**2017 LTM/RPO - Navy Owned Wells, NWIRP Bethpage**

**NYSDEC Comments: Received March 29 2019**

| COMMENT NUMBER | COMMENT | RESPONSE |
|---|---|---|
| 1 | In a letter dated September 21, 2017, the Department already approved removal of GM-17SR, GM-74I, HN-29I, and HN-29D from the long-term sampling program. Per the recommendation in the October 30, 2018 RPO memorandum, these four wells can be eliminated from the long-term sampling program. | Comment noted; these wells will be removed. Note that sampling of well GM-74I prior to the next LTM/RPO has been requested by the agency (see Comment 3), so it has been included for the next LTM/RPO sampling |
| 2 | Per the September 21, 2017 letter, the Department wants GM-17I and GM-17D maintained in the long-term sampling program at the current sampling frequency (semi-annual). | Comment noted; these wells will be maintained in the LTM program at a semi-annual frequency |
| 3 | Per our telephone conversation on January 16, 2019, the following five monitoring wells can be removed from the long-term sampling program, but sampled prior to and included in the next Long Term Monitoring Remedial Process Optimization: GM-15D, GM-16SR, GM-18D, GM-74I, and GM-74D. | Comment noted; these five wells will be removed from the LTM program, but will be sampled and included in the next LTM/RPO analysis |
| 4 | The Department agrees with the Navy on the remaining recommendations to either continue with the current sampling frequency or to reduce the frequency of the routine groundwater sampling. | Comment noted |

RESOLUTION CONSULTANTS

**To:** Brian Murray, NAVFAC MIDLANT

**From:** Brian Caldwell, P.G., Resolution Consultants

**Subject:** **2017 Long Term Monitoring Remedial Process Optimization – Navy-Owned Wells, NWIRP Bethpage**

**Date:** May 2019

## INTRODUCTION

This memorandum documents a review and analysis of the Groundwater Long Term Monitoring (LTM) Program being performed jointly by the Navy and Northrop Grumman (NG) for Naval Weapons Industrial Reserve Plant (NWIRP) Bethpage. The purpose of this review is to execute a Remedial Process Optimization (RPO) evaluation of the LTM program, which includes analysis of the LTM results obtained to date, and provision of recommendations to optimize the LTM program. The RPO evaluation consisted of three elements: an analysis of the data and trends, an analysis of the first-order change rates in concentrations and finally, development of recommendations. This evaluation was conducted on 118 Navy-owned wells currently included in the groundwater LTM program. The following provides procedural documentation and results of the RPO evaluation.

## ANALYSIS OF LTM DATA AND TRENDS IN THE DATA

There are 118 Navy-owned wells under analysis for the current LTM report; these are shown in Figure 1. Prior reports included wells BPOW4-1 and BPOW4-2, however these wells were decommissioned in 2014 due to compromised well integrity and replaced with BPOW4-1R and BPOW4-2R. Documentation of the integrity testing, attempted rehabilitation, and decommissioning of BPOW4-1 and BPOW4-2 and subsequent installation of replacement wells BPOW4-1R and



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BPOW4-2R is provided in *2014 OU2 Groundwater Investigation BPOW4-1R, BPOW4-2R Installation Report, Bethpage, NY* (Resolution Consultants, 2015).

Of the 118 wells evaluated herein, trend and first-order change rate analysis was completed on 66 wells, summarized in Table 1, Appendix A and Appendix B. Trend analysis was not conducted on 52 wells with exclusively or primarily non–detect (ND) values or fewer than four data points. These wells are listed in Table 2.

The full historical data record for these 66 wells evaluated in Table 1 is included in Appendix A. LTM began as early as 1999-2000 for some wells, with others being added to the program as they were installed. Monitoring frequencies have ranged from quarterly to bi-annually for each well. Results from some of the Navy-owned wells have historically been included with NG–owned wells in monitoring reports prepared and submitted to the New York State Department of Environmental Conservation (NYSDEC) by NG. The remainder of the Navy-owned wells have been sampled by Resolution and are included in the quarterly sampling reports submitted to NYSDEC.

The primary parameter of concern being monitored in the LTM program, in terms of frequency and magnitude of detection, is trichloroethene (TCE). Other parameters of concern that are being monitored above NYSDEC standards include tetrachloroethylene (PCE), Freon 113, 1,1,1-trichloroethane, 1,1,2-trichloroethane, 1,1-dichloroethane, 1,2-dichloroethene total, and cis-1,2-dichloroethene. Because of its importance as the primary parameter of concern, the RPO evaluation focused on TCE. The TCE data for each well, as presented in Appendix A, was fully evaluated with respect to completeness prior to arranging it for subsequent trend analyses.

Significant trends in the data were determined by performing a full Mann–Kendall (MK) analysis (Gilbert, Richard O., 1987, *Statistical Methods for Environmental Pollution Monitoring*) of each dataset from each well. The MK test is a non-parametric statistical test for trends in the data record for a given well over time. The MK statistic (S) provides an indication of whether a trend exists and whether the trend is positive or negative at a given confidence level. The MK statistic is calculated by iteratively comparing a data value to all others prior to and subsequent to that data value. Data values greater than that data value are assigned a score of +1, values less than that are assigned a score of -1, and identical values are assigned a score of 0. The resulting matrix of scores is summed to calculate the S statistic. The presence of a trend is determined based on the absolute value of the S statistic, the number of samples, and a critical probability value representing the confidence level. A positive value for S indicates an increasing trend in the data over time, whereas a negative value indicates a decreasing trend. A value of S near 0 suggests there is no significant



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upward or downward trend. The magnitude of S is therefore an indication of the strength of the trend. For the purposes of this RPO evaluation, the presence of a significant trend was tested at both an 80% (the acceptance or rejection of the null hypothesis is correct 80% of the time) and 90% (the acceptance or rejection of the null hypothesis is correct 90% of the time) confidence level. Precedence for use of these confidence levels can be found in the Wisconsin Department of Natural Resources (WDNR), 2003, *Guidance on Natural Attenuation for Petroleum Releases*. The statistical software for this RPO evaluation was originally developed by the WDNR; the original version has been expanded to test up to 18 sampling events.

In the event that a statistically significant trend could not be identified, the data were tested for stability by calculating the coefficient of variation (CV; the ratio of the standard deviation to the mean, a measure of the scatter of the data). If the CV is less than or equal to 1, the well concentrations are considered stable; if it is greater than 1, they are considered not stable.

Even though the MK test is non-parametric and therefore is not sensitive to the distribution of the data, it is clearly sensitive to the relative differences in magnitude between data values for a given well. This can be a critical concern when detected values are low and are close in magnitude to the detection limit and when intra-well detection limits are variable. To account for this potential bias, all NDs for a given well were assigned one-half of the lowest reported ND limit for that well.

In addition to all of the historical data for each well, Appendix A identifies the dataset used for the MK testing of each well (labeled as "MK Dataset" for each well), consisting of a maximum of the most recent 18 sampling events with the ND values corrected as described above. The results of the MK testing are provided in Appendix B.

Table 1 provides a summary of the results of the MK testing performed for each well at both 80% and 90% confidence. In addition, for wells that were tested that did not exhibit a statistically significant trend, the results of the stability test is provided. Note that a total of 38 wells were not MK tested primarily because they have exhibited NDs for a significant time (a test would have simply trended a flat line and resulted in a "stable" determination, or it would simply be a trending of the detection limits if they were variable), or the well had less than four sampling events. These wells are thus omitted from Table 1 and the rationale for a well not being tested is provided in Table 2.



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## FIRST-ORDER CHANGE RATES IN CONCENTRATION

The use of the first-order change in a temporal dataset is a predictive tool that can be applied to concentration over time (Newell, Charles J., et al., *Calculation and Use of First-Order Rate Constants for Monitored Natural Attenuation Studies*, [EPA/540/S-02/500] November 2002). This is useful to determine the efficacy of a remediation system, to determine if natural attenuation is operating effectively, to screen potential remedial alternatives, and to estimate future concentrations under both passive and active remediation scenarios. The basis of the technique utilizes the regression of a dependent variable (concentration) over an independent variable (time). Typically, a linear regression technique is applied (although non-linear techniques can be applied as well), and a least squares fit regression line (the line that has the smallest sum of the squares of the residuals of the data relative to the line) is used to calculate the first-order equation for the change rate.

The results of the MK analysis are included in Appendix B: these include the determination of a trend, the calculated change rate, stability test and plots of the least-squares linear regression line for each well. In addition, natural log concentration plots are presented for wells showing a decreasing trend.

Once the slope in the first-order equation is known, it can be utilized to predict future concentrations (assuming no change in conditions, such as implementation of a different remedy, or introduction of another source mass). A decreasing slope indicates an exponential loss of mass, and the first-order slope is calculated with the concentration data transformed to lognormal (this allows the first-order change rate to be solved with a linear equation, which is applied over the time of concern to calculate future concentrations). An increasing slope indicates an increase in mass, and the increase is assumed to be linear (a constant introduction of mass per day) unless the data suggest otherwise (the data exhibit large residual values to the linear regression line). In the case of an increasing slope, a source term is calculated using the change in concentration over the time span in the data record and this is applied linearly, multiplied by the first-order change rate per day, to calculate future concentrations. The projected concentration for an increasing trend, assuming a linear increase in mass, can also be solved using the first-order change rate and ratio relationships.

Table 1 provides important information regarding the first-order concentration rate change analyses (for wells with a minimum 80% confidence of the presence of a statistical trend), including the change rate, the dates in the test record dataset, the number of days in the test record, the initial



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concentration in the test record, the most recent concentration in the test record, the highest concentration and its date of detection, the projected concentration in 2021, and the time to reach the Maximum Concentration Levels (MCL) of 5 ppb for TCE. Figure 2 and Figure 3 depict wells with increasing and decreasing trends, respectively.



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## RECOMMENDATIONS

The current sampling frequency for each of the 66 Navy-owned wells (for which trend and first-order change rate analysis was completed) and recommendations for changes in frequency or status quo are provided in Table 1. Of the 66 wells listed in Table 1, 50 are sampled on a frequency determined by other programs (e.g., BPOWs per the Public Water Supply Contingency Plan requirements; RE108 hot spot wells), thus no changes in sampling frequency are recommended here. The sampling frequency of the remaining 16 wells was programmatically set (ranging from quarterly to semi-annually) as they were installed. This report evaluates the future sampling frequency of these 16 wells.

Recommended changes in sampling frequency do not imply changes to ongoing water level measurement schedules including the quarterly synoptic water level rounds completed as part of the Navy's quarterly sampling program. The following general decision rules were applied to the 16 wells described above to guide recommended changes in sampling frequency. Note that there are multiple rules that are not applied in Table 1 at this time, but are listed here as they may be invoked in the future.

1. No Trend; stable; most recent result below MCL = semi-annual
2. No Trend; stable; most recent result above MCL = annual or semi-annual
3. No Trend; not stable; most recent result above MCL = semi-annual
4. No Trend; not stable; most recent result below MCL = semi-annual
5. Increasing Trend; change rate >0.001/day; most recent result below MCL = annual
6. Increasing Trend; change rate <0.001/day; most recent result below MCL = semi-annual
7. Increasing Trend; most recent result above MCL = annual or semi-annual
8. Decreasing Trend; most recent result below MCL; highest historical detection below MCL = no further sampling, eliminate from LTM
9. Decreasing Trend; most recent result below MCL; highest historical detection above MCL = annual, semi-annual or eliminate
10. Decreasing Trend; most recent result above MCL = annual or semi-annual
11. Not MK Tested; >75% NDs in last 3 years = no further sampling, eliminate from LTM
12. Not MK Tested; >75% ND; < 3 years of sample data = annual



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13. Not MK Tested; all NDs; > 3 years of sample data = no further sampling, eliminate from LTM

14. Not MK Tested; all NDs; < 3 years of sample data = annual

15. No longer sampled; = no further sampling, eliminate from LTM

An additional recommendation is to perform the LTM/RPO on the Navy-owned wells every two years.



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## REFERENCES

Gilbert, Richard O., 1987*, Statistical Methods for Environmental Pollution Monitoring*, v. 1, 321 p.

Newell, Charles J., et al., 2002, *Calculation and Use of First-Order Rate Constants for Monitored Natural Attenuation Studies,*USEPA Ground Water Issue, EPA/540/S-02/500, 1-25 p.

Resolution Consultants, 2015. *2014 OU2 Groundwater Investigation BPOW4-1R, BPOW4-2R Installation Report, NWIRP Bethpage, NY*, July.

Wisconsin Department of Natural Resources (WDNR), 2003, *Guidance on Natural Attenuation for Petroleum Releases, Bureau for Remediation and Redevelopment*, v. 1, 9-12 p.



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# Tables

**Table 1**
**2017 Long Term Monitoring Trend Analysis**
**Trichloroethene (TCE) of NWIRP Bethpage, Navy Owned Wells**

| Well | MK 80% Result | MK 90% Result | Stable? | Change Rate/day (ppb/day) | Dates in Test Record | Days in Test Record | Initial [X] (ppb) | Most Recent [X] (ppb) | Highest Detection in ppb (Date)[1] | [X] in 5 years from last date (ppb) | Time to Reach MCL (yrs) | Current Monitoring Frequency | Recommended Monitoring Frequency | Applied Decision Rule[2] |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| BPOW1-1 | Increasing | Increasing | na | 0.00012 | 5/1/12 – 6/19/17 | 1875 | 1.1 | 1 | 4 (4/30/04) | 0.9 | na | Quarterly | Quarterly | * |
| BPOW1-2 | Increasing | Increasing | na | 0.00027 | 8/20/12 - 6/13/17 | 1758 | 0.3 | 0.88 | 0.85 (6/7/16) | 1.5 | na | Quarterly | Quarterly | * |
| BPOW3-4 | Increasing | Increasing | na | 0.01305 | 5/6/12 - 6/14/17 | 1865 | 51 | 77.3 | 80.7 (12/11/15) | 103 | na | Quarterly | Quarterly | * |
| BPOW4-1R | NT | NT | Y | na | 12/15/14 – 5/26/17 | 893 | 0.84 | 0.84 | 1.1 (5/31/16) | na | na | Semi-Annual | Semi-Annual | * |
| BPOW4-2R | NT | NT | Y | na | 12/15/14 – 6/20/17 | 918 | 0.73 | 0.6 | 1.9 (6/1/16) | na | na | Semi-Annual | Semi-Annual | * |
| FW-03 | Decreasing | Decreasing | na | -0.0002 | 3/14/06 - 4/20/17 | 4055 | 4 | 0.71 | 5.6 (3/6/2007) | 0.5 | na | Annual | Semi-annual | 9 |
| GM-15D | Decreasing | Decreasing | na | -0.00035 | 2/27/09 - 6/28/17 | 2913 | 1.5 | 0.5 (ND) | 13 (1/30/2001) | 0.3 | na | Semi-Annual | Eliminate | **** |
| GM-15D2 | Decreasing | Decreasing | na | -0.00006 | 2/27/09 – 6/28/17 | 3043 | 11 | 10 | 17 (3/28/02) | 9 | 31.65 | Semi-Annual | Semi-Annual | 10 |
| GM-16SR | Increasing | NT | na | 0.00209 | 7/24/03 - 4/10/06 | 991 | 2.5 (ND) | 4 | 5 (9/7/2005) | 6.8 | na | Not Sampled | Water levels only | **** |
| GM-17D | NT | NT | Y | na | 3/7/08 – 5/2/17 | 3343 | 2.5 | 0.83 | 1 (9/1/2005) | na | na | Semi-Annual | Semi-annual | *** |
| GM-17I | Increasing | Increasing | na | 0.00027 | 3/7/08 – 5/2/17 | 3343 | 0.5 (ND) | 0.5 (ND) | 1.7 (4/22/15) | 0.5 | na | Semi-Annual | Semi-annual | *** |
| GM-18D | Decreasing | Decreasing | na | -0.00047 | 3/21/08 – 4/21/17 | 3318 | 2.5 | 0.52 | 12 (4/11/06) | 0.2 | na | Semi-Annual | Eliminate | **** |
| GM-21D | Increasing | NT | na | 0.00043 | 5/17/09 – 5/3/17 | 2908 | 0.74 | 1.5 | 3 (7/17/03) | 2 | na | Annual | Annual | 6 |
| GM-39DA | Decreasing | Decreasing | na | -0.00053 | 3/18/08 - 5/3/17 | 3333 | 19 | 1.6 | 19 (3/18/08) | 0 | na | Semi-Annual | Semi-Annual | 9 |
| GM-39DB | Decreasing | Decreasing | na | -0.0002 | 3/18/08 – 5/3/17 | 3333 | 46 | 34 | 94 (5/9/11) | 23.6 | 26.26 | Semi-Annual | Semi-Annual | 10 |
| GM-73D | NT | NT | N | na | 3/18/08 - 6/15/17 | 3376 | 6.4 | 4.4 | 780 (10/18/02) | na | na | Semi-Annual | Quarterly | 3 |
| GM-73D2 | Decreasing | Decreasing | na | -0.00018 | 3/17/08 – 4/14/17 | 3315 | 58 | 35.7 | 1200 (11/22/02) | 25.8 | 30.32 | Semi-Annual | Semi-Annual | 10 |
| GM-74D | Decreasing | Decreasing | na | -0.00031 | 3/17/08 – 5/2/17 | 3333 | 2.5 (ND) | 1.3 | 81 (2/5/01) | 0.7 | na | Semi-Annual | Eliminate | **** |
| GM-74D2 | NT | NT | Y | na | 3/17/08 – 4/14/17 | 3315 | 7.3 | 7.8 | 12 (3/20/06) | na | na | Semi-Annual | Semi-Annual | 2 |
| GM-74I | Decreasing | Decreasing | na | -0.00057 | 3/17/08 – 5/2/17 | 3333 | 2.5 (ND) | 0.6 | 0.79 (12/9/13) | 0.2 | na | Semi-Annual | Eliminate | **** |
| GM-75D2 | Decreasing | Decreasing | na | -0.00056 | 2/3/10 – 6/12/17 | 2686 | 82 | 26.4 | 1500 (10/3/02) | 9.5 | 8.14 | Semi-Annual | Semi-Annual | 10 |
| GM-78I | NT | NT | Y | na | 3/15/06 - 5/5/17 | 4069 | 0.9 | 0.44 | 7 (1/9/02) | na | na | Annual | Annual | 1 |
| GM-78S | NT | NT | Y | na | 3/15/06 - 6/22/17 | 4117 | 0.3 | 0.43 | 1.1 (2/8/2007) | na | na | Annual | Annual | 1 |
| GM-79D | NT | NT | Y | na | 4/13/10 – 6/28/17 | 2631 | 34 | 46.9 | 110 (4/7/03) | na | na | Semi-Annual | Semi-Annual | 2 |
| GM-79I | NT | NT | N | na | 1/22/10 - 6/28/17 | 2714 | 0.25 (ND) | 0.45 | 30 (2/14/12) | na | na | Semi-Annual | Annual | 4 |
| HN-24I | NT | NT | Y | na | 4/12/05 - 4/20/17 | 4391 | 0.25 (ND) | 11.2 | 290 (10/15/2002) | na | na | Annual | Semi-Annual | 2 |
| HN-40I | Increasing | Increasing | na | 0.00229 | 9/27/06 - 4/19/17 | 3857 | 0.5 | 0.5 (ND) | 35 (12/22/03) | 0.5 | na | Annual | Semi-Annual | 5 |
| HN-42I | Decreasing | Decreasing | na | -0.00103 | 9/24/07 - 4/19/17 | 3495 | 12 | 0.42 | 20 (7/8/09) | 0.1 | na | Annual | Semi-Annual | 9 |
| RE103D1 | Decreasing | Decreasing | na | -0.00024 | 3/11/14 – 12/13/17 | 1373 | 1000 | 720 | 1300 (12/10/14) | 462.6 | 56.18 | Quarterly | Quarterly | * |
| RE103D2 | Decreasing | Decreasing | na | -0.00035 | 3/11/14 – 12/13/17 | 1373 | 750 | 530 | 1300 (9/23/14) | 279.8 | 36.5 | Quarterly | Quarterly | * |
| RE103D3 | Decreasing | Decreasing | na | -0.00026 | 3/11/14 – 12/13/17 | 1373 | 430 | 390 | 600 (12/10/14) | 242.7 | 45.91 | Quarterly | Quarterly | * |
| RE104D1 | Decreasing | Decreasing | na | -0.00062 | 3/12/14 – 12/5/17 | 1364 | 150 | 69 | 160 (6/12/14) | 22.3 | 11.6 | Quarterly | Quarterly | * |
| RE104D2 | Increasing | Increasing | na | 0.01321 | 3/12/14 – 12/5/17 | 1364 | 2.6 | 27 | 27 (12/5/2017) | 5.6 | na | Quarterly | Quarterly | * |
| RE105D1 | Decreasing | Decreasing | na | -0.00022 | 3/11/14 – 12/5/17 | 1365 | 160 | 100 | 160 (3/11/14) | 67.3 | 37.75 | Quarterly | Quarterly | * |
| RE105D2 | Increasing | Increasing | na | 0.5172 | 3/11/14 – 12/5/17 | 1365 | 620 | 1900 | 1900 (12/5/17) | 3611.4 | na | Quarterly | Quarterly | * |
| RE107D1 | NT | NT | Y | na | 12/18/15 – 11/29/17 | 712 | 17 | 12.7 | 17 (12/18/15) | na | na | Quarterly | Quarterly | * |
| RE107D2 | Increasing | Increasing | na | 0.11332 | 12/18/15 – 11/29/17 | 712 | 140 | 226 | 226 (11/29/17) | 446.4 | na | Quarterly | Quarterly | * |
| RE107D3 | NT | NT | Y | na | 12/29/15 – 11/29/17 | 701 | 0.36 | 0.125 | 0.36 (12/29/15) | na | na | Quarterly | Quarterly | * |
| RE108D1 | Decreasing | Decreasing | na | -0.00091 | 3/12/14 – 12/6/17 | 1365 | 130 | 51 | 140 (3/27/15) | 9.7 | 6.99 | Quarterly | Quarterly | * |
| RE108D2 | Decreasing | Decreasing | na | -0.00021 | 3/12/14 – 12/6/17 | 1365 | 4600 | 3100 | 4600 (3/12/14) | 2113.1 | 83.881 | Quarterly | Quarterly | * |
| RE114D1 | NT | NT | Y | na | 12/21/15 – 11/29/17 | 709 | 370 | 387 | 415 (6/1/17) | na | na | Quarterly | Quarterly | * |
| RE114D2 | NT | NT | Y | na | 12/16/15 – 12/20/17 | 736 | 70 | 84 | 84 (12/20/17) | na | na | Quarterly | Quarterly | * |
| RE114D3 | NT | NT | Y | na | 12/16/15 – 12/20/17 | 736 | 43 | 51.2 | 51.2 (12/20/17) | na | na | Quarterly | Quarterly | * |
| RE117D1 | NT | NT | Y | na | 6/1/15 – 12/13/17 | 926 | 7.8 | 13 | 21.3 (5/16/2016) | na | na | Quarterly | Quarterly | * |
| RE120D1 | Decreasing | Decreasing | na | -0.00036 | 12/12/14 – 12/12/17 | 1095 | 1300 | 990 | 1400 (9/1/16) | 513.2 | 40.24 | Quarterly | Quarterly | * |

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|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| RE120D2 | Decreasing | Decreasing | na | -0.00023 | 12/12/14 – 12/12/17 | 1095 | 900 | 710 | 1000 (9/1/16) | 466.6 | 59.03 | Quarterly | Quarterly | * |
| RE120D3 | NT | NT | Y | na | 12/12/14 – 12/12/17 | 1096 | 3.4 | 28 | 120 (9/29/15) | na | na | Quarterly | Quarterly | * |
| RE121D1 | Increasing | NT | na | 0.01261 | 12/21/15 – 12/5/17 | 731 | 29 | 33.8 | 33.8 (12/5/17) | 45.8 | na | Quarterly | Quarterly | * |
| RE121D2 | Increasing | NT | na | 0.51229 | 12/21/15 – 12/5/17 | 731 | 480 | 754 | 789 (6/1/17) | 1438.1 | na | Quarterly | Quarterly | * |
| RE122D1 | Decreasing | Decreasing | na | -0.00025 | 3/24/15 – 12/6/17 | 988 | 570 | 490 | 610 (6/22/16) | 310.5 | 50.25 | Quarterly | Quarterly | * |
| RE122D2 | Decreasing | Decreasing | na | -0.00065 | 3/24/15 – 12/6/17 | 988 | 4600 | 3200 | 5500 (6/22/16) | 977.2 | 27.23 | Quarterly | Quarterly | * |
| RE122D3 | NT | NT | Y | na | 3/24/15 – 12/6/17 | 988 | 6.8 | 4.2 | 10 (9/30/15) | na | na | Quarterly | Quarterly | * |
| RE123D1 | NT | NT | na | na | 9/29/15 – 12/12/17 | 805 | 12 | 8.4 | 12 (9/29/15) | 0.2 | na | Quarterly | Quarterly | * |
| RE123D2 | Increasing | Increasing | na | 0.00067 | 9/29/15 – 12/12/17 | 805 | 1.4 | 2.1 | 2.1 (12/12/17) | 3.7 | na | Quarterly | Quarterly | * |
| RE125D1 | Decreasing | NT | na | -0.0004 | 12/7/16 – 12/11/17 | 369 | 180 | 140 | 180 (6/2/17) | 67.1 | 22.6 | Quarterly | Quarterly | * |
| RE125D2 | Decreasing | Decreasing | na | -0.00045 | 12/7/16 – 12/11/17 | 369 | 240 | 200 | 240 (12/7/16) | 88.8 | 22.7 | Quarterly | Quarterly | * |
| RE125D3 | NT | NT | Y | na | 12/7/16 – 12/11/17 | 369 | 150 | 150 | 150 (12/11/17) | na | na | Quarterly | Quarterly | * |
| RE126D1 | Increasing | Increasing | na | 0.10912 | 6/21/16 – 12/7/17 | 534 | 28 | 85 | 85 (12/7/17) | 279.5 | na | Quarterly | Quarterly | * |
| RE126D2 | Decreasing | Decreasing | na | -0.00031 | 6/21/16 – 12/7/17 | 534 | 520 | 450 | 530 (12/6/16) | 255.6 | 39.77 | Quarterly | Quarterly | * |
| RE126D3 | NT | NT | Y | na | 6/21/16 – 12/7/17 | 534 | 4 | 4.3 | 4.3 (12/7/17) | na | na | Quarterly | Quarterly | * |
| RE131D1 | Increasing | Increasing | na | 0.08957 | 6/23/16 – 12/7/17 | 532 | 96 | 140 | 140 (12/7/17) | 290.9 | na | Quarterly | Quarterly | * |
| RE131D2 | Increasing | NT | na | 0.0423 | 6/23/16 – 12/7/17 | 532 | 46 | 67 | 67 (12/7/17) | 139 | na | Quarterly | Quarterly | * |
| RE131D3 | Increasing | Increasing | na | 0.00648 | 6/23/16 – 12/7/17 | 532 | 6.1 | 9.5 | 9.5 (12/7/17) | 21.2 | na | Quarterly | Quarterly | * |
| TT101D | Increasing | Increasing | na | 0.00918 | 3/13/14 – 12/8/17 | 1366 | 52 | 66 | 74 (12/17/15) | 84.7 | na | Quarterly | Quarterly | ** |
| TT101D1 | Increasing | Increasing | na | 0.03409 | 3/13/14 – 12/8/17 | 1366 | 170 | 170 | 220 (9/21/16) | 170 | na | Quarterly | Quarterly | ** |
| TT101D2 | Increasing | Increasing | na | 0.30067 | 3/13/14 – 12/8/17 | 1366 | 250 | 840 | 840 (12/8/17) | 1630 | na | Quarterly | Quarterly | ** |

[1] If highest detection occurred on multiple dates, most recent date listed.
[2] Applied Decision Rule: pertains to recommended future sampling; numeric rules defined in text.
* Wells sampled on a frequency determined by other programs (e.g. Public Water Supply Contingency Plan);
** Due to the unique location of this well, it will be sampled annually for the next three years. A re-evaluation of the sampling frequency will be made at that time.
*** Semi annual as per NYSDEC letter dated September 21, 2017
**** Sample prior to next LTM Remedial Process Optimization and then eliminate as per NYSDEC comments
NT = No Trend
ND = Non-Detect Value; for MK analysis replaced ND with ½ the ND value
na = not applicable

**Table 2. Wells not MK Tested for TCE**
**2017 Long Term Monitoring Analysis, NWIRP, Bethpage, NY**

| Well | Rationale for not MK testing | Applied Decision Rule |
|---|---|---|
| HN-40S | 94% ND | 11 |
| HN-42S | 89% ND | 11 |
| BPOW1-3 | Has been ND since 12/8/10 | * |
| BPOW1-4 | 100% ND | * |
| BPOW1-5 | 100% ND | * |
| BPOW1-6 | 100% ND | * |
| BPOW2-1 | Has been ND since 6/14/11 | * |
| BPOW2-2 | Has been ND since 12/2/2011 | * |
| BPOW2-3 | 84% ND | * |
| BPOW3-1 | 100% ND | * |
| BPOW3-2 | 100% ND | * |
| BPOW3-3 | 100% ND | * |
| BPOW5-1 | 100% ND | * |
| BPOW5-2 | 100% ND | * |
| BPOW5-3 | 100% ND | * |
| BPOW5-4 | 100% ND | * |
| BPOW5-5 | 100% ND | * |
| BPOW5-6 | 100% ND | * |
| BPOW5-7 | 100% ND | * |
| BPOW6-1 | 100% ND | * |
| BPOW6-2 | 100% ND | * |
| BPOW6-3 | 100% ND | * |
| BPOW6-4 | 100% ND | * |
| BPOW6-5 | 100% ND | * |
| BPOW6-6 | 100% ND | * |
| TT102D | 100% ND | ** |
| TT102D2 | 83% ND | ** |
| RE104D3 | 90% ND | * |
| RE106D1 | Less than 4 data points | * |
| RE106D2 | Less than 4 data points | * |
| RE106D3 | Less than 4 data points | * |
| RE109D1 | Less than 4 data points | * |
| RE109D2 | Less than 4 data points | * |
| RE109D3 | Less than 4 data points | * |
| RE115D1 | Less than 4 data points | * |
| RE115D2 | Less than 4 data points | * |
| RE117D2 | 87% ND | * |
| RE118D1 | 100% ND | * |
| RE119D1 | 100% ND | * |
| RE123D3 | 100% ND | * |
| RE124D1 | Less than 4 data points | * |
| RE124D2 | Less than 4 data points | * |
| RE127D1 | Less than 4 data points | * |
| RE127D2 | Less than 4 data points | * |
| RE128D1 | Less than 4 data points | * |
| RE128D2 | Less than 4 data points | * |

## Table 2. Wells not MK Tested for TCE
## 2017 Long Term Monitoring Analysis, NWIRP, Bethpage, NY

| Well | Rationale for not MK testing | Applied Decision Rule |
|---|---|---|
| RE129D1 | 100% ND | * |
| RE129D2 | 100% ND | * |
| RE130D1 | Less than 4 data points | * |
| RE130D2 | Less than 4 data points | * |
| RE133D1 | 100% ND | * |
| RE133D2 | 100% ND | * |

Notes:

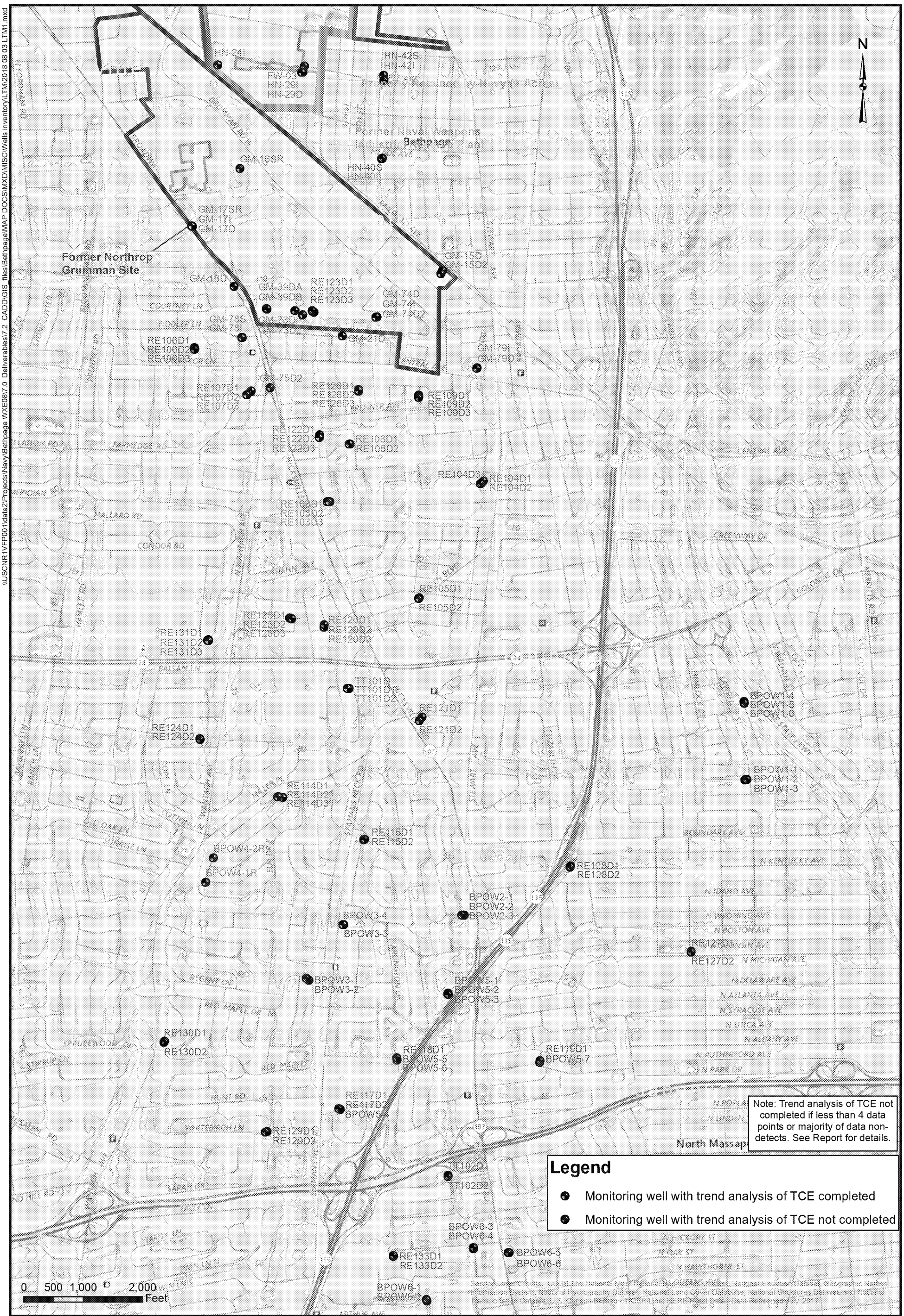
Applied Decision Rule: pertains to recommended future sampling; numeric rules defined in text.

* Wells sampled on a frequency determined by other programs (e.g. Public Water Supply Contingency Plan)

** Due to the unique location of this well, it will be sampled annually for the next three years. A re-evaluation of the sampling frequency will be made at that time.

ND = Non-detect

**Figures**

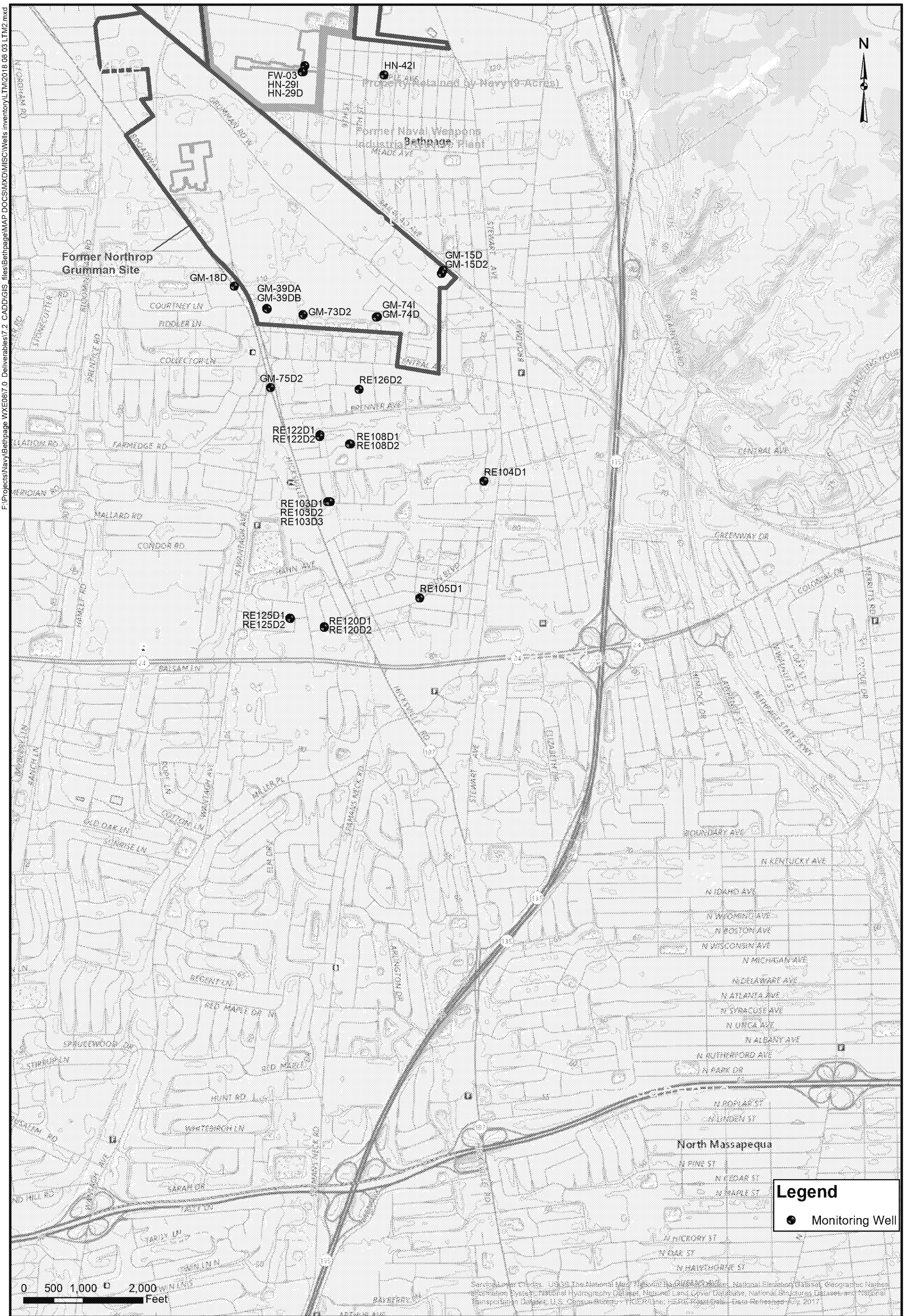



\\USCNR1VFP001\data2\Projects\Navy\Bethpage WXE0817.0 Deliverables\7.2 CADD\GIS_files\Bethpage\MAP DOCS\MXD\MISC\Wells inventory\LTM\2018 08 03 LTM1.mxd

NAVFAC

LOCATION MAP
NAVAL WEAPONS INDUSTRIAL RESERVE PLANT
BETHPAGE, NEW YORK

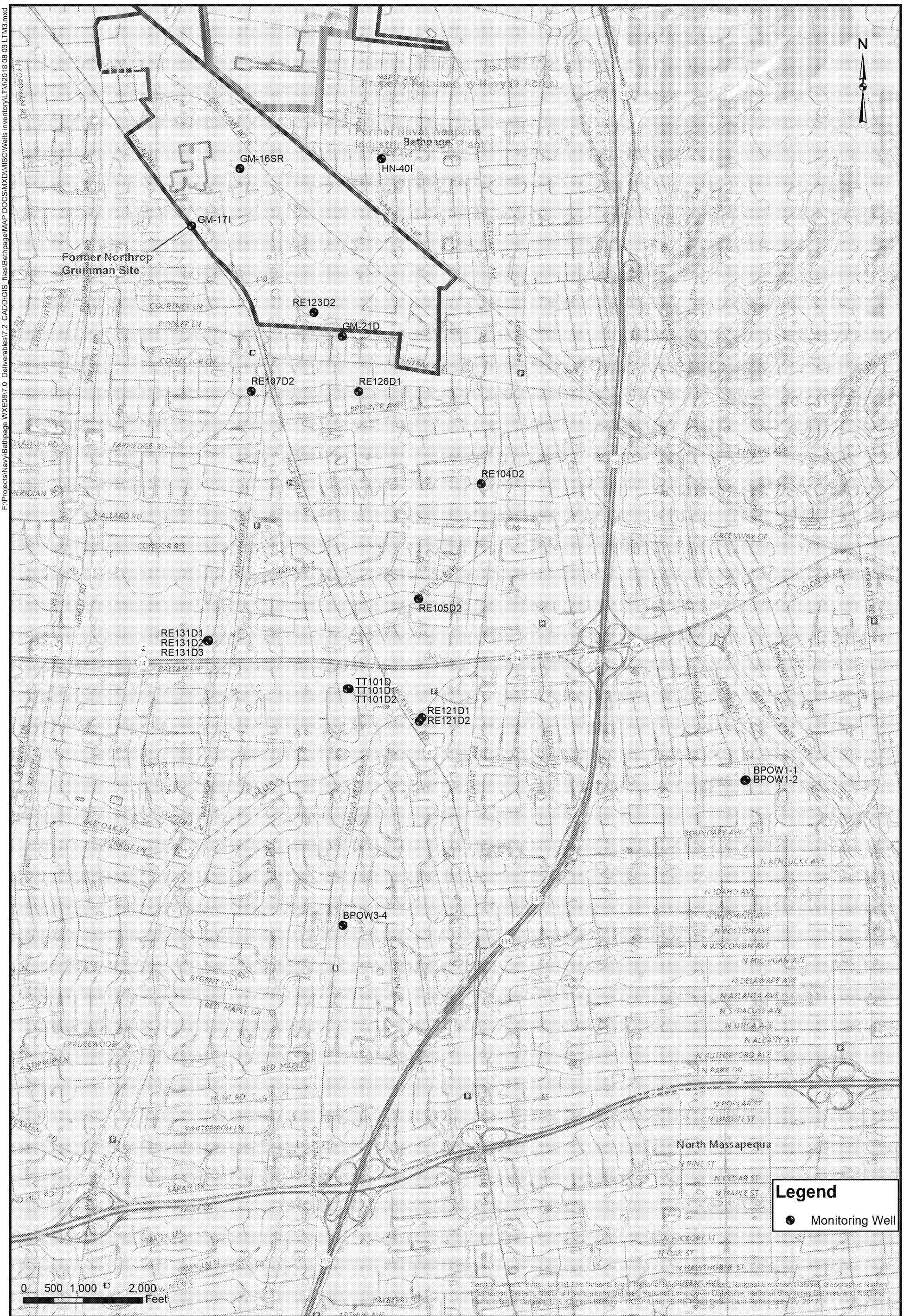
| CONTRACT NUMBER | CTO NUMBER |
|---|---|
| N62470-11-D8013 | WE15 |
| APPROVED BY: PS | DATE: 8/3/2018 |
| APPROVED BY: — | DATE: — |
| FIGURE NO. 1 | REV 0 |




NAVFAC

WELLS WITH DECREASING TREND IN TCE CONCENTRATION
NAVAL WEAPONS INDUSTRIAL RESERVE PLANT
BETHPAGE, NEW YORK

| CONTRACT NUMBER | CTO NUMBER |
|---|---|
| N62470-11-D8013 | WE15 |
| APPROVED BY: PS | DATE: 8/3/2018 |
| APPROVED BY: — | DATE: — |
| FIGURE NO. 2 | REV 0 |




| | | | |
|---|---|---|---|
| NAVFAC | WELLS WITH INCREASING TREND IN TCE CONCENTRATION<br>NAVAL WEAPONS INDUSTRIAL RESERVE PLANT<br>BETHPAGE, NEW YORK | CONTRACT NUMBER<br>N62470-11-D8013 | CTO NUMBER<br>WE15 |
| | | APPROVED BY<br>PS | DATE<br>8/3/2018 |
| | | APPROVED BY<br>— | DATE<br>— |
| | | FIGURE NO.<br>3 | REV<br>0 |

# Appendix A
# Data Sets Used For Trends and Projections

Appendix A

Data Sets Used for Trends and Projections

| Well | Date | Top screen | Bottom Screen | TCE Result | Detect? | | MK Database | | |
|---|---|---|---|---|---|---|---|---|---|
| BPOW 1-1 | 4/23/2004 | 196 | 241 | 3.8 | Y | | | | |
| BPOW 1-1 | 4/30/2004 | 196 | 241 | 4 | Y | | | | |
| BPOW 1-1 | 5/6/2004 | 196 | 241 | 3.2 | Y | | | | |
| BPOW 1-1 | 6/29/2004 | 196 | 241 | 3.4 | Y | | | | |
| BPOW 1-1 | 11/11/2004 | 196 | 241 | 3.3 | Y | | | | |
| BPOW 1-1 | 1/4/2005 | 196 | 241 | 3.2 | Y | | | | |
| BPOW 1-1 | 4/5/2005 | 196 | 241 | 2.5 | Y | | | | |
| BPOW 1-1 | 6/14/2005 | 196 | 241 | 0.78 | Y | | | | |
| BPOW 1-1 | 9/13/2005 | 196 | 241 | 2.5 | Y | | | | |
| BPOW 1-1 | 1/17/2006 | 196 | 241 | 2.5 | Y | | | | |
| BPOW 1-1 | 3/28/2006 | 196 | 241 | 2 | Y | | | | |
| BPOW 1-1 | 7/10/2006 | 196 | 241 | 2.3 | Y | | | | |
| BPOW 1-1 | 10/6/2006 | 196 | 241 | 1.6 | Y | | | | |
| BPOW 1-1 | 12/1/2006 | 196 | 241 | 2 | Y | | | | |
| BPOW 1-1 | 3/7/2007 | 196 | 241 | 1.7 | Y | | | | |
| BPOW 1-1 | 6/18/2007 | 196 | 241 | 1.6 | Y | | | | |
| BPOW 1-1 | 9/21/2007 | 196 | 241 | 1.3 | Y | | | | |
| BPOW 1-1 | 12/10/2007 | 196 | 241 | 1.3 | Y | | | | |
| BPOW 1-1 | 3/31/2008 | 196 | 241 | 1.3 | Y | | | | |
| BPOW 1-1 | 6/27/2008 | 196 | 241 | 1.4 | Y | | | | |
| BPOW 1-1 | 8/5/2008 | 196 | 241 | 1.2 | Y | | | | |
| BPOW 1-1 | 12/18/2008 | 196 | 241 | 1.3 | Y | | | | |
| BPOW 1-1 | 3/3/2009 | 196 | 241 | 1.4 | Y | | | | |
| BPOW 1-1 | 5/19/2009 | 196 | 241 | 1.4 | Y | | | | |
| BPOW 1-1 | 8/6/2009 | 196 | 241 | 1.2 | Y | | | | |
| BPOW 1-1 | 11/11/2009 | 196 | 241 | 1.3 | Y | | | | |
| BPOW 1-1 | 1/21/2010 | 196 | 241 | 1.4 | Y | | | | |
| BPOW 1-1 | 4/6/2010 | 196 | 241 | 1.1 | Y | | | | |
| BPOW 1-1 | 7/20/2010 | 196 | 241 | 0.86 | Y | | | | |
| BPOW 1-1 | 12/16/2010 | 196 | 241 | 0.89 | Y | | | | |
| BPOW 1-1 | 2/9/2011 | 196 | 241 | 1.1 | Y | | | | |
| BPOW 1-1 | 5/23/2011 | 196 | 241 | 1.2 | Y | | | | |
| BPOW 1-1 | 8/5/2011 | 196 | 241 | 0.94 | Y | | | | |
| BPOW 1-1 | 11/30/2011 | 196 | 241 | 1.1 | Y | | | | |
| BPOW 1-1 | 2/21/2012 | 196 | 241 | 1.1 | Y | | | | |
| BPOW 1-1 | 5/1/2012 | 196 | 241 | 1.1 | Y | | 5/1/2012 | 1.1 | Y |
| BPOW 1-1 | 8/20/2012 | 196 | 241 | 0.95 | Y | | 8/20/2012 | 0.95 | Y |
| BPOW 1-1 | 11/29/2012 | 196 | 241 | 0.9 | Y | | 11/29/2012 | 0.9 | Y |
| BPOW 1-1 | 2/6/2013 | 196 | 241 | 0.88 | Y | | 2/6/2013 | 0.88 | Y |
| BPOW 1-1 | 5/14/2013 | 196 | 241 | 0.82 | Y | | 5/14/2013 | 0.82 | Y |
| BPOW 1-1 | 8/14/2013 | 196 | 241 | 0.86 | Y | | 8/14/2013 | 0.86 | Y |
| BPOW 1-1 | 11/25/2013 | 196 | 241 | 0.9 | Y | | 11/25/2013 | 0.9 | Y |
| BPOW 1-1 | 2/11/2014 | 196 | 241 | 0.9 | Y | | 2/11/2014 | 0.9 | Y |
| BPOW 1-1 | 4/17/2014 | 196 | 241 | 0.86 | Y | | 4/17/2014 | 0.86 | Y |
| BPOW 1-1 | 8/4/2014 | 196 | 241 | 0.84 | Y | | 8/4/2014 | 0.84 | Y |
| BPOW 1-1 | 12/9/2014 | 196 | 241 | 1.00 | Y | | 12/9/2014 | 1.00 | Y |
| BPOW 1-1 | 2/4/2015 | 196 | 241 | 1.1 | Y | | 2/4/2015 | 1.1 | Y |
| BPOW 1-1 | 5/27/2015 | 196 | 241 | 0.97 | Y | | 5/27/2015 | 0.97 | Y |
| BPOW 1-1 | 8/11/2015 | 196 | 241 | 1.10 | Y | | 8/11/2015 | 1.10 | Y |
| BPOW 1-1 | 11/2/2015 | 196 | 241 | 1.1 | Y | | 11/2/2015 | 1.1 | Y |
| BPOW 1-1 | 6/8/2016 | 196 | 241 | 1.1 | Y | | 6/8/2016 | 1.1 | Y |
| BPOW 1-1 | 12/1/2016 | 196 | 241 | 1.2 | Y | | 12/1/2016 | 1.2 | Y |
| BPOW 1-1 | 6/19/2017 | 196 | 241 | 1 | Y | | 6/19/2017 | 1 | Y |

Appendix A

Data Sets Used for Trends and Projections

| Well | Date | Top screen | Bottom Screen | TCE Result | Detect? | | MK Dataset | | |
|---|---|---|---|---|---|---|---|---|---|
| BPOW 1-2 | 4/26/2004 | 310 | 335 | 0.5 | N | | | | |
| BPOW 1-2 | 6/29/2004 | 310 | 335 | 0.5 | N | | | | |
| BPOW 1-2 | 11/11/2004 | 310 | 335 | 0.5 | N | | | | |
| BPOW 1-2 | 1/4/2005 | 310 | 335 | 0.5 | N | | | | |
| BPOW 1-2 | 4/5/2005 | 310 | 335 | 0.5 | N | | | | |
| BPOW 1-2 | 6/14/2005 | 310 | 335 | 0.5 | N | | | | |
| BPOW 1-2 | 9/13/2005 | 310 | 335 | 0.5 | N | | | | |
| BPOW 1-2 | 1/16/2006 | 310 | 335 | 0.5 | N | | | | |
| BPOW 1-2 | 3/28/2006 | 310 | 335 | 0.5 | N | | | | |
| BPOW 1-2 | 7/10/2006 | 310 | 335 | 0.5 | N | | | | |
| BPOW 1-2 | 10/6/2006 | 310 | 335 | 0.5 | N | | | | |
| BPOW 1-2 | 12/1/2006 | 310 | 335 | 0.5 | N | | | | |
| BPOW 1-2 | 3/6/2007 | 310 | 335 | 0.5 | N | | | | |
| BPOW 1-2 | 6/19/2007 | 310 | 335 | 0.5 | N | | | | |
| BPOW 1-2 | 9/21/2007 | 310 | 335 | 0.5 | N | | | | |
| BPOW 1-2 | 12/10/2007 | 310 | 335 | 0.5 | N | | | | |
| BPOW 1-2 | 3/31/2008 | 310 | 335 | 0.5 | N | | | | |
| BPOW 1-2 | 6/27/2008 | 310 | 335 | 0.5 | N | | | | |
| BPOW 1-2 | 8/5/2008 | 310 | 335 | 0.5 | N | | | | |
| BPOW 1-2 | 12/18/2008 | 310 | 335 | 0.5 | N | | | | |
| BPOW 1-2 | 3/3/2009 | 310 | 335 | 0.5 | N | | | | |
| BPOW 1-2 | 5/19/2009 | 310 | 335 | 0.5 | N | | | | |
| BPOW 1-2 | 8/6/2009 | 310 | 335 | 0.5 | N | | | | |
| BPOW 1-2 | 11/11/2009 | 310 | 335 | 0.5 | N | | | | |
| BPOW 1-2 | 1/21/2010 | 310 | 335 | 0.5 | N | | | | |
| BPOW 1-2 | 4/6/2010 | 310 | 335 | 0.5 | N | | | | |
| BPOW 1-2 | 7/20/2010 | 310 | 335 | 0.5 | N | | | | |
| BPOW 1-2 | 12/16/2010 | 310 | 335 | 0.5 | N | | | | |
| BPOW 1-2 | 2/8/2011 | 310 | 335 | 0.5 | N | | | | |
| BPOW 1-2 | 5/23/2011 | 310 | 335 | 0.25 | Y | | | | |
| BPOW 1-2 | 8/5/2011 | 310 | 335 | 0.38 | Y | | | | |
| BPOW 1-2 | 11/30/2011 | 310 | 335 | 0.41 | Y | | | | |
| BPOW 1-2 | 2/20/2012 | 310 | 335 | 0.33 | Y | | 2/20/2012 | 0.33 | Y |
| BPOW 1-2 | 5/1/2012 | 310 | 335 | 0.33 | Y | | 5/1/2012 | 0.33 | Y |
| BPOW 1-2 | 8/20/2012 | 310 | 335 | 0.3 | Y | | 8/20/2012 | 0.3 | Y |
| BPOW 1-2 | 12/5/2012 | 310 | 335 | 0.4 | Y | | 12/5/2012 | 0.4 | Y |
| BPOW 1-2 | 12/11/2012 | 310 | 335 | 0.25 | Y | | 12/11/2012 | 0.25 | Y |
| BPOW 1-2 | 2/6/2013 | 310 | 335 | 0.63 | Y | | 2/6/2013 | 0.63 | Y |
| BPOW 1-2 | 5/14/2013 | 310 | 335 | 0.33 | Y | | 5/14/2013 | 0.33 | Y |
| BPOW 1-2 | 8/15/2013 | 310 | 335 | 0.5 | N | | 8/15/2013 | 0.25 | N |
| BPOW 1-2 | 11/22/2013 | 310 | 335 | 0.5 | N | | 11/22/2013 | 0.25 | N |
| BPOW 1-2 | 2/11/2014 | 310 | 335 | 0.55 | Y | | 2/11/2014 | 0.55 | Y |
| BPOW 1-2 | 4/17/2014 | 310 | 335 | 0.5 | N | | 4/17/2014 | 0.25 | N |
| BPOW 1-2 | 8/4/2014 | 310 | 335 | 0.5 | N | | 8/4/2014 | 0.25 | N |
| BPOW 1-2 | 12/8/2014 | 310 | 335 | 0.37 | Y | | 12/8/2014 | 0.37 | Y |
| BPOW 1-2 | 2/3/2015 | 310 | 335 | 0.62 | Y | | 2/3/2015 | 0.62 | Y |
| BPOW 1-2 | 5/27/2015 | 310 | 335 | 0.45 | Y | | 5/27/2015 | 0.45 | Y |
| BPOW 1-2 | 8/11/2015 | 310 | 335 | 0.3 | Y | | 8/11/2015 | 0.3 | Y |
| BPOW 1-2 | 11/2/2015 | 310 | 335 | 0.23 | Y | | 11/2/2015 | 0.23 | Y |
| BPOW 1-2 | 6/7/2016 | 310 | 335 | 0.85 | Y | | 6/7/2016 | 0.85 | Y |
| BPOW 1-2 | 12/1/2016 | 310 | 335 | 0.85 | Y | | 12/1/2016 | 0.85 | Y |
| BPOW 1-2 | 6/13/2017 | 310 | 335 | 0.88 | Y | | 6/13/2017 | 0.88 | Y |

Appendix A

Data Sets Used for Trends and Projections

| Well | Date | Top screen | Bottom Screen | TCE Result | Detect? | | MK Dataset | | |
|---|---|---|---|---|---|---|---|---|---|
| BPOW 3-4 | 12/7/2011 | 640 | 690 | 46 | Y | | 12/7/2011 | 46 | Y |
| BPOW 3-4 | 3/8/2012 | 640 | 690 | 45 | Y | | 3/8/2012 | 45 | Y |
| BPOW 3-4 | 5/16/2012 | 640 | 690 | 51 | Y | | 5/16/2012 | 51 | Y |
| BPOW 3-4 | 9/4/2012 | 640 | 690 | 58 | Y | | 9/4/2012 | 58 | Y |
| BPOW 3-4 | 12/28/2012 | 640 | 690 | 59 | Y | | 12/28/2012 | 59 | Y |
| BPOW 3-4 | 2/19/2013 | 640 | 690 | 57 | Y | | 2/19/2013 | 57 | Y |
| BPOW 3-4 | 5/21/2013 | 640 | 690 | 53 | Y | | 5/21/2013 | 53 | Y |
| BPOW 3-4 | 8/26/2013 | 640 | 690 | 64 | Y | | 8/26/2013 | 64 | Y |
| BPOW 3-4 | 12/6/2013 | 640 | 690 | 49 | Y | | 12/6/2013 | 49 | Y |
| BPOW 3-4 | 2/25/2014 | 640 | 690 | 46 | Y | | 2/25/2014 | 46 | Y |
| BPOW 3-4 | 4/22/2014 | 640 | 690 | 50 | Y | | 4/22/2014 | 50 | Y |
| BPOW 3-4 | 8/12/2014 | 640 | 690 | 54 | Y | | 8/12/2014 | 54 | Y |
| BPOW 3-4 | 11/26/2014 | 640 | 690 | 74.6 | Y | | 11/26/2014 | 74.6 | Y |
| BPOW 3-4 | 3/31/2015 | 640 | 690 | 64.2 | Y | | 3/31/2015 | 64.2 | Y |
| BPOW 3-4 | 6/9/2015 | 640 | 690 | 52.9 | Y | | 6/9/2015 | 52.9 | Y |
| BPOW 3-4 | 8/25/2015 | 640 | 690 | 60.9 | Y | | 8/25/2015 | 60.9 | Y |
| BPOW 3-4 | 12/11/2015 | 640 | 690 | 80.7 | Y | | 12/11/2015 | 80.7 | Y |
| BPOW 3-4 | 6/22/2016 | 640 | 690 | 63 | Y | | 6/22/2016 | 63 | Y |
| BPOW 3-4 | 12/1/2016 | 640 | 690 | 78.8 | Y | | 12/1/2016 | 78.8 | Y |
| BPOW 3-4 | 6/14/2017 | 640 | 690 | 77.3 | Y | | 6/14/2017 | 77.3 | Y |

Appendix A

Data Sets Used for Trends and Projections

| Well | Date | Top screen | Bottom Screen | TCE Result | Detect? | | MK Dataset | | |
|---|---|---|---|---|---|---|---|---|---|
| BPOW 4-1R | 12/15/2014 | 652 | 692 | 0.84 | Y | | 12/15/2014 | 0.84 | Y |
| BPOW 4-1R | 3/30/2015 | 652 | 692 | 0.79 | Y | | 3/30/2015 | 0.79 | Y |
| BPOW 4-1R | 6/3/2015 | 652 | 692 | 0.58 | Y | | 6/3/2015 | 0.58 | Y |
| BPOW 4-1R | 8/26/2015 | 652 | 692 | 0.92 | Y | | 8/26/2015 | 0.92 | Y |
| BPOW 4-1R | 11/13/2015 | 652 | 692 | 1 | Y | | 11/13/2015 | 1 | Y |
| BPOW 4-1R | 5/31/2016 | 652 | 692 | 1.1 | Y | | 5/31/2016 | 1.1 | Y |
| BPOW 4-1R | 10/31/2016 | 652 | 692 | 0.57 | Y | | 10/31/2016 | 0.57 | Y |
| BPOW 4-1R | 5/26/2017 | 652 | 692 | 0.84 | Y | | 5/26/2017 | 0.84 | Y |

Appendix A

Data Sets Used for Trends and Projections

| Well | Date | Top screen | Bottom Screen | TCE Result | Detect? | | MK Dataset | | |
|---|---|---|---|---|---|---|---|---|---|
| BPOW 4-2R | 12/15/2014 | 725 | 765 | 0.73 | Y | | 12/15/2014 | 0.73 | Y |
| BPOW 4-2R | 3/27/2015 | 725 | 765 | 0.78 | Y | | 3/27/2015 | 0.78 | Y |
| BPOW 4-2R | 6/3/2015 | 725 | 765 | 0.82 | Y | | 6/3/2015 | 0.82 | Y |
| BPOW 4-2R | 8/24/2015 | 725 | 765 | 1.6 | Y | | 8/24/2015 | 1.6 | Y |
| BPOW 4-2R | 11/12/2015 | 725 | 765 | 1.5 | Y | | 11/12/2015 | 1.5 | Y |
| BPOW 4-2R | 6/1/2016 | 725 | 765 | 1.9 | Y | | 6/1/2016 | 1.9 | Y |
| BPOW 4-2R | 11/3/2016 | 725 | 765 | 0.91 | Y | | 11/3/2016 | 0.91 | Y |
| BPOW 4-2R | 6/20/2017 | 725 | 765 | 0.6 | Y | | 6/20/2017 | 0.6 | Y |

Appendix A

Data Sets Used for Trends and Projections

| Well | Date | Top screen | Bottom Screen | TCE Result | Detect? | | MK Dataset | | |
|---|---|---|---|---|---|---|---|---|---|
| FW-03 | 6/28/2000 | 49 | 64 | 2 | Y | | 6/28/2000 | 2 | Y |
| FW-03 | 9/27/2000 | 49 | 64 | 3 | Y | | 9/27/2000 | 3 | Y |
| FW-03 | 2/1/2001 | 49 | 64 | 14 | Y | | 2/1/2001 | 14 | Y |
| FW-03 | 5/31/2001 | 49 | 64 | 28 | Y | | 5/31/2001 | 28 | Y |
| FW-03 | 10/4/2001 | 49 | 64 | 27 | Y | | 10/4/2001 | 27 | Y |
| FW-03 | 1/3/2002 | 49 | 64 | 33 | Y | | 1/3/2002 | 33 | Y |
| FW-03 | 4/11/2002 | 49 | 64 | 19 | Y | | 4/11/2002 | 19 | Y |
| FW-03 | 7/9/2002 | 49 | 64 | 16 | Y | | 7/9/2002 | 16 | Y |
| FW-03 | 3/20/2003 | 49 | 64 | 6 | Y | | 3/20/2003 | 6 | Y |
| FW-03 | 7/21/2003 | 49 | 64 | 2 | Y | | 7/21/2003 | 2 | Y |
| FW-03 | 10/14/2003 | 49 | 64 | 3 | Y | | 10/14/2003 | 3 | Y |
| FW-03 | 1/7/2004 | 49 | 64 | 1 | Y | | 1/7/2004 | 1 | Y |
| FW-03 | 10/6/2004 | 49 | 64 | 4 | Y | | 10/6/2004 | 4 | Y |
| FW-03 | 4/12/2005 | 49 | 64 | 3 | Y | | 4/12/2005 | 3 | Y |
| FW-03 | 9/20/2005 | 49 | 64 | 3 | Y | | 9/20/2005 | 3 | Y |
| FW-03 | 3/14/2006 | 49 | 64 | 4 | Y | | 3/14/2006 | 4 | Y |
| FW-03 | 10/5/2006 | 49 | 64 | 3 | Y | | 10/5/2006 | 3 | Y |
| FW-03 | 3/6/2007 | 49 | 64 | 5.6 | Y | | 3/6/2007 | 5.6 | Y |
| FW-03 | 9/11/2007 | 49 | 64 | 5 | N | | 9/11/2007 | 2.5 | N |
| FW-03 | 3/13/2008 | 49 | 64 | 5 | Y | | 3/13/2008 | 5 | Y |
| FW-03 | 9/5/2008 | 49 | 64 | 5 | N | | 9/5/2008 | 2.5 | N |
| FW-03 | 2/27/2009 | 49 | 64 | 3.4 | Y | | 2/27/2009 | 3.4 | Y |
| FW-03 | 8/25/2009 | 49 | 64 | 2.8 | Y | | 8/25/2009 | 2.8 | Y |
| FW-03 | 1/29/2010 | 49 | 64 | 2.5 | Y | | 1/29/2010 | 2.5 | Y |
| FW-03 | 8/6/2010 | 49 | 64 | 2.3 | Y | | 8/6/2010 | 2.3 | Y |
| FW-03 | 5/5/2011 | 49 | 64 | 3.1 | Y | | 5/5/2011 | 3.1 | Y |
| FW-03 | 12/28/2011 | 49 | 64 | 3.2 | Y | | 12/28/2011 | 3.2 | Y |
| FW-03 | 2/17/2012 | 49 | 64 | 3.4 | Y | | 2/17/2012 | 3.4 | Y |
| FW-03 | 6/10/2013 | 49 | 64 | 3.5 | Y | | 6/10/2013 | 3.5 | Y |
| FW-03 | 5/19/2014 | 49 | 64 | 4.5 | Y | | 5/19/2014 | 4.5 | Y |
| FW-03 | 6/2/2015 | 49 | 64 | 2.4 | Y | | 6/2/2015 | 2.4 | Y |
| FW-03 | 4/27/2016 | 49 | 64 | 2.2 | Y | | 4/27/2016 | 2.2 | Y |
| FW-03 | 4/20/2017 | 49 | 64 | 0.71 | Y | | 4/20/2017 | 0.71 | Y |

