µg/L which is denoted as a red contour interval on the plot slides.
- The interpolated plume "center" for MTBE is represented as a "+" symbol on the corresponding plot slide and can be used to evaluate plume movement over time.
- Wells that are bolded in red text indicate an anomalous value identified by the GWSDAT algorithm for a given plot slide.

In summary, review of the GWSDAT time-series plots indicates that the historical Wally's MTBE footprint has significantly reduced over time and that these reductions have continued to occur after the Wally's P&T groundwater remediation system went offline in November 2016.

6 Proposed Monitoring Program Changes

6.1 Reductions to the Wally's Groundwater Monitoring Program

Considering the stable and/or downward CoC trends as summarized in **Section 3.0 and 4.0** since Wally's P&T system deactivation and the significant reduction of MTBE footprint which continues to date (**Section 5.0**), GES formally petitions the MDE for the reductions and modifications to the current Wally's monitoring well program which are summarized with supporting rationale in the table, on the next page.

Monitoring and Former Recover Wells Proposed for Reduction or Elimination from the Wally's Monitoring Program

Location	Request	Rationale
Monitoring wells (16): MW-5B, MW-8A, MW-8B, MW-9B, MW-12B, MW-13A, MW-13B, MW-14A, MW-17A, MW-19A, MW-19B, MW-20B, MW-21, MW-24B, MW-25B and RW-3	Discontinue groundwater monitoring and sampling activities. Abandon wells from network.	MTBE has not historically exceeded 20 µg/L. Benzene has not historically exceeded 5 µg/L. Mann-Kendall analysis of analytical data demonstrates a "possibly decreasing", "stable" or "no trend" determination.
Monitoring wells (4): MW-9A, MW-11A, MW-18A and MW-23	Discontinue groundwater monitoring and sampling activities. Abandon wells from network.	MTBE has not been above 5.1 µg/L in last 2 years. Benzene has never been above 5 µg/L. Mann-Kendall analysis of analytical data demonstrates a "possibly decreasing", "stable" or "no trend" determination.
Former Recover wells (2): RW-1 and RW-2	Discontinue groundwater monitoring gauging and sampling. Abandon wells from network.	RW-1 is redundant to MW-4. RW-2 is redundant to MW-7A.
Monitoring wells (5): MW-7B, MW-10B, MW-11A, MW-16A, and MW-18A	Discontinue groundwater monitoring gauging and sampling. Abandon wells from network.	MW-7B is redundant to MW-7A. MW-10B is redundant to MW-10A. MW-11A is redundant to MW-11B. MW-16A is redundant to MW-16B. MW-18A is redundant to MW-18B.
Monitoring well 1608R	Discontinue groundwater monitoring gauging and sampling. Abandon well from network.	Bedrock well is isolated from productive fractures in the area* and demonstrates a continued decreasing trend for MTBE.

*Please see GES correspondence *Replacement Potable Well Installation Report* dated July 10, 2013

6.2 Revised Wally's Monitoring Network

Based on the elimination of monitoring and former recovery wells as proposed in **Section 6.1**, a revised Wally's groundwater monitoring network, with supporting rationale, is presented in the table, on the next page.

Monitoring and Former Recover Wells Proposed for the Revised Wally's Monitoring Program

Location	Request	Rationale
Monitoring wells (7) MW-1, MW-2, MW-3, MW-6, MW-10A, MW-14B and MW-20A	Reduce from quarterly to an annual monitoring frequency	This grouping of wells was selected for an annual sampling frequency based on their moderate levels of recent CoC concentration and their spatial distribution within the historical plume footprint. A sub-set of these wells are also candidates as future High-Risk Groundwater Use Area (HRGUA) wells.
Monitoring wells (10) MW-4, MW-5, MW-7A, MW-11B, MW-15, MW-16B, MW-17B, MW-18B, MW-22 and RW-4	Continue quarterly monitoring	This grouping of wells will allow for continued observation of CoC reductions in select areas of the historical plume footprint where benzene and/or MTBE remain relatively elevated. A sub-set of these wells are also possible candidates as future HRGUA wells.

A summary of current and proposed monitoring and potable well sampling frequencies are included in the attached **Table 2- Monitoring Well Sample Frequency and Method Summary**. A map highlighting those wells proposed for removal or reduction from the current Wally's monitoring program are presented as **Figure 1 – Locations of Proposed Monitoring Program Modifications**. To assist the MDE with review of the proposed wells for reduction and/or elimination, a table of Wally's monitoring and former recover well specifications is included as **Table 3**. Available well completion logs (excluding MW-5B) for the current Wally's network are also provided as **Appendix D.**

6.3 Proposed Monitoring Well Low-Flow Sampling

Currently, 20 monitoring wells are sampled via low-flow procedures while 22 monitoring wells are conventionally purged/ sampled and one (1) well (1608R) is a grab-only sample collection. The monitoring well purge water is currently treated and discharged through the Wally's P&T remediation system which is operated just a few days per quarter to accommodate purge water processing.

In anticipation of the removal of the Wally's P&T remediation system (as proposed in later **Section 7.0**), GES wishes to reduce high volumes of purge water during future groundwater monitoring events at the Site. With reductions to the monitoring network as proposed (**Section 6.2**), future low-flow water could be contained to just a few 55-gal drums per monitoring period. These purge

drums would be temporarily stored onsite in properly labelled (non-hazardous material) 55-gallon steel drums which would ultimately be transported to a qualified waste facility for treatment and disposal.

An updated Monitoring Well Sample Frequency and Method Summary, included as **Table 2,** contains details of the current and proposed sample methods for each monitoring well within the network. Please note that GES has selected new target, low-flow intake intervals (based on screen midpoint) for those wells proposed to remain in the network but which were conventionally purged and sampled in the past.

6.4 Reductions to the Wally's Potable Well Monitoring Program

Based low-level concentrations and stabilization of CoCs (MTBE) in select potable wells as summarized in **Section 4.1**, GES has prepared a summary of recommended modifications to the Wally's potable monitoring program in the table below.

Potable Wells Proposed for Reduction or Elimination from the Wally's Monitoring Program

Location	Request	Rationale
1612 Rayville Road	Release Carroll from POET maintenance responsibility. Continue quarterly influent monitoring only.	The 1612 Rayville Rd. well proposed is selected for discontinuation of treatment due to declining and historically low-levels of target CoCs including benzene and MTBE.
19119, 19124, 19201 and 19222 Middletown Road	Release from routine sampling.	MTBE concentrations are recurrently non-detect to low-level (<0.2 ug/L). Mann-Kendall analysis (for those wells with detectable concentrations) do not demonstrate increasing MTBE trend. There is no indication that these potable wells are at risk from increasing MTBE related to the historical Wally's release.

Location	Request	Rationale
1614, 1616, 1620, 1624 and 1717 Rayville Road	Release from routine sampling	MTBE concentrations are recurrently non-detect to low-level (<0.2 ug/L). Mann-Kendall analysis (for those wells with detectable concentrations) do not demonstrate increasing MTBE trend. There is no indication that these potable wells are at risk from increasing MTBE related to the historical Wally's release.
19200 Middletown Road supply wells PW-1, PW-2 and PW-3	Change to annual sampling	Potable well PW-01 has gradually reduced in MTBE concentration since P&T shutdown. Supply wells PW-02 and PW-03 are recurrently non-detect to low-level (<0.2 ug/L). Mann-Kendall analysis (for those wells with detectable concentrations) to not demonstrate increasing MTBE trend. There is no indication that these potable wells are at risk from increasing MTBE related to the historical Wally's release.
Point of treatment (POET) system for 1606 Rayville Road	Continue quarterly monitoring	While this treated potable location has reduced three orders-of-magnitude in MTBE concentration since 2005, continued operation and quarterly monitoring of the POET system is recommended at this time

An updated **Monitoring and Potable Well Sample Frequency and Method Summary**, included as **Table 2** to this report, summarizes both current and proposed sample frequency changes for the Wally's monitoring well program. A map noting those monitoring, former recovery and potable wells to be removed, reduced in frequency and/or to remain in the monitoring network is presented as Figure **1**.

7 Remediation System Decommissioning

Based on the current benzene and MTBE concentration trends exhibited in the monitoring well network and the fact that no significant increases in target CoC concentrations are evident in the Wally's potable well monitoring network since the November 2016 P&T system shutdown event, GES recommends decommissioning and removal of the Wally's groundwater system.

8 Summary and Conclusions

Per goals set forth in the October 16, 2016 *Wally's Monitoring & Remedial Work Plan*, GES has reevaluated the historical Wally's groundwater analytical dataset, in conjunction with the areal distribution of the existing Wally's monitoring network. This evaluation has primarily focused on the analytical dataset which has accumulated over the last seven (7) comprehensive monitoring events for the Site since the shutdown of the Wally's P&T remediation system on November 2, 2016.

In summary:

- For the most recent 3Q2018 groundwater monitoring event, no assigned system restart criteria for either benzene or MTBE were exceeded this period. In fact, no system restart criteria have been exceed since 2Q2017. It is concluded that the Wally's groundwater system has stabilized since the deactivation of the Wally's groundwater P&T remediation system in November 2016 and that no severe CoC "rebound" conditions, which could affect surrounding potable well water quality, are expected to occur in the future.

- Evaluation of monitoring well, recover well and potable well concentrations of benzene and MTBE via Mann-Kendall statistical analyses indicate no increasing trends for either constituent, within the Wally's monitoring network, since the Wally's P&T system shutdown.

- Onsite monitoring well MW-5, which has demonstrated historically variable concentrations of benzene and MTBE, appears to be: 1) locally isolated, 2) is gradually reducing in CoC concentration and 3) does not appear as a significant source to adjacent monitoring wells and offsite potable wells.

- Review of time-series graphical plots of MTBE concentration in monitoring and potable wells for the Wally's monitoring network from 2005 to present (3Q2018) indicates a significant reduction in MTBE "footprint" over time which has continued to reduce after the November 2016 P&T remediation system shutdown event.

Based on these observations and conclusions, GES, on behalf of Carroll, has proposed significant changes to the current Wally's monitoring program which include:

- the removal of 26 monitoring wells from the monitoring well network including MW-5B, 6, 7B, 8A, 8B, 9A, 9B, 10B, 11A, 12B, 13A, 13B, 14A, 16A, 17A, 18A, 19A, 19B, 20A, 20B, 21, 23, 24B, 25B, 1608R and RW-3,
- the removal of two (2) formerly active recover wells RW-1 and RW-2,
- quarterly monitoring for ten (10) wells including MW-4, 5, 7A, 11B, 15, 16B, 17B, 18B, 22 and RW-4,
- annual monitoring for seven (7) wells including MW-1, 2, 3, 6, 10A, 14B and 20A,

- the removal of nine (9) potable wells from the monitoring program including 1614, 1616, 1620, 1624 and 1717 Rayville and 19119, 19124, 19201 and 19222 Middletown Road,
- the removal of Carroll from maintenance responsibility for the 1612 Rayville Road POET system (to remain quarterly influent sampling only); and
- the transition to low-flow sampling procedures for all remaining wells in the Wally's monitoring program.

In addition, GES requests permission to start decommission activities for the inactive Wally's P&T groundwater remediation system which currently occupies the Wally's site but includes infrastructure which extends to offsite properties including 1606 and 1608 Rayville Road.

GES appreciates the MDE's time to review this post-remediation evaluation and the Department's consideration of this significant monitoring modification request for the Wally's case. GES intends to work with the Department to provide any additional information or assistance that maybe needed to support the requested reductions. GES feels that the seven (7) comprehensive monitoring events conducted since the system shutdown in November 2016 have provided enough supporting analytical data to substantiate the significant reductions to monitoring program and the permanent removal of the Wally' P&T system as proposed.

References

Environmental Alliance, multiple historical case files and reports for the Wally's site generated prior to 2011

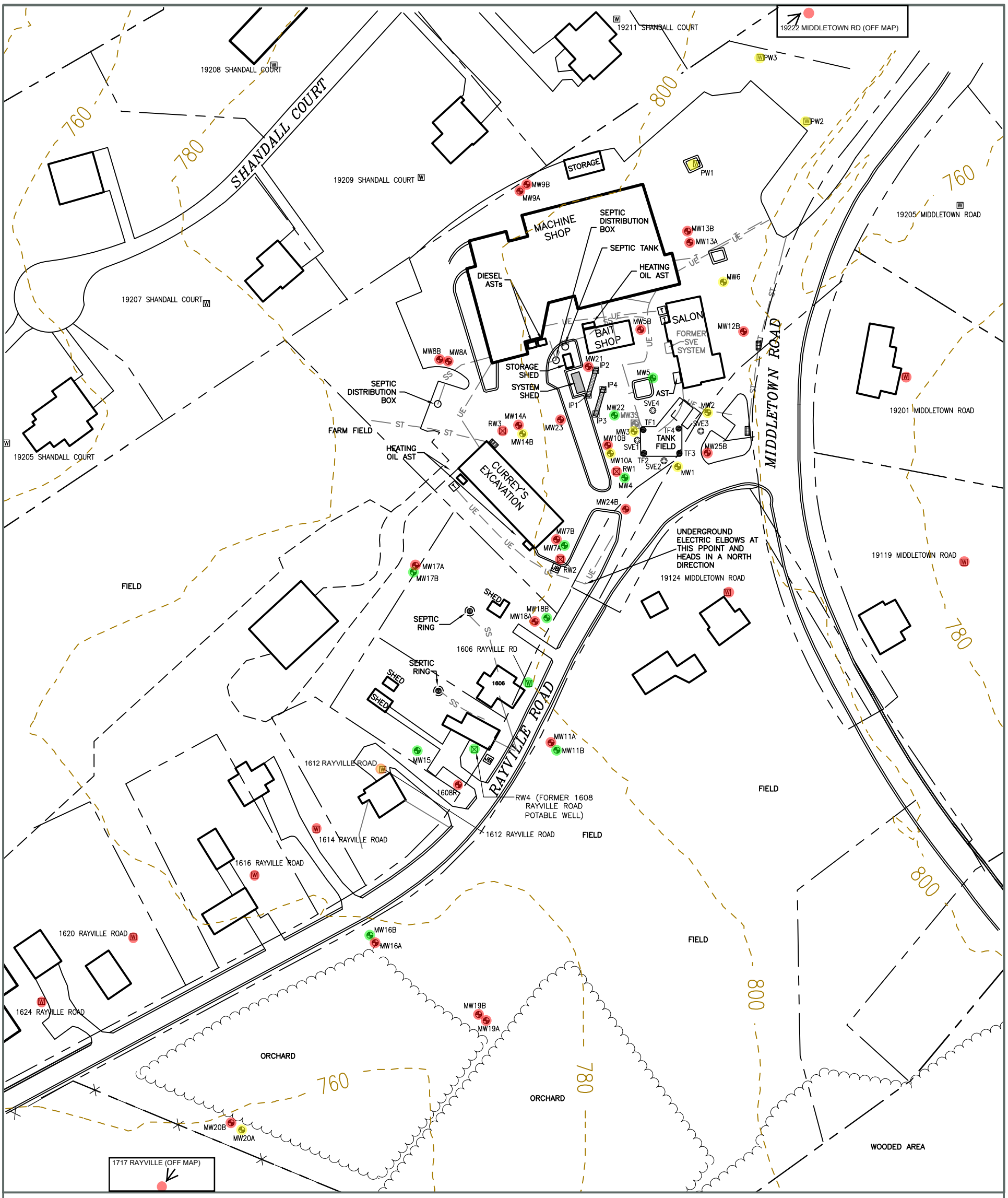
GES, Second Quarter 2018 Monitoring Report, Carroll Independent Fuel – Wally's, 19200 Middletown Road, Parkton, Maryland, OCP Case #2006-0319-BA2, Aug. 15, 2018

GES, Replacement Potable Well Installation Report, Wally's BP (Former Citgo), 19200 Middletown Road, Parkton, Maryland, OCP Case #2006-0319-BA, Facility ID #4593, July 10, 2013

GSI Environmental Inc., GSI Mann-Kendall Toolkit, https://www.gsi-net.com/en/software/free-software/gsi-mann-kendall-toolkit.html

GWSDAT, https://www.api.org/oil-and-natural-gas/environment/clean-water/ground-water/gwsdat

Figures



LEGEND

- CATCH BASIN
- POTABLE WELL
- TANK FIELD WELL
- MONITORING WELL
- RECOVERY WELL
- SOIL VAPOR EXTRACTION WELL
- ABANDONED MONITORING WELL
- INJECTION POINT
- SS — UNDERGROUND SANITARY SEWER LINE
- ST — UNDERGROUND STORM SEWER LINE
- T — UNDERGROUND TELEPHONE LINE
- UE — UNDERGROUND ELECTRIC LINE
- OHU — OVERHEAD UTILITIY LINE
- SYSTEM SHED
- INFILTRATION GALLERY
- JB — REMEDIAL SYSTEM JUNCTION BOX

- -MONITORING OR POTABLE WELL REQUESTED FOR REMOVAL FROM PROGRAM
- -MONITORING WELL REQUESTED FOR QUARTERLY SAMPLING
- -MONITORING WELL REQUESTED FOR ANNUAL SAMPLING
- -POTABLE WELL (1612 RAYVILLE RD.) REQUESTED FOR POET RELEASE-QUARTERLY INFLUENT SAMPLING ONLY

Locations of Proposed Monitoring Program Modifications

Former Citgo -Wally's
Station 19200
Middletown Road
Parkton, Maryland

Drawn	Date
WAW (NJ)	8-19-18
Designed	Figure
PR	1
Approved	
PR	

Scale In Feet (Approximate)
0 120

Groundwater & Environmental Services, Inc.

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Tables

Table 1A

SYSTEM RESTART CRITERIA - BENZENE

Carroll Motor Fuels - Wally's
19200 Middletown Rd., Parkton, MD

Benzene

Well	3Q2014	4Q2014	1Q2015	2Q2015	3Q2015	4Q2015	1Q2016	2Q2016	8Q Mean	8Q Mean x%150	Established Restart Criteria**	3Q2016 Event (8/1/16 - 8/4/16)	4Q2016 Event (11/7/16 - 11/11/16)	Resample Event 12/13/2016	1Q2017 Event (1/6/17 - 1/10/17)	Resample Event 4/5/2017	2Q2017 Event (5/3/17 - 5/9/17)	3Q2017 Event (7/31/17 - 8/3/17)	4Q2017 Event (11/6/17 - 11/14/17)	1Q2018 Event (2/12/18- 2/16/18)	2Q2018 Event (6/11/18 - 6/18/18)	3Q2018 Event (8/20/18 - 8/24/18)
	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	**(µg/L)**	(µg/L)	(µg/L)	(µg/L)		(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)
MW-5	28.3	9.6	5.6	13	12	12	18	13	14	21	**25**	8.7	8.0	-	21	20	24	2.8	3.6	11	7	1.6
MW-17B	2.1	10.2	0.6	8.4	6.9	4.4	6.7	2.6	5.2	7.8	**25**	4.4	0.7	-	0.3 J	-	5.7	4.9	0.9	4.7	0.2 J	3
MW-14B	7.3	3.4	1.9	3.5	3.3	2.1	2.1	2	3.2	4.8	**25**	1.2	1	-	1.1	-	0.4 J	1.2	0.4 J	1.1	0.1 J	2.6
MW-18B	8.8	1	5.6	1.9	2.2	3.2	0.1	0.1	2.9	4.3	**25**	3.1 J	0.1 J	-	0.1 J	-	0.3 J	ND<0.1	2.9 J	2.2 J	0.1 J	1.2 J
MW-1608R	1.0	1.0	1.0	0.6	5.0	5.0	3.0	2.0	2.3	3.5	**25**	ND<2.0	ND<2.0	-	ND<1.0	-	ND<0.2	ND<0.2	ND<0.5	ND<1.0	ND<0.5	ND<0.5
MW-16A	1.0	6.4	1.8	4.3	2.0	1.1	1.0	0.1	2.2	3.3	**25**	0.2 J	1.0 J	2.6	0.7 J	-	0.7 J	ND<0.1	ND<0.5	ND<0.5	ND<0.1	ND<0.05
MW-15	2.0	8.9	0.2	0.1	0.1	0.1	0.1	0.1	1.4	2.2	**25**	ND<0.1	ND<0.3	-	0.1 J	ND<0.2	ND<0.1	ND<0.1	ND<0.1	ND<0.1	ND<0.1	ND<0.05
MW-7B	1.7	1.8	NS	1.2	1.1	1.0	1.0	0.1	1.1	1.7	**25**	0.1 J	ND<0.1	-	ND<0.1	-	ND<0.1	ND<0.1	ND<0.1	ND<0.1	ND<0.1	ND<0.05
MW-22	1	4.8	1.8	0.1	0.1	0.1	0.1	0.1	1.0	1.5	**25**	ND<0.1	ND<0.1	2.5	1.6	1.4 J	2.0	0.8	ND<0.1	0.2 J	ND<0.1	0.4 J
RW-4*	1.6	0.6	1.5	1.0	1.0	0.5	0.2	0.1	0.8	1.2	**25**	ND<0.1	ND<0.1	-	ND<0.1	-	0.1 J	ND<0.1	ND<0.1	ND<0.1	ND<0.1	ND<0.05
MW-16B	1.3	1.2	2.9	0.1	0.2	0.1	0.1	0.1	0.8	1.1	**25**	ND<0.1	ND<0.2	-	0.2 J	-	0.3 J	0.5 J	0.2 J	0.3 J	0.1 J	0.1 J
MW-10A	1.0	1.0	1.0	0.1	0.1	0.1	0.1	0.5	0.5	0.7	**25**	ND<0.1	ND<0.1	-	0.3 J	0.8	ND<0.1	0.7	0.1 J	1.6	1	ND<0.05
MW-10B	1.0	1.0	0.1	0.1	0.9	0.2	0.1	0.1	0.4	0.7	**25**	0.6	0.5	-	ND<0.1	ND<0.1	0.2 J	ND<0.1	ND<0.1	0.1 J	ND<0.1	ND<0.05
MW-3	1.4	1.0	0.6	0.1	0.1	0.1	0.1	0.1	0.4	0.7	**25**	ND<0.1	0.4 J	0.6	0.3 J	0.3 J	ND<0.1	0.2 J	2.0	2.1	1.0	0.3 J
RW-1	1.0	1.0	0.1	0.4	0.3	0.2	0.1	0.1	0.4	0.6	**25**	ND<0.1	ND<0.1	ND<0.1	ND<0.1	-	ND<0.1	ND<0.1	0.1 J	0.1 J	ND<0.1	ND<0.05
MW-24B	1.0	1.0	0.1	0.1	0.1	0.1	0.1	0.1	0.3	0.5	**25**	ND<0.1	ND<0.1	-	ND<0.1	-	ND<0.1	ND<0.1	ND<0.1	ND<0.1	ND<0.1	ND<0.05
MW-4	1.0	1.0	0.2	0.1	0.1	0.1	0.1	0.1	0.3	0.5	**25**	ND<0.1	ND<0.1	-	ND<0.1	-	ND<0.1	ND<0.1	ND<0.1	ND<0.1	ND<0.1	ND<0.05
MW-7A	1.0	1.0	0.2	0.1	0.1	0.1	0.1	0.1	0.3	0.5	**25**	ND<0.1	ND<0.1	-	ND<0.1	-	ND<0.1	ND<0.1	ND<0.1	ND<0.1	ND<0.1	ND<0.05
MW-19A	1.0	1.0	NS	0.1	0.1	0.1	0.1	0.1	0.4	0.5	**25**	ND<0.1	ND<0.1	-	ND<0.1	-	ND<0.1	ND<0.1	ND<0.1	ND<0.1	ND<0.1	ND<0.05
MW-19B	1.0	1.0	NS	0.1	0.1	0.1	0.1	0.1	0.4	0.5	**25**	ND<0.1	ND<0.1	-	ND<0.1	-	ND<0.1	ND<0.1	ND<0.1	ND<0.1	ND<0.1	ND<0.05
RW-2*	1.0	1.0	0.1	0.1	0.1	0.1	0.1	0.1	0.3	0.5	**25**	ND<0.1	ND<0.1	-	ND<0.1	-	ND<0.1	ND<0.1	ND<0.1	ND<0.1	ND<0.1	ND<0.05
MW-1	1.0	1.0	0.1	0.1	0.1	0.1	0.1	0.1	0.3	0.5	**25**	ND<0.1	ND<0.1	-	ND<0.1	-	ND<0.1	ND<0.1	ND<0.1	ND<0.1	ND<0.1	ND<0.05
MW-2	1.0	1.0	0.1	0.1	0.1	0.1	0.1	0.1	0.3	0.5	**25**	ND<0.1	ND<0.1	-	ND<0.1	-	ND<0.1	ND<0.1	ND<0.1	ND<0.1	ND<0.1	ND<0.05
MW-11A	1.0	1.0	0.1	0.1	0.1	0.1	0.1	0.1	0.3	0.5	**25**	ND<0.1	ND<0.1	-	ND<0.1	-	ND<0.1	ND<0.1	ND<0.1	ND<0.1	ND<0.1	ND<0.05
MW-11B	1.0	1.0	0.1	0.1	0.1	0.1	0.1	0.1	0.3	0.5	**25**	ND<0.1	ND<0.1	-	ND<0.1	-	ND<0.1	ND<0.1	ND<0.1	ND<0.1	ND<0.1	ND<0.05
MW-14A	1.0	1.0	0.1	0.1	0.1	0.1	0.1	0.1	0.3	0.5	**25**	ND<0.1	ND<0.1	-	ND<0.1	-	ND<0.1	ND<0.1	ND<0.1	ND<0.1	ND<0.1	ND<0.05
MW-18A	1.0	1.0	0.1	0.1	0.1	0.1	0.1	0.1	0.3	0.5	**25**	ND<0.1	ND<0.1	-	ND<0.1	-	ND<0.1	ND<0.1	ND<0.1	ND<0.1	ND<0.1	ND<0.05
MW-20A	1.0	1.0	0.1	0.1	0.1	0.1	0.1	0.1	0.3	0.5	**25**	ND<0.1	ND<0.1	-	ND<0.1	-	ND<0.1	ND<0.1	ND<0.1	ND<0.1	ND<0.1	ND<0.05
MW-20B	1.0	1.0	0.1	0.1	0.1	0.1	0.1	0.1	0.3	0.5	**25**	ND<0.1	ND<0.1	-	ND<0.1	-	ND<0.1	ND<0.1	ND<0.1	ND<0.1	ND<0.1	ND<0.05
MW-21	1.0	1.0	0.1	0.1	0.1	0.1	0.1	0.1	0.3	0.5	**25**	ND<0.1	ND<0.1	-	ND<0.1	-	ND<0.1	ND<0.1	ND<0.1	ND<0.1	ND<0.1	ND<0.05
MW-23	1.0	1.0	0.1	0.1	0.1	0.1	0.1	0.1	0.3	0.5	**25**	ND<0.1	ND<0.1	-	0.2 J	-	0.1 J	ND<0.1	ND<0.1	ND<0.1	ND<0.1	ND<0.05
MW-25B	1.0	1.0	0.1	0.1	0.1	0.1	0.1	0.1	0.3	0.5	**25**	0.1 J	0.1 J	-	ND<0.1	-	0.1 J	0.1 J	0.1 J	0.1 J	ND<0.1	ND<0.05
MW-5B	NS	1.0	NS	0.1	NS	0.1	NS	0.1	0.3	0.5	**25**	NS	ND<0.1	-	ND<0.1	-	ND<0.1	NS	ND<0.1	ND<0.1	ND<0.1	ND<0.05
MW-6	NS	1.0	NS	0.1	NS	0.1	NS	0.1	0.3	0.5	**25**	NS	ND<0.1	-	ND<0.1	-	ND<0.1	NS	ND<0.1	ND<0.1	ND<0.1	ND<0.05
MW-8A	NS	1.0	NS	0.1	NS	0.1	NS	0.1	0.3	0.5	**25**	NS	ND<0.1	-	ND<0.1	-	ND<0.1	NS	ND<0.1	ND<0.1	ND<0.1	ND<0.05
MW-8B	NS	1.0	NS	0.1	NS	0.1	NS	0.1	0.3	0.5	**25**	NS	ND<0.1	-	ND<0.1	-	ND<0.1	NS	ND<0.1	ND<0.1	ND<0.1	ND<0.05
MW-9A	NS	1.0	NS	0.1	NS	0.1	NS	0.1	0.3	0.5	**25**	NS	ND<0.1	-	ND<0.1	-	ND<0.1	NS	ND<0.1	ND<0.1	ND<0.1	ND<0.05
MW-9B	NS	1.0	NS	0.1	NS	0.1	NS	0.1	0.3	0.5	**25**	NS	ND<0.1	-	ND<0.1	-	ND<0.1	NS	ND<0.1	ND<0.1	ND<1.0	ND<0.5
MW-12B	NS	1.0	NS	0.1	NS	0.1	NS	0.1	0.3	0.5	**25**	NS	ND<0.1	-	ND<0.1	-	ND<0.1	NS	ND<0.1	ND<0.1	ND<0.1	ND<0.05
MW-13A	NS	1.0	NS	0.1	NS	0.1	NS	0.1	0.3	0.5	**25**	NS	ND<0.1	-	ND<0.1	-	ND<0.1	NS	ND<0.1	ND<0.1	ND<0.1	ND<0.05
MW-13B	NS	1.0	NS	0.1	NS	0.1	NS	0.1	0.3	0.5	**25**	NS	ND<0.1	-	ND<0.1	-	ND<0.1	NS	ND<0.1	ND<0.1	ND<0.1	ND<0.05
MW-17A	NS	1.0	NS	0.1	NS	0.1	NS	0.1	0.3	0.5	**25**	NS	ND<0.1	-	ND<0.1	-	ND<0.1	NS	ND<0.1	ND<0.1	ND<0.1	ND<0.05
RW-3	NS	1.0	NS	0.1	NS	0.1	NS	0.1	0.3	0.5	**25**	NS	ND<0.1	-	ND<0.1	-	ND<0.1	NS	ND<0.1	ND<0.1	ND<0.1	ND<0.05

*Where multiple samples were collected in a given quarter (i.e., RW-2 & RW-4), the average concentration for the quarter is presented.
**A minimum restart criteria for benzene of 25 µg/L is used when the calculated 8Q average falls below 25 µg/L.
Note: Non detect values are presented as the detection limit.
NS= Not Sampled
Red bold indicates exceedance of system restart criteria

Table 1B

SYSTEM RESTART CRITERIA - MTBE

Carroll Motor Fuels - Wally's
19200 Middletown Rd., Parkton, MD

MTBE

Well	3Q2014	4Q2014	1Q2015	2Q2015	3Q2015	4Q2015	1Q2016	2Q2016	8Q Mean	8Q Mean x%150	Established Restart Criteria**	3Q2016 Event (8/1/16 - 8/4/16)	4Q2016 Event (11/7/16 - 11/11/16)	Resample Event 12/13/2016	1Q2017 Event (1/6/17 - 1/10/17)	Resample Event 4/5/2017	2Q2017 Event (5/4/17 - 5/10/17)	3Q2017 Event (7/31/17 - 8/3/17)	4Q2017 Event (11/6/17 - 11/14/17)	1Q2018 Event (2/12/18- 2/16/18)	2Q2018 Event (6/11/18 - 6/18/18)	3Q2018 Event (8/20/18 - 8/24/18)
	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	**(µg/L)**	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)
MW-1608R	1,880	2,010	1,500	1,600	1,200	1,300	1,800	520	1,476	2,214	**2,214**	680	700	-	810	-	350	580	450	480	430	360
MW-18B	4,420	23	2,300	400	55	190	50	9.8	931	1,396	**1,396**	1,200	15	-	29	-	76	13	850	830	22	430
RW-4*	2,068	1,245	1,500	1,110	347	283	140	73	846	1,269	**1,269**	58	25	-	38	-	56	42	26	30	33	25
MW-16A	241	1,460	980	1,900	680	500	300	120	773	1,159	**1,159**	86	500	1,100	300	-	510	260	360	190	4.0	0.2 J
MW-16B	1,470	939	1,200	33	64	22	46	9.2	473	709	**709**	36	160	-	170	-	110	200	42	100	59	56
MW-15	2	1,040	200	1.4	1.3	0.6	0.4	0.6	156	234	**234**	0.3 J	110	-	**240**	200	140	83	31	25	16	0.3 J
MW-7B	174	139	NS	210	150	170	160	7.9	144	217	**217**	25	11	-	4.4	-	3.7	ND<0.1	2.0	ND<0.1	ND<0.1	ND<0.05
MW-14B	95.7	153	91	190	140	110	110	110	125	187	**187**	90	100	-	96	-	80	82	64	70	66	32
MW-22	11.1	253	210	1.0	0.5	0.2	0.4	0.8	60	89	**100**	0.1 J	23	**100**	**500**	**370**	87	53	7.0	22	3	6.3
MW-7A	11.5	63.2	210	67	62	41	1.5	0.8	57	86	**100**	0.8	8.4	-	23	-	4.1	3.9	ND<0.1	2.5	1.9	0.7
RW-1	17.2	17.8	31	130	50	52	14	0.3	39	59	**100**	12	21	43	13	-	5.3	5.7	22	32	3.4	1.2
RW-2*	11.7	119	98	30	16	15	8.6	6.0	38	57	**100**	6.1	5.1	-	12	-	5.0	2.1	1.9	4.6	2.5	1.4
MW-3	149	88.9	24	17	9	2.7	0.5	0.8	36	55	**100**	0.3 J	**140**	36	15	17	17	14	55	43	8.3	8.1
MW-11B	70.7	3.9	48	4.2	2.6	37	2.3	28	25	37	**100**	26	2.3	-	25	-	1.6	9.5	14	17	16	0.9
MW-4	42.9	22.9	27	22	14	23	3.3	11	21	31	**100**	0.9	0.7	-	9.4	-	0.8	1	5.8	2.9	1.4	0.7
MW-10A	NS	76.5	42	0.3	0.1	0.6	1.2	9.2	19	28	**100**	0.1 J	0.3 J	-	11	19	ND<0.1	17	1.4	37	13	ND<0.05
MW-1	14	15.9	9.6	23	18	14	5.3	7.4	13	20	**100**	5.3	5.5	-	0.9	-	0.5 J	0.6	5.3	6.5	0.4 J	0.2 J
MW-17B	6.6	15.7	4.6	18	12	9.2	13	6.3	11	16	**100**	8.7	2.8	-	2	-	10	9.7	2.0	7.8	1.1	5.3
MW-5	7.1	5.0	2.1	18	12	13	13	8.4	10	15	**100**	8.5	5.5	-	13	14	9.7	1.0 J	0.8	5.0	2.8 J	0.8
MW-10B	23	6.9	2.5	3.1	25	4.9	0.8	1.3	8.4	13	**100**	12	10	-	0.1 J	0.5	2.8	0.9	0.7	1.9	ND<0.1	ND<0.05
MW-18A	11.8	9.5	5.0	15	6.5	2.8	9.2	1.6	7.7	12	**100**	0.4 J	1.9	-	3.7	-	5.1	1.4	0.8	3.4	2.6	3.9
MW-24B	1.0	3.4	1.0	0.4	3.5	1.9	1.8	0.6	1.7	2.5	**100**	0.2 J	0.8	-	0.6	-	ND<0.1	ND<0.1	ND<0.1	0.1 J	1.6	0.6
MW-11A	4.8	2.2	1.5	1.1	0.6	0.6	0.6	1.1	1.6	2.3	**100**	1.1	1.0	-	0.6	-	0.1 J	0.2 J	ND<0.1	ND<0.1	0.2 J	0.4 J
MW-20A	1.0	1.0	0.8	1.2	0.7	0.8	0.8	0.6	0.9	1.3	**100**	0.7	0.6	-	0.7	-	0.9	0.7	0.4 J	0.5	0.7	0.6
MW-2	1.0	1.0	0.1	1.8	0.2	0.2	0.8	0.9	0.8	1.1	**100**	0.5 J	0.4 J	-	ND<0.1	-	ND<0.1	ND<0.1	0.1 J	0.1 J	ND<0.1	ND<0.05
MW-6	NS	1.0	NS	0.3	NS	0.5	NS	0.9	0.7	1.0	**100**	NS	0.6	-	0.4 J	-	0.9	NS	0.8	0.5	0.7	2.5
MW-8A	NS	1.0	NS	0.5	NS	0.4	NS	0.3	0.6	0.8	**100**	NS	0.3 J	-	0.2 J	-	0.3 J	NS	0.2 J	0.2 J	0.2 J	ND<0.05
MW-23	1.0	1.1	1.0	0.1	0.1	0.1	0.1	0.1	0.4	0.7	**100**	ND<0.1	ND<0.1	-	2.6	-	2.8	1.6	0.5	0.3 J	0.2 J	0.1 J
MW-20B	1.0	1.0	0.1	0.4	0.2	0.1	0.3	0.1	0.4	0.6	**100**	ND<0.1	0.2 J	-	ND<0.1	-	0.4 J	0.3 J	0.3 J	0.3 J	0.4 J	0.2 J
MW-19B	1.0	1.0	NS	0.1	0.1	0.1	0.1	0.3	0.4	0.6	**100**	ND<0.1	ND<0.1	-	ND<0.1	-	ND<0.1	ND<0.1	ND<0.1	ND<0.1	ND<0.1	ND<0.05
MW-19A	1.0	1.0	NS	0.1	0.1	0.1	0.1	0.1	0.4	0.5	**100**	ND<0.1	ND<0.1	-	ND<0.1	-	ND<0.1	ND<0.1	ND<0.1	ND<0.1	ND<0.1	ND<0.05
MW-13A	NS	1.0	NS	0.3	NS	0.2	NS	0.2	0.4	0.6	**100**	NS	0.1 J	-	0.1 J	-	0.1 J	NS	0.1 J	ND<0.1	0.1 J	0.1 J
MW-14A	1.0	1.0	0.2	0.1	0.1	0.1	0.1	0.1	0.3	0.5	**100**	ND<0.1	ND<0.1	-	0.5 J	-	0.1 J	0.1 J	0.1 J	0.1 J	ND<0.1	0.06 J
MW-8B	NS	1.0	NS	0.2	NS	0.1	NS	0.1	0.4	0.5	**100**	NS	ND<0.1	-	ND<0.1	-	ND<0.1	NS	ND<0.1	ND<0.1	ND<0.1	ND<0.05
MW-17A	NS	1.0	NS	0.2	NS	0.1	NS	0.1	0.4	0.5	**100**	NS	0.1 J	-	0.1 J	-	0.1 J	NS	ND<0.1	0.1 J	ND<0.1	0.07 J
MW-21	1.0	1.0	0.1	0.1	0.1	0.1	0.1	0.1	0.3	0.5	**100**	ND<0.1	ND<0.1	-	ND<0.1	-	ND<0.1	ND<0.1	0.1 J	ND<0.1	ND<0.1	ND<0.05
MW-25B	1.0	1.0	0.1	0.1	0.1	0.1	0.1	0.1	0.3	0.5	**100**	ND<0.1	ND<0.1	-	ND<0.1	-	ND<0.1	ND<0.1	ND<0.1	ND<0.1	ND<0.1	ND<0.05
MW-5B	NS	1.0	NS	0.1	NS	0.1	NS	0.1	0.3	0.5	**100**	NS	ND<0.1	-	ND<0.1	-	0.2 J	NS	ND<0.1	ND<0.1	ND<0.1	ND<0.05
MW-9A	NS	1.0	NS	0.1	NS	0.1	NS	0.1	0.3	0.5	**100**	NS	ND<0.1	-	ND<0.1	-	ND<0.1	NS	ND<0.1	ND<0.1	ND<0.1	ND<0.05
MW-9B	NS	1.0	NS	0.1	NS	0.1	NS	0.1	0.3	0.5	**100**	NS	ND<0.1	-	ND<0.1	-	ND<0.1	NS	ND<0.1	ND<0.1	ND<1.0	ND<0.5
MW-12B	NS	1.0	NS	0.1	NS	0.1	NS	0.1	0.3	0.5	**100**	NS	ND<0.1	-	ND<0.1	-	ND<0.1	NS	ND<0.1	ND<0.1	ND<0.1	ND<0.05
MW-13B	NS	1.0	NS	0.1	NS	0.1	NS	0.1	0.3	0.5	**100**	NS	ND<0.1	-	ND<0.1	-	ND<0.1	NS	ND<0.1	ND<0.1	ND<0.1	0.07 J
RW-3	NS	1.0	NS	0.1	NS	0.1	NS	0.1	0.3	0.5	**100**	NS	0.2 J	-	0.3 J	-	0.1 J	NS	0.2 J	0.2 J	0.1 J	ND<0.05

*Where multiple samples were collected in a given quarter (i.e., RW-2 & RW-4), the average concentration for the quarter is presented.
**A minimum restart criteria for MTBE of 100 µg/L is used when the calculated 8Q average falls below 100 µg/L.
Note: Non detect values are presented as the detection limit.
MTBE= methyl tert-butyl ether
NS= Not Sampled
Red bold indicates exceedance of system restart criteria

Table 2

MONITORING WELL SAMPLING METHOD SUMMARY

Carroll Fuels - Wally's Citgo
19200 Middletown Rd
Parkton, MD

Well ID	Well Diameter (in)	Sample Frequency Prior to Post-Remedial Period	Proposed Sample Frequency	Sample Method & Target Interval Prior to Post-Remedial Period	Target Low Flow Sample Interval
MW-1	2	Quarterly	Annual	Purge & Grab sample	LF Interval (47' to 52')
MW-2	2	Quarterly	Annual	Purge & Grab sample	LF Interval (47' to 52')
MW-3	2	Quarterly	Annual	Purge & Grab sample	LF Interval (52-57')
MW-4	2	Quarterly	Quarterly	Purge & Grab sample	LF Interval (47' to 52')
MW-5	4	Quarterly	Quarterly	Purge & Grab sample	LF Interval (43-48')
MW-5B	6	SA (2Q & 4Q)	REMOVE	Purge & Grab sample	N/A
MW-6	2	SA (2Q & 4Q)	Annual	Purge & Grab sample	LF Interval (47' to 52')
MW-7A	6	Quarterly	Quarterly	Purge & Grab sample	LF Interval (55-60')
MW-7B	6	Quarterly	REMOVE	LF Interval (95-100')	N/A
MW-8A	6	SA (2Q & 4Q)	REMOVE	Purge & Grab sample	N/A
MW-8B	6	SA (2Q & 4Q)	REMOVE	LF Interval (90-95')	N/A
MW-9A	6	SA (2Q & 4Q)	REMOVE	LF Interval (55-60')	N/A
MW-9B	6	SA (2Q & 4Q)	REMOVE	LF Interval (95-100')	N/A
MW-10A	6	Quarterly	Annual	Purge & Grab sample	LF Interval (52-57')
MW-10B	6	Quarterly	REMOVE	LF Interval (90-95')	N/A
MW-11A	6	Quarterly	REMOVE	LF Interval (50-55')	N/A
MW-11B	6	Quarterly	Quarterly	LF Interval (85-90')	LF Interval (85-90')
MW-12B	6	SA (2Q & 4Q)	REMOVE	LF Interval (90-95')	N/A
MW-13A	6	SA (2Q & 4Q)	REMOVE	LF Interval (50-55')	N/A
MW-13B	6	SA (2Q & 4Q)	REMOVE	LF Interval (85-90')	N/A
MW-14A	6	Quarterly	REMOVE	Purge & Grab sample	N/A
MW-14B	6	Quarterly	Annual	LF Interval (85-90')	LF Interval (85-90')
MW-15	6	Quarterly	Quarterly	LF Interval (80-85')	LF Interval (80-85')
MW-16A	6	Quarterly	REMOVE	Purge & Grab sample	N/A
MW-16B	6	Quarterly	Quarterly	LF Interval (110-115')	LF Interval (110-115')
MW-17A	6	SA (2Q & 4Q)	REMOVE	LF Interval (55-60')	N/A
MW-17B	6	Quarterly	Quarterly	LF Interval (85-90')	LF Interval (85-90')
MW-18A	6	Quarterly	REMOVE	Purge & Grab sample	N/A
MW-18B	6	Quarterly	Quarterly	LF Interval (100-110')	LF Interval (100-110')
MW-19A	6	Quarterly	REMOVE	LF Interval (40-50')	N/A
MW-19B	6	Quarterly	REMOVE	LF Interval (105-115')	N/A
MW-20A	6	Quarterly	Annual	LF Interval (40-50')	LF Interval (40-50')
MW-20B	6	Quarterly	REMOVE	LF Interval (105-115')	N/A
MW-21	2	Quarterly	REMOVE	Purge & Grab sample	N/A
MW-22	2	Quarterly	Quarterly	Purge & Grab sample	LF Interval (40-45')
MW-23	4	Quarterly	REMOVE	Purge & Grab sample	N/A
MW-24B	6	Quarterly	REMOVE	Purge & Grab sample	N/A
MW-25B	6	Quarterly	REMOVE	Purge & Grab sample	N/A
MW-1608R	8	Quarterly	REMOVE	Grab Sample	N/A
RW-1	6	Quarterly	REMOVE	Purge & Grab sample	N/A
RW-2	6	Quarterly	REMOVE	Purge & Grab sample	N/A
RW-3	6	SA (2Q & 4Q)	REMOVE	Purge & Grab sample	N/A
RW-4	6	Quarterly	Quarterly	Purge & Grab sample	LF Interval (65-70')

' = feet
fbg = feet below grade
in = inches
LF = Low Flow
N/A =Not Applicable
SA = Semi-annual
Bold = Well proposed for sampling frequency modification
REMOVE =Well proposed for removal from groundwater monitoring network

Table 3

MONITORING WELL CONSTRUCTION DETAILS

Carroll Fuels - Wally's Citgo
19200 Middletown Rd
Parkton, MD

Well ID	Well Install Date	Well Diameter/ Material (Inches-PVC/Open)	Total Depth Of Well from Ground Surface (ft)	Depth to T.O.S. from Ground Surface (ft)	Depth to B.O.S. from Ground Surface (ft)	Drilling method	Depth to Bedrock (ft)	Depth of Potential Water-Bearing Zones (ft)[1]	Initial Water Depth (ft)*	Geophysics (Y/N)	Packer Testing (Y/N)	Comments
MW-1	08/09/05	2-PVC	62	37	62	Air Rotary	33	47, 52-54	41.25	N	N	
MW-2	08/10/05	2-PVC	62	40	60	Air Rotary	34	43, 47-49, 54	42.66	N	N	
MW-3	08/09/05	2-PVC	62	42	62	Air Rotary	32	52, 57	41.35	N	N	
MW-3S	08/30/06	2-PVC	30	5	30	Air Rotary	28	NE****	Dry	N	N	Abandoned 01/23/08
MW-4	11/09/05	2-PVC	61	40	60	Air Rotary	36	42-44, 46-47	40.79	N	N	
MW-5	11/09/05	2-PVC	51	30.5	50.5	Air Rotary	18	33.5, 36-37,39	40.75	N	N	
MW-5B	07/02/08	6- OPEN **	100	70	100	Air Rotary	20	51, 64, 80, 89, 92, 95	Dry	N	N	
MW-6	11/10/05	2-PVC	62	40.5	60.5	Air Rotary	24	50-52, 54	43.74	N	N	
MW-7A	08/29/06	6-OPEN**	65	40	65	Air Rotary	37	46-51, 55-56, 60-62	44.47	Y	Y	Geophysics 46, 51
MW-7B	08/31/06	6-OPEN**	120^	70	120	Air Rotary	38	101, 216	>200	Y	Y	Reconstructed July-08
MW-8A	08/29/06	6-OPEN**	65	40	65	Air Rotary	48	48-53, 60-62	41.94	Y	Y	Geophysics 48, 53, 62
MW-8B	08/29/06	6-OPEN**	100	73.5	100	Air Rotary	48	85, 94	95.78	Y	Y	Geophysics 85, 94
MW-9A	08/30/06	6-OPEN**	62	40	65	Air Rotary	33	40-51, 56-58	41.04	Y	Y	Geophysics 51, 56
MW-9B	08/30/06	6-OPEN**	120^	72	120	Air Rotary	33	99, 141, 186-190, 220	>200	Y	Y	Geophysics 99, 141, 186, 220
MW-10A	05/08/07	6-OPEN**	62	40	62	Air Rotary	36	60-61	35.77	N	N	
MW-10B	05/08/07	6-OPEN**	100	70	100	Air Rotary	38	NE****	89	N	N	
MW-11A	06/26/08	6-OPEN**	60	40	60	Air Rotary	30	NE****	44.53	N	N	
MW-11B	06/26/08	6-OPEN**	100	70	100	Air Rotary	30	80, 85, 90	41.6	N	N	
MW-12B	07/02/08	6-OPEN**	100	70	100	Air Rotary	31	64	>75	N	N	
MW-13A	07/01/08	6-OPEN**	60	40	60	Air Rotary	38	50, 53	41.5	N	N	
MW-13B	07/01/08	6-OPEN**	100	70	100	Air Rotary	38	50, 53, 72, 80, 90	>75	N	N	
MW-14A	06/27/08	6-OPEN**	60	40	60	Air Rotary	38	54, 57, 60	41.18	N	N	
MW-14B	06/27/08	6-OPEN**	100	70	100	Air Rotary	38	54, 57, 60, 78, 81, 89	>75	N	N	
MW-15	05/12/10	6-OPEN**	120	40.5	120	Air Rotary	28	54, 57, 77, 85	54	Y	N	Geophysics 55-60
MW-16A	05/17/10	6-OPEN**	65	40.5	65	Air Rotary	34	49-50, 55, 58-59	49	N	N	
MW-16B	05/18/10	6-OPEN**	120	70.5	120	Air Rotary	32	54.5, 56, 75, 112-113	75	N	N	
MW-17A	05/14/10	6-OPEN**	65	40.5	65	Air Rotary	27	55, 57, 63.5	55	N	N	
MW-17B	05/17/10	6-OPEN**	120	70.5	120	Air Rotary	26	55, 62, 64.5, 69.5, 87	87	N	N	
MW-18A	05/13/10	6-OPEN**	65	40.5	65	Air Rotary	25	51-52, 54-55, 63.5	51	N	N	
MW-18B	05/14/10	6-OPEN**	120	70.5	120	Air Rotary	25.5	48, 50.5, 53, 57.5, 66-69, 85, 103, 109, 112	90	N	N	
MW-19A	06/13/11	6-OPEN**	55	31	55	Air Rotary	17.5	31, 41, 45, 48, 51	NA	N	N	
MW-19B	06/10/11	6-OPEN**	120	70	120	Air Rotary	19	87, 91, 95	NA	N	N	
MW-20A	06/10/11	6-OPEN**	55	31	55	Air Rotary	25	45, 48	NA	N	N	
MW-20B	06/09/11	6-OPEN**	120	70	120	Air Rotary	22	74, 76, 114	NA	N	N	
RW-1	05/20/10	6-OPEN**	120	40.5	120	Air Rotary	23	44-47, 106	NO	N	N	

Table 3

MONITORING WELL CONSTRUCTION DETAILS

Carroll Fuels - Wally's Citgo
19200 Middletown Rd
Parkton, MD

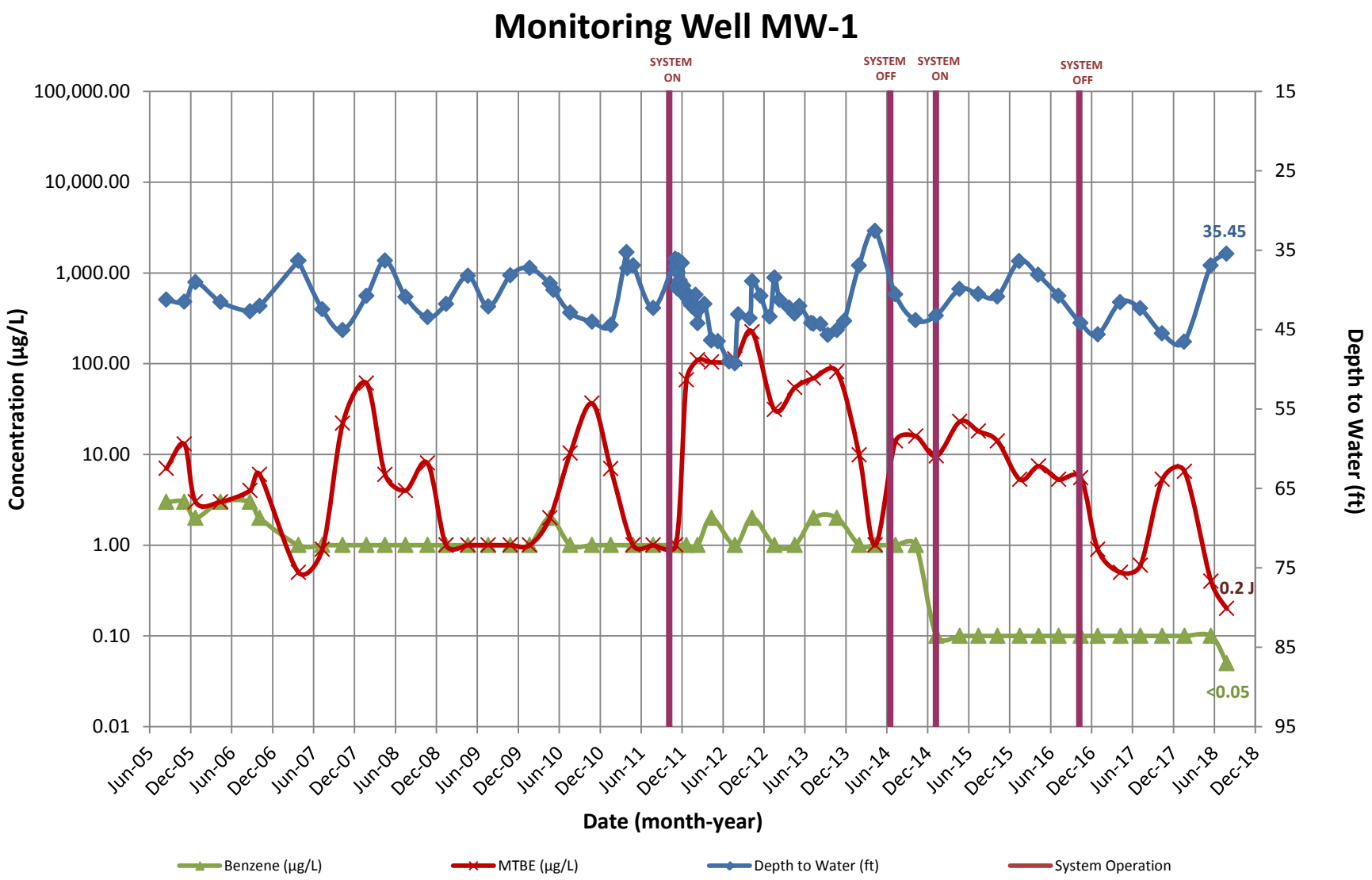
Well ID	Well Install Date	Well Diameter/ Material (Inches-PVC/Open)	Total Depth Of Well from Ground Surface (ft)	Depth to T.O.S. from Ground Surface (ft)	Depth to B.O.S. from Ground Surface (ft)	Drilling method	Depth to Bedrock (ft)	Depth of Potential Water-Bearing Zones (ft)[1]	Initial Water Depth (ft)*	Geophysics (Y/N)	Packer Testing (Y/N)	Comments
RW-2	05/19/10	6-OPEN**	120	40.5	120	Air Rotary	29	43-47, 86-87, 100.5-101.5	NO	N	N	
RW-3	05/20/10	6-OPEN**	120	40.5	120	Air Rotary	25	46-48, 61-62.5, 72.5, 91	47	N	N	
RW-4***	NA	6-OPEN**	84.7	44	84.7	NA	NA	45, 60, 66	NA	Y	N	Geophysics 45, 60, 66
MW-21	11/9/11	2	45	20	45	Air Rotary	15	NE****	33	N	N	
MW-22	11/9/11	2	45	20	45	Air Rotary	15	NE****	37	N	N	
MW-23	1/10/11	4	60	20	60	Air Rotary	20	NE****	41	N	N	
MW-24B	11/9/11	6-OPEN**	120	60	120	Air Rotary	20	60	96	N	N	
MW-25B	1/10/11	6-OPEN**	120	60	120	Air Rotary	20	60	>100	N	N	
1608R	5/7/13	8-OPEN**	402	82.26	402	Air Rotary	79.26	NE****	NO	N	N	
1606 Rayville	NA	6-OPEN**	135.7	27	135.7	NA	NA	43, 59, 62, 74, 98, 113	NA	Y	N	Geophysics 43, 59, 62, 74, 98, 113
1612 Rayville	NA	6-OPEN**	114	23	114	NA	NA	63, 70, 83, 96, 101	NA	Y	N	Geophysics 63, 70, 83, 96, 101

* = Depth to water measured during first sampling event
** = Steel casing grouted to open hole depth
*** = The well at 1608 Rayville Road is a former potable well location and will be now referred to as RW-4
^ = Well reconstruction completed on 07/03/08
1 = Water-bearing zones determined by field observations during well installation and/or down-hole geophysics (see comments column for depths by geophysics)
B.O.S. = Bottom of Screen (or open borehole)
ft = Feet
N = No
NA = Not Available
NE **** = None Encountered
NO = Not Observed
NAVD 88 = Maryland State Coordinate System, National Aerial Vertical Data 1988.
T.O.S. = Top of Screen (or open borehole)
Y = Yes

Appendix A – Concentration Hydrographs

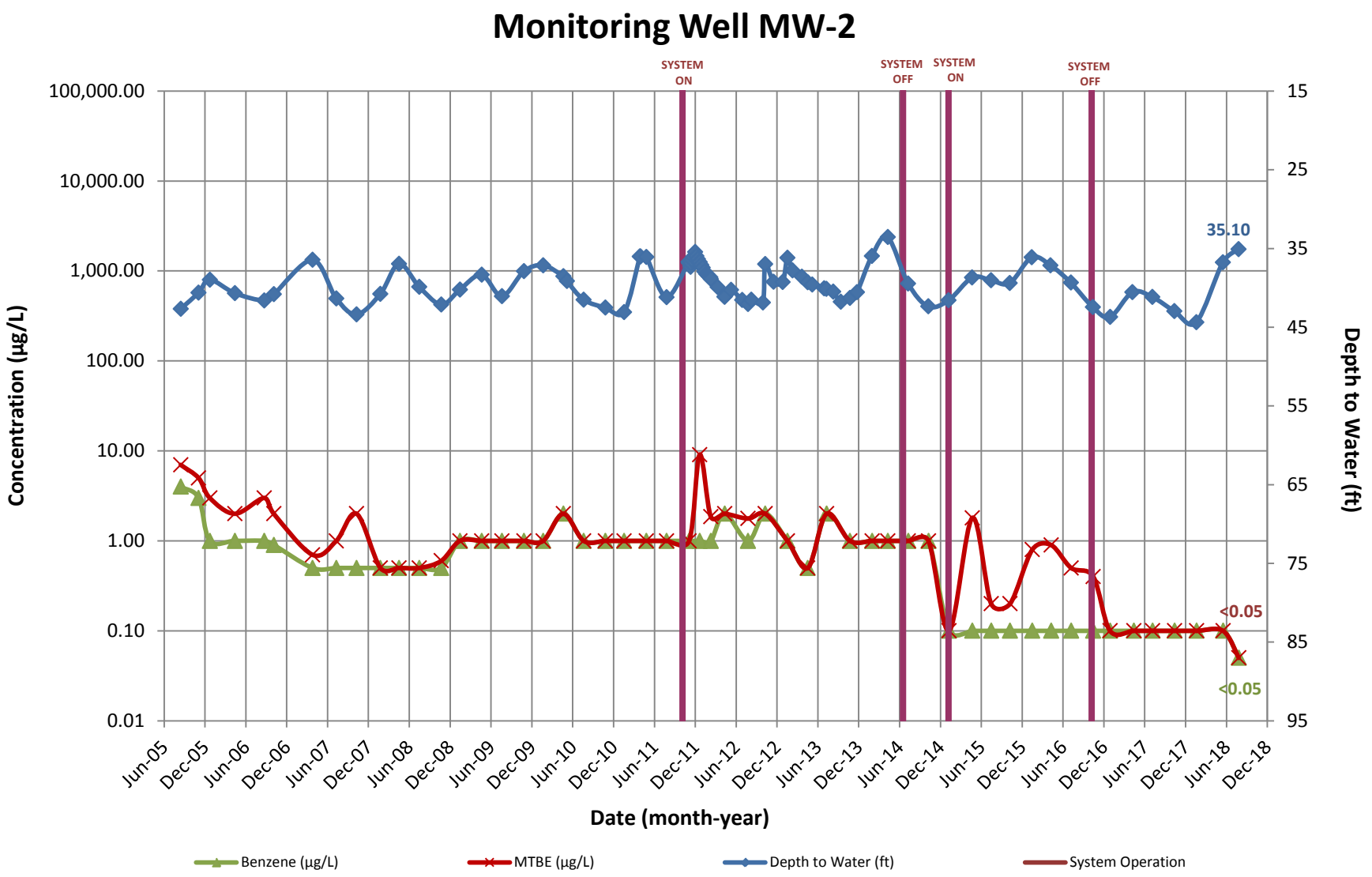
CONCENTRATION HYDROGRAPHS

Carroll Motor Fuels - Wally's
19200 Middletown Rd
Parkton, MD



CONCENTRATION HYDROGRAPHS

Carroll Motor Fuels - Wally's
19200 Middletown Rd
Parkton, MD



CONCENTRATION HYDROGRAPHS

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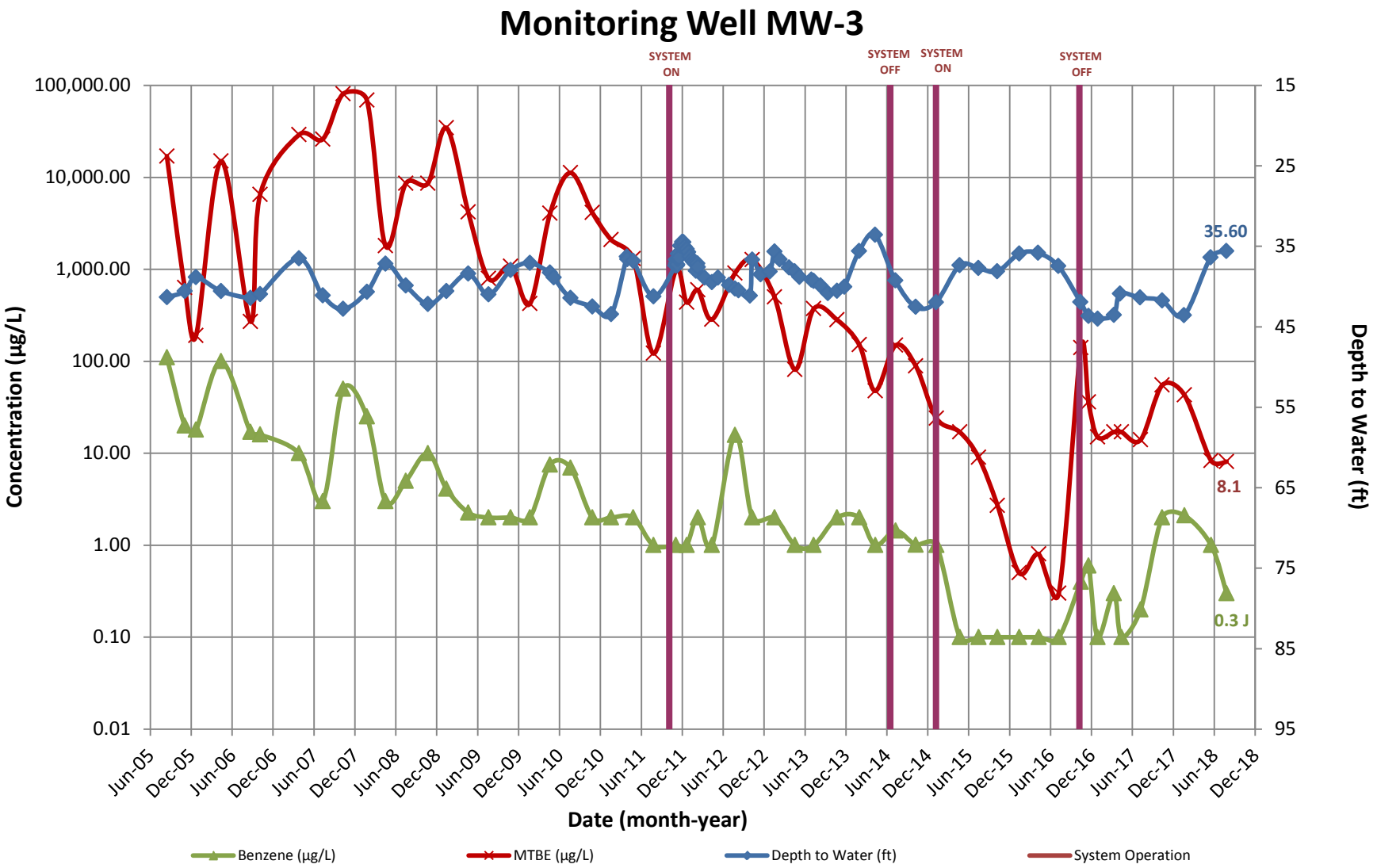
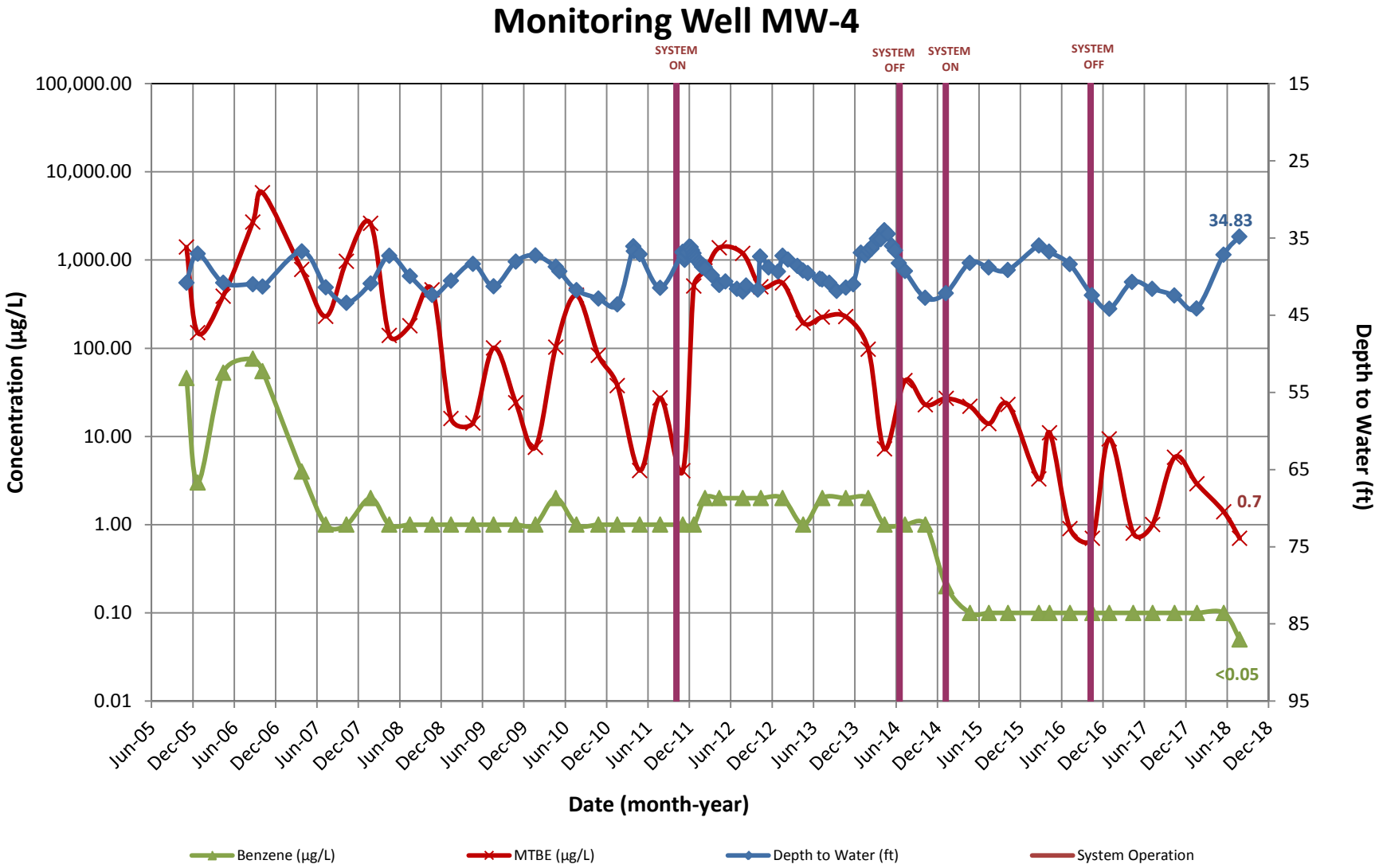
Parkton, MD



CONCENTRATION HYDROGRAPHS

Carroll Motor Fuels - Wally's
19200 Middletown Rd
Parkton, MD



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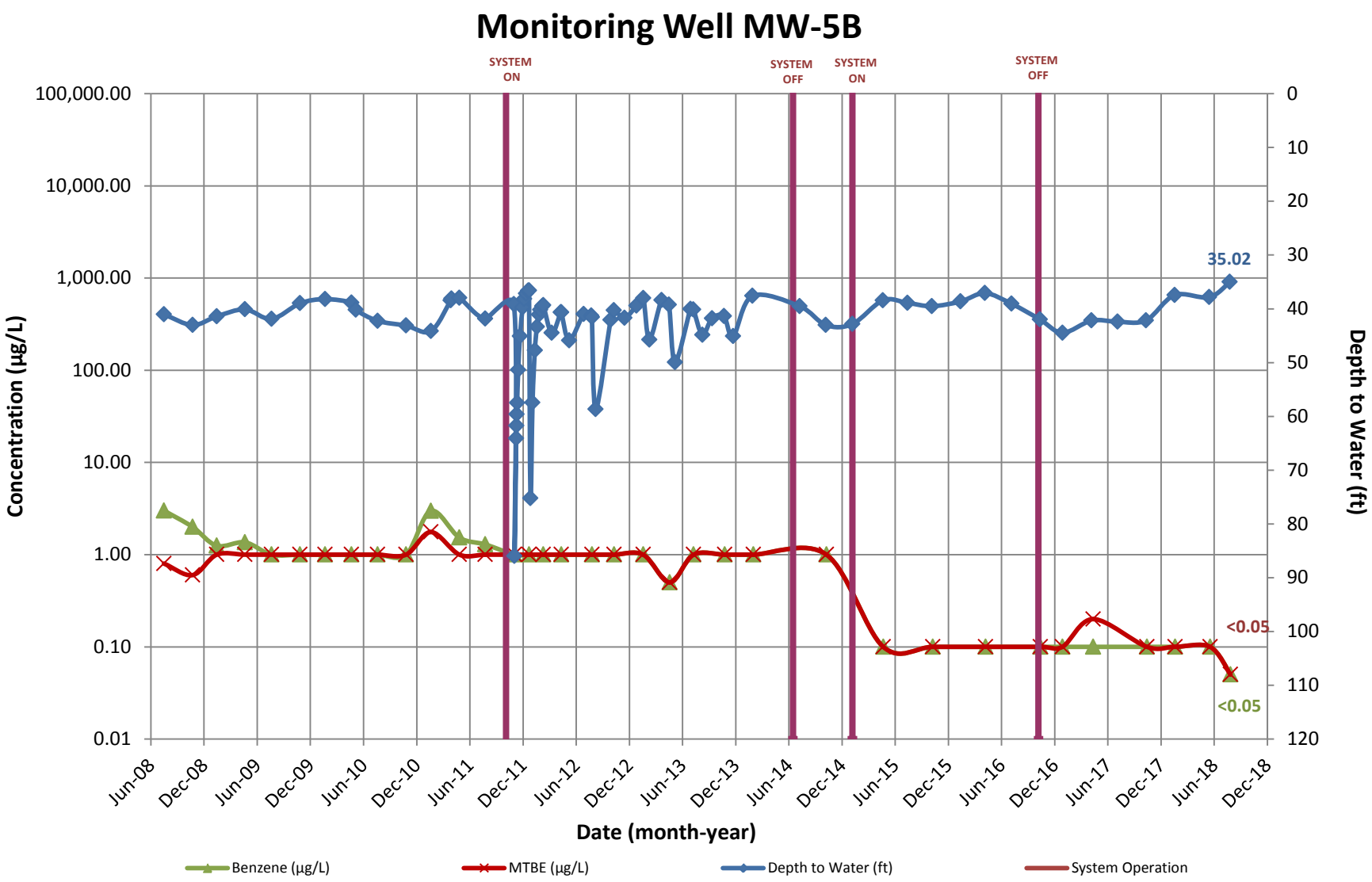
Parkton, MD



CONCENTRATION HYDROGRAPHS

Carroll Motor Fuels - Wally's
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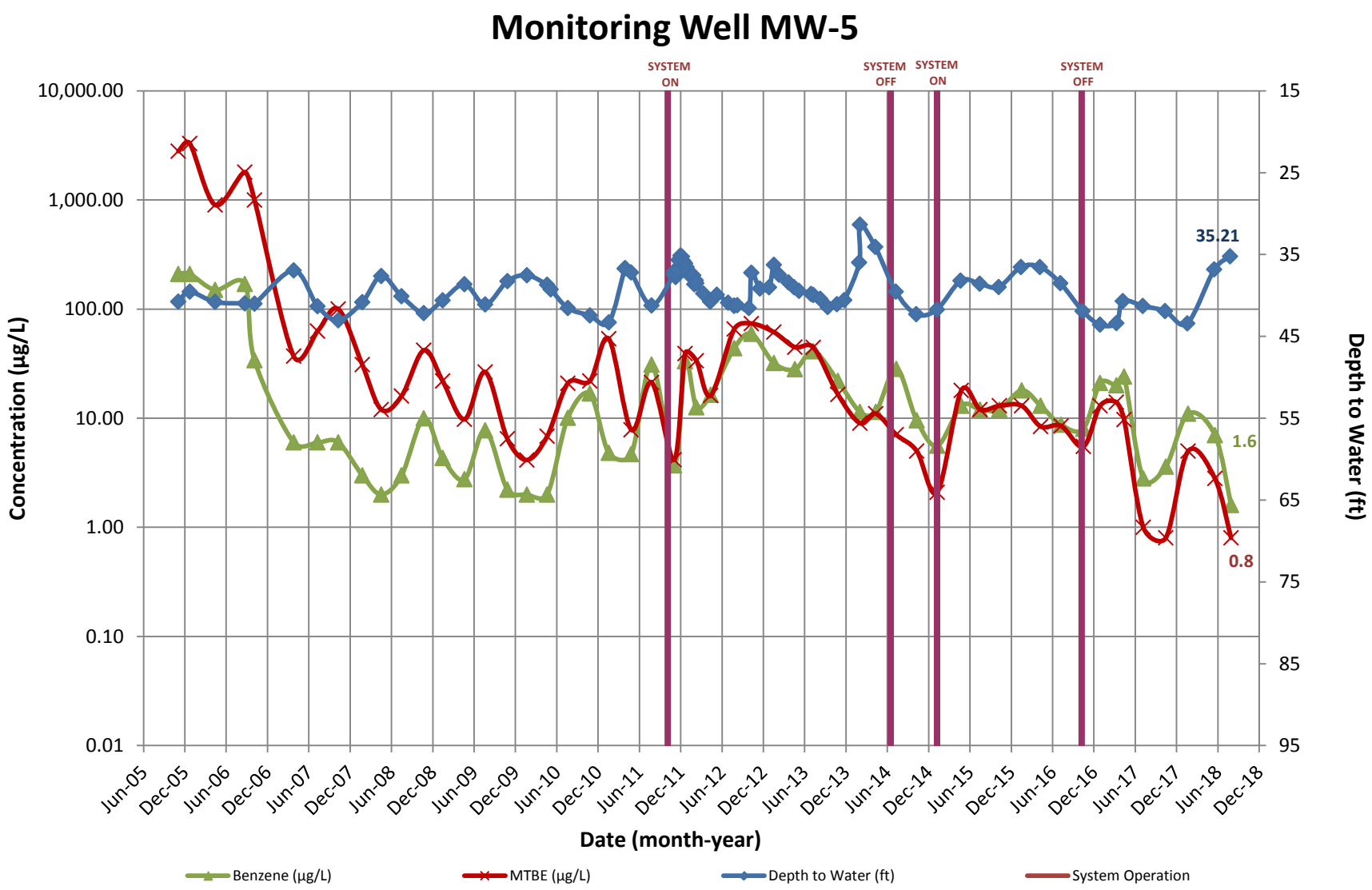
Parkton, MD



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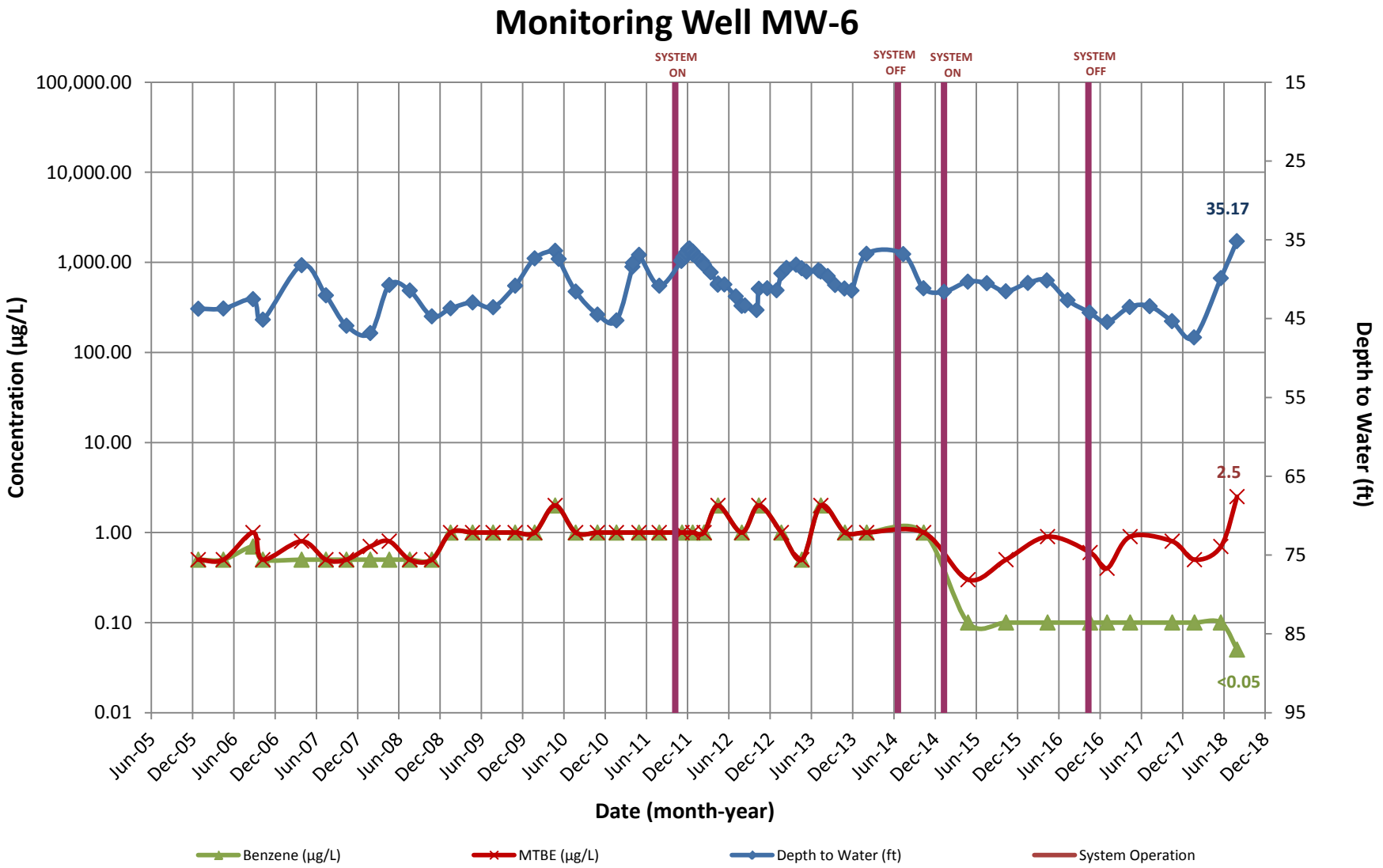
Parkton, MD



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Carroll Motor Fuels - Wally's
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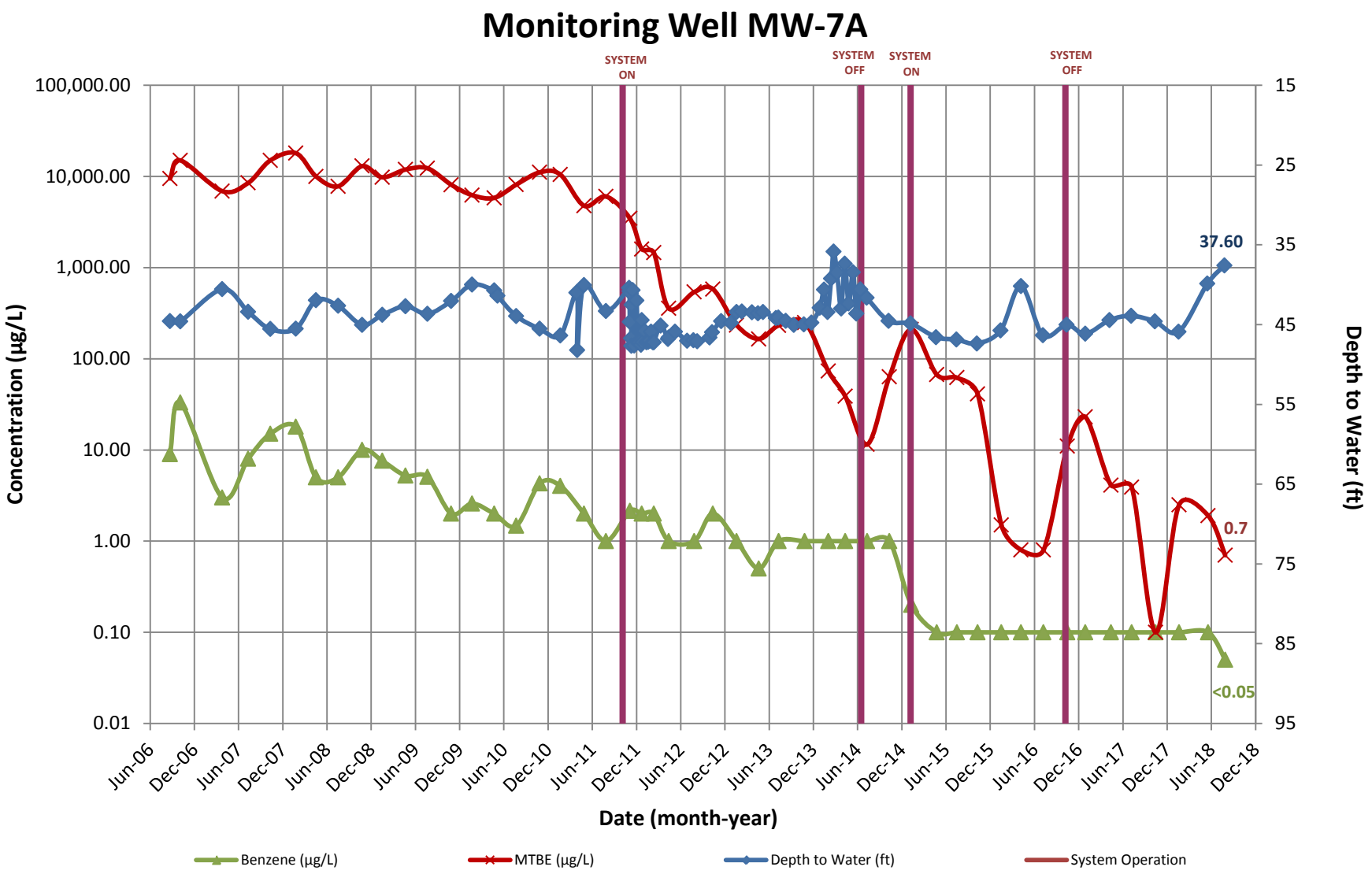
Parkton, MD



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Carroll Motor Fuels - Wally's
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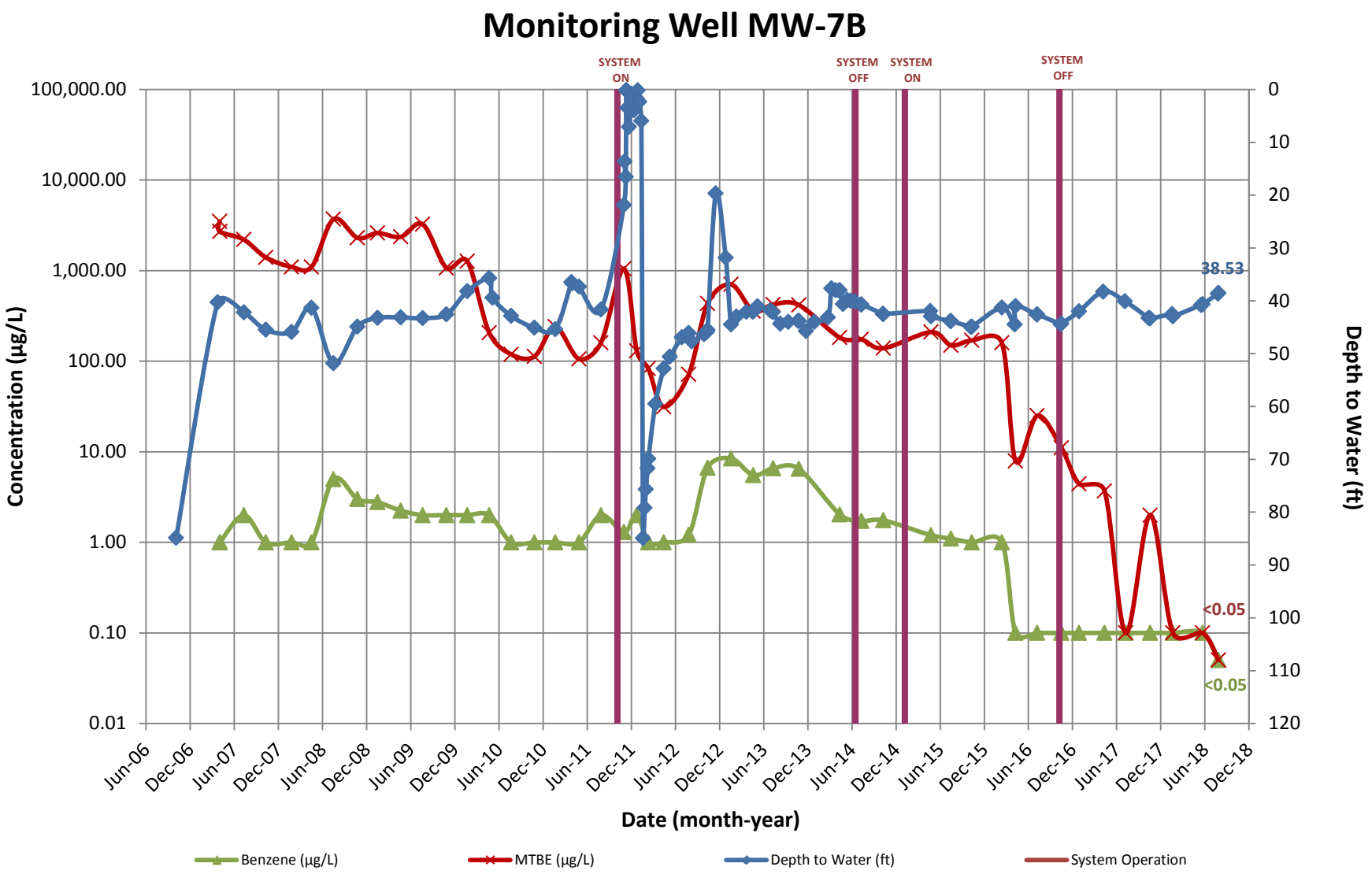
Parkton, MD



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Carroll Motor Fuels - Wally's
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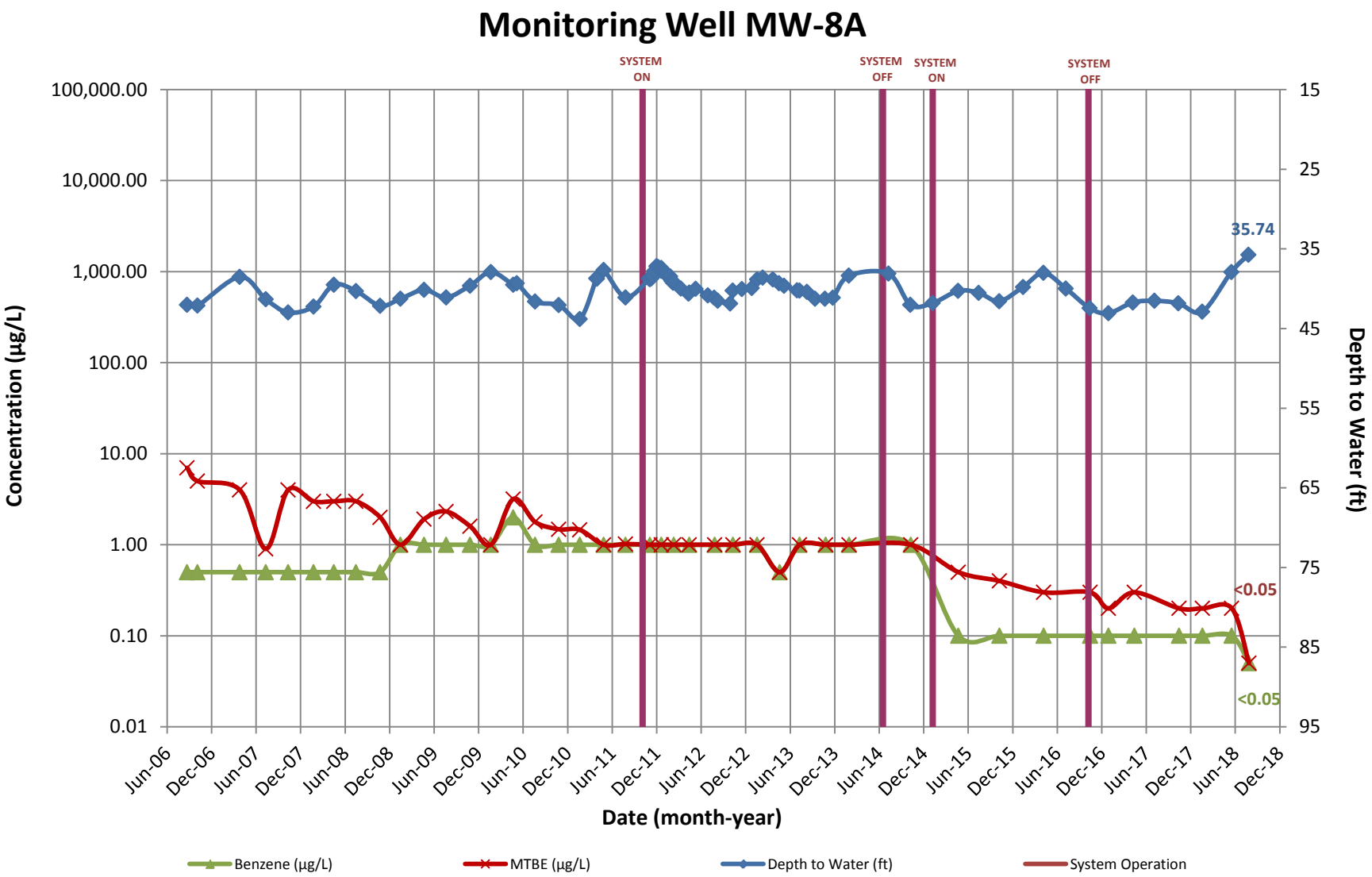
Parkton, MD



CONCENTRATION HYDROGRAPHS

Carroll Motor Fuels - Wally's
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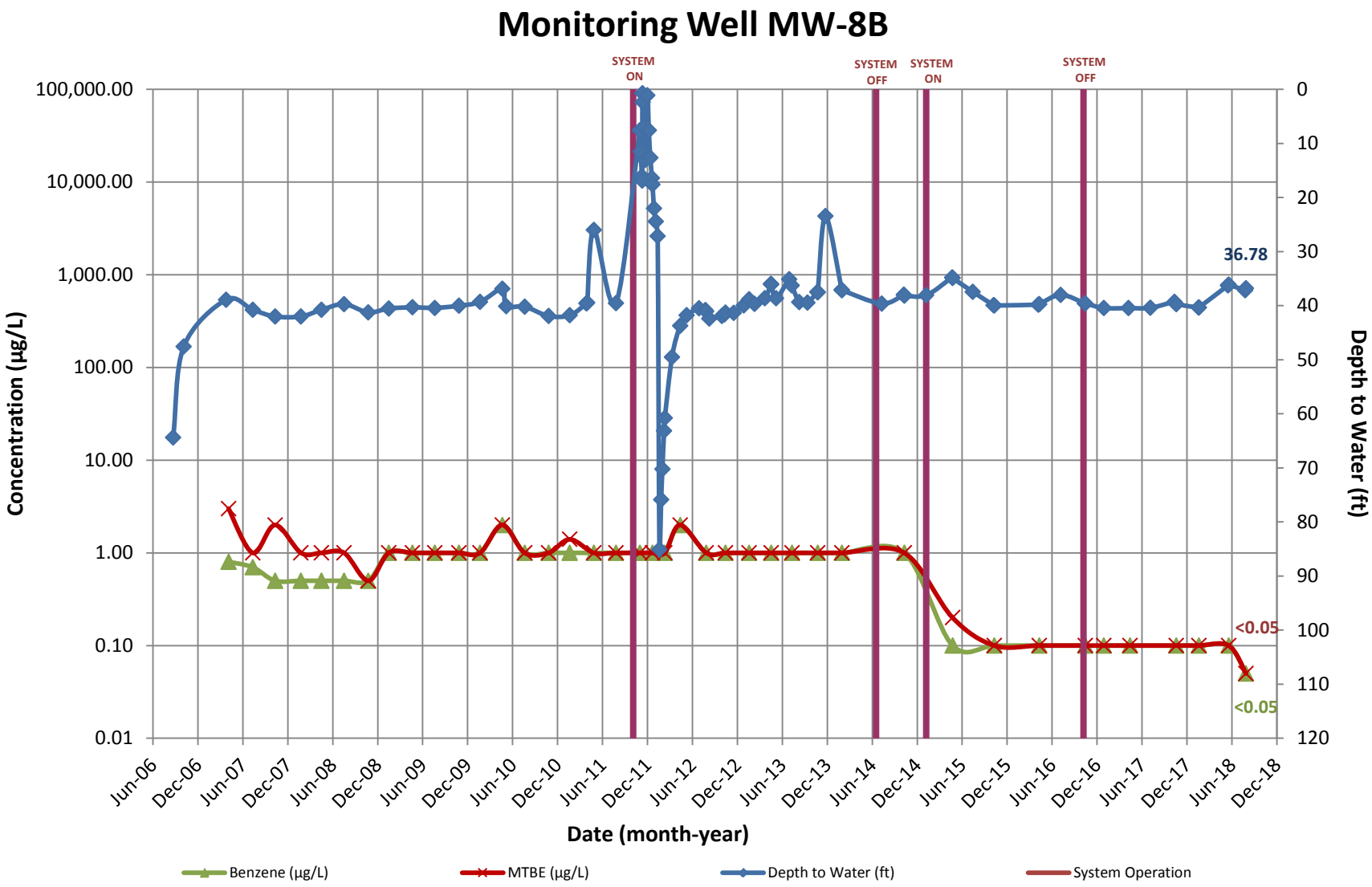
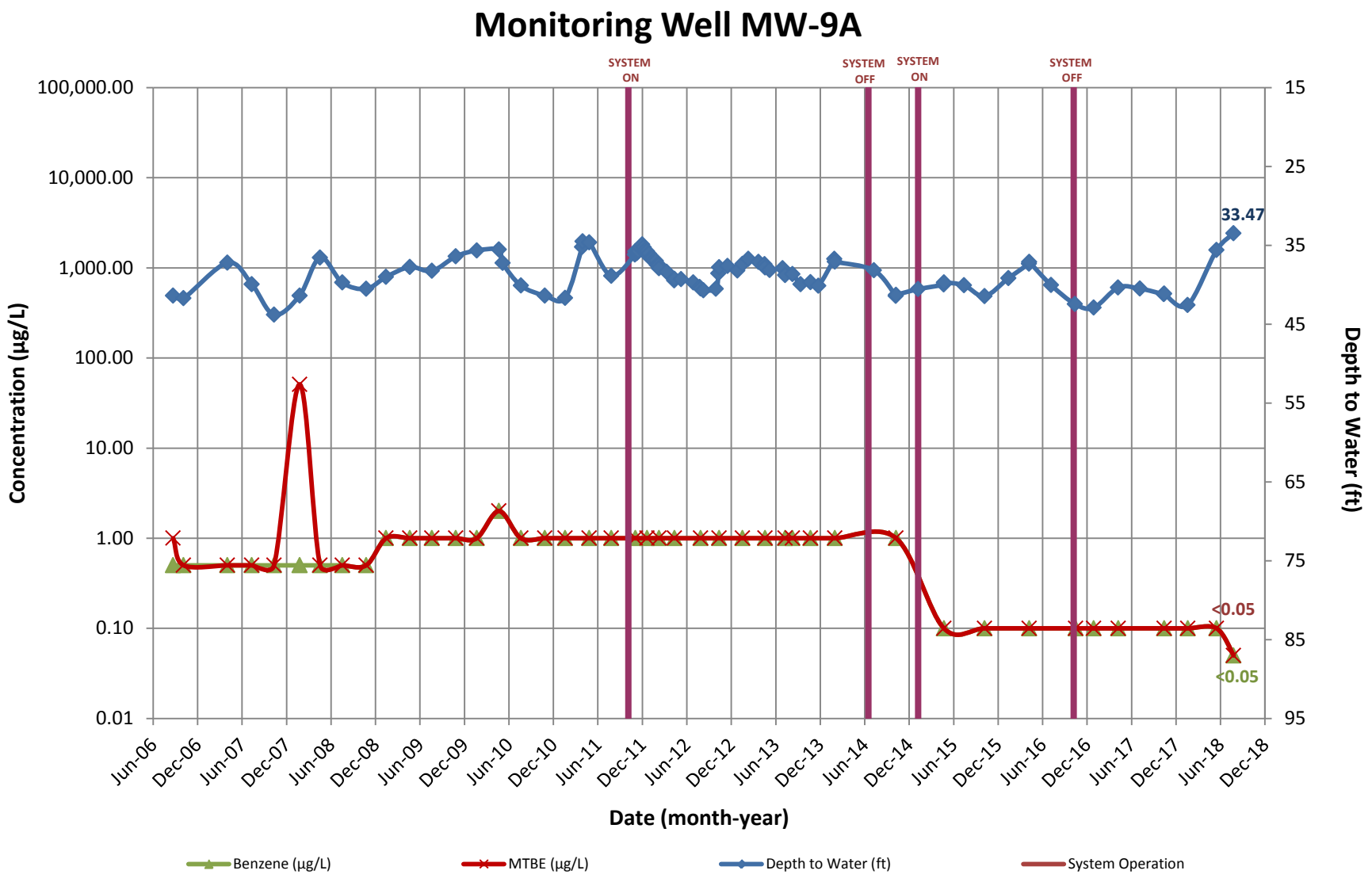
Parkton, MD



