APPENDIX K-1

Mann-Kendall Trend Analysis of 2019 Soil Vapor Data

ATTACHMENTS

Attachment 1 ProUCL Mann-Kendall Trend Analysis Output

Attachment 2 ProUCL Outlier Analysis Output

LIST OF ACRONYMS AND ABBREVIATIONS

EDB	ethylene dibromide
EPA	U.S. Environmental Protection Agency
HC	hydrocarbon
MDL	method detection limit
ppm	part per million
p-value	calculated probability
Q	quarter
S	Kendall score
SVMP	soil vapor monitoring point

Mann-Kendall Trend Analysis of 2019 Soil Vapor Data

A statistical analysis was performed on selected soil vapor monitoring points (SVMPs) collected between quarter (Q)1 2016 and Q4 2019. Hydrocarbons (HCs), ethylene dibromide (EDB), and benzene were analyzed to determine if any statistically significant trends existed when analyte concentrations were evaluated over time. Any SVMP with an HC concentration of 20 parts per million (ppm) or greater during any quarter within this time span was included in the evaluation. Between Q1 2016 and Q4 2019, 82 out of 284 SVMPs contained HC concentrations of 20 ppm or greater during at least one quarter and were selected for evaluation. However, 13 of the 82 selected SVMPs were not sampled in 2019 due to bioventing activities, the remaining 69 SVMPs were evaluated. The other 202 SVMPs contained HC concentrations between 0 and 20 ppm, which are considered background concentrations; therefore, they were not included in the evaluation. Attachment 1 summarizes results of the Mann-Kendall analyses.

Mann-Kendall Trend Analysis Method

The Mann-Kendall trend analysis is a test that evaluates whether a data series tends to increase or decrease with time by comparing each later-measured value to all the earlier measured values (Walpole et al., 2007). Due to the robustness to outliers, the Mann-Kendall analysis has been used for trend analysis of various types of environmental data (Hipel and McLeod, 1994).

The Mann-Kendall trend analysis seeks to either confirm or reject the null hypothesis that no trend is present, and the data series are independent of time. In the event the null hypothesis cannot be rejected the data may exhibit a random normal distribution (Walpole et al., 2007). The Mann-Kendall analysis uses the Kendall score (S) test statistics to determine whether there is a trend in the time series data.

S is computed by comparing the later-measured value to the previous values and assigning either a -1, 0, or 1, based on whether there is a decrease among the values, the values are equal, or there is an increase among the values. S is then computed as a summation of these assigned values. When S is a large positive number, there is an increasing/positive trend in the data. The maximum and minimum values of S depend on the number of measured data points. When S is a large negative number, there is a decreasing trend in the data; when the absolute value S is small, there is no trend in the data (Walpole et al., 2007).

If the null hypothesis is rejected because the absolute values of S are significantly different from zero, the Theil-Sen's slope can be calculated and used to determine the average rate of change. The Theil-Sen's slope is the average of the rate of change between the measured data points (Walpole et al., 2007).

The Mann-Kendall analysis assumes that the data do not conform to a normal random distribution, and that a measured data point can be considered less than, equal to, or greater than another measured value in the time series (Walpole et al., 2007).

Statistical Analysis Software Package (ProUCL)

For the purposes of this study, the software package ProUCL Version 5.1.002 was used. ProUCL is a statistical software package to analyze environmental datasets with and without non-detect observations (U.S. Environmental Protection Agency [EPA], 2015). The desired time series data are entered into ProUCL and the Mann-Kendall trend analysis is selected and executed. ProUCL then calculates the values of S, the variance of S, and the Theil-Sen's slope (EPA, 2015).

In addition to performing the Mann-Kendall analysis on the data, ProUCL provides the calculated probability (p-value) for the desired confidence interval as another measurement to rejecting the null and also determines if the use of the Mann-Kendall approach is appropriate (EPA, 2015).

The p-value for a data series is a measurement of normality in the data and also provides a measurement of statistical significance for a linear trend in the data (EPA, 2015). The p-value ranges from 0 to 1 and is a normalized function of the residual data measurements, i.e., deviation from the data set's mean value (Walpole et al., 2007). A p-value equal to 1 indicates a perfect normal distribution and that the Mann-Kendall method of analysis is not appropriate, because it assumes a non-normal distribution (Walpole et al., 2007). A small p-value near zero indicates a non-normal distribution and a possible statistically significant trend. Statistical significance depends on the level of the confidence interval selected for the analysis (Walpole et al., 2007; EPA, 2015).

Data Input and Assumptions

Data from the selected 69 SVMPs were input into ProUCL to perform the Mann-Kendall analysis. HC, EDB, and benzene were analyzed to determine if any statistically significant trends existed from Q1 2016 to Q4 2019.

Data from SVMPs were analyzed using a censored data Mann-Kendall analysis. Censored data refers to datasets containing non-detect concentrations, which are only partially known because they are between the laboratory method detection limit (MDL) and zero. In datasets containing one to five non-detect values, the values were assumed to be the MDL used by the laboratory at the time of reporting. This assumption would show that there was a decrease (-1) for the computation of S if the MDL was less than the previous measured values, an increase if the MDL was greater than the previous measured values (1), or 0 if it was the same as the previous values. This assumption is conservative in that it indicates there is a data point at that time in the series and assumes the maximum concentration at that time. Datasets that contained six or more non-detect values were not analyzed for a trend because at least 50% of the data points would be estimated, which would not provide an adequate dataset for statistical evaluation. SVMPs containing six or more non-detect data points were therefore considered to have no trend.

ProUCL also calculates the p-value, so a 95% confidence interval was selected for this analysis. This means that p-values less than 0.05 indicate a statistically significant trend and rejection of the null hypothesis. A p-value greater than 0.05 would be considered failure to reject the null hypothesis.

In addition to the trend analysis, a ProUCL outlier analysis was performed on data sets that were observed to potentially contain an outlier. The inclusion of outliers in a trend analysis tends to yield inflated values of decision statistics, which can lead to a poor representation of the main data population. Outliers were identified by using a combination of the ProUCL outlier analysis (Attachment 2) and professional judgement. The identified outliers were removed from data sets before the trend analyses were performed.

Results

The results of the Mann-Kendall analyses are presented in Attachment 1, ProUCL output. Of the 69 SVMPs included in the analysis, 41 SVMPs had an increasing or decreasing trend in HC, 9 SVMPs had an increasing or decreasing trend in EDB, and 35 SVMPs had an increasing or decreasing trend in benzene.

The range of statistically significant p-values for HC, EDB, and benzene varied at each SVMP between 0 and 0.0440. P-values that were above the 95% confidence interval of 0.05 ranged from 0.0537 to 0.5000. The high variability of soil vapor data affected the outcome of the p-value at each SVMP. For example, an SVMP that yielded both increasing and decreasing HC values throughout the dataset would have a larger p-value than an SVMP where HC values consistently increased or decreased between Q1 2016 and Q4 2019. SVMPs with statistically significant increasing or decreasing trends are identified on Table 2-6 in the main report.

References

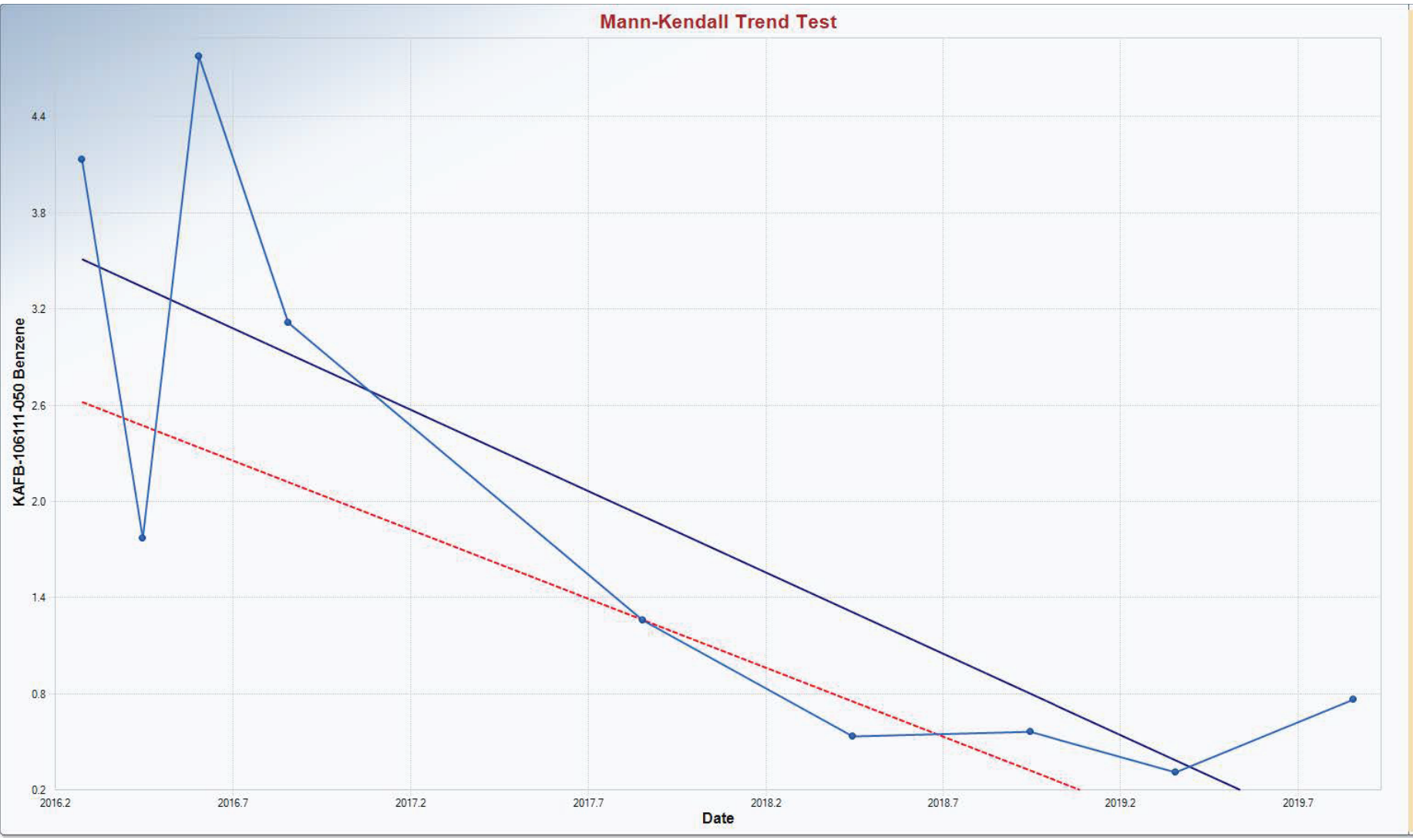
Hipel, K.W. and A.I. McLeod, 1994. *Time Series Modeling of Water Resources and Environmental Systems,* Amsterdam: Elsevier. ISBN: 0-444-89270-2.

U.S. Environmental Protection Agency, 2015. *ProUCL Version 5.1 User Guide, Statistical Software for Environmental Applications for Data Sets with and without Nondetect Observations*. EPA600/R-07/041 https://www.epa.gov/sites/production/files/2016-05/documents/proucl_5.1_user-guide.pdf. Downloaded 05/21/2016.

Walpole, R.E., H.R. Myers, S.L. Myers, K. Ye, 2007. *Probability and Statistics for Engineers and Scientist. Eighth Edition.* Pearson Prentice Hall. Upper Saddle River, New Jersey.

ATTACHMENT 1

ProUCL Mann-Kendall Trend Analysis Output



Mann-Kendall Trend Analysis

n	9
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	9.5917
Standardized Value of S	-2.1894
M-K Test Value (S)	-22
Tabulated p-value	0.0120
Approximate p-value	0.0143

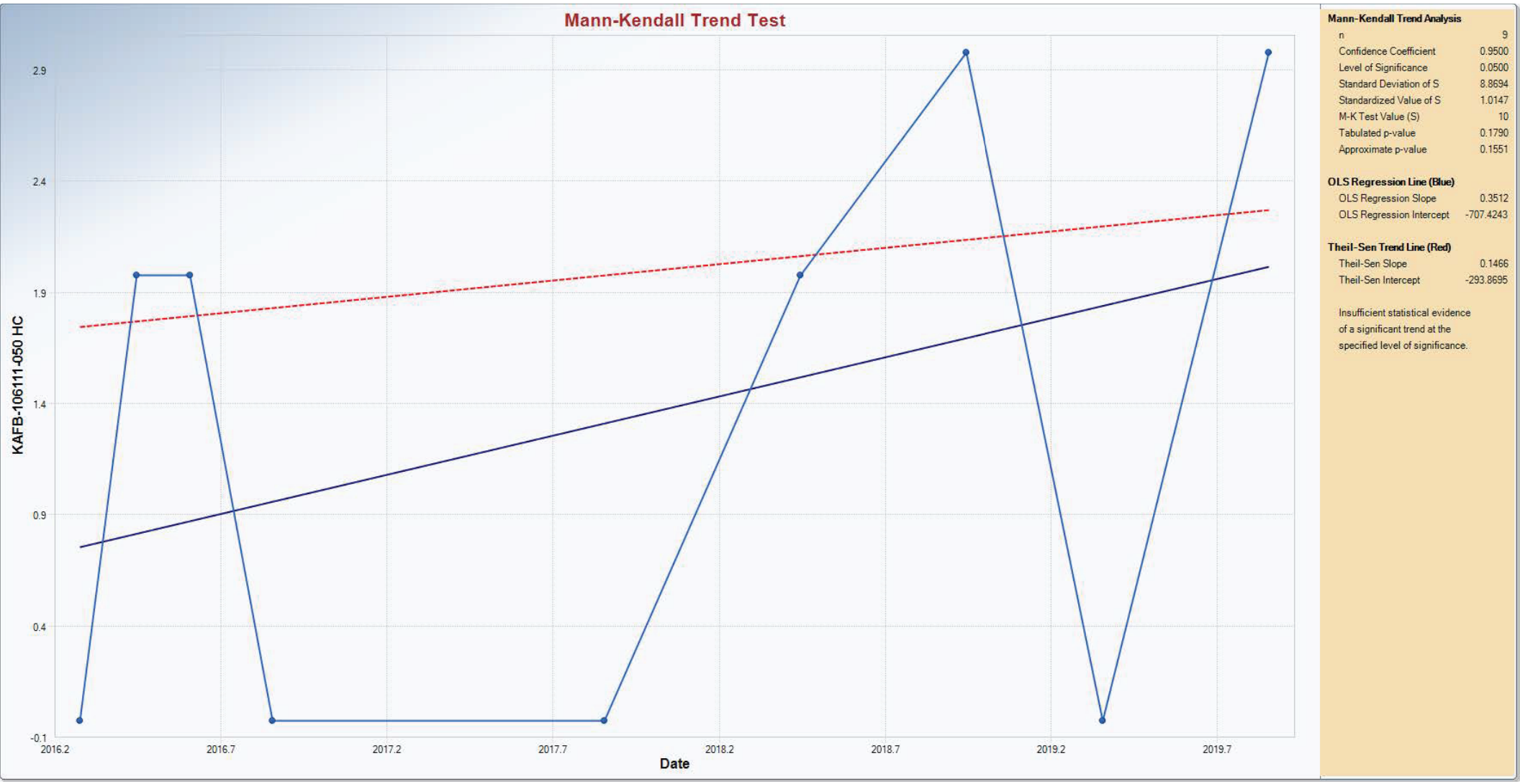
OLS Regression Line (Blue)

OLS Regression Slope	-1.0165
OLS Regression Intercept	2,053.0617

Theil-Sen Trend Line (Red)

Theil-Sen Slope	-0.8629
Theil-Sen Intercept	1,742.4632

Statistically significant evidence of a decreasing trend at the specified level of significance.



Mann-Kendall Trend Analysis

n	9
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	8.8694
Standardized Value of S	1.0147
M-K Test Value (S)	10
Tabulated p-value	0.1790
Approximate p-value	0.1551

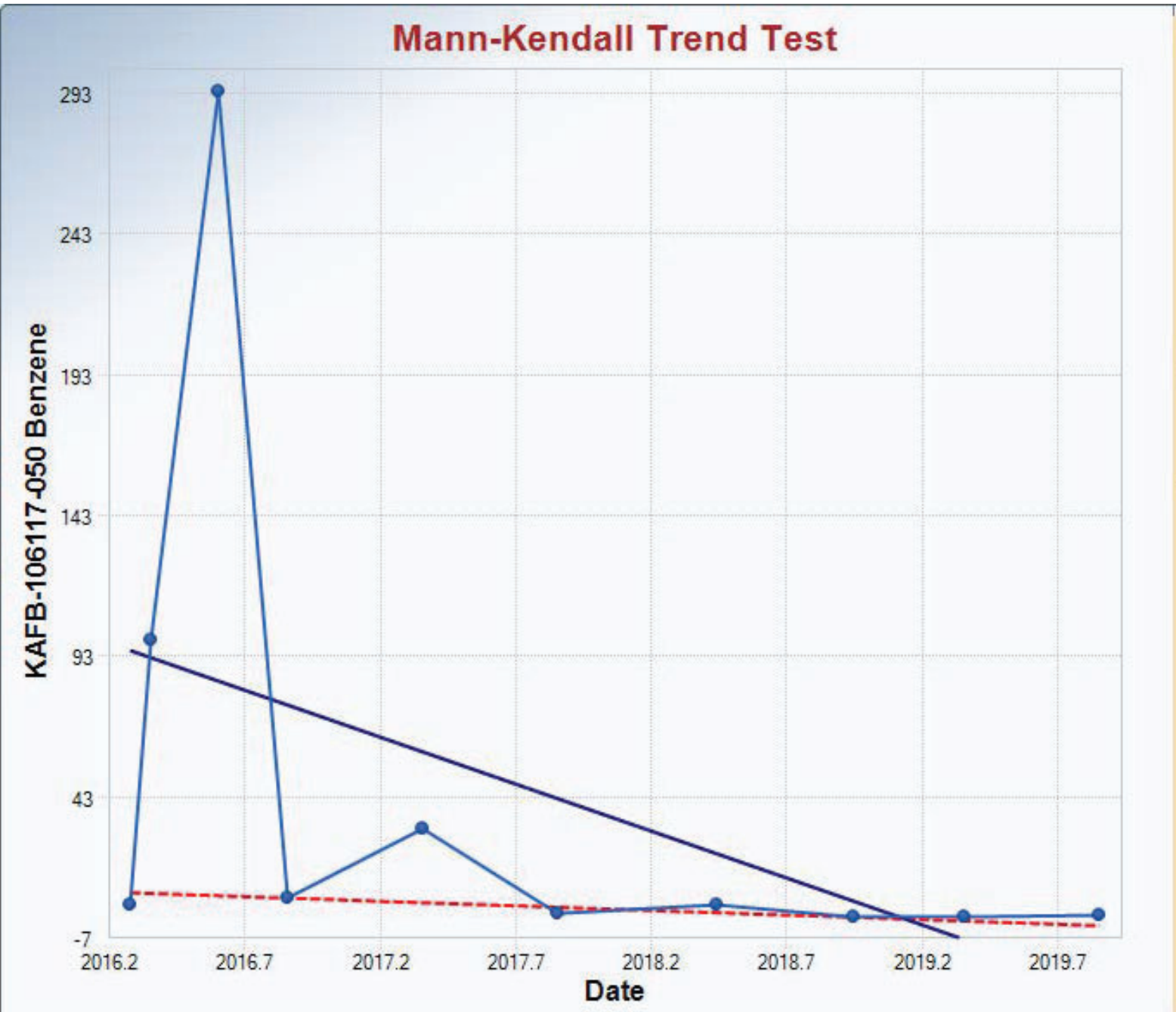
OLS Regression Line (Blue)

OLS Regression Slope	0.3512
OLS Regression Intercept	-707.4243

Theil-Sen Trend Line (Red)

Theil-Sen Slope	0.1466
Theil-Sen Intercept	-293.8695

Insufficient statistical evidence of a significant trend at the specified level of significance.