Appendix A

Data Sets Used for Trends and Projections

| Well | Date | Top screen | Bottom Screen | TCE Result | Detect? | | MK Dataset | | |
|---|---|---|---|---|---|---|---|---|---|
| GM-15D | 9/28/2000 | 332 | 342 | 9 | Y | | | | |
| GM-15D | 1/30/2001 | 332 | 342 | 13 | Y | | | | |
| GM-15D | 4/30/2001 | 332 | 342 | 12 | Y | | | | |
| GM-15D | 10/8/2001 | 332 | 342 | 10 | Y | | | | |
| GM-15D | 12/19/2001 | 332 | 342 | 11 | Y | | | | |
| GM-15D | 3/28/2002 | 332 | 342 | 10 | Y | | | | |
| GM-15D | 7/10/2002 | 332 | 342 | 8 | Y | | | | |
| GM-15D | 10/8/2002 | 332 | 342 | 9 | Y | | | | |
| GM-15D | 1/6/2003 | 332 | 342 | 8 | Y | | | | |
| GM-15D | 3/21/2003 | 332 | 342 | 11 | Y | | | | |
| GM-15D | 7/29/2003 | 332 | 342 | 6 | Y | | | | |
| GM-15D | 10/2/2003 | 332 | 342 | 8 | Y | | | | |
| GM-15D | 12/29/2003 | 332 | 342 | 10 | Y | | | | |
| GM-15D | 3/17/2004 | 332 | 342 | 8 | Y | | | | |
| GM-15D | 7/13/2004 | 332 | 342 | 6 | Y | | | | |
| GM-15D | 10/4/2004 | 332 | 342 | 5 | Y | | | | |
| GM-15D | 1/7/2005 | 332 | 342 | 4 | Y | | | | |
| GM-15D | 3/16/2005 | 332 | 342 | 3 | Y | | | | |
| GM-15D | 5/31/2005 | 332 | 342 | 3 | Y | | | | |
| GM-15D | 8/19/2005 | 332 | 342 | 2 | Y | | | | |
| GM-15D | 12/22/2005 | 332 | 342 | 1 | Y | | | | |
| GM-15D | 3/13/2006 | 332 | 342 | 1 | Y | | | | |
| GM-15D | 9/20/2006 | 332 | 342 | 1 | Y | | | | |
| GM-15D | 2/20/2007 | 332 | 342 | 5 | N | | | | |
| GM-15D | 9/12/2007 | 332 | 342 | 5 | N | | | | |
| GM-15D | 3/11/2008 | 332 | 342 | 5 | N | | 3/11/2008 | 0.5 | N |
| GM-15D | 8/13/2008 | 332 | 342 | 5 | N | | 8/13/2008 | 0.5 | N |
| GM-15D | 2/27/2009 | 332 | 342 | 1.5 | Y | | 2/27/2009 | 1.5 | Y |
| GM-15D | 7/7/2009 | 332 | 342 | 1.3 | Y | | 7/7/2009 | 1.3 | Y |
| GM-15D | 8/14/2009 | 332 | 342 | 1.2 | Y | | 8/14/2009 | 1.2 | Y |
| GM-15D | 10/23/2009 | 332 | 342 | 1.1 | Y | | 10/23/2009 | 1.1 | Y |
| GM-15D | 1/21/2010 | 332 | 342 | 0.93 | Y | | 1/21/2010 | 0.93 | Y |
| GM-15D | 7/13/2010 | 332 | 342 | 0.76 | Y | | 7/13/2010 | 0.76 | Y |
| GM-15D | 5/6/2011 | 332 | 342 | 0.6 | Y | | 5/6/2011 | 0.6 | Y |
| GM-15D | 12/10/2011 | 332 | 342 | 0.31 | Y | | 12/10/2011 | 0.31 | Y |
| GM-15D | 2/8/2012 | 332 | 342 | 0.51 | Y | | 2/8/2012 | 0.51 | Y |
| GM-15D | 9/12/2012 | 332 | 342 | 0.55 | Y | | 9/12/2012 | 0.55 | Y |
| GM-15D | 5/24/2013 | 332 | 342 | 0.36 | Y | | 5/24/2013 | 0.36 | Y |
| GM-15D | 12/12/2013 | 332 | 342 | 0.39 | Y | | 12/12/2013 | 0.39 | Y |
| GM-15D | 6/4/2014 | 332 | 342 | 0.48 | Y | | 6/4/2014 | 0.48 | Y |
| GM-15D | 10/20/2014 | 332 | 342 | 1 | N | | 10/20/2014 | 0.5 | N |
| GM-15D | 5/7/2015 | 332 | 342 | 0.34 | Y | | 5/7/2015 | 0.34 | Y |
| GM-15D | 6/30/2016 | 332 | 342 | 1 | N | | 6/30/2016 | 0.5 | N |
| GM-15D | 10/26/2016 | 332 | 342 | 1 | N | | 10/26/2016 | 0.5 | N |
| GM-15D | 6/28/2017 | 332 | 342 | 1 | N | | 6/28/2017 | 0.5 | N |

Appendix A

Data Sets Used for Trends and Projections

| Well | Date | Top screen | Bottom Screen | TCE Result | Detect? | | MK Dataset | | |
|---|---|---|---|---|---|---|---|---|---|
| GM-15D2 | 10/2/2000 | | | 9 | Y | | 10/2/2000 | 9 | Y |
| GM-15D2 | 1/30/2001 | | | 15 | Y | | 1/30/2001 | 15 | Y |
| GM-15D2 | 4/30/2001 | | | 13 | Y | | 4/30/2001 | 13 | Y |
| GM-15D2 | 10/8/2001 | | | 16 | Y | | 10/8/2001 | 16 | Y |
| GM-15D2 | 12/19/2001 | | | 16 | Y | | 12/19/2001 | 16 | Y |
| GM-15D2 | 3/28/2002 | | | 17 | Y | | 3/28/2002 | 17 | Y |
| GM-15D2 | 7/10/2002 | | | 12 | Y | | 7/10/2002 | 12 | Y |
| GM-15D2 | 10/2/2002 | | | 16 | Y | | 10/2/2002 | 16 | Y |
| GM-15D2 | 1/6/2003 | | | 13 | Y | | 1/6/2003 | 13 | Y |
| GM-15D2 | 3/21/2003 | | | 15 | Y | | 3/21/2003 | 15 | Y |
| GM-15D2 | 7/29/2003 | | | 12 | Y | | 7/29/2003 | 12 | Y |
| GM-15D2 | 10/2/2003 | | | 13 | Y | | 10/2/2003 | 13 | Y |
| GM-15D2 | 1/6/2004 | | | 13 | Y | | 1/6/2004 | 13 | Y |
| GM-15D2 | 3/17/2004 | | | 6 | Y | | 3/17/2004 | 6 | Y |
| GM-15D2 | 7/13/2004 | | | 12 | Y | | 7/13/2004 | 12 | Y |
| GM-15D2 | 10/4/2004 | | | 11 | Y | | 10/4/2004 | 11 | Y |
| GM-15D2 | 1/7/2005 | | | 11 | Y | | 1/7/2005 | 11 | Y |
| GM-15D2 | 3/16/2005 | | | 11 | Y | | 3/16/2005 | 11 | Y |
| GM-15D2 | 5/31/2005 | | | 13 | Y | | 5/31/2005 | 13 | Y |
| GM-15D2 | 8/19/2005 | | | 11 | Y | | 8/19/2005 | 11 | Y |
| GM-15D2 | 12/22/2005 | | | 12 | Y | | 12/22/2005 | 12 | Y |
| GM-15D2 | 3/13/2006 | | | 13 | Y | | 3/13/2006 | 13 | Y |
| GM-15D2 | 9/13/2006 | | | 13 | Y | | 9/13/2006 | 13 | Y |
| GM-15D2 | 2/20/2007 | | | 11 | Y | | 2/20/2007 | 11 | Y |
| GM-15D2 | 9/12/2007 | | | 10 | Y | | 9/12/2007 | 10 | Y |
| GM-15D2 | 3/11/2008 | | | 10 | Y | | 3/11/2008 | 10 | Y |
| GM-15D2 | 8/13/2008 | | | 10 | Y | | 8/13/2008 | 10 | Y |
| GM-15D2 | 2/27/2009 | | | 11 | Y | | 2/27/2009 | 11 | Y |
| GM-15D2 | 7/7/2009 | | | 10 | Y | | 7/7/2009 | 10 | Y |
| GM-15D2 | 8/14/2009 | | | 10 | Y | | 8/14/2009 | 10 | Y |
| GM-15D2 | 10/23/2009 | | | 11 | Y | | 10/23/2009 | 11 | Y |
| GM-15D2 | 1/21/2010 | | | 10 | Y | | 1/21/2010 | 10 | Y |
| GM-15D2 | 7/13/2010 | | | 10 | Y | | 7/13/2010 | 10 | Y |
| GM-15D2 | 5/6/2011 | | | 11 | Y | | 5/6/2011 | 11 | Y |
| GM-15D2 | 12/10/2011 | | | 9.6 | Y | | 12/10/2011 | 9.6 | Y |
| GM-15D2 | 2/8/2012 | | | 10 | Y | | 2/8/2012 | 10 | Y |
| GM-15D2 | 9/12/2012 | | | 10 | Y | | 9/12/2012 | 10 | Y |
| GM-15D2 | 5/24/2013 | | | 11 | Y | | 5/24/2013 | 11 | Y |
| GM-15D2 | 12/12/2013 | | | 10 | Y | | 12/12/2013 | 10 | Y |
| GM-15D2 | 6/4/2014 | | | 9.2 | Y | | 6/4/2014 | 9.2 | Y |
| GM-15D2 | 10/20/2014 | | | 9.5 | Y | | 10/20/2014 | 9.5 | Y |
| GM-15D2 | 5/7/2015 | | | 9.7 | Y | | 5/7/2015 | 9.7 | Y |
| GM-15D2 | 4/13/2016 | | | 8.8 | Y | | 4/13/2016 | 8.8 | Y |
| GM-15D2 | 10/26/2016 | | | 7.7 | Y | | 10/26/2016 | 7.7 | Y |
| GM-15D2 | 6/28/2017 | | | 10 | Y | | 6/28/2017 | 10 | Y |

Appendix A

Data Sets Used for Trends and Projections

| Well | Date | Top screen | Bottom Screen | TCE Result | Detect? | | MK Dataset | | |
|---|---|---|---|---|---|---|---|---|---|
| GM-16SR | 7/24/2003 | 60 | 70 | 5 | N | | 7/24/2003 | 2.5 | N |
| GM-16SR | 10/8/2003 | 60 | 70 | 5 | N | | 10/8/2003 | 2.5 | N |
| GM-16SR | 1/9/2004 | 60 | 70 | 5 | N | | 1/9/2004 | 2.5 | N |
| GM-16SR | 3/29/2004 | 60 | 70 | 2 | Y | | 3/29/2004 | 2 | Y |
| GM-16SR | 10/1/2004 | 60 | 70 | 5 | N | | 10/1/2004 | 2.5 | N |
| GM-16SR | 4/11/2005 | 60 | 70 | 5 | N | | 4/11/2005 | 2.5 | N |
| GM-16SR | 9/7/2005 | 60 | 70 | 5 | Y | | 9/7/2005 | 5 | Y |
| GM-16SR | 4/10/2006 | 60 | 70 | 4 | Y | | 4/10/2006 | 4 | Y |

Appendix A

Data Sets Used for Trends and Projections

| Well | Date | Top screen | Bottom Screen | TCE Result | Detect? | | MK Dataset | | |
|---|---|---|---|---|---|---|---|---|---|
| GM-17D | 9/29/2000 | 278 | 298 | 10 | N | | | | |
| GM-17D | 1/31/2001 | 278 | 298 | 10 | N | | | | |
| GM-17D | 5/1/2001 | 278 | 298 | 10 | N | | | | |
| GM-17D | 10/2/2001 | 278 | 298 | 10 | N | | | | |
| GM-17D | 12/27/2001 | 278 | 298 | 5 | N | | | | |
| GM-17D | 4/2/2002 | 278 | 298 | 5 | N | | | | |
| GM-17D | 6/18/2002 | 278 | 298 | 5 | N | | | | |
| GM-17D | 10/7/2002 | 278 | 298 | 5 | N | | | | |
| GM-17D | 12/27/2002 | 278 | 298 | 5 | N | | | | |
| GM-17D | 3/28/2003 | 278 | 298 | 5 | N | | | | |
| GM-17D | 7/28/2003 | 278 | 298 | 5 | N | | | | |
| GM-17D | 9/30/2003 | 278 | 298 | 5 | N | | | | |
| GM-17D | 1/14/2004 | 278 | 298 | 5 | N | | | | |
| GM-17D | 3/31/2004 | 278 | 298 | 5 | N | | | | |
| GM-17D | 7/9/2004 | 278 | 298 | 5 | N | | | | |
| GM-17D | 10/29/2004 | 278 | 298 | 5 | N | | | | |
| GM-17D | 1/10/2005 | 278 | 298 | 5 | N | | | | |
| GM-17D | 3/25/2005 | 278 | 298 | 5 | N | | | | |
| GM-17D | 6/7/2005 | 278 | 298 | 5 | N | | | | |
| GM-17D | 9/1/2005 | 278 | 298 | 1 | Y | | | | |
| GM-17D | 12/20/2005 | 278 | 298 | 5 | N | | | | |
| GM-17D | 3/8/2006 | 278 | 298 | 5 | N | | | | |
| GM-17D | 9/13/2006 | 278 | 298 | 5 | N | | | | |
| GM-17D | 2/9/2007 | 278 | 298 | 0.36 | Y | | 2/9/2007 | 0.36 | Y |
| GM-17D | 9/13/2007 | 278 | 298 | 5 | N | | 9/13/2007 | 2.5 | N |
| GM-17D | 3/7/2008 | 278 | 298 | 5 | N | | 3/7/2008 | 2.5 | N |
| GM-17D | 8/11/2008 | 278 | 298 | 5 | N | | 8/11/2008 | 2.5 | N |
| GM-17D | 2/17/2009 | 278 | 298 | 0.32 | Y | | 2/17/2009 | 0.32 | Y |
| GM-17D | 8/12/2009 | 278 | 298 | 0.47 | Y | | 8/12/2009 | 0.47 | Y |
| GM-17D | 2/17/2010 | 278 | 298 | 0.49 | Y | | 2/17/2010 | 0.49 | Y |
| GM-17D | 7/29/2010 | 278 | 298 | 0.44 | Y | | 7/29/2010 | 0.44 | Y |
| GM-17D | 5/11/2011 | 278 | 298 | 0.54 | Y | | 5/11/2011 | 0.54 | Y |
| GM-17D | 12/21/2011 | 278 | 298 | 0.36 | Y | | 12/21/2011 | 0.36 | Y |
| GM-17D | 2/9/2012 | 278 | 298 | 0.33 | Y | | 2/9/2012 | 0.33 | Y |
| GM-17D | 9/10/2012 | 278 | 298 | 5 | N | | 9/10/2012 | 2.5 | N |
| GM-17D | 6/11/2013 | 278 | 298 | 0.34 | Y | | 6/11/2013 | 0.34 | Y |
| GM-17D | 12/19/2013 | 278 | 298 | 0.28 | Y | | 12/19/2013 | 0.28 | Y |
| GM-17D | 5/5/2014 | 278 | 298 | 0.66 | Y | | 5/5/2014 | 0.66 | Y |
| GM-17D | 10/23/2014 | 278 | 298 | 0.3 | Y | | 10/23/2014 | 0.3 | Y |
| GM-17D | 4/22/2015 | 278 | 298 | 0.33 | Y | | 4/22/2015 | 0.33 | Y |
| GM-17D | 5/2/2016 | 278 | 298 | 0.61 | Y | | 5/2/2016 | 0.61 | Y |
| GM-17D | 10/21/2016 | 278 | 298 | 0.7 | Y | | 10/21/2016 | 0.7 | Y |
| GM-17D | 5/2/2017 | 278 | 298 | 0.83 | Y | | 5/2/2017 | 0.83 | Y |

Appendix A

Data Sets Used for Trends and Projections

| Well | Date | Top screen | Bottom Screen | TCE Result | Detect? | | MK DATASET | | |
|---|---|---|---|---|---|---|---|---|---|
| GM-17I | 9/29/2000 | 99.5 | 119.5 | 10 | N | | | | |
| GM-17I | 1/31/2001 | 99.5 | 119.5 | 10 | N | | | | |
| GM-17I | 5/2/2001 | 99.5 | 119.5 | 10 | N | | | | |
| GM-17I | 10/2/2001 | 99.5 | 119.5 | 10 | N | | | | |
| GM-17I | 12/27/2001 | 99.5 | 119.5 | 5 | N | | | | |
| GM-17I | 4/2/2002 | 99.5 | 119.5 | 5 | N | | | | |
| GM-17I | 6/18/2002 | 99.5 | 119.5 | 5 | N | | | | |
| GM-17I | 10/7/2002 | 99.5 | 119.5 | 5 | N | | | | |
| GM-17I | 12/27/2002 | 99.5 | 119.5 | 5 | N | | | | |
| GM-17I | 3/28/2003 | 99.5 | 119.5 | 2 | Y | | | | |
| GM-17I | 7/28/2003 | 99.5 | 119.5 | 5 | N | | | | |
| GM-17I | 9/30/2003 | 99.5 | 119.5 | 5 | N | | | | |
| GM-17I | 12/30/2003 | 99.5 | 119.5 | 0.6 | Y | | | | |
| GM-17I | 4/6/2004 | 99.5 | 119.5 | 5 | N | | | | |
| GM-17I | 7/9/2004 | 99.5 | 119.5 | 5 | N | | | | |
| GM-17I | 10/29/2004 | 99.5 | 119.5 | 5 | N | | | | |
| GM-17I | 1/10/2005 | 99.5 | 119.5 | 5 | N | | | | |
| GM-17I | 3/25/2005 | 99.5 | 119.5 | 5 | N | | | | |
| GM-17I | 6/7/2005 | 99.5 | 119.5 | 5 | N | | | | |
| GM-17I | 9/1/2005 | 99.5 | 119.5 | 2 | Y | | | | |
| GM-17I | 12/20/2005 | 99.5 | 119.5 | 5 | N | | | | |
| GM-17I | 3/8/2006 | 99.5 | 119.5 | 5 | N | | | | |
| GM-17I | 9/15/2006 | 99.5 | 119.5 | 5 | N | | | | |
| GM-17I | 2/9/2007 | 99.5 | 119.5 | 5 | N | | | | |
| GM-17I | 9/13/2007 | 99.5 | 119.5 | 5 | N | | | | |
| GM-17I | 3/7/2008 | 99.5 | 119.5 | 5 | N | | 3/7/2008 | 0.50 | N |
| GM-17I | 8/11/2008 | 99.5 | 119.5 | 5 | N | | 8/11/2008 | 0.50 | N |
| GM-17I | 2/17/2009 | 99.5 | 119.5 | 5 | N | | 2/17/2009 | 0.50 | N |
| GM-17I | 8/12/2009 | 99.5 | 119.5 | 0.59 | Y | | 8/12/2009 | 0.59 | Y |
| GM-17I | 2/16/2010 | 99.5 | 119.5 | 0.45 | Y | | 2/16/2010 | 0.45 | Y |
| GM-17I | 7/29/2010 | 99.5 | 119.5 | 5 | N | | 7/29/2010 | 0.50 | N |
| GM-17I | 5/11/2011 | 99.5 | 119.5 | 5 | N | | 5/11/2011 | 0.50 | N |
| GM-17I | 12/21/2011 | 99.5 | 119.5 | 5 | N | | 12/21/2011 | 0.50 | N |
| GM-17I | 2/15/2012 | 99.5 | 119.5 | 5 | N | | 2/15/2012 | 0.50 | N |
| GM-17I | 9/10/2012 | 99.5 | 119.5 | 0.45 | Y | | 9/10/2012 | 0.45 | Y |
| GM-17I | 6/11/2013 | 99.5 | 119.5 | 0.86 | Y | | 6/11/2013 | 0.86 | Y |
| GM-17I | 12/19/2013 | 99.5 | 119.5 | 0.72 | Y | | 12/19/2013 | 0.72 | Y |
| GM-17I | 5/5/2014 | 99.5 | 119.5 | 5 | N | | 5/5/2014 | 0.50 | N |
| GM-17I | 10/23/2014 | 99.5 | 119.5 | 0.76 | Y | | 10/23/2014 | 0.76 | Y |
| GM-17I | 4/22/2015 | 99.5 | 119.5 | 1.7 | Y | | 4/22/2015 | 1.7 | Y |
| GM-17I | 5/2/2016 | 99.5 | 119.5 | 0.65 | Y | | 5/2/2016 | 0.65 | Y |
| GM-17I | 10/21/2016 | 99.5 | 119.5 | 0.82 | Y | | 10/21/2016 | 0.82 | Y |
| GM-17I | 5/2/2017 | 99.5 | 119.5 | 1 | N | | 5/2/2017 | 0.50 | N |

Appendix A

Data Sets Used for Trends and Projections

| Well | Date | Top screen | Bottom Screen | TCE Result | Detect? | | MK Dataset | | |
|---|---|---|---|---|---|---|---|---|---|
| GM-18D | 2/14/2001 | 290 | 300 | 0.7 | Y | | | | |
| GM-18D | 6/4/2001 | 290 | 300 | 2 | Y | | | | |
| GM-18D | 9/28/2001 | 290 | 300 | 2 | Y | | | | |
| GM-18D | 1/10/2002 | 290 | 300 | 1 | Y | | | | |
| GM-18D | 4/2/2002 | 290 | 300 | 0.9 | Y | | | | |
| GM-18D | 6/21/2002 | 290 | 300 | 3 | Y | | | | |
| GM-18D | 10/3/2002 | 290 | 300 | 6 | Y | | | | |
| GM-18D | 12/27/2002 | 290 | 300 | 8 | Y | | | | |
| GM-18D | 4/8/2003 | 290 | 300 | 11 | Y | | | | |
| GM-18D | 7/25/2003 | 290 | 300 | 9 | Y | | | | |
| GM-18D | 10/1/2003 | 290 | 300 | 6 | Y | | | | |
| GM-18D | 1/14/2004 | 290 | 300 | 5 | Y | | | | |
| GM-18D | 3/23/2004 | 290 | 300 | 3 | Y | | | | |
| GM-18D | 7/9/2004 | 290 | 300 | 0.8 | Y | | | | |
| GM-18D | 10/29/2004 | 290 | 300 | 5 | N | | | | |
| GM-18D | 12/29/2004 | 290 | 300 | 6 | Y | | | | |
| GM-18D | 3/18/2005 | 290 | 300 | 7 | Y | | | | |
| GM-18D | 6/7/2005 | 290 | 300 | 9 | Y | | | | |
| GM-18D | 9/26/2005 | 290 | 300 | 9 | Y | | | | |
| GM-18D | 1/6/2006 | 290 | 300 | 9 | Y | | | | |
| GM-18D | 3/8/2006 | 290 | 300 | 11 | Y | | | | |
| GM-18D | 4/11/2006 | 290 | 300 | 12 | Y | | | | |
| GM-18D | 9/15/2006 | 290 | 300 | 11 | Y | | | | |
| GM-18D | 2/13/2007 | 290 | 300 | 7 | Y | | 2/13/2007 | 7 | Y |
| GM-18D | 9/14/2007 | 290 | 300 | 6.4 | Y | | 9/14/2007 | 6.4 | Y |
| GM-18D | 3/21/2008 | 290 | 300 | 5 | N | | 3/21/2008 | 2.5 | N |
| GM-18D | 8/26/2008 | 290 | 300 | 5 | N | | 8/26/2008 | 2.5 | N |
| GM-18D | 4/1/2009 | 290 | 300 | 1.5 | Y | | 4/1/2009 | 1.5 | Y |
| GM-18D | 8/13/2009 | 290 | 300 | 1 | Y | | 8/13/2009 | 1 | Y |
| GM-18D | 2/17/2010 | 290 | 300 | 3.2 | Y | | 2/17/2010 | 3.2 | Y |
| GM-18D | 7/30/2010 | 290 | 300 | 2 | Y | | 7/30/2010 | 2 | Y |
| GM-18D | 5/11/2011 | 290 | 300 | 1.7 | Y | | 5/11/2011 | 1.7 | Y |
| GM-18D | 12/22/2011 | 290 | 300 | 0.83 | Y | | 12/22/2011 | 0.83 | Y |
| GM-18D | 2/17/2012 | 290 | 300 | 1.1 | Y | | 2/17/2012 | 1.1 | Y |
| GM-18D | 9/10/2012 | 290 | 300 | 1.4 | Y | | 9/10/2012 | 1.4 | Y |
| GM-18D | 6/10/2013 | 290 | 300 | 0.92 | Y | | 6/10/2013 | 0.92 | Y |
| GM-18D | 12/31/2013 | 290 | 300 | 1.3 | Y | | 12/31/2013 | 1.3 | Y |
| GM-18D | 5/1/2014 | 290 | 300 | 1.6 | Y | | 5/1/2014 | 1.6 | Y |
| GM-18D | 10/15/2014 | 290 | 300 | 0.75 | Y | | 10/15/2014 | 0.75 | Y |
| GM-18D | 4/21/2015 | 290 | 300 | 0.87 | Y | | 4/21/2015 | 0.87 | Y |
| GM-18D | 6/14/2016 | 290 | 300 | 0.39 | Y | | 6/14/2016 | 0.39 | Y |
| GM-18D | 10/19/2016 | 290 | 300 | 0.45 | Y | | 10/19/2016 | 0.45 | Y |
| GM-18D | 4/21/2017 | 290 | 300 | 0.52 | Y | | 4/21/2017 | 0.52 | Y |

Appendix A
Data Sets Used for Trends and Projections

| Well | Date | Top screen | Bottom Screen | TCE Result | Detect? | | MK Dataset | | |
|---|---|---|---|---|---|---|---|---|---|
| GM-21D | 1/10/2002 | 278 | 288 | 0.8 | Y | | | | |
| GM-21D | 3/29/2002 | 278 | 288 | 5 | N | | | | |
| GM-21D | 6/17/2002 | 278 | 288 | 2 | Y | | | | |
| GM-21D | 10/8/2002 | 278 | 288 | 3 | Y | | | | |
| GM-21D | 1/8/2003 | 278 | 288 | 2 | Y | | | | |
| GM-21D | 3/24/2003 | 278 | 288 | 3 | Y | | | | |
| GM-21D | 7/17/2003 | 278 | 288 | 3 | Y | | | | |
| GM-21D | 10/2/2003 | 278 | 288 | 2 | Y | | | | |
| GM-21D | 12/30/2003 | 278 | 288 | 2 | Y | | | | |
| GM-21D | 3/24/2004 | 278 | 288 | 2 | Y | | | | |
| GM-21D | 7/8/2004 | 278 | 288 | 1 | Y | | | | |
| GM-21D | 10/5/2004 | 278 | 288 | 1 | Y | | | | |
| GM-21D | 12/30/2004 | 278 | 288 | 0.8 | Y | | | | |
| GM-21D | 3/17/2005 | 278 | 288 | 0.6 | Y | | | | |
| GM-21D | 6/6/2005 | 278 | 288 | 2 | Y | | | | |
| GM-21D | 8/29/2005 | 278 | 288 | 2 | Y | | | | |
| GM-21D | 1/3/2006 | 278 | 288 | 2 | Y | | | | |
| GM-21D | 3/7/2006 | 278 | 288 | 2 | Y | | | | |
| GM-21D | 7/5/2006 | 278 | 288 | 1 | Y | | | | |
| GM-21D | 9/18/2006 | 278 | 288 | 1 | Y | | | | |
| GM-21D | 11/20/2006 | 278 | 288 | 2 | Y | | | | |
| GM-21D | 2/13/2007 | 278 | 288 | 2.2 | Y | | | | |
| GM-21D | 6/1/2007 | 278 | 288 | 5 | N | | | | |
| GM-21D | 9/11/2007 | 278 | 288 | 5 | N | | | | |
| GM-21D | 12/18/2007 | 278 | 288 | 5 | N | | | | |
| GM-21D | 3/3/2008 | 278 | 288 | 5 | N | | | | |
| GM-21D | 6/18/2008 | 278 | 288 | 5 | N | | | | |
| GM-21D | 8/28/2008 | 278 | 288 | 5 | N | | | | |
| GM-21D | 12/15/2008 | 278 | 288 | 5 | N | | | | |
| GM-21D | 3/20/2009 | 278 | 288 | 0.69 | Y | | 3/20/2009 | 0.69 | Y |
| GM-21D | 5/17/2009 | 278 | 288 | 0.74 | Y | | 5/17/2009 | 0.74 | Y |
| GM-21D | 8/12/2009 | 278 | 288 | 0.53 | Y | | 8/12/2009 | 0.53 | Y |
| GM-21D | 11/13/2009 | 278 | 288 | 0.67 | Y | | 11/13/2009 | 0.67 | Y |
| GM-21D | 2/8/2010 | 278 | 288 | 0.89 | Y | | 2/8/2010 | 0.89 | Y |
| GM-21D | 4/19/2010 | 278 | 288 | 0.87 | Y | | 4/19/2010 | 0.87 | Y |
| GM-21D | 8/4/2010 | 278 | 288 | 1.2 | Y | | 8/4/2010 | 1.2 | Y |
| GM-21D | 12/13/2010 | 278 | 288 | 1.7 | Y | | 12/13/2010 | 1.7 | Y |
| GM-21D | 5/12/2011 | 278 | 288 | 0.55 | Y | | 5/12/2011 | 0.55 | Y |
| GM-21D | 7/27/2011 | 278 | 288 | 0.5 | Y | | 7/27/2011 | 0.5 | Y |
| GM-21D | 12/12/2011 | 278 | 288 | 0.43 | Y | | 12/12/2011 | 0.43 | Y |
| GM-21D | 2/14/2012 | 278 | 288 | 0.36 | Y | | 2/14/2012 | 0.36 | Y |
| GM-21D | 5/9/2012 | 278 | 288 | 0.43 | Y | | 5/9/2012 | 0.43 | Y |
| GM-21D | 12/3/2012 | 278 | 288 | 2 | Y | | 12/3/2012 | 2 | Y |
| GM-21D | 5/29/2013 | 278 | 288 | 1.8 | Y | | 5/29/2013 | 1.8 | Y |
| GM-21D | 6/3/2014 | 278 | 288 | 0.97 | Y | | 6/3/2014 | 0.97 | Y |
| GM-21D | 4/24/2015 | 278 | 288 | 2.6 | Y | | 4/24/2015 | 2.6 | Y |
| GM-21D | 5/5/2016 | 278 | 288 | 1.7 | Y | | 5/5/2016 | 1.7 | Y |
| GM-21D | 5/3/2017 | 278 | 288 | 1.5 | Y | | 5/3/2017 | 1.5 | Y |

Appendix A

Data Sets Used for Trends and Projections

| Well | Date | Top screen | Bottom Screen | TCE Result | Detect? | | MK Dataset | | |
|---|---|---|---|---|---|---|---|---|---|
| GM-39DA | 11/26/2002 | | | 23 | Y | | | | |
| GM-39DA | 1/7/2003 | | | 21 | Y | | | | |
| GM-39DA | 4/9/2003 | | | 18 | Y | | | | |
| GM-39DA | 7/22/2003 | | | 19 | Y | | | | |
| GM-39DA | 10/15/2003 | | | 21 | Y | | | | |
| GM-39DA | 1/20/2004 | | | 29 | Y | | | | |
| GM-39DA | 3/23/2004 | | | 42 | Y | | | | |
| GM-39DA | 7/7/2004 | | | 25 | Y | | | | |
| GM-39DA | 10/7/2004 | | | 13 | Y | | | | |
| GM-39DA | 12/29/2004 | | | 9 | Y | | | | |
| GM-39DA | 3/23/2005 | | | 9 | Y | | | | |
| GM-39DA | 6/3/2005 | | | 7 | Y | | | | |
| GM-39DA | 8/25/2005 | | | 9 | Y | | | | |
| GM-39DA | 1/3/2006 | | | 10 | Y | | | | |
| GM-39DA | 3/24/2006 | | | 10 | Y | | | | |
| GM-39DA | 9/18/2006 | | | 17 | Y | | | | |
| GM-39DA | 2/13/2007 | | | 17 | Y | | 2/13/2007 | 17 | Y |
| GM-39DA | 9/6/2007 | | | 14 | Y | | 9/6/2007 | 14 | Y |
| GM-39DA | 3/18/2008 | | | 19 | Y | | 3/18/2008 | 19 | Y |
| GM-39DA | 8/20/2008 | | | 13 | Y | | 8/20/2008 | 13 | Y |
| GM-39DA | 3/16/2009 | | | 5.1 | Y | | 3/16/2009 | 5.1 | Y |
| GM-39DA | 8/10/2009 | | | 6.5 | Y | | 8/10/2009 | 6.5 | Y |
| GM-39DA | 1/29/2010 | | | 10 | Y | | 1/29/2010 | 10 | Y |
| GM-39DA | 7/30/2010 | | | 5.5 | Y | | 7/30/2010 | 5.5 | Y |
| GM-39DA | 5/9/2011 | | | 1.2 | Y | | 5/9/2011 | 1.2 | Y |
| GM-39DA | 12/15/2011 | | | 0.69 | Y | | 12/15/2011 | 0.69 | Y |
| GM-39DA | 3/6/2012 | | | 0.74 | Y | | 3/6/2012 | 0.74 | Y |
| GM-39DA | 8/28/2012 | | | 1.1 | Y | | 8/28/2012 | 1.1 | Y |
| GM-39DA | 6/14/2013 | | | 2.8 | Y | | 6/14/2013 | 2.8 | Y |
| GM-39DA | 12/11/2013 | | | 3.7 | Y | | 12/11/2013 | 3.7 | Y |
| GM-39DA | 5/9/2014 | | | 1.2 | Y | | 5/9/2014 | 1.2 | Y |
| GM-39DA | 10/15/2014 | | | 0.66 | Y | | 10/15/2014 | 0.66 | Y |
| GM-39DA | 4/23/2015 | | | 1 | Y | | 4/23/2015 | 1 | Y |
| GM-39DA | 5/3/2016 | | | 6.1 | Y | | 5/3/2016 | 6.1 | Y |
| GM-39DA | 10/21/2016 | | | 3.4 | Y | | 10/21/2016 | 3.4 | Y |
| GM-39DA | 5/3/2017 | | | 1.6 | Y | | 5/3/2017 | 1.6 | Y |

Appendix A

Data Sets Used for Trends and Projections

| Well | Date | Top screen | Bottom Screen | TCE Result | Detect? | | MK Dataset | | |
|---|---|---|---|---|---|---|---|---|---|
| GM-39DB | 11/25/2002 | | | 110 | Y | | | | |
| GM-39DB | 1/7/2003 | | | 110 | Y | | | | |
| GM-39DB | 4/9/2003 | | | 61 | Y | | | | |
| GM-39DB | 7/22/2003 | | | 41 | Y | | | | |
| GM-39DB | 10/15/2003 | | | 44 | Y | | | | |
| GM-39DB | 1/20/2004 | | | 85 | Y | | | | |
| GM-39DB | 3/23/2004 | | | 75 | Y | | | | |
| GM-39DB | 7/7/2004 | | | 49 | Y | | | | |
| GM-39DB | 10/7/2004 | | | 35 | Y | | | | |
| GM-39DB | 12/29/2004 | | | 46 | Y | | | | |
| GM-39DB | 3/25/2005 | | | 28 | Y | | | | |
| GM-39DB | 6/7/2005 | | | 23 | Y | | | | |
| GM-39DB | 8/25/2005 | | | 21 | Y | | | | |
| GM-39DB | 1/6/2006 | | | 50 | Y | | | | |
| GM-39DB | 3/24/2006 | | | 42 | Y | | | | |
| GM-39DB | 9/18/2006 | | | 63 | Y | | | | |
| GM-39DB | 2/28/2007 | | | 43 | Y | | 2/28/2007 | 43 | Y |
| GM-39DB | 9/14/2007 | | | 27 | Y | | 9/14/2007 | 27 | Y |
| GM-39DB | 3/18/2008 | | | 46 | Y | | 3/18/2008 | 46 | Y |
| GM-39DB | 8/20/2008 | | | 62 | Y | | 8/20/2008 | 62 | Y |
| GM-39DB | 3/16/2009 | | | 68 | Y | | 3/16/2009 | 68 | Y |
| GM-39DB | 8/10/2009 | | | 52 | Y | | 8/10/2009 | 52 | Y |
| GM-39DB | 1/29/2010 | | | 34 | Y | | 1/29/2010 | 34 | Y |
| GM-39DB | 7/30/2010 | | | 66 | Y | | 7/30/2010 | 66 | Y |
| GM-39DB | 5/9/2011 | | | 94 | Y | | 5/9/2011 | 94 | Y |
| GM-39DB | 12/15/2011 | | | 62 | Y | | 12/15/2011 | 62 | Y |
| GM-39DB | 3/5/2012 | | | 64 | Y | | 3/5/2012 | 64 | Y |
| GM-39DB | 8/28/2012 | | | 56 | Y | | 8/28/2012 | 56 | Y |
| GM-39DB | 6/14/2013 | | | 80 | Y | | 6/14/2013 | 80 | Y |
| GM-39DB | 12/11/2013 | | | 70 | Y | | 12/11/2013 | 70 | Y |
| GM-39DB | 5/9/2014 | | | 52 | Y | | 5/9/2014 | 52 | Y |
| GM-39DB | 10/15/2014 | | | 52.7 | Y | | 10/15/2014 | 52.7 | Y |
| GM-39DB | 4/23/2015 | | | 43.9 | Y | | 4/23/2015 | 43.9 | Y |
| GM-39DB | 5/3/2016 | | | 21 | Y | | 5/3/2016 | 21 | Y |
| GM-39DB | 10/21/2016 | | | 22.5 | Y | | 10/21/2016 | 22.5 | Y |
| GM-39DB | 5/3/2017 | | | 34 | Y | | 5/3/2017 | 34 | Y |

Appendix A

Data Sets Used for Trends and Projections

| Well | Date | Top screen | Bottom Screen | TCE Result | Detect? | | MK Dataset | | |
|---|---|---|---|---|---|---|---|---|---|
| GM-73D | 10/18/2002 | 401 | 411 | 780 | Y | | | | |
| GM-73D | 11/25/2002 | 401 | 411 | 510 | Y | | | | |
| GM-73D | 1/15/2003 | 401 | 411 | 680 | Y | | | | |
| GM-73D | 3/25/2003 | 401 | 411 | 520 | Y | | | | |
| GM-73D | 7/23/2003 | 401 | 411 | 430 | Y | | | | |
| GM-73D | 10/15/2003 | 401 | 411 | 310 | Y | | | | |
| GM-73D | 1/15/2004 | 401 | 411 | 260 | Y | | | | |
| GM-73D | 3/22/2004 | 401 | 411 | 250 | Y | | | | |
| GM-73D | 7/7/2004 | 401 | 411 | 110 | Y | | | | |
| GM-73D | 11/8/2004 | 401 | 411 | 86 | Y | | | | |
| GM-73D | 1/13/2005 | 401 | 411 | 84 | Y | | | | |
| GM-73D | 3/22/2005 | 401 | 411 | 82 | Y | | | | |
| GM-73D | 6/2/2005 | 401 | 411 | 74 | Y | | | | |
| GM-73D | 8/18/2005 | 401 | 411 | 38 | Y | | | | |
| GM-73D | 12/21/2005 | 401 | 411 | 23 | Y | | | | |
| GM-73D | 3/20/2006 | 401 | 411 | 26 | Y | | | | |
| GM-73D | 9/14/2006 | 401 | 411 | 14 | Y | | | | |
| GM-73D | 2/28/2007 | 401 | 411 | 13 | Y | | 2/28/2007 | 13 | Y |
| GM-73D | 9/7/2007 | 401 | 411 | 10 | Y | | 9/7/2007 | 10 | Y |
| GM-73D | 3/18/2008 | 401 | 411 | 6.4 | Y | | 3/18/2008 | 6.4 | Y |
| GM-73D | 8/21/2008 | 401 | 411 | 7.6 | Y | | 8/21/2008 | 7.6 | Y |
| GM-73D | 2/17/2009 | 401 | 411 | 16 | Y | | 2/17/2009 | 16 | Y |
| GM-73D | 8/10/2009 | 401 | 411 | 4.6 | Y | | 8/10/2009 | 4.6 | Y |
| GM-73D | 1/28/2010 | 401 | 411 | 3.3 | Y | | 1/28/2010 | 3.3 | Y |
| GM-73D | 8/3/2010 | 401 | 411 | 5.6 | Y | | 8/3/2010 | 5.6 | Y |
| GM-73D | 5/4/2011 | 401 | 411 | 58 | Y | | 5/4/2011 | 58 | Y |
| GM-73D | 12/17/2011 | 401 | 411 | 59 | Y | | 12/17/2011 | 59 | Y |
| GM-73D | 2/10/2012 | 401 | 411 | 68 | Y | | 2/10/2012 | 68 | Y |
| GM-73D | 8/27/2012 | 401 | 411 | 8.9 | Y | | 8/27/2012 | 8.9 | Y |
| GM-73D | 5/23/2013 | 401 | 411 | 23 | Y | | 5/23/2013 | 23 | Y |
| GM-73D | 12/11/2013 | 401 | 411 | 19 | Y | | 12/11/2013 | 19 | Y |
| GM-73D | 5/9/2014 | 401 | 411 | 11 | Y | | 5/9/2014 | 11 | Y |
| GM-73D | 10/17/2014 | 401 | 411 | 14.2 | Y | | 10/17/2014 | 14.2 | Y |
| GM-73D | 4/17/2015 | 401 | 411 | 11.1 | Y | | 4/17/2015 | 11.1 | Y |
| GM-73D | 6/29/2016 | 401 | 411 | 7.9 | Y | | 6/29/2016 | 7.9 | Y |
| GM-73D | 10/25/2016 | 401 | 411 | 4.1 | Y | | 10/25/2016 | 4.1 | Y |
| GM-73D | 6/15/2017 | 401 | 411 | 4.4 | Y | | 6/15/2017 | 4.4 | Y |

Appendix A

Data Sets Used for Trends and Projections

| Well | Date | Top screen | Bottom Screen | TCE Result | Detect? | | MK Dataset | | |
|---|---|---|---|---|---|---|---|---|---|
| GM-73D2 | 10/4/2000 | 532 | 552 | 960 | Y | | | | |
| GM-73D2 | 2/8/2001 | 532 | 552 | 630 | Y | | | | |
| GM-73D2 | 6/5/2001 | 532 | 552 | 830 | Y | | | | |
| GM-73D2 | 10/9/2001 | 532 | 552 | 1100 | Y | | | | |
| GM-73D2 | 1/4/2002 | 532 | 552 | 940 | Y | | | | |
| GM-73D2 | 4/4/2002 | 532 | 552 | 830 | Y | | | | |
| GM-73D2 | 6/19/2002 | 532 | 552 | 840 | Y | | | | |
| GM-73D2 | 11/22/2002 | 532 | 552 | 1200 | Y | | | | |
| GM-73D2 | 1/13/2003 | 532 | 552 | 1100 | Y | | | | |
| GM-73D2 | 3/25/2003 | 532 | 552 | 880 | Y | | | | |
| GM-73D2 | 7/23/2003 | 532 | 552 | 1100 | Y | | | | |
| GM-73D2 | 9/29/2003 | 532 | 552 | 830 | Y | | | | |
| GM-73D2 | 1/13/2004 | 532 | 552 | 1100 | Y | | | | |
| GM-73D2 | 3/22/2004 | 532 | 552 | 720 | Y | | | | |
| GM-73D2 | 7/7/2004 | 532 | 552 | 610 | Y | | | | |
| GM-73D2 | 11/8/2004 | 532 | 552 | 360 | Y | | | | |
| GM-73D2 | 1/13/2005 | 532 | 552 | 340 | Y | | | | |
| GM-73D2 | 3/22/2005 | 532 | 552 | 320 | Y | | | | |
| GM-73D2 | 6/3/2005 | 532 | 552 | 260 | Y | | | | |
| GM-73D2 | 8/26/2005 | 532 | 552 | 150 | Y | | | | |
| GM-73D2 | 12/21/2005 | 532 | 552 | 140 | Y | | | | |
| GM-73D2 | 3/24/2006 | 532 | 552 | 140 | Y | | | | |
| GM-73D2 | 9/14/2006 | 532 | 552 | 96 | Y | | | | |
| GM-73D2 | 2/28/2007 | 532 | 552 | 67 | Y | | 2/28/2007 | 67 | Y |
| GM-73D2 | 9/7/2007 | 532 | 552 | 72 | Y | | 9/7/2007 | 72 | Y |
| GM-73D2 | 3/17/2008 | 532 | 552 | 58 | Y | | 3/17/2008 | 58 | Y |
| GM-73D2 | 8/21/2008 | 532 | 552 | 44 | Y | | 8/21/2008 | 44 | Y |
| GM-73D2 | 2/17/2009 | 532 | 552 | 40 | Y | | 2/17/2009 | 40 | Y |
| GM-73D2 | 8/10/2009 | 532 | 552 | 69 | Y | | 8/10/2009 | 69 | Y |
| GM-73D2 | 1/28/2010 | 532 | 552 | 47 | Y | | 1/28/2010 | 47 | Y |
| GM-73D2 | 8/3/2010 | 532 | 552 | 53 | Y | | 8/3/2010 | 53 | Y |
| GM-73D2 | 5/4/2011 | 532 | 552 | 110 | Y | | 5/4/2011 | 110 | Y |
| GM-73D2 | 12/17/2011 | 532 | 552 | 94 | Y | | 12/17/2011 | 94 | Y |
| GM-73D2 | 2/10/2012 | 532 | 552 | 93 | Y | | 2/10/2012 | 93 | Y |
| GM-73D2 | 8/27/2012 | 532 | 552 | 60 | Y | | 8/27/2012 | 60 | Y |
| GM-73D2 | 5/23/2013 | 532 | 552 | 44 | Y | | 5/23/2013 | 44 | Y |
| GM-73D2 | 12/11/2013 | 532 | 552 | 29 | Y | | 12/11/2013 | 29 | Y |
| GM-73D2 | 5/8/2014 | 532 | 552 | 25 | Y | | 5/8/2014 | 25 | Y |
| GM-73D2 | 10/17/2014 | 532 | 552 | 40 | Y | | 10/17/2014 | 40 | Y |
| GM-73D2 | 4/17/2015 | 532 | 552 | 46.7 | Y | | 4/17/2015 | 46.7 | Y |
| GM-73D2 | 5/6/2016 | 532 | 552 | 33.2 | Y | | 5/6/2016 | 33.2 | Y |
| GM-73D2 | 10/25/2016 | 532 | 552 | 37 | Y | | 10/25/2016 | 37 | Y |
| GM-73D2 | 4/14/2017 | 532 | 552 | 35.7 | Y | | 4/14/2017 | 35.7 | Y |

Appendix A

Data Sets Used for Trends and Projections

| Well | Date | Top screen | Bottom Screen | TCE Result | Detect? | | MK Dataset | | |
|---|---|---|---|---|---|---|---|---|---|
| GM-74D | 10/6/2000 | 295 | 305 | 64 | Y | | | | |
| GM-74D | 2/5/2001 | 295 | 305 | 81 | Y | | | | |
| GM-74D | 6/5/2001 | 295 | 305 | 63 | Y | | | | |
| GM-74D | 10/9/2001 | 295 | 305 | 35 | Y | | | | |
| GM-74D | 1/4/2002 | 295 | 305 | 32 | Y | | | | |
| GM-74D | 4/4/2002 | 295 | 305 | 17 | Y | | | | |
| GM-74D | 6/19/2002 | 295 | 305 | 15 | Y | | | | |
| GM-74D | 10/9/2002 | 295 | 305 | 10 | Y | | | | |
| GM-74D | 1/13/2003 | 295 | 305 | 9 | Y | | | | |
| GM-74D | 3/25/2003 | 295 | 305 | 7 | Y | | | | |
| GM-74D | 7/24/2003 | 295 | 305 | 4 | Y | | | | |
| GM-74D | 9/29/2003 | 295 | 305 | 5 | Y | | | | |
| GM-74D | 1/13/2004 | 295 | 305 | 4 | Y | | | | |
| GM-74D | 3/22/2004 | 295 | 305 | 4 | Y | | | | |
| GM-74D | 7/6/2004 | 295 | 305 | 4 | Y | | | | |
| GM-74D | 11/1/2004 | 295 | 305 | 3 | Y | | | | |
| GM-74D | 1/13/2005 | 295 | 305 | 3 | Y | | | | |
| GM-74D | 3/22/2005 | 295 | 305 | 3 | Y | | | | |
| GM-74D | 6/2/2005 | 295 | 305 | 4 | Y | | | | |
| GM-74D | 8/18/2005 | 295 | 305 | 3 | Y | | | | |
| GM-74D | 12/21/2005 | 295 | 305 | 2 | Y | | | | |
| GM-74D | 3/20/2006 | 295 | 305 | 3 | Y | | | | |
| GM-74D | 9/14/2006 | 295 | 305 | 3 | Y | | | | |
| GM-74D | 2/27/2007 | 295 | 305 | 5 | N | | 2/27/2007 | 2.5 | N |
| GM-74D | 9/7/2007 | 295 | 305 | 5 | N | | 9/7/2007 | 2.5 | N |
| GM-74D | 3/17/2008 | 295 | 305 | 5 | N | | 3/17/2008 | 2.5 | N |
| GM-74D | 8/18/2008 | 295 | 305 | 5 | N | | 8/18/2008 | 2.5 | Y |
| GM-74D | 2/17/2009 | 295 | 305 | 2.5 | Y | | 2/17/2009 | 2.5 | Y |
| GM-74D | 8/10/2009 | 295 | 305 | 3.3 | Y | | 8/10/2009 | 3.3 | Y |
| GM-74D | 1/28/2010 | 295 | 305 | 2.6 | Y | | 1/28/2010 | 2.6 | Y |
| GM-74D | 7/14/2010 | 295 | 305 | 2.3 | Y | | 7/14/2010 | 2.3 | Y |
| GM-74D | 5/4/2011 | 295 | 305 | 1.8 | Y | | 5/4/2011 | 1.8 | Y |
| GM-74D | 12/16/2011 | 295 | 305 | 1.7 | Y | | 12/16/2011 | 1.7 | Y |
| GM-74D | 2/10/2012 | 295 | 305 | 1.7 | Y | | 2/10/2012 | 1.7 | Y |
| GM-74D | 8/28/2012 | 295 | 305 | 1.4 | Y | | 8/28/2012 | 1.4 | Y |
| GM-74D | 5/23/2013 | 295 | 305 | 1.6 | Y | | 5/23/2013 | 1.6 | Y |
| GM-74D | 12/9/2013 | 295 | 305 | 1.5 | Y | | 12/9/2013 | 1.5 | Y |
| GM-74D | 5/8/2014 | 295 | 305 | 1 | Y | | 5/8/2014 | 1 | Y |
| GM-74D | 10/17/2014 | 295 | 305 | 0.99 | Y | | 10/17/2014 | 0.99 | Y |
| GM-74D | 4/23/2015 | 295 | 305 | 1 | Y | | 4/23/2015 | 1 | Y |
| GM-74D | 4/13/2016 | 295 | 305 | 1.2 | Y | | 4/13/2016 | 1.2 | Y |
| GM-74D | 10/19/2016 | 295 | 305 | 1.2 | Y | | 10/19/2016 | 1.2 | Y |
| GM-74D | 5/2/2017 | 295 | 305 | 1.3 | Y | | 5/2/2017 | 1.3 | Y |

Appendix A

Data Sets Used for Trends and Projections

| Well | Date | Top screen | Bottom Screen | TCE Result | Detect? | | MK Dataset | | |
|---|---|---|---|---|---|---|---|---|---|
| GM-74D2 | 10/5/2000 | 542 | 562 | 5 | Y | | | | |
| GM-74D2 | 2/8/2001 | 542 | 562 | 4 | Y | | | | |
| GM-74D2 | 6/5/2001 | 542 | 562 | 4 | Y | | | | |
| GM-74D2 | 10/9/2001 | 542 | 562 | 3 | Y | | | | |
| GM-74D2 | 1/4/2002 | 542 | 562 | 3 | Y | | | | |
| GM-74D2 | 4/4/2002 | 542 | 562 | 2 | Y | | | | |
| GM-74D2 | 6/19/2002 | 542 | 562 | 4 | Y | | | | |
| GM-74D2 | 10/9/2002 | 542 | 562 | 8 | Y | | | | |
| GM-74D2 | 1/13/2003 | 542 | 562 | 8 | Y | | | | |
| GM-74D2 | 3/25/2003 | 542 | 562 | 8 | Y | | | | |
| GM-74D2 | 7/24/2003 | 542 | 562 | 8 | Y | | | | |
| GM-74D2 | 9/29/2003 | 542 | 562 | 10 | Y | | | | |
| GM-74D2 | 1/13/2004 | 542 | 562 | 8 | Y | | | | |
| GM-74D2 | 3/22/2004 | 542 | 562 | 8 | Y | | | | |
| GM-74D2 | 7/6/2004 | 542 | 562 | 9 | Y | | | | |
| GM-74D2 | 11/1/2004 | 542 | 562 | 9 | Y | | | | |
| GM-74D2 | 1/13/2005 | 542 | 562 | 8 | Y | | | | |
| GM-74D2 | 3/22/2005 | 542 | 562 | 8 | Y | | | | |
| GM-74D2 | 6/2/2005 | 542 | 562 | 9 | Y | | | | |
| GM-74D2 | 8/18/2005 | 542 | 562 | 9 | Y | | | | |
| GM-74D2 | 12/21/2005 | 542 | 562 | 9 | Y | | | | |
| GM-74D2 | 3/20/2006 | 542 | 562 | 12 | Y | | | | |
| GM-74D2 | 9/15/2006 | 542 | 562 | 9 | Y | | | | |
| GM-74D2 | 2/27/2007 | 542 | 562 | 7.4 | Y | | 2/27/2007 | 7.4 | Y |
| GM-74D2 | 9/7/2007 | 542 | 562 | 7 | Y | | 9/7/2007 | 7 | Y |
| GM-74D2 | 3/17/2008 | 542 | 562 | 7.3 | Y | | 3/17/2008 | 7.3 | Y |
| GM-74D2 | 8/18/2008 | 542 | 562 | 6.4 | Y | | 8/18/2008 | 6.4 | Y |
| GM-74D2 | 2/17/2009 | 542 | 562 | 8.6 | Y | | 2/17/2009 | 8.6 | Y |
| GM-74D2 | 8/10/2009 | 542 | 562 | 7.3 | Y | | 8/10/2009 | 7.3 | Y |
| GM-74D2 | 1/28/2010 | 542 | 562 | 6.4 | Y | | 1/28/2010 | 6.4 | Y |
| GM-74D2 | 7/14/2010 | 542 | 562 | 6.6 | Y | | 7/14/2010 | 6.6 | Y |
| GM-74D2 | 5/4/2011 | 542 | 562 | 8.8 | Y | | 5/4/2011 | 8.8 | Y |
| GM-74D2 | 12/16/2011 | 542 | 562 | 6.9 | Y | | 12/16/2011 | 6.9 | Y |
| GM-74D2 | 2/10/2012 | 542 | 562 | 6.4 | Y | | 2/10/2012 | 6.4 | Y |
| GM-74D2 | 8/28/2012 | 542 | 562 | 6.3 | Y | | 8/28/2012 | 6.3 | Y |
| GM-74D2 | 5/23/2013 | 542 | 562 | 8.2 | Y | | 5/23/2013 | 8.2 | Y |
| GM-74D2 | 12/9/2013 | 542 | 562 | 7 | Y | | 12/9/2013 | 7 | Y |
| GM-74D2 | 5/8/2014 | 542 | 562 | 6.3 | Y | | 5/8/2014 | 6.3 | Y |
| GM-74D2 | 10/17/2014 | 542 | 562 | 7.2 | Y | | 10/17/2014 | 7.2 | Y |
| GM-74D2 | 4/23/2015 | 542 | 562 | 7.2 | Y | | 4/23/2015 | 7.2 | Y |
| GM-74D2 | 5/5/2016 | 542 | 562 | 7.2 | Y | | 5/5/2016 | 7.2 | Y |
| GM-74D2 | 10/25/2016 | 542 | 562 | 6.9 | Y | | 10/25/2016 | 6.9 | Y |
| GM-74D2 | 4/14/2017 | 542 | 562 | 7.8 | Y | | 4/14/2017 | 7.8 | Y |

Appendix A

Data Sets Used for Trends and Projections

| Well | Date | Top screen | Bottom Screen | TCE Result | Detect? | | MK DATASET | | |
|---|---|---|---|---|---|---|---|---|---|
| GM-74I | 10/5/2000 | 94 | 114 | 10 | N | | | | |
| GM-74I | 2/5/2001 | 94 | 114 | 10 | N | | | | |
| GM-74I | 6/5/2001 | 94 | 114 | 10 | N | | | | |
| GM-74I | 10/9/2001 | 94 | 114 | 10 | N | | | | |
| GM-74I | 1/4/2002 | 94 | 114 | 5 | N | | | | |
| GM-74I | 4/4/2002 | 94 | 114 | 5 | N | | | | |
| GM-74I | 6/19/2002 | 94 | 114 | 5 | N | | | | |
| GM-74I | 10/9/2002 | 94 | 114 | 5 | N | | | | |
| GM-74I | 1/13/2003 | 94 | 114 | 5 | N | | | | |
| GM-74I | 3/25/2003 | 94 | 114 | 5 | N | | | | |
| GM-74I | 7/24/2003 | 94 | 114 | 5 | N | | | | |
| GM-74I | 9/29/2003 | 94 | 114 | 0.4 | Y | | | | |
| GM-74I | 1/13/2004 | 94 | 114 | 5 | N | | | | |
| GM-74I | 3/22/2004 | 94 | 114 | 5 | N | | | | |
| GM-74I | 7/6/2004 | 94 | 114 | 5 | N | | | | |
| GM-74I | 11/1/2004 | 94 | 114 | 5 | N | | | | |
| GM-74I | 1/12/2005 | 94 | 114 | 5 | N | | | | |
| GM-74I | 3/22/2005 | 94 | 114 | 5 | N | | | | |
| GM-74I | 6/2/2005 | 94 | 114 | 5 | N | | | | |
| GM-74I | 8/18/2005 | 94 | 114 | 5 | N | | | | |
| GM-74I | 12/21/2005 | 94 | 114 | 5 | N | | | | |
| GM-74I | 3/20/2006 | 94 | 114 | 5 | N | | | | |
| GM-74I | 9/14/2006 | 94 | 114 | 5 | N | | | | |
| GM-74I | 2/27/2007 | 94 | 114 | 5 | N | | | | |
| GM-74I | 9/7/2007 | 94 | 114 | 5 | N | | | | |
| GM-74I | 3/17/2008 | 94 | 114 | 5 | N | | 3/17/2008 | 2.5 | N |
| GM-74I | 8/18/2008 | 94 | 114 | 5 | N | | 8/18/2008 | 2.5 | N |
| GM-74I | 2/17/2009 | 94 | 114 | 5 | N | | 2/17/2009 | 2.5 | N |
| GM-74I | 8/10/2009 | 94 | 114 | 5 | N | | 8/10/2009 | 2.5 | N |
| GM-74I | 1/28/2010 | 94 | 114 | 5 | N | | 1/28/2010 | 2.5 | N |
| GM-74I | 7/14/2010 | 94 | 114 | 5 | N | | 7/14/2010 | 2.5 | N |
| GM-74I | 5/4/2011 | 94 | 114 | 5 | N | | 5/4/2011 | 2.5 | N |
| GM-74I | 12/16/2011 | 94 | 114 | 0.28 | Y | | 12/16/2011 | 0.28 | Y |
| GM-74I | 2/10/2012 | 94 | 114 | 5 | N | | 2/10/2012 | 2.5 | N |
| GM-74I | 8/28/2012 | 94 | 114 | 0.34 | Y | | 8/28/2012 | 0.34 | Y |
| GM-74I | 5/23/2013 | 94 | 114 | 0.35 | Y | | 5/23/2013 | 0.35 | Y |
| GM-74I | 12/9/2013 | 94 | 114 | 0.79 | Y | | 12/9/2013 | 0.79 | Y |
| GM-74I | 5/8/2014 | 94 | 114 | 0.3 | Y | | 5/8/2014 | 0.3 | Y |
| GM-74I | 10/17/2014 | 94 | 114 | 0.63 | Y | | 10/17/2014 | 0.63 | Y |
| GM-74I | 4/21/2015 | 94 | 114 | 0.76 | Y | | 4/21/2015 | 0.76 | Y |
| GM-74I | 4/13/2016 | 94 | 114 | 0.62 | Y | | 4/13/2016 | 0.62 | Y |
| GM-74I | 10/24/2016 | 94 | 114 | 0.73 | Y | | 10/24/2016 | 0.73 | Y |
| GM-74I | 5/2/2017 | 94 | 114 | 0.6 | Y | | 5/2/2017 | 0.6 | Y |

Appendix A
Data Sets Used for Trends and Projections

| Well | Date | Top screen | Bottom Screen | TCE Result | Detect? | | MK Dataset | | |
|---|---|---|---|---|---|---|---|---|---|
| GM-75D2 | 6/6/2001 | 505 | 525 | 1100 | Y | | | | |
| GM-75D2 | 10/10/2001 | 505 | 525 | 1400 | Y | | | | |
| GM-75D2 | 12/26/2001 | 505 | 525 | 1300 | Y | | | | |
| GM-75D2 | 4/10/2002 | 505 | 525 | 1000 | Y | | | | |
| GM-75D2 | 7/11/2002 | 505 | 525 | 1400 | Y | | | | |
| GM-75D2 | 10/3/2002 | 505 | 525 | 1500 | Y | | | | |
| GM-75D2 | 1/9/2003 | 505 | 525 | 980 | Y | | | | |
| GM-75D2 | 3/24/2003 | 505 | 525 | 960 | Y | | | | |
| GM-75D2 | 8/1/2003 | 505 | 525 | 1100 | Y | | | | |
| GM-75D2 | 9/30/2003 | 505 | 525 | 890 | Y | | | | |
| GM-75D2 | 1/30/2004 | 505 | 525 | 880 | Y | | | | |
| GM-75D2 | 3/30/2004 | 505 | 525 | 890 | Y | | | | |
| GM-75D2 | 7/16/2004 | 505 | 525 | 730 | Y | | | | |
| GM-75D2 | 11/15/2004 | 505 | 525 | 550 | Y | | | | |
| GM-75D2 | 1/11/2005 | 505 | 525 | 410 | Y | | | | |
| GM-75D2 | 4/16/2005 | 505 | 525 | 330 | Y | | | | |
| GM-75D2 | 6/9/2005 | 505 | 525 | 320 | Y | | | | |
| GM-75D2 | 9/9/2005 | 505 | 525 | 380 | Y | | | | |
| GM-75D2 | 1/12/2006 | 505 | 525 | 190 | Y | | | | |
| GM-75D2 | 3/16/2006 | 505 | 525 | 200 | Y | | | | |
| GM-75D2 | 9/22/2006 | 505 | 525 | 360 | Y | | | | |
| GM-75D2 | 11/27/2006 | 505 | 525 | 380 | Y | | | | |
| GM-75D2 | 3/1/2007 | 505 | 525 | 280 | Y | | | | |
| GM-75D2 | 6/8/2007 | 505 | 525 | 240 | Y | | | | |
| GM-75D2 | 9/27/2007 | 505 | 525 | 250 | Y | | | | |
| GM-75D2 | 12/20/2007 | 505 | 525 | 220 | Y | | | | |
| GM-75D2 | 3/14/2008 | 505 | 525 | 200 | Y | | | | |
| GM-75D2 | 6/25/2008 | 505 | 525 | 180 | Y | | | | |
| GM-75D2 | 8/19/2008 | 505 | 525 | 190 | Y | | | | |
| GM-75D2 | 12/17/2008 | 505 | 525 | 190 | Y | | | | |
| GM-75D2 | 3/17/2009 | 505 | 525 | 140 | Y | | | | |
| GM-75D2 | 5/18/2009 | 505 | 525 | 130 | Y | | | | |
| GM-75D2 | 8/21/2009 | 505 | 525 | 120 | Y | | 8/21/2009 | 120 | Y |
| GM-75D2 | 11/6/2009 | 505 | 525 | 110 | Y | | 11/6/2009 | 110 | Y |
| GM-75D2 | 2/3/2010 | 505 | 525 | 82 | Y | | 2/3/2010 | 82 | Y |
| GM-75D2 | 4/15/2010 | 505 | 525 | 86 | Y | | 4/15/2010 | 86 | Y |
| GM-75D2 | 8/10/2010 | 505 | 525 | 120 | Y | | 8/10/2010 | 120 | Y |
| GM-75D2 | 12/15/2010 | 505 | 525 | 130 | Y | | 12/15/2010 | 130 | Y |
| GM-75D2 | 5/18/2011 | 505 | 525 | 87 | Y | | 5/18/2011 | 87 | Y |
| GM-75D2 | 7/27/2011 | 505 | 525 | 67 | Y | | 7/27/2011 | 67 | Y |
| GM-75D2 | 12/23/2011 | 505 | 525 | 44 | Y | | 12/23/2011 | 44 | Y |
| GM-75D2 | 3/9/2012 | 505 | 525 | 35 | Y | | 3/9/2012 | 35 | Y |
| GM-75D2 | 5/16/2012 | 505 | 525 | 37 | Y | | 5/16/2012 | 37 | Y |
| GM-75D2 | 9/6/2012 | 505 | 525 | 35 | Y | | 9/6/2012 | 35 | Y |
| GM-75D2 | 12/14/2012 | 505 | 525 | 28 | Y | | 12/14/2012 | 28 | Y |
| GM-75D2 | 6/12/2013 | 505 | 525 | 39 | Y | | 6/12/2013 | 39 | Y |
| GM-75D2 | 12/19/2013 | 505 | 525 | 38 | Y | | 12/19/2013 | 38 | Y |
| GM-75D2 | 6/2/2014 | 505 | 525 | 36 | Y | | 6/2/2014 | 36 | Y |
| GM-75D2 | 6/4/2015 | 505 | 525 | 23.9 | Y | | 6/4/2015 | 23.9 | Y |
| GM-75D2 | 5/10/2016 | 505 | 525 | 18.8 | Y | | 5/10/2016 | 18.8 | Y |
| GM-75D2 | 12/5/2016 | 505 | 525 | 31.4 | Y | | 12/5/2016 | 31.4 | Y |
| GM-75D2 | 6/12/2017 | 505 | 525 | 26.4 | Y | | 6/12/2017 | 26.4 | Y |

Appendix A

Data Sets Used for Trends and Projections

| Well | Date | Top screen | Bottom Screen | TCE Result | Detect? | | MK DATASET | | |
|---|---|---|---|---|---|---|---|---|---|
| GM-78I | 6/4/2001 | 89 | 109 | 0.8 | Y | | | | |
| GM-78I | 9/27/2001 | 89 | 109 | 3 | Y | | | | |
| GM-78I | 1/9/2002 | 89 | 109 | 7 | Y | | | | |
| GM-78I | 4/9/2002 | 89 | 109 | 5 | Y | | | | |
| GM-78I | 6/18/2002 | 89 | 109 | 4 | Y | | | | |
| GM-78I | 10/10/2002 | 89 | 109 | 5 | Y | | | | |
| GM-78I | 12/19/2002 | 89 | 109 | 4 | Y | | | | |
| GM-78I | 3/19/2003 | 89 | 109 | 4 | Y | | | | |
| GM-78I | 7/15/2003 | 89 | 109 | 3 | Y | | | | |
| GM-78I | 10/16/2003 | 89 | 109 | 2 | Y | | | | |
| GM-78I | 1/8/2004 | 89 | 109 | 0.8 | Y | | | | |
| GM-78I | 3/19/2004 | 89 | 109 | 5 | N | | | | |
| GM-78I | 7/2/2004 | 89 | 109 | 5 | N | | | | |
| GM-78I | 9/30/2004 | 89 | 109 | 0.6 | Y | | | | |
| GM-78I | 1/12/2005 | 89 | 109 | 2 | Y | | | | |
| GM-78I | 4/13/2005 | 89 | 109 | 1 | Y | | | | |
| GM-78I | 6/1/2005 | 89 | 109 | 2 | Y | | | | |
| GM-78I | 9/7/2005 | 89 | 109 | 2 | Y | | | | |
| GM-78I | 12/23/2005 | 89 | 109 | 0.7 | Y | | | | |
| GM-78I | 3/15/2006 | 89 | 109 | 0.9 | Y | | 3/15/2006 | 0.9 | Y |
| GM-78I | 9/26/2006 | 89 | 109 | 0.6 | Y | | 9/26/2006 | 0.6 | Y |
| GM-78I | 2/8/2007 | 89 | 109 | 0.69 | Y | | 2/8/2007 | 0.69 | Y |
| GM-78I | 9/25/2007 | 89 | 109 | 5 | N | | 9/25/2007 | 2.5 | N |
| GM-78I | 3/12/2008 | 89 | 109 | 5 | N | | 3/12/2008 | 2.5 | N |
| GM-78I | 8/14/2008 | 89 | 109 | 5 | N | | 8/14/2008 | 2.5 | N |
| GM-78I | 2/24/2009 | 89 | 109 | 5 | N | | 2/24/2009 | 2.5 | N |
| GM-78I | 8/17/2009 | 89 | 109 | 5 | N | | 8/17/2009 | 2.5 | N |
| GM-78I | 1/29/2010 | 89 | 109 | 5 | N | | 1/29/2010 | 2.5 | N |
| GM-78I | 7/16/2010 | 89 | 109 | 5 | N | | 7/16/2010 | 2.5 | N |
| GM-78I | 5/5/2011 | 89 | 109 | 5 | N | | 5/5/2011 | 2.5 | N |
| GM-78I | 12/9/2011 | 89 | 109 | 5 | N | | 12/9/2011 | 2.5 | N |
| GM-78I | 2/16/2012 | 89 | 109 | 5 | N | | 2/16/2012 | 2.5 | N |
| GM-78I | 5/29/2013 | 89 | 109 | 0.31 | Y | | 5/29/2013 | 0.31 | Y |
| GM-78I | 5/15/2014 | 89 | 109 | 0.58 | Y | | 5/15/2014 | 0.58 | Y |
| GM-78I | 6/1/2015 | 89 | 109 | 0.39 | Y | | 6/1/2015 | 0.39 | Y |
| GM-78I | 4/28/2016 | 89 | 109 | 0.38 | Y | | 4/28/2016 | 0.38 | Y |
| GM-78I | 5/5/2017 | 89 | 109 | 0.44 | Y | | 5/5/2017 | 0.44 | Y |