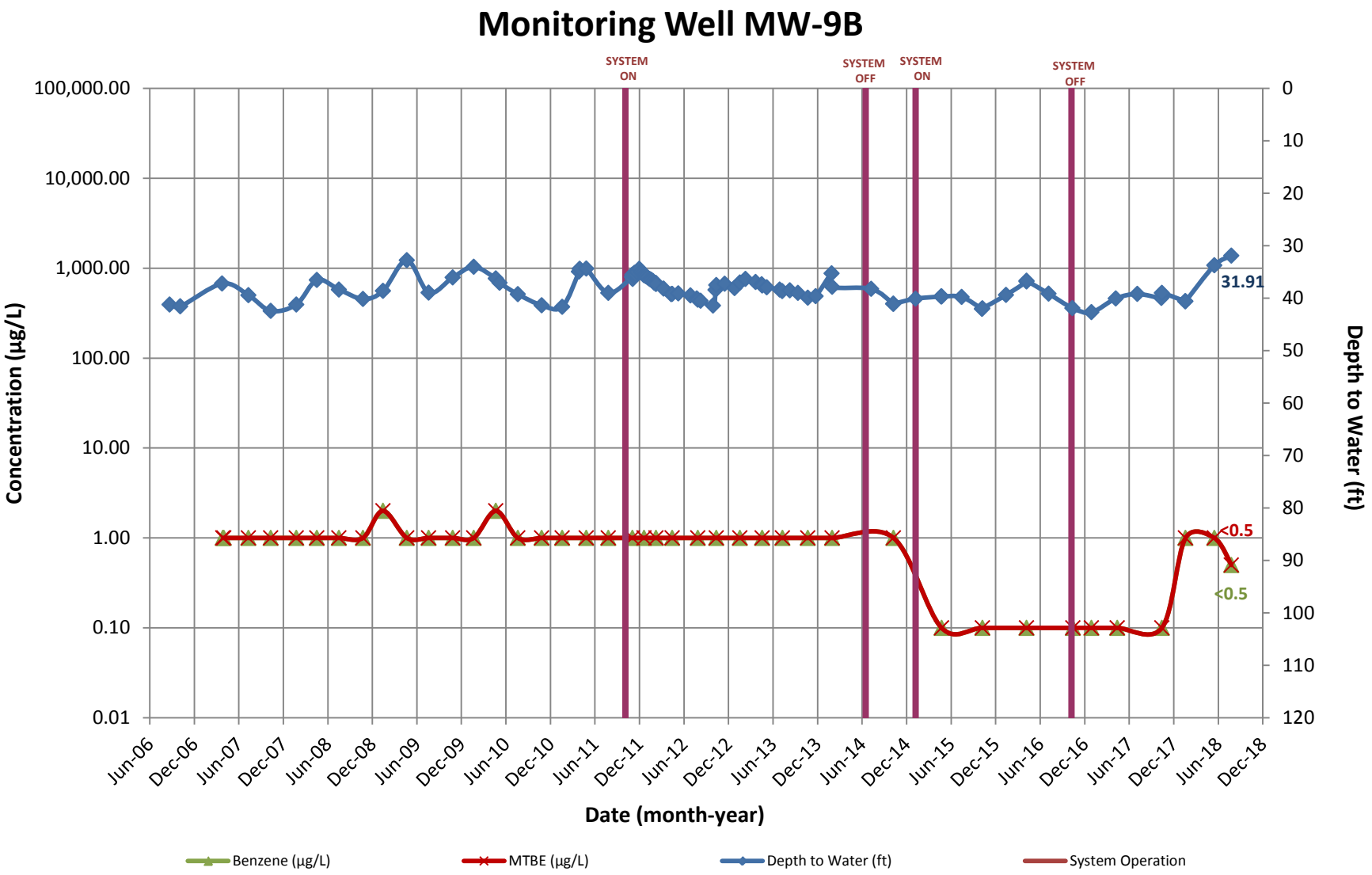
CONCENTRATION HYDROGRAPHS

Carroll Motor Fuels - Wally's
19200 Middletown Rd
Parkton, MD



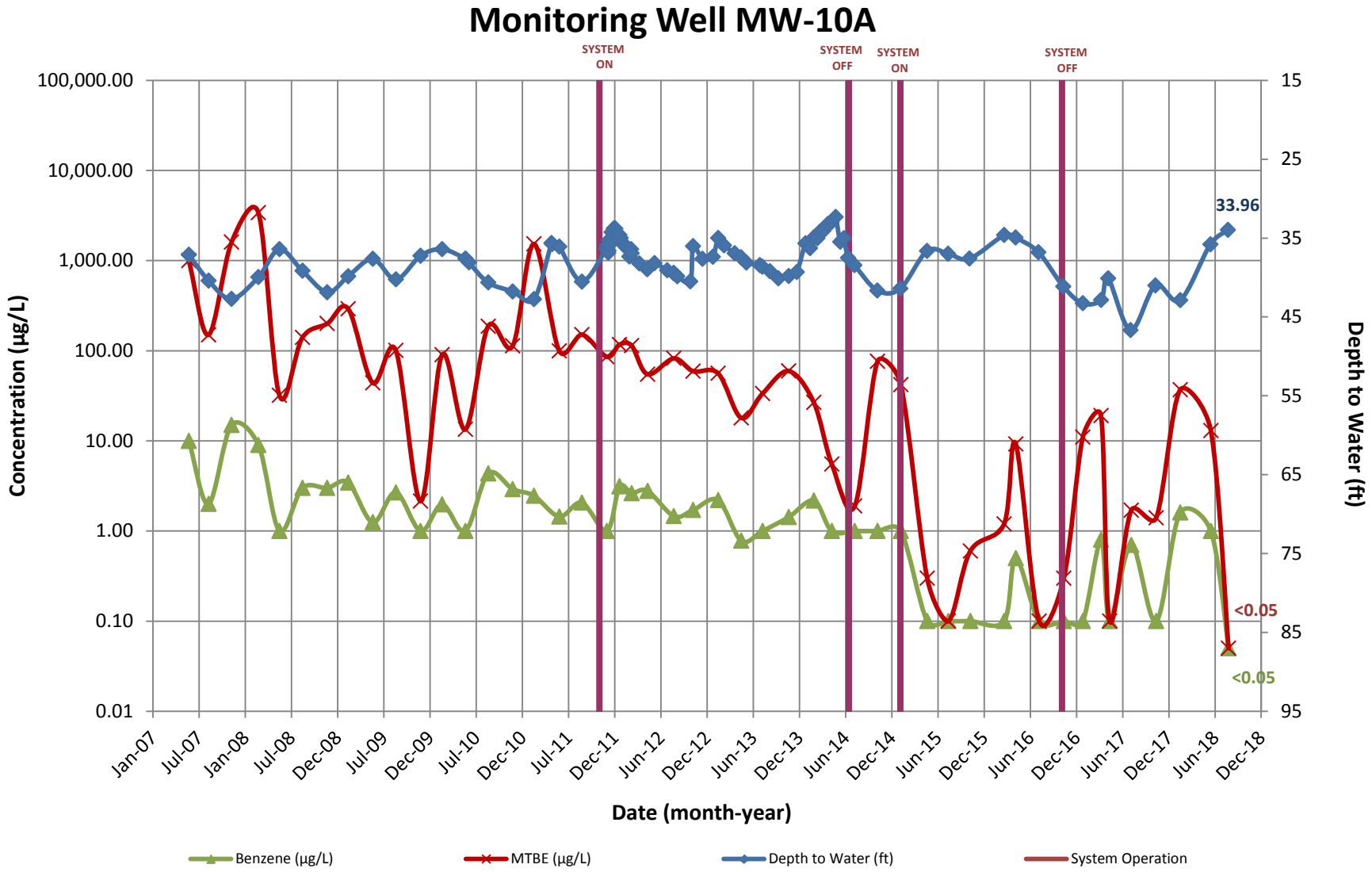
CONCENTRATION HYDROGRAPHS

Carroll Motor Fuels - Wally's
19200 Middletown Rd
Parkton, MD



CONCENTRATION HYDROGRAPHS

Carroll Motor Fuels - Wally's
19200 Middletown Rd
Parkton, MD



CONCENTRATION HYDROGRAPHS

Carroll Motor Fuels - Wally's
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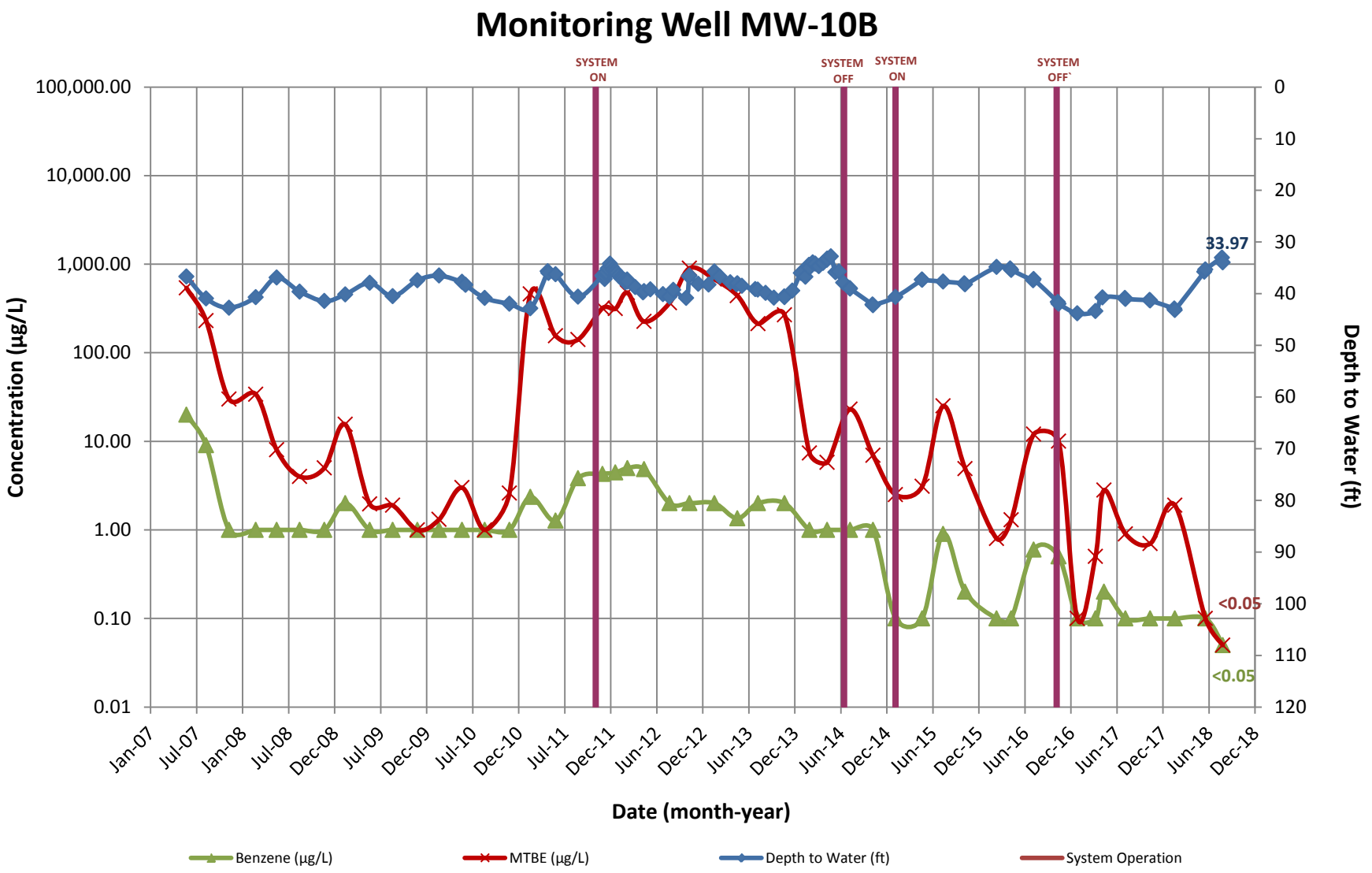
Parkton, MD



CONCENTRATION HYDROGRAPHS

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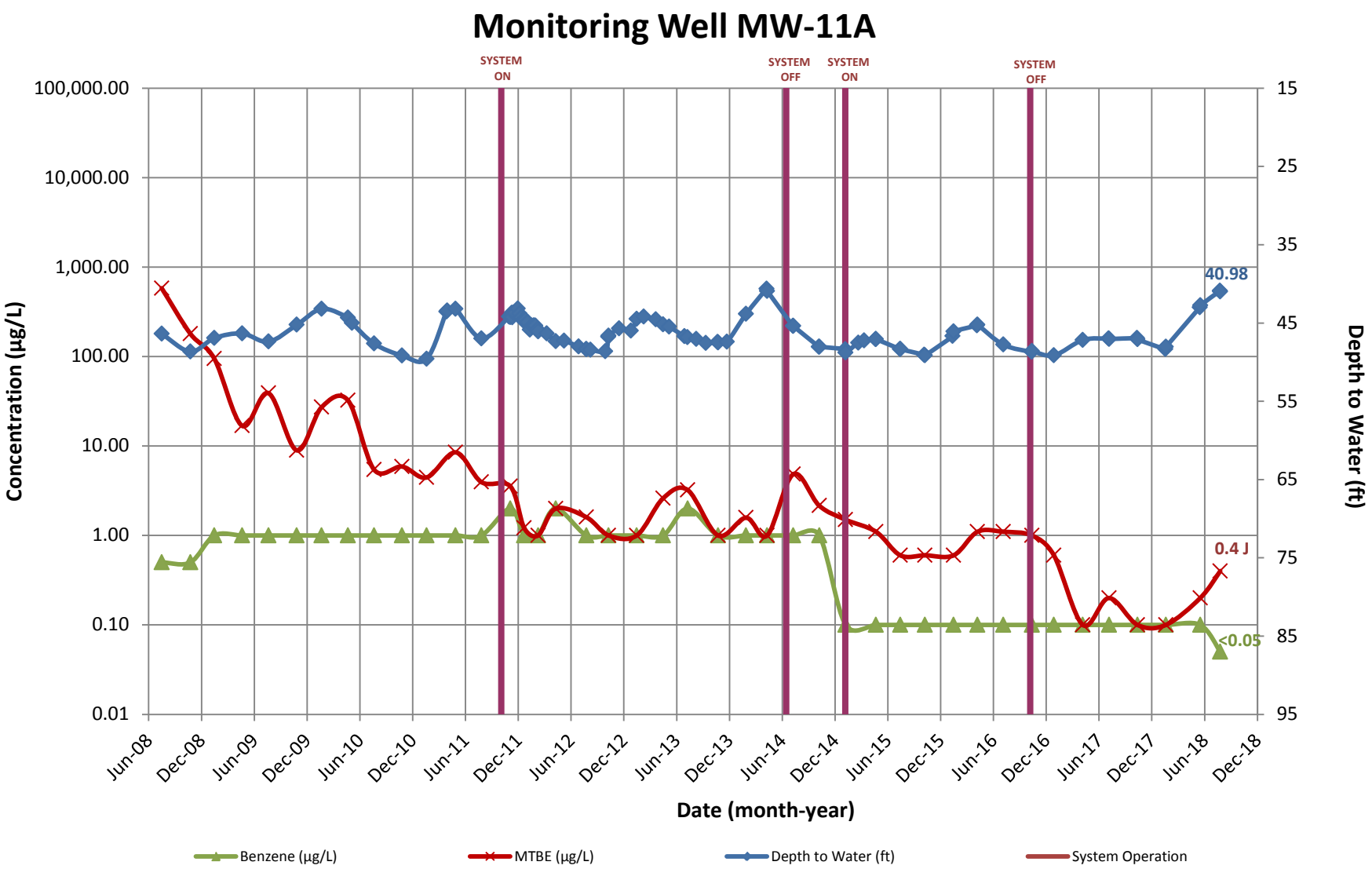
Parkton, MD



CONCENTRATION HYDROGRAPHS

Carroll Motor Fuels - Wally's
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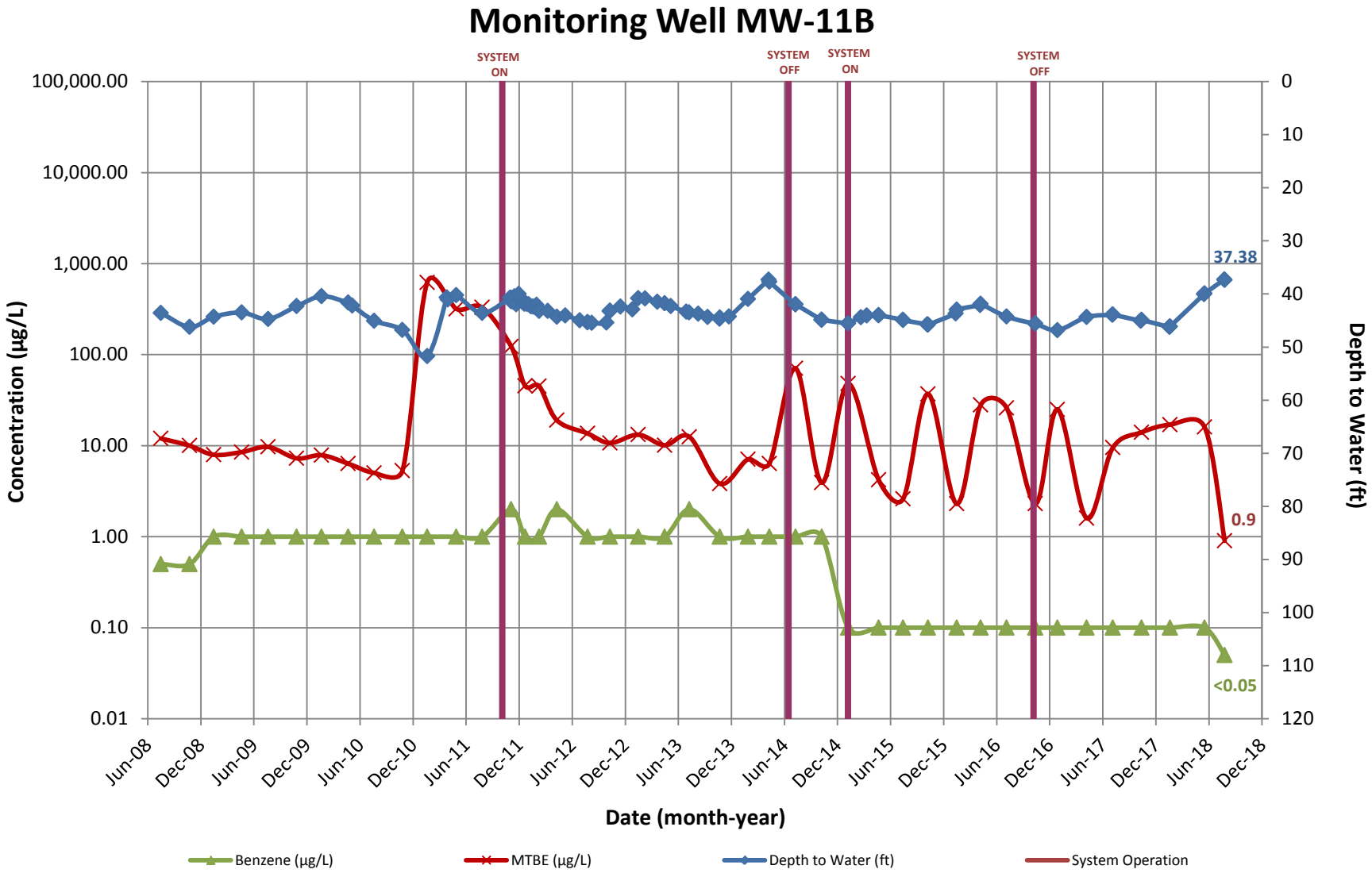
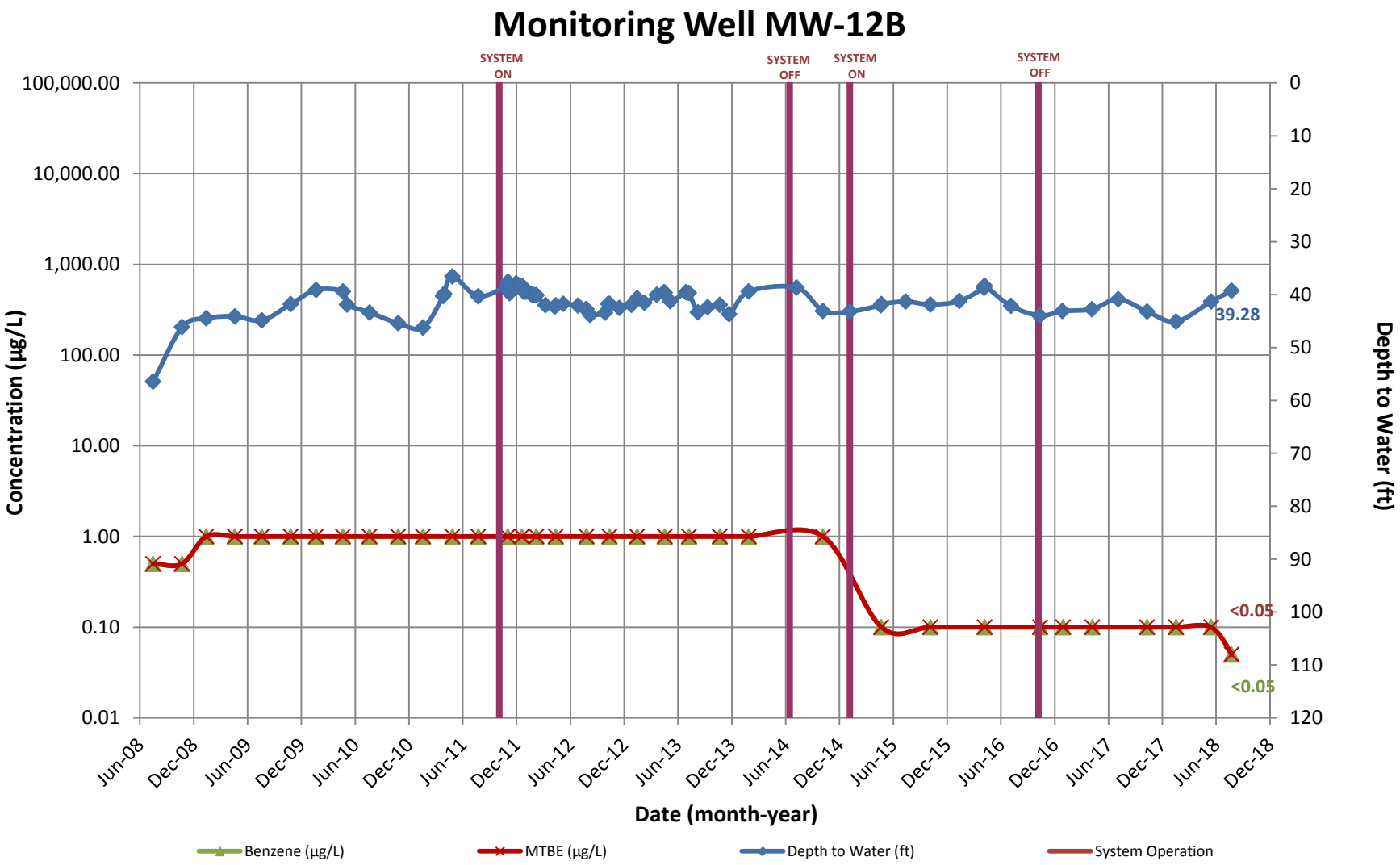
Parkton, MD



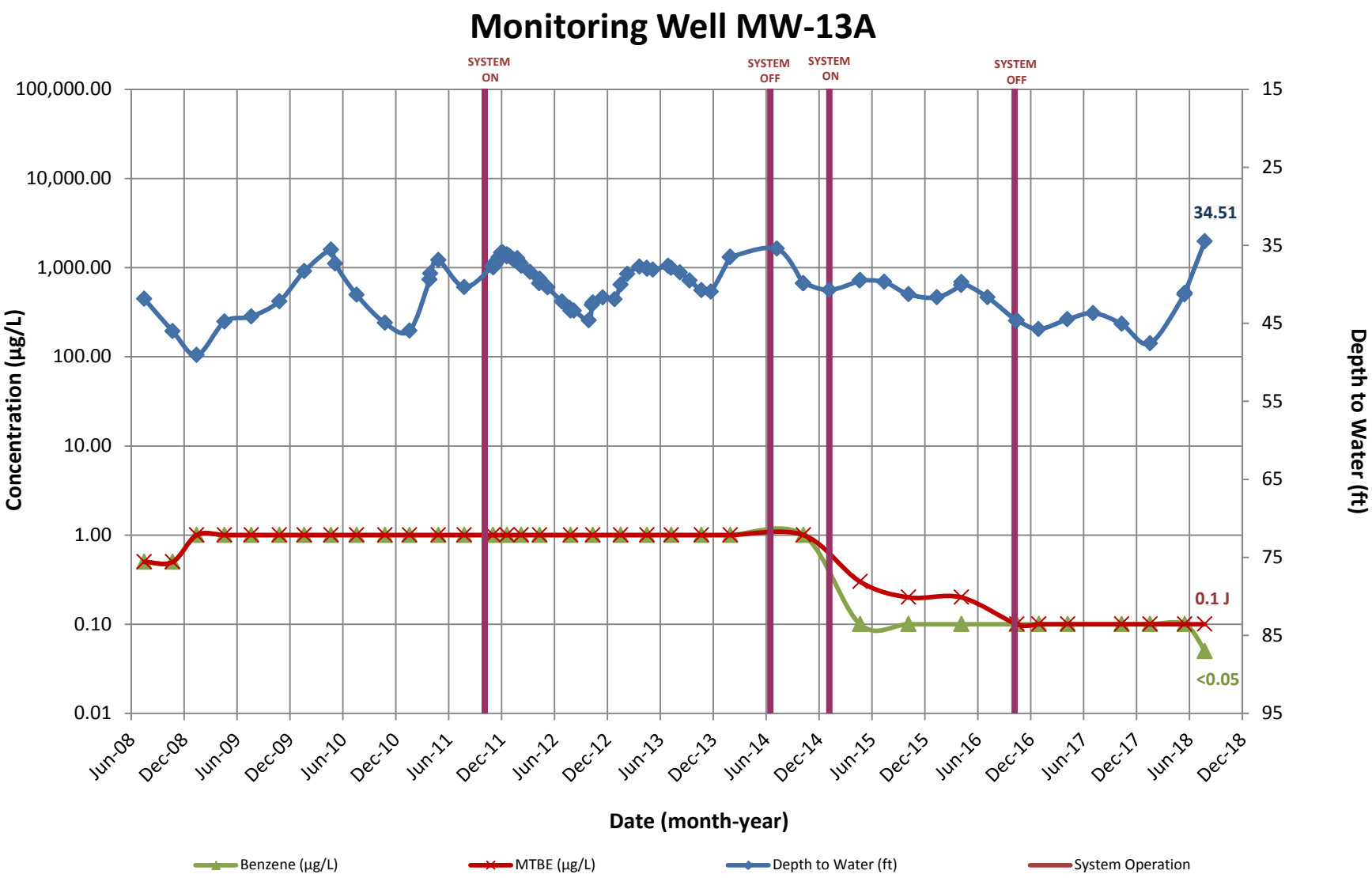
CONCENTRATION HYDROGRAPHS

Carroll Motor Fuels - Wally's
19200 Middletown Rd
Parkton, MD



CONCENTRATION HYDROGRAPHS

Carroll Motor Fuels - Wally's
19200 Middletown Rd
Parkton, MD



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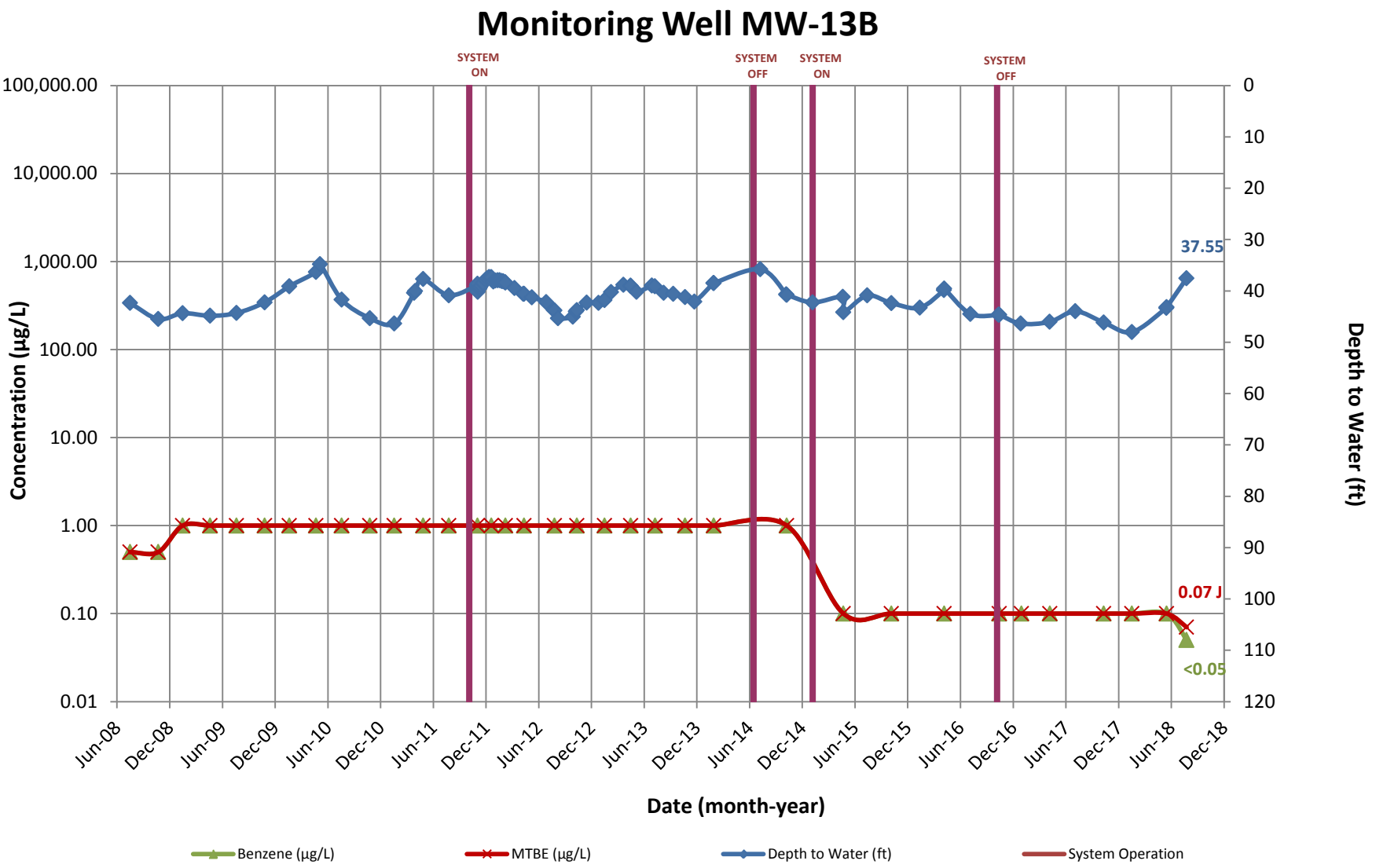
19200 Middletown Rd
Parkton, MD



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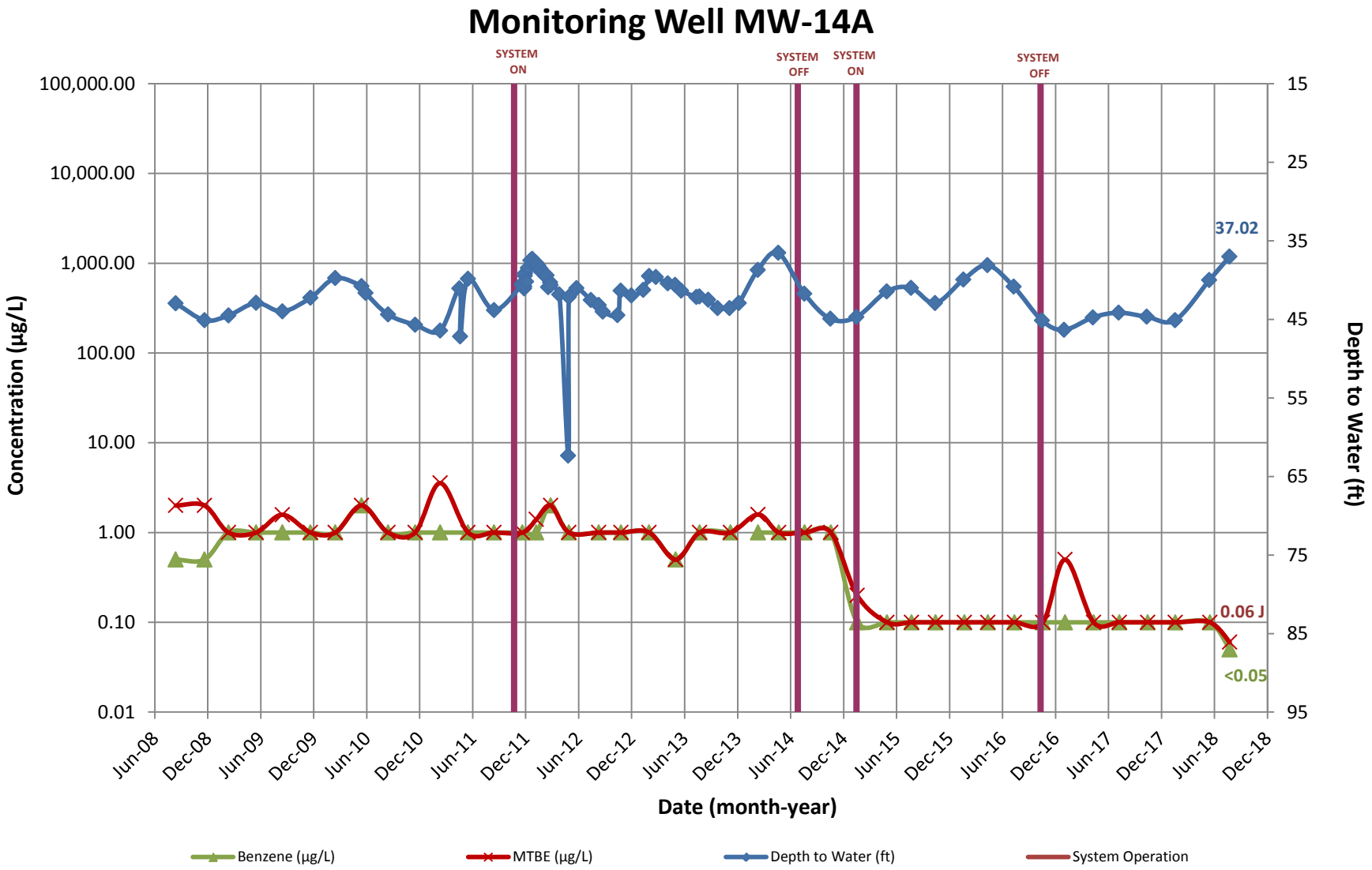
Parkton, MD



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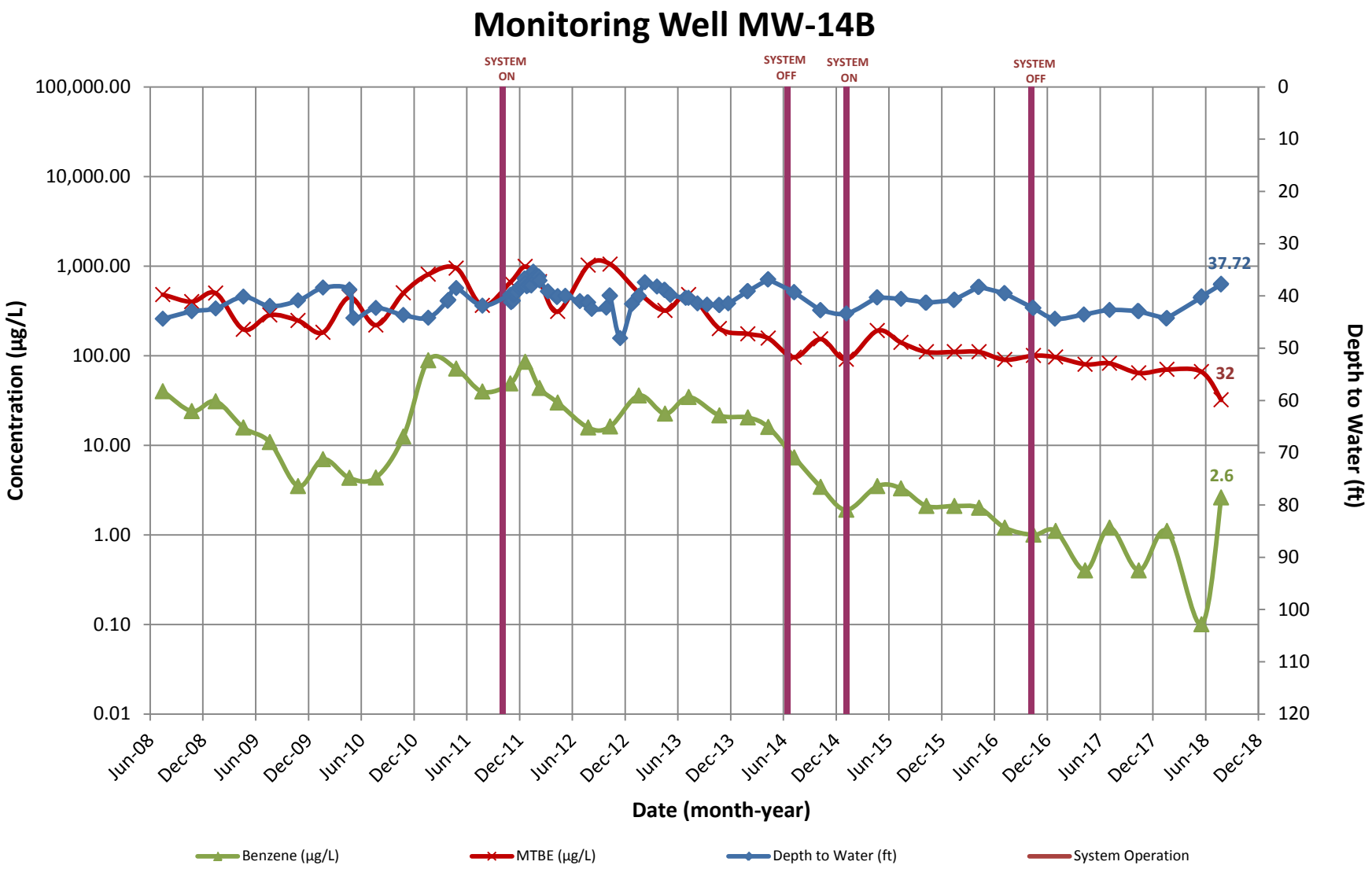
Parkton, MD



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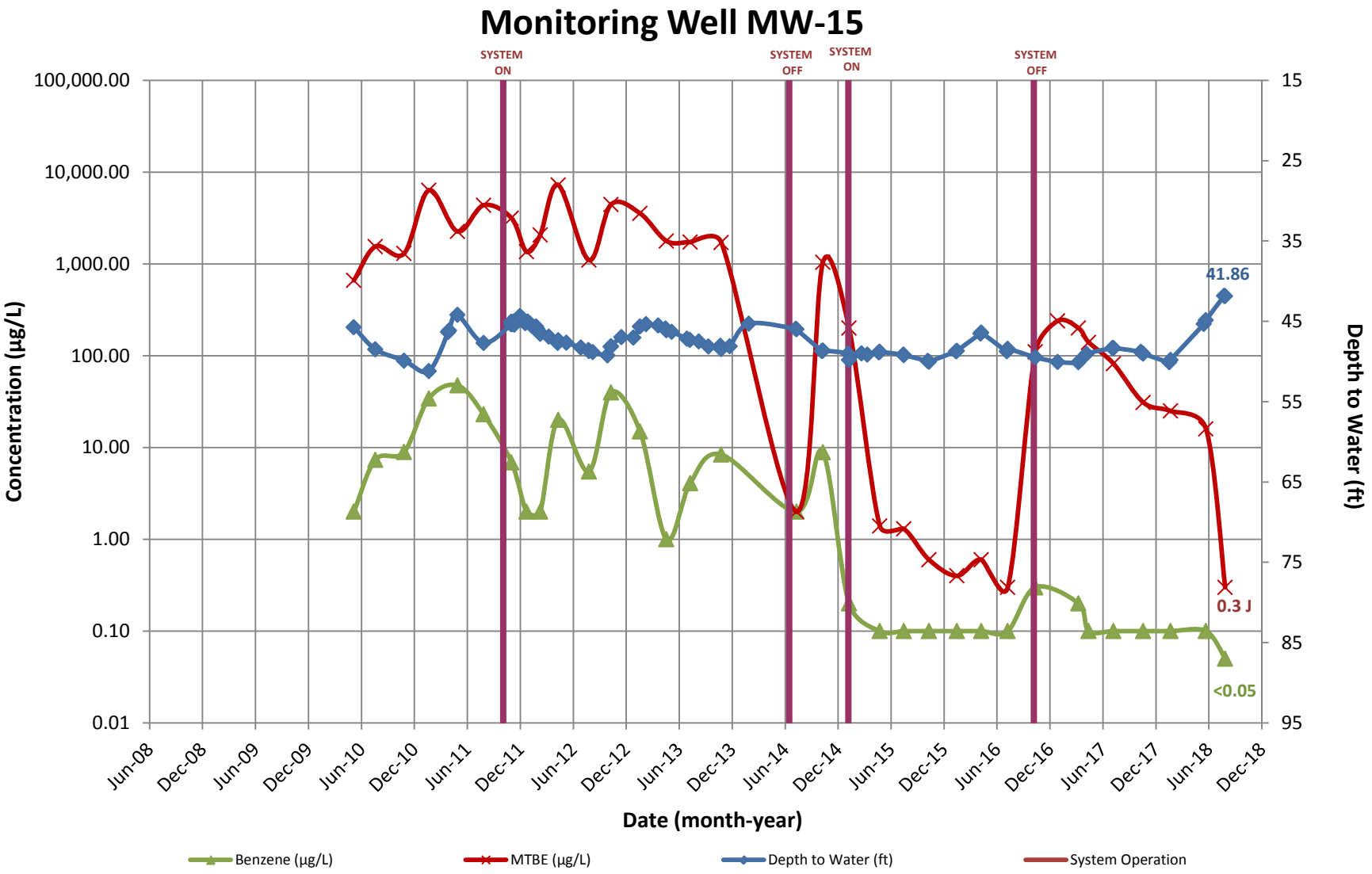
Parkton, MD



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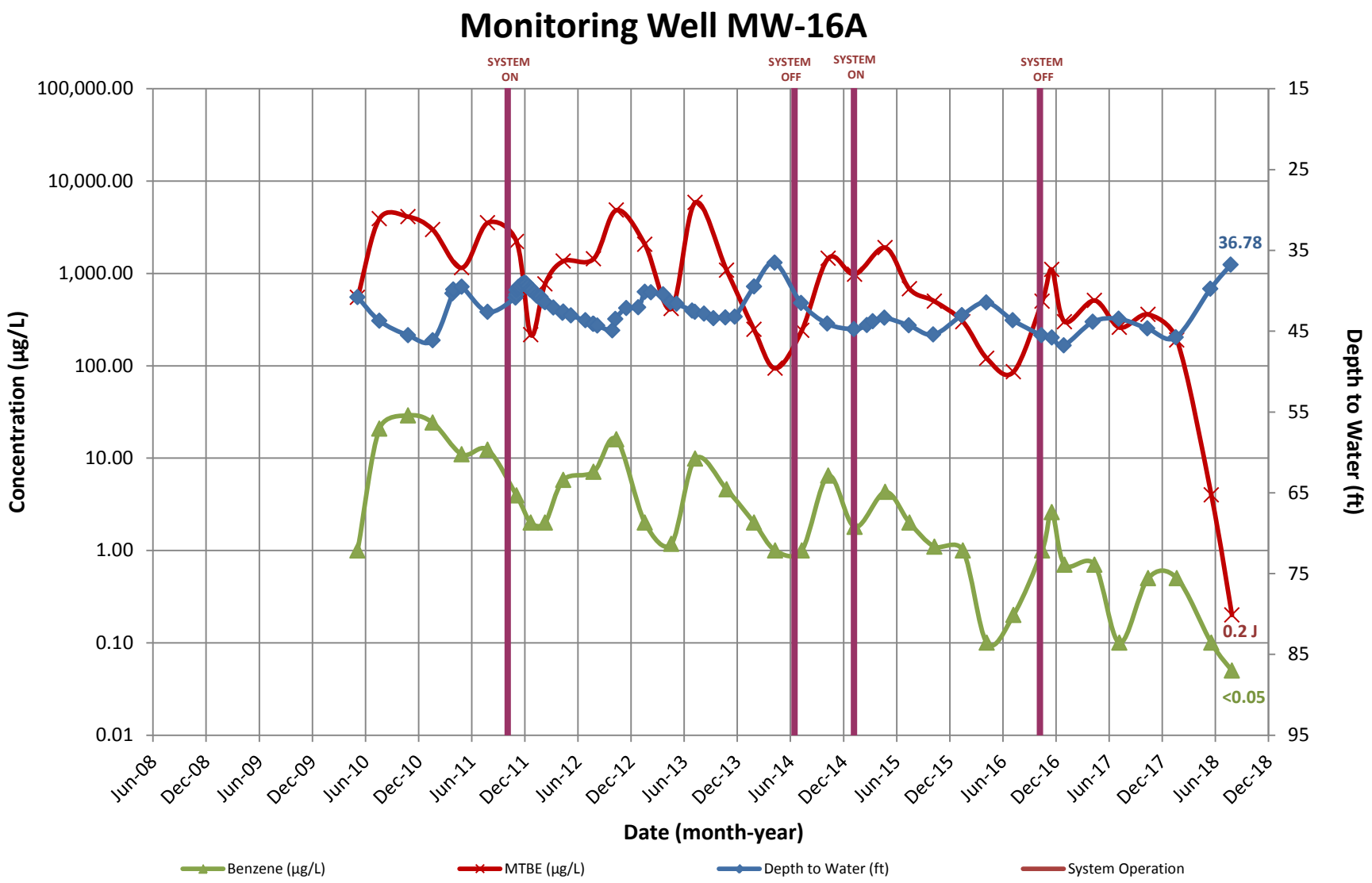

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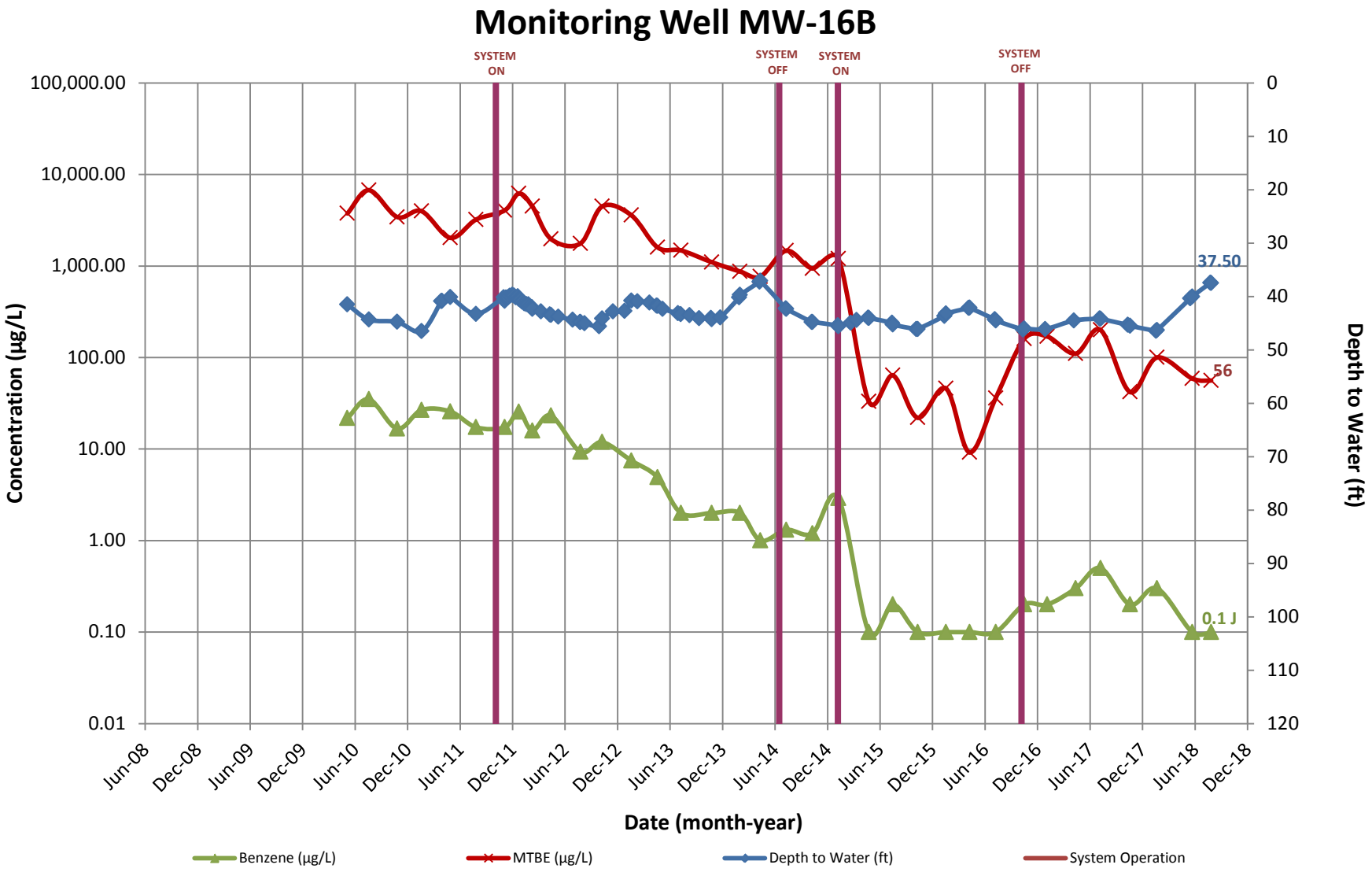

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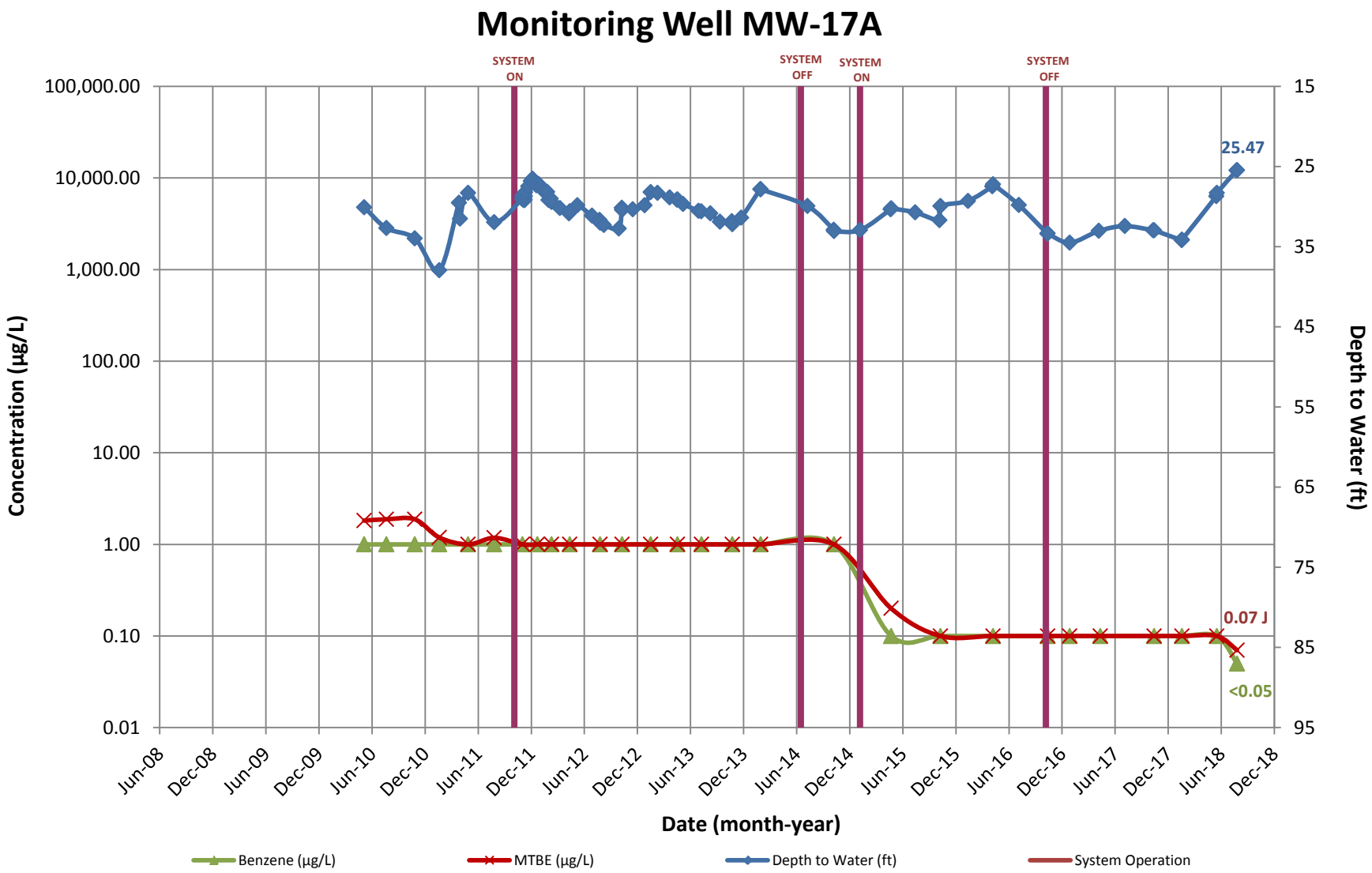

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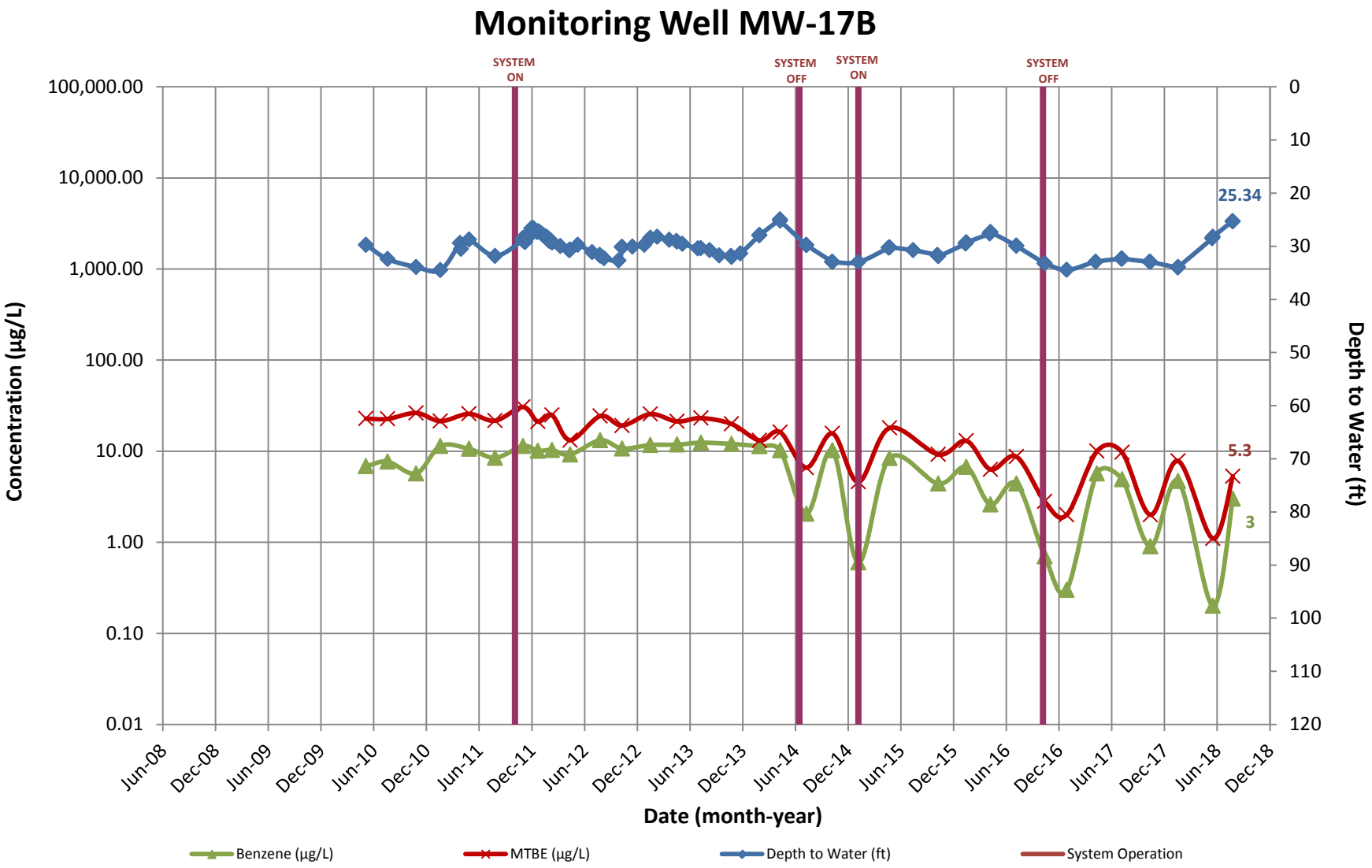

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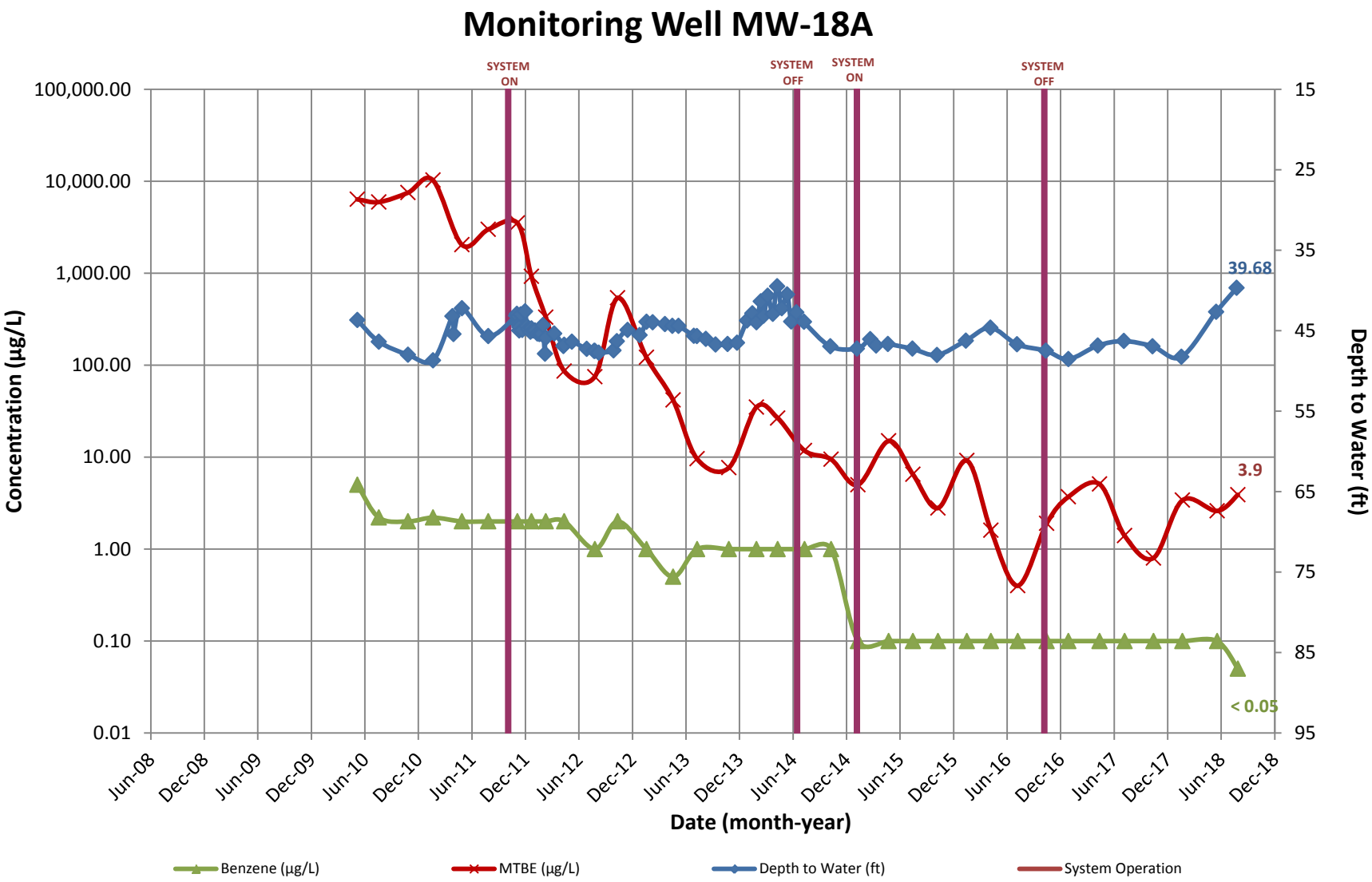

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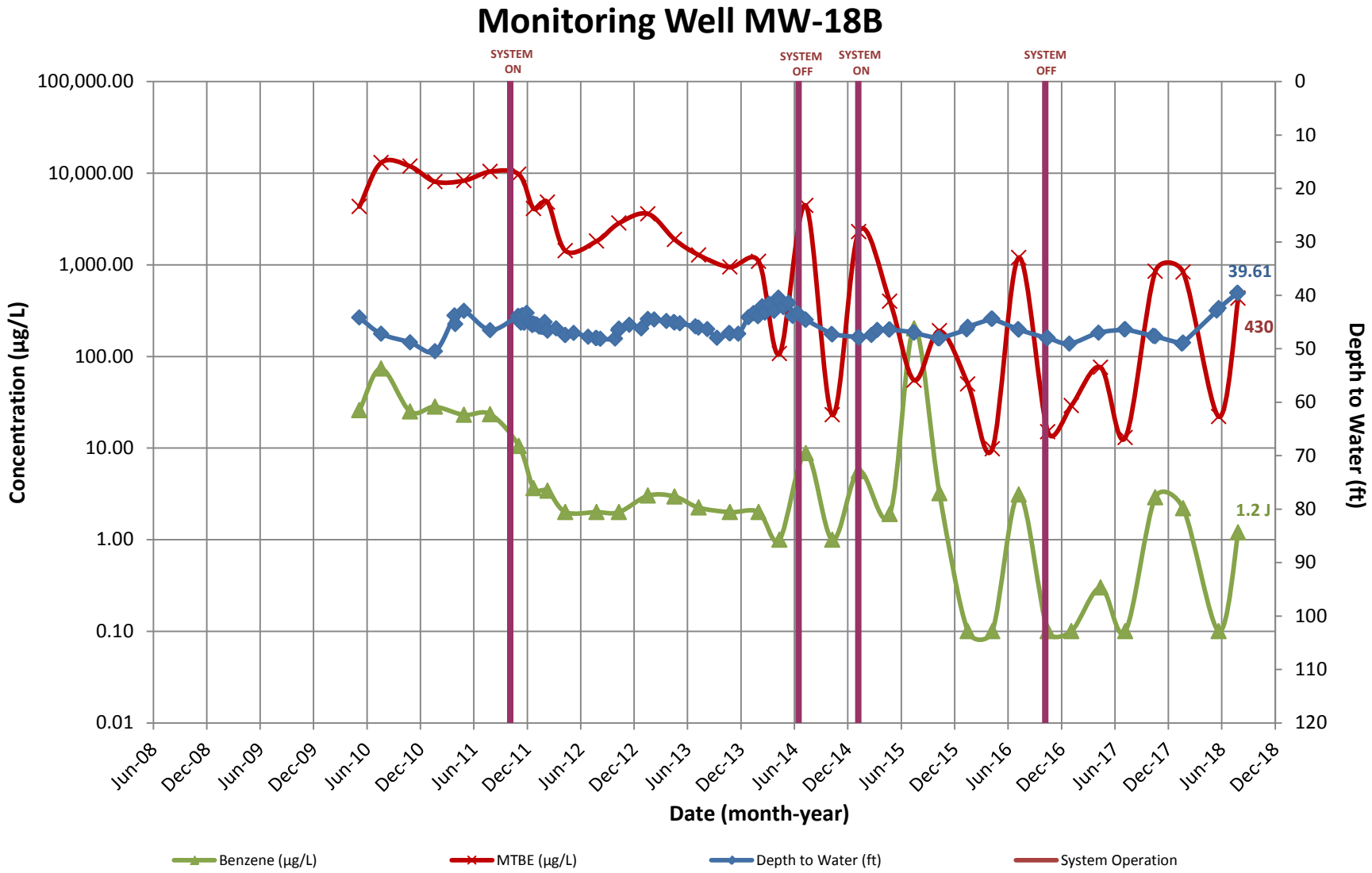

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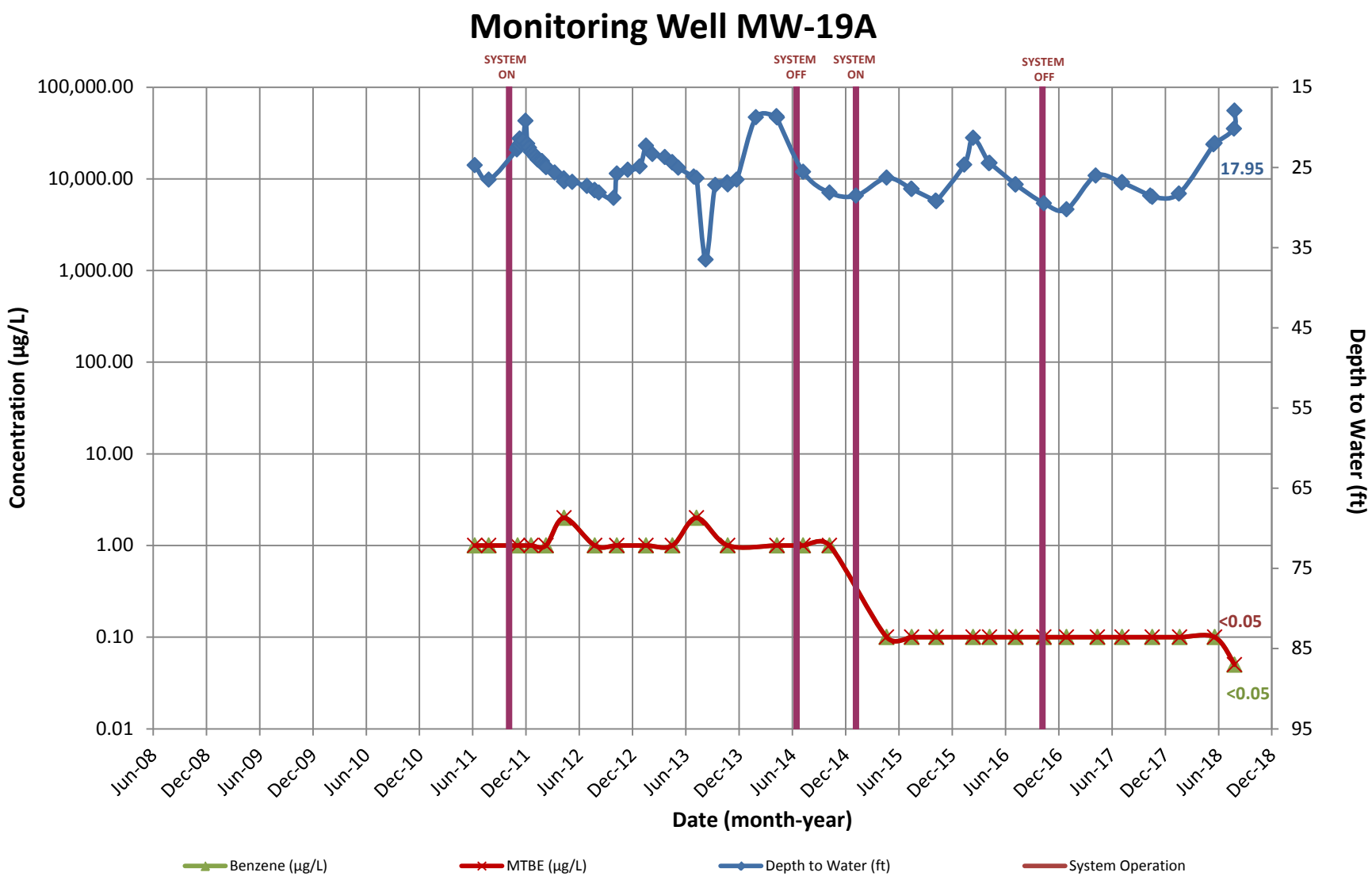
Parkton, MD



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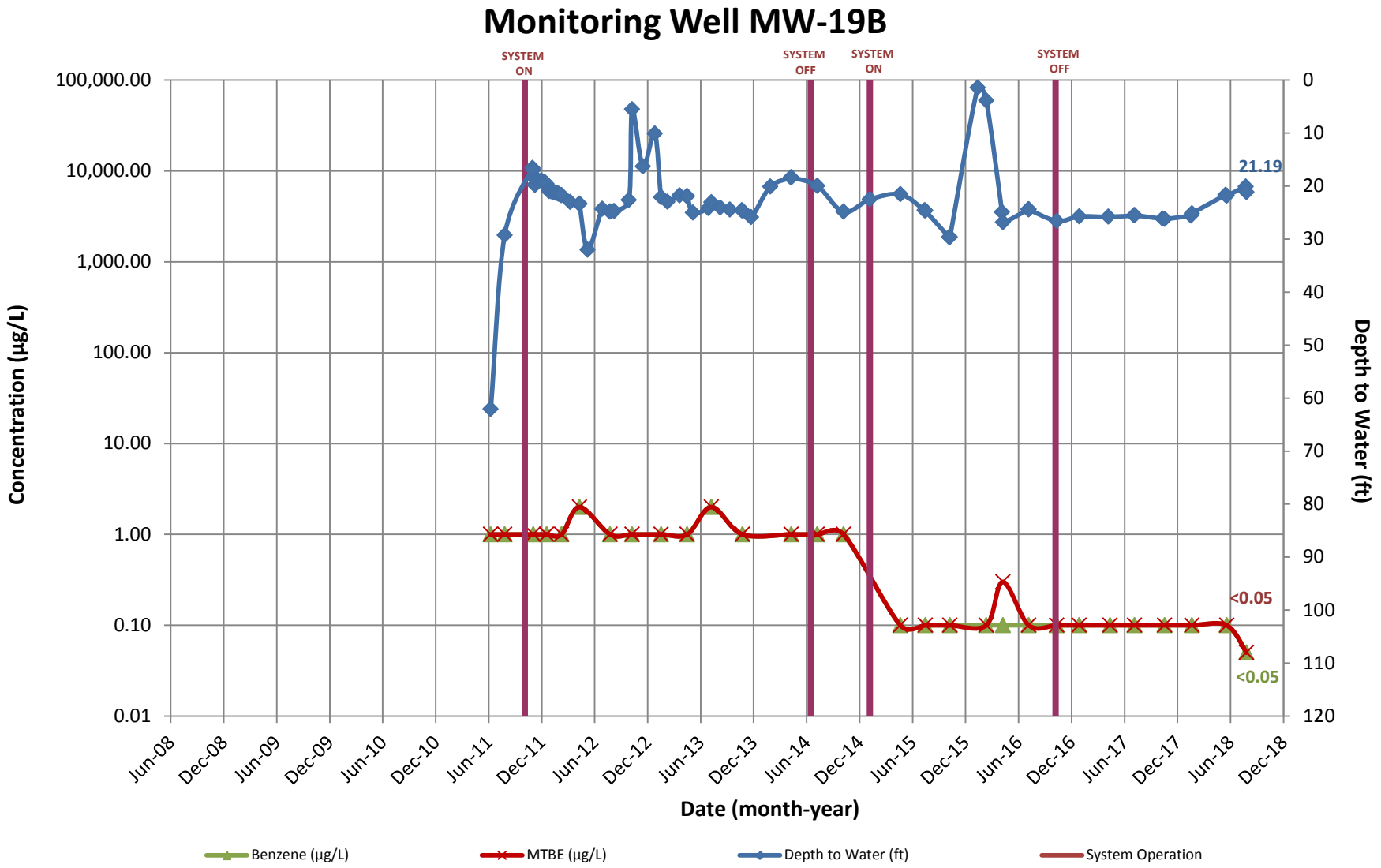
Parkton, MD



CONCENTRATION HYDROGRAPHS

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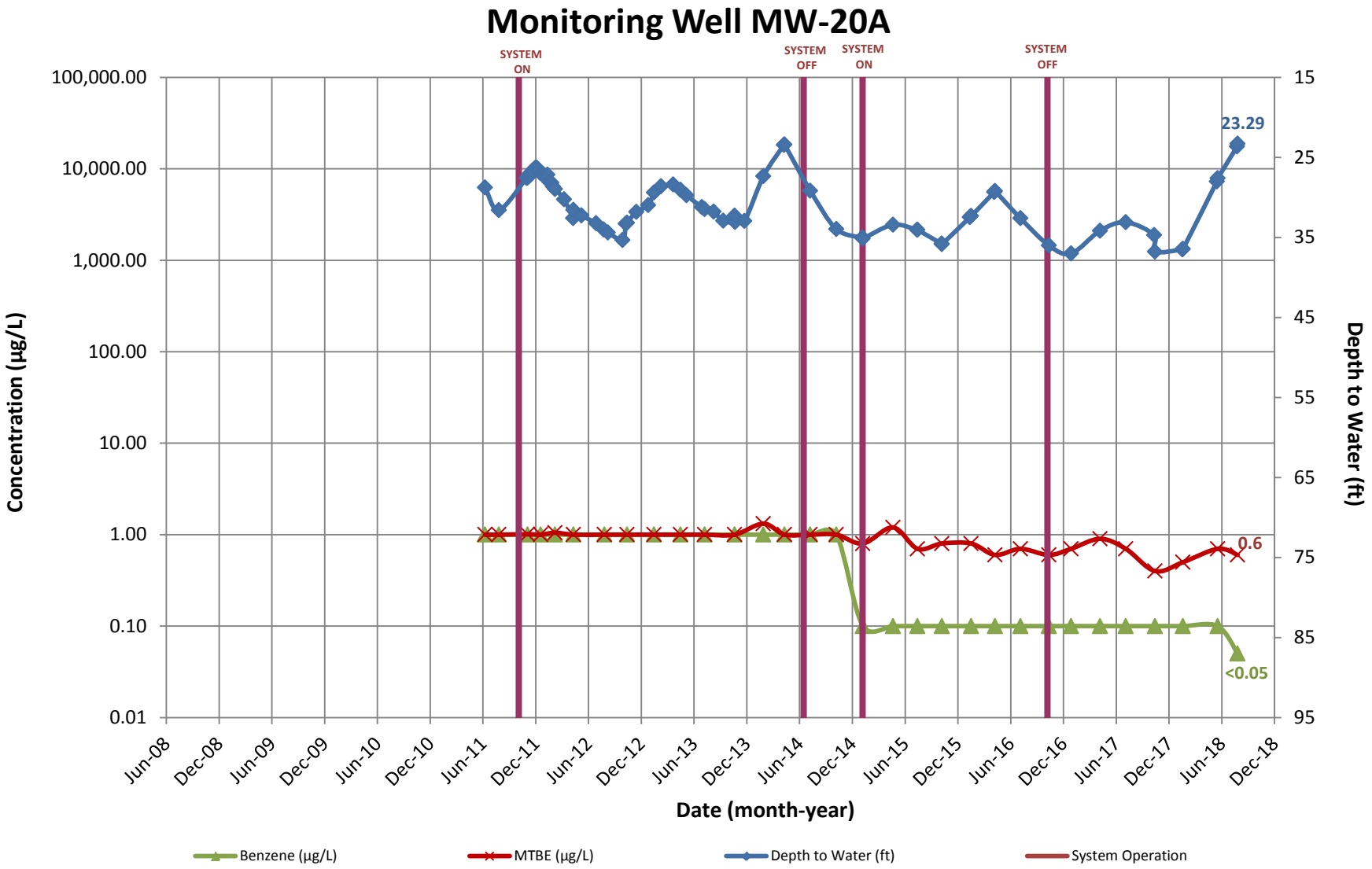
19200 Middletown Rd
Parkton, MD



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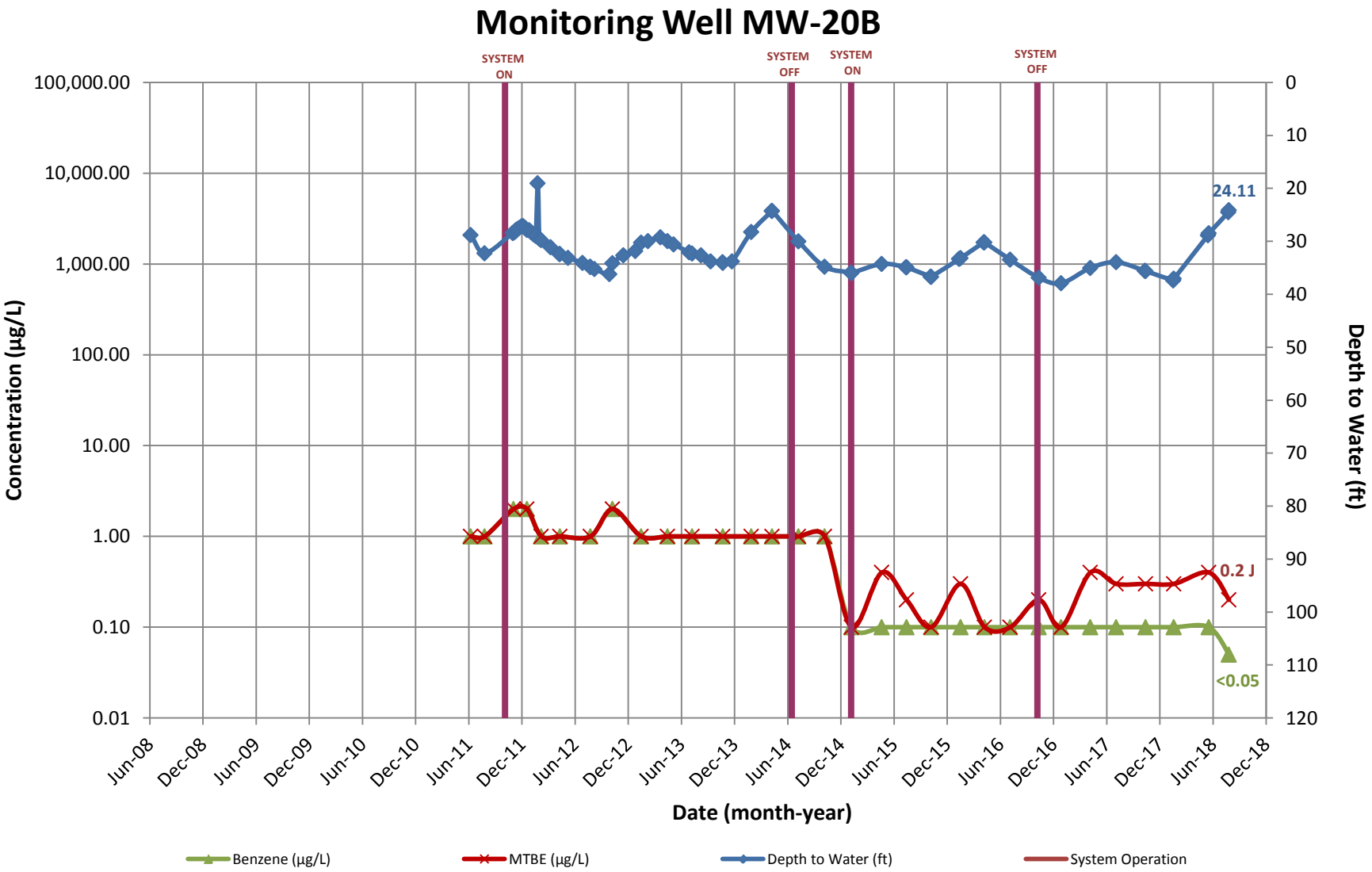

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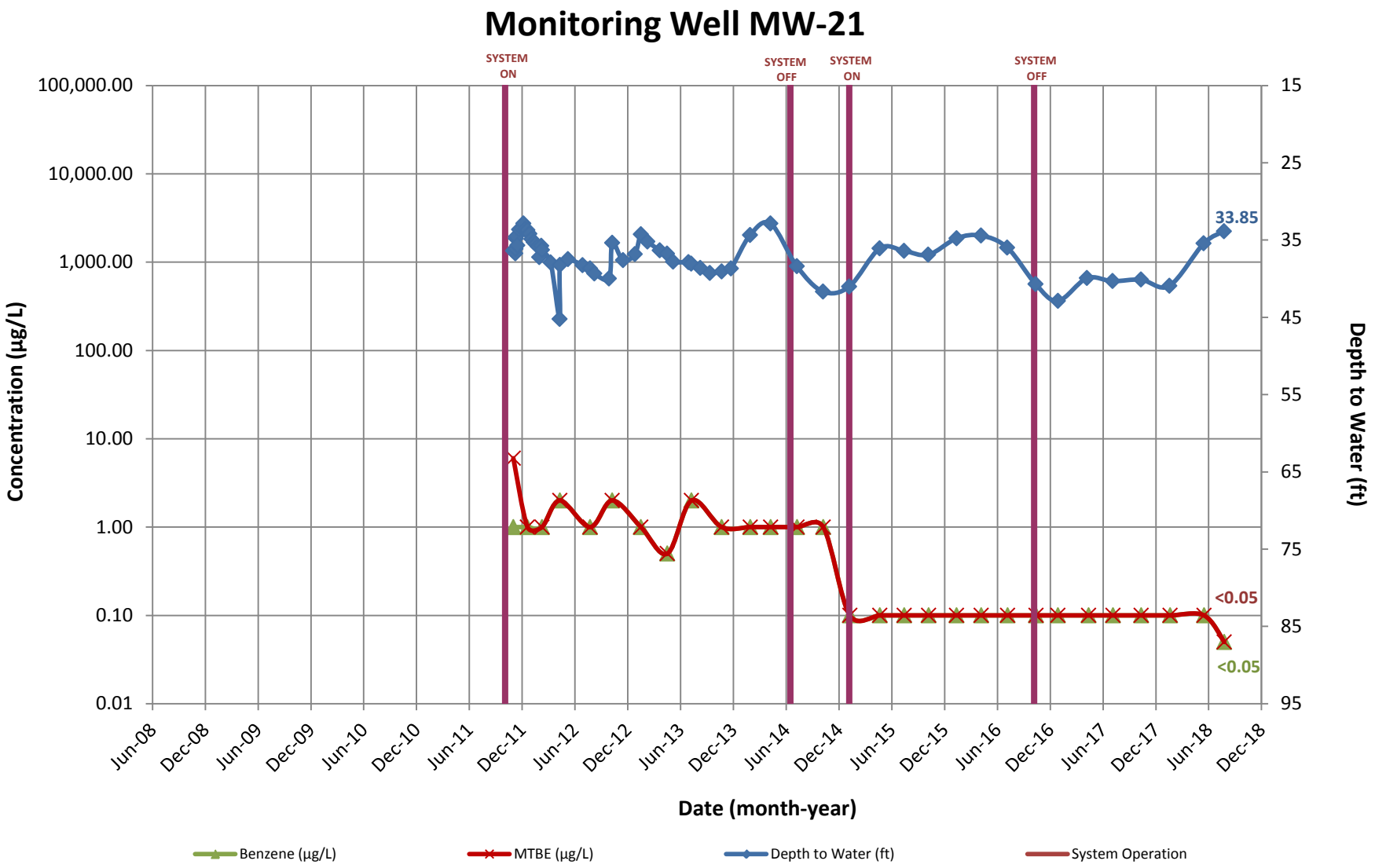

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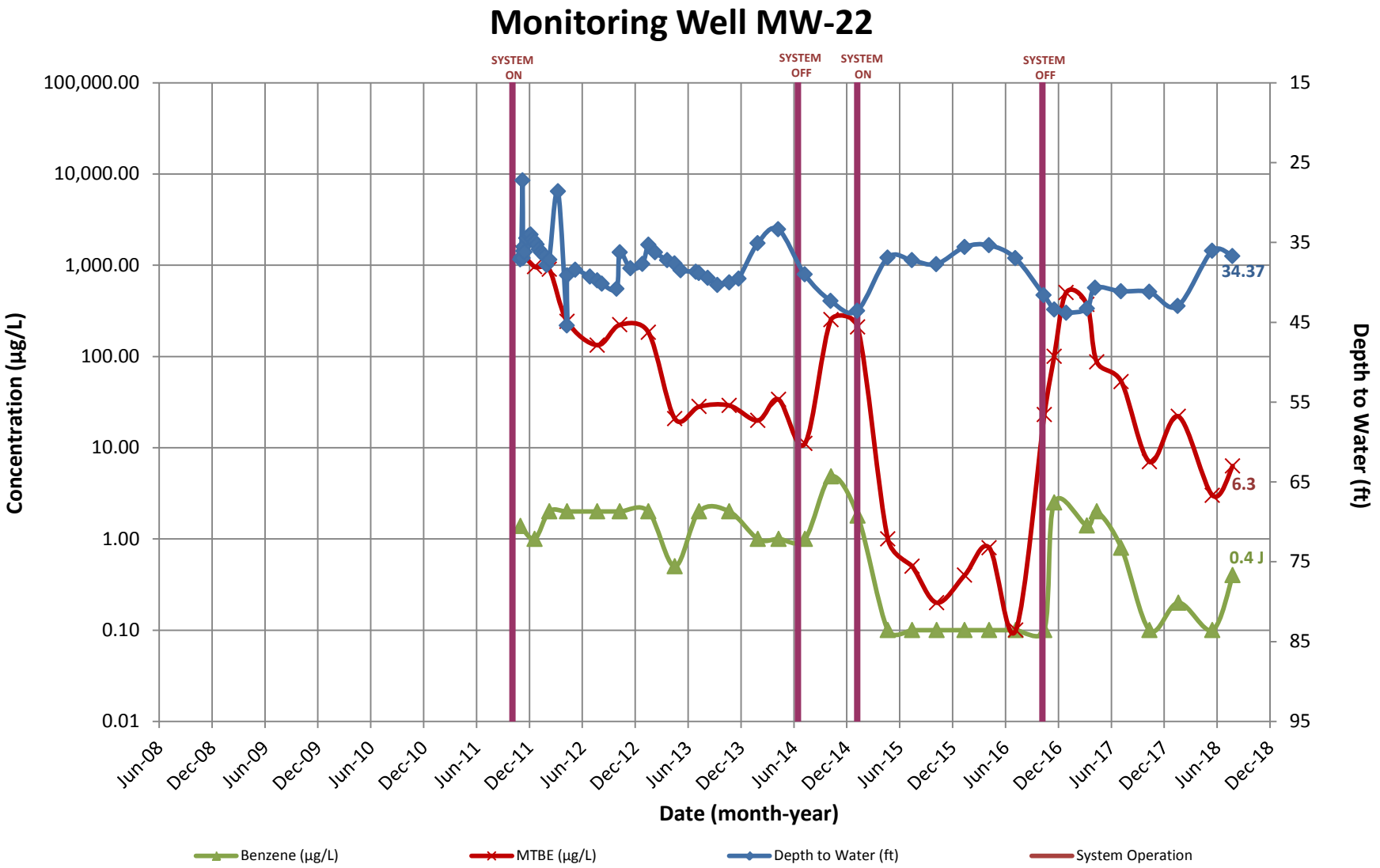

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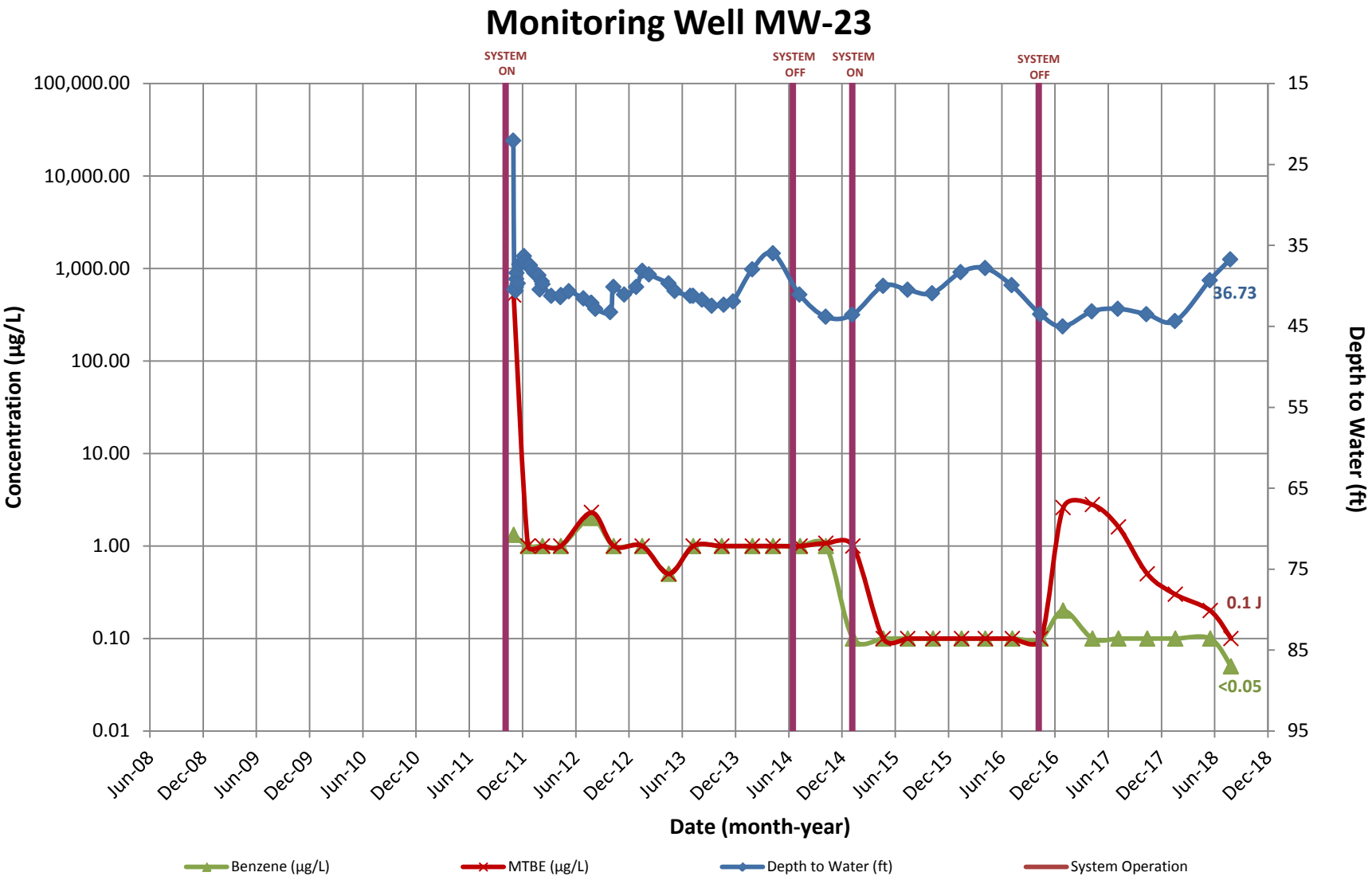

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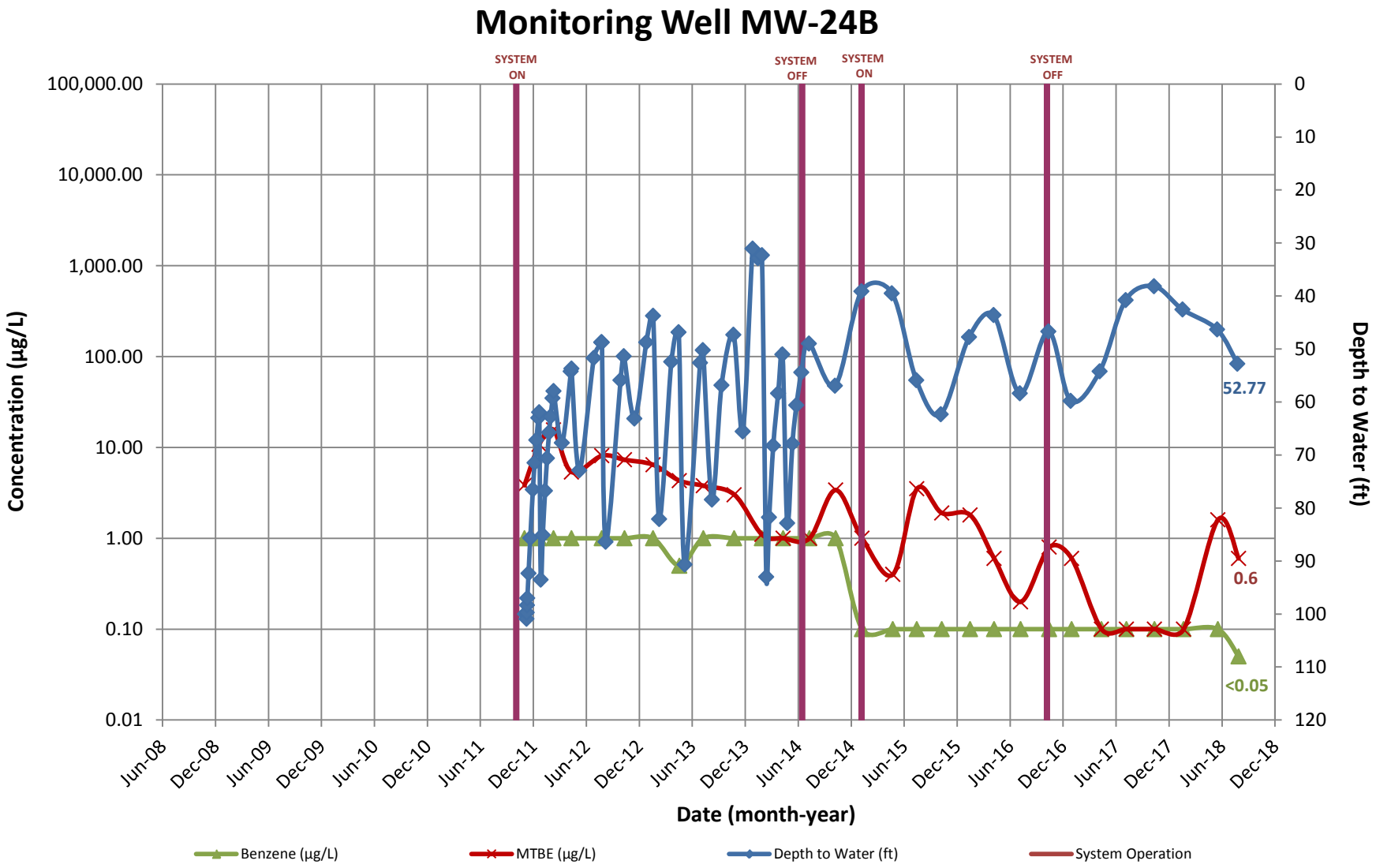

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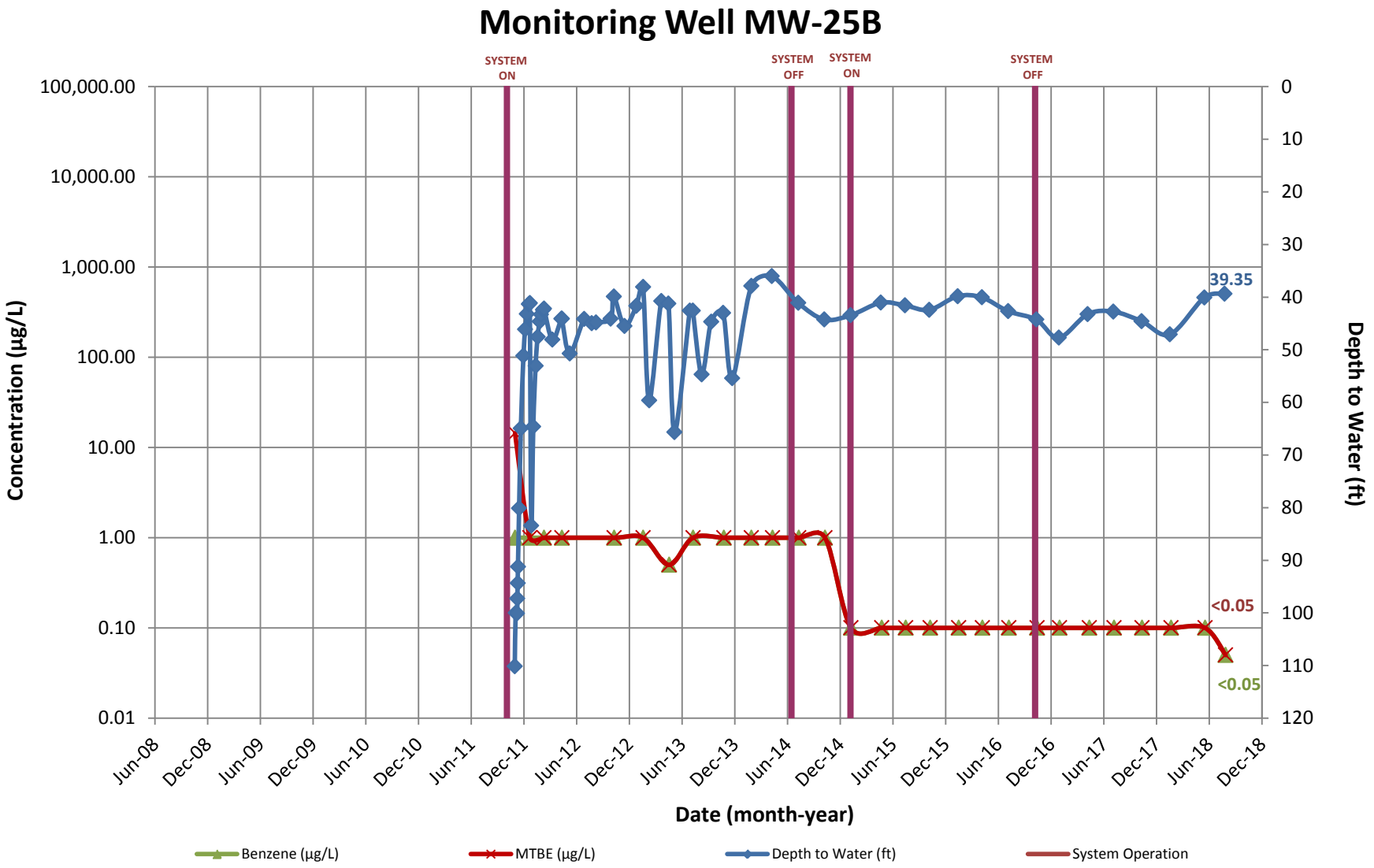

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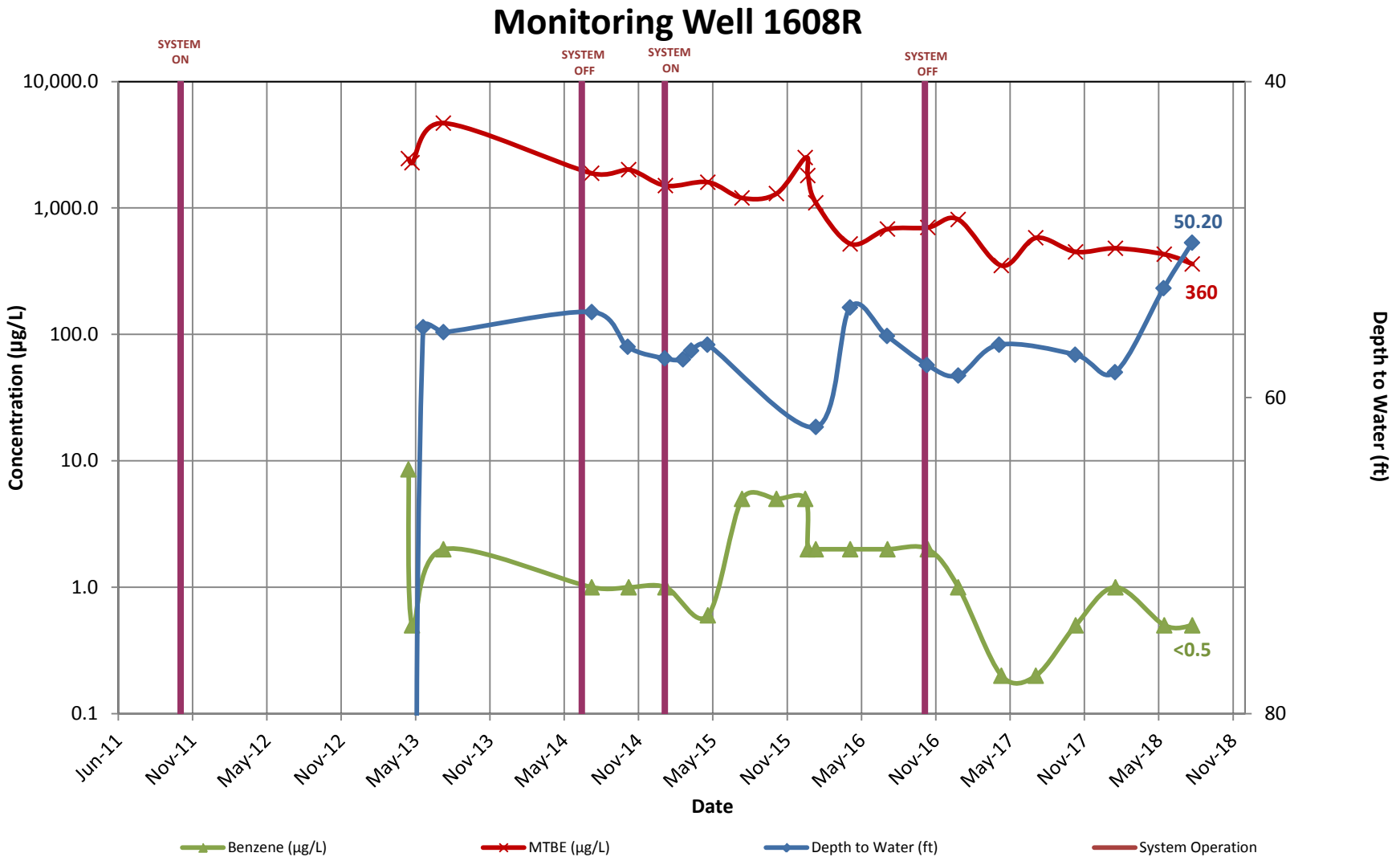