Mann-Kendall Trend Analysis

n	10
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	11.1803
Standardized Value of S	-2.1466
M-K Test Value (S)	-25
Tabulated p-value	0.0140
Approximate p-value	0.0159

OLS Regression Line (Blue)

OLS Regression Slope	-33.3894
OLS Regression Intercept	67,416.5662

Theil-Sen Trend Line (Red)

Theil-Sen Slope	-3.1140
Theil-Sen Intercept	6,287.5313

Statistically significant evidence of a decreasing trend at the specified level of significance.

Mann-Kendall Trend Analysis

n	9
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	9.0738
Standardized Value of S	-0.6612
M-K Test Value (S)	-7
Tabulated p-value	0.3060
Approximate p-value	0.2542

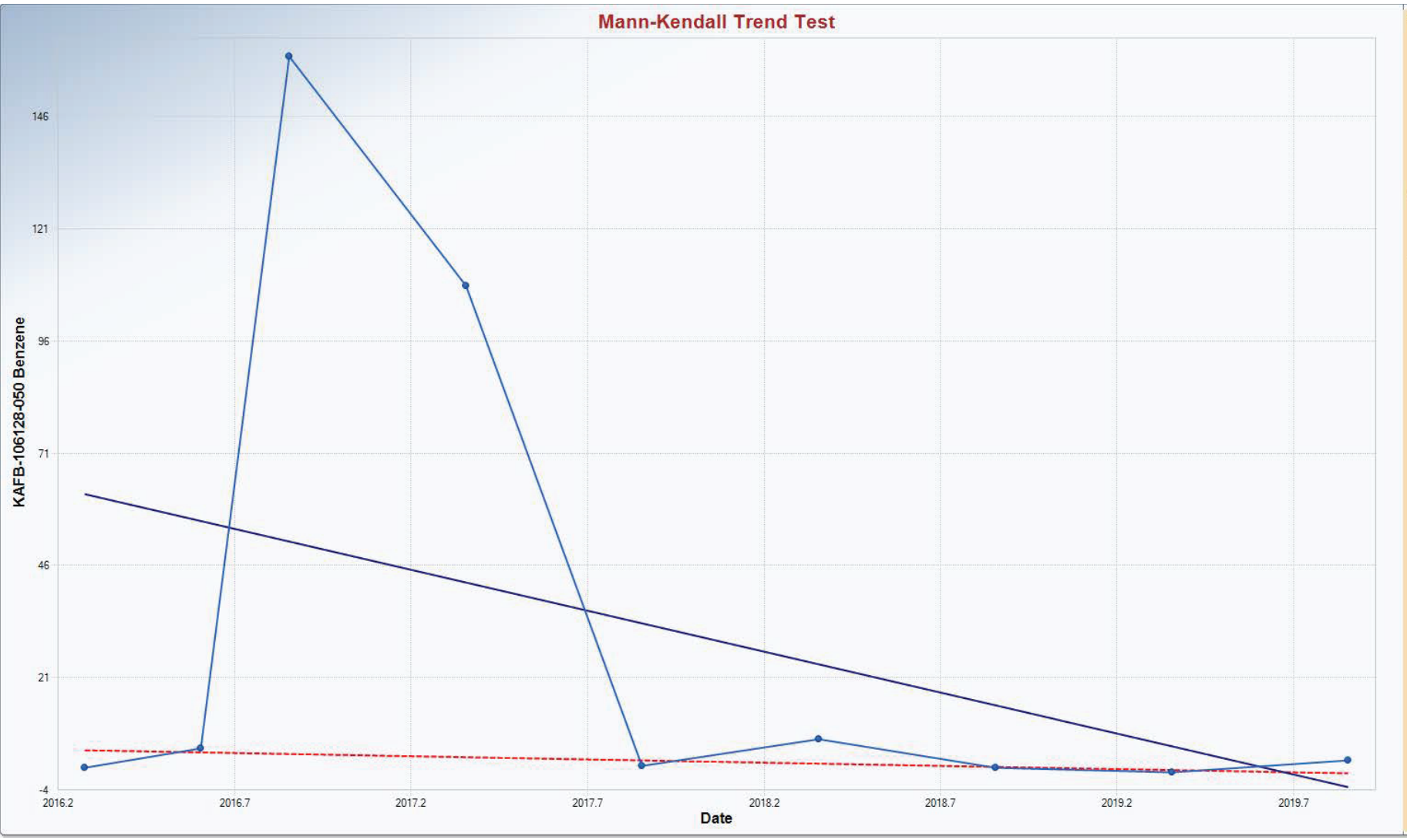
OLS Regression Line (Blue)

OLS Regression Slope	-0.7800
OLS Regression Intercept	1,576.6890

Theil-Sen Trend Line (Red)

Theil-Sen Slope	-0.1873
Theil-Sen Intercept	378.8708

Insufficient statistical evidence of a significant trend at the specified level of significance.



Mann-Kendall Trend Analysis

n	9
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	9.5917
Standardized Value of S	-0.7298
M-K Test Value (S)	-8
Tabulated p-value	0.2380
Approximate p-value	0.2328

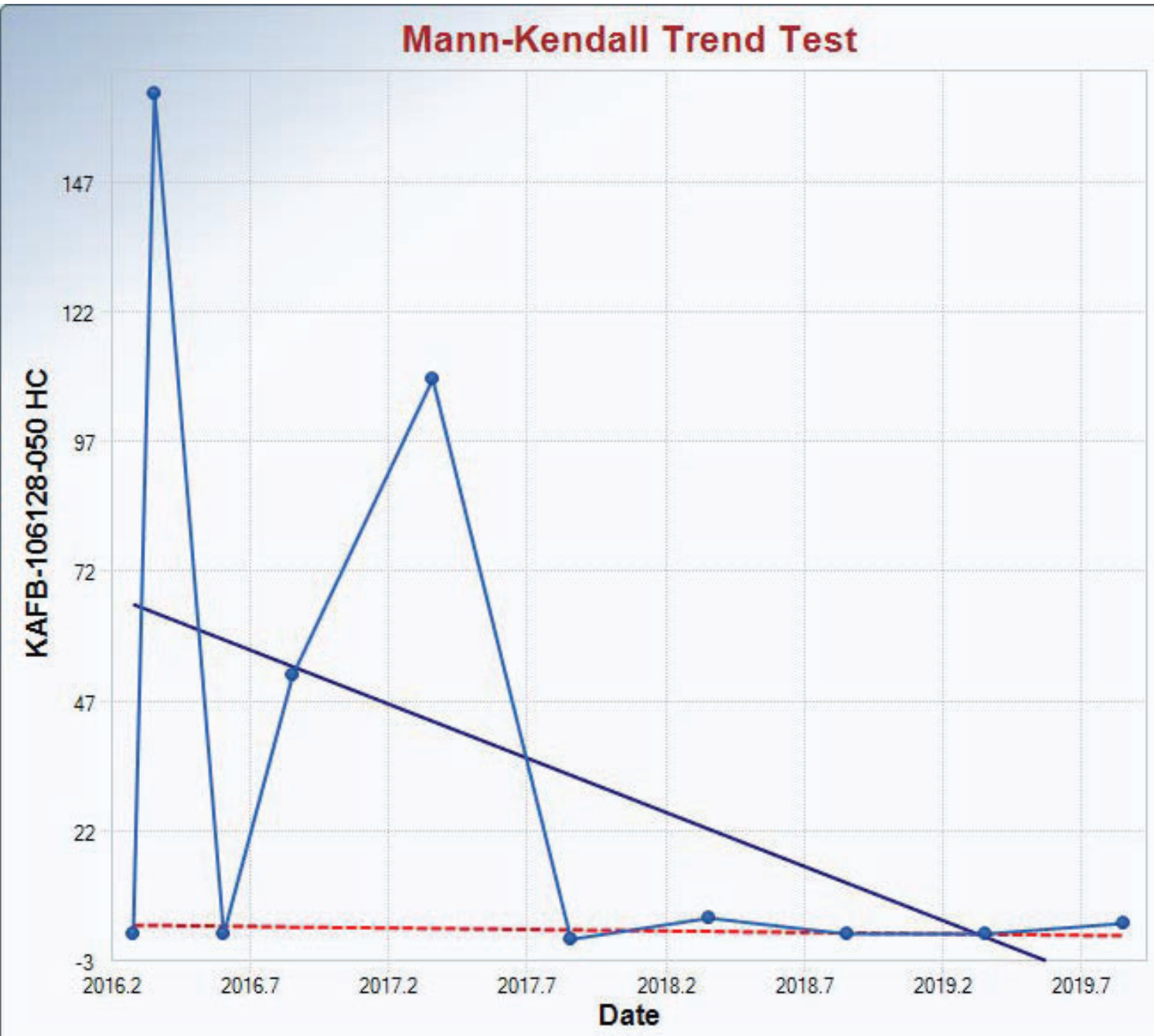
OLS Regression Line (Blue)

OLS Regression Slope	-18.2384
OLS Regression Intercept	36,835.5334

Theil-Sen Trend Line (Red)

Theil-Sen Slope	-1.4338
Theil-Sen Intercept	2,896.1675

Insufficient statistical evidence of a significant trend at the specified level of significance.



Mann-Kendall Trend Analysis

n	10
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	10.7858
Standardized Value of S	-0.5563
M-K Test Value (S)	-7
Tabulated p-value	0.3000
Approximate p-value	0.2890

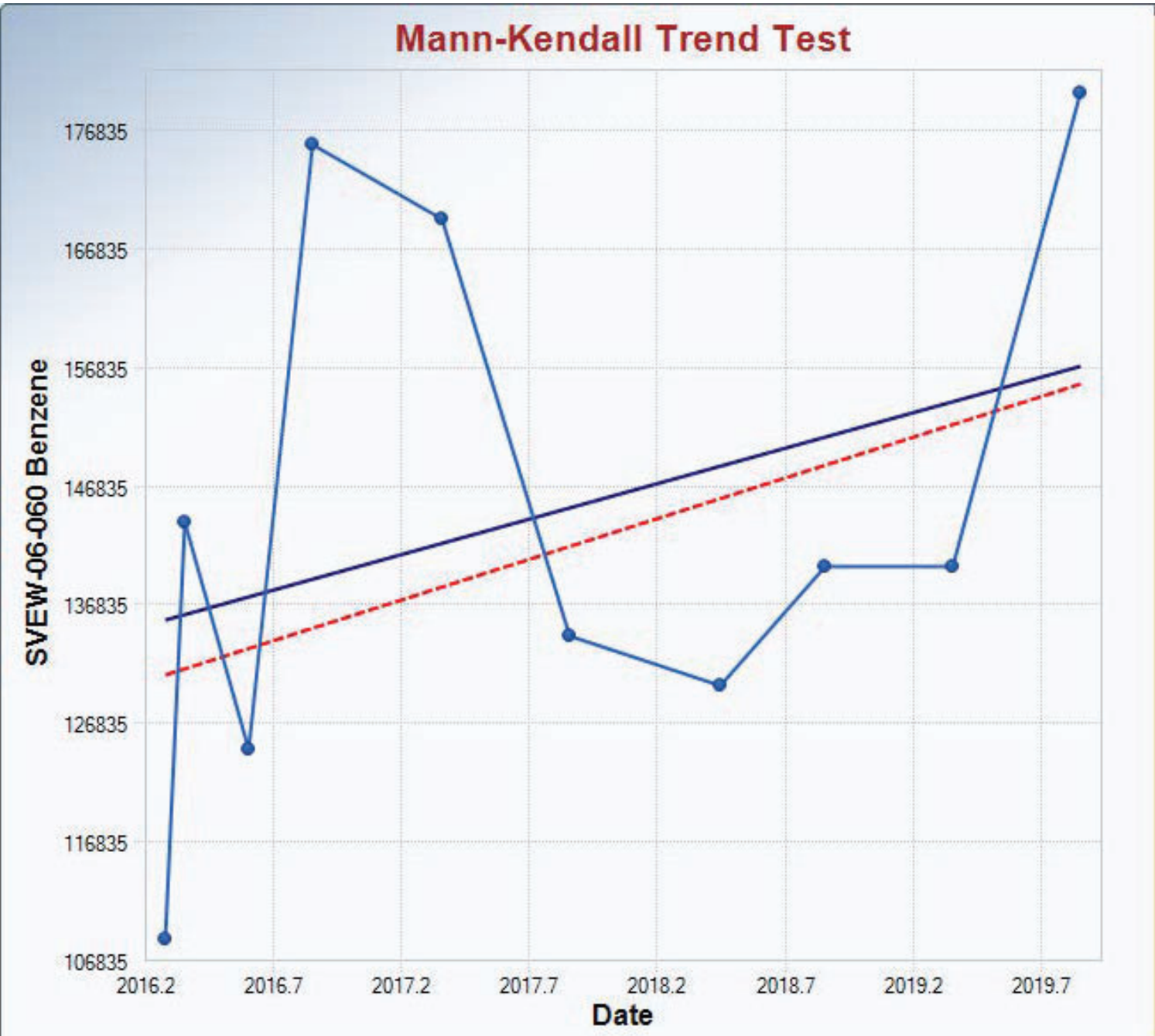
OLS Regression Line (Blue)

OLS Regression Slope	-20.9600
OLS Regression Intercept	42,326.3297

Theil-Sen Trend Line (Red)

Theil-Sen Slope	-0.6329
Theil-Sen Intercept	1,279.9494

Insufficient statistical evidence of a significant trend at the specified level of significance.



Mann-Kendall Trend Analysis

n	10
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	11.1355
Standardized Value of S	1.1674
M-K Test Value (S)	14
Tabulated p-value	0.1080
Approximate p-value	0.1215

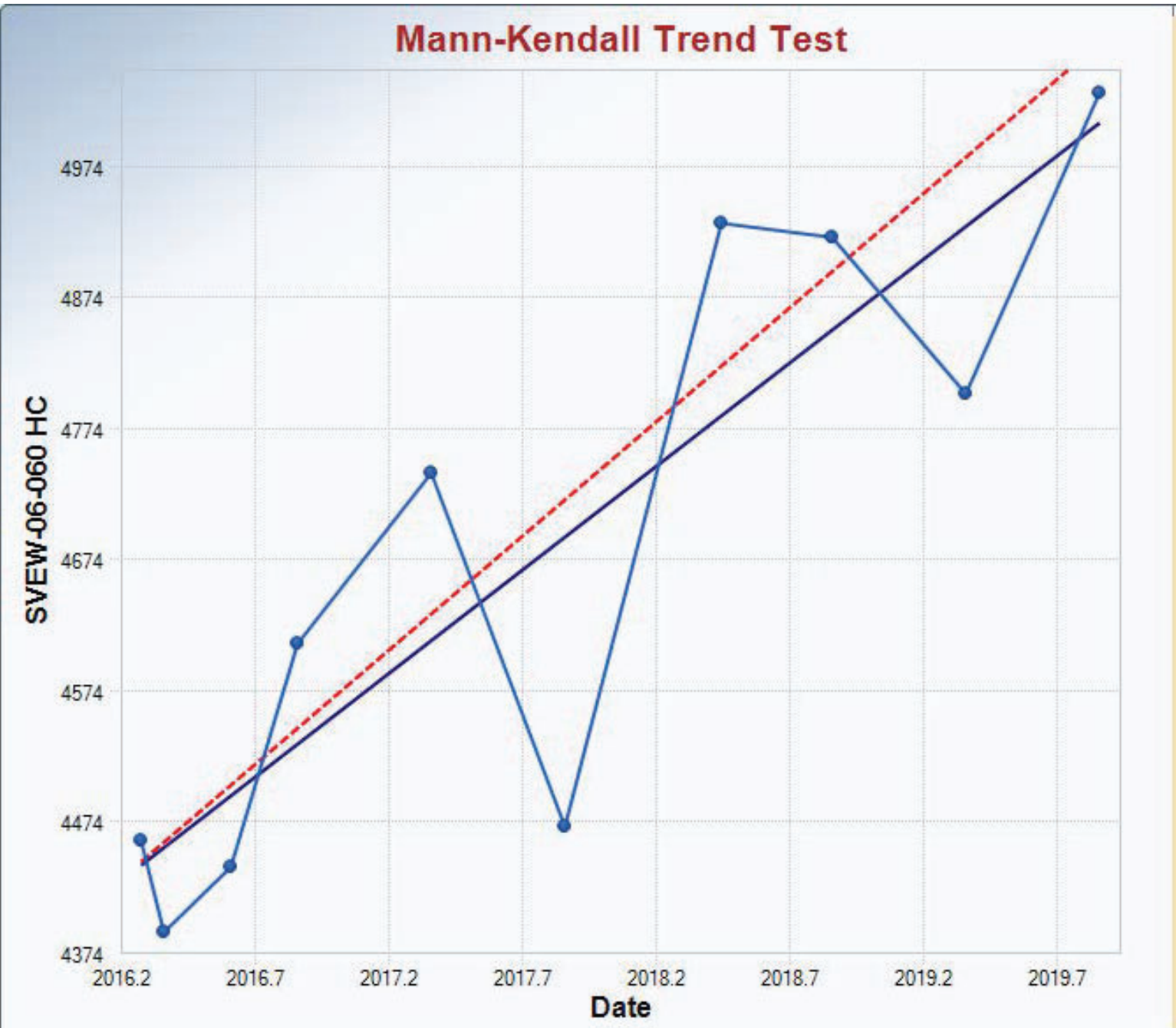
OLS Regression Line (Blue)

OLS Regression Slope	5,982.5571
OLS Regression Intercept	-11,926,722.9709

Theil-Sen Trend Line (Red)

Theil-Sen Slope	6,847.7164
Theil-Sen Intercept	-13,675,815.7440

Insufficient statistical evidence of a significant trend at the specified level of significance.