Appendix A

Data Sets Used for Trends and Projections

| Well | Date | Top screen | Bottom Screen | TCE Result | Detect? | | MK Dataset | | |
|---|---|---|---|---|---|---|---|---|---|
| GM-78S | 6/4/2001 | | | 1 | | | | | |
| GM-78S | 9/27/2001 | | | 2 | | | | | |
| GM-78S | 1/8/2002 | | | 6 | | | | | |
| GM-78S | 4/9/2002 | | | 7 | | | | | |
| GM-78S | 6/18/2002 | | | 8 | | | | | |
| GM-78S | 10/10/2002 | | | 6 | | | | | |
| GM-78S | 12/19/2002 | | | 5 | | | | | |
| GM-78S | 3/19/2003 | | | 3 | | | | | |
| GM-78S | 7/15/2003 | | | 3 | | | | | |
| GM-78S | 10/16/2003 | | | 1 | | | | | |
| GM-78S | 1/8/2004 | | | 5 | N | | | | |
| GM-78S | 3/19/2004 | | | 5 | N | | | | |
| GM-78S | 7/2/2004 | | | 5 | N | | | | |
| GM-78S | 9/30/2004 | | | 0.7 | Y | | | | |
| GM-78S | 12/28/2004 | | | 0.7 | Y | | | | |
| GM-78S | 4/13/2005 | | | 0.9 | Y | | | | |
| GM-78S | 6/1/2005 | | | 1 | Y | | | | |
| GM-78S | 9/7/2005 | | | 5 | N | | | | |
| GM-78S | 12/23/2005 | | | 5 | N | | | | |
| GM-78S | 3/15/2006 | | | 0.3 | Y | | 3/15/2006 | 0.3 | Y |
| GM-78S | 9/26/2006 | | | 0.9 | Y | | 9/26/2006 | 0.9 | Y |
| GM-78S | 2/8/2007 | | | 1.1 | Y | | 2/8/2007 | 1.1 | Y |
| GM-78S | 9/25/2007 | | | 5 | N | | 9/25/2007 | 2.5 | N |
| GM-78S | 3/12/2008 | | | 5 | N | | 3/12/2008 | 2.5 | N |
| GM-78S | 8/14/2008 | | | 5 | N | | 8/14/2008 | 2.5 | N |
| GM-78S | 2/24/2009 | | | 5 | N | | 2/24/2009 | 2.5 | N |
| GM-78S | 8/17/2009 | | | 5 | N | | 8/17/2009 | 2.5 | N |
| GM-78S | 1/29/2010 | | | 0.28 | Y | | 1/29/2010 | 0.28 | Y |
| GM-78S | 7/16/2010 | | | 0.33 | Y | | 7/16/2010 | 0.33 | Y |
| GM-78S | 5/5/2011 | | | 5 | N | | 5/5/2011 | 2.5 | N |
| GM-78S | 12/9/2011 | | | 5 | N | | 12/9/2011 | 2.5 | N |
| GM-78S | 2/16/2012 | | | 5 | N | | 2/16/2012 | 2.5 | N |
| GM-78S | 5/29/2013 | | | 5 | N | | 5/29/2013 | 2.5 | N |
| GM-78S | 5/15/2014 | | | 5 | N | | 5/15/2014 | 2.5 | N |
| GM-78S | 6/1/2015 | | | 0.57 | Y | | 6/1/2015 | 0.57 | Y |
| GM-78S | 4/28/2016 | | | 0.45 | Y | | 4/28/2016 | 0.45 | Y |
| GM-78S | 6/22/2017 | | | 0.43 | Y | | 6/22/2017 | 0.43 | Y |

Appendix A
Data Sets Used for Trends and Projections

| Well | Date | Top screen | Bottom Screen | TCE Result | Detect? | | MK Dataset | | |
|---|---|---|---|---|---|---|---|---|---|
| GM-79D | 2/14/2001 | 280 | 290 | 48 | Y | | | | |
| GM-79D | 5/3/2001 | 280 | 290 | 49 | Y | | | | |
| GM-79D | 10/11/2001 | 280 | 290 | 63 | Y | | | | |
| GM-79D | 1/9/2002 | 280 | 290 | 80 | Y | | | | |
| GM-79D | 4/9/2002 | 280 | 290 | 64 | Y | | | | |
| GM-79D | 7/11/2002 | 280 | 290 | 91 | Y | | | | |
| GM-79D | 10/4/2002 | 280 | 290 | 96 | Y | | | | |
| GM-79D | 1/14/2003 | 280 | 290 | 110 | Y | | | | |
| GM-79D | 4/7/2003 | 280 | 290 | 110 | Y | | | | |
| GM-79D | 8/1/2003 | 280 | 290 | 97 | Y | | | | |
| GM-79D | 10/3/2003 | 280 | 290 | 92 | Y | | | | |
| GM-79D | 12/30/2003 | 280 | 290 | 75 | Y | | | | |
| GM-79D | 4/6/2004 | 280 | 290 | 76 | Y | | | | |
| GM-79D | 7/8/2004 | 280 | 290 | 65 | Y | | | | |
| GM-79D | 10/8/2004 | 280 | 290 | 31 | Y | | | | |
| GM-79D | 12/28/2004 | 280 | 290 | 62 | Y | | | | |
| GM-79D | 3/23/2005 | 280 | 290 | 68 | Y | | | | |
| GM-79D | 6/7/2005 | 280 | 290 | 79 | Y | | | | |
| GM-79D | 9/1/2005 | 280 | 290 | 54 | Y | | | | |
| GM-79D | 1/6/2006 | 280 | 290 | 58 | Y | | | | |
| GM-79D | 3/7/2006 | 280 | 290 | 57 | Y | | | | |
| GM-79D | 7/6/2006 | 280 | 290 | 44 | Y | | | | |
| GM-79D | 9/12/2006 | 280 | 290 | 55 | Y | | | | |
| GM-79D | 11/21/2006 | 280 | 290 | 47 | Y | | | | |
| GM-79D | 2/12/2007 | 280 | 290 | 38 | Y | | | | |
| GM-79D | 6/5/2007 | 280 | 290 | 38 | Y | | | | |
| GM-79D | 9/6/2007 | 280 | 290 | 33 | Y | | | | |
| GM-79D | 12/18/2007 | 280 | 290 | 34 | Y | | | | |
| GM-79D | 3/21/2008 | 280 | 290 | 39 | Y | | | | |
| GM-79D | 6/18/2008 | 280 | 290 | 47 | Y | | | | |
| GM-79D | 8/22/2008 | 280 | 290 | 46 | Y | | | | |
| GM-79D | 12/15/2008 | 280 | 290 | 48 | Y | | | | |
| GM-79D | 3/20/2009 | 280 | 290 | 48 | Y | | | | |
| GM-79D | 5/14/2009 | 280 | 290 | 37 | Y | | | | |
| GM-79D | 8/17/2009 | 280 | 290 | 38 | Y | | | | |
| GM-79D | 11/5/2009 | 280 | 290 | 33 | Y | | 11/5/2009 | 33 | Y |
| GM-79D | 1/22/2010 | 280 | 290 | 37 | Y | | 1/22/2010 | 37 | Y |
| GM-79D | 4/13/2010 | 280 | 290 | 34 | Y | | 4/13/2010 | 34 | Y |
| GM-79D | 7/16/2010 | 280 | 290 | 35 | Y | | 7/16/2010 | 35 | Y |
| GM-79D | 12/13/2010 | 280 | 290 | 31 | Y | | 12/13/2010 | 31 | Y |
| GM-79D | 5/3/2011 | 280 | 290 | 5 | N | | 5/3/2011 | 2.5 | N |
| GM-79D | 7/26/2011 | 280 | 290 | 26 | Y | | 7/26/2011 | 26 | Y |
| GM-79D | 12/26/2011 | 280 | 290 | 26 | Y | | 12/26/2011 | 26 | Y |
| GM-79D | 2/14/2012 | 280 | 290 | 5 | N | | 2/14/2012 | 2.5 | N |
| GM-79D | 5/18/2012 | 280 | 290 | 26 | Y | | 5/18/2012 | 26 | Y |
| GM-79D | 9/5/2012 | 280 | 290 | 18 | Y | | 9/5/2012 | 18 | Y |
| GM-79D | 12/31/2012 | 280 | 290 | 27 | Y | | 12/31/2012 | 27 | Y |
| GM-79D | 5/28/2013 | 280 | 290 | 19 | Y | | 5/28/2013 | 19 | Y |
| GM-79D | 12/17/2013 | 280 | 290 | 13 | Y | | 12/17/2013 | 13 | Y |
| GM-79D | 5/14/2014 | 280 | 290 | 18 | Y | | 5/14/2014 | 18 | Y |
| GM-79D | 10/24/2014 | 280 | 290 | 15.5 | Y | | 10/24/2014 | 15.5 | Y |
| GM-79D | 6/13/2015 | 280 | 290 | 18 | Y | | 6/13/2015 | 18 | Y |
| GM-79D | 4/13/2016 | 280 | 290 | 25.9 | Y | | 4/13/2016 | 25.9 | Y |
| GM-79D | 12/9/2016 | 280 | 290 | 35.7 | Y | | 12/9/2016 | 35.7 | Y |
| GM-79D | 6/28/2017 | 280 | 290 | 46.9 | Y | | 6/28/2017 | 46.9 | Y |

Appendix A

Data Sets Used for Trends and Projections

| Well | Date | Top screen | Bottom Screen | TCE Result | Detect? | | MK DATASET | | |
|---|---|---|---|---|---|---|---|---|---|
| GM-79I | 2/14/2001 | 170 | 180 | 6 | Y | | | | |
| GM-79I | 5/7/2001 | 170 | 180 | 3 | Y | | | | |
| GM-79I | 10/11/2001 | 170 | 180 | 2 | Y | | | | |
| GM-79I | 1/9/2002 | 170 | 180 | 1 | Y | | | | |
| GM-79I | 4/9/2002 | 170 | 180 | 1 | Y | | | | |
| GM-79I | 7/12/2002 | 170 | 180 | 1 | Y | | | | |
| GM-79I | 10/4/2002 | 170 | 180 | 1 | Y | | | | |
| GM-79I | 1/14/2003 | 170 | 180 | 3 | Y | | | | |
| GM-79I | 4/7/2003 | 170 | 180 | 1 | Y | | | | |
| GM-79I | 8/1/2003 | 170 | 180 | 5 | N | | | | |
| GM-79I | 10/3/2003 | 170 | 180 | 5 | N | | | | |
| GM-79I | 12/30/2003 | 170 | 180 | 0.4 | Y | | | | |
| GM-79I | 4/6/2004 | 170 | 180 | 5 | N | | | | |
| GM-79I | 7/8/2004 | 170 | 180 | 2 | Y | | | | |
| GM-79I | 10/8/2004 | 170 | 180 | 5 | N | | | | |
| GM-79I | 12/28/2004 | 170 | 180 | 5 | N | | | | |
| GM-79I | 3/23/2005 | 170 | 180 | 5 | N | | | | |
| GM-79I | 6/7/2005 | 170 | 180 | 5 | N | | | | |
| GM-79I | 9/1/2005 | 170 | 180 | 0.5 | Y | | | | |
| GM-79I | 1/6/2006 | 170 | 180 | 5 | N | | | | |
| GM-79I | 3/7/2006 | 170 | 180 | 5 | N | | | | |
| GM-79I | 7/6/2006 | 170 | 180 | 5 | N | | | | |
| GM-79I | 9/12/2006 | 170 | 180 | 5 | N | | | | |
| GM-79I | 11/21/2006 | 170 | 180 | 5 | N | | | | |
| GM-79I | 2/12/2007 | 170 | 180 | 5 | N | | | | |
| GM-79I | 6/5/2007 | 170 | 180 | 5 | N | | | | |
| GM-79I | 9/6/2007 | 170 | 180 | 5 | N | | | | |
| GM-79I | 12/18/2007 | 170 | 180 | 5 | N | | | | |
| GM-79I | 3/21/2008 | 170 | 180 | 5 | N | | | | |
| GM-79I | 6/18/2008 | 170 | 180 | 5 | N | | | | |
| GM-79I | 8/22/2008 | 170 | 180 | 5 | N | | | | |
| GM-79I | 12/15/2008 | 170 | 180 | 5 | N | | | | |
| GM-79I | 3/20/2009 | 170 | 180 | 5 | N | | | | |
| GM-79I | 5/14/2009 | 170 | 180 | 5 | N | | | | |
| GM-79I | 8/17/2009 | 170 | 180 | 5 | N | | | | |
| GM-79I | 11/5/2009 | 170 | 180 | 5 | N | | 11/5/2009 | 0.5 | N |
| GM-79I | 1/22/2010 | 170 | 180 | 5 | N | | 1/22/2010 | 0.5 | N |
| GM-79I | 4/13/2010 | 170 | 180 | 5 | N | | 4/13/2010 | 0.5 | N |
| GM-79I | 7/16/2010 | 170 | 180 | 5 | N | | 7/16/2010 | 0.5 | N |
| GM-79I | 12/13/2010 | 170 | 180 | 5 | N | | 12/13/2010 | 0.5 | N |
| GM-79I | 5/3/2011 | 170 | 180 | 28 | Y | | 5/3/2011 | 28 | Y |
| GM-79I | 7/26/2011 | 170 | 180 | 5 | N | | 7/26/2011 | 0.5 | N |
| GM-79I | 12/26/2011 | 170 | 180 | 5 | N | | 12/26/2011 | 0.5 | N |
| GM-79I | 2/14/2012 | 170 | 180 | 30 | Y | | 2/14/2012 | 30 | Y |
| GM-79I | 5/12/2012 | 170 | 180 | 5 | N | | 5/12/2012 | 0.5 | N |
| GM-79I | 9/5/2012 | 170 | 180 | 5 | N | | 9/5/2012 | 0.5 | N |
| GM-79I | 12/31/2012 | 170 | 180 | 5 | N | | 12/31/2012 | 0.5 | N |
| GM-79I | 5/28/2013 | 170 | 180 | 0.23 | Y | | 5/28/2013 | 0.23 | Y |
| GM-79I | 12/17/2013 | 170 | 180 | 0.33 | Y | | 12/17/2013 | 0.33 | Y |
| GM-79I | 5/14/2014 | 170 | 180 | 0.31 | Y | | 5/14/2014 | 0.31 | Y |
| GM-79I | 10/24/2014 | 170 | 180 | 1 | N | | 10/24/2014 | 0.5 | N |
| GM-79I | 4/22/2015 | 170 | 180 | 1 | N | | 4/22/2015 | 0.5 | N |
| GM-79I | 4/13/2016 | 170 | 180 | 1 | N | | 4/13/2016 | 0.5 | N |
| GM-79I | 6/28/2017 | 170 | 180 | 0.45 | Y | | 6/28/2017 | 0.45 | Y |

Appendix A

Data Sets Used for Trends and Projections

| Well | Date | Top screen | Bottom Screen | TCE Result | Detect? | | MK dataset | | |
|---|---|---|---|---|---|---|---|---|---|
| HN-24I | 4/22/1999 | 148 | 158 | 190 | Y | | | | |
| HN-24I | 12/2/1999 | 148 | 158 | 230 | Y | | | | |
| HN-24I | 3/22/2000 | 148 | 158 | 270 | Y | | | | |
| HN-24I | 6/28/2000 | 148 | 158 | 180 | Y | | | | |
| HN-24I | 9/27/2000 | 148 | 158 | 180 | Y | | | | |
| HN-24I | 2/1/2001 | 148 | 158 | 200 | Y | | | | |
| HN-24I | 5/31/2001 | 148 | 158 | 180 | Y | | | | |
| HN-24I | 10/4/2001 | 148 | 158 | 160 | Y | | | | |
| HN-24I | 1/3/2002 | 148 | 158 | 160 | Y | | | | |
| HN-24I | 4/11/2002 | 148 | 158 | 210 | Y | | | | |
| HN-24I | 7/9/2002 | 148 | 158 | 160 | Y | | | | |
| HN-24I | 10/15/2002 | 148 | 158 | 290 | Y | | | | |
| HN-24I | 12/20/2002 | 148 | 158 | 190 | Y | | | | |
| HN-24I | 3/20/2003 | 148 | 158 | 170 | Y | | | | |
| HN-24I | 7/21/2003 | 148 | 158 | 110 | Y | | | | |
| HN-24I | 10/14/2003 | 148 | 158 | 100 | Y | | | | |
| HN-24I | 1/7/2004 | 148 | 158 | 62 | Y | | | | |
| HN-24I | 3/18/2004 | 148 | 158 | 62 | Y | | | | |
| HN-24I | 10/6/2004 | 148 | 158 | 36 | Y | | 10/6/2004 | 36 | Y |
| HN-24I | 4/12/2005 | 148 | 158 | 5 | N | | 4/12/2005 | 2.5 | N |
| HN-24I | 9/20/2005 | 148 | 158 | 22 | Y | | 9/20/2005 | 22 | Y |
| HN-24I | 3/14/2006 | 148 | 158 | 37 | Y | | 3/14/2006 | 37 | Y |
| HN-24I | 9/29/2006 | 148 | 158 | 15 | Y | | 9/29/2006 | 15 | Y |
| HN-24I | 2/12/2007 | 148 | 158 | 11 | Y | | 2/12/2007 | 11 | Y |
| HN-24I | 3/13/2008 | 148 | 158 | 15 | Y | | 3/13/2008 | 15 | Y |
| HN-24I | 9/5/2008 | 148 | 158 | 19 | Y | | 9/5/2008 | 19 | Y |
| HN-24I | 2/27/2009 | 148 | 158 | 21 | Y | | 2/27/2009 | 21 | Y |
| HN-24I | 8/25/2009 | 148 | 158 | 22 | Y | | 8/25/2009 | 22 | Y |
| HN-24I | 8/6/2010 | 148 | 158 | 32 | Y | | 8/6/2010 | 32 | Y |
| HN-24I | 5/17/2011 | 148 | 158 | 35 | Y | | 5/17/2011 | 35 | Y |
| HN-24I | 12/28/2011 | 148 | 158 | 28 | Y | | 12/28/2011 | 28 | Y |
| HN-24I | 2/17/2012 | 148 | 158 | 27 | Y | | 2/17/2012 | 27 | Y |
| HN-24I | 6/10/2013 | 148 | 158 | 16 | Y | | 6/10/2013 | 16 | Y |
| HN-24I | 5/19/2014 | 148 | 158 | 18 | Y | | 5/19/2014 | 18 | Y |
| HN-24I | 6/2/2015 | 148 | 158 | 18.9 | Y | | 6/2/2015 | 18.9 | Y |
| HN-24I | 4/28/2016 | 148 | 158 | 15 | Y | | 4/28/2016 | 15 | Y |
| HN-24I | 4/20/2017 | 148 | 158 | 11.2 | Y | | 4/20/2017 | 11.2 | Y |

Appendix A

Data Sets Used for Trends and Projections

| Well | Date | Top screen | Bottom Screen | TCE Result | Detect? | | MK Dataset | | |
|---|---|---|---|---|---|---|---|---|---|
| HN-40I | 2/13/2001 | 108 | 118 | 2 | Y | | | | |
| HN-40I | 5/4/2001 | 108 | 118 | 4 | Y | | | | |
| HN-40I | 10/5/2001 | 108 | 118 | 4 | Y | | | | |
| HN-40I | 1/7/2002 | 108 | 118 | 5 | Y | | | | |
| HN-40I | 3/25/2002 | 108 | 118 | 5 | Y | | | | |
| HN-40I | 6/13/2002 | 108 | 118 | 6 | Y | | | | |
| HN-40I | 10/14/2002 | 108 | 118 | 7 | Y | | | | |
| HN-40I | 12/18/2002 | 108 | 118 | 8 | Y | | | | |
| HN-40I | 3/18/2003 | 108 | 118 | 11 | Y | | | | |
| HN-40I | 7/14/2003 | 108 | 118 | 10 | Y | | | | |
| HN-40I | 10/13/2003 | 108 | 118 | 35 | Y | | | | |
| HN-40I | 12/22/2003 | 108 | 118 | 35 | Y | | | | |
| HN-40I | 3/16/2004 | 108 | 118 | 34 | Y | | | | |
| HN-40I | 9/28/2004 | 108 | 118 | 20 | Y | | | | |
| HN-40I | 3/14/2005 | 108 | 118 | 4 | Y | | | | |
| HN-40I | 9/21/2005 | 108 | 118 | 4 | Y | | | | |
| HN-40I | 3/17/2006 | 108 | 118 | 8 | Y | | | | |
| HN-40I | 4/13/2006 | 108 | 118 | 3 | Y | | 4/13/2006 | 3 | Y |
| HN-40I | 9/27/2006 | 108 | 118 | 0.5 | Y | | 9/27/2006 | 0.5 | Y |
| HN-40I | 2/7/2007 | 108 | 118 | 5 | N | | 2/7/2007 | 0.5 | N |
| HN-40I | 9/24/2007 | 108 | 118 | 5 | N | | 9/24/2007 | 0.5 | N |
| HN-40I | 8/12/2008 | 108 | 118 | 5 | N | | 8/12/2008 | 0.5 | N |
| HN-40I | 2/23/2009 | 108 | 118 | 5 | N | | 2/23/2009 | 0.5 | N |
| HN-40I | 7/14/2009 | 108 | 118 | 5 | N | | 7/14/2009 | 0.5 | N |
| HN-40I | 8/24/2009 | 108 | 118 | 5 | N | | 8/24/2009 | 0.5 | N |
| HN-40I | 10/22/2009 | 108 | 118 | 5 | N | | 10/22/2009 | 0.5 | N |
| HN-40I | 1/28/2010 | 108 | 118 | 5 | N | | 1/28/2010 | 0.5 | N |
| HN-40I | 7/15/2010 | 108 | 118 | 1.2 | Y | | 7/15/2010 | 1.2 | Y |
| HN-40I | 5/3/2011 | 108 | 118 | 2.3 | Y | | 5/3/2011 | 2.3 | Y |
| HN-40I | 12/19/2011 | 108 | 118 | 8.7 | Y | | 12/19/2011 | 8.7 | Y |
| HN-40I | 2/7/2012 | 108 | 118 | 11 | Y | | 2/7/2012 | 11 | Y |
| HN-40I | 5/28/2013 | 108 | 118 | 22 | Y | | 5/28/2013 | 22 | Y |
| HN-40I | 5/12/2014 | 108 | 118 | 22 | Y | | 5/12/2014 | 22 | Y |
| HN-40I | 4/20/2015 | 108 | 118 | 5 | N | | 4/20/2015 | 0.5 | N |
| HN-40I | 4/13/2016 | 108 | 118 | 1 | N | | 4/13/2016 | 0.5 | N |
| HN-40I | 4/19/2017 | 108 | 118 | 1 | N | | 4/19/2017 | 0.5 | N |

Appendix A
Data Sets Used for Trends and Projections

| Well | Date | Top screen | Bottom Screen | TCE Result | Detect? | | MK Dataset | | |
|---|---|---|---|---|---|---|---|---|---|
| HN-42I | 2/9/2001 | 100 | 110 | 1 | Y | | | | |
| HN-42I | 5/4/2001 | 100 | 110 | 0.9 | Y | | | | |
| HN-42I | 10/5/2001 | 100 | 110 | 0.9 | Y | | | | |
| HN-42I | 1/7/2002 | 100 | 110 | 1 | Y | | | | |
| HN-42I | 3/26/2002 | 100 | 110 | 5 | N | | | | |
| HN-42I | 6/13/2002 | 100 | 110 | 5 | N | | | | |
| HN-42I | 10/14/2002 | 100 | 110 | 5 | N | | | | |
| HN-42I | 12/18/2002 | 100 | 110 | 0.4 | Y | | | | |
| HN-42I | 3/18/2003 | 100 | 110 | 0.5 | Y | | | | |
| HN-42I | 7/14/2003 | 100 | 110 | 5 | N | | | | |
| HN-42I | 10/13/2003 | 100 | 110 | 5 | N | | | | |
| HN-42I | 12/22/2003 | 100 | 110 | 0.6 | Y | | | | |
| HN-42I | 3/16/2004 | 100 | 110 | 5 | N | | | | |
| HN-42I | 9/28/2004 | 100 | 110 | 5 | N | | | | |
| HN-42I | 3/14/2005 | 100 | 110 | 5 | N | | | | |
| HN-42I | 9/21/2005 | 100 | 110 | 0.4 | Y | | | | |
| HN-42I | 3/17/2006 | 100 | 110 | 5 | N | | | | |
| HN-42I | 4/13/2006 | 100 | 110 | 5 | N | | | | |
| HN-42I | 9/27/2006 | 100 | 110 | 2 | Y | | | | |
| HN-42I | 2/7/2007 | 100 | 110 | 10 | Y | | 2/7/2007 | 10 | Y |
| HN-42I | 9/24/2007 | 100 | 110 | 12 | Y | | 9/24/2007 | 12 | Y |
| HN-42I | 3/12/2008 | 100 | 110 | 15 | Y | | 3/12/2008 | 15 | Y |
| HN-42I | 3/13/2008 | 100 | 110 | 5 | N | | 3/13/2008 | 2.5 | N |
| HN-42I | 8/12/2008 | 100 | 110 | 17 | Y | | 8/12/2008 | 17 | Y |
| HN-42I | 2/23/2009 | 100 | 110 | 18 | Y | | 2/23/2009 | 18 | Y |
| HN-42I | 7/8/2009 | 100 | 110 | 20 | Y | | 7/8/2009 | 20 | Y |
| HN-42I | 8/20/2009 | 100 | 110 | 19 | Y | | 8/20/2009 | 19 | Y |
| HN-42I | 10/21/2009 | 100 | 110 | 17 | Y | | 10/21/2009 | 17 | Y |
| HN-42I | 1/28/2010 | 100 | 110 | 12 | Y | | 1/28/2010 | 12 | Y |
| HN-42I | 7/15/2010 | 100 | 110 | 7.3 | Y | | 7/15/2010 | 7.3 | Y |
| HN-42I | 5/2/2011 | 100 | 110 | 8.1 | Y | | 5/2/2011 | 8.1 | Y |
| HN-42I | 12/17/2011 | 100 | 110 | 4.3 | Y | | 12/17/2011 | 4.3 | Y |
| HN-42I | 2/6/2012 | 100 | 110 | 3.9 | Y | | 2/6/2012 | 3.9 | Y |
| HN-42I | 5/28/2013 | 100 | 110 | 3 | Y | | 5/28/2013 | 3 | Y |
| HN-42I | 5/12/2014 | 100 | 110 | 5 | N | | 5/12/2014 | 2.5 | N |
| HN-42I | 4/27/2015 | 100 | 110 | 0.56 | Y | | 4/27/2015 | 0.56 | Y |
| HN-42I | 4/26/2016 | 100 | 110 | 0.71 | Y | | 4/26/2016 | 0.71 | Y |
| HN-42I | 4/19/2017 | 100 | 110 | 0.42 | Y | | 4/19/2017 | 0.42 | Y |

Appendix A

Data Sets Used for Trends and Projections

| Well | Date | Top screen | Bottom Screen | TCE Result | Detect? | | MK Dataset | | |
|---|---|---|---|---|---|---|---|---|---|
| RE103D1 | 3/11/2014 | | | 1000 | Y | | 3/11/2014 | 1000 | Y |
| RE103D1 | 6/11/2014 | | | 1200 | Y | | 6/11/2014 | 1200 | Y |
| RE103D1 | 9/23/2014 | | | 850 | Y | | 9/23/2014 | 850 | Y |
| RE103D1 | 12/10/2014 | | | 1300 | Y | | 12/10/2014 | 1300 | Y |
| RE103D1 | 3/23/2015 | | | 900 | Y | | 3/23/2015 | 900 | Y |
| RE103D1 | 6/22/2015 | | | 810 | Y | | 6/22/2015 | 810 | Y |
| RE103D1 | 9/30/2015 | | | 860 | Y | | 9/30/2015 | 860 | Y |
| RE103D1 | 12/14/2015 | | | 930 | Y | | 12/14/2015 | 930 | Y |
| RE103D1 | 3/14/2016 | | | 1200 | Y | | 3/14/2016 | 1200 | Y |
| RE103D1 | 6/23/2016 | | | 930 | Y | | 6/23/2016 | 930 | Y |
| RE103D1 | 9/1/2016 | | | 860 | Y | | 9/1/2016 | 860 | Y |
| RE103D1 | 12/1/2016 | | | 940 | Y | | 12/1/2016 | 940 | Y |
| RE103D1 | 3/1/2017 | | | 740 | Y | | 3/1/2017 | 740 | Y |
| RE103D1 | 6/1/2017 | | | 910 | Y | | 6/1/2017 | 910 | Y |
| RE103D1 | 9/26/2017 | | | 720 | Y | | 9/26/2017 | 720 | Y |
| RE103D1 | 12/13/2017 | | | 720 | Y | | 12/13/2017 | 720 | y |

Appendix A
Data Sets Used for Trends and Projections

| Well | Date | Top screen | Bottom Screen | TCE Result | Detect? | | MK Dataset | | |
|---|---|---|---|---|---|---|---|---|---|
| RE103D2 | 3/11/2014 | | | 750 | Y | | 3/11/2014 | 750 | Y |
| RE103D2 | 6/11/2014 | | | 670 | Y | | 6/11/2014 | 670 | Y |
| RE103D2 | 9/23/2014 | | | 1300 | Y | | 9/23/2014 | 1300 | Y |
| RE103D2 | 12/10/2014 | | | 930 | Y | | 12/10/2014 | 930 | Y |
| RE103D2 | 3/23/2015 | | | 940 | Y | | 3/23/2015 | 940 | Y |
| RE103D2 | 6/22/2015 | | | 770 | Y | | 6/22/2015 | 770 | Y |
| RE103D2 | 9/30/2015 | | | 830 | Y | | 9/30/2015 | 830 | Y |
| RE103D2 | 12/14/2015 | | | 620 | Y | | 12/14/2015 | 620 | Y |
| RE103D2 | 3/14/2016 | | | 860 | Y | | 3/14/2016 | 860 | Y |
| RE103D2 | 6/23/2016 | | | 890 | Y | | 6/23/2016 | 890 | Y |
| RE103D2 | 9/1/2016 | | | 810 | Y | | 9/1/2016 | 810 | Y |
| RE103D2 | 12/1/2016 | | | 780 | Y | | 12/1/2016 | 780 | Y |
| RE103D2 | 3/1/2017 | | | 700 | Y | | 3/1/2017 | 700 | Y |
| RE103D2 | 6/1/2017 | | | 560 | Y | | 6/1/2017 | 560 | Y |
| RE103D2 | 9/26/2017 | | | 480 | Y | | 9/26/2017 | 480 | Y |
| RE103D2 | 12/13/2017 | | | 530 | Y | | 12/13/2017 | 530 | Y |

Appendix A

Data Sets Used for Trends and Projections

| Well | Date | Top screen | Bottom Screen | TCE Result | Detect? | | MK Dataset | | |
|---|---|---|---|---|---|---|---|---|---|
| RE103D3 | 3/11/2014 | | | 430 | Y | | 3/11/2014 | 430 | Y |
| RE103D3 | 6/11/2014 | | | 510 | Y | | 6/11/2014 | 510 | Y |
| RE103D3 | 9/23/2014 | | | 460 | Y | | 9/23/2014 | 460 | Y |
| RE103D3 | 12/10/2014 | | | 600 | Y | | 12/10/2014 | 600 | Y |
| RE103D3 | 3/23/2015 | | | 570 | Y | | 3/23/2015 | 570 | Y |
| RE103D3 | 6/22/2015 | | | 420 | Y | | 6/22/2015 | 420 | Y |
| RE103D3 | 9/30/2015 | | | 470 | Y | | 9/30/2015 | 470 | Y |
| RE103D3 | 12/14/2015 | | | 510 | Y | | 12/14/2015 | 510 | Y |
| RE103D3 | 3/14/2016 | | | 520 | Y | | 3/14/2016 | 520 | Y |
| RE103D3 | 6/23/2016 | | | 500 | Y | | 6/23/2016 | 500 | Y |
| RE103D3 | 9/1/2016 | | | 490 | Y | | 9/1/2016 | 490 | Y |
| RE103D3 | 12/1/2016 | | | 500 | Y | | 12/1/2016 | 500 | Y |
| RE103D3 | 3/1/2017 | | | 420 | Y | | 3/1/2017 | 420 | Y |
| RE103D3 | 6/1/2017 | | | 400 | Y | | 6/1/2017 | 400 | Y |
| RE103D3 | 9/26/2017 | | | 240 | Y | | 9/26/2017 | 240 | Y |
| RE103D3 | 12/13/2017 | | | 390 | Y | | 12/13/2017 | 390 | Y |

Appendix A
Data Sets Used for Trends and Projections

| Well | Date | Top screen | Bottom Screen | TCE Result | Detect? | | MK Dataset | | |
|---|---|---|---|---|---|---|---|---|---|
| RE104D1 | 3/12/2014 | | | 150 | Y | | 3/12/2014 | 150 | Y |
| RE104D1 | 6/12/2014 | | | 160 | Y | | 6/12/2014 | 160 | Y |
| RE104D1 | 9/24/2014 | | | 140 | Y | | 9/24/2014 | 140 | Y |
| RE104D1 | 12/11/2014 | | | 140 | Y | | 12/11/2014 | 140 | Y |
| RE104D1 | 3/23/2015 | | | 110 | Y | | 3/23/2015 | 110 | Y |
| RE104D1 | 6/23/2015 | | | 100 | Y | | 6/23/2015 | 100 | Y |
| RE104D1 | 9/25/2015 | | | 110 | Y | | 9/25/2015 | 110 | Y |
| RE104D1 | 12/15/2015 | | | 110 | Y | | 12/15/2015 | 110 | Y |
| RE104D1 | 3/15/2016 | | | 100 | Y | | 3/15/2016 | 100 | Y |
| RE104D1 | 6/21/2016 | | | 92 | Y | | 6/21/2016 | 92 | Y |
| RE104D1 | 9/1/2016 | | | 93 | Y | | 9/1/2016 | 93 | Y |
| RE104D1 | 12/1/2016 | | | 84 | Y | | 12/1/2016 | 84 | Y |
| RE104D1 | 3/1/2017 | | | 79 | Y | | 3/1/2017 | 79 | Y |
| RE104D1 | 6/1/2017 | | | 77 | Y | | 6/1/2017 | 77 | Y |
| RE104D1 | 9/19/2017 | | | 65 | Y | | 9/19/2017 | 65 | Y |
| RE104D1 | 12/5/2017 | | | 69 | Y | | 12/5/2017 | 69 | Y |

Appendix A

Data Sets Used for Trends and Projections

| Well | Date | Top screen | Bottom Screen | TCE Result | Detect? | | MK Dataset | | |
|---|---|---|---|---|---|---|---|---|---|
| RE104D2 | 3/12/2014 | | | 2.6 | Y | | 3/12/2014 | 2.6 | Y |
| RE104D2 | 6/12/2014 | | | 1.8 | Y | | 6/12/2014 | 1.8 | Y |
| RE104D2 | 9/24/2014 | | | 2.3 | Y | | 9/24/2014 | 2.3 | Y |
| RE104D2 | 12/11/2014 | | | 3.4 | Y | | 12/11/2014 | 3.4 | Y |
| RE104D2 | 3/23/2015 | | | 3 | Y | | 3/23/2015 | 3 | Y |
| RE104D2 | 6/23/2015 | | | 4.3 | Y | | 6/23/2015 | 4.3 | Y |
| RE104D2 | 9/25/2015 | | | 4.2 | Y | | 9/25/2015 | 4.2 | Y |
| RE104D2 | 12/15/2015 | | | 6.8 | Y | | 12/15/2015 | 6.8 | Y |
| RE104D2 | 3/15/2016 | | | 8.4 | Y | | 3/15/2016 | 8.4 | Y |
| RE104D2 | 6/21/2016 | | | 9 | Y | | 6/21/2016 | 9 | Y |
| RE104D2 | 9/1/2016 | | | 12 | Y | | 9/1/2016 | 12 | Y |
| RE104D2 | 12/1/2016 | | | 10 | Y | | 12/1/2016 | 10 | Y |
| RE104D2 | 3/1/2017 | | | 10 | Y | | 3/1/2017 | 10 | Y |
| RE104D2 | 6/1/2017 | | | 15 | Y | | 6/1/2017 | 15 | Y |
| RE104D2 | 9/19/2017 | | | 13 | Y | | 9/19/2017 | 13 | Y |
| RE104D2 | 12/5/2017 | | | 27 | Y | | 12/5/2017 | 27 | Y |

Appendix A
Data Sets Used for Trends and Projections

| Well | Date | Top screen | Bottom Screen | TCE Result | Detect? | | MK Dataset | | |
|---|---|---|---|---|---|---|---|---|---|
| RE105D1 | 3/11/2014 | | | 160 | Y | | 3/11/2014 | 160 | Y |
| RE105D1 | 6/11/2014 | | | 130 | Y | | 6/11/2014 | 130 | Y |
| RE105D1 | 9/26/2014 | | | 92 | Y | | 9/26/2014 | 92 | Y |
| RE105D1 | 12/11/2014 | | | 120 | Y | | 12/11/2014 | 120 | Y |
| RE105D1 | 3/25/2015 | | | 120 | Y | | 3/25/2015 | 120 | Y |
| RE105D1 | 6/23/2015 | | | 120 | Y | | 6/23/2015 | 120 | Y |
| RE105D1 | 9/28/2015 | | | 94 | Y | | 9/28/2015 | 94 | Y |
| RE105D1 | 12/17/2015 | | | 120 | Y | | 12/17/2015 | 120 | Y |
| RE105D1 | 3/17/2016 | | | 130 | Y | | 3/17/2016 | 130 | Y |
| RE105D1 | 6/27/2016 | | | 110 | Y | | 6/27/2016 | 110 | Y |
| RE105D1 | 9/1/2016 | | | 100 | Y | | 9/1/2016 | 100 | Y |
| RE105D1 | 12/1/2016 | | | 110 | Y | | 12/1/2016 | 110 | Y |
| RE105D1 | 3/1/2017 | | | 120 | Y | | 3/1/2017 | 120 | Y |
| RE105D1 | 6/1/2017 | | | 86 | Y | | 6/1/2017 | 86 | Y |
| RE105D1 | 9/18/2017 | | | 92 | Y | | 9/18/2017 | 92 | Y |
| RE105D1 | 12/5/2017 | | | 100 | Y | | 12/5/2017 | 100 | Y |

Appendix A
Data Sets Used for Trends and Projections

| Well | Date | Top screen | Bottom Screen | TCE Result | Detect? | | MK Dataset | | |
|---|---|---|---|---|---|---|---|---|---|
| RE105D2 | 3/11/2014 | | | 620 | Y | | 3/11/2014 | 620 | Y |
| RE105D2 | 6/11/2014 | | | 1500 | Y | | 6/11/2014 | 1500 | Y |
| RE105D2 | 9/26/2014 | | | 1500 | Y | | 9/26/2014 | 1500 | Y |
| RE105D2 | 12/11/2014 | | | 1700 | Y | | 12/11/2014 | 1700 | Y |
| RE105D2 | 3/25/2015 | | | 1600 | Y | | 3/25/2015 | 1600 | Y |
| RE105D2 | 6/23/2015 | | | 1400 | Y | | 6/23/2015 | 1400 | Y |
| RE105D2 | 9/28/2015 | | | 1900 | Y | | 9/28/2015 | 1900 | Y |
| RE105D2 | 12/17/2015 | | | 1800 | Y | | 12/17/2015 | 1800 | Y |
| RE105D2 | 3/17/2016 | | | 1800 | Y | | 3/17/2016 | 1800 | Y |
| RE105D2 | 6/27/2016 | | | 1800 | Y | | 6/27/2016 | 1800 | Y |
| RE105D2 | 9/1/2016 | | | 2000 | Y | | 9/1/2016 | 2000 | Y |
| RE105D2 | 12/1/2016 | | | 1800 | Y | | 12/1/2016 | 1800 | Y |
| RE105D2 | 3/1/2017 | | | 1800 | Y | | 3/1/2017 | 1800 | Y |
| RE105D2 | 6/1/2017 | | | 1700 | Y | | 6/1/2017 | 1700 | Y |
| RE105D2 | 9/18/2017 | | | 1900 | Y | | 9/18/2017 | 1900 | Y |
| RE105D2 | 12/5/2017 | | | 1900 | Y | | 12/5/2017 | 1900 | Y |

Appendix A
Data Sets Used for Trends and Projections

| Well | Date | Top screen | Bottom Screen | TCE Result | Detect? | | MK Dataset | | |
|---|---|---|---|---|---|---|---|---|---|
| RE107D1 | 12/18/2015 | | | 17 | Y | | 12/18/2015 | 17 | Y |
| RE107D1 | 5/23/2016 | | | 11.6 | Y | | 5/23/2016 | 11.6 | Y |
| RE107D1 | 12/1/2016 | | | 11.8 | Y | | 12/1/2016 | 11.8 | Y |
| RE107D1 | 6/1/2017 | | | 15.2 | Y | | 6/1/2017 | 15.2 | Y |
| RE107D1 | 11/29/2017 | | | 12.7 | Y | | 11/29/2017 | 12.7 | Y |

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Data Sets Used for Trends and Projections

| Well | Date | Top screen | Bottom Screen | TCE Result | Detect? | | MK Dataset | | |
|---|---|---|---|---|---|---|---|---|---|
| RE107D2 | 12/18/2015 | | | 140 | Y | | 12/18/2015 | 140 | Y |
| RE107D2 | 5/23/2016 | | | 162 | Y | | 5/23/2016 | 162 | Y |
| RE107D2 | 12/1/2016 | | | 174 | Y | | 12/1/2016 | 174 | Y |
| RE107D2 | 6/1/2017 | | | 194 | Y | | 6/1/2017 | 194 | Y |
| RE107D2 | 11/29/2017 | | | 226 | Y | | 11/29/2017 | 226 | Y |

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Data Sets Used for Trends and Projections

| Well | Date | Top screen | Bottom Screen | TCE Result | Detect? | | MK Dataset | | |
|---|---|---|---|---|---|---|---|---|---|
| RE107D3 | 12/29/2015 | | | 0.36 | Y | | 12/29/2015 | 0.36 | Y |
| RE107D3 | 5/24/2016 | | | 1 | N | | 5/24/2016 | 0.125 | N |
| RE107D3 | 12/1/2016 | | | 0.26 | Y | | 12/1/2016 | 0.26 | Y |
| RE107D3 | 6/1/2017 | | | 0.27 | Y | | 6/1/2017 | 0.27 | Y |
| RE107D3 | 12/1/2017 | | | 1 | N | | 12/1/2017 | 0.125 | N |

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Data Sets Used for Trends and Projections

| Well | Date | Top screen | Bottom Screen | TCE Result | Detect? | | MK Dataset | | |
|---|---|---|---|---|---|---|---|---|---|
| RE108D1 | 3/12/2014 | | | 130 | Y | | 3/12/2014 | 130 | Y |
| RE108D1 | 6/10/2014 | | | 82 | Y | | 6/10/2014 | 82 | Y |
| RE108D1 | 9/24/2014 | | | 140 | Y | | 9/24/2014 | 140 | Y |
| RE108D1 | 12/12/2014 | | | 140 | Y | | 12/12/2014 | 140 | Y |
| RE108D1 | 3/27/2015 | | | 140 | Y | | 3/27/2015 | 140 | Y |
| RE108D1 | 6/24/2015 | | | 110 | Y | | 6/24/2015 | 110 | Y |
| RE108D1 | 9/28/2015 | | | 98 | Y | | 9/28/2015 | 98 | Y |
| RE108D1 | 12/22/2015 | | | 110 | Y | | 12/22/2015 | 110 | Y |
| RE108D1 | 3/14/2016 | | | 120 | Y | | 3/14/2016 | 120 | Y |
| RE108D1 | 6/27/2016 | | | 82 | Y | | 6/27/2016 | 82 | Y |
| RE108D1 | 9/1/2016 | | | 50 | Y | | 9/1/2016 | 50 | Y |
| RE108D1 | 12/1/2016 | | | 56 | Y | | 12/1/2016 | 56 | Y |
| RE108D1 | 3/1/2017 | | | 61 | Y | | 3/1/2017 | 61 | Y |
| RE108D1 | 6/1/2017 | | | 38 | Y | | 6/1/2017 | 38 | Y |
| RE108D1 | 9/18/2017 | | | 39 | Y | | 9/18/2017 | 39 | Y |
| RE108D1 | 12/6/2017 | | | 51 | Y | | 12/6/2017 | 51 | Y |

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Data Sets Used for Trends and Projections

| Well | Date | Top screen | Bottom Screen | TCE Result | Detect? | | MK Dataset | | |
|---|---|---|---|---|---|---|---|---|---|
| RE108D2 | 3/12/2014 | | | 4600 | Y | | 3/12/2014 | 4600 | Y |
| RE108D2 | 6/10/2014 | | | 3400 | Y | | 6/10/2014 | 3400 | Y |
| RE108D2 | 9/24/2014 | | | 3700 | Y | | 9/24/2014 | 3700 | Y |
| RE108D2 | 12/12/2014 | | | 3100 | Y | | 12/12/2014 | 3100 | Y |
| RE108D2 | 3/27/2015 | | | 3300 | Y | | 3/27/2015 | 3300 | Y |
| RE108D2 | 6/24/2015 | | | 3900 | Y | | 6/24/2015 | 3900 | Y |
| RE108D2 | 9/28/2015 | | | 3400 | Y | | 9/28/2015 | 3400 | Y |
| RE108D2 | 12/22/2015 | | | 2900 | Y | | 12/22/2015 | 2900 | Y |
| RE108D2 | 3/14/2016 | | | 3800 | Y | | 3/14/2016 | 3800 | Y |
| RE108D2 | 6/27/2016 | | | 3000 | Y | | 6/27/2016 | 3000 | Y |
| RE108D2 | 9/1/2016 | | | 3000 | Y | | 9/1/2016 | 3000 | Y |
| RE108D2 | 12/1/2016 | | | 2900 | Y | | 12/1/2016 | 2900 | Y |
| RE108D2 | 3/1/2017 | | | 2900 | Y | | 3/1/2017 | 2900 | Y |
| RE108D2 | 6/1/2017 | | | 3000 | Y | | 6/1/2017 | 3000 | Y |
| RE108D2 | 9/18/2017 | | | 2900 | Y | | 9/18/2017 | 2900 | Y |
| RE108D2 | 12/6/2017 | | | 3100 | Y | | 12/6/2017 | 3100 | Y |

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Data Sets Used for Trends and Projections

| Well | Date | Top screen | Bottom Screen | TCE Result | Detect? | | MK Dataset | | |
|---|---|---|---|---|---|---|---|---|---|
| RE114D1 | 12/21/2015 | | | 370 | Y | | 12/21/2015 | 370 | Y |
| RE114D1 | 5/26/2016 | | | 353 | Y | | 5/26/2016 | 353 | Y |
| RE114D1 | 12/1/2016 | | | 399 | Y | | 12/1/2016 | 399 | Y |
| RE114D1 | 6/1/2017 | | | 415 | Y | | 6/1/2017 | 415 | Y |
| RE114D1 | 11/29/2017 | | | 387 | Y | | 11/29/2017 | 387 | Y |

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Data Sets Used for Trends and Projections

| Well | Date | Top screen | Bottom Screen | TCE Result | Detect? | | MK Dataset | | |
|---|---|---|---|---|---|---|---|---|---|
| RE114D2 | 12/16/2015 | | | 70 | Y | | 12/16/2015 | 70 | Y |
| RE114D2 | 5/26/2016 | | | 52.3 | Y | | 5/26/2016 | 52.3 | Y |
| RE114D2 | 12/1/2016 | | | 68.2 | Y | | 12/1/2016 | 68.2 | Y |
| RE114D2 | 6/1/2017 | | | 67 | Y | | 6/1/2017 | 67 | Y |
| RE114D2 | 12/20/2017 | | | 84 | y | | 12/20/2017 | 84 | y |

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Data Sets Used for Trends and Projections

| Well | Date | Top screen | Bottom Screen | TCE Result | Detect? | | MK Dataset | | |
|---|---|---|---|---|---|---|---|---|---|
| RE114D3 | 12/16/2015 | | | 43 | Y | | 12/16/2015 | 43 | Y |
| RE114D3 | 5/26/2016 | | | 34 | Y | | 5/26/2016 | 34 | Y |
| RE114D3 | 12/1/2016 | | | 47 | Y | | 12/1/2016 | 47 | Y |
| RE114D3 | 6/1/2017 | | | 42.6 | Y | | 6/1/2017 | 42.6 | Y |
| RE114D3 | 12/20/2017 | | | 51.2 | y | | 12/20/2017 | 51.2 | y |

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Data Sets Used for Trends and Projections

| Well | Date | Top screen | Bottom Screen | TCE Result | Detect? | | MK Dataset | | |
|---|---|---|---|---|---|---|---|---|---|
| RE117D1 | 6/1/2015 | | | 7.8 | Y | | 6/1/2015 | 7.8 | Y |
| RE117D1 | 12/1/2015 | | | 9.4 | Y | | 12/1/2015 | 9.4 | Y |
| RE117D1 | 5/16/2016 | | | 21.3 | Y | | 5/16/2016 | 21.3 | Y |
| RE117D1 | 10/31/2016 | | | 16 | Y | | 10/31/2016 | 16 | Y |
| RE117D1 | 12/1/2016 | | | 17 | Y | | 12/1/2016 | 17 | Y |
| RE117D1 | 3/1/2017 | | | 14 | Y | | 3/1/2017 | 14 | Y |
| RE117D1 | 6/1/2017 | | | 15 | Y | | 6/1/2017 | 15 | Y |
| RE117D1 | 9/25/2017 | | | 14 | Y | | 9/25/2017 | 14 | Y |
| RE117D1 | 12/13/2017 | | | 13 | Y | | 12/13/2017 | 13 | Y |

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Data Sets Used for Trends and Projections

| Well | Date | Top screen | Bottom Screen | TCE Result | Detect? | | MK Dataset | | |
|---|---|---|---|---|---|---|---|---|---|
| RE120D1 | 12/12/2014 | | | 1300 | Y | | 12/12/2014 | 1300 | Y |
| RE120D1 | 3/25/2015 | | | 1300 | Y | | 3/25/2015 | 1300 | Y |
| RE120D1 | 9/29/2015 | | | 1300 | Y | | 9/29/2015 | 1300 | Y |
| RE120D1 | 12/18/2015 | | | 1300 | Y | | 12/18/2015 | 1300 | Y |
| RE120D1 | 3/16/2016 | | | 1200 | Y | | 3/16/2016 | 1200 | Y |
| RE120D1 | 6/22/2016 | | | 1200 | Y | | 6/22/2016 | 1200 | Y |
| RE120D1 | 9/1/2016 | | | 1400 | Y | | 9/1/2016 | 1400 | Y |
| RE120D1 | 12/1/2016 | | | 1000 | Y | | 12/1/2016 | 1000 | Y |
| RE120D1 | 3/1/2017 | | | 1000 | Y | | 3/1/2017 | 1000 | Y |
| RE120D1 | 6/1/2017 | | | 870 | Y | | 6/1/2017 | 870 | Y |
| RE120D1 | 9/20/2017 | | | 970 | Y | | 9/20/2017 | 970 | Y |
| RE120D1 | 12/12/2017 | | | 990 | Y | | 12/12/2017 | 990 | Y |

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Data Sets Used for Trends and Projections

| Well | Date | Top screen | Bottom Screen | TCE Result | Detect? | | MK Dataset | | |
|---|---|---|---|---|---|---|---|---|---|
| RE120D2 | 12/12/2014 | | | 900 | Y | | 12/12/2014 | 900 | Y |
| RE120D2 | 3/25/2015 | | | 830 | Y | | 3/25/2015 | 930 | Y |
| RE120D2 | 9/29/2015 | | | 760 | Y | | 9/29/2015 | 760 | Y |
| RE120D2 | 12/29/2015 | | | 680 | Y | | 12/29/2015 | 680 | Y |
| RE120D2 | 3/16/2016 | | | 780 | Y | | 3/16/2016 | 780 | Y |
| RE120D2 | 6/22/2016 | | | 720 | Y | | 6/22/2016 | 720 | Y |
| RE120D2 | 9/1/2016 | | | 1000 | Y | | 9/1/2016 | 1000 | Y |
| RE120D2 | 12/1/2016 | | | 670 | Y | | 12/1/2016 | 670 | Y |
| RE120D2 | 3/1/2017 | | | 610 | Y | | 3/1/2017 | 610 | Y |
| RE120D2 | 6/1/2017 | | | 640 | Y | | 6/1/2017 | 640 | Y |
| RE120D2 | 9/20/2017 | | | 690 | Y | | 9/20/2017 | 690 | Y |
| RE120D2 | 12/12/2017 | | | 710 | Y | | 12/12/2017 | 710 | Y |

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Data Sets Used for Trends and Projections

| Well | Date | Top screen | Bottom Screen | TCE Result | Detect? | | MK Dataset | | |
|---|---|---|---|---|---|---|---|---|---|
| RE120D3 | 12/12/2014 | | | 3.4 | Y | | 12/12/2014 | 3.4 | Y |
| RE120D3 | 3/25/2015 | | | 0.74 | Y | | 3/25/2015 | 0.74 | Y |
| RE120D3 | 9/29/2015 | | | 120 | Y | | 9/29/2015 | 120 | Y |
| RE120D3 | 12/29/2015 | | | 29 | Y | | 12/29/2015 | 29 | Y |
| RE120D3 | 3/16/2016 | | | 55 | Y | | 3/16/2016 | 55 | Y |
| RE120D3 | 6/22/2016 | | | 46 | Y | | 6/22/2016 | 46 | Y |
| RE120D2 | 9/1/2016 | | | 57 | Y | | 9/1/2016 | 57 | Y |
| RE120D2 | 12/1/2016 | | | 41 | Y | | 12/1/2016 | 41 | Y |
| RE120D2 | 3/1/2017 | | | 31 | Y | | 3/1/2017 | 31 | Y |
| RE120D2 | 6/1/2017 | | | 37 | Y | | 6/1/2017 | 37 | Y |
| RE120D2 | 9/20/2017 | | | 44 | Y | | 9/20/2017 | 44 | Y |
| RE120D2 | 12/12/2017 | | | 28 | Y | | 12/12/2017 | 28 | Y |

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Data Sets Used for Trends and Projections

| Well | Date | Top screen | Bottom Screen | TCE Result | Detect? | | MK Dataset | | |
|---|---|---|---|---|---|---|---|---|---|
| RE121D1 | 12/21/2015 | | | 29 | Y | | 12/21/2015 | 29 | Y |
| RE121D1 | 6/1/2016 | | | 18.9 | Y | | 6/1/2016 | 18.9 | Y |
| RE121D1 | 12/1/2016 | | | 25.8 | Y | | 12/1/2016 | 25.8 | Y |
| RE121D1 | 6/1/2017 | | | 31.3 | Y | | 6/1/2017 | 31.3 | Y |
| RE121D1 | 12/5/2017 | | | 33.8 | Y | | 12/5/2017 | 33.8 | Y |

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Data Sets Used for Trends and Projections

| Well | Date | Top screen | Bottom Screen | TCE Result | Detect? | | MK Dataset | | |
|---|---|---|---|---|---|---|---|---|---|
| RE121D2 | 12/21/2015 | | | 480 | Y | | 12/21/2015 | 480 | Y |
| RE121D2 | 6/1/2016 | | | 422 | Y | | 6/1/2016 | 422 | Y |
| RE121D2 | 12/1/2016 | | | 591 | Y | | 12/1/2016 | 591 | Y |
| RE121D2 | 6/1/2017 | | | 789 | Y | | 6/1/2017 | 789 | Y |
| RE121D2 | 12/5/2017 | | | 754 | Y | | 12/5/2017 | 754 | Y |

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Data Sets Used for Trends and Projections

| Well | Date | Top screen | Bottom Screen | TCE Result | Detect? | | MK Dataset | | |
|---|---|---|---|---|---|---|---|---|---|
| RE122D1 | 3/24/2015 | | | 570 | Y | | 3/24/2015 | 570 | Y |
| RE122D1 | 9/30/2015 | | | 600 | Y | | 9/30/2015 | 600 | Y |
| RE122D1 | 12/15/2015 | | | 600 | Y | | 12/15/2015 | 600 | Y |
| RE122D1 | 3/15/2016 | | | 610 | Y | | 3/15/2016 | 610 | Y |
| RE122D1 | 6/22/2016 | | | 610 | Y | | 6/22/2016 | 610 | Y |
| RE122D1 | 9/1/2016 | | | 510 | Y | | 9/1/2016 | 510 | Y |
| RE122D1 | 12/1/2016 | | | 520 | Y | | 12/1/2016 | 520 | Y |
| RE122D1 | 3/1/2017 | | | 540 | Y | | 3/1/2017 | 540 | Y |
| RE122D1 | 6/1/2017 | | | 450 | Y | | 6/1/2017 | 450 | Y |
| RE122D1 | 9/21/2017 | | | 510 | Y | | 9/21/2017 | 510 | Y |
| RE122D1 | 12/6/2017 | | | 490 | Y | | 12/6/2017 | 490 | Y |

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Data Sets Used for Trends and Projections

| Well | Date | Top screen | Bottom Screen | TCE Result | Detect? | | MK Dataset | | |
|---|---|---|---|---|---|---|---|---|---|
| RE122D2 | 3/24/2015 | | | 4600 | Y | | 3/24/2015 | 4600 | Y |
| RE122D2 | 9/30/2015 | | | 5200 | Y | | 9/30/2015 | 5200 | Y |
| RE122D2 | 12/15/2015 | | | 4700 | Y | | 12/15/2015 | 4700 | Y |
| RE122D2 | 3/15/2016 | | | 5300 | Y | | 3/15/2016 | 5300 | Y |
| RE122D2 | 6/22/2016 | | | 5500 | Y | | 6/22/2016 | 5500 | Y |
| RE122D2 | 9/1/2016 | | | 4600 | Y | | 9/1/2016 | 4600 | Y |
| RE122D2 | 12/1/2016 | | | 5300 | Y | | 12/1/2016 | 5300 | Y |
| RE122D2 | 3/1/2017 | | | 4700 | Y | | 3/1/2017 | 4700 | Y |
| RE122D2 | 6/1/2017 | | | 3000 | Y | | 6/1/2017 | 3000 | Y |
| RE122D2 | 9/21/2017 | | | 2200 | Y | | 9/21/2017 | 2200 | Y |
| RE122D2 | 12/6/2017 | | | 3200 | Y | | 12/6/2017 | 3200 | Y |

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Data Sets Used for Trends and Projections

| Well | Date | Top screen | Bottom Screen | TCE Result | Detect? | | MK Dataset | | |
|---|---|---|---|---|---|---|---|---|---|
| RE122D3 | 3/24/2015 | | | 6.8 | Y | | 3/24/2015 | 6.8 | Y |
| RE122D3 | 9/30/2015 | | | 10 | Y | | 9/30/2015 | 10 | Y |
| RE122D3 | 12/15/2015 | | | 2.5 | Y | | 12/15/2015 | 2.5 | Y |
| RE122D3 | 3/15/2016 | | | 2.1 | Y | | 3/15/2016 | 2.1 | Y |
| RE122D3 | 6/22/2016 | | | 7.4 | Y | | 6/22/2016 | 7.4 | Y |
| RE122D3 | 9/1/2016 | | | 3.8 | Y | | 9/1/2016 | 3.8 | Y |
| RE122D3 | 12/1/2016 | | | 5.1 | Y | | 12/1/2016 | 5.1 | Y |
| RE122D3 | 3/1/2017 | | | 6.2 | Y | | 3/1/2017 | 6.2 | Y |
| RE122D3 | 6/1/2017 | | | 6.7 | Y | | 6/1/2017 | 6.7 | Y |
| RE122D3 | 9/21/2017 | | | 7.2 | Y | | 9/21/2017 | 7.2 | Y |
| RE122D3 | 12/6/2017 | | | 4.2 | Y | | 12/6/2017 | 4.2 | Y |

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Data Sets Used for Trends and Projections

| Well | Date | Top screen | Bottom Screen | TCE Result | Detect? | | MK Dataset | | |
|---|---|---|---|---|---|---|---|---|---|
| RE123D1 | 9/29/2015 | | | 12 | Y | | 9/29/2015 | 12 | Y |
| RE123D1 | 12/21/2015 | | | 6.1 | Y | | 12/21/2015 | 6.1 | Y |
| RE123D1 | 3/17/2016 | | | 6.6 | Y | | 3/17/2016 | 6.6 | Y |
| RE123D1 | 6/20/2016 | | | 7.4 | Y | | 6/20/2016 | 7.4 | Y |
| RE123D1 | 9/1/2016 | | | 9.6 | Y | | 9/1/1916 | 9.6 | Y |
| RE123D1 | 12/1/1916 | | | 7.3 | Y | | 12/1/1916 | 7.3 | Y |
| RE123D1 | 3/1/2017 | | | 4.8 | Y | | 3/1/1917 | 4.8 | Y |
| RE123D1 | 6/1/2017 | | | 4.9 | Y | | 6/1/1917 | 4.9 | Y |
| RE123D1 | 9/22/2017 | | | 8 | Y | | 9/22/2017 | 8 | Y |
| RE123D1 | 12/12/2017 | | | 8.4 | Y | | 12/12/2017 | 8.4 | Y |

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Data Sets Used for Trends and Projections

| Well | Date | Top screen | Bottom Screen | TCE Result | Detect? | | MK Dataset | | |
|---|---|---|---|---|---|---|---|---|---|
| RE123D2 | 9/29/2015 | | | 1.4 | Y | | 9/29/2015 | 1.4 | Y |
| RE123D2 | 12/21/2015 | | | 1.5 | Y | | 12/21/2015 | 1.5 | Y |
| RE123D2 | 3/17/2016 | | | 1.9 | Y | | 3/17/2016 | 1.9 | Y |
| RE123D2 | 6/20/2016 | | | 1.5 | Y | | 6/20/2016 | 1.5 | Y |
| RE123D2 | 9/1/2016 | | | 2.1 | Y | | 9/1/1916 | 2.1 | Y |
| RE123D2 | 12/1/2016 | | | 1.8 | Y | | 12/1/1916 | 1.8 | Y |
| RE123D2 | 3/1/2017 | | | 1.6 | Y | | 3/1/1917 | 1.6 | Y |
| RE123D2 | 6/1/2017 | | | 1.8 | Y | | 6/1/1917 | 1.8 | Y |
| RE123D2 | 9/22/2017 | | | 2.1 | Y | | 9/22/2017 | 2.1 | Y |
| RE123D2 | 12/12/2017 | | | 2.1 | Y | | 12/12/2017 | 2.1 | Y |

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Data Sets Used for Trends and Projections

| Well | Date | Top screen | Bottom Screen | TCE Result | Detect? | | MK Dataset | | |
|---|---|---|---|---|---|---|---|---|---|
| RE125D1 | 12/7/2016 | | | 180 | Y | | 12/1/2016 | 180 | Y |
| RE125D1 | 3/13/2017 | | | 150 | Y | | 3/1/2017 | 150 | Y |
| RE125D1 | 6/2/2017 | | | 180 | Y | | 6/1/2017 | 180 | Y |
| RE125D1 | 9/25/2017 | | | 170 | Y | | 9/25/2017 | 170 | Y |
| RE125D1 | 12/11/2017 | | | 140 | Y | | 12/11/2017 | 140 | Y |

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Data Sets Used for Trends and Projections

| Well | Date | Top screen | Bottom Screen | TCE Result | Detect? | | MK Dataset | | |
|---|---|---|---|---|---|---|---|---|---|
| RE125D2 | 12/7/2016 | | | 240 | Y | | 12/1/2016 | 240 | Y |
| RE125D2 | 3/13/2017 | | | 220 | Y | | 3/1/2017 | 220 | Y |
| RE125D2 | 6/2/2017 | | | 230 | Y | | 6/1/2017 | 230 | Y |
| RE125D2 | 9/25/2017 | | | 210 | Y | | 9/25/2017 | 210 | Y |
| RE125D2 | 12/11/2017 | | | 200 | Y | | 12/11/2017 | 200 | Y |

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Data Sets Used for Trends and Projections

| Well | Date | Top screen | Bottom Screen | TCE Result | Detect? | | MK Dataset | | |
|---|---|---|---|---|---|---|---|---|---|
| RE125D3 | 12/7/2016 | | | 150 | Y | | 12/1/2016 | 150 | Y |
| RE125D3 | 3/13/2017 | | | 140 | Y | | 3/1/2017 | 140 | Y |
| RE125D3 | 6/2/2017 | | | 140 | Y | | 6/1/2017 | 140 | Y |
| RE125D3 | 9/25/2017 | | | 140 | Y | | 9/25/2017 | 140 | Y |
| RE125D3 | 12/11/2017 | | | 150 | Y | | 12/11/2017 | 150 | Y |

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Data Sets Used for Trends and Projections

| Well | Date | Top screen | Bottom Screen | TCE Result | Detect? | | MK Dataset | | |
|---|---|---|---|---|---|---|---|---|---|
| RE126D1 | 6/21/2016 | | | 28 | Y | | 6/21/2016 | 28 | Y |
| RE126D1 | 9/23/2016 | | | 23 | Y | | 9/1/2016 | 23 | Y |
| RE126D1 | 12/6/2016 | | | 26 | Y | | 12/1/2016 | 26 | Y |
| RE126D1 | 3/10/2017 | | | 34 | Y | | 3/1/2017 | 34 | Y |
| RE126D1 | 6/5/2017 | | | 43 | Y | | 6/1/2017 | 43 | Y |
| RE126D1 | 9/22/2017 | | | 65 | Y | | 9/22/2017 | 65 | Y |
| RE126D1 | 12/7/2017 | | | 85 | Y | | 12/7/2017 | 85 | Y |

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Data Sets Used for Trends and Projections

| Well | Date | Top screen | Bottom Screen | TCE Result | Detect? | | MK Dataset | | |
|---|---|---|---|---|---|---|---|---|---|
| RE126D2 | 6/21/2016 | | | 520 | Y | | 6/21/2016 | 520 | Y |
| RE126D2 | 9/23/2016 | | | 520 | Y | | 9/1/2016 | 520 | Y |
| RE126D2 | 12/6/2016 | | | 530 | Y | | 12/1/2016 | 530 | Y |
| RE126D2 | 3/10/2017 | | | 400 | Y | | 3/1/2017 | 400 | Y |
| RE126D2 | 6/9/2017 | | | 480 | Y | | 6/1/2017 | 480 | Y |
| RE126D2 | 9/22/2017 | | | 460 | Y | | 9/22/2017 | 460 | Y |
| RE126D2 | 12/7/2017 | | | 450 | Y | | 12/7/2017 | 450 | Y |

Appendix A

Data Sets Used for Trends and Projections

| Well | Date | Top screen | Bottom Screen | TCE Result | Detect? | | MK Dataset | | |
|---|---|---|---|---|---|---|---|---|---|
| RE126D3 | 6/21/2016 | | | 4 | Y | | 6/21/2016 | 4 | Y |
| RE126D3 | 9/23/2016 | | | 3.9 | Y | | 9/1/2016 | 3.9 | Y |
| RE126D3 | 12/6/2016 | | | 3.3 | Y | | 12/1/2016 | 3.3 | Y |
| RE126D3 | 3/10/2017 | | | 2 | Y | | 3/1/2017 | 2 | Y |
| RE126D3 | 6/9/2017 | | | 2.5 | Y | | 6/1/2017 | 2.5 | Y |
| RE126D3 | 9/22/2017 | | | 3.7 | Y | | 9/22/2017 | 3.7 | Y |
| RE126D3 | 12/7/2017 | | | 4.3 | Y | | 12/7/2017 | 4.3 | Y |