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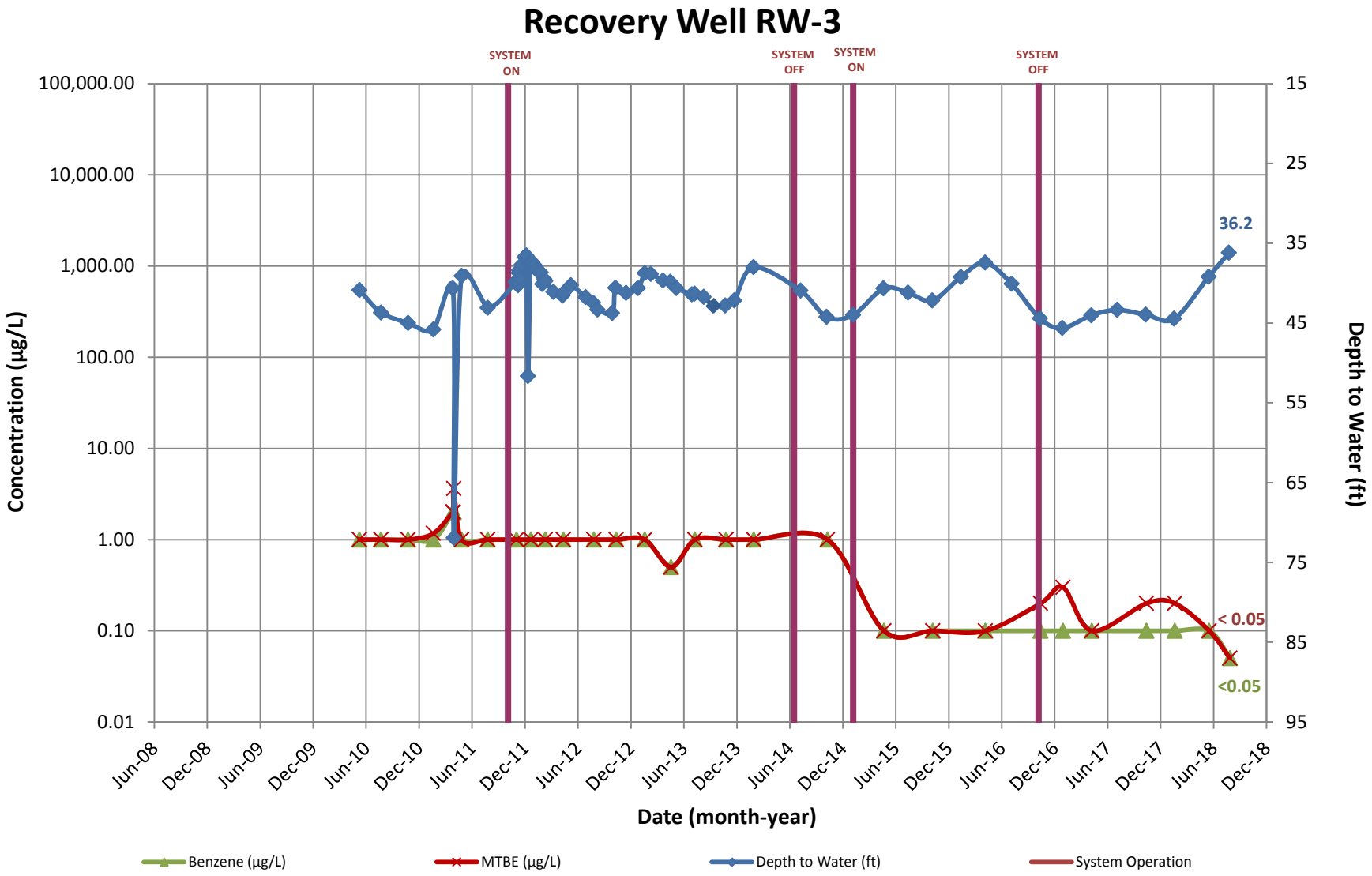

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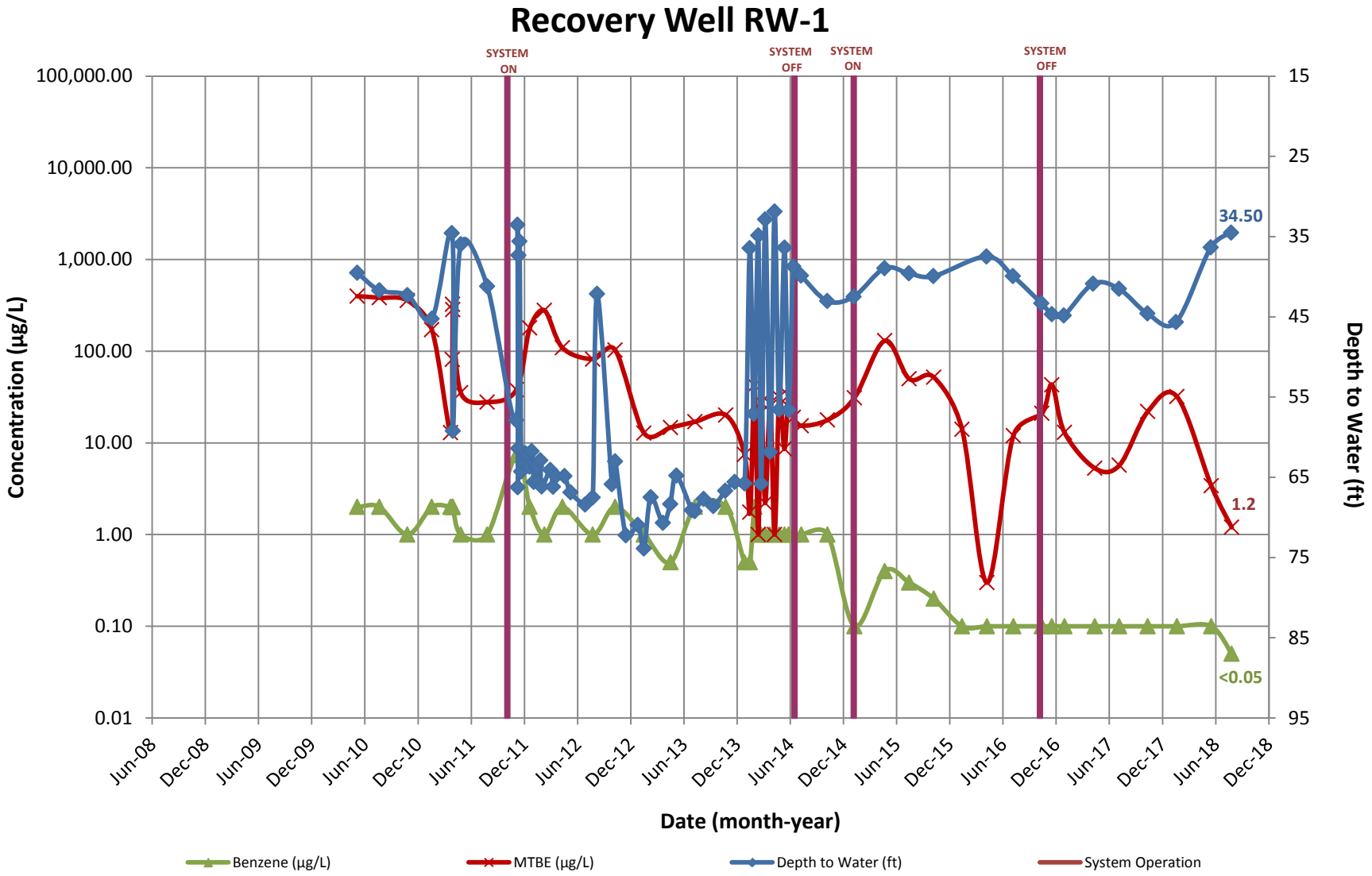

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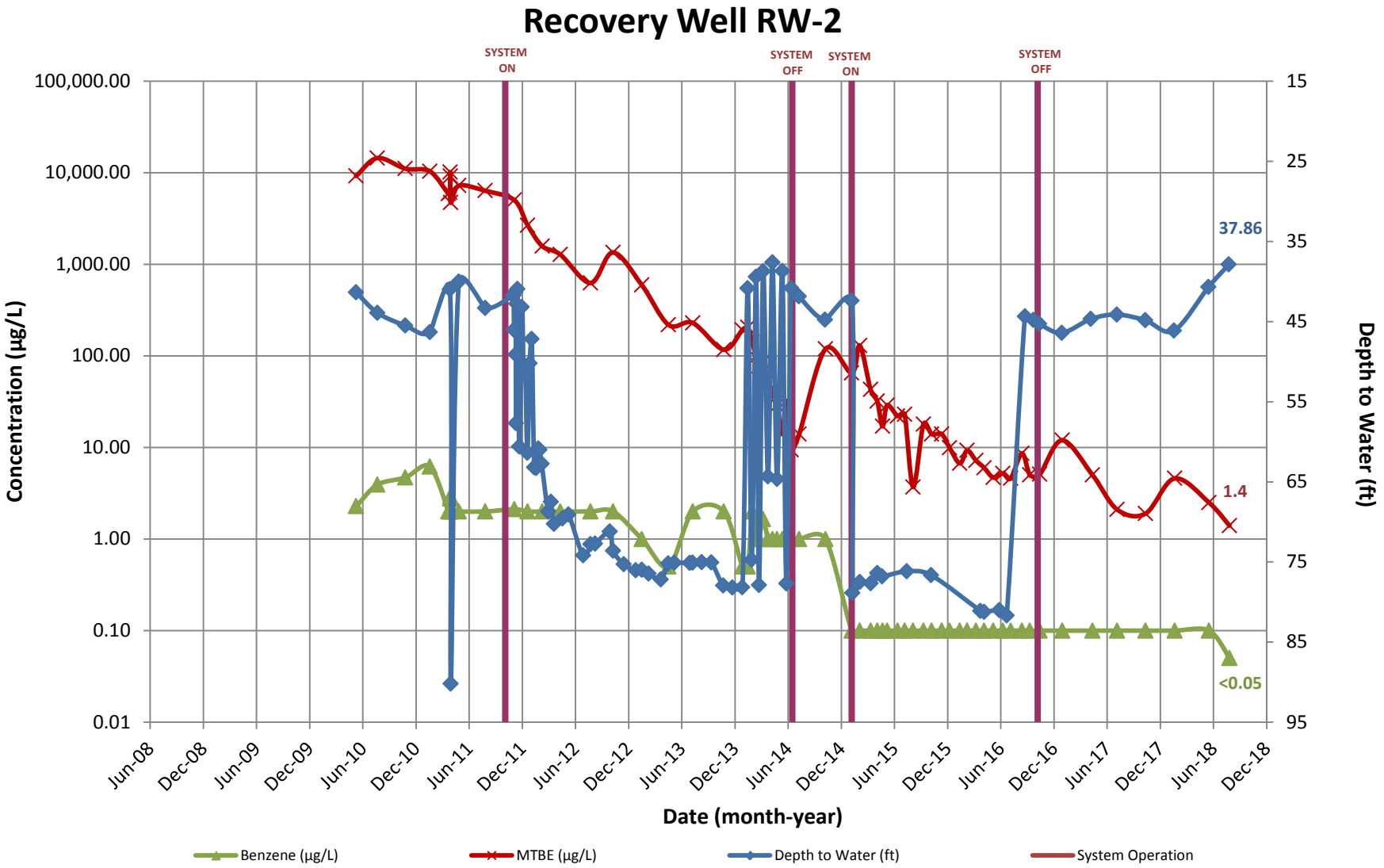

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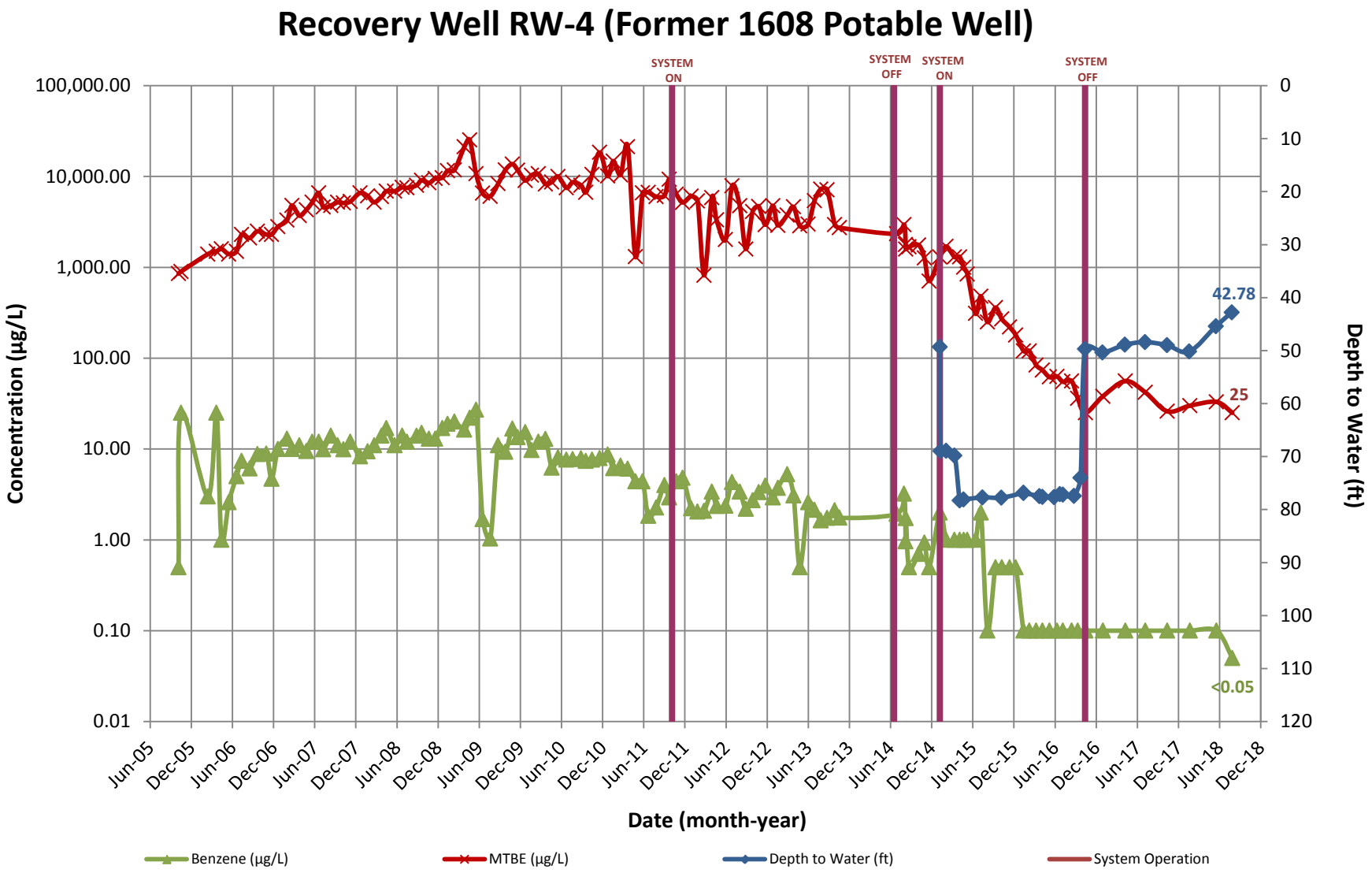

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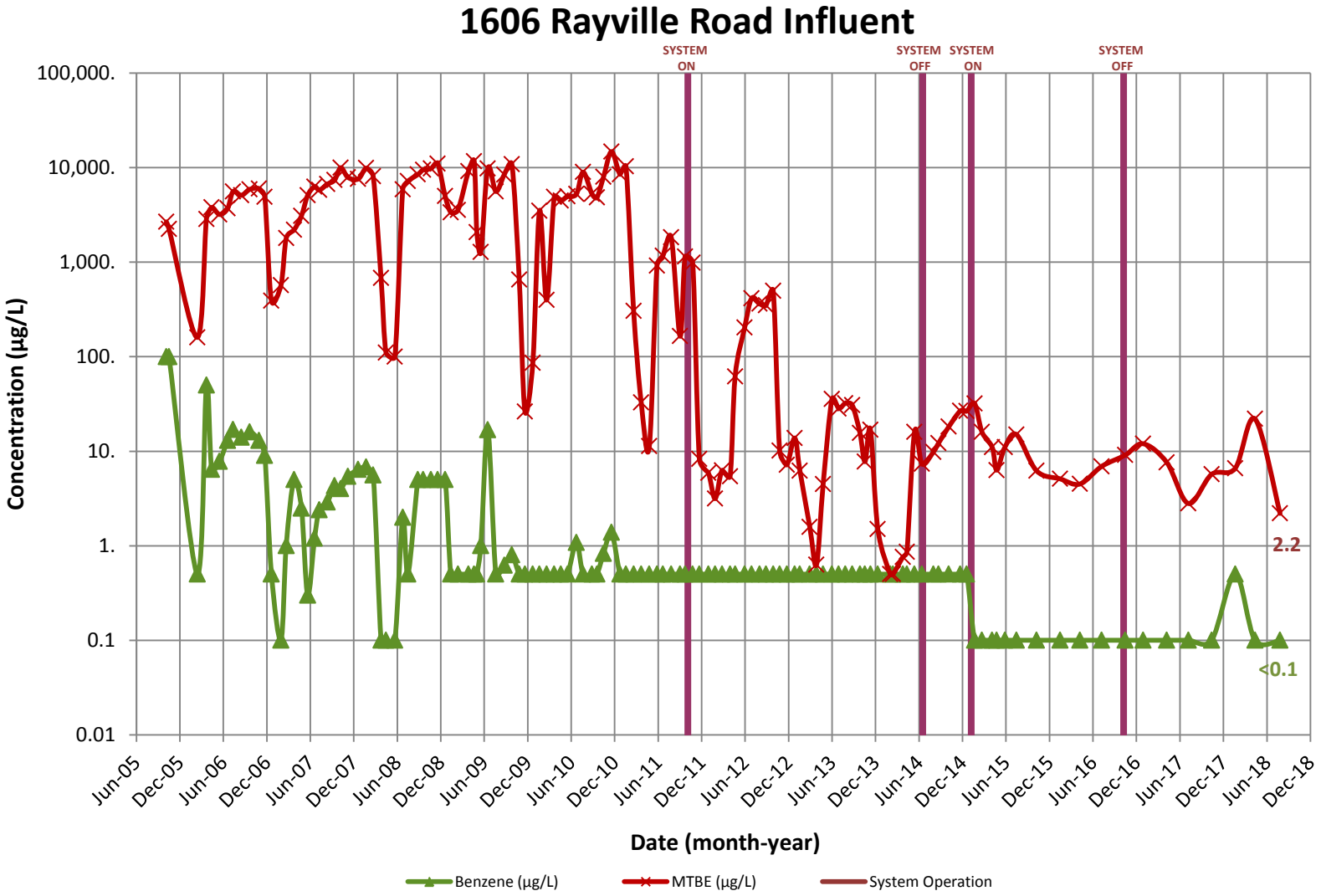

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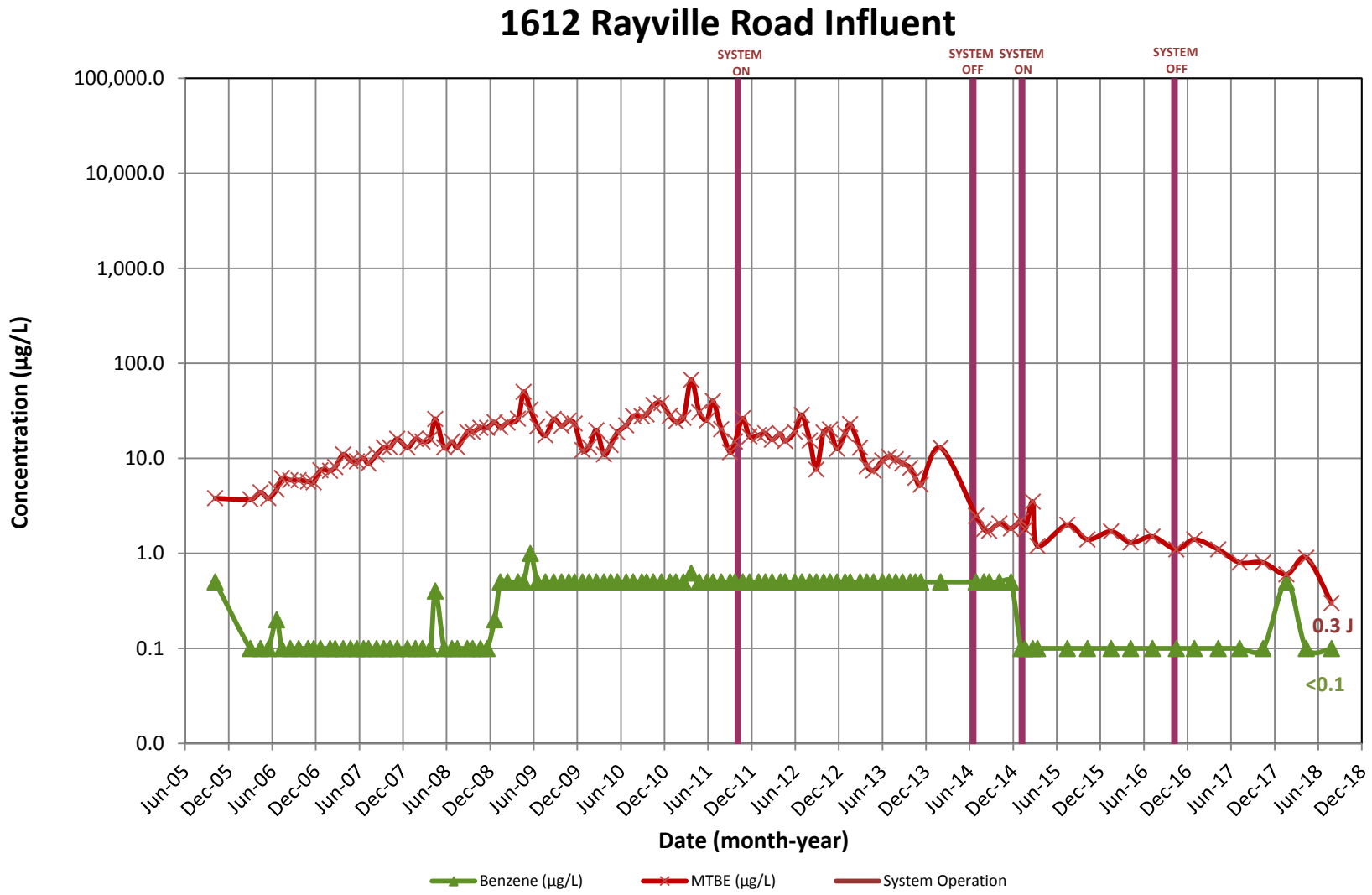

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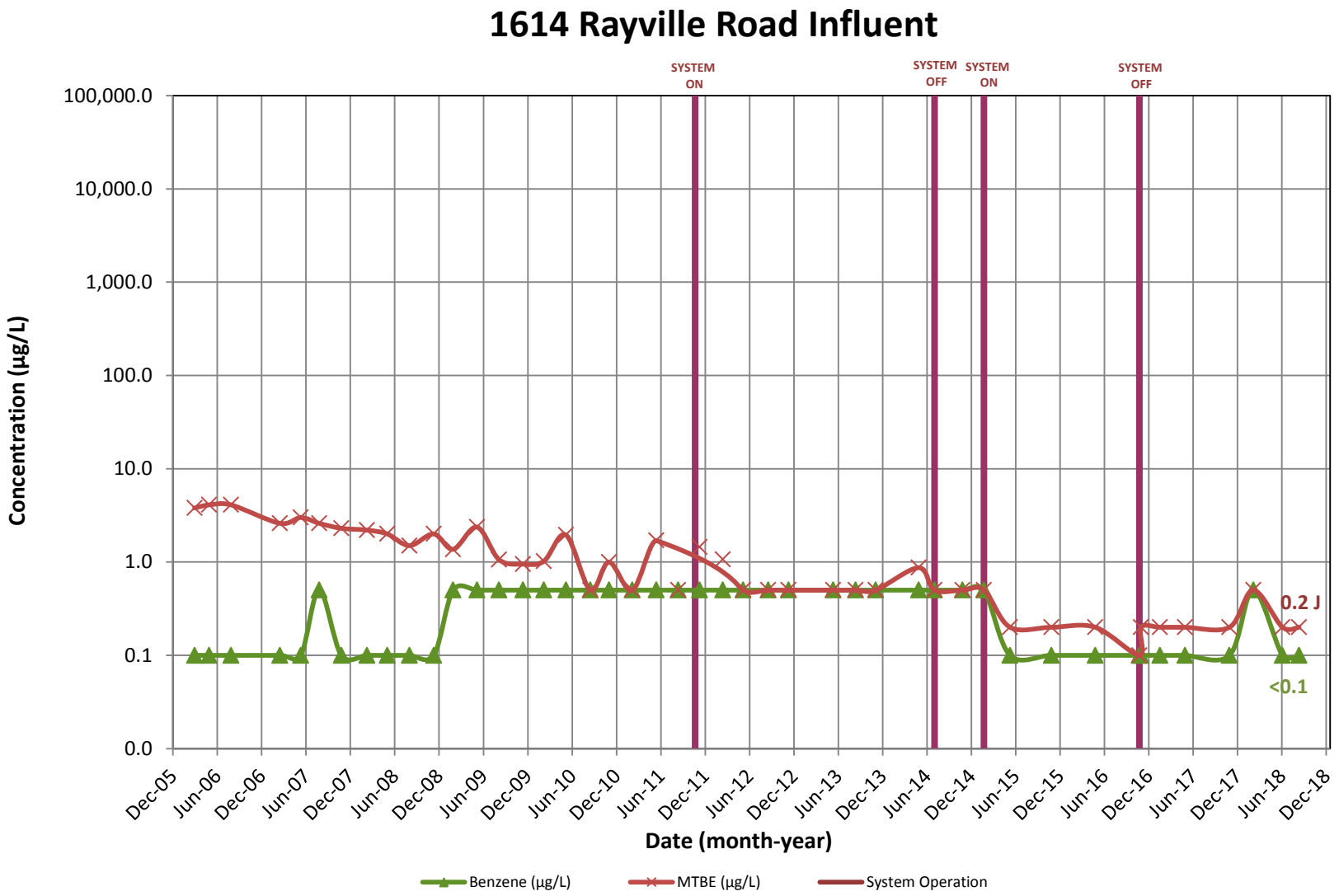

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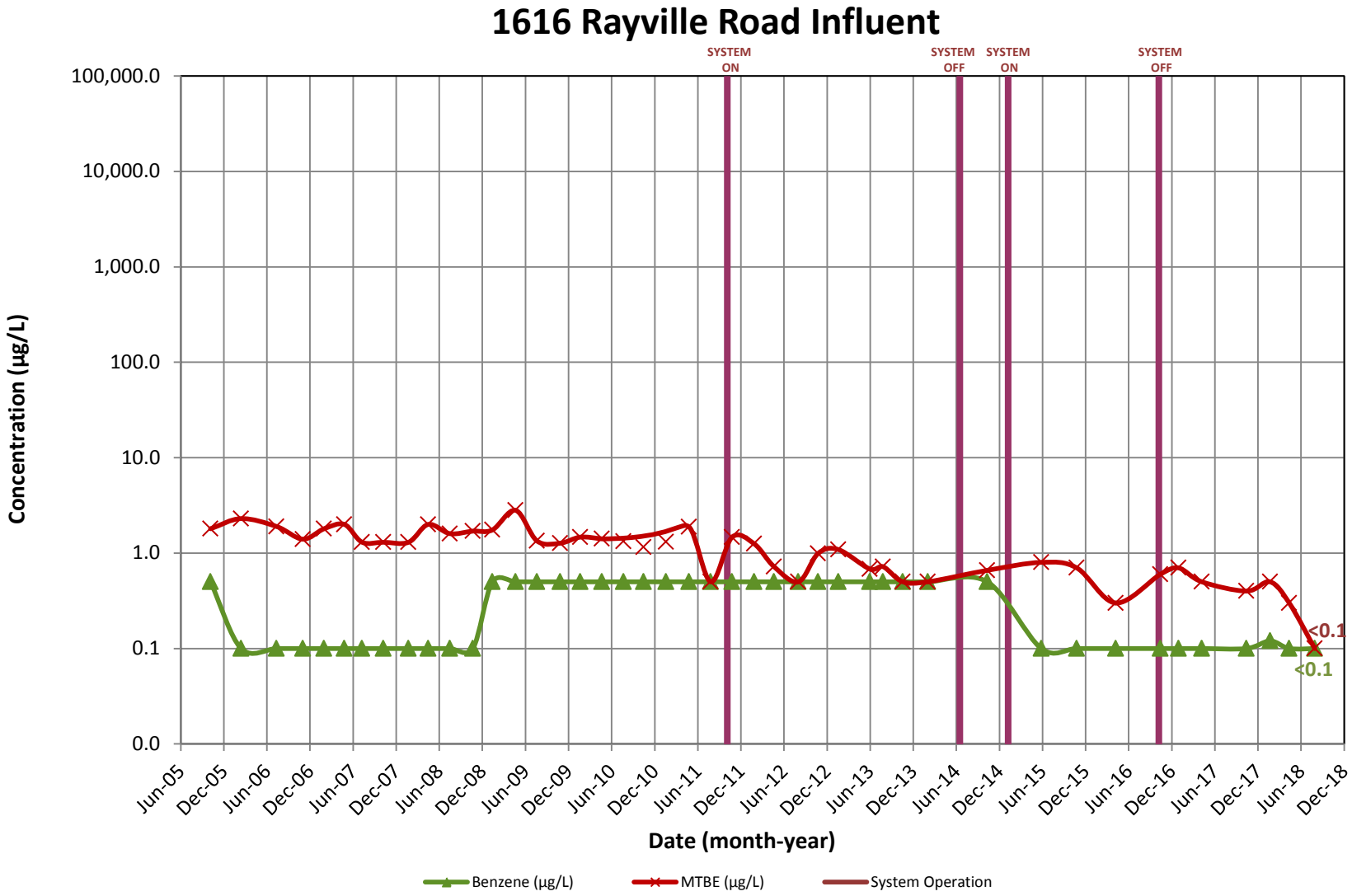

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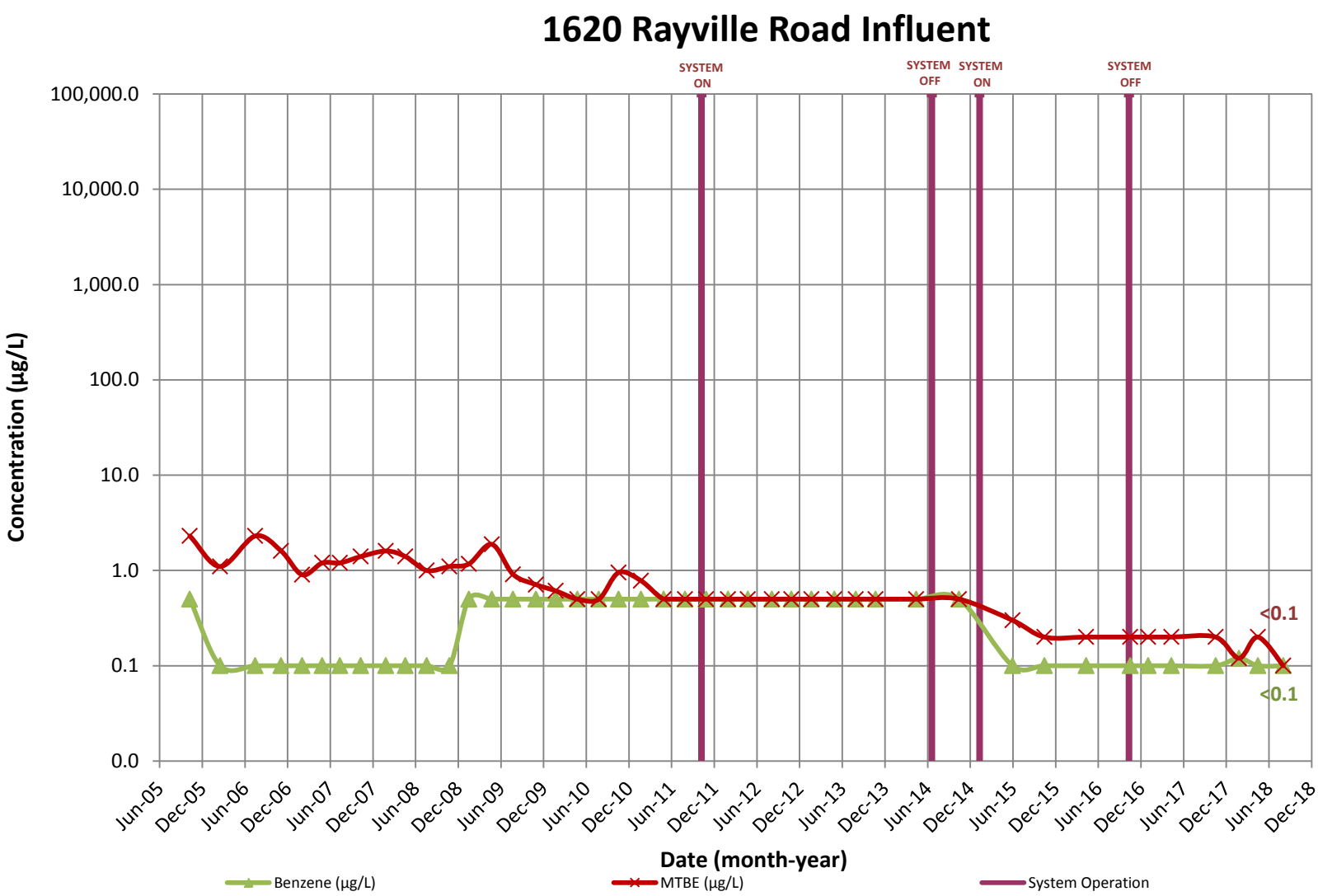

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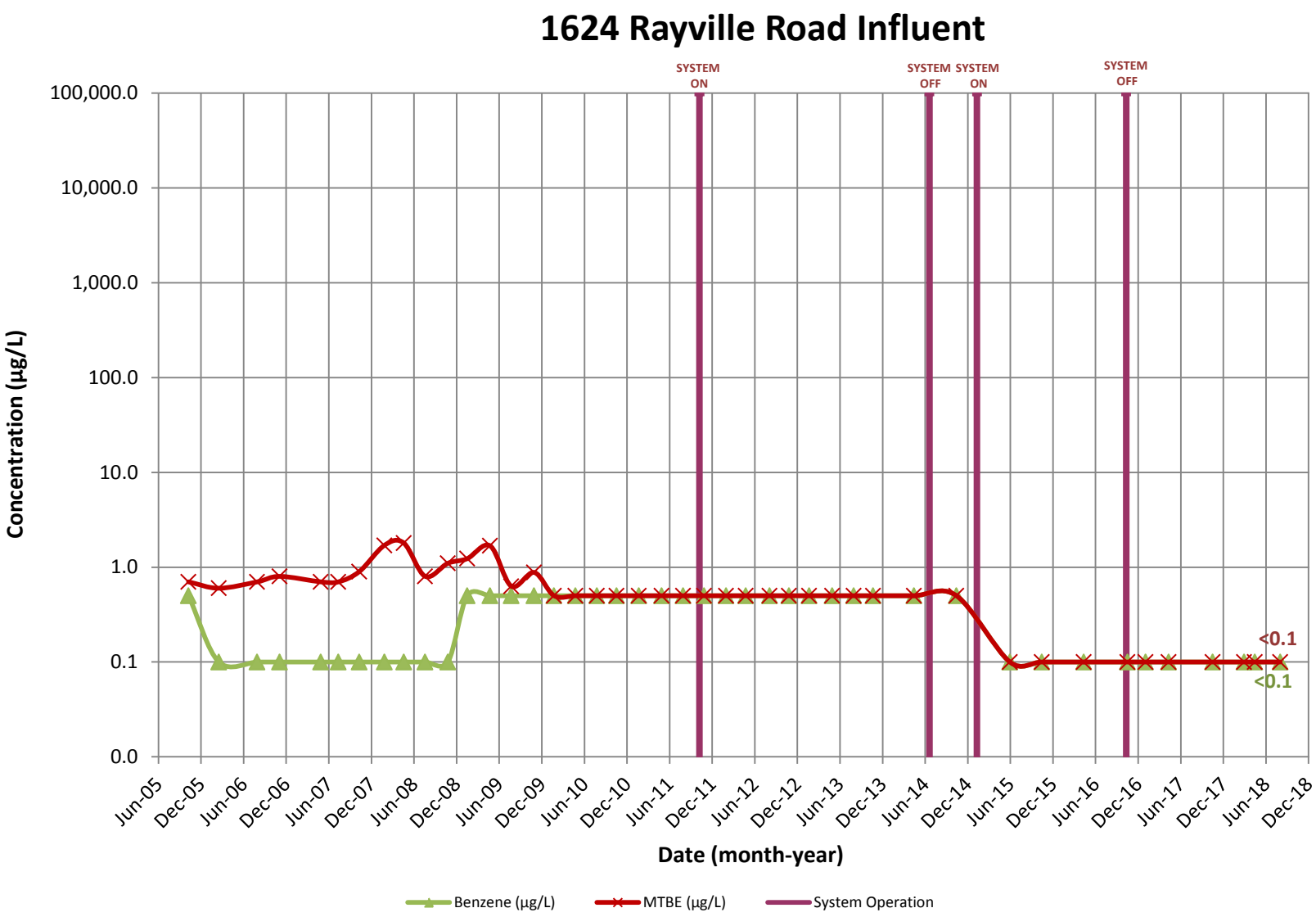
19200 Middletown Rd
Parkton, MD



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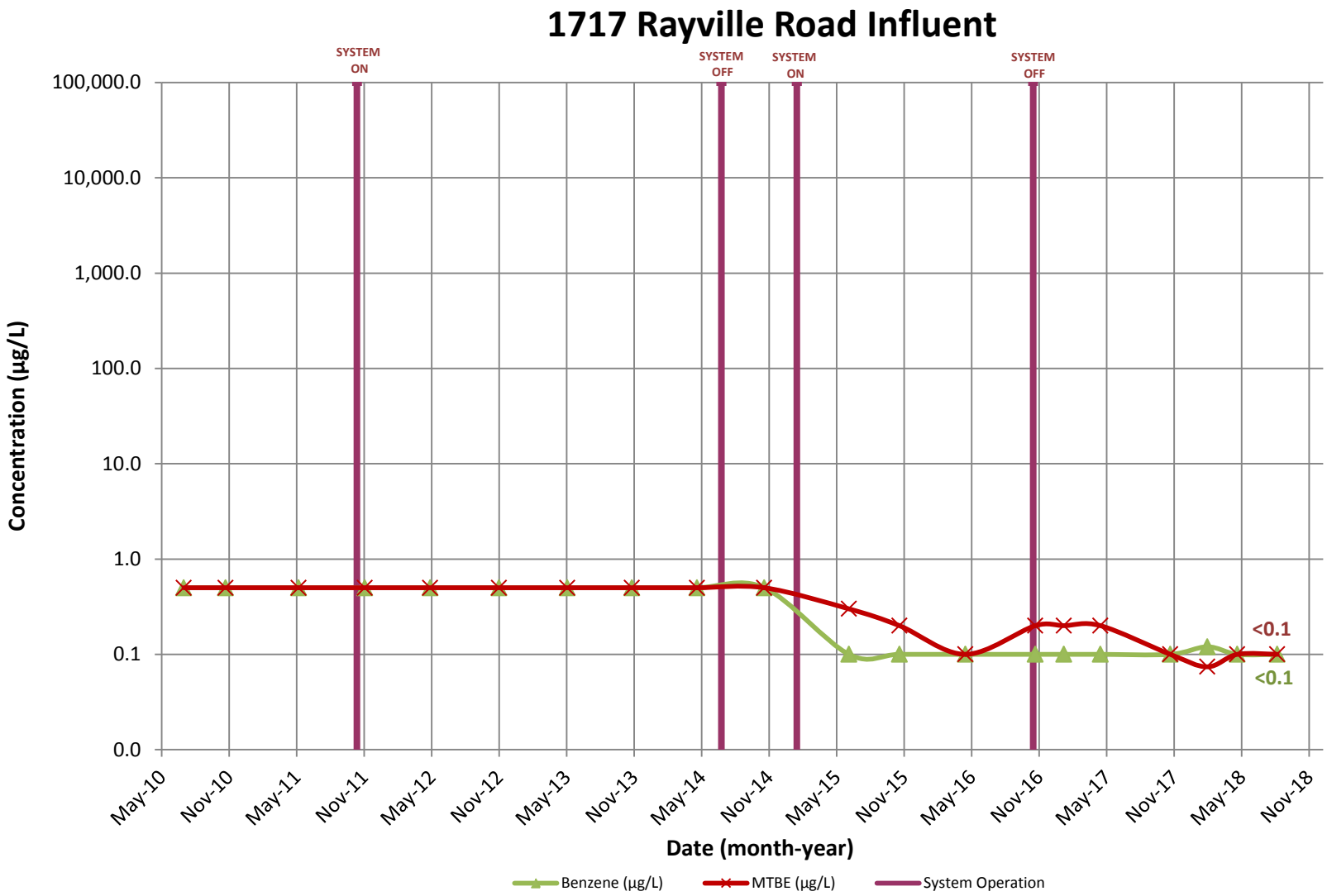

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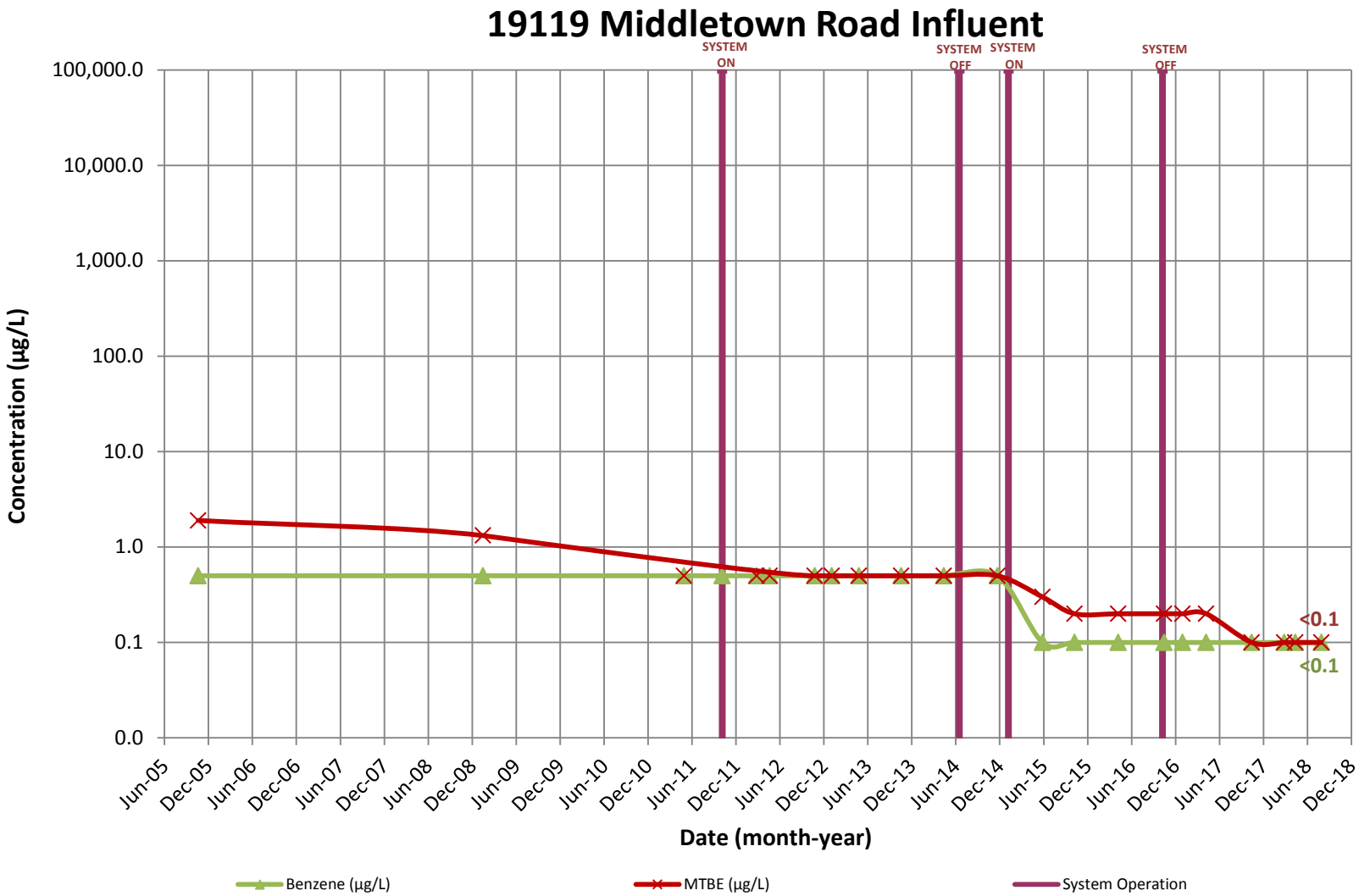

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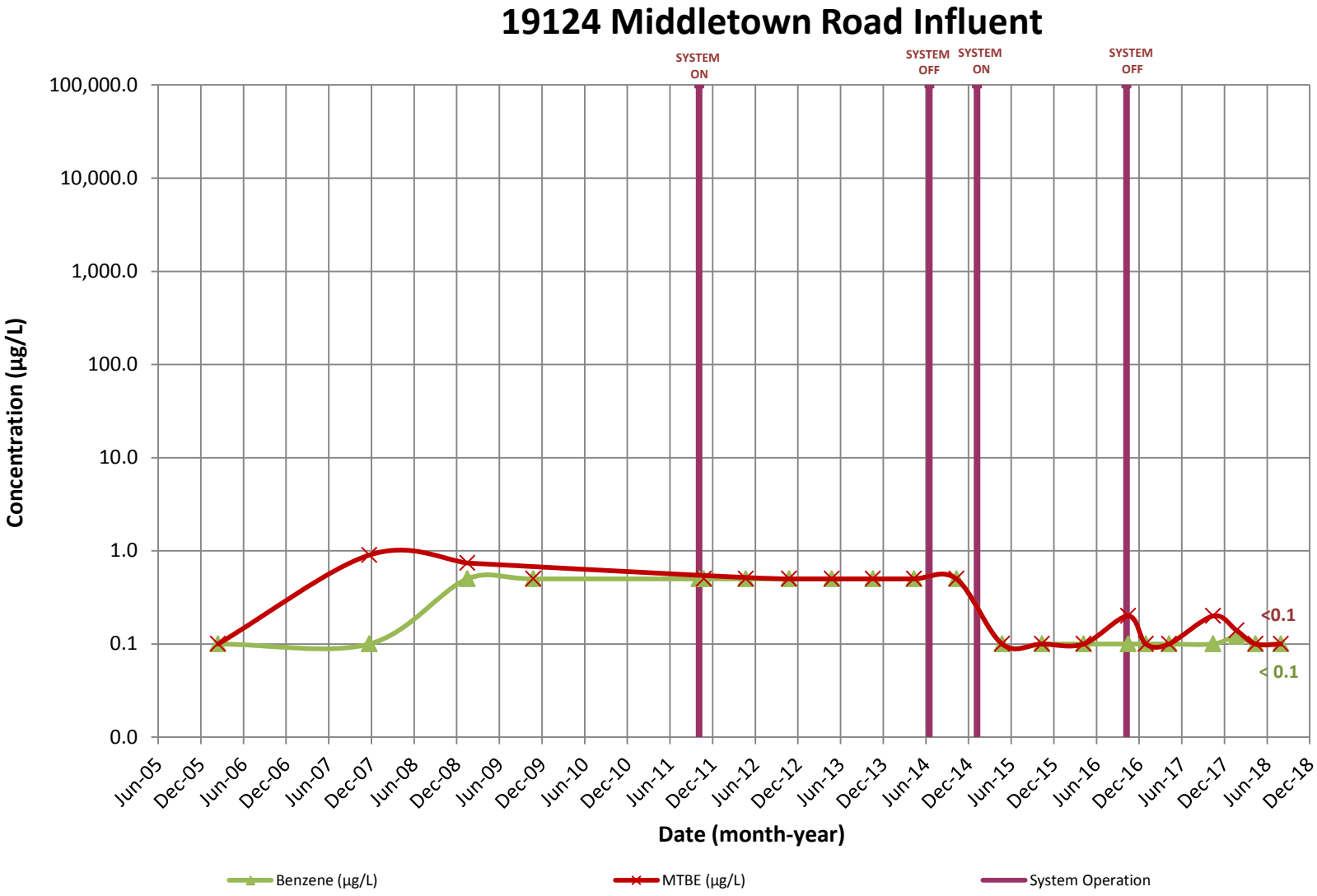

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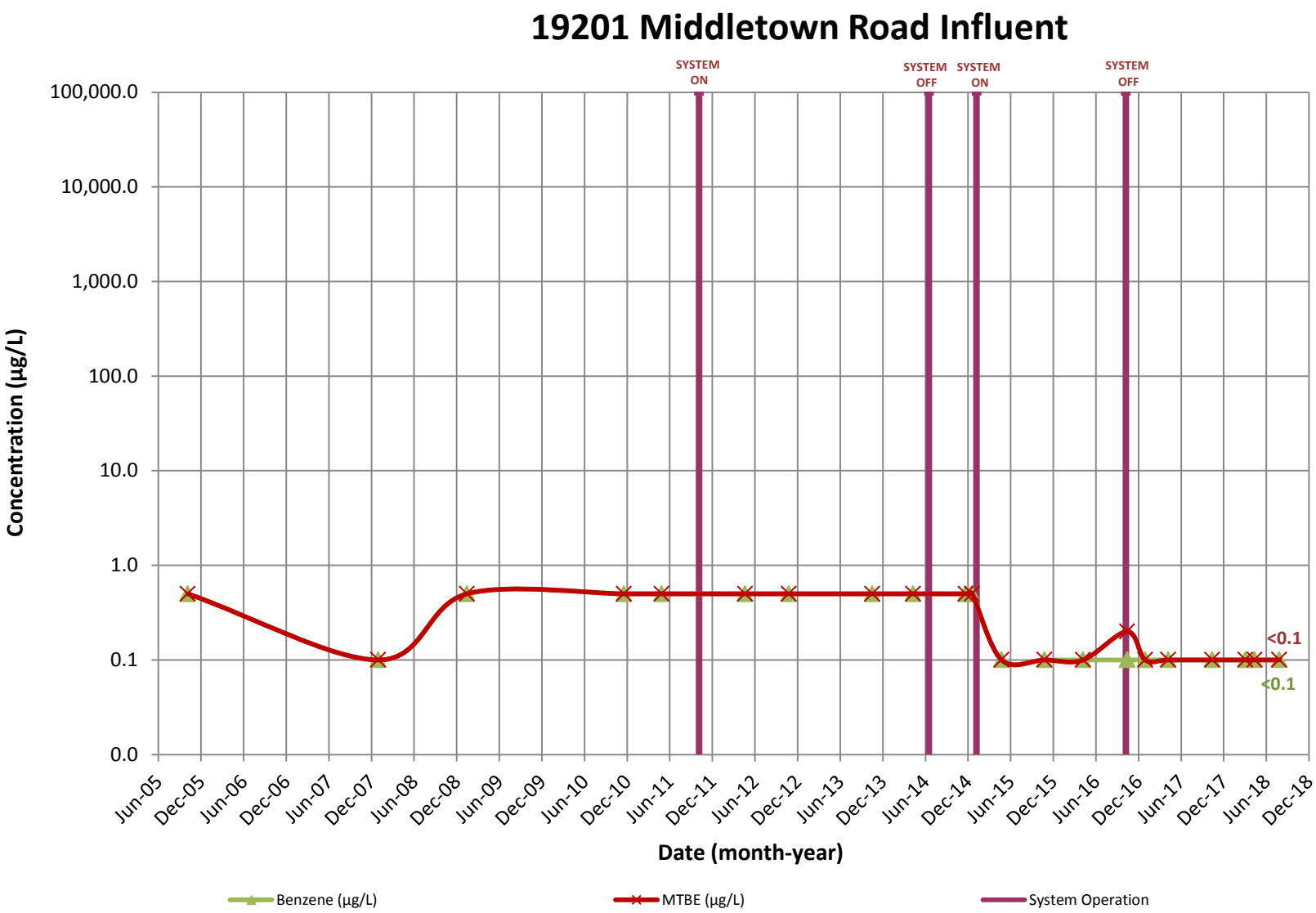

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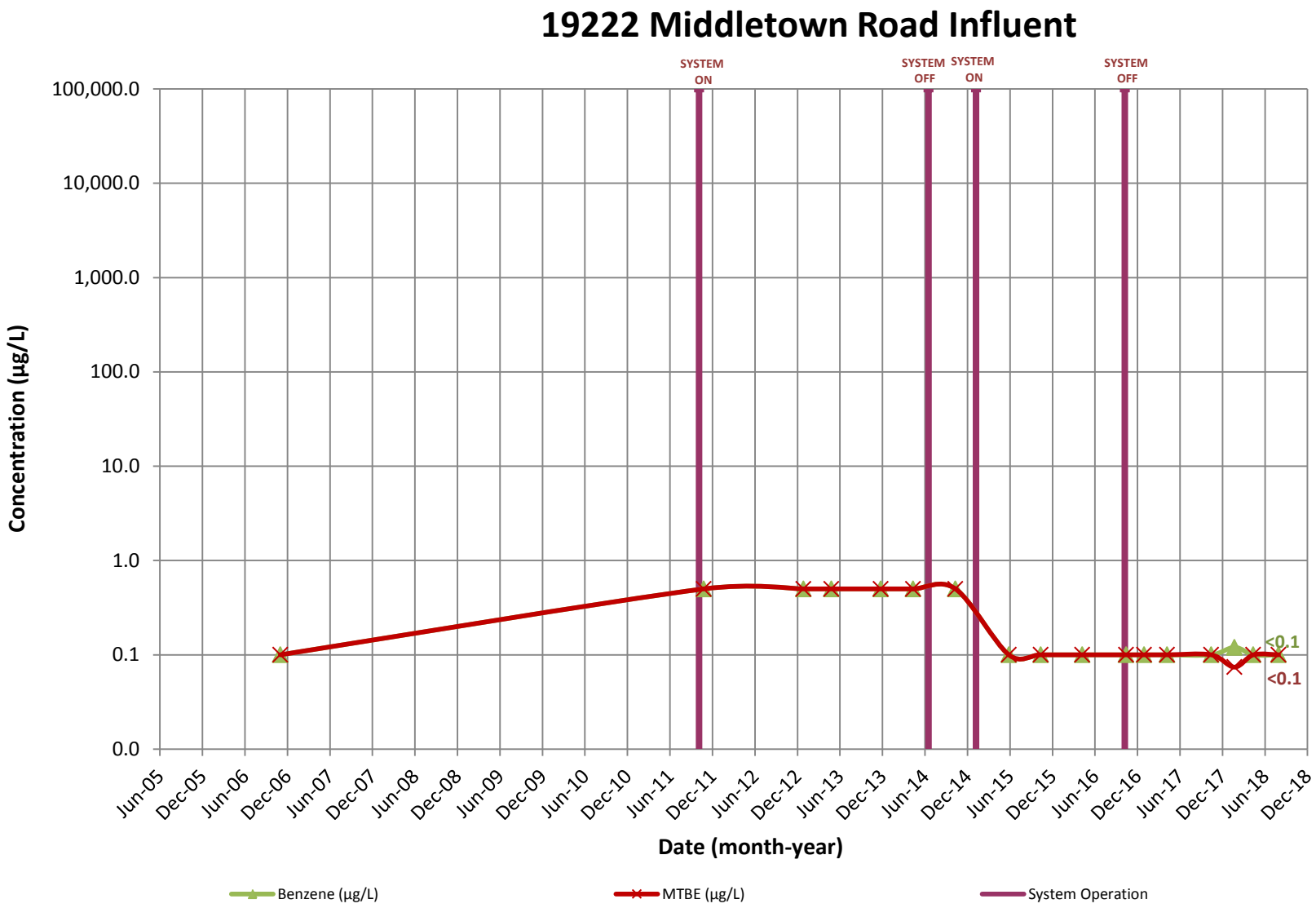

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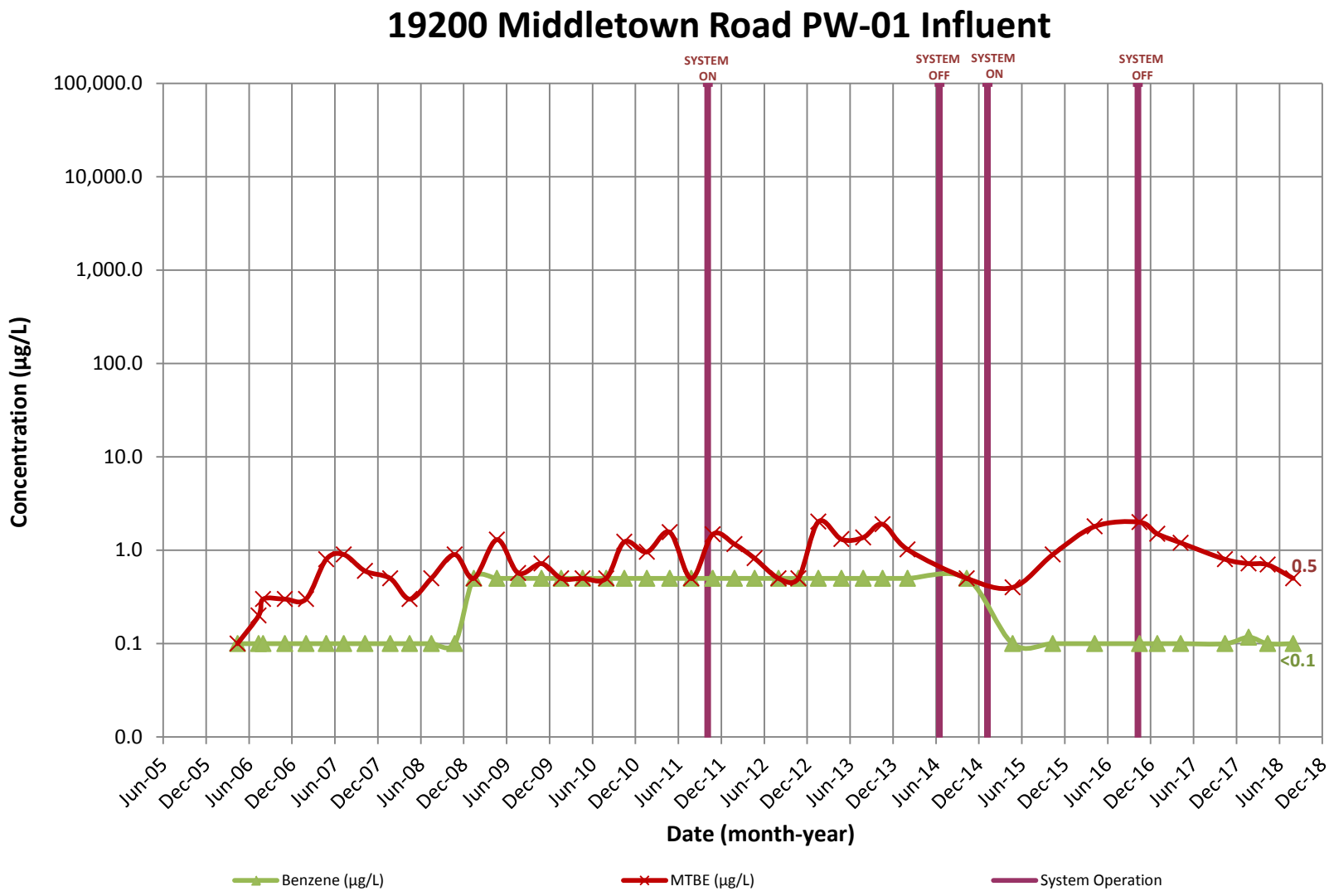

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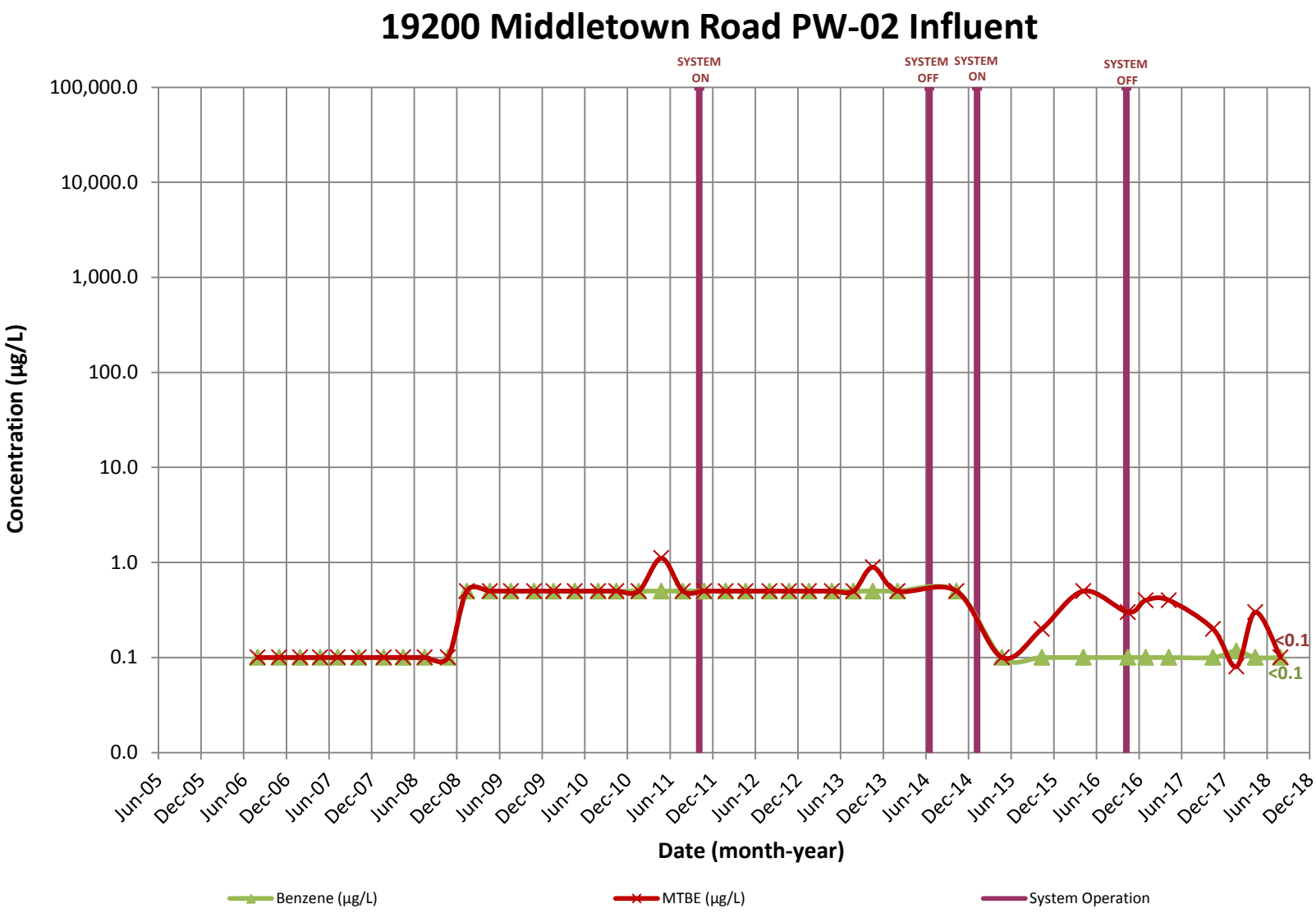

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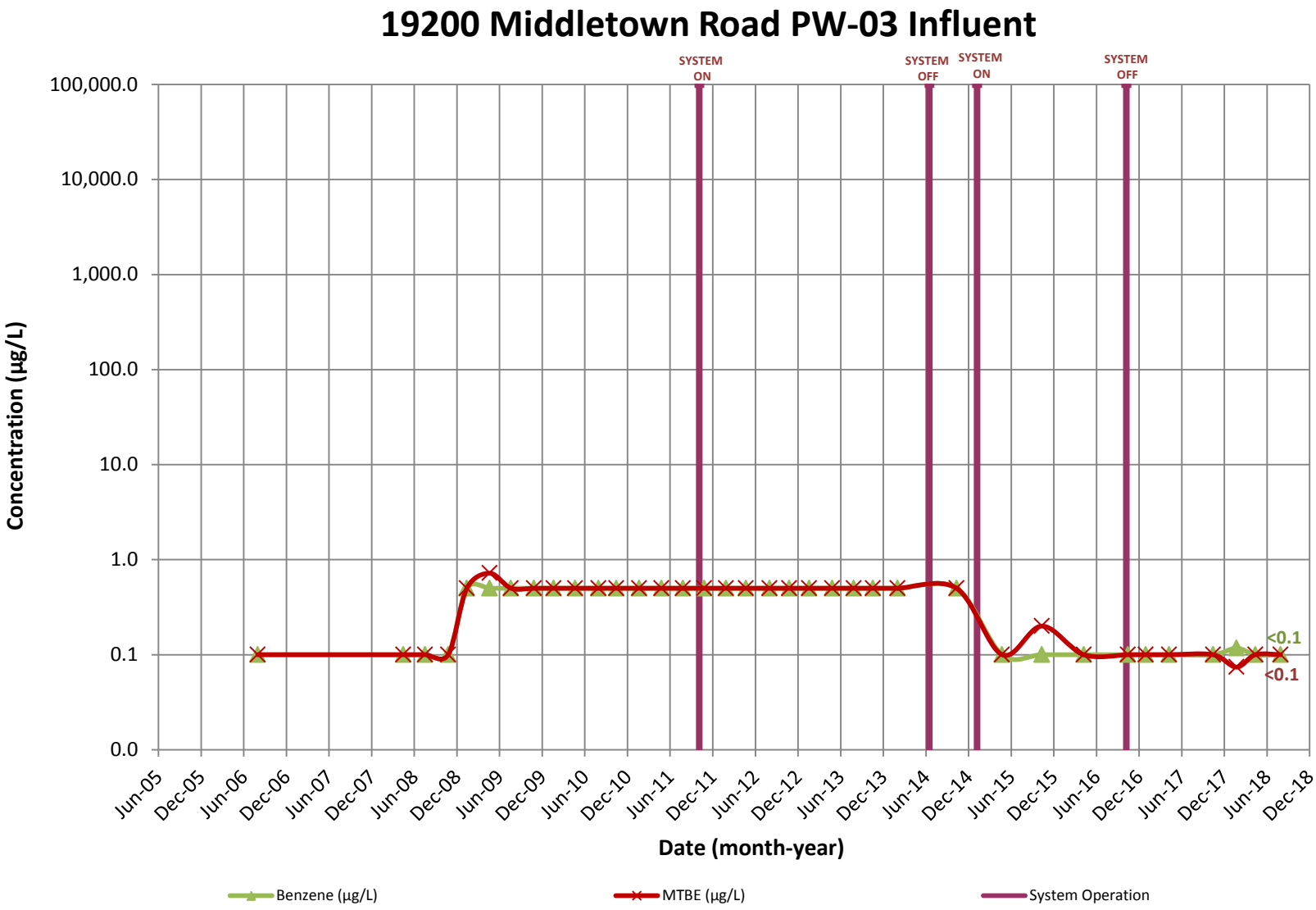


Appendix B – Mann-Kendall Analyses

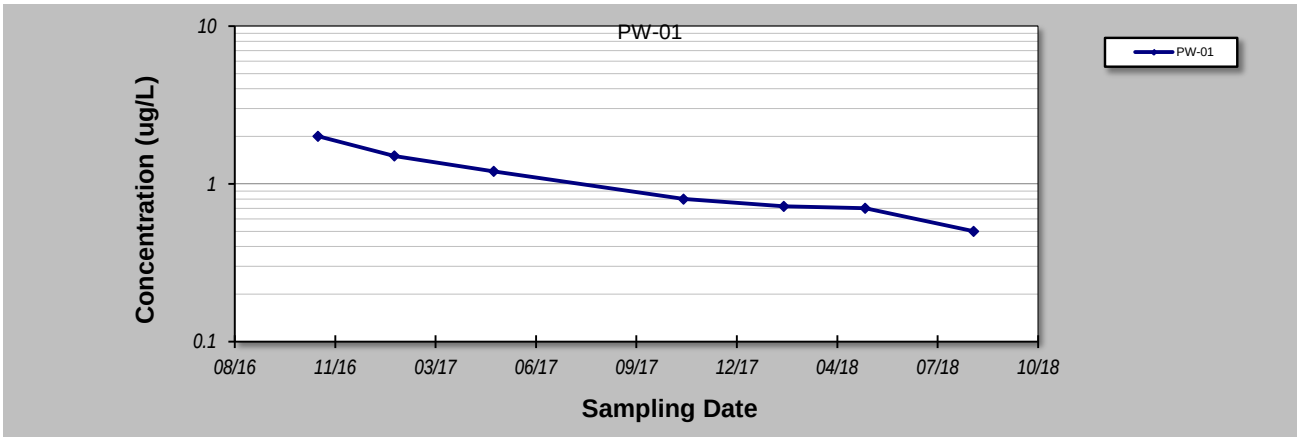
GSI MANN-KENDALL TOOLKIT
for Constituent Trend Analysis

Evaluation Date: **16-Jul-18**
Facility Name: **Parkton/Wally's**
Conducted By: **Amelia Ryan**

Job ID: **403162**
Constituent: **Methyl tert-Butyl Ether**
Concentration Units: **ug/L**

Sampling Point ID: **PW-01**

Sampling Event	Sampling Date	METHYL TERT-BUTYL ETHER CONCENTRATION (ug/L)						
1	11/09/2016	2						
2	01/24/2017	1.5						
3	05/03/2017	1.2						
4	11/08/2017	0.8						
5	02/16/2018	0.72						
6	05/08/2018	0.7						
7	08/24/2018	0.5						
8								
9								
10								
11								
12								
13								
14								
15								
16								
17								
18								
19								
20								
Coefficient of Variation:		**0.51**						
Mann-Kendall Statistic (S):		**-21**						
Confidence Factor:		**100.0%**						
Concentration Trend:		Decreasing						



Notes:

1. At least four independent sampling events per well are required for calculating the trend. *Methodology is valid for 4 to 40 samples.*
2. Confidence in Trend = Confidence (in percent) that constituent concentration is increasing (S>0) or decreasing (S<0): >95% = Increasing or Decreasing; ≥ 90% = Probably Increasing or Probably Decreasing; < 90% and S>0 = No Trend; < 90%, S≤0, and COV ≥ 1 = No Trend; < 90% and COV < 1 = Stable.
3. Methodology based on "MAROS: A Decision Support System for Optimizing Monitoring Plans", J.J. Aziz, M. Ling, H.S. Rifai, C.J. Newell, and J.R. Gonzales, *Ground Water*, 41(3):355-367, 2003.

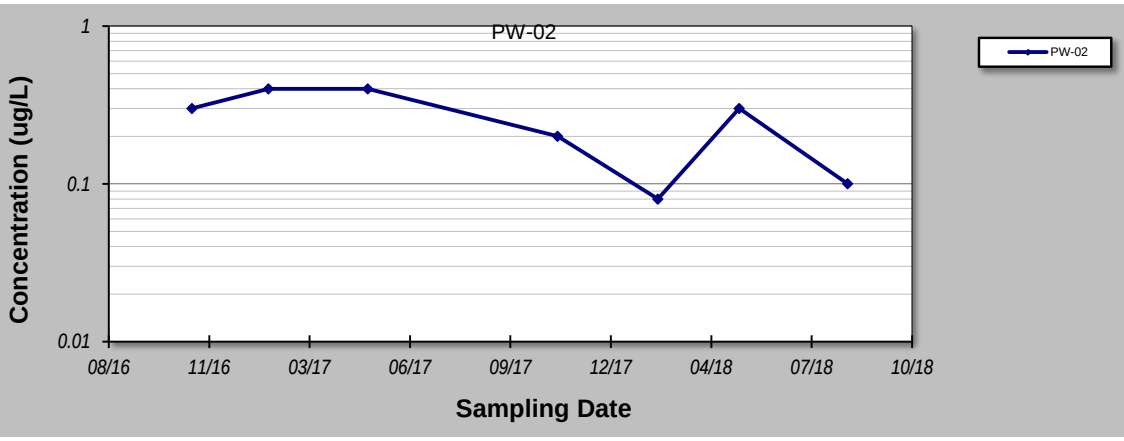
GSI MANN-KENDALL TOOLKIT
for Constituent Trend Analysis

Evaluation Date: **16-Jul-18**
Facility Name: **Parkton/Wally's**
Conducted By: **Amelia Ryan**

Job ID: **403162**
Constituent: **Methyl tert-Butyl Ether**
Concentration Units: **ug/L**

Sampling Point ID: **PW-02**

Sampling Event	Sampling Date	METHYL TERT-BUTYL ETHER CONCENTRATION (ug/L)
1	11/09/2016	0.3
2	01/24/2017	0.4
3	05/03/2017	0.4
4	11/08/2017	0.2
5	02/16/2018	0.08
6	05/08/2018	0.3
7	08/24/2018	0.1
8		
9		
10		
11		
12		
13		
14		
15		
16		
17		
18		
19		
20		
Coefficient of Variation:		**0.52**
Mann-Kendall Statistic (S):		**-9**
Confidence Factor:		**88.1%**
Concentration Trend:		Stable



Notes:

1. At least four independent sampling events per well are required for calculating the trend. *Methodology is valid for 4 to 40 samples.*
2. Confidence in Trend = Confidence (in percent) that constituent concentration is increasing (S>0) or decreasing (S<0): >95% = Increasing or Decreasing; ≥ 90% = Probably Increasing or Probably Decreasing; < 90% and S>0 = No Trend; < 90%, S≤0, and COV ≥ 1 = No Trend; < 90% and COV < 1 = Stable.
3. Methodology based on "MAROS: A Decision Support System for Optimizing Monitoring Plans", J.J. Aziz, M. Ling, H.S. Rifai, C.J. Newell, and J.R. Gonzales, *Ground Water*, 41(3):355-367, 2003.

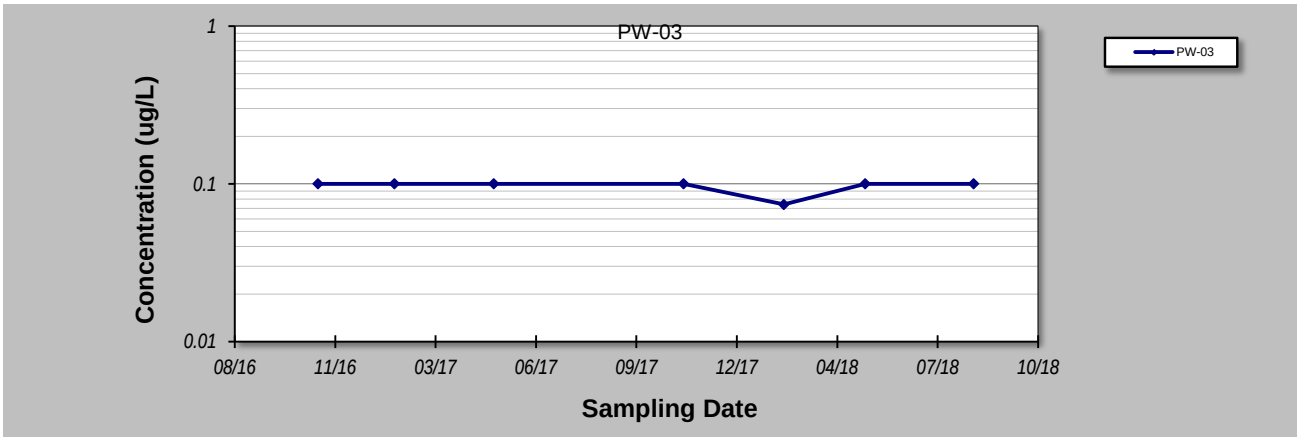
GSI MANN-KENDALL TOOLKIT
for Constituent Trend Analysis

Evaluation Date: **16-Jul-18**
Facility Name: **Parkton/Wally's**
Conducted By: **Amelia Ryan**

Job ID: **403162**
Constituent: **Methyl tert-Butyl Ether**
Concentration Units: **ug/L**

Sampling Point ID: **PW-03**

Sampling Event	Sampling Date	METHYL TERT-BUTYL ETHER CONCENTRATION (ug/L)						
1	11/09/2016	0.1						
2	01/24/2017	0.1						
3	05/03/2017	0.1						
4	11/08/2017	0.1						
5	02/16/2018	0.074						
6	05/08/2018	0.1						
7	08/24/2018	0.1						
8								
9								
10								
11								
12								
13								
14								
15								
16								
17								
18								
19								
20								
Coefficient of Variation:		**0.10**						
Mann-Kendall Statistic (S):		**-2**						
Confidence Factor:		**55.7%**						
Concentration Trend:		Stable						



Notes:

1. At least four independent sampling events per well are required for calculating the trend. *Methodology is valid for 4 to 40 samples.*
2. Confidence in Trend = Confidence (in percent) that constituent concentration is increasing (S>0) or decreasing (S<0): >95% = Increasing or Decreasing; ≥ 90% = Probably Increasing or Probably Decreasing; < 90% and S>0 = No Trend; < 90%, S≤0, and COV ≥ 1 = No Trend; < 90% and COV < 1 = Stable.
3. Methodology based on "MAROS: A Decision Support System for Optimizing Monitoring Plans", J.J. Aziz, M. Ling, H.S. Rifai, C.J. Newell, and J.R. Gonzales, *Ground Water*, 41(3):355-367, 2003.

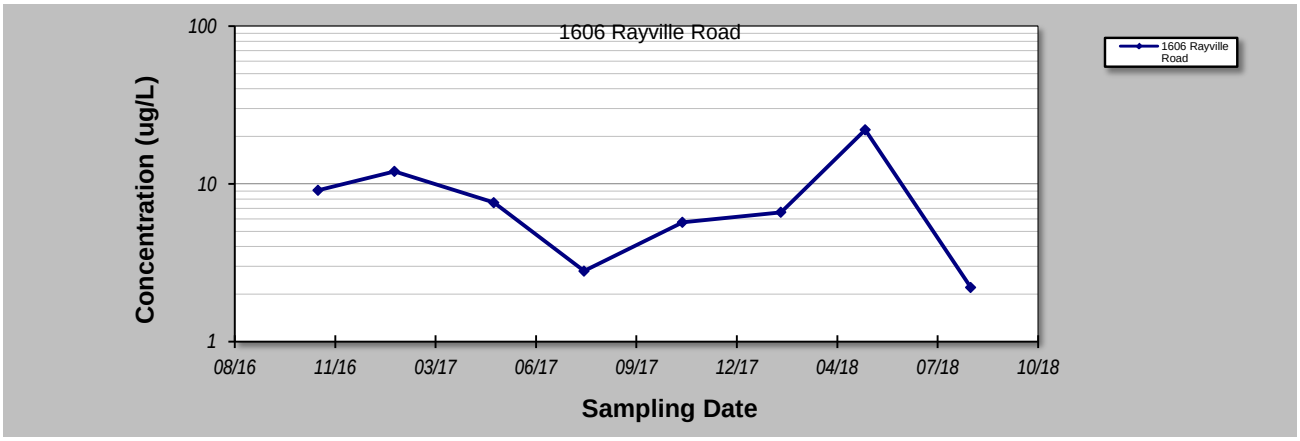
GSI MANN-KENDALL TOOLKIT
for Constituent Trend Analysis

Evaluation Date: **16-Jul-18**
Facility Name: **Parkton/Wally's**
Conducted By: **Amelia Ryan**

Job ID: **403162**
Constituent: **Methyl tert-Butyl Ether**
Concentration Units: **ug/L**

Sampling Point ID: **1606 Rayville Road**

Sampling Event	Sampling Date	METHYL TERT-BUTYL ETHER CONCENTRATION (ug/L)						
1	11/09/2016	9.1						
2	01/24/2017	12						
3	05/03/2017	7.6						
4	08/01/2017	2.8						
5	11/07/2017	5.7						
6	02/13/2018	6.6						
7	05/08/2018	22						
8	08/21/2018	2.2						
9								
10								
11								
12								
13								
14								
15								
16								
17								
18								
19								
20								
Coefficient of Variation:		0.74						
Mann-Kendall Statistic (S):		-8						
Confidence Factor:		80.1%						
Concentration Trend:		Stable						



Notes:

1. At least four independent sampling events per well are required for calculating the trend. *Methodology is valid for 4 to 40 samples.*
2. Confidence in Trend = Confidence (in percent) that constituent concentration is increasing (S>0) or decreasing (S<0): >95% = Increasing or Decreasing; ≥ 90% = Probably Increasing or Probably Decreasing; < 90% and S>0 = No Trend; < 90%, S≤0, and COV ≥ 1 = No Trend; < 90% and COV < 1 = Stable.
3. Methodology based on "MAROS: A Decision Support System for Optimizing Monitoring Plans", J.J. Aziz, M. Ling, H.S. Rifai, C.J. Newell, and J.R. Gonzales, *Ground Water*, 41(3):355-367, 2003.

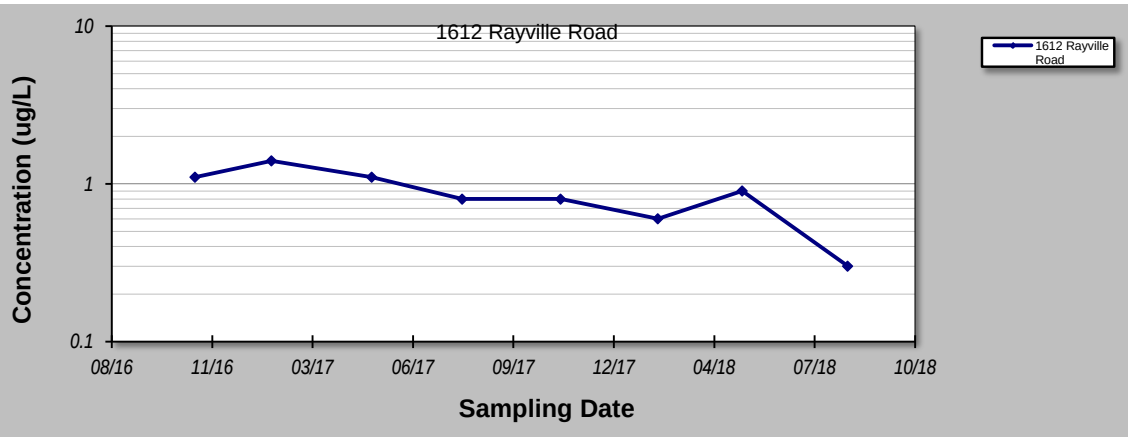
GSI MANN-KENDALL TOOLKIT
for Constituent Trend Analysis

Evaluation Date: **16-Jul-18**
Facility Name: **Parkton/Wally's**
Conducted By: **Amelia Ryan**

Job ID: **403162**
Constituent: **Methyl tert-Butyl Ether**
Concentration Units: **ug/L**

Sampling Point ID: **1612 Rayville Road**

Sampling Event	Sampling Date	METHYL TERT-BUTYL ETHER CONCENTRATION (ug/L)						
1	11/09/2016	1.1						
2	01/24/2017	1.4						
3	05/04/2017	1.1						
4	08/02/2017	0.8						
5	11/08/2017	0.8						
6	02/13/2018	0.6						
7	05/08/2018	0.9						
8	08/21/2018	0.3						
9								
10								
11								
12								
13								
14								
15								
16								
17								
18								
19								
20								
Coefficient of Variation:		0.39						
Mann-Kendall Statistic (S):		-18						
Confidence Factor:		98.4%						
Concentration Trend:		Decreasing						



Notes:

1. At least four independent sampling events per well are required for calculating the trend. *Methodology is valid for 4 to 40 samples.*
2. Confidence in Trend = Confidence (in percent) that constituent concentration is increasing (S>0) or decreasing (S<0): >95% = Increasing or Decreasing; ≥ 90% = Probably Increasing or Probably Decreasing; < 90% and S>0 = No Trend; < 90%, S≤0, and COV ≥ 1 = No Trend; < 90% and COV < 1 = Stable.
3. Methodology based on "MAROS: A Decision Support System for Optimizing Monitoring Plans", J.J. Aziz, M. Ling, H.S. Rifai, C.J. Newell, and J.R. Gonzales, *Ground Water*, 41(3):355-367, 2003.

GSI MANN-KENDALL TOOLKIT
for Constituent Trend Analysis

Evaluation Date: **16-Jul-18**
Facility Name: **Parkton/Wally's**
Conducted By: **Amelia Ryan**

Job ID: **403162**
Constituent: **Methyl tert-Butyl Ether**
Concentration Units: **ug/L**

Sampling Point ID: **1614 Rayville Road**

Sampling Event	Sampling Date	METHYL TERT-BUTYL ETHER CONCENTRATION (ug/L)						
1	11/09/2016	0.2						
2	01/26/2017	0.2						
3	05/09/2017	0.2						
4	11/08/2017	0.2						
5	02/13/2018	0.5						
6	06/14/2018	0.2						
7	08/21/2018	0.2						
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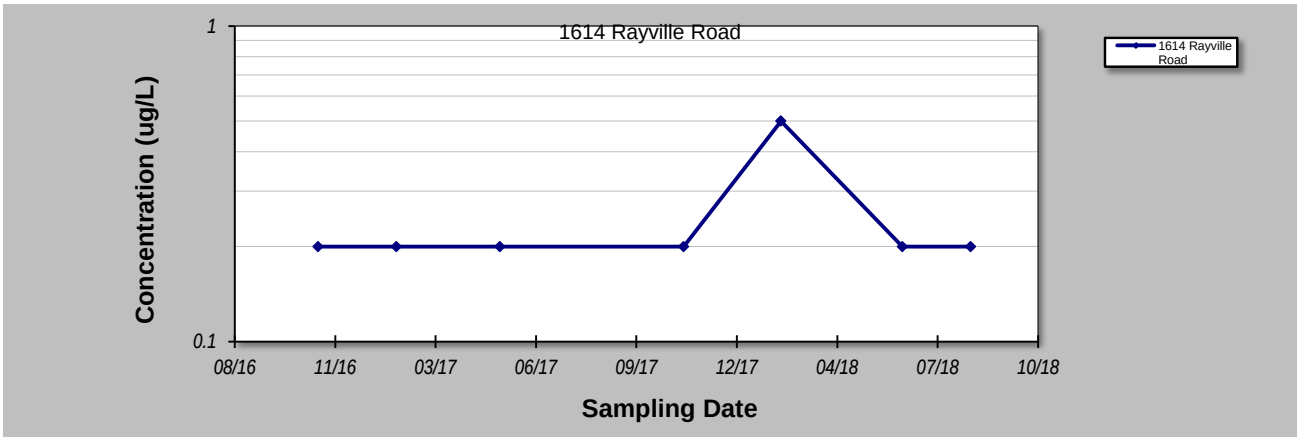
18								
19								
20								
Coefficient of Variation:		0.47						
Mann-Kendall Statistic (S):		2						
Confidence Factor:		55.7%						
Concentration Trend:		No Trend						



Notes:

1. At least four independent sampling events per well are required for calculating the trend. *Methodology is valid for 4 to 40 samples.*
2. Confidence in Trend = Confidence (in percent) that constituent concentration is increasing (S>0) or decreasing (S<0): >95% = Increasing or Decreasing; ≥ 90% = Probably Increasing or Probably Decreasing; < 90% and S>0 = No Trend; < 90%, S≤0, and COV ≥ 1 = No Trend; < 90% and COV < 1 = Stable.
3. Methodology based on "MAROS: A Decision Support System for Optimizing Monitoring Plans", J.J. Aziz, M. Ling, H.S. Rifai, C.J. Newell, and J.R. Gonzales, *Ground Water*, 41(3):355-367, 2003.

GSI MANN-KENDALL TOOLKIT
for Constituent Trend Analysis

Evaluation Date: **16-Jul-18**
Facility Name: **Parkton/Wally's**
Conducted By: **Amelia Ryan**

Job ID: **403162**
Constituent: **Methyl tert-Butyl Ether**
Concentration Units: **ug/L**

Sampling Point ID: **1616 Rayville Road**

Sampling Event	Sampling Date	METHYL TERT-BUTYL ETHER CONCENTRATION (ug/L)						
1	11/08/2016	0.6						
2	01/24/2017	0.7						
3	05/03/2017	0.5						
4	11/08/2017	0.4						
5	02/16/2018	0.5						
6	05/08/2018	0.3						
7	08/24/2018	0.1						
8								
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14								
15								
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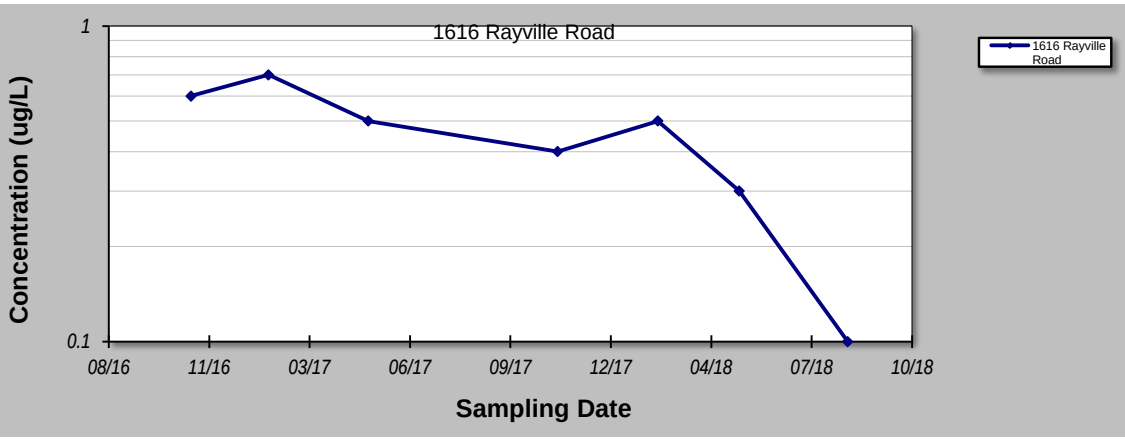
17								
18								
19								
20								
Coefficient of Variation:		0.45						
Mann-Kendall Statistic (S):		-16						
Confidence Factor:		99.0%						
Concentration Trend:		Decreasing						



Notes:

1. At least four independent sampling events per well are required for calculating the trend. *Methodology is valid for 4 to 40 samples.*
2. Confidence in Trend = Confidence (in percent) that constituent concentration is increasing (S>0) or decreasing (S<0): >95% = Increasing or Decreasing; ≥ 90% = Probably Increasing or Probably Decreasing; < 90% and S>0 = No Trend; < 90%, S≤0, and COV ≥ 1 = No Trend; < 90% and COV < 1 = Stable.
3. Methodology based on "MAROS: A Decision Support System for Optimizing Monitoring Plans", J.J. Aziz, M. Ling, H.S. Rifai, C.J. Newell, and J.R. Gonzales, *Ground Water*, 41(3):355-367, 2003.

GSI MANN-KENDALL TOOLKIT
for Constituent Trend Analysis

Evaluation Date: **16-Jul-18**
Facility Name: **Parkton/Wally's**
Conducted By: **Amelia Ryan**

Job ID: **403162**
Constituent: **Methyl tert-Butyl Ether**
Concentration Units: **ug/L**

Sampling Point ID: **1620 Rayville Road**

Sampling Event	Sampling Date	METHYL TERT-BUTYL ETHER CONCENTRATION (ug/L)						
1	11/08/2016	0.2						
2	01/24/2017	0.2						
3	05/03/2017	0.2						
4	11/08/2017	0.2						
5	02/16/2018	0.1						
6	05/08/2018	0.2						
7	08/24/2018	0.1						
8								
9								
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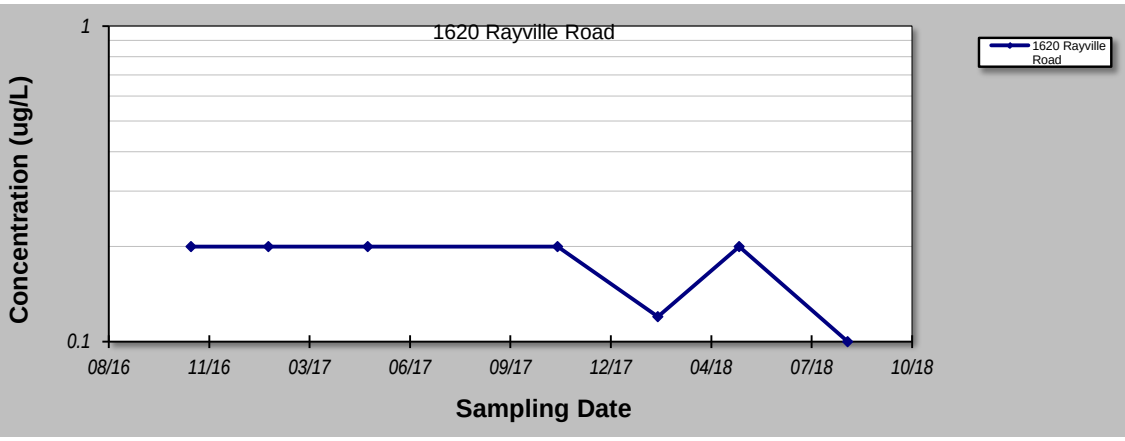
11								
12								
13								
14								
15								
16								
17								
18								
19								
20								
Coefficient of Variation:		0.25						
Mann-Kendall Statistic (S):		-9						
Confidence Factor:		88.1%						
Concentration Trend:		Stable						



Notes:

1. At least four independent sampling events per well are required for calculating the trend. *Methodology is valid for 4 to 40 samples.*
2. Confidence in Trend = Confidence (in percent) that constituent concentration is increasing (S>0) or decreasing (S<0): >95% = Increasing or Decreasing; ≥ 90% = Probably Increasing or Probably Decreasing; < 90% and S>0 = No Trend; < 90%, S≤0, and COV ≥ 1 = No Trend; < 90% and COV < 1 = Stable.
3. Methodology based on "MAROS: A Decision Support System for Optimizing Monitoring Plans", J.J. Aziz, M. Ling, H.S. Rifai, C.J. Newell, and J.R. Gonzales, *Ground Water*, 41(3):355-367, 2003.

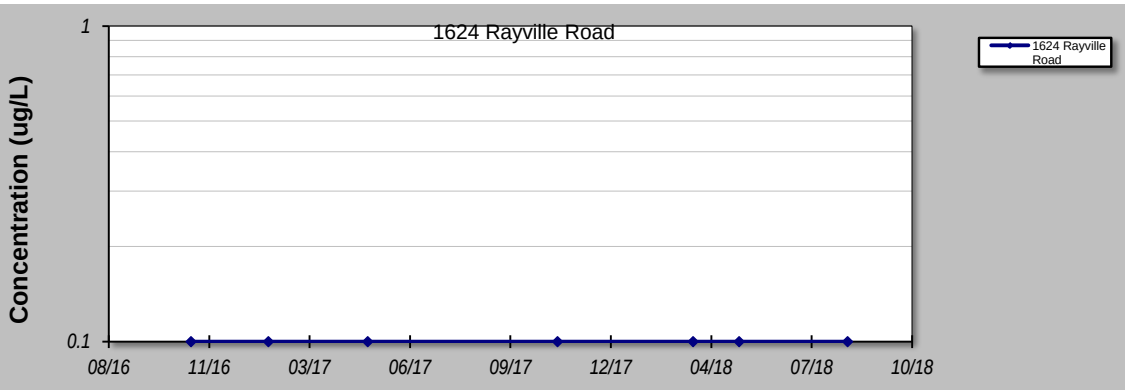
GSI MANN-KENDALL TOOLKIT
for Constituent Trend Analysis

Evaluation Date: **16-Jul-18**
Facility Name: **Parkton/Wally's**
Conducted By: **Amelia Ryan**

Job ID: **403162**
Constituent: **Methyl tert-Butyl Ether**
Concentration Units: **ug/L**

Sampling Point ID: **1624 Rayville Road**

Sampling Event	Sampling Date	METHYL TERT-BUTYL ETHER CONCENTRATION (ug/L)						
1	11/08/2016	0.1						
2	01/24/2017	0.1						
3	05/03/2017	0.1						
4	11/08/2017	0.1						
5	03/23/2018	0.1						
6	05/08/2018	0.1						
7	08/24/2018	0.1						
8								
9								
10								
11								
12								
13								
14								
15								
16								
17								
18								
19								
20								
Coefficient of Variation:		0.00						
Mann-Kendall Statistic (S):		0						
Confidence Factor:		37.9%						
Concentration Trend:		Stable						



Notes:

1. At least four independent sampling events per well are required for calculating the trend. *Methodology is valid for 4 to 40 samples.*
2. Confidence in Trend = Confidence (in percent) that constituent concentration is increasing (S>0) or decreasing (S<0): >95% = Increasing or Decreasing; ≥ 90% = Probably Increasing or Probably Decreasing; < 90% and S>0 = No Trend; < 90%, S≤0, and COV ≥ 1 = No Trend; < 90% and COV < 1 = Stable.
3. Methodology based on "MAROS: A Decision Support System for Optimizing Monitoring Plans", J.J. Aziz, M. Ling, H.S. Rifai, C.J. Newell, and J.R. Gonzales, *Ground Water*, 41(3):355-367, 2003.

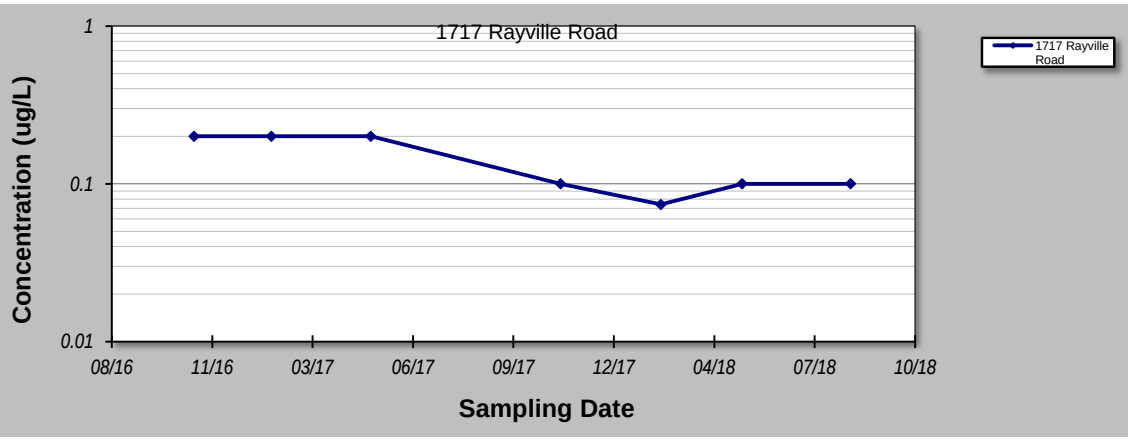
GSI MANN-KENDALL TOOLKIT
for Constituent Trend Analysis

Evaluation Date: **16-Jul-18**
Facility Name: **Parkton/Wally's**
Conducted By: **Amelia Ryan**

Job ID: **403162**
Constituent: **Methyl tert-Butyl Ether**
Concentration Units: **ug/L**

Sampling Point ID: **1717 Rayville Road**

Sampling Event	Sampling Date	METHYL TERT-BUTYL ETHER CONCENTRATION (ug/L)
1	11/08/2016	0.2
2	01/24/2017	0.2
3	05/03/2017	0.2
4	11/08/2017	0.1
5	02/16/2018	0.074
6	05/08/2018	0.1
7	08/24/2018	0.1
8		
9		
10		
11		
12		
13		
14		
15		
16		
17		
18		
19		
20		
Coefficient of Variation:		**0.41**
Mann-Kendall Statistic (S):		**-11**
Confidence Factor:		**93.2%**
Concentration Trend:		Prob. Decreasing



Notes:

1. At least four independent sampling events per well are required for calculating the trend. *Methodology is valid for 4 to 40 samples.*
2. Confidence in Trend = Confidence (in percent) that constituent concentration is increasing (S>0) or decreasing (S<0): >95% = Increasing or Decreasing; ≥ 90% = Probably Increasing or Probably Decreasing; < 90% and S>0 = No Trend; < 90%, S≤0, and COV ≥ 1 = No Trend; < 90% and COV < 1 = Stable.
3. Methodology based on "MAROS: A Decision Support System for Optimizing Monitoring Plans", J.J. Aziz, M. Ling, H.S. Rifai, C.J. Newell, and J.R. Gonzales, *Ground Water*, 41(3):355-367, 2003.

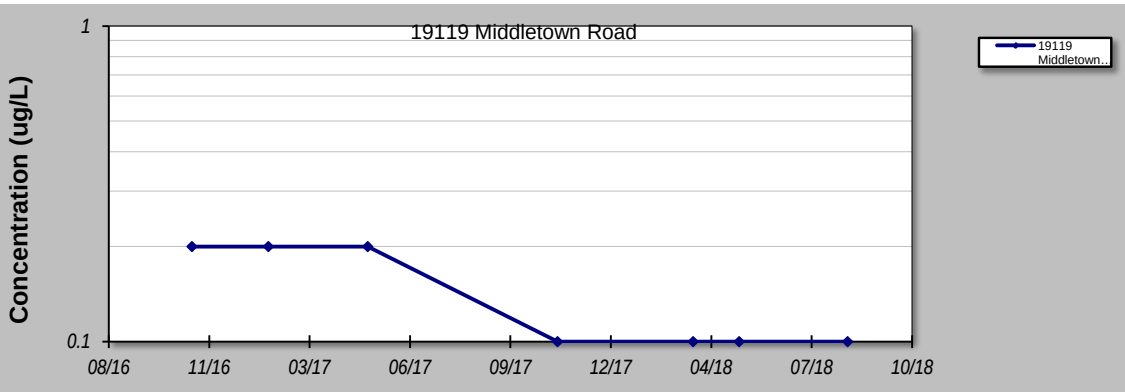
GSI MANN-KENDALL TOOLKIT
for Constituent Trend Analysis

Evaluation Date: **16-Jul-18**
Facility Name: **Parkton/Wally's**
Conducted By: **Amelia Ryan**

Job ID: **403162**
Constituent: **Methyl tert-Butyl Ether**
Concentration Units: **ug/L**

Sampling Point ID: **19119 Middletown Road**

Sampling Event	Sampling Date	METHYL TERT-BUTYL ETHER CONCENTRATION (ug/L)						
1	11/09/2016	0.2						
2	01/24/2017	0.2						
3	05/03/2017	0.2						
4	11/08/2017	0.1						
5	03/23/2018	0.1						
6	05/08/2018	0.1						
7	08/24/2018	0.1						
8								
9								
10								
11								
12								
13								
14								
15								
16								
17								
18								
19								
20								
Coefficient of Variation:		0.37						
Mann-Kendall Statistic (S):		-12						
Confidence Factor:		94.9%						
Concentration Trend:		Prob. Decreasing						



Notes:

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2. Confidence in Trend = Confidence (in percent) that constituent concentration is increasing (S>0) or decreasing (S<0): >95% = Increasing or Decreasing; ≥ 90% = Probably Increasing or Probably Decreasing; < 90% and S>0 = No Trend; < 90%, S≤0, and COV ≥ 1 = No Trend; < 90% and COV < 1 = Stable.
3. Methodology based on "MAROS: A Decision Support System for Optimizing Monitoring Plans", J.J. Aziz, M. Ling, H.S. Rifai, C.J. Newell, and J.R. Gonzales, *Ground Water*, 41(3):355-367, 2003.