Mann-Kendall Trend Analysis

n	10
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	11.1803
Standardized Value of S	2.6833
M-K Test Value (S)	31
Tabulated p-value	0.0020
Approximate p-value	0.0036

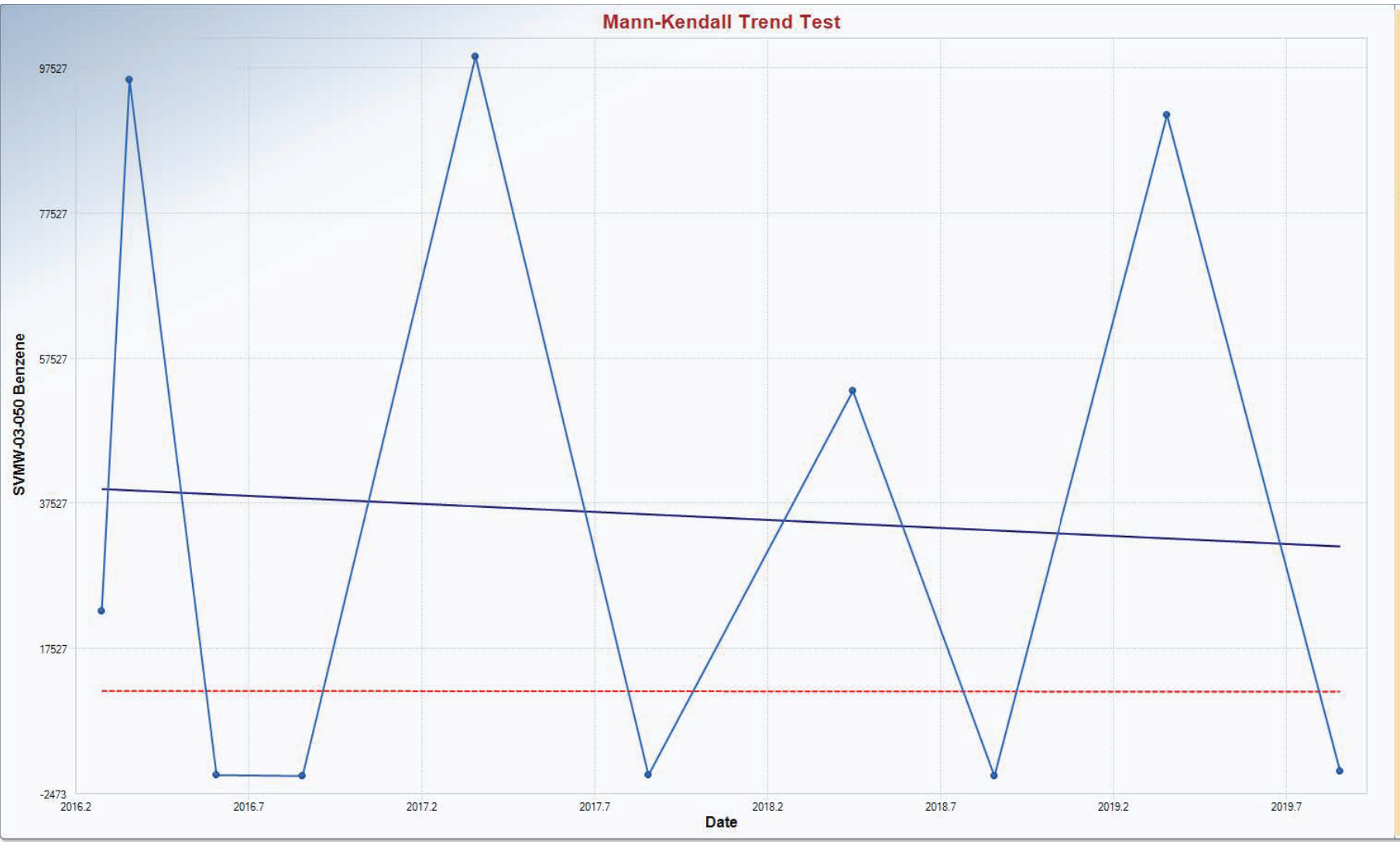
OLS Regression Line (Blue)

OLS Regression Slope	158.2123
OLS Regression Intercept	-314,554.8007

Theil-Sen Trend Line (Red)

Theil-Sen Slope	174.3119
Theil-Sen Intercept	-347,013.2569

Statistically significant evidence of an increasing trend at the specified level of significance.



Mann-Kendall Trend Analysis

n	10
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	11.1803
Standardized Value of S	-0.1789
M-K Test Value (S)	-3
Tabulated p-value	0.4310
Approximate p-value	0.4290

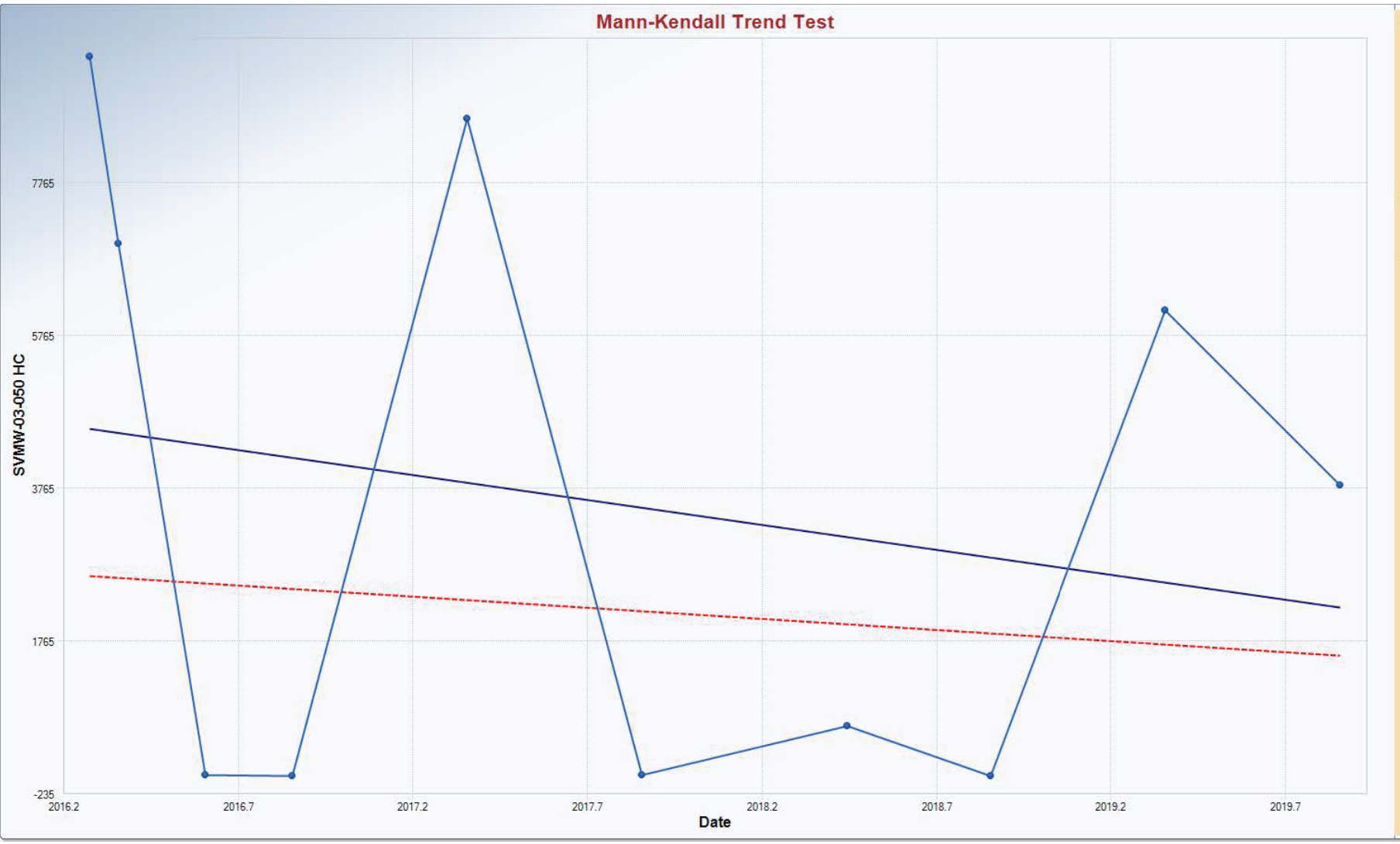
OLS Regression Line (Blue)

OLS Regression Slope	-2,212.6234
OLS Regression Intercept	4,500,758.6292

Theil-Sen Trend Line (Red)

Theil-Sen Slope	-10.6737
Theil-Sen Intercept	33,166.2080

Insufficient statistical evidence of a significant trend at the specified level of significance.



Mann-Kendall Trend Analysis

n	10
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	11.1803
Standardized Value of S	-0.5367
M-K Test Value (S)	-7
Tabulated p-value	0.3000
Approximate p-value	0.2958

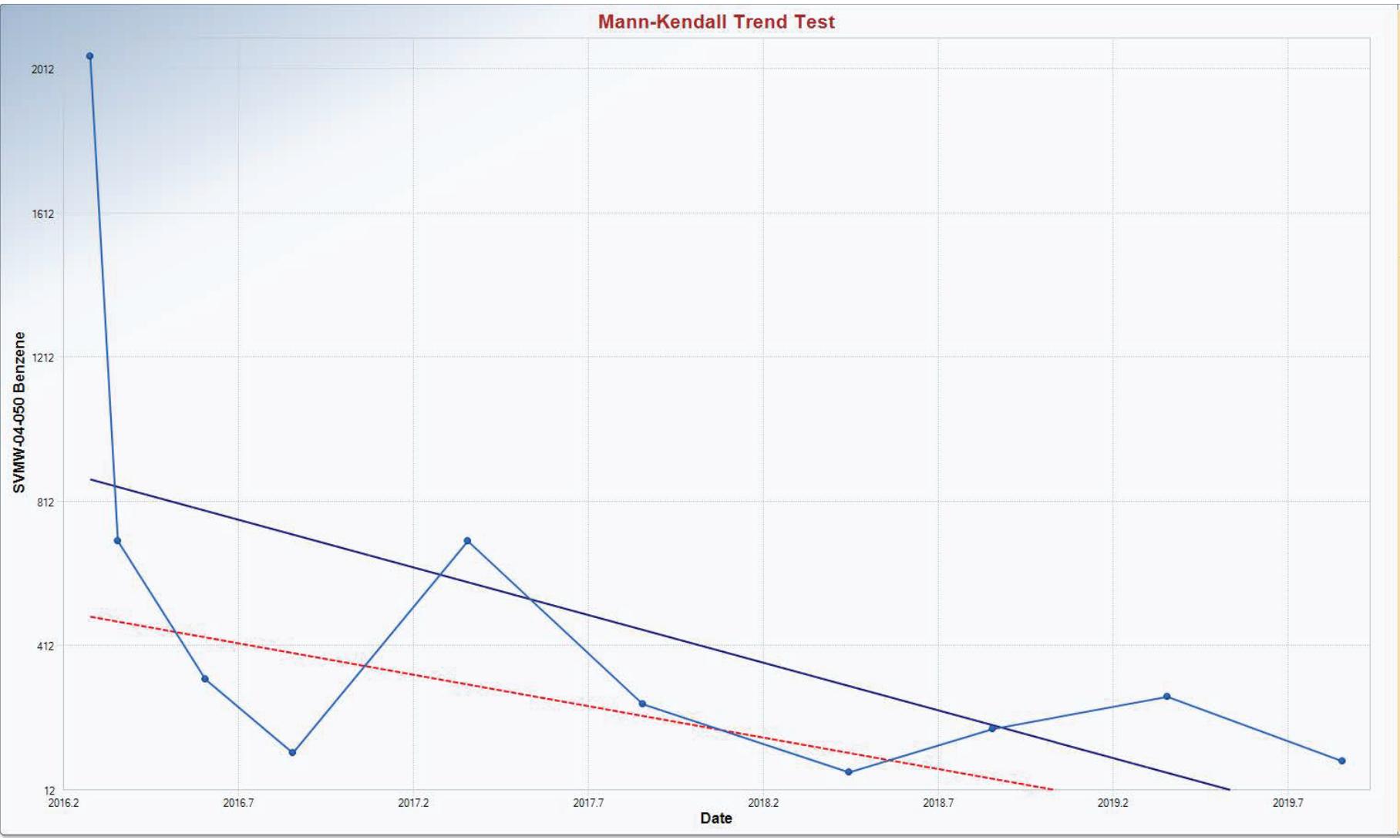
OLS Regression Line (Blue)

OLS Regression Slope	-653.4503
OLS Regression Intercept	1,322,056.2623

Theil-Sen Trend Line (Red)

Theil-Sen Slope	-290.0000
Theil-Sen Intercept	587,323.7000

Insufficient statistical evidence of a significant trend at the specified level of significance.



Mann-Kendall Trend Analysis

n	10
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	11.1355
Standardized Value of S	-2.0655
M-K Test Value (S)	-24
Tabulated p-value	0.0140
Approximate p-value	0.0194

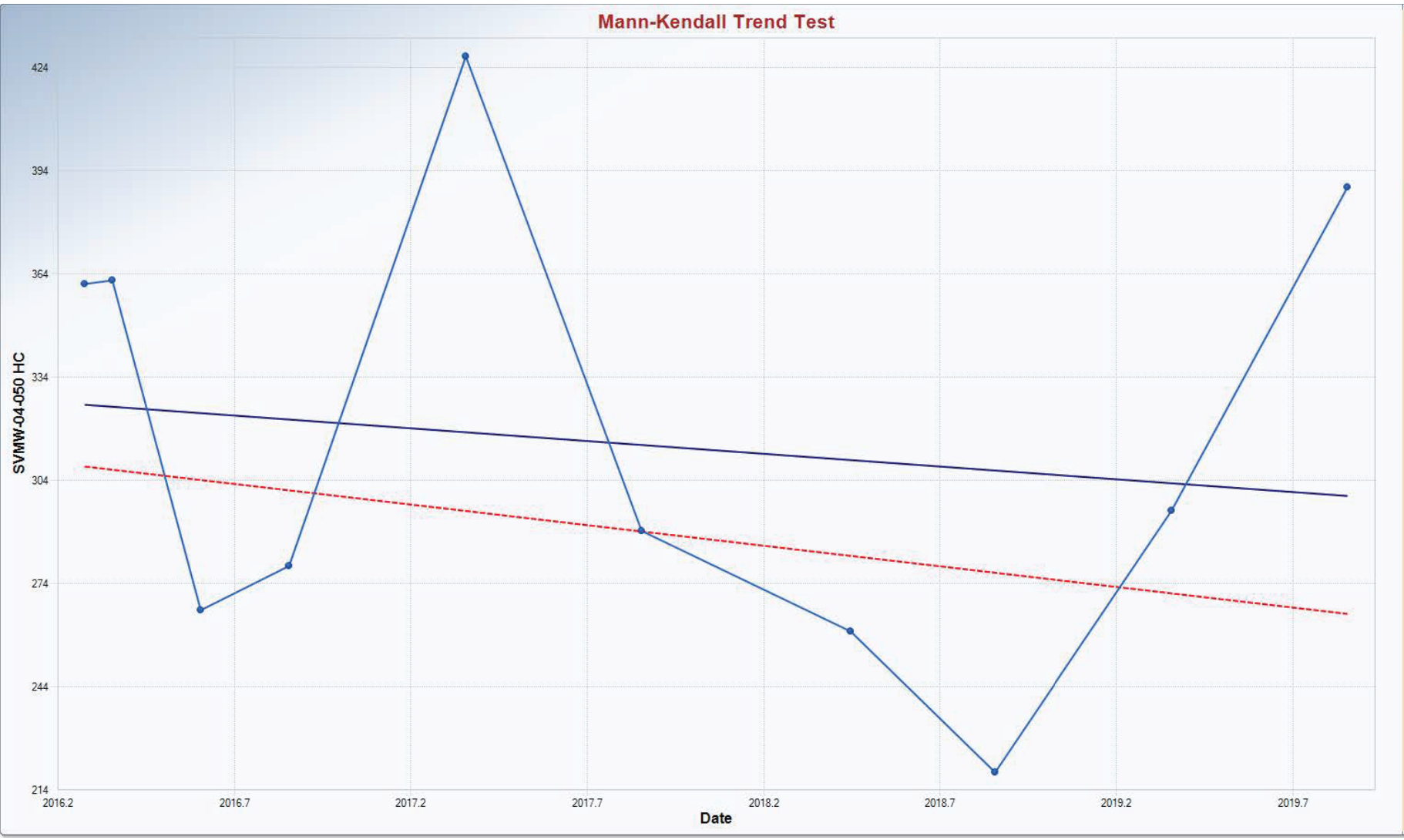
OLS Regression Line (Blue)

OLS Regression Slope	-264.6201
OLS Regression Intercept	534,412.4394

Theil-Sen Trend Line (Red)

Theil-Sen Slope	-174.8086
Theil-Sen Intercept	352,950.0234

Statistically significant evidence of a decreasing trend at the specified level of significance.



Mann-Kendall Trend Analysis

n	10
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	11.1803
Standardized Value of S	-0.1789
M-K Test Value (S)	-3
Tabulated p-value	0.4310
Approximate p-value	0.4290

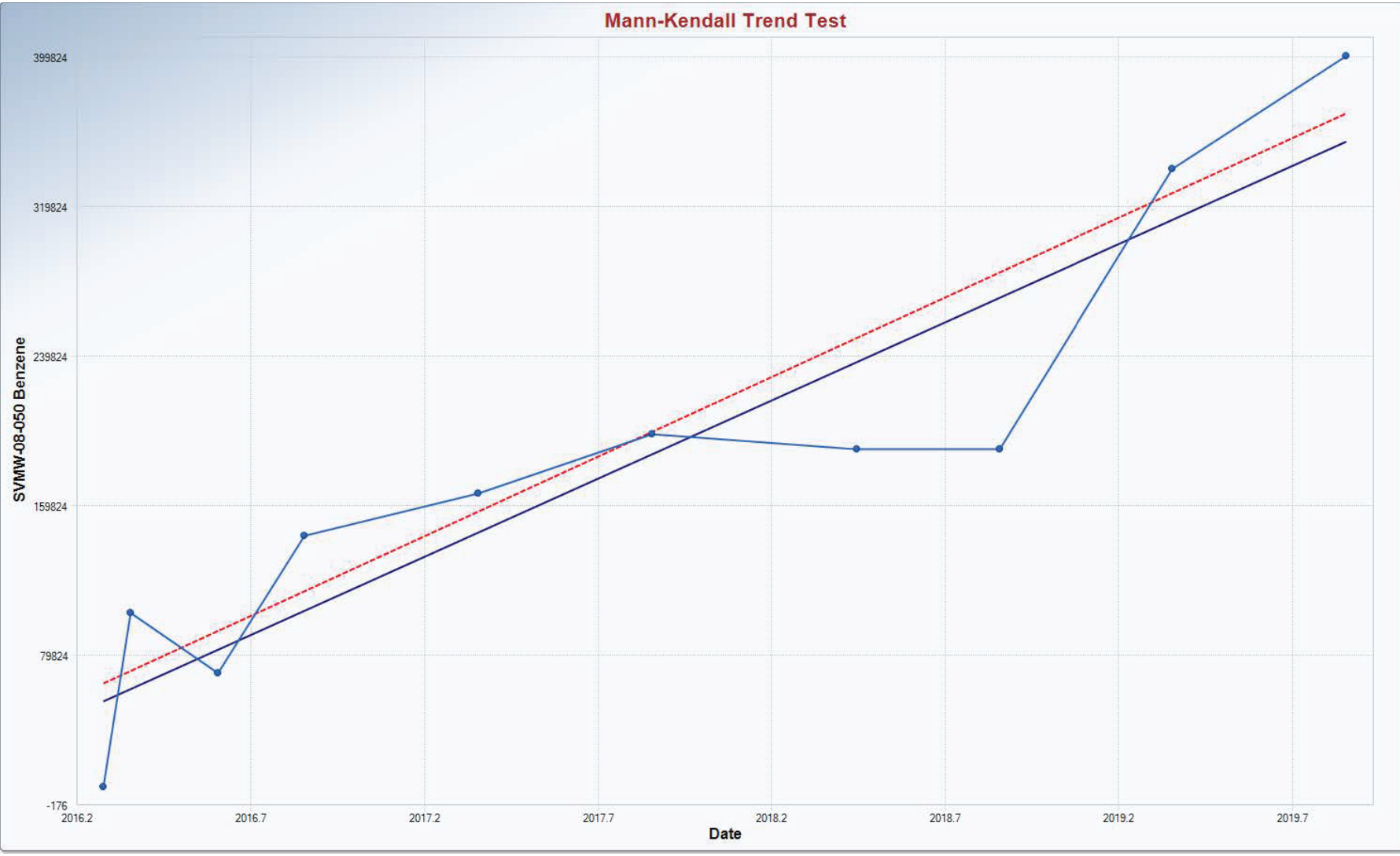
OLS Regression Line (Blue)

OLS Regression Slope	-7.4560
OLS Regression Intercept	15,359.0485

Theil-Sen Trend Line (Red)

Theil-Sen Slope	-11.9497
Theil-Sen Intercept	24,401.4465

Insufficient statistical evidence of a significant trend at the specified level of significance.