Appendix A

Data Sets Used for Trends and Projections

| Well | Date | Top screen | Bottom Screen | TCE Result | Detect? | | MK Dataset | | |
|---|---|---|---|---|---|---|---|---|---|
| RE131D1 | 6/23/2016 | | | 96 | Y | | 6/23/2016 | 96 | Y |
| RE131D1 | 9/22/2016 | | | 110 | Y | | 9/1/2016 | 110 | Y |
| RE131D1 | 12/6/2016 | | | 100 | Y | | 12/1/2016 | 100 | Y |
| RE131D1 | 3/10/2017 | | | 110 | Y | | 3/1/2017 | 110 | Y |
| RE131D1 | 6/2/2017 | | | 130 | Y | | 6/1/2017 | 130 | Y |
| RE131D1 | 9/20/2017 | | | 140 | Y | | 9/20/2017 | 140 | Y |
| RE131D1 | 12/7/2017 | | | 140 | Y | | 12/7/2017 | 140 | Y |

Appendix A

Data Sets Used for Trends and Projections

| Well | Date | Top screen | Bottom Screen | TCE Result | Detect? | | MK Dataset | | |
|---|---|---|---|---|---|---|---|---|---|
| RE131D2 | 6/23/2016 | | | 46 | Y | | 6/23/2016 | 46 | Y |
| RE131D2 | 9/22/2016 | | | 42 | Y | | 9/1/2016 | 42 | Y |
| RE131D2 | 12/6/2016 | | | 54 | Y | | 12/1/2016 | 54 | Y |
| RE131D2 | 3/10/2017 | | | 45 | Y | | 3/1/2017 | 45 | Y |
| RE131D2 | 6/2/2017 | | | 45 | Y | | 6/1/2017 | 45 | Y |
| RE131D2 | 9/20/2017 | | | 67 | Y | | 9/20/2017 | 67 | Y |
| RE131D2 | 12/7/2017 | | | 67 | Y | | 12/7/2017 | 67 | Y |

Appendix A

Data Sets Used for Trends and Projections

| Well | Date | Top screen | Bottom Screen | TCE Result | Detect? | | MK Dataset | | |
|---|---|---|---|---|---|---|---|---|---|
| RE131D3 | 6/23/2016 | | | 6.1 | Y | | 6/23/2016 | 6.1 | Y |
| RE131D3 | 9/22/2016 | | | 6.1 | Y | | 9/1/2016 | 6.1 | Y |
| RE131D3 | 12/6/2016 | | | 6.6 | Y | | 12/1/2016 | 6.6 | Y |
| RE131D3 | 3/10/2017 | | | 6.3 | Y | | 3/1/2017 | 6.3 | Y |
| RE131D3 | 6/2/2017 | | | 6.3 | Y | | 6/1/2017 | 6.3 | Y |
| RE131D3 | 9/20/2017 | | | 9.1 | Y | | 9/20/2017 | 9.1 | Y |
| RE131D3 | 12/7/2017 | | | 9.5 | Y | | 12/7/2017 | 9.5 | Y |

Appendix A
Data Sets Used for Trends and Projections

| Well | Date | Top screen | Bottom Screen | TCE Result | Detect? | | MK Dataset | | |
|---|---|---|---|---|---|---|---|---|---|
| TT101D | 3/13/2014 | | | 52 | Y | | 3/13/2014 | 52 | Y |
| TT101D | 5/27/2014 | | | 57 | Y | | 5/27/2014 | 57 | Y |
| TT101D | 9/25/2014 | | | 66 | Y | | 9/25/2014 | 66 | Y |
| TT101D | 12/9/2014 | | | 67 | Y | | 12/9/2014 | 67 | Y |
| TT101D | 3/24/2015 | | | 61 | Y | | 3/24/2015 | 61 | Y |
| TT101D | 6/22/2015 | | | 66 | Y | | 6/22/2015 | 66 | Y |
| TT101D | 9/29/2015 | | | 67 | Y | | 9/29/2015 | 67 | Y |
| TT101D | 12/17/2015 | | | 74 | Y | | 12/17/2015 | 74 | Y |
| TT101D | 3/16/2016 | | | 67 | Y | | 3/16/2016 | 67 | Y |
| TT101D | 6/21/2016 | | | 73 | Y | | 6/21/2016 | 73 | Y |
| TT101D | 9/26/2016 | | | 69 | Y | | 9/26/2016 | 69 | Y |
| TT101D | 12/1/2016 | | | 68 | Y | | 12/1/2016 | 68 | Y |
| TT101D | 3/1/2017 | | | 70 | Y | | 3/1/2017 | 70 | Y |
| TT101D | 6/1/2017 | | | 85 | Y | | 6/1/2017 | 85 | Y |
| TT101D | 9/19/2017 | | | 62 | Y | | 9/19/2017 | 62 | Y |
| TT101D | 12/8/2017 | | | 66 | Y | | 12/8/2017 | 66 | Y |

Appendix A
Data Sets Used for Trends and Projections

| Well | Date | Top screen | Bottom Screen | TCE Result | Detect? | | MK Dataset | | |
|---|---|---|---|---|---|---|---|---|---|
| TT101D1 | 3/13/2014 | | | 170 | Y | | 3/13/2014 | 170 | Y |
| TT101D1 | 5/27/2014 | | | 93 | Y | | 5/27/2014 | 93 | Y |
| TT101D1 | 9/25/2014 | | | 160 | Y | | 9/25/2014 | 160 | Y |
| TT101D1 | 12/9/2014 | | | 160 | Y | | 12/9/2014 | 160 | Y |
| TT101D1 | 3/24/2015 | | | 170 | Y | | 3/24/2015 | 170 | Y |
| TT101D1 | 6/22/2015 | | | 180 | Y | | 6/22/2015 | 180 | Y |
| TT101D1 | 9/29/2015 | | | 170 | Y | | 9/29/2015 | 170 | Y |
| TT101D1 | 12/17/2015 | | | 200 | Y | | 12/17/2015 | 200 | Y |
| TT101D1 | 3/16/2016 | | | 180 | Y | | 3/16/2016 | 180 | Y |
| TT101D1 | 6/21/2016 | | | 190 | Y | | 6/21/2016 | 190 | Y |
| TT101D1 | 9/21/2016 | | | 220 | Y | | 9/21/2016 | 220 | Y |
| TT101D1 | 12/1/2016 | | | 190 | Y | | 12/1/2016 | 190 | Y |
| TT101D1 | 3/1/2017 | | | 190 | Y | | 3/1/2017 | 190 | Y |
| TT101D1 | 6/1/2017 | | | 200 | Y | | 6/1/2017 | 200 | Y |
| TT101D1 | 9/19/2017 | | | 170 | Y | | 9/19/2017 | 170 | Y |
| TT101D1 | 12/8/2017 | | | 170 | Y | | 12/8/2017 | 170 | Y |

Appendix A
Data Sets Used for Trends and Projections

| Well | Date | Top screen | Bottom Screen | TCE Result | Detect? | | MK Dataset | | |
|---|---|---|---|---|---|---|---|---|---|
| TT101D2 | 3/13/2014 | | | 250 | Y | | 3/13/2014 | 250 | Y |
| TT101D2 | 5/27/2014 | | | 300 | Y | | 5/27/2014 | 300 | Y |
| TT101D2 | 9/25/2014 | | | 560 | Y | | 9/25/2014 | 560 | Y |
| TT101D2 | 12/9/2014 | | | 520 | Y | | 12/9/2014 | 520 | Y |
| TT101D2 | 3/24/2015 | | | 480 | Y | | 3/24/2015 | 480 | Y |
| TT101D2 | 6/22/2015 | | | 620 | Y | | 6/22/2015 | 620 | Y |
| TT101D2 | 9/29/2015 | | | 640 | Y | | 9/29/2015 | 640 | Y |
| TT101D2 | 12/17/2015 | | | 510 | Y | | 12/17/2015 | 510 | Y |
| TT101D2 | 3/16/2016 | | | 590 | Y | | 3/16/2016 | 590 | Y |
| TT101D2 | 6/21/2016 | | | 690 | Y | | 6/21/2016 | 690 | Y |
| TT101D2 | 9/26/2016 | | | 680 | Y | | 9/26/2016 | 680 | Y |
| TT101D2 | 12/1/2016 | | | 740 | Y | | 12/1/2016 | 740 | Y |
| TT101D2 | 3/1/2017 | | | 780 | Y | | 3/1/2017 | 780 | Y |
| TT101D2 | 6/1/2017 | | | 670 | Y | | 6/1/2017 | 670 | Y |
| TT101D2 | 9/19/2017 | | | 630 | Y | | 9/19/2017 | 630 | Y |
| TT101D2 | 12/8/2017 | | | 840 | Y | | 12/8/2017 | 840 | Y |

# Appendix B
# Mann-Kendall Results and First-Order Change Rates

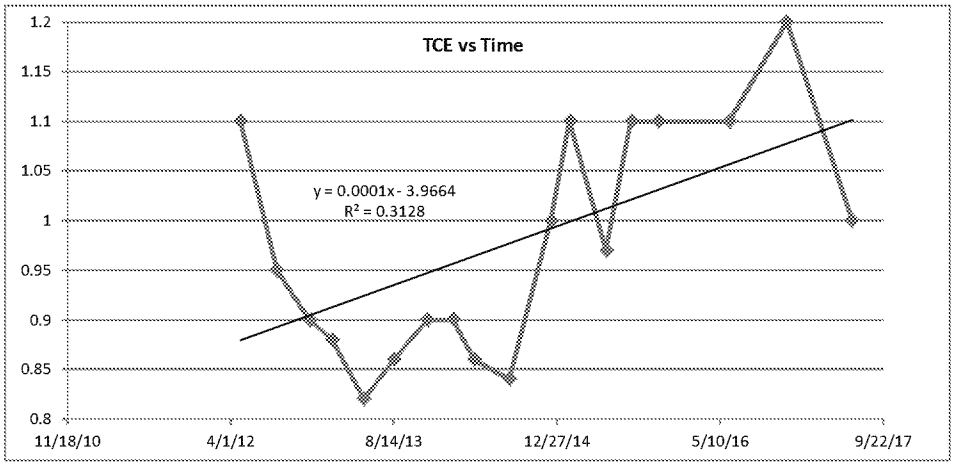
## Mann-Kendall Statistical Test and First Order Change Rate

**Site Name** = Bethpage | **Well Number** = BPOW1-1

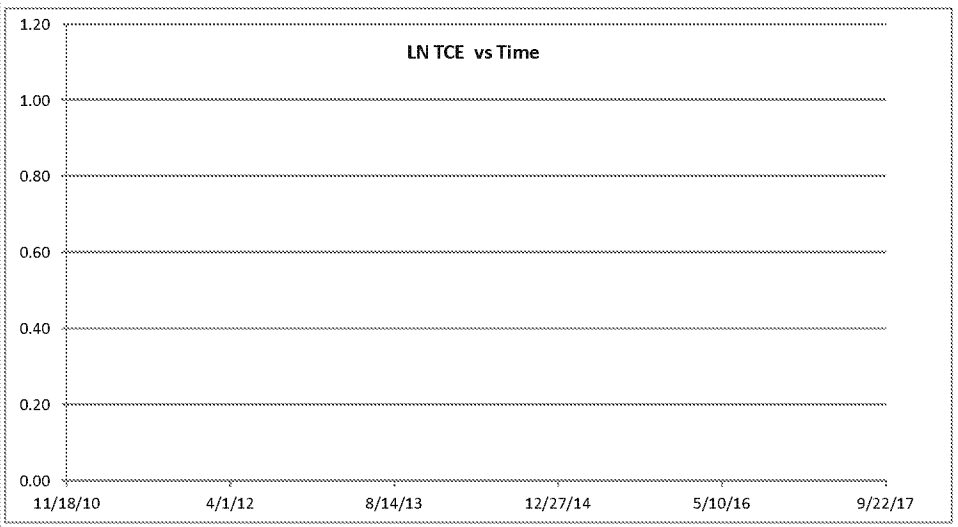
| Event Number | Sampling Date (most recent last) | TCE Concentration | LN TCE Decreasing Change Rate Calculation | Linear TCE Increasing Change Rate Calculation |
|---|---|---|---|---|
| | Compound -> | | | |
| 1 | 5/1/2012 | 1.1 | | 1.1 |
| 2 | 8/20/2012 | 0.95 | | 0.95 |
| 3 | 11/29/2012 | 0.9 | | 0.9 |
| 4 | 2/6/2013 | 0.88 | | 0.88 |
| 5 | 5/14/2013 | 0.82 | | 0.82 |
| 6 | 8/14/2013 | 0.86 | | 0.86 |
| 7 | 11/25/2013 | 0.9 | | 0.9 |
| 8 | 2/11/2014 | 0.9 | | 0.9 |
| 9 | 4/17/2014 | 0.86 | | 0.86 |
| 10 | 8/4/2014 | 0.84 | | 0.84 |
| 11 | 12/9/2014 | 1 | | 1 |
| 12 | 2/4/2015 | 1.1 | | 1.1 |
| 13 | 5/27/2015 | 0.97 | | 0.97 |
| 14 | 8/11/2015 | 1.1 | | 1.1 |
| 15 | 11/2/2015 | 1.1 | | 1.1 |
| 16 | 6/8/2016 | 1.10 | | 1.1 |
| 17 | 12/1/2016 | 1.2 | | 1.2 |
| 18 | 6/19/2017 | 1 | | 1 |
| | Mann Kendall Statistic (S) = | 54.0 | | 0.00012 |
| | Number of Rounds (n) = | 18 | | |
| | Average = | 0.98 | | |
| | Standard Deviation = | 0.115 | | |
| | Coefficient of Variation(CV)= | 0.118 | | |
| Error Check, Blank if No Errors Detected | | | | |
| Trend ≥ 80% Confidence Level | | INCREASING | | |
| Trend ≥ 90% Confidence Level | | INCREASING | | |
| Stability Test, If No Trend Exists at 80% Confidence Level | | NA | | |

**Data Entry By =** BC **Date =** Mar 5 2018

TCE Concentration Trend




LN TCE Concentration Trend



## Mann-Kendall Statistical Test and First Order Change Rate

**Site Name** = Bethpage | **Well Number** = BPOW1-2

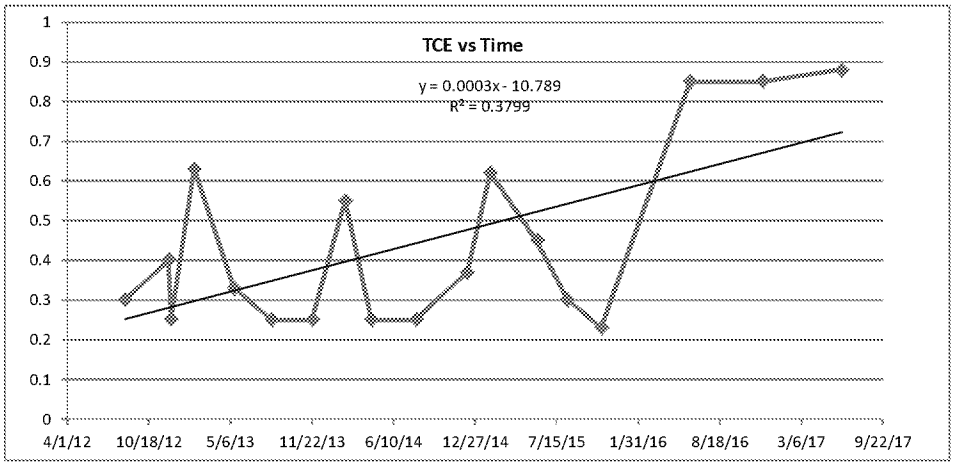
| Event Number | Sampling Date (most recent last) | TCE Concentration | LN TCE Decreasing Change Rate Calculation | Linear TCE Increasing Change Rate Calculation |
|---|---|---|---|---|
| | Compound -> | | | |
| 1 | 8/20/2012 | 0.3 | | 0.3 |
| 2 | 12/5/2012 | 0.4 | | 0.4 |
| 3 | 12/11/2012 | 0.25 | | 0.25 |
| 4 | 2/6/2013 | 0.63 | | 0.63 |
| 5 | 5/14/2013 | 0.33 | | 0.33 |
| 6 | 8/15/2013 | 0.25 | | 0.25 |
| 7 | 11/22/2013 | 0.25 | | 0.25 |
| 8 | 2/11/2014 | 0.55 | | 0.55 |
| 9 | 4/17/2014 | 0.25 | | 0.25 |
| 10 | 8/4/2014 | 0.25 | | 0.25 |
| 11 | 12/8/2014 | 0.37 | | 0.37 |
| 12 | 2/3/2015 | 0.62 | | 0.62 |
| 13 | 5/27/2015 | 0.45 | | 0.45 |
| 14 | 8/11/2015 | 0.3 | | 0.3 |
| 15 | 11/2/2015 | 0.23 | | 0.23 |
| 16 | 6/7/2016 | 0.85 | | 0.85 |
| 17 | 12/1/2016 | 0.85 | | 0.85 |
| 18 | 6/13/2017 | 0.88 | | 0.88 |
| | **Mann Kendall Statistic (S) =** | 39.0 | | 0.00027 |
| | **Number of Rounds (n) =** | 18 | | |
| | **Average =** | 0.45 | | |
| | **Standard Deviation =** | 0.229 | | |
| | **Coefficient of Variation(CV)=** | 0.515 | | |

**Error Check, Blank if No Errors Detected**

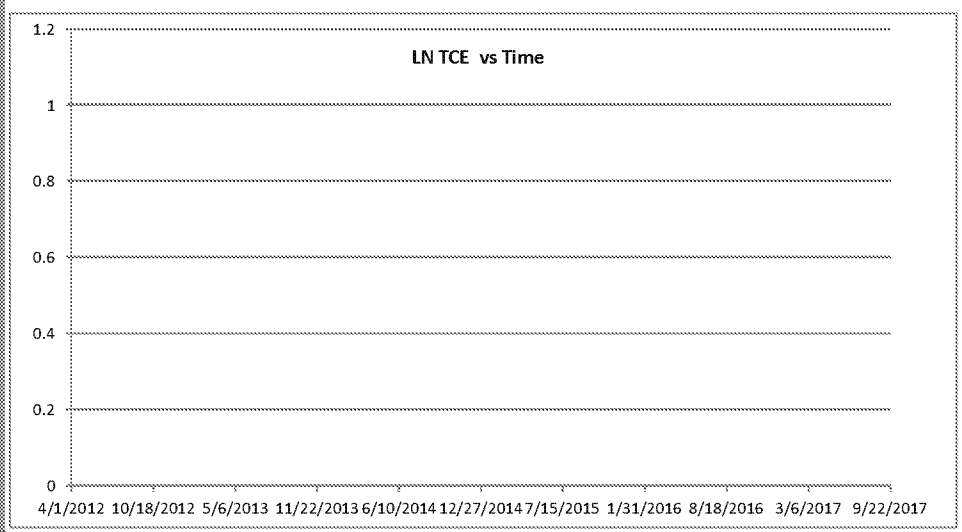
| | | | |
|---|---|---|---|
| **Trend ≥ 80% Confidence Level** | INCREASING | | |
| **Trend ≥ 90% Confidence Level** | INCREASING | | |
| Stability Test, If No Trend Exists at 80% Confidence Level | NA | | |

**Data Entry By =** BC **Date =** Mar 5 2018

**TCE Concentration Trend**




**LN TCE Concentration Trend**



## Mann-Kendall Statistical Test and First Order Change Rate

**Site Name** = Bethpage | **Well Number** = BPOW3-4

| Event Number | Sampling Date (most recent last) | TCE Concentration | LN TCE Decreasing Change Rate Calculation | Linear TCE Increasing Change Rate Calculation |
|---|---|---|---|---|
| | Compound -> | | | |
| 1 | 5/16/2012 | 51 | | 51 |
| 2 | 9/4/2012 | 58 | | 58 |
| 3 | 12/28/2012 | 59 | | 59 |
| 4 | 2/19/2013 | 57 | | 57 |
| 5 | 5/21/2013 | 53 | | 53 |
| 6 | 8/26/2013 | 64 | | 64 |
| 7 | 12/6/2013 | 49 | | 49 |
| 8 | 2/25/2014 | 46 | | 46 |
| 9 | 4/22/2014 | 50 | | 50 |
| 10 | 8/12/2014 | 54 | | 54 |
| 11 | 11/26/2014 | 74.6 | | 74.6 |
| 12 | 3/31/2015 | 64.2 | | 64.2 |
| 13 | 6/9/2015 | 52.9 | | 52.9 |
| 14 | 8/25/2015 | 60.9 | | 60.9 |
| 15 | 12/11/2015 | 80.7 | | 80.7 |
| 16 | 6/22/2016 | 63 | | 63 |
| 17 | 12/1/2016 | 78.8 | | 78.8 |
| 18 | 6/14/2017 | 77.3 | | 77.3 |

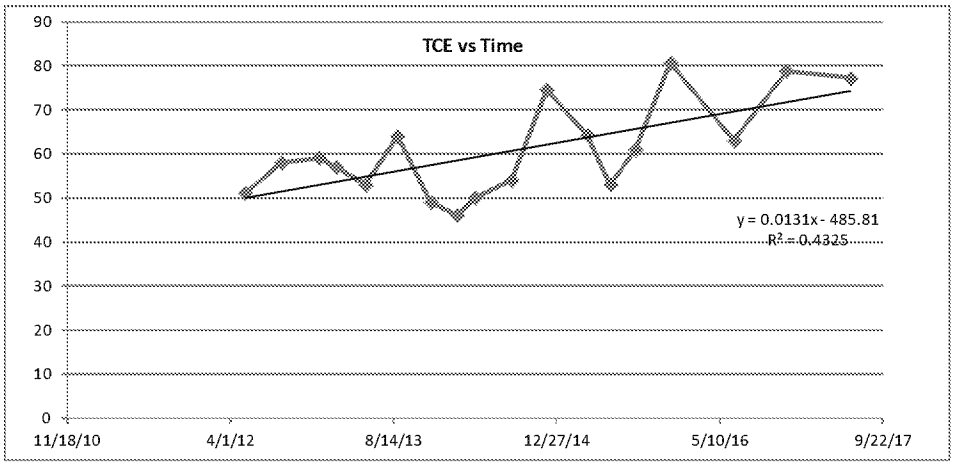
| | | | |
|---|---|---|---|
| **Mann Kendall Statistic (S) =** | 59.0 | | 0.01305 |
| **Number of Rounds (n) =** | 18 | | |
| **Average =** | 60.74 | | |
| **Standard Deviation =** | 10.779 | | |
| **Coefficient of Variation(CV)=** | 0.177 | | |

**Error Check, Blank if No Errors Detected**

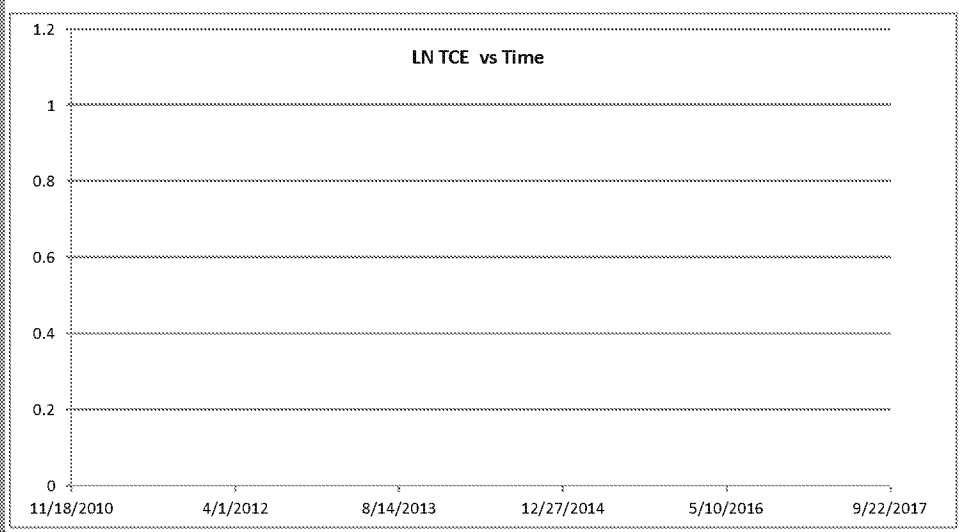
| | | | |
|---|---|---|---|
| **Trend ≥ 80% Confidence Level** | INCREASING | | |
| **Trend ≥ 90% Confidence Level** | INCREASING | | |
| Stability Test, If No Trend Exists at 80% Confidence Level | NA | | |

| | | | |
|---|---|---|---|
| **Data Entry By =** | BC | **Date =** | Mar 6 2018 |

**TCE Concentration Trend**




**LN TCE Concentration Trend**



## Mann-Kendall Statistical Test and First Order Change Rate

**Site Name** = Bethpage | **Well Number** = BPOW4-1R

| Event Number | Sampling Date (most recent last) | TCE Concentration | LN TCE Decreasing Change Rate Calculation | Linear TCE Increasing Change Rate Calculation |
|---|---|---|---|---|
| | Compound -> | | | |
| 1 | 12/15/2014 | 0.84 | | |
| 2 | 3/30/2015 | 0.79 | | |
| 3 | 6/3/2015 | 0.58 | | |
| 4 | 8/26/2015 | 0.92 | | |
| 5 | 11/13/2015 | 1 | | |
| 6 | 5/31/2016 | 1.1 | | |
| 7 | 10/31/2016 | 0.57 | | |
| 8 | 5/26/2017 | 0.84 | | |
| 9 | | | | |
| 10 | | | | |
| 11 | | | | |
| 12 | | | | |
| 13 | | | | |
| 14 | | | | |
| 15 | | | | |
| 16 | | | | |
| 17 | | | | |
| 18 | | | | |

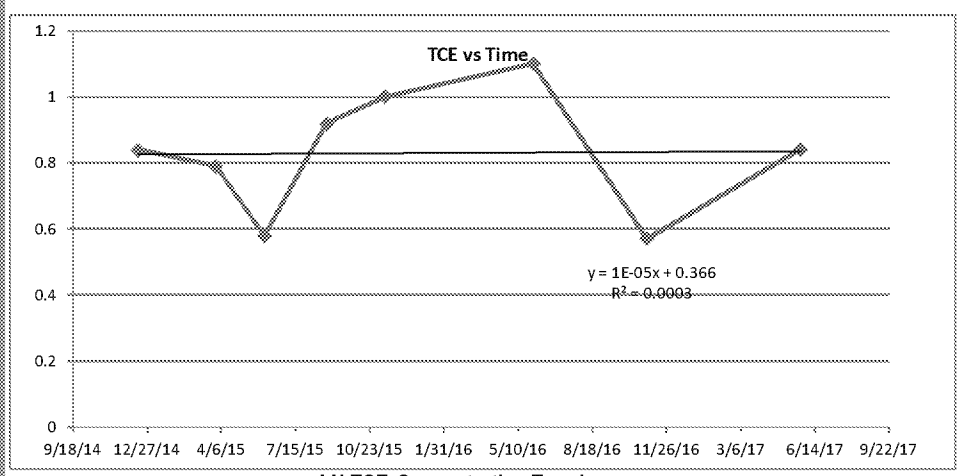
| | | | |
|---|---|---|---|
| Mann Kendall Statistic (S) = | 3.0 | | #DIV/0! |
| Number of Rounds (n) = | 8 | | |
| Average = | 0.83 | | |
| Standard Deviation = | 0.186 | | |
| Coefficient of Variation(CV)= | 0.224 | | |

**Error Check, Blank if No Errors Detected**

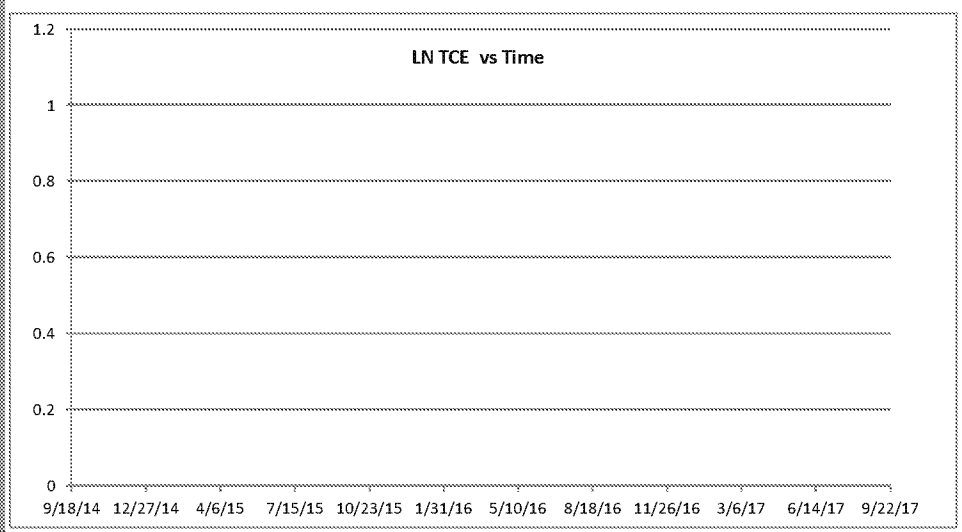
| | | | |
|---|---|---|---|
| Trend ≥ 80% Confidence Level | No Trend | | |
| Trend ≥ 90% Confidence Level | No Trend | | |
| Stability Test, If No Trend Exists at 80% Confidence Level | CV <= 1 STABLE | | |

| | | | |
|---|---|---|---|
| Data Entry By = | BC | Date = | Mar 6 2016 |

**TCE Concentration Trend**




**LN TCE Concentration Trend**



## Mann-Kendall Statistical Test and First Order Change Rate

**Site Name** = Bethpage | **Well Number** = BPOW4-2R

| Event Number | Sampling Date (most recent last) | TCE Concentration | LN TCE Decreasing Change Rate Calculation | Linear TCE Increasing Change Rate Calculation |
|---|---|---|---|---|
| | Compound -> | | | |
| 1 | 12/15/2014 | 0.73 | | |
| 2 | 3/27/2015 | 0.78 | | |
| 3 | 6/3/2015 | 0.82 | | |
| 4 | 8/24/2015 | 1.6 | | |
| 5 | 11/12/2015 | 1.5 | | |
| 6 | 6/1/2016 | 1.9 | | |
| 7 | 11/3/2016 | 0.91 | | |
| 8 | 6/20/2017 | 0.6 | | |
| 9 | | | | |
| 10 | | | | |
| 11 | | | | |
| 12 | | | | |
| 13 | | | | |
| 14 | | | | |
| 15 | | | | |
| 16 | | | | |
| 17 | | | | |
| 18 | | | | |

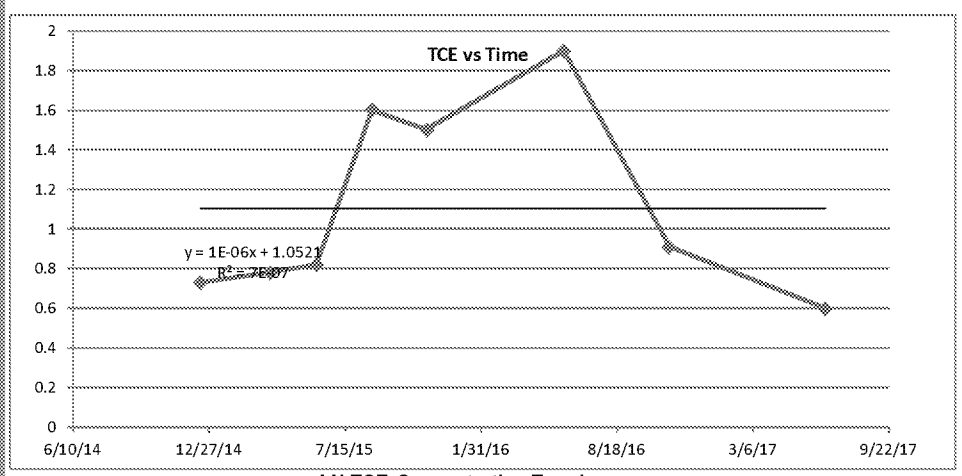
| | | | |
|---|---|---|---|
| Mann Kendall Statistic (S) = | 6.0 | | #DIV/0! |
| Number of Rounds (n) = | 8 | | |
| Average = | 1.11 | | |
| Standard Deviation = | 0.486 | | |
| Coefficient of Variation(CV)= | 0.440 | | |

**Error Check, Blank if No Errors Detected**

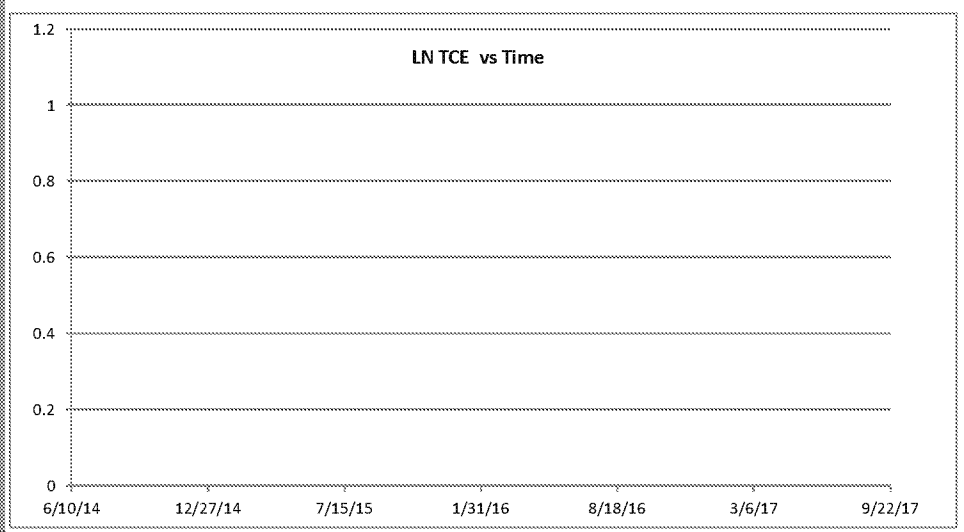
| | | | |
|---|---|---|---|
| Trend ≥ 80% Confidence Level | No Trend | | |
| Trend ≥ 90% Confidence Level | No Trend | | |
| Stability Test, If No Trend Exists at 80% Confidence Level | CV <= 1 STABLE | | |

| | | | |
|---|---|---|---|
| Data Entry By = | BC | Date = | Mar 6 2018 |

TCE Concentration Trend




LN TCE Concentration Trend



## Mann-Kendall Statistical Test and First Order Change Rate

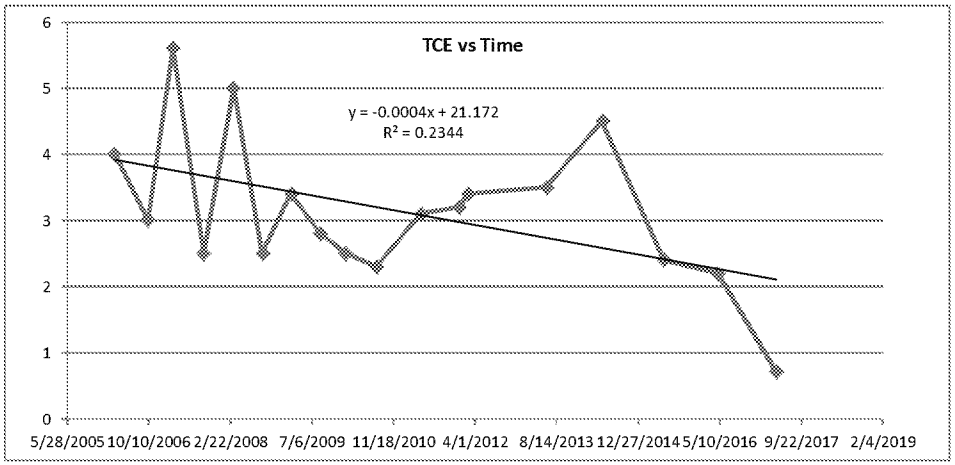
**Site Name** = Bethpage | **Well Number** = FW-03

| Event Number | Sampling Date (most recent last) | TCE Concentration | LN TCE Decreasing Change Rate Calculation | Linear TCE Increasing Change Rate Calculation |
|---|---|---|---|---|
| | Compound -> | | | |
| 1 | 3/14/2006 | 4 | 1.39 | |
| 2 | 10/5/2006 | 3 | 1.10 | |
| 3 | 3/6/2007 | 5.6 | 1.72 | |
| 4 | 9/11/2007 | 2.5 | 0.92 | |
| 5 | 3/13/2008 | 5 | 1.61 | |
| 6 | 9/5/2008 | 2.5 | 0.92 | |
| 7 | 2/27/2009 | 3.4 | 1.22 | |
| 8 | 8/25/2009 | 2.8 | 1.03 | |
| 9 | 1/29/2010 | 2.5 | 0.92 | |
| 10 | 8/6/2010 | 2.3 | 0.83 | |
| 11 | 5/5/2011 | 3.1 | 1.13 | |
| 12 | 12/28/2011 | 3.2 | 1.16 | |
| 13 | 2/17/2012 | 3.4 | 1.22 | |
| 14 | 6/10/2013 | 3.5 | 1.25 | |
| 15 | 5/19/2014 | 4.5 | 1.50 | |
| 16 | 6/2/2015 | 2.4 | 0.88 | |
| 17 | 4/27/2016 | 2.2 | 0.79 | |
| 18 | 4/20/2017 | 0.71 | -0.34 | |
| | Mann Kendall Statistic (S) = | -41.0 | -0.00020 | |
| | Number of Rounds (n) = | 18 | | |
| | Average = | 3.15 | | |
| | Standard Deviation = | 1.132 | | |
| | Coefficient of Variation(CV)= | 0.360 | | |

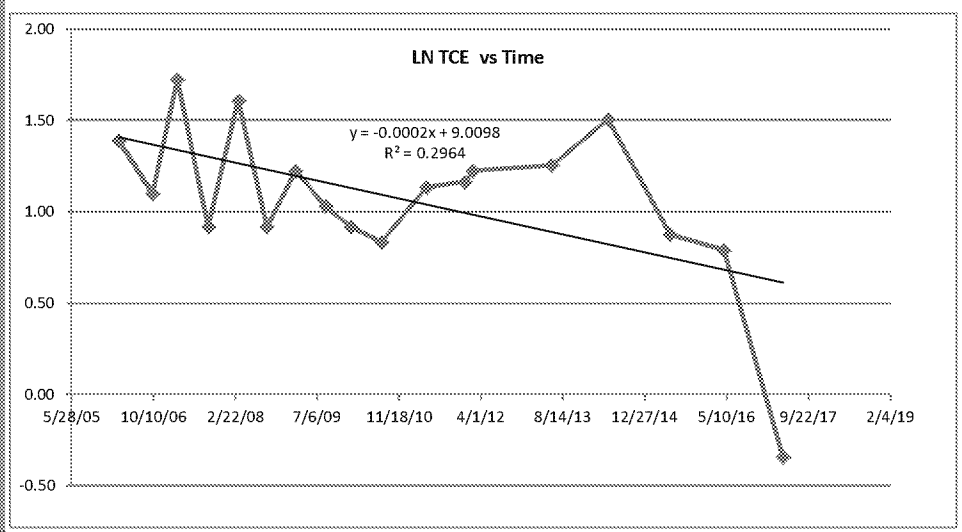
**Error Check, Blank if No Errors Detected**

| | | | |
|---|---|---|---|
| Trend ≥ 80% Confidence Level | DECREASING | | |
| Trend ≥ 90% Confidence Level | DECREASING | | |
| Stability Test, If No Trend Exists at 80% Confidence Level | NA | | |
| Data Entry By = | BC | Date = | 1-Mar-18 |

**TCE Concentration Trend**




**LN TCE Concentration Trend**



## Mann-Kendall Statistical Test and First Order Change Rate

**Site Name** = Bethpage | **Well Number** = GM-15D

| Event Number | Sampling Date (most recent last) | TCE Concentration | LN TCE Decreasing Change Rate Calculation | Linear TCE Increasing Change Rate Calculation |
|---|---|---|---|---|
| | Compound -> | | | |
| 1 | 2/27/2009 | 1.5 | 0.41 | |
| 2 | 7/7/2009 | 1.3 | 0.26 | |
| 3 | 8/14/2009 | 1.2 | 0.18 | |
| 4 | 10/23/2009 | 1.1 | 0.10 | |
| 5 | 1/21/2010 | 0.93 | -0.07 | |
| 6 | 7/13/2010 | 0.76 | -0.27 | |
| 7 | 5/6/2011 | 0.6 | -0.51 | |
| 8 | 12/10/2011 | 0.31 | -1.17 | |
| 9 | 2/8/2012 | 0.51 | -0.67 | |
| 10 | 9/12/2012 | 0.55 | -0.60 | |
| 11 | 5/24/2013 | 0.36 | -1.02 | |
| 12 | 12/12/2013 | 0.39 | -0.94 | |
| 13 | 6/4/2014 | 0.48 | -0.73 | |
| 14 | 10/20/2014 | 0.5 | -0.69 | |
| 15 | 5/7/2015 | 0.34 | -1.08 | |
| 16 | 6/30/2016 | 0.5 | -0.69 | |
| 17 | 10/26/2016 | 0.5 | -0.69 | |
| 18 | 6/28/2017 | 0.5 | -0.69 | |

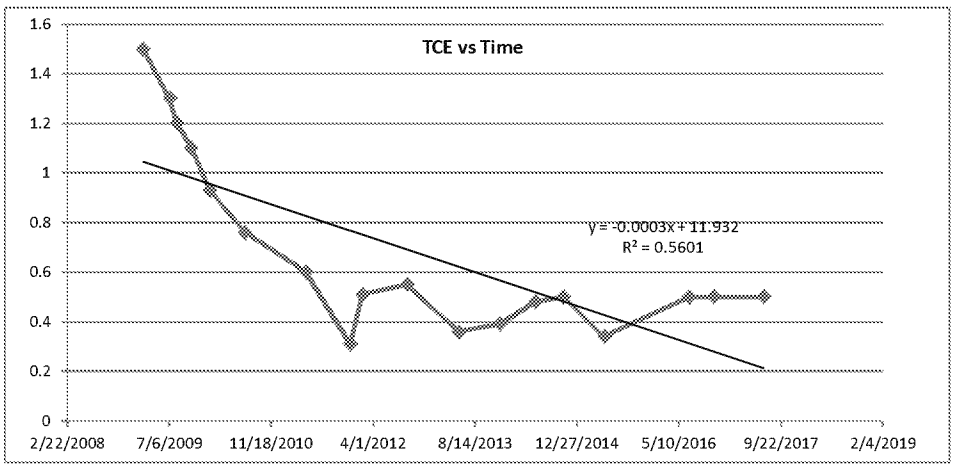
| | | | |
|---|---|---|---|
| Mann Kendall Statistic (S) = | -89.0 | -0.00035 | |
| Number of Rounds (n) = | 18 | | |
| Average = | 0.69 | | |
| Standard Deviation = | 0.362 | | |
| Coefficient of Variation(CV)= | 0.529 | | |

**Error Check, Blank if No Errors Detected**

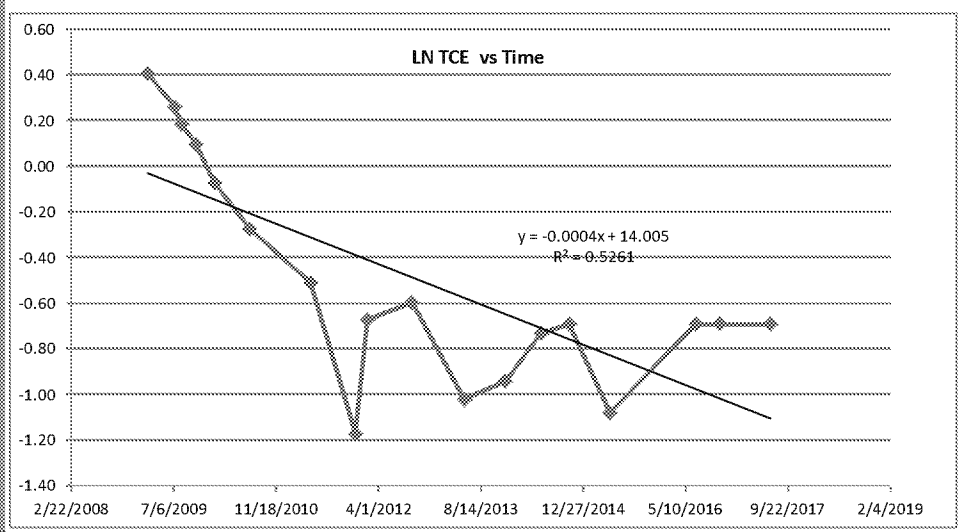
| | | | |
|---|---|---|---|
| Trend ≥ 80% Confidence Level | DECREASING | | |
| Trend ≥ 90% Confidence Level | DECREASING | | |
| Stability Test, If No Trend Exists at 80% Confidence Level | NA | | |

| | | | |
|---|---|---|---|
| Data Entry By = | BC | Date = | Mar 5 2018 |

TCE Concentration Trend




LN TCE Concentration Trend



## Mann-Kendall Statistical Test and First Order Change Rate

**Site Name** = Bethpage | **Well Number** = GM-15D2

| Event Number | Sampling Date (most recent last) | TCE Concentration | LN TCE Decreasing Change Rate Calculation | Linear TCE Increasing Change Rate Calculation |
|---|---|---|---|---|
| | Compound -> | | | |
| 1 | 2/27/2009 | 11 | 2.40 | |
| 2 | 7/7/2009 | 10 | 2.30 | |
| 3 | 8/14/2009 | 10 | 2.30 | |
| 4 | 10/23/2009 | 11 | 2.40 | |
| 5 | 1/21/2010 | 10 | 2.30 | |
| 6 | 7/13/2010 | 10 | 2.30 | |
| 7 | 5/6/2011 | 11 | 2.40 | |
| 8 | 12/10/2011 | 9.6 | 2.26 | |
| 9 | 2/8/2012 | 10 | 2.30 | |
| 10 | 9/12/2012 | 10 | 2.30 | |
| 11 | 5/24/2013 | 11 | 2.40 | |
| 12 | 12/12/2013 | 10 | 2.30 | |
| 13 | 6/4/2014 | 9.2 | 2.22 | |
| 14 | 10/20/2014 | 9.5 | 2.25 | |
| 15 | 5/7/2015 | 9.7 | 2.27 | |
| 16 | 4/13/2016 | 8.8 | 2.17 | |
| 17 | 10/26/2016 | 7.7 | 2.04 | |
| 18 | 6/28/2017 | 10 | 2.30 | |

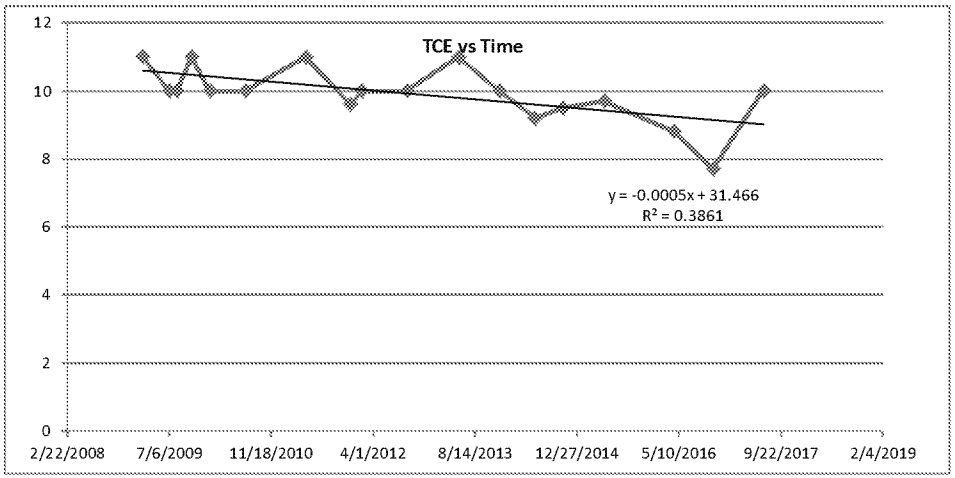
| | | | |
|---|---|---|---|
| Mann Kendall Statistic (S) = | -67.0 | -0.00006 | |
| Number of Rounds (n) = | 18 | | |
| Average = | 9.92 | | |
| Standard Deviation = | 0.831 | | |
| Coefficient of Variation(CV)= | 0.084 | | |

**Error Check, Blank if No Errors Detected**

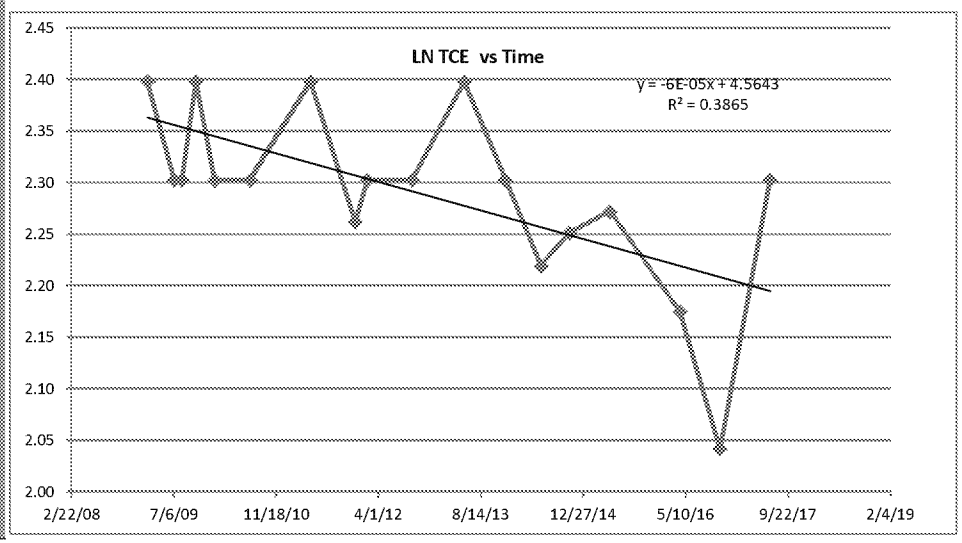
| | | | |
|---|---|---|---|
| Trend ≥ 80% Confidence Level | DECREASING | | |
| Trend ≥ 90% Confidence Level | DECREASING | | |
| Stability Test, If No Trend Exists at 80% Confidence Level | NA | | |

| | | | |
|---|---|---|---|
| Data Entry By = | BC | Date = | Mar 6 2018 |

**TCE Concentration Trend**




**LN TCE Concentration Trend**



## Mann-Kendall Statistical Test and First Order Change Rate

**Site Name** = Bethpage | **Well Number** = GM-16SR

| Event Number | Sampling Date (most recent last) | TCE Concentration | LN TCE Decreasing Change Rate Calculation | Linear TCE Increasing Change Rate Calculation |
|---|---|---|---|---|
| | Compound -> | | | |
| 1 | 7/24/2003 | 2.5 | | 2.5 |
| 2 | 10/8/2003 | 2.5 | | 2.5 |
| 3 | 1/9/2004 | 2.5 | | 2.5 |
| 4 | 3/29/2004 | 2 | | 2 |
| 5 | 10/1/2004 | 2.5 | | 2.5 |
| 6 | 4/11/2005 | 2.5 | | 2.5 |
| 7 | 9/7/2005 | 5 | | 5 |
| 8 | 4/10/2006 | 4 | | 4 |
| 9 | | | | |
| 10 | | | | |
| 11 | | | | |
| 12 | | | | |
| 13 | | | | |
| 14 | | | | |
| 15 | | | | |
| 16 | | | | |
| 17 | | | | |
| 18 | | | | |

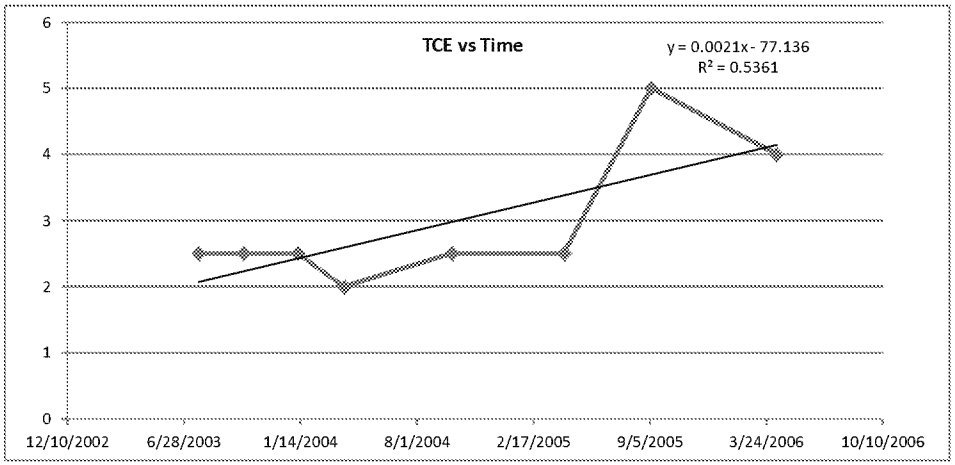
| | | | |
|---|---|---|---|
| Mann Kendall Statistic (S) = | 10.0 | | 0.00209 |
| Number of Rounds (n) = | 8 | | |
| Average = | 2.94 | | |
| Standard Deviation = | 1.016 | | |
| Coefficient of Variation(CV)= | 0.346 | | |

**Error Check, Blank if No Errors Detected**

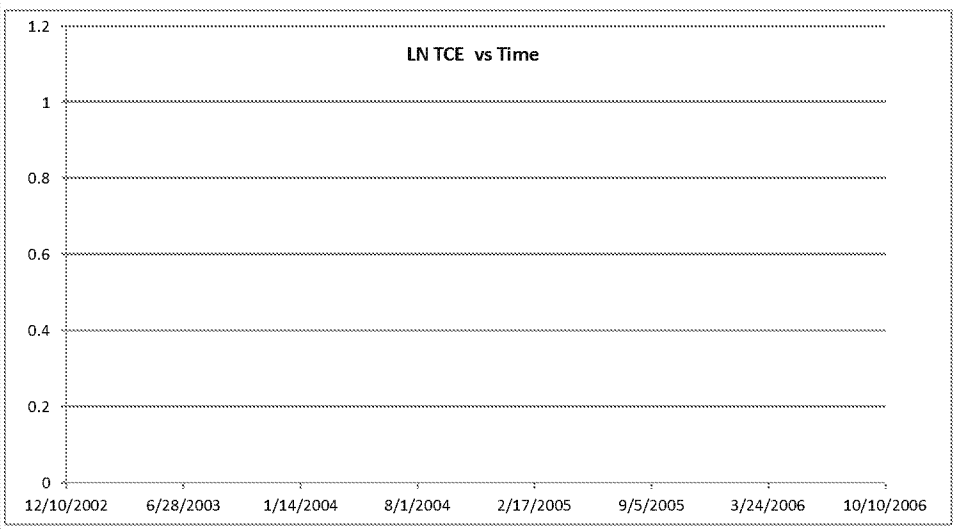
| | | | |
|---|---|---|---|
| Trend ≥ 80% Confidence Level | INCREASING | | |
| Trend ≥ 90% Confidence Level | No Trend | | |
| Stability Test, If No Trend Exists at 80% Confidence Level | NA | | |

**Data Entry By =** BC **Date =** Mar 6 2018

**TCE Concentration Trend**




**LN TCE Concentration Trend**



## Mann-Kendall Statistical Test and First Order Change Rate

**Site Name** = Bethpage | **Well Number** = GM-17D

| Event Number | Sampling Date (most recent last) | TCE Concentration | LN TCE Decreasing Change Rate Calculation | Linear TCE Increasing Change Rate Calculation |
|---|---|---|---|---|
| | Compound -> | | | |
| 1 | 3/7/2008 | 2.5 | | |
| 2 | 8/11/2008 | 2.5 | | |
| 3 | 2/17/2009 | 0.32 | | |
| 4 | 8/12/2009 | 0.47 | | |
| 5 | 2/17/2010 | 0.49 | | |
| 6 | 7/29/2010 | 0.44 | | |
| 7 | 5/11/2011 | 0.54 | | |
| 8 | 12/21/2011 | 0.36 | | |
| 9 | 2/9/2012 | 0.33 | | |
| 10 | 9/10/2012 | 2.5 | | |
| 11 | 6/11/2013 | 0.34 | | |
| 12 | 12/19/2013 | 0.28 | | |
| 13 | 5/5/2014 | 0.66 | | |
| 14 | 10/23/2014 | 0.3 | | |
| 15 | 4/22/2015 | 0.33 | | |
| 16 | 5/2/2016 | 0.61 | | |
| 17 | 10/21/2016 | 0.7 | | |
| 18 | 5/2/2017 | 0.83 | | |

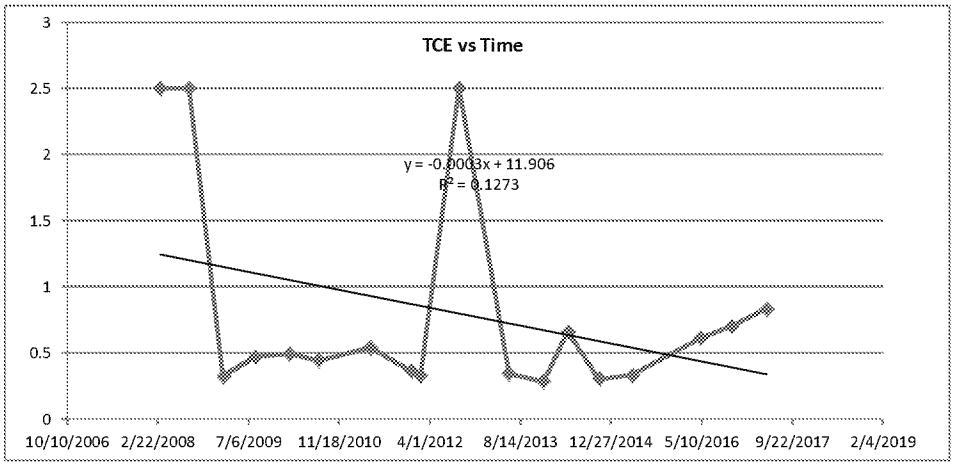
| | | | |
|---|---|---|---|
| Mann Kendall Statistic (S) = | -9.0 | | |
| Number of Rounds (n) = | 18 | | |
| Average = | 0.81 | | |
| Standard Deviation = | 0.795 | | |
| Coefficient of Variation(CV)= | 0.987 | | |

**Error Check, Blank if No Errors Detected**

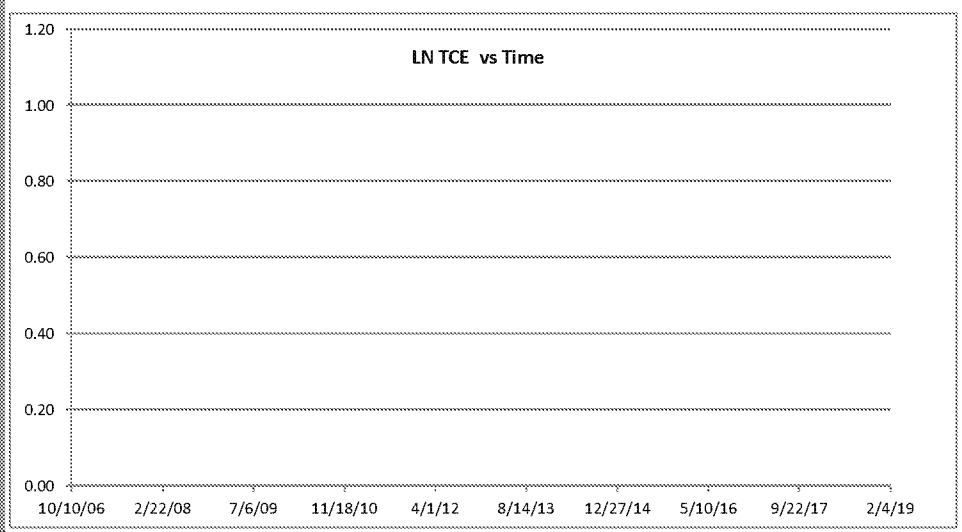
| | | | |
|---|---|---|---|
| Trend ≥ 80% Confidence Level | No Trend | | |
| Trend ≥ 90% Confidence Level | No Trend | | |
| Stability Test, If No Trend Exists at 80% Confidence Level | CV <= 1 STABLE | | |

| | | | |
|---|---|---|---|
| Data Entry By = | BC | Date = | Mar 5 2018 |

**TCE Concentration Trend**




**LN TCE Concentration Trend**



## Mann-Kendall Statistical Test and First Order Change Rate

**Site Name** = Bethpage | **Well Number** = GM-17I

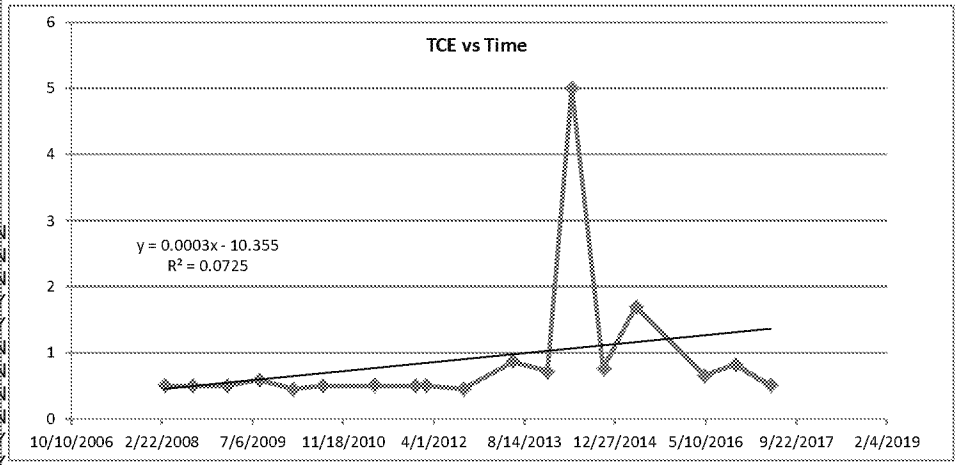
| Event Number | Sampling Date (most recent last) | TCE Concentration | LN TCE Decreasing Change Rate Calculation | Linear TCE Increasing Change Rate Calculation | |
|---|---|---|---|---|---|
| | Compound -> | | | | |
| 1 | 3/7/2008 | 0.5 | | 0.5 | N |
| 2 | 8/11/2008 | 0.5 | | 0.5 | N |
| 3 | 2/17/2009 | 0.5 | | 0.5 | N |
| 4 | 8/12/2009 | 0.59 | | 0.59 | Y |
| 5 | 2/16/2010 | 0.45 | | 0.45 | Y |
| 6 | 7/29/2010 | 0.5 | | 0.5 | N |
| 7 | 5/11/2011 | 0.5 | | 0.5 | N |
| 8 | 12/21/2011 | 0.5 | | 0.5 | N |
| 9 | 2/15/2012 | 0.5 | | 0.5 | N |
| 10 | 9/10/2012 | 0.45 | | 0.45 | Y |
| 11 | 6/11/2013 | 0.86 | | 0.86 | Y |
| 12 | 12/19/2013 | 0.72 | | 0.72 | Y |
| 13 | 5/5/2014 | 5 | | 5 | N |
| 14 | 10/23/2014 | 0.76 | | 0.76 | Y |
| 15 | 4/22/2015 | 1.7 | | 1.7 | Y |
| 16 | 5/2/2016 | 0.65 | | 0.65 | Y |
| 17 | 10/21/2016 | 0.82 | | 0.82 | Y |
| 18 | 5/2/2017 | 0.5 | | 0.5 | N |
| | **Mann Kendall Statistic (S) =** | 52.0 | | 0.00027 | |
| | **Number of Rounds (n) =** | 18 | | | |
| | **Average =** | 0.89 | | | |
| | **Standard Deviation =** | 1.067 | | | |
| | **Coefficient of Variation(CV)=** | 1.200 | | | |

**Error Check, Blank if No Errors Detected**

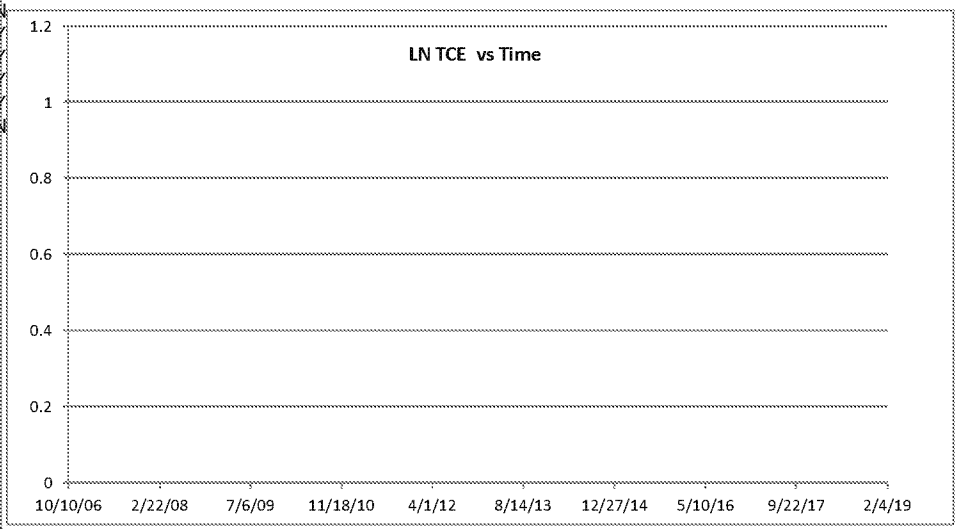
| | | | |
|---|---|---|---|
| **Trend ≥ 80% Confidence Level** | INCREASING | | |
| **Trend ≥ 90% Confidence Level** | INCREASING | | |
| Stability Test, If No Trend Exists at 80% Confidence Level | NA | | |

**Data Entry By =** BC **Date =** March 5 2018

**TCE Concentration Trend**




**LN TCE Concentration Trend**



## Mann-Kendall Statistical Test and First Order Change Rate

**Site Name** = Bethpage | **Well Number** = GM-18D

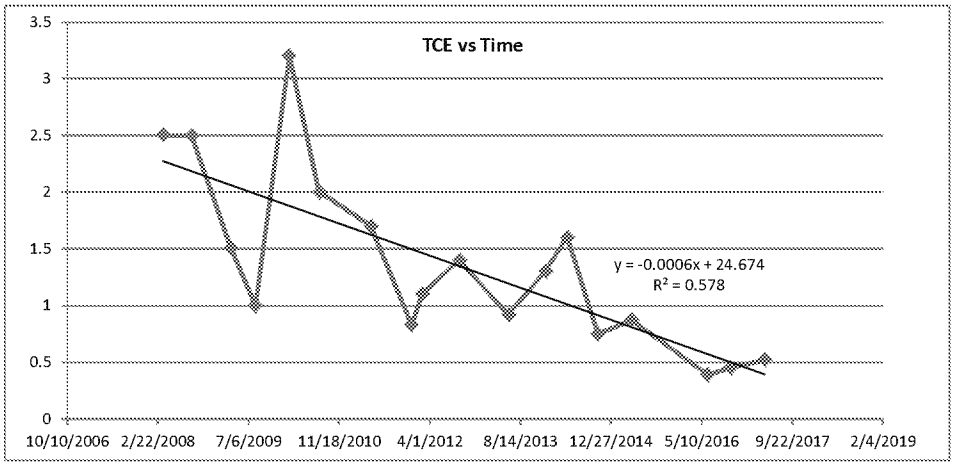
| Event Number | Sampling Date (most recent last) | TCE Concentration | LN TCE Decreasing Change Rate Calculation | Linear TCE Increasing Change Rate Calculation |
|---|---|---|---|---|
| | Compound -> | | | |
| 1 | 3/21/2008 | 2.5 | 0.92 | |
| 2 | 8/26/2008 | 2.5 | 0.92 | |
| 3 | 4/1/2009 | 1.5 | 0.41 | |
| 4 | 8/13/2009 | 1 | 0.00 | |
| 5 | 2/17/2010 | 3.2 | 1.16 | |
| 6 | 7/30/2010 | 2 | 0.69 | |
| 7 | 5/11/2011 | 1.7 | 0.53 | |
| 8 | 12/22/2011 | 0.83 | -0.19 | |
| 9 | 2/17/2012 | 1.1 | 0.10 | |
| 10 | 9/10/2012 | 1.4 | 0.34 | |
| 11 | 6/10/2013 | 0.92 | -0.08 | |
| 12 | 12/31/2013 | 1.3 | 0.26 | |
| 13 | 5/1/2014 | 1.6 | 0.47 | |
| 14 | 10/15/2014 | 0.75 | -0.29 | |
| 15 | 4/21/2015 | 0.87 | -0.14 | |
| 16 | 6/14/2016 | 0.39 | -0.94 | |
| 17 | 10/19/2016 | 0.45 | -0.80 | |
| 18 | 4/21/2017 | 0.52 | -0.65 | |
| | Mann Kendall Statistic (S) = | -92.0 | -0.00047 | |
| | Number of Rounds (n) = | 18 | | |
| | Average = | 1.36 | | |
| | Standard Deviation = | 0.780 | | |
| | Coefficient of Variation(CV)= | 0.573 | | |