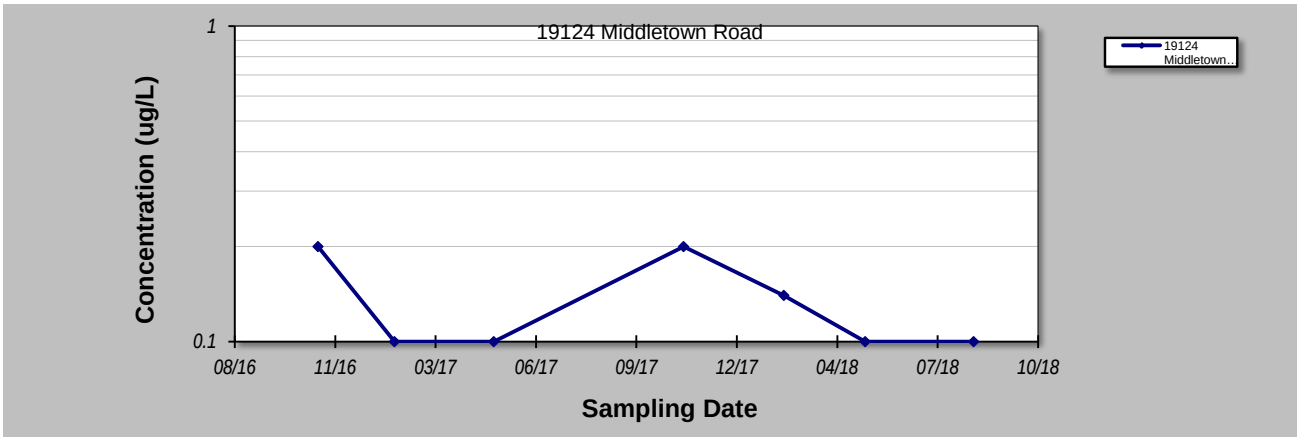
GSI MANN-KENDALL TOOLKIT
for Constituent Trend Analysis

Evaluation Date: **16-Jul-18**
Facility Name: **Parkton/Wally's**
Conducted By: **Amelia Ryan**

Job ID: **403162**
Constituent: **Methyl tert-Butyl Ether**
Concentration Units: **ug/L**

Sampling Point ID: **19124 Middletown Road**

Sampling Event	Sampling Date	METHYL TERT-BUTYL ETHER CONCENTRATION (ug/L)						
1	11/09/2016	0.2						
2	01/24/2017	0.1						
3	05/03/2017	0.1						
4	11/08/2017	0.2						
5	02/16/2018	0.14						
6	05/08/2018	0.1						
7	08/24/2018	0.1						
8								
9								
10								
11								
12								
13								
14								
15								
16								
17								
18								
19								
20								
Coefficient of Variation:		**0.35**						
Mann-Kendall Statistic (S):		**-6**						
Confidence Factor:		**76.4%**						
Concentration Trend:		Stable						



Notes:

1. At least four independent sampling events per well are required for calculating the trend. *Methodology is valid for 4 to 40 samples.*
2. Confidence in Trend = Confidence (in percent) that constituent concentration is increasing (S>0) or decreasing (S<0): >95% = Increasing or Decreasing; ≥ 90% = Probably Increasing or Probably Decreasing; < 90% and S>0 = No Trend; < 90%, S≤0, and COV ≥ 1 = No Trend; < 90% and COV < 1 = Stable.
3. Methodology based on "MAROS: A Decision Support System for Optimizing Monitoring Plans", J.J. Aziz, M. Ling, H.S. Rifai, C.J. Newell, and J.R. Gonzales, *Ground Water*, 41(3):355-367, 2003.

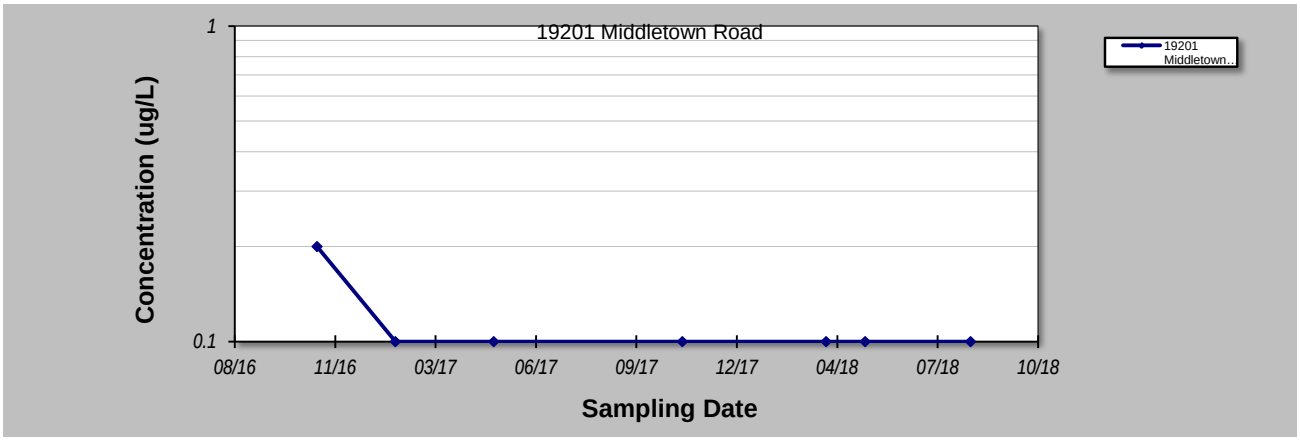
GSI MANN-KENDALL TOOLKIT
for Constituent Trend Analysis

Evaluation Date: **16-Jul-18**
Facility Name: **Parkton/Wally's**
Conducted By: **Amelia Ryan**

Job ID: **403162**
Constituent: **Methyl tert-Butyl Ether**
Concentration Units: **ug/L**

Sampling Point ID: **19201 Middletown Road**

Sampling Event	Sampling Date	METHYL TERT-BUTYL ETHER CONCENTRATION (ug/L)						
1	11/08/2016	0.2						
2	01/25/2017	0.1						
3	05/03/2017	0.1						
4	11/07/2017	0.1						
5	03/30/2018	0.1						
6	05/08/2018	0.1						
7	08/21/2018	0.1						
8								
9								
10								
11								
12								
13								
14								
15								
16								
17								
18								
19								
20								
Coefficient of Variation:		0.33						
Mann-Kendall Statistic (S):		-6						
Confidence Factor:		76.4%						
Concentration Trend:		Stable						



Notes:

1. At least four independent sampling events per well are required for calculating the trend. *Methodology is valid for 4 to 40 samples.*
2. Confidence in Trend = Confidence (in percent) that constituent concentration is increasing (S>0) or decreasing (S<0): >95% = Increasing or Decreasing; ≥ 90% = Probably Increasing or Probably Decreasing; < 90% and S>0 = No Trend; < 90%, S≤0, and COV ≥ 1 = No Trend; < 90% and COV < 1 = Stable.
3. Methodology based on "MAROS: A Decision Support System for Optimizing Monitoring Plans", J.J. Aziz, M. Ling, H.S. Rifai, C.J. Newell, and J.R. Gonzales, *Ground Water*, 41(3):355-367, 2003.

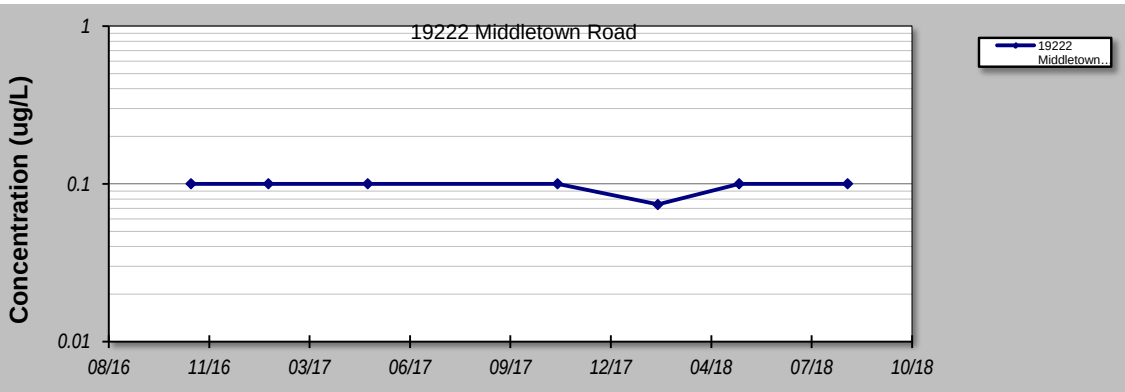
GSI MANN-KENDALL TOOLKIT
for Constituent Trend Analysis

Evaluation Date: **16-Jul-18**
Facility Name: **Parkton/Wally's**
Conducted By: **Amelia Ryan**

Job ID: **403162**
Constituent: **Methyl tert-Butyl Ether**
Concentration Units: **ug/L**

Sampling Point ID: **19222 Middletown Road**

Sampling Event	Sampling Date	METHYL TERT-BUTYL ETHER CONCENTRATION (ug/L)						
1	11/08/2016	0.1						
2	01/24/2017	0.1						
3	05/03/2017	0.1						
4	11/08/2017	0.1						
5	02/16/2018	0.074						
6	05/08/2018	0.1						
7	08/24/2018	0.1						
8								
9								
10								
11								
12								
13								
14								
15								
16								
17								
18								
19								
20								
Coefficient of Variation:		**0.10**						
Mann-Kendall Statistic (S):		**-2**						
Confidence Factor:		**55.7%**						
Concentration Trend:		Stable						



Notes:

1. At least four independent sampling events per well are required for calculating the trend. *Methodology is valid for 4 to 40 samples.*
2. Confidence in Trend = Confidence (in percent) that constituent concentration is increasing (S>0) or decreasing (S<0): >95% = Increasing or Decreasing; ≥ 90% = Probably Increasing or Probably Decreasing; < 90% and S>0 = No Trend; < 90%, S≤0, and COV ≥ 1 = No Trend; < 90% and COV < 1 = Stable.
3. Methodology based on "MAROS: A Decision Support System for Optimizing Monitoring Plans", J.J. Aziz, M. Ling, H.S. Rifai, C.J. Newell, and J.R. Gonzales, *Ground Water*, 41(3):355-367, 2003.

GSI MANN-KENDALL TOOLKIT
for Constituent Trend Analysis

Evaluation Date: **16-Jul-18**
Facility Name: **Parkton/Wally's**
Conducted By: **Amelia Ryan**

Job ID: **403162**
Constituent: **Methyl tert-Butyl Ether**
Concentration Units: **ug/L**

Sampling Point ID: **MW-1**

Sampling Event	Sampling Date	METHYL TERT-BUTYL ETHER CONCENTRATION (ug/L)
1	11/09/2016	5.5
2	01/25/2017	0.9
3	05/05/2017	0.5
4	08/01/2017	0.6
5	11/07/2017	5.3
6	02/14/2018	6.5
7	06/12/2018	0.4
8	08/21/2018	0.2
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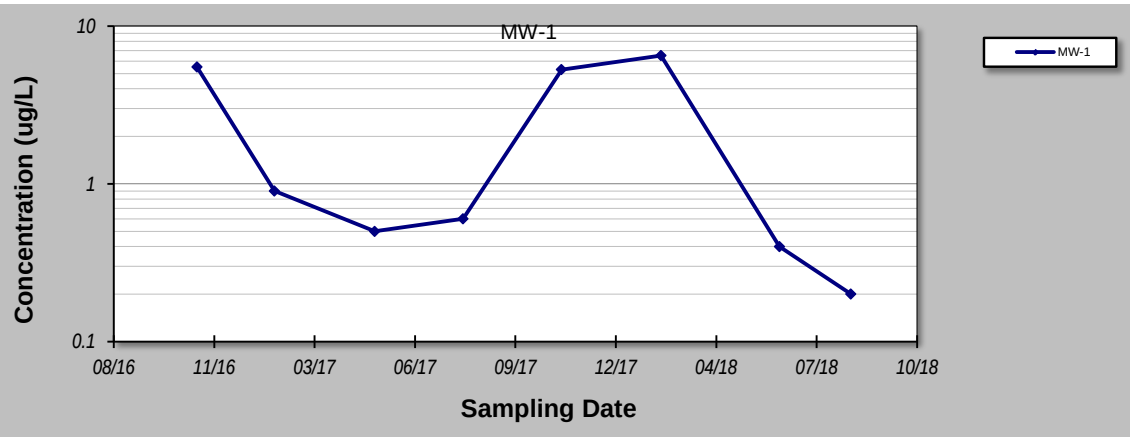
Coefficient of Variation:		**1.10**
Mann-Kendall Statistic (S):		**-10**
Confidence Factor:		**86.2%**
Concentration Trend:		No Trend



Notes:

1. At least four independent sampling events per well are required for calculating the trend. *Methodology is valid for 4 to 40 samples.*
2. Confidence in Trend = Confidence (in percent) that constituent concentration is increasing (S>0) or decreasing (S<0): >95% = Increasing or Decreasing; ≥ 90% = Probably Increasing or Probably Decreasing; < 90% and S>0 = No Trend; < 90%, S≤0, and COV ≥ 1 = No Trend; < 90% and COV < 1 = Stable.
3. Methodology based on "MAROS: A Decision Support System for Optimizing Monitoring Plans", J.J. Aziz, M. Ling, H.S. Rifai, C.J. Newell, and J.R. Gonzales, *Ground Water*, 41(3):355-367, 2003.

GSI MANN-KENDALL TOOLKIT
for Constituent Trend Analysis

Evaluation Date: **16-Jul-18**
Facility Name: **Parkton/Wally's**
Conducted By: **Amelia Ryan**

Job ID: **403162**
Constituent: **Methyl tert-Butyl Ether**
Concentration Units: **ug/L**

Sampling Point ID: **MW-2**

Sampling Event	Sampling Date	METHYL TERT-BUTYL ETHER CONCENTRATION (ug/L)
1	11/09/2016	0.4
2	1/25/2017	0.1
3	05/09/2017	0.1
4	08/01/2017	0.1
5	11/07/2017	0.1
6	02/14/2018	0.1
7	06/12/2018	0.1
8	08/21/2018	0.05
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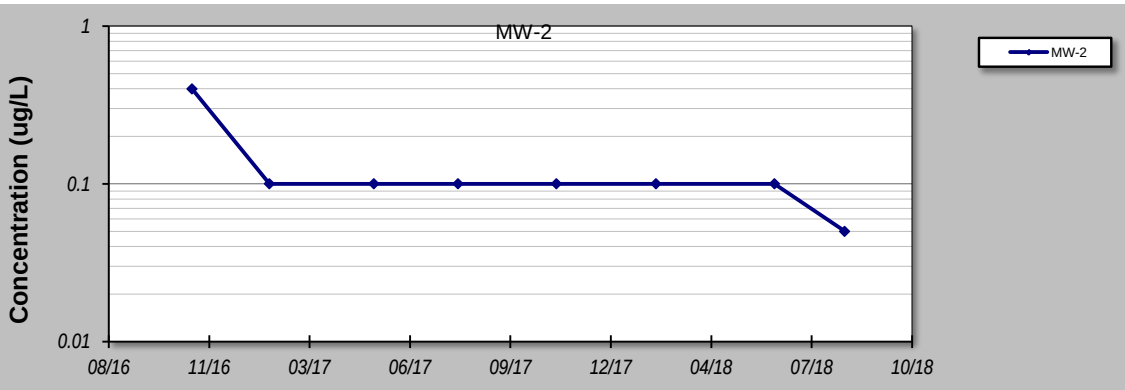
20		
Coefficient of Variation:		**0.84**
Mann-Kendall Statistic (S):		**-13**
Confidence Factor:		**92.9%**
Concentration Trend:		Prob. Decreasing



Notes:

1. At least four independent sampling events per well are required for calculating the trend. *Methodology is valid for 4 to 40 samples.*
2. Confidence in Trend = Confidence (in percent) that constituent concentration is increasing (S>0) or decreasing (S<0): >95% = Increasing or Decreasing; ≥ 90% = Probably Increasing or Probably Decreasing; < 90% and S>0 = No Trend; < 90%, S≤0, and COV ≥ 1 = No Trend; < 90% and COV < 1 = Stable.
3. Methodology based on "MAROS: A Decision Support System for Optimizing Monitoring Plans", J.J. Aziz, M. Ling, H.S. Rifai, C.J. Newell, and J.R. Gonzales, *Ground Water*, 41(3):355-367, 2003.

GSI MANN-KENDALL TOOLKIT
for Constituent Trend Analysis

Evaluation Date: **16-Jul-18**
Facility Name: **Parkton/Wally's**
Conducted By: **Amelia Ryan**

Job ID: **403162**
Constituent: **Methyl tert-Butyl Ether**
Concentration Units: **ug/L**

Sampling Point ID: **MW-3**

Sampling Event	Sampling Date	METHYL TERT-BUTYL ETHER CONCENTRATION (ug/L)
1	11/09/2016	140.0
2	12/13/2016	36.0
3	01/25/2017	15.0
4	04/05/2017	17.0
5	05/09/2017	17.0
6	08/02/2017	14.0
7	11/07/2017	55.0
8	02/14/2018	43.0
9	06/13/2018	8.3
10	08/21/2018	8.1
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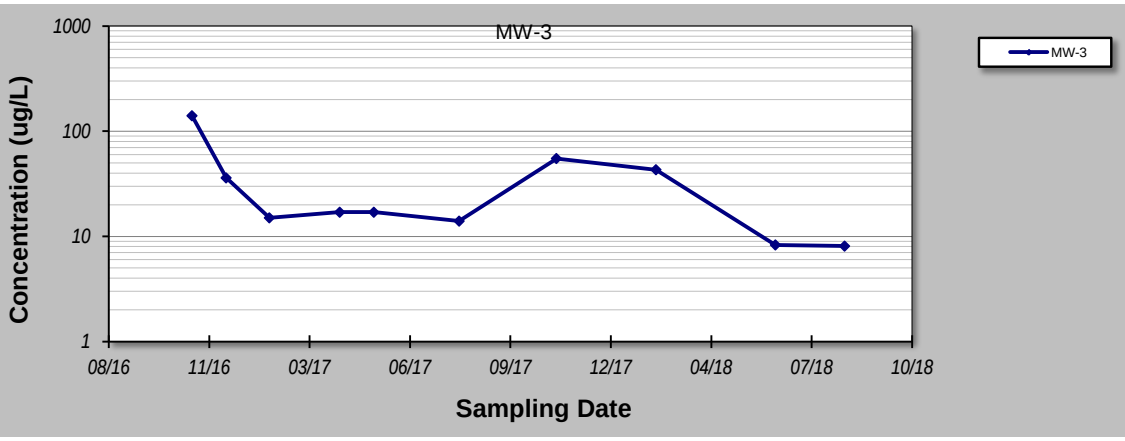
20		
Coefficient of Variation:		**1.13**
Mann-Kendall Statistic (S):		**-20**
Confidence Factor:		**95.5%**
Concentration Trend:		Decreasing



Notes:

1. At least four independent sampling events per well are required for calculating the trend. *Methodology is valid for 4 to 40 samples.*
2. Confidence in Trend = Confidence (in percent) that constituent concentration is increasing (S>0) or decreasing (S<0): >95% = Increasing or Decreasing; ≥ 90% = Probably Increasing or Probably Decreasing; < 90% and S>0 = No Trend; < 90%, S≤0, and COV ≥ 1 = No Trend; < 90% and COV < 1 = Stable.
3. Methodology based on "MAROS: A Decision Support System for Optimizing Monitoring Plans", J.J. Aziz, M. Ling, H.S. Rifai, C.J. Newell, and J.R. Gonzales, *Ground Water*, 41(3):355-367, 2003.

GSI MANN-KENDALL TOOLKIT
for Constituent Trend Analysis

Evaluation Date: **16-Jul-18**
Facility Name: **Parkton/Wally's**
Conducted By: **Amelia Ryan**

Job ID: **403162**
Constituent: **Benzene**
Concentration Units: **ug/L**

Sampling Point ID: **MW-3**

Sampling Event	Sampling Date	BENZENE CONCENTRATION (ug/L)
1	11/09/2016	0.4
2	12/13/2016	0.6
3	01/23/2017	0.1
4	04/05/2017	0.3
5	05/09/2017	0.1
6	08/02/2017	0.2
7	11/07/2017	2
8	02/12/2018	2.1
9	06/13/2018	1
10	08/21/2018	0.3
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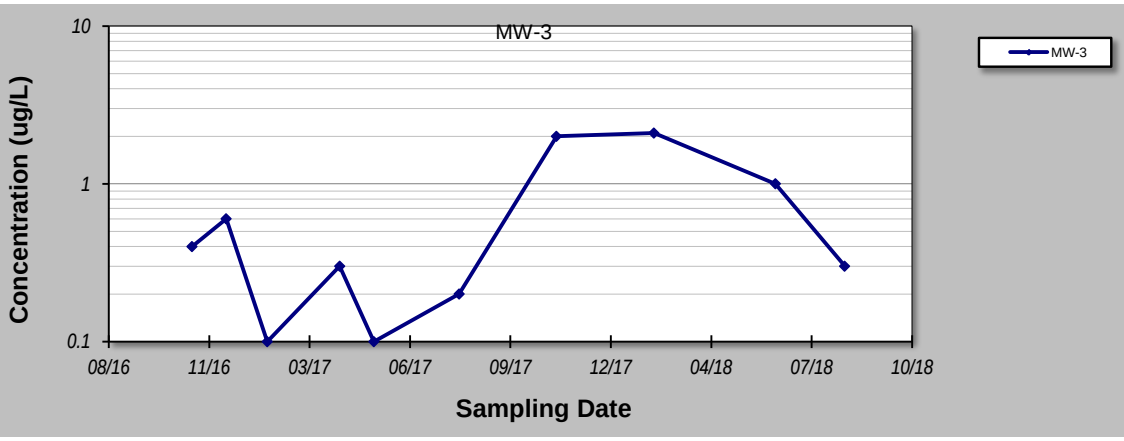
20		
Coefficient of Variation:		**1.06**
Mann-Kendall Statistic (S):		**9**
Confidence Factor:		**75.8%**
Concentration Trend:		No Trend



Notes:

1. At least four independent sampling events per well are required for calculating the trend. *Methodology is valid for 4 to 40 samples.*
2. Confidence in Trend = Confidence (in percent) that constituent concentration is increasing (S>0) or decreasing (S<0): >95% = Increasing or Decreasing; ≥ 90% = Probably Increasing or Probably Decreasing; < 90% and S>0 = No Trend; < 90%, S≤0, and COV ≥ 1 = No Trend; < 90% and COV < 1 = Stable.
3. Methodology based on "MAROS: A Decision Support System for Optimizing Monitoring Plans", J.J. Aziz, M. Ling, H.S. Rifai, C.J. Newell, and J.R. Gonzales, *Ground Water*, 41(3):355-367, 2003.

GSI MANN-KENDALL TOOLKIT
for Constituent Trend Analysis

Evaluation Date: **16-Jul-18**
Facility Name: **Parkton/Wally's**
Conducted By: **Amelia Ryan**

Job ID: **403162**
Constituent: **Methyl tert-Butyl Ether**
Concentration Units: **ug/L**

Sampling Point ID: **MW-4**

Sampling Event	Sampling Date	METHYL TERT-BUTYL ETHER CONCENTRATION (ug/L)						
1	11/09/2016	0.7						
2	01/25/2017	9.4						
3	05/09/2017	0.8						
4	08/01/2017	1.0						
5	11/07/2017	5.8						
6	02/14/2018	2.9						
7	08/21/2018	0.7						
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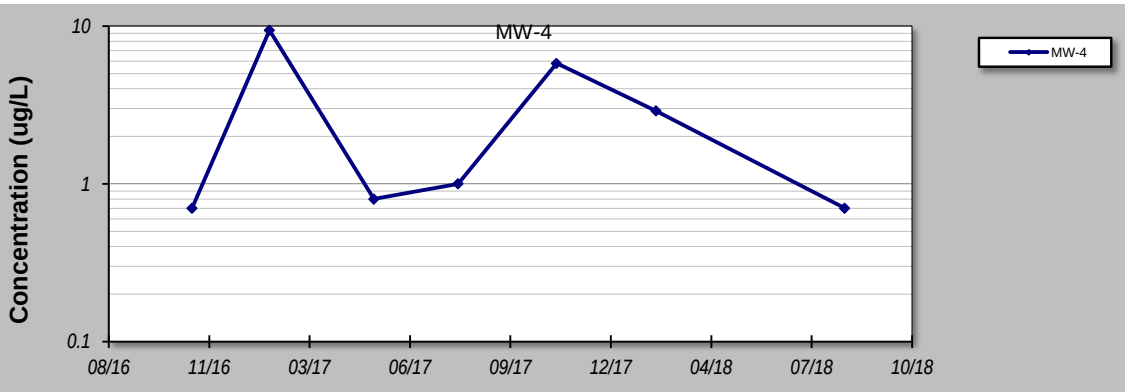
19								
20								
Coefficient of Variation:		1.11						
Mann-Kendall Statistic (S):		0						
Confidence Factor:		37.9%						
Concentration Trend:		No Trend						



Notes:

1. At least four independent sampling events per well are required for calculating the trend. *Methodology is valid for 4 to 40 samples.*
2. Confidence in Trend = Confidence (in percent) that constituent concentration is increasing (S>0) or decreasing (S<0): >95% = Increasing or Decreasing; ≥ 90% = Probably Increasing or Probably Decreasing; < 90% and S>0 = No Trend; < 90%, S≤0, and COV ≥ 1 = No Trend; < 90% and COV < 1 = Stable.
3. Methodology based on "MAROS: A Decision Support System for Optimizing Monitoring Plans", J.J. Aziz, M. Ling, H.S. Rifai, C.J. Newell, and J.R. Gonzales, *Ground Water*, 41(3):355-367, 2003.

GSI MANN-KENDALL TOOLKIT
for Constituent Trend Analysis

Evaluation Date: **16-Jul-18**
Facility Name: **Parkton/Wally's**
Conducted By: **Amelia Ryan**

Job ID: **403162**
Constituent: **Methyl tert-Butyl Ether**
Concentration Units: **ug/L**

Sampling Point ID: **MW-5**

Sampling Event	Sampling Date	METHYL TERT-BUTYL ETHER CONCENTRATION (ug/L)
1	11/10/2016	5.5
2	01/26/2017	13.0
3	04/05/2017	14.0
4	05/09/2017	9.7
5	08/01/2017	1.0
6	11/09/2017	0.8
7	02/16/2018	5.0
8	06/14/2018	2.8
9	08/24/2018	0.8
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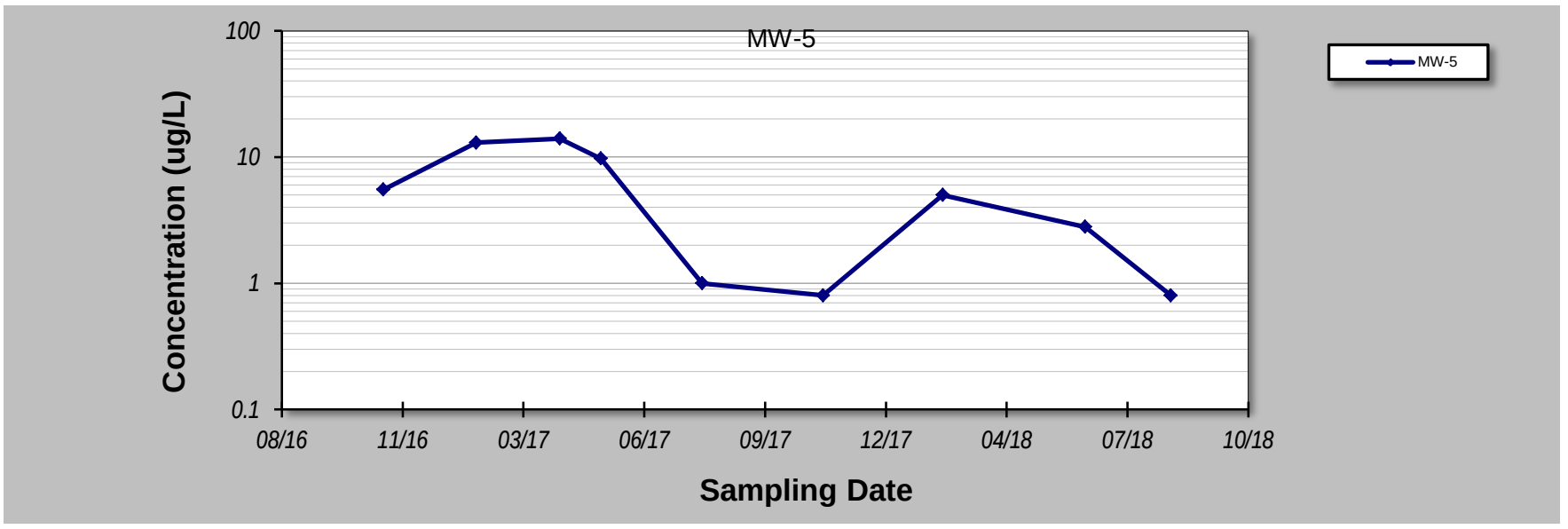
20		
Coefficient of Variation:		**0.89**
Mann-Kendall Statistic (S):		**-19**
Confidence Factor:		**97.0%**
Concentration Trend:		Decreasing



Notes:

1. At least four independent sampling events per well are required for calculating the trend. *Methodology is valid for 4 to 40 samples.*
2. Confidence in Trend = Confidence (in percent) that constituent concentration is increasing (S>0) or decreasing (S<0): >95% = Increasing or Decreasing; ≥ 90% = Probably Increasing or Probably Decreasing; < 90% and S>0 = No Trend; < 90%, S≤0, and COV ≥ 1 = No Trend; < 90% and COV < 1 = Stable.
3. Methodology based on "MAROS: A Decision Support System for Optimizing Monitoring Plans", J.J. Aziz, M. Ling, H.S. Rifai, C.J. Newell, and J.R. Gonzales, *Ground Water* , 41(3):355-367, 2003.

GSI MANN-KENDALL TOOLKIT
for Constituent Trend Analysis

Evaluation Date: **16-Jul-18**
Facility Name: **Parkton/Wally's**
Conducted By: **Amelia Ryan**

Job ID: **403162**
Constituent: **Benzene**
Concentration Units: **ug/L**

Sampling Point ID: **MW-5**

Sampling Event	Sampling Date	BENZENE CONCENTRATION (ug/L)
1	11/10/2016	8
2	01/26/2017	21
3	04/05/2017	20
4	05/09/2017	24
5	08/01/2017	2.8
6	11/09/2017	3.6
7	02/16/2018	11.0
8	06/14/2018	7
9	08/24/2018	1.6
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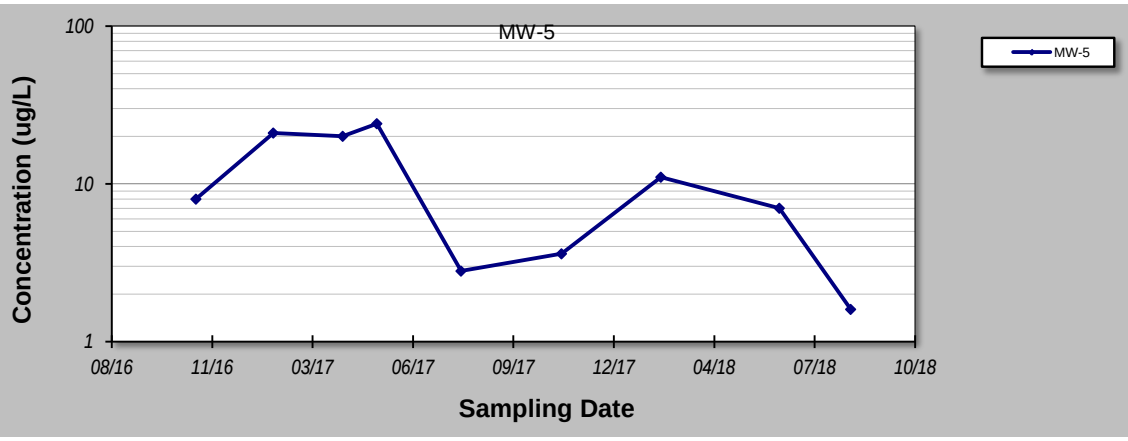
20		
Coefficient of Variation:		**0.78**
Mann-Kendall Statistic (S):		**-14**
Confidence Factor:		**91.0%**
Concentration Trend:		Prob. Decreasing



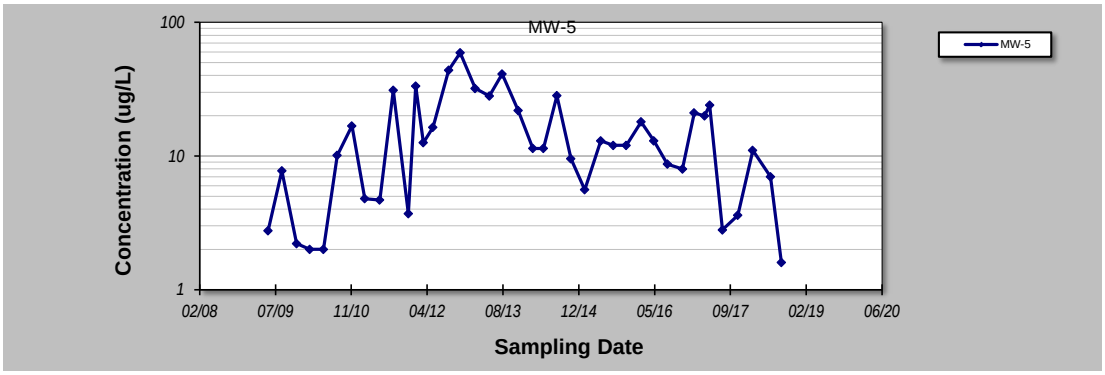
Notes:

1. At least four independent sampling events per well are required for calculating the trend. *Methodology is valid for 4 to 40 samples.*
2. Confidence in Trend = Confidence (in percent) that constituent concentration is increasing (S>0) or decreasing (S<0): >95% = Increasing or Decreasing; ≥ 90% = Probably Increasing or Probably Decreasing; < 90% and S>0 = No Trend; < 90%, S≤0, and COV ≥ 1 = No Trend; < 90% and COV < 1 = Stable.
3. Methodology based on "MAROS: A Decision Support System for Optimizing Monitoring Plans", J.J. Aziz, M. Ling, H.S. Rifai, C.J. Newell, and J.R. Gonzales, *Ground Water*, 41(3):355-367, 2003.

GSI MANN-KENDALL TOOLKIT
for Constituent Trend Analysis

Evaluation Date: **16-Jul-18**
Facility Name: **Parkton/Wally's**
Conducted By: **Amelia Ryan**
Job ID: **403162**
Constituent: **Benzene**
Concentration Units: **ug/L**
Sampling Point ID: **MW-5**

Sampling Event	Sampling Date	BENZENE CONCENTRATION (ug/L)
1	05/18/2009	2.8
2	08/17/2009	7.7
3	11/23/2009	2.2
4	02/17/2010	2.0
5	05/18/2010	2.0
6	08/17/2010	10.1
7	11/22/2010	16.8
8	02/14/2011	4.8
9	05/24/2011	4.7
10	08/22/2011	31.0
11	11/30/2011	3.7
12	01/17/2012	33.3
13	03/07/2012	12.6
14	05/09/2012	16.4
15	08/21/2012	43.9
16	11/05/2012	59.3
17	02/12/2013	32.0
18	05/16/2013	28.1
19	08/08/2013	41.1
20	11/22/2013	21.9
21	02/27/2014	11.4
22	05/08/2014	11.4
23	08/05/2014	28.3
24	11/05/2014	9.6
25	02/04/2015	5.6
26	05/21/2015	13.0
27	08/12/2015	12.0
28	11/5/2015	12.0
29	02/11/2016	18.0
30	05/05/2016	13
31	08/03/2016	8.7
32	11/10/2016	8
33	01/26/2017	21
34	04/05/2017	20
35	05/09/2017	24
36	08/01/2017	2.8
37	11/09/2017	3.6
38	02/16/2018	11.0
39	06/14/2018	7
40	08/24/2018	1.6
Coefficient of Variation:		0.85
Mann-Kendall Statistic (S):		10
Confidence Factor:		54.1%
Concentration Trend:		No Trend



Notes:

1. At least four independent sampling events per well are required for calculating the trend. *Methodology is valid for 4 to 40 samples.*
2. Confidence in Trend = Confidence (in percent) that constituent concentration is increasing (S>0) or decreasing (S<0): >95% = Increasing or Decreasing; ≥ 90% = Probably Increasing or Probably Decreasing; < 90% and S>0 = No Trend; < 90%, S≤0, and COV ≥ 1 = No Trend; < 90% and COV < 1 = Stable.
3. Methodology based on "MAROS: A Decision Support System for Optimizing Monitoring Plans", J.J. Aziz, M. Ling, H.S. Rifai, C.J. Newell, and J.R. Gonzales, *Ground Water* , 41(3):355-367, 2003.

GSI MANN-KENDALL TOOLKIT
for Constituent Trend Analysis

Evaluation Date: **16-Jul-18**
Facility Name: **Parkton/Wally's**
Conducted By: **Amelia Ryan**

Job ID: **403162**
Constituent: **Methyl tert-Butyl Ether**
Concentration Units: **ug/L**

Sampling Point ID: **MW-5B**

Sampling Event	Sampling Date	METHYL TERT-BUTYL ETHER CONCENTRATION (ug/L)
1	11/09/2016	0.1
2	01/26/2017	0.1
3	05/09/2017	0.2
4	11/09/2017	0.1
5	02/14/2018	0.1
6	06/14/2018	0.1
7	08/23/2018	0.05
8		
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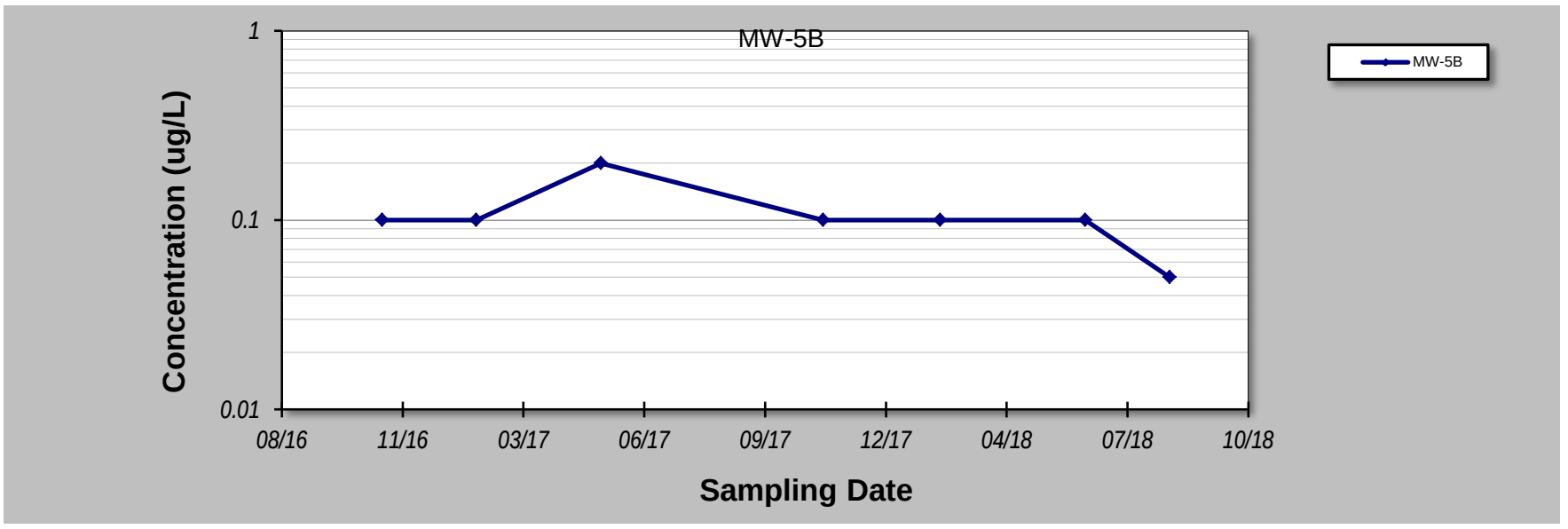
19		
20		
Coefficient of Variation:		**0.42**
Mann-Kendall Statistic (S):		**-7**
Confidence Factor:		**80.9%**
Concentration Trend:		Stable



Notes:

1. At least four independent sampling events per well are required for calculating the trend. *Methodology is valid for 4 to 40 samples.*
2. Confidence in Trend = Confidence (in percent) that constituent concentration is increasing (S>0) or decreasing (S<0): >95% = Increasing or Decreasing; ≥ 90% = Probably Increasing or Probably Decreasing; < 90% and S>0 = No Trend; < 90%, S≤0, and COV ≥ 1 = No Trend; < 90% and COV < 1 = Stable.
3. Methodology based on "MAROS: A Decision Support System for Optimizing Monitoring Plans", J.J. Aziz, M. Ling, H.S. Rifai, C.J. Newell, and J.R. Gonzales, *Ground Water* , 41(3):355-367, 2003.

GSI MANN-KENDALL TOOLKIT
for Constituent Trend Analysis

Evaluation Date: **16-Jul-18**
Facility Name: **Parkton/Wally's**
Conducted By: **Amelia Ryan**

Job ID: **403162**
Constituent: **Methyl tert-Butyl Ether**
Concentration Units: **ug/L**

Sampling Point ID: **MW-6**

Sampling Event	Sampling Date	METHYL TERT-BUTYL ETHER CONCENTRATION (ug/L)
1	11/09/2016	0.6
2	01/25/2017	0.4
3	05/05/2017	0.9
4	11/07/2017	0.8
5	02/14/2018	0.5
6	06/11/2018	0.7
7	08/21/2018	2.5
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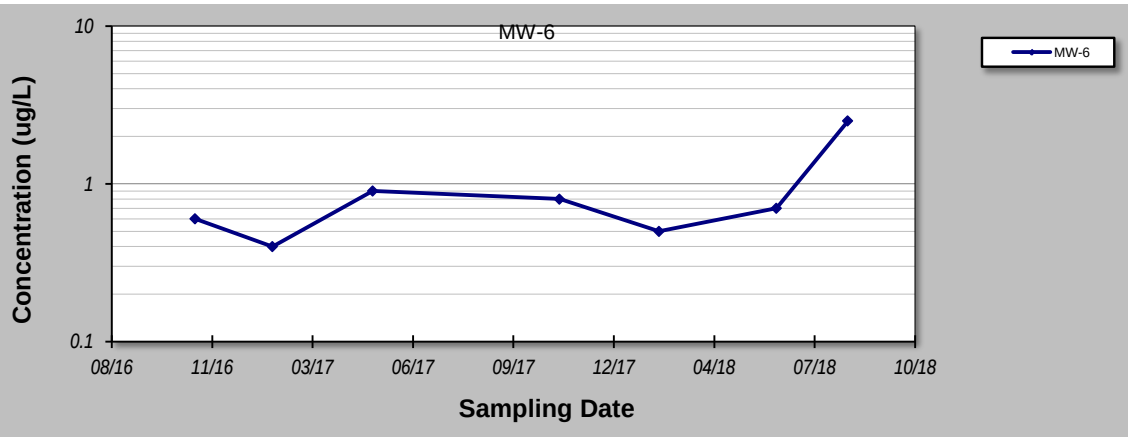
20		
Coefficient of Variation:		0.79
Mann-Kendall Statistic (S):		7
Confidence Factor:		80.9%
Concentration Trend:		No Trend



Notes:

1. At least four independent sampling events per well are required for calculating the trend. *Methodology is valid for 4 to 40 samples.*
2. Confidence in Trend = Confidence (in percent) that constituent concentration is increasing (S>0) or decreasing (S<0): >95% = Increasing or Decreasing; ≥ 90% = Probably Increasing or Probably Decreasing; < 90% and S>0 = No Trend; < 90%, S≤0, and COV ≥ 1 = No Trend; < 90% and COV < 1 = Stable.
3. Methodology based on "MAROS: A Decision Support System for Optimizing Monitoring Plans", J.J. Aziz, M. Ling, H.S. Rifai, C.J. Newell, and J.R. Gonzales, *Ground Water*, 41(3):355-367, 2003.

GSI MANN-KENDALL TOOLKIT
for Constituent Trend Analysis

Evaluation Date: **16-Jul-18**
Facility Name: **Parkton/Wally's**
Conducted By: **Amelia Ryan**

Job ID: **403162**
Constituent: **Methyl tert-Butyl Ether**
Concentration Units: **ug/L**

Sampling Point ID: **MW-7A**

Sampling Event	Sampling Date	METHYL TERT-BUTYL ETHER CONCENTRATION (ug/L)
1	11/10/2016	8.4
2	01/26/2017	23.0
3	05/09/2017	4.1
4	08/02/2017	3.9
5	11/09/2017	0.1
6	02/14/2018	2.5
7	06/14/2018	1.9
8	08/23/2018	0.7
9		
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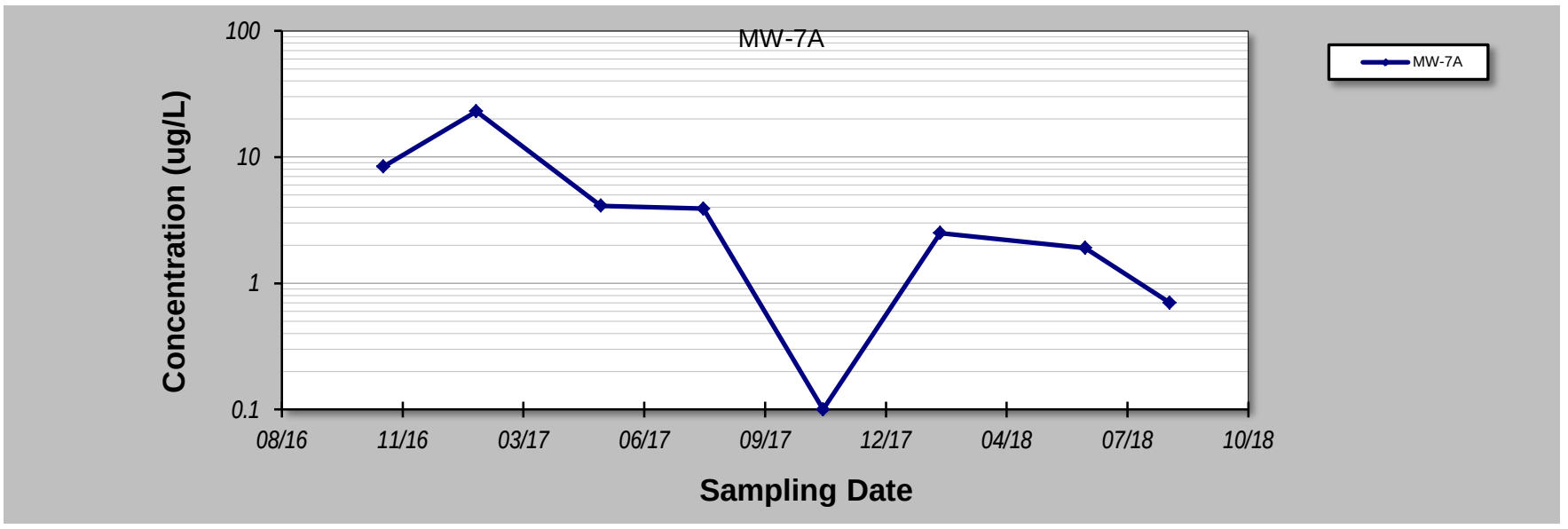
20		
Coefficient of Variation:		**1.34**
Mann-Kendall Statistic (S):		**-20**
Confidence Factor:		**99.3%**
Concentration Trend:		Decreasing



Notes:

1. At least four independent sampling events per well are required for calculating the trend. *Methodology is valid for 4 to 40 samples.*
2. Confidence in Trend = Confidence (in percent) that constituent concentration is increasing (S>0) or decreasing (S<0): >95% = Increasing or Decreasing; ≥ 90% = Probably Increasing or Probably Decreasing; < 90% and S>0 = No Trend; < 90%, S≤0, and COV ≥ 1 = No Trend; < 90% and COV < 1 = Stable.
3. Methodology based on "MAROS: A Decision Support System for Optimizing Monitoring Plans", J.J. Aziz, M. Ling, H.S. Rifai, C.J. Newell, and J.R. Gonzales, *Ground Water* , 41(3):355-367, 2003.

GSI MANN-KENDALL TOOLKIT
for Constituent Trend Analysis

Evaluation Date: **16-Jul-18**
Facility Name: **Parkton/Wally's**
Conducted By: **Amelia Ryan**

Job ID: **403162**
Constituent: **Methyl tert-Butyl Ether**
Concentration Units: **ug/L**

Sampling Point ID: **MW-7B**

Sampling Event	Sampling Date	METHYL TERT-BUTYL ETHER CONCENTRATION (ug/L)
1	11/11/2016	11.0
2	01/26/2017	4.4
3	05/08/2017	3.7
4	08/03/2017	0.1
5	11/13/2017	2.0
6	02/15/2018	0.1
7	06/18/2018	0.1
8	08/22/2018	0.05
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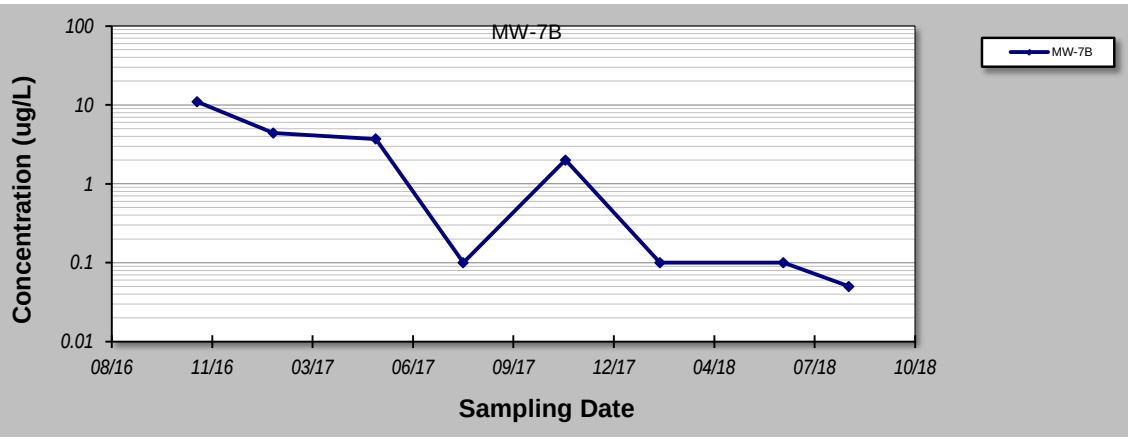
20		
Coefficient of Variation:		**1.41**
Mann-Kendall Statistic (S):		**-23**
Confidence Factor:		**99.9%**
Concentration Trend:		Decreasing



Notes:

1. At least four independent sampling events per well are required for calculating the trend. *Methodology is valid for 4 to 40 samples.*
2. Confidence in Trend = Confidence (in percent) that constituent concentration is increasing (S>0) or decreasing (S<0): >95% = Increasing or Decreasing; ≥ 90% = Probably Increasing or Probably Decreasing; < 90% and S>0 = No Trend; < 90%, S≤0, and COV ≥ 1 = No Trend; < 90% and COV < 1 = Stable.
3. Methodology based on "MAROS: A Decision Support System for Optimizing Monitoring Plans", J.J. Aziz, M. Ling, H.S. Rifai, C.J. Newell, and J.R. Gonzales, *Ground Water*, 41(3):355-367, 2003.

GSI MANN-KENDALL TOOLKIT
for Constituent Trend Analysis

Evaluation Date: **16-Jul-18**
Facility Name: **Parkton/Wally's**
Conducted By: **Amelia Ryan**

Job ID: **403162**
Constituent: **Methyl tert-Butyl Ether**
Concentration Units: **ug/L**

Sampling Point ID: **MW-8A**

Sampling Event	Sampling Date	METHYL TERT-BUTYL ETHER CONCENTRATION (ug/L)
1	11/09/2016	0.3
2	01/25/2017	0.2
3	05/09/2017	0.3
4	11/09/2017	0.2
5	02/13/2018	0.2
6	06/13/2018	0.2
7	08/22/2018	0.05
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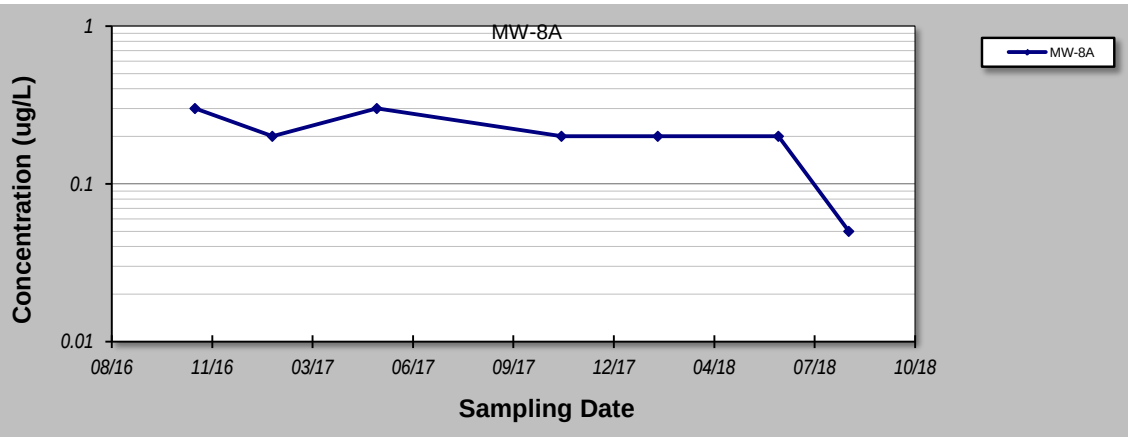
Coefficient of Variation:		0.40
Mann-Kendall Statistic (S):		-12
Confidence Factor:		94.9%
Concentration Trend:		Prob. Decreasing



Notes:

1. At least four independent sampling events per well are required for calculating the trend. *Methodology is valid for 4 to 40 samples.*
2. Confidence in Trend = Confidence (in percent) that constituent concentration is increasing (S>0) or decreasing (S<0): >95% = Increasing or Decreasing; ≥ 90% = Probably Increasing or Probably Decreasing; < 90% and S>0 = No Trend; < 90%, S≤0, and COV ≥ 1 = No Trend; < 90% and COV < 1 = Stable.
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GSI MANN-KENDALL TOOLKIT
for Constituent Trend Analysis

Evaluation Date: **16-Jul-18**
Facility Name: **Parkton/Wally's**
Conducted By: **Amelia Ryan**

Job ID: **403162**
Constituent: **Methyl tert-Butyl Ether**
Concentration Units: **ug/L**

Sampling Point ID: **MW-10A**

Sampling Event	Sampling Date	METHYL TERT-BUTYL ETHER CONCENTRATION (ug/L)
1	11/09/2016	0.3
2	01/25/2017	11
3	04/05/2017	19
4	05/09/2017	0.1
5	08/02/2017	17
6	11/09/2017	1.4
7	02/13/2018	37
8	06/13/2018	13
9	08/22/2018	0.05
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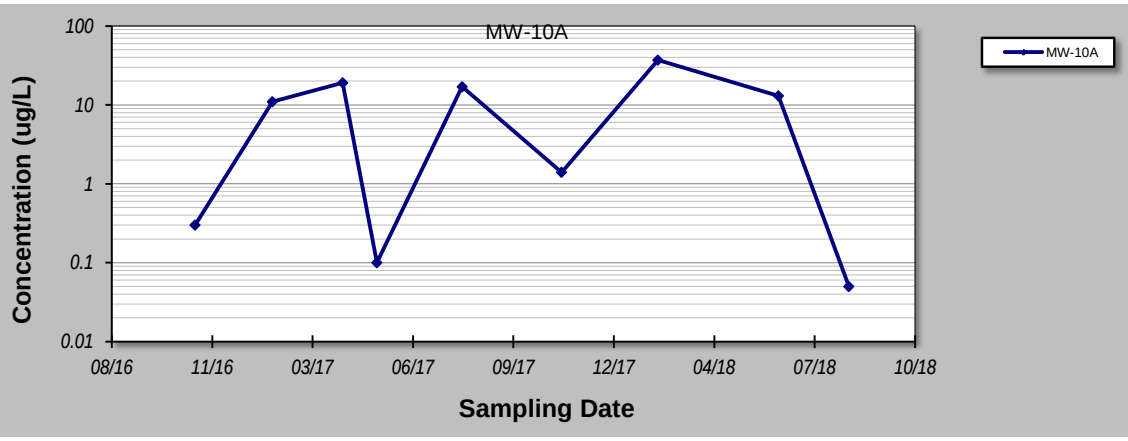
Coefficient of Variation:		**1.13**
Mann-Kendall Statistic (S):		**0**
Confidence Factor:		**46.0%**
Concentration Trend:		No Trend



Notes:

1. At least four independent sampling events per well are required for calculating the trend. *Methodology is valid for 4 to 40 samples.*
2. Confidence in Trend = Confidence (in percent) that constituent concentration is increasing (S>0) or decreasing (S<0): >95% = Increasing or Decreasing; ≥ 90% = Probably Increasing or Probably Decreasing; < 90% and S>0 = No Trend; < 90%, S≤0, and COV ≥ 1 = No Trend; < 90% and COV < 1 = Stable.
3. Methodology based on "MAROS: A Decision Support System for Optimizing Monitoring Plans", J.J. Aziz, M. Ling, H.S. Rifai, C.J. Newell, and J.R. Gonzales, *Ground Water*, 41(3):355-367, 2003.

GSI MANN-KENDALL TOOLKIT
for Constituent Trend Analysis

Evaluation Date: **16-Jul-18**
Facility Name: **Parkton/Wally's**
Conducted By: **Amelia Ryan**

Job ID: **403162**
Constituent: **Benzene**
Concentration Units: **ug/L**

Sampling Point ID: **MW-10A**

Sampling Event	Sampling Date	BENZENE CONCENTRATION (ug/L)
1	11/09/2016	0.1
2	01/25/2017	0.3
3	04/05/2017	0.8
4	05/09/2017	0.1
5	08/02/2017	0.7
6	11/09/2017	0.1
7	02/13/2018	1.6
8	06/13/2018	1
9	08/22/2018	0.05
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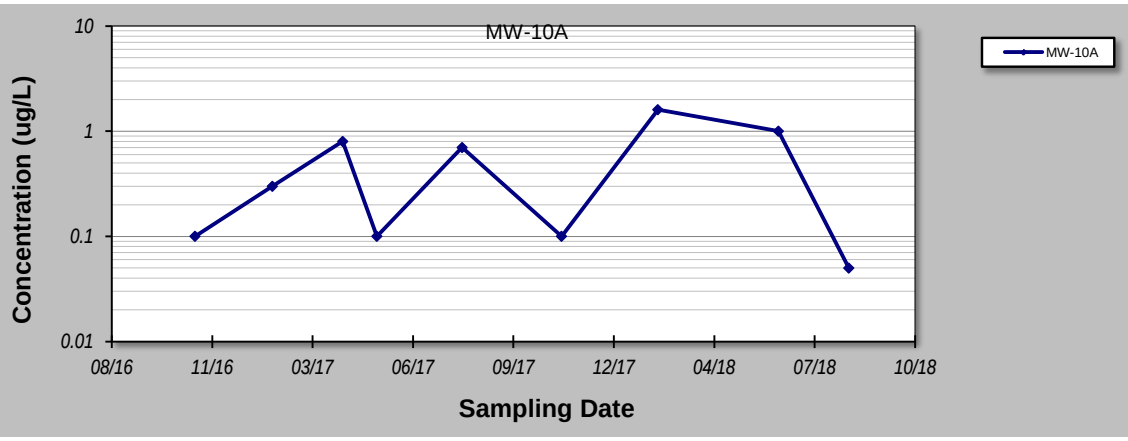
Coefficient of Variation:		1.02
Mann-Kendall Statistic (S):		3
Confidence Factor:		58.0%
Concentration Trend:		No Trend



Notes:

1. At least four independent sampling events per well are required for calculating the trend. *Methodology is valid for 4 to 40 samples.*
2. Confidence in Trend = Confidence (in percent) that constituent concentration is increasing (S>0) or decreasing (S<0): >95% = Increasing or Decreasing; ≥ 90% = Probably Increasing or Probably Decreasing; < 90% and S>0 = No Trend; < 90%, S≤0, and COV ≥ 1 = No Trend; < 90% and COV < 1 = Stable.
3. Methodology based on "MAROS: A Decision Support System for Optimizing Monitoring Plans", J.J. Aziz, M. Ling, H.S. Rifai, C.J. Newell, and J.R. Gonzales, *Ground Water*, 41(3):355-367, 2003.

GSI MANN-KENDALL TOOLKIT
for Constituent Trend Analysis

Evaluation Date: **16-Jul-18**
Facility Name: **Parkton/Wally's**
Conducted By: **Amelia Ryan**

Job ID: **403162**
Constituent: **Methyl tert-Butyl Ether**
Concentration Units: **ug/L**

Sampling Point ID: **MW-10B**

Sampling Event	Sampling Date	METHYL TERT-BUTYL ETHER CONCENTRATION (ug/L)						
1	11/10/2016	10						
2	01/27/2017	0.1						
3	04/05/2017	0.5						
4	05/09/2017	2.8						
5	08/02/2017	0.9						
6	11/08/2017	0.7						
7	02/14/2018	1.9						
8	06/15/2018	0.1						
9	08/23/2018	0.05						
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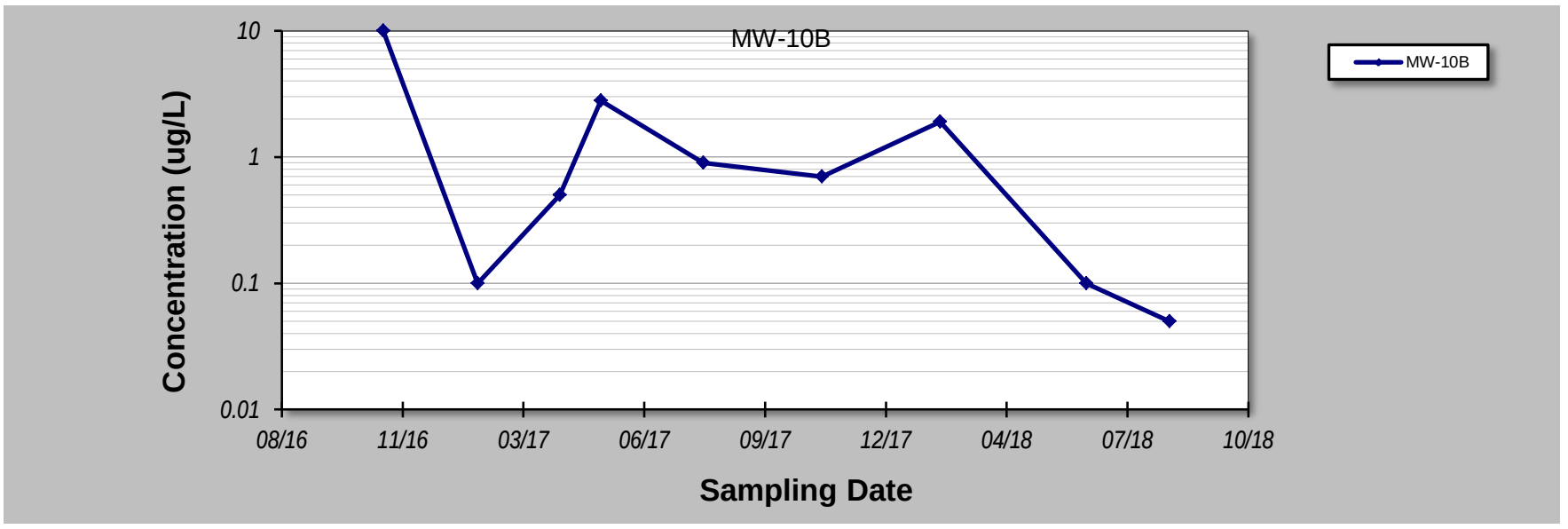
Coefficient of Variation:		**1.68**						
Mann-Kendall Statistic (S):		**-13**						
Confidence Factor:		**89.0%**						
Concentration Trend:		No Trend						



Notes:

1. At least four independent sampling events per well are required for calculating the trend. *Methodology is valid for 4 to 40 samples.*
2. Confidence in Trend = Confidence (in percent) that constituent concentration is increasing (S>0) or decreasing (S<0): >95% = Increasing or Decreasing; ≥ 90% = Probably Increasing or Probably Decreasing; < 90% and S>0 = No Trend; < 90%, S≤0, and COV ≥ 1 = No Trend; < 90% and COV < 1 = Stable.
3. Methodology based on "MAROS: A Decision Support System for Optimizing Monitoring Plans", J.J. Aziz, M. Ling, H.S. Rifai, C.J. Newell, and J.R. Gonzales, *Ground Water* , 41(3):355-367, 2003.

GSI MANN-KENDALL TOOLKIT
for Constituent Trend Analysis

Evaluation Date: **16-Jul-18**
Facility Name: **Parkton/Wally's**
Conducted By: **Amelia Ryan**

Job ID: **403162**
Constituent: **Benzene**
Concentration Units: **ug/L**

Sampling Point ID: **MW-10B**

Sampling Event	Sampling Date	BENZENE CONCENTRATION (ug/L)
1	11/10/2016	0.5
2	1/27/2017	0.1
3	04/05/2017	0.1
4	05/09/2017	0.2
5	08/02/2017	0.1
6	11/08/2017	0.1
7	02/14/2018	0.1
8	06/15/2018	0.1
9	08/23/2018	0.05
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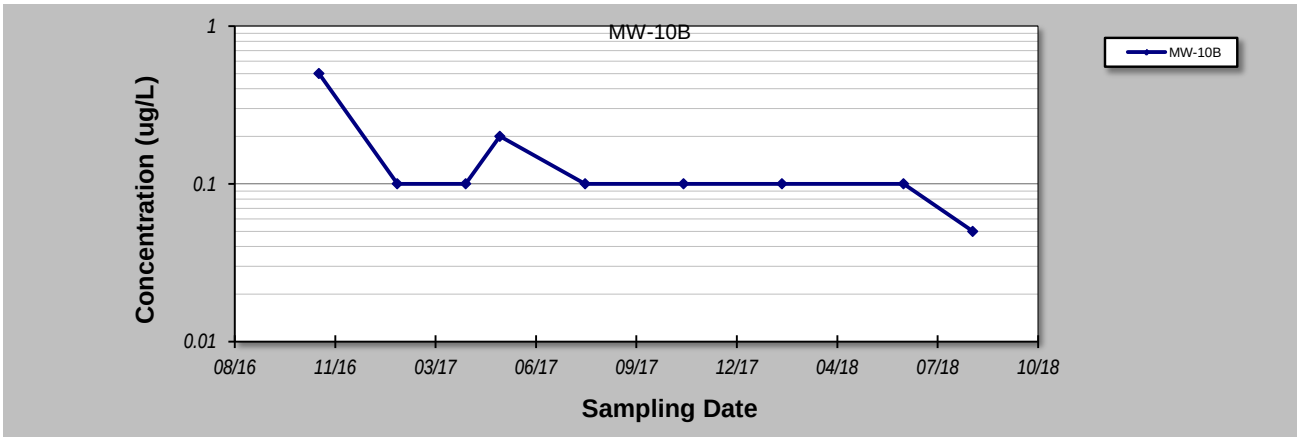
Coefficient of Variation:		**0.91**
Mann-Kendall Statistic (S):		**-17**
Confidence Factor:		**95.1%**
Concentration Trend:		Decreasing



Notes:

1. At least four independent sampling events per well are required for calculating the trend. *Methodology is valid for 4 to 40 samples.*
2. Confidence in Trend = Confidence (in percent) that constituent concentration is increasing (S>0) or decreasing (S<0): >95% = Increasing or Decreasing; ≥ 90% = Probably Increasing or Probably Decreasing; < 90% and S>0 = No Trend; < 90%, S≤0, and COV ≥ 1 = No Trend; < 90% and COV < 1 = Stable.
3. Methodology based on "MAROS: A Decision Support System for Optimizing Monitoring Plans", J.J. Aziz, M. Ling, H.S. Rifai, C.J. Newell, and J.R. Gonzales, *Ground Water*, 41(3):355-367, 2003.

GSI MANN-KENDALL TOOLKIT
for Constituent Trend Analysis

Evaluation Date: **16-Jul-18**
Facility Name: **Parkton/Wally's**
Conducted By: **Amelia Ryan**

Job ID: **403162**
Constituent: **Methyl tert-Butyl Ether**
Concentration Units: **ug/L**

Sampling Point ID: **MW-11A**

Sampling Event	Sampling Date	METHYL TERT-BUTYL ETHER CONCENTRATION (ug/L)
1	11/08/2016	1
2	01/24/2017	0.6
3	05/03/2017	0.1
4	08/01/2017	0.2
5	11/08/2017	0.1
6	02/14/2018	0.1
7	06/13/2018	0.2
8	08/21/2018	0.4
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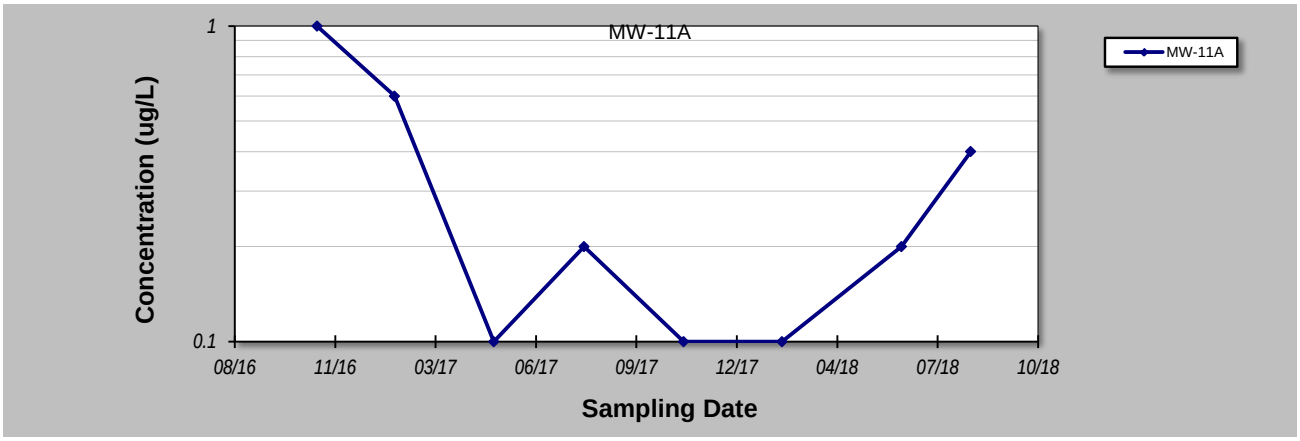
Coefficient of Variation:		**0.95**
Mann-Kendall Statistic (S):		**-6**
Confidence Factor:		**72.6%**
Concentration Trend:		Stable



Notes:

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GSI MANN-KENDALL TOOLKIT
for Constituent Trend Analysis

Evaluation Date: **16-Jul-18**
Facility Name: **Parkton/Wally's**
Conducted By: **Amelia Ryan**

Job ID: **403162**
Constituent: **Methyl tert-Butyl Ether**
Concentration Units: **ug/L**

Sampling Point ID: **MW-11B**

Sampling Event	Sampling Date	METHYL TERT-BUTYL ETHER CONCENTRATION (ug/L)
1	11/08/2016	2.3
2	01/24/2017	25
3	05/03/2017	1.6
4	08/01/2017	9.5
5	11/08/2017	14
6	02/14/2018	17
7	06/13/2018	16
8	08/21/2018	0.9
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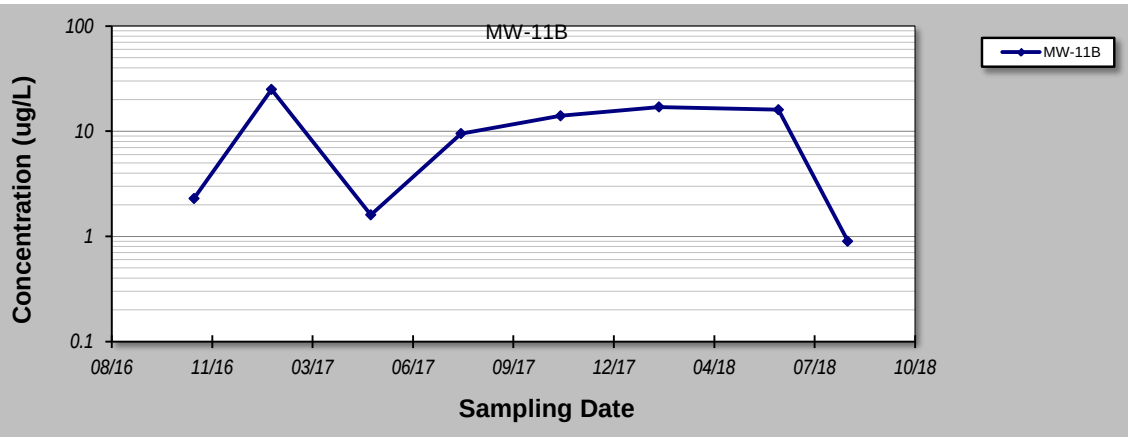
Coefficient of Variation:		**0.81**
Mann-Kendall Statistic (S):		**0**
Confidence Factor:		**45.2%**
Concentration Trend:		Stable



Notes:

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GSI MANN-KENDALL TOOLKIT
for Constituent Trend Analysis

Evaluation Date: **16-Jul-18**
Facility Name: **Parkton/Wally's**
Conducted By: **Amelia Ryan**

Job ID: **403162**
Constituent: **Methyl tert-Butyl Ether**
Concentration Units: **ug/L**

Sampling Point ID: **MW-13A**

Sampling Event	Sampling Date	METHYL TERT-BUTYL ETHER CONCENTRATION (ug/L)						
1	11/10/2016	0.1						
2	01/25/2017	0.1						
3	05/04/2017	0.1						
4	11/06/2017	0.1						
5	02/12/2018	0.1						
6	06/12/2018	0.1						
7	08/20/2018	0.1						
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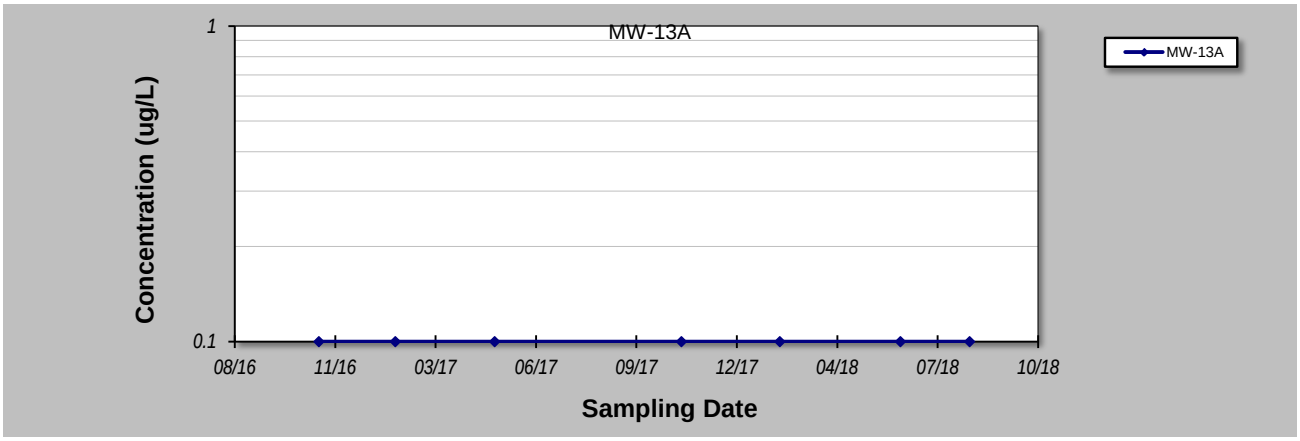
20								
Coefficient of Variation:		0.00						
Mann-Kendall Statistic (S):		0						
Confidence Factor:		37.9%						
Concentration Trend:		Stable						



Notes:

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GSI MANN-KENDALL TOOLKIT
for Constituent Trend Analysis

Evaluation Date: **16-Jul-18**
Facility Name: **Parkton/Wally's**
Conducted By: **Amelia Ryan**

Job ID: **403162**
Constituent: **Methyl tert-Butyl Ether**
Concentration Units: **ug/L**

Sampling Point ID: **MW-13B**

Sampling Event	Sampling Date	METHYL TERT-BUTYL ETHER CONCENTRATION (ug/L)						
1	11/10/2016	0.1						
2	01/25/2017	0.1						
3	05/04/2017	0.1						
4	11/06/2017	0.1						
5	02/12/2018	0.1						
6	06/12/2018	0.1						
7	08/20/2018	0.07						
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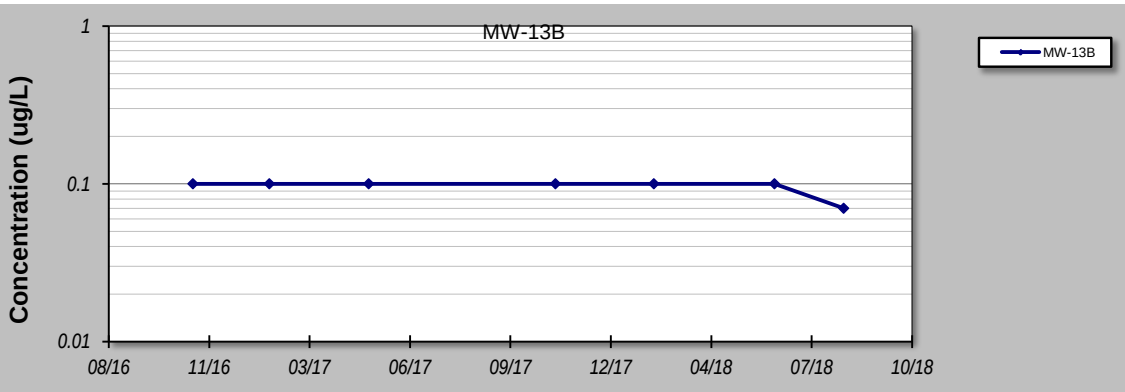
20								
Coefficient of Variation:		0.12						
Mann-Kendall Statistic (S):		-6						
Confidence Factor:		76.4%						
Concentration Trend:		Stable						



Notes:

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2. Confidence in Trend = Confidence (in percent) that constituent concentration is increasing (S>0) or decreasing (S<0): >95% = Increasing or Decreasing; ≥ 90% = Probably Increasing or Probably Decreasing; < 90% and S>0 = No Trend; < 90%, S≤0, and COV ≥ 1 = No Trend; < 90% and COV < 1 = Stable.
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GSI MANN-KENDALL TOOLKIT
for Constituent Trend Analysis

Evaluation Date: **16-Jul-18**
Facility Name: **Parkton/Wally's**
Conducted By: **Amelia Ryan**

Job ID: **403162**
Constituent: **Methyl tert-Butyl Ether**
Concentration Units: **ug/L**

Sampling Point ID: **MW-14A**

Sampling Event	Sampling Date	METHYL TERT-BUTYL ETHER CONCENTRATION (ug/L)						
1	11/10/2016	0.1						
2	01/26/2017	0.5						
3	05/05/2017	0.1						
4	08/02/2017	0.1						
5	11/09/2017	0.1						
6	02/13/2018	0.1						
7	06/13/2018	0.1						
8	08/21/2018	0.06						
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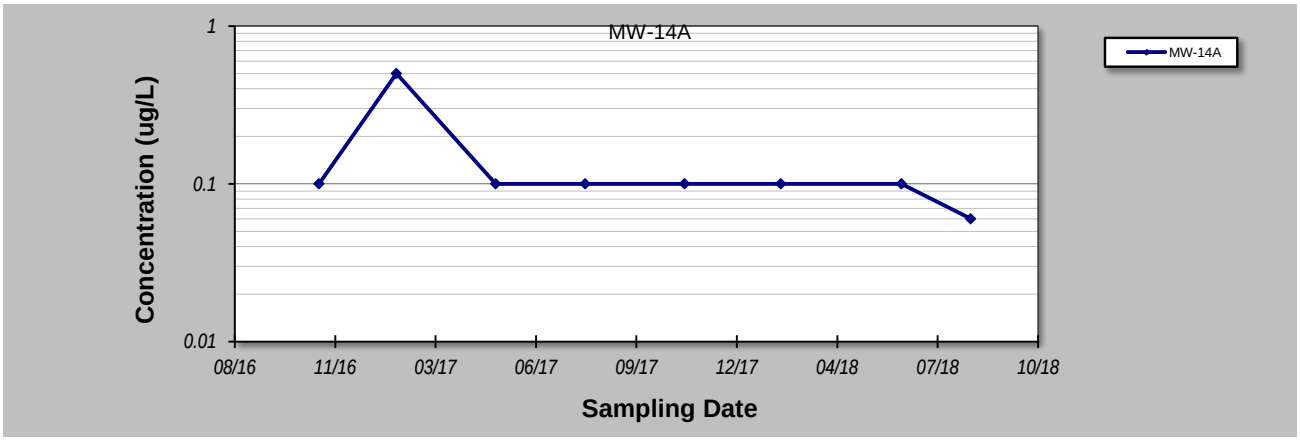
Coefficient of Variation:		0.99						
Mann-Kendall Statistic (S):		-11						
Confidence Factor:		88.7%						
Concentration Trend:		Stable						



Notes:

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2. Confidence in Trend = Confidence (in percent) that constituent concentration is increasing (S>0) or decreasing (S<0): >95% = Increasing or Decreasing; ≥ 90% = Probably Increasing or Probably Decreasing; < 90% and S>0 = No Trend; < 90%, S≤0, and COV ≥ 1 = No Trend; < 90% and COV < 1 = Stable.
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GSI MANN-KENDALL TOOLKIT
for Constituent Trend Analysis

Evaluation Date: **16-Jul-18**
Facility Name: **Parkton/Wally's**
Conducted By: **Amelia Ryan**

Job ID: **403162**
Constituent: **Methyl tert-Butyl Ether**
Concentration Units: **ug/L**

Sampling Point ID: **MW-14B**

Sampling Event	Sampling Date	METHYL TERT-BUTYL ETHER CONCENTRATION (ug/L)						
1	11/10/2016	100						
2	01/25/2017	96						
3	05/08/2017	80						
4	07/31/2017	82						
5	11/09/2017	64						
6	02/15/2018	70						
7	06/14/2018	66						
8	08/21/2018	32						
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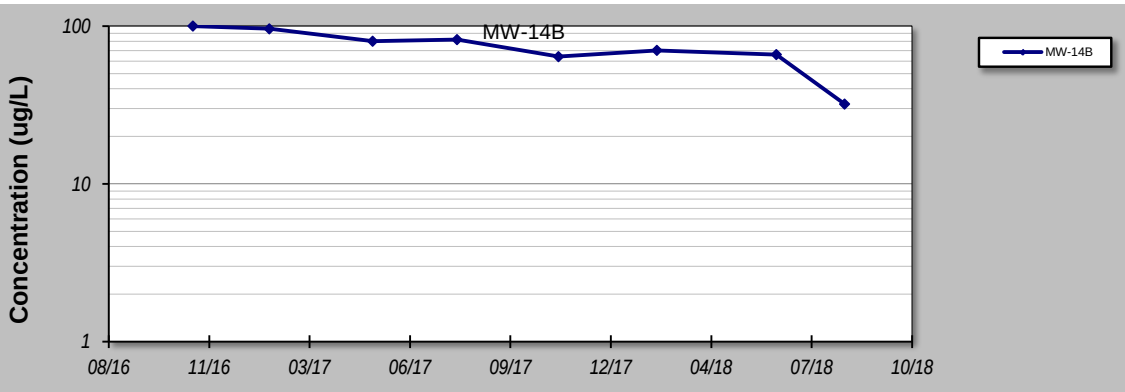
20								
Coefficient of Variation:		0.29						
Mann-Kendall Statistic (S):		-22						
Confidence Factor:		99.8%						
Concentration Trend:		Decreasing						



Notes:

1. At least four independent sampling events per well are required for calculating the trend. *Methodology is valid for 4 to 40 samples.*
2. Confidence in Trend = Confidence (in percent) that constituent concentration is increasing (S>0) or decreasing (S<0): >95% = Increasing or Decreasing; ≥ 90% = Probably Increasing or Probably Decreasing; < 90% and S>0 = No Trend; < 90%, S≤0, and COV ≥ 1 = No Trend; < 90% and COV < 1 = Stable.
3. Methodology based on "MAROS: A Decision Support System for Optimizing Monitoring Plans", J.J. Aziz, M. Ling, H.S. Rifai, C.J. Newell, and J.R. Gonzales, *Ground Water*, 41(3):355-367, 2003.

GSI MANN-KENDALL TOOLKIT
for Constituent Trend Analysis

Evaluation Date: **16-Jul-18**
Facility Name: **Parkton/Wally's**
Conducted By: **Amelia Ryan**

Job ID: **403162**
Constituent: **Benzene**
Concentration Units: **ug/L**

Sampling Point ID: **MW-14B**

Sampling Event	Sampling Date	BENZENE CONCENTRATION (ug/L)
1	11/10/2016	1
2	1/25/2017	1.1
3	05/08/2017	0.4
4	07/31/2017	1.2
5	11/09/2017	0.4
6	02/15/2018	1.1
7	06/14/2018	0.1
8	08/21/2018	2.6
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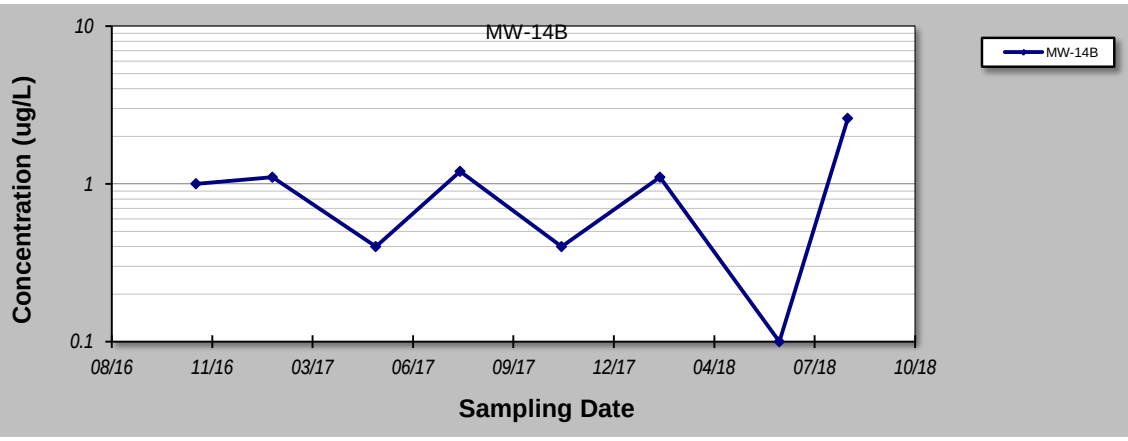
20		
Coefficient of Variation:		**0.78**
Mann-Kendall Statistic (S):		**2**
Confidence Factor:		**54.8%**
Concentration Trend:		No Trend



Notes:

1. At least four independent sampling events per well are required for calculating the trend. *Methodology is valid for 4 to 40 samples.*
2. Confidence in Trend = Confidence (in percent) that constituent concentration is increasing (S>0) or decreasing (S<0): >95% = Increasing or Decreasing; ≥ 90% = Probably Increasing or Probably Decreasing; < 90% and S>0 = No Trend; < 90%, S≤0, and COV ≥ 1 = No Trend; < 90% and COV < 1 = Stable.
3. Methodology based on "MAROS: A Decision Support System for Optimizing Monitoring Plans", J.J. Aziz, M. Ling, H.S. Rifai, C.J. Newell, and J.R. Gonzales, *Ground Water*, 41(3):355-367, 2003.

GSI MANN-KENDALL TOOLKIT
for Constituent Trend Analysis

Evaluation Date: **16-Jul-18**
Facility Name: **Parkton/Wally's**
Conducted By: **Amelia Ryan**

Job ID: **403162**
Constituent: **Methyl tert-Butyl Ether**
Concentration Units: **ug/L**

Sampling Point ID: **MW-15**

Sampling Event	Sampling Date	METHYL TERT-BUTYL ETHER CONCENTRATION (ug/L)
1	11/07/2016	110
2	01/30/2017	240
3	04/05/2017	200
4	05/10/2017	140
5	08/03/2017	83
6	11/14/2017	31
7	02/16/2018	25
8	06/18/2018	16
9	08/23/2018	0.3
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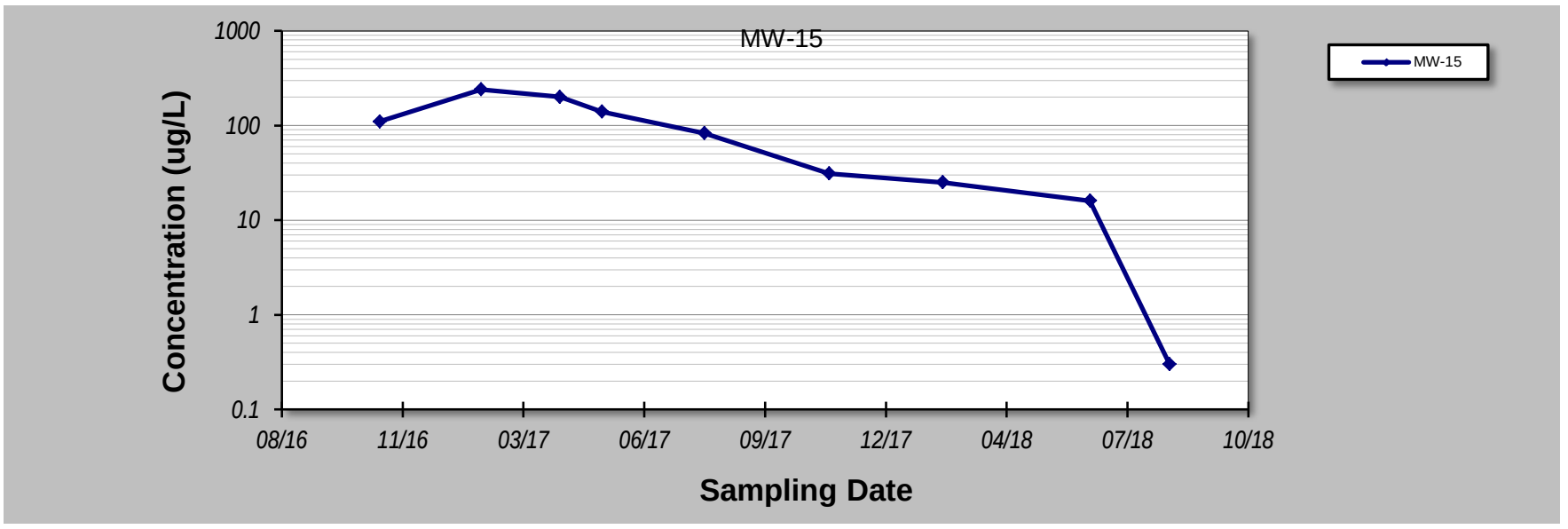
Coefficient of Variation:		**0.91**
Mann-Kendall Statistic (S):		**-30**
Confidence Factor:		**100.0%**
Concentration Trend:		Decreasing



Notes:

1. At least four independent sampling events per well are required for calculating the trend. *Methodology is valid for 4 to 40 samples.*
2. Confidence in Trend = Confidence (in percent) that constituent concentration is increasing (S>0) or decreasing (S<0): >95% = Increasing or Decreasing; ≥ 90% = Probably Increasing or Probably Decreasing; < 90% and S>0 = No Trend; < 90%, S≤0, and COV ≥ 1 = No Trend; < 90% and COV < 1 = Stable.
3. Methodology based on "MAROS: A Decision Support System for Optimizing Monitoring Plans", J.J. Aziz, M. Ling, H.S. Rifai, C.J. Newell, and J.R. Gonzales, *Ground Water* , 41(3):355-367, 2003.

GSI MANN-KENDALL TOOLKIT
for Constituent Trend Analysis

Evaluation Date: **16-Jul-18**
Facility Name: **Parkton/Wally's**
Conducted By: **Amelia Ryan**

Job ID: **403162**
Constituent: **Benzene**
Concentration Units: **ug/L**

Sampling Point ID: **MW-15**

Sampling Event	Sampling Date	BENZENE CONCENTRATION (ug/L)
1	11/07/2016	0.3
2	1/30/2017	0.1
3	04/05/2017	0.2
4	05/10/2017	0.1
5	08/03/2017	0.1
6	11/14/2017	0.1
7	02/16/2018	0.1
8	06/18/2018	0.1
9	08/23/2018	0.05
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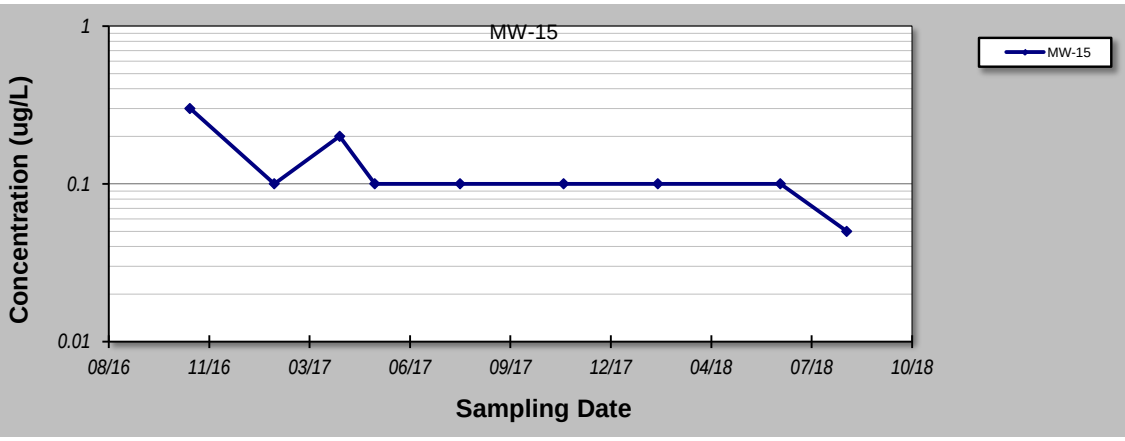
Coefficient of Variation:		**0.59**
Mann-Kendall Statistic (S):		**-19**
Confidence Factor:		**97.0%**
Concentration Trend:		Decreasing



Notes:

1. At least four independent sampling events per well are required for calculating the trend. *Methodology is valid for 4 to 40 samples.*
2. Confidence in Trend = Confidence (in percent) that constituent concentration is increasing (S>0) or decreasing (S<0): >95% = Increasing or Decreasing; ≥ 90% = Probably Increasing or Probably Decreasing; < 90% and S>0 = No Trend; < 90%, S≤0, and COV ≥ 1 = No Trend; < 90% and COV < 1 = Stable.
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GSI MANN-KENDALL TOOLKIT
for Constituent Trend Analysis

Evaluation Date: **16-Jul-18**
Facility Name: **Parkton/Wally's**
Conducted By: **Amelia Ryan**

Job ID: **403162**
Constituent: **Methyl tert-Butyl Ether**
Concentration Units: **ug/L**

Sampling Point ID: **MW-16A**

Sampling Event	Sampling Date	METHYL TERT-BUTYL ETHER CONCENTRATION (ug/L)
1	11/10/2016	500
2	12/13/2016	1,100
3	01/26/2017	300
4	05/09/2017	510
5	08/02/2017	260
6	11/09/2017	360
7	02/16/2018	190
8	06/14/2018	4
9	08/24/2018	0.2
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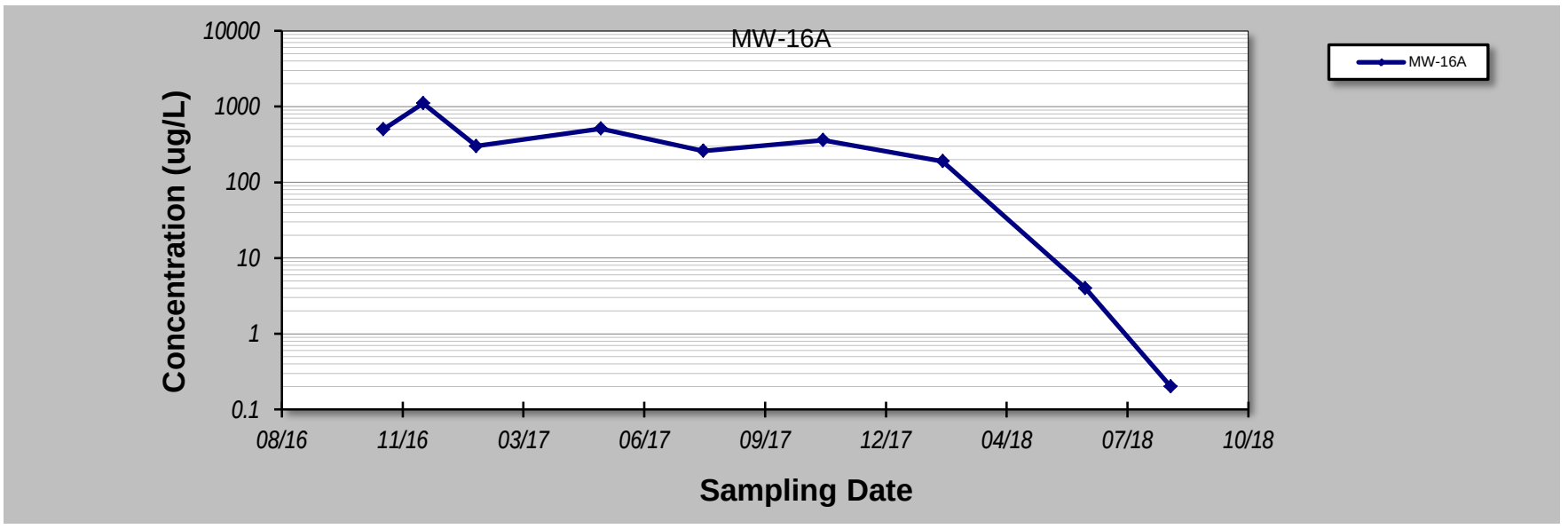
Coefficient of Variation:		**0.93**
Mann-Kendall Statistic (S):		**-26**
Confidence Factor:		**99.7%**
Concentration Trend:		Decreasing



Notes:

1. At least four independent sampling events per well are required for calculating the trend. *Methodology is valid for 4 to 40 samples.*
2. Confidence in Trend = Confidence (in percent) that constituent concentration is increasing (S>0) or decreasing (S<0): >95% = Increasing or Decreasing; ≥ 90% = Probably Increasing or Probably Decreasing; < 90% and S>0 = No Trend; < 90%, S≤0, and COV ≥ 1 = No Trend; < 90% and COV < 1 = Stable.
3. Methodology based on "MAROS: A Decision Support System for Optimizing Monitoring Plans", J.J. Aziz, M. Ling, H.S. Rifai, C.J. Newell, and J.R. Gonzales, *Ground Water* , 41(3):355-367, 2003.