Mann-Kendall Trend Analysis

n	10
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	11.1355
Standardized Value of S	3.3227
M-K Test Value (S)	38
Tabulated p-value	0.0000
Approximate p-value	0.0004

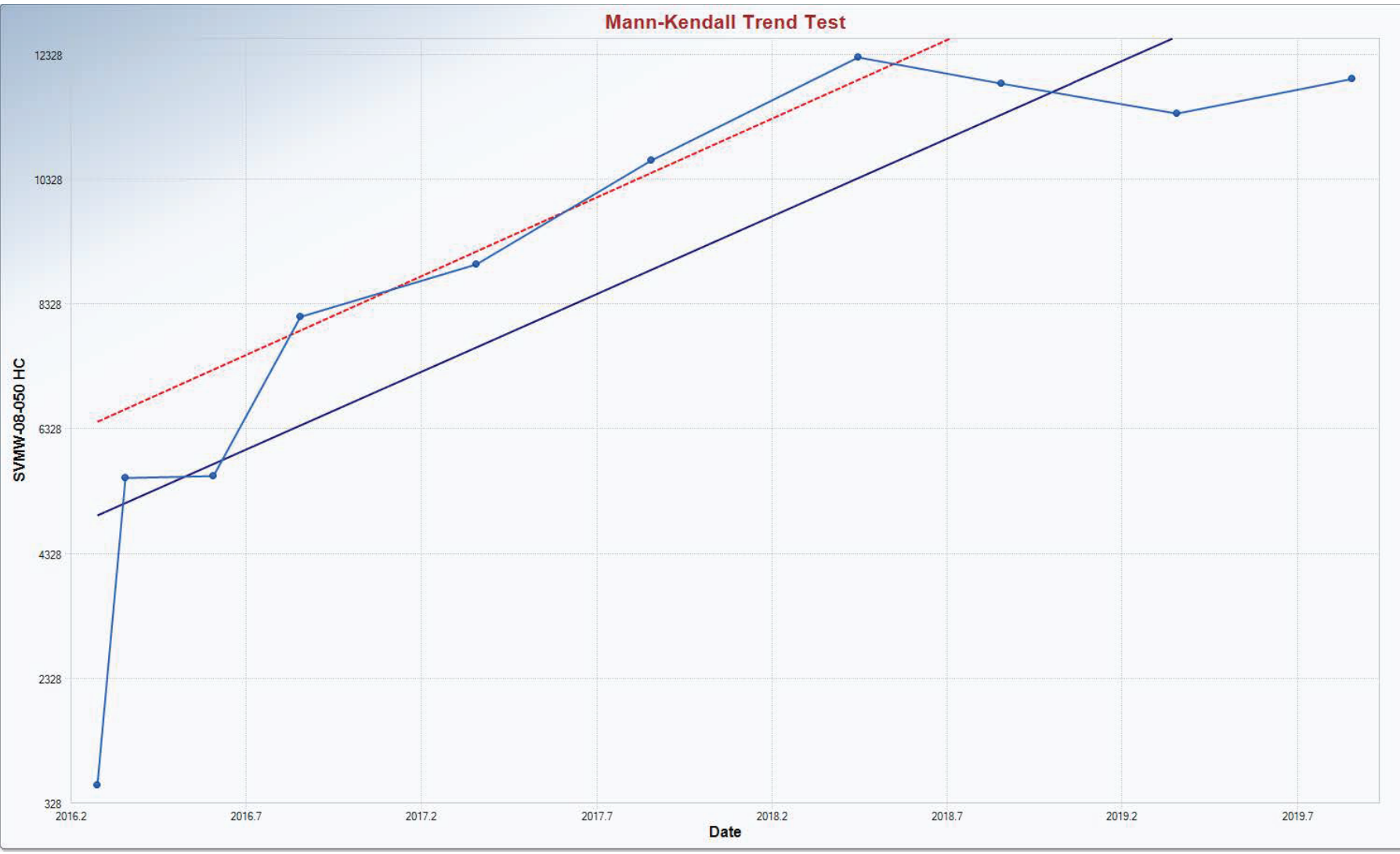
OLS Regression Line (Blue)

OLS Regression Slope	83,622.0291
OLS Regression Intercept	-168,547,845.7174

Theil-Sen Trend Line (Red)

Theil-Sen Slope	85,077.1837
Theil-Sen Intercept	-171,471,962.6172

Statistically significant evidence of an increasing trend at the specified level of significance.



Mann-Kendall Trend Analysis

n	10
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	11.1803
Standardized Value of S	3.2199
M-K Test Value (S)	37
Tabulated p-value	0.0000
Approximate p-value	0.0006

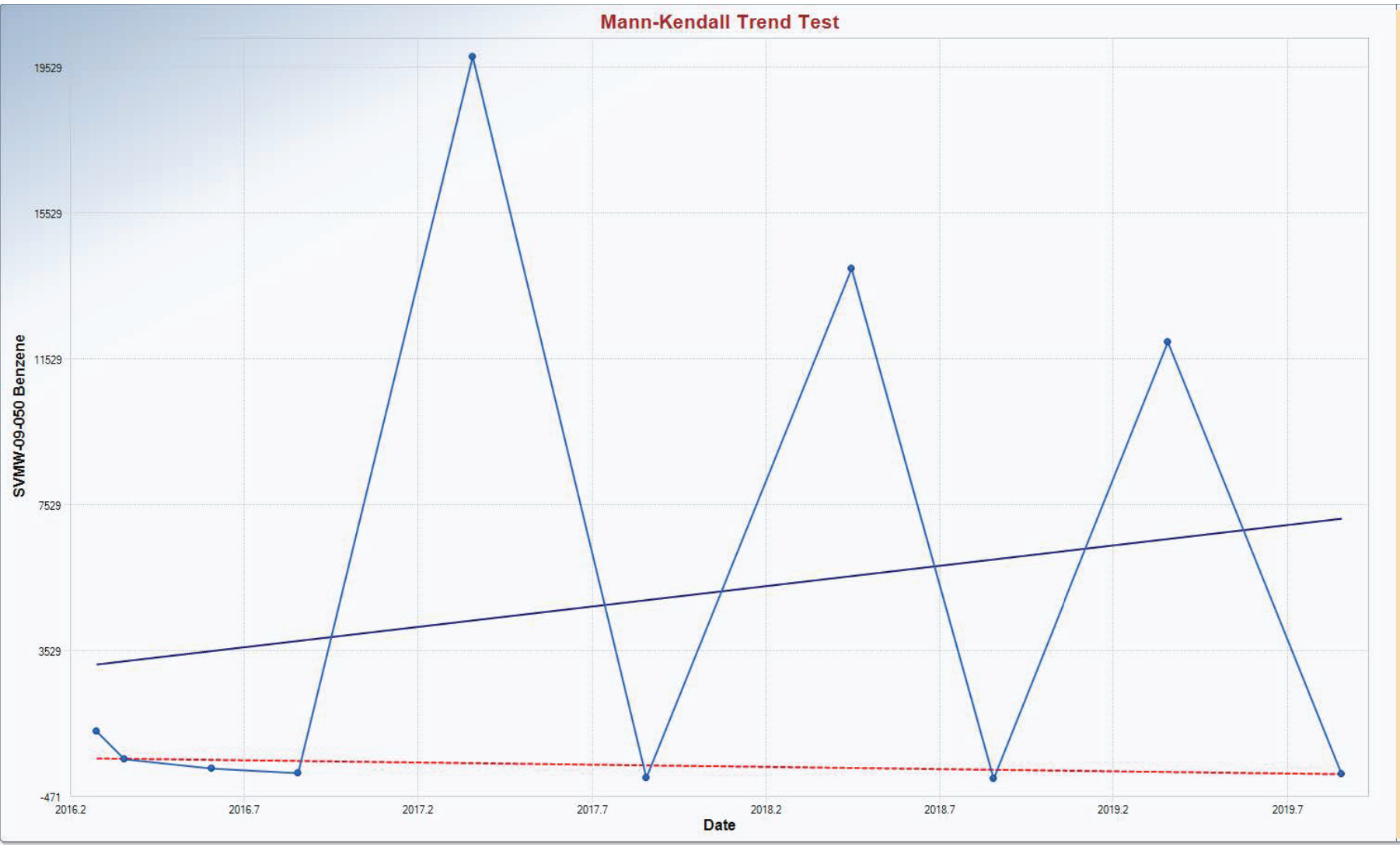
OLS Regression Line (Blue)

OLS Regression Slope	2,489.2404
OLS Regression Intercept	-5,013,994.8596

Theil-Sen Trend Line (Red)

Theil-Sen Slope	2,524.0000
Theil-Sen Intercept	-5,082,576.9200

Statistically significant evidence of an increasing trend at the specified level of significance.



Mann-Kendall Trend Analysis

n	10
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	11.1803
Standardized Value of S	-0.8944
M-K Test Value (S)	-11
Tabulated p-value	0.1900
Approximate p-value	0.1855

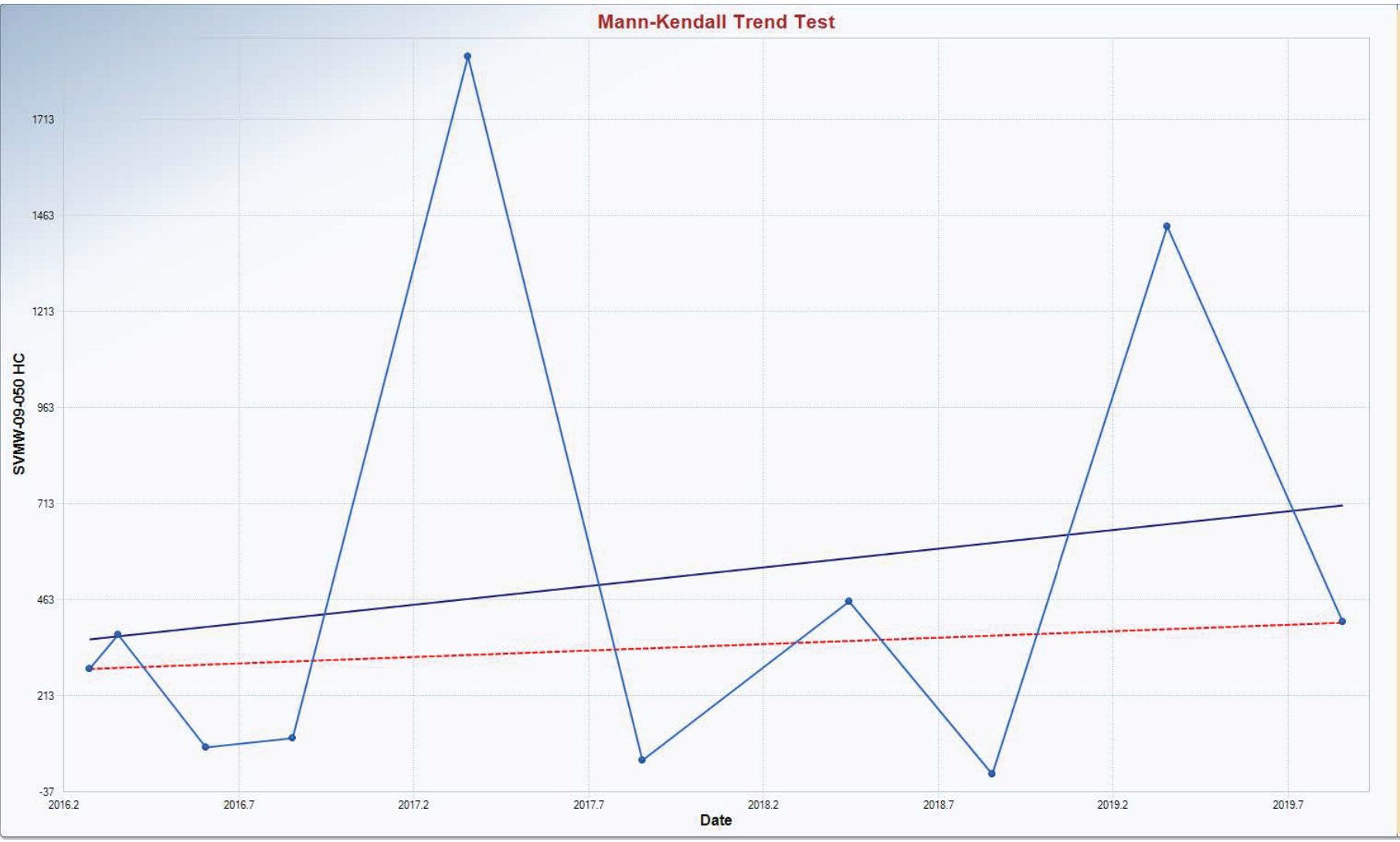
OLS Regression Line (Blue)

OLS Regression Slope	1,112.6504
OLS Regression Intercept	-2,240,225.7644

Theil-Sen Trend Line (Red)

Theil-Sen Slope	-118.0275
Theil-Sen Intercept	238,543.5568

Insufficient statistical evidence of a significant trend at the specified level of significance.



Mann-Kendall Trend Analysis

n	10
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	11.1803
Standardized Value of S	0.1789
M-K Test Value (S)	3
Tabulated p-value	0.4310
Approximate p-value	0.4290

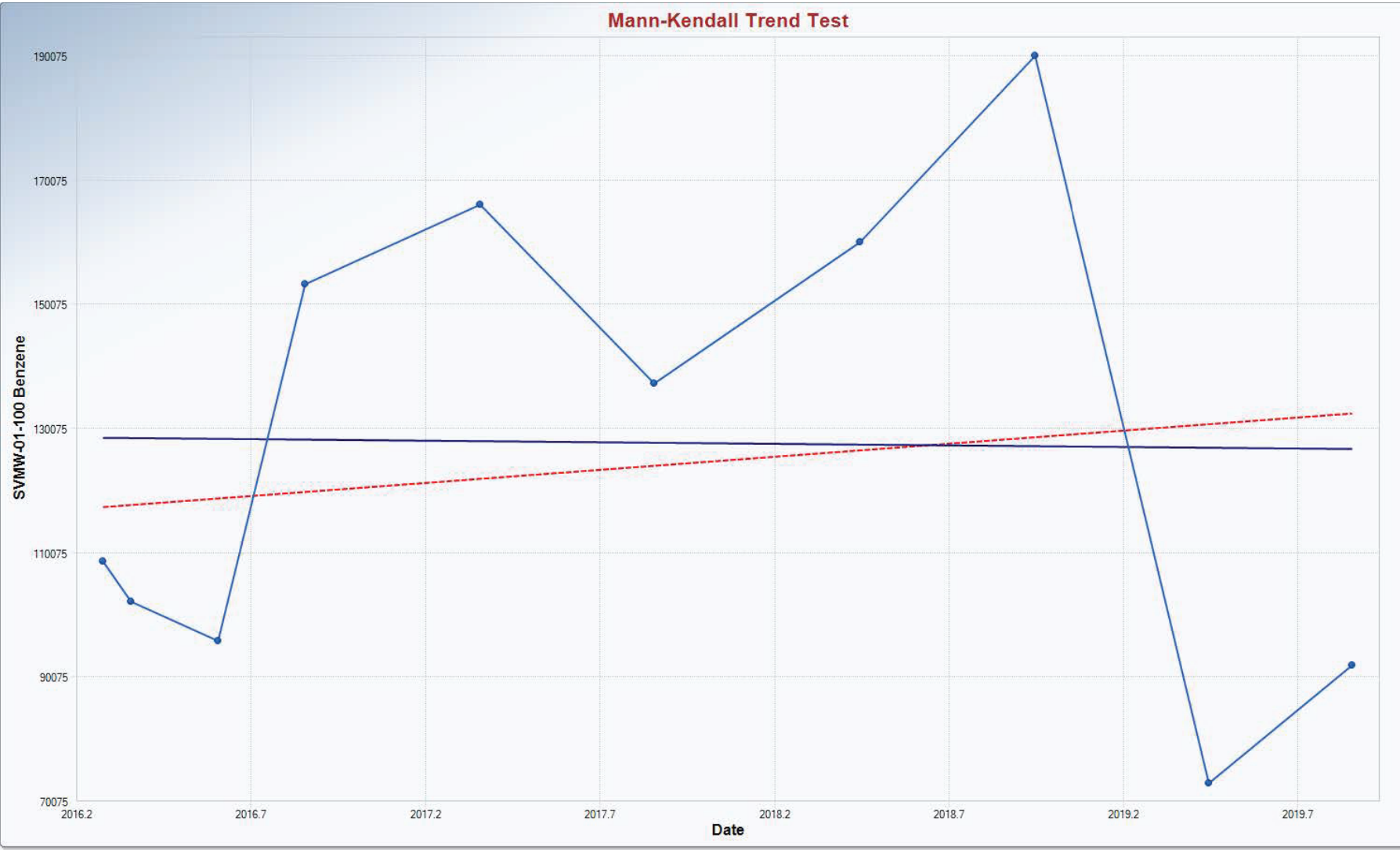
OLS Regression Line (Blue)

OLS Regression Slope	97.5451
OLS Regression Intercept	-196,315.7761

Theil-Sen Trend Line (Red)

Theil-Sen Slope	33.7989
Theil-Sen Intercept	-67,864.4497

Insufficient statistical evidence of a significant trend at the specified level of significance.