**Error Check, Blank if No Errors Detected**

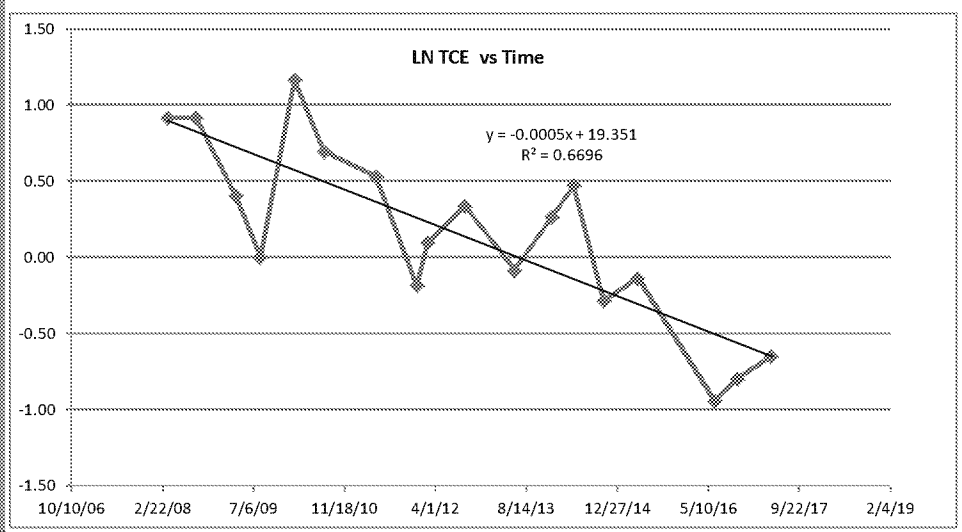
| | | | |
|---|---|---|---|
| Trend ≥ 80% Confidence Level | DECREASING | | |
| Trend ≥ 90% Confidence Level | DECREASING | | |
| Stability Test, If No Trend Exists at 80% Confidence Level | NA | | |

| | | | |
|---|---|---|---|
| Data Entry By = | BC | Date = | Mar 5 2018 |

**TCE Concentration Trend**




**LN TCE Concentration Trend**



## Mann-Kendall Statistical Test and First Order Change Rate

**Site Name** = Bethpage | **Well Number** = GM-21D

| Event Number | Sampling Date (most recent last) | TCE Concentration | LN TCE Decreasing Change Rate Calculation | Linear TCE Increasing Change Rate Calculation |
|---|---|---|---|---|
| | Compound -> | | | |
| 1 | 5/17/2009 | 0.74 | | 0.74 |
| 2 | 8/12/2009 | 0.53 | | 0.53 |
| 3 | 11/13/2009 | 0.67 | | 0.67 |
| 4 | 2/8/2010 | 0.89 | | 0.89 |
| 5 | 4/19/2010 | 0.87 | | 0.87 |
| 6 | 8/4/2010 | 1.2 | | 1.2 |
| 7 | 12/13/2010 | 1.7 | | 1.7 |
| 8 | 5/12/2011 | 0.55 | | 0.55 |
| 9 | 7/27/2011 | 0.5 | | 0.5 |
| 10 | 12/12/2011 | 0.43 | | 0.43 |
| 11 | 2/14/2012 | 0.36 | | 0.36 |
| 12 | 5/9/2012 | 0.43 | | 0.43 |
| 13 | 12/3/2012 | 2 | | 2 |
| 14 | 5/29/2013 | 1.8 | | 1.8 |
| 15 | 6/3/2014 | 0.97 | | 0.97 |
| 16 | 4/24/2015 | 2.6 | | 2.6 |
| 17 | 5/5/2016 | 1.7 | | 1.7 |
| 18 | 5/3/2017 | 1.5 | | 1.5 |

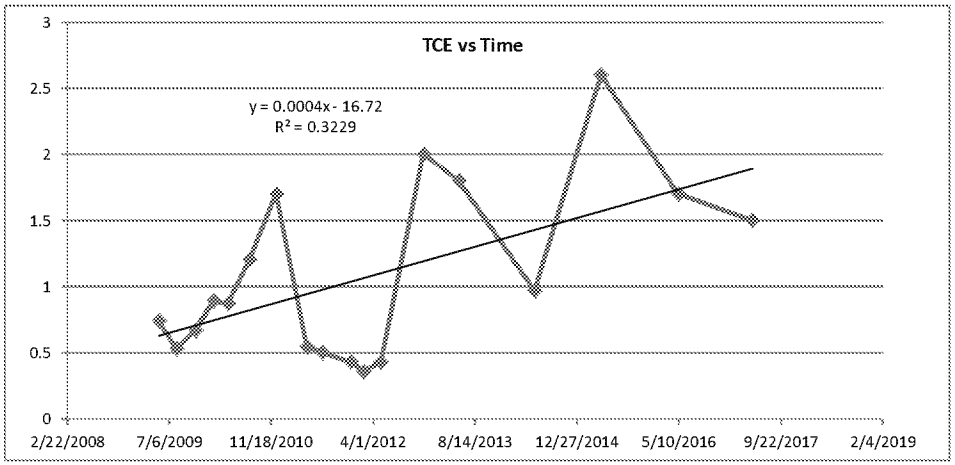
| | | | |
|---|---|---|---|
| **Mann Kendall Statistic (S) =** | 35.0 | | 0.00043 |
| **Number of Rounds (n) =** | 18 | | |
| **Average =** | 1.08 | | |
| **Standard Deviation =** | 0.655 | | |
| **Coefficient of Variation(CV)=** | 0.607 | | |

**Error Check, Blank if No Errors Detected**

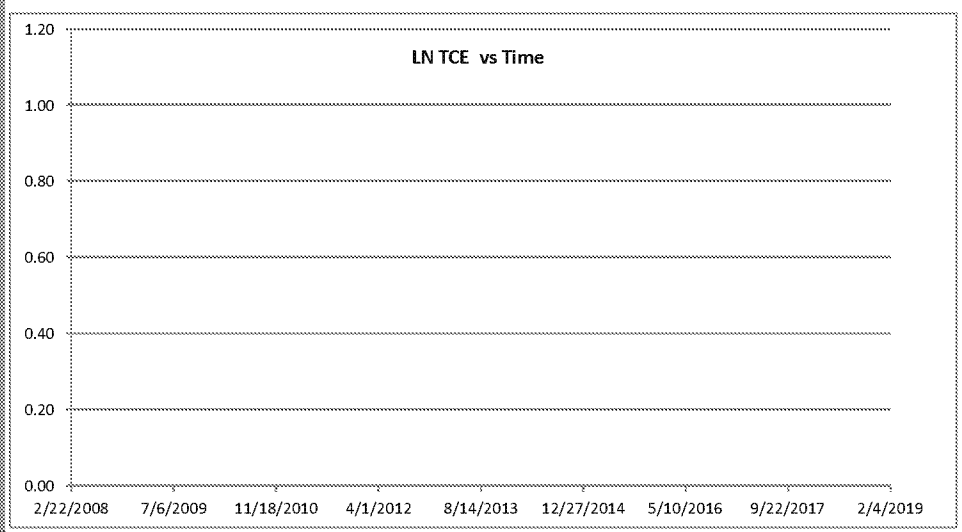
| | | | |
|---|---|---|---|
| **Trend ≥ 80% Confidence Level** | INCREASING | | |
| **Trend ≥ 90% Confidence Level** | No Trend | | |
| Stability Test, If No Trend Exists at 80% Confidence Level | NA | | |

**Data Entry By =** BC **Date =** Mar 5 2018

**TCE Concentration Trend**




**LN TCE Concentration Trend**



## Mann-Kendall Statistical Test and First Order Change Rate

**Site Name** = Bethpage | **Well Number** = GM-39DA

| Event Number | Sampling Date (most recent last) | TCE Concentration | LN TCE Decreasing Change Rate Calculation | Linear TCE Increasing Change Rate Calculation |
|---|---|---|---|---|
| | Compound -> | | | |
| 1 | 3/18/2008 | 19 | 2.944438979 | |
| 2 | 8/20/2008 | 13 | 2.564949357 | |
| 3 | 3/16/2009 | 5.1 | 1.62924054 | |
| 4 | 8/10/2009 | 6.5 | 1.871802177 | |
| 5 | 1/29/2010 | 10 | 2.302585093 | |
| 6 | 7/30/2010 | 5.5 | 1.704748092 | |
| 7 | 5/9/2011 | 1.2 | 0.182321557 | |
| 8 | 12/15/2011 | 0.69 | -0.371063681 | |
| 9 | 3/6/2012 | 0.74 | -0.301105093 | |
| 10 | 8/28/2012 | 1.1 | 0.09531018 | |
| 11 | 6/14/2013 | 2.8 | 1.029619417 | |
| 12 | 12/11/2013 | 3.7 | 1.30833282 | |
| 13 | 5/9/2014 | 1.2 | 0.182321557 | |
| 14 | 10/15/2014 | 0.66 | -0.415515444 | |
| 15 | 4/23/2015 | 1 | 0 | |
| 16 | 5/3/2016 | 6.1 | 1.808288771 | |
| 17 | 10/21/2016 | 3.4 | 1.223775432 | |
| 18 | 5/3/2017 | 1.6 | 0.470003629 | |

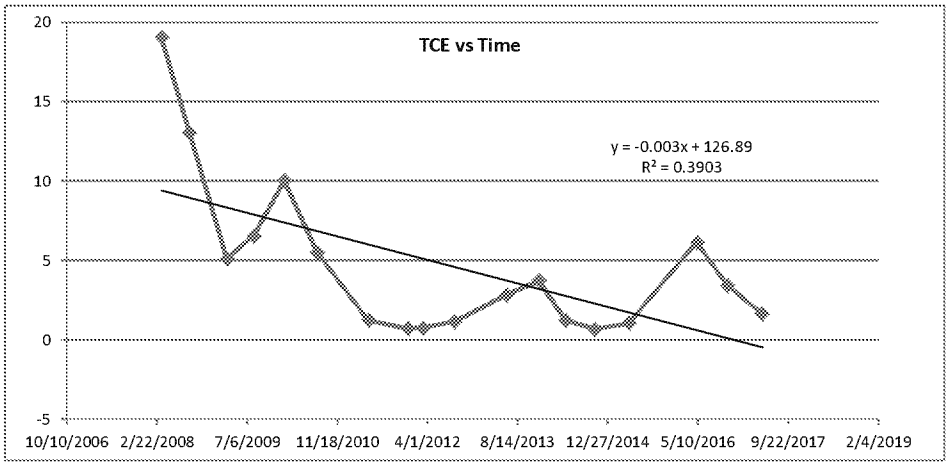
| | | | |
|---|---|---|---|
| Mann Kendall Statistic (S) = | -56.0 | -0.00053 | |
| Number of Rounds (n) = | 18 | | |
| Average = | 4.63 | | |
| Standard Deviation = | 4.985 | | |
| Coefficient of Variation(CV)= | 1.077 | | |

**Error Check, Blank if No Errors Detected**

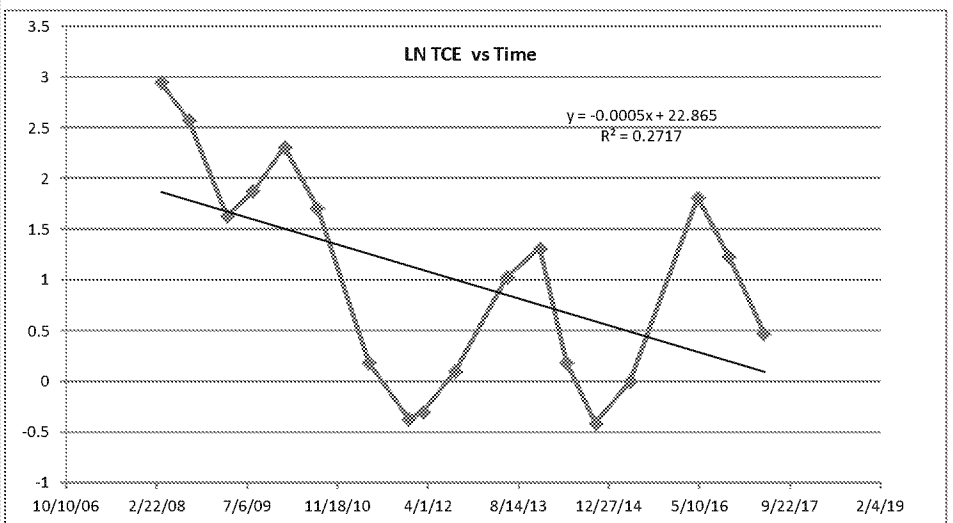
| | | | |
|---|---|---|---|
| Trend ≥ 80% Confidence Level | DECREASING | | |
| Trend ≥ 90% Confidence Level | DECREASING | | |
| Stability Test, If No Trend Exists at 80% Confidence Level | NA | | |

| | | | |
|---|---|---|---|
| Data Entry By = | BC | Date = | Mar 5 2018 |

**TCE Concentration Trend**




**LN TCE Concentration Trend**



## Mann-Kendall Statistical Test and First Order Change Rate

**Site Name** = Bethpage | **Well Number** = GM-39DB

| Event Number | Sampling Date (most recent last) | TCE Concentration | LN TCE Decreasing Change Rate Calculation | Linear TCE Increasing Change Rate Calculation |
|---|---|---|---|---|
| | Compound -> | | | |
| 1 | 3/18/2008 | 46 | 3.828641396 | |
| 2 | 8/20/2008 | 62 | 4.127134385 | |
| 3 | 3/16/2009 | 68 | 4.219507705 | |
| 4 | 8/10/2009 | 52 | 3.951243719 | |
| 5 | 1/29/2010 | 34 | 3.526360525 | |
| 6 | 7/30/2010 | 66 | 4.189654742 | |
| 7 | 5/9/2011 | 94 | 4.543294782 | |
| 8 | 12/15/2011 | 62 | 4.127134385 | |
| 9 | 3/5/2012 | 64 | 4.158883083 | |
| 10 | 8/28/2012 | 56 | 4.025351691 | |
| 11 | 6/14/2013 | 80 | 4.382026635 | |
| 12 | 12/11/2013 | 70 | 4.248495242 | |
| 13 | 5/9/2014 | 52 | 3.951243719 | |
| 14 | 10/15/2014 | 52.7 | 3.964615456 | |
| 15 | 4/23/2015 | 43.9 | 3.78191432 | |
| 16 | 5/3/2016 | 21 | 3.044522438 | |
| 17 | 10/21/2016 | 22.5 | 3.113515309 | |
| 18 | 5/3/2017 | 34 | 3.526360525 | |

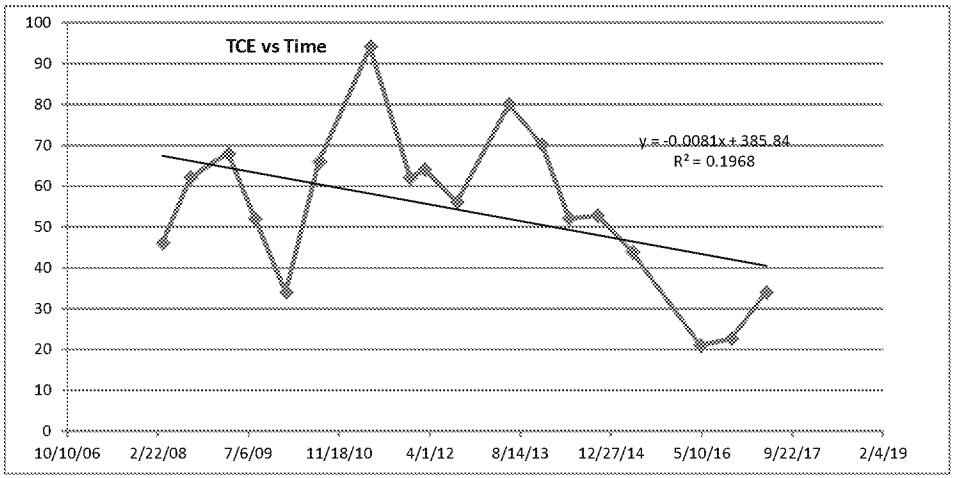
| | | | |
|---|---|---|---|
| Mann Kendall Statistic (S) = | -44.0 | -0.00020 | |
| Number of Rounds (n) = | 18 | | |
| Average = | 54.45 | | |
| Standard Deviation = | 19.031 | | |
| Coefficient of Variation(CV)= | 0.350 | | |

**Error Check, Blank if No Errors Detected**

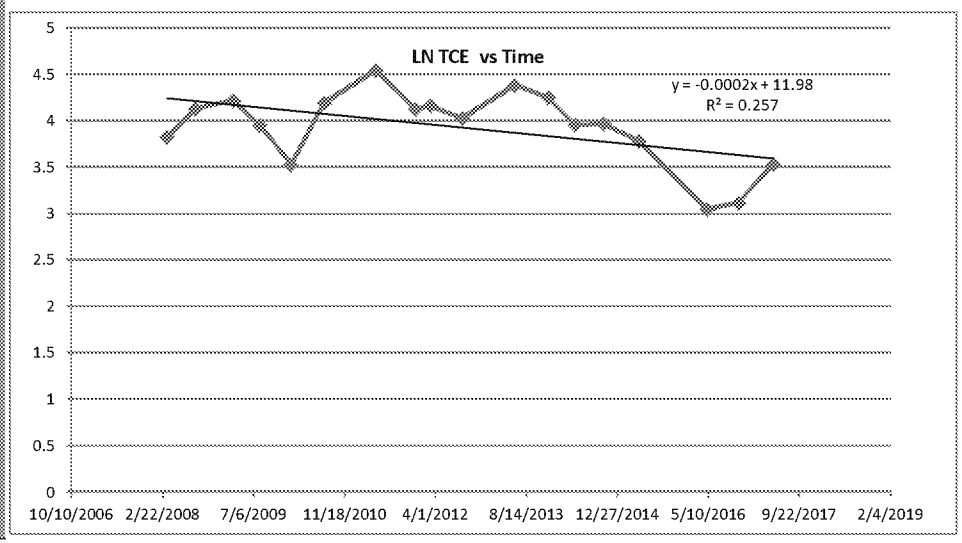
| | | | |
|---|---|---|---|
| Trend ≥ 80% Confidence Level | DECREASING | | |
| Trend ≥ 90% Confidence Level | DECREASING | | |
| Stability Test, If No Trend Exists at 80% Confidence Level | NA | | |

| | | | |
|---|---|---|---|
| Data Entry By = | BC | Date = | Mar 6 2018 |

**TCE Concentration Trend**




**LN TCE Concentration Trend**



## Mann-Kendall Statistical Test and First Order Change Rate

**Site Name** = Bethpage | **Well Number** = GM-73D

| Event Number | Sampling Date (most recent last) | TCE Concentration | LN TCE Decreasing Change Rate Calculation | Linear TCE Increasing Change Rate Calculation |
|---|---|---|---|---|
| | Compound -> | | | |
| 1 | 3/18/2008 | 6.4 | | |
| 2 | 8/21/2008 | 7.6 | | |
| 3 | 2/17/2009 | 16 | | |
| 4 | 8/10/2009 | 4.6 | | |
| 5 | 1/28/2010 | 3.3 | | |
| 6 | 8/3/2010 | 5.6 | | |
| 7 | 5/4/2011 | 58 | | |
| 8 | 12/17/2011 | 59 | | |
| 9 | 2/10/2012 | 68 | | |
| 10 | 8/27/2012 | 8.9 | | |
| 11 | 5/23/2013 | 23 | | |
| 12 | 12/11/2013 | 19 | | |
| 13 | 5/9/2014 | 11 | | |
| 14 | 10/17/2014 | 14.2 | | |
| 15 | 4/17/2015 | 11.1 | | |
| 16 | 6/29/2016 | 7.9 | | |
| 17 | 10/25/2016 | 4.1 | | |
| 18 | 6/29/2017 | 1.5 | | |

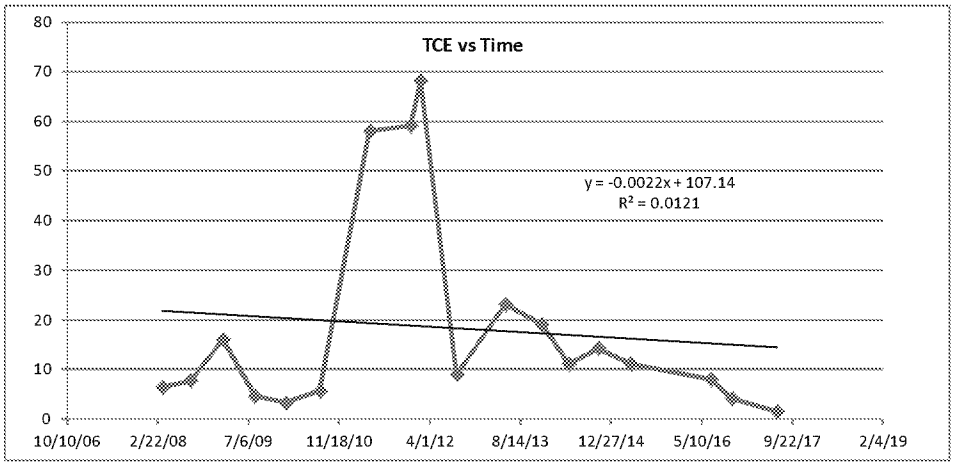
| | | | |
|---|---|---|---|
| **Mann Kendall Statistic (S) =** | -11.0 | | |
| **Number of Rounds (n) =** | 18 | | |
| **Average =** | 18.29 | | |
| **Standard Deviation =** | 20.811 | | |
| **Coefficient of Variation(CV)=** | 1.138 | | |

**Error Check, Blank if No Errors Detected**

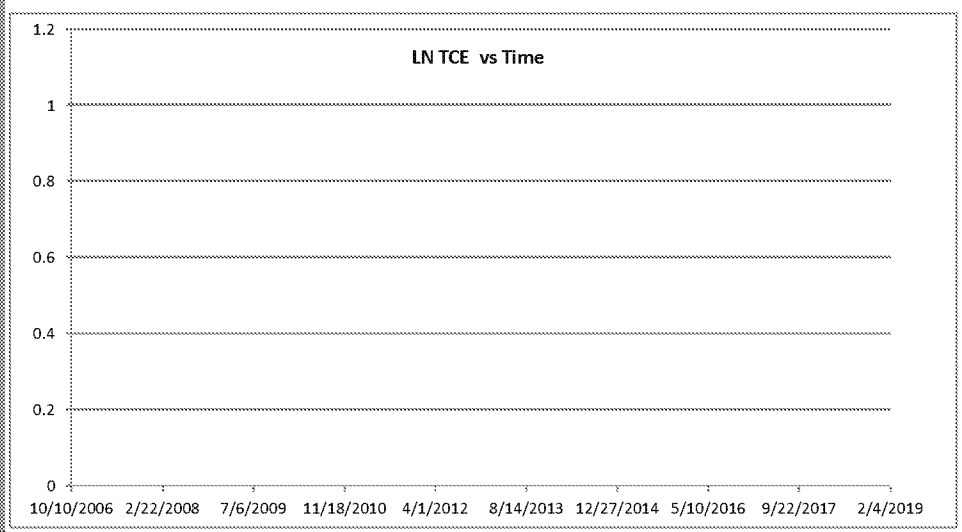
| | | | |
|---|---|---|---|
| **Trend ≥ 80% Confidence Level** | No Trend | | |
| **Trend ≥ 90% Confidence Level** | No Trend | | |
| Stability Test, If No Trend Exists at 80% Confidence Level | CV > 1 NON-STABLE | | |

**Data Entry By =** BC **Date =** Mar 6 2018

**TCE Concentration Trend**




**LN TCE Concentration Trend**



## Mann-Kendall Statistical Test and First Order Change Rate

**Site Name** = Bethpage | **Well Number** = GM-73D2

| Event Number | Sampling Date (most recent last) | TCE Concentration | LN TCE Decreasing Change Rate Calculation | Linear TCE Increasing Change Rate Calculation |
|---|---|---|---|---|
| | Compound -> | | | |
| 1 | 3/17/2008 | 58 | 4.06 | |
| 2 | 8/21/2008 | 44 | 3.78 | |
| 3 | 2/17/2009 | 40 | 3.69 | |
| 4 | 8/10/2009 | 69 | 4.23 | |
| 5 | 1/28/2010 | 47 | 3.85 | |
| 6 | 8/3/2010 | 53 | 3.97 | |
| 7 | 5/4/2011 | 110 | 4.70 | |
| 8 | 12/17/2011 | 94 | 4.54 | |
| 9 | 2/10/2012 | 93 | 4.53 | |
| 10 | 8/27/2012 | 60 | 4.09 | |
| 11 | 5/23/2013 | 44 | 3.78 | |
| 12 | 12/11/2013 | 29 | 3.37 | |
| 13 | 5/8/2014 | 25 | 3.22 | |
| 14 | 10/17/2014 | 40 | 3.69 | |
| 15 | 4/17/2015 | 46.7 | 3.84 | |
| 16 | 5/6/2016 | 33.2 | 3.50 | |
| 17 | 10/25/2016 | 37 | 3.61 | |
| 18 | 4/14/2017 | 35.7 | 3.58 | |

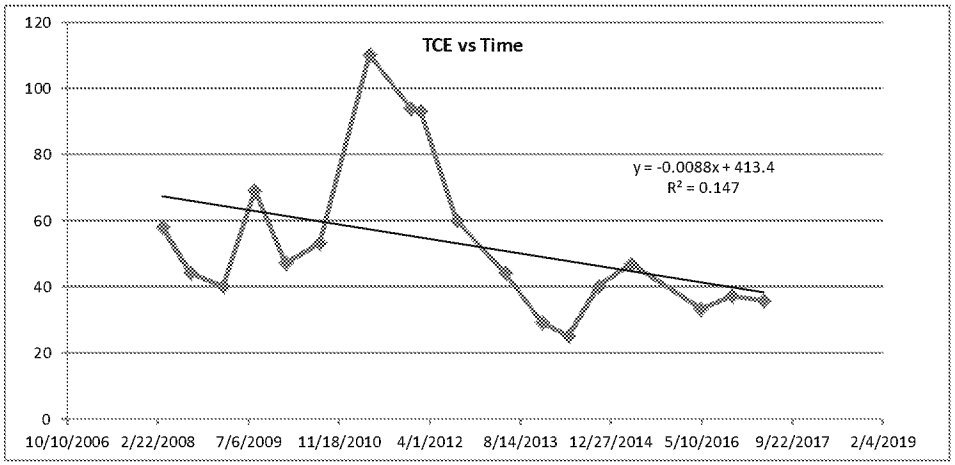
| | | | |
|---|---|---|---|
| **Mann Kendall Statistic (S) =** | -55.0 | -0.00018 | |
| **Number of Rounds (n) =** | 18 | | |
| **Average =** | 53.26 | | |
| **Standard Deviation =** | 23.938 | | |
| **Coefficient of Variation(CV)=** | 0.450 | | |

**Error Check, Blank if No Errors Detected**

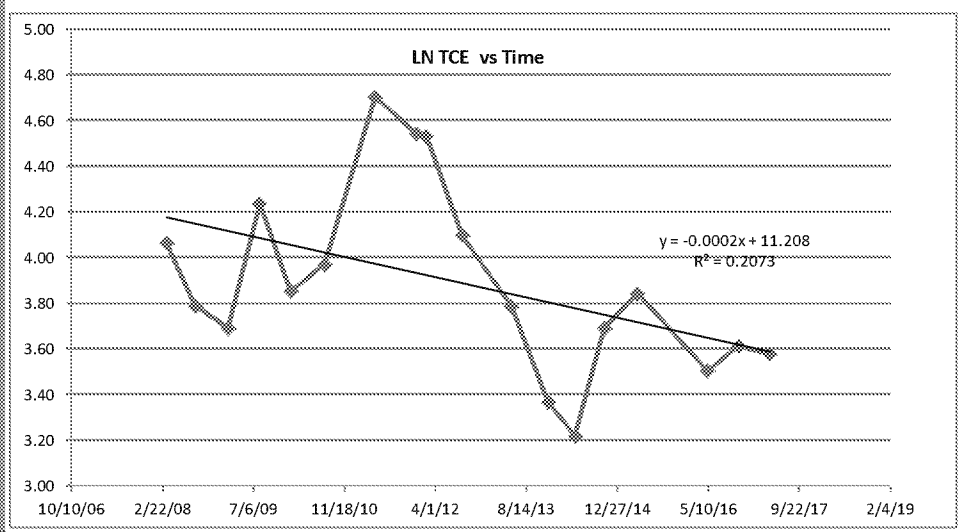
| | | | |
|---|---|---|---|
| **Trend ≥ 80% Confidence Level** | **DECREASING** | | |
| **Trend ≥ 90% Confidence Level** | **DECREASING** | | |
| Stability Test, If No Trend Exists at 80% Confidence Level | NA | | |

**Data Entry By =** BC **Date =** Mar 6 2018

**TCE Concentration Trend**




**LN TCE Concentration Trend**



## Mann-Kendall Statistical Test and First Order Change Rate

**Site Name** = Bethpage | **Well Number** = GM-74D

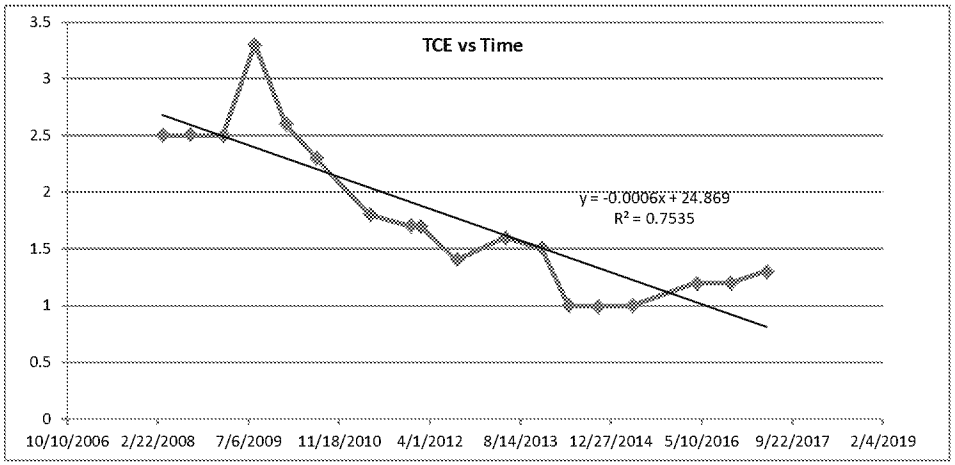
| Event Number | Sampling Date (most recent last) | TCE Concentration | LN TCE Decreasing Change Rate Calculation | Linear TCE Increasing Change Rate Calculation |
|---|---|---|---|---|
| | Compound -> | | | |
| 1 | 3/17/2008 | 2.5 | 0.92 | |
| 2 | 8/18/2008 | 2.5 | 0.92 | |
| 3 | 2/17/2009 | 2.5 | 0.92 | |
| 4 | 8/10/2009 | 3.3 | 1.19 | |
| 5 | 1/28/2010 | 2.6 | 0.96 | |
| 6 | 7/14/2010 | 2.3 | 0.83 | |
| 7 | 5/4/2011 | 1.8 | 0.59 | |
| 8 | 12/16/2011 | 1.7 | 0.53 | |
| 9 | 2/10/2012 | 1.7 | 0.53 | |
| 10 | 8/28/2012 | 1.4 | 0.34 | |
| 11 | 5/23/2013 | 1.6 | 0.47 | |
| 12 | 12/9/2013 | 1.5 | 0.41 | |
| 13 | 5/8/2014 | 1 | 0.00 | |
| 14 | 10/17/2014 | 0.99 | -0.01 | |
| 15 | 4/23/2015 | 1 | 0.00 | |
| 16 | 4/13/2016 | 1.2 | 0.18 | |
| 17 | 10/19/2016 | 1.2 | 0.18 | |
| 18 | 5/2/2017 | 1.3 | 0.26 | |
| | Mann Kendall Statistic (S) = | -107.0 | -0.00031 | |
| | Number of Rounds (n) = | 18 | | |
| | Average = | 1.78 | | |
| | Standard Deviation = | 0.678 | | |
| | Coefficient of Variation(CV)= | 0.380 | | |

**Error Check, Blank if No Errors Detected**

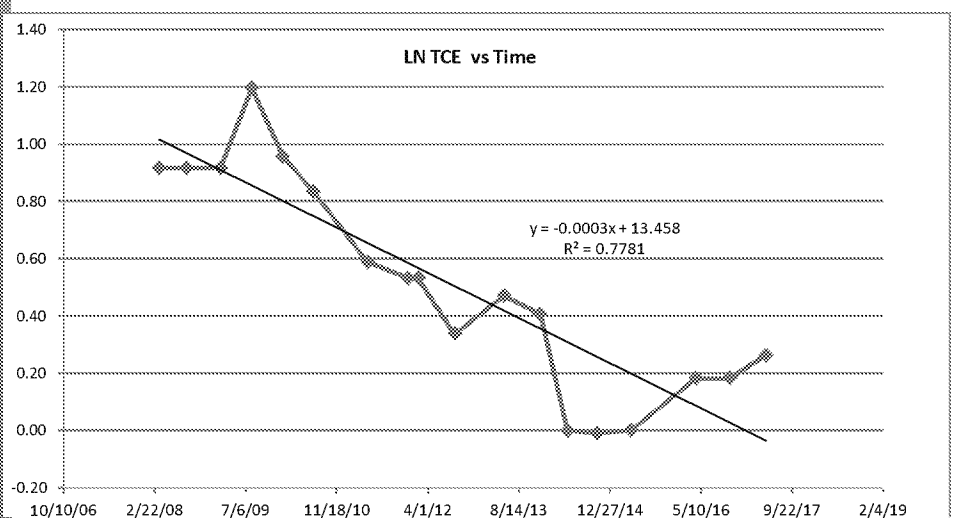
| | | | |
|---|---|---|---|
| Trend ≥ 80% Confidence Level | DECREASING | | |
| Trend ≥ 90% Confidence Level | DECREASING | | |
| Stability Test, If No Trend Exists at 80% Confidence Level | NA | | |

| | | | |
|---|---|---|---|
| Data Entry By = | BC | Date = | Mar 6 2018 |

**TCE Concentration Trend**




**LN TCE Concentration Trend**



## Mann-Kendall Statistical Test and First Order Change Rate

**Site Name** = Bethpage | **Well Number** = GM-74D2

| Event Number | Sampling Date (most recent last) | TCE Concentration | LN TCE Decreasing Change Rate Calculation | Linear TCE Increasing Change Rate Calculation |
|---|---|---|---|---|
| | Compound -> | | | |
| 1 | 3/17/2008 | 7.3 | | |
| 2 | 8/18/2008 | 6.4 | | |
| 3 | 2/17/2009 | 8.6 | | |
| 4 | 8/10/2009 | 7.3 | | |
| 5 | 1/28/2010 | 6.4 | | |
| 6 | 7/14/2010 | 6.6 | | |
| 7 | 5/4/2011 | 8.8 | | |
| 8 | 12/16/2011 | 6.9 | | |
| 9 | 2/10/2012 | 6.4 | | |
| 10 | 8/28/2012 | 6.3 | | |
| 11 | 5/23/2013 | 8.2 | | |
| 12 | 12/9/2013 | 7 | | |
| 13 | 5/8/2014 | 6.3 | | |
| 14 | 10/17/2014 | 7.2 | | |
| 15 | 4/23/2015 | 7.2 | | |
| 16 | 5/5/2016 | 7.2 | | |
| 17 | 10/25/2016 | 6.9 | | |
| 18 | 4/14/2017 | 7.8 | | |

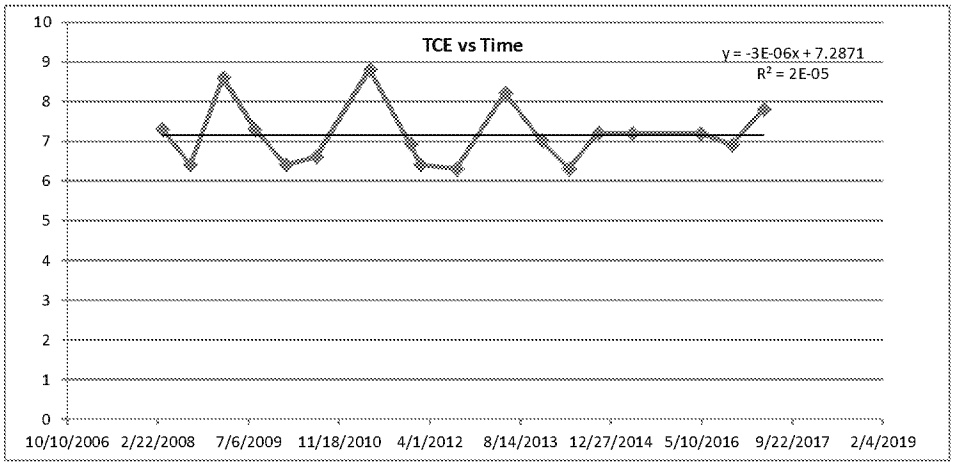
| | | | |
|---|---|---|---|
| Mann Kendall Statistic (S) = | 0.0 | #DIV/0! | |
| Number of Rounds (n) = | 18 | | |
| Average = | 7.16 | | |
| Standard Deviation = | 0.766 | | |
| Coefficient of Variation(CV)= | 0.107 | | |

**Error Check, Blank if No Errors Detected**

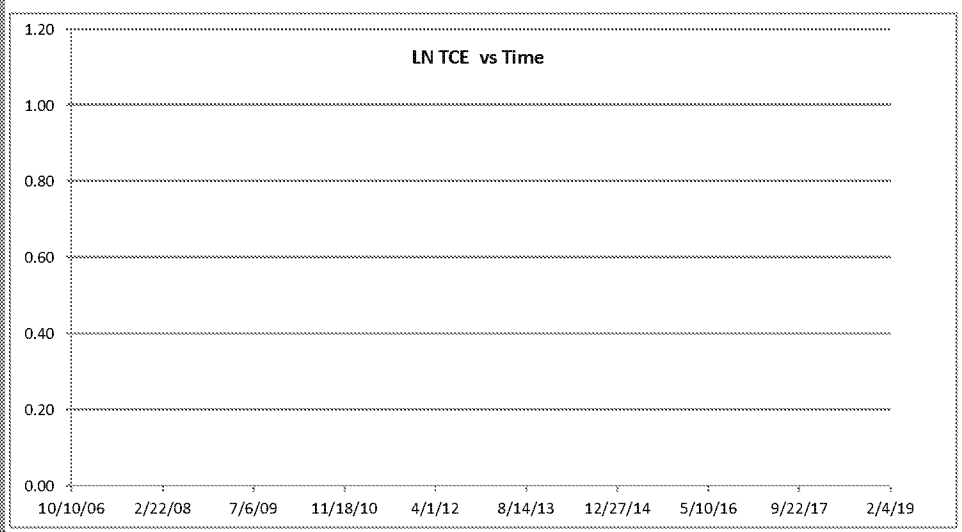
| | | | |
|---|---|---|---|
| Trend ≥ 80% Confidence Level | No Trend | | |
| Trend ≥ 90% Confidence Level | No Trend | | |
| Stability Test, If No Trend Exists at 80% Confidence Level | CV <= 1 STABLE | | |

| | | | |
|---|---|---|---|
| Data Entry By = | BC | Date = | Mar 6 2018 |

**TCE Concentration Trend**




**LN TCE Concentration Trend**



## Mann-Kendall Statistical Test and First Order Change Rate

**Site Name** = Bethpage | **Well Number** = GM-74I

| Event Number | Sampling Date (most recent last) | TCE Concentration | LN TCE Decreasing Change Rate Calculation | Linear TCE Increasing Change Rate Calculation |
|---|---|---|---|---|
| | Compound -> | | | |
| 1 | 3/17/2008 | 2.5 | 0.916290732 | |
| 2 | 8/18/2008 | 2.5 | 0.916290732 | |
| 3 | 2/17/2009 | 2.5 | 0.916290732 | |
| 4 | 8/10/2009 | 2.5 | 0.916290732 | |
| 5 | 1/28/2010 | 2.5 | 0.916290732 | |
| 6 | 7/14/2010 | 2.5 | 0.916290732 | |
| 7 | 5/4/2011 | 2.5 | 0.916290732 | |
| 8 | 12/16/2011 | 0.28 | -1.272965676 | |
| 9 | 2/10/2012 | 2.5 | 0.916290732 | |
| 10 | 8/28/2012 | 0.34 | -1.078809661 | |
| 11 | 5/23/2013 | 0.35 | -1.049822124 | |
| 12 | 12/9/2013 | 0.79 | -0.235722334 | |
| 13 | 5/8/2014 | 0.3 | -1.203972804 | |
| 14 | 10/17/2014 | 0.63 | -0.46203546 | |
| 15 | 4/21/2015 | 0.76 | -0.274436846 | |
| 16 | 4/13/2016 | 0.62 | -0.478035801 | |
| 17 | 10/24/2016 | 0.73 | -0.314710745 | |
| 18 | 5/2/2017 | 0.6 | -0.510825624 | |

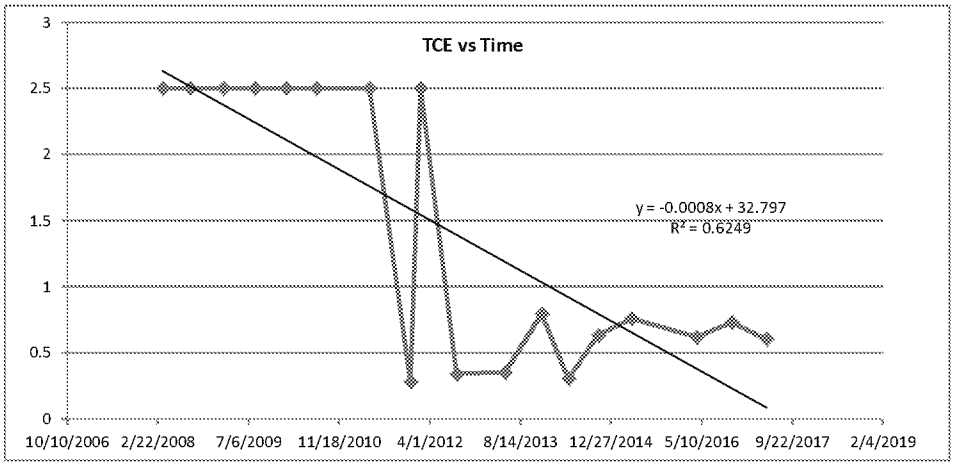
| | | | |
|---|---|---|---|
| Mann Kendall Statistic (S) = | -63.0 | -0.00057 | |
| Number of Rounds (n) = | 18 | | |
| Average = | 1.41 | | |
| Standard Deviation = | 1.013 | | |
| Coefficient of Variation(CV)= | 0.718 | | |

**Error Check, Blank if No Errors Detected**

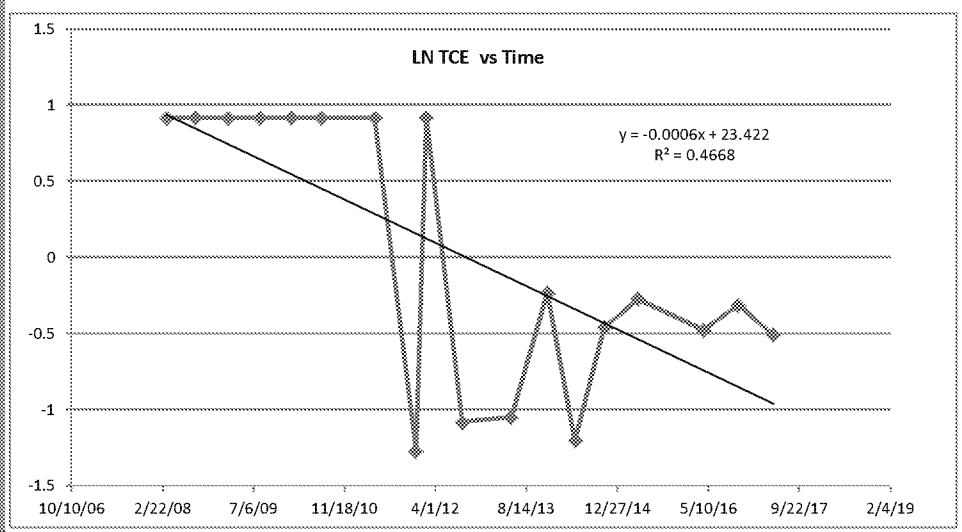
| | | | |
|---|---|---|---|
| Trend ≥ 80% Confidence Level | DECREASING | | |
| Trend ≥ 90% Confidence Level | DECREASING | | |
| Stability Test, If No Trend Exists at 80% Confidence Level | NA | | |

| | | | |
|---|---|---|---|
| Data Entry By = | BC | Date = | Mar 5 2018 |

**TCE Concentration Trend**




**LN TCE Concentration Trend**



## Mann-Kendall Statistical Test and First Order Change Rate

**Site Name** = Bethpage | **Well Number** = GM-75D2

| Event Number | Sampling Date (most recent last) | TCE Concentration | LN TCE Decreasing Change Rate Calculation | Linear TCE Increasing Change Rate Calculation |
|---|---|---|---|---|
| | Compound -> | | | |
| 1 | 2/3/2010 | 82 | 4.41 | |
| 2 | 4/15/2010 | 86 | 4.45 | |
| 3 | 8/10/2010 | 120 | 4.79 | |
| 4 | 12/15/2010 | 130 | 4.87 | |
| 5 | 5/18/2011 | 87 | 4.47 | |
| 6 | 7/27/2011 | 67 | 4.20 | |
| 7 | 12/23/2011 | 44 | 3.78 | |
| 8 | 3/9/2012 | 35 | 3.56 | |
| 9 | 5/16/2012 | 37 | 3.61 | |
| 10 | 9/6/2012 | 35 | 3.56 | |
| 11 | 12/14/2012 | 28 | 3.33 | |
| 12 | 6/12/2013 | 39 | 3.66 | |
| 13 | 12/19/2013 | 38 | 3.64 | |
| 14 | 6/2/2014 | 36 | 3.58 | |
| 15 | 6/4/2015 | 23.9 | 3.17 | |
| 16 | 5/10/2016 | 18.8 | 2.93 | |
| 17 | 12/5/2016 | 31.4 | 3.45 | |
| 18 | 6/12/2017 | 26.4 | 3.27 | |

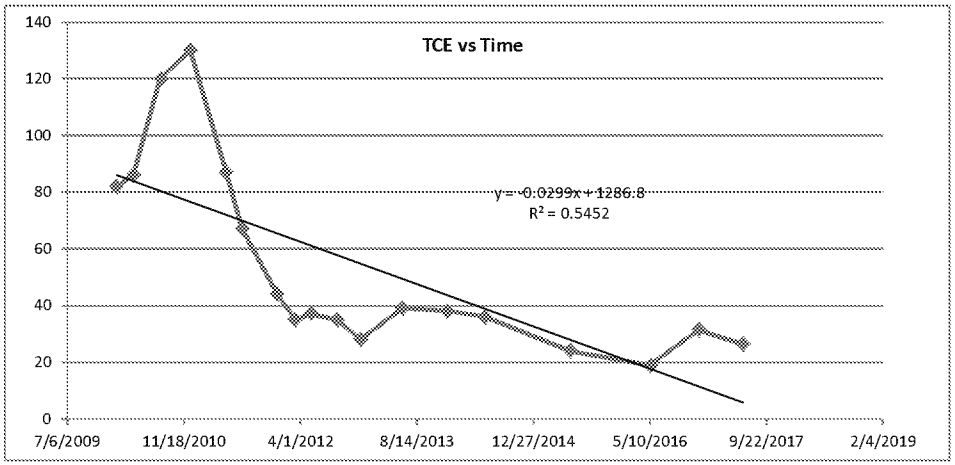
| | | | |
|---|---|---|---|
| Mann Kendall Statistic (S) = | -102.0 | -0.00056 | |
| Number of Rounds (n) = | 18 | | |
| Average = | 53.58 | | |
| Standard Deviation = | 33.611 | | |
| Coefficient of Variation(CV)= | 0.627 | | |

**Error Check, Blank if No Errors Detected**

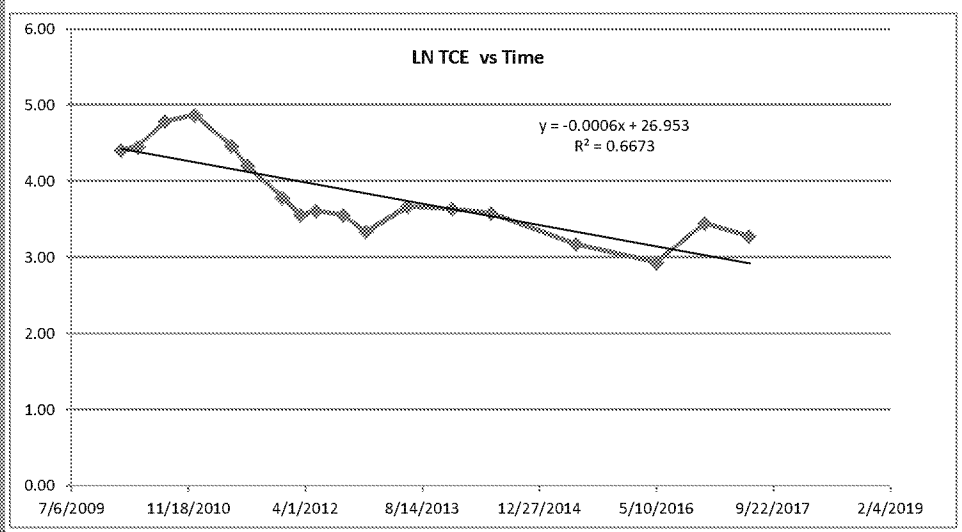
| | | | |
|---|---|---|---|
| Trend ≥ 80% Confidence Level | DECREASING | | |
| Trend ≥ 90% Confidence Level | DECREASING | | |
| Stability Test, If No Trend Exists at 80% Confidence Level | NA | | |

| | | | |
|---|---|---|---|
| Data Entry By = | BC | Date = | Mar 6 2018 |

TCE Concentration Trend




LN TCE Concentration Trend



## Mann-Kendall Statistical Test and First Order Change Rate

**Site Name** = Bethpage | **Well Number** = GM-78I

| Event Number | Sampling Date (most recent last) | TCE Concentration | LN TCE Decreasing Change Rate Calculation | Linear TCE Increasing Change Rate Calculation |
|---|---|---|---|---|
| | Compound -> | | | |
| 1 | 3/15/2006 | 0.9 | | |
| 2 | 9/26/2006 | 0.6 | | |
| 3 | 2/8/2007 | 0.69 | | |
| 4 | 9/25/2007 | 0.25 | | |
| 5 | 3/12/2008 | 0.25 | | |
| 6 | 8/14/2008 | 0.25 | | |
| 7 | 2/24/2009 | 0.25 | | |
| 8 | 8/17/2009 | 0.25 | | |
| 9 | 1/29/2010 | 0.25 | | |
| 10 | 7/16/2010 | 0.25 | | |
| 11 | 5/5/2011 | 0.25 | | |
| 12 | 12/9/2011 | 0.25 | | |
| 13 | 2/16/2012 | 0.25 | | |
| 14 | 5/29/2013 | 0.31 | | |
| 15 | 5/15/2014 | 0.58 | | |
| 16 | 6/1/2015 | 0.39 | | |
| 17 | 4/28/2016 | 0.38 | | |
| 18 | 5/5/2017 | 0.44 | | |

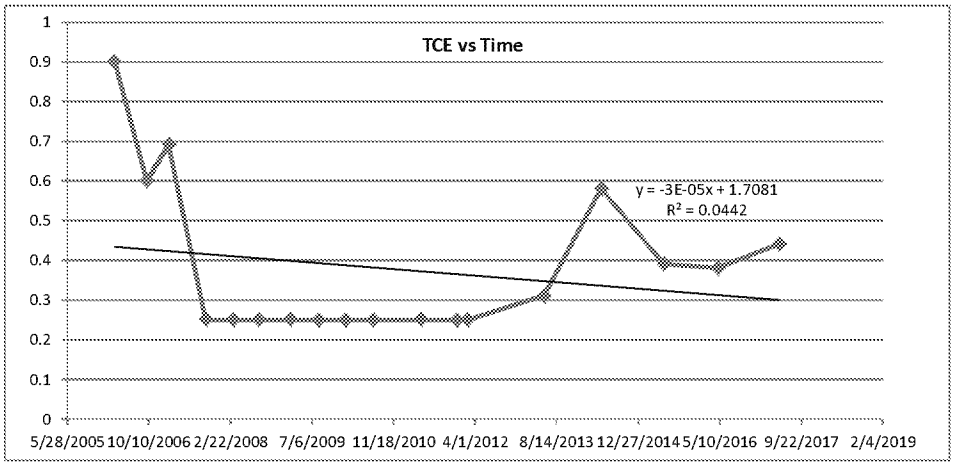
| | | | |
|---|---|---|---|
| **Mann Kendall Statistic (S) =** | 6.0 | #DIV/0! | |
| **Number of Rounds (n) =** | 18 | | |
| **Average =** | 0.38 | | |
| **Standard Deviation =** | 0.193 | | |
| **Coefficient of Variation(CV)=** | 0.511 | | |

**Error Check, Blank if No Errors Detected**

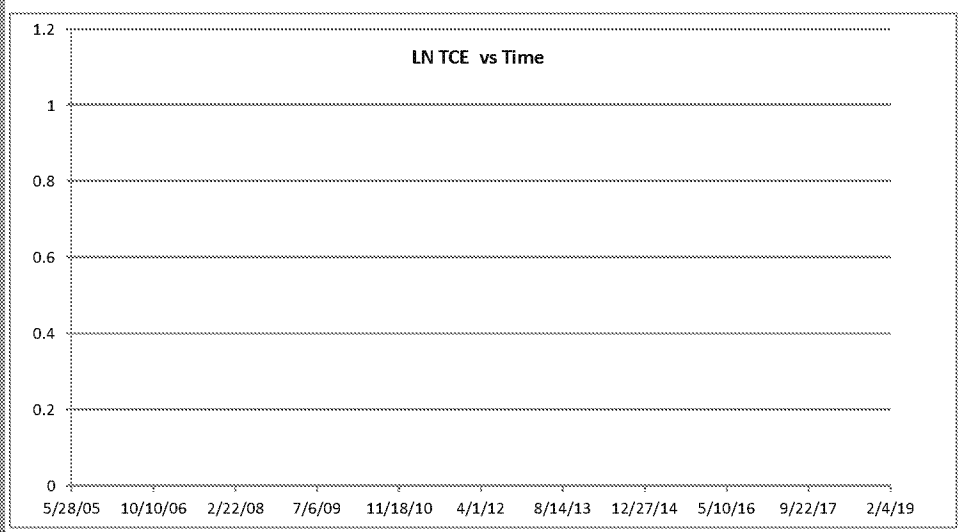
| | | | |
|---|---|---|---|
| **Trend ≥ 80% Confidence Level** | No Trend | | |
| **Trend ≥ 90% Confidence Level** | No Trend | | |
| Stability Test, If No Trend Exists at 80% Confidence Level | **CV <= 1 STABLE** | | |

| | | | |
|---|---|---|---|
| **Data Entry By =** | BC | **Date =** | Mar 6 2018 |

**TCE Concentration Trend**




**LN TCE Concentration Trend**



## Mann-Kendall Statistical Test and First Order Change Rate

**Site Name** = Bethpage | **Well Number** = GM-78S

| Event Number | Sampling Date (most recent last) | TCE Concentration | LN TCE Decreasing Change Rate Calculation | Linear TCE Increasing Change Rate Calculation |
|---|---|---|---|---|
| | Compound -> | | | |
| 1 | 3/15/2006 | 0.3 | | |
| 2 | 9/26/2006 | 0.9 | | |
| 3 | 2/8/2007 | 1.1 | | |
| 4 | 9/25/2007 | 2.5 | | |
| 5 | 3/12/2008 | 2.5 | | |
| 6 | 8/14/2008 | 2.5 | | |
| 7 | 2/24/2009 | 2.5 | | |
| 8 | 8/17/2009 | 2.5 | | |
| 9 | 1/29/2010 | 0.28 | | |
| 10 | 7/16/2010 | 0.33 | | |
| 11 | 5/5/2011 | 2.5 | | |
| 12 | 12/9/2011 | 2.5 | | |
| 13 | 2/16/2012 | 2.5 | | |
| 14 | 5/29/2013 | 2.5 | | |
| 15 | 5/15/2014 | 2.5 | | |
| 16 | 6/1/2015 | 0.57 | | |
| 17 | 4/28/2016 | 0.45 | | |
| 18 | 6/22/2017 | 0.43 | | |

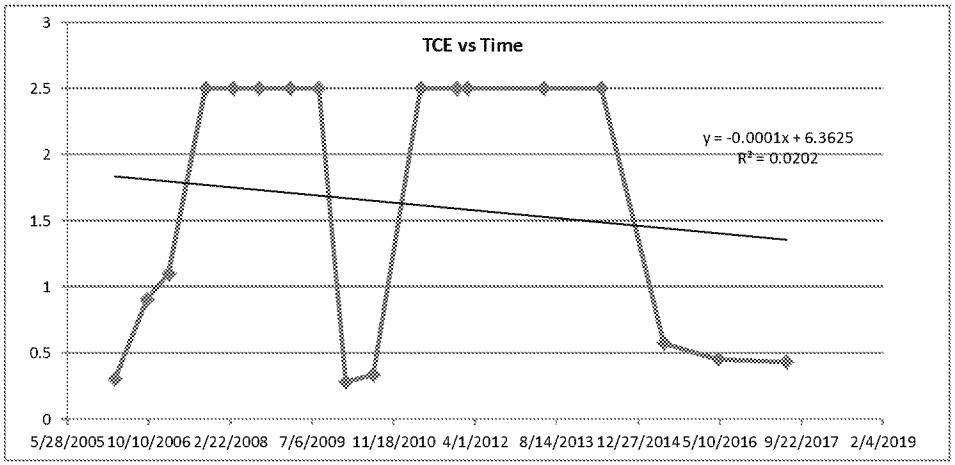
| | | | |
|---|---|---|---|
| **Mann Kendall Statistic (S) =** | 0.0 | #DIV/0! | |
| **Number of Rounds (n) =** | 18 | | |
| **Average =** | 1.63 | | |
| **Standard Deviation =** | 1.018 | | |
| **Coefficient of Variation(CV)=** | 0.624 | | |

**Error Check, Blank if No Errors Detected**

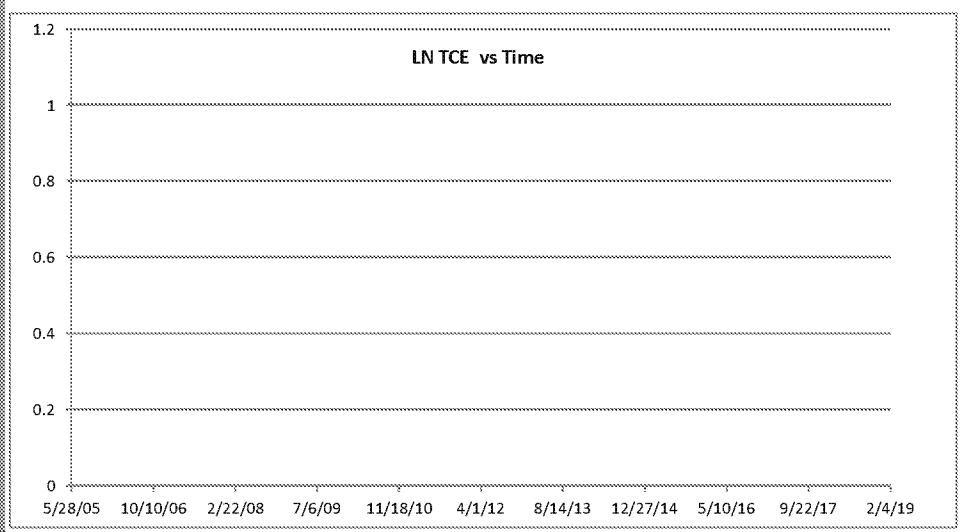
| | | | |
|---|---|---|---|
| **Trend ≥ 80% Confidence Level** | No Trend | | |
| **Trend ≥ 90% Confidence Level** | No Trend | | |
| Stability Test, If No Trend Exists at 80% Confidence Level | **CV <= 1 STABLE** | | |

| | | | |
|---|---|---|---|
| **Data Entry By =** | BC | **Date =** | March 5 2017 |

**TCE Concentration Trend**




**LN TCE Concentration Trend**



## Mann-Kendall Statistical Test and First Order Change Rate

**Site Name** = Bethpage | **Well Number** = GM-79D

| Event Number | Sampling Date (most recent last) | TCE Concentration | LN TCE Decreasing Change Rate Calculation | Linear TCE Increasing Change Rate Calculation |
|---|---|---|---|---|
| | Compound -> | | | |
| 1 | 4/13/2010 | 34 | | |
| 2 | 7/16/2010 | 35 | | |
| 3 | 12/13/2010 | 31 | | |
| 4 | 5/3/2011 | 2.5 | | |
| 5 | 7/26/2011 | 26 | | |
| 6 | 12/26/2011 | 26 | | |
| 7 | 2/14/2012 | 2.5 | | |
| 8 | 5/18/2012 | 26 | | |
| 9 | 9/5/2012 | 18 | | |
| 10 | 12/31/2012 | 27 | | |
| 11 | 5/28/2013 | 19 | | |
| 12 | 12/17/2013 | 13 | | |
| 13 | 5/14/2014 | 18 | | |
| 14 | 10/24/2014 | 15.5 | | |
| 15 | 6/13/2015 | 18 | | |
| 16 | 4/13/2016 | 25.9 | | |
| 17 | 12/9/2016 | 35.7 | | |
| 18 | 6/28/2017 | 46.9 | | |

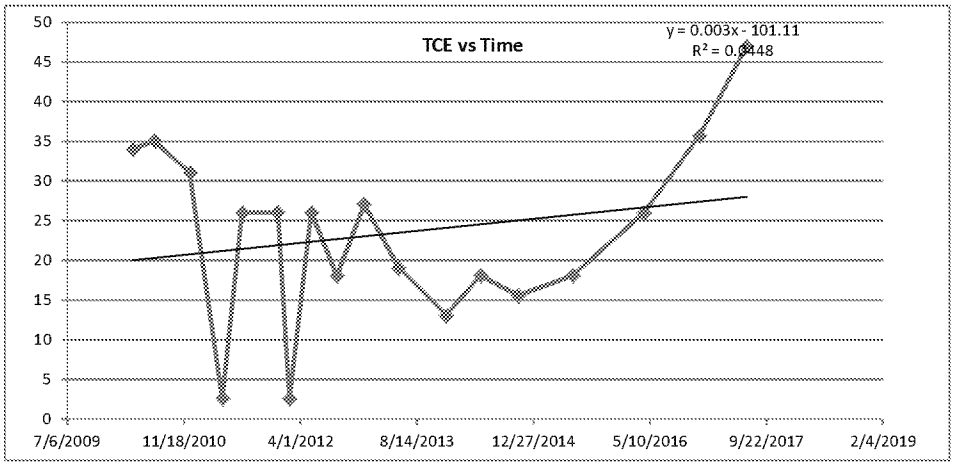
| | | | |
|---|---|---|---|
| **Mann Kendall Statistic (S) =** | -8.0 | #DIV/0! | |
| **Number of Rounds (n) =** | 18 | | |
| **Average =** | 23.33 | | |
| **Standard Deviation =** | 11.372 | | |
| **Coefficient of Variation(CV)=** | 0.487 | | |

**Error Check, Blank if No Errors Detected**

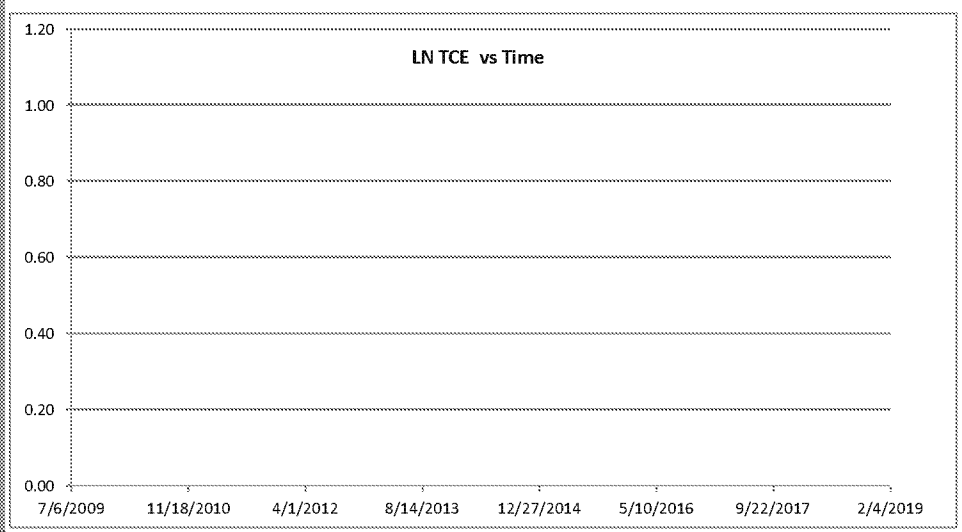
| | | | |
|---|---|---|---|
| **Trend ≥ 80% Confidence Level** | No Trend | | |
| **Trend ≥ 90% Confidence Level** | No Trend | | |
| Stability Test, If No Trend Exists at 80% Confidence Level | **CV <= 1 STABLE** | | |

| | | | |
|---|---|---|---|
| **Data Entry By =** | BC | **Date =** | Mar 6 2018 |