GSI MANN-KENDALL TOOLKIT
for Constituent Trend Analysis

Evaluation Date: **16-Jul-18**
Facility Name: **Parkton/Wally's**
Conducted By: **Amelia Ryan**

Job ID: **403162**
Constituent: **Benzene**
Concentration Units: **ug/L**

Sampling Point ID: **MW-16A**

Sampling Event	Sampling Date	BENZENE CONCENTRATION (ug/L)
1	11/10/2016	1
2	12/13/2016	2.6
3	01/26/2017	0.7
4	05/09/2017	0.7
5	08/02/2017	0.1
6	11/09/2017	0.5
7	02/16/2018	0.5
8	06/14/2018	0.1
9	08/24/2018	0.05
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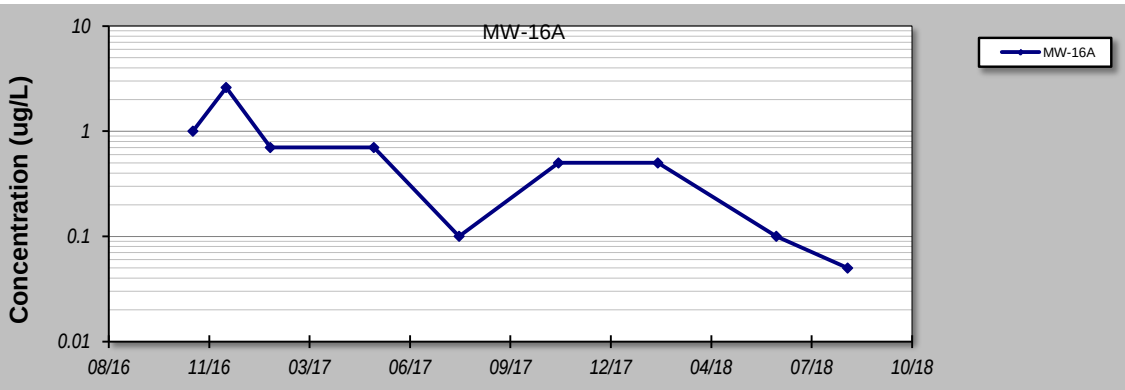
Coefficient of Variation:		**1.13**
Mann-Kendall Statistic (S):		**-27**
Confidence Factor:		**99.8%**
Concentration Trend:		Decreasing



Notes:

1. At least four independent sampling events per well are required for calculating the trend. *Methodology is valid for 4 to 40 samples.*
2. Confidence in Trend = Confidence (in percent) that constituent concentration is increasing (S>0) or decreasing (S<0): >95% = Increasing or Decreasing; ≥ 90% = Probably Increasing or Probably Decreasing; < 90% and S>0 = No Trend; < 90%, S≤0, and COV ≥ 1 = No Trend; < 90% and COV < 1 = Stable.
3. Methodology based on "MAROS: A Decision Support System for Optimizing Monitoring Plans", J.J. Aziz, M. Ling, H.S. Rifai, C.J. Newell, and J.R. Gonzales, *Ground Water*, 41(3):355-367, 2003.

GSI MANN-KENDALL TOOLKIT
for Constituent Trend Analysis

Evaluation Date: **16-Jul-18**
Facility Name: **Parkton/Wally's**
Conducted By: **Amelia Ryan**

Job ID: **403162**
Constituent: **Methyl tert-Butyl Ether**
Concentration Units: **ug/L**

Sampling Point ID: **MW-16B**

Sampling Event	Sampling Date	METHYL TERT-BUTYL ETHER CONCENTRATION (ug/L)
1	11/11/2016	160
2	01/30/2017	170
3	05/10/2017	110
4	08/03/2017	200
5	11/14/2017	42
6	02/16/2018	100
7	06/18/2018	59
8	08/23/2018	56
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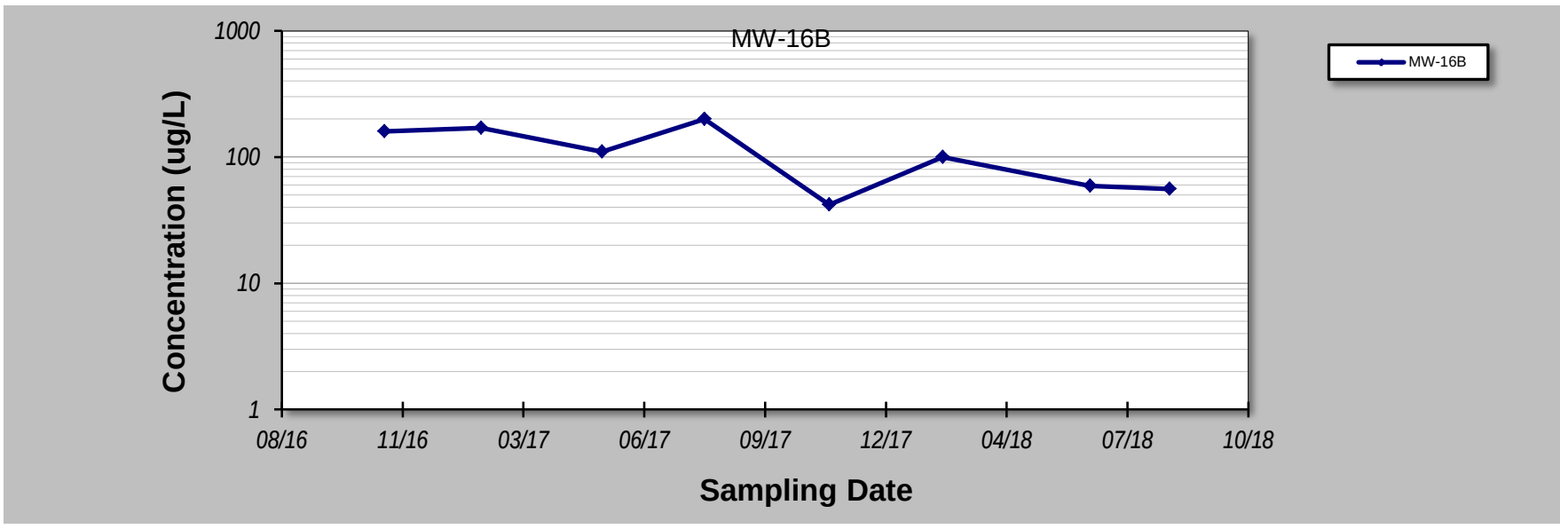
Coefficient of Variation:		**0.53**
Mann-Kendall Statistic (S):		**-14**
Confidence Factor:		**94.6%**
Concentration Trend:		Prob. Decreasing



Notes:

1. At least four independent sampling events per well are required for calculating the trend. *Methodology is valid for 4 to 40 samples.*
2. Confidence in Trend = Confidence (in percent) that constituent concentration is increasing (S>0) or decreasing (S<0): >95% = Increasing or Decreasing; ≥ 90% = Probably Increasing or Probably Decreasing; < 90% and S>0 = No Trend; < 90%, S≤0, and COV ≥ 1 = No Trend; < 90% and COV < 1 = Stable.
3. Methodology based on "MAROS: A Decision Support System for Optimizing Monitoring Plans", J.J. Aziz, M. Ling, H.S. Rifai, C.J. Newell, and J.R. Gonzales, *Ground Water* , 41(3):355-367, 2003.

GSI MANN-KENDALL TOOLKIT
for Constituent Trend Analysis

Evaluation Date: **16-Jul-18**
Facility Name: **Parkton/Wally's**
Conducted By: **Amelia Ryan**

Job ID: **403162**
Constituent: **Benzene**
Concentration Units: **ug/L**

Sampling Point ID: **MW-16B**

Sampling Event	Sampling Date	BENZENE CONCENTRATION (ug/L)
1	11/11/2016	0.2
2	1/30/2017	0.2
3	05/10/2017	0.3
4	08/03/2017	0.5
5	11/14/2017	0.2
6	02/16/2018	0.3
7	06/18/2018	0.1
8	08/23/2018	0.1
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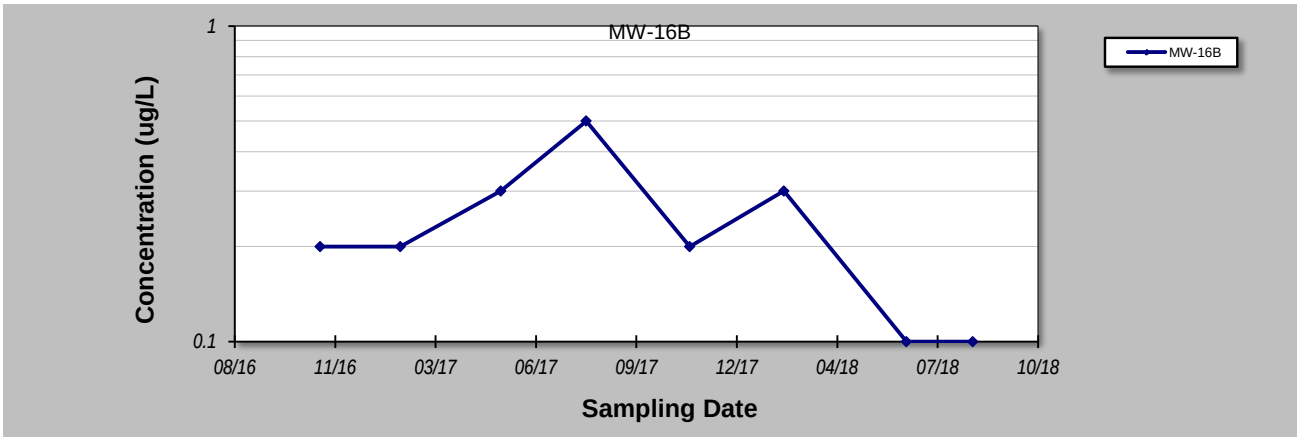
Coefficient of Variation:		0.55
Mann-Kendall Statistic (S):		-7
Confidence Factor:		76.4%
Concentration Trend:		Stable



Notes:

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3. Methodology based on "MAROS: A Decision Support System for Optimizing Monitoring Plans", J.J. Aziz, M. Ling, H.S. Rifai, C.J. Newell, and J.R. Gonzales, *Ground Water*, 41(3):355-367, 2003.

GSI MANN-KENDALL TOOLKIT
for Constituent Trend Analysis

Evaluation Date: **16-Jul-18**
Facility Name: **Parkton/Wally's**
Conducted By: **Amelia Ryan**

Job ID: **403162**
Constituent: **Methyl tert-Butyl Ether**
Concentration Units: **ug/L**

Sampling Point ID: **MW-17A**

Sampling Event	Sampling Date	METHYL TERT-BUTYL ETHER CONCENTRATION (ug/L)						
1	11/08/2016	0.1						
2	01/27/2017	0.1						
3	05/08/2017	0.1						
4	11/09/2017	0.1						
5	02/13/2018	0.1						
6	06/13/2018	0.1						
7	08/21/2018	0						
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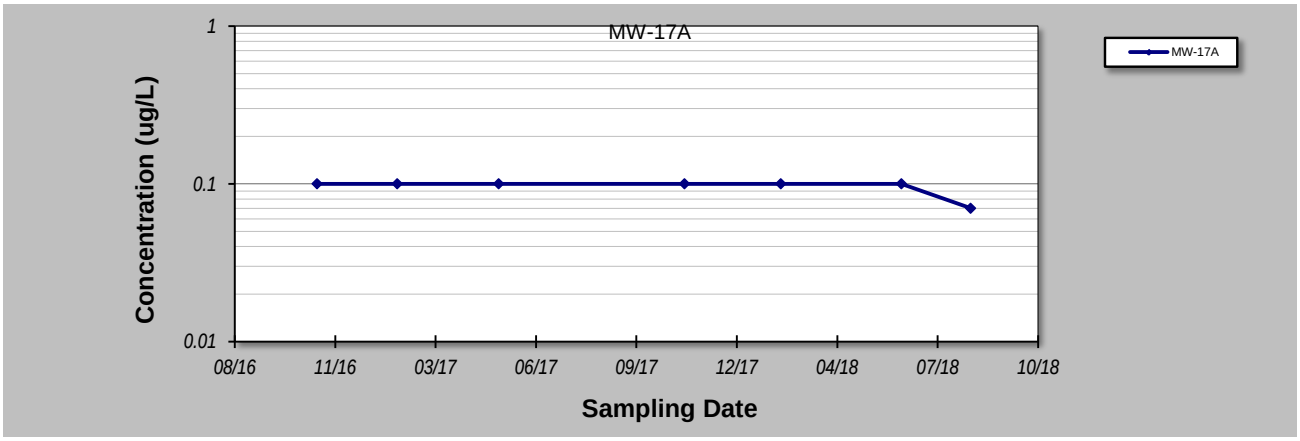
Coefficient of Variation:		0.12						
Mann-Kendall Statistic (S):		-6						
Confidence Factor:		76.4%						
Concentration Trend:		Stable						



Notes:

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2. Confidence in Trend = Confidence (in percent) that constituent concentration is increasing (S>0) or decreasing (S<0): >95% = Increasing or Decreasing; ≥ 90% = Probably Increasing or Probably Decreasing; < 90% and S>0 = No Trend; < 90%, S≤0, and COV ≥ 1 = No Trend; < 90% and COV < 1 = Stable.
3. Methodology based on "MAROS: A Decision Support System for Optimizing Monitoring Plans", J.J. Aziz, M. Ling, H.S. Rifai, C.J. Newell, and J.R. Gonzales, *Ground Water*, 41(3):355-367, 2003.

GSI MANN-KENDALL TOOLKIT
for Constituent Trend Analysis

Evaluation Date: **16-Jul-18**
Facility Name: **Parkton/Wally's**
Conducted By: **Amelia Ryan**

Job ID: **403162**
Constituent: **Methyl tert-Butyl Ether**
Concentration Units: **ug/L**

Sampling Point ID: **MW-17B**

Sampling Event	Sampling Date	METHYL TERT-BUTYL ETHER CONCENTRATION (ug/L)
1	11/08/2016	2.8
2	01/27/2017	2.0
3	05/08/2017	10.0
4	08/02/2017	9.7
5	11/09/2017	2.0
6	02/13/2018	7.8
7	06/13/2018	1.1
8	08/21/2018	5.3
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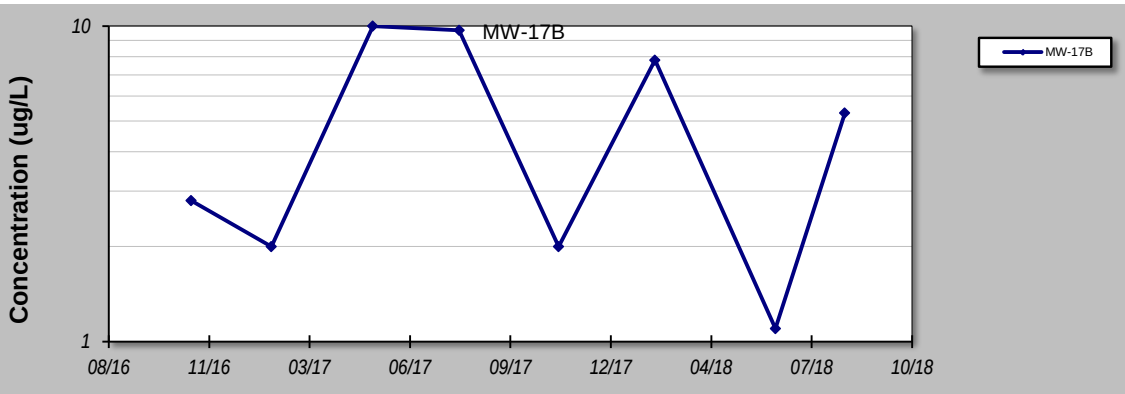
Coefficient of Variation:		0.72
Mann-Kendall Statistic (S):		-5
Confidence Factor:		68.3%
Concentration Trend:		Stable



Notes:

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2. Confidence in Trend = Confidence (in percent) that constituent concentration is increasing (S>0) or decreasing (S<0): >95% = Increasing or Decreasing; ≥ 90% = Probably Increasing or Probably Decreasing; < 90% and S>0 = No Trend; < 90%, S≤0, and COV ≥ 1 = No Trend; < 90% and COV < 1 = Stable.
3. Methodology based on "MAROS: A Decision Support System for Optimizing Monitoring Plans", J.J. Aziz, M. Ling, H.S. Rifai, C.J. Newell, and J.R. Gonzales, *Ground Water*, 41(3):355-367, 2003.

GSI MANN-KENDALL TOOLKIT
for Constituent Trend Analysis

Evaluation Date: **16-Jul-18**
Facility Name: **Parkton/Wally's**
Conducted By: **Amelia Ryan**

Job ID: **403162**
Constituent: **Benzene**
Concentration Units: **ug/L**

Sampling Point ID: **MW-17B**

Sampling Event	Sampling Date	BENZENE CONCENTRATION (ug/L)
1	11/08/2016	0.7
2	1/27/2017	0.3
3	05/08/2017	5.7
4	08/02/2017	4.9
5	11/09/2017	0.9
6	02/13/2018	4.7
7	06/13/2018	0.2
8	08/21/2018	3
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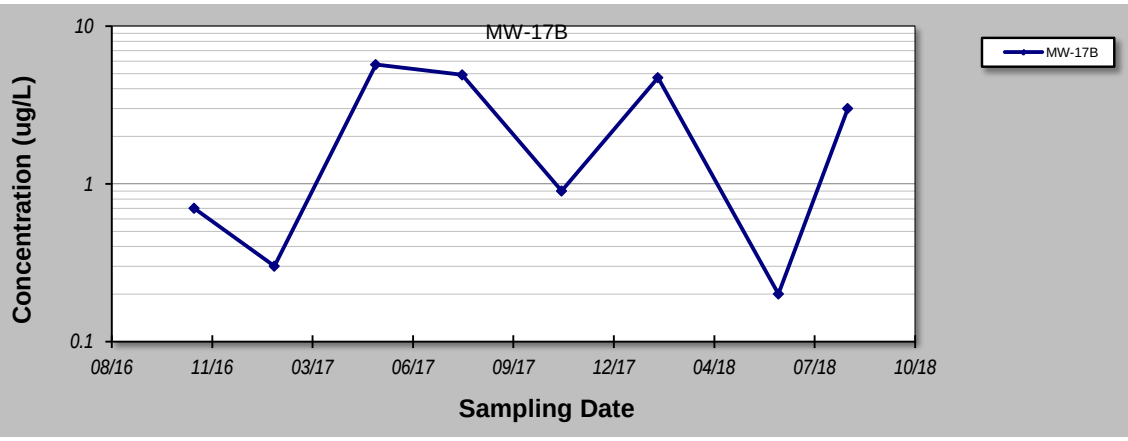
Coefficient of Variation:		0.90
Mann-Kendall Statistic (S):		-2
Confidence Factor:		54.8%
Concentration Trend:		Stable



Notes:

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2. Confidence in Trend = Confidence (in percent) that constituent concentration is increasing (S>0) or decreasing (S<0): >95% = Increasing or Decreasing; ≥ 90% = Probably Increasing or Probably Decreasing; < 90% and S>0 = No Trend; < 90%, S≤0, and COV ≥ 1 = No Trend; < 90% and COV < 1 = Stable.
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GSI MANN-KENDALL TOOLKIT
for Constituent Trend Analysis

Evaluation Date: **16-Jul-18**
Facility Name: **Parkton/Wally's**
Conducted By: **Amelia Ryan**

Job ID: **403162**
Constituent: **Methyl tert-Butyl Ether**
Concentration Units: **ug/L**

Sampling Point ID: **MW-18A**

Sampling Event	Sampling Date	METHYL TERT-BUTYL ETHER CONCENTRATION (ug/L)						
1	11/10/2016	1.9						
2	01/26/2017	3.7						
3	05/09/2017	5.1						
4	08/02/2017	1.4						
5	11/09/2017	0.8						
6	02/16/2018	3.4						
7	06/14/2018	2.6						
8	08/24/2018	3.9						
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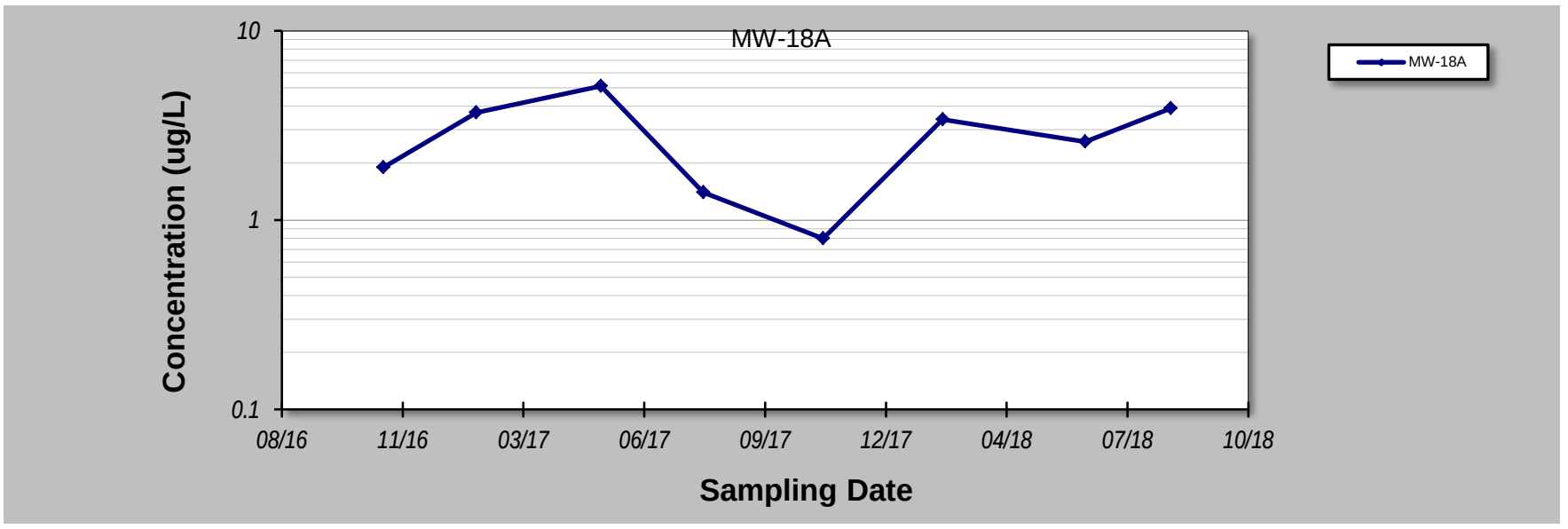
20								
Coefficient of Variation:		**0.50**						
Mann-Kendall Statistic (S):		**2**						
Confidence Factor:		**54.8%**						
Concentration Trend:		No Trend						



Notes:

1. At least four independent sampling events per well are required for calculating the trend. *Methodology is valid for 4 to 40 samples.*
2. Confidence in Trend = Confidence (in percent) that constituent concentration is increasing (S>0) or decreasing (S<0): >95% = Increasing or Decreasing; ≥ 90% = Probably Increasing or Probably Decreasing; < 90% and S>0 = No Trend; < 90%, S≤0, and COV ≥ 1 = No Trend; < 90% and COV < 1 = Stable.
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GSI MANN-KENDALL TOOLKIT
for Constituent Trend Analysis

Evaluation Date: **16-Jul-18**
Facility Name: **Parkton/Wally's**
Conducted By: **Amelia Ryan**

Job ID: **403162**
Constituent: **Methyl tert-Butyl Ether**
Concentration Units: **ug/L**

Sampling Point ID: **MW-18B**

Sampling Event	Sampling Date	METHYL TERT-BUTYL ETHER CONCENTRATION (ug/L)
1	11/11/2016	15
2	1/30/2017	29
3	05/10/2017	76
4	08/02/2017	13
5	11/13/2017	850
6	02/16/2018	830
7	06/18/2018	22
8	08/23/2018	430
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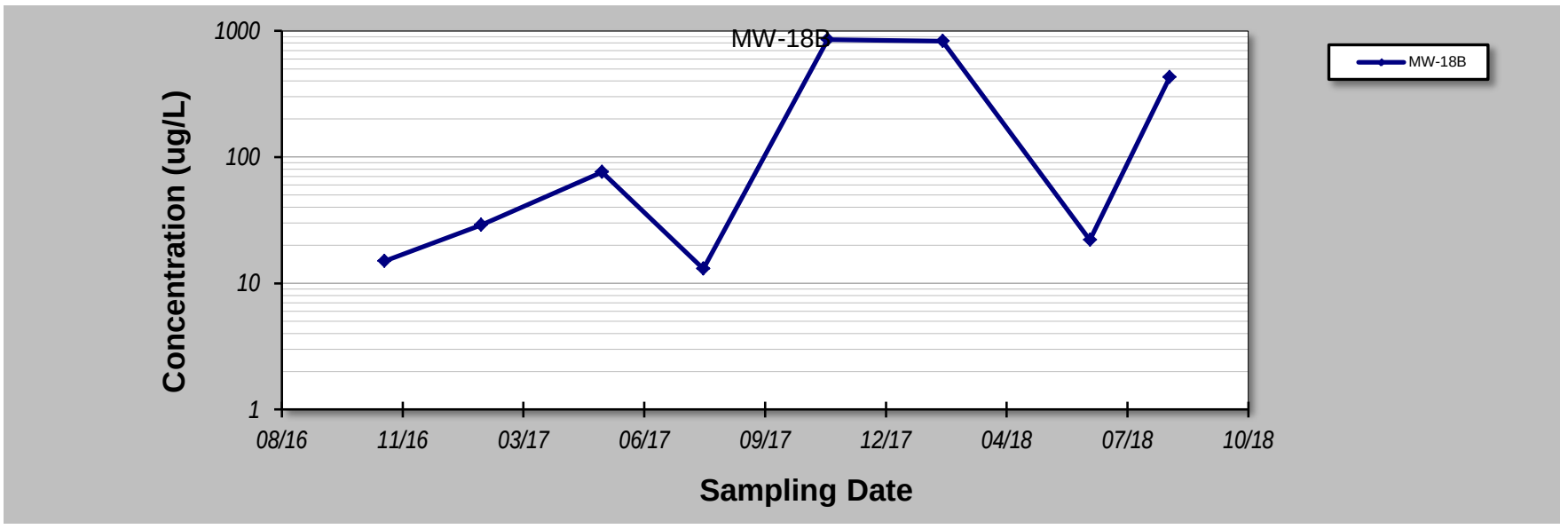
Coefficient of Variation:		**1.31**
Mann-Kendall Statistic (S):		**8**
Confidence Factor:		**80.1%**
Concentration Trend:		No Trend



Notes:

1. At least four independent sampling events per well are required for calculating the trend. *Methodology is valid for 4 to 40 samples.*
2. Confidence in Trend = Confidence (in percent) that constituent concentration is increasing (S>0) or decreasing (S<0): >95% = Increasing or Decreasing; ≥ 90% = Probably Increasing or Probably Decreasing; < 90% and S>0 = No Trend; < 90%, S≤0, and COV ≥ 1 = No Trend; < 90% and COV < 1 = Stable.
3. Methodology based on "MAROS: A Decision Support System for Optimizing Monitoring Plans", J.J. Aziz, M. Ling, H.S. Rifai, C.J. Newell, and J.R. Gonzales, *Ground Water* , 41(3):355-367, 2003.

GSI MANN-KENDALL TOOLKIT
for Constituent Trend Analysis

Evaluation Date: **16-Jul-18**
Facility Name: **Parkton/Wally's**
Conducted By: **Amelia Ryan**

Job ID: **403162**
Constituent: **Benzene**
Concentration Units: **ug/L**

Sampling Point ID: **MW-18B**

Sampling Event	Sampling Date	BENZENE CONCENTRATION (ug/L)
1	11/11/2016	0.1
2	1/30/2017	0.1
3	05/10/2017	0.3
4	08/02/2017	0.1
5	11/13/2017	2.9
6	02/16/2018	2.2
7	06/18/2018	0.1
8	08/23/2018	1.2
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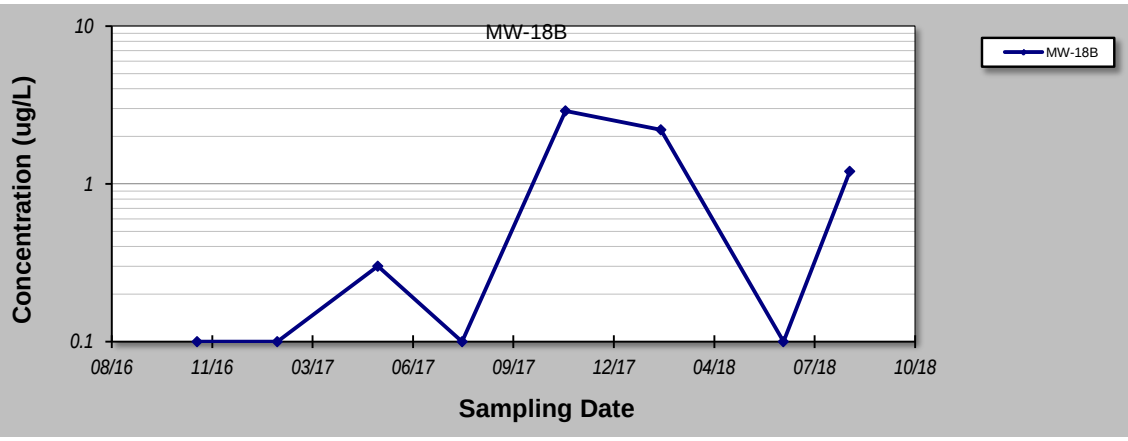
20		
Coefficient of Variation:		1.27
Mann-Kendall Statistic (S):		8
Confidence Factor:		80.1%
Concentration Trend:		No Trend



Notes:

1. At least four independent sampling events per well are required for calculating the trend. *Methodology is valid for 4 to 40 samples.*
2. Confidence in Trend = Confidence (in percent) that constituent concentration is increasing (S>0) or decreasing (S<0): >95% = Increasing or Decreasing; ≥ 90% = Probably Increasing or Probably Decreasing; < 90% and S>0 = No Trend; < 90%, S≤0, and COV ≥ 1 = No Trend; < 90% and COV < 1 = Stable.
3. Methodology based on "MAROS: A Decision Support System for Optimizing Monitoring Plans", J.J. Aziz, M. Ling, H.S. Rifai, C.J. Newell, and J.R. Gonzales, *Ground Water*, 41(3):355-367, 2003.

GSI MANN-KENDALL TOOLKIT
for Constituent Trend Analysis

Evaluation Date: **16-Jul-18**
Facility Name: **Parkton/Wally's**
Conducted By: **Amelia Ryan**

Job ID: **403162**
Constituent: **Methyl tert-Butyl Ether**
Concentration Units: **ug/L**

Sampling Point ID: **MW-20A**

Sampling Event	Sampling Date	METHYL TERT-BUTYL ETHER CONCENTRATION (ug/L)
1	11/07/2016	0.6
2	1/23/2017	0.7
3	05/03/2017	0.9
4	07/31/2017	0.7
5	11/09/2017	0.4
6	02/14/2018	0.5
7	06/14/2018	0.7
8	08/22/2018	0.6
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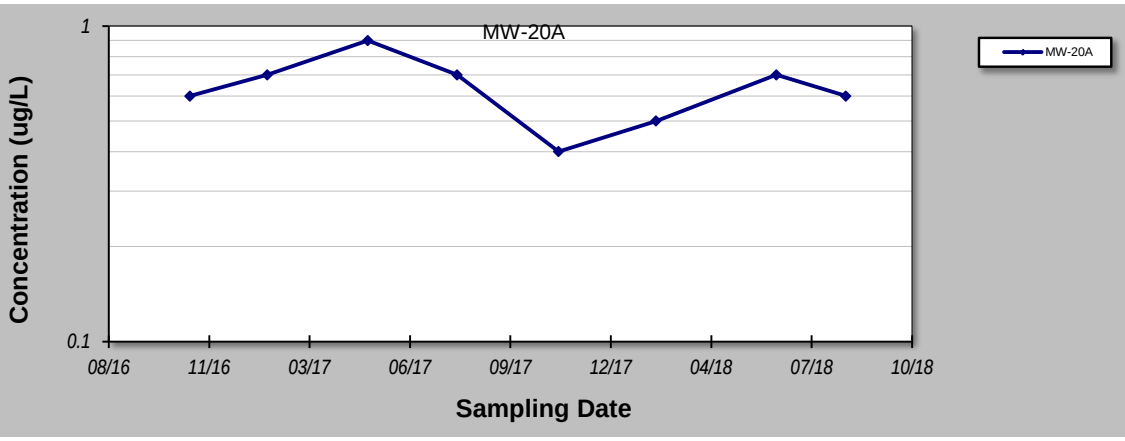
Coefficient of Variation:		0.24
Mann-Kendall Statistic (S):		-4
Confidence Factor:		64.0%
Concentration Trend:		Stable



Notes:

1. At least four independent sampling events per well are required for calculating the trend. *Methodology is valid for 4 to 40 samples.*
2. Confidence in Trend = Confidence (in percent) that constituent concentration is increasing (S>0) or decreasing (S<0): >95% = Increasing or Decreasing; ≥ 90% = Probably Increasing or Probably Decreasing; < 90% and S>0 = No Trend; < 90%, S≤0, and COV ≥ 1 = No Trend; < 90% and COV < 1 = Stable.
3. Methodology based on "MAROS: A Decision Support System for Optimizing Monitoring Plans", J.J. Aziz, M. Ling, H.S. Rifai, C.J. Newell, and J.R. Gonzales, *Ground Water*, 41(3):355-367, 2003.

GSI MANN-KENDALL TOOLKIT
for Constituent Trend Analysis

Evaluation Date: **16-Jul-18**
Facility Name: **Parkton/Wally's**
Conducted By: **Amelia Ryan**

Job ID: **403162**
Constituent: **Methyl tert-Butyl Ether**
Concentration Units: **ug/L**

Sampling Point ID: **MW-20B**

Sampling Event	Sampling Date	METHYL TERT-BUTYL ETHER CONCENTRATION (ug/L)						
1	11/07/2016	0.2						
2	1/23/2017	0.1						
3	05/03/2017	0.4						
4	07/31/2017	0.3						
5	11/09/2017	0.3						
6	02/14/2018	0.3						
7	06/14/2018	0.4						
8	08/22/2018	0.2						
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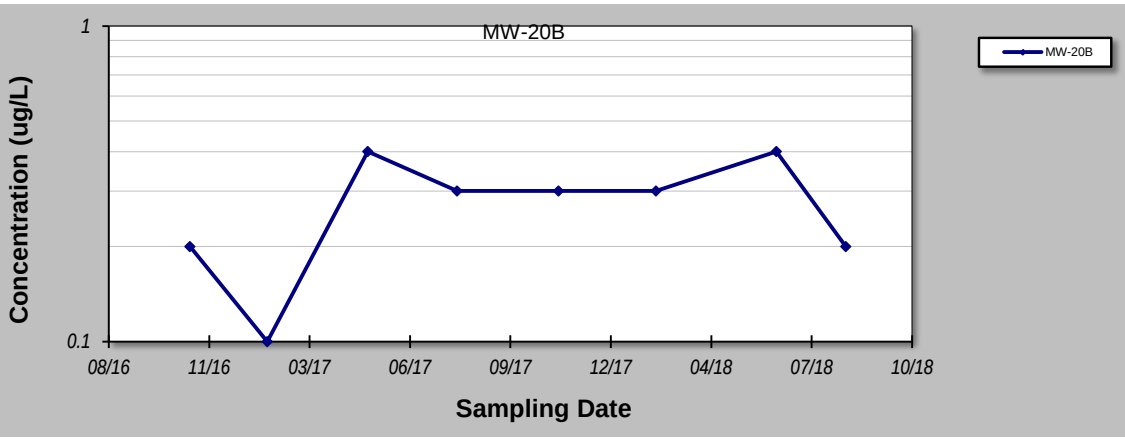
Coefficient of Variation:		0.38						
Mann-Kendall Statistic (S):		5						
Confidence Factor:		68.3%						
Concentration Trend:		No Trend						



Notes:

1. At least four independent sampling events per well are required for calculating the trend. *Methodology is valid for 4 to 40 samples.*
2. Confidence in Trend = Confidence (in percent) that constituent concentration is increasing (S>0) or decreasing (S<0): >95% = Increasing or Decreasing; ≥ 90% = Probably Increasing or Probably Decreasing; < 90% and S>0 = No Trend; < 90%, S≤0, and COV ≥ 1 = No Trend; < 90% and COV < 1 = Stable.
3. Methodology based on "MAROS: A Decision Support System for Optimizing Monitoring Plans", J.J. Aziz, M. Ling, H.S. Rifai, C.J. Newell, and J.R. Gonzales, *Ground Water*, 41(3):355-367, 2003.

GSI MANN-KENDALL TOOLKIT
for Constituent Trend Analysis

Evaluation Date: **16-Jul-18**
Facility Name: **Parkton/Wally's**
Conducted By: **Amelia Ryan**

Job ID: **403162**
Constituent: **Methyl tert-Butyl Ether**
Concentration Units: **ug/L**

Sampling Point ID: **MW-21**

Sampling Event	Sampling Date	METHYL TERT-BUTYL ETHER CONCENTRATION (ug/L)						
1	11/09/2016	0.1						
2	01/25/2017	0.1						
3	05/09/2017	0.1						
4	08/01/2017	0.1						
5	11/07/2017	0.1						
6	02/15/2018	0.1						
7	06/12/2018	0.1						
8	08/21/2018	0.05						
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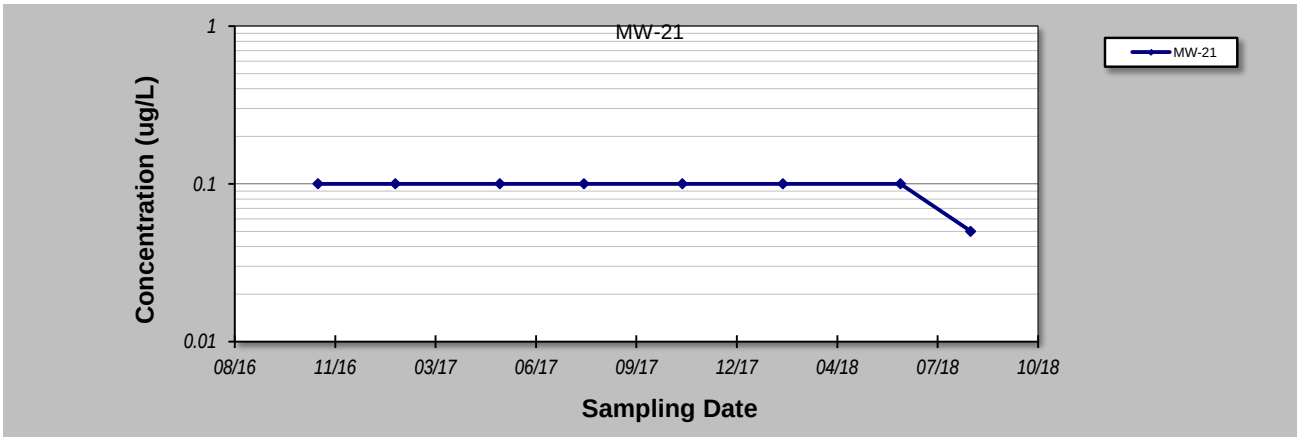
Coefficient of Variation:		0.19						
Mann-Kendall Statistic (S):		-7						
Confidence Factor:		76.4%						
Concentration Trend:		Stable						



Notes:

1. At least four independent sampling events per well are required for calculating the trend. *Methodology is valid for 4 to 40 samples.*
2. Confidence in Trend = Confidence (in percent) that constituent concentration is increasing (S>0) or decreasing (S<0): >95% = Increasing or Decreasing; ≥ 90% = Probably Increasing or Probably Decreasing; < 90% and S>0 = No Trend; < 90%, S≤0, and COV ≥ 1 = No Trend; < 90% and COV < 1 = Stable.
3. Methodology based on "MAROS: A Decision Support System for Optimizing Monitoring Plans", J.J. Aziz, M. Ling, H.S. Rifai, C.J. Newell, and J.R. Gonzales, *Ground Water*, 41(3):355-367, 2003.

GSI MANN-KENDALL TOOLKIT
for Constituent Trend Analysis

Evaluation Date: **16-Jul-18**
Facility Name: **Parkton/Wally's**
Conducted By: **Amelia Ryan**

Job ID: **403162**
Constituent: **Methyl tert-Butyl Ether**
Concentration Units: **ug/L**

Sampling Point ID: **MW-22**

Sampling Event	Sampling Date	METHYL TERT-BUTYL ETHER CONCENTRATION (ug/L)
1	11/09/2016	23.0
2	12/13/2016	100.0
3	01/25/2017	500.0
4	04/05/2017	370.0
5	05/09/2017	87.0
6	08/01/2017	53.0
7	11/07/2017	7.0
8	02/15/2018	22.0
9	06/12/2018	3.3
10	08/21/2018	6.3
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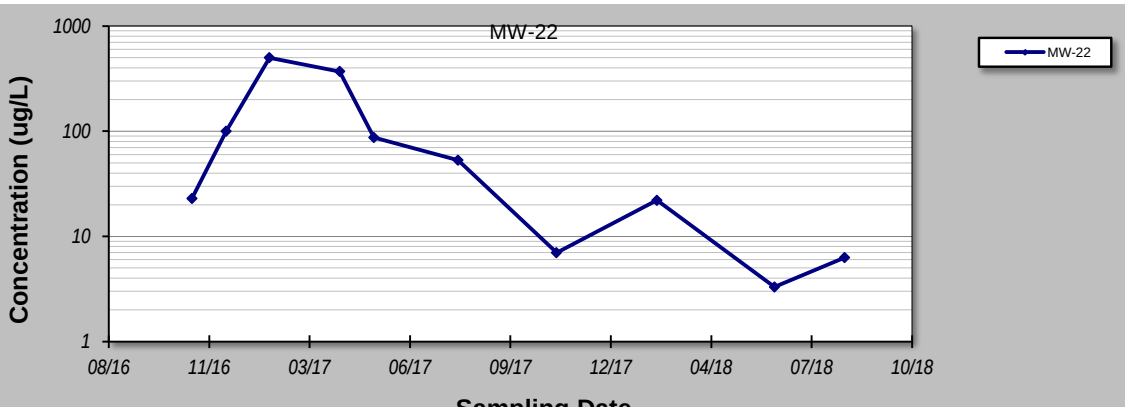
Coefficient of Variation:		1.48
Mann-Kendall Statistic (S):		-27
Confidence Factor:		99.2%
Concentration Trend:		Decreasing



Notes:

1. At least four independent sampling events per well are required for calculating the trend. *Methodology is valid for 4 to 40 samples.*
2. Confidence in Trend = Confidence (in percent) that constituent concentration is increasing (S>0) or decreasing (S<0): >95% = Increasing or Decreasing; ≥ 90% = Probably Increasing or Probably Decreasing; < 90% and S>0 = No Trend; < 90%, S≤0, and COV ≥ 1 = No Trend; < 90% and COV < 1 = Stable.
3. Methodology based on "MAROS: A Decision Support System for Optimizing Monitoring Plans", J.J. Aziz, M. Ling, H.S. Rifai, C.J. Newell, and J.R. Gonzales, *Ground Water*, 41(3):355-367, 2003.

GSI MANN-KENDALL TOOLKIT
for Constituent Trend Analysis

Evaluation Date: **16-Jul-18**
Facility Name: **Parkton/Wally's**
Conducted By: **Amelia Ryan**

Job ID: **403162**
Constituent: **Benzene**
Concentration Units: **ug/L**

Sampling Point ID: **MW-22**

Sampling Event	Sampling Date	BENZENE CONCENTRATION (ug/L)
1	11/09/2016	0.1
2	12/13/2016	2.5
3	01/25/2017	1.6
4	04/05/2017	1.4
5	05/09/2017	2
6	08/01/2017	0.8
7	11/07/2017	0.1
8	02/15/2018	0.2
9	06/12/2018	0.1
10	08/21/2018	0.4
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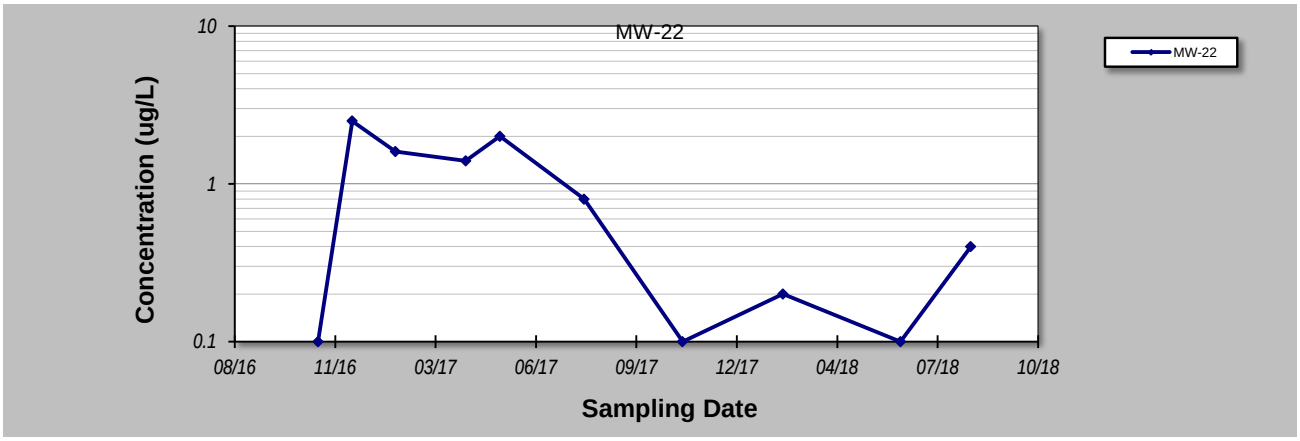
Coefficient of Variation:		**0.97**
Mann-Kendall Statistic (S):		**-16**
Confidence Factor:		**90.7%**
Concentration Trend:		Prob. Decreasing



Notes:

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2. Confidence in Trend = Confidence (in percent) that constituent concentration is increasing (S>0) or decreasing (S<0): >95% = Increasing or Decreasing; ≥ 90% = Probably Increasing or Probably Decreasing; < 90% and S>0 = No Trend; < 90%, S≤0, and COV ≥ 1 = No Trend; < 90% and COV < 1 = Stable.
3. Methodology based on "MAROS: A Decision Support System for Optimizing Monitoring Plans", J.J. Aziz, M. Ling, H.S. Rifai, C.J. Newell, and J.R. Gonzales, *Ground Water*, 41(3):355-367, 2003.

GSI MANN-KENDALL TOOLKIT
for Constituent Trend Analysis

Evaluation Date: **16-Jul-18**
Facility Name: **Parkton/Wally's**
Conducted By: **Amelia Ryan**

Job ID: **403162**
Constituent: **Methyl tert-Butyl Ether**
Concentration Units: **ug/L**

Sampling Point ID: **MW-23**

Sampling Event	Sampling Date	METHYL TERT-BUTYL ETHER CONCENTRATION (ug/L)
1	11/09/2016	0.1
2	01/25/2017	2.6
3	05/05/2017	2.8
4	08/02/2017	1.6
5	11/09/2017	0.5
6	02/13/2018	0.3
7	06/13/2018	0.2
8	08/23/2018	0.1
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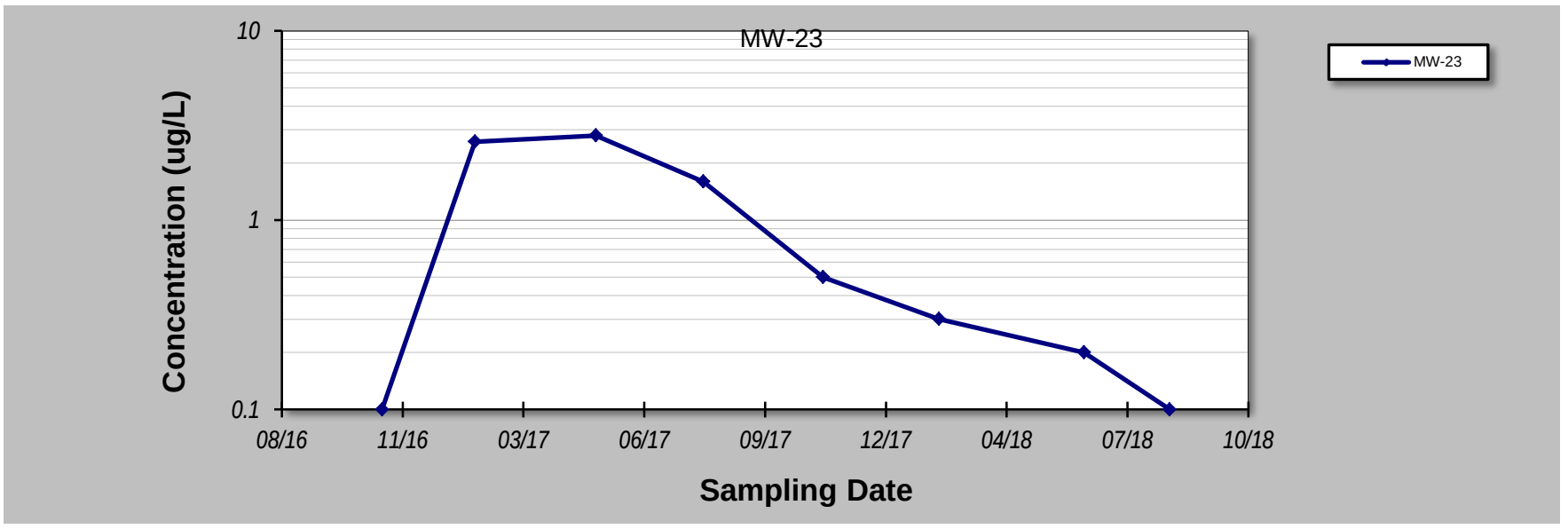
Coefficient of Variation:		**1.12**
Mann-Kendall Statistic (S):		**-13**
Confidence Factor:		**92.9%**
Concentration Trend:		Prob. Decreasing



Notes:

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2. Confidence in Trend = Confidence (in percent) that constituent concentration is increasing (S>0) or decreasing (S<0): >95% = Increasing or Decreasing; ≥ 90% = Probably Increasing or Probably Decreasing; < 90% and S>0 = No Trend; < 90%, S≤0, and COV ≥ 1 = No Trend; < 90% and COV < 1 = Stable.
3. Methodology based on "MAROS: A Decision Support System for Optimizing Monitoring Plans", J.J. Aziz, M. Ling, H.S. Rifai, C.J. Newell, and J.R. Gonzales, *Ground Water* , 41(3):355-367, 2003.

GSI MANN-KENDALL TOOLKIT
for Constituent Trend Analysis

Evaluation Date: **16-Jul-18**
Facility Name: **Parkton/Wally's**
Conducted By: **Amelia Ryan**

Job ID: **403162**
Constituent: **Benzene**
Concentration Units: **ug/L**

Sampling Point ID: **MW-23**

Sampling Event	Sampling Date	BENZENE CONCENTRATION (ug/L)
1	11/09/2016	0.1
2	1/25/2017	0.2
3	05/05/2017	0.1
4	08/02/2017	0.1
5	11/09/2017	0.1
6	02/13/2018	0.1
7	06/13/2018	0.1
8	08/23/2018	0.05
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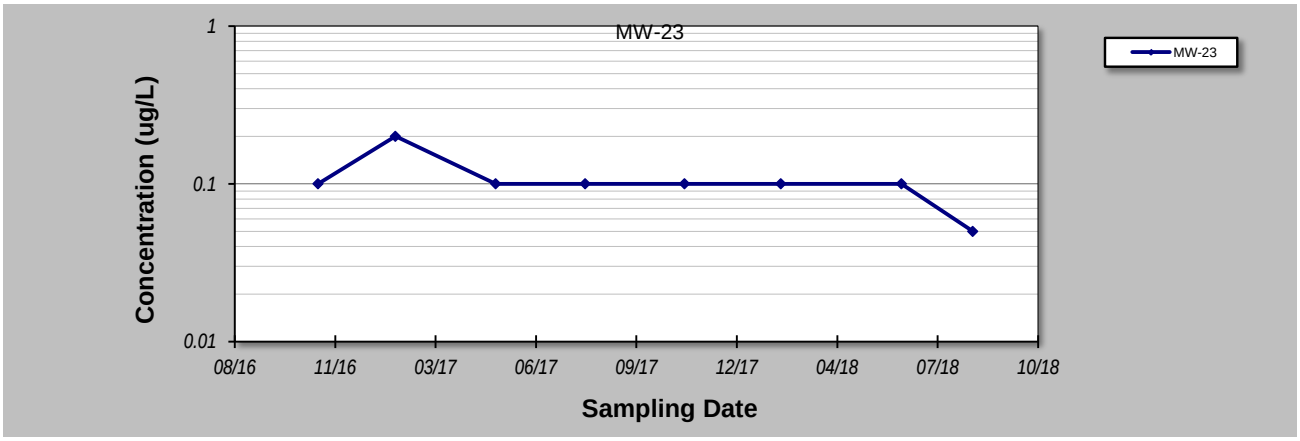
Coefficient of Variation:		0.39
Mann-Kendall Statistic (S):		-11
Confidence Factor:		88.7%
Concentration Trend:		Stable



Notes:

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2. Confidence in Trend = Confidence (in percent) that constituent concentration is increasing (S>0) or decreasing (S<0): >95% = Increasing or Decreasing; ≥ 90% = Probably Increasing or Probably Decreasing; < 90% and S>0 = No Trend; < 90%, S≤0, and COV ≥ 1 = No Trend; < 90% and COV < 1 = Stable.
3. Methodology based on "MAROS: A Decision Support System for Optimizing Monitoring Plans", J.J. Aziz, M. Ling, H.S. Rifai, C.J. Newell, and J.R. Gonzales, *Ground Water*, 41(3):355-367, 2003.

GSI MANN-KENDALL TOOLKIT
for Constituent Trend Analysis

Evaluation Date: **16-Jul-18**
Facility Name: **Parkton/Wally's**
Conducted By: **Amelia Ryan**

Job ID: **403162**
Constituent: **Methyl tert-Butyl Ether**
Concentration Units: **ug/L**

Sampling Point ID: **MW-24B**

Sampling Event	Sampling Date	METHYL TERT-BUTYL ETHER CONCENTRATION (ug/L)						
1	11/10/2016	0.8						
2	01/26/2017	0.6						
3	05/09/2017	0.1						
4	08/02/2017	0.1						
5	11/08/2017	0.1						
6	02/16/2018	0.1						
7	06/14/2018	1.6						
8	08/24/2018	0.6						
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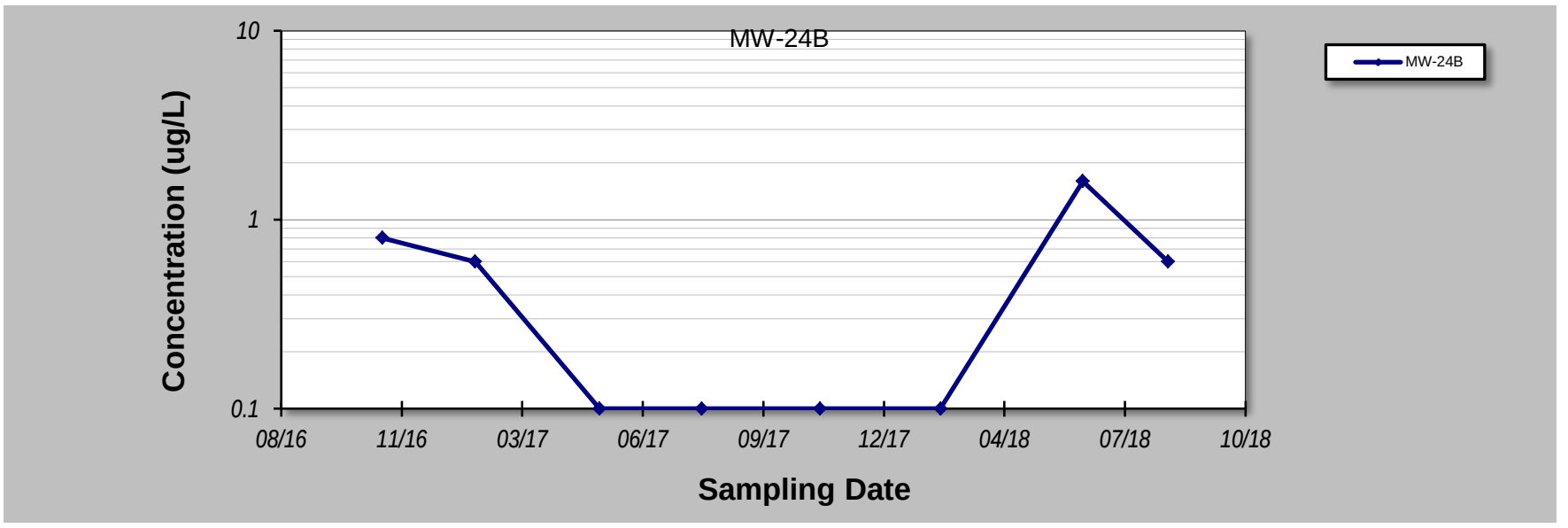
20								
Coefficient of Variation:		1.06						
Mann-Kendall Statistic (S):		-1						
Confidence Factor:		50.0%						
Concentration Trend:		No Trend						



Notes:

1. At least four independent sampling events per well are required for calculating the trend. *Methodology is valid for 4 to 40 samples.*
2. Confidence in Trend = Confidence (in percent) that constituent concentration is increasing (S>0) or decreasing (S<0): >95% = Increasing or Decreasing; ≥ 90% = Probably Increasing or Probably Decreasing; < 90% and S>0 = No Trend; < 90%, S≤0, and COV ≥ 1 = No Trend; < 90% and COV < 1 = Stable.
3. Methodology based on "MAROS: A Decision Support System for Optimizing Monitoring Plans", J.J. Aziz, M. Ling, H.S. Rifai, C.J. Newell, and J.R. Gonzales, *Ground Water* , 41(3):355-367, 2003.

GSI MANN-KENDALL TOOLKIT
for Constituent Trend Analysis

Evaluation Date: **16-Jul-18**
Facility Name: **Parkton/Wally's**
Conducted By: **Amelia Ryan**

Job ID: **403162**
Constituent: **Benzene**
Concentration Units: **ug/L**

Sampling Point ID: **MW-25B**

Sampling Event	Sampling Date	BENZENE CONCENTRATION (ug/L)
1	11/09/2016	0.1
2	1/26/2017	0.1
3	05/09/2017	0.1
4	08/02/2017	0.1
5	11/08/2017	0.1
6	02/16/2018	0.1
7	06/14/2018	0.1
8	08/24/2018	0.05
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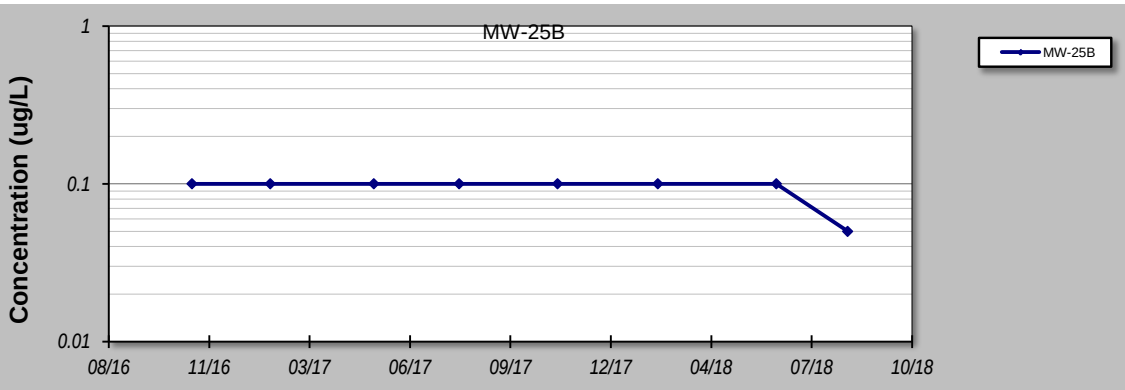
Coefficient of Variation:		0.19
Mann-Kendall Statistic (S):		-7
Confidence Factor:		76.4%
Concentration Trend:		Stable



Notes:

1. At least four independent sampling events per well are required for calculating the trend. *Methodology is valid for 4 to 40 samples.*
2. Confidence in Trend = Confidence (in percent) that constituent concentration is increasing (S>0) or decreasing (S<0): >95% = Increasing or Decreasing; ≥ 90% = Probably Increasing or Probably Decreasing; < 90% and S>0 = No Trend; < 90%, S≤0, and COV ≥ 1 = No Trend; < 90% and COV < 1 = Stable.
3. Methodology based on "MAROS: A Decision Support System for Optimizing Monitoring Plans", J.J. Aziz, M. Ling, H.S. Rifai, C.J. Newell, and J.R. Gonzales, *Ground Water*, 41(3):355-367, 2003.

GSI MANN-KENDALL TOOLKIT
for Constituent Trend Analysis

Evaluation Date: **16-Jul-18**
Facility Name: **Parkton/Wally's**
Conducted By: **Amelia Ryan**

Job ID: **403162**
Constituent: **Methyl tert-Butyl Ether**
Concentration Units: **ug/L**

Sampling Point ID: **1608R**

Sampling Event	Sampling Date	METHYL TERT-BUTYL ETHER CONCENTRATION (ug/L)						
1	11/09/2016	700.0						
2	01/25/2017	810.0						
3	05/09/2017	350.0						
4	08/01/2017	580.0						
5	11/07/2017	450.0						
6	02/13/2018	480.0						
7	06/13/2018	430.0						
8	08/21/2018	360.0						
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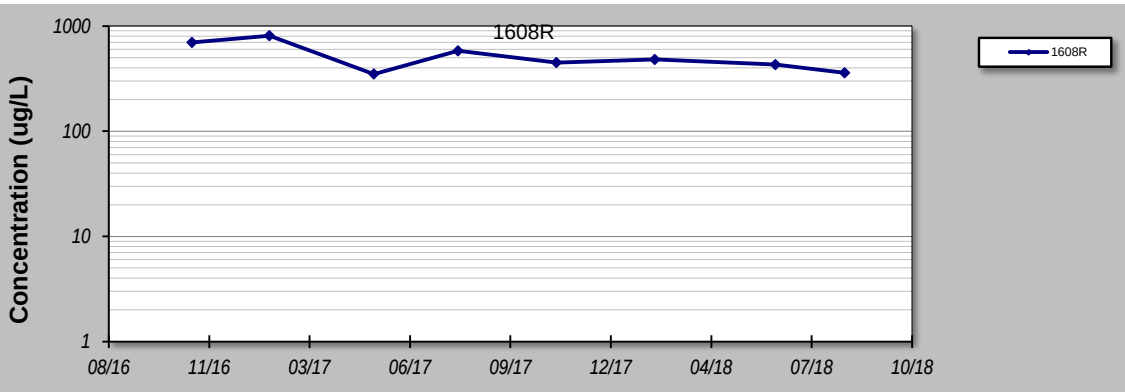
Coefficient of Variation:		0.32						
Mann-Kendall Statistic (S):		-14						
Confidence Factor:		94.6%						
Concentration Trend:		Prob. Decreasing						



Notes:

1. At least four independent sampling events per well are required for calculating the trend. *Methodology is valid for 4 to 40 samples.*
2. Confidence in Trend = Confidence (in percent) that constituent concentration is increasing (S>0) or decreasing (S<0): >95% = Increasing or Decreasing; ≥ 90% = Probably Increasing or Probably Decreasing; < 90% and S>0 = No Trend; < 90%, S≤0, and COV ≥ 1 = No Trend; < 90% and COV < 1 = Stable.
3. Methodology based on "MAROS: A Decision Support System for Optimizing Monitoring Plans", J.J. Aziz, M. Ling, H.S. Rifai, C.J. Newell, and J.R. Gonzales, *Ground Water*, 41(3):355-367, 2003.

GSI MANN-KENDALL TOOLKIT
for Constituent Trend Analysis

Evaluation Date: **16-Jul-18**
Facility Name: **Parkton/Wally's**
Conducted By: **Amelia Ryan**

Job ID: **403162**
Constituent: **Methyl tert-Butyl Ether**
Concentration Units: **ug/L**

Sampling Point ID: **RW-1**

Sampling Event	Sampling Date	METHYL TERT-BUTYL ETHER CONCENTRATION (ug/L)
1	11/09/2016	21.0
2	12/13/2016	43.0
3	01/25/2017	13.0
4	05/09/2017	5.3
5	08/01/2017	5.7
6	11/07/2017	22.0
7	02/15/2018	32.0
8	06/13/2018	3.4
9	08/22/2018	1.2
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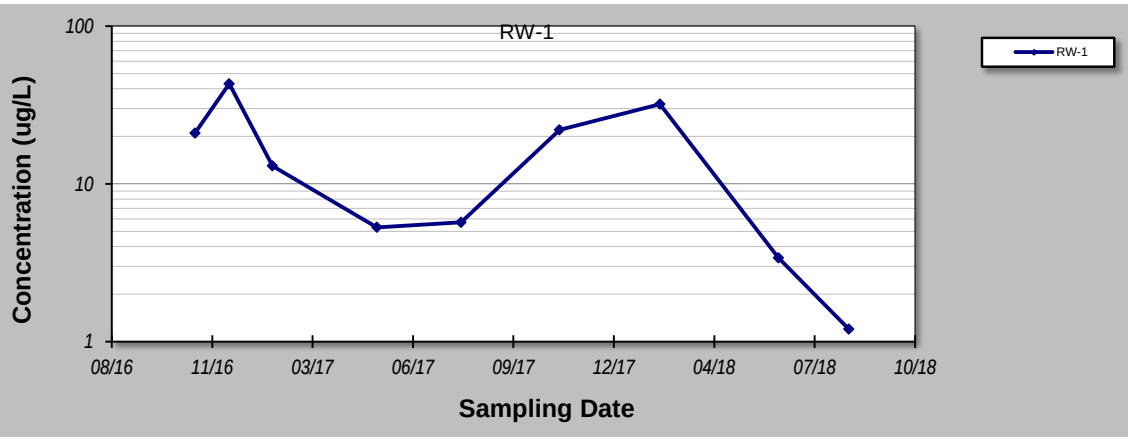
Coefficient of Variation:		**0.88**
Mann-Kendall Statistic (S):		**-14**
Confidence Factor:		**91.0%**
Concentration Trend:		Prob. Decreasing



Notes:

1. At least four independent sampling events per well are required for calculating the trend. *Methodology is valid for 4 to 40 samples.*
2. Confidence in Trend = Confidence (in percent) that constituent concentration is increasing (S>0) or decreasing (S<0): >95% = Increasing or Decreasing; ≥ 90% = Probably Increasing or Probably Decreasing; < 90% and S>0 = No Trend; < 90%, S≤0, and COV ≥ 1 = No Trend; < 90% and COV < 1 = Stable.
3. Methodology based on "MAROS: A Decision Support System for Optimizing Monitoring Plans", J.J. Aziz, M. Ling, H.S. Rifai, C.J. Newell, and J.R. Gonzales, *Ground Water*, 41(3):355-367, 2003.

GSI MANN-KENDALL TOOLKIT
for Constituent Trend Analysis

Evaluation Date: **16-Jul-18**
Facility Name: **Parkton/Wally's**
Conducted By: **Amelia Ryan**

Job ID: **403162**
Constituent: **Benzene**
Concentration Units: **ug/L**

Sampling Point ID: **RW-1**

Sampling Event	Sampling Date	BENZENE CONCENTRATION (ug/L)
1	11/09/2016	0.1
2	12/13/2016	0.1
3	01/25/2017	0.1
4	05/09/2017	0.1
5	08/01/2017	0.1
6	11/07/2017	0.1
7	02/15/2018	0.1
8	06/13/2018	0.1
9	08/22/2018	0.05
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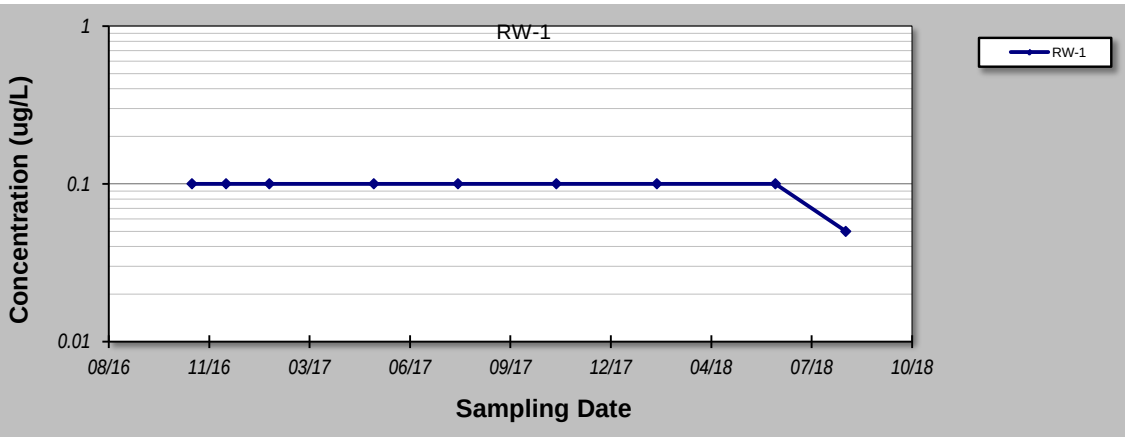
Coefficient of Variation:		**0.18**
Mann-Kendall Statistic (S):		**-8**
Confidence Factor:		**76.2%**
Concentration Trend:		Stable



Notes:

1. At least four independent sampling events per well are required for calculating the trend. *Methodology is valid for 4 to 40 samples.*
2. Confidence in Trend = Confidence (in percent) that constituent concentration is increasing (S>0) or decreasing (S<0): >95% = Increasing or Decreasing; ≥ 90% = Probably Increasing or Probably Decreasing; < 90% and S>0 = No Trend; < 90%, S≤0, and COV ≥ 1 = No Trend; < 90% and COV < 1 = Stable.
3. Methodology based on "MAROS: A Decision Support System for Optimizing Monitoring Plans", J.J. Aziz, M. Ling, H.S. Rifai, C.J. Newell, and J.R. Gonzales, *Ground Water*, 41(3):355-367, 2003.

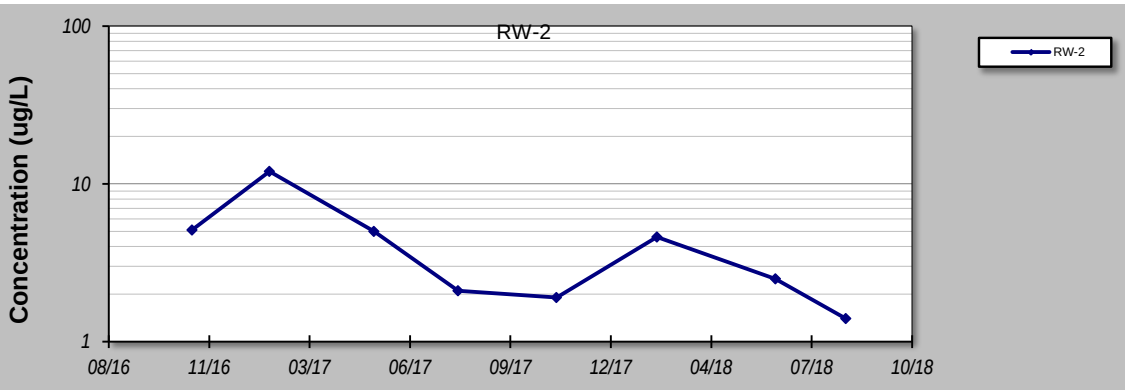
GSI MANN-KENDALL TOOLKIT
for Constituent Trend Analysis

Evaluation Date: **16-Jul-18**
Facility Name: **Parkton/Wally's**
Conducted By: **Amelia Ryan**

Job ID: **403162**
Constituent: **Methyl tert-Butyl Ether**
Concentration Units: **ug/L**

Sampling Point ID: **RW-2**

Sampling Event	Sampling Date	METHYL TERT-BUTYL ETHER CONCENTRATION (ug/L)						
1	11/09/2016	5.1						
2	1/25/2017	12.0						
3	05/09/2017	5.0						
4	08/01/2017	2.1						
5	11/07/2017	1.9						
6	02/15/2018	4.6						
7	06/13/2018	2.5						
8	08/22/2018	1.4						
9								
10								
11								
12								
13								
14								
15								
16								
17								
18								
19								
20								
Coefficient of Variation:		0.79						
Mann-Kendall Statistic (S):		-18						
Confidence Factor:		98.4%						
Concentration Trend:		Decreasing						



Notes:

1. At least four independent sampling events per well are required for calculating the trend. *Methodology is valid for 4 to 40 samples.*
2. Confidence in Trend = Confidence (in percent) that constituent concentration is increasing (S>0) or decreasing (S<0): >95% = Increasing or Decreasing; ≥ 90% = Probably Increasing or Probably Decreasing; < 90% and S>0 = No Trend; < 90%, S≤0, and COV ≥ 1 = No Trend; < 90% and COV < 1 = Stable.
3. Methodology based on "MAROS: A Decision Support System for Optimizing Monitoring Plans", J.J. Aziz, M. Ling, H.S. Rifai, C.J. Newell, and J.R. Gonzales, *Ground Water*, 41(3):355-367, 2003.

GSI MANN-KENDALL TOOLKIT
for Constituent Trend Analysis

Evaluation Date: **16-Jul-18**
Facility Name: **Parkton/Wally's**
Conducted By: **Amelia Ryan**

Job ID: **403162**
Constituent: **Methyl tert-Butyl Ether**
Concentration Units: **ug/L**

Sampling Point ID: **RW-3**

Sampling Event	Sampling Date	METHYL TERT-BUTYL ETHER CONCENTRATION (ug/L)						
1	11/09/2016	0.2						
2	01/25/2017	0.3						
3	05/05/2017	0.1						
4	11/09/2017	0.2						
5	02/14/2018	0.2						
6	06/13/2018	0.1						
7	08/23/2018	0.1						
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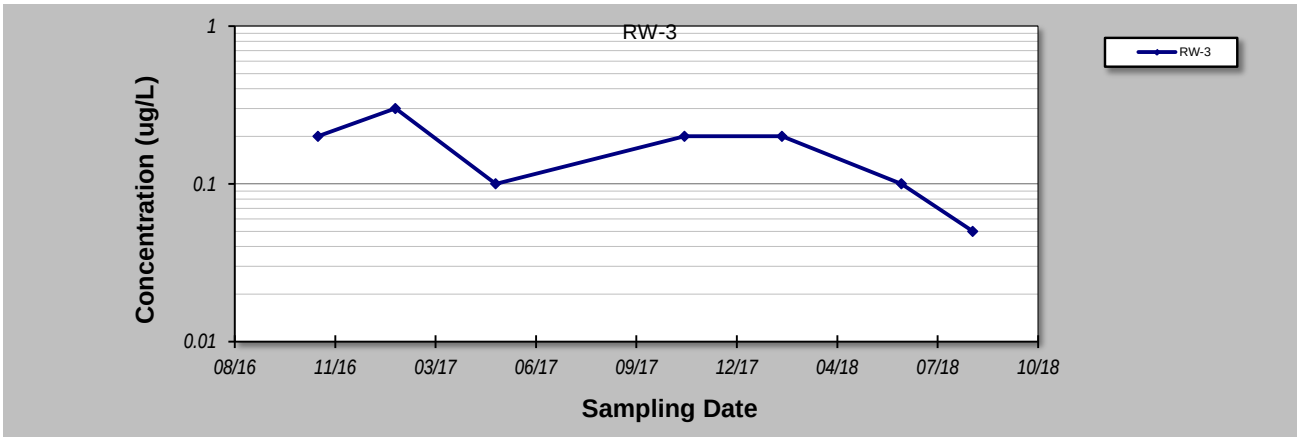
Coefficient of Variation:		**0.52**						
Mann-Kendall Statistic (S):		**-11**						
Confidence Factor:		**93.2%**						
Concentration Trend:		Prob. Decreasing						



Notes:

1. At least four independent sampling events per well are required for calculating the trend. *Methodology is valid for 4 to 40 samples.*
2. Confidence in Trend = Confidence (in percent) that constituent concentration is increasing (S>0) or decreasing (S<0): >95% = Increasing or Decreasing; ≥ 90% = Probably Increasing or Probably Decreasing; < 90% and S>0 = No Trend; < 90%, S≤0, and COV ≥ 1 = No Trend; < 90% and COV < 1 = Stable.
3. Methodology based on "MAROS: A Decision Support System for Optimizing Monitoring Plans", J.J. Aziz, M. Ling, H.S. Rifai, C.J. Newell, and J.R. Gonzales, *Ground Water*, 41(3):355-367, 2003.

GSI MANN-KENDALL TOOLKIT
for Constituent Trend Analysis

Evaluation Date: **16-Jul-18**
Facility Name: **Parkton/Wally's**
Conducted By: **Amelia Ryan**

Job ID: **403162**
Constituent: **Methyl tert-Butyl Ether**
Concentration Units: **ug/L**

Sampling Point ID: **RW-4**

Sampling Event	Sampling Date	METHYL TERT-BUTYL ETHER CONCENTRATION (ug/L)						
1	11/09/2016	25.0						
2	1/25/2017	38.0						
3	05/09/2017	56.0						
4	08/01/2017	42.0						
5	11/07/2017	26.0						
6	02/15/2018	30.0						
7	06/13/2018	33.0						
8	08/22/2018	25.0						
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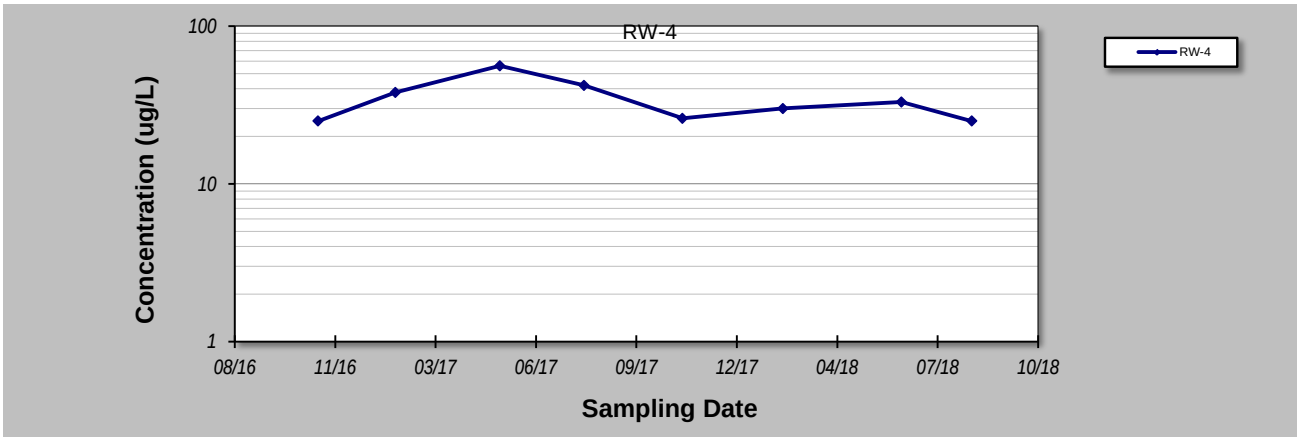
20								
Coefficient of Variation:		0.31						
Mann-Kendall Statistic (S):		-5						
Confidence Factor:		68.3%						
Concentration Trend:		Stable						



Notes:

1. At least four independent sampling events per well are required for calculating the trend. *Methodology is valid for 4 to 40 samples.*
2. Confidence in Trend = Confidence (in percent) that constituent concentration is increasing (S>0) or decreasing (S<0): >95% = Increasing or Decreasing; ≥ 90% = Probably Increasing or Probably Decreasing; < 90% and S>0 = No Trend; < 90%, S≤0, and COV ≥ 1 = No Trend; < 90% and COV < 1 = Stable.
3. Methodology based on "MAROS: A Decision Support System for Optimizing Monitoring Plans", J.J. Aziz, M. Ling, H.S. Rifai, C.J. Newell, and J.R. Gonzales, *Ground Water*, 41(3):355-367, 2003.

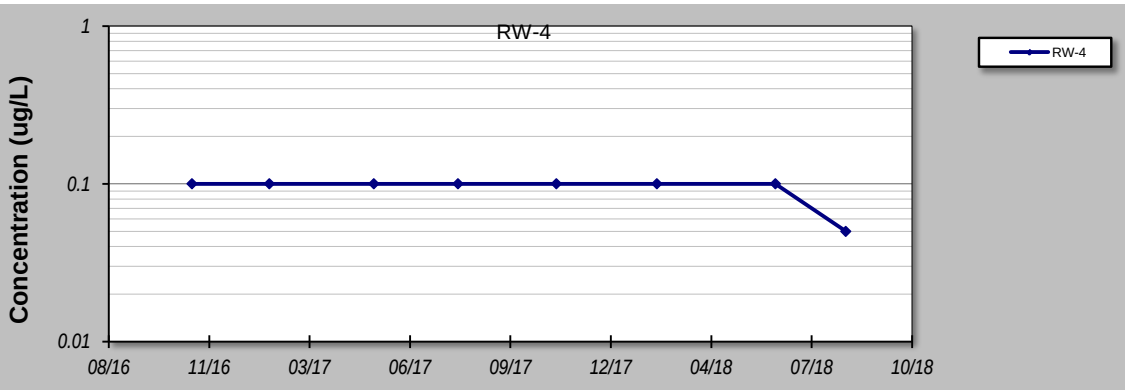
GSI MANN-KENDALL TOOLKIT
for Constituent Trend Analysis

Evaluation Date: **16-Jul-18**
Facility Name: **Parkton/Wally's**
Conducted By: **Amelia Ryan**

Job ID: **403162**
Constituent: **Benzene**
Concentration Units: **ug/L**

Sampling Point ID: **RW-4**

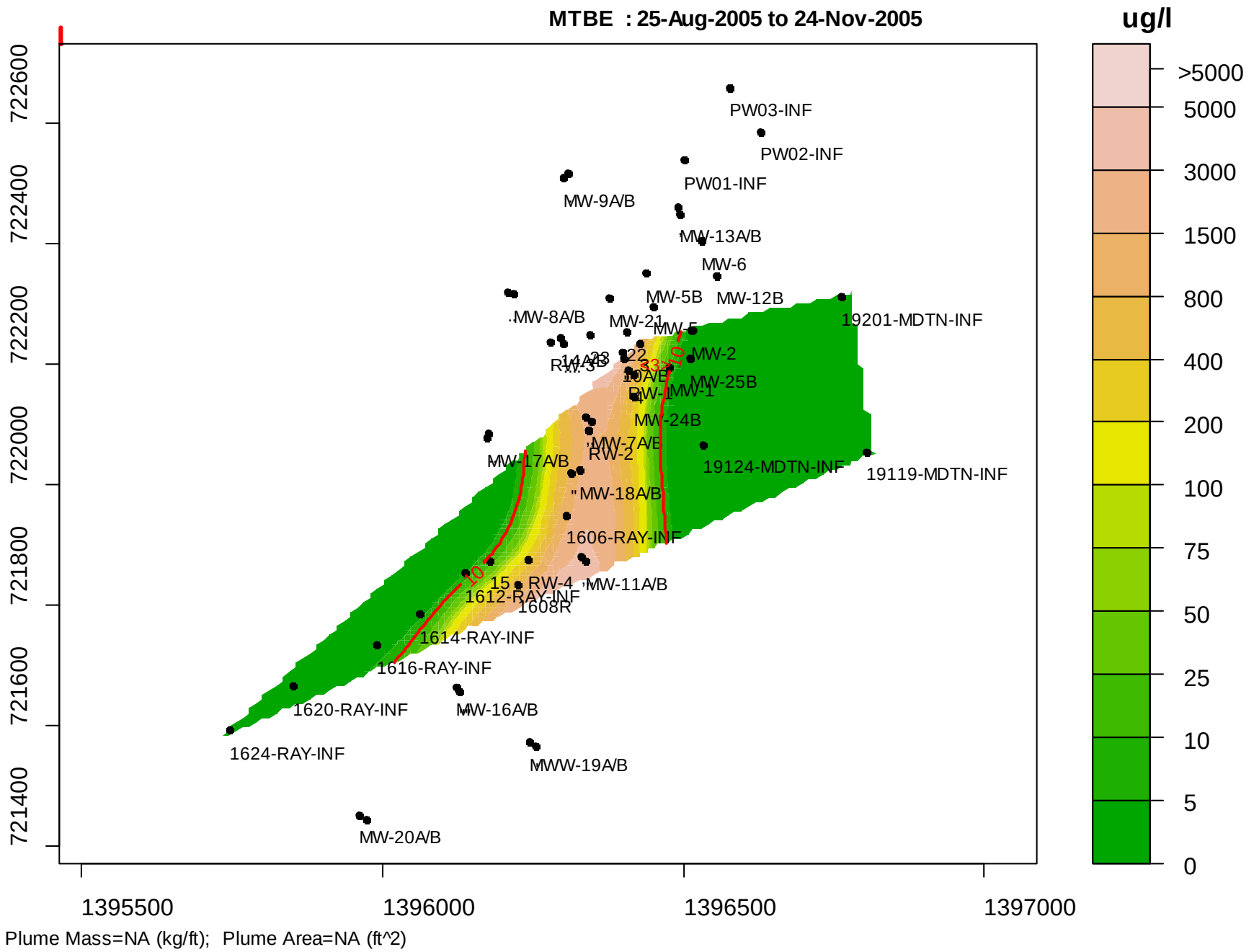
Sampling Event	Sampling Date	BENZENE CONCENTRATION (ug/L)
1	11/09/2016	0.1
2	1/25/2017	0.1
3	05/09/2017	0.1
4	08/01/2017	0.1
5	11/07/2017	0.1
6	02/15/2018	0.1
7	06/13/2018	0.1
8	08/22/2018	0.05
9		
10		
11		
12		
13		
14		
15		
16		
17		
18		
19		
20		
Coefficient of Variation:		0.19
Mann-Kendall Statistic (S):		-7
Confidence Factor:		76.4%
Concentration Trend:		Stable



Notes:

1. At least four independent sampling events per well are required for calculating the trend. *Methodology is valid for 4 to 40 samples.*
2. Confidence in Trend = Confidence (in percent) that constituent concentration is increasing (S>0) or decreasing (S<0): >95% = Increasing or Decreasing; ≥ 90% = Probably Increasing or Probably Decreasing; < 90% and S>0 = No Trend; < 90%, S≤0, and COV ≥ 1 = No Trend; < 90% and COV < 1 = Stable.
3. Methodology based on "MAROS: A Decision Support System for Optimizing Monitoring Plans", J.J. Aziz, M. Ling, H.S. Rifai, C.J. Newell, and J.R. Gonzales, *Ground Water*, 41(3):355-367, 2003.

Appendix C – GWSDAT Time Series Plots - MTBE


MTBE : 25-Aug-2005 to 24-Nov-2005
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PW02-INF
PW01-INF
MW-9A/B
MW-13A/B
MW-6
MW-5B
MW-12B
MW-8A/B
MW-21
MW-5
19201-MDTN-INF
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MW-25B
MW-1
MW-24B
MW-7A/B
RW-2
MW-17A/B
19124-MDTN-INF
19119-MDTN-INF
MW-18A/B
1606-RAY-INF
RW-4
MW-11A/B
1612-RAY-INF
1608R
1614-RAY-INF
1616-RAY-INF
1620-RAY-INF
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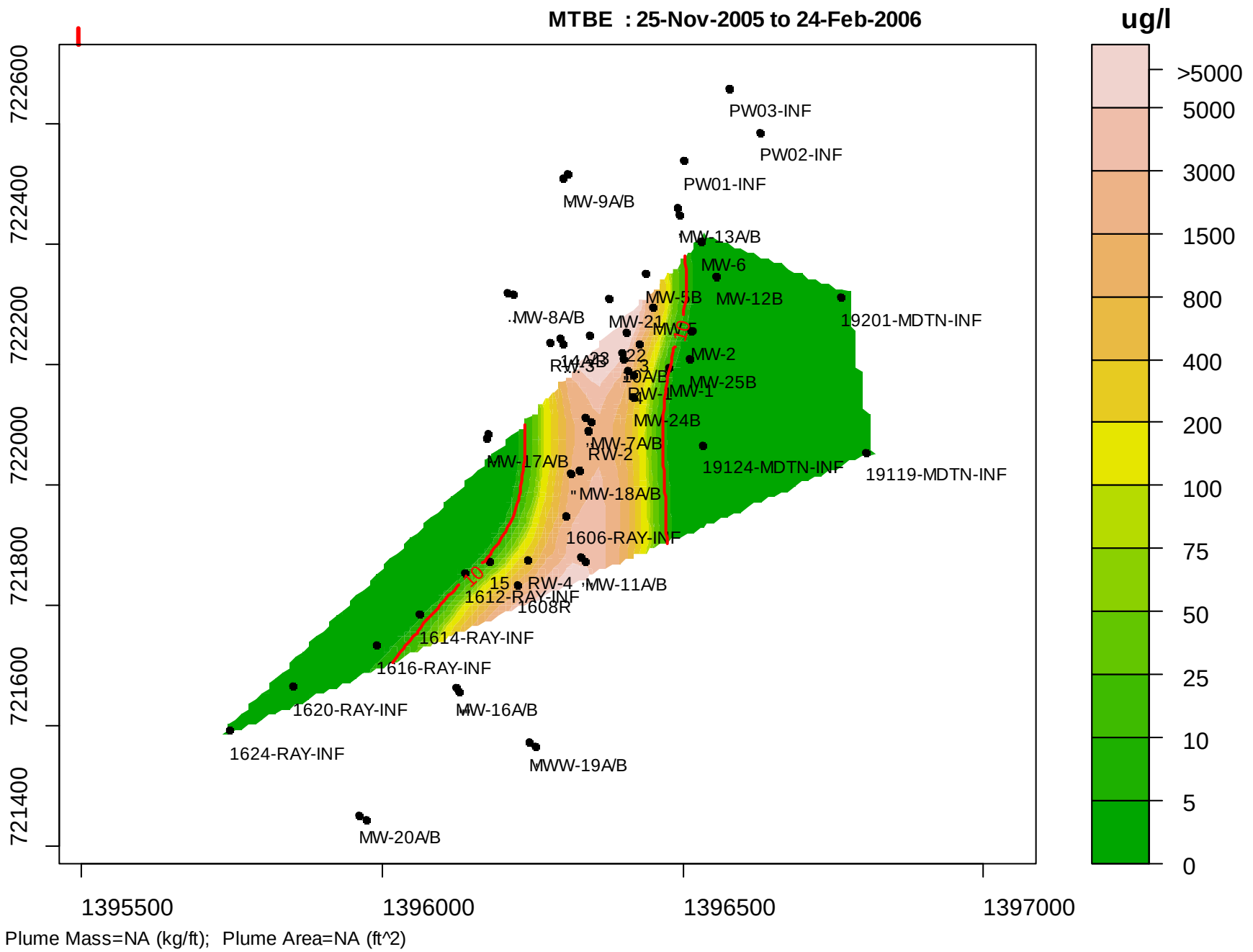
1624-RAY-INF
MW-19A/B
MW-20A/B
Plume Mass=NA (kg/ft); Plume Area=NA (ft^2)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MW-13A/B
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MW-5B
MW-12B
MW-8A/B
MW-21
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1608R
1614-RAY-INF
1616-RAY-INF
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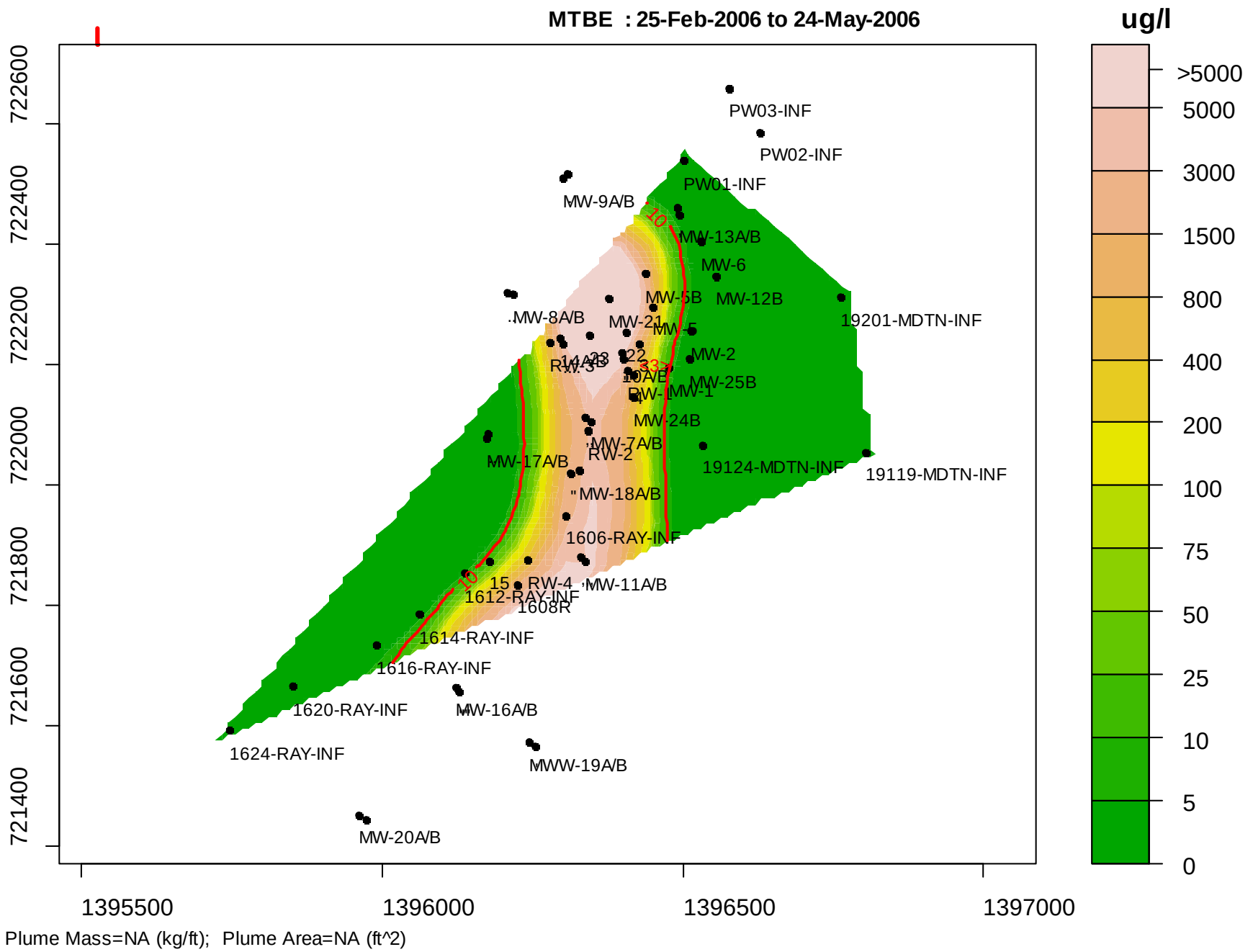
MW-20A/B
Plume Mass=NA (kg/ft); Plume Area=NA (ft^2)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1620-RAY-INF
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MW-20A/B
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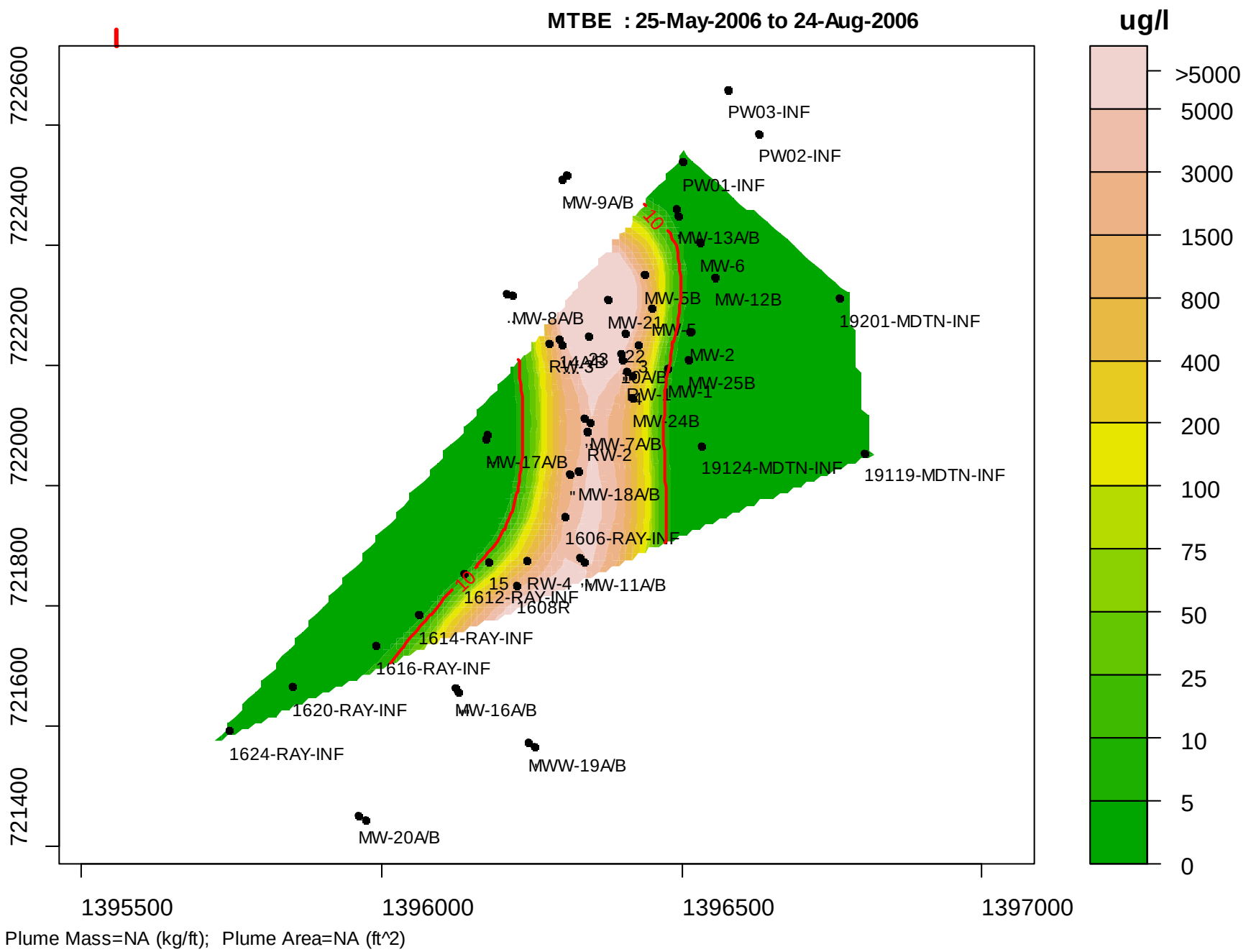
Plume Mass=NA (kg/ft); Plume Area=NA (ft^2)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RW-4
MW-11A/B
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1608R
1614-RAY-INF
1616-RAY-INF
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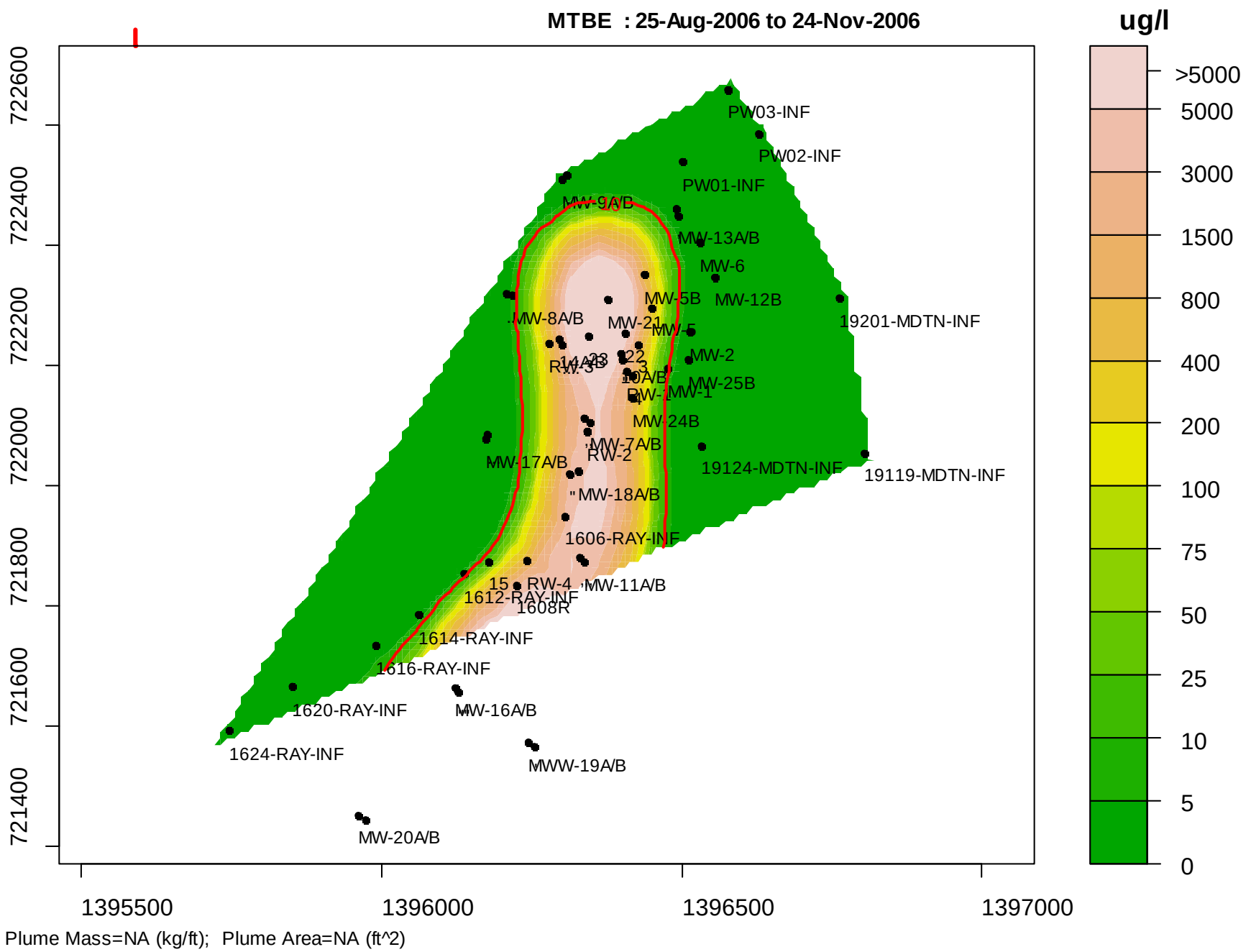
MW-19A/B
MW-20A/B
Plume Mass=NA (kg/ft); Plume Area=NA (ft^2)