Mann-Kendall Trend Analysis

n	10
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	11.1803
Standardized Value of S	0.0000
M-K Test Value (S)	1
Tabulated p-value	0.5000
Approximate p-value	0.5000

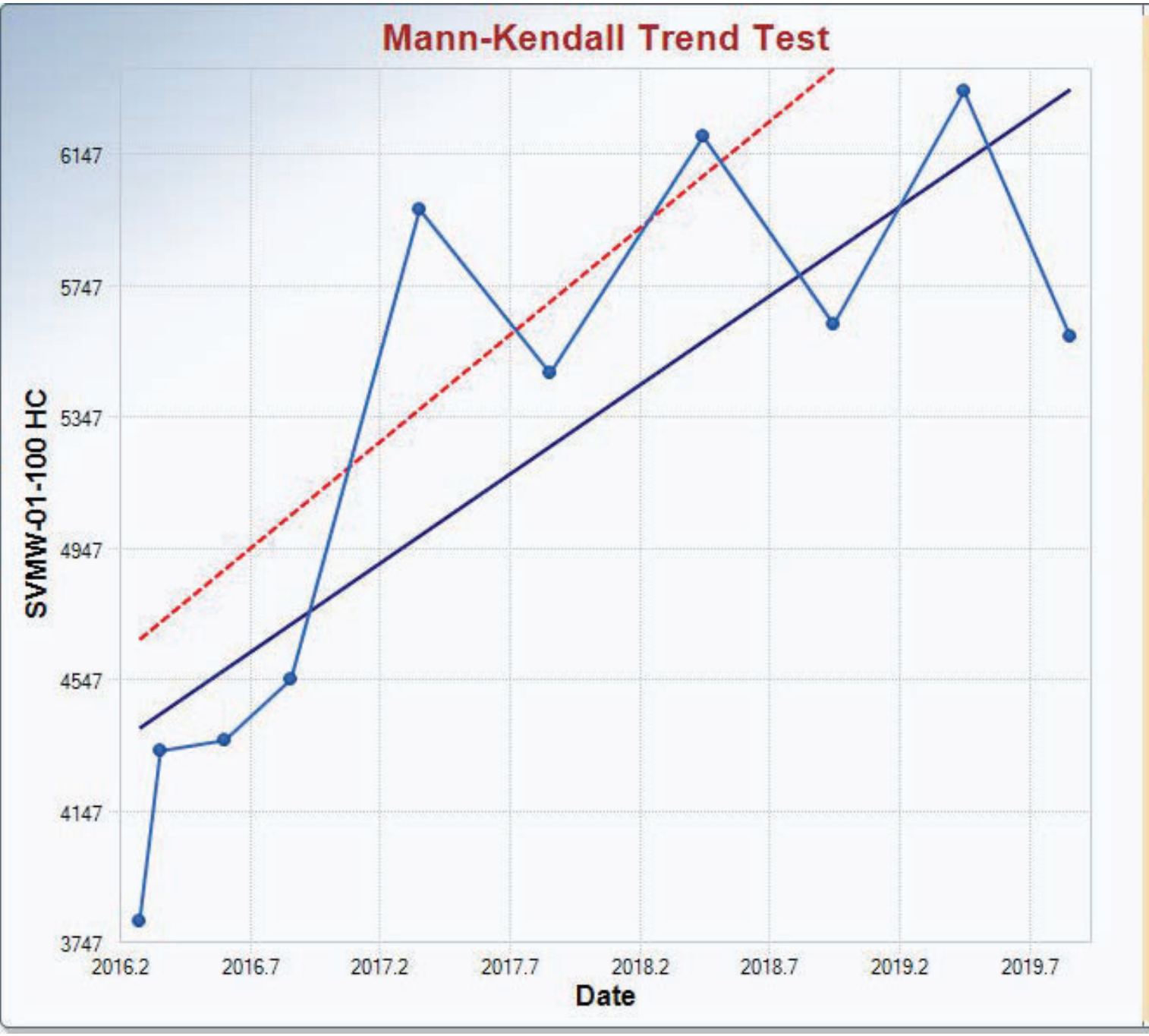
OLS Regression Line (Blue)

OLS Regression Slope	-513.2606
OLS Regression Intercept	1,163,496.8494

Theil-Sen Trend Line (Red)

Theil-Sen Slope	4,185.6696
Theil-Sen Intercept	-8,321,928.0207

Insufficient statistical evidence of a significant trend at the specified level of significance.



Mann-Kendall Trend Analysis

n	10
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	11.1803
Standardized Value of S	2.6833
M-K Test Value (S)	31
Tabulated p-value	0.0020
Approximate p-value	0.0036

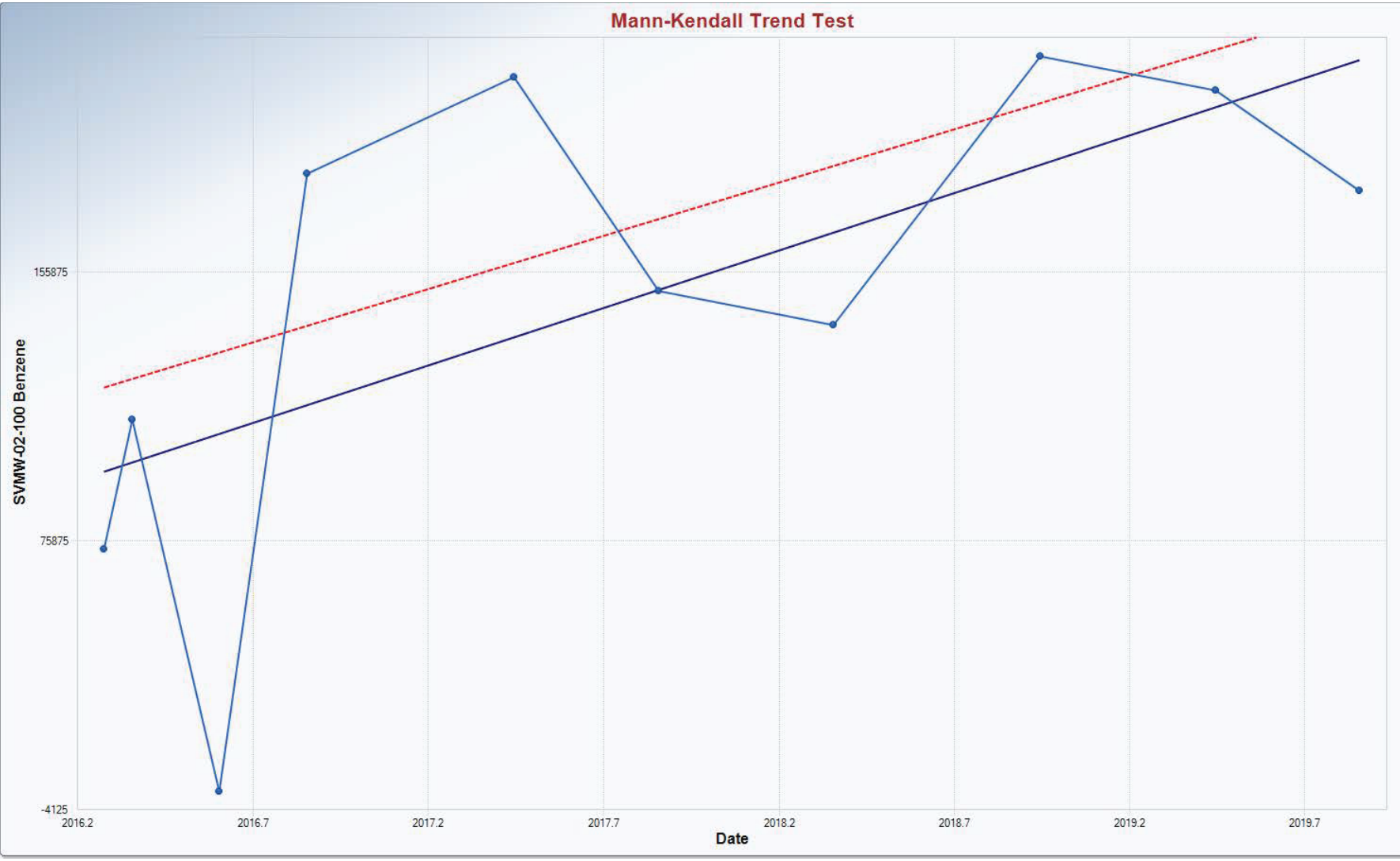
OLS Regression Line (Blue)

OLS Regression Slope	543.7216
OLS Regression Intercept	-1,091,880.2819

Theil-Sen Trend Line (Red)

Theil-Sen Slope	650.4854
Theil-Sen Intercept	-1,306,871.4078

Statistically significant evidence of an increasing trend at the specified level of significance.



Mann-Kendall Trend Analysis

n	10
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	11.1803
Standardized Value of S	1.6100
M-K Test Value (S)	19
Tabulated p-value	0.0540
Approximate p-value	0.0537

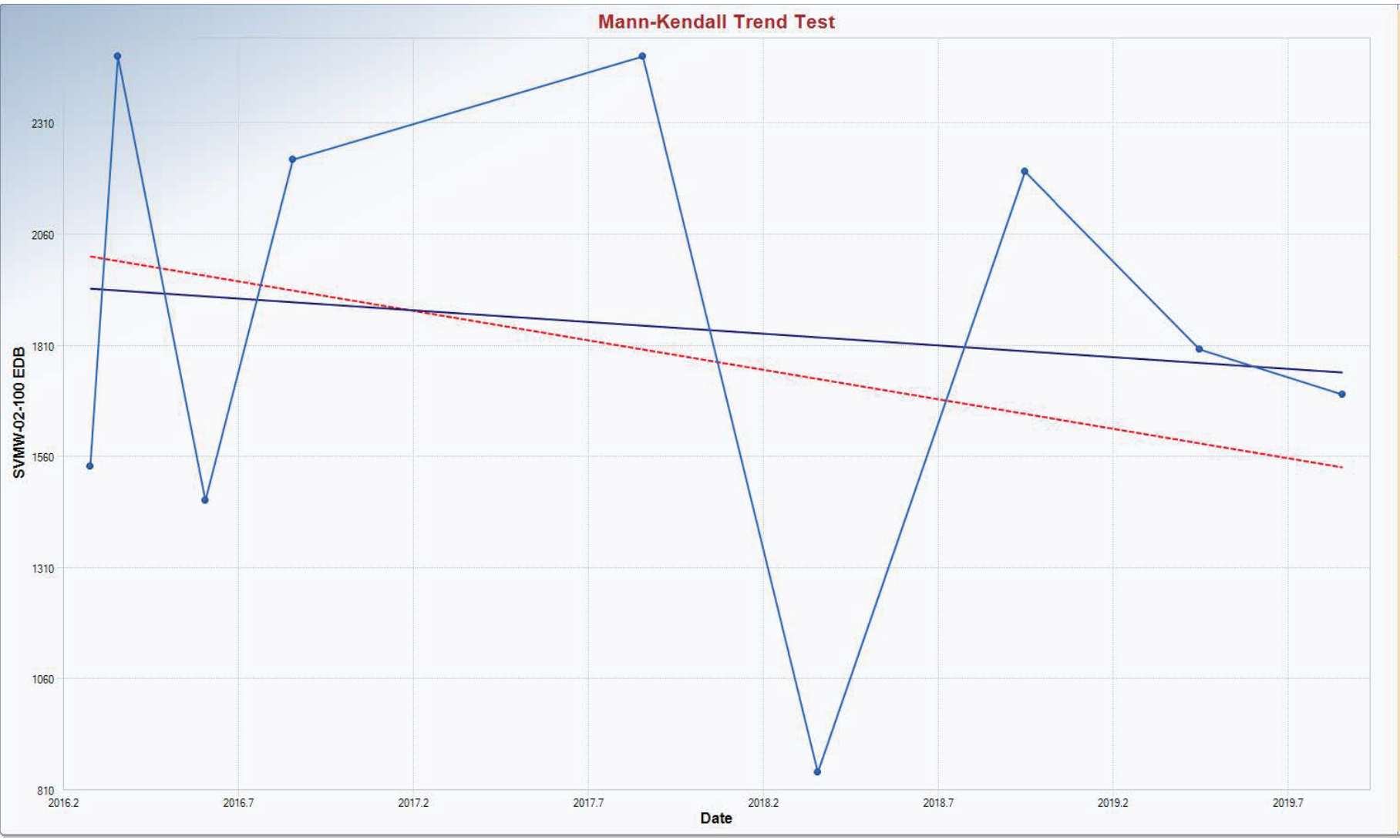
OLS Regression Line (Blue)

OLS Regression Slope	34,284.0471
OLS Regression Intercept	-69,028,847.0334

Theil-Sen Trend Line (Red)

Theil-Sen Slope	31,775.4350
Theil-Sen Intercept	-63,945,836.9581

Insufficient statistical evidence of a significant trend at the specified level of significance.



Mann-Kendall Trend Analysis

n	9
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	9.5394
Standardized Value of S	-0.4193
M-K Test Value (S)	-5
Tabulated p-value	0.3810
Approximate p-value	0.3375

OLS Regression Line (Blue)

OLS Regression Slope	-52.8325
OLS Regression Intercept	108,460.8885

Theil-Sen Trend Line (Red)

Theil-Sen Slope	-132.7017
Theil-Sen Intercept	269,569.4234

Insufficient statistical evidence of a significant trend at the specified level of significance.

Mann-Kendall Trend Analysis

n	10
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	11.1803
Standardized Value of S	3.2199
M-K Test Value (S)	37
Tabulated p-value	0.0000
Approximate p-value	0.0006

OLS Regression Line (Blue)

OLS Regression Slope	3,042.6179
OLS Regression Intercept	-6,129,821.2514

Theil-Sen Trend Line (Red)

Theil-Sen Slope	3,304.6154
Theil-Sen Intercept	-6,656,904.6154

Statistically significant evidence of an increasing trend at the specified level of significance.

Mann-Kendall Trend Analysis

n	10
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	11.1803
Standardized Value of S	0.0000
M-K Test Value (S)	1
Tabulated p-value	0.5000
Approximate p-value	0.5000

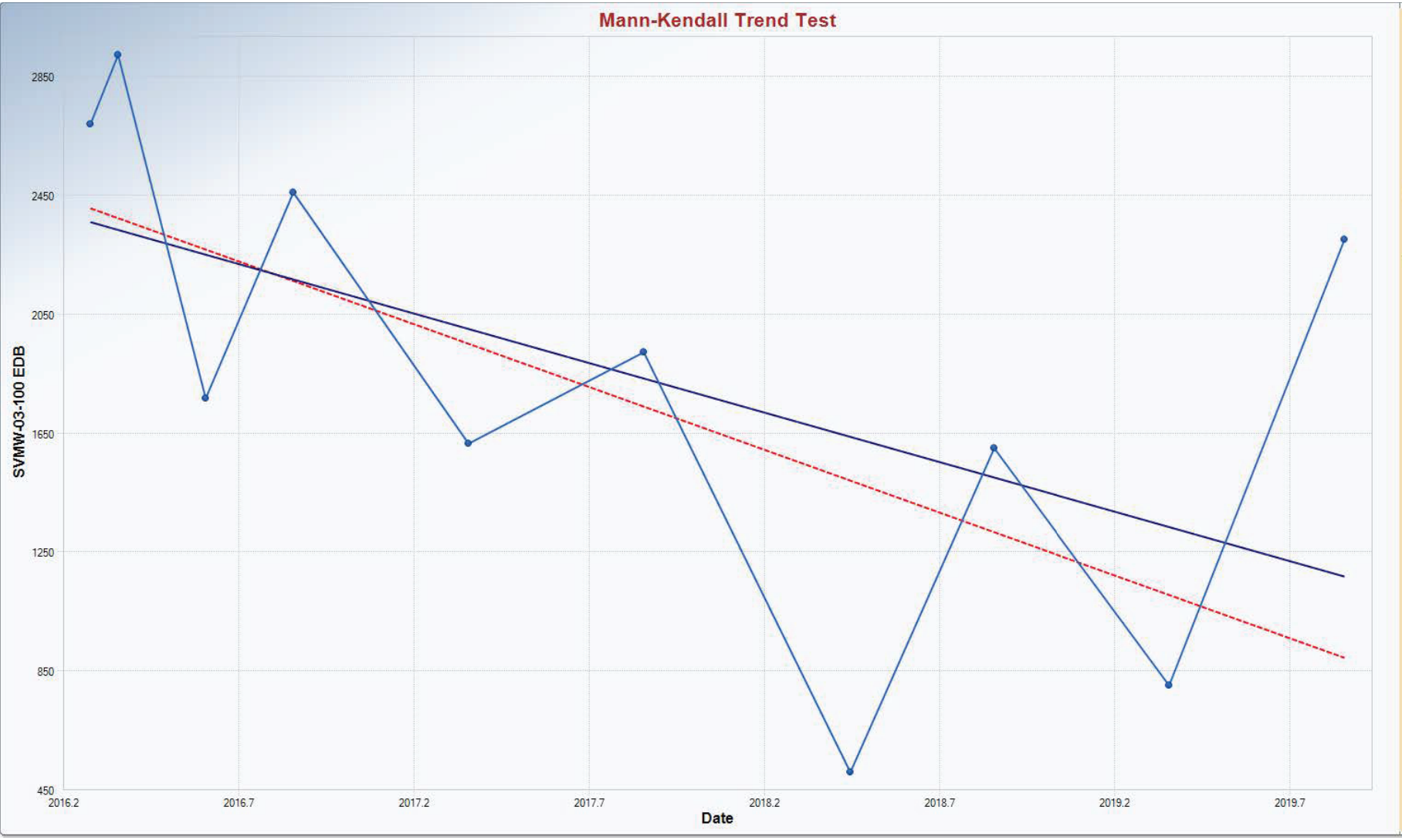
OLS Regression Line (Blue)

OLS Regression Slope	1,611.2312
OLS Regression Intercept	-3,062,077.0389

Theil-Sen Trend Line (Red)

Theil-Sen Slope	690.4091
Theil-Sen Intercept	-1,213,504.5066

Insufficient statistical evidence of a significant trend at the specified level of significance.



Mann-Kendall Trend Analysis

n	10
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	11.1803
Standardized Value of S	-1.7889
M-K Test Value (S)	-21
Tabulated p-value	0.0360
Approximate p-value	0.0368

OLS Regression Line (Blue)

OLS Regression Slope	-332.9693
OLS Regression Intercept	673,708.9527

Theil-Sen Trend Line (Red)

Theil-Sen Slope	-422.2825
Theil-Sen Intercept	853,832.8714

Statistically significant evidence of a decreasing trend at the specified level of significance.