**TCE Concentration Trend**




**LN TCE Concentration Trend**

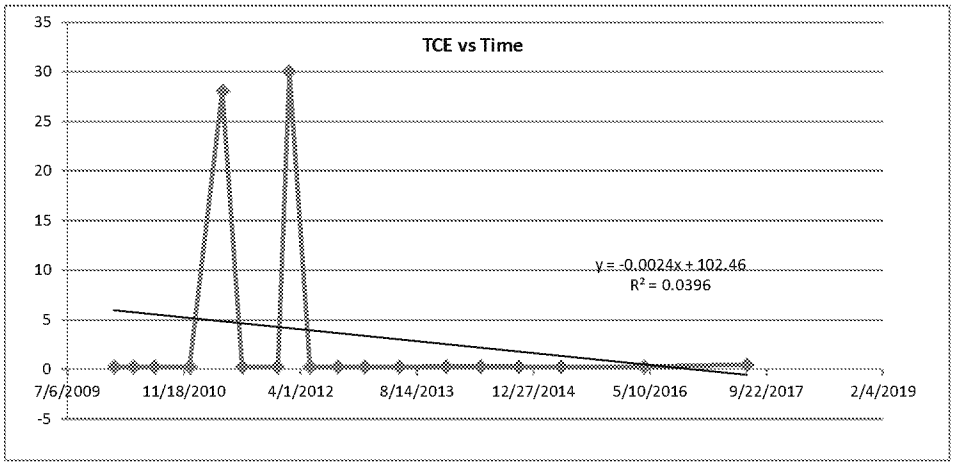


## Mann-Kendall Statistical Test and First Order Change Rate

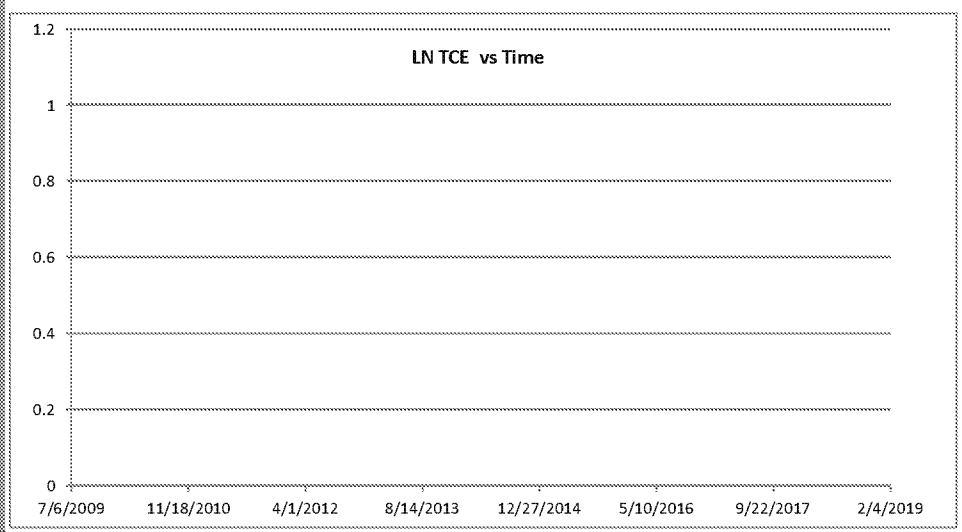
**Site Name** = Bethpage | **Well Number** = GM-79I

| Event Number | Sampling Date (most recent last) | TCE Concentration | LN TCE Decreasing Change Rate Calculation | Linear TCE Increasing Change Rate Calculation |
|---|---|---|---|---|
| | Compound -> | | | |
| 1 | 1/22/2010 | 0.25 | | |
| 2 | 4/13/2010 | 0.25 | | |
| 3 | 7/16/2010 | 0.25 | | |
| 4 | 12/13/2010 | 0.25 | | |
| 5 | 5/3/2011 | 28 | | |
| 6 | 7/26/2011 | 0.25 | | |
| 7 | 12/26/2011 | 0.25 | | |
| 8 | 2/14/2012 | 30 | | |
| 9 | 5/12/2012 | 0.25 | | |
| 10 | 9/5/2012 | 0.25 | | |
| 11 | 12/31/2012 | 0.25 | | |
| 12 | 5/28/2013 | 0.23 | | |
| 13 | 12/17/2013 | 0.33 | | |
| 14 | 5/14/2014 | 0.31 | | |
| 15 | 10/24/2014 | 0.25 | | |
| 16 | 4/22/2015 | 0.25 | | |
| 17 | 4/13/2016 | 0.25 | | |
| 18 | 6/28/2017 | 0.45 | | |
| | **Mann Kendall Statistic (S) =** | 11.0 | #DIV/0! | |
| | **Number of Rounds (n) =** | 18 | | |
| | **Average =** | 3.46 | | |
| | **Standard Deviation =** | 9.297 | | |
| | **Coefficient of Variation(CV)=** | 2.685 | | |
| **Error Check, Blank if No Errors Detected** | | | | |
| **Trend ≥ 80% Confidence Level** | | No Trend | | |
| **Trend ≥ 90% Confidence Level** | | No Trend | | |
| Stability Test, If No Trend Exists at 80% Confidence Level | | CV > 1 NON-STABLE | | |
| | **Data Entry By =** | BC | **Date =** | Mar 5 2018 |

**TCE Concentration Trend**




**LN TCE Concentration Trend**



## Mann-Kendall Statistical Test and First Order Change Rate

**Site Name** = Bethpage | **Well Number** = HN-24I

| Event Number | Sampling Date (most recent last) | TCE Concentration | LN TCE Decreasing Change Rate Calculation | Linear TCE Increasing Change Rate Calculation |
|---|---|---|---|---|
| | Compound -> | | | |
| 1 | 4/12/2005 | 0.25 | | |
| 2 | 9/20/2005 | 22 | | |
| 3 | 3/14/2006 | 37 | | |
| 4 | 9/29/2006 | 15 | | |
| 5 | 2/12/2007 | 11 | | |
| 6 | 3/13/2008 | 15 | | |
| 7 | 9/5/2008 | 19 | | |
| 8 | 2/27/2009 | 21 | | |
| 9 | 8/25/2009 | 22 | | |
| 10 | 8/6/2010 | 32 | | |
| 11 | 5/17/2011 | 35 | | |
| 12 | 12/28/2011 | 28 | | |
| 13 | 2/17/2012 | 27 | | |
| 14 | 6/10/2013 | 16 | | |
| 15 | 5/19/2014 | 18 | | |
| 16 | 6/2/2015 | 18.9 | | |
| 17 | 4/28/2016 | 15 | | |
| 18 | 4/20/2017 | 11.2 | | |

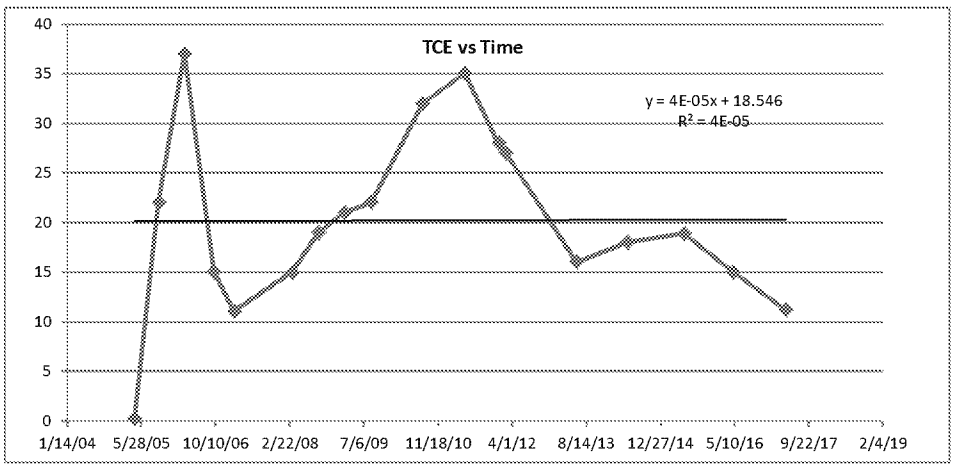
| | | | |
|---|---|---|---|
| **Mann Kendall Statistic (S) =** | -1.0 | #DIV/0! | |
| **Number of Rounds (n) =** | 18 | | |
| **Average =** | 20.19 | | |
| **Standard Deviation =** | 9.156 | | |
| **Coefficient of Variation(CV)=** | 0.454 | | |

**Error Check, Blank if No Errors Detected**

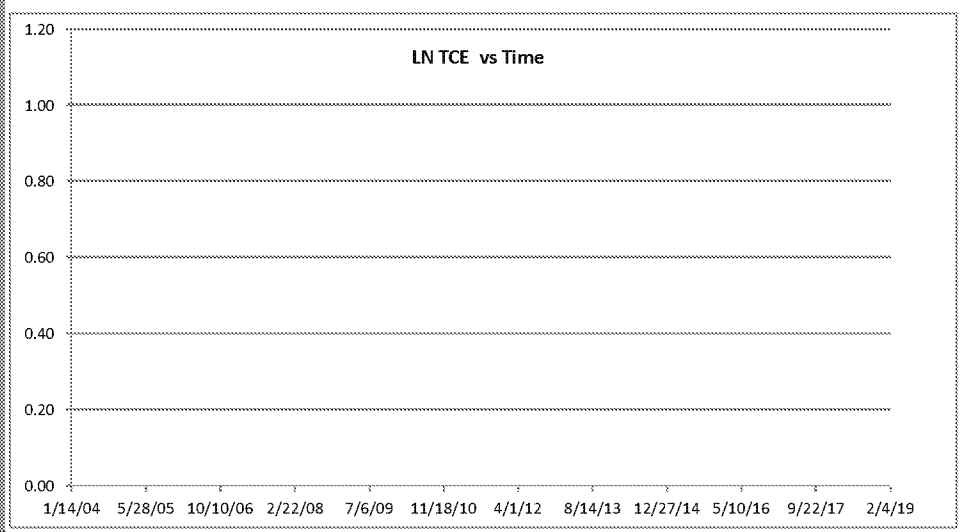
| | | | |
|---|---|---|---|
| **Trend ≥ 80% Confidence Level** | No Trend | | |
| **Trend ≥ 90% Confidence Level** | No Trend | | |
| Stability Test, If No Trend Exists at 80% Confidence Level | **CV <= 1 STABLE** | | |

| | | | |
|---|---|---|---|
| **Data Entry By =** | BC | **Date =** | Mar 5 2018 |

**TCE Concentration Trend**




**LN TCE Concentration Trend**



## Mann-Kendall Statistical Test and First Order Change Rate

**Site Name** = Bethpage | **Well Number** = HN-40I

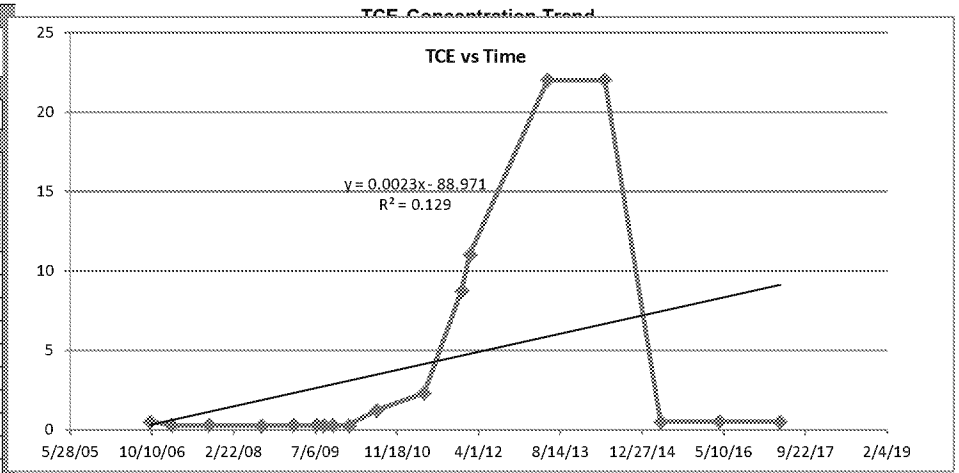
| Event Number | Sampling Date (most recent last) | TCE Concentration | LN TCE Decreasing Change Rate Calculation | Linear TCE Increasing Change Rate Calculation |
|---|---|---|---|---|
| | Compound -> | | | |
| 1 | 9/27/2006 | 0.5 | | 0.5 |
| 2 | 2/7/2007 | 0.25 | | 0.25 |
| 3 | 9/24/2007 | 0.25 | | 0.25 |
| 4 | 8/12/2008 | 0.25 | | 0.25 |
| 5 | 2/23/2009 | 0.25 | | 0.25 |
| 6 | 7/14/2009 | 0.25 | | 0.25 |
| 7 | 8/24/2009 | 0.25 | | 0.25 |
| 8 | 10/22/2009 | 0.25 | | 0.25 |
| 9 | 1/28/2010 | 0.25 | | 0.25 |
| 10 | 7/15/2010 | 1.2 | | 1.2 |
| 11 | 5/3/2011 | 2.3 | | 2.3 |
| 12 | 12/19/2011 | 8.7 | | 8.7 |
| 13 | 2/7/2012 | 11 | | 11 |
| 14 | 5/28/2013 | 22 | | 22 |
| 15 | 5/12/2014 | 22 | | 22 |
| 16 | 4/20/2015 | 0.5 | | 0.5 |
| 17 | 4/13/2016 | 0.5 | | 0.5 |
| 18 | 4/19/2017 | 0.5 | | 0.5 |

| | | | |
|---|---|---|---|
| Mann Kendall Statistic (S) = | 66.0 | | 0.00229 |
| Number of Rounds (n) = | 18 | | |
| Average = | 3.96 | | |
| Standard Deviation = | 7.241 | | |
| Coefficient of Variation(CV)= | 1.831 | | |

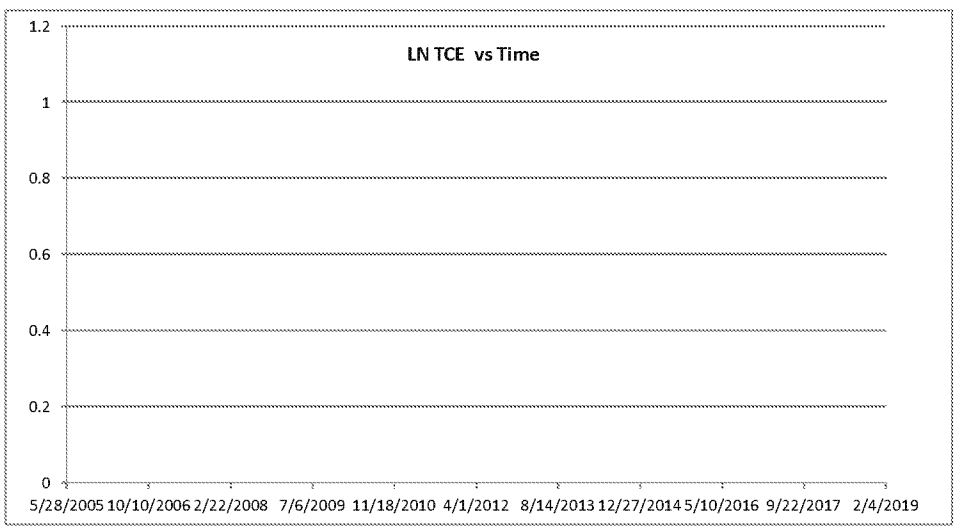
**Error Check, Blank if No Errors Detected**

| | | | |
|---|---|---|---|
| Trend ≥ 80% Confidence Level | INCREASING | | |
| Trend ≥ 90% Confidence Level | INCREASING | | |
| Stability Test, If No Trend Exists at 80% Confidence Level | NA | | |

| | | | |
|---|---|---|---|
| Data Entry By = | BC | Date = | Mar 5 2018 |




LN TCE Concentration Trend



## Mann-Kendall Statistical Test and First Order Change Rate

**Site Name** = Bethpage | **Well Number** = HN-42I

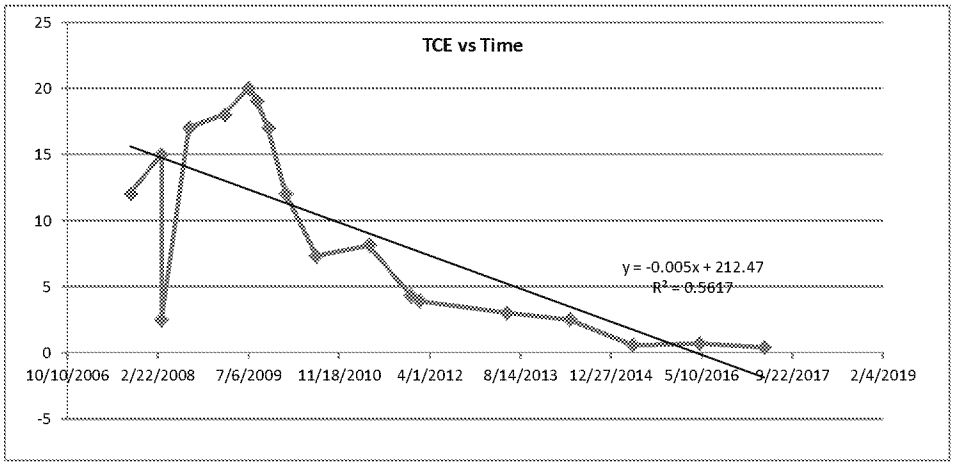
| Event Number | Sampling Date (most recent last) | TCE Concentration | LN TCE Decreasing Change Rate Calculation | Linear TCE Increasing Change Rate Calculation |
|---|---|---|---|---|
| | Compound -> | | | |
| 1 | 9/24/2007 | 12 | 2.48 | |
| 2 | 3/12/2008 | 15 | 2.71 | |
| 3 | 3/13/2008 | 2.5 | 0.92 | |
| 4 | 8/12/2008 | 17 | 2.83 | |
| 5 | 2/23/2009 | 18 | 2.89 | |
| 6 | 7/8/2009 | 20 | 3.00 | |
| 7 | 8/20/2009 | 19 | 2.94 | |
| 8 | 10/21/2009 | 17 | 2.83 | |
| 9 | 1/28/2010 | 12 | 2.48 | |
| 10 | 7/15/2010 | 7.3 | 1.99 | |
| 11 | 5/2/2011 | 8.1 | 2.09 | |
| 12 | 12/17/2011 | 4.3 | 1.46 | |
| 13 | 2/6/2012 | 3.9 | 1.36 | |
| 14 | 5/28/2013 | 3 | 1.10 | |
| 15 | 5/12/2014 | 2.5 | 0.92 | |
| 16 | 4/27/2015 | 0.56 | -0.58 | |
| 17 | 4/26/2016 | 0.71 | -0.34 | |
| 18 | 4/19/2017 | 0.42 | -0.87 | |
| | Mann Kendall Statistic (S) = | -92.0 | -0.00103 | |
| | Number of Rounds (n) = | 18 | | |
| | Average = | 9.07 | | |
| | Standard Deviation = | 7.153 | | |
| | Coefficient of Variation(CV)= | 0.788 | | |

**Error Check, Blank if No Errors Detected**

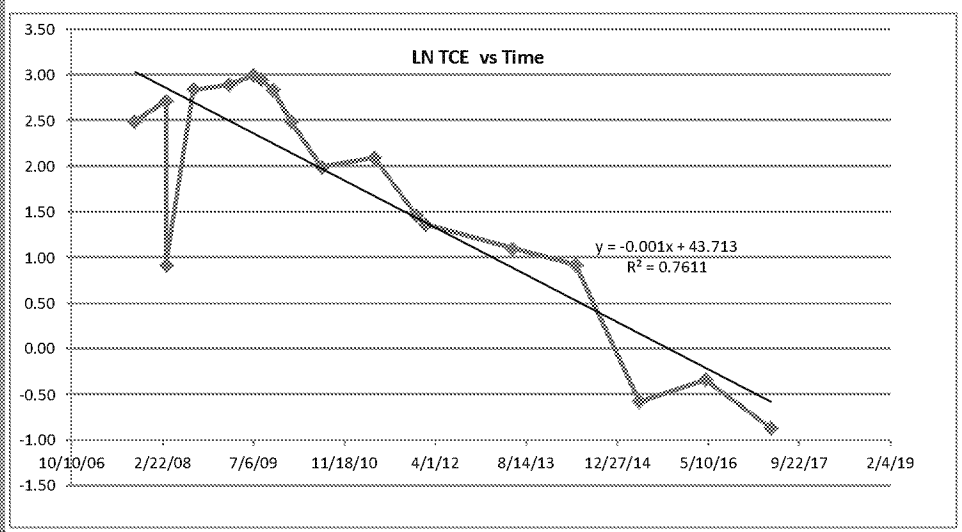
| | | | |
|---|---|---|---|
| Trend ≥ 80% Confidence Level | DECREASING | | |
| Trend ≥ 90% Confidence Level | DECREASING | | |
| Stability Test, If No Trend Exists at 80% Confidence Level | NA | | |

| | | | |
|---|---|---|---|
| Data Entry By = | BC | Date = | Mar 5 2018 |

TCE Concentration Trend




LN TCE Concentration Trend



## Mann-Kendall Statistical Test and First Order Change Rate

**Site Name** = Bethpage | **Well Number** = RE103D1

| Event Number | Sampling Date (most recent last) | TCE Concentration | LN TCE Decreasing Change Rate Calculation | Linear TCE Increasing Change Rate Calculation |
|---|---|---|---|---|
| | Compound -> | | | |
| 1 | 3/11/2014 | 1000 | 6.91 | |
| 2 | 6/11/2014 | 1200 | 7.09 | |
| 3 | 9/23/2014 | 850 | 6.75 | |
| 4 | 12/10/2014 | 1300 | 7.17 | |
| 5 | 3/23/2015 | 900 | 6.80 | |
| 6 | 6/22/2015 | 810 | 6.70 | |
| 7 | 9/30/2015 | 860 | 6.76 | |
| 8 | 12/14/2015 | 930 | 6.84 | |
| 9 | 3/14/2016 | 1200 | 7.09 | |
| 10 | 6/23/2016 | 930 | 6.84 | |
| 11 | 9/19/2016 | 860 | 6.76 | |
| 12 | 12/6/2016 | 940 | 6.85 | |
| 13 | 3/7/2017 | 740 | 6.61 | |
| 14 | 6/1/2017 | 910 | 6.81 | |
| 15 | 9/18/2017 | 720 | 6.58 | |
| 16 | 12/5/2017 | 720 | 6.58 | |
| 17 | | | | |
| 18 | | | | |

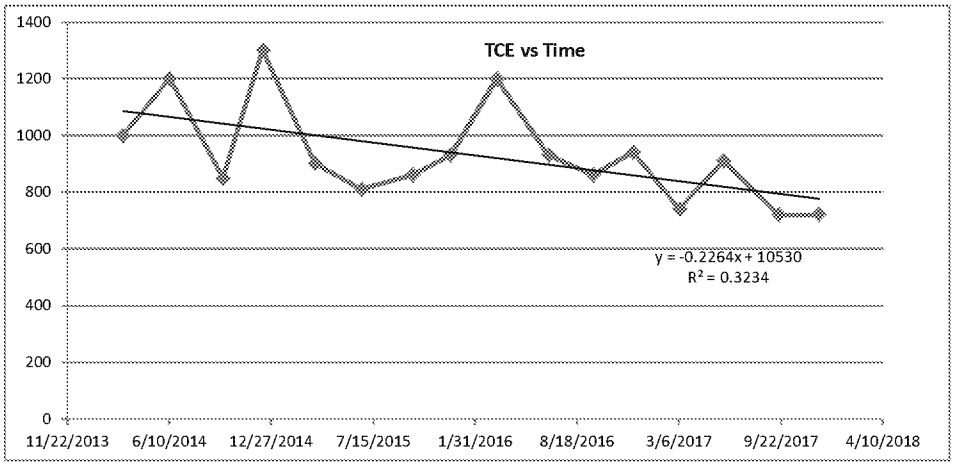
| | | | |
|---|---|---|---|
| Mann Kendall Statistic (S) = | -44.0 | -0.00024 | |
| Number of Rounds (n) = | 16 | | |
| Average = | 929.38 | | |
| Standard Deviation = | 172.026 | | |
| Coefficient of Variation(CV)= | 0.185 | | |

**Error Check, Blank if No Errors Detected**

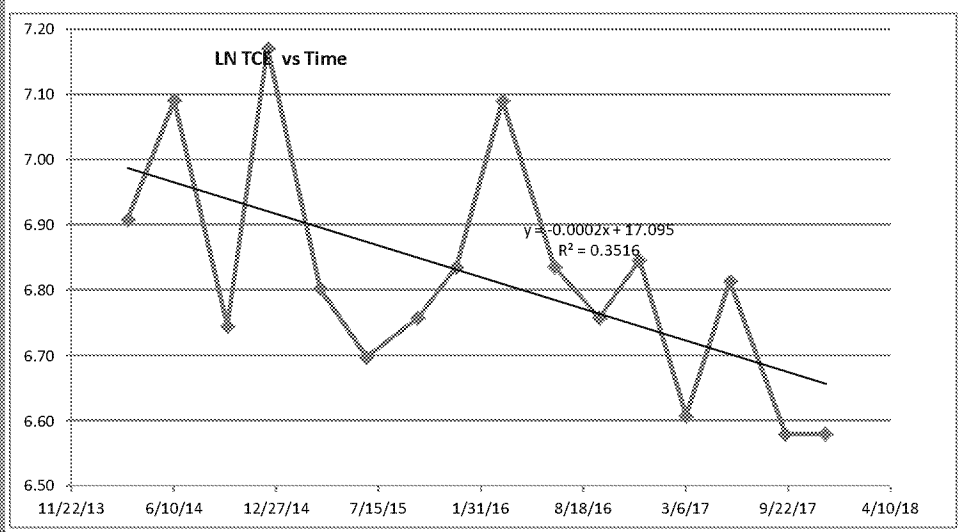
| | | | |
|---|---|---|---|
| Trend ≥ 80% Confidence Level | DECREASING | | |
| Trend ≥ 90% Confidence Level | DECREASING | | |
| Stability Test, If No Trend Exists at 80% Confidence Level | NA | | |

| | | | |
|---|---|---|---|
| Data Entry By = | BC | Date = | Feb 27 2018 |

**TCE Concentration Trend**




**LN TCE Concentration Trend**



## Mann-Kendall Statistical Test and First Order Change Rate

**Site Name** = Bethpage | **Well Number** = RE103D2

| Event Number | Sampling Date (most recent last) | TCE Concentration | LN TCE Decreasing Change Rate Calculation | Linear TCE Increasing Change Rate Calculation |
|---|---|---|---|---|
| | Compound -> | | | |
| 1 | 3/11/2014 | 750 | 6.620073207 | |
| 2 | 6/11/2014 | 670 | 6.507277712 | |
| 3 | 9/23/2014 | 1300 | 7.170119543 | |
| 4 | 12/10/2014 | 930 | 6.835184586 | |
| 5 | 3/23/2015 | 940 | 6.845879875 | |
| 6 | 6/22/2015 | 770 | 6.646390515 | |
| 7 | 9/30/2015 | 830 | 6.721425701 | |
| 8 | 12/14/2015 | 620 | 6.429719478 | |
| 9 | 3/14/2016 | 860 | 6.756932389 | |
| 10 | 6/23/2016 | 890 | 6.791221463 | |
| 11 | 9/19/2016 | 810 | 6.697034248 | |
| 12 | 12/6/2016 | 780 | 6.65929392 | |
| 13 | 3/7/2017 | 700 | 6.551080335 | |
| 14 | 6/1/2017 | 560 | 6.327936784 | |
| 15 | 9/18/2017 | 480 | 6.173786104 | |
| 16 | 12/13/2017 | 530 | 6.272877007 | |
| 17 | | | | |
| 18 | | | | |

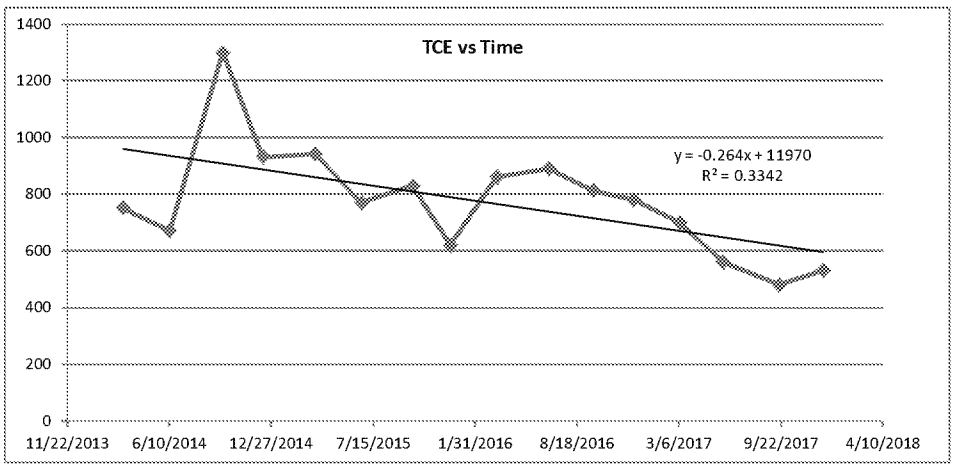
| | | | |
|---|---|---|---|
| Mann Kendall Statistic (S) = | -52.0 | -0.00035 | |
| Number of Rounds (n) = | 16 | | |
| Average = | 776.25 | | |
| Standard Deviation = | 197.682 | | |
| Coefficient of Variation(CV)= | 0.255 | | |

**Error Check, Blank if No Errors Detected**

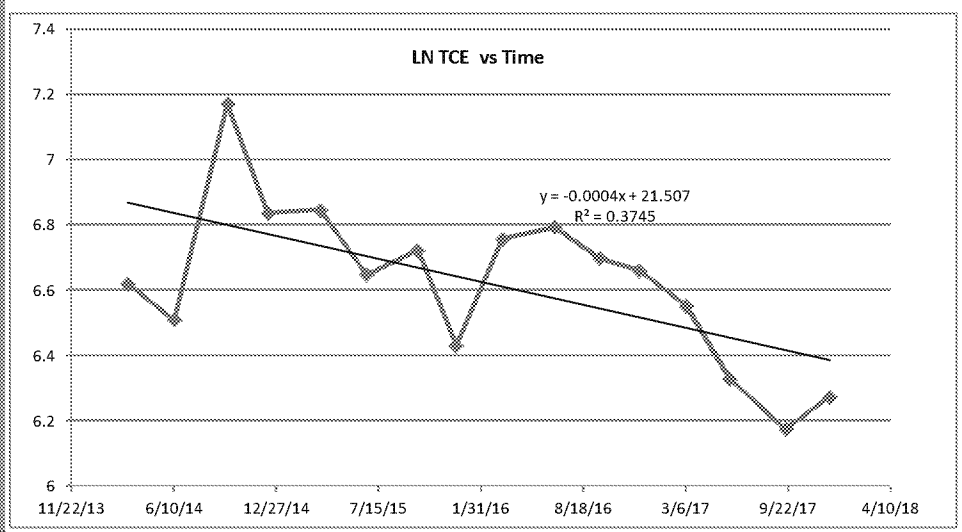
| | | | |
|---|---|---|---|
| Trend ≥ 80% Confidence Level | DECREASING | | |
| Trend ≥ 90% Confidence Level | DECREASING | | |
| Stability Test, If No Trend Exists at 80% Confidence Level | NA | | |

| | | | |
|---|---|---|---|
| Data Entry By = | BC | Date = | Mar 5 2018 |

**TCE Concentration Trend**




**LN TCE Concentration Trend**



## Mann-Kendall Statistical Test and First Order Change Rate

**Site Name** = Bethpage | **Well Number** = RE103D3

| Event Number | Sampling Date (most recent last) | TCE Concentration | LN TCE Decreasing Change Rate Calculation | Linear TCE Increasing Change Rate Calculation |
|---|---|---|---|---|
| | Compound -> | | | |
| 1 | 3/11/2014 | 430 | 6.063785209 | |
| 2 | 6/11/2014 | 510 | 6.234410726 | |
| 3 | 9/23/2014 | 460 | 6.131226489 | |
| 4 | 12/10/2014 | 600 | 6.396929655 | |
| 5 | 3/23/2015 | 570 | 6.345636361 | |
| 6 | 6/22/2015 | 420 | 6.040254711 | |
| 7 | 9/30/2015 | 470 | 6.152732695 | |
| 8 | 12/14/2015 | 510 | 6.234410726 | |
| 9 | 3/14/2016 | 520 | 6.253828812 | |
| 10 | 6/23/2016 | 500 | 6.214608098 | |
| 11 | 9/19/2016 | 490 | 6.194405391 | |
| 12 | 12/6/2016 | 500 | 6.214608098 | |
| 13 | 3/7/2017 | 420 | 6.040254711 | |
| 14 | 6/1/2017 | 400 | 5.991464547 | |
| 15 | 9/18/2017 | 240 | 5.480638923 | |
| 16 | 12/13/2017 | 390 | 5.966146739 | |
| 17 | | | | |
| 18 | | | | |

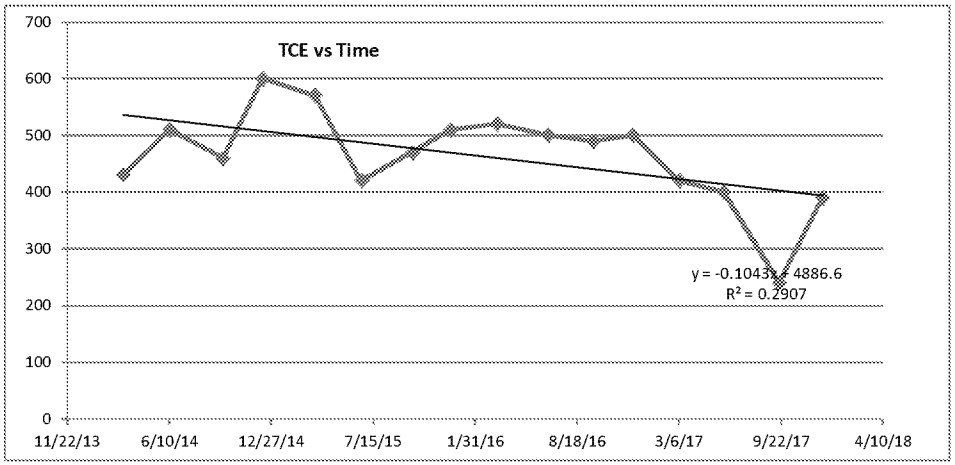
| | | | |
|---|---|---|---|
| Mann Kendall Statistic (S) = | -47.0 | -0.00026 | |
| Number of Rounds (n) = | 16 | | |
| Average = | 464.38 | | |
| Standard Deviation = | 83.743 | | |
| Coefficient of Variation(CV)= | 0.180 | | |

**Error Check, Blank if No Errors Detected**

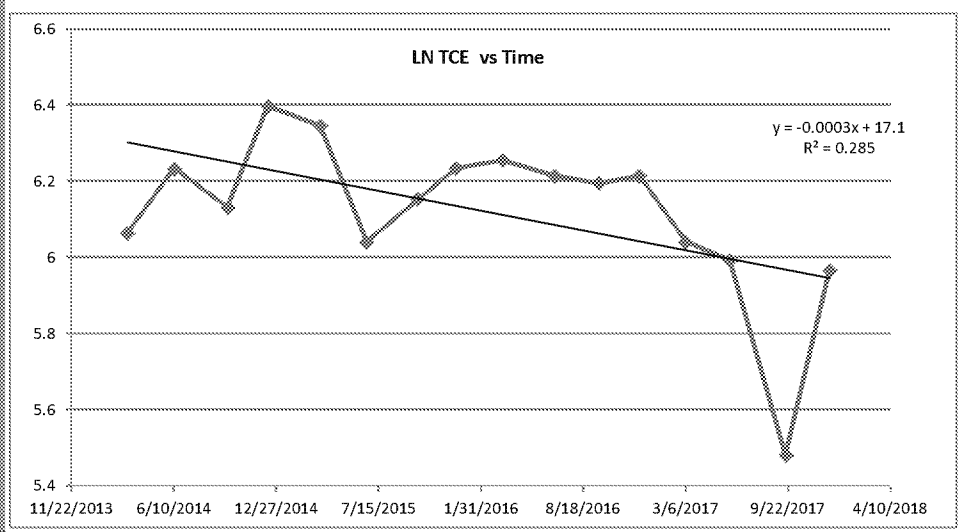
| | | | |
|---|---|---|---|
| Trend ≥ 80% Confidence Level | DECREASING | | |
| Trend ≥ 90% Confidence Level | DECREASING | | |
| Stability Test, If No Trend Exists at 80% Confidence Level | NA | | |

**Data Entry By =** BC **Date =** Feb 27 2018

**TCE Concentration Trend**




**LN TCE Concentration Trend**



## Mann-Kendall Statistical Test and First Order Change Rate

**Site Name** = Bethpage | **Well Number** = RE104D1

| Event Number | Sampling Date (most recent last) | TCE Concentration | LN TCE Decreasing Change Rate Calculation | Linear TCE Increasing Change Rate Calculation |
|---|---|---|---|---|
| | Compound -> | | | |
| 1 | 3/12/2014 | 150 | 5.01 | |
| 2 | 6/12/2014 | 160 | 5.08 | |
| 3 | 9/24/2014 | 140 | 4.94 | |
| 4 | 12/11/2014 | 140 | 4.94 | |
| 5 | 3/23/2015 | 110 | 4.70 | |
| 6 | 6/23/2015 | 100 | 4.61 | |
| 7 | 9/25/2015 | 110 | 4.70 | |
| 8 | 12/15/2015 | 110 | 4.70 | |
| 9 | 3/15/2016 | 100 | 4.61 | |
| 10 | 6/21/2016 | 92 | 4.52 | |
| 11 | 9/1/2016 | 93 | 4.53 | |
| 12 | 12/1/2016 | 84 | 4.43 | |
| 13 | 3/1/2017 | 79 | 4.37 | |
| 14 | 6/1/2017 | 77 | 4.34 | |
| 15 | 9/19/2017 | 65 | 4.17 | |
| 16 | 12/5/2017 | 69 | 4.23 | |
| 17 | | | | |
| 18 | | | | |

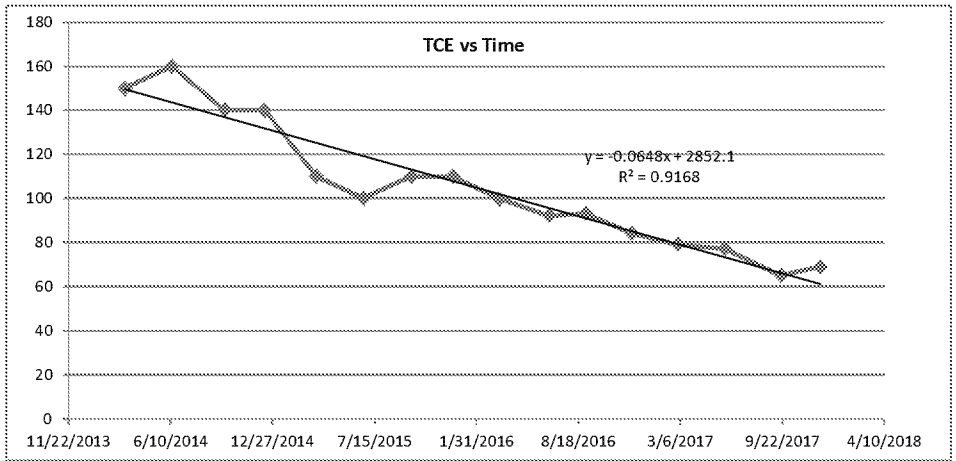
| | | | |
|---|---|---|---|
| Mann Kendall Statistic (S) = | -105.0 | -0.00062 | |
| Number of Rounds (n) = | 16 | | |
| Average = | 104.94 | | |
| Standard Deviation = | 29.138 | | |
| Coefficient of Variation(CV)= | 0.278 | | |

**Error Check, Blank if No Errors Detected**

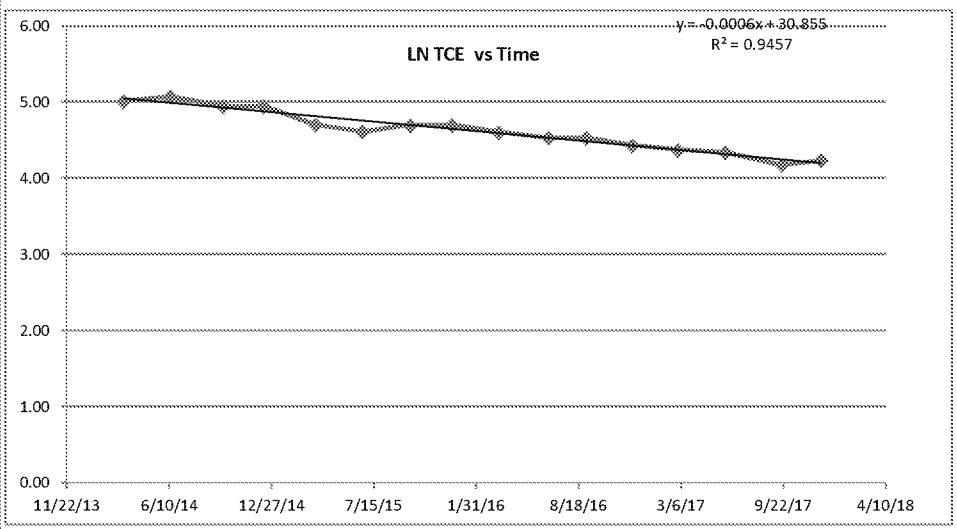
| | | | |
|---|---|---|---|
| Trend ≥ 80% Confidence Level | DECREASING | | |
| Trend ≥ 90% Confidence Level | DECREASING | | |
| Stability Test, If No Trend Exists at 80% Confidence Level | NA | | |

**Data Entry By =** BC **Date =** Mar 1 2018

TCE Concentration Trend




LN TCE Concentration Trend



## Mann-Kendall Statistical Test and First Order Change Rate

**Site Name** = Bethpage | **Well Number** = RE104D2

| Event Number | Sampling Date (most recent last) | TCE Concentration | LN TCE Decreasing Change Rate Calculation | Linear TCE Increasing Change Rate Calculation |
|---|---|---|---|---|
| | Compound -> | | | |
| 1 | 3/12/2014 | 2.6 | | 2.6 |
| 2 | 6/12/2014 | 1.8 | | 1.8 |
| 3 | 9/24/2014 | 2.3 | | 2.3 |
| 4 | 12/11/2014 | 3.4 | | 3.4 |
| 5 | 3/23/2015 | 3 | | 3 |
| 6 | 6/23/2015 | 4.3 | | 4.3 |
| 7 | 9/25/2015 | 4.2 | | 4.2 |
| 8 | 12/15/2015 | 6.8 | | 6.8 |
| 9 | 3/15/2016 | 8.4 | | 8.4 |
| 10 | 6/21/2016 | 9 | | 9 |
| 11 | 9/1/2016 | 12 | | 12 |
| 12 | 12/1/2016 | 10 | | 10 |
| 13 | 3/1/2017 | 10 | | 10 |
| 14 | 6/1/2017 | 15 | | 15 |
| 15 | 9/19/2017 | 13 | | 13 |
| 16 | 12/5/2017 | 27 | | 27 |
| 17 | | | | |
| 18 | | | | |

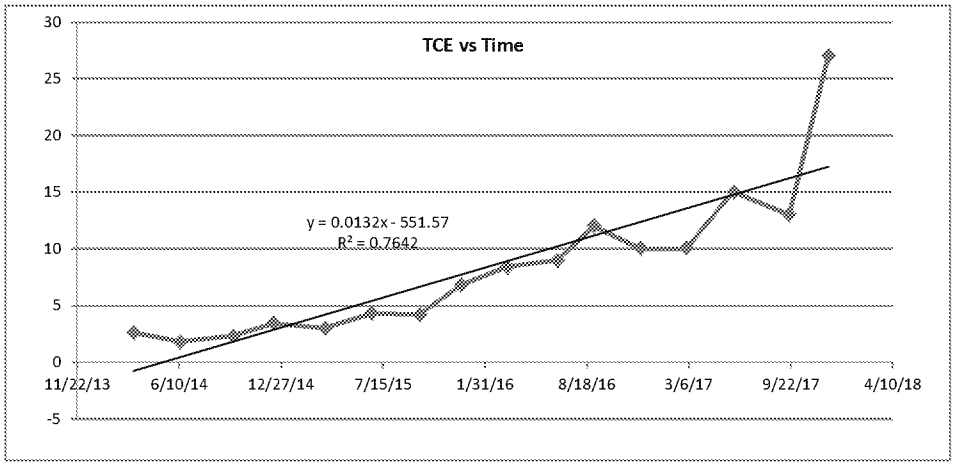
| | | | |
|---|---|---|---|
| Mann Kendall Statistic (S) = | 105.0 | | 0.01321 |
| Number of Rounds (n) = | 16 | | |
| Average = | 8.30 | | |
| Standard Deviation = | 6.504 | | |
| Coefficient of Variation(CV)= | 0.784 | | |

Error Check, Blank if No Errors Detected

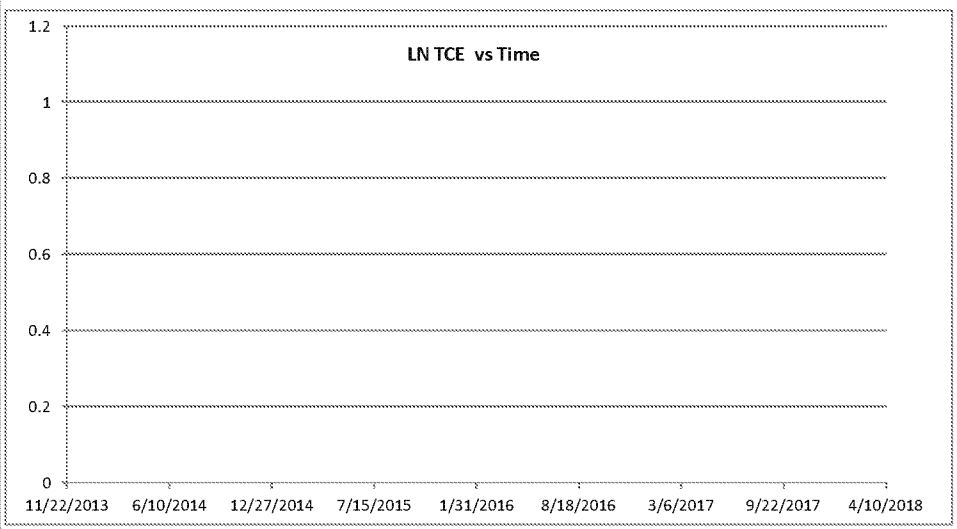
| | | | |
|---|---|---|---|
| Trend ≥ 80% Confidence Level | INCREASING | | |
| Trend ≥ 90% Confidence Level | INCREASING | | |
| Stability Test, If No Trend Exists at 80% Confidence Level | NA | | |

Data Entry By = BAH | Date = Jan 4 2017

TCE Concentration Trend




LN TCE Concentration Trend



## Mann-Kendall Statistical Test and First Order Change Rate

**Site Name** = Bethpage | **Well Number** = RE105D1

| Event Number | Sampling Date (most recent last) | TCE Concentration | LN TCE Decreasing Change Rate Calculation | Linear TCE Increasing Change Rate Calculation |
|---|---|---|---|---|
| | Compound -> | | | |
| 1 | 3/11/2014 | 160 | 5.08 | |
| 2 | 6/11/2014 | 130 | 4.87 | |
| 3 | 9/26/2014 | 92 | 4.52 | |
| 4 | 12/11/2014 | 120 | 4.79 | |
| 5 | 3/25/2015 | 120 | 4.79 | |
| 6 | 6/23/2015 | 120 | 4.79 | |
| 7 | 9/28/2015 | 94 | 4.54 | |
| 8 | 12/17/2015 | 120 | 4.79 | |
| 9 | 3/17/2016 | 130 | 4.87 | |
| 10 | 6/27/2016 | 110 | 4.70 | |
| 11 | 9/19/2016 | 100 | 4.61 | |
| 12 | 12/6/2016 | 110 | 4.70 | |
| 13 | 3/7/2017 | 120 | 4.79 | |
| 14 | 6/1/2017 | 86 | 4.45 | |
| 15 | 9/18/2017 | 92 | 4.52 | |
| 16 | 12/5/2017 | 100 | 4.61 | |
| 17 | | | | |
| 18 | | | | |

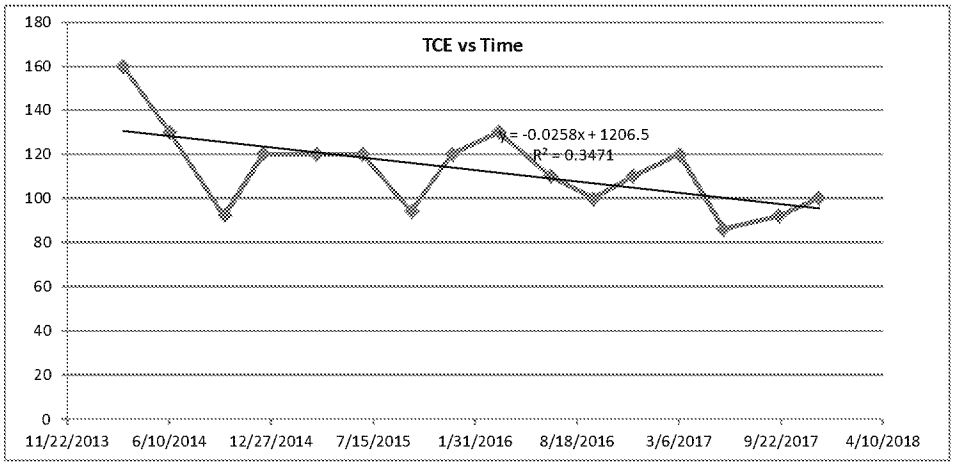
| | | | |
|---|---|---|---|
| Mann Kendall Statistic (S) = | -48.0 | -0.00022 | |
| Number of Rounds (n) = | 16 | | |
| Average = | 112.75 | | |
| Standard Deviation = | 18.901 | | |
| Coefficient of Variation(CV)= | 0.168 | | |

**Error Check, Blank if No Errors Detected**

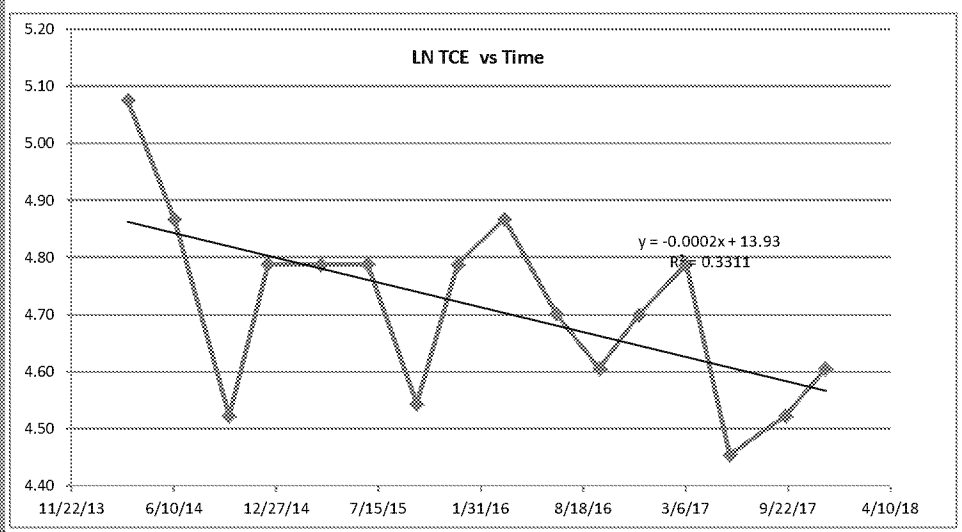
| | | | |
|---|---|---|---|
| Trend ≥ 80% Confidence Level | DECREASING | | |
| Trend ≥ 90% Confidence Level | DECREASING | | |
| Stability Test, If No Trend Exists at 80% Confidence Level | NA | | |

| | | | |
|---|---|---|---|
| Data Entry By = | BC | Date = | Feb 27 2018 |

TCE Concentration Trend




LN TCE Concentration Trend



## Mann-Kendall Statistical Test and First Order Change Rate

**Site Name** = Bethpage | **Well Number** = RE105D2

| Event Number | Sampling Date (most recent last) | TCE Concentration | LN TCE Decreasing Change Rate Calculation | Linear TCE Increasing Change Rate Calculation |
|---|---|---|---|---|
| | Compound -> | | | |
| 1 | 3/11/2014 | 620 | | 620 |
| 2 | 6/11/2014 | 1500 | | 1500 |
| 3 | 9/26/2014 | 1500 | | 1500 |
| 4 | 12/11/2014 | 1700 | | 1700 |
| 5 | 3/25/2015 | 1600 | | 1600 |
| 6 | 6/23/2015 | 1400 | | 1400 |
| 7 | 9/28/2015 | 1900 | | 1900 |
| 8 | 12/17/2015 | 1800 | | 1800 |
| 9 | 3/17/2016 | 1800 | | 1800 |
| 10 | 6/27/2016 | 1800 | | 1800 |
| 11 | 9/19/2016 | 2000 | | 2000 |
| 12 | 12/6/2016 | 1800 | | 1800 |
| 13 | 3/7/2017 | 1800 | | 1800 |
| 14 | 6/1/2017 | 1700 | | 1700 |
| 15 | 9/18/2017 | 1900 | | 1900 |
| 16 | 12/5/2017 | 1900 | | 1900 |
| 17 | | | | |
| 18 | | | | |

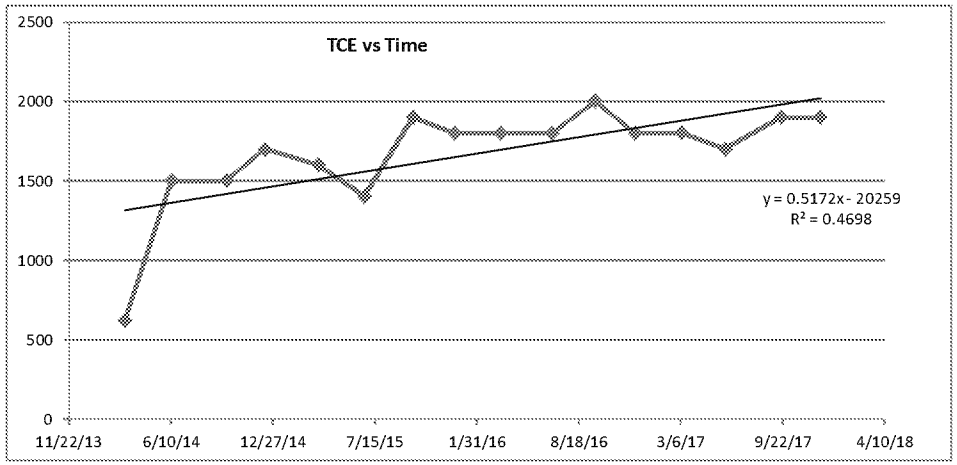
| | | | |
|---|---|---|---|
| **Mann Kendall Statistic (S) =** | 63.0 | | 0.51720 |
| **Number of Rounds (n) =** | 16 | | |
| **Average =** | 1670.00 | | |
| **Standard Deviation =** | 325.781 | | |
| **Coefficient of Variation(CV)=** | 0.195 | | |

**Error Check, Blank if No Errors Detected**

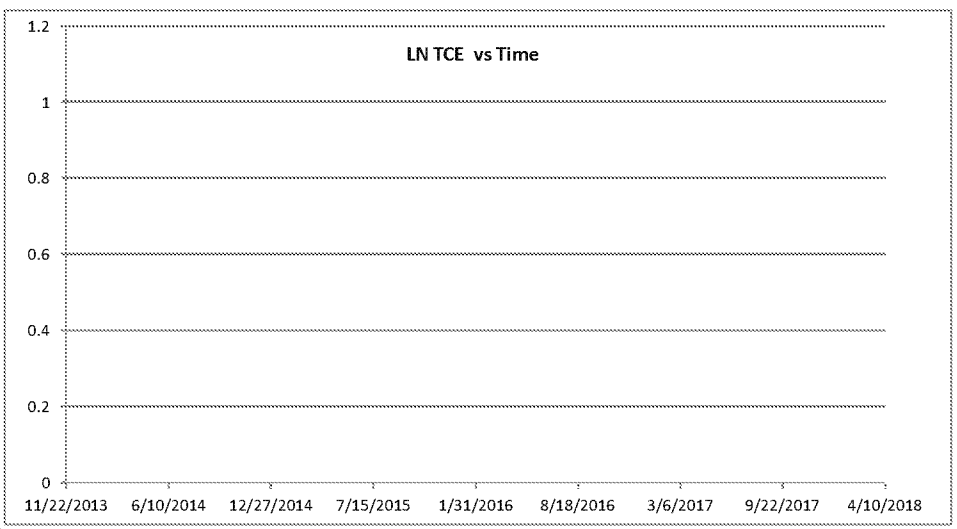
| | | | |
|---|---|---|---|
| **Trend ≥ 80% Confidence Level** | INCREASING | | |
| **Trend ≥ 90% Confidence Level** | INCREASING | | |
| Stability Test, If No Trend Exists at 80% Confidence Level | NA | | |

**Data Entry By =** BC | **Date =** Feb 27 2018

**TCE Concentration Trend**




**LN TCE Concentration Trend**



## Mann-Kendall Statistical Test and First Order Change Rate

**Site Name** = Bethpage | **Well Number** = RE107D1

| Event Number | Sampling Date (most recent last) | TCE Concentration | LN TCE Decreasing Change Rate Calculation | Linear TCE Increasing Change Rate Calculation |
|---|---|---|---|---|
| | Compound -> | | | |
| 1 | 12/18/2015 | 17 | 2.833213344 | |
| 2 | 5/23/2016 | 11.6 | 2.451005098 | |
| 3 | 12/1/2016 | 11.8 | 2.468099531 | |
| 4 | 6/1/2017 | 15.2 | 2.721295428 | |
| 5 | 11/29/2017 | 12.7 | 2.541601993 | |
| 6 | | | | |
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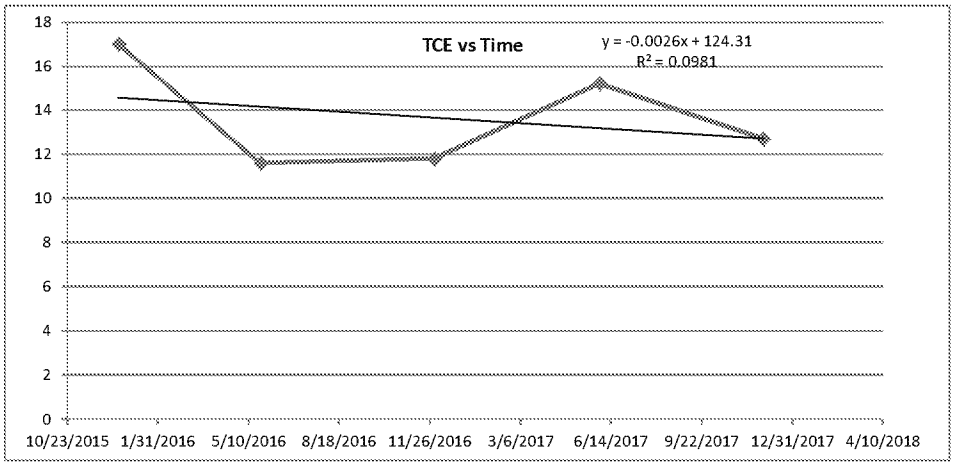
| | | | |
|---|---|---|---|
| Mann Kendall Statistic (S) = | 0.0 | -0.00016 | |
| Number of Rounds (n) = | 5 | | |
| Average = | 13.66 | | |
| Standard Deviation = | 2.353 | | |
| Coefficient of Variation(CV)= | 0.172 | | |

**Error Check, Blank if No Errors Detected**

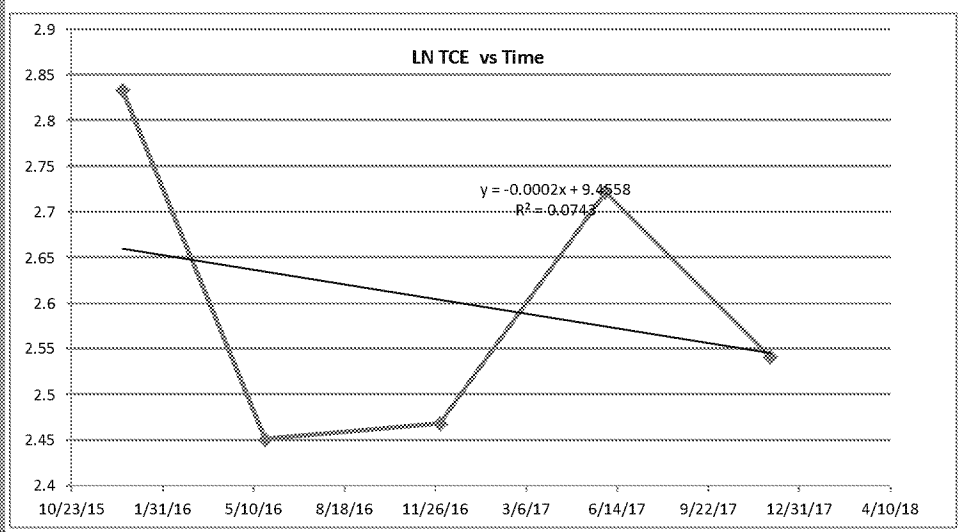
| | | | |
|---|---|---|---|
| Trend ≥ 80% Confidence Level | No Trend | | |
| Trend ≥ 90% Confidence Level | No Trend | | |
| Stability Test, If No Trend Exists at 80% Confidence Level | CV <= 1 STABLE | | |

| | | | |
|---|---|---|---|
| Data Entry By = | BC | Date = | Mar 1 2018 |

TCE Concentration Trend




LN TCE Concentration Trend



## Mann-Kendall Statistical Test and First Order Change Rate

**Site Name** = Bethpage | **Well Number** = RE107D2

| Event Number | Sampling Date (most recent last) | TCE Concentration | LN TCE Decreasing Change Rate Calculation | Linear TCE Increasing Change Rate Calculation |
|---|---|---|---|---|
| | Compound -> | | | |
| 1 | 12/18/2015 | 140 | | 140 |
| 2 | 5/23/2016 | 162 | | 162 |
| 3 | 12/1/2016 | 174 | | 174 |
| 4 | 6/1/2017 | 194 | | 194 |
| 5 | 11/29/2017 | 226 | | 226 |
| 6 | | | | |
| 7 | | | | |
| 8 | | | | |
| 9 | | | | |
| 10 | | | | |
| 11 | | | | |
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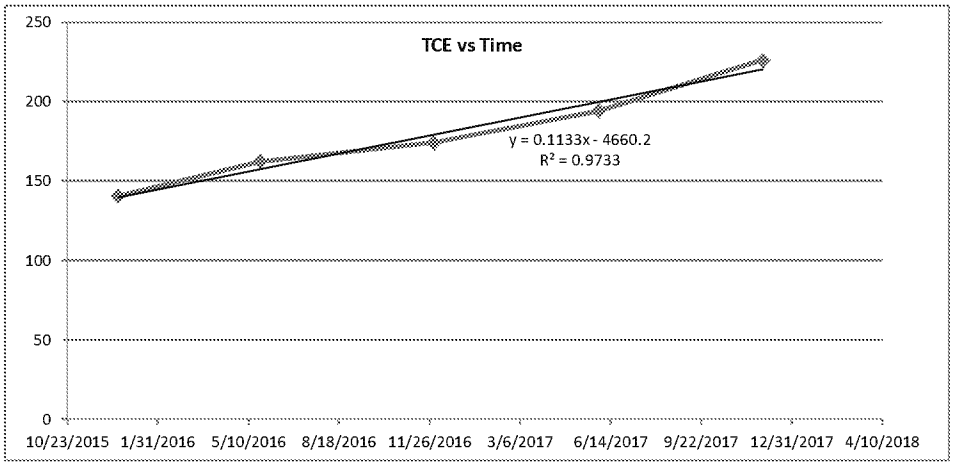
| | | | |
|---|---|---|---|
| Mann Kendall Statistic (S) = | 10.0 | | 0.11332 |
| Number of Rounds (n) = | 5 | | |
| Average = | 179.20 | | |
| Standard Deviation = | 32.668 | | |
| Coefficient of Variation(CV)= | 0.182 | | |

**Error Check, Blank if No Errors Detected**

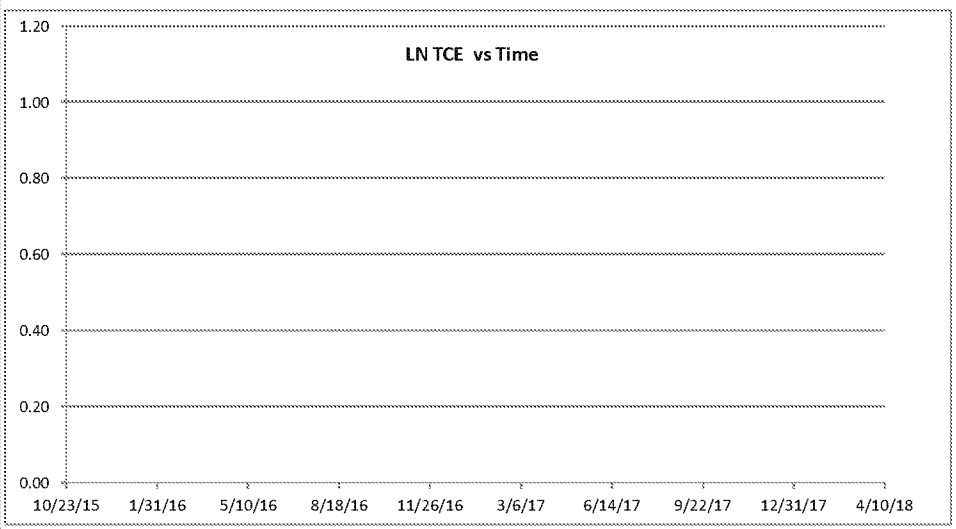
| | | | |
|---|---|---|---|
| Trend ≥ 80% Confidence Level | INCREASING | | |
| Trend ≥ 90% Confidence Level | INCREASING | | |
| Stability Test, If No Trend Exists at 80% Confidence Level | NA | | |

| | | | |
|---|---|---|---|
| Data Entry By = | BC | Date = | Mar 1 2018 |

**TCE Concentration Trend**




**LN TCE Concentration Trend**



## Mann-Kendall Statistical Test and First Order Change Rate

**Site Name** = Bethpage | **Well Number** = RE107D3

| Event Number | Sampling Date (most recent last) | TCE Concentration | LN TCE Decreasing Change Rate Calculation | Linear TCE Increasing Change Rate Calculation |
|---|---|---|---|---|
| | Compound -> | | | |
| 1 | 12/29/2015 | 0.36 | | |
| 2 | 5/24/2016 | 0.125 | | |
| 3 | 12/1/2016 | 0.26 | | |
| 4 | 6/1/2017 | 0.27 | | |
| 5 | 11/29/2017 | 0.125 | | |
| 6 | | | | |
| 7 | | | | |
| 8 | | | | |
| 9 | | | | |
| 10 | | | | |
| 11 | | | | |
| 12 | | | | |
| 13 | | | | |
| 14 | | | | |
| 15 | | | | |
| 16 | | | | |
| 17 | | | | |
| 18 | | | | |

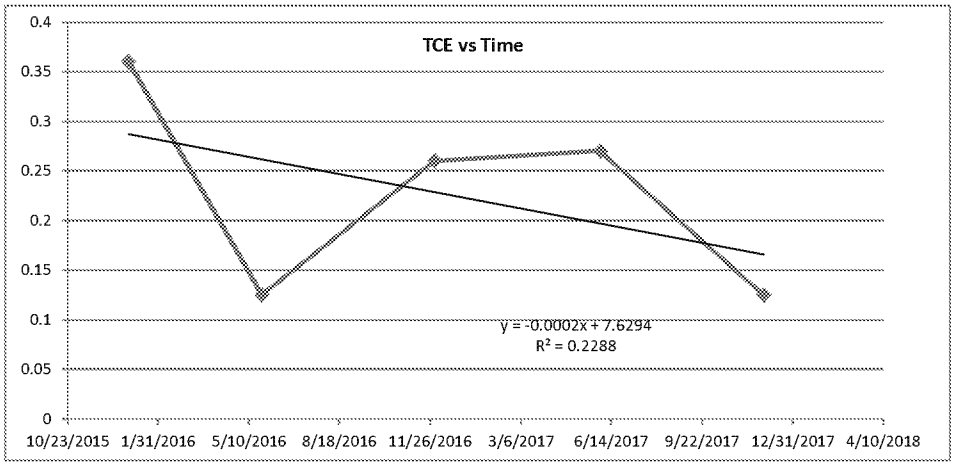
| | | | |
|---|---|---|---|
| Mann Kendall Statistic (S) = | -3.0 | | |
| Number of Rounds (n) = | 5 | | |
| Average = | 0.23 | | |
| Standard Deviation = | 0.102 | | |
| Coefficient of Variation(CV)= | 0.446 | | |