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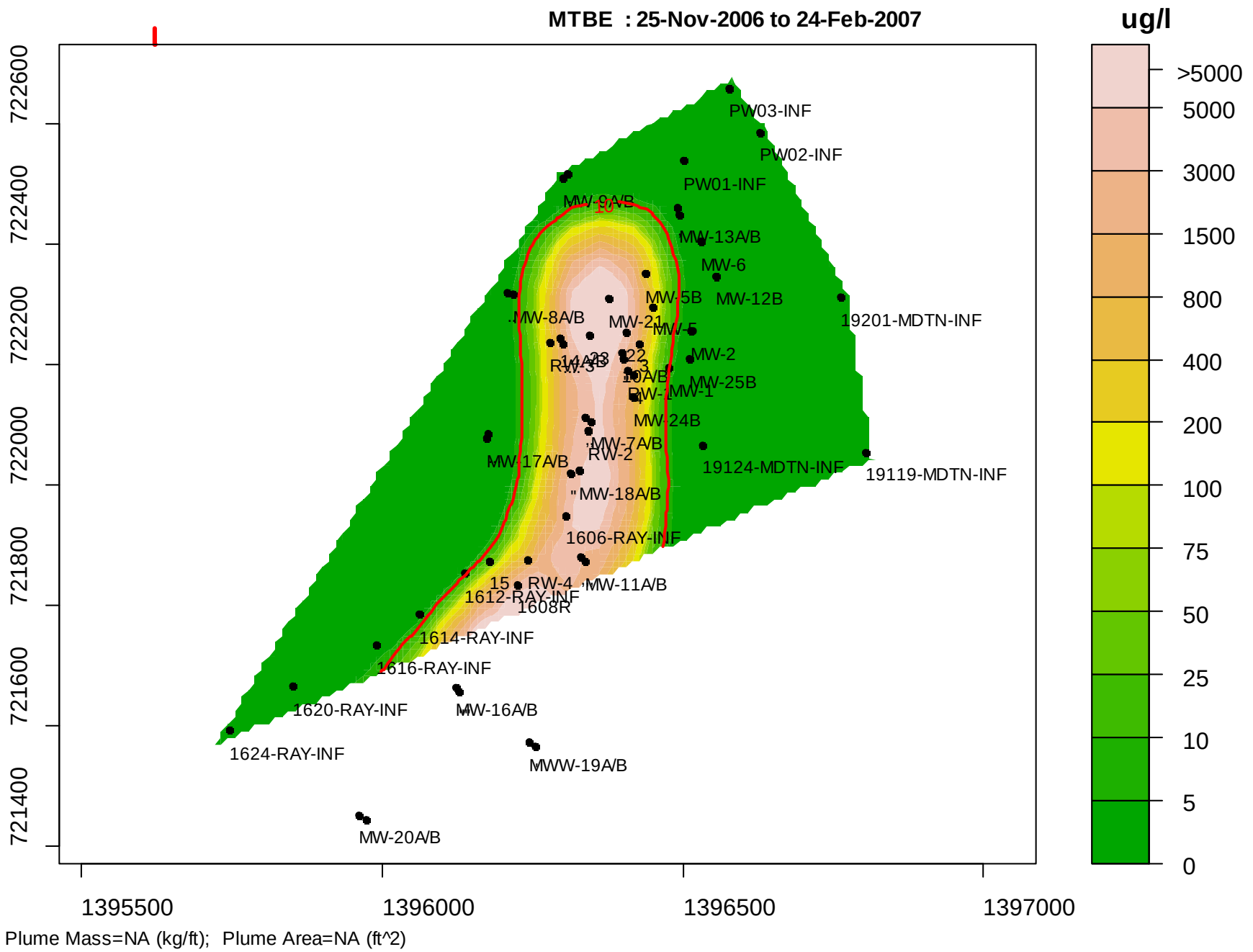
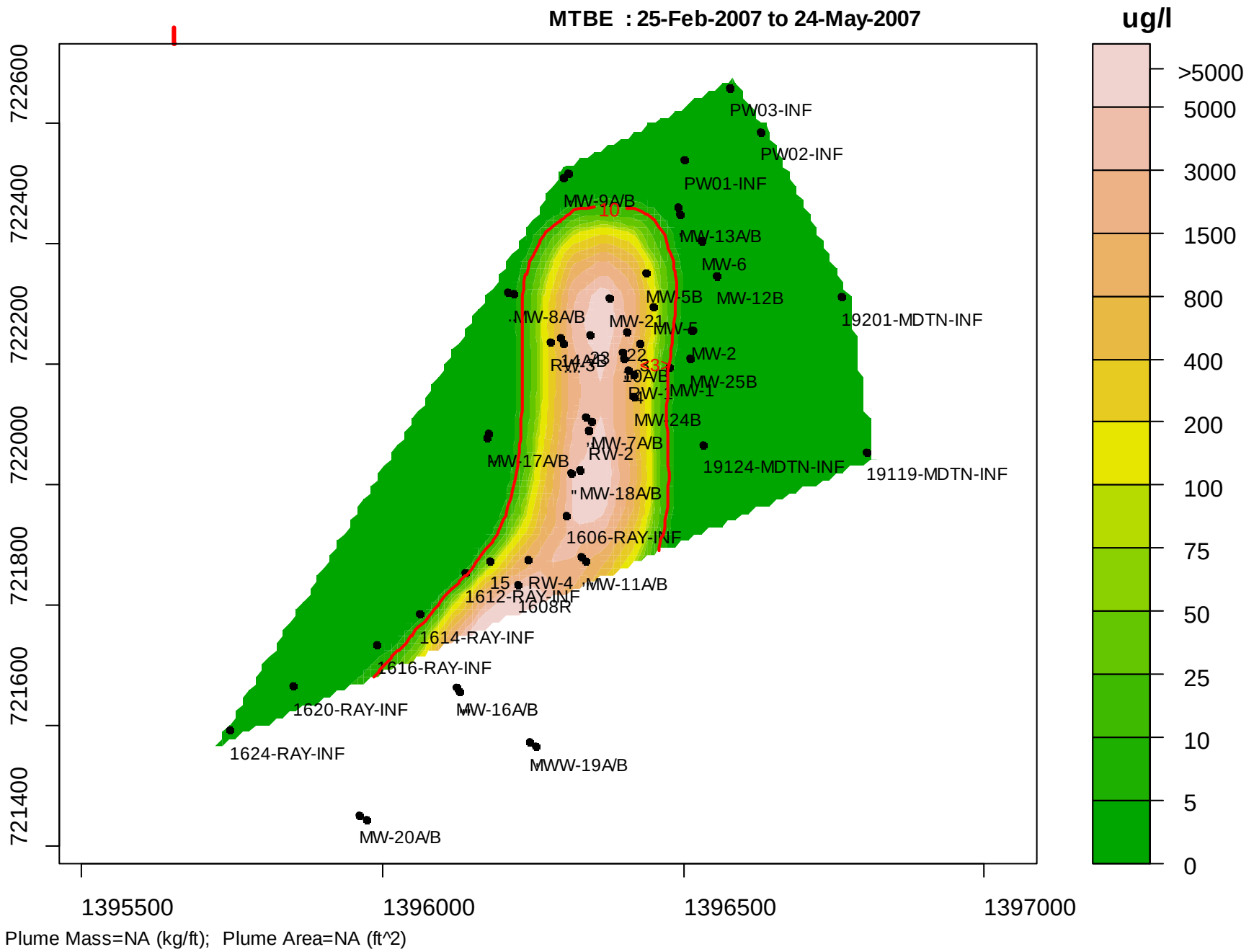
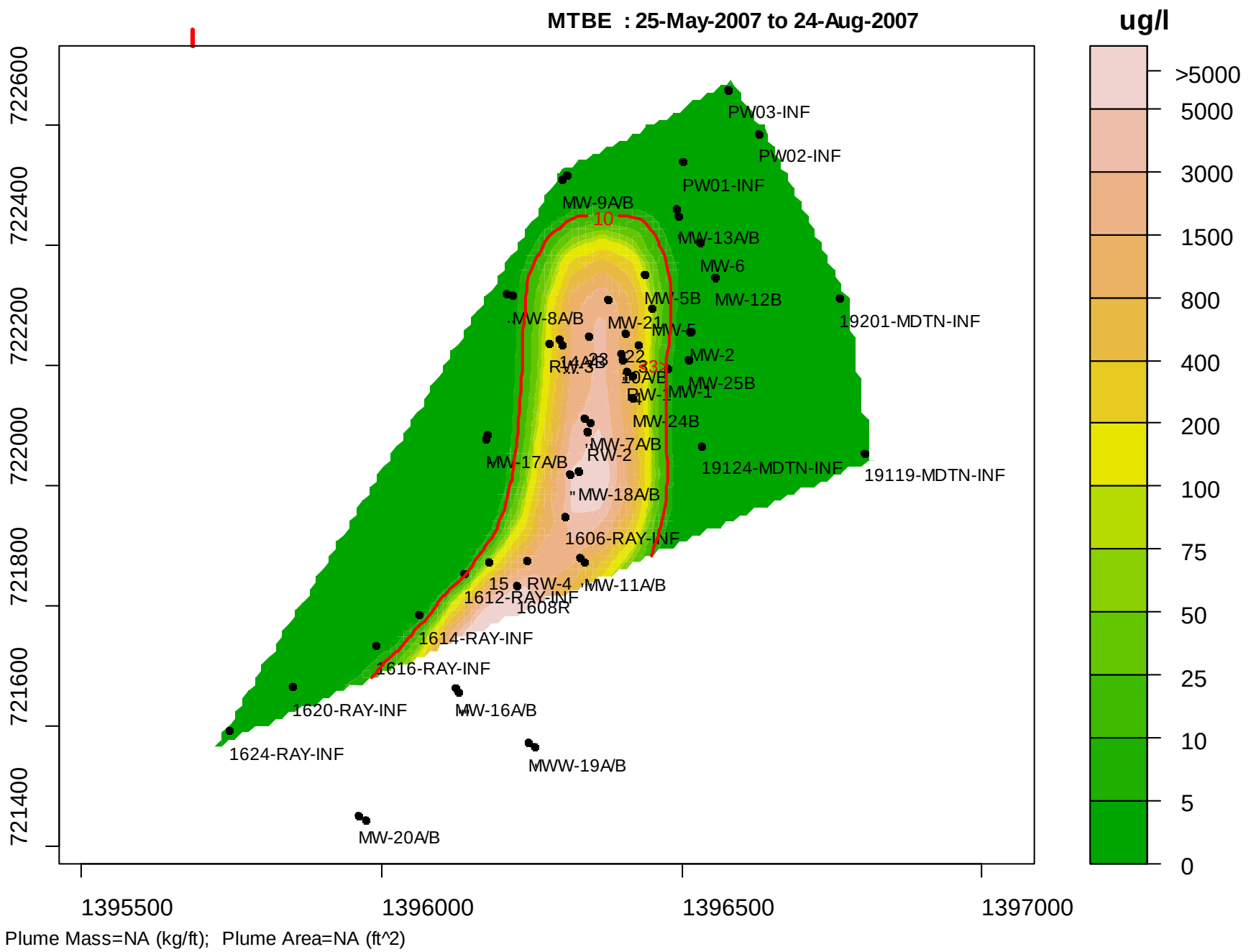


Plume Mass=NA (kg/ft); Plume Area=NA (ft^2)



Plume Mass=NA (kg/ft); Plume Area=NA (ft^2)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PW01-INF
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MW-5B
MW-12B
MW-8A/B
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MW-7A/B
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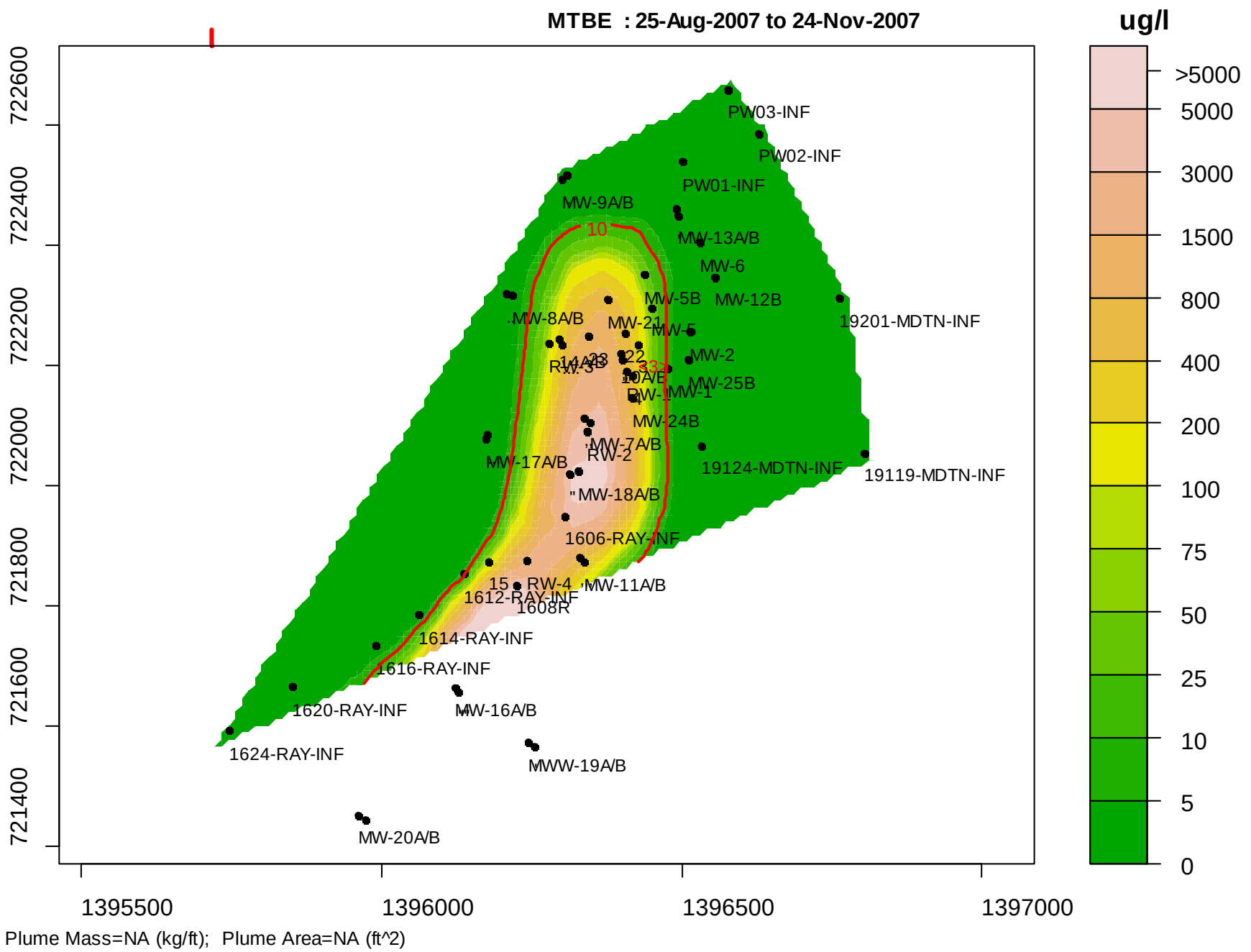
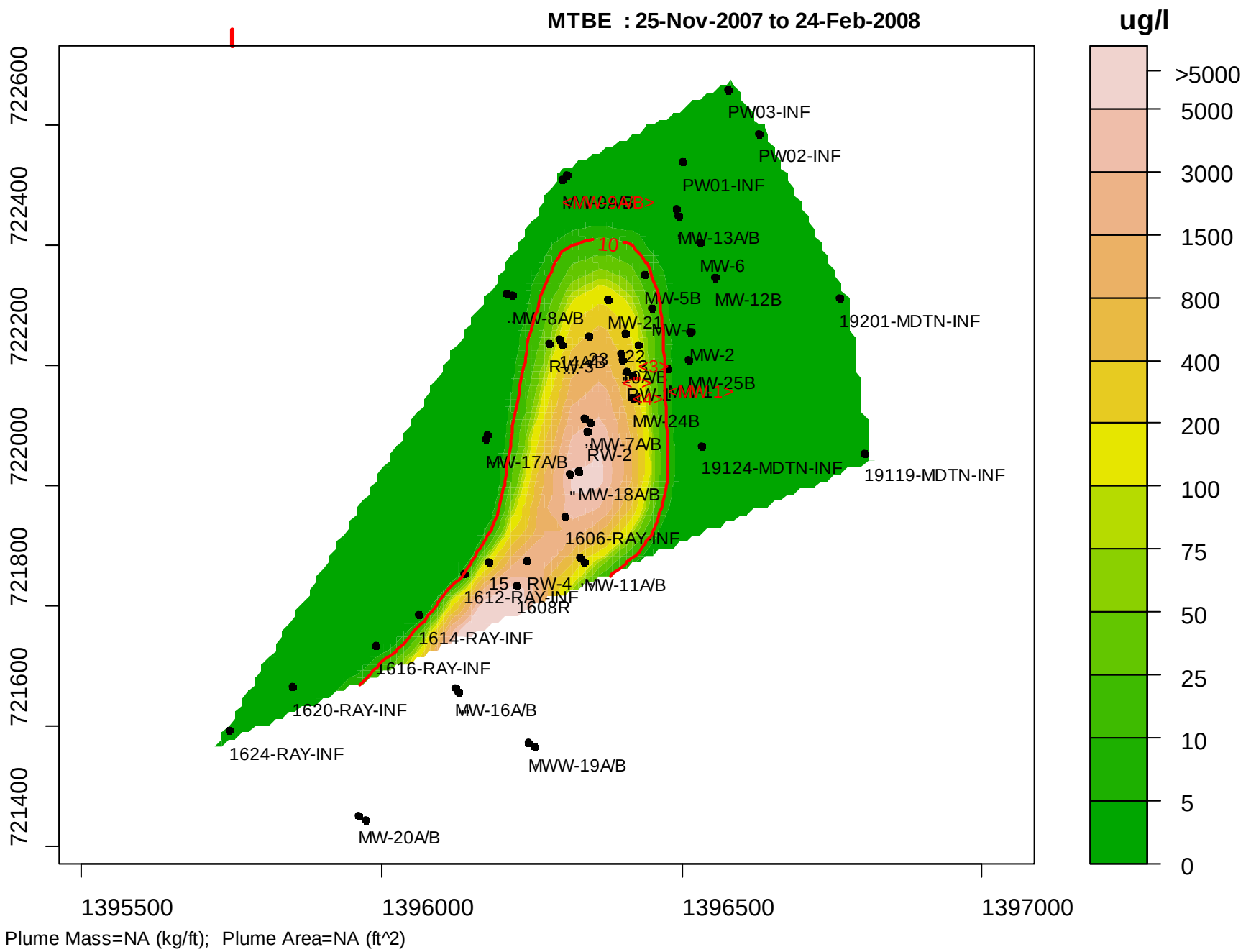


Plume Mass=NA (kg/ft); Plume Area=NA (ft^2)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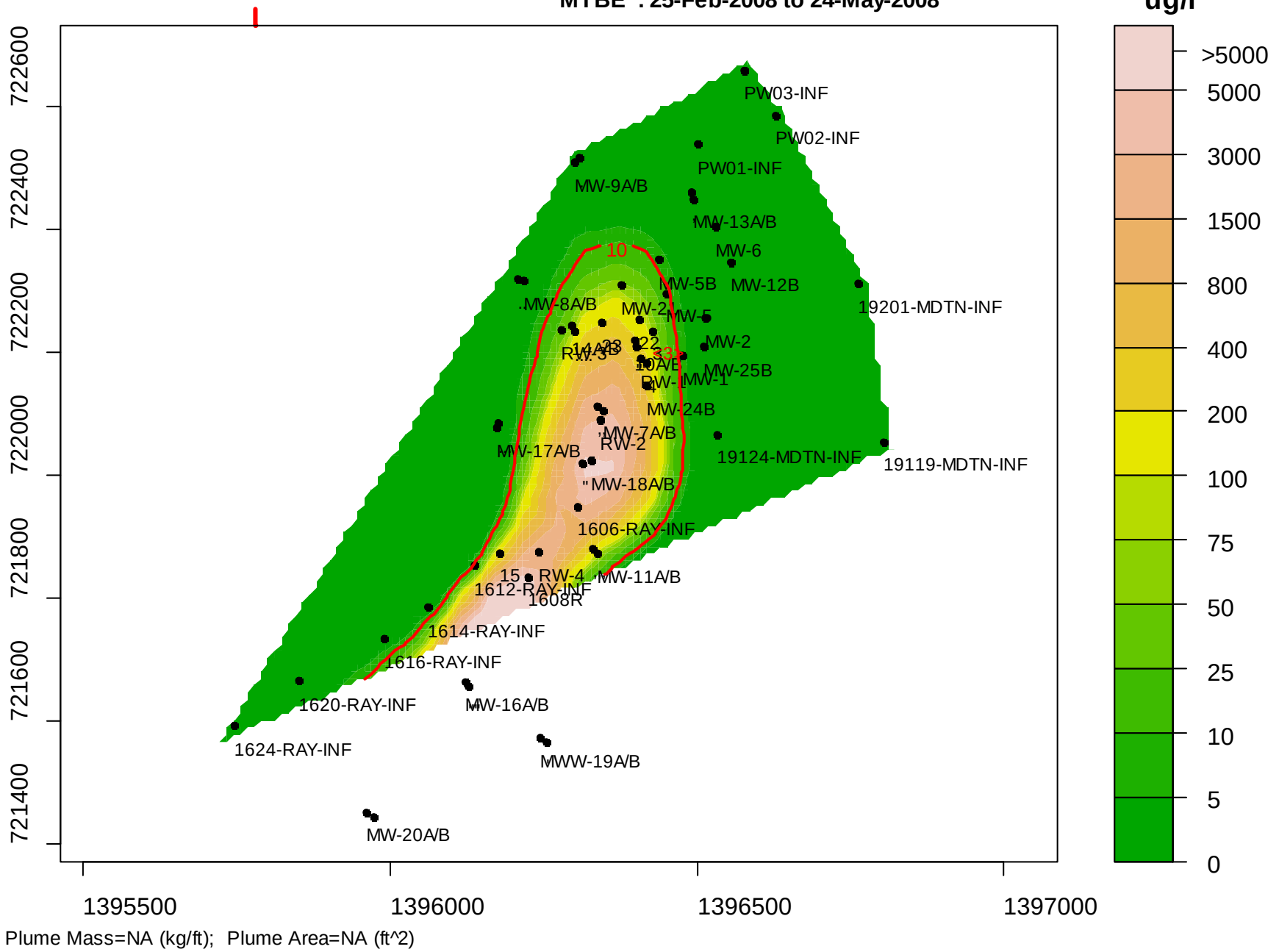
Plume Mass=NA (kg/ft); Plume Area=NA (ft^2)



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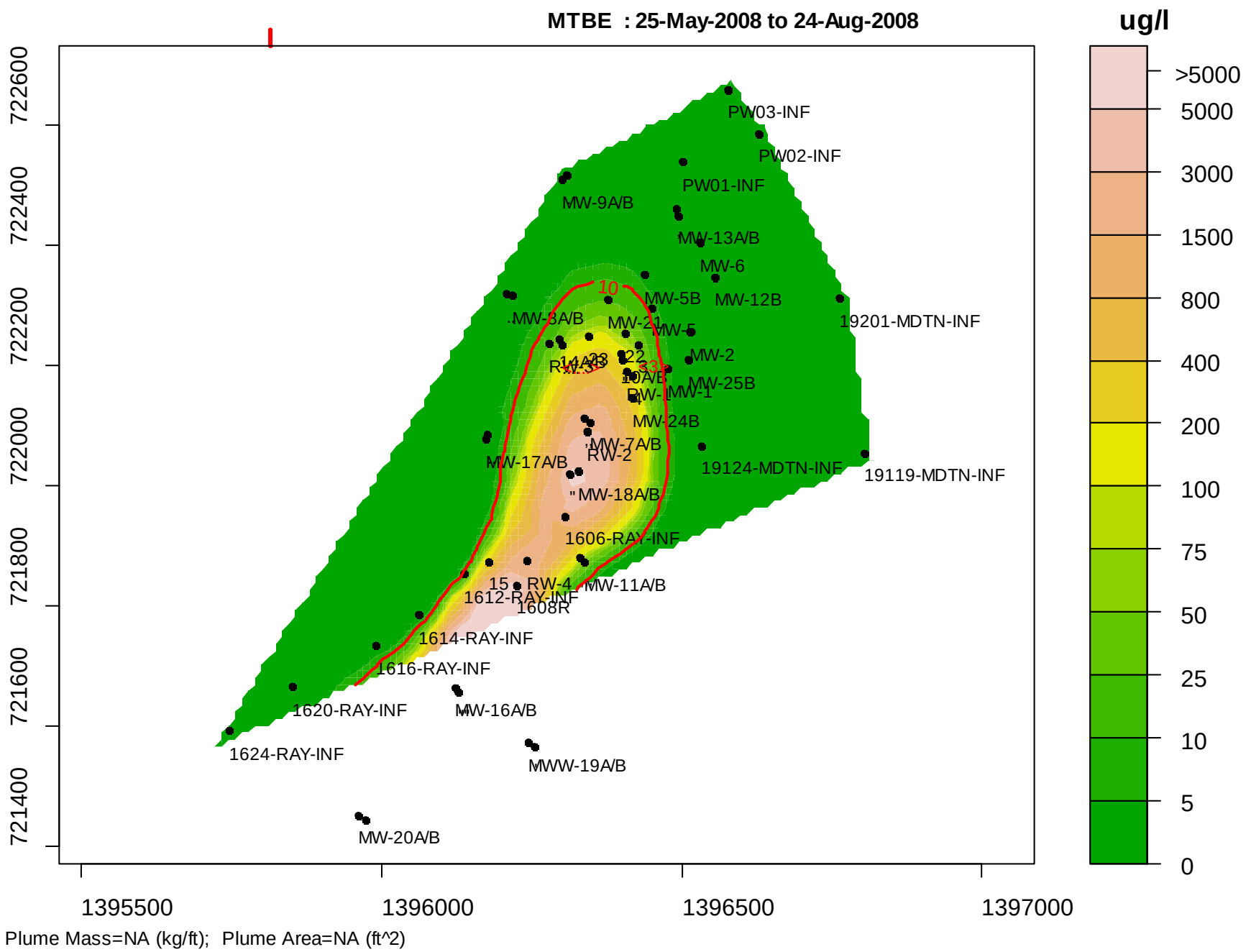
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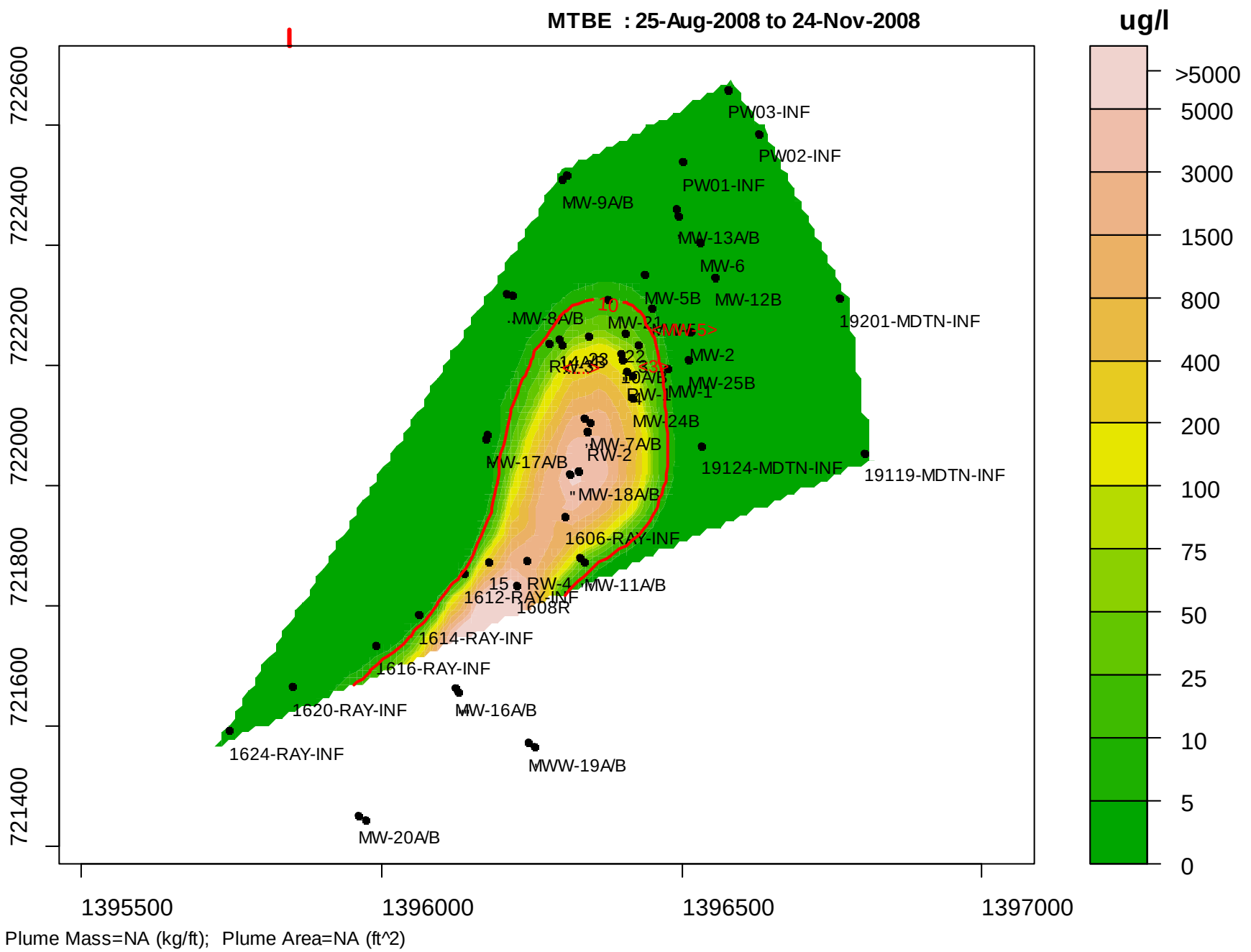
MWW-19A/B
MW-20A/B
10
Plume Mass=NA (kg/ft); Plume Area=NA (ft^2)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MW-21
19201-MDTN-INF
MW-2
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RW-2
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19124-MDTN-INF
19119-MDTN-INF
MW-18A/B
1606-RAY-INF
RW-4
MW-11A/B
1612-RAY-INF
1608R
1614-RAY-INF
1616-RAY-INF
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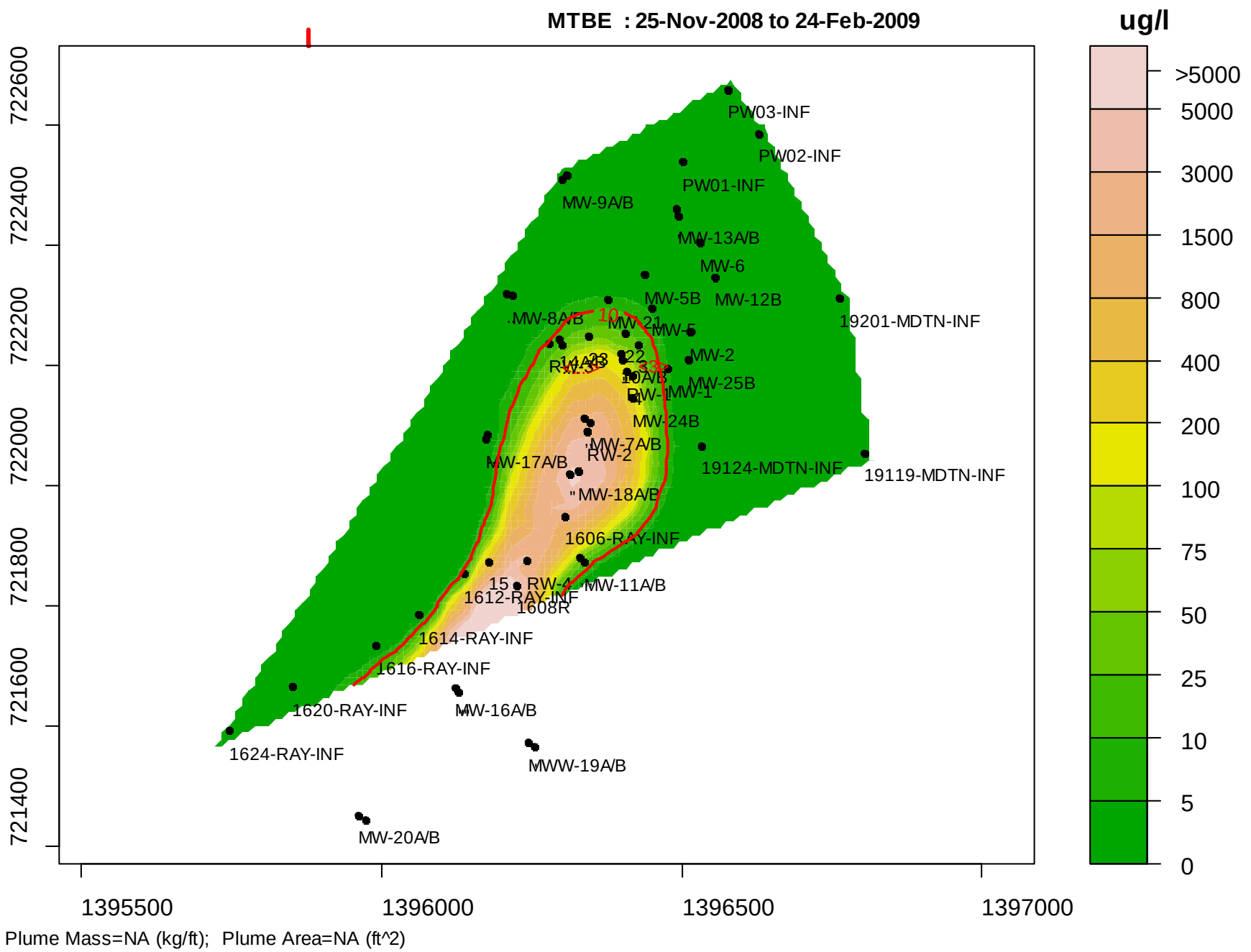
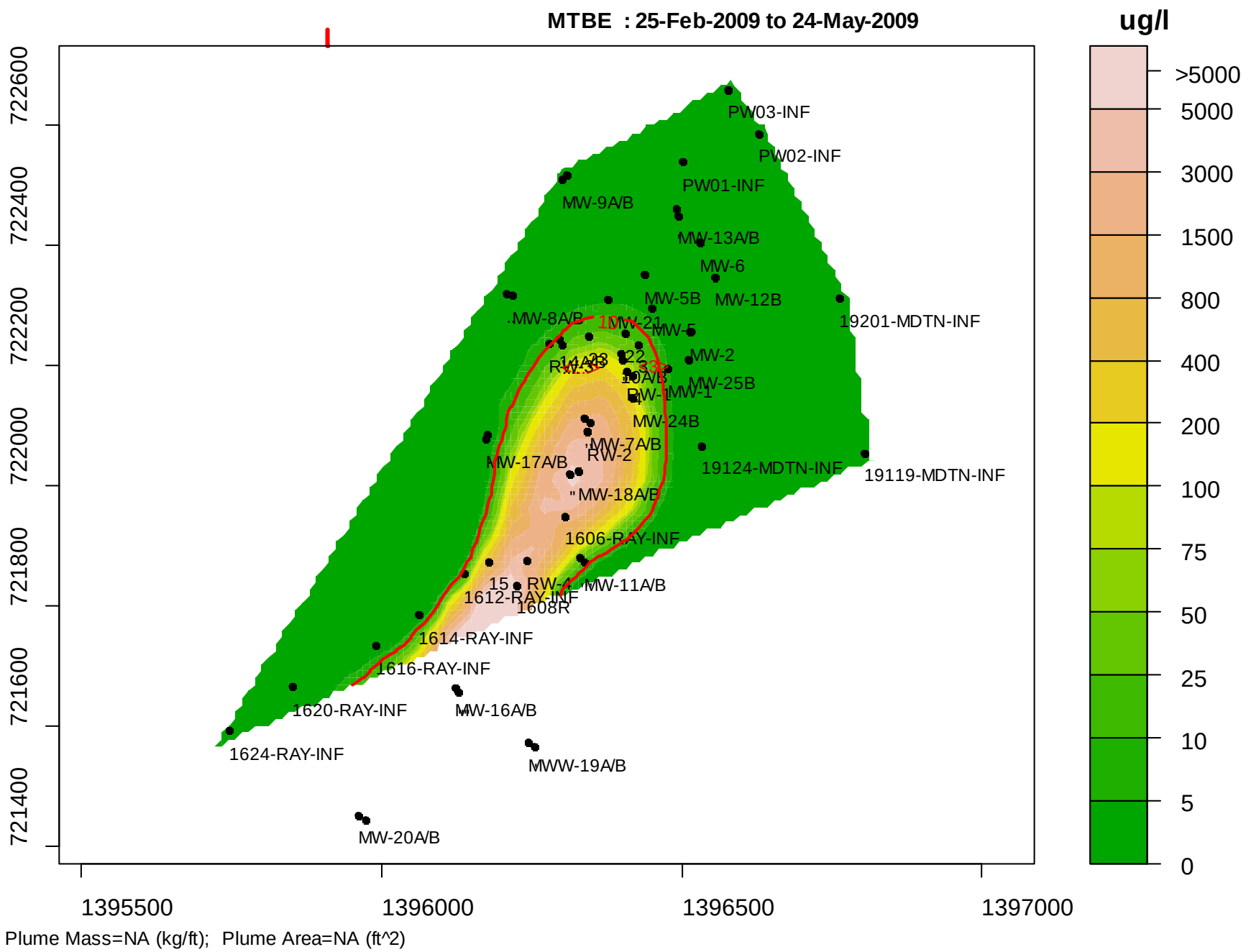
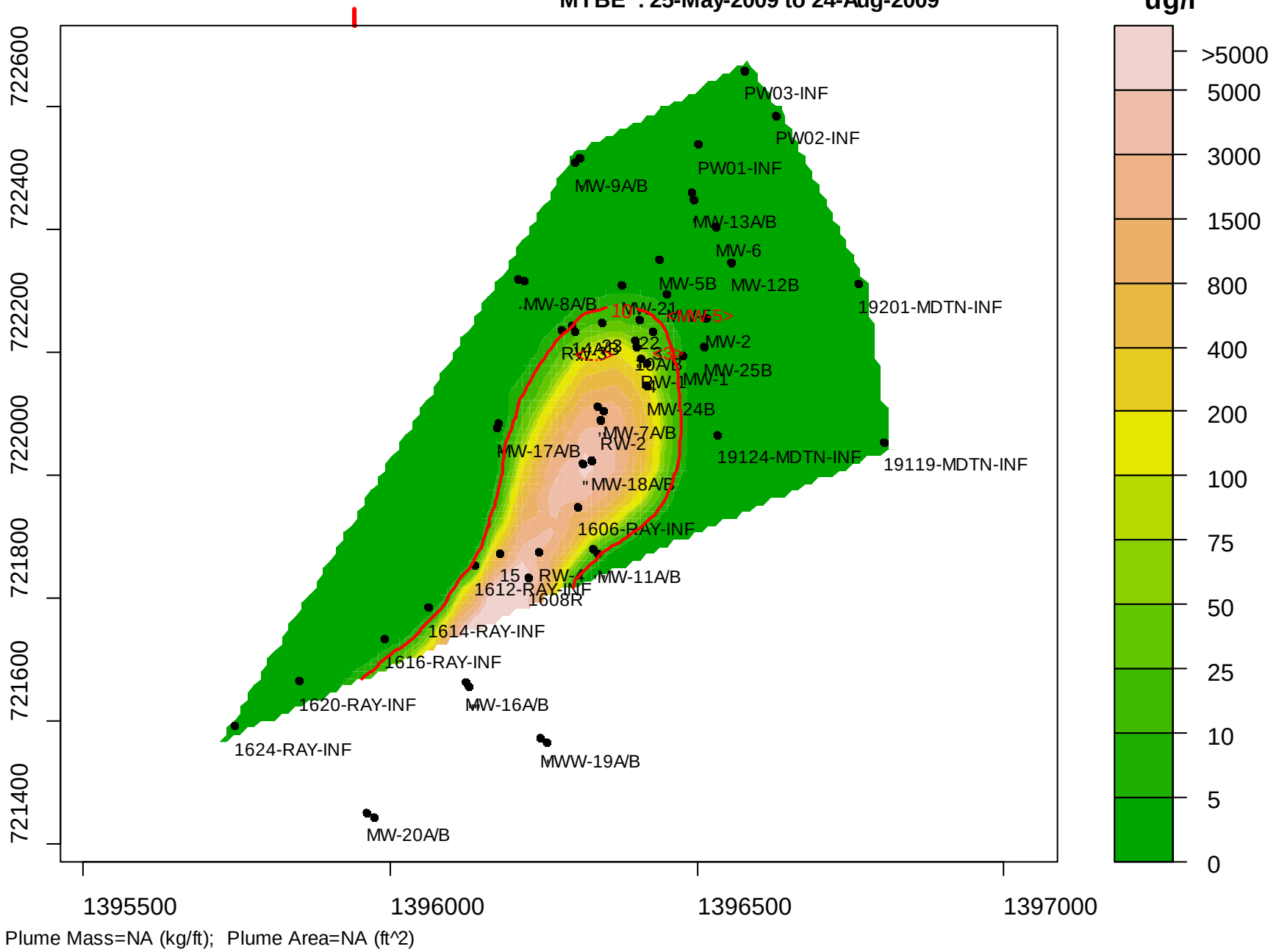
MW-20A/B
Plume Mass=NA (kg/ft); Plume Area=NA (ft^2)



Plume Mass=NA (kg/ft); Plume Area=NA (ft^2)



Plume Mass=NA (kg/ft); Plume Area=NA (ft^2)


MTBE : 25-May-2009 to 24-Aug-2009
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PW03-INF
PW02-INF
PW01-INF
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MW-13A/B
MW-6
MW-5B
MW-12B
MW-8A/B
MW-21
19201-MDTN-INF
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MW-1
MW-24B
MW-7A/B
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1612-RAY-INF
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1614-RAY-INF
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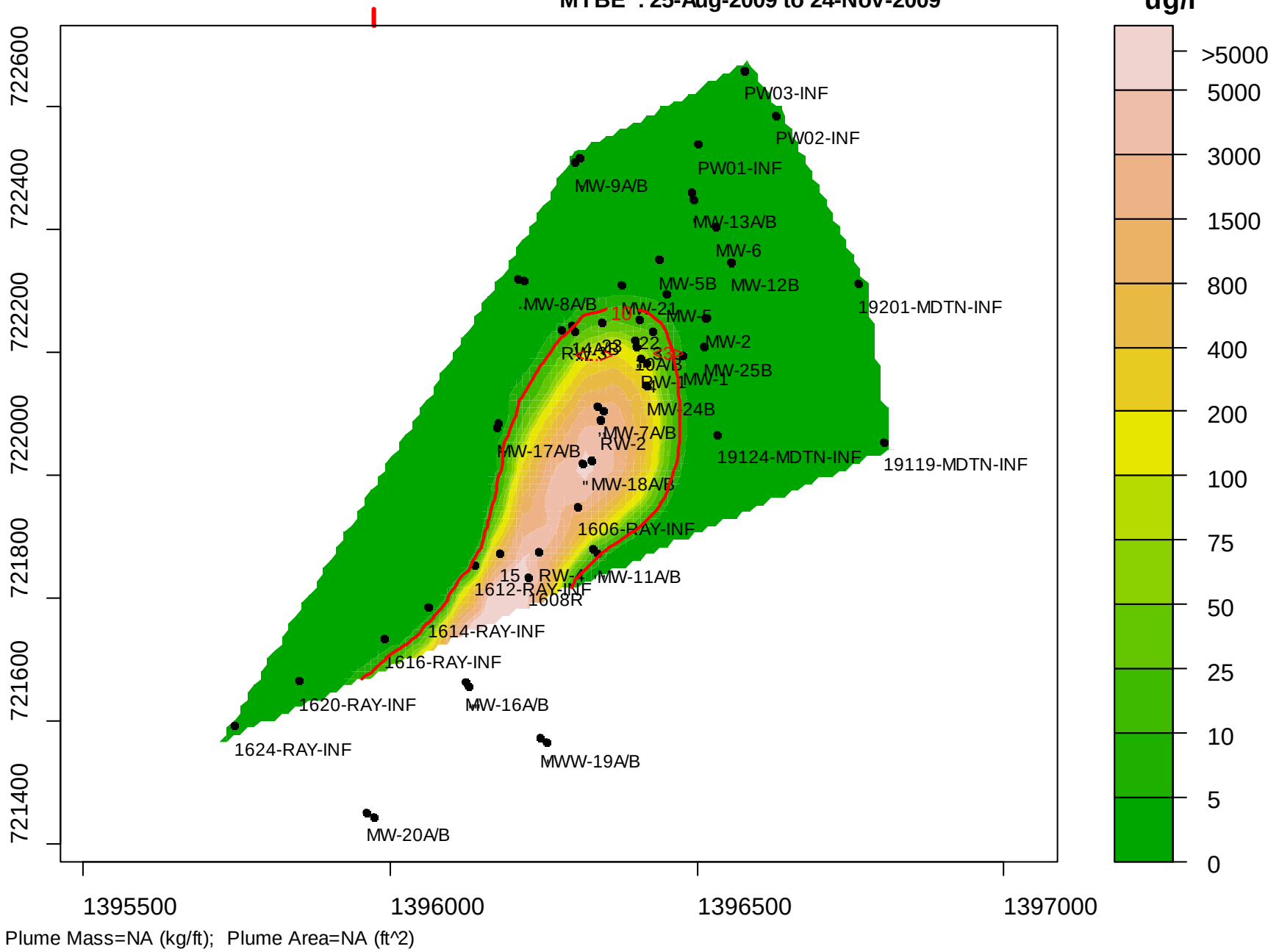
MW-20A/B
Plume Mass=NA (kg/ft); Plume Area=NA (ft^2)



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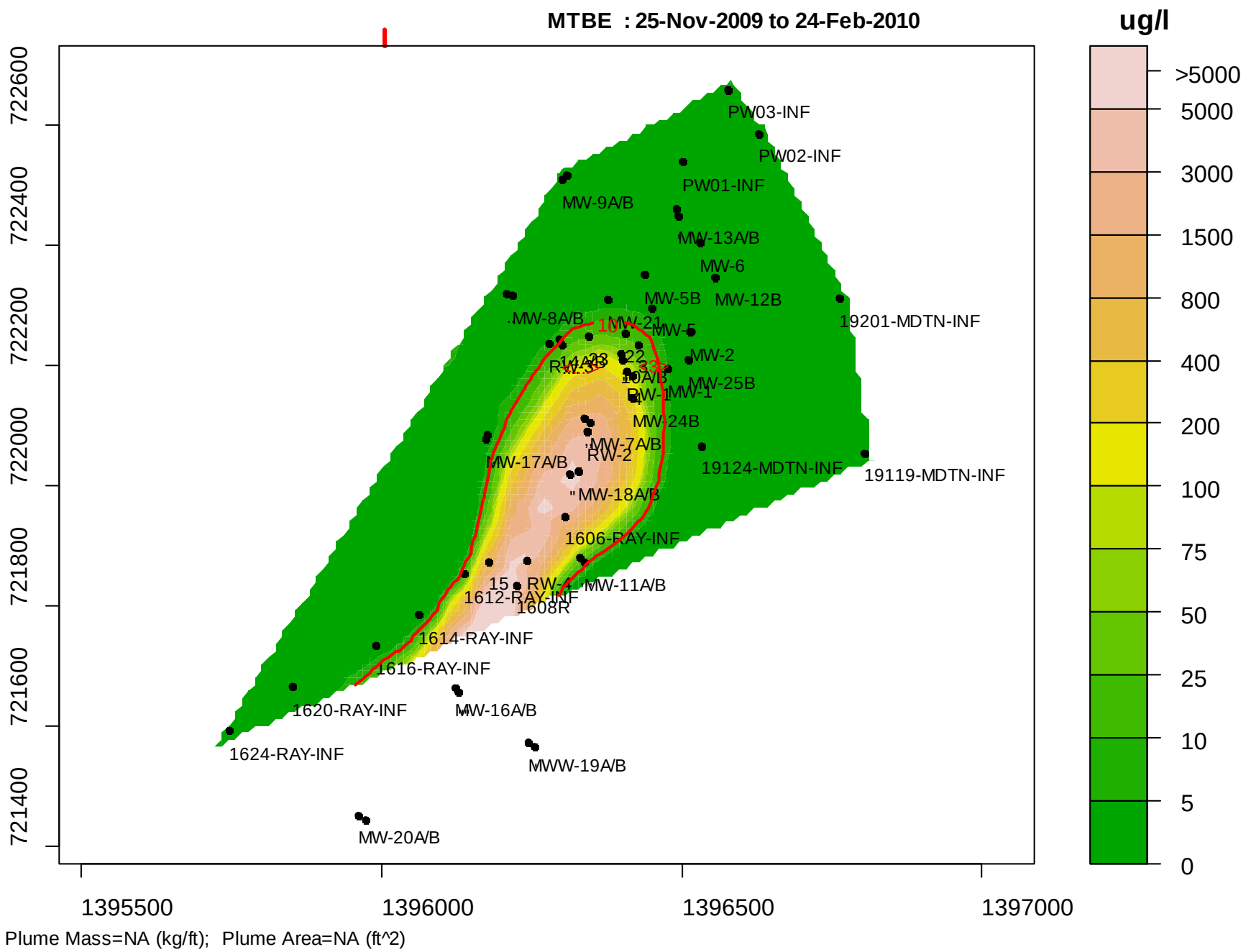
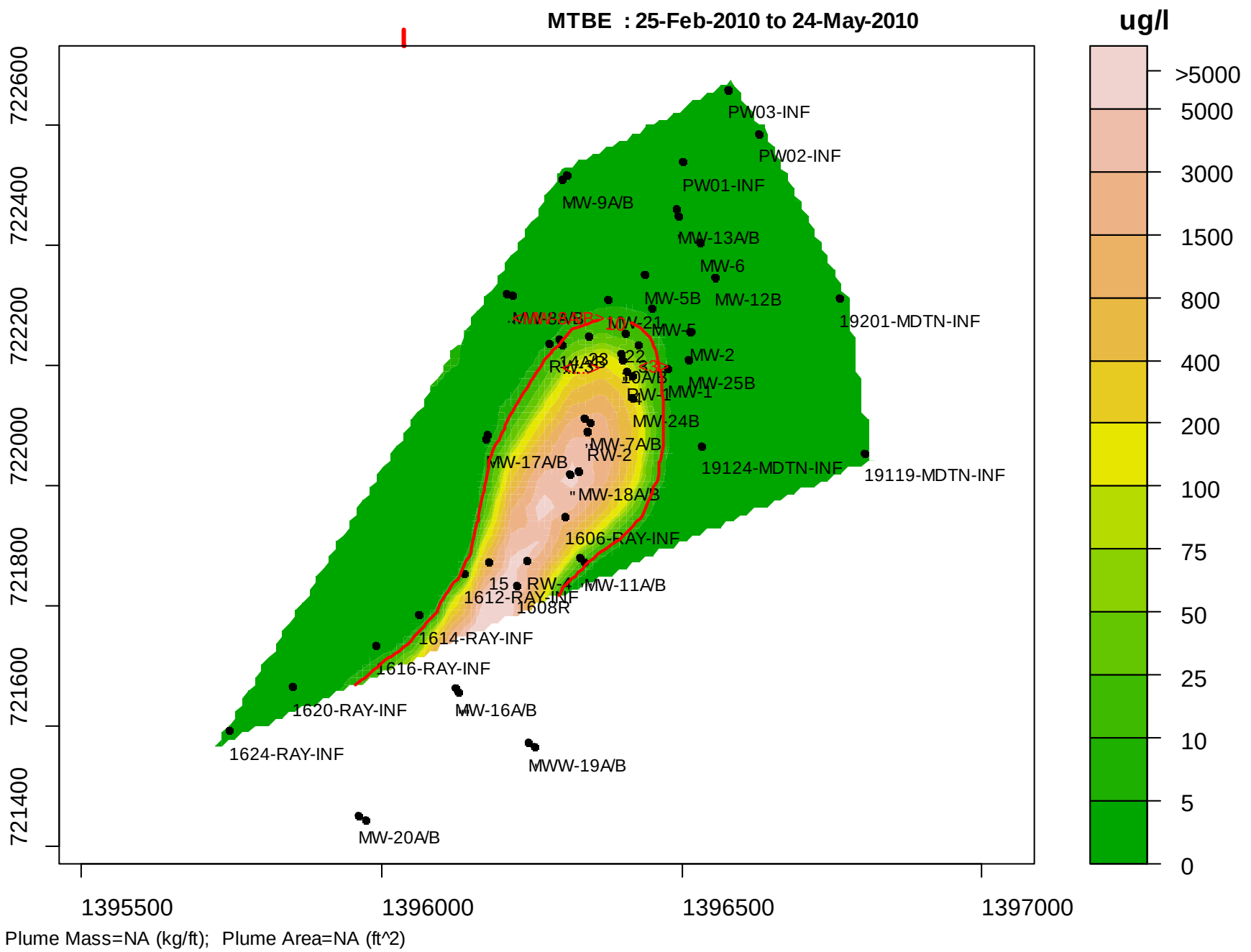
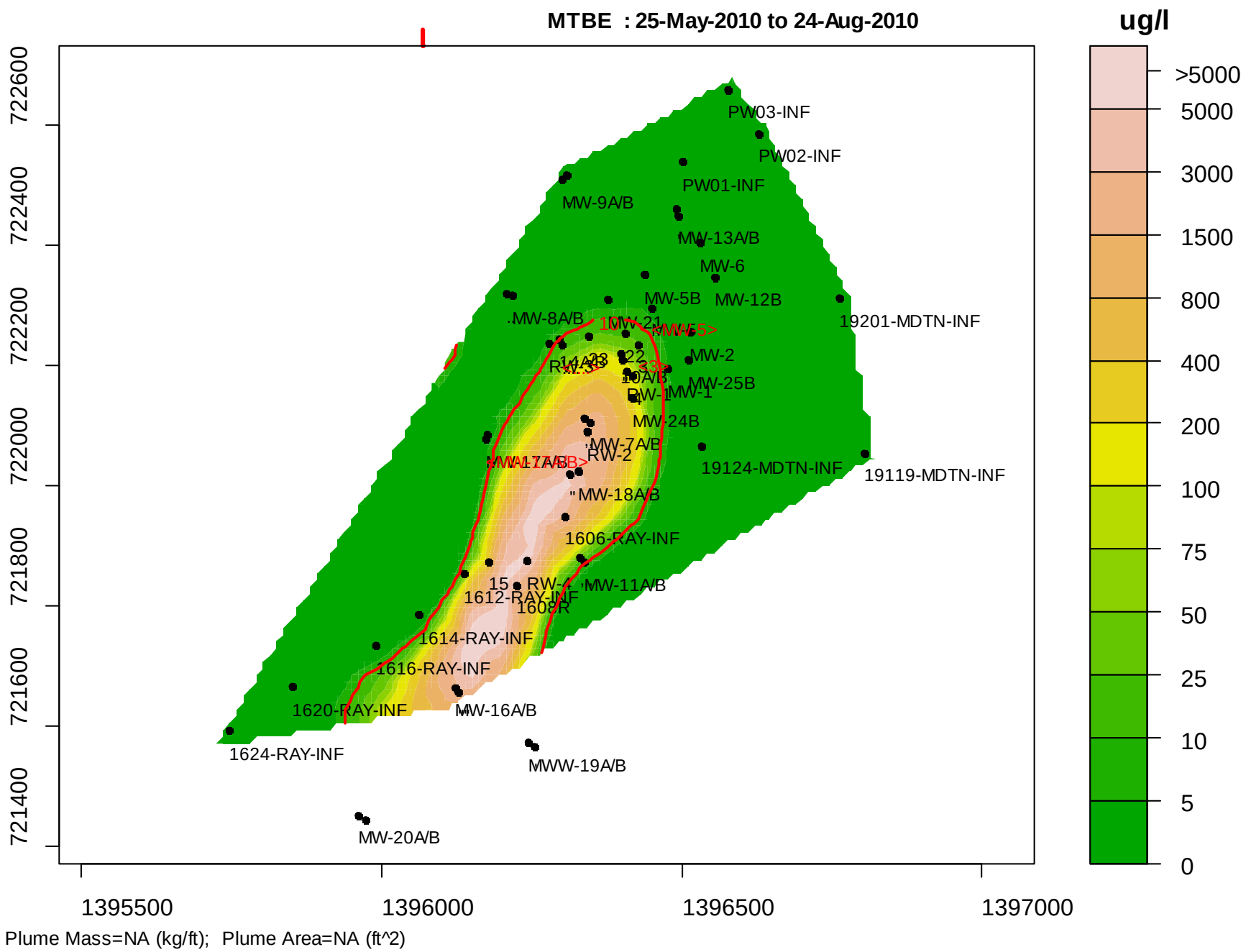


Plume Mass=NA (kg/ft); Plume Area=NA (ft^2)



Plume Mass=NA (kg/ft); Plume Area=NA (ft^2)


MTBE : 25-May-2010 to 24-Aug-2010
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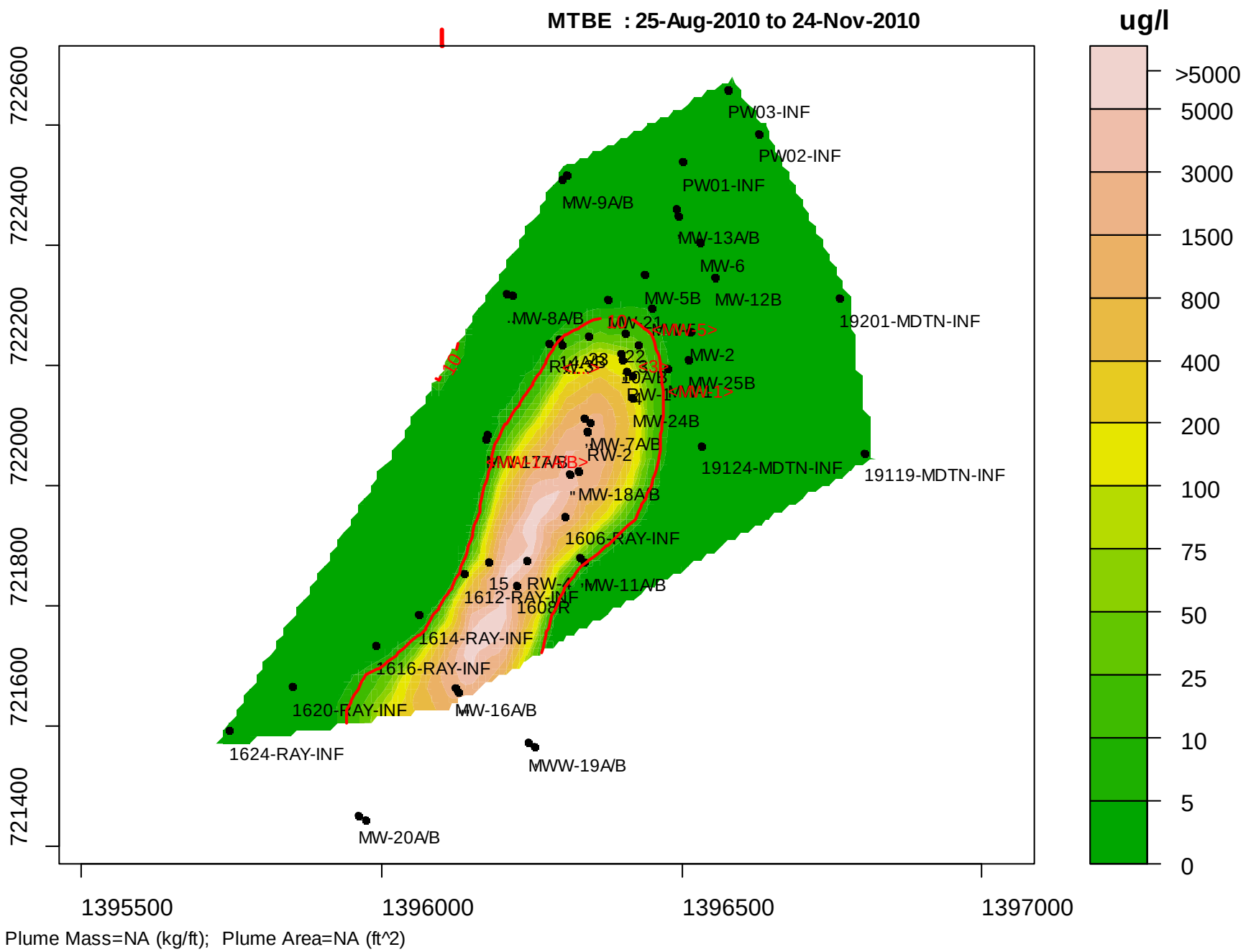
MW-20A/B
Plume Mass=NA (kg/ft); Plume Area=NA (ft^2)



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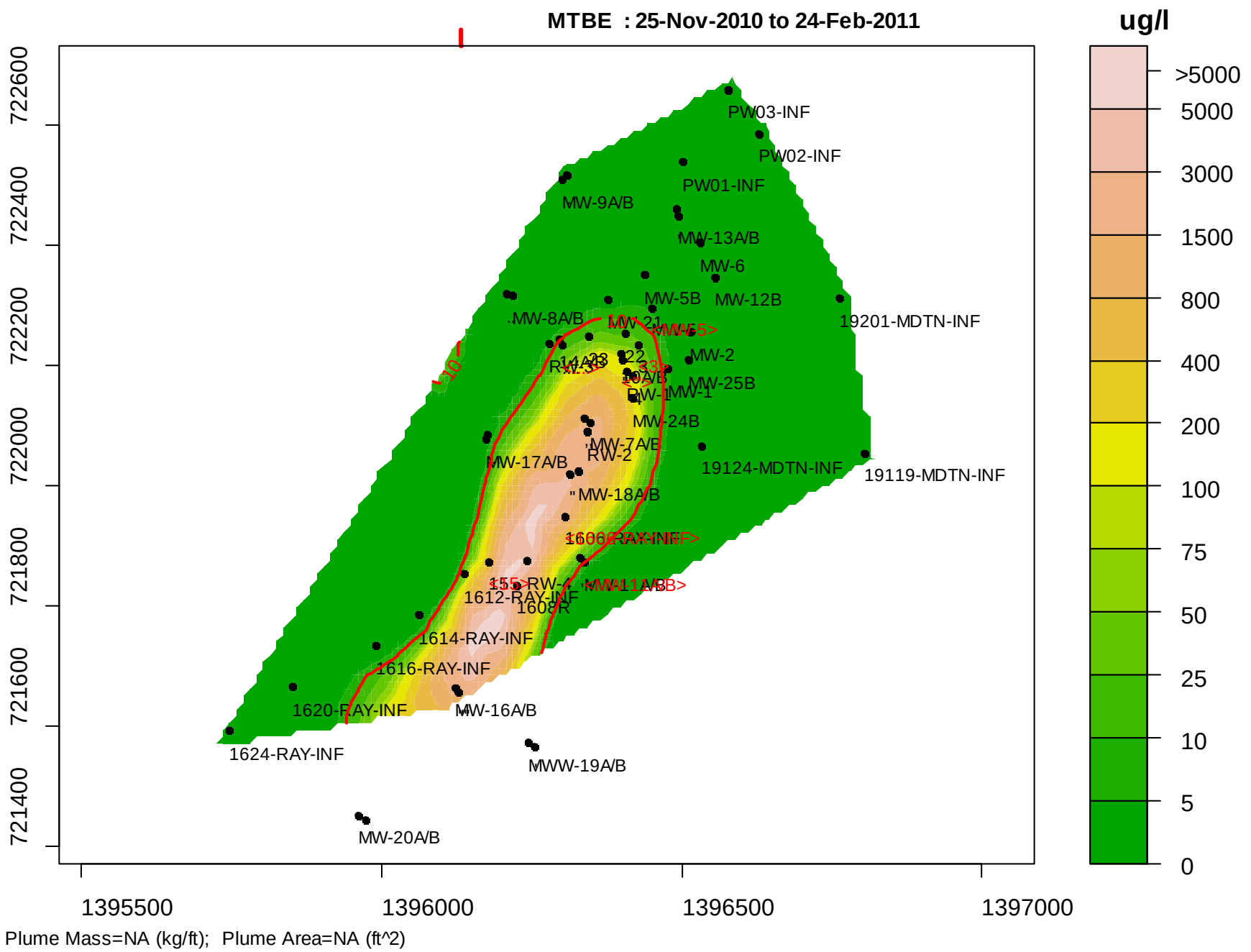
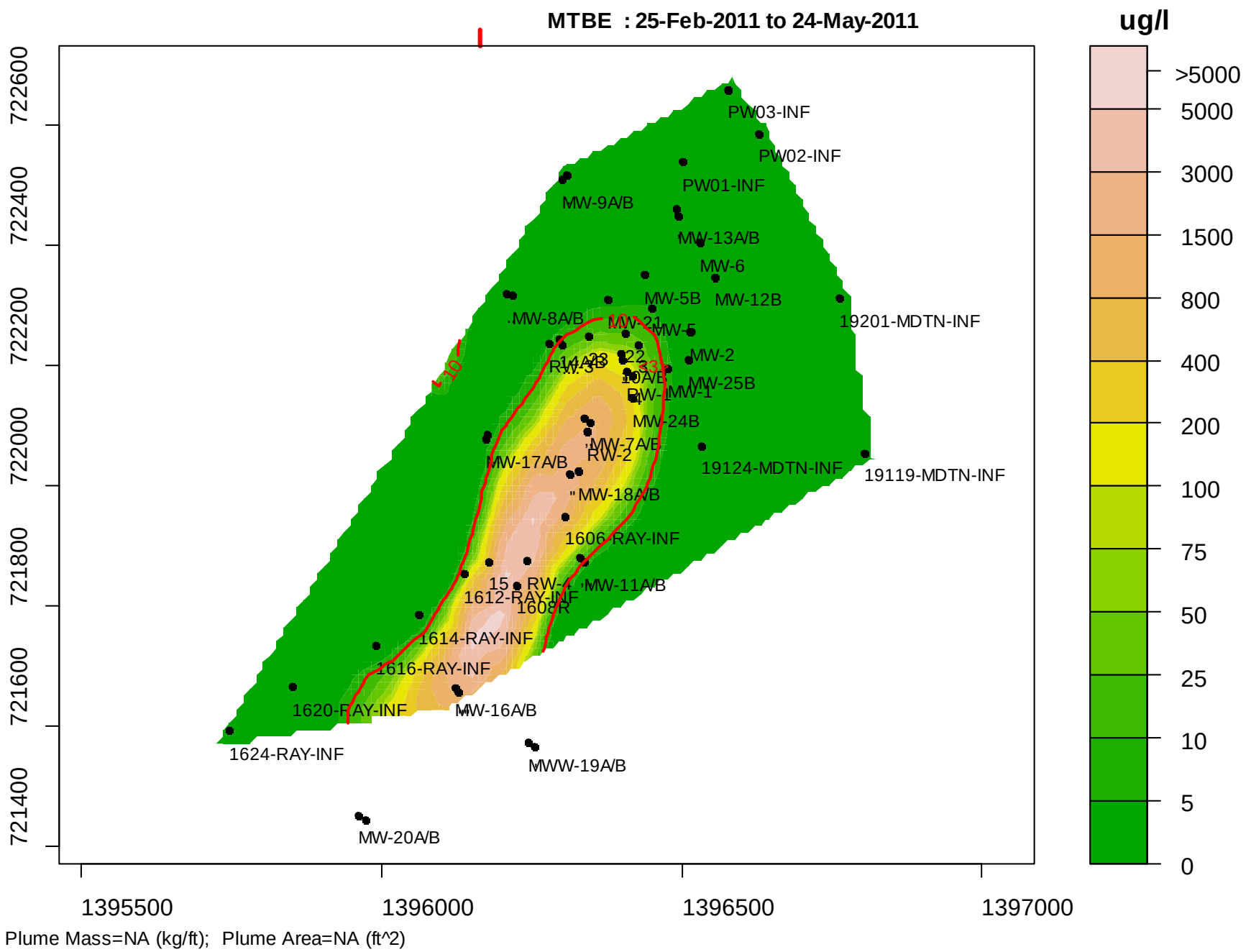
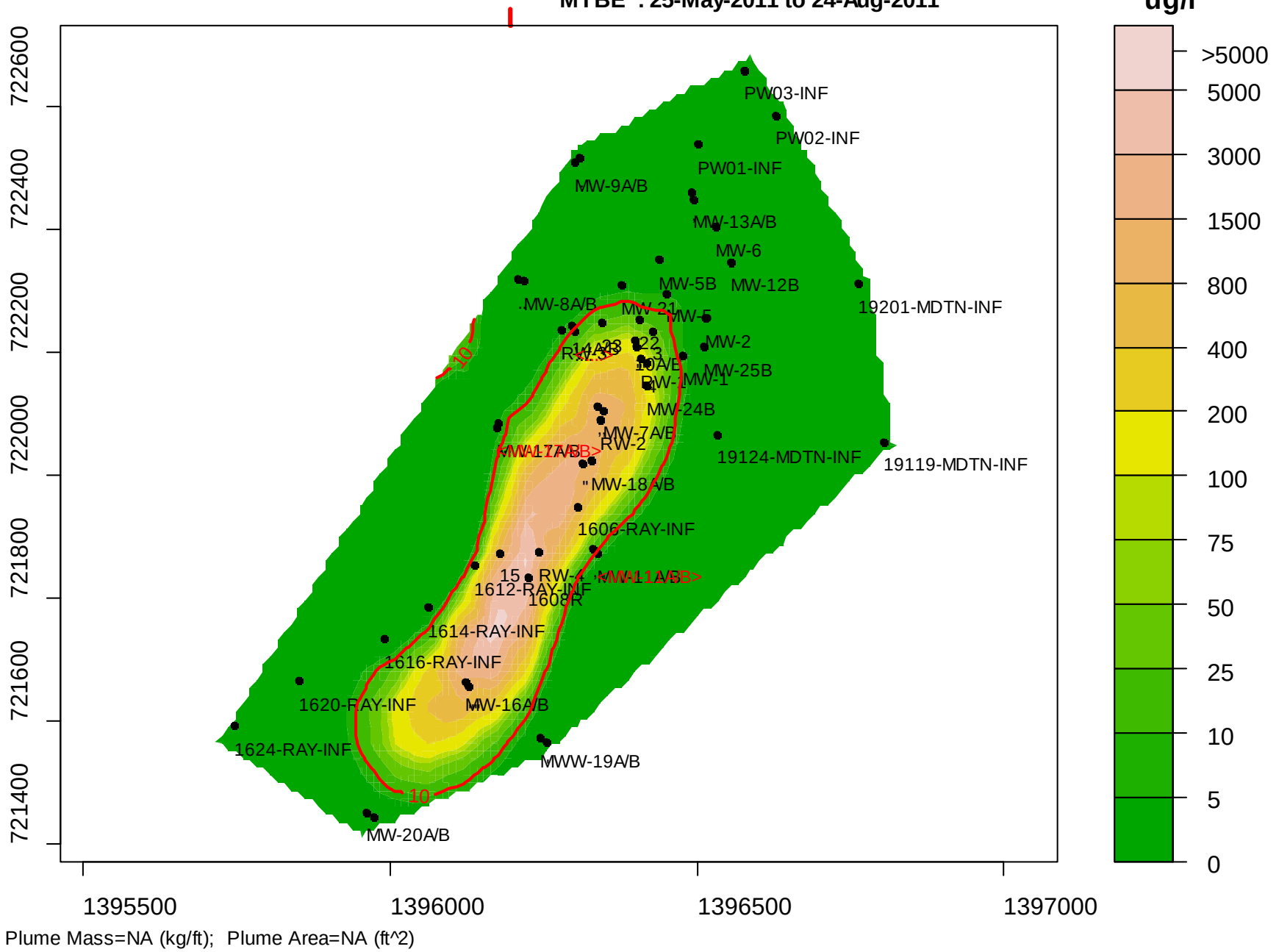


Plume Mass=NA (kg/ft); Plume Area=NA (ft^2)



Plume Mass=NA (kg/ft); Plume Area=NA (ft^2)


MTBE : 25-May-2011 to 24-Aug-2011
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PW03-INF
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MW-8A/B
MW-21
MW-5
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19119-MDTN-INF
MW-18A/B
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1624-RAY-INF
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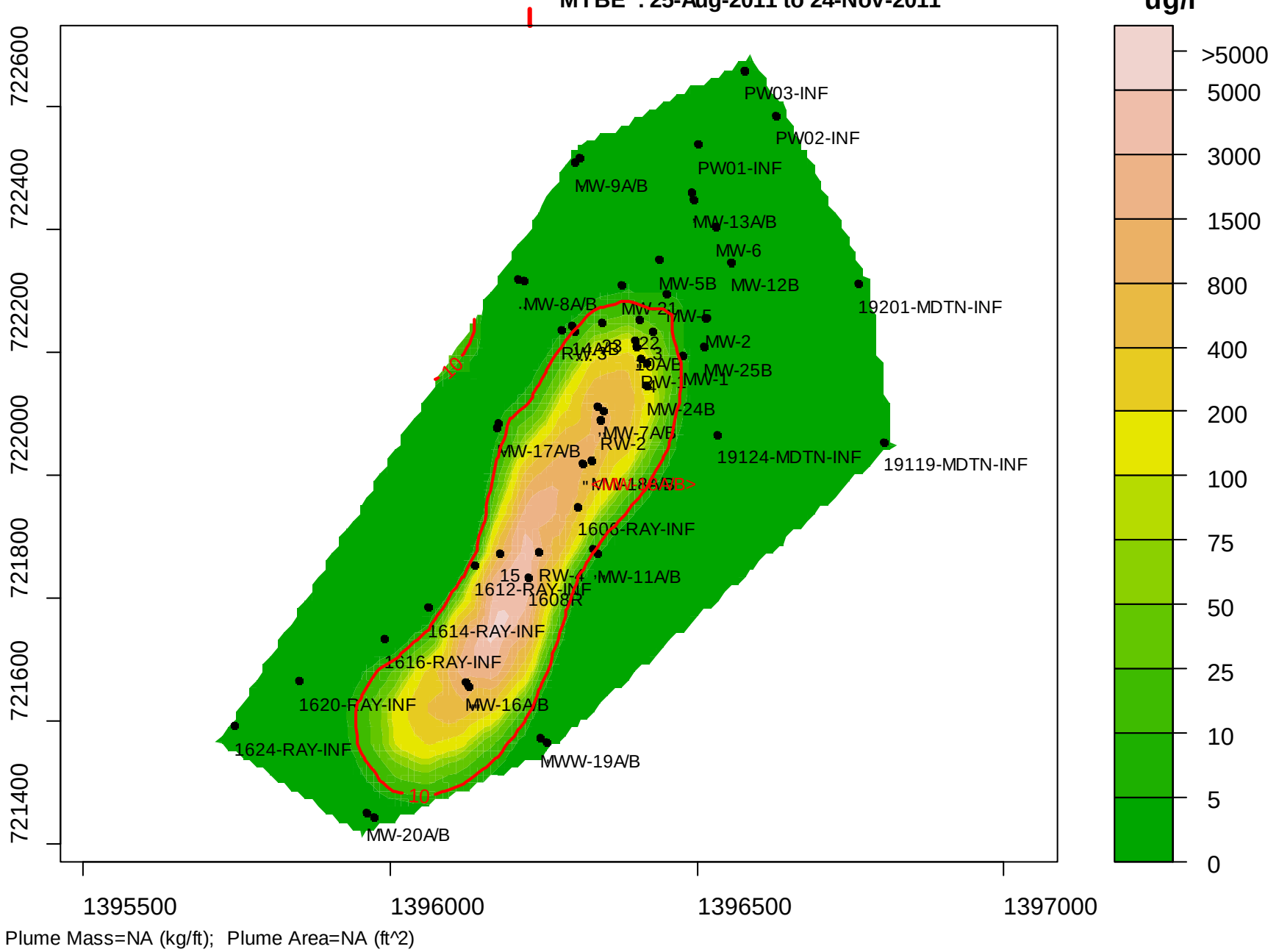
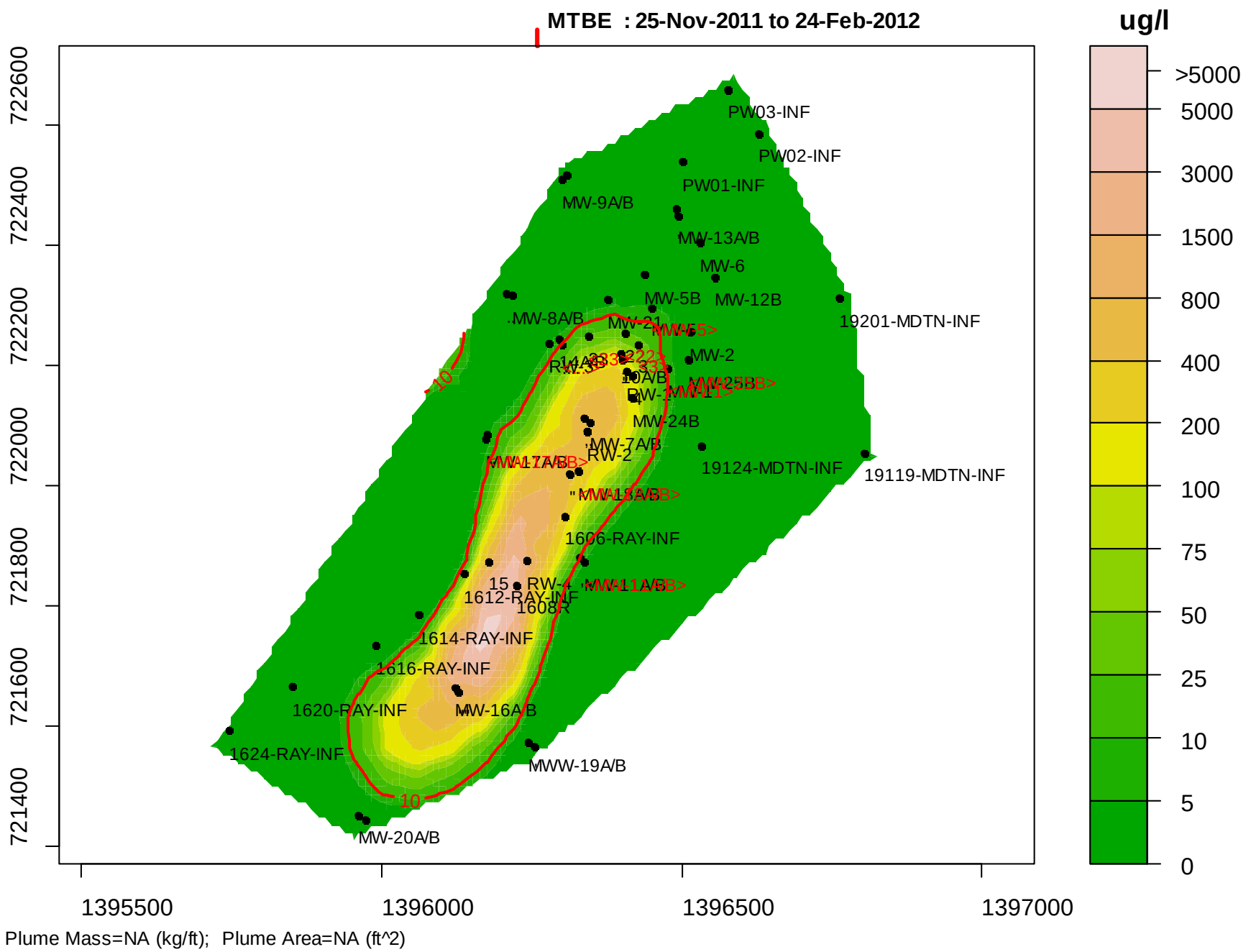
MW-20A/B
Plume Mass=NA (kg/ft); Plume Area=NA (ft^2)



Plume Mass=NA (kg/ft); Plume Area=NA (ft^2)


MTBE : 25-Nov-2011 to 24-Feb-2012
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19201-MDTN-INF
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19119-MDTN-INF
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1616-RAY-INF
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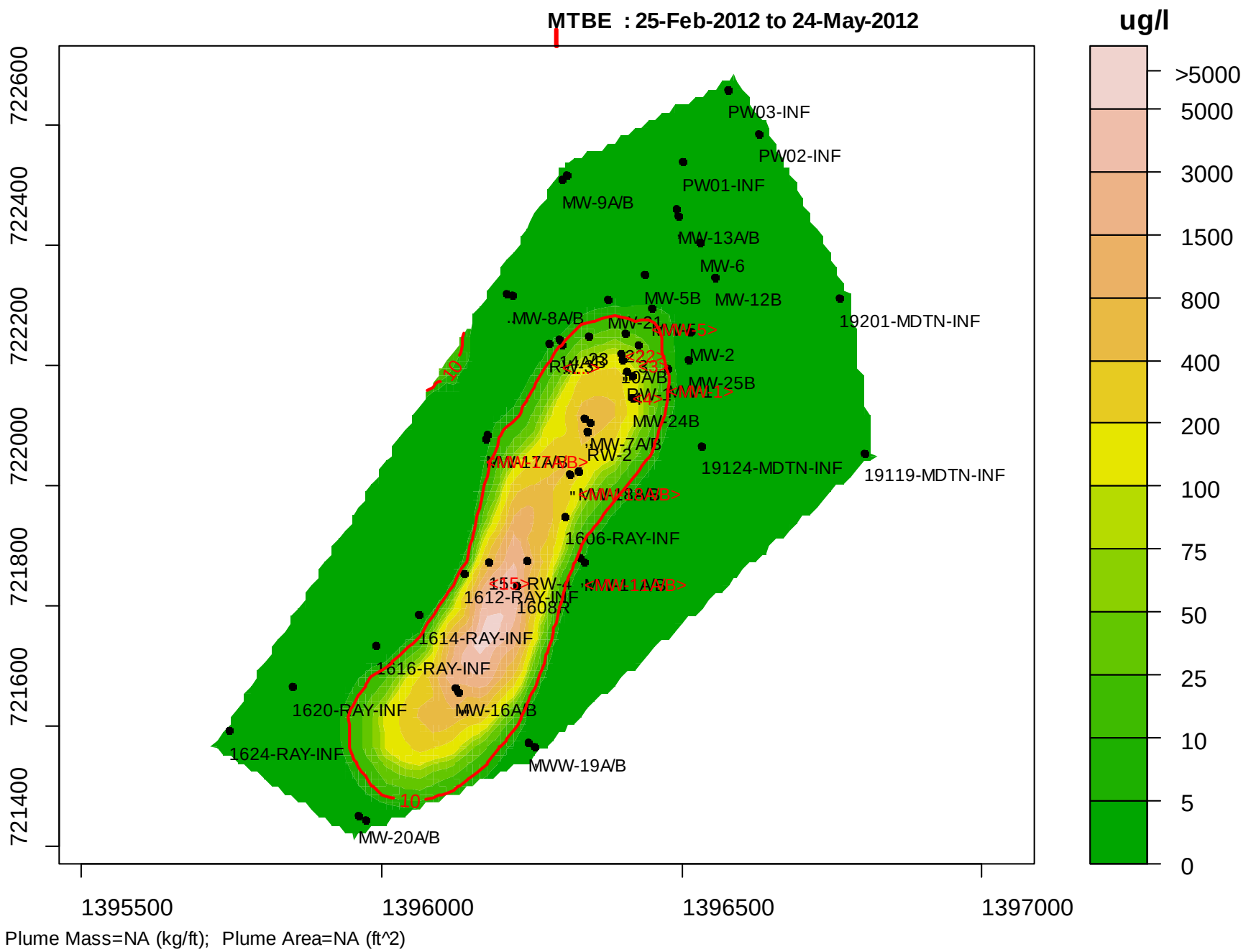
MW-20A/B
Plume Mass=NA (kg/ft); Plume Area=NA (ft^2)


MTBE : 25-Feb-2012 to 24-May-2012
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MW-5B
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1608R
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1616-RAY-INF
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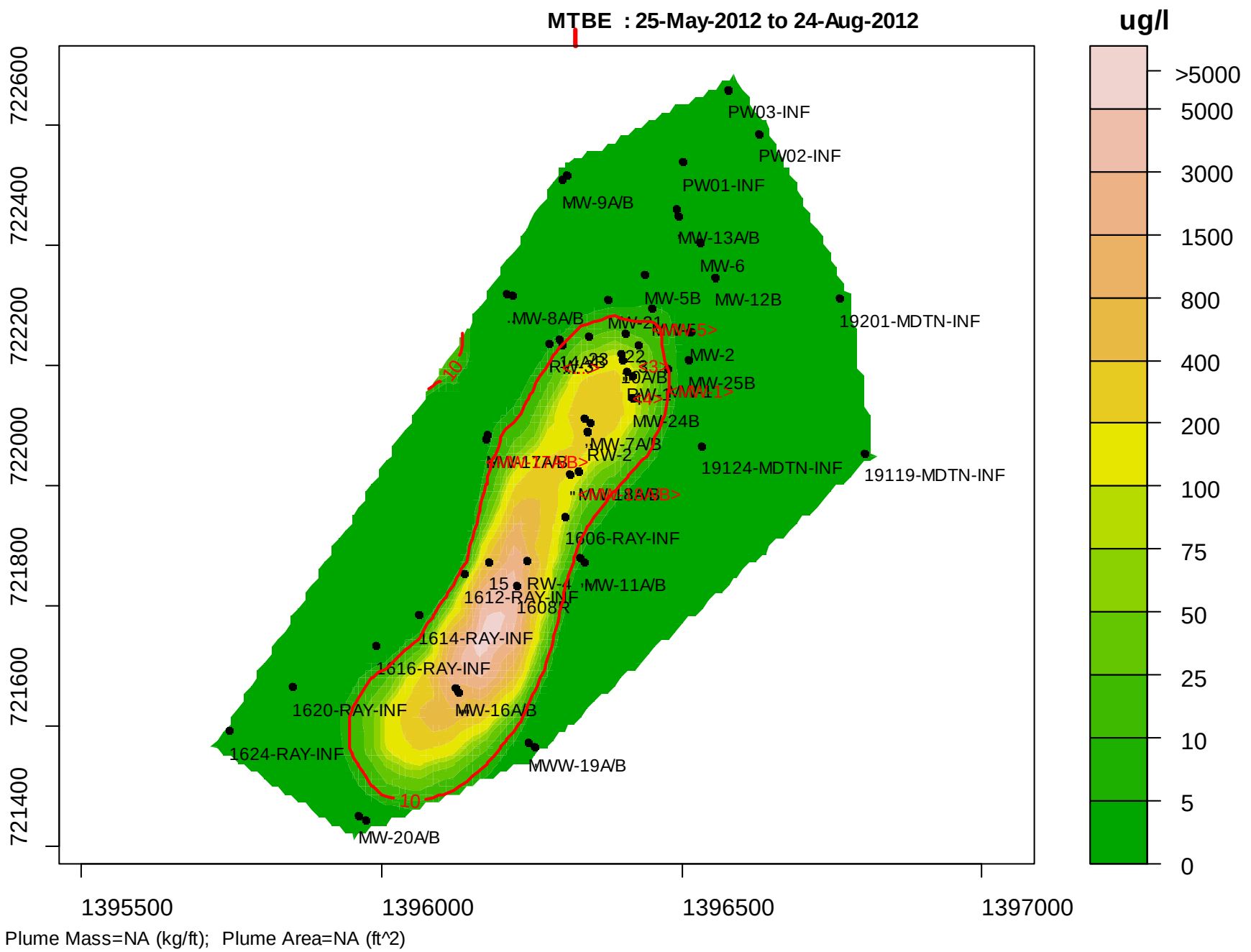
MWW-19A/B
MW-20A/B
Plume Mass=NA (kg/ft); Plume Area=NA (ft^2)


MTBE : 25-May-2012 to 24-Aug-2012
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1616-RAY-INF
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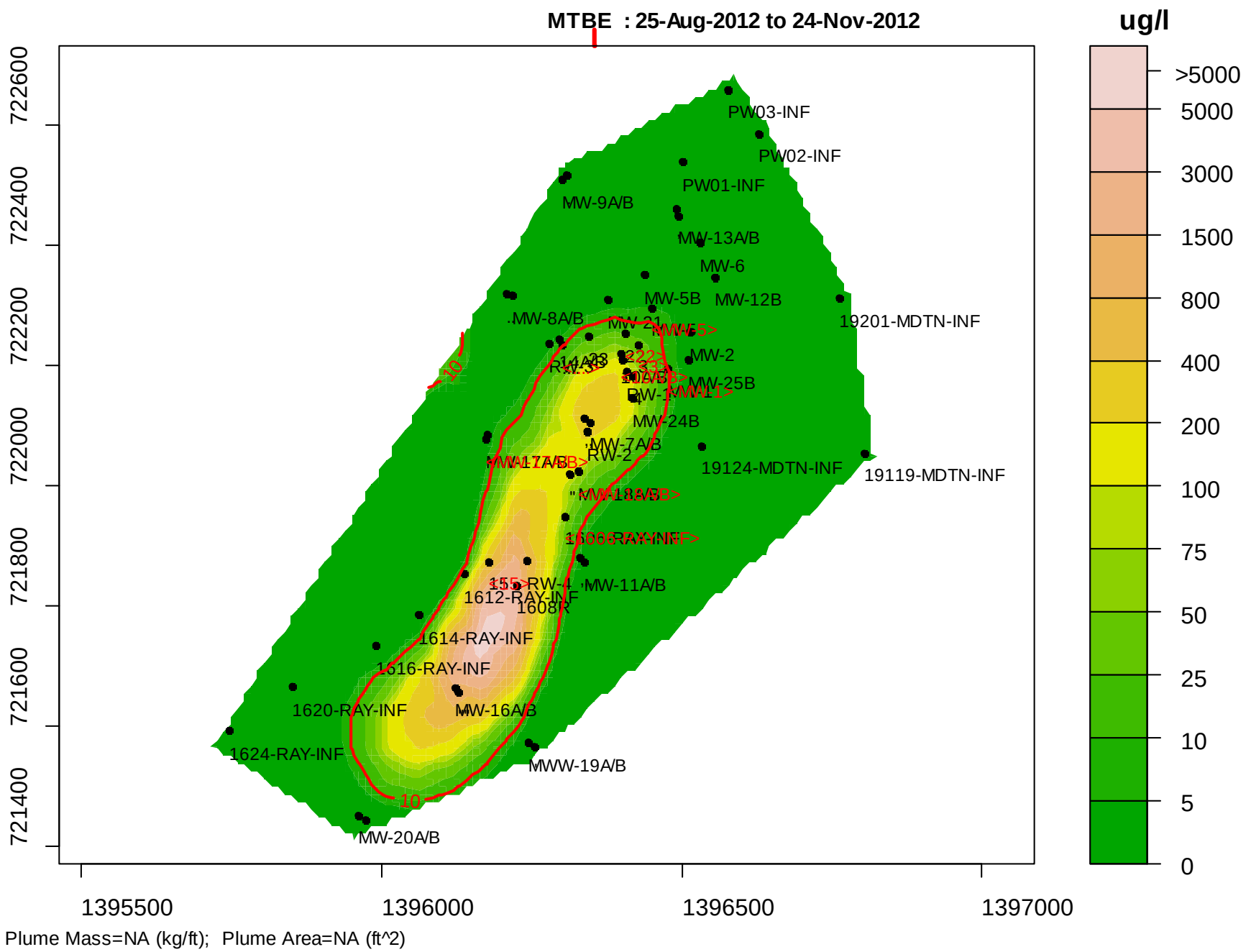
MW-20A/B
Plume Mass=NA (kg/ft); Plume Area=NA (ft^2)


MTBE : 25-Aug-2012 to 24-Nov-2012
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MW-21
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19119-MDTN-INF
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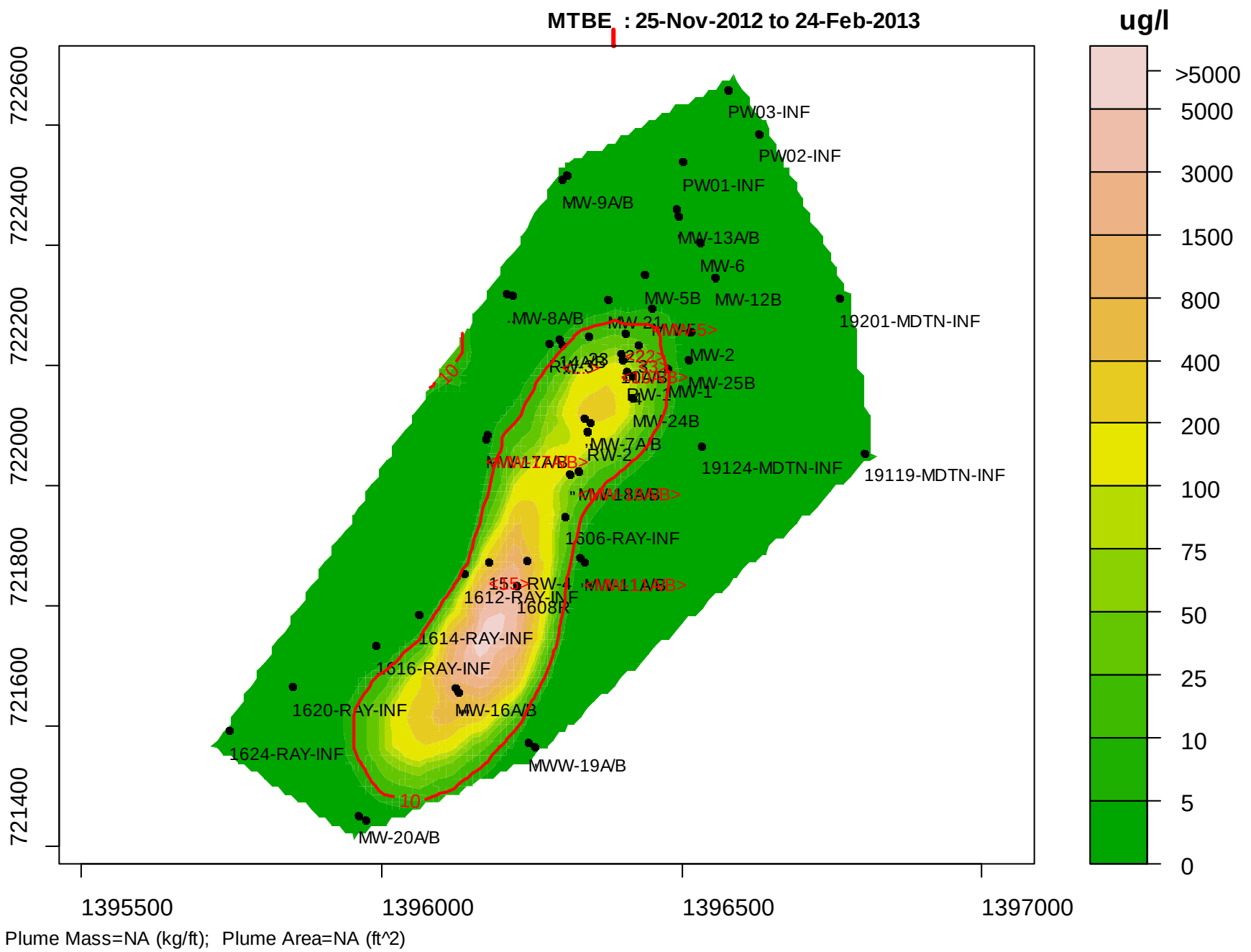
MW-20A/B
Plume Mass=NA (kg/ft); Plume Area=NA (ft^2)


MTBE : 25-Nov-2012 to 24-Feb-2013
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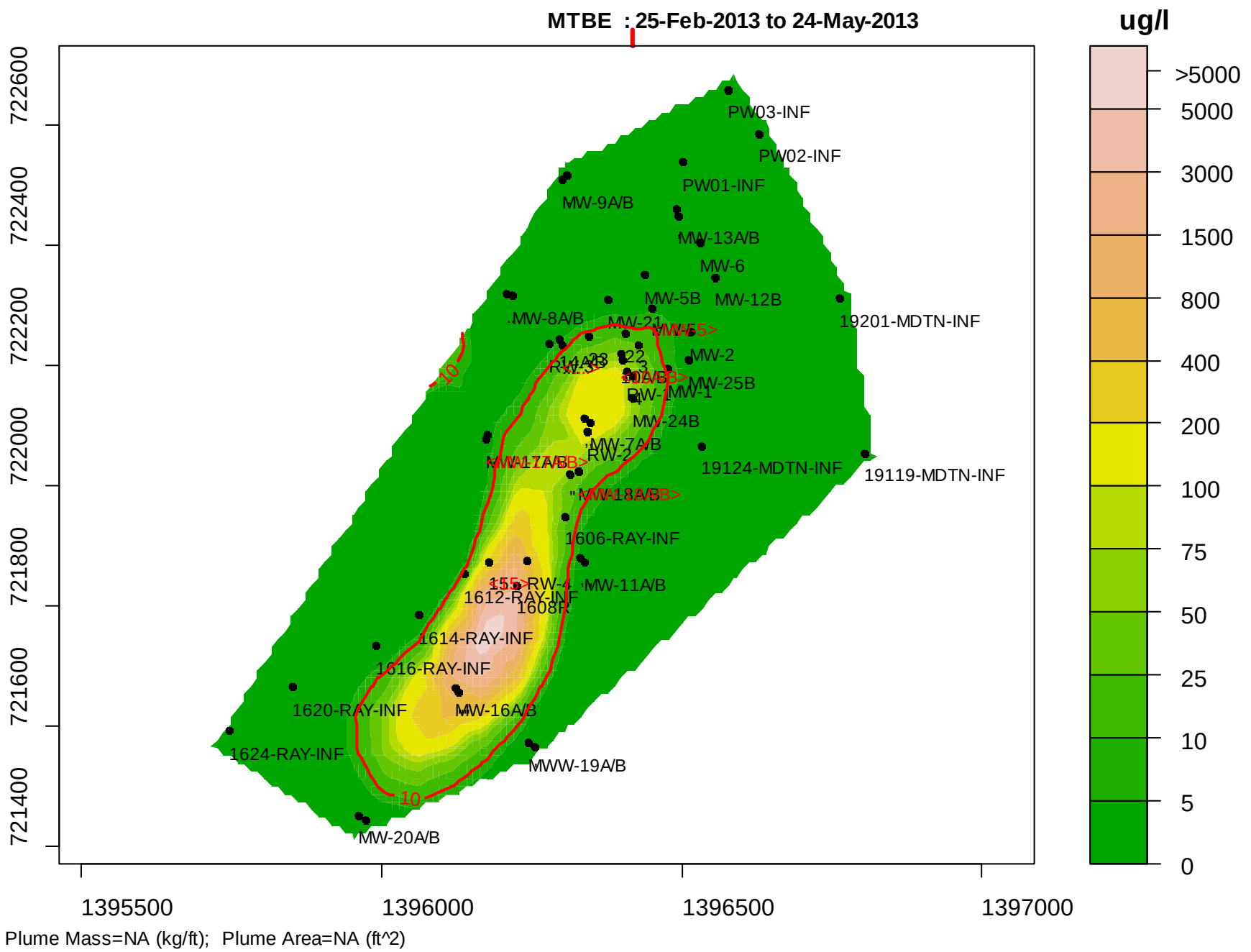
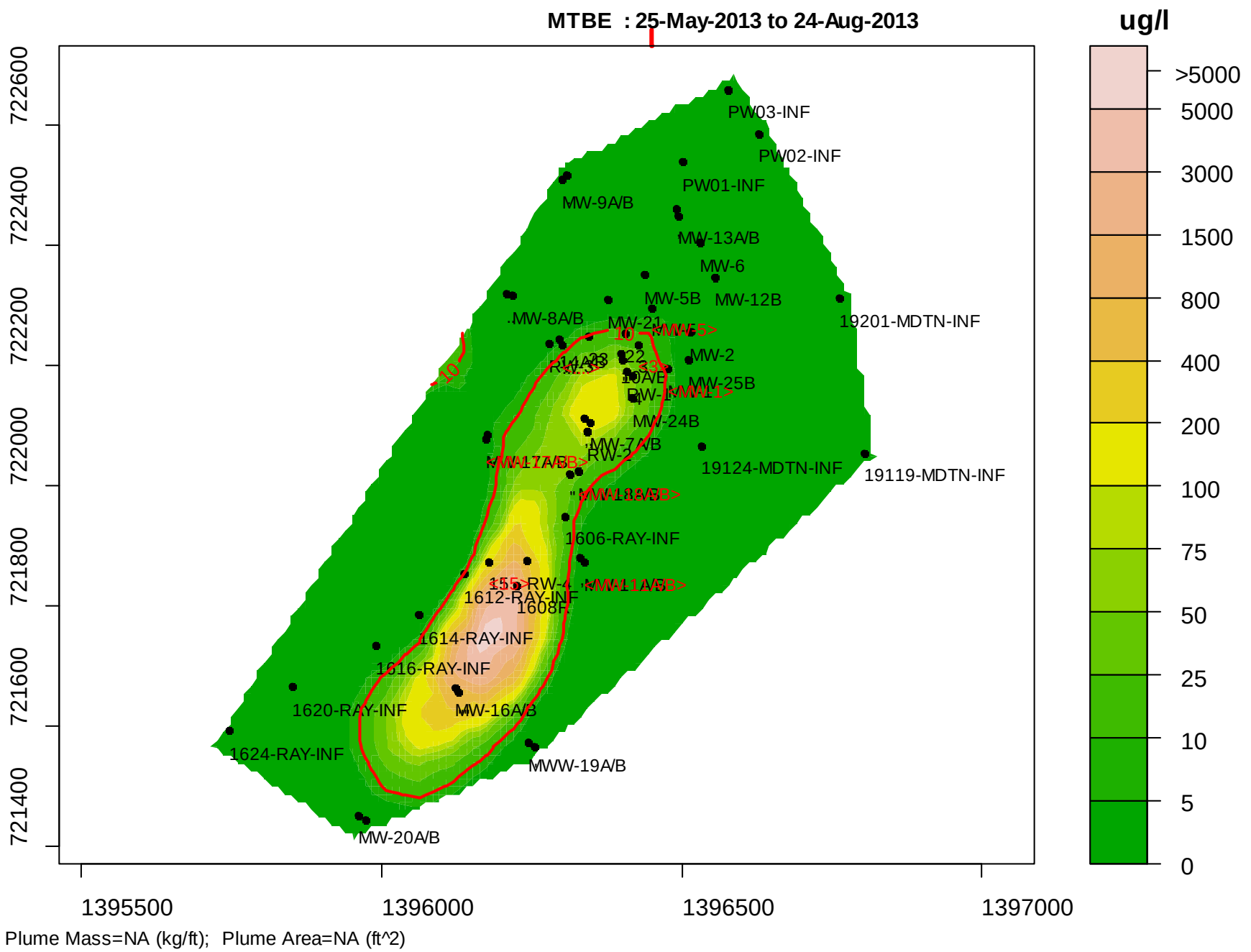
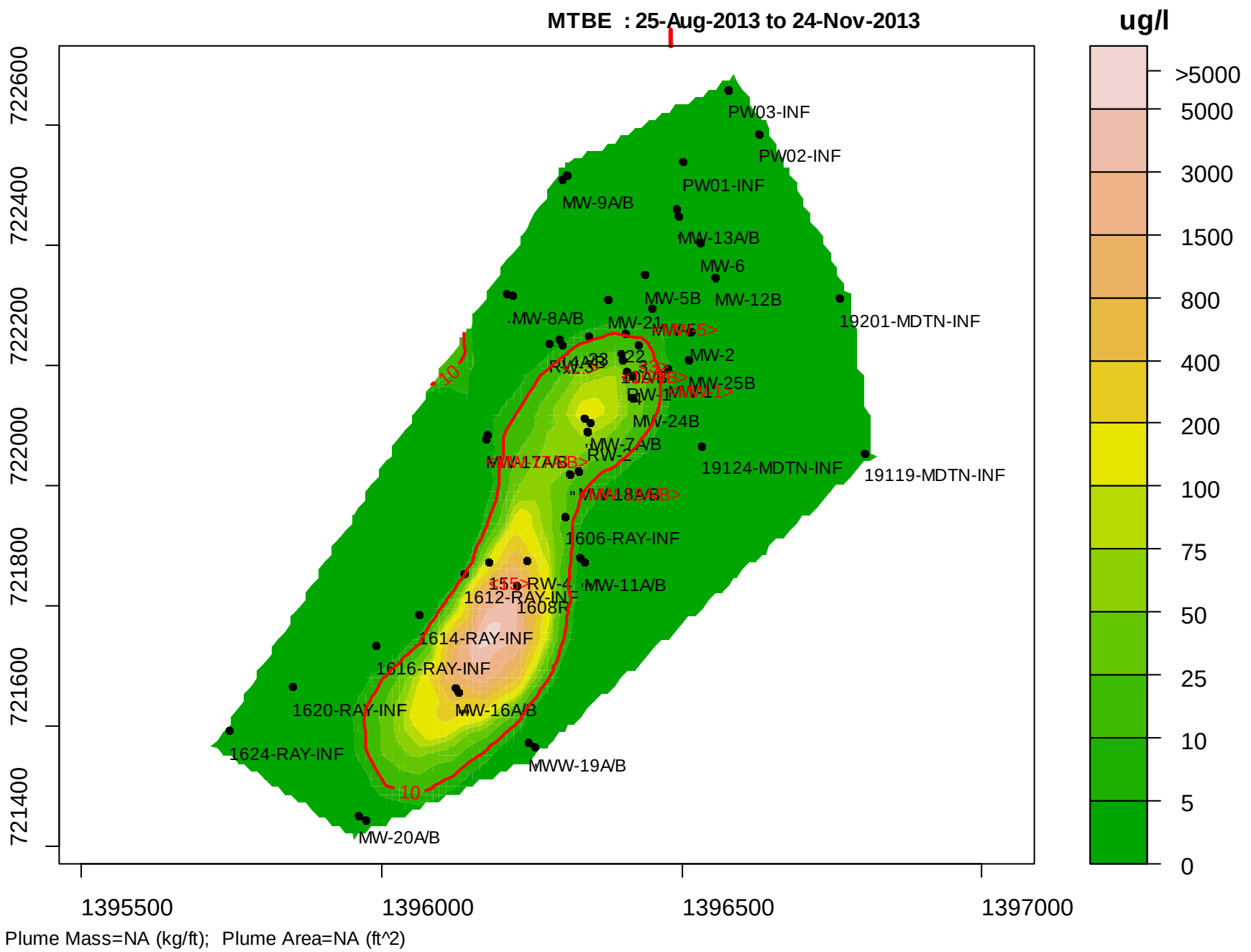
MW-20A/B
Plume Mass=NA (kg/ft); Plume Area=NA (ft^2)