Mann-Kendall Trend Analysis

n	10
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	11.1355
Standardized Value of S	0.0898
M-K Test Value (S)	2
Tabulated p-value	0.4310
Approximate p-value	0.4642

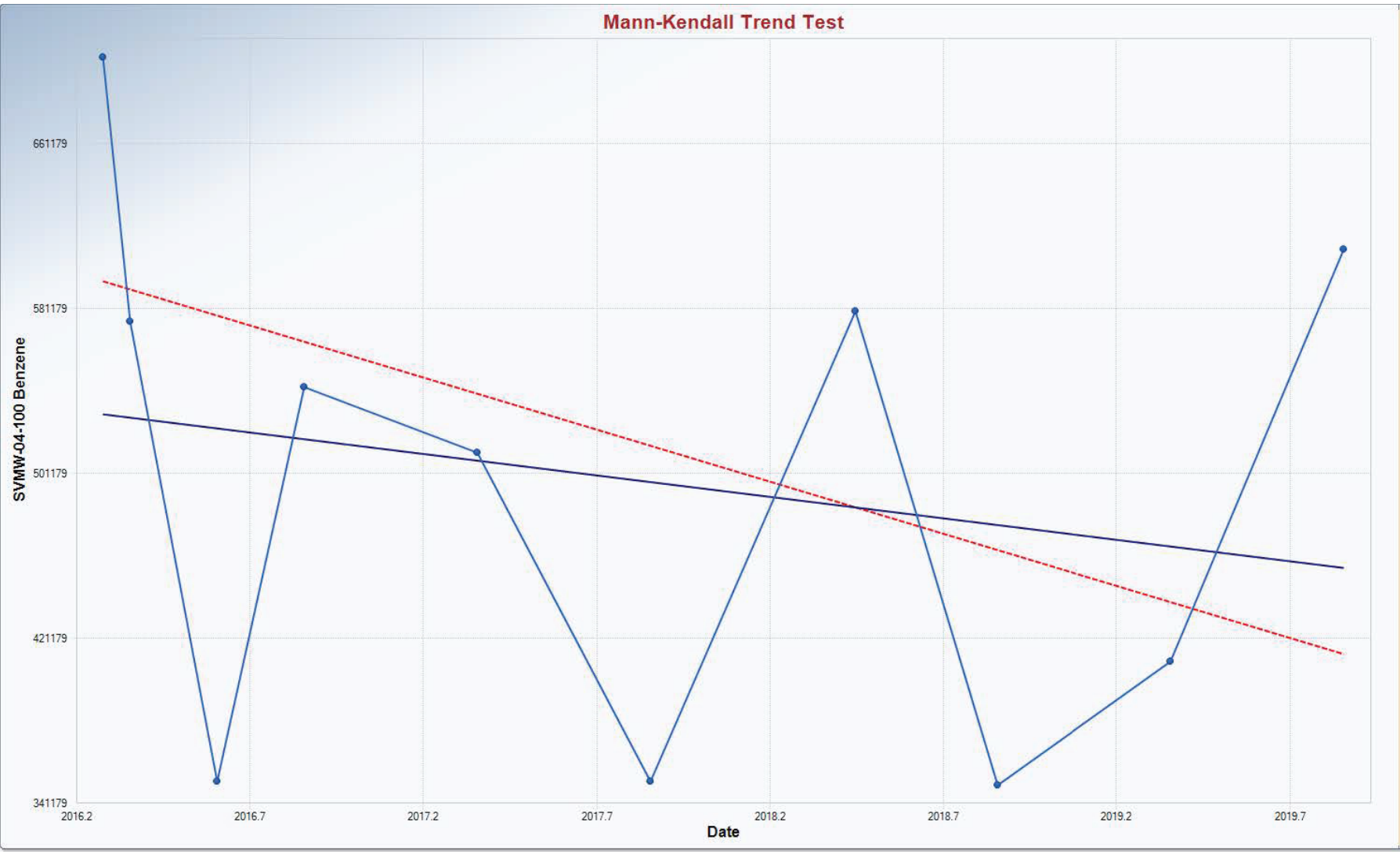
OLS Regression Line (Blue)

OLS Regression Slope	77.3091
OLS Regression Intercept	-146,559.8225

Theil-Sen Trend Line (Red)

Theil-Sen Slope	8.8889
Theil-Sen Intercept	-8,614.0444

Insufficient statistical evidence of a significant trend at the specified level of significance.



Mann-Kendall Trend Analysis

n	10
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	11.1355
Standardized Value of S	-0.6286
M-K Test Value (S)	-8
Tabulated p-value	0.2420
Approximate p-value	0.2648

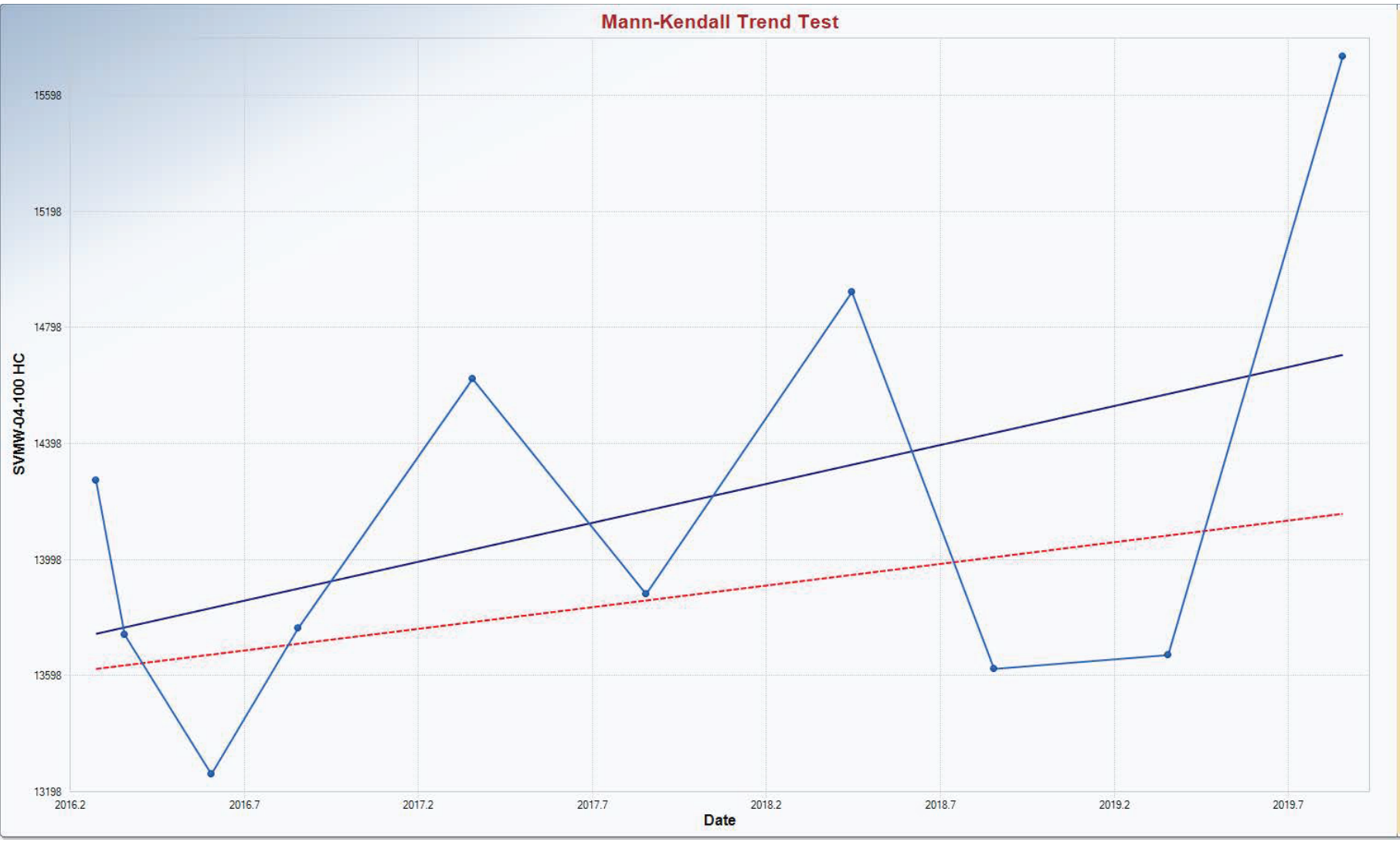
OLS Regression Line (Blue)

OLS Regression Slope	-20,850.5290
OLS Regression Intercept	42,569,774.8820

Theil-Sen Trend Line (Red)

Theil-Sen Slope	-50,574.6422
Theil-Sen Intercept	102,565,509.2084

Insufficient statistical evidence of a significant trend at the specified level of significance.



Mann-Kendall Trend Analysis

n	10
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	11.1803
Standardized Value of S	0.7155
M-K Test Value (S)	9
Tabulated p-value	0.2420
Approximate p-value	0.2371

OLS Regression Line (Blue)

OLS Regression Slope	268.5019
OLS Regression Intercept	-527,624.3017

Theil-Sen Trend Line (Red)

Theil-Sen Slope	149.0909
Theil-Sen Intercept	-286,982.8364

Insufficient statistical evidence of a significant trend at the specified level of significance.

Mann-Kendall Trend Analysis

n	10
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	11.1803
Standardized Value of S	-2.3255
M-K Test Value (S)	-27
Tabulated p-value	0.0080
Approximate p-value	0.0100

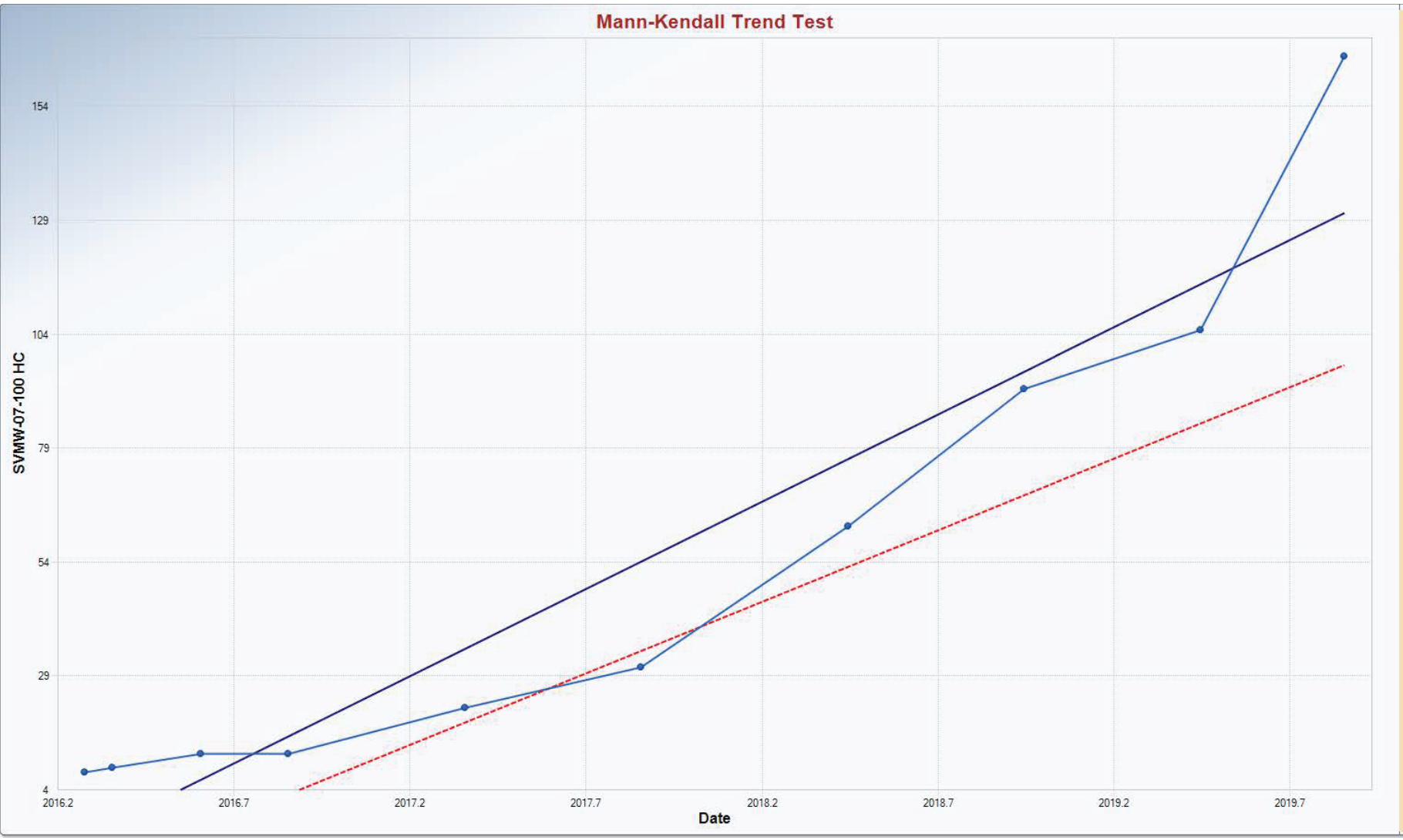
OLS Regression Line (Blue)

OLS Regression Slope	-312.1758
OLS Regression Intercept	630,675.2617

Theil-Sen Trend Line (Red)

Theil-Sen Slope	-307.2491
Theil-Sen Intercept	620,618.3811

Statistically significant evidence of a decreasing trend at the specified level of significance.



Mann-Kendall Trend Analysis

n	10
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	11.1355
Standardized Value of S	3.8615
M-K Test Value (S)	44
Tabulated p-value	0.0000
Approximate p-value	0.0001

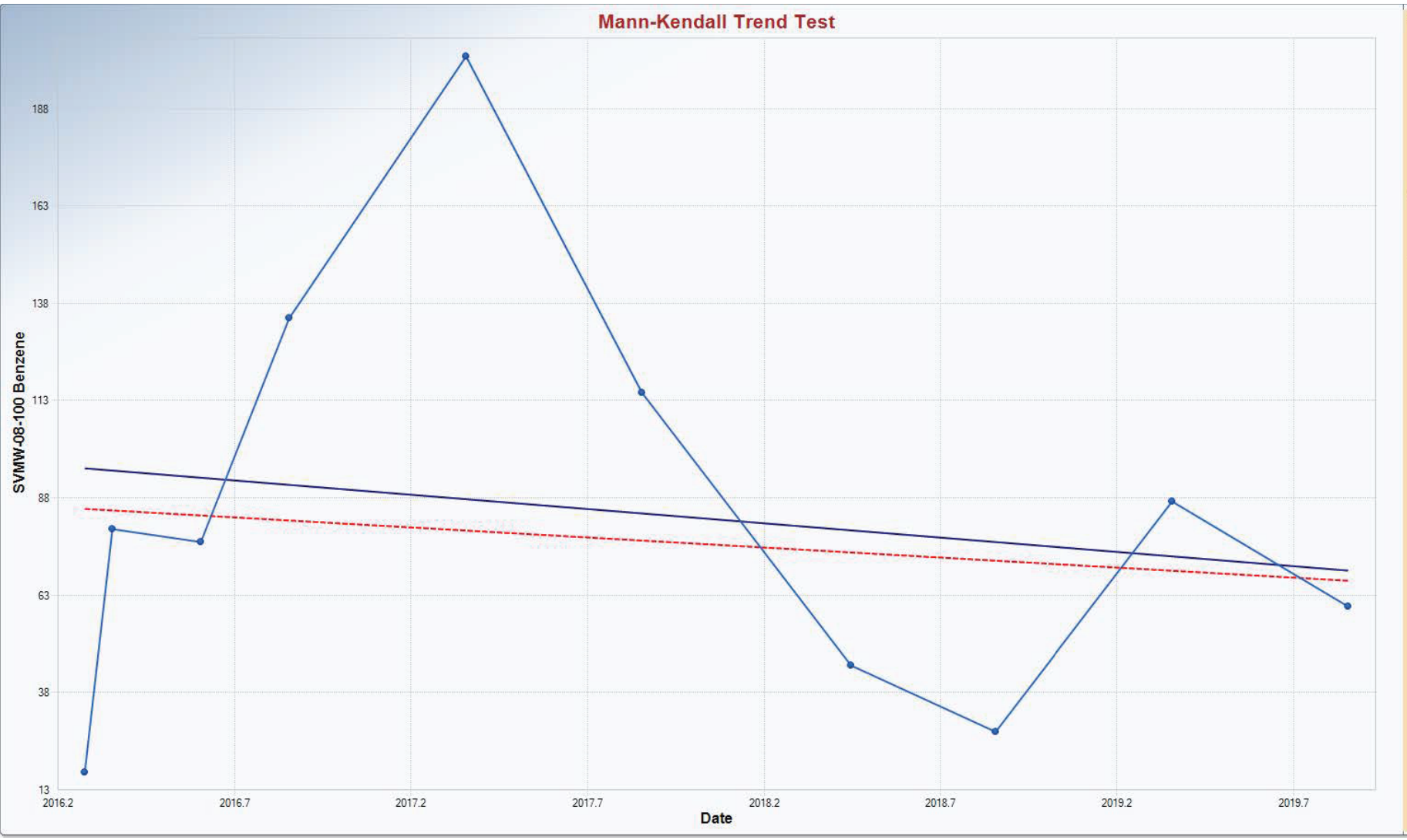
OLS Regression Line (Blue)

OLS Regression Slope	38.3969
OLS Regression Intercept	-77,424.4249

Theil-Sen Trend Line (Red)

Theil-Sen Slope	31.4607
Theil-Sen Intercept	-63,447.9270

Statistically significant evidence of an increasing trend at the specified level of significance.