**Error Check, Blank if No Errors Detected**

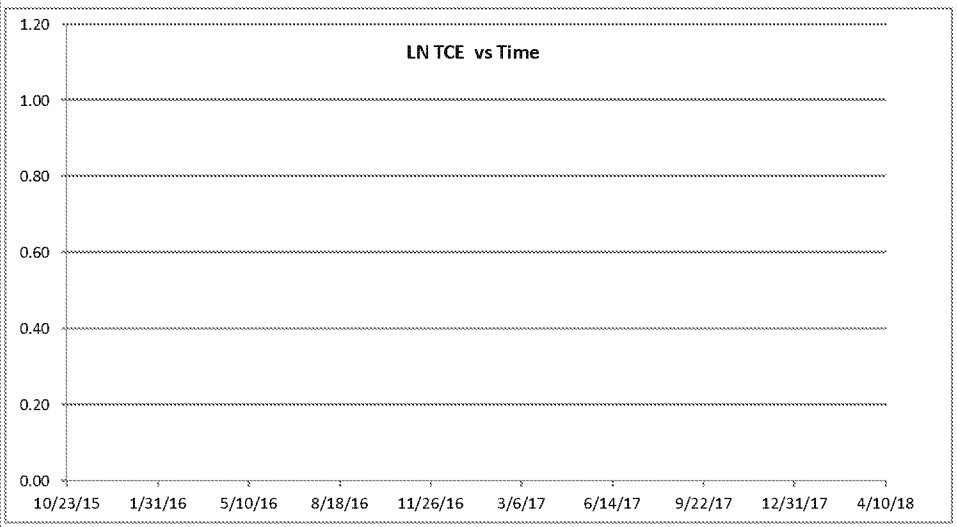
| | | | |
|---|---|---|---|
| Trend ≥ 80% Confidence Level | No Trend | | |
| Trend ≥ 90% Confidence Level | No Trend | | |
| Stability Test, If No Trend Exists at 80% Confidence Level | CV <= 1 STABLE | | |

| | | | |
|---|---|---|---|
| Data Entry By = | BC | Date = | Mar 1 2018 |

**TCE Concentration Trend**




**LN TCE Concentration Trend**



## Mann-Kendall Statistical Test and First Order Change Rate

**Site Name =** Bethpage | **Well Number =** RE108D1

| Event Number | Sampling Date (most recent last) | TCE Concentration | LN TCE Decreasing Change Rate Calculation | Linear TCE Increasing Change Rate Calculation |
|---|---|---|---|---|
| | Compound -> | | | |
| 1 | 3/12/2014 | 130 | 4.86753445 | |
| 2 | 6/10/2014 | 82 | 4.406719247 | |
| 3 | 9/24/2014 | 140 | 4.941642423 | |
| 4 | 12/12/2014 | 140 | 4.941642423 | |
| 5 | 3/27/2015 | 140 | 4.941642423 | |
| 6 | 6/24/2015 | 110 | 4.700480366 | |
| 7 | 9/28/2015 | 98 | 4.584967479 | |
| 8 | 12/22/2015 | 110 | 4.700480366 | |
| 9 | 3/14/2016 | 120 | 4.787491743 | |
| 10 | 6/27/2016 | 82 | 4.406719247 | |
| 11 | 9/19/2016 | 50 | 3.912023005 | |
| 12 | 12/6/2016 | 56 | 4.025351691 | |
| 13 | 3/7/2017 | 61 | 4.110873864 | |
| 14 | 6/1/2017 | 38 | 3.63758616 | |
| 15 | 9/18/2017 | 39 | 3.663561646 | |
| 16 | 12/5/2017 | 51 | 3.931825633 | |
| 17 | | | | |
| 18 | | | | |

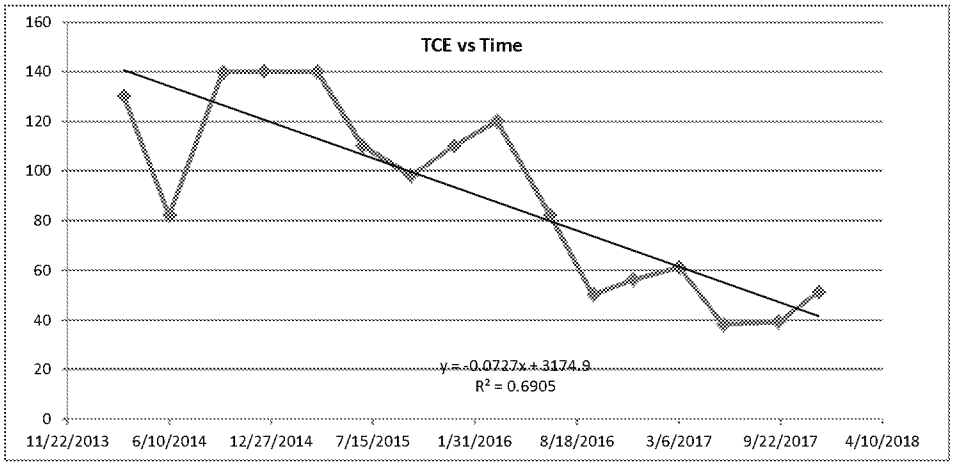
| | | | |
|---|---|---|---|
| Mann Kendall Statistic (S) = | -73.0 | -0.00091 | |
| Number of Rounds (n) = | 16 | | |
| Average = | 90.44 | | |
| Standard Deviation = | 37.782 | | |
| Coefficient of Variation(CV)= | 0.418 | | |

**Error Check, Blank if No Errors Detected**

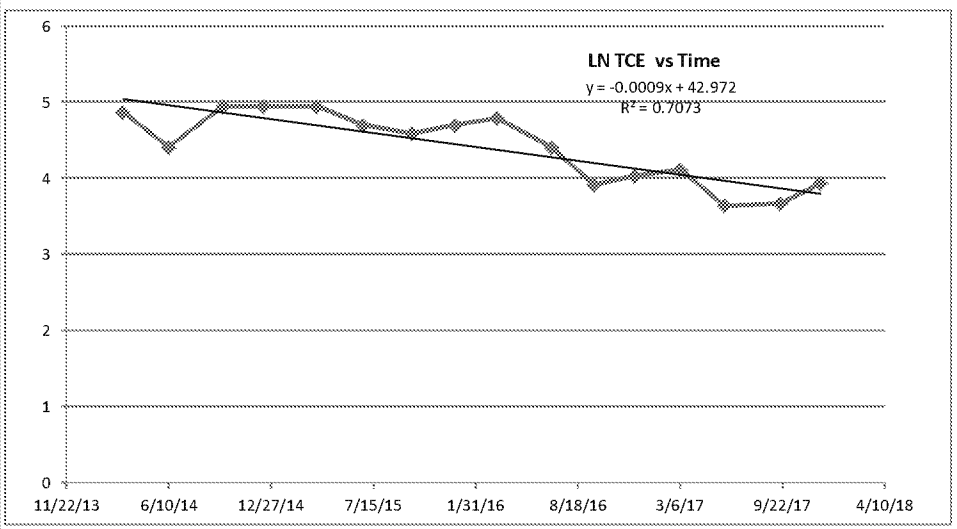
| | | | |
|---|---|---|---|
| Trend ≥ 80% Confidence Level | DECREASING | | |
| Trend ≥ 90% Confidence Level | DECREASING | | |
| Stability Test, If No Trend Exists at 80% Confidence Level | NA | | |

| | | | |
|---|---|---|---|
| Data Entry By = | BC | Date = | Feb 27 2018 |

**TCE Concentration Trend**




**LN TCE Concentration Trend**



## Mann-Kendall Statistical Test and First Order Change Rate

**Site Name** = Bethpage | **Well Number** = RE108D2

| Event Number | Sampling Date (most recent last) | TCE Concentration | LN TCE Decreasing Change Rate Calculation | Linear TCE Increasing Change Rate Calculation |
|---|---|---|---|---|
| | Compound -> | | | |
| 1 | 3/12/2014 | 4600 | 8.43 | |
| 2 | 6/10/2014 | 3400 | 8.13 | |
| 3 | 9/24/2014 | 3700 | 8.22 | |
| 4 | 12/12/2014 | 3100 | 8.04 | |
| 5 | 3/27/2015 | 3300 | 8.10 | |
| 6 | 6/24/2015 | 3900 | 8.27 | |
| 7 | 9/28/2015 | 3400 | 8.13 | |
| 8 | 12/22/2015 | 2900 | 7.97 | |
| 9 | 3/14/2016 | 3800 | 8.24 | |
| 10 | 6/27/2016 | 3000 | 8.01 | |
| 11 | 9/19/2016 | 3000 | 8.01 | |
| 12 | 12/6/2016 | 2900 | 7.97 | |
| 13 | 3/7/2017 | 2900 | 7.97 | |
| 14 | 6/1/2017 | 3000 | 8.01 | |
| 15 | 9/18/2017 | 2900 | 7.97 | |
| 16 | 12/6/2017 | 3100 | 8.04 | |
| 17 | | | | |
| 18 | | | | |

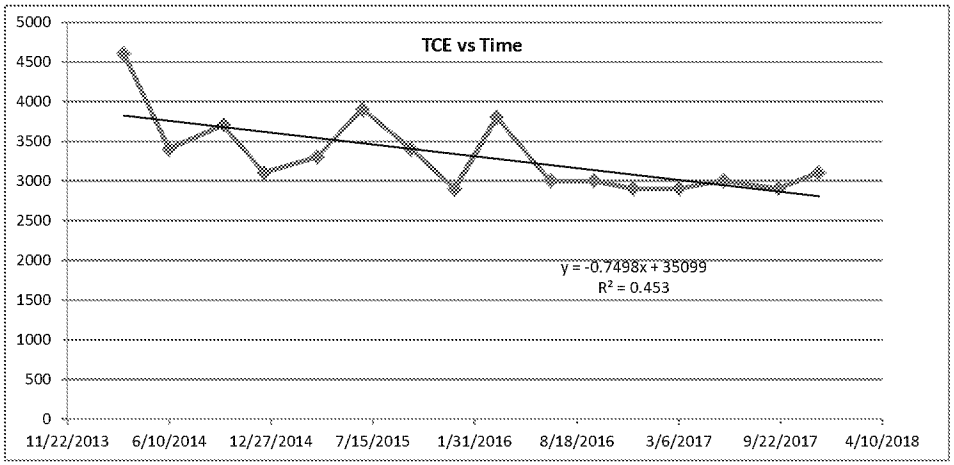
| | | | |
|---|---|---|---|
| Mann Kendall Statistic (S) = | -57.0 | -0.00021 | |
| Number of Rounds (n) = | 16 | | |
| Average = | 3306.25 | | |
| Standard Deviation = | 480.928 | | |
| Coefficient of Variation(CV)= | 0.145 | | |

**Error Check, Blank if No Errors Detected**

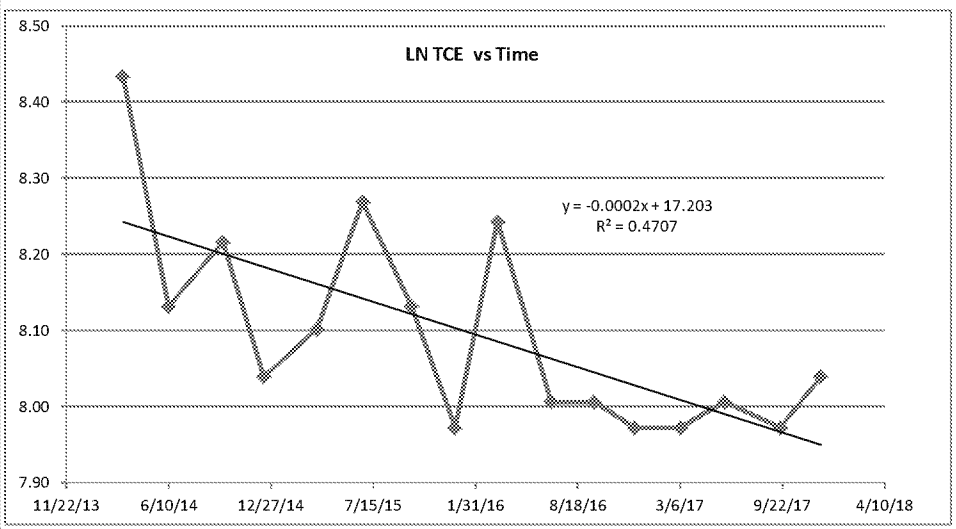
| | | | |
|---|---|---|---|
| Trend ≥ 80% Confidence Level | DECREASING | | |
| Trend ≥ 90% Confidence Level | DECREASING | | |
| Stability Test, If No Trend Exists at 80% Confidence Level | NA | | |

**Data Entry By =** BC **Date =** Feb 27 2018

**TCE Concentration Trend**




**LN TCE Concentration Trend**



## Mann-Kendall Statistical Test and First Order Change Rate

**Site Name** = Bethpage | **Well Number** = RE114D1

| Event Number | Sampling Date (most recent last) | TCE Concentration | LN TCE Decreasing Change Rate Calculation | Linear TCE Increasing Change Rate Calculation |
|---|---|---|---|---|
| | Compound -> | | | |
| 1 | 12/21/2015 | 370 | | |
| 2 | 5/26/2016 | 353 | | |
| 3 | 12/1/2016 | 399 | | |
| 4 | 6/1/2017 | 415 | | |
| 5 | 11/29/2017 | 387 | | |
| 6 | | | | |
| 7 | | | | |
| 8 | | | | |
| 9 | | | | |
| 10 | | | | |
| 11 | | | | |
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| 15 | | | | |
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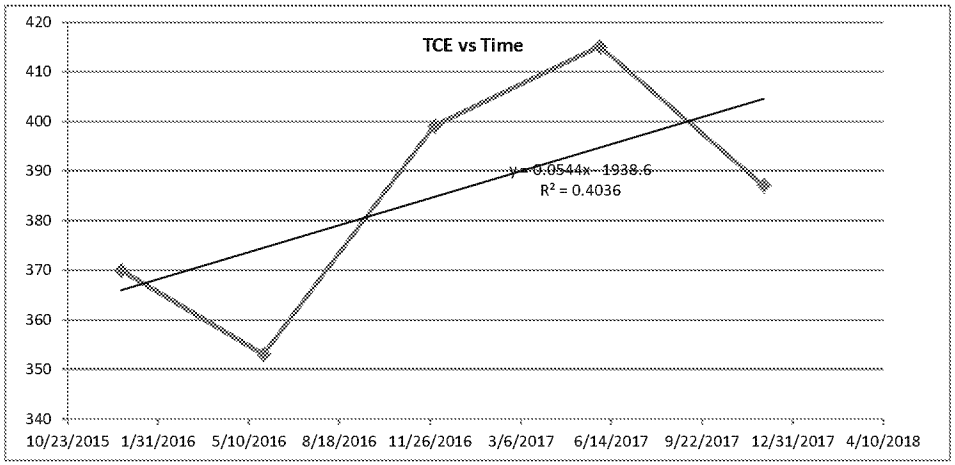
| | | | |
|---|---|---|---|
| Mann Kendall Statistic (S) = | 4.0 | | |
| Number of Rounds (n) = | 5 | | |
| Average = | 384.80 | | |
| Standard Deviation = | 24.232 | | |
| Coefficient of Variation(CV)= | 0.063 | | |

**Error Check, Blank if No Errors Detected**

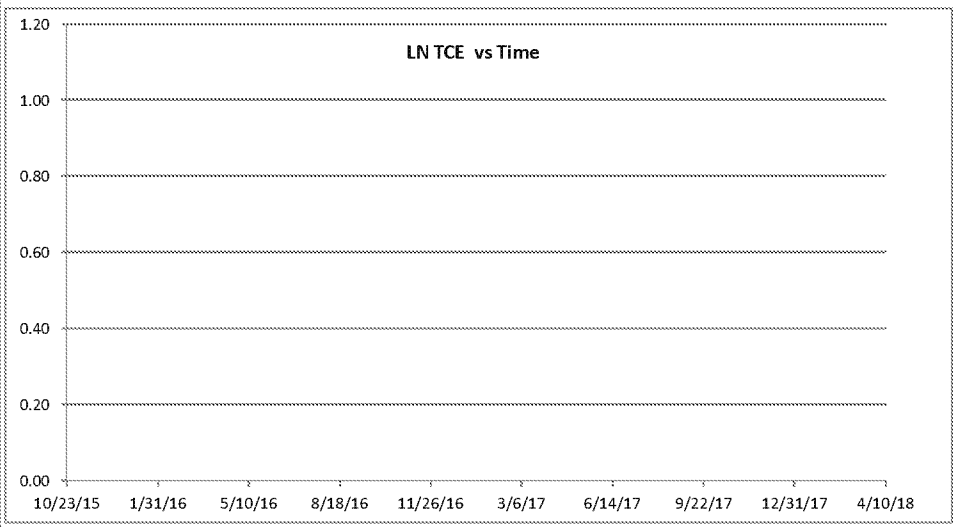
| | | | |
|---|---|---|---|
| Trend ≥ 80% Confidence Level | No Trend | | |
| Trend ≥ 90% Confidence Level | No Trend | | |
| Stability Test, If No Trend Exists at 80% Confidence Level | CV <= 1 STABLE | | |

| | | | |
|---|---|---|---|
| Data Entry By = | BC | Date = | Mar 1 2018 |

**TCE Concentration Trend**




**LN TCE Concentration Trend**



## Mann-Kendall Statistical Test and First Order Change Rate

**Site Name** = Bethpage | **Well Number** = RE114D2

| Event Number | Sampling Date (most recent last) | TCE Concentration | LN TCE Decreasing Change Rate Calculation | Linear TCE Increasing Change Rate Calculation |
|---|---|---|---|---|
| | Compound -> | | | |
| 1 | 12/16/2015 | 70 | | |
| 2 | 5/26/2016 | 52.3 | | |
| 3 | 12/1/2016 | 68.2 | | |
| 4 | 6/1/2017 | 67 | | |
| 5 | 12/20/2017 | 84 | | |
| 6 | | | | |
| 7 | | | | |
| 8 | | | | |
| 9 | | | | |
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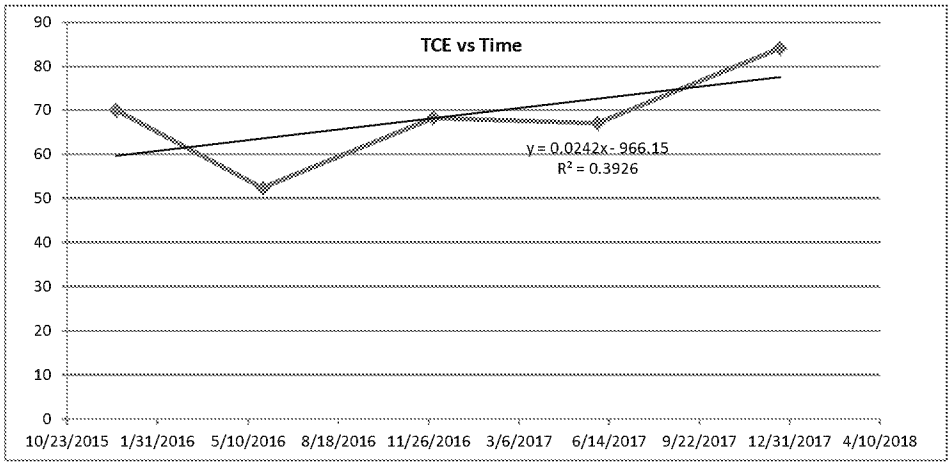
| | | | |
|---|---|---|---|
| Mann Kendall Statistic (S) = | 2.0 | | |
| Number of Rounds (n) = | 5 | | |
| Average = | 68.30 | | |
| Standard Deviation = | 11.259 | | |
| Coefficient of Variation(CV)= | 0.165 | | |

**Error Check, Blank if No Errors Detected**

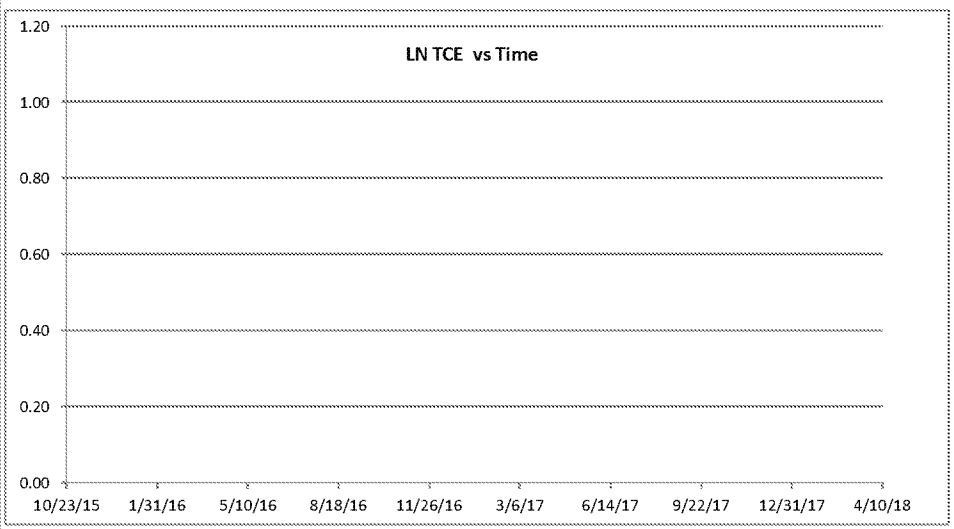
| | | | |
|---|---|---|---|
| Trend ≥ 80% Confidence Level | No Trend | | |
| Trend ≥ 90% Confidence Level | No Trend | | |
| Stability Test, If No Trend Exists at 80% Confidence Level | CV <= 1 STABLE | | |

| | | | |
|---|---|---|---|
| Data Entry By = | BC | Date = | Mar 1 2018 |

**TCE Concentration Trend**




**LN TCE Concentration Trend**



## Mann-Kendall Statistical Test and First Order Change Rate

**Site Name** = Bethpage | **Well Number** = RE114D3

| Event Number | Sampling Date (most recent last) | TCE Concentration | LN TCE Decreasing Change Rate Calculation | Linear TCE Increasing Change Rate Calculation |
|---|---|---|---|---|
| | Compound -> | | | |
| 1 | 12/16/2015 | 43 | | |
| 2 | 5/26/2016 | 34 | | |
| 3 | 12/1/2016 | 47 | | |
| 4 | 6/1/2017 | 42.6 | | |
| 5 | 12/20/2017 | 51.2 | | |
| 6 | | | | |
| 7 | | | | |
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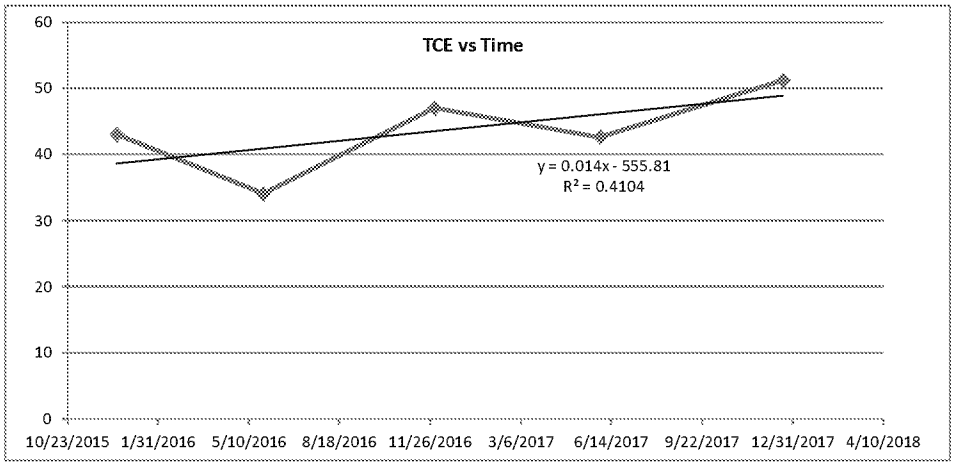
|---|---|---|---|
| Mann Kendall Statistic (S) = | 4.0 | | |
| Number of Rounds (n) = | 5 | | |
| Average = | 43.56 | | |
| Standard Deviation = | 6.380 | | |
| Coefficient of Variation(CV)= | 0.146 | | |

**Error Check, Blank if No Errors Detected**

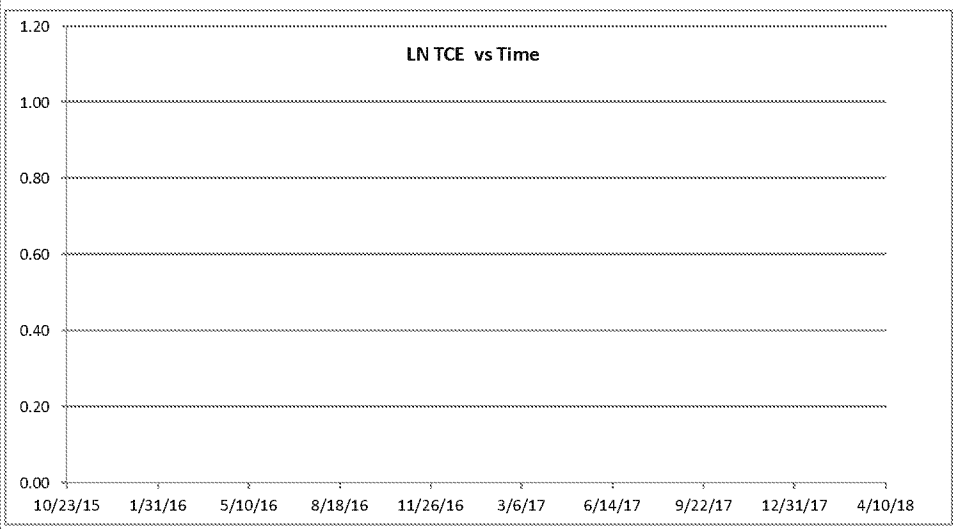
| | | | |
|---|---|---|---|
| Trend ≥ 80% Confidence Level | No Trend | | |
| Trend ≥ 90% Confidence Level | No Trend | | |
| Stability Test, If No Trend Exists at 80% Confidence Level | CV <= 1 STABLE | | |

| | | | |
|---|---|---|---|
| Data Entry By = | BC | Date = | Mar 1 2018 |

**TCE Concentration Trend**




**LN TCE Concentration Trend**



## Mann-Kendall Statistical Test and First Order Change Rate

**Site Name** = Bethpage | **Well Number** = RE117D1

| Event Number | Sampling Date (most recent last) | TCE Concentration | LN TCE Decreasing Change Rate Calculation | Linear TCE Increasing Change Rate Calculation |
|---|---|---|---|---|
| | Compound -> | | | |
| 1 | 6/1/2015 | 7.8 | | |
| 2 | 12/1/2015 | 9.4 | | |
| 3 | 5/16/2016 | 21.3 | | |
| 4 | 10/31/2016 | 16 | | |
| 5 | 12/1/2016 | 17 | | |
| 6 | 3/1/2017 | 14 | | |
| 7 | 6/1/2017 | 15 | | |
| 8 | 9/25/2017 | 14 | | |
| 9 | 12/13/2017 | 13 | | |
| 10 | | | | |
| 11 | | | | |
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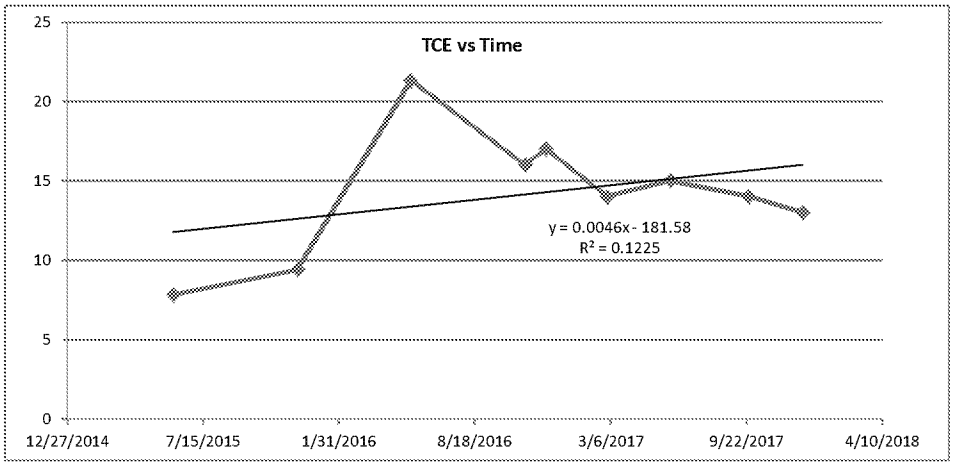
| | | | |
|---|---|---|---|
| Mann Kendall Statistic (S) = | -1.0 | | |
| Number of Rounds (n) = | 9 | | |
| Average = | 14.17 | | |
| Standard Deviation = | 3.994 | | |
| Coefficient of Variation(CV)= | 0.282 | | |

**Error Check, Blank if No Errors Detected**

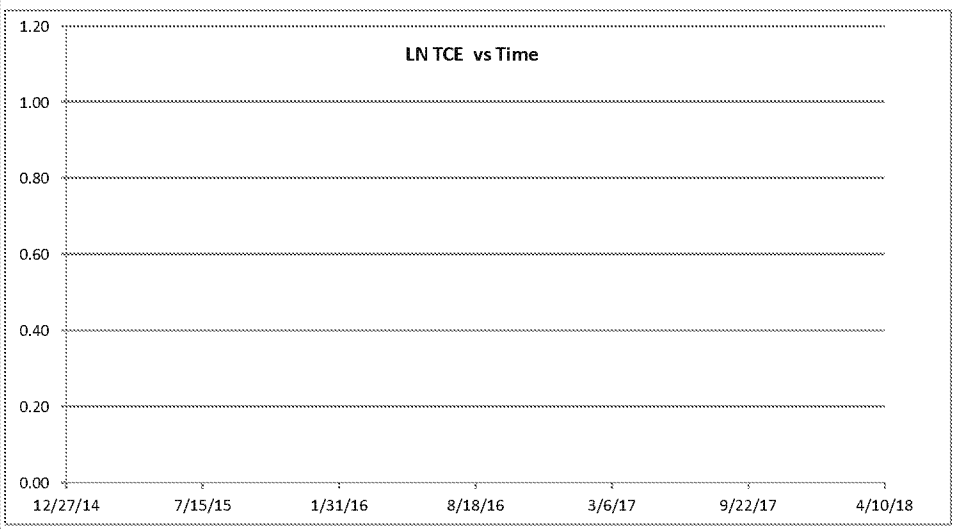
| | | | |
|---|---|---|---|
| Trend ≥ 80% Confidence Level | No Trend | | |
| Trend ≥ 90% Confidence Level | No Trend | | |
| Stability Test, If No Trend Exists at 80% Confidence Level | CV <= 1 STABLE | | |

| | | | |
|---|---|---|---|
| Data Entry By = | BC | Date = | Mar 1 2018 |

**TCE Concentration Trend**




**LN TCE Concentration Trend**



## Mann-Kendall Statistical Test and First Order Change Rate

**Site Name** = Bethpage | **Well Number** = RE120D1

| Event Number | Sampling Date (most recent last) | TCE Concentration | LN TCE Decreasing Change Rate Calculation | Linear TCE Increasing Change Rate Calculation |
|---|---|---|---|---|
| | Compound -> | | | |
| 1 | 12/12/2014 | 1300 | 7.170119543 | |
| 2 | 3/25/2015 | 1300 | 7.170119543 | |
| 3 | 9/29/2015 | 1300 | 7.170119543 | |
| 4 | 12/18/2015 | 1300 | 7.170119543 | |
| 5 | 3/16/2016 | 1200 | 7.090076836 | |
| 6 | 6/22/2016 | 1200 | 7.090076836 | |
| 7 | 9/19/2016 | 1400 | 7.244227516 | |
| 8 | 12/6/2016 | 1000 | 6.907755279 | |
| 9 | 3/7/2017 | 1000 | 6.907755279 | |
| 10 | 6/1/2017 | 870 | 6.768493212 | |
| 11 | 9/18/2017 | 970 | 6.877296071 | |
| 12 | 12/12/2017 | 990 | 6.897704943 | |
| 13 | | | | |
| 14 | | | | |
| 15 | | | | |
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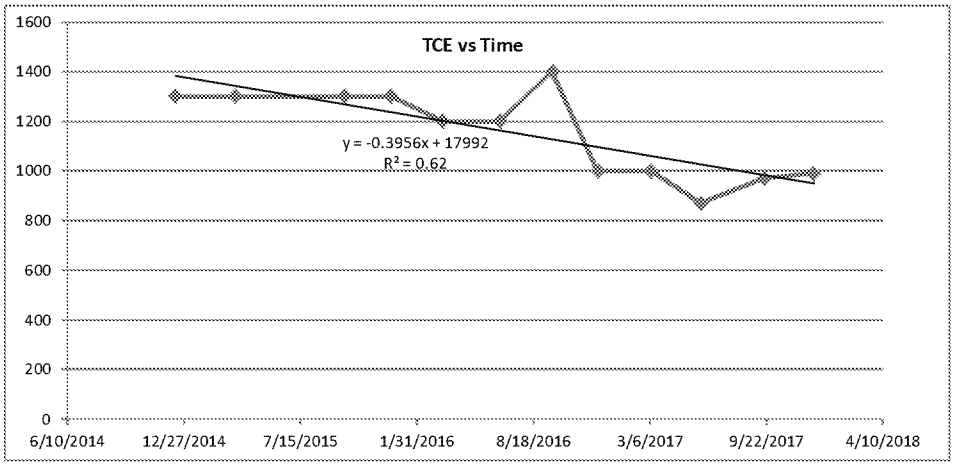
| | | | |
|---|---|---|---|
| Mann Kendall Statistic (S) = | -40.0 | -0.00036 | |
| Number of Rounds (n) = | 12 | | |
| Average = | 1152.50 | | |
| Standard Deviation = | 175.506 | | |
| Coefficient of Variation(CV)= | 0.152 | | |

**Error Check, Blank if No Errors Detected**

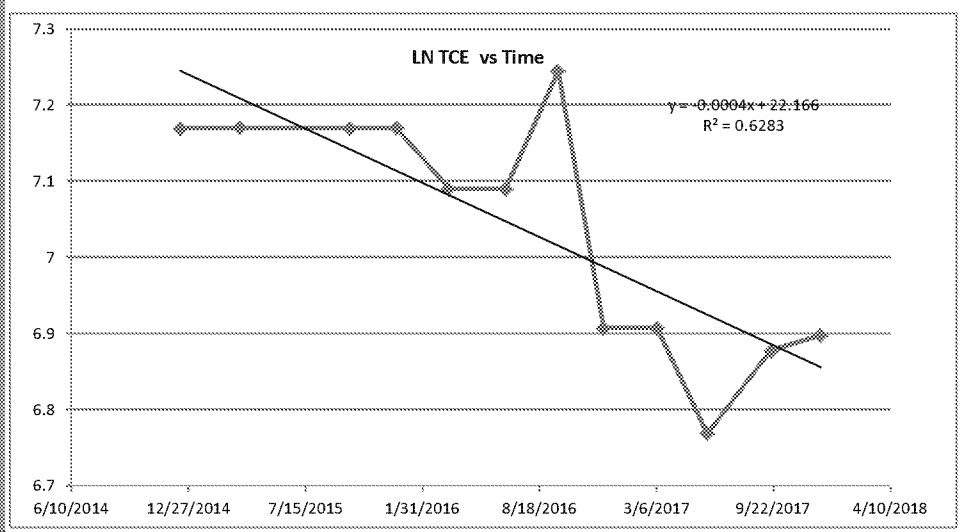
| | | | |
|---|---|---|---|
| Trend ≥ 80% Confidence Level | DECREASING | | |
| Trend ≥ 90% Confidence Level | DECREASING | | |
| Stability Test, If No Trend Exists at 80% Confidence Level | NA | | |

| | | | |
|---|---|---|---|
| Data Entry By = | BC | Date = | Feb 27 2018 |

**TCE Concentration Trend**




**LN TCE Concentration Trend**



## Mann-Kendall Statistical Test and First Order Change Rate

**Site Name** = Bethpage | **Well Number** = RE120D2

| Event Number | Sampling Date (most recent last) | TCE Concentration | LN TCE Decreasing Change Rate Calculation | Linear TCE Increasing Change Rate Calculation |
|---|---|---|---|---|
| | Compound -> | | | |
| 1 | 12/12/2014 | 900 | 6.802394763 | |
| 2 | 3/25/2015 | 830 | 6.721425701 | |
| 3 | 9/29/2015 | 760 | 6.633318433 | |
| 4 | 12/29/2015 | 680 | 6.522092798 | |
| 5 | 3/16/2016 | 780 | 6.65929392 | |
| 6 | 6/22/2016 | 720 | 6.579251212 | |
| 7 | 9/19/2016 | 1000 | 6.907755279 | |
| 8 | 12/6/2016 | 670 | 6.507277712 | |
| 9 | 3/7/2017 | 610 | 6.413458957 | |
| 10 | 6/1/2017 | 640 | 6.461468176 | |
| 11 | 9/18/2017 | 690 | 6.536691598 | |
| 12 | 12/12/2017 | 710 | 6.56526497 | |
| 13 | | | | |
| 14 | | | | |
| 15 | | | | |
| 16 | | | | |
| 17 | | | | |
| 18 | | | | |

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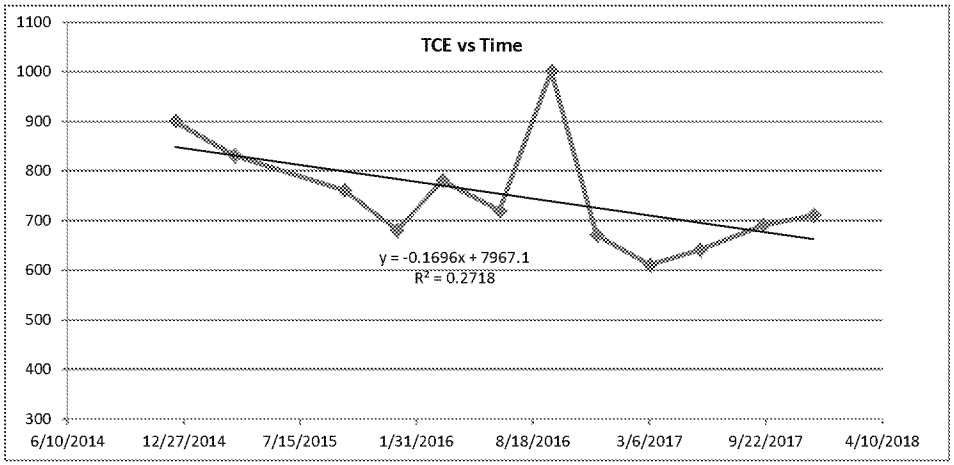
|---|---|---|---|
| Mann Kendall Statistic (S) = | -28.0 | -0.00023 | |
| Number of Rounds (n) = | 12 | | |
| Average = | 749.17 | | |
| Standard Deviation = | 113.415 | | |
| Coefficient of Variation(CV)= | 0.151 | | |

**Error Check, Blank if No Errors Detected**

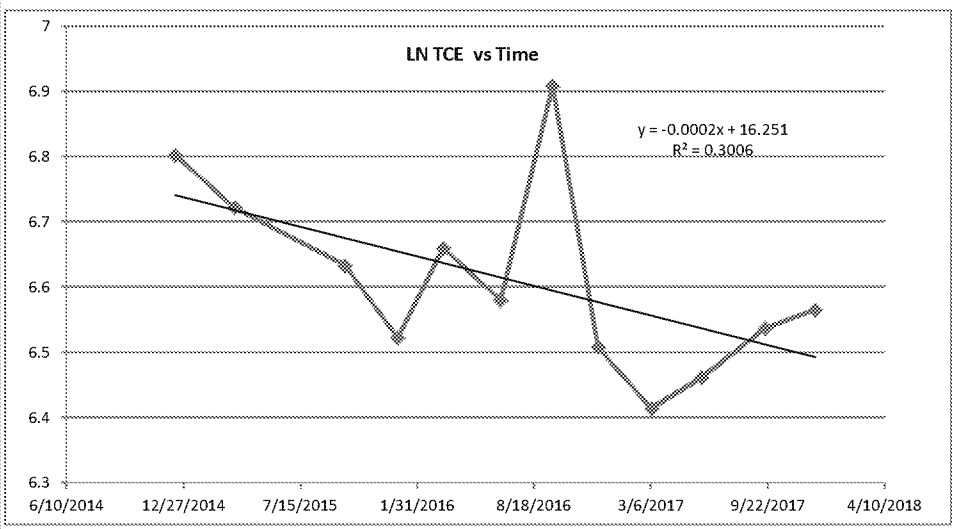
| | | | |
|---|---|---|---|
| Trend ≥ 80% Confidence Level | DECREASING | | |
| Trend ≥ 90% Confidence Level | DECREASING | | |
| Stability Test, If No Trend Exists at 80% Confidence Level | NA | | |

| | | | |
|---|---|---|---|
| Data Entry By = | BC | Date = | Feb 27 2018 |

**TCE Concentration Trend**




**LN TCE Concentration Trend**



## Mann-Kendall Statistical Test and First Order Change Rate

**Site Name** = Bethpage | **Well Number** = RE120D3

| Event Number | Sampling Date (most recent last) | TCE Concentration | LN TCE Decreasing Change Rate Calculation | Linear TCE Increasing Change Rate Calculation |
|---|---|---|---|---|
| | Compound -> | | | |
| 1 | 12/12/2014 | 3.4 | | |
| 2 | 3/25/2015 | 0.74 | | |
| 3 | 9/29/2015 | 120 | | |
| 4 | 12/29/2015 | 29 | | |
| 5 | 3/16/2016 | 55 | | |
| 6 | 6/22/2016 | 46 | | |
| 7 | 9/19/2016 | 57 | | |
| 8 | 12/6/2016 | 41 | | |
| 9 | 3/7/2017 | 31 | | |
| 10 | 6/1/2017 | 37 | | |
| 11 | 9/18/2017 | 44 | | |
| 12 | 12/12/2017 | 28 | | |
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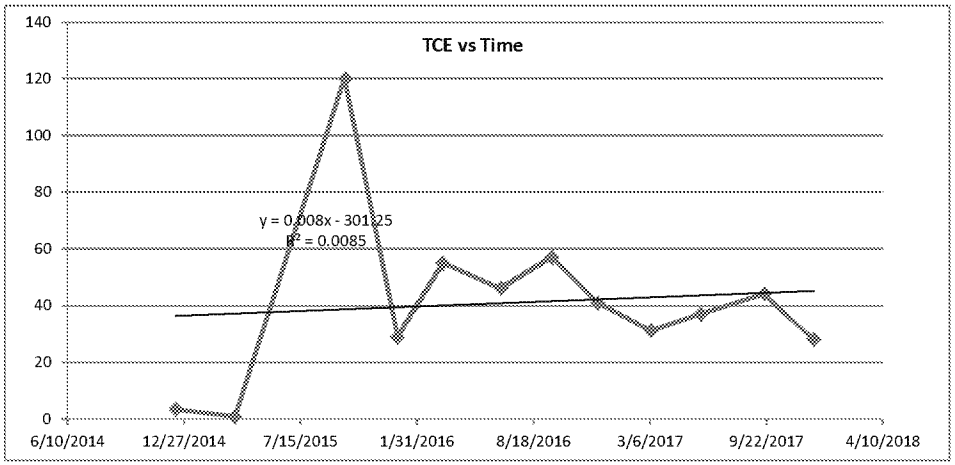
|---|---|---|---|
| Mann Kendall Statistic (S) = | 0.0 | | |
| Number of Rounds (n) = | 12 | | |
| Average = | 41.01 | | |
| Standard Deviation = | 30.437 | | |
| Coefficient of Variation(CV)= | 0.742 | | |

**Error Check, Blank if No Errors Detected**

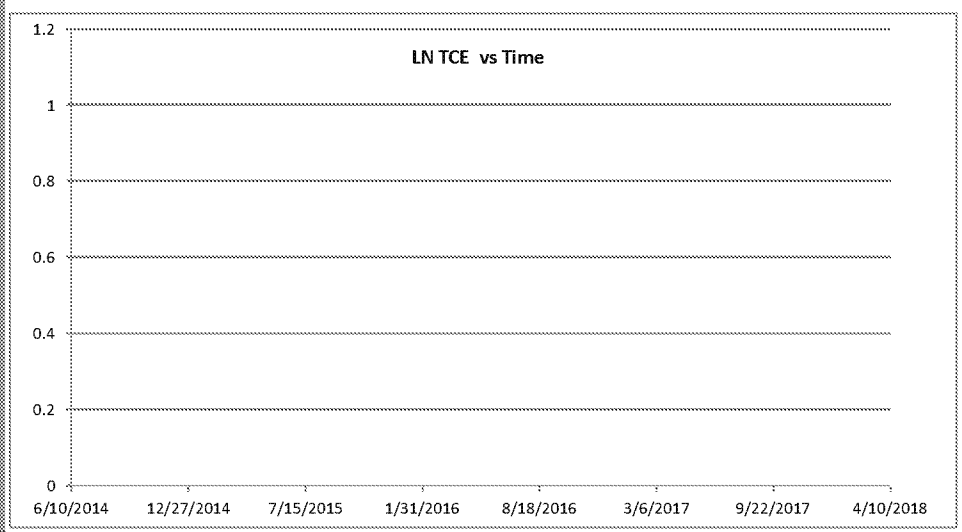
| | | | |
|---|---|---|---|
| Trend ≥ 80% Confidence Level | No Trend | | |
| Trend ≥ 90% Confidence Level | No Trend | | |
| Stability Test, If No Trend Exists at 80% Confidence Level | CV <= 1 STABLE | | |

| | | | |
|---|---|---|---|
| Data Entry By = | BC | Date = | Feb 27 2018 |

**TCE Concentration Trend**




**LN TCE Concentration Trend**



## Mann-Kendall Statistical Test and First Order Change Rate

**Site Name** = Bethpage | **Well Number** = RE121D1

| Event Number | Sampling Date (most recent last) | TCE Concentration | LN TCE Decreasing Change Rate Calculation | Linear TCE Increasing Change Rate Calculation |
|---|---|---|---|---|
| | Compound -> | | | |
| 1 | 12/21/2015 | 29 | | 29 |
| 2 | 6/1/2016 | 18.9 | | 18.9 |
| 3 | 12/1/2016 | 25.8 | | 25.8 |
| 4 | 6/1/2017 | 31.3 | | 31.3 |
| 5 | 12/5/2017 | 33.8 | | 33.8 |
| 6 | | | | |
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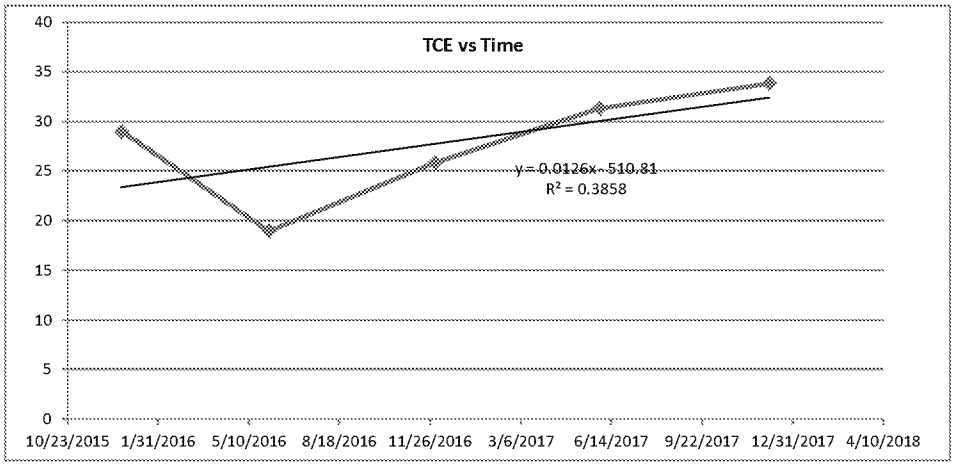
|---|---|---|---|
| Mann Kendall Statistic (S) = | 6.0 | | 0.01261 |
| Number of Rounds (n) = | 5 | | |
| Average = | 27.76 | | |
| Standard Deviation = | 5.764 | | |
| Coefficient of Variation(CV)= | 0.208 | | |

Error Check, Blank if No Errors Detected

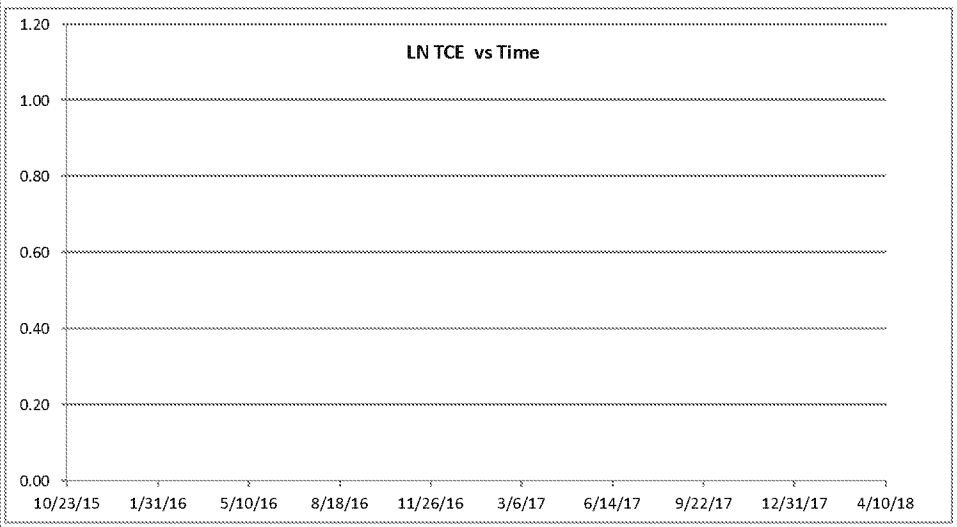
| | | | |
|---|---|---|---|
| Trend ≥ 80% Confidence Level | INCREASING | | |
| Trend ≥ 90% Confidence Level | No Trend | | |
| Stability Test, If No Trend Exists at 80% Confidence Level | NA | | |

| | | | |
|---|---|---|---|
| Data Entry By = | BC | Date = | Mar 1 2018 |

TCE Concentration Trend




LN TCE Concentration Trend



## Mann-Kendall Statistical Test and First Order Change Rate

**Site Name** = Bethpage | **Well Number** = RE121D2

| Event Number | Sampling Date (most recent last) | TCE Concentration | LN TCE Decreasing Change Rate Calculation | Linear TCE Increasing Change Rate Calculation |
|---|---|---|---|---|
| | Compound -> | | | |
| 1 | 12/21/2015 | 480 | | 480 |
| 2 | 6/1/2016 | 422 | | 422 |
| 3 | 12/1/2016 | 591 | | 591 |
| 4 | 6/1/2017 | 789 | | 789 |
| 5 | 12/5/2017 | 754 | | 754 |
| 6 | | | | |
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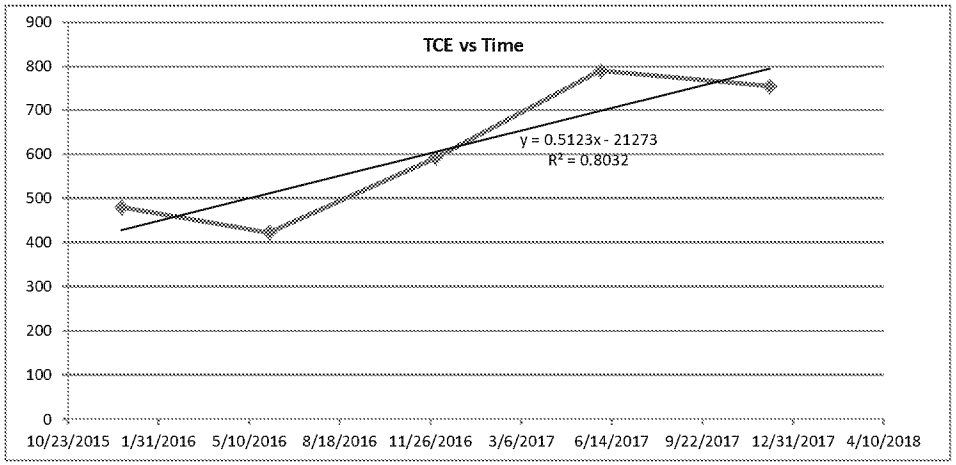
| | | | |
|---|---|---|---|
| Mann Kendall Statistic (S) = | 6.0 | #DIV/0! | 0.51229 |
| Number of Rounds (n) = | 5 | | |
| Average = | 607.20 | | |
| Standard Deviation = | 162.283 | | |
| Coefficient of Variation(CV)= | 0.267 | | |

**Error Check, Blank if No Errors Detected**

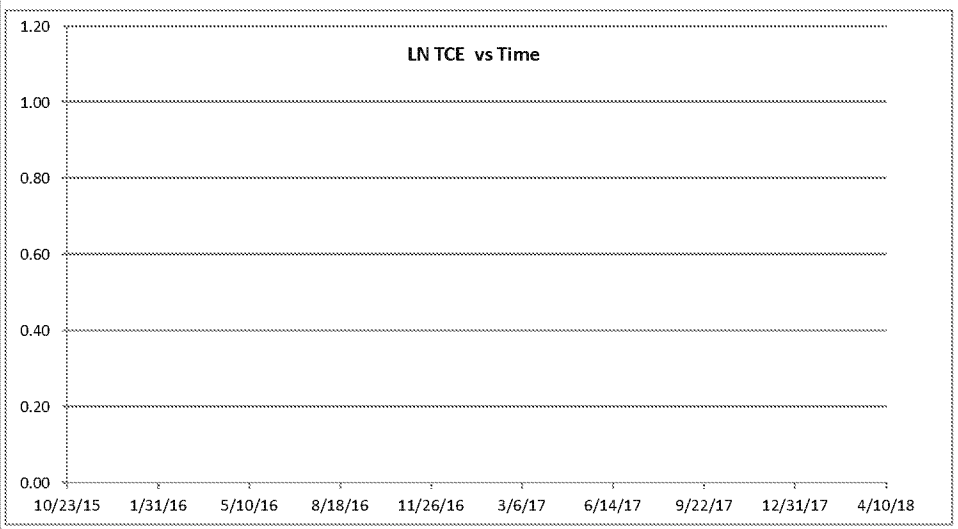
| | | | |
|---|---|---|---|
| Trend ≥ 80% Confidence Level | INCREASING | | |
| Trend ≥ 90% Confidence Level | No Trend | | |
| Stability Test, If No Trend Exists at 80% Confidence Level | NA | | |

| | | | |
|---|---|---|---|
| Data Entry By = | BC | Date = | Mar 1 2018 |

**TCE Concentration Trend**




**LN TCE Concentration Trend**



## Mann-Kendall Statistical Test and First Order Change Rate

**Site Name** = Bethpage | **Well Number** = RE122D1

| Event Number | Sampling Date (most recent last) | TCE Concentration | LN TCE Decreasing Change Rate Calculation | Linear TCE Increasing Change Rate Calculation |
|---|---|---|---|---|
| | Compound -> | | | |
| 1 | 3/24/2015 | 570 | 6.345636361 | |
| 2 | 9/30/2015 | 600 | 6.396929655 | |
| 3 | 12/15/2015 | 600 | 6.396929655 | |
| 4 | 3/15/2016 | 610 | 6.413458957 | |
| 5 | 6/22/2016 | 610 | 6.413458957 | |
| 6 | 9/19/2016 | 510 | 6.234410726 | |
| 7 | 12/6/2016 | 520 | 6.253828812 | |
| 8 | 3/7/2017 | 540 | 6.29156914 | |
| 9 | 6/1/2017 | 450 | 6.109247583 | |
| 10 | 9/18/2017 | 510 | 6.234410726 | |
| 11 | 12/6/2017 | 490 | 6.194405391 | |
| 12 | | | | |
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| 15 | | | | |
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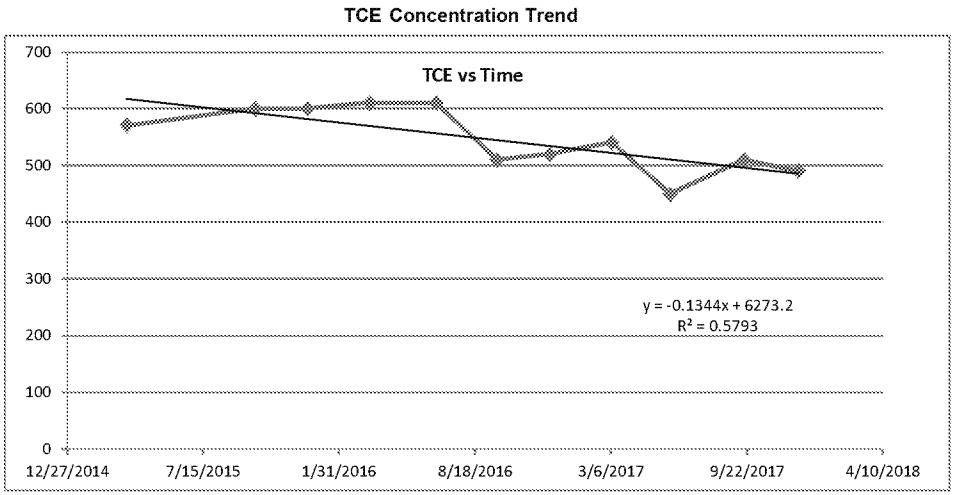
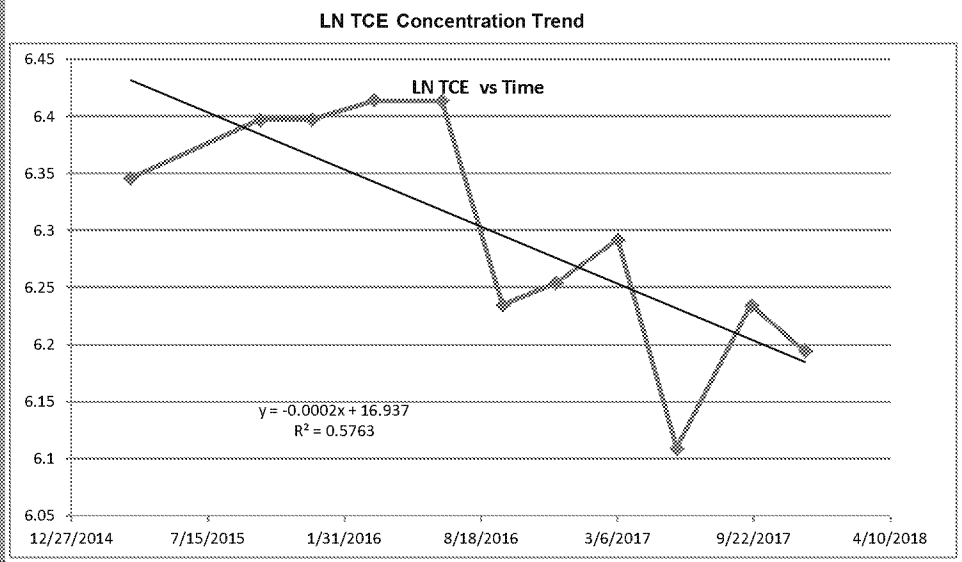
| | | | |
|---|---|---|---|
| Mann Kendall Statistic (S) = | -26.0 | -0.00025 | |
| Number of Rounds (n) = | 11 | | |
| Average = | 546.36 | | |
| Standard Deviation = | 55.004 | | |
| Coefficient of Variation(CV)= | 0.101 | | |

**Error Check, Blank if No Errors Detected**

| | | | |
|---|---|---|---|
| Trend ≥ 80% Confidence Level | DECREASING | | |
| Trend ≥ 90% Confidence Level | DECREASING | | |
| Stability Test, If No Trend Exists at 80% Confidence Level | NA | | |

| | | | |
|---|---|---|---|
| Data Entry By = | BC | Date = | Feb 28 2018 |



## Mann-Kendall Statistical Test and First Order Change Rate

**Site Name** = Bethpage | **Well Number** = RE122D2

| Event Number | Sampling Date (most recent last) | TCE Concentration | LN TCE Decreasing Change Rate Calculation | Linear TCE Increasing Change Rate Calculation |
|---|---|---|---|---|
| | Compound -> | | | |
| 1 | 3/24/2015 | 4600 | 8.433811582 | |
| 2 | 9/30/2015 | 5200 | 8.556413905 | |
| 3 | 12/15/2015 | 4700 | 8.455317788 | |
| 4 | 3/15/2016 | 5300 | 8.5754621 | |
| 5 | 6/22/2016 | 5500 | 8.612503371 | |
| 6 | 9/19/2016 | 4600 | 8.433811582 | |
| 7 | 12/6/2016 | 5300 | 8.5754621 | |
| 8 | 3/7/2017 | 4700 | 8.455317788 | |
| 9 | 6/1/2017 | 3000 | 8.006367568 | |
| 10 | 9/21/2017 | 2200 | 7.696212639 | |
| 11 | 12/6/2017 | 3200 | 8.070906089 | |
| 12 | | | | |
| 13 | | | | |
| 14 | | | | |
| 15 | | | | |
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| 17 | | | | |
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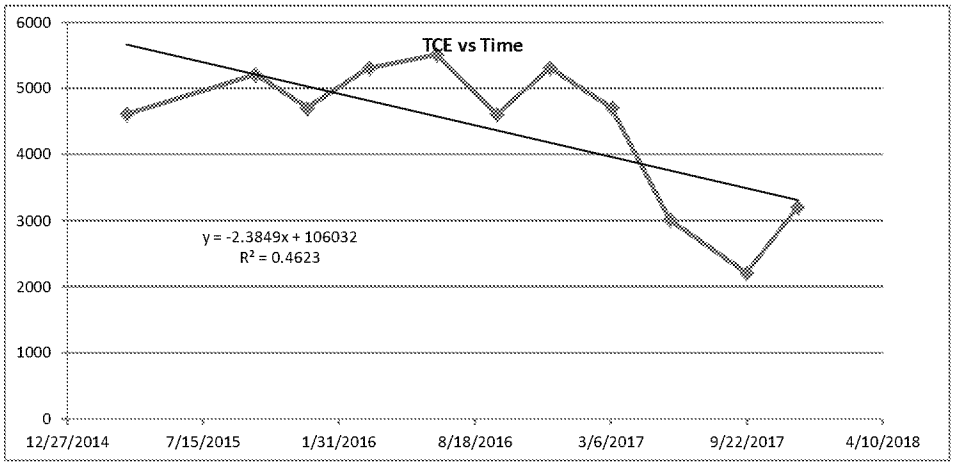
| | | | |
|---|---|---|---|
| Mann Kendall Statistic (S) = | -18.0 | -0.00065 | |
| Number of Rounds (n) = | 11 | | |
| Average = | 4390.91 | | |
| Standard Deviation = | 1094.033 | | |
| Coefficient of Variation(CV)= | 0.249 | | |

**Error Check, Blank if No Errors Detected**

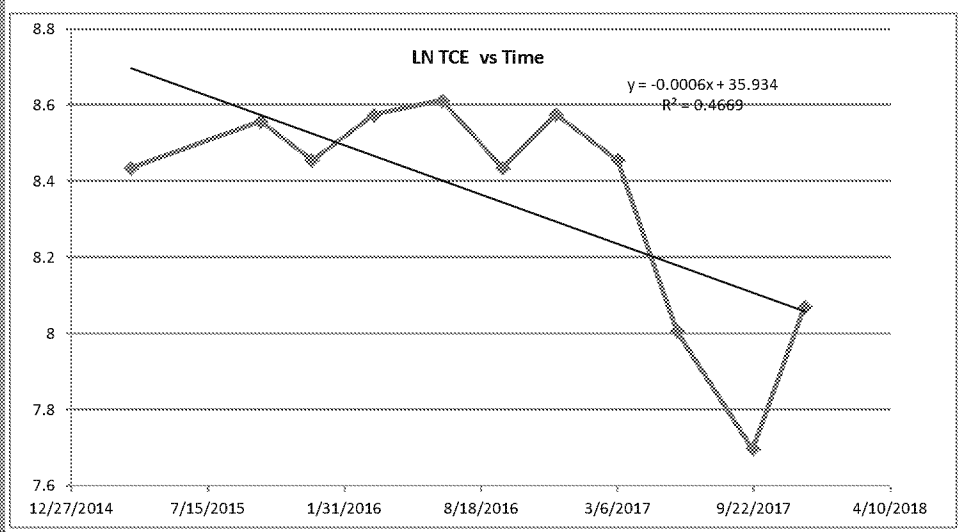
| | | | |
|---|---|---|---|
| Trend ≥ 80% Confidence Level | DECREASING | | |
| Trend ≥ 90% Confidence Level | DECREASING | | |
| Stability Test, If No Trend Exists at 80% Confidence Level | NA | | |

| | | | |
|---|---|---|---|
| Data Entry By = | BC | Date = | Feb 28 2018 |

**TCE Concentration Trend**




**LN TCE Concentration Trend**



## Mann-Kendall Statistical Test and First Order Change Rate

**Site Name** = Bethpage | **Well Number** = RE122D3

| Event Number | Sampling Date (most recent last) | TCE Concentration | LN TCE Decreasing Change Rate Calculation | Linear TCE Increasing Change Rate Calculation |
|---|---|---|---|---|
| | Compound -> | | | |
| 1 | 3/24/2015 | 6.8 | | |
| 2 | 9/30/2015 | 10 | | |
| 3 | 12/15/2015 | 2.5 | | |
| 4 | 3/15/2016 | 2.1 | | |
| 5 | 6/22/2016 | 7.4 | | |
| 6 | 9/19/2016 | 3.8 | | |
| 7 | 12/6/2016 | 5.1 | | |
| 8 | 3/7/2017 | 6.2 | | |
| 9 | 6/1/2017 | 6.7 | | |
| 10 | 9/21/2017 | 7.2 | | |
| 11 | 12/6/2017 | 4.2 | | |
| 12 | | | | |
| 13 | | | | |
| 14 | | | | |
| 15 | | | | |
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| 17 | | | | |
| 18 | | | | |

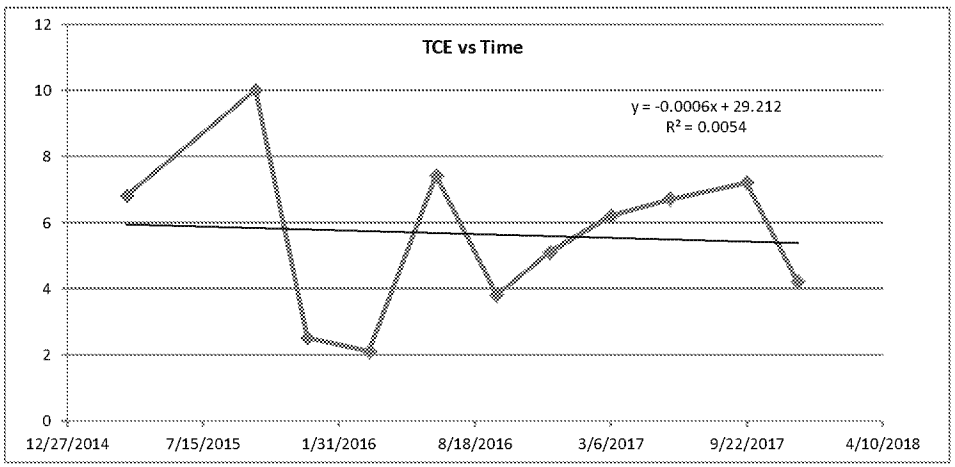
| | | | |
|---|---|---|---|
| Mann Kendall Statistic (S) = | 1.0 | | |
| Number of Rounds (n) = | 11 | | |
| Average = | 5.64 | | |
| Standard Deviation = | 2.355 | | |
| Coefficient of Variation(CV)= | 0.418 | | |