Plume Mass=NA (kg/ft); Plume Area=NA (ft^2)



Plume Mass=NA (kg/ft); Plume Area=NA (ft^2)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1616-RAY-INF
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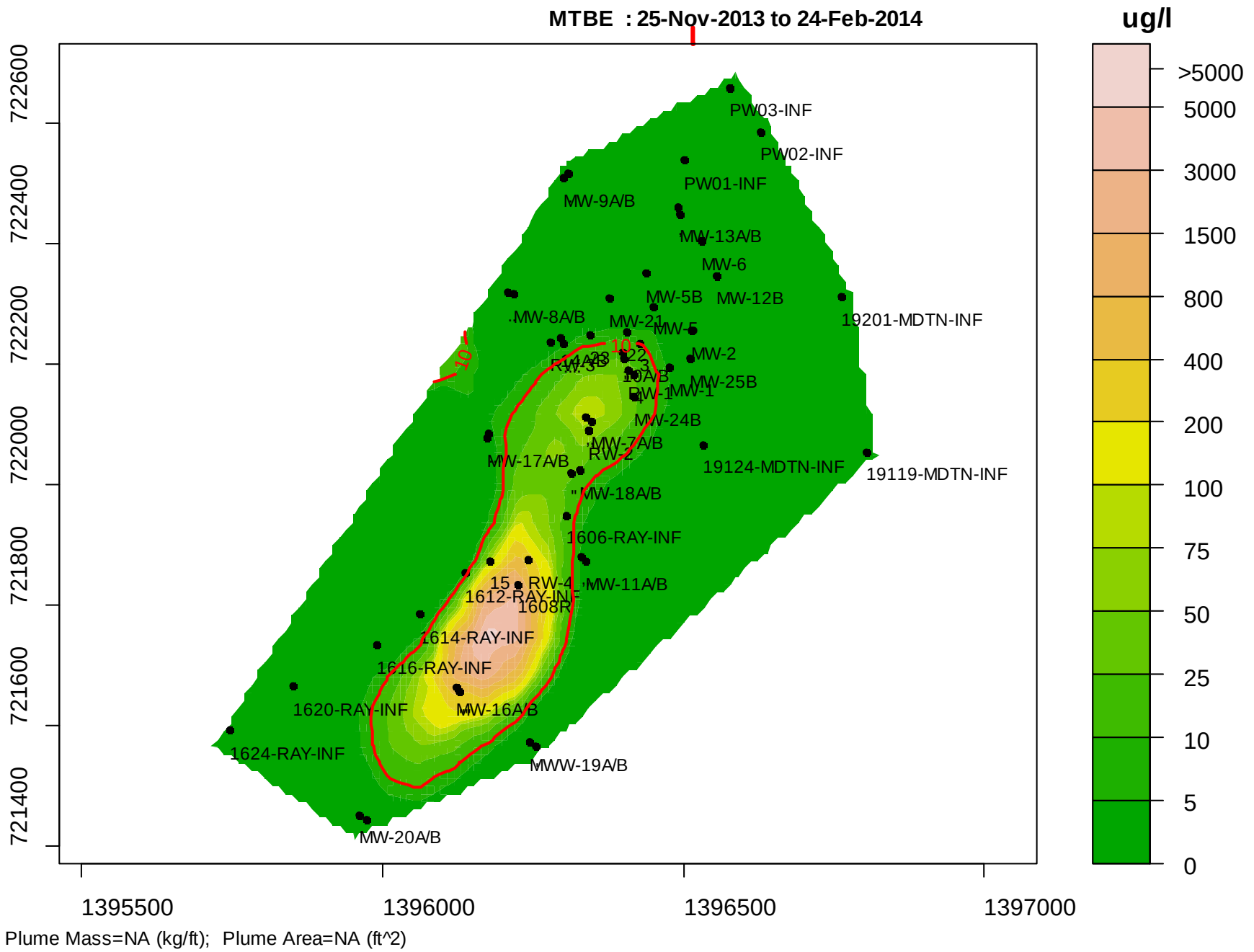
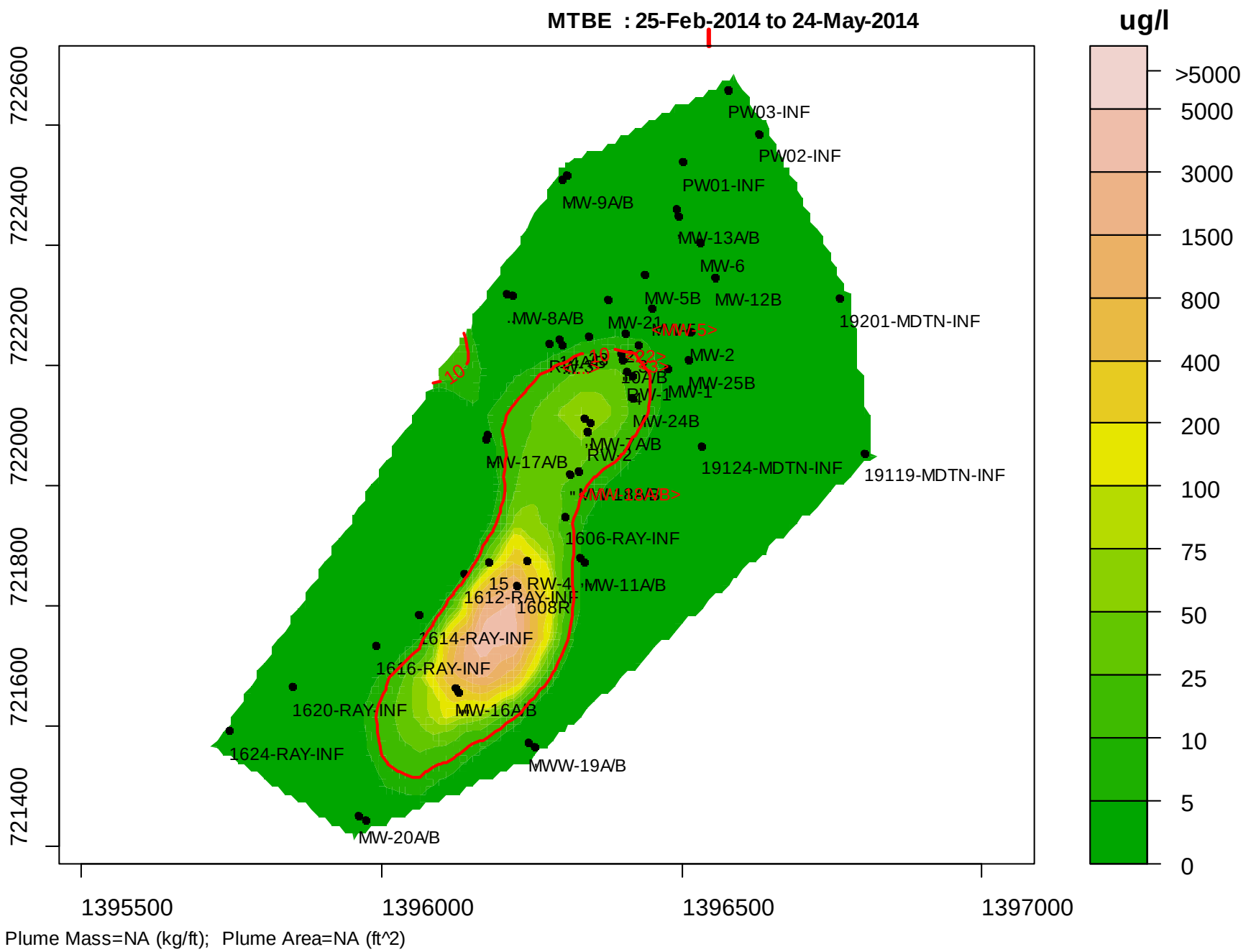
MW-20A/B
Plume Mass=NA (kg/ft); Plume Area=NA (ft^2)



Plume Mass=NA (kg/ft); Plume Area=NA (ft^2)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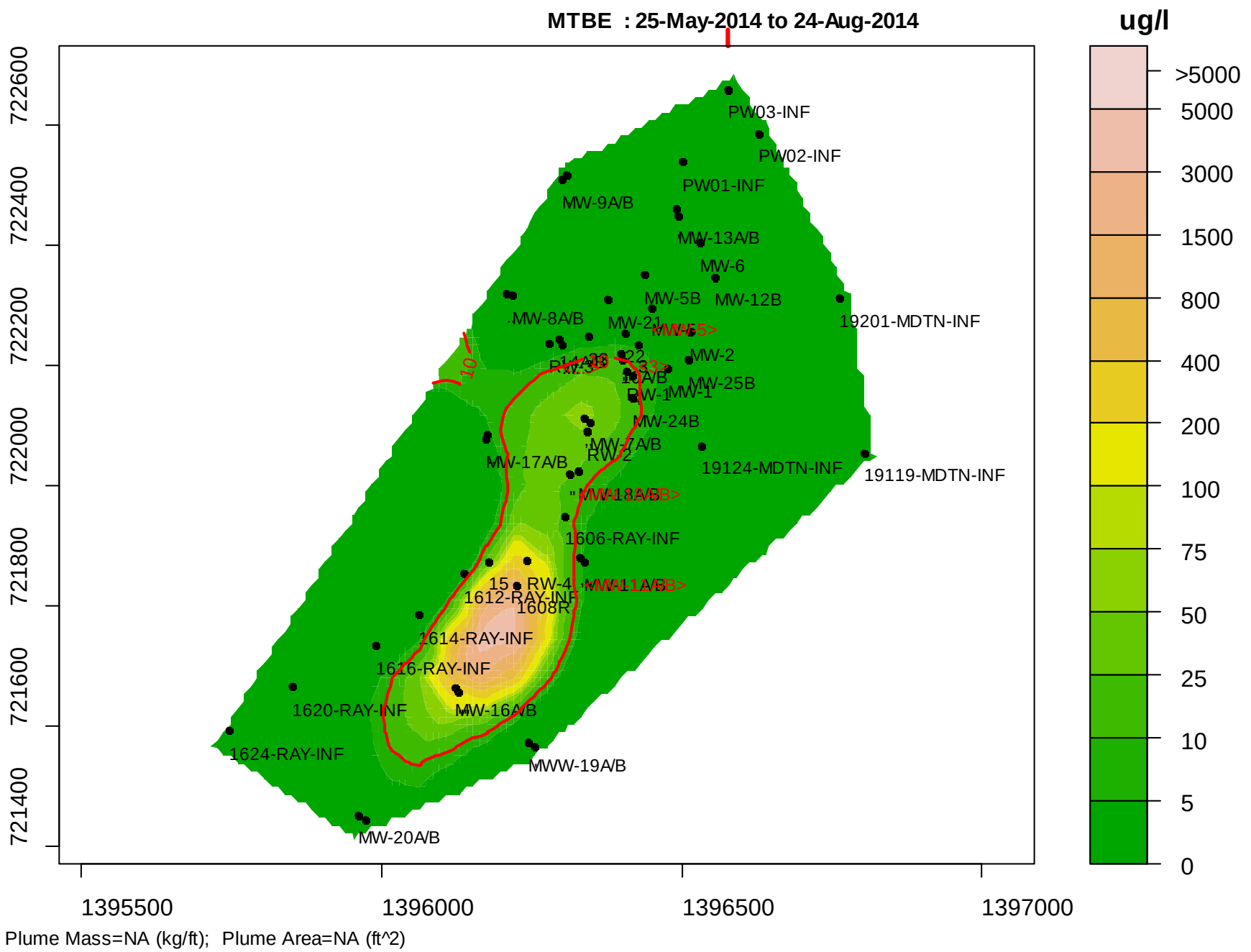
Plume Mass=NA (kg/ft); Plume Area=NA (ft^2)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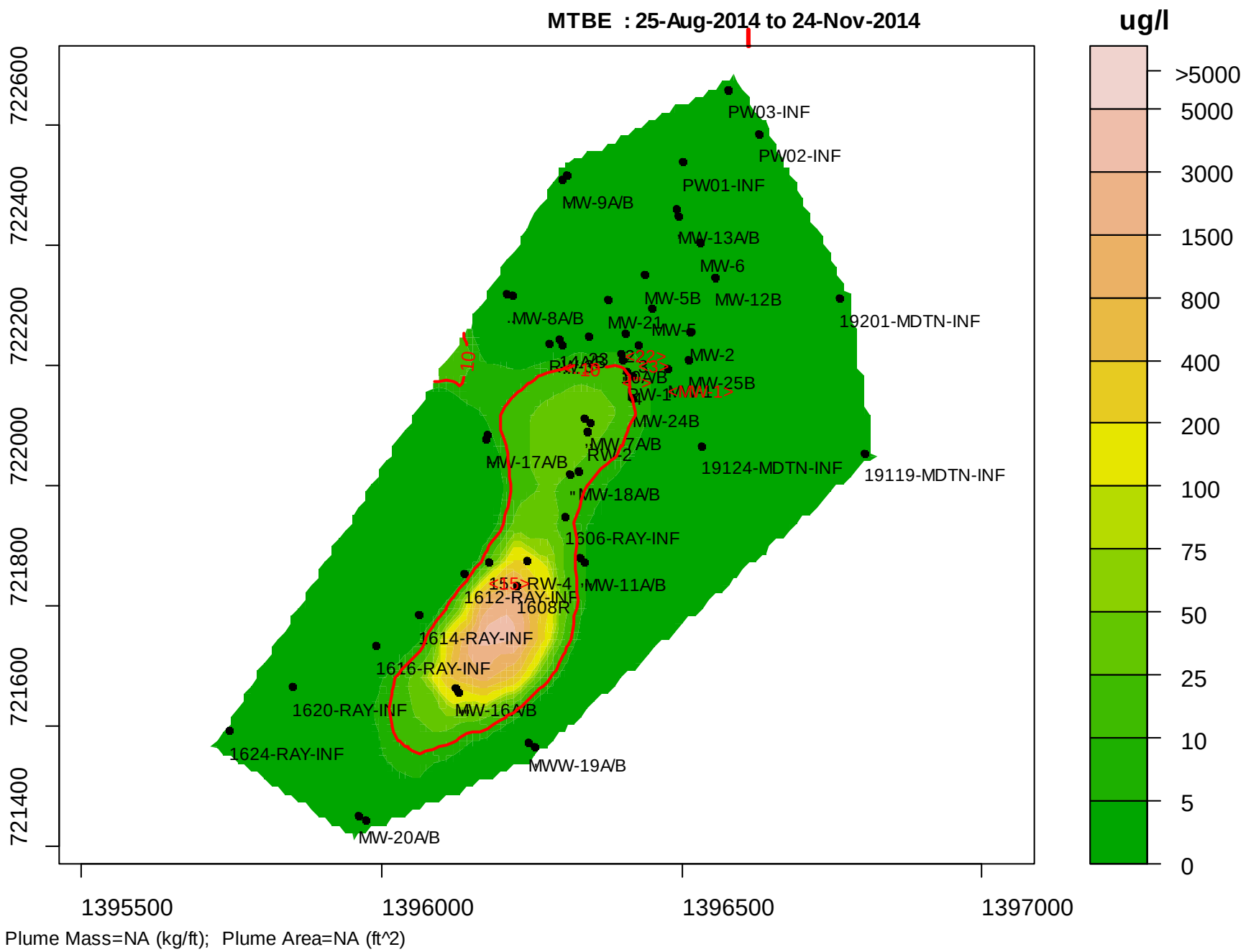
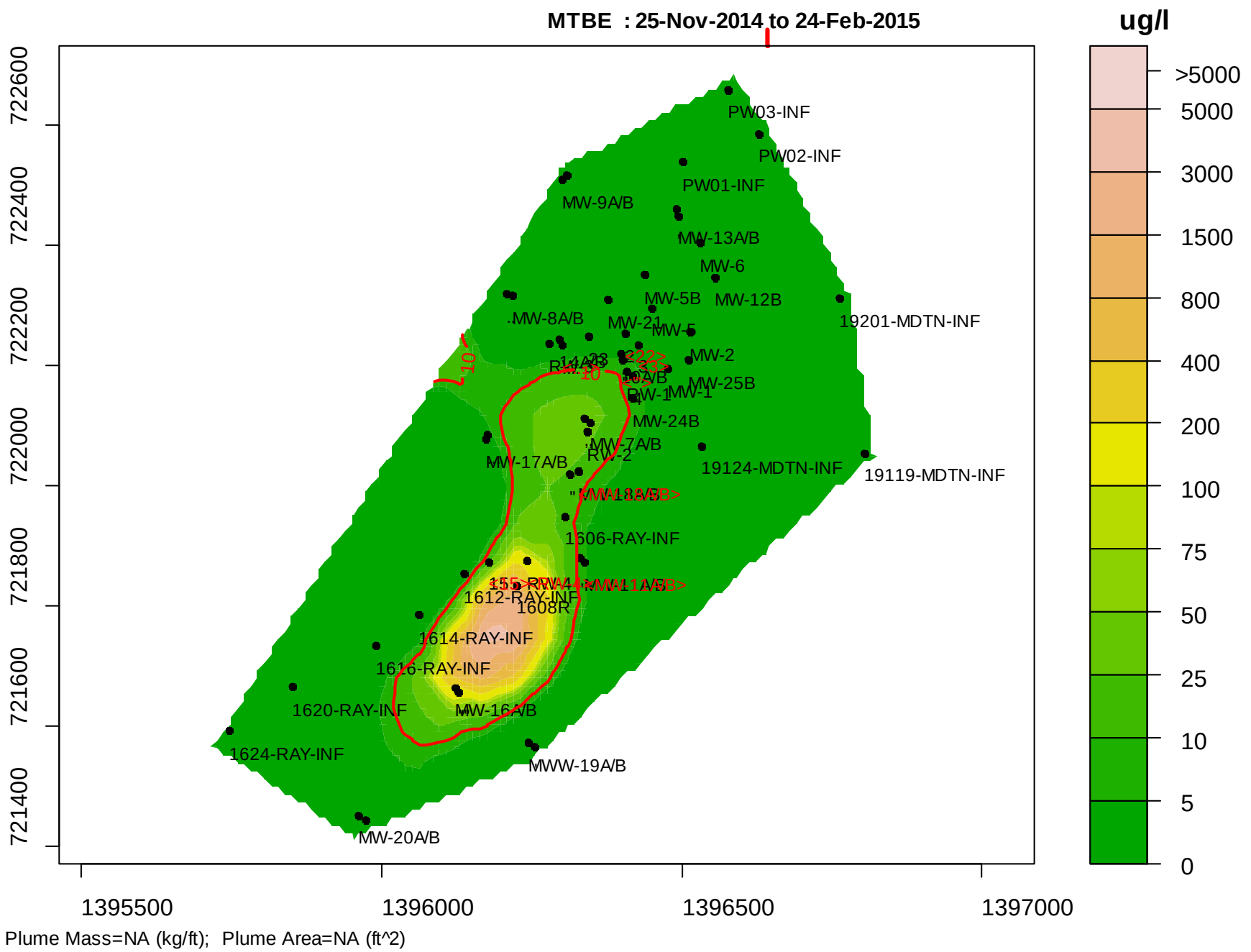
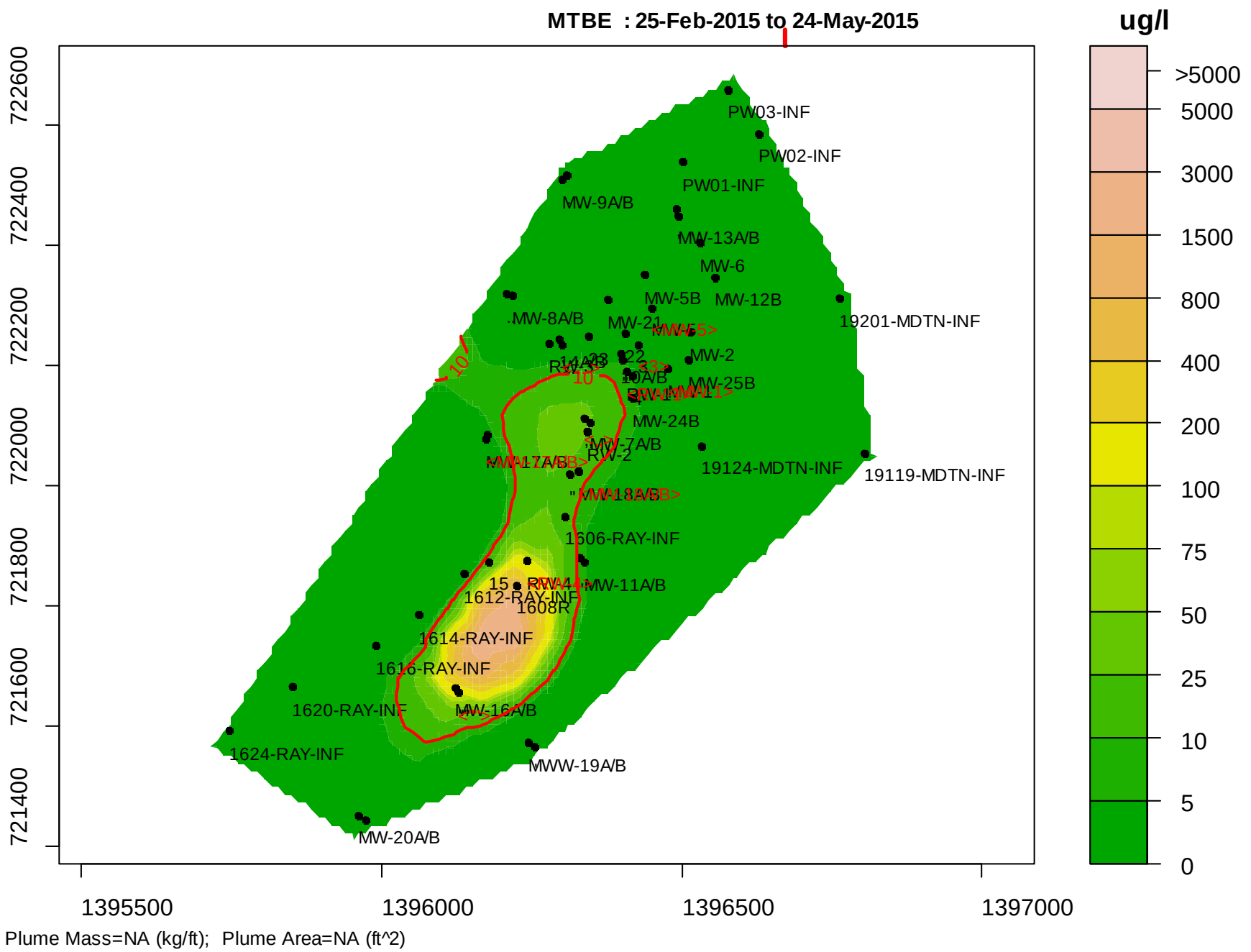
MW-20A/B
Plume Mass=NA (kg/ft); Plume Area=NA (ft^2)



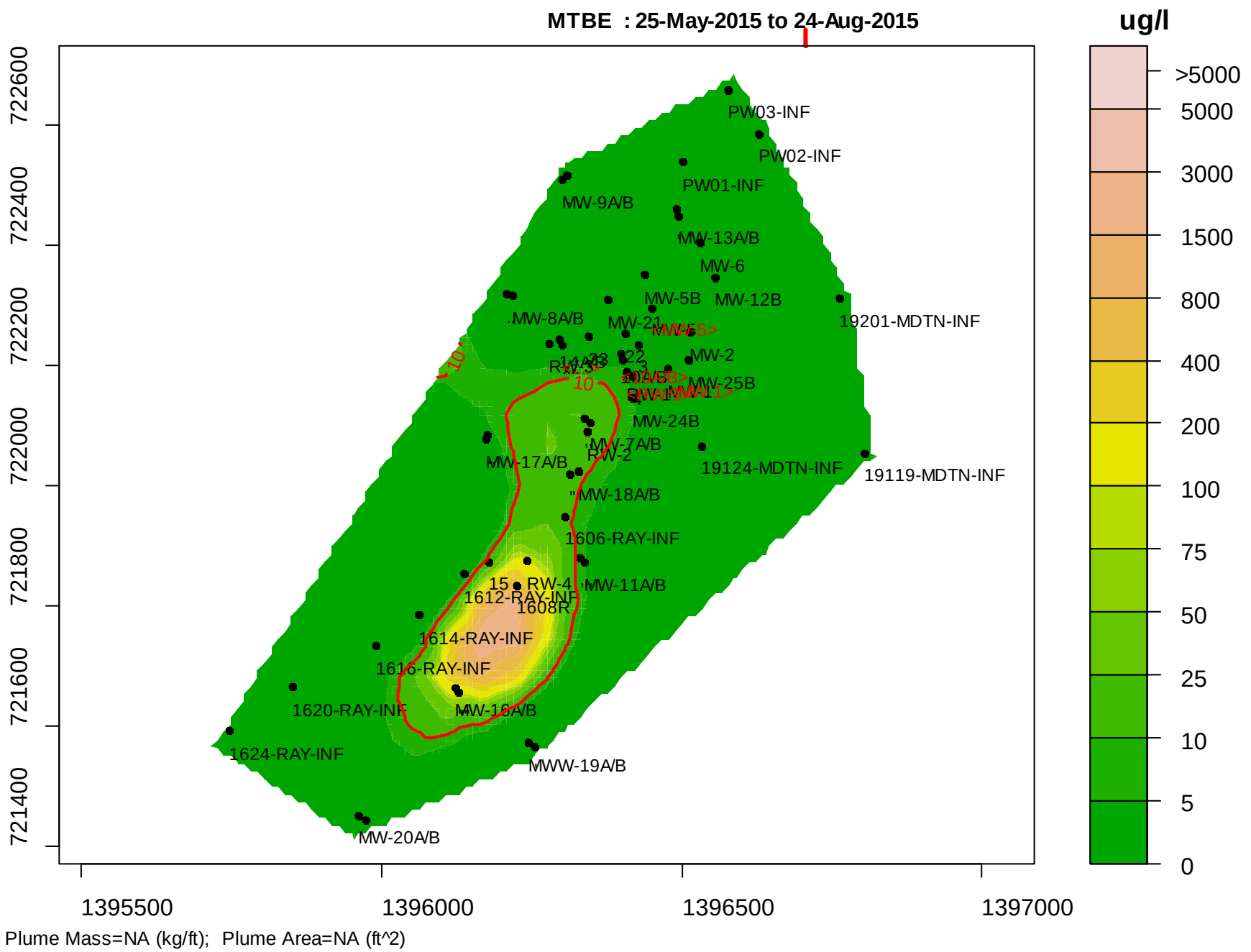
Plume Mass=NA (kg/ft); Plume Area=NA (ft^2)



Plume Mass=NA (kg/ft); Plume Area=NA (ft^2)



Plume Mass=NA (kg/ft); Plume Area=NA (ft^2)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19201-MDTN-INF
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MW-20A/B
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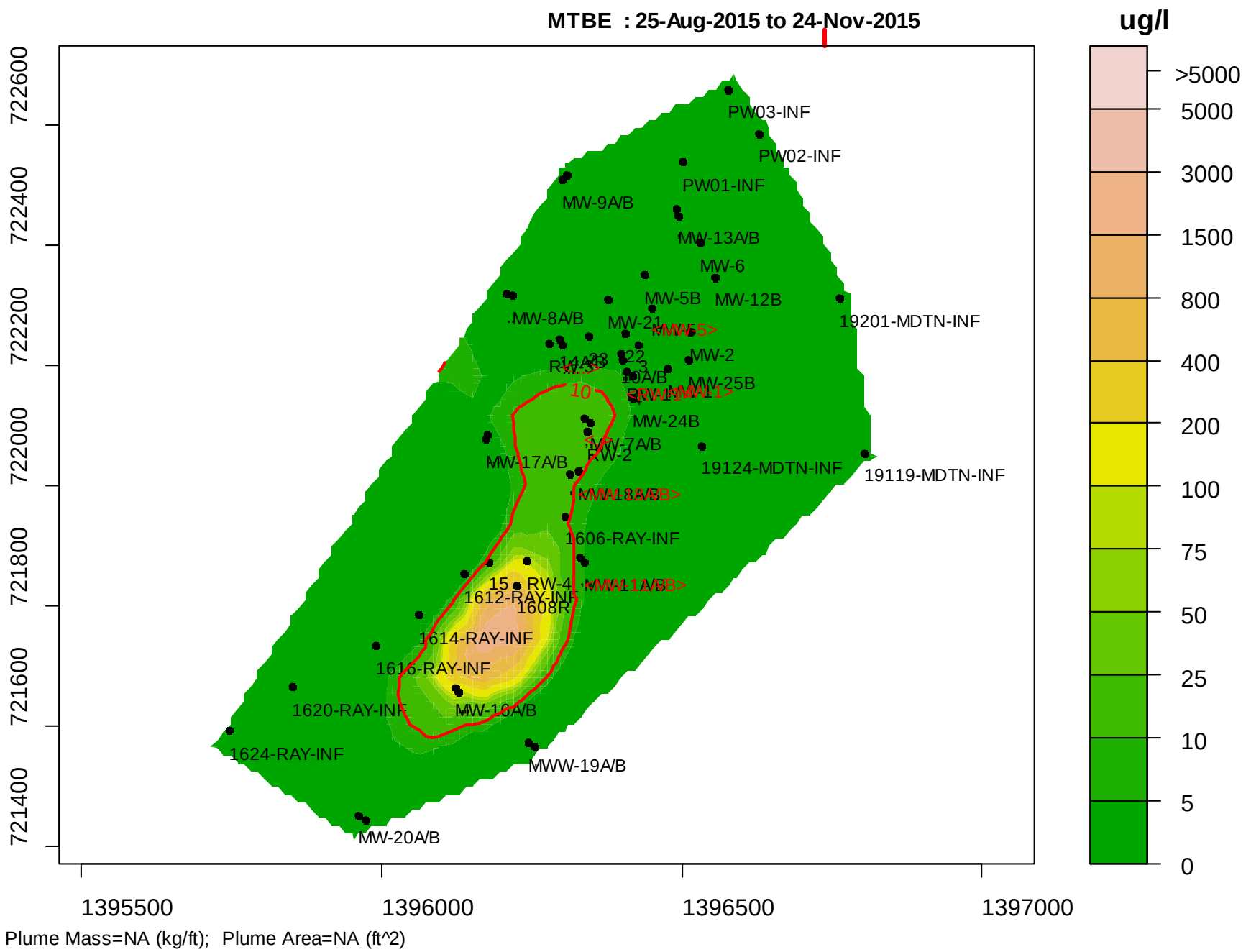
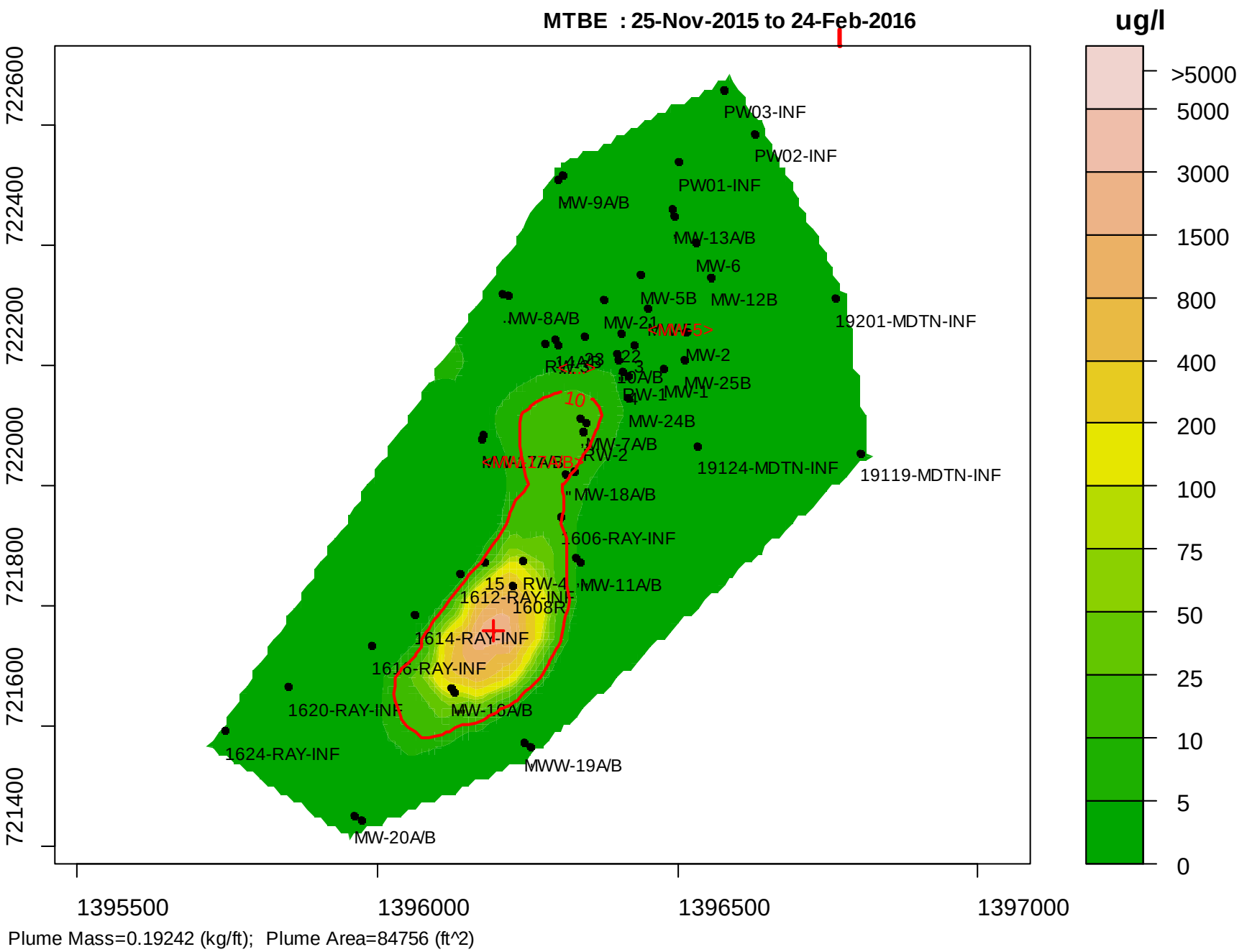
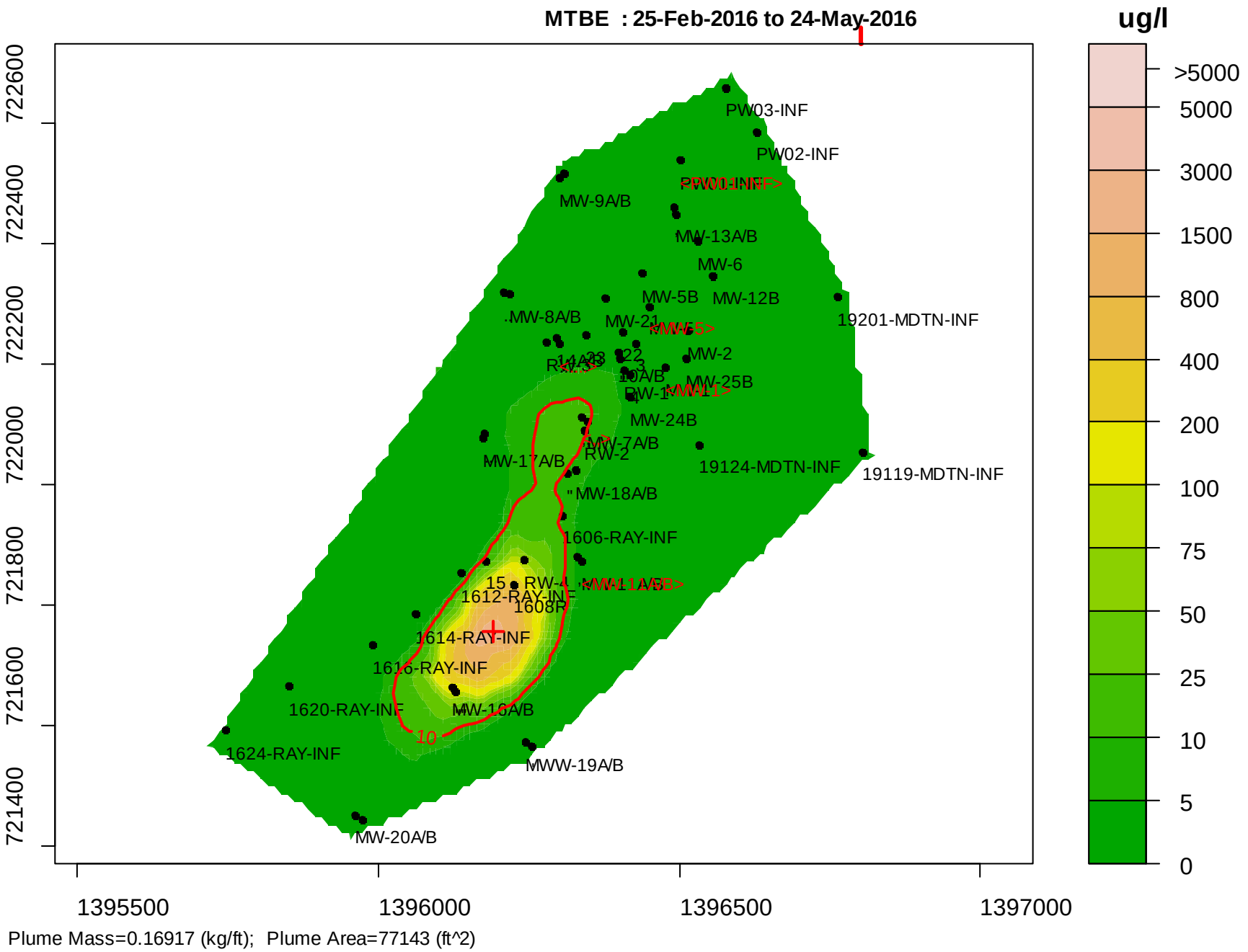
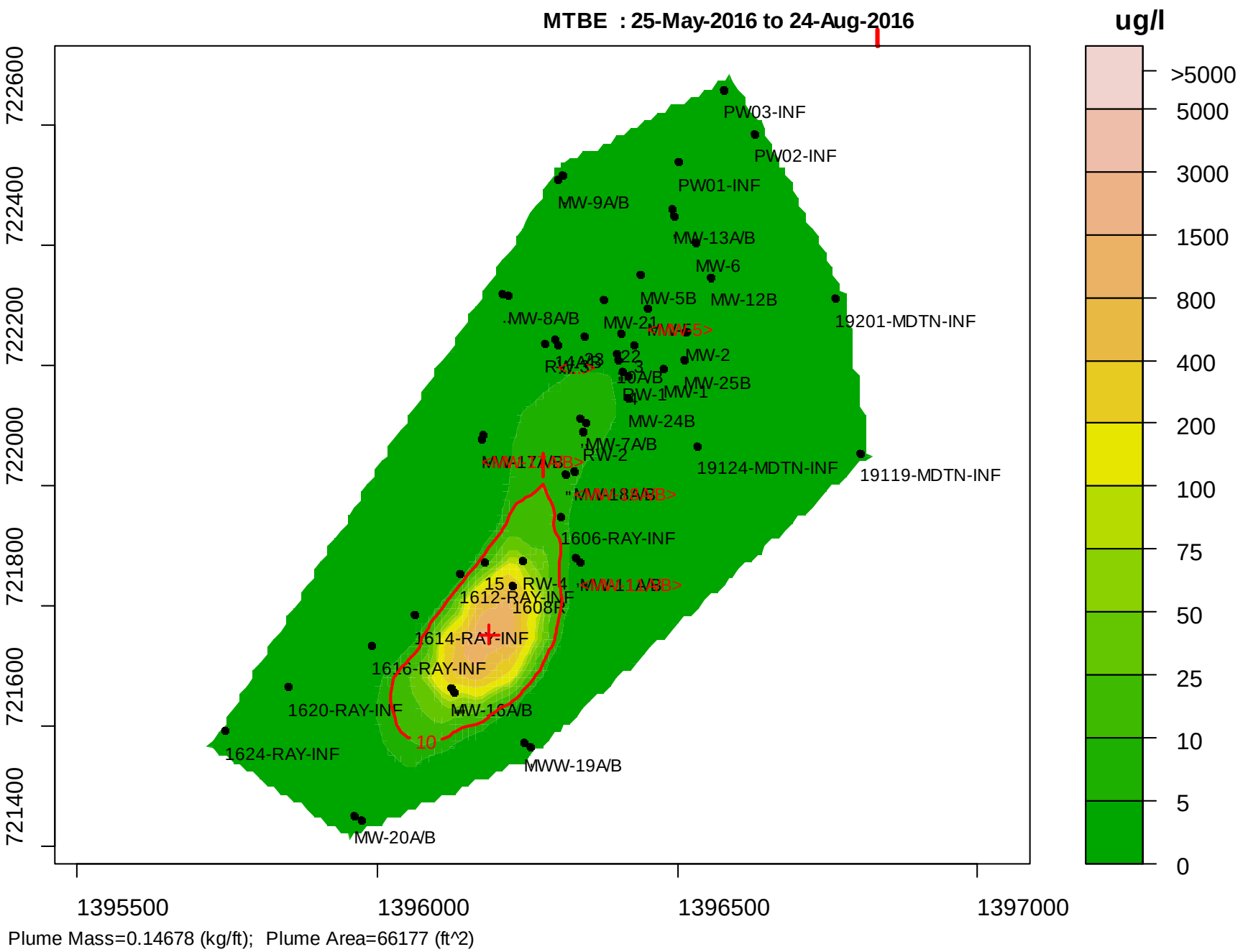


Plume Mass=NA (kg/ft); Plume Area=NA (ft^2)

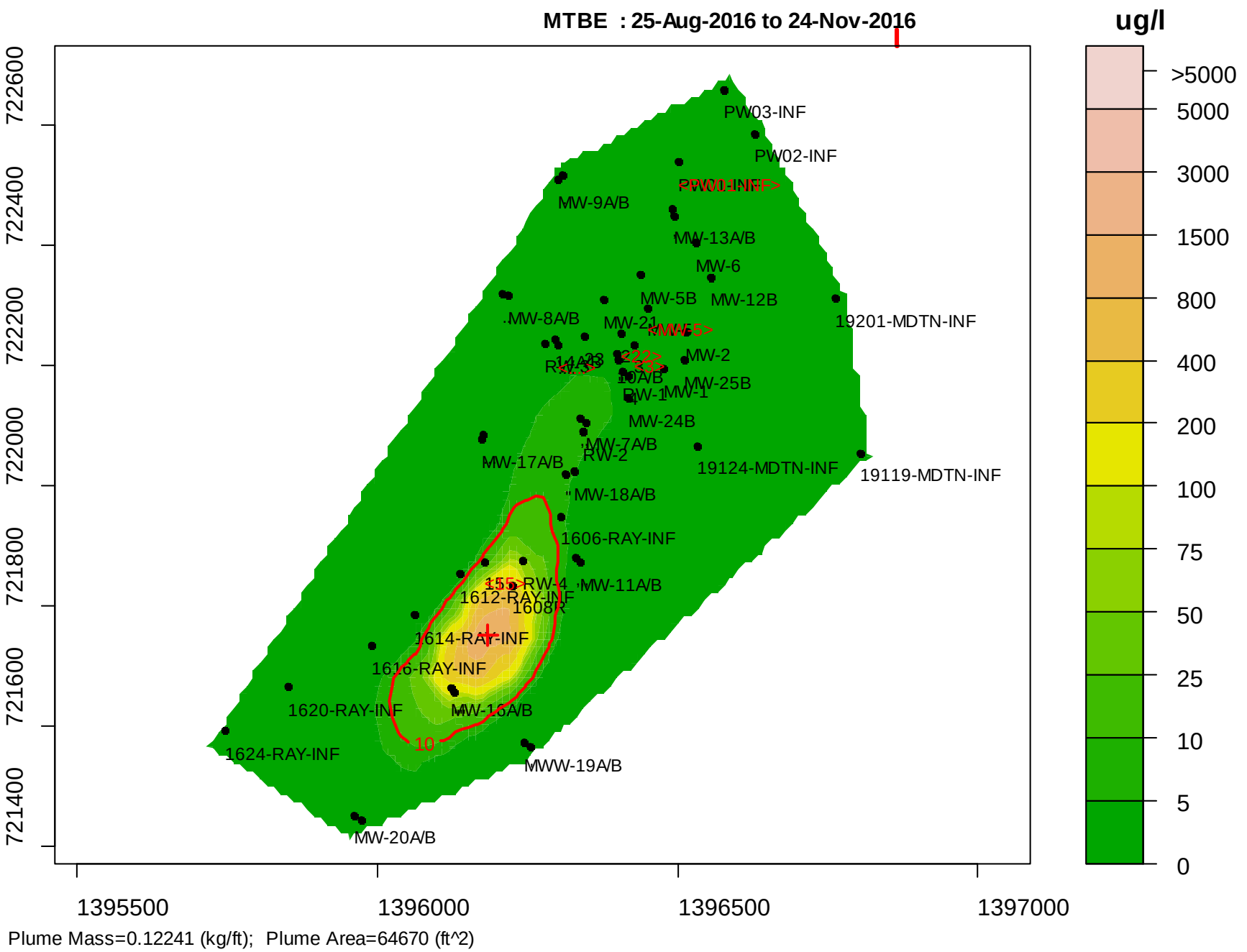


Plume Mass=0.19242 (kg/ft); Plume Area=84756 (ft^2)

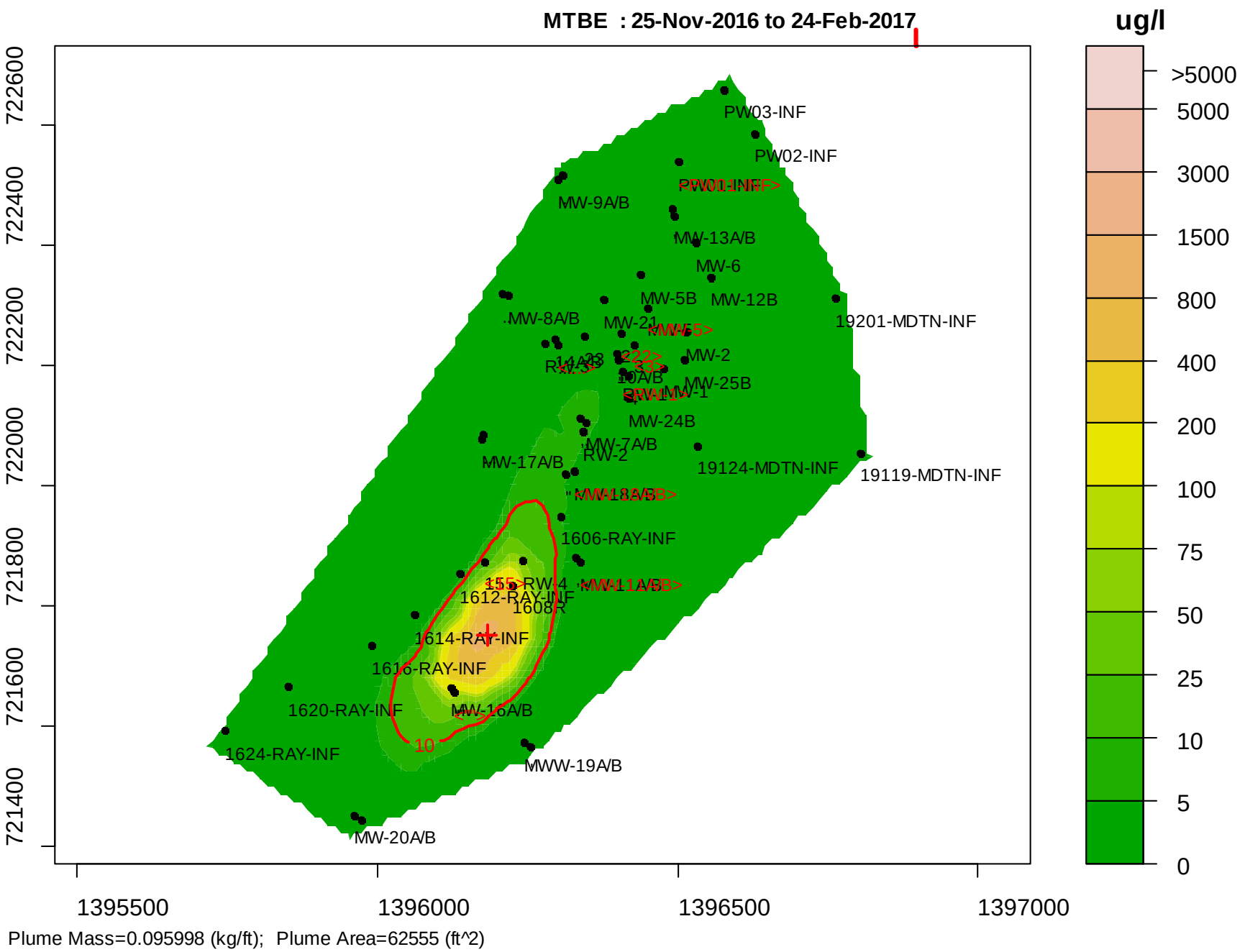

MTBE : 25-Feb-2016 to 24-May-2016
ug/l
>5000
5000
3000
1500
800
400
200
100
75
50
25
10
5
0
722600
722400
722200
722000
721800
721600
721400
1395500
1396000
1396500
1397000
PW03-INF
PW02-INF
MW-9A/B
MW-13A/B
MW-6
MW-5B
MW-12B
MW-8A/B
MW-21
19201-MDTN-INF
MW-2
MW-25B
MW-24B
MW-7A/B
RW-2
MW-17A/B
19124-MDTN-INF
19119-MDTN-INF
MW-18A/B
1606-RAY-INF
1612-RAY-INF
1608R
1614-RAY-INF
1616-RAY-INF
1620-RAY-INF
MW-16A/B
10
1624-RAY-INF
MWW-19A/B
MW-20A/B
Plume Mass=0.16917 (kg/ft); Plume Area=77143 (ft^2)

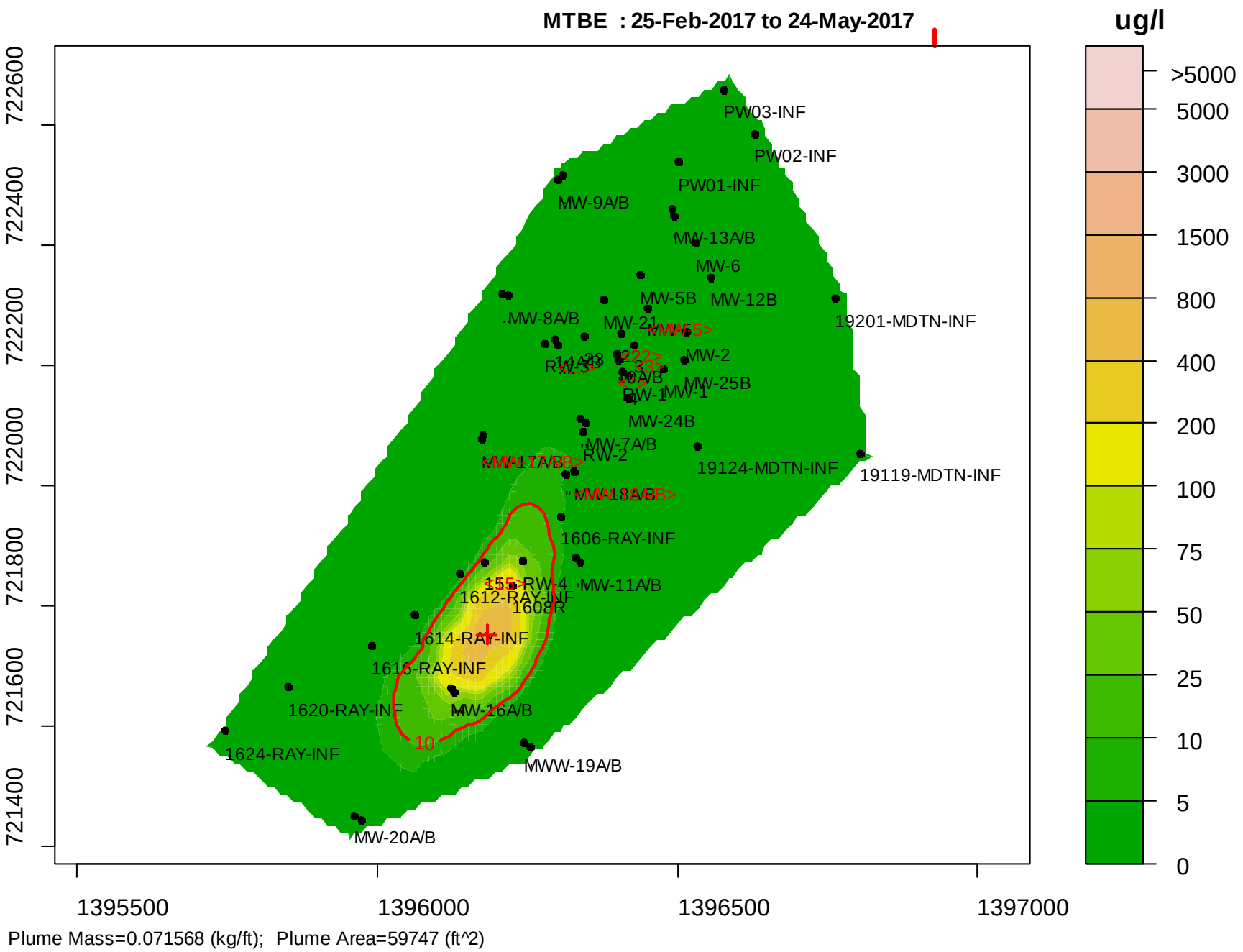


Plume Mass=0.14678 (kg/ft); Plume Area=66177 (ft^2)

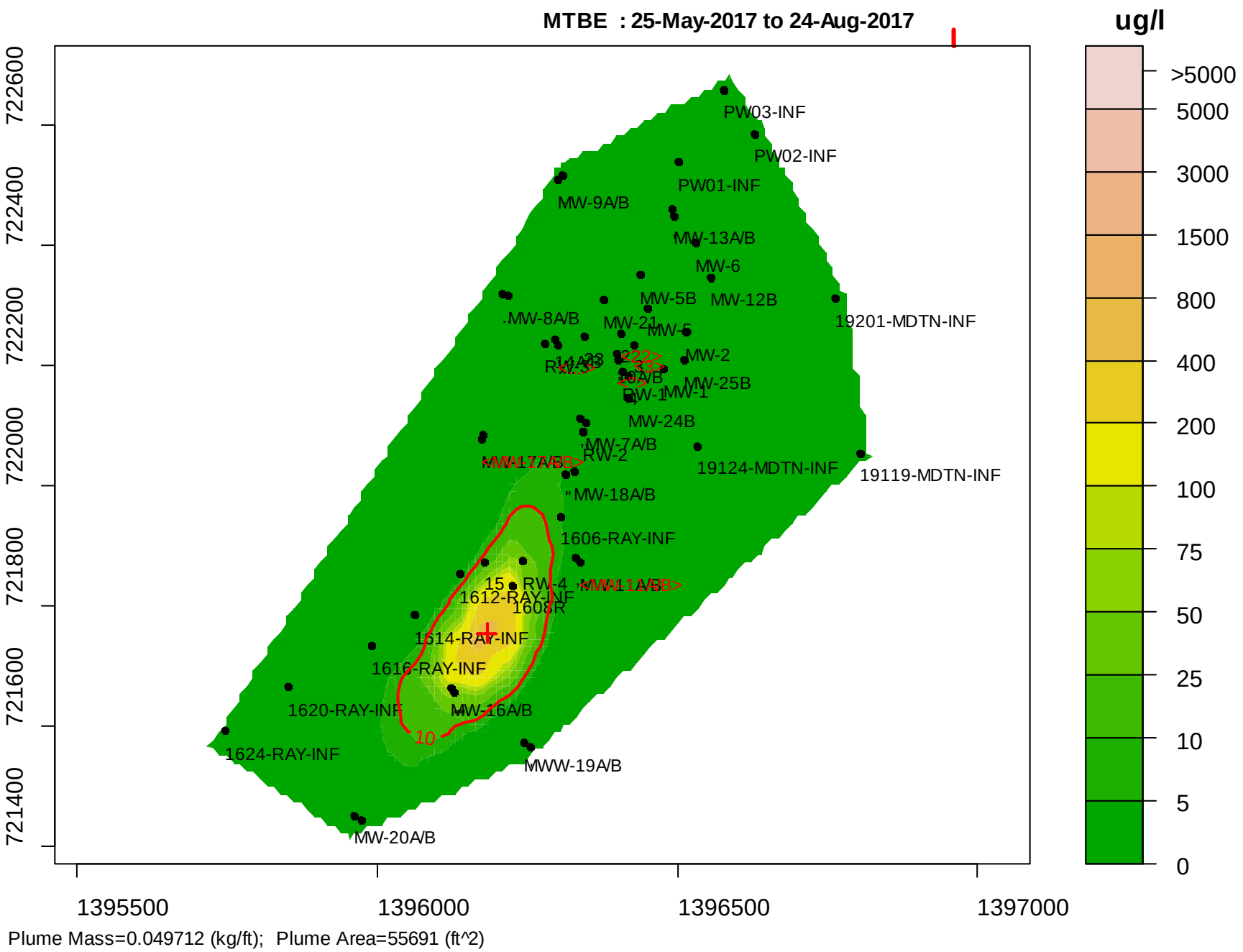


Plume Mass=0.12241 (kg/ft); Plume Area=64670 (ft^2)

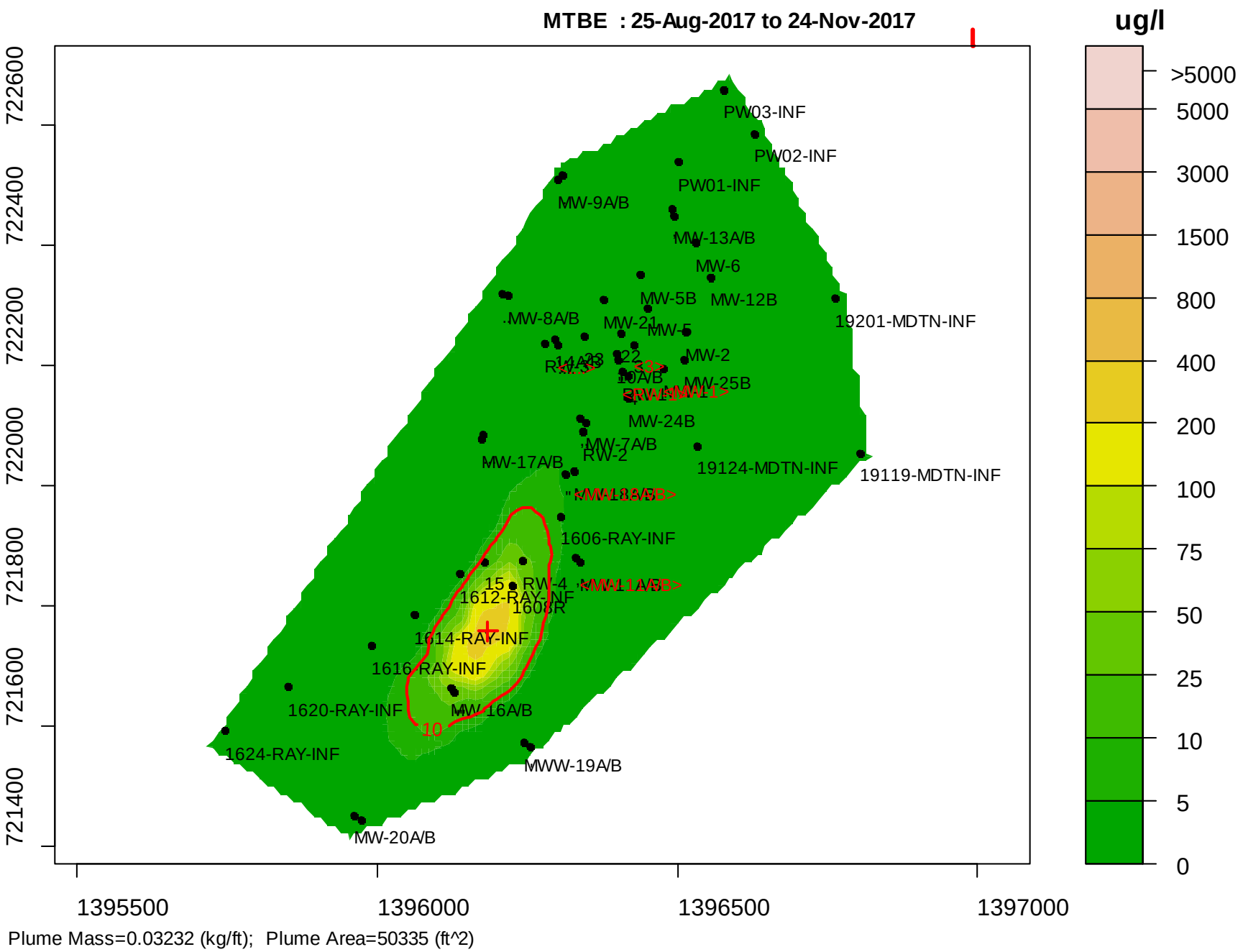

MTBE : 25-Nov-2016 to 24-Feb-2017
ug/l
>5000
5000
3000
1500
800
400
200
100
75
50
25
10
5
0
722600
722400
722200
722000
721800
721600
721400
1395500
1396000
1396500
1397000
PW03-INF
PW02-INF
MW-9A/B
MW-13A/B
MW-6
MW-5B
MW-12B
MW-8A/B
MW-21
19201-MDTN-INF
MW-2
MW-25B
MW-1
MW-24B
MW-7A/B
RW-2
MW-17A/B
19124-MDTN-INF
19119-MDTN-INF
1606-RAY-INF
RW-4
1612-RAY-INF
1608R
1614-RAY-INF
1616-RAY-INF
1620-RAY-INF
MW-16A/B
1624-RAY-INF
MWW-19A/B
MW-20A/B
Plume Mass=0.095998 (kg/ft); Plume Area=62555 (ft^2)



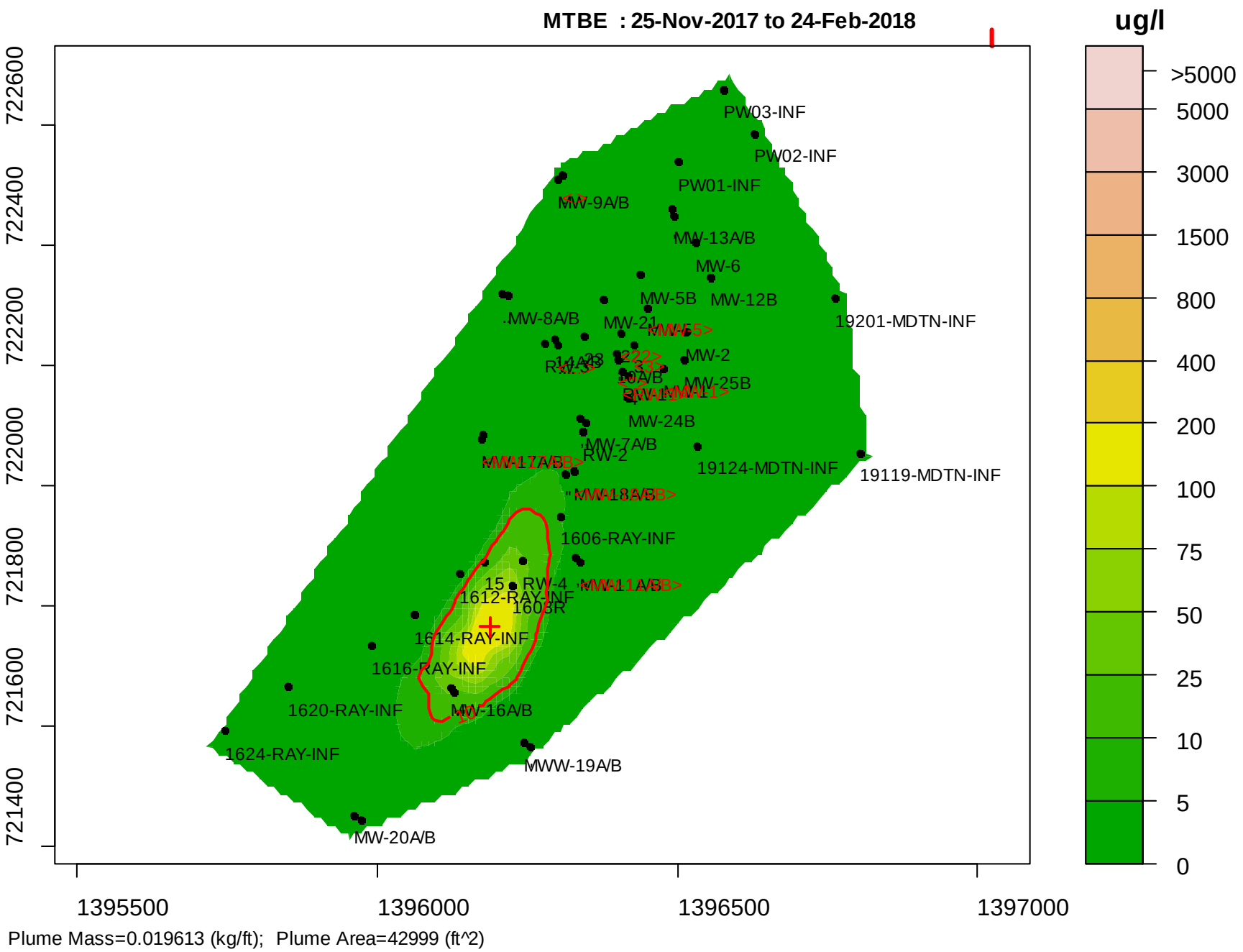
Plume Mass=0.071568 (kg/ft); Plume Area=59747 (ft^2)



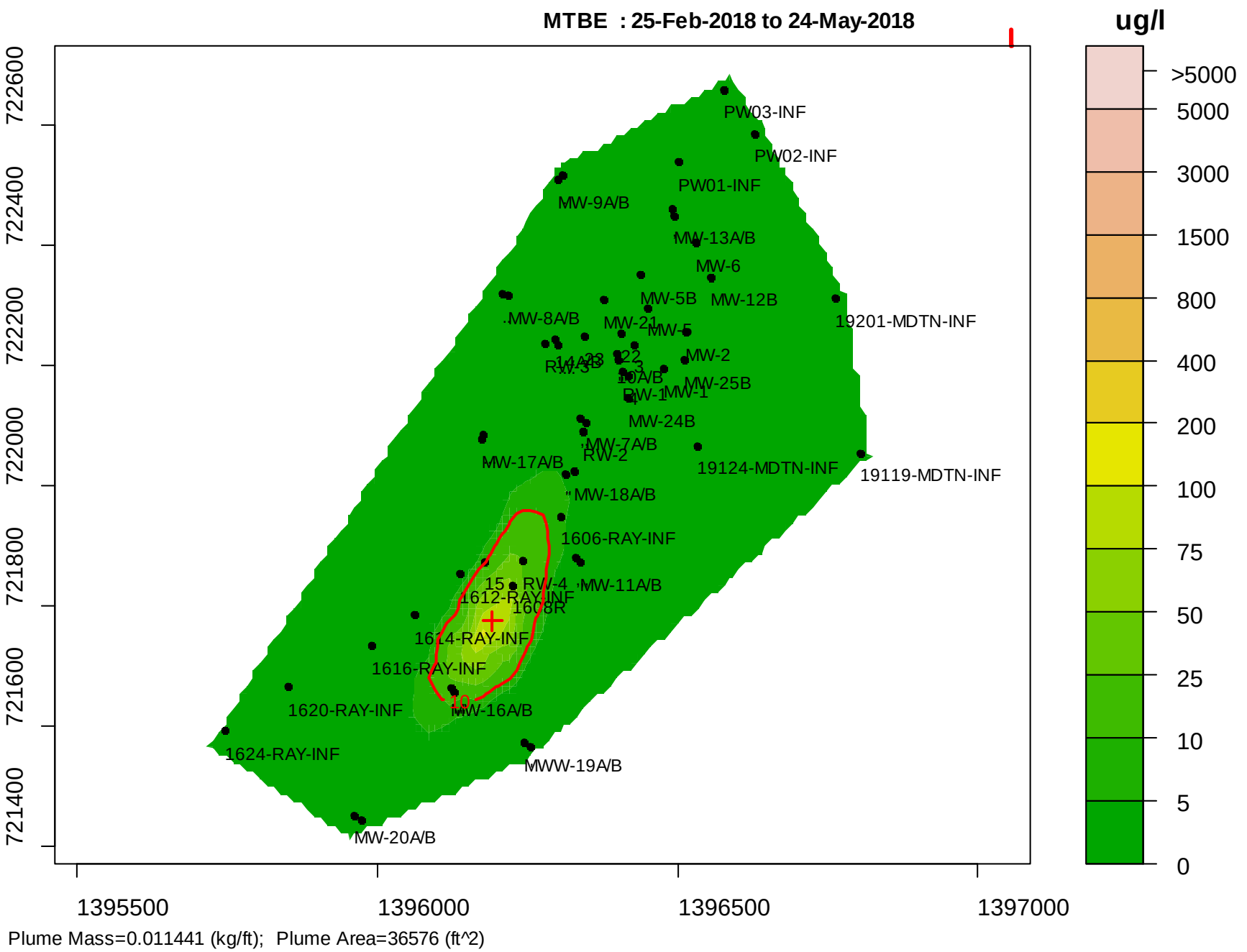
Plume Mass=0.049712 (kg/ft); Plume Area=55691 (ft^2)



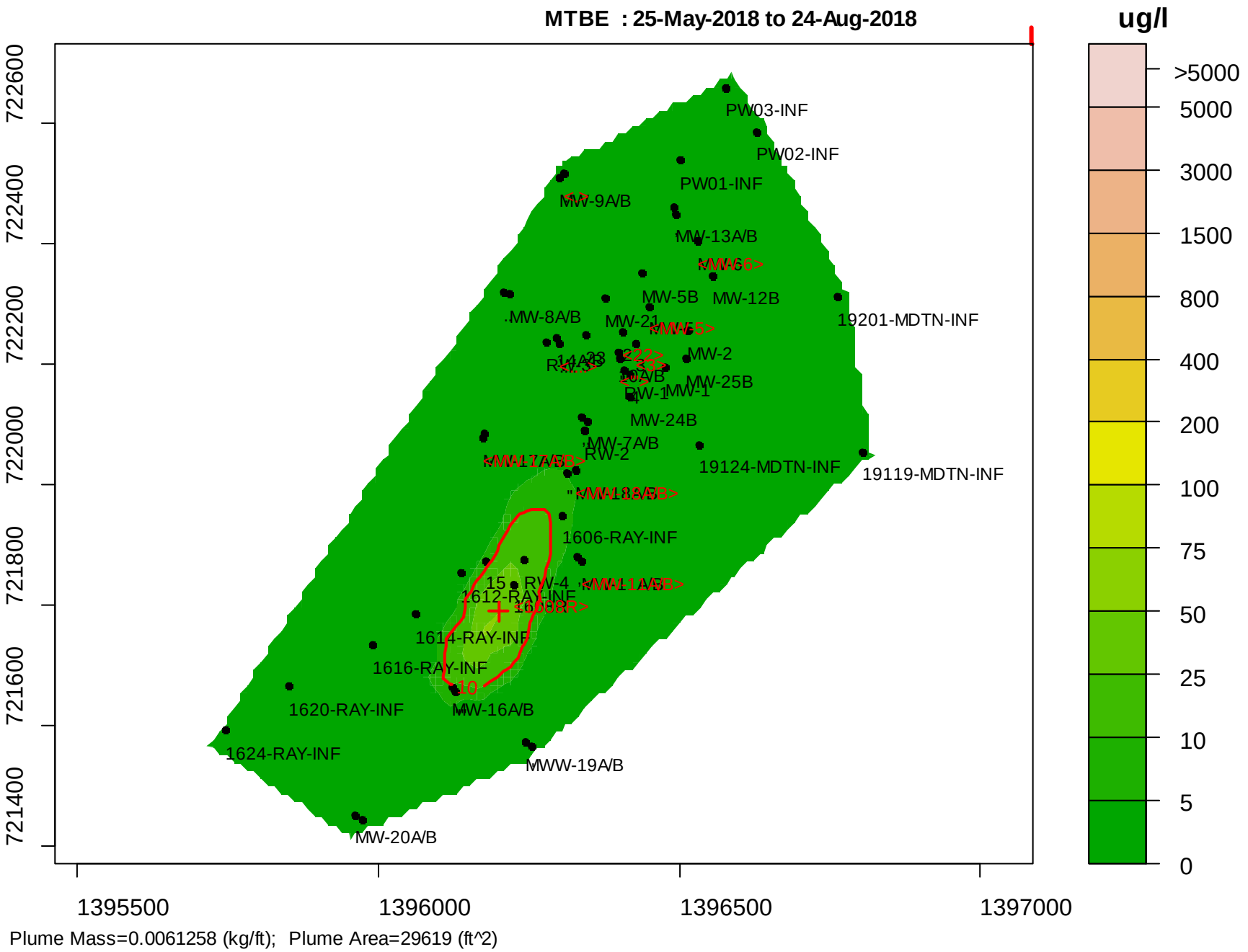
Plume Mass=0.03232 (kg/ft); Plume Area=50335 (ft^2)

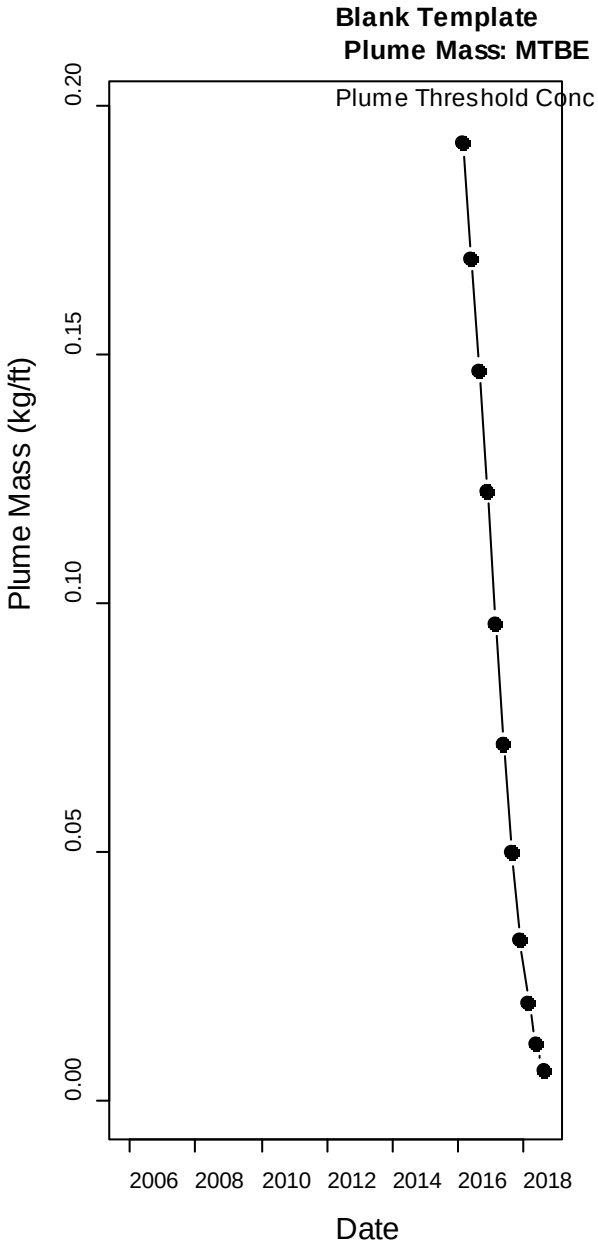


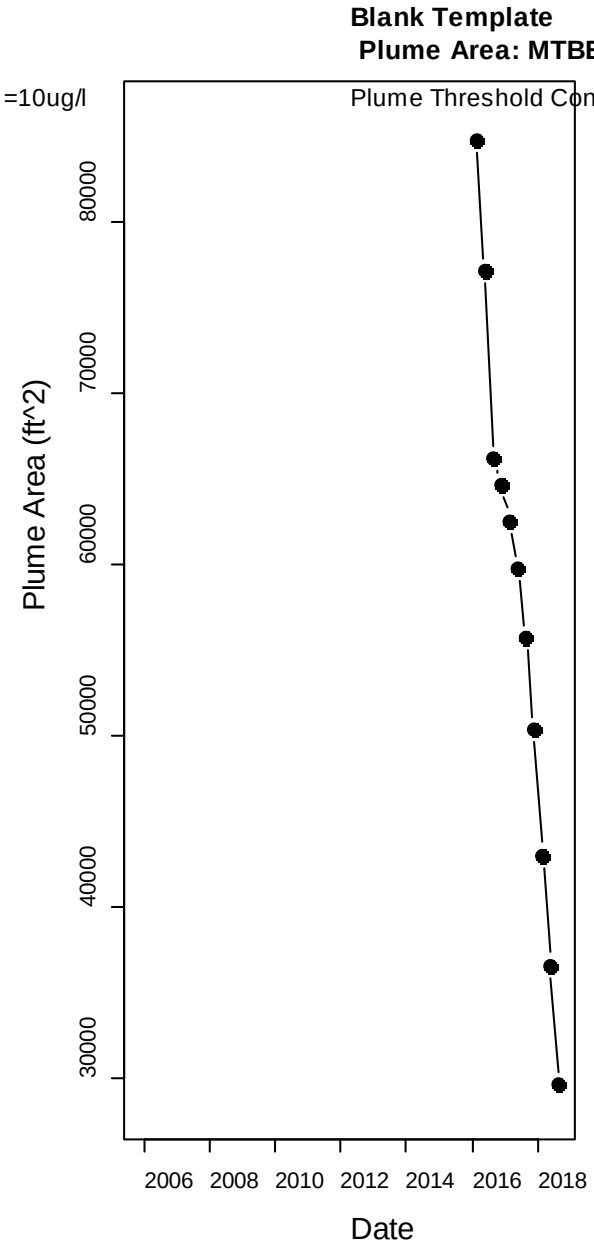
Plume Mass=0.019613 (kg/ft); Plume Area=42999 (ft^2)

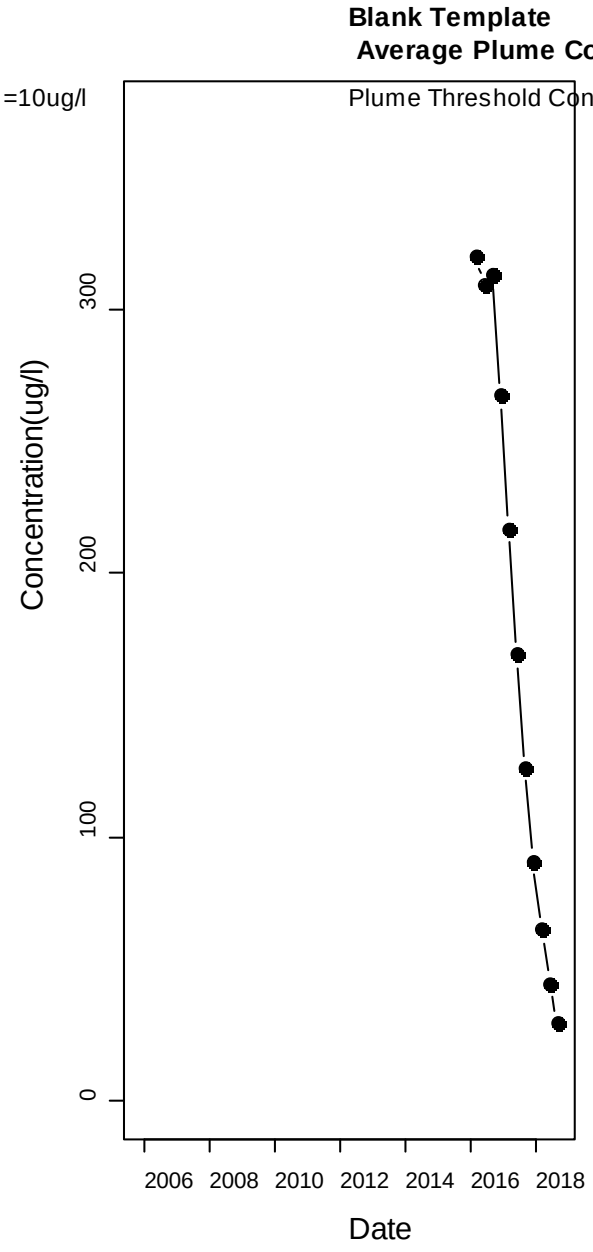


Plume Mass=0.011441 (kg/ft); Plume Area=36576 (ft^2)


MTBE : 25-May-2018 to 24-Aug-2018
ug/l
>5000
5000
3000
1500
800
400
200
100
75
50
25
10
5
0
722600
722400
722200
722000
721800
721600
721400
1395500
1396000
1396500
1397000
PW03-INF
PW02-INF
PW01-INF
MW-9A/B
MW-13A/B
MW-5B
MW-12B
MW-8A/B
MW-21
19201-MDTN-INF
MW-2
MW-25B
MW-1
MW-24B
MW-7A/B
RW-2
19124-MDTN-INF
19119-MDTN-INF
1606-RAY-INF
RW-4
1612-RAY-INF
1614-RAY-INF
1616-RAY-INF
1620-RAY-INF
MW-16A/B
1624-RAY-INF
MWW-19A/B
MW-20A/B
Plume Mass=0.0061258 (kg/ft); Plume Area=29619 (ft^2)


Blank Template
Plume Mass: MTBE
Plume Threshold Conc =10ug/l
Plume Mass (kg/ft)
0.00
0.05
0.10
0.15
0.20
2006
2008
2010
2012
2014
2016
2018
Date


Blank Template
Plume Area: MTBE
Plume Threshold Conc =10ug/l
Plume Area (ft^2)
30000
40000
50000
60000
70000
80000
2006
2008
2010
2012
2014
2016
2018
Date


Blank Template
Average Plume Conc
Plume Threshold Conc =
Concentration(ug/l)
0
100
200
300
2006
2008
2010
2012
2014
2016
2018
Date

Appendix D – Monitoring and Former Recovery Well Completion Logs

Log of Boring: MW-1

Date Started: 7/25/2005
Date Completed: 8/9/2005
Total Depth (ft): 62.00
Boring Diameter (in): 6
Bedrock Depth (ft): 33
Elevation (ft-msl): N/A
Remark:

Project Code: 1962
Project Name: Carroll Fuel - Parkton
Drilled By: Bedford Well Drilling
Logged By: Andrew Applebaum
Drill Rig: IR T3W
Drill Method: Air rotary
Sampling Method: N/A

Depth	Sample Number	Sample Interval	Recovery (inches)	Blow Counts	PID Units	Lithological Description	Interpreted Lithology	Well Construction	Comments
0						ML: Asphalt, tan silty fine sand and large gravel (fill).			Background air PID 0.0.
-5	1		8	20|21|23|24	0.0	ML: Red brown fine sandy silt, damp.			
-10	2		6	18|14|20|21	0.0				
-15	3		12	7|15|20|24	0.0	ML: Brown micaceous silt with some fine sand, damp.			
-20	4		4	24|50/5	0.0	SAPROLITE: Green brown micaceous silt, some fine to medium sand (mica schist), rock fragments, zones of tan coloration.			
-25									
-30									
-35						SCHIST: Harder drilling, competent green mica schist like rock with soft tan zones at 47' & 52'-54'.			
-40									
-45									
-50									
-55									
-60									

Log of Boring: MW-2

Date Started: 7/25/2005
Date Completed: 8/10/2005
Total Depth (ft): 62.00
Boring Diameter (in): 6
Bedrock Depth (ft): 34
Elevation (ft-msl): N/A
Remark:

Project Code: 1962
Project Name: Carroll Fuel - Parkton
Drilled By: Bedford Well Drilling
Logged By: Andrew Applebaum
Drill Rig: IR T3W
Drill Method: Air rotary
Sampling Method: N/A

Depth	Sample Number	Sample Interval	Recovery (inches)	Blow Counts	PID Units	Lithological Description	Interpreted Lithology	Well Construction	Comments
0						ML: Asphalt, tan fine sandy silt and gravel (fill).			Background air PID 0.0.
-5						ML: Red brown fine sandy silt, micaceous, damp.			
-10						ML: Tan silty fine sand, micaceous, damp.			
-15						ML: Green micaceous silt with fine-medium sand, rock fragments.			
-20						SAPROLITE: Green mica schist, harder drilling with rock fragments.			
-25									
-30									
-35						SCHIST: Competent green mica schist like rock, micaceous silt with fine sand and rock fragments with soft zones at 43', 47-49'and 54'.			
-40									
-45									
-50									
-55									
-60									

Log of Boring: MW-3

Date Started: 8/9/2005
Date Completed: 8/9/2005
Total Depth (ft): 62.00
Boring Diameter (in): 6
Bedrock Depth (ft): 32
Elevation (ft-msl): N/A
Remark:

Project Code: 1962
Project Name: Carroll Fuel - Parkton
Drilled By: Bedford Well Drilling
Logged By: Andrew Applebaum
Drill Rig: IR T3W
Drill Method: Air rotary
Sampling Method: N/A

Depth	Sample Number	Sample Interval	Recovery (inches)	Blow Counts	PID Units	Lithological Description	Interpreted Lithology	Well Construction	Comments
0						ML: Asphalt, tan silty fine sand and large gravel (fill).			Background air PID 0.0.
-5					35.2	ML: Red brown fine sandy silt, damp.			
-10						ML: Brown micaceous silt with some fine sand, damp.			
-15					42.6	ML: Green micaceous silt, damp.			
-20					47.6	SAPROLITE: As above with tan mica schist colored zones, presence of rock fragments, harder drilling with depth.			
-25									
-30									
-35					39.5	SCHIST: Harder drilling, small rock fragments, green mica schist like rock with soft tan zones observed at 52' & 57'.			
-40									
-45									
-50									
-55									
-60									

Log of Boring: MW-4

Date Started: 11/09/05
Date Completed: 11/09/05
Total Depth (ft): 61.00
Boring Diameter (in): 6
Bedrock Depth (ft): 36
Elevation (ft-msl): N/A
Remark:

Project Code: 1962
Project Name: Carroll Fuel - Parkton
Drilled By: Earth Matters, Inc.
Logged By: Andrew Applebaum
Drill Rig: Simco 2800
Drill Method: Air rotary
Sampling Method: N/A

Depth	Sample Number	Sample Interval	Recovery (inches)	Blow Counts	PID Units	Lithological Description	Interpreted Lithology	Well Construction	Comments
0					0.0	ASPHALT MH: Red brown to brown micaceous silt, some rock fragments, dry.			Background PID 0.0. Set 2" Sch. 40 PVC well at 60' with 20' of 0.02"-slot screen, 40' of casing. #2 sand 61'-37', bentonite 37'-1', cement/ manhole 1'-grade.
-25					102	SAPROLITE: tan, micaceous weathered rock, dry.			
-35					95	SCHIST: Greenish brown to green mica schist, some soft zones at 42'-44' & 46'-47' with brown coloration, damp.			

Log of Boring: MW-5

Date Started: 11/09/05
Date Completed: 11/09/05
Total Depth (ft): 51.00
Boring Diameter (in): 6
Bedrock Depth (ft): 18
Elevation (ft-msl): N/A
Remark:

Project Code: 1962
Project Name: Carroll Fuel - Parkton
Drilled By: Earth Matters, Inc.
Logged By: Andrew Applebaum
Drill Rig: Simco 2800
Drill Method: Air rotary
Sampling Method: N/A

Depth	Sample Number	Sample Interval	Recovery (inches)	Blow Counts	PID Units	Lithological Description	Interpreted Lithology	Well Construction	Comments
0						ASPHALT			Background air PID 0.0.
-5						MH: Brown micaceous silt, some rock fragments, dry.			Set 2" Sch. 40 PVC well at 50.5' with 20' of 0.02"-slot screen, 30' of casing. #2 sand 51'-28', bentonite 28'- 1', cement / manhole 1'-grade.
-10									
-15					38.7	SAPROLITE: greenish brown to brown weathered rock, dry.			
-20					424	SCHIST: Tan to green mica schist. Soft damp zones at 33.5', 36'-37' & 39', all have strong petroleum odor. Harder drilling 41.5'-51'.			
-25									
-30									
-35									
-40									
-45									
-50									

Log of Boring: MW-6

Date Started: 11/10/05
Date Completed: 11/10/05
Total Depth (ft): 62.00
Boring Diameter (in): 6
Bedrock Depth (ft): 24
Elevation (ft-msl): N/A
Remark:

Project Code: 1962
Project Name: Carroll Fuel - Parkton
Drilled By: Earth Matters, Inc.
Logged By: Andrew Applebaum
Drill Rig: Simco 2800
Drill Method: Air rotary
Sampling Method: N/A

Depth	Sample Number	Sample Interval	Recovery (inches)	Blow Counts	PID Units	Lithological Description	Interpreted Lithology	Well Construction	Comments
0					0.0	ASPHALT			Background air PID 0.0.
						GRAVEL: & fines.			
-5					0.2	MH: Brown to tan micaceous silt, rock fragments, dry.			Set 2" Sch. 40 PVC well at 60.5' with 20' of 0.02"-slot screen, 40' of casing. #2 sand 62'-37', bentonite 37'-1', cement / manhole 1'-grade.
-10									
					7.9	MH: Red brown to tan micaceous silt with rock fragments, dry.			
-15									
						SAPROLITE: brown to greenish brown weathered rock with rock fragments, dry.			
-20									
-25					22.9	SCHIST: Greenish mica schist, dry. Brownish soft zone 33'-34', no water. Broken rock fragments 50'-52', fracture. Cuttings darker & damp at 54'.			
-30									
-35									
-40									
-45									
-50									
-55									
-60									

Log of Boring: MW-7A

Date Started: 08/28/06
Date Completed: 08/29/06
Total Depth (ft): 65.00
Boring Diameter (in): 10"/6"
Bedrock Depth (ft): 37
Elevation (ft-msl): 91.81
Remark:

Project Code: 1962
Project Name: Carroll Fuel - Parkton
Drilled By: Eichelbergers
Logged By: Jason Yaple
Drill Rig: T450W
Drill Method: Air rotary
Sampling Method: N/A

Depth	Sample Number	Sample Interval	Recovery (inches)	Blow Counts	PID Units	Lithological Description	Interpreted Lithology	Well Construction	Comments
0					<0.1	GRAVEL: Asphalt and gravel subbase, fill.			6" steel conductor casing from 40'-0', bentonite-cement grout tremie piped from 40'-3', open borehole 65'-40'.
						ML: Clayey silt, orange to brown, no plasticity, low moisture, soap-like texture.			
-5									
-10					<0.1	SAPROLITE: Harder drilling, saprolite silty sand-like cuttings, micaceous throughout, no water.			
-15						SAPROLITE: As above, red.			
-20					<0.1				
						SAPROLITE: As above, tan.			
-25									
						SAPROLITE: As above, slightly faster drilling, no water.			
-30						SAPROLITE: As above, brown-tan.			

Log of Boring: MW-7A

Date Started: 08/28/06
Date Completed: 08/29/06
Total Depth (ft): 65.00
Boring Diameter (in): 10"/6"
Bedrock Depth (ft): 37
Elevation (ft-msl): 91.81
Remark:

Project Code: 1962
Project Name: Carroll Fuel - Parkton
Drilled By: Eichelbergers
Logged By: Jason Yaple
Drill Rig: T450W
Drill Method: Air rotary
Sampling Method: N/A

Depth	Sample Number	Sample Interval	Recovery (inches)	Blow Counts	PID Units	Lithological Description	Interpreted Lithology	Well Construction	Comments
-35									
-40					<0.1	SCHIST: Harder drilling with larger rock-like cuttings, begin weathered schist, cuttings angular.			
-45						SCHIST: Brown cuttings, likely fracture/top of competent bedrock.			
-50						SCHIST: Gray, harder schist drilling, more coarse and angular cuttings.			
						SCHIST: As above, tan, appr. 1/2 gallon of water.			
						SCHIST: As above, gray.			
-55						SCHIST: As above, brown, softer zone.			
						SCHIST: As above, gray, harder drilling.			
-60					<0.1	SCHIST: As above, soft brown zone.			
						SCHIST: As above, gray.			
-65									

Log of Boring: MW-7B

Date Started: 08/24/06
Date Completed: 08/31/06
Total Depth (ft): 242.00
Boring Diameter (in): 10"/6"
Bedrock Depth (ft): 38
Elevation (ft-msl): 91.77
Remark:

Project Code: 1962
Project Name: Carroll Fuel - Parkton
Drilled By: Eichelbergers
Logged By: Jason Yaple
Drill Rig: T450W
Drill Method: Air rotary
Sampling Method: N/A

Depth	Sample Number	Sample Interval	Recovery (inches)	Blow Counts	PID Units	Lithological Description	Interpreted Lithology	Well Construction	Comments
0					<0.1	GRAVEL: Asphalt and gravel subbase.			Complete well with 6" steel casing from 70'-0', bentonite-cement grout tremie piped 70'-3', open borehole 242'-70'.
-5						ML: Clayey silt, orange to brown, micaceous, soap-like texture, no plasticity, slight moisture, soft drilling.			
-10									
-15						SAPROLITE: Harder with depth, fine grained cuttings with similar soapy texture, more drill chatter, no water.			
-20					<0.1				
-25						SAPROLITE: As above, slightly soft zone, less chatter.			
-30									
-35						SAPROLITE: As above, coarser cuttings, harder drilling with more chatter.			
-40					<0.1	SCHIST: Greenish brown, hard drilling.			
-45						SCHIST: As above, soft zone, no water.			
-50						SCHIST: As above, greenish brown, hard drilling.			
-55						SCHIST: As above, drill chatter (harder) with depth.			
-60					<0.1				
-65						SCHIST: Slight soft zone, likely water bearing (<0.5 gpm).			
-70						SCHIST: More coarse grained cuttings, loose, some wet zones.			
-75						SCHIST: Dry cuttings.			
-80						SCHIST: Harder drilling,			

Log of Boring: MW-7B

Date Started: 08/24/06
Date Completed: 08/31/06
Total Depth (ft): 242.00
Boring Diameter (in): 10"/6"
Bedrock Depth (ft): 38
Elevation (ft-msl): 91.77
Remark:

Project Code: 1962
Project Name: Carroll Fuel - Parkton
Drilled By: Eichelbergers
Logged By: Jason Yaple
Drill Rig: T450W
Drill Method: Air rotary
Sampling Method: N/A

Depth	Sample Number	Sample Interval	Recovery (inches)	Blow Counts	PID Units	Lithological Description	Interpreted Lithology	Well Construction	Comments
-85					<0.1	competent bedrock gray schist, no discernable fractures or water bearing zone, slight moisture at 82'.			
-90						SCHIST: As above, dusty cuttings, micaceous.			
-95									
-100					<0.1				
-105									
-110									
-115									
-120					<0.1				
-125									
-130									
-135									
-140					<0.1				
-145									
-150									
-155									
-160					<0.1				

Log of Boring: MW-7B

Date Started: 08/24/06
Date Completed: 08/31/06
Total Depth (ft): 242.00
Boring Diameter (in): 10"/6"
Bedrock Depth (ft): 38
Elevation (ft-msl): 91.77
Remark:

Project Code: 1962
Project Name: Carroll Fuel - Parkton
Drilled By: Eichelbergers
Logged By: Jason Yaple
Drill Rig: T450W
Drill Method: Air rotary
Sampling Method: N/A

Depth	Sample Number	Sample Interval	Recovery (inches)	Blow Counts	PID Units	Lithological Description	Interpreted Lithology	Well Construction	Comments
-165									
-170									
-175									
-180					<0.1				
-185									
-190									
-195									
-200					<0.1				
-205									
-210									
-215									
-220					<0.1				
-225									
-230									
-235									
-240					<0.1				

Log of Boring: MW-8A

Date Started: 08/28/06
Date Completed: 08/29/06
Total Depth (ft): 65.00
Boring Diameter (in): 10
Bedrock Depth (ft): 30
Elevation (ft-msl): 89.89
Remark:

Project Code: 1962
Project Name: Carroll Fuel - Parkton
Drilled By: Eichelbergers
Logged By: Jason Yaple
Drill Rig: T450W
Drill Method: Air rotary
Sampling Method: N/A

Depth	Sample Number	Sample Interval	Recovery (inches)	Blow Counts	PID Units	Lithological Description	Interpreted Lithology	Well Construction	Comments
0					<0.1	GRAVEL: roadbase fill material.			Complete well with 6" steel casing from 40'-0', bentonite-cement grout tremie piped 40'-3', open borehole 65'-40'.
						ML: Clayey silt, reddish brown, micaceous, no plasticity, low moisture, easy drilling.			
-5						SAPROLITE: light brown, slight drill chatter, soap-like texture.			
-10					<0.1				
						SAPROLITE: As above, dark brown.			
-15						SAPROLITE: As above, more drill chatter, light tan.			
						SAPROLITE: As above, bronze, no water.			
-20					<0.1				
-25						SAPROLITE: As above, light tan.			
-30						SCHIST: As above, bronze, no water, slightly harder drilling with few			

Log of Boring: MW-8A

Date Started: 08/28/06
Date Completed: 08/29/06
Total Depth (ft): 65.00
Boring Diameter (in): 10
Bedrock Depth (ft): 30
Elevation (ft-msl): 89.89
Remark:

Project Code: 1962
Project Name: Carroll Fuel - Parkton
Drilled By: Eichelbergers
Logged By: Jason Yaple
Drill Rig: T450W
Drill Method: Air rotary
Sampling Method: N/A

Depth	Sample Number	Sample Interval	Recovery (inches)	Blow Counts	PID Units	Lithological Description	Interpreted Lithology	Well Construction	Comments
-35						weathered bedrock cuttings.			
-40					<0.1				
-45									
-50						SCHIST: As above, harder drilling, bronze, some small gravel sized cuttings, <0.25 gpm.			
						SCHIST: As above, tannish gray.			
-55						SCHIST: As above, gray, dusty cuttings.			
-60					<0.1	SCHIST: As above, brown, possible water bearing.			
						SCHIST: As above, gray.			
-65									

Log of Boring: MW-8B

Date Started: 08/24/06
Date Completed: 08/29/06
Total Depth (ft): 100.00
Boring Diameter (in): 10"/6"
Bedrock Depth (ft): 30
Elevation (ft-msl): 89.48
Remark:

Project Code: 1962
Project Name: Carroll Fuel - Parkton
Drilled By: Eichelbergers
Logged By: Jason Yaple
Drill Rig: T450W
Drill Method: Air rotary
Sampling Method: N/A

Depth	Sample Number	Sample Interval	Recovery (inches)	Blow Counts	PID Units	Lithological Description	Interpreted Lithology	Well Construction	Comments
0						GRAVEL: and road base fill.			Complete well with 6" steel casing from 73.5'-0', bentonite-cement grout tremie piped 73.5'-3', open borehole100'-73.5'.
-5						MH: Clayey silt, reddish brown, no plasticity, low moisture, micaceous, easy drilling.			
-10						SAPROLITE: light brown, more drill chatter, harder.			
-15						SAPROLITE: As above, dark brown.			
						SAPROLITE: As above, harder drilling, light tan.			
-20					<0.1	SAPROLITE: As above, bronze.			
-25						SAPROLITE: As above, light tan.			
-30						SCHIST: As above, bronze with few weathered rock cuttings, slightly harder drilling.			
-35									
-40					<0.1				
-45									
-50						SCHIST: As above, harder drilling, some small gravel sized cuttings, minor			

Log of Boring: MW-8B

Date Started: 08/24/06
Date Completed: 08/29/06
Total Depth (ft): 100.00
Boring Diameter (in): 10"/6"
Bedrock Depth (ft): 30
Elevation (ft-msl): 89.48
Remark:

Project Code: 1962
Project Name: Carroll Fuel - Parkton
Drilled By: Eichelbergers
Logged By: Jason Yaple
Drill Rig: T450W
Drill Method: Air rotary
Sampling Method: N/A

Depth	Sample Number	Sample Interval	Recovery (inches)	Blow Counts	PID Units	Lithological Description	Interpreted Lithology	Well Construction	Comments
-50						water, weathered schist.			
						SCHIST: As above, tannish gray.			
-55						SCHIST: As above, gray, dusty cuttings, harder.			
-60					<0.1	SCHIST: As above, brown.			
						SCHIST: As above, gray.			
-65									
-70						SCHIST: As above, dark gray, hard drilling, coarse angular cuttings, not as soapy in texture, slight moisture, no discernable fractures.			
-75									
-80					<0.1				
-85									
-90									
-95									
-100					<0.1				

Log of Boring: MW-9A

Date Started: 08/29/06
Date Completed: 08/30/06
Total Depth (ft): 65.00
Boring Diameter (in): 10"/6"
Bedrock Depth (ft): 33
Elevation (ft-msl): 95.05
Remark:

Project Code: 1962
Project Name: Carroll Fuel - Parkton
Drilled By: Eichelbergers
Logged By: Jason Yaple
Drill Rig: T450W
Drill Method: Air rotary
Sampling Method: N/A

Depth	Sample Number	Sample Interval	Recovery (inches)	Blow Counts	PID Units	Lithological Description	Interpreted Lithology	Well Construction	Comments
0					<0.1	GRAVEL: and soil fill, road base.			Complete well with 6" steel casing from 40'-0', bentonite-cement grout tremie piped 40'-3', open borehole 65'-40'.
-5						ML: Clayey silt, no mosture, low plasticity, micaceous.			
-10					<0.1	SAPROLITE: Reddish brown, silty sand like cuttings, low moisture, soapy texture, continued micaceous.			
-15									
-20					<0.1	SAPROLITE: As above, orange brown, little harder.			
-25						SAPROLITE: As above, light tan to orange to tan.			
-30						SAPROLITE: As above, soft, easy drilling.			