Mann-Kendall Trend Analysis

n	10
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	11.1803
Standardized Value of S	0.0000
M-K Test Value (S)	-1
Tabulated p-value	0.5000
Approximate p-value	0.5000

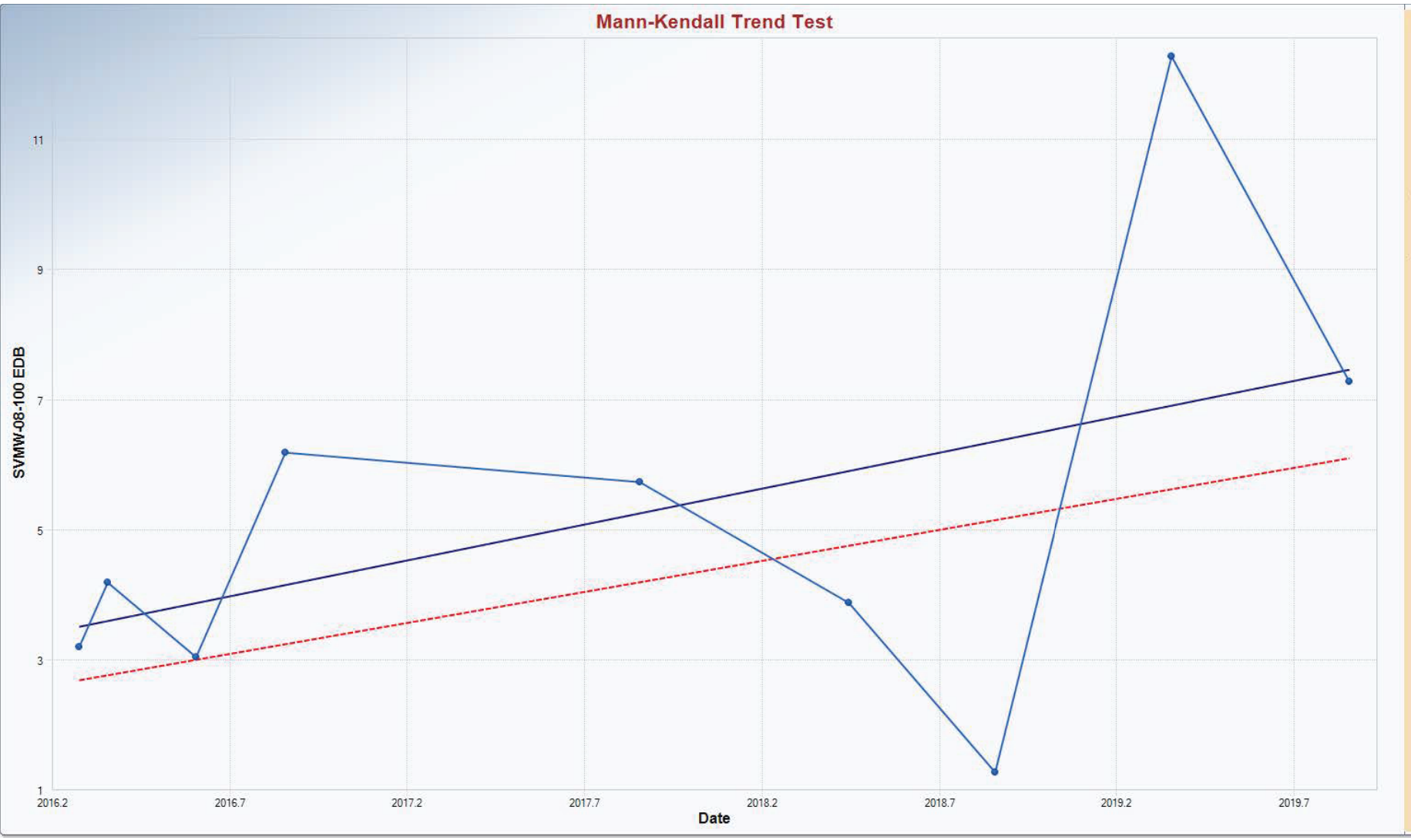
OLS Regression Line (Blue)

OLS Regression Slope	-7.3277
OLS Regression Intercept	14,869.9585

Theil-Sen Trend Line (Red)

Theil-Sen Slope	-5.1300
Theil-Sen Intercept	10,428.3885

Insufficient statistical evidence of a significant trend at the specified level of significance.



Mann-Kendall Trend Analysis

n	9
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	9.5917
Standardized Value of S	0.9383
M-K Test Value (S)	10
Tabulated p-value	0.1790
Approximate p-value	0.1740

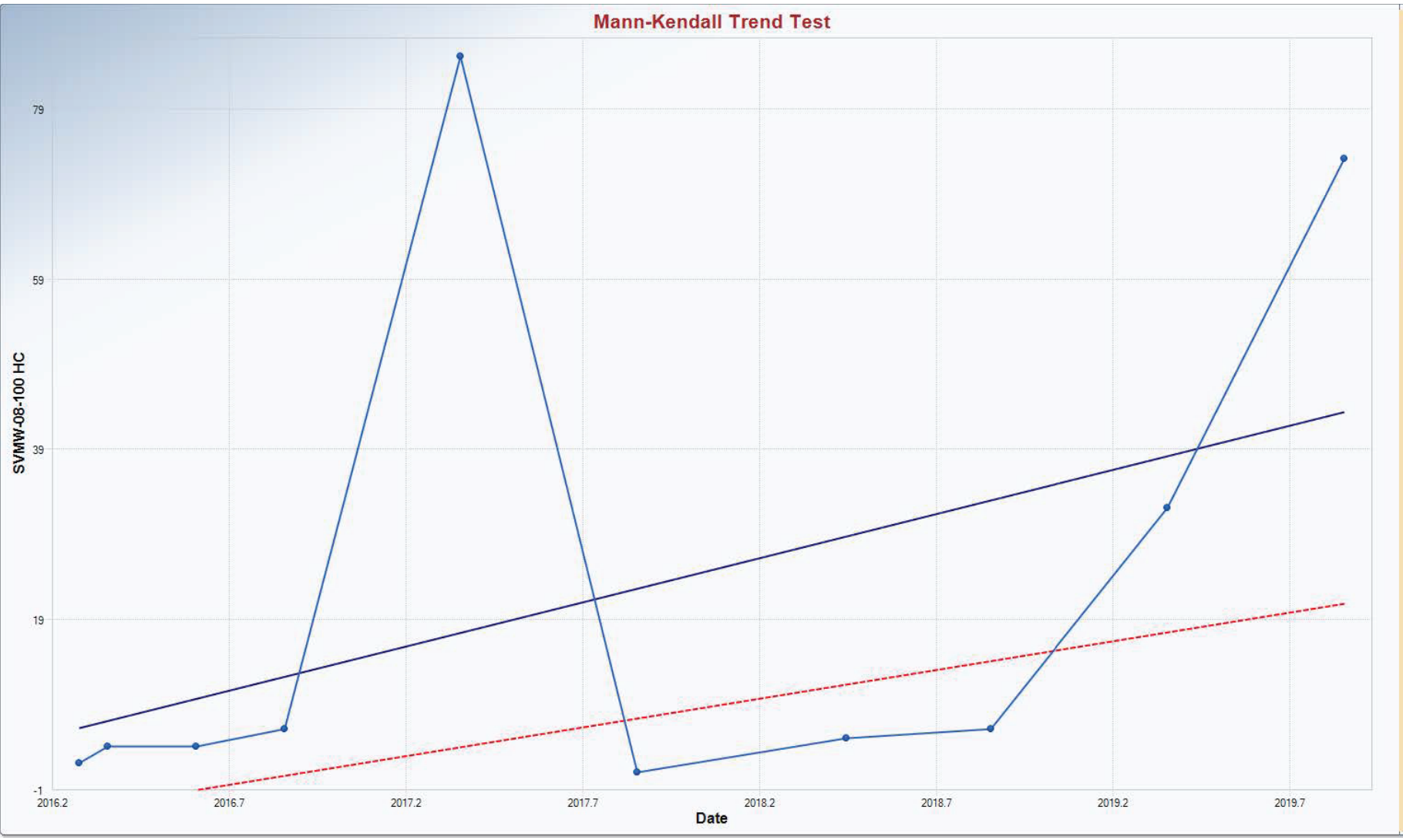
OLS Regression Line (Blue)

OLS Regression Slope	1.1037
OLS Regression Intercept	-2,222.1080

Theil-Sen Trend Line (Red)

Theil-Sen Slope	0.9524
Theil-Sen Intercept	-1,917.9245

Insufficient statistical evidence of a significant trend at the specified level of significance.



Mann-Kendall Trend Analysis

n	10
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	11.0905
Standardized Value of S	1.9837
M-K Test Value (S)	23
Tabulated p-value	0.0230
Approximate p-value	0.0236

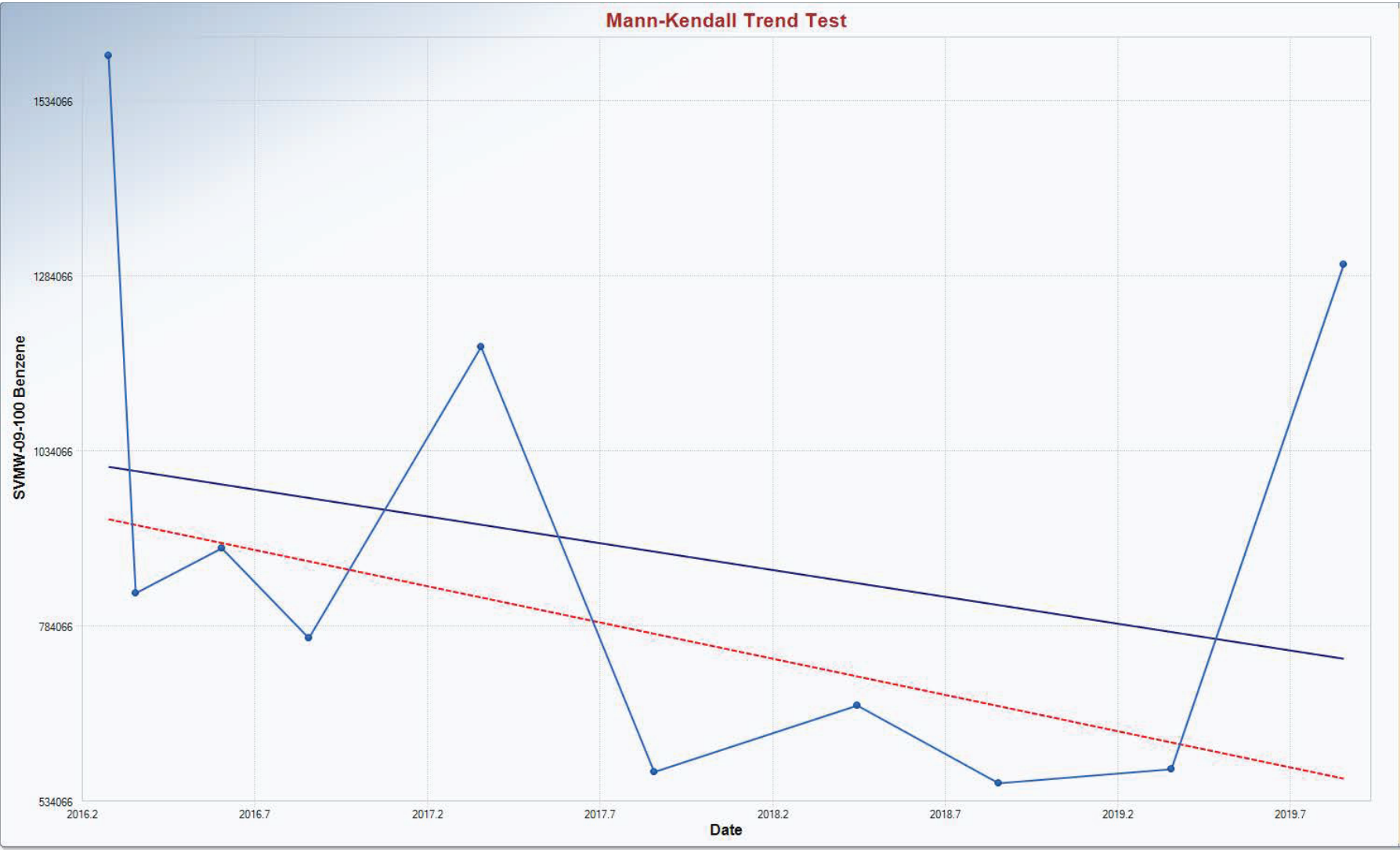
OLS Regression Line (Blue)

OLS Regression Slope	10.3575
OLS Regression Intercept	-20,877.1811

Theil-Sen Trend Line (Red)

Theil-Sen Slope	6.7797
Theil-Sen Intercept	-13,673.0085

Statistically significant evidence of an increasing trend at the specified level of significance.



Mann-Kendall Trend Analysis

n	10
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	11.1803
Standardized Value of S	-1.2522
M-K Test Value (S)	-15
Tabulated p-value	0.1080
Approximate p-value	0.1052

OLS Regression Line (Blue)

OLS Regression Slope	-76,646.9968
OLS Regression Intercept	155,550,564.6497

Theil-Sen Trend Line (Red)

Theil-Sen Slope	-103,361.9632
Theil-Sen Intercept	209,339,700.4697

Insufficient statistical evidence of a significant trend at the specified level of significance.

Mann-Kendall Trend Analysis

n	9
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	9.5917
Standardized Value of S	-1.3553
M-K Test Value (S)	-14
Tabulated p-value	0.0900
Approximate p-value	0.0877

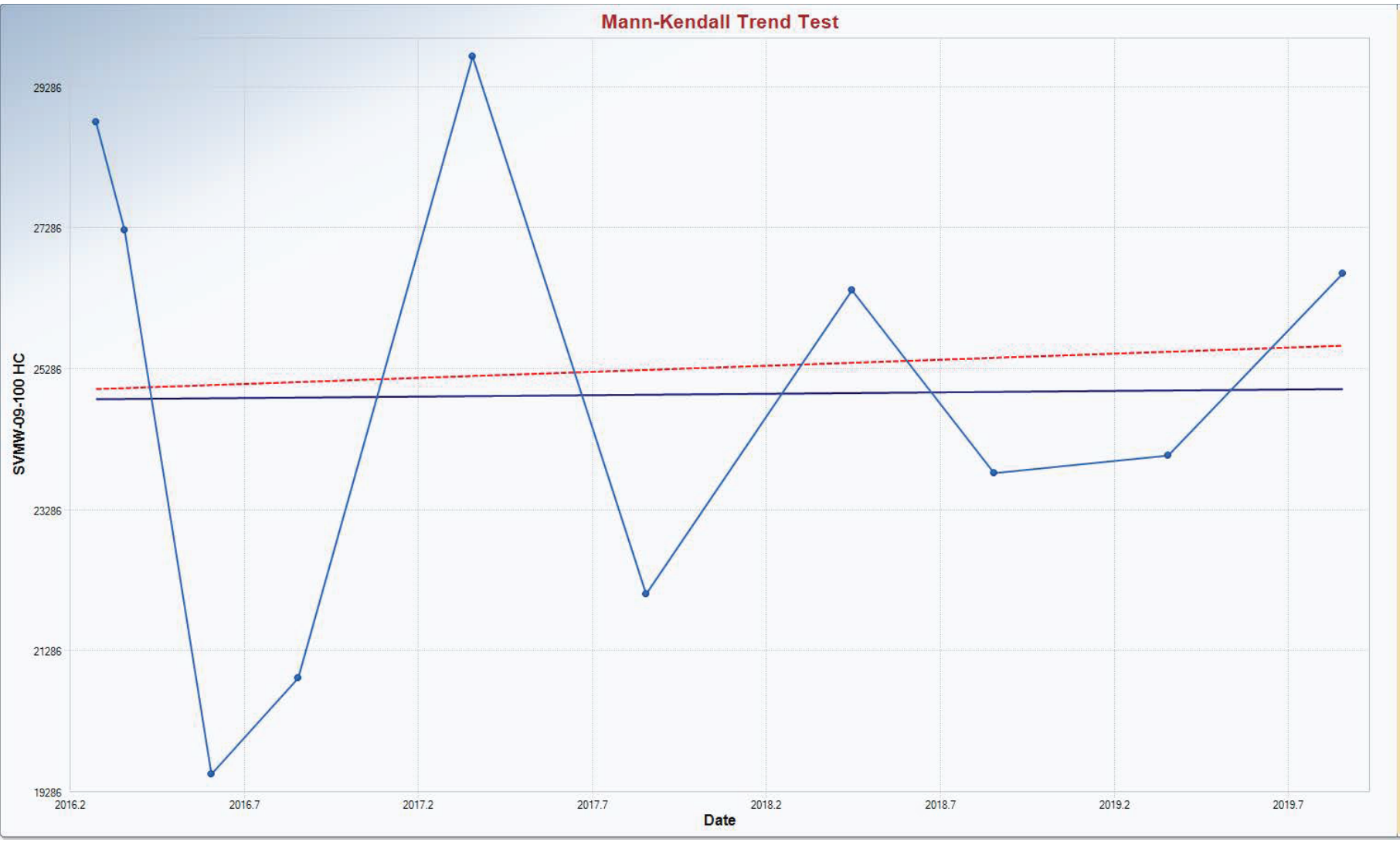
OLS Regression Line (Blue)

OLS Regression Slope	-966.7867
OLS Regression Intercept	1,957,309.2328

Theil-Sen Trend Line (Red)

Theil-Sen Slope	-1,448.0580
Theil-Sen Intercept	2,927,334.8968

Insufficient statistical evidence of a significant trend at the specified level of significance.



Mann-Kendall Trend Analysis

n	10
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	11.1803
Standardized Value of S	0.0000
M-K Test Value (S)	1
Tabulated p-value	0.5000
Approximate p-value	0.5000

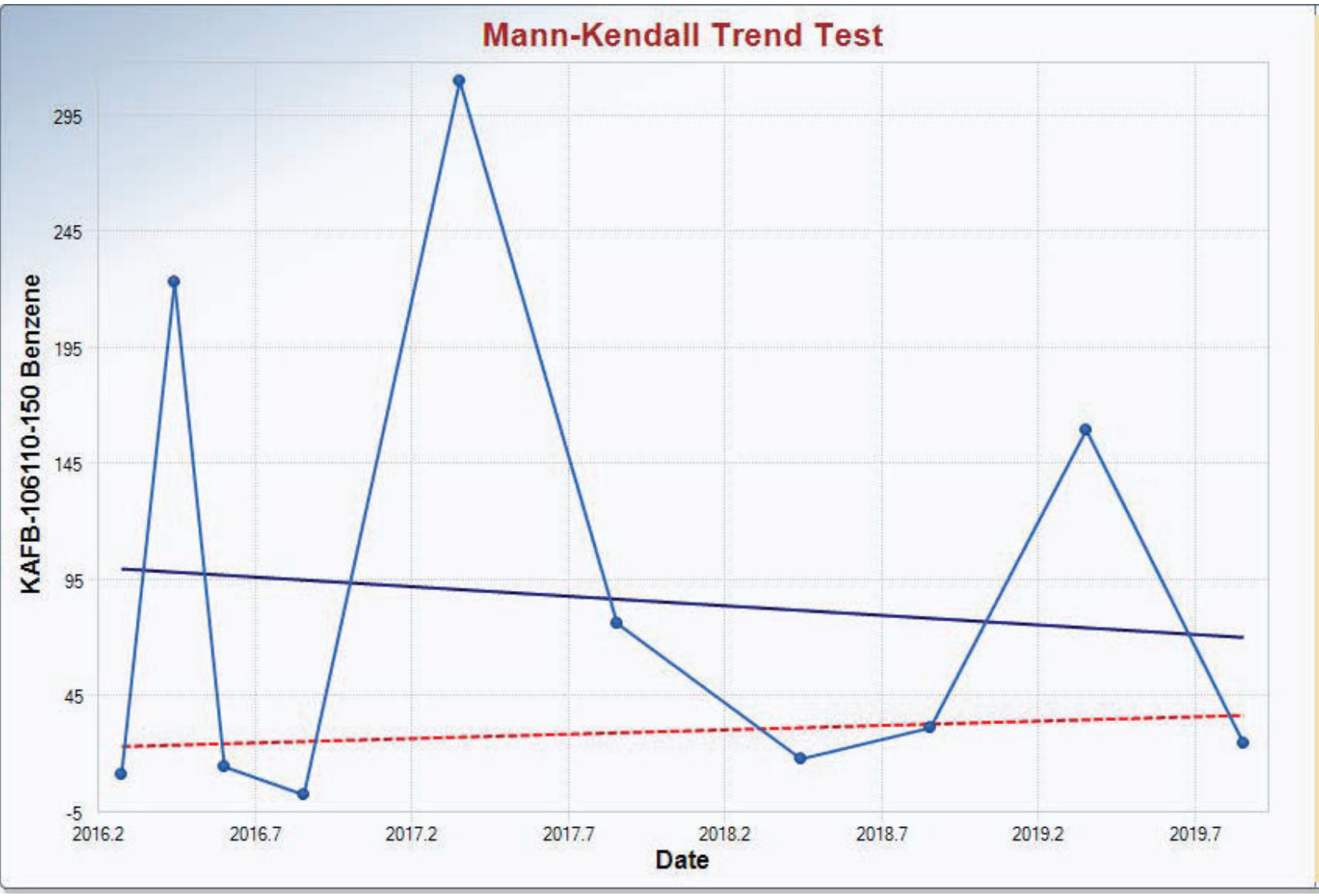
OLS Regression Line (Blue)

OLS Regression Slope	41.4760
OLS Regression Intercept	-58,771.3802

Theil-Sen Trend Line (Red)

Theil-Sen Slope	170.2128
Theil-Sen Intercept	-318,192.8723

Insufficient statistical evidence of a significant trend at the specified level of significance.