**Error Check, Blank if No Errors Detected**

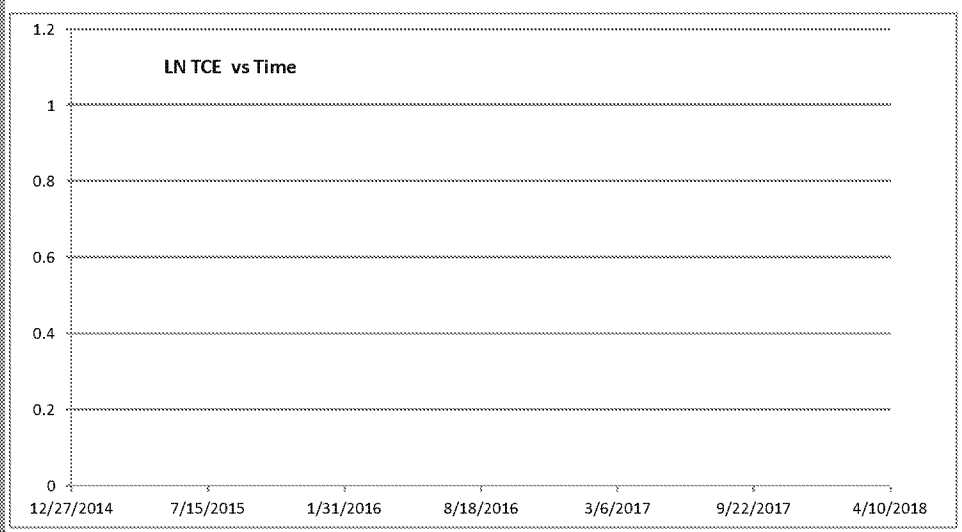
| | | | |
|---|---|---|---|
| Trend ≥ 80% Confidence Level | No Trend | | |
| Trend ≥ 90% Confidence Level | No Trend | | |
| Stability Test, If No Trend Exists at 80% Confidence Level | CV <= 1 STABLE | | |

| | | | |
|---|---|---|---|
| Data Entry By = | BC | Date = | Feb 28 2018 |

TCE Concentration Trend




LN TCE Concentration Trend



## Mann-Kendall Statistical Test and First Order Change Rate

**Site Name** = Bethpage | **Well Number** = RE123D1

| Event Number | Sampling Date (most recent last) | TCE Concentration | LN TCE Decreasing Change Rate Calculation | Linear TCE Increasing Change Rate Calculation |
|---|---|---|---|---|
| | Compound -> | | | |
| 1 | 9/29/2015 | 12 | | |
| 2 | 12/21/2015 | 6.1 | | |
| 3 | 3/17/2016 | 6.6 | | |
| 4 | 6/20/2016 | 7.4 | | |
| 5 | 9/1/2016 | 9.6 | | |
| 6 | 12/1/2016 | 7.3 | | |
| 7 | 3/1/2017 | 4.8 | | |
| 8 | 6/1/2017 | 4.9 | | |
| 9 | 9/22/2017 | 8 | | |
| 10 | 12/12/2017 | 8.4 | | |
| 11 | | | | |
| 12 | | | | |
| 13 | | | | |
| 14 | | | | |
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| | | | |
|---|---|---|---|
| Mann Kendall Statistic (S) = | -1.0 | | |
| Number of Rounds (n) = | 10 | | |
| Average = | 7.51 | | |
| Standard Deviation = | 2.175 | | |
| Coefficient of Variation(CV)= | 0.290 | | |

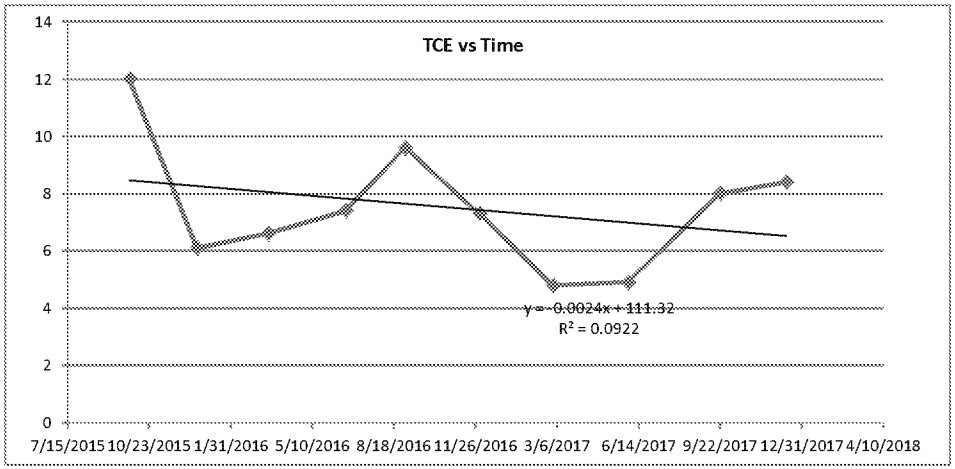
**Error Check, Blank if No Errors Detected**

| | | | |
|---|---|---|---|
| Trend ≥ 80% Confidence Level | No Trend | | |
| Trend ≥ 90% Confidence Level | No Trend | | |

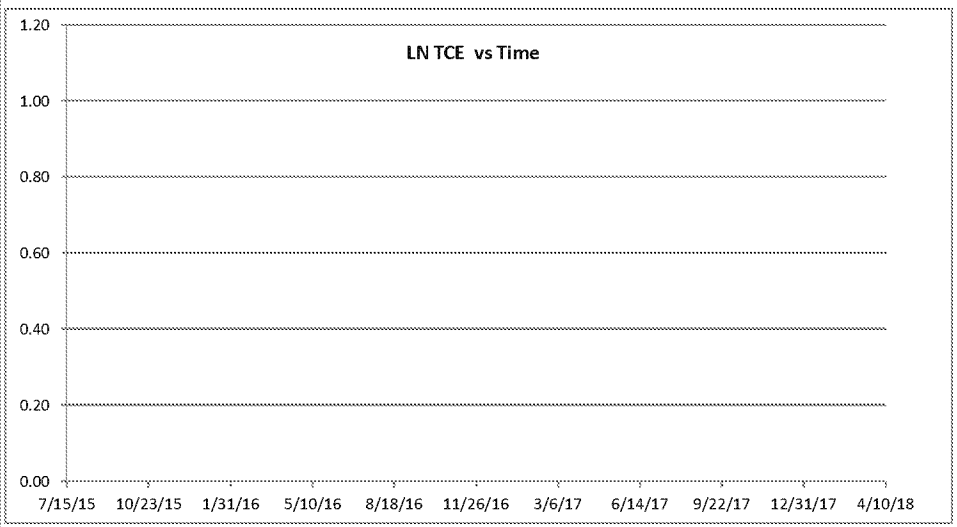
| | | | |
|---|---|---|---|
| Stability Test, If No Trend Exists at 80% Confidence Level | CV <= 1 STABLE | | |

| | | | |
|---|---|---|---|
| Data Entry By = | BC | Date = | Mar 1 2018 |

TCE Concentration Trend




LN TCE Concentration Trend



## Mann-Kendall Statistical Test and First Order Change Rate

**Site Name** = Bethpage | **Well Number** = RE123D2

| Event Number | Sampling Date (most recent last) | TCE Concentration | LN TCE Decreasing Change Rate Calculation | Linear TCE Increasing Change Rate Calculation |
|---|---|---|---|---|
| | Compound -> | | | |
| 1 | 9/29/2015 | 1.4 | | 1.4 |
| 2 | 12/21/2015 | 1.5 | | 1.5 |
| 3 | 3/17/2016 | 1.9 | | 1.9 |
| 4 | 6/20/2016 | 1.5 | | 1.5 |
| 5 | 9/1/2016 | 2.1 | | 2.1 |
| 6 | 12/1/2016 | 1.8 | | 1.8 |
| 7 | 3/1/2017 | 1.6 | | 1.6 |
| 8 | 6/1/2017 | 1.8 | | 1.8 |
| 9 | 9/22/2017 | 2.1 | | 2.1 |
| 10 | 12/12/2017 | 2.1 | | 2.1 |
| 11 | | | | |
| 12 | | | | |
| 13 | | | | |
| 14 | | | | |
| 15 | | | | |
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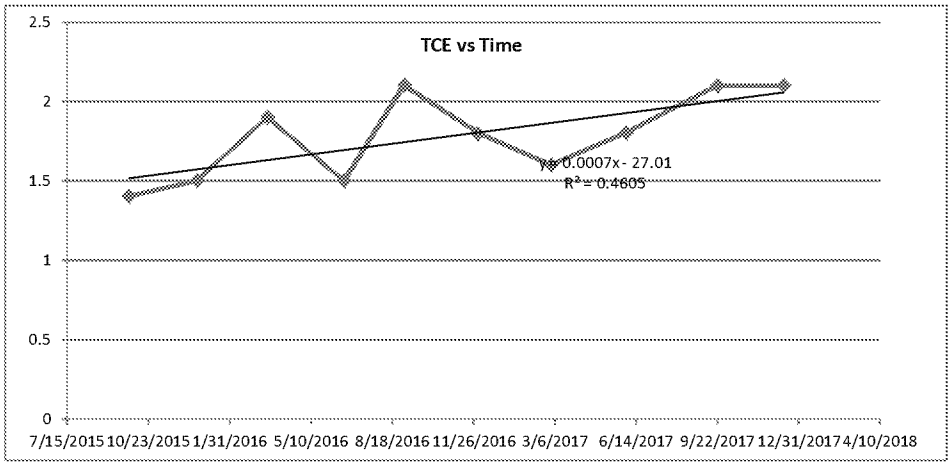
| | | | |
|---|---|---|---|
| Mann Kendall Statistic (S) = | 24.0 | | 0.00067 |
| Number of Rounds (n) = | 10 | | |
| Average = | 1.78 | | |
| Standard Deviation = | 0.270 | | |
| Coefficient of Variation(CV)= | 0.152 | | |

**Error Check, Blank if No Errors Detected**

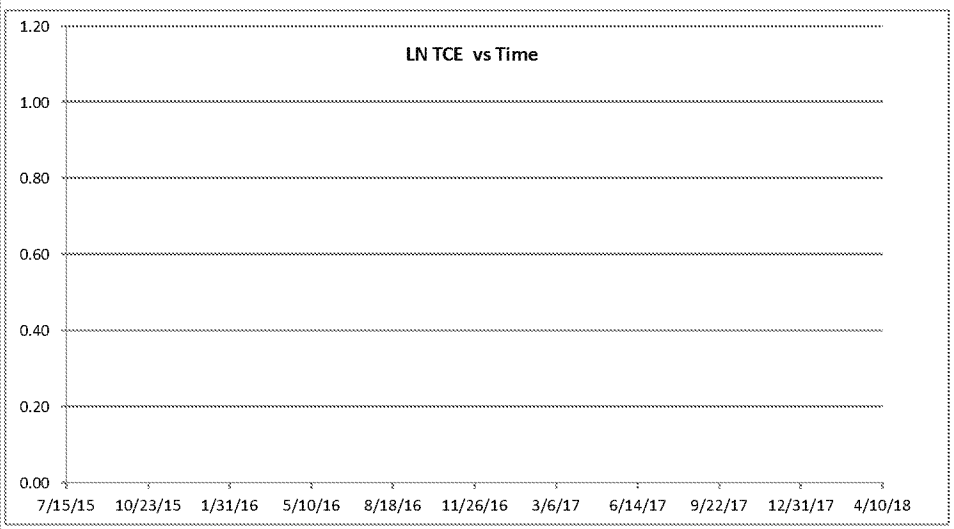
| | | | |
|---|---|---|---|
| Trend ≥ 80% Confidence Level | INCREASING | | |
| Trend ≥ 90% Confidence Level | INCREASING | | |
| Stability Test, If No Trend Exists at 80% Confidence Level | NA | | |

| | | | |
|---|---|---|---|
| Data Entry By = | BC | Date = | Mar 1 2018 |

**TCE Concentration Trend**




**LN TCE Concentration Trend**



## Mann-Kendall Statistical Test and First Order Change Rate

**Site Name** = Bethpage | **Well Number** = RE125D1

| Event Number | Sampling Date (most recent last) | TCE Concentration | LN TCE Decreasing Change Rate Calculation | Linear TCE Increasing Change Rate Calculation |
|---|---|---|---|---|
| | Compound -> | | | |
| 1 | 12/7/2016 | 180 | 5.19 | |
| 2 | 3/13/2017 | 150 | 5.01 | |
| 3 | 6/2/2017 | 180 | 5.19 | |
| 4 | 9/25/2017 | 170 | 5.14 | |
| 5 | 12/11/2017 | 140 | 4.94 | |
| 6 | | | | |
| 7 | | | | |
| 8 | | | | |
| 9 | | | | |
| 10 | | | | |
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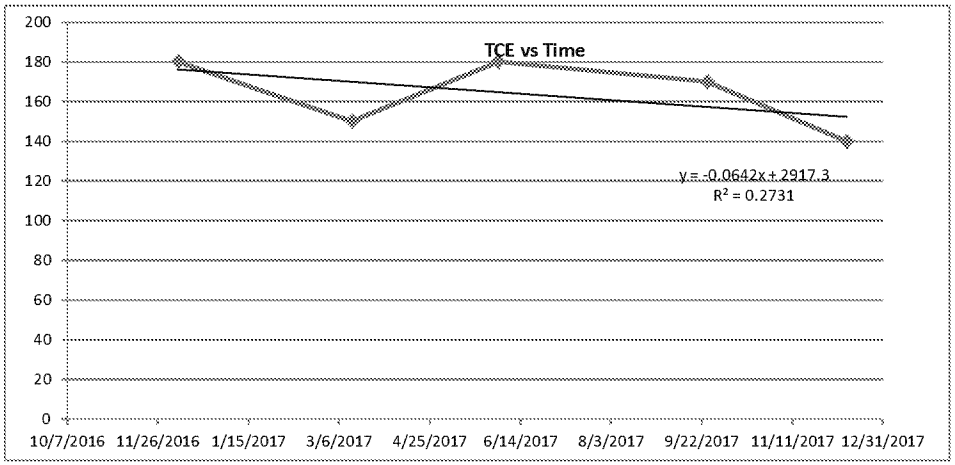
| | | | |
|---|---|---|---|
| Mann Kendall Statistic (S) = | -5.0 | -0.00040 | |
| Number of Rounds (n) = | 5 | | |
| Average = | 164.00 | | |
| Standard Deviation = | 18.166 | | |
| Coefficient of Variation(CV)= | 0.111 | | |

**Error Check, Blank if No Errors Detected**

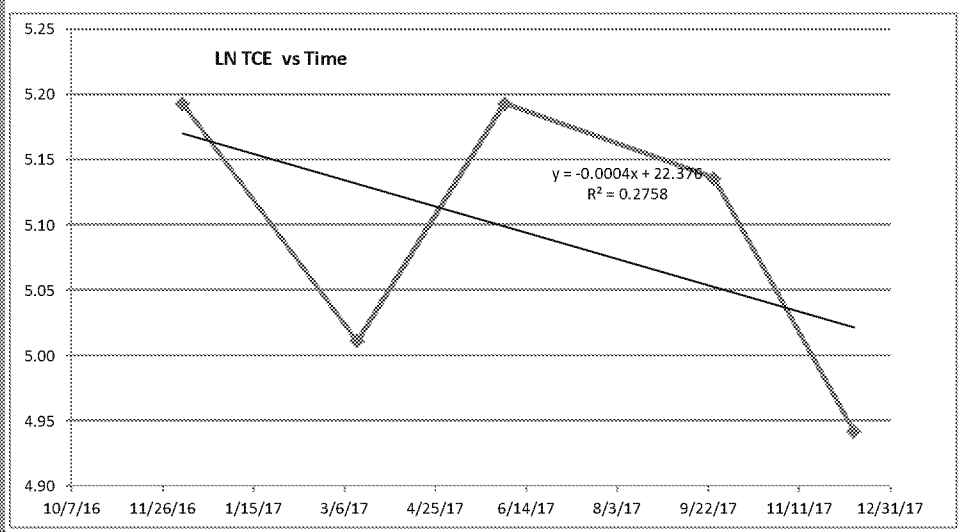
| | | | |
|---|---|---|---|
| Trend ≥ 80% Confidence Level | DECREASING | | |
| Trend ≥ 90% Confidence Level | No Trend | | |
| Stability Test, If No Trend Exists at 80% Confidence Level | NA | | |

| | | | |
|---|---|---|---|
| Data Entry By = | BC | Date = | Feb 27 2018 |

TCE Concentration Trend




LN TCE Concentration Trend



## Mann-Kendall Statistical Test and First Order Change Rate

**Site Name** = Bethpage | **Well Number** = RE125D2

| Event Number | Sampling Date (most recent last) | TCE Concentration | LN TCE Decreasing Change Rate Calculation | Linear TCE Increasing Change Rate Calculation |
|---|---|---|---|---|
| | Compound -> | | | |
| 1 | 12/7/2016 | 240 | 5.48 | |
| 2 | 3/13/2017 | 220 | 5.39 | |
| 3 | 6/2/2017 | 230 | 5.44 | |
| 4 | 9/25/2017 | 210 | 5.35 | |
| 5 | 12/11/2017 | 200 | 5.30 | |
| 6 | | | | |
| 7 | | | | |
| 8 | | | | |
| 9 | | | | |
| 10 | | | | |
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| 12 | | | | |
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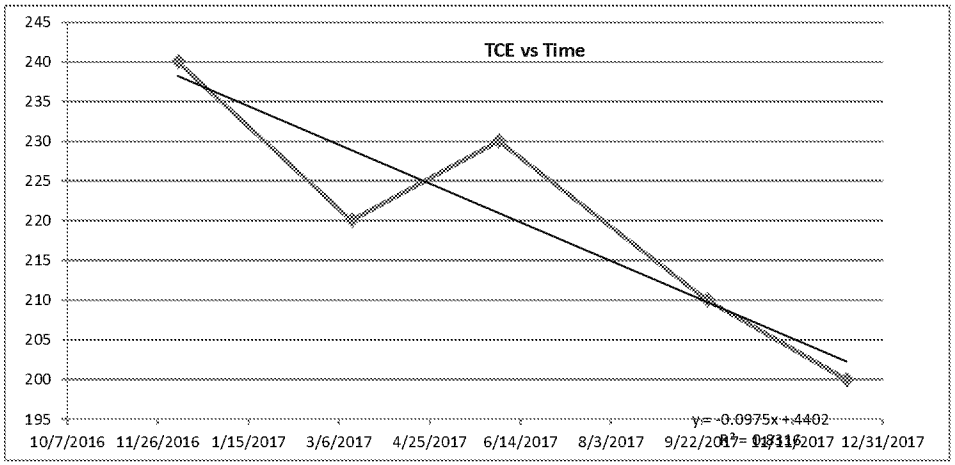
| | | | |
|---|---|---|---|
| Mann Kendall Statistic (S) = | -8.0 | -0.00045 | |
| Number of Rounds (n) = | 5 | | |
| Average = | 220.00 | | |
| Standard Deviation = | 15.811 | | |
| Coefficient of Variation(CV)= | 0.072 | | |

**Error Check, Blank if No Errors Detected**

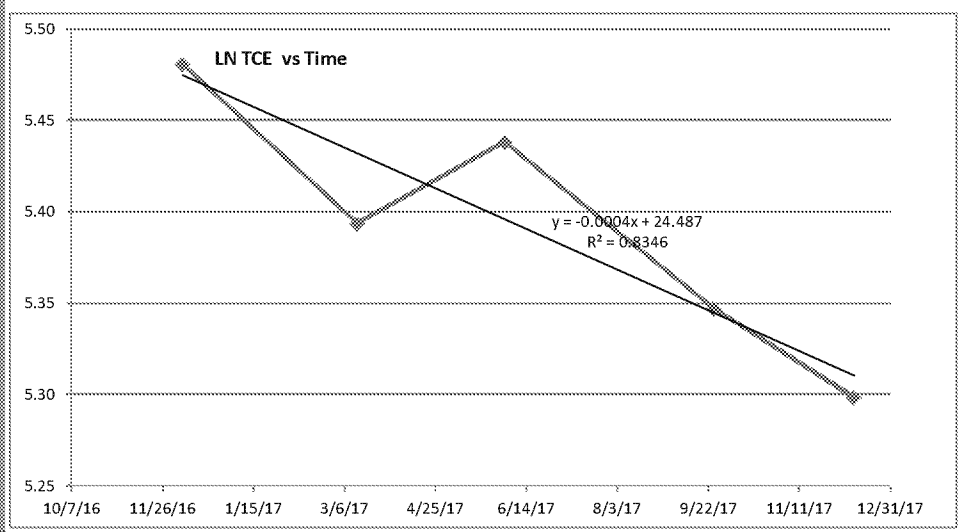
| | | | |
|---|---|---|---|
| Trend ≥ 80% Confidence Level | DECREASING | | |
| Trend ≥ 90% Confidence Level | DECREASING | | |
| Stability Test, If No Trend Exists at 80% Confidence Level | NA | | |

| | | | |
|---|---|---|---|
| Data Entry By = | BC | Date = | Feb 28 2018 |

TCE Concentration Trend




LN TCE Concentration Trend



## Mann-Kendall Statistical Test and First Order Change Rate

**Site Name** = Bethpage | **Well Number** = RE125D3

| Event Number | Sampling Date (most recent last) | TCE Concentration | LN TCE Decreasing Change Rate Calculation | Linear TCE Increasing Change Rate Calculation |
|---|---|---|---|---|
| | Compound -> | | | |
| 1 | 12/7/2016 | 150 | | |
| 2 | 3/13/2017 | 140 | | |
| 3 | 6/2/2017 | 140 | | |
| 4 | 9/25/2017 | 140 | | |
| 5 | 12/11/2017 | 150 | | |
| 6 | | | | |
| 7 | | | | |
| 8 | | | | |
| 9 | | | | |
| 10 | | | | |
| 11 | | | | |
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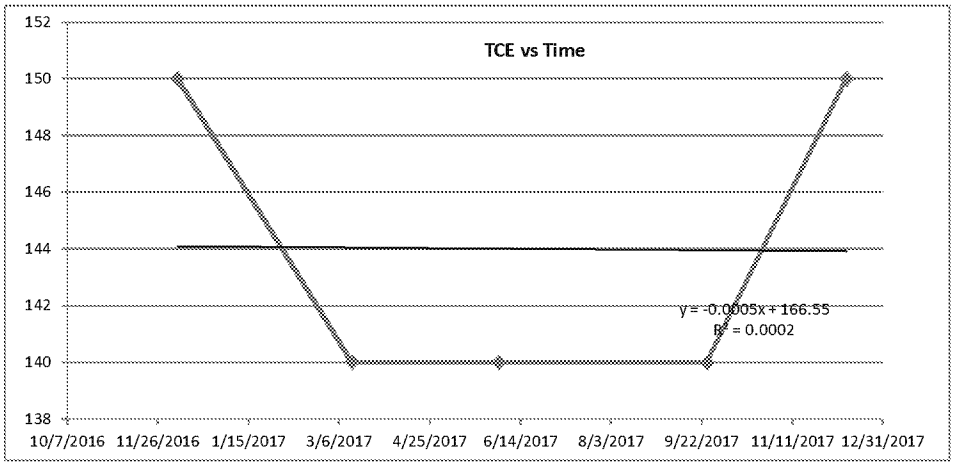
|---|---|---|---|
| Mann Kendall Statistic (S) = | 0.0 | | |
| Number of Rounds (n) = | 5 | | |
| Average = | 144.00 | | |
| Standard Deviation = | 5.477 | | |
| Coefficient of Variation(CV)= | 0.038 | | |

**Error Check, Blank if No Errors Detected**

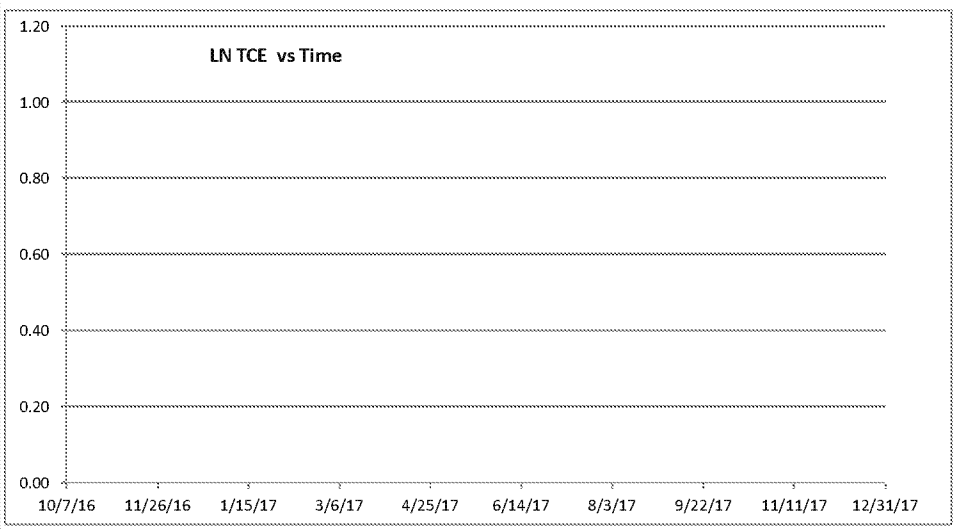
| | | | |
|---|---|---|---|
| Trend ≥ 80% Confidence Level | No Trend | | |
| Trend ≥ 90% Confidence Level | No Trend | | |
| Stability Test, If No Trend Exists at 80% Confidence Level | CV <= 1 STABLE | | |

| | | | |
|---|---|---|---|
| Data Entry By = | BC | Date = | Feb 28 2018 |

TCE Concentration Trend




LN TCE Concentration Trend



## Mann-Kendall Statistical Test and First Order Change Rate

**Site Name** = Bethpage | **Well Number** = RE126D1

| Event Number | Sampling Date (most recent last) | TCE Concentration | LN TCE Decreasing Change Rate Calculation | Linear TCE Increasing Change Rate Calculation |
|---|---|---|---|---|
| | Compound -> | | | |
| 1 | 6/21/2016 | 28 | | 28 |
| 2 | 9/23/2016 | 23 | | 23 |
| 3 | 12/6/2016 | 26 | | 26 |
| 4 | 3/10/2017 | 34 | | 34 |
| 5 | 6/5/2017 | 43 | | 43 |
| 6 | 9/22/2017 | 65 | | 65 |
| 7 | 12/7/2017 | 85 | | 85 |
| 8 | | | | |
| 9 | | | | |
| 10 | | | | |
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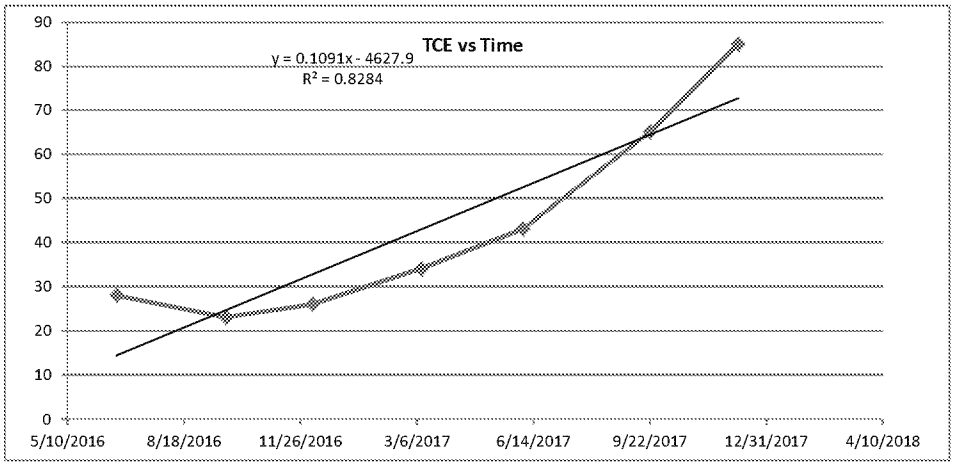
| | | | |
|---|---|---|---|
| Mann Kendall Statistic (S) = | 17.0 | | 0.10912 |
| Number of Rounds (n) = | 7 | | |
| Average = | 43.43 | | |
| Standard Deviation = | 23.244 | | |
| Coefficient of Variation(CV)= | 0.535 | | |

Error Check, Blank if No Errors Detected

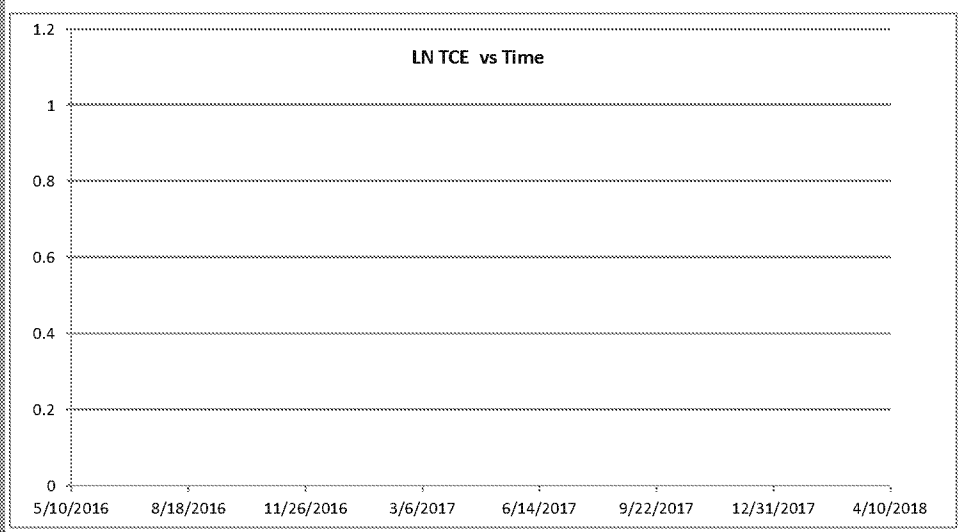
| | | | |
|---|---|---|---|
| Trend ≥ 80% Confidence Level | INCREASING | | |
| Trend ≥ 90% Confidence Level | INCREASING | | |
| Stability Test, If No Trend Exists at 80% Confidence Level | NA | | |

Data Entry By = BC | Date Feb 28 2018

TCE Concentration Trend




LN TCE Concentration Trend



## Mann-Kendall Statistical Test and First Order Change Rate

**Site Name** = Bethpage | **Well Number** = RE126D2

| Event Number | Sampling Date (most recent last) | TCE Concentration | LN TCE Decreasing Change Rate Calculation | Linear TCE Increasing Change Rate Calculation |
|---|---|---|---|---|
| | Compound -> | | | |
| 1 | 6/21/2016 | 520 | 6.253828812 | |
| 2 | 9/23/2016 | 520 | 6.253828812 | |
| 3 | 12/6/2016 | 530 | 6.272877007 | |
| 4 | 3/10/2017 | 400 | 5.991464547 | |
| 5 | 6/9/2017 | 480 | 6.173786104 | |
| 6 | 9/22/2017 | 460 | 6.131226489 | |
| 7 | 12/7/2017 | 450 | 6.109247583 | |
| 8 | | | | |
| 9 | | | | |
| 10 | | | | |
| 11 | | | | |
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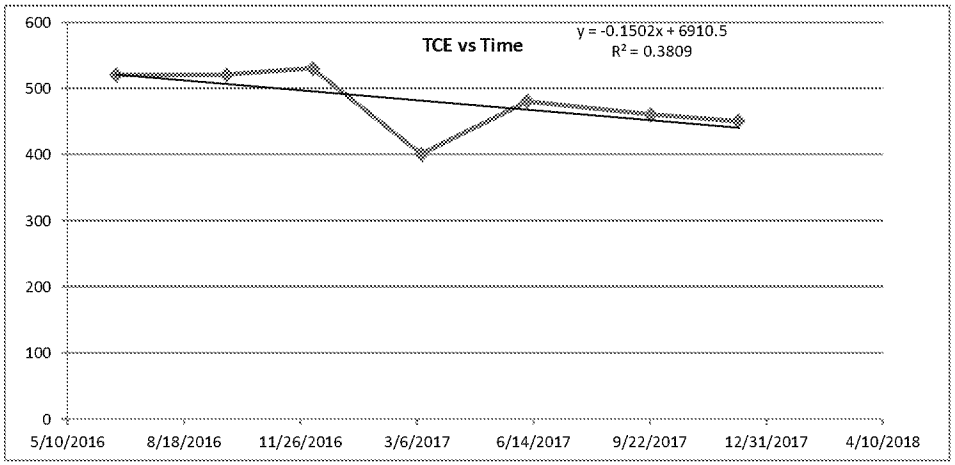
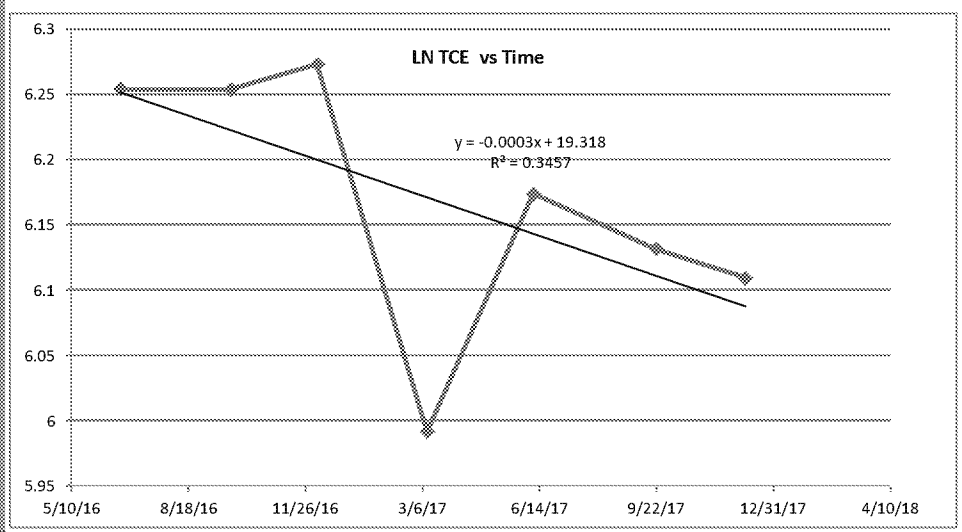
| | | | |
|---|---|---|---|
| Mann Kendall Statistic (S) = | -10.0 | -0.00031 | |
| Number of Rounds (n) = | 7 | | |
| Average = | 480.00 | | |
| Standard Deviation = | 47.258 | | |
| Coefficient of Variation(CV)= | 0.098 | | |

**Error Check, Blank if No Errors Detected**

| | | | |
|---|---|---|---|
| Trend ≥ 80% Confidence Level | DECREASING | | |
| Trend ≥ 90% Confidence Level | DECREASING | | |
| Stability Test, If No Trend Exists at 80% Confidence Level | NA | | |

| | | | |
|---|---|---|---|
| Data Entry By = | BC | Date = | Mar 1 2018 |



## Mann-Kendall Statistical Test and First Order Change Rate

**Site Name** = Bethpage | **Well Number** = RE126D3

| Event Number | Sampling Date (most recent last) | TCE Concentration | LN TCE Decreasing Change Rate Calculation | Linear TCE Increasing Change Rate Calculation |
|---|---|---|---|---|
| | Compound -> | | | |
| 1 | 6/21/2016 | 4 | | |
| 2 | 9/23/2016 | 3.9 | | |
| 3 | 12/6/2016 | 3.3 | | |
| 4 | 3/10/2017 | 2 | | |
| 5 | 6/9/2017 | 2.5 | | |
| 6 | 9/22/2017 | 3.7 | | |
| 7 | 12/7/2017 | 4.3 | | |
| 8 | | | | |
| 9 | | | | |
| 10 | | | | |
| 11 | | | | |
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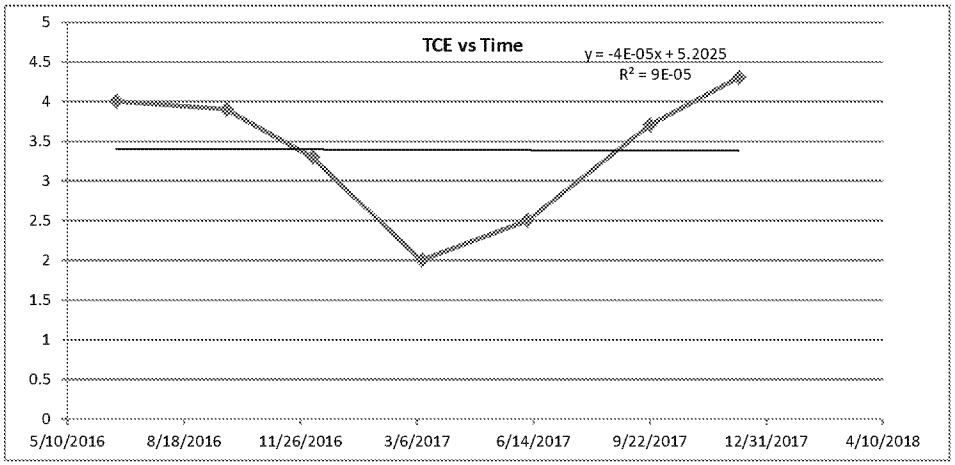
| | | | |
|---|---|---|---|
| Mann Kendall Statistic (S) = | -1.0 | | |
| Number of Rounds (n) = | 7 | | |
| Average = | 3.39 | | |
| Standard Deviation = | 0.845 | | |
| Coefficient of Variation(CV)= | 0.250 | | |

**Error Check, Blank if No Errors Detected**

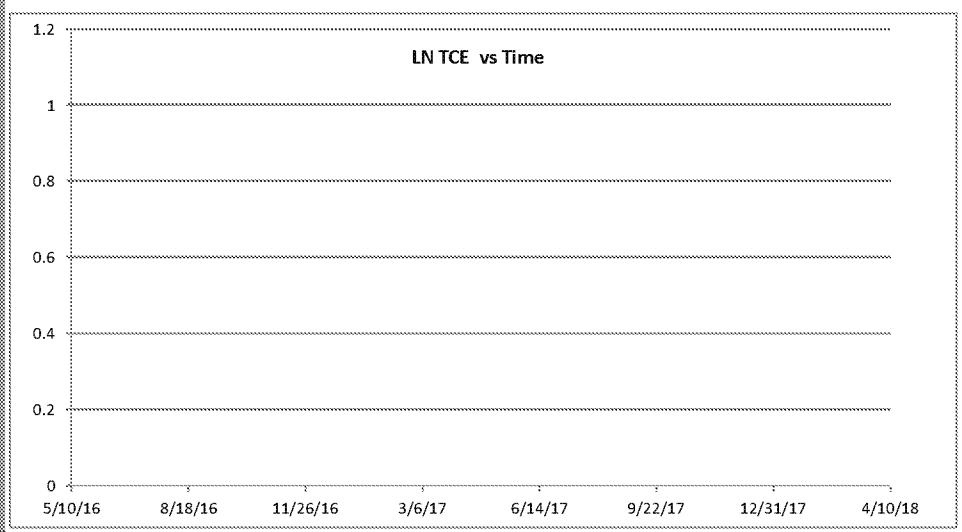
| | | | |
|---|---|---|---|
| Trend ≥ 80% Confidence Level | No Trend | | |
| Trend ≥ 90% Confidence Level | No Trend | | |
| Stability Test, If No Trend Exists at 80% Confidence Level | CV <= 1 STABLE | | |

| | | | |
|---|---|---|---|
| Data Entry By = | BC | Date = | Mar 1 2018 |

**TCE Concentration Trend**




**LN TCE Concentration Trend**



## Mann-Kendall Statistical Test and First Order Change Rate

**Site Name** = Bethpage | **Well Number** = RE131D1

| Event Number | Sampling Date (most recent last) | TCE Concentration | LN TCE Decreasing Change Rate Calculation | Linear TCE Increasing Change Rate Calculation |
|---|---|---|---|---|
| | Compound -> | | | |
| 1 | 6/23/2016 | 96 | | 96 |
| 2 | 9/22/2016 | 110 | | 110 |
| 3 | 12/6/2016 | 100 | | 100 |
| 4 | 3/10/2017 | 110 | | 110 |
| 5 | 6/2/2017 | 130 | | 130 |
| 6 | 9/20/2017 | 140 | | 140 |
| 7 | 12/7/2017 | 140 | | 140 |
| 8 | | | | |
| 9 | | | | |
| 10 | | | | |
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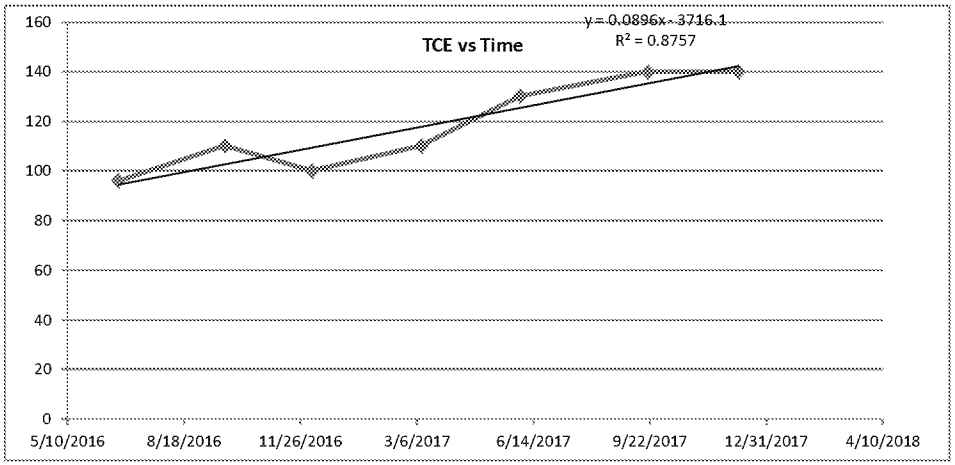
| | | | |
|---|---|---|---|
| Mann Kendall Statistic (S) = | 17.0 | | 0.08957 |
| Number of Rounds (n) = | 7 | | |
| Average = | 118.00 | | |
| Standard Deviation = | 18.475 | | |
| Coefficient of Variation(CV)= | 0.157 | | |

**Error Check, Blank if No Errors Detected**

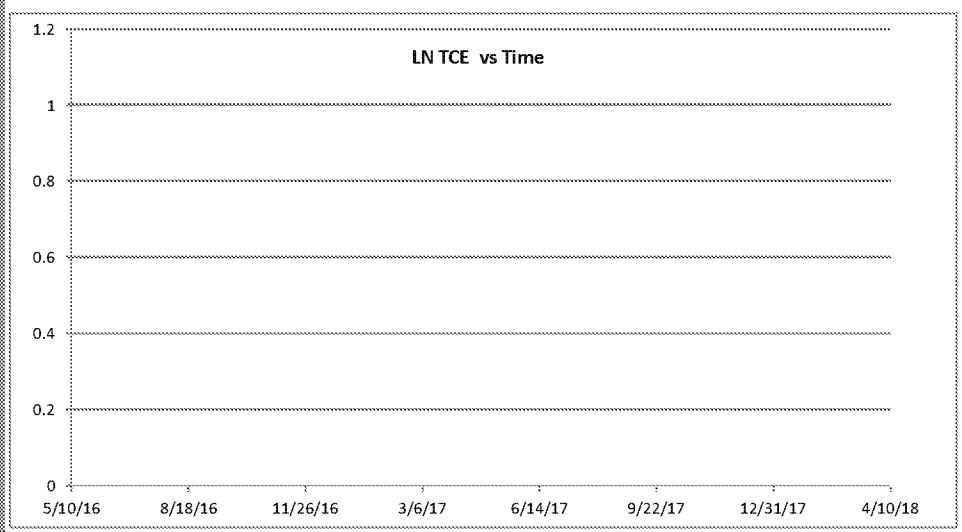
| | | | |
|---|---|---|---|
| Trend ≥ 80% Confidence Level | INCREASING | | |
| Trend ≥ 90% Confidence Level | INCREASING | | |
| Stability Test, If No Trend Exists at 80% Confidence Level | NA | | |

| | | | |
|---|---|---|---|
| Data Entry By = | BC | Date = | Mar 1 2018 |

**TCE Concentration Trend**




**LN TCE Concentration Trend**



## Mann-Kendall Statistical Test and First Order Change Rate

**Site Name** = Bethpage | **Well Number** = RE131D2

| Event Number | Sampling Date (most recent last) | TCE Concentration | LN TCE Decreasing Change Rate Calculation | Linear TCE Increasing Change Rate Calculation |
|---|---|---|---|---|
| | Compound -> | | | |
| 1 | 6/23/2016 | 46 | | 46 |
| 2 | 9/22/2016 | 42 | | 42 |
| 3 | 12/6/2016 | 54 | | 54 |
| 4 | 3/10/2017 | 45 | | 45 |
| 5 | 6/2/2017 | 45 | | 45 |
| 6 | 9/20/2017 | 67 | | 67 |
| 7 | 12/7/2017 | 67 | | 67 |
| 8 | | | | |
| 9 | | | | |
| 10 | | | | |
| 11 | | | | |
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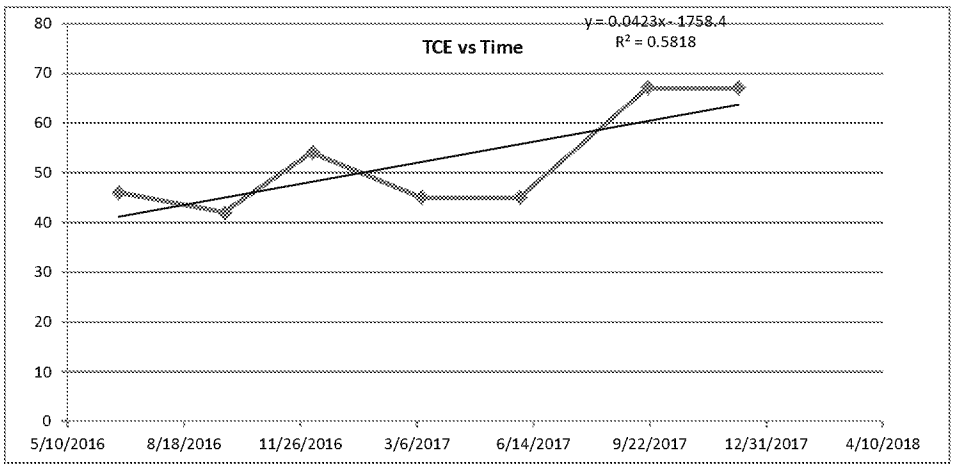
| | | | |
|---|---|---|---|
| Mann Kendall Statistic (S) = | 9.0 | | 0.04230 |
| Number of Rounds (n) = | 7 | | |
| Average = | 52.29 | | |
| Standard Deviation = | 10.704 | | |
| Coefficient of Variation(CV)= | 0.205 | | |

**Error Check, Blank if No Errors Detected**

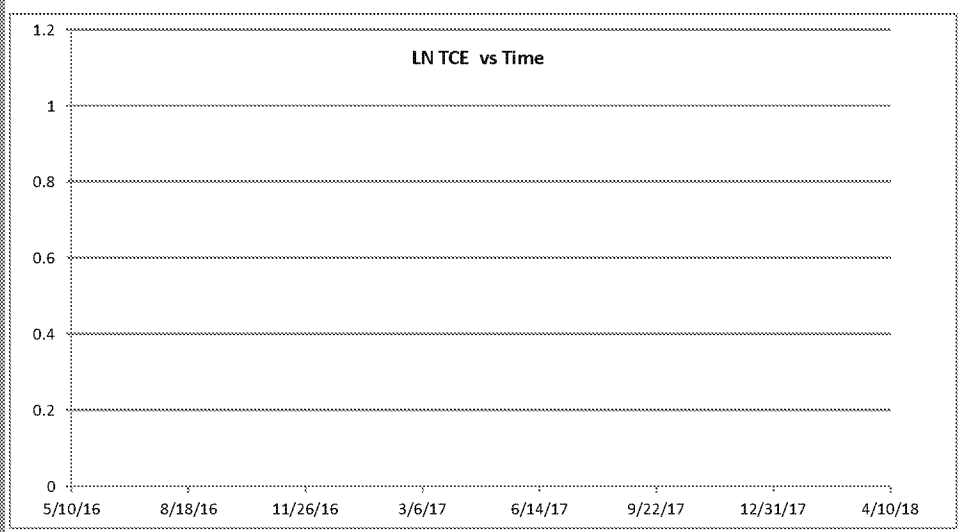
| | | | |
|---|---|---|---|
| Trend ≥ 80% Confidence Level | INCREASING | | |
| Trend ≥ 90% Confidence Level | No Trend | | |
| Stability Test, If No Trend Exists at 80% Confidence Level | NA | | |

| | | | |
|---|---|---|---|
| Data Entry By = | BC | Date = | Mar 1 2018 |

**TCE Concentration Trend**




**LN TCE Concentration Trend**



## Mann-Kendall Statistical Test and First Order Change Rate

**Site Name** = Bethpage | **Well Number** = RE131D3

| Event Number | Sampling Date (most recent last) | TCE Concentration | LN TCE Decreasing Change Rate Calculation | Linear TCE Increasing Change Rate Calculation |
|---|---|---|---|---|
| | Compound -> | | | |
| 1 | 6/23/2016 | 6.1 | | 6.1 |
| 2 | 9/22/2016 | 6.1 | | 6.1 |
| 3 | 12/6/2016 | 6.6 | | 6.6 |
| 4 | 3/10/2017 | 6.3 | | 6.3 |
| 5 | 6/2/2017 | 6.3 | | 6.3 |
| 6 | 9/20/2017 | 9.1 | | 9.1 |
| 7 | 12/7/2017 | 9.5 | | 9.5 |
| 8 | | | | |
| 9 | | | | |
| 10 | | | | |
| 11 | | | | |
| 12 | | | | |
| 13 | | | | |
| 14 | | | | |
| 15 | | | | |
| 16 | | | | |
| 17 | | | | |
| 18 | | | | |

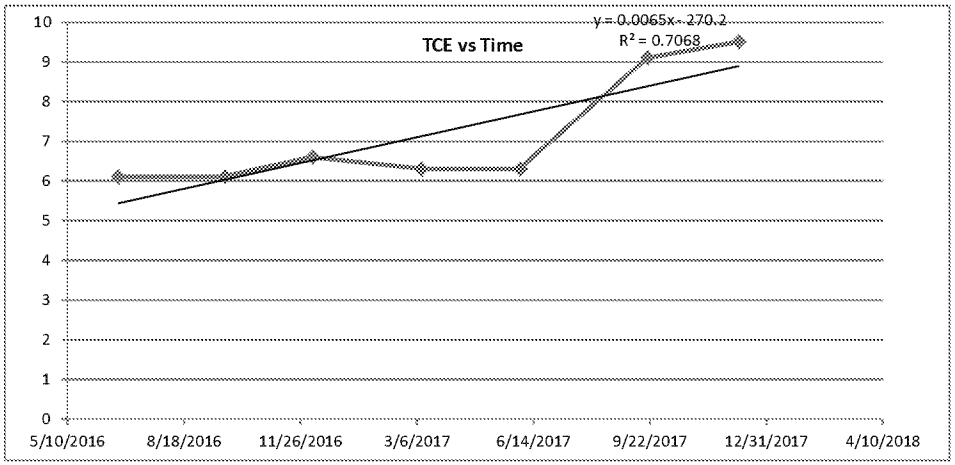
| | | | |
|---|---|---|---|
| Mann Kendall Statistic (S) = | 15.0 | | 0.00648 |
| Number of Rounds (n) = | 7 | | |
| Average = | 7.14 | | |
| Standard Deviation = | 1.488 | | |
| Coefficient of Variation(CV)= | 0.208 | | |

**Error Check, Blank if No Errors Detected**

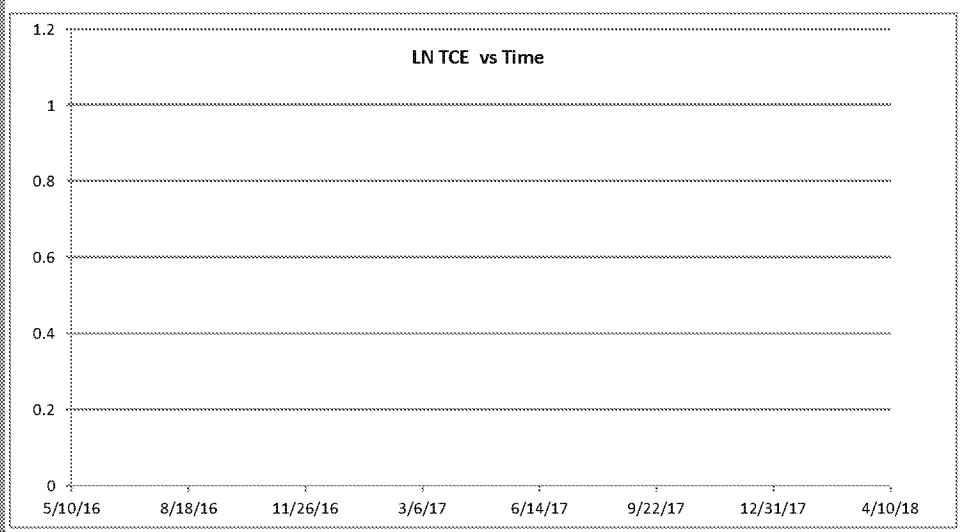
| | | | |
|---|---|---|---|
| Trend ≥ 80% Confidence Level | INCREASING | | |
| Trend ≥ 90% Confidence Level | INCREASING | | |
| Stability Test, If No Trend Exists at 80% Confidence Level | NA | | |

| | | | |
|---|---|---|---|
| Data Entry By = | BC | Date = | Mar 1 2018 |

TCE Concentration Trend




LN TCE Concentration Trend



## Mann-Kendall Statistical Test and First Order Change Rate

**Site Name** = Bethpage | **Well Number** = TT101D

| Event Number | Sampling Date (most recent last) | TCE Concentration | LN TCE Decreasing Change Rate Calculation | Linear TCE Increasing Change Rate Calculation |
|---|---|---|---|---|
| | Compound -> | | | |
| 1 | 3/13/2014 | 52 | | 52 |
| 2 | 5/27/2014 | 57 | | 57 |
| 3 | 9/25/2014 | 66 | | 66 |
| 4 | 12/9/2014 | 67 | | 67 |
| 5 | 3/24/2015 | 61 | | 61 |
| 6 | 5/21/2015 | 68 | | 68 |
| 7 | 6/22/2015 | 66 | | 66 |
| 8 | 9/29/2015 | 67 | | 67 |
| 9 | 12/17/2015 | 74 | | 74 |
| 10 | 3/16/2016 | 67 | | 67 |
| 11 | 6/21/2016 | 73 | | 73 |
| 12 | 9/26/2016 | 69 | | 69 |
| 13 | 12/6/2016 | 68 | | 68 |
| 14 | 3/7/2017 | 70 | | 70 |
| 15 | 6/1/2017 | 85 | | 85 |
| 16 | 9/18/2017 | 62 | | 62 |
| 17 | 12/8/2017 | 66 | | 66 |
| 18 | | | | |

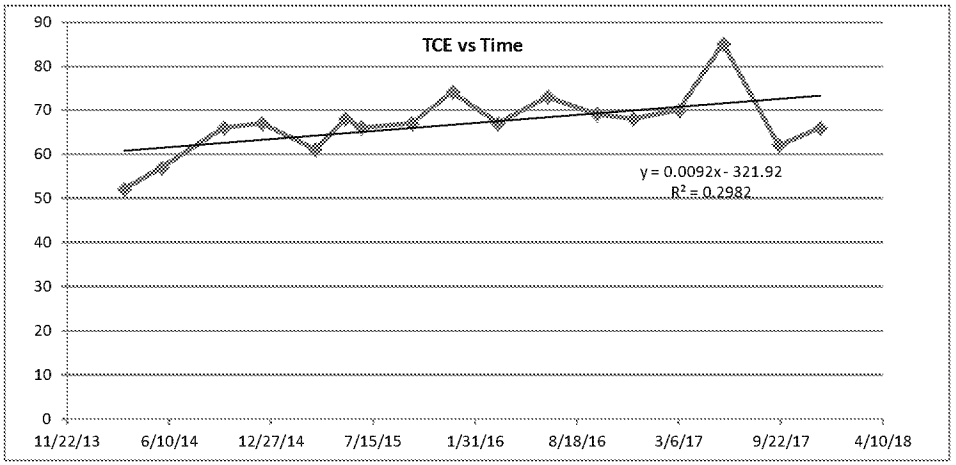
| | | | |
|---|---|---|---|
| Mann Kendall Statistic (S) = | 55.0 | | 0.00917 |
| Number of Rounds (n) = | 17 | | |
| Average = | 66.94 | | |
| Standard Deviation = | 7.128 | | |
| Coefficient of Variation(CV)= | 0.106 | | |

**Error Check, Blank if No Errors Detected**

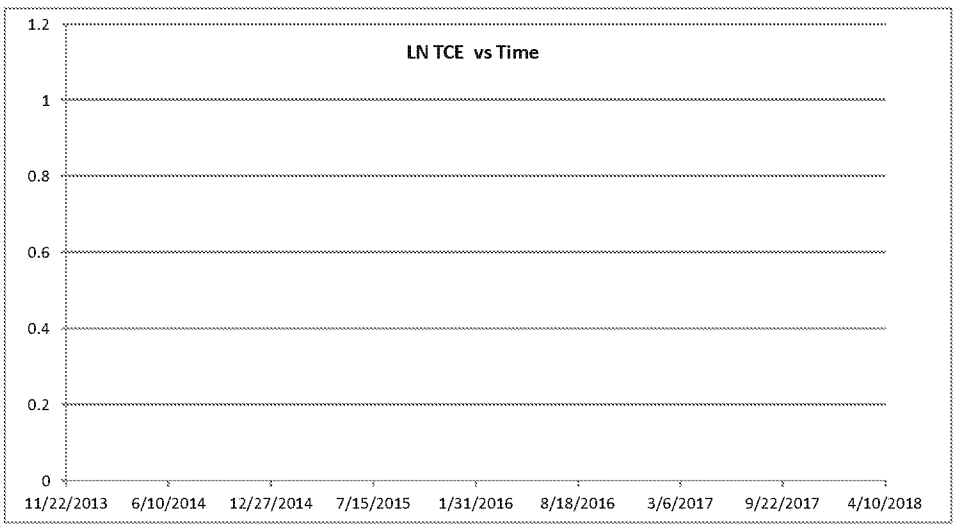
| | | | |
|---|---|---|---|
| Trend ≥ 80% Confidence Level | INCREASING | | |
| Trend ≥ 90% Confidence Level | INCREASING | | |
| Stability Test, If No Trend Exists at 80% Confidence Level | NA | | |

| | | | |
|---|---|---|---|
| Data Entry By = | BC | Date = | Feb 27 2018 |

**TCE Concentration Trend**




**LN TCE Concentration Trend**



## Mann-Kendall Statistical Test and First Order Change Rate

| Site Name = Bethpage | Well Number = | TT101D1 |
|---|---|---|

| Event Number | Sampling Date (most recent last) | TCE Concentration | LN TCE Decreasing Change Rate Calculation | Linear TCE Increasing Change Rate Calculation |
|---|---|---|---|---|
| | Compound -> | | | |
| 1 | 3/13/2014 | 170 | | 170 |
| 2 | 5/27/2014 | 93 | | 93 |
| 3 | 9/25/2014 | 160 | | 160 |
| 4 | 12/9/2014 | 160 | | 160 |
| 5 | 3/24/2015 | 170 | | 170 |
| 6 | 5/21/2015 | 170 | | 170 |
| 7 | 6/22/2015 | 180 | | 180 |
| 8 | 9/29/2015 | 170 | | 170 |
| 9 | 12/17/2015 | 200 | | 200 |
| 10 | 3/16/2016 | 180 | | 180 |
| 11 | 6/21/2016 | 190 | | 190 |
| 12 | 9/21/2016 | 220 | | 220 |
| 13 | 12/6/2016 | 190 | | 190 |
| 14 | 3/7/2017 | 190 | | 190 |
| 15 | 6/1/2017 | 200 | | 200 |
| 16 | 9/18/2017 | 170 | | 170 |
| 17 | 12/8/2017 | 170 | | 170 |
| 18 | | | | |

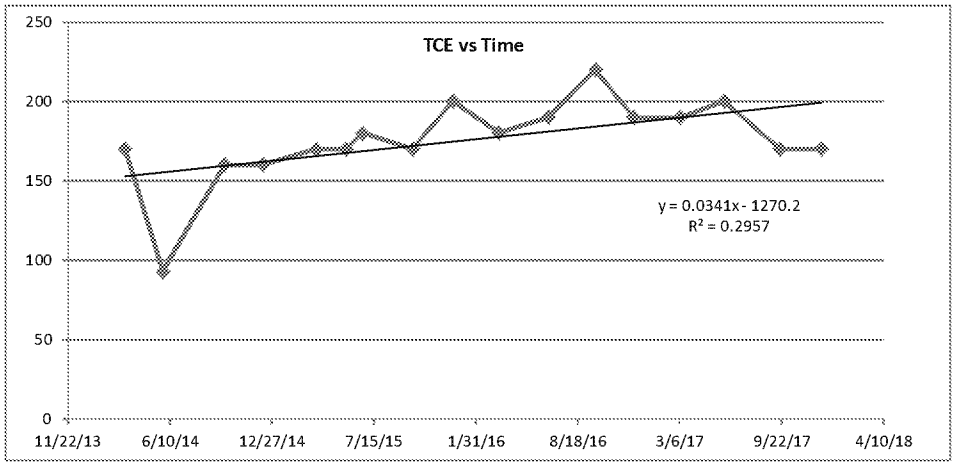
| | | | |
|---|---|---|---|
| Mann Kendall Statistic (S) = | 61.0 | | 0.03411 |
| Number of Rounds (n) = | 17 | | |
| Average = | 175.47 | | |
| Standard Deviation = | 26.599 | | |
| Coefficient of Variation(CV)= | 0.152 | | |

Error Check, Blank if No Errors Detected

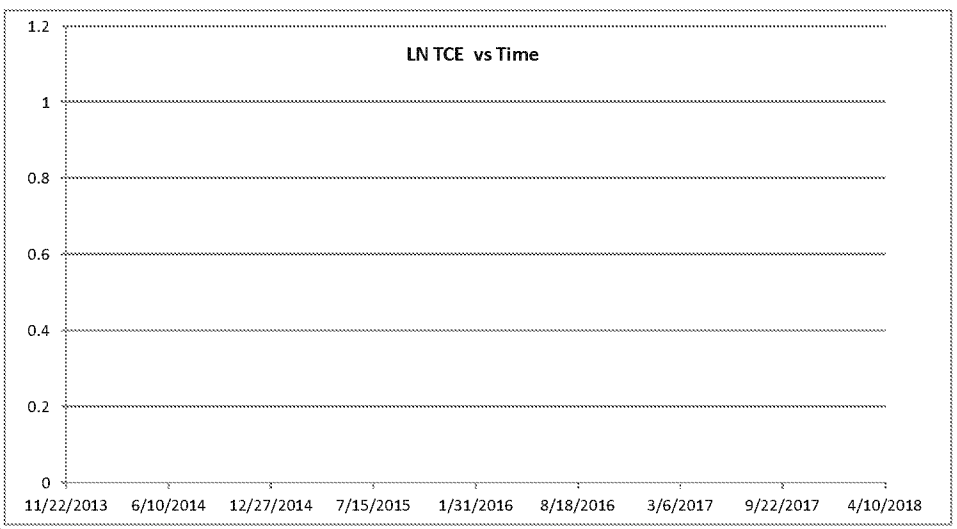
| | | | |
|---|---|---|---|
| Trend ≥ 80% Confidence Level | INCREASING | | |
| Trend ≥ 90% Confidence Level | INCREASING | | |
| Stability Test, If No Trend Exists at 80% Confidence Level | NA | | |

| Data Entry By = | BC | Date = | Feb 27 2018 |
|---|---|---|---|

TCE Concentration Trend




LN TCE Concentration Trend



## Mann-Kendall Statistical Test and First Order Change Rate

**Site Name** = Bethpage | **Well Number =** TT101D2

| Event Number | Sampling Date (most recent last) | TCE Concentration | LN TCE Decreasing Change Rate Calculation | Linear TCE Increasing Change Rate Calculation |
|---|---|---|---|---|
| | Compound -> | | | |
| 1 | 3/13/2014 | 250 | | 250 |
| 2 | 5/27/2014 | 300 | | 300 |
| 3 | 9/25/2014 | 560 | | 560 |
| 4 | 12/9/2014 | 520 | | 520 |
| 5 | 3/24/2015 | 480 | | 480 |
| 6 | 5/21/2015 | 620 | | 620 |
| 7 | 6/22/2015 | 620 | | 620 |
| 8 | 9/29/2015 | 640 | | 640 |
| 9 | 12/17/2015 | 510 | | 510 |
| 10 | 3/16/2016 | 590 | | 590 |
| 11 | 6/21/2016 | 690 | | 690 |
| 12 | 9/26/2016 | 680 | | 680 |
| 13 | 12/6/2016 | 740 | | 740 |
| 14 | 3/7/2017 | 780 | | 780 |
| 15 | 6/1/2017 | 670 | | 670 |
| 16 | 9/18/2017 | 630 | | 630 |
| 17 | 12/8/2017 | 840 | | 840 |
| 18 | | | | |

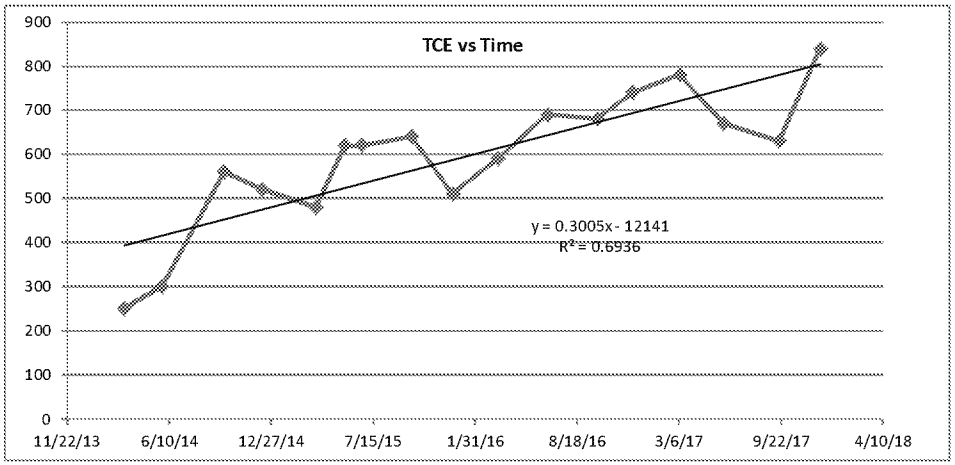
| | | | |
|---|---|---|---|
| **Mann Kendall Statistic (S) =** | 91.0 | | 0.30051 |
| **Number of Rounds (n) =** | 17 | | |
| **Average =** | 595.29 | | |
| **Standard Deviation =** | 153.098 | | |
| **Coefficient of Variation(CV)=** | 0.257 | | |

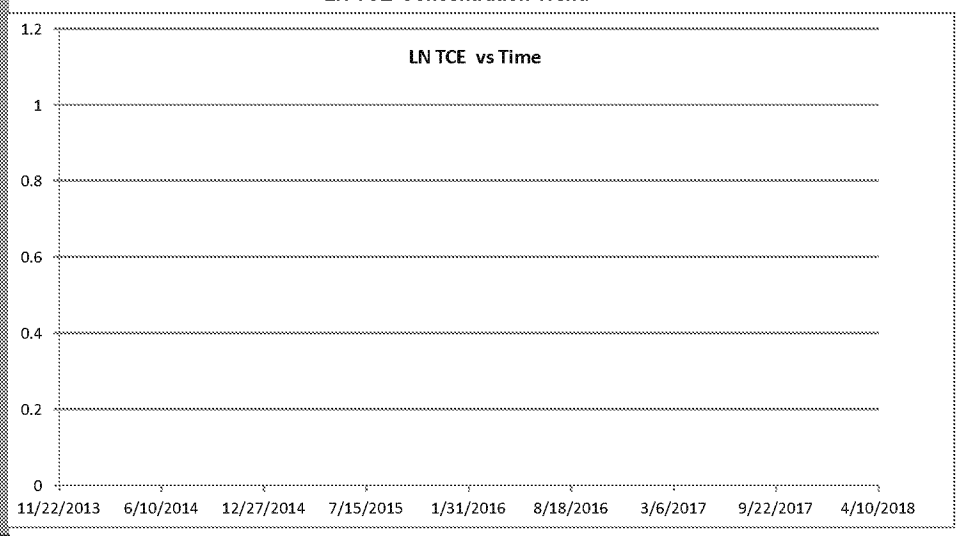
**Error Check, Blank if No Errors Detected**

| | | | |
|---|---|---|---|
| **Trend ≥ 80% Confidence Level** | INCREASING | | |
| **Trend ≥ 90% Confidence Level** | INCREASING | | |
| Stability Test, If No Trend Exists at 80% Confidence Level | NA | | |

**Data Entry By =** BC **Date =** Feb 27 2018

**TCE Concentration Trend**




**LN TCE Concentration Trend**