Log of Boring: MW-9A

Date Started: 08/29/06
Date Completed: 08/30/06
Total Depth (ft): 65.00
Boring Diameter (in): 10"/6"
Bedrock Depth (ft): 33
Elevation (ft-msl): 95.05
Remark:

Project Code: 1962
Project Name: Carroll Fuel - Parkton
Drilled By: Eichelbergers
Logged By: Jason Yaple
Drill Rig: T450W
Drill Method: Air rotary
Sampling Method: N/A

Depth	Sample Number	Sample Interval	Recovery (inches)	Blow Counts	PID Units	Lithological Description	Interpreted Lithology	Well Construction	Comments
-35						SCHIST: weathered, bronze, harder, more rock fragments.			
-40					<0.1	SCHIST: As above, harder drilling 37'-40', soft 40'-50'.			
-45									
-50						SCHIST: As above, harder, light tan.			
-55						SCHIST: As above, tannish gray, coarser cuttings, harder drilling.			
						SCHIST: As above, brown, softer.			
-60					<0.1	SCHIST: Harder gray bedrock, competent.			
-65									

Log of Boring: MW-9B

Date Started: 08/05/06
Date Completed: 08/30/06
Total Depth (ft): 242.00
Boring Diameter (in): 10"/6"
Bedrock Depth (ft): 33
Elevation (ft-msl): 94.93
Remark:

Project Code: 1962
Project Name: Carroll Fuel - Parkton
Drilled By: Eichelbergers
Logged By: Jason Yaple
Drill Rig: T450W
Drill Method: Air rotary
Sampling Method: N/A

Depth	Sample Number	Sample Interval	Recovery (inches)	Blow Counts	PID Units	Lithological Description	Interpreted Lithology	Well Construction	Comments
0					<0.1	GRAVEL: and soil road base, fill.			Complete well with 6" steel casing from 72'-0', bentonite-cement grout tremie piped 72'-3', open borehole 242'-72'.
-5						ML: Clayey silt, orange brown, low plasticity, micaceous, low moisture.			
-10						SAPROLITE: reddish brown with drill chatter (harder), silty sand like cuttings, low moisture, soapy texture.			
-15									
-20					<0.1	SAPROLITE: As above, orange brown, little harder, orange 27'-28', tan 28'-29'.			
-25									
-30						SAPROLITE: As above, softer, easy drilling.			
-35						SCHIST: weathered, bronze, harder, more rock fragments.			
-40					<0.1	SCHIST: As above, harder drilling 37'-40', softer 40'-50'.			
-45									
-50						SCHIST: As above, light tan.			
-55						SCHIST: As above, tannish gray, coarser cuttings, harder drilling.			
-60					<0.1	SCHIST: As above, brown, soft drilling.			
-65						SCHIST: Harder gray bedrock drilling.			
-70						SCHIST: Slower drilling, chlorite gray green color.			
-75						SCHIST: As above, tan.			
-80						SCHIST: Gray green, hard			

Log of Boring: MW-9B

Date Started: 08/05/06
Date Completed: 08/30/06
Total Depth (ft): 242.00
Boring Diameter (in): 10"/6"
Bedrock Depth (ft): 33
Elevation (ft-msl): 94.93
Remark:

Project Code: 1962
Project Name: Carroll Fuel - Parkton
Drilled By: Eichelbergers
Logged By: Jason Yaple
Drill Rig: T450W
Drill Method: Air rotary
Sampling Method: N/A

Depth	Sample Number	Sample Interval	Recovery (inches)	Blow Counts	PID Units	Lithological Description	Interpreted Lithology	Well Construction	Comments
-85					<0.1	chatter, bedrock, very dusty, minor moisture.			
-90									
-95									
-100					<0.1				
-105									
-110									
-115									
-120					<0.1				
-125									
-130									
-135									
-140					<0.1				
-145									
-150									
-155									
-160					<0.1				

Log of Boring: MW-9B

Date Started: 08/05/06
Date Completed: 08/30/06
Total Depth (ft): 242.00
Boring Diameter (in): 10"/6"
Bedrock Depth (ft): 33
Elevation (ft-msl): 94.93
Remark:

Project Code: 1962
Project Name: Carroll Fuel - Parkton
Drilled By: Eichelbergers
Logged By: Jason Yaple
Drill Rig: T450W
Drill Method: Air rotary
Sampling Method: N/A

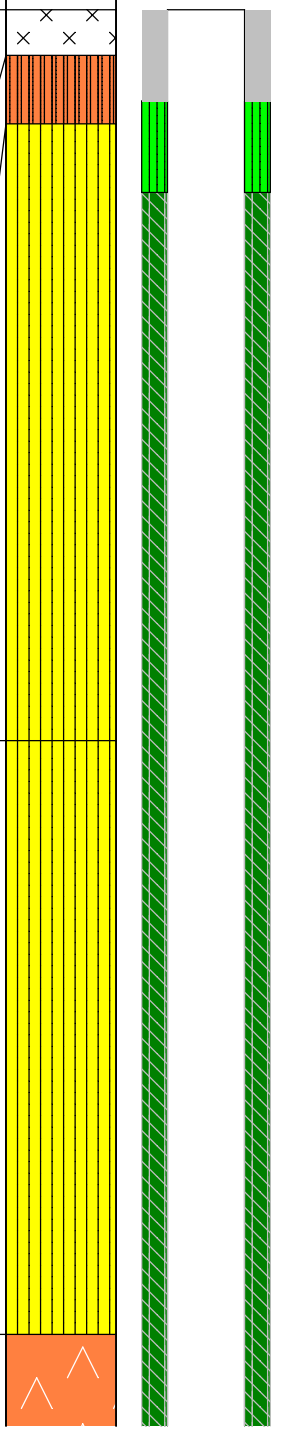
Depth	Sample Number	Sample Interval	Recovery (inches)	Blow Counts	PID Units	Lithological Description	Interpreted Lithology	Well Construction	Comments
-165									
-170									
-175									
-180					<0.1				
-185						SCHIST: As above, soft drilling with no chatter, no water observed.			
-190						SCHIST: As above, hard drilling, some moisture.			
-195									
-200					<0.1				
-205									
-210									
-215									
-220					<0.1				
-225									
-230									
-235									
-240					<0.1				

Log of Boring: MW-10A

Date Started: 05/08/07
Date Completed: 05/08/07
Total Depth (ft): 62.00
Boring Diameter (in): 10" to 40', 6" to 62'
Bedrock Depth (ft): 36'
Elevation (ft-msl): 97.60
Remark:

Project Code: 1962
Project Name: Carroll Fuel - Parkton
Drilled By: Eichelbergers
Logged By: Jason Yaple
Drill Rig: IR-T4
Drill Method: Air rotary
Sampling Method: N/A

Depth	Sample Number	Sample Interval	Recovery (inches)	Blow Counts	PID Units	Lithological Description	Interpreted Lithology	Well Construction	Comments
0						FILL: asphalt and gravel subbase			
						MH: clayey silt, light tan, micaceous, medium soft, medium plasticity			
-5						ML: tan and ligh red silt, medium soft, no plasiticity, some schist gravel gragments. gravel sized			
-10									
-15									
					<0.1	ML: light brown/tan color			
-20									
-25									
-30						SAPROLITE: more drill chatter, tan saprolite			



Log of Boring: MW-10A

Date Started: 05/08/07
Date Completed: 05/08/07
Total Depth (ft): 62.00
Boring Diameter (in): 10" to 40', 6" to 62'
Bedrock Depth (ft): 36'
Elevation (ft-msl): 97.60
Remark:

Project Code: 1962
Project Name: Carroll Fuel - Parkton
Drilled By: Eichelbergers
Logged By: Jason Yaple
Drill Rig: IR-T4
Drill Method: Air rotary
Sampling Method: N/A

Depth	Sample Number	Sample Interval	Recovery (inches)	Blow Counts	PID Units	Lithological Description	Interpreted Lithology	Well Construction	Comments
-35									
						SCHIST: constant chatter, bronze color, weathered schist bedrock			
-40					<0.1	SCHIST: SAA			
-45					12.8				
						SCHIST: SAA, more constant chatter			
-50					2.7	SCHIST: regular chatter			
-55					<0.1				
-60						SCHIST: no chatter, fracture			Note: water noticed after waiting 30 seconds
						SCHIST: regular chatter, grey bedrock			

Log of Boring: MW-10B

Date Started: 05/08/07
Date Completed: 05/08/07
Total Depth (ft): 100.00
Boring Diameter (in): 10" to 70', 6" to 100'
Bedrock Depth (ft): 38'
Elevation (ft-msl): 97.66
Remark:

Project Code: 1962
Project Name: Carroll Fuel - Parkton
Drilled By: Eichelbergers
Logged By: Jason Yaple
Drill Rig: IR-T4
Drill Method: Air rotary
Sampling Method: N/A

Depth	Sample Number	Sample Interval	Recovery (inches)	Blow Counts	PID Units	Lithological Description	Interpreted Lithology	Well Construction	Comments
0						FILL: asphalt and gravel subbase			
-5						MH: clayey silt, light tan, micaceous, medium soft, medium plasticity			
-10					<0.1	ML: tan and light red silt, medium soft, no plasticity, some schist gravel fragments, gravel sized			
					<0.1				
-15					<0.1	ML: SAA, color change to red			
						ML: begin drill chatter			
-20						ML: SAA, bronze color			
					<0.1	ML: SAA, tan color			
-25					<0.1	ML: SAA, red color			
-30					<0.1	SAPROLITE: more drill chatter, light tan/grey color, saprolite			
-35									
-40						SCHIST: light brown/green mica schist, highly weathered			
-45					7.9				
-50					8.9	SCHIST: SAA, light grey harder, good chatter			

Log of Boring: MW-10B

Date Started: 05/08/07
Date Completed: 05/08/07
Total Depth (ft): 100.00
Boring Diameter (in): 10" to 70', 6" to 100'
Bedrock Depth (ft): 38'
Elevation (ft-msl): 97.66
Remark:

Project Code: 1962
Project Name: Carroll Fuel - Parkton
Drilled By: Eichelbergers
Logged By: Jason Yaple
Drill Rig: IR-T4
Drill Method: Air rotary
Sampling Method: N/A

Depth	Sample Number	Sample Interval	Recovery (inches)	Blow Counts	PID Units	Lithological Description	Interpreted Lithology	Well Construction	Comments
-55									
-60					<0.1	SCHIST: hard drilling			
-65									
-70						SCHIST: steady chatter, harder drilling continued grey schist, no noticable fractures or water bearing zones			
-75									
-80									
-85									
-90									
-95									
-100									

Log of Boring: MW-11A

Date Started: 06/26/08
Date Completed: 06/26/08
Total Depth (ft): 60.00
Boring Diameter (in): 10" to 40'; 6" to 60'
Bedrock Depth (ft): 30
Elevation (ft-msl): 795.52
Remark:

Project Code: 1962
Project Name: Carroll Fuel - Parkton
Drilled By: Eichelbergers
Logged By: Jason Yaple
Drill Rig: T555
Drill Method: Air rotary
Sampling Method: Cutting observation

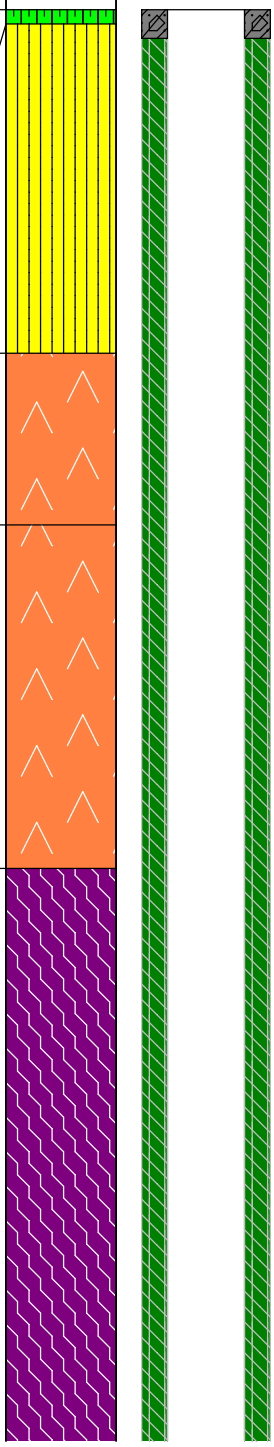
Depth	Sample Number	Sample Interval	Recovery (inches)	Blow Counts	PID	Lithological Description	Interpreted Lithology	Well Construction	Comments
0						OL: Grass and clay.			Well set at 60' with open borehole 60'-40', steel casing 40'-surface. Bentonite-cement grout 40'-1', concrete 1'-surface.
-5						ML: Orange-brown silt with few gravel.			
-10					<0.1				Note: no discernable water bearing fractures.
-15						SAPROLITE: As above, maroon-brown fine sand to silt cuttings, saprolite (weathered schist).			
-20					<0.1	SAPROLITE: As above, steady drill chatter, slight mica flakes.			
-25					<0.1				
-30						SCHIST: Harder drilling, bronze color.			
-35					<0.1				
-40									
-45									
-50					<0.1				
-55						SCHIST: Gray color cuttings.			
-60					<0.1				

Log of Boring: MW-11B

Date Started: 06/26/08
Date Completed: 06/26/08
Total Depth (ft): 100.00
Boring Diameter (in): 10" to 70'; 6" to 100'
Bedrock Depth (ft): 30
Elevation (ft-msl): 795.22
Remark:

Project Code: 1962
Project Name: Carroll Fuel - Parkton
Drilled By: Eichelbergers
Logged By: Jason Yaple
Drill Rig: T555
Drill Method: Air rotary
Sampling Method: Cutting observation

Depth	Sample Number	Sample Interval	Recovery (inches)	Blow Counts	PID	Lithological Description	Interpreted Lithology	Well Construction	Comments
0						OL: Grass and clay.			Well set at 100' with open borehole 100'-70', steel casing 70'-surface. Bentonite-cement grout 70'-1', concrete 1'-surface.
-5						ML: Orange-brown silt with few gravel.			Note: no discernable water bearing fractures.
-10					<0.1				
-15						SAPROLITE: As above, maroon-brown fine sand to silt cuttings, saprolite (weathered schist).			
-20					<0.1	SAPROLITE: As above, steady drill chatter, slight mica flakes.			
-25					<0.1				
-30						SCHIST: Harder drilling, bronze color.			
-35					<0.1				
-40									
-45					<0.1				
50									



Log of Boring: MW-11B

Date Started: 06/26/08
Date Completed: 06/26/08
Total Depth (ft): 100.00
Boring Diameter (in): 10" to 70'; 6" to 100'
Bedrock Depth (ft): 30
Elevation (ft-msl): 795.22
Remark:

Project Code: 1962
Project Name: Carroll Fuel - Parkton
Drilled By: Eichelbergers
Logged By: Jason Yaple
Drill Rig: T555
Drill Method: Air rotary
Sampling Method: Cutting observation

Depth	Sample Number	Sample Interval	Recovery (inches)	Blow Counts	PID	Lithological Description	Interpreted Lithology	Well Construction	Comments
-55									
-60					<0.1	SCHIST: Gray color cuttings.			
-65									
-70									
-75					<0.1				
-80						SCHIST: As above, small fracture at 80' bgs.			
-85					<0.1	SCHIST: As above, small fracture at 85' bgs, brown cuttings.			
-90						SCHIST: As above, small fracture at 90' bgs.			
-95									
-100					<0.1				

Log of Boring: MW-12B

Date Started: 07/02/08
Date Completed: 07/02/08
Total Depth (ft): 100.00
Boring Diameter (in): 10" to 70'; 6" to 100'
Bedrock Depth (ft): 31
Elevation (ft-msl): 800.28
Remark:

Project Code: 1962
Project Name: Carroll Fuel - Parkton
Drilled By: Eichelbergers
Logged By: Jason Yaple
Drill Rig: T555
Drill Method: Air rotary
Sampling Method: Cutting observation

Depth	Sample Number	Sample Interval	Recovery (inches)	Blow Counts	PID	Lithological Description	Interpreted Lithology	Well Construction	Comments
0						FILL: Asphalt and gravel fill.			Well set at 100' with open borehole 100'-70', steel casing 70'-surface. Bentonite-cement grout 70'-1', concrete 1'-surface.
-5					<0.1	ML: Light brown silt, micaceous, no plasticity, medium soft with many schist gravel fragments.			Note: no discernable water bearing fractures.
-10					<0.1				
-15					<0.1	ML: As above, maroon-brown color.			
-20						SAPROLITE: As above, bronze color.			
-25					<0.1				
-30						SCHIST: Harder drilling, gray color, schist bedrock.			
-35									
-40									
-45					<0.1				
50									

Log of Boring: MW-12B

Date Started: 07/02/08
Date Completed: 07/02/08
Total Depth (ft): 100.00
Boring Diameter (in): 10" to 70'; 6" to 100'
Bedrock Depth (ft): 31
Elevation (ft-msl): 800.28
Remark:

Project Code: 1962
Project Name: Carroll Fuel - Parkton
Drilled By: Eichelbergers
Logged By: Jason Yaple
Drill Rig: T555
Drill Method: Air rotary
Sampling Method: Cutting observation

Depth	Sample Number	Sample Interval	Recovery (inches)	Blow Counts	PID	Lithological Description	Interpreted Lithology	Well Construction	Comments
-55						SCHIST: As above, bronze color.			
-60					<0.1	SCHIST: As above, gray color.			
-65						SCHIST: As above, possible fracture at 64' bgs.			
-70									
-75									
-80					<0.1				
-85									
-90									
-95									
-100					<0.1				

Log of Boring: MW-13A

Date Started: 06/27/08
Date Completed: 06/27/08
Total Depth (ft): 60.00
Boring Diameter (in): 10" to 40'; 6" to 60'
Bedrock Depth (ft): 38
Elevation (ft-msl): 801.74
Remark:

Project Code: 1962
Project Name: Carroll Fuel - Parkton
Drilled By: Eichelbergers
Logged By: Jason Yaple
Drill Rig: T555
Drill Method: Air rotary
Sampling Method: Cutting observation

Depth	Sample Number	Sample Interval	Recovery (inches)	Blow Counts	PID	Lithological Description	Interpreted Lithology	Well Construction	Comments
0 to -5					<0.1	FILL: Asphalt and gravel fill material.			Well set at 60' with open borehole 60'-40', steel casing 40'-surface. Bentonite-cement grout 40'-1', concrete 1'-surface.
-5 to -20					<0.1	ML: Light tan, silt, no plasticity, micaceous, soft.			
-5 to -20					<0.1	SAPROLITE: Maroon-brown saprolite, weathered schist, and bedrock.			
-20 to -40					<0.1	SAPROLITE: As above, light tan.			
-40 to -50					<0.1	SCHIST: Gray-green, harder drilling, schist bedrock.			
-50 to -55					<0.1	SCHIST: As above, slight fracture at 50' bgs.			
-55 to -60					<0.1	SCHIST: As above, slight fracture at 53' bgs.			

Log of Boring: MW-13B

Date Started:	06/27/08
Date Completed:	06/27/08
Total Depth (ft):	100.00
Boring Diameter (in):	10" to 70'; 6" to 100'
Bedrock Depth (ft):	38
Elevation (ft-msl):	801.78
Remark:	

Project Code:	1962
Project Name:	Carroll Fuel - Parkton
Drilled By:	Eichelbergers
Logged By:	Jason Yaple
Drill Rig:	T555
Drill Method:	Air rotary
Sampling Method:	Cutting observation

Depth	Sample Number	Sample Interval	Recovery (inches)	Blow Counts	PID	Lithological Description	Interpreted Lithology	Well Construction	Comments
0						FILL: Asphalt and gravel fill material.			Well set at 100' with open borehole 100'-70', steel casing 70'-surface. Bentonite-cement grout 70'-1', concrete 1'-surface.
-5					<0.1	ML: Light tan, silt, no plasticity, micaceous, soft.			
-10					<0.1	SAPROLITE: Maroon-brown saprolite, weathered schist, and bedrock.			
-15									
-20					<0.1				
-25						SAPROLITE: As above, light tan.			
-30									
-35									
-40					<0.1	SCHIST: Gray-green, harder drilling, schist bedrock.			
-45					<0.1				
50									

Log of Boring: MW-13B

Date Started: 06/27/08
Date Completed: 06/27/08
Total Depth (ft): 100.00
Boring Diameter (in): 10" to 70'; 6" to 100'
Bedrock Depth (ft): 38
Elevation (ft-msl): 801.78
Remark:

Project Code: 1962
Project Name: Carroll Fuel - Parkton
Drilled By: Eichelbergers
Logged By: Jason Yaple
Drill Rig: T555
Drill Method: Air rotary
Sampling Method: Cutting observation

Depth	Sample Number	Sample Interval	Recovery (inches)	Blow Counts	PID	Lithological Description	Interpreted Lithology	Well Construction	Comments
-55						SCHIST: As above, slight fracture at 50' bgs.			
-60					<0.1	SCHIST: As above, slight fracture at 53' bgs.			
-65									
-70									
-75						SCHIST: As above, slight fracture at 72' bgs.			
-80					<0.1	SCHIST: As above, slight fracture at 80' bgs.			
-85									
-90						SCHIST: As above, slight fracture at 90' bgs.			
-95									
-100					<0.1				

Log of Boring: MW-14A

Date Started: 06/26/08
Date Completed: 06/26/08
Total Depth (ft): 60.00
Boring Diameter (in): 10" to 40'; 6" to 60'
Bedrock Depth (ft): 38
Elevation (ft-msl): 797.53
Remark:

Project Code: 1962
Project Name: Carroll Fuel - Parkton
Drilled By: Eichelbergers
Logged By: Jason Yaple
Drill Rig: T555
Drill Method: Air rotary
Sampling Method: Cutting observation

Depth	Sample Number	Sample Interval	Recovery (inches)	Blow Counts	PID	Lithological Description	Interpreted Lithology	Well Construction	Comments
0						FILL: Asphalt and gravel fill material.			Well set at 60' with open borehole 60'-40', steel casing 40'-surface. Bentonite-cement grout 40'-1', concrete 1'-surface. Note: no discernable water bearing fractures.
-5					<0.1	ML: Clayey silt, stiff, low plasticity.			
-10					<0.1	ML: Silt, no plasticity, tan to brown, micaceous.			
-15									
-20									
-25					<0.1	SAPROLITE: Slight color change to bronze-green, more chatter, graphitic texture.			
-30						SAPROLITE: As above, slight fracture at 32' bgs.			
-35						SAPROLITE: As above, slight fracture at 34' bgs.			
-40					<0.1	SCHIST: Gray cuttings, more chatter, highly micaceous schist.			
-45									
-50					<0.1				
-55						SCHIST: As above, slight fracture at 54' bgs.			
-60						SCHIST: As above, slight fractures at 57' and 60' bgs.			

Log of Boring: MW-14B

Date Started:	06/26/08
Date Completed:	06/26/08
Total Depth (ft):	100.00
Boring Diameter (in):	10" to 70'; 6" to 100'
Bedrock Depth (ft):	38
Elevation (ft-msl):	797.33
Remark:	

Project Code:	1962
Project Name:	Carroll Fuel - Parkton
Drilled By:	Eichelbergers
Logged By:	Jason Yaple
Drill Rig:	T555
Drill Method:	Air rotary
Sampling Method:	Cutting observation

Depth	Sample Number	Sample Interval	Recovery (inches)	Blow Counts	PID	Lithological Description	Interpreted Lithology	Well Construction	Comments
0						FILL: Asphalt and gravel fill material.			Well set at 100' with open borehole 100'-70', steel casing 70'-surface. Bentonite-cement grout 70'-1', concrete 1'-surface.
					<0.1	ML: Clayey silt, stiff, low plasticity.			Note: no discernable water bearing fractures.
-5					<0.1	ML: Silt, no plasticity, tan to brown, micaceous.			
-10									
-15									
-20									
-25					<0.1				
-30						SAPROLITE: Slight color change to bronze-green, more chatter, graphitic texture.			
						SAPROLITE: As above, slight fracture at 32' bgs.			
-35						SAPROLITE: As above, slight fracture at 34' bgs.			
					<0.1				
-40						SCHIST: Gray cuttings, more chatter, highly micaceous schist.			
-45									
50					<0.1				

Log of Boring: MW-14B

Date Started: 06/26/08
Date Completed: 06/26/08
Total Depth (ft): 100.00
Boring Diameter (in): 10" to 70'; 6" to 100'
Bedrock Depth (ft): 38
Elevation (ft-msl): 797.33
Remark:

Project Code: 1962
Project Name: Carroll Fuel - Parkton
Drilled By: Eichelbergers
Logged By: Jason Yaple
Drill Rig: T555
Drill Method: Air rotary
Sampling Method: Cutting observation

Depth	Sample Number	Sample Interval	Recovery (inches)	Blow Counts	PID	Lithological Description	Interpreted Lithology	Well Construction	Comments
-55						SCHIST: As above, slight fracture at 54' bgs.			
						SCHIST: As above, slight fracture at 57' bgs.			
-60						SCHIST: As above, slightly soft drilling at 60' bgs.			
-65					<0.1				
-70									
-75									
-80					<0.1	SCHIST: As above, small fracture at 78' bgs.			
						SCHIST: As above, small fracture at 81' bgs.			
-85									
-90						SCHIST: As above, small fracture at 89' bgs.			
-95									
-100					<0.1				

Log of Boring: MW-15

Date Started:	05/11/10
Date Completed:	05/12/10
Total Depth (ft):	120.00
Boring Diameter (in):	10/6
Bedrock Depth (ft):	28
Elevation (ft-above mean sea level-NAVD 88:	793.55
Project Code:	1962
Project Name:	Carroll Fuel - Parkton
Drilled By:	Eichelbergers
Logged By:	Andrew Applebaum
Drill Rig:	IR T4W
Drill Method:	Air rotary
Sampling Method:	N/A
Permit Number:	N/A

Depth	Sample Number	Sample Interval	Recovery (inches)	PID	Lithological Description	Interpreted Lithology	Well Construction	Comments
0				0.0	TOPSOIL: Grass & topsoil.			Background PID 0.0 units.
-5					ML: Red brown micaceous silt, grades into saprolite, dry.			
-10				0.0	SAPROLITE: Light brown saprolite, dry, soft 14-16' & 19'.			
-15								
-20								
-25				0.0	SAPROLITE: Reddish brown saprolite, soft, dry, darker at 23' and hard at 24'.			
-30				0.0	SCHIST: Gray brown schist bedrock, hard, dry.			
-35				0.0	SCHIST: Olive gray schist, dry.			
-40				0.0	SCHIST: Light brown schist, dry to damp.			Set 6" steel casing to 40.5' and grout in place. Well completed as open borehole to 120'.
-45								
-50				0.0	SCHIST: Gray brown schist, soft & hard alternating, with water at 54-57'.			
-55								
-60								

Log of Boring: MW-15

Date Started: 05/11/10
Date Completed: 05/12/10
Total Depth (ft): 120.00
Boring Diameter (in): 10/6
Bedrock Depth (ft): 28
Elevation (ft-above mean sea level-NAVD 88: 793.55

Project Code: 1962
Project Name: Carroll Fuel - Parkton
Drilled By: Eichelbergers
Logged By: Andrew Applebaum
Drill Rig: IR T4W
Drill Method: Air rotary
Sampling Method: N/A
Permit Number: N/A

Depth	Sample Number	Sample Interval	Recovery (inches)	PID	Lithological Description	Interpreted Lithology	Well Construction	Comments
-60				0.0	SCHIST: Olive brown schist, damp.			
-65				0.0	SCHIST: Blue gray schist alternating with gray schist, brown at 77'-possible water bearing zone, soft at 85'-possible water bearing.			
-70								
-75								
-80								
-85								
-90				0.0	SCHIST: Blue schist, hard and dry.			
-95								
-100								
-105								
-110				0.0	SCHIST: Gray schist, hard and dry.			
-115								
-120								

Log of Boring: MW-16A

Date Started: 05/10/10
Date Completed: 05/17/10
Total Depth (ft): 65.00
Boring Diameter (in): 10/6
Bedrock Depth (ft): 34
Elevation (ft-above mean sea level-NAVD 88: 778.96

Project Code: 1962
Project Name: Carroll Fuel - Parkton
Drilled By: Eichelbergers
Logged By: Andrew Applebaum
Drill Rig: IR T4W
Drill Method: Air rotary
Sampling Method: N/A
Permit Number: N/A

Depth	Sample Number	Sample Interval	Recovery (inches)	PID	Lithological Description	Interpreted Lithology	Well Construction	Comments
0					TOPSOIL: Grass & topsoil.			PID operation issues.
-5					ML: Brown micaceous silt with trace sand.			
-10					SAPROLITE: Brown saprolite with relict rock structure, dry to damp, alternating hard & soft spots.			
-15								
-20					SAPROLITE: Light brown to gray brown saprolite, dry to damp.			
-25								
-30								
-35					SCHIST: Olive brown to gray brown schist, harder drilling with depth. Soft spot at 42'.			
-40								Set 6" steel casing in borehole to 40.5' and grout in place. Well completed as open borehole well to 65'.
-45								
-50					SCHIST: Blue gray & olive brown schist with soft spot at 50-51' and fractures at 49-50', 55' and 58-59'.			
-55								
-60								
-65								

Log of Boring: MW-16A

Date Started:	05/10/10
Date Completed:	05/17/10
Total Depth (ft):	65.00
Boring Diameter (in):	10/6
Bedrock Depth (ft):	34
Elevation (ft-above mean sea level-NAVD 88:	778.96
Project Code:	1962
Project Name:	Carroll Fuel - Parkton
Drilled By:	Eichelbergers
Logged By:	Andrew Applebaum
Drill Rig:	IR T4W
Drill Method:	Air rotary
Sampling Method:	N/A
Permit Number:	N/A

Depth	Sample Number	Sample Interval	Recovery (inches)	PID	Lithological Description	Interpreted Lithology	Well Construction	Comments

Log of Boring: MW-16B

Date Started: 05/17/10
Date Completed: 05/18/10
Total Depth (ft): 120.00
Boring Diameter (in): 10
Bedrock Depth (ft): 32
Elevation (ft-above mean sea level-NAVD 88: 778.24

Project Code: 1962
Project Name: Carroll Fuel - Parkton
Drilled By: Eichelbergers
Logged By: Megan Brown
Drill Rig: IR T4W
Drill Method: Air rotary
Sampling Method: N/A
Permit Number: N/A

Depth	Sample Number	Sample Interval	Recovery (inches)	PID	Lithological Description	Interpreted Lithology	Well Construction	Comments
0					TOPSOIL: Grass & topsoil.			Background PID 0.0 units.
-5				0.0	ML: Orange brown micaceous silt.			
-10				0.0	SAPROLITE: Red brown micaceous saprolite, dry, small blue rock fragments.			
-15								
-20					SAPROLITE: Brown & olive brown saprolite with rock fragments.			
-25				0.0				
-30								
-35					SCHIST: Gray brown to olive brown schist. 38-41' soft.			
-40				0.0				
-45								
-50				0.0	SCHIST: Alternating blue gray & olive brown schist, more competent. 54.5 minimal water. After 56' water free flowing ~20-25 gpm by driller.			
-55				0.0				
-60								

Log of Boring: MW-16B

Date Started: 05/17/10
Date Completed: 05/18/10
Total Depth (ft): 120.00
Boring Diameter (in): 10
Bedrock Depth (ft): 32
Elevation (ft-above mean sea level-NAVD 88: 778.24

Project Code: 1962
Project Name: Carroll Fuel - Parkton
Drilled By: Eichelbergers
Logged By: Megan Brown
Drill Rig: IR T4W
Drill Method: Air rotary
Sampling Method: N/A
Permit Number: N/A

Depth	Sample Number	Sample Interval	Recovery (inches)	PID	Lithological Description	Interpreted Lithology	Well Construction	Comments
-60								
-65								
-70								Set 6" dia. steel casing to 70.5' and grout in place. Well completed as open borehole to 120'.
-75				0.0	SCHIST: Gray schist, dry, hard drilling with fractures noted at 75' and 112-113' and soft spot at 104'.			
-80								
-85								
-90								
-95								
-100								
-105								
-110								
-115								
-120								

Log of Boring: MW-17A

Date Started: 05/13/10
Date Completed: 05/14/10
Total Depth (ft): 65.00
Boring Diameter (in): 10/6
Bedrock Depth (ft): 27
Elevation (ft-above mean sea level-NAVD 88: 785.01

Project Code: 1962
Project Name: Carroll Fuel-Parkton
Drilled By: Eichelbergers
Logged By: Andrew Applebaum
Drill Rig: IR T4W
Drill Method: Air rotary
Sampling Method: N/A
Permit Number: N/A

Depth	Sample Number	Sample Interval	Recovery (inches)	PID	Lithological Description	Interpreted Lithology	Well Construction	Comments
0				0.0 0.0	TOPSOIL: Grass & topsoil.			Background PID 0.0 units.
-5					ML: Light brown to reddish brown micaceous silt with some sand, dry to damp.			
-10				0.0	SAPROLITE: Brown mica saprolite, relict rock structure, dry with dark brown damp spots at 15-16' and 20'.			
-15								
-20				0.0	SAPROLITE: Gray brown mica saprolite, harder drilling, dry.			
-25				0.0	SCHIST: Light brown schist, harder drilling with depth, soft spot at 39.5', dry.			
-30								
-35								
-40				0.0	SCHIST: Blue gray schist, dry.			Set 6" steel casing to 40.5' and grout in place. Well completed as open borehole to 65'.
-45				0.0	SCHIST: Alternating blue gray & olive brown schist, dry.			
-50					SCHIST: Blue gray schist with soft spots at 55' and 57'.			
-55								
-60								
-65				0.0	SCHIST: Dark brown schist, wet.			Water collected in borehole when adding drill rods.

Log of Boring: MW-17B

Date Started: 05/14/10
Date Completed: 05/17/10
Total Depth (ft): 120.00
Boring Diameter (in): 10/6
Bedrock Depth (ft): 26
Elevation (ft-above mean sea level-NAVD 88: 785.17

Project Code: 1962
Project Name: Carroll Fuel-Parkton
Drilled By: Eichelbergers
Logged By: Andrew Applebaum
Drill Rig: IR T4W
Drill Method: Air rotary
Sampling Method: N/A
Permit Number: N/A

Depth	Sample Number	Sample Interval	Recovery (inches)	PID	Lithological Description	Interpreted Lithology	Well Construction	Comments
0				0.0	TOPSOIL: Grass & topsoil.			Background PID 0.0 units.
-5					ML: Light brown to reddish brown micaceous silt with some sand, dry to damp.			
-10				0.0	ML: Same as above, grades to saprolite.			Set 6" steel casing to 70.5' and grout in place. Completed as open borehole well to 120'.
-15				0.0	SAPROLITE: Brown mica saprolite with relict rock structure, dry, soft spot 15-18'.			
-20				0.0	SAPROLITE: Gray brown mica saprolite, hard drilling, dry.			
-25				0.0	SCHIST: Light brown mica schist, dry.			
-30								
-35								
-40				0.0	SCHIST: Blue gray schist, dry.			
-45				0.0	SCHIST: Blue gray & olive brown alternating schist with darker schist indicating soft spots, possible water bearing zones at 55', 62', 64.5' and 69.5'.			
-50								
-55								
-60								

Log of Boring: MW-17B

Date Started: 05/14/10
Date Completed: 05/17/10
Total Depth (ft): 120.00
Boring Diameter (in): 10/6
Bedrock Depth (ft): 26
Elevation (ft-above mean sea level-NAVD 88: 785.17

Project Code: 1962
Project Name: Carroll Fuel-Parkton
Drilled By: Eichelbergers
Logged By: Andrew Applebaum
Drill Rig: IR T4W
Drill Method: Air rotary
Sampling Method: N/A
Permit Number: N/A

Depth	Sample Number	Sample Interval	Recovery (inches)	PID	Lithological Description	Interpreted Lithology	Well Construction	Comments
-60								
-65								
-70								
-75								
-80				0.0	SCHIST: Gray schist, hard, dry, with fracture noted at 87'.			
-85								
-90								Note water in borehole when add drill rod.
-95								
-100								
-105								
-110								
-115								
-120								

Log of Boring: MW-18A

Date Started: 05/12/10
Date Completed: 05/13/10
Total Depth (ft): 65.00
Boring Diameter (in): 10/6
Bedrock Depth (ft): 25
Elevation (ft-above mean sea level-NAVD 88: 798.54

Project Code: 1962
Project Name: Carroll Fuel-Parkton
Drilled By: Eichelbergers
Logged By: Andrew Applebaum
Drill Rig: IR T4W
Drill Method: Air rotary
Sampling Method: N/A
Permit Number: N/A

Depth	Sample Number	Sample Interval	Recovery (inches)	PID	Lithological Description	Interpreted Lithology	Well Construction	Comments
0				0.0	TOPSOIL: Grass & topsoil.			Background PID 0.0 units.
-5					ML: Brown micaceous silt, grades to saprolite, dry to damp.			
				0.0	SAPROLITE: Light brown saprolite with remnant rock structure & soft spots at 8-10' and 18'.			
-10								
-15								
-20				0.0	SAPROLITE: Brown saprolite, harder, with soft spot at 24'.			
-25				0.0	SCHIST: Gray brown and gray schist, harder, with brownish soft spot at 36-37', 51-52' and 54-55'.			
-30								
-35								
-40								Set 6" steel casing and grouted in place. Well completed as open borehole to 65'.
-45								
-50				0.0	SCHIST: Blue gray schist, hard, with brownish soft spot at 63.5'.			First water at 51-52' and 54-55', observed water in borehole when changed drill rods at 64-65'.
-55								
-60								
-65								

Log of Boring: MW-18B

Date Started: 05/13/10
Date Completed: 05/14/10
Total Depth (ft): 120.00
Boring Diameter (in): 10/6
Bedrock Depth (ft): 25.5
Elevation (ft-above mean sea level-NAVD 88: 799.12

Project Code: 1962
Project Name: Carroll Fuel-Parkton
Drilled By: Eichelbergers
Logged By: Andrew Applebaum
Drill Rig: IR T4W
Drill Method: Air rotary
Sampling Method: N/A
Permit Number: N/A

Depth	Sample Number	Sample Interval	Recovery (inches)	PID	Lithological Description	Interpreted Lithology	Well Construction	Comments
0					TOPSOIL: Grass & topsoil.			Background PID 0.0 units.
-5					ML: Brown micaceous silt grades into saprolite with relict rock structure, dry to damp.			
-10					SAPROLITE: Light brown mica saprolite, dry to damp.			
-15								
-20					SAPROLITE: Dark brown mica saprolite, dry to damp.			
-25				0.0	SAPROLITE: Gray saprolite, dry, with soft spot at 25'.			
-30				0.0	SCHIST: Alternating gray brown & gray schist with soft spots at 31-32' and 41'; fractures at 48' and 50.5'.			
-35								
-40								
-45								
-50				0.3	SCHIST: Alternating blue gray & olive brown schist with potential fractures at 53-57.5' and 66-69'.			
-55								
-60								

Log of Boring: MW-18B

Date Started: 05/13/10
Date Completed: 05/14/10
Total Depth (ft): 120.00
Boring Diameter (in): 10/6
Bedrock Depth (ft): 25.5
Elevation (ft-above mean sea level-NAVD 88: 799.12

Project Code: 1962
Project Name: Carroll Fuel-Parkton
Drilled By: Eichelbergers
Logged By: Andrew Applebaum
Drill Rig: IR T4W
Drill Method: Air rotary
Sampling Method: N/A
Permit Number: N/A

Depth	Sample Number	Sample Interval	Recovery (inches)	PID	Lithological Description	Interpreted Lithology	Well Construction	Comments
-60								
-65								
-70								Well campleted as open borehole to 120'.
-75				0.0	SCHIST: Gray schist, hard, dry, with soft spot at 85' being a water bearing zone, other water bearing zones at 103', 109' and 112'.			
-80								
-85								
-90								Water in borehole when changing drill rods.
-95								
-100								
-105								
-110								
-115								
-120				0.0				

Log of Boring: MW-19A

Date Started:	6/13/11
Date Completed:	6/13/11
Total Depth (ft):	55
Boring Diameter (in):	10/6
Bedrock Depth (ft):	17.5
Elevation (ft-amsl)	761.83
Project Code:	1962
Project Name:	Wally's Citgo
Drilled By:	Eichelbergers
Logged By:	Megan Brown
Drill Rig:	Ingersoll Rand T4
Drill Method:	Air Rotary
Sampling Method:	N/A
Permit Number:	N/A

Depth	Sample Number	Sample Interval	Recovery (inches)	PID	Lithological Description	Interpreted Lithology	Well Construction	Comments
0					TOPSOIL			Background PID 0.0 units.
-5					ML: Brown silt with rocks, moist to wet			Well Construction - Flushmount: - 6" diameter 1/4" thick steel casing placed from 0 to 31-ft. bgs. - Grout placed from 0 to 31-ft. bgs. - Open borehole from 31 to 55-ft. bgs.
-10				0.0	SAPROLITE: Brown, micaceous silty saprolite			
-15				0.0	BEDROCK: Schist, varying brown to brown-grey			
-20					17.5' more competent 21-22' fractured zone, no observable water 24' grey schist No observable water 28' Increased amount of rocks to surface			
-25								
-30					31-52' Broken/fractured rock observed			
-35					36' Light brown			
-40				0.0	41' Brown, fracture, no observable water			
-45					45' Brown, fracture, no observable water			
-50				0.0	48' Brown, fracture, no observable water			During drilling, observed well yield < 0.5 gpm
-55				0.0 0.0	51' Brown-grey, broken BEDROCK: More competent grey schist			Terminated boring at 55-ft. bgs

Log of Boring: MW-19B

Date Started: 6/10/11
Date Completed: 6/10/11
Total Depth (ft): 120
Boring Diameter (in): 10/6
Bedrock Depth (ft): 19
Elevation (ft-amsl) 762.80

Project Code: 1962
Project Name: Wally's Citgo
Drilled By: Eichelbergers
Logged By: Megan Brown
Drill Rig: Ingersoll Rand T4
Drill Method: Air Rotary
Sampling Method: N/A
Permit Number: N/A

Depth	Sample Number	Sample Interval	Recovery (inches)	PID	Lithological Description	Interpreted Lithology	Well Construction	Comments
0				0.0	TOPSOIL: Grass and topsoil			Background PID 0.0 units.
					ML: Brown, micaceous silt, moist			Well Construction - Flushmount: - 6" diameter 1/4" thick steel casing placed from 0 to 70-ft. bgs. - Grout placed from 0 to 70-ft. bgs. - Open borehole from 70 to 120-ft. bgs.
-5				0.0	SAPROLITE: Medium brown, very micaceous saprolite, dry			
-10								
-15								
-20				0.0	BEDROCK: Schist, light brown and brown-grey to grey. Dry 22-26' Grey, broken section			
-25								
-30					28.5' Fracture, no observable water			
-35					36' Little small clay balls (indication of water)			
-40					37' soft			
-45								
-50					55' Little small clay balls (indication of water)			
-55				0.0	BEDROCK: Competent schist, blue-grey, dry to very			
-60								

Log of Boring: MW-19B

Date Started: 6/10/11
Date Completed: 6/10/11
Total Depth (ft): 120
Boring Diameter (in): 10/6
Bedrock Depth (ft): 19
Elevation (ft-amsl) 762.80

Project Code: 1962
Project Name: Wally's Citgo
Drilled By: Eichelbergers
Logged By: Megan Brown
Drill Rig: Ingersoll Rand T4
Drill Method: Air Rotary
Sampling Method: N/A
Permit Number: N/A

Depth	Sample Number	Sample Interval	Recovery (inches)	PID	Lithological Description	Interpreted Lithology	Well Construction	Comments
-65					dry 59' Increased amount of rock fragments 65' Very light brown-grey			
-70								
-75					76' Brown			
-80								
-85					87' Possible fracture, no observable water			
-90					91' Fracture, no observable water			
-95					95' Fracture, no observable water			
-100								During drilling, observed well yield was <0.5 gpm
-105					109' Brown-grey			
-110								
-115								Terminated boring at 120-ft. bgs
-120								

Log of Boring: MW-20A

Date Started: 6/9/11
Date Completed: 6/10/11
Total Depth (ft): 55
Boring Diameter (in): 10/6
Bedrock Depth (ft): 25
Elevation (ft-amsl) 758.61

Project Code: 1962
Project Name: Wally's Citgo
Drilled By: Eichelbergers
Logged By: Megan Brown
Drill Rig: Ingersoll Rand T4
Drill Method: Air Rotary
Sampling Method: N/A
Permit Number: N/A

Depth	Sample Number	Sample Interval	Recovery (inches)	PID	Lithological Description	Interpreted Lithology	Well Construction	Comments
0				0.0	TOPSOIL: Grass and topsoil			Background PID 0.0 units.
				0.0	ML: Brown, very micaceous silt, some rock			Well Construction - Flushmount: - 6" diameter 1/4" thick steel casing placed from 0 to 30-ft. bgs. - Grout placed from 0 to 30-ft. bgs. - Open borehole from 30 to 55-ft. bgs.
-5								
				0.0	SAPROLITE: Brown, silty, micaceous saprolite with small to large rocks, moist, no free water			
-10								
-15								
-20								
				0.0				
-25					BEDROCK: Schist Light brown to brown-grey 27' Indications of water (clay balls) 30' Trace water (larger clay balls)			
-30								
-35								
-40								
					42' Soft, fractured zone, no observable water			
-45					45' Waterbearing fracture			Approximate well yield greater than 30 gpm during well development
					48' Fracture; potential water bearing zone			
-50								
								Terminated boring at 55-ft. bgs
-55								

Log of Boring: MW-20B

Date Started:	6/8/11
Date Completed:	6/9/11
Total Depth (ft):	120
Boring Diameter (in):	10/6
Bedrock Depth (ft):	22
Elevation (ft-amsl)	759.46

Project Code:	1962
Project Name:	Wally's Citgo
Drilled By:	Eichelbergers
Logged By:	Megan Brown
Drill Rig:	Ingersoll Rand T4
Drill Method:	Air Rotary
Sampling Method:	N/A
Permit Number:	N/A

Depth	Sample Number	Sample Interval	Recovery (inches)	PID	Lithological Description	Interpreted Lithology	Well Construction	Comments
0					TOPSOIL			Background PID 0.0 units.
-5				0.0	SAPROLITE: Brown, micaceous, silty saprolite 3-16' Darker brown, very soft with some rock fragments			Well Construction - Flushmount: - 6" diameter 1/4" thick steel casing placed from 0 to 70-ft. bgs. - Grout placed from 0 to 70-ft. bgs. - Open borehole from 70 to 120-ft. bgs.
-10				0.0				
-15					16-22' Medium brown, micaceous, little rock fragments			
-20				0.0				
-25					BEDROCK: Schist, varying brown, brown-grey & grey, more competent with depth			
-30					34' Dark brown			
-35				0.0	36' evidence of water (clay balls)			
-40					40' competent rock			
-45					46' Waterbearing fracture			
-50					51-52' Possible waterbearing fracture			
-55								
-60								

Log of Boring: MW-20B

Date Started:	6/8/11
Date Completed:	6/9/11
Total Depth (ft):	120
Boring Diameter (in):	10/6
Bedrock Depth (ft):	22
Elevation (ft-amsl)	759.46

Project Code:	1962
Project Name:	Wally's Citgo
Drilled By:	Eichelbergers
Logged By:	Megan Brown
Drill Rig:	Ingersoll Rand T4
Drill Method:	Air Rotary
Sampling Method:	N/A
Permit Number:	N/A

Depth	Sample Number	Sample Interval	Recovery (inches)	PID	Lithological Description	Interpreted Lithology	Well Construction	Comments
-65								
-70					70' Dry, grey			
					74' Fracture, little water			
-75					76' Brown; waterbearing fracture			
-80								
-85								
-90								
-95								
-100								During drilling, observed approximate well yield of <1gpm
-105								Well yield during development at least 3gpm
-110					114' Small fracture, potential water bearing fracture			Terminated boring at 120-ft. bgs
-115								
-120								

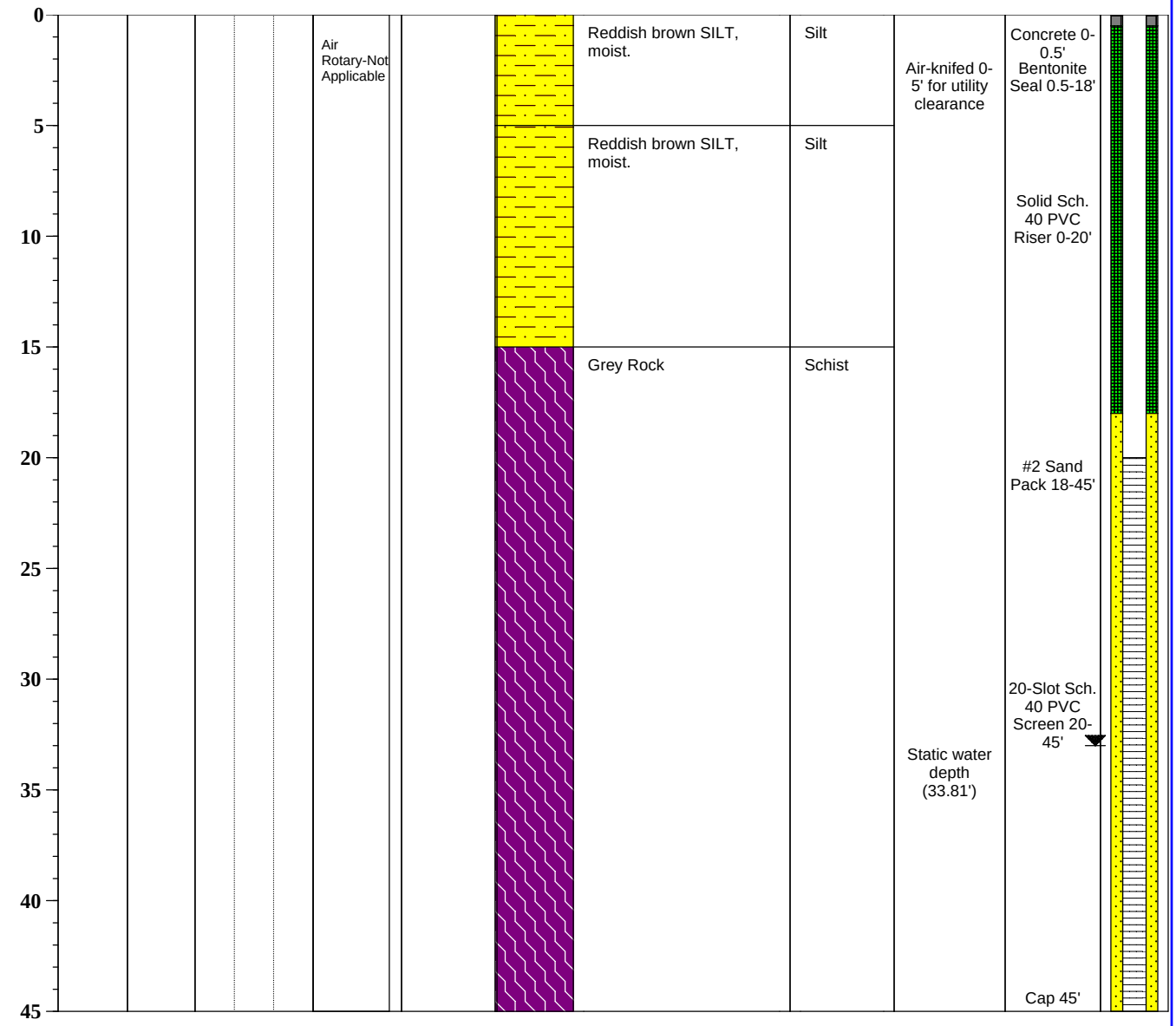
WELL LOG

ID NO. **MW-21**

Groundwater and Environmental Services, Inc.

PROJECT:	**Carroll Fuels Wally's**	WATER DEPTH:	**33.81**	TOTAL DEPTH:	**45'**
ADDRESS:	**19200 Middletown Road, Parkton MD**			CASING EL.:	**800.69**
JOB NO.	**0402643**	BOREHOLE DIA.:	**6"**	WELL DIA.:	**2"**

Logged By:	**Adam Dennis**	Drilling Method:	**Air Rotary**
Dates Drilled:	**11/9/2011**	Sampling Method:	**N/A**
Drilling Company:	**B.L. Myers**	Soil Class. System:	**Unified Soil Classification System**
Well Permit #:	**BA-95-4065**	Field Screening:	



LEGEND

Proportion Descriptions:

Trace = <10% Some = <50%

Little = <25% And = 50%

Symbol Key:

Water Level

Sample Location

fbg = feet below grade
NA = not available
ppm = parts per million
in. = inches

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2142 Priest Bridge Court, Crofton, Maryland 800.220.3606 Fax 410.721.3733

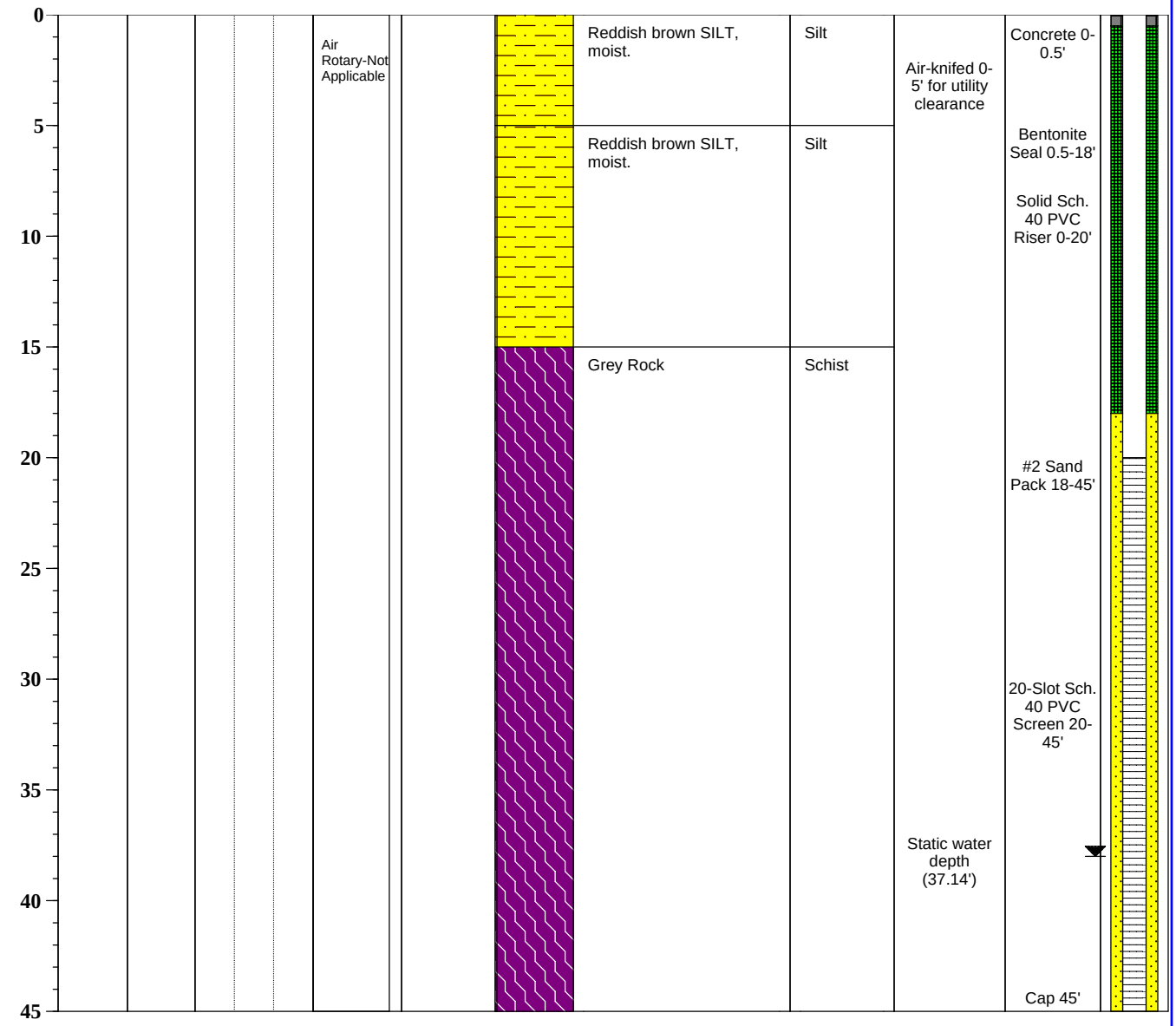
WELL LOG

ID NO. **MW-22**

Groundwater and Environmental Services, Inc.

PROJECT:	**Carroll Fuels Wally's**	WATER DEPTH:	**37.14**	TOTAL DEPTH:	**45'**
ADDRESS:	**19200 Middletown Road, Parkton MD**			CASING EL.:	**801.21**
JOB NO.	**0402643**	BOREHOLE DIA.:	**6"**	WELL DIA.:	**2"**

Logged By:	**Adam Dennis**	Drilling Method:	**Air Rotary**
Dates Drilled:	**11/9/2011**	Sampling Method:	**N/A**
Drilling Company:	**B.L. Myers**	Soil Class. System:	**Unified Soil Classification System**
Well Permit #:	**BA-95-4066**	Field Screening:	



LEGEND

Proportion Descriptions:

Trace = <10% Some = <50%

Little = <25% And = 50%

Symbol Key:

Water Level

Sample Location

fbg = feet below grade
NA = not available
ppm = parts per million
in. = inches

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2142 Priest Bridge Court, Crofton, Maryland 800.220.3606 Fax 410.721.3733

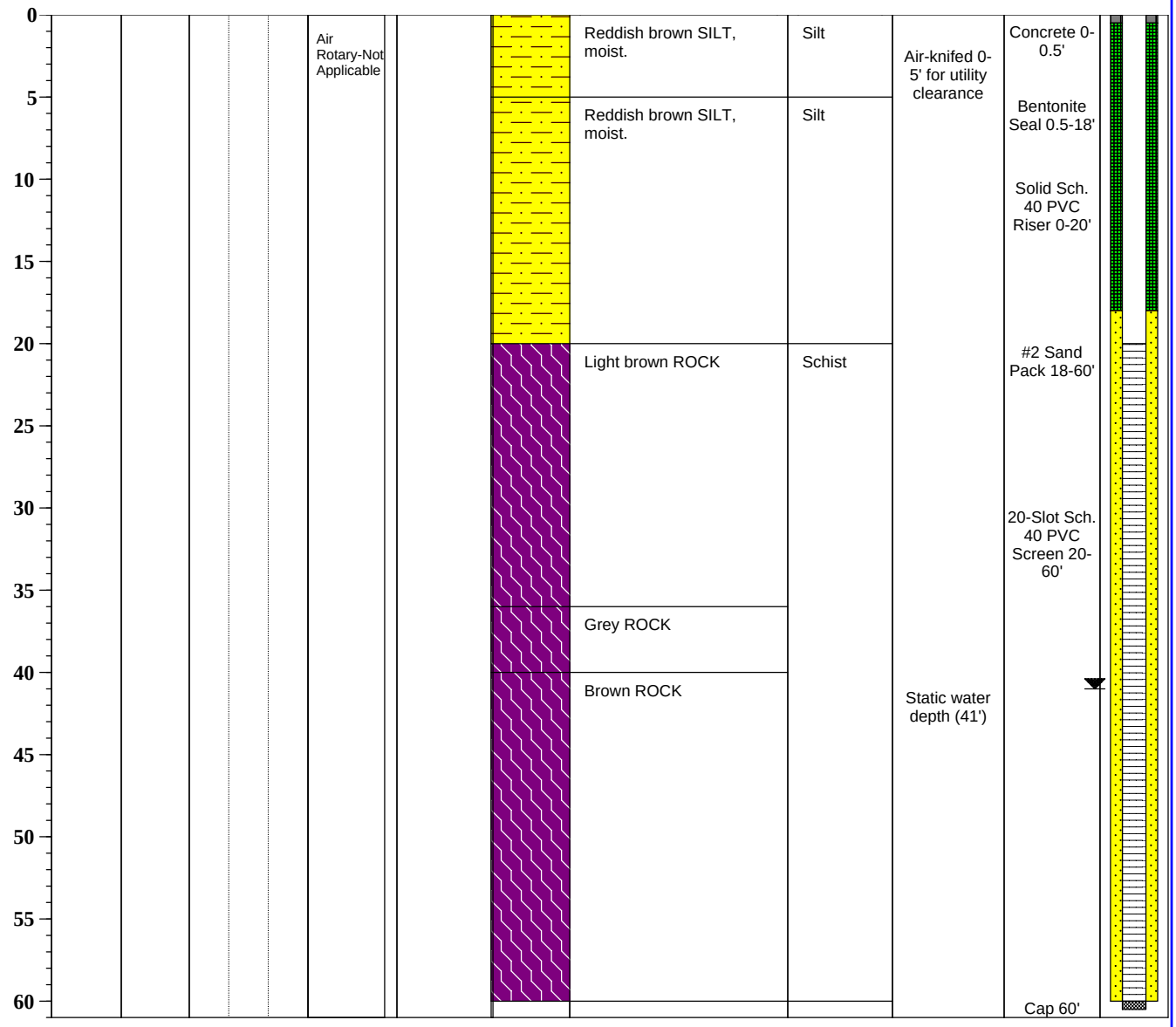
WELL LOG

ID NO. **MW-23**

Groundwater and Environmental Services, Inc.

PROJECT:	**Carroll Fuels Wally's**	WATER DEPTH: **41'**	TOTAL DEPTH: **60'**
ADDRESS:	**19200 Middletown Road, Parkton MD**		CASING EL.: **798.70**
JOB NO.	**0402643**	BOREHOLE DIA.: **6"**	WELL DIA.: **4"**

Logged By:	**Adam Dennis**	Drilling Method:	**Air Rotary**
Dates Drilled:	**11/10/2011**	Sampling Method:	**N/A**
Drilling Company:	**B.L. Myers**	Soil Class. System:	**Unified Soil Classification System**
Well Permit #:	**BA-95-4066**	Field Screening:	



LEGEND

Proportion Descriptions:

Trace = <10% Some = <50%

Little = <25% And = 50%

Symbol Key:

Water Level

Sample Location

fbg = feet below grade
NA = not available
ppm = parts per million
in. = inches

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WELL LOG

ID NO. **MW-24B**

Groundwater and Environmental Services, Inc.

PROJECT:	**Carroll Fuels Wally's**	WATER DEPTH:	**96.50**	TOTAL DEPTH:	**120'**
ADDRESS:	**19200 Middletown Road, Parkton MD**			CASING EL.:	**801.25**
JOB NO.	**0402643**	BOREHOLE DIA.:	**10"**	WELL DIA.:	**6"**

Logged By:	**Adam Dennis**	Drilling Method:	**Air Rotary**
Dates Drilled:	**11/9/2011**	Sampling Method:	**N/A**
Drilling Company:	**B.L. Myers**	Soil Class. System:	**Unified Soil Classification System**
Well Permit #:	**BA-95-4067**	Field Screening:	

Depth (feet)	Sample Interval (feet)	Field Screen: Total Organic Volatiles (ppm) 0–3000	Blow Counts	Recovery (inches)	Sample Lithology	Stratigraphy	Comments	Completion Details
0–120			Air Rotary-Not Applicable		Reddish brown SILT, moist. Reddish brown SILT, moist. Grey ROCK. Light grey ROCK. Dark grey ROCK, wet and muddy.	Silt Schist	Air-knifed 0-5' for utility clearance Static water depth (96.50')	Concrete Steel Casing Grouted in Place Steel Casing Depth (60') Open Borehole

LEGEND

Proportion Descriptions:

Trace = <10% Some = <50%

Little = <25% And = 50%

Symbol Key:

Water Level

Sample Location

fbg = feet below grade
NA = not available
ppm = parts per million
in. = inches

Groundwater & Environmental Services, Inc.
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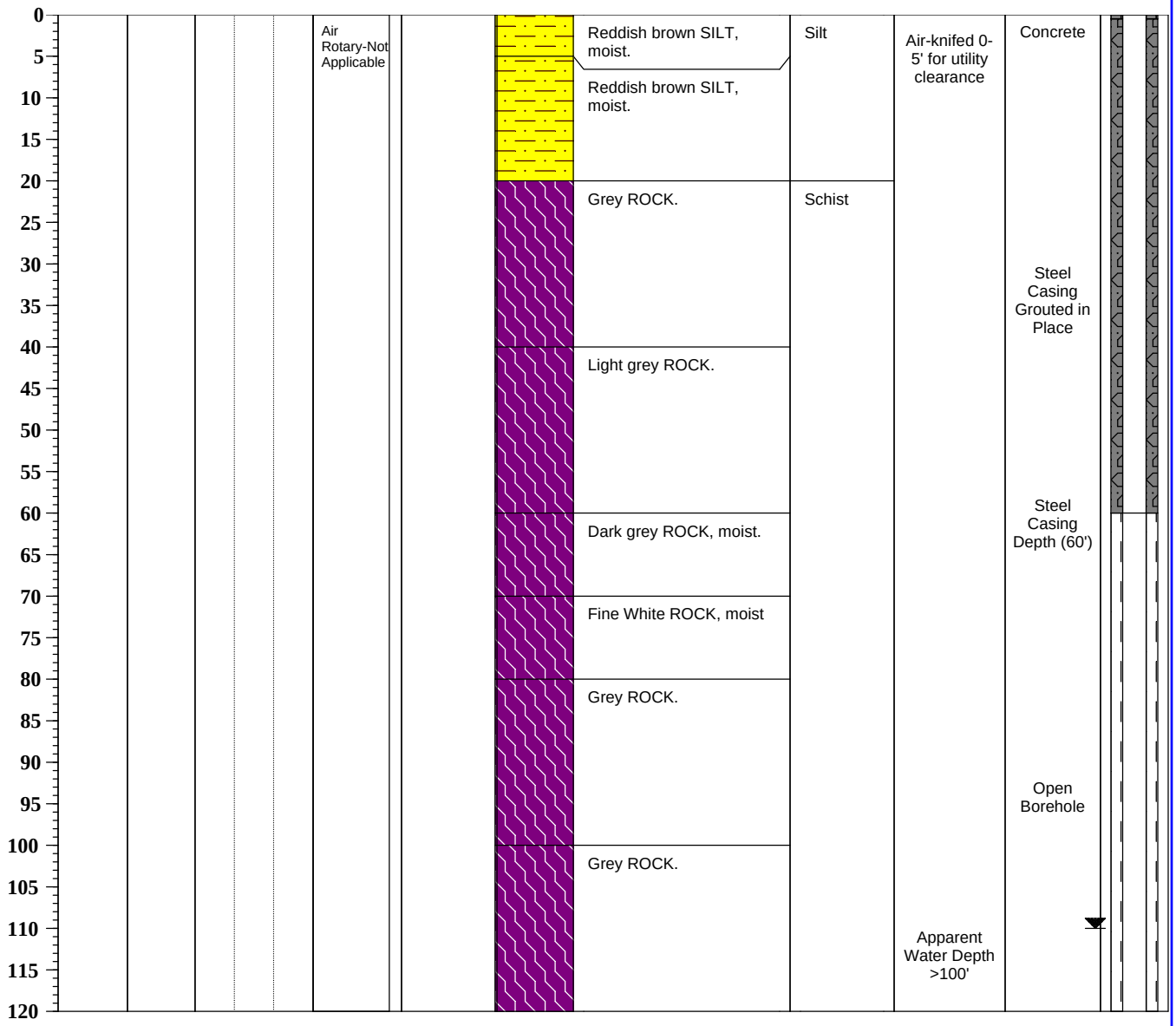
WELL LOG

ID NO. **MW-25B**

Groundwater and Environmental Services, Inc.

PROJECT:	**Carroll Fuels Wally's**	WATER DEPTH:	**>100'**	TOTAL DEPTH:	**120'**
ADDRESS:	**19200 Middletown Road, Parkton MD**			CASING EL.:	**802.80**
JOB NO.	**0402643**	BOREHOLE DIA.:	**10"**	WELL DIA.:	**6"**

Logged By:	**Adam Dennis**	Drilling Method:	**Air Rotary**
Dates Drilled:	**11/9/2011-11/10/2011**	Sampling Method:	**N/A**
Drilling Company:	**B.L. Myers**	Soil Class. System:	**Unified Soil Classification System**
Well Permit #:	**BA-95-4068**	Field Screening:	



LEGEND

Proportion Descriptions:

Trace = <10% Some = <50%

Little = <25% And = 50%

Symbol Key:

Water Level

Sample Location

fbg = feet below grade
NA = not available
ppm = parts per million
in. = inches

Groundwater & Environmental Services, Inc.
2142 Priest Bridge Court, Crofton, Maryland 800.220.3606 Fax 410.721.3733

WELL LOG

Groundwater and Environmental Services, Inc.

ID NO. **Replacement Potable Well -1608R**

PROJECT: **Carroll Fuels Wally's**
ADDRESS: **1608 Rayville Rd, Parkton, MD**
JOB NO. **0402736**

WATER DEPTH:
BOREHOLE DIA.: **12"**

TOTAL DEPTH: **402'**
CASING EL.: **N/A**
WELL DIA.: **8"**

Logged By: **Pete Reichardt**
Dates Drilled: **5/2/3013 to 5/7/2013**
Drilling Company: **B.L. Myers**
Well Permit #: **BA-10-0072**

Drilling Method: **Air Rotary**
Sampling Method: **N/A**
Soil Class. System: **Unified Soil Classification System**
Field Screening:

Depth (feet)	Sample Interval (feet)	Field Screen: Total Organic Volatiles (ppm) 0–5	Blow Counts	Recovery (inches)	Sample Lithology	Stratigraphy	Comments	Completion Details
0–10		0.2, 0.1	Air Rotary-Not Applicable	Air Rotary-Not Applicable	Light brown to tan Saprolitic SILT with quartz and parent rock fragments, weathered, moist.	Silt	Air-knifed 0-5' for utility clearance	
10–30		0.0			Light brown cuttings, fine grain, mica present.	Silt		
30–50		0.0			Brown, grey to green, fine grain micaceous SILT cuttings, moist.	Silt		
50–70		0.2, 0.1			Brown, grey to green, micaceous SILT, large quartz fragments.	Silt		Grouted from 0 to 82.26'
70–90		0.3, 0.3, 0.1			Green, grey to trace brown micaceous SILT cuttings, trace rock fragments, schist/gneise, moist.	Silt		8-Inch Steel Casing Depth (82.26')
90–100					Dark grey cuttings, competent rock SCHIST.	Schist		Compentent Schist Depth (79.26')

LEGEND

Proportion Descriptions:
Trace = <10% Some = <50%
Little = <25% And = 50%

Symbol Key:
Water Level
Sample Location

fbg = feet below grade
NA = not available
ppm = parts per million
in. = inches

WELL LOG

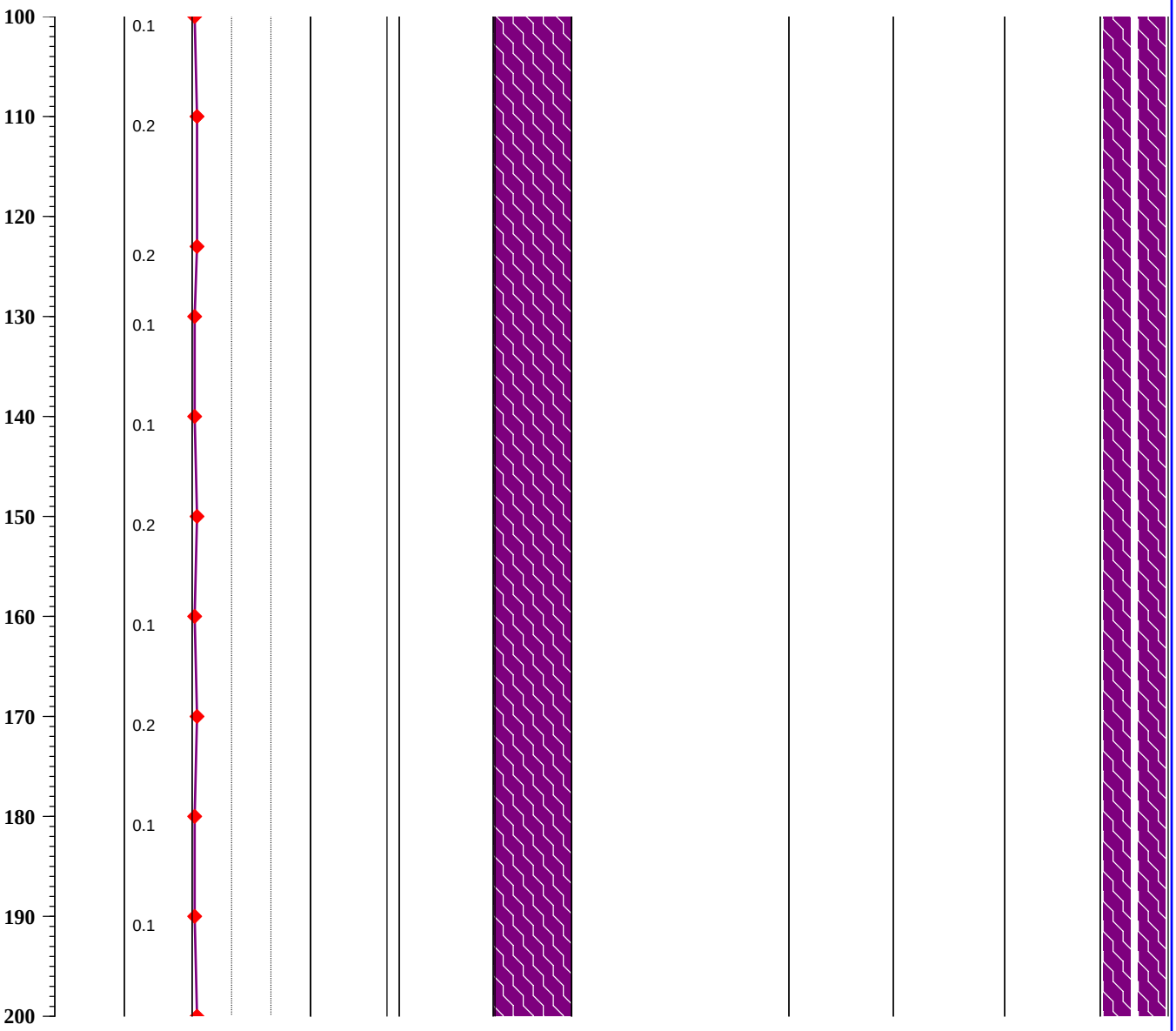
ID NO. **Replacement Potable Well**

Groundwater and Environmental Services, Inc.

PROJECT:	**Carroll Fuels Wally's**	WATER DEPTH:	TOTAL DEPTH: **402'**
ADDRESS:	**1608 Rayville Rd, Parkton, MD**		CASING EL.: **N/A**
JOB NO.	**0402736**	BOREHOLE DIA.: **12"**	WELL DIA.: **8"**

Logged By:	**Pete Reichardt**	Drilling Method:	**Air Rotary**
Dates Drilled:	**5/2/3013 to 5/7/2013**	Sampling Method:	**N/A**
Drilling Company:	**B.L. Myers**	Soil Class. System:	**Unified Soil Classification System**
Well Permit #:	**BA-10-0072**	Field Screening:	

Depth (feet)	Sample Interval (feet)	Field Screen: Total Organic Volatiles (ppm) 0 — 5	Blow Counts	Recovery (inches)	Sample Lithology	Stratigraphy	Comments	Completion Details



LEGEND

Proportion Descriptions:

Trace = <10% Some = <50%

Little = <25% And = 50%

Symbol Key:

Water Level

Sample Location

fbg = feet below grade
NA = not available
ppm = parts per million
in. = inches

WELL LOG

ID NO. **Replacement Potable Well**

Groundwater and Environmental Services, Inc.

PROJECT:	**Carroll Fuels Wally's**	WATER DEPTH:	TOTAL DEPTH: **402'**
ADDRESS:	**1608 Rayville Rd, Parkton, MD**		CASING EL.: **N/A**
JOB NO.	**0402736**	BOREHOLE DIA.: **12"**	WELL DIA.: **8"**

Logged By:	**Pete Reichardt**	Drilling Method:	**Air Rotary**
Dates Drilled:	**5/2/3013 to 5/7/2013**	Sampling Method:	**N/A**
Drilling Company:	**B.L. Myers**	Soil Class. System:	**Unified Soil Classification System**
Well Permit #:	**BA-10-0072**	Field Screening:	

Depth (feet)	Sample Interval (feet)	Field Screen: Total Organic Volatiles (ppm) 0–5	Blow Counts	Recovery (inches)	Sample Lithology	Stratigraphy	Comments	Completion Details
200		0.2						
210		0.0						
220		0.0						
230		0.1			Dark grey cuttings, competent rock SCHIST, moist to wet.	Schist		
240		0.1						
250		0.0			Grey cuttings, competent rock SCHIST, dry.	Schist		
260		0.1						
270		0.1						
280		0.1						
290		0.0						
300								

LEGEND

Proportion Descriptions:

Trace = <10% Some = <50%

Little = <25% And = 50%

Symbol Key:

Water Level

Sample Location

fbg = feet below grade
NA = not available
ppm = parts per million
in. = inches

WELL LOG

ID NO. **Replacement Potable Well**

Groundwater and Environmental Services, Inc.

PROJECT:	**Carroll Fuels Wally's**	WATER DEPTH:	TOTAL DEPTH: **402'**
ADDRESS:	**1608 Rayville Rd, Parkton, MD**		CASING EL.: **N/A**
JOB NO.	**0402736**	BOREHOLE DIA.: **12"**	WELL DIA.: **8"**

Logged By:	**Pete Reichardt**	Drilling Method:	**Air Rotary**
Dates Drilled:	**5/2/3013 to 5/7/2013**	Sampling Method:	**N/A**
Drilling Company:	**B.L. Myers**	Soil Class. System:	**Unified Soil Classification System**
Well Permit #:	**BA-10-0072**	Field Screening:	

Depth (feet)	Sample Interval (feet)	Field Screen: Total Organic Volatiles (ppm) 0–5	Blow Counts	Recovery (inches)	Sample Lithology	Stratigraphy	Comments	Completion Details
300		0.0						
310		0.0						
320		0.1						
330		0.1						
340		0.1						
350		0.0						
360		0.1						
370		0.1						
380		0.0						
390		0.0			QUARTZ zone, dry.	Quartz		
400								

LEGEND

Proportion Descriptions:

Trace = <10% Some = <50%

Little = <25% And = 50%

Symbol Key:

Water Level

Sample Location

fbg = feet below grade
NA = not available
ppm = parts per million
in. = inches

Log of Boring: RW-1

Date Started:	05/19/10
Date Completed:	05/20/10
Total Depth (ft):	120.00
Boring Diameter (in):	10/6
Bedrock Depth (ft):	23
Elevation (ft-above mean sea level-NAVD 88:	800.93
Project Code:	1962
Project Name:	Carroll Fuel - Parkton
Drilled By:	Eichelbergers
Logged By:	Megan Brown
Drill Rig:	IR T4W
Drill Method:	Air rotary
Sampling Method:	N/A
Permit Number:	N/A

Depth	Sample Number	Sample Interval	Recovery (inches)	PID	Lithological Description	Interpreted Lithology	Well Construction	Comments
0					ASPHALT			Background PID 0.0 units.
-5				0.0	ML: Brown silt with rock fragments.			
-10					SAPROLITE: Red-brown saprolite, micaceous, dry. Very soft 10-13' and 18-19', olive brown 20-23'.			
-15				0.0				
-20								
-25					SCHIST: Olive brown schist, soft at 34'. Soft fractured area 44-47'.			
-30				0.0				
-35								
-40								Set 40' of 6" dia. steel casing at 40.5, well completed as open borehole to 120'.
-45								
-50				0.0	SCHIST: Gray brown schist, dry. Soft 52-53'.			
-55					SCHIST: Blue gray schist, very dry.			
-60				0.0				

Log of Boring: RW-1

Date Started: 05/19/10
Date Completed: 05/20/10
Total Depth (ft): 120.00
Boring Diameter (in): 10/6
Bedrock Depth (ft): 23
Elevation (ft-above mean sea level-NAVD 88: 800.93

Project Code: 1962
Project Name: Carroll Fuel - Parkton
Drilled By: Eichelbergers
Logged By: Megan Brown
Drill Rig: IR T4W
Drill Method: Air rotary
Sampling Method: N/A
Permit Number: N/A

Depth	Sample Number	Sample Interval	Recovery (inches)	PID	Lithological Description	Interpreted Lithology	Well Construction	Comments
-60								
-65				0.0	SCHIST: Gray brown schist. 72-73' brown, very slight hydrocarbon odor.			
-70								
-75				0.0				
-80					SCHIST: Olive brown schist.			
-85					SCHIST: Gray brown schist, more competent.			
-90				0.0	SCHIST: Olive brown schist. Moist at 90'.			
-95					SCHIST: Gray brown schist. 93-94.5' blue gray. 100-103.5 olive brown. 103.5-105 blue gray. 106 brown, possible fracture. 109.5-110 olive brown.			
-100				0.0				
-105								
-110				0.0	SCHIST: Olive brown schist.			
-115								
-120				0.0				

Log of Boring: RW-2

Date Started: 05/18/10
Date Completed: 05/19/10
Total Depth (ft): 120.00
Boring Diameter (in): 10/6
Bedrock Depth (ft): 29
Elevation (ft-above mean sea level-NAVD 88: 796.65

Project Code: 1962
Project Name: Carroll Fuel - Parkton
Drilled By: Eichelbergers
Logged By: A. Applebaum/M. Brown
Drill Rig: IR T4W
Drill Method: Air rotary
Sampling Method: N/A
Permit Number: N/A

Depth	Sample Number	Sample Interval	Recovery (inches)	PID	Lithological Description	Interpreted Lithology	Well Construction	Comments
0				0.0 0.0	ASPHALT: and road base gravel.			Background PID 0.0 units.
-5					ML: Brown micaceous silt with trace sand, dry.			
-10				0.0	SAPROLITE: Light brown saprolite, dry.			
-15				0.0	SAPROLITE: Darker brown saprolite, dry to damp.			
-20					SAPROLITE: Reddish brown to brown saprolite, harder drilling, damp.			
-25								
-30								
-35					SCHIST: Gray brown schist, dry.			
-40					SCHIST: Olive brown schist, dry.			
-45				0.5	SCHIST: Olive brown schist. 43-47' very soft fractured area.			Set 6" steel casing at 40.5' and grout in place. Well completed as open borehole to 120'.
-50					SCHIST: Blue gray schist.			
-55					SCHIST: Gray brown schist. More competent at 53'.			
-60				0.6	SCHIST: Blue gray schist.			

Log of Boring: RW-2

Date Started: 05/18/10
Date Completed: 05/19/10
Total Depth (ft): 120.00
Boring Diameter (in): 10/6
Bedrock Depth (ft): 29
Elevation (ft-above mean sea level-NAVD 88: 796.65

Project Code: 1962
Project Name: Carroll Fuel - Parkton
Drilled By: Eichelbergers
Logged By: A. Applebaum/M. Brown
Drill Rig: IR T4W
Drill Method: Air rotary
Sampling Method: N/A
Permit Number: N/A

Depth	Sample Number	Sample Interval	Recovery (inches)	PID	Lithological Description	Interpreted Lithology	Well Construction	Comments
-60								
-65				0.6				
-70					SCHIST: Gray brown schist, dry. 86-87' brown, fractured.			
-75								
-80				0.5				
-85								
-90					SCHIST: Blue gray schist. 87-88' soft.			
-95					SCHIST: Gray brown schist.			
-100				0.6	SCHIST: Blue gray schist. 95-120' blue gray schist, 100.5-101.5 brown, soft fractured area, 118-119' olive brown schist.			
-105								
-110				0.7				
-115								
-120				0.6				

Log of Boring: RW-3

Date Started: 05/19/10
Date Completed: 05/20/10
Total Depth (ft): 120.00
Boring Diameter (in): 10/6
Bedrock Depth (ft): 25
Elevation (ft-above mean sea level-NAVD 88: 796.77

Project Code: 1962
Project Name: Carroll Fuel - Parkton
Drilled By: Eichelbergers
Logged By: Megan Brown
Drill Rig: IR T4W
Drill Method: Air rotary
Sampling Method: N/A
Permit Number: N/A

Depth	Sample Number	Sample Interval	Recovery (inches)	PID	Lithological Description	Interpreted Lithology	Well Construction	Comments
0					ASPHALT			Background PID 0.0 units.
-5					ML: Silt & large gravel to cobbles, micaceous, dry. 0.5-8' brown to orange brown, 8-14' very soft, red brown, very micaceous.			
-10				0.1				
-15					SAPROLITE: Alternating orange brown & red brown saprolite, dry, micaceous. 23-25' olive brown.			
-20				0.1				
-25					SCHIST: Olive brown schist. 34-35' brown to orange brown. 38-39' soft.			
-30				0.0				
-35								
-40				0.0				Set 6" dia. steel casing at 40.5', well completed as open borehole to 120'.
-45				0.2	SCHIST: Gray brown schist. 46-48' brown, soft fractured zone. 49.5-51' very dry.			
-50				0.0				
-55					SCHIST: Olive brown schist, more competent, moist.			
60				0.0	SCHIST: Blue gray schist. 61-62.5 brown, possible fracture.			

Log of Boring: RW-3

Date Started: 05/19/10
Date Completed: 05/20/10
Total Depth (ft): 120.00
Boring Diameter (in): 10/6
Bedrock Depth (ft): 25
Elevation (ft-above mean sea level-NAVD 88: 796.77

Project Code: 1962
Project Name: Carroll Fuel - Parkton
Drilled By: Eichelbergers
Logged By: Megan Brown
Drill Rig: IR T4W
Drill Method: Air rotary
Sampling Method: N/A
Permit Number: N/A

Depth	Sample Number	Sample Interval	Recovery (inches)	PID	Lithological Description	Interpreted Lithology	Well Construction	Comments
-60								
-65					SCHIST: Gray brown schist. 62.5-64' very dry.			
				0.0	SCHIST: Alternating gray brown & blue gray schist. 72.5 very soft, possible fracture. 91' fracture.			
-70								
-75								
				0.0				
-80								
-85								
-90								Well yields approximately 4-5 gpm.
				0.0				
-95								
-100								
				0.0				
-105								
-110								
				0.0				
-115								
				0.0				
-120								

Log of Boring: SVE-01

Date Started: 06/15/09
Date Completed: 06/15/09
Total Depth (ft): 37.00
Boring Diameter (in): 8 3/4"
Bedrock Depth (ft): 29
Elevation (ft-msl): N/A
Remark: N/A

Project Code: 1962
Project Name: Carroll Fuel - Parkton
Drilled By: Eichelbergers
Logged By: Jason Yaple
Drill Rig: T4
Drill Method: Air Rotary
Sampling Method: Direct observation

Depth	Sample Number	Sample Interval	Recovery (inches)	PID/ FID	Lithological Description	Interpreted Lithology	Well Construction	Comments
0	1				FILL: Asphalt and gravel sub-base			Set 4" diameter 20 slot screen 22-37', casing 0-22', #2 sand 20-37', hydrated bentonite hole plug 1-20', concrete 0-1'.
	2				ML: Red brown silty fire sand with large gravel rock fragments throughout, moist			
-5				0.0				
-10	3				ML: Same as above, more regular drill chatter lighter/ tan color			
	4			0.0	ML: Same as above, maroon			
-15	5				SAPROLITE: Brown/ green saprolite, regular chatter, easy drilling, similar texture to above			Terminate borehole @ 37' BGS
-20				0.0				
-25				0.0				
-30	6			0.5	SCHIST: Gray sandy cuttings with gravel bedrock fragments micaceous schist, graphitic texture			
-35				0.0				
				0.0				
				0.0				

Log of Boring: SVE-02

Date Started: 06/15/09
Date Completed: 06/15/09
Total Depth (ft): 37.00
Boring Diameter (in): 8 3/4"
Bedrock Depth (ft): 26
Elevation (ft-msl): N/A
Remark: N/A

Project Code: 1962
Project Name: Carroll Fuel - Parkton
Drilled By: Eichelbergers
Logged By: Jason Yaple
Drill Rig: T4
Drill Method: Air Rotary
Sampling Method: Direct observation

Depth	Sample Number	Sample Interval	Recovery (inches)	PID/ FID	Lithological Description	Interpreted Lithology	Well Construction	Comments
0	1				FILL: Asphalt and gravel sub base			Set 4" diameter 20 slot screen 22-37', casing 0-22', #2 sand 21-37', hydrated bentonite hole plug 1-21', concrete 0-1'.
	2				ML: Brown and maroon silt and sand with many rock fragments			
-5				0.0				
-10				0.0				
-15	3			0.0	SAPROLITE: Gray green and brown weatherd schist (saprolite) sandy silt cuttings more drill chatter			
-20	4			0.0	SAPROLITE: Tan color same as above			
	5				SAPROLITE: Dark brown			
-25				0.0				
	6				SCHIST: Gray micaceous schist steady drill chatter, graphitic texture			Terminate borehole @ 37'
-30				0.0				
-35				0.0				

Log of Boring: SVE-03

Date Started: 06/15/09
Date Completed: 06/15/09
Total Depth (ft): 37.00
Boring Diameter (in): 8 3/4"
Bedrock Depth (ft): 33
Elevation (ft-msl): N/A
Remark: N/A

Project Code: 1962
Project Name: Carroll Fuel - Parkton
Drilled By: Eichelbergers
Logged By: Jason Yaple
Drill Rig: T4
Drill Method: Air Rotary
Sampling Method: Direct observation

Depth	Sample Number	Sample Interval	Recovery (inches)	PID/ FID	Lithological Description	Interpreted Lithology	Well Construction	Comments
0	1				FILL: Asphalt and gravel fill			Set 4" diameter 20 slot screen 22-37', casing 0-22', #2 sand 21-37', hydrated bentonite hole plug 1-21', concrete 0-1'.
	2			0.0	ML: Light brown/maroon silt with sand and gravel fragments			
-5								
-10								
	3			0.0	ML: Same as above, tan and red			
-15	4			0.0	SAPROLITE: Saprolite bedrock schist weathered high mica content gray green			
-20				0.0				
				0.0				
-25								
-30								
				0.0				
	5				SCHIST: Gray and brown steady drilling chatter, schist bedrock			Terminate borehole @ 37'
-35								

Log of Boring: SVE-04

Date Started: 06/15/09
Date Completed: 06/15/09
Total Depth (ft): 37.00
Boring Diameter (in): 8 3/4"
Bedrock Depth (ft): 31
Elevation (ft-msl): N/A
Remark: N/A

Project Code: 1962
Project Name: Carroll Fuel - Parkton
Drilled By: Eichelbergers
Logged By: Jason Yaple
Drill Rig: T4
Drill Method: Air Rotary
Sampling Method: Direct observation

Depth	Sample Number	Sample Interval	Recovery (inches)	PID/ FID	Lithological Description	Interpreted Lithology	Well Construction	Comments
0	1				ASPHALT: Asphalt and gravel			Set 4" diameter 20 slot screen 22-37', casing 0-22', #2 sand 21-37', hydrated bentonite hole plug 1-21', concrete 0-1'.
	2			0.0	ML: Light brown and maroon silt with sand and gravel fragments, high micaceous, soft, non-plastic			
-5								
-10	3			0.0	ML: Same as above, tan and red zones			
-15	4				SAPROLITE: Gray green highly micaceous weathered schist bedrock saprolite graphitic texture cuttings			
-20				0.0				
	5				SAPROLITE: Tan same as above			
-25								
	6				SAPROLITE: Gray same as above			Terminate borehole @ 37' BGS
-30								
	7			0.0	SCHIST: Gray schist bedrock, harder drill chatter, highly micaceous			
-35								

Log of Boring: SVE-5

Date Started: 05/19/10
Date Completed: 05/19/10
Total Depth (ft): 37.00
Boring Diameter (in): 8
Bedrock Depth (ft): 27
Elevation (ft): N/A
Remark: N/A

Project Code: 1962
Project Name: Carroll Fuel - Parkton
Drilled By: Eichelbergers
Logged By: Simon Mullen
Drill Rig: Diedrich D-50 Turbo/IR T4W
Drill Method: Hollow stem auger/Air rotary
Sampling Method: Split spoon

Depth	Sample Number	Sample Interval	Recovery (inches)	Blow Counts	PID	Lithological Description	Interpreted Lithology	Well Construction	Comments
0						NO RECOVERY: 0-5 feet not logged - soil was cleared for utilities using a Soft-dig vacuum with soil returned to borehole before initiating hollow-stem auger drilling.			Background PID 0.0 units.
-2									Set well at 37' with 4" dia. 0.010-slot screen from 7-37' and casing to surface. Backfilled with sandpack from 5.9-37' bentonite from 3-5.9' and concrete to surface.
-4									
-6	1		18	3-2-2-3	0.0 0.0 0.0	SM: Pink, gray & white mottled saprolitic fine sand with some mica, some silt and trace coarse gravel with lens of black & light orange material at 7.2-7.3'.			
-8	2		22	4-5-6-6	0.0 0.0 0.0 0.0	SM: Black, orange, white & gray mottled fine sand with some silt, some mica & trace fine gravel.			
-10	3		19	4-5-5-7	0.0 3.9 2.1	SW: Pink, black & white mottled fine sand with some mica, some fine gravel, no odor, some black & orange material due to oxidation.			
-12	4		17	13-41-50/5	138 69.7	SAPROLITE: Red fine saprolitic sand with some fine gravel, foliated schist at 11.5', faint odor of lubricant, no petroleum odor, some mica.			

Log of Boring: SVE-5

Date Started: 05/19/10
Date Completed: 05/19/10
Total Depth (ft): 37.00
Boring Diameter (in): 8
Bedrock Depth (ft): 27
Elevation (ft): N/A
Remark: N/A

Project Code: 1962
Project Name: Carroll Fuel - Parkton
Drilled By: Eichelbergers
Logged By: Simon Mullen
Drill Rig: Diedrich D-50 Turbo/IR T4W
Drill Method: Hollow stem auger/Air rotary
Sampling Method: Split spoon

Depth	Sample Number	Sample Interval	Recovery (inches)	Blow Counts	PID	Lithological Description	Interpreted Lithology	Well Construction	Comments
-12					102	SAPROLITE: Fine white, black & pink mottled sand with fine gravel, grading to brown at end of split spoon.			
	5		10	28-50/5	3.6				
					4.1	SAPROLITE: Gray, white, black, orange & pink mottled weathreed schist with mica, some orange & black coloring due to oxidation.			
-14									
	6		24	8-15-36-45	0.0				
					0.0	SAPROLITE: White, orange, black & gray mottled weathered schist, trace quartz gravel.			
-16					4.2				
					0.0	SAPROLITE: Red, orange, black, white & gray mottled weathered schist with mica.			
	7		9	29-50/5	0.0				
						SAPROLITE: Black, white & orange mottled fine saprolitic sand with some silt, some mica.			
-18					0.0				
	8		13	17-48-50/3	14.5				
					137	SAPROLITE: Gray, white & light brown mottled fine saprolitic sand, some mica, weathered schist.			
-20					115				
	9		20	28-30-46-50/5	1.9				
					6.2	SAPROLITE: Same as above.			
-22					2.3				
					2.5	SAPROLITE: Gray & white mottled weathered schist, foliated with orange & black coloring from oxidation, with mica.			
	10		6	48-50/3	0.0				
						SAPROLITE: Gray & white mottled, foliated, weathered schist, some black coloring due to oxidation, with mica.			
-24					0.0				

Log of Boring: SVE-5

Date Started: 05/19/10
Date Completed: 05/19/10
Total Depth (ft): 37.00
Boring Diameter (in): 8
Bedrock Depth (ft): 27
Elevation (ft): N/A
Remark: N/A

Project Code: 1962
Project Name: Carroll Fuel - Parkton
Drilled By: Eichelbergers
Logged By: Simon Mullen
Drill Rig: Diedrich D-50 Turbo/IR T4W
Drill Method: Hollow stem auger/Air rotary
Sampling Method: Split spoon

Depth	Sample Number	Sample Interval	Recovery (inches)	Blow Counts	PID	Lithological Description	Interpreted Lithology	Well Construction	Comments
-26	11		5	45-50/3	2.5	SAPROLITE: Same as above with some orange coloring from oxidation.			
					1.6				
					0.0	SCHIST: Blue gray schist.			
-28									
-30									
-32									
-34									
						SCHIST: Softer olive brown schist.			
-36									