Mann-Kendall Trend Analysis

n	10
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	11.1803
Standardized Value of S	0.5367
M-K Test Value (S)	7
Tabulated p-value	0.3000
Approximate p-value	0.2958

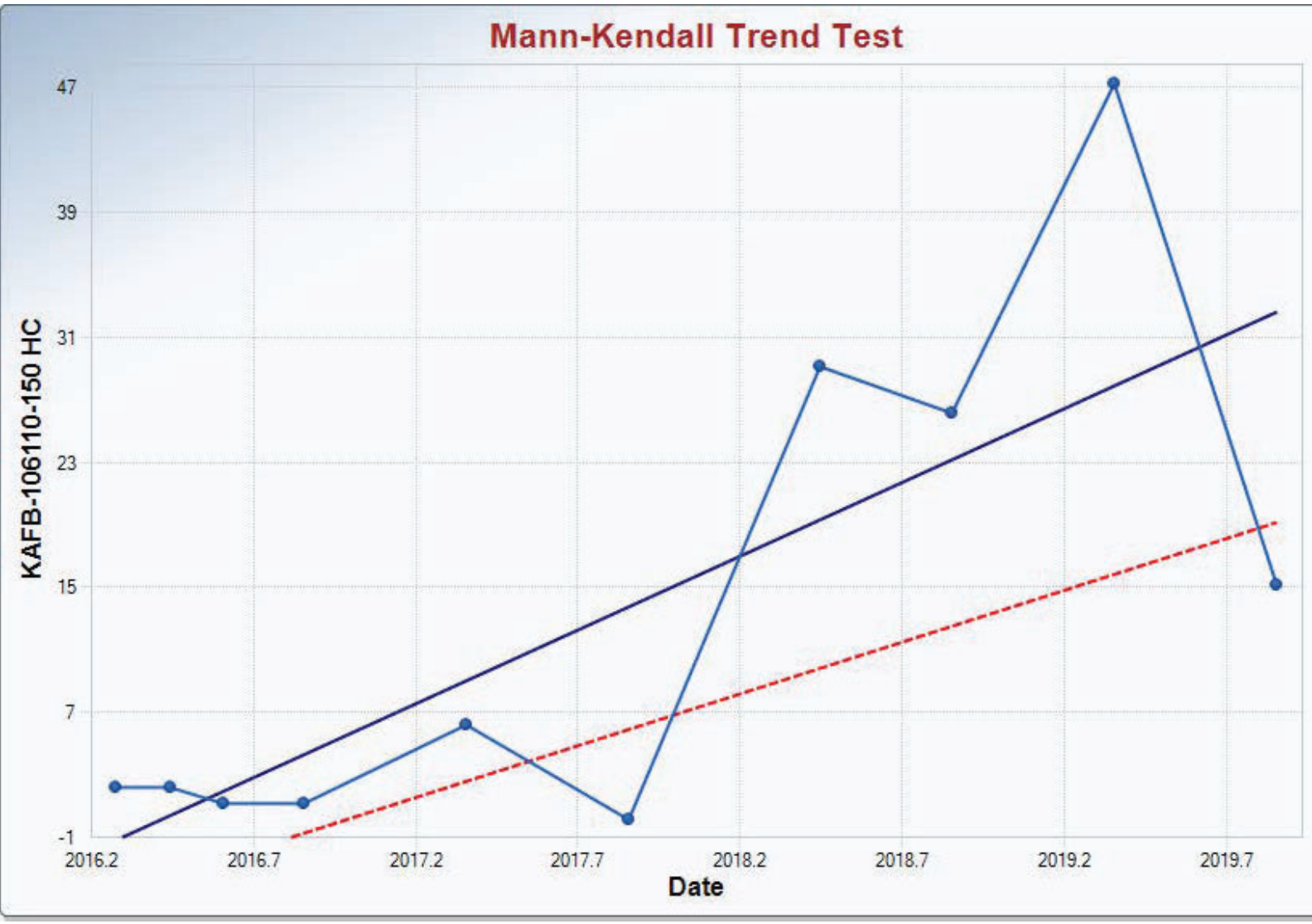
OLS Regression Line (Blue)

OLS Regression Slope	-8.1341
OLS Regression Intercept	16,500.1538

Theil-Sen Trend Line (Red)

Theil-Sen Slope	3.7707
Theil-Sen Intercept	-7,579.2087

Insufficient statistical evidence of a significant trend at the specified level of significance.



Mann-Kendall Trend Analysis

n	10
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	11.0905
Standardized Value of S	1.4427
M-K Test Value (S)	17
Tabulated p-value	0.0780
Approximate p-value	0.0746

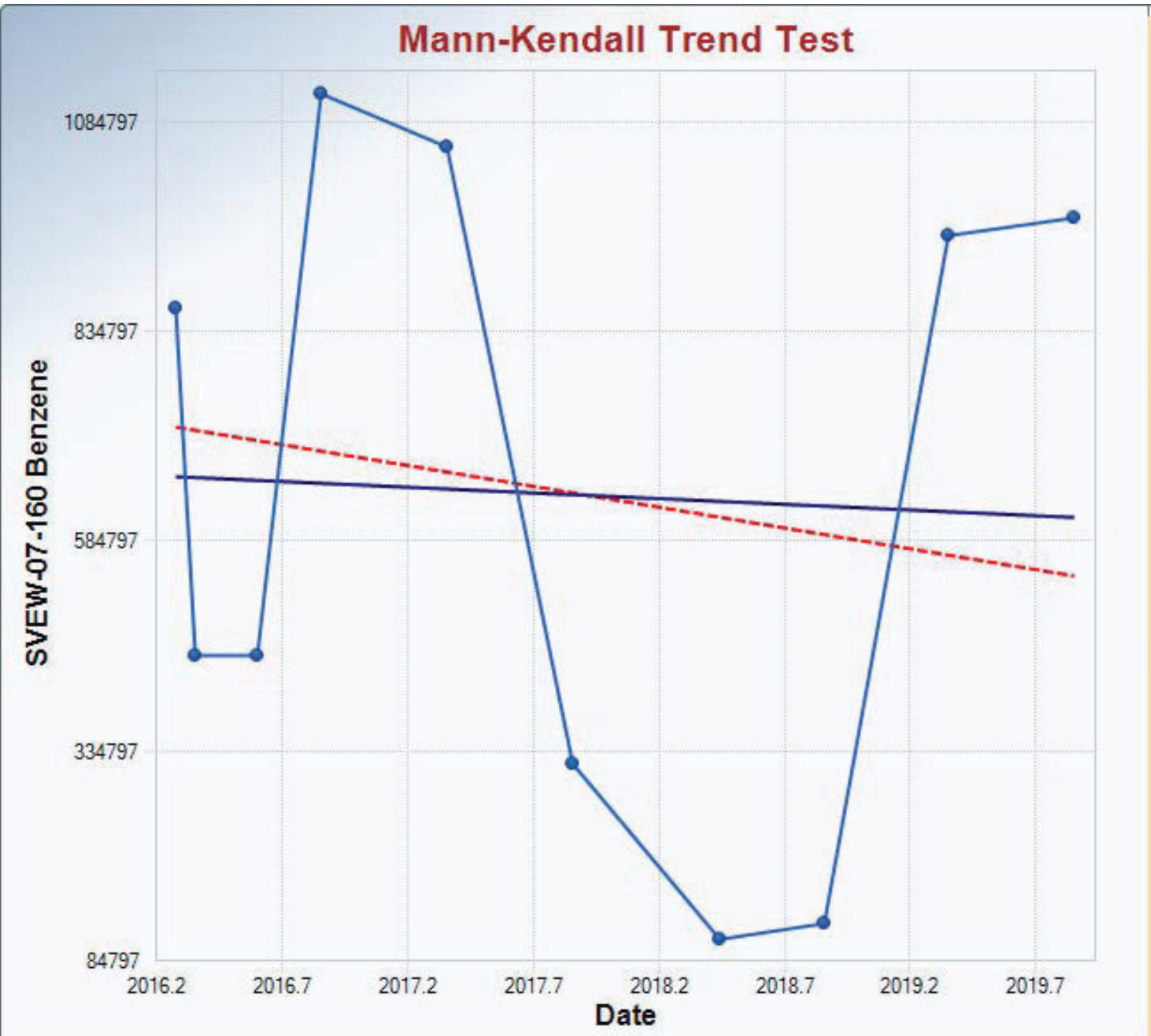
OLS Regression Line (Blue)

OLS Regression Slope	9.4773
OLS Regression Intercept	-19,110.0757

Theil-Sen Trend Line (Red)

Theil-Sen Slope	6.6667
Theil-Sen Intercept	-13,446.5333

Insufficient statistical evidence of a significant trend at the specified level of significance.



Mann-Kendall Trend Analysis

n	10
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	11.1355
Standardized Value of S	-0.2694
M-K Test Value (S)	-4
Tabulated p-value	0.3640
Approximate p-value	0.3938

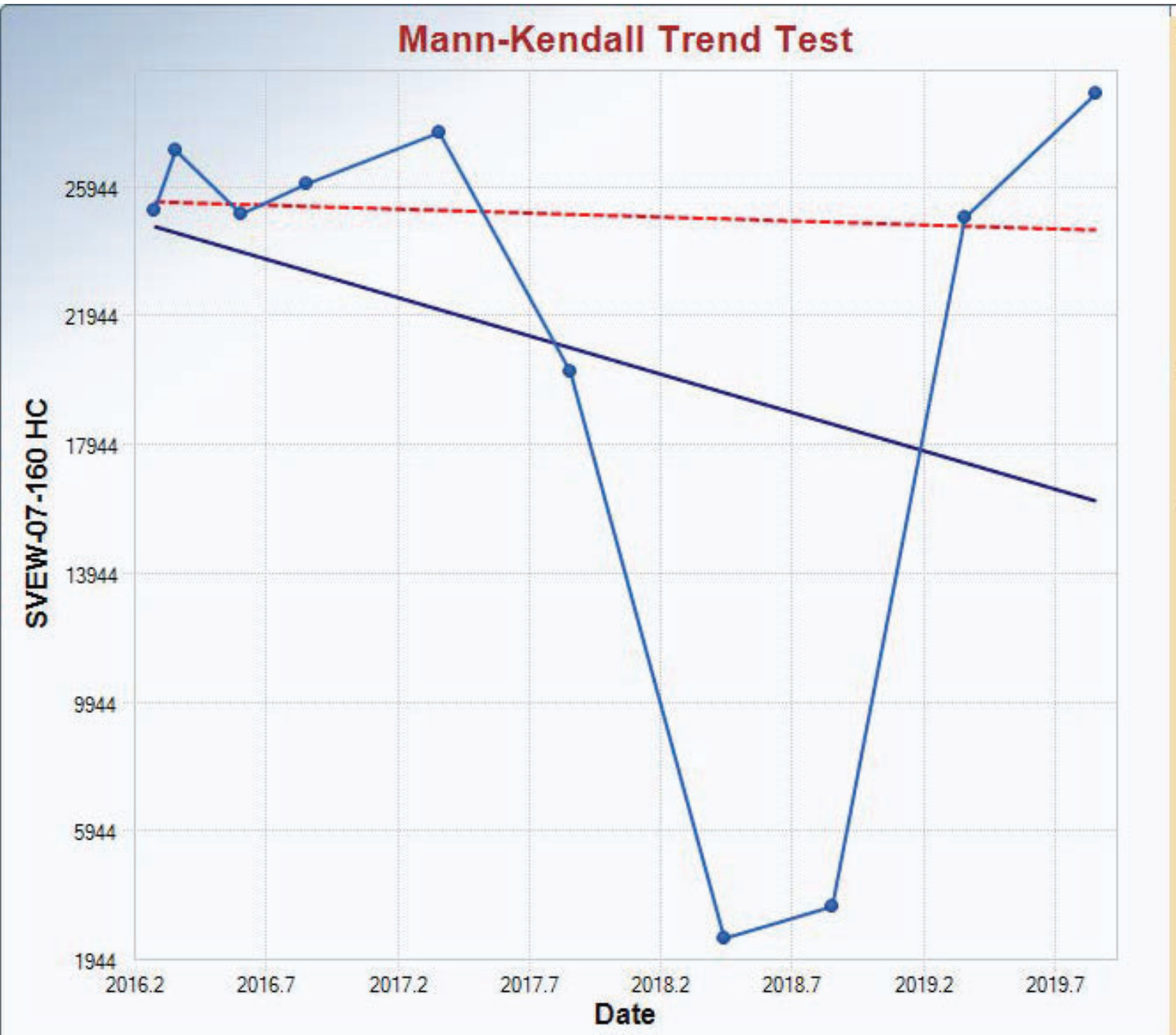
OLS Regression Line (Blue)

OLS Regression Slope	-13,501.6924
OLS Regression Intercept	27,884,013.7322

Theil-Sen Trend Line (Red)

Theil-Sen Slope	-49,379.6863
Theil-Sen Intercept	100,282,377.5729

Insufficient statistical evidence of a significant trend at the specified level of significance.



Mann-Kendall Trend Analysis

n	10
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	11.1803
Standardized Value of S	-0.3578
M-K Test Value (S)	-5
Tabulated p-value	0.3640
Approximate p-value	0.3603

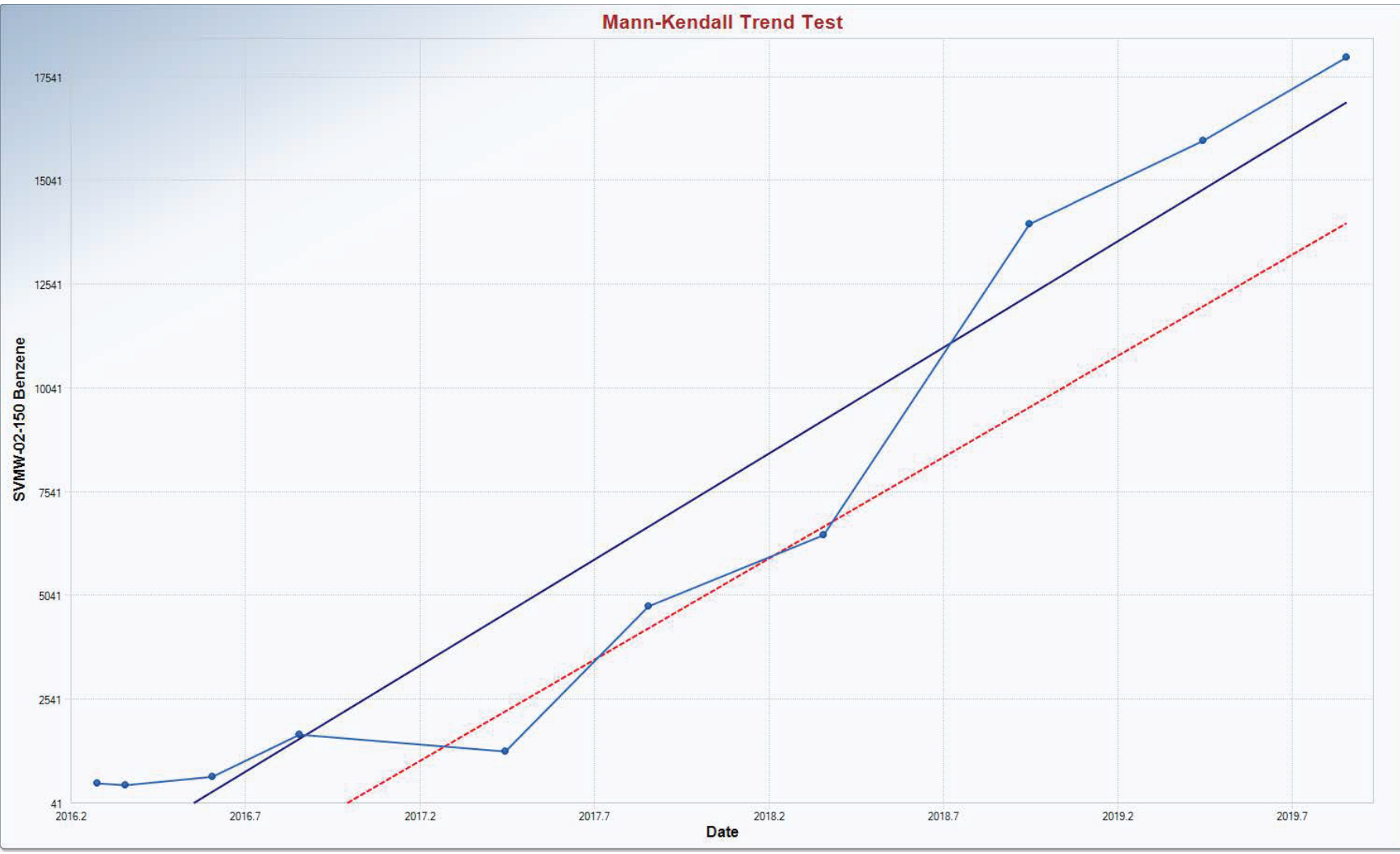
OLS Regression Line (Blue)

OLS Regression Slope	-2,370.1941
OLS Regression Intercept	4,803,597.3459

Theil-Sen Trend Line (Red)

Theil-Sen Slope	-242.4242
Theil-Sen Intercept	514,270.3030

Insufficient statistical evidence of a significant trend at the specified level of significance.



Mann-Kendall Trend Analysis

n	10
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	11.1803
Standardized Value of S	3.5777
M-K Test Value (S)	41
Tabulated p-value	0.0000
Approximate p-value	0.0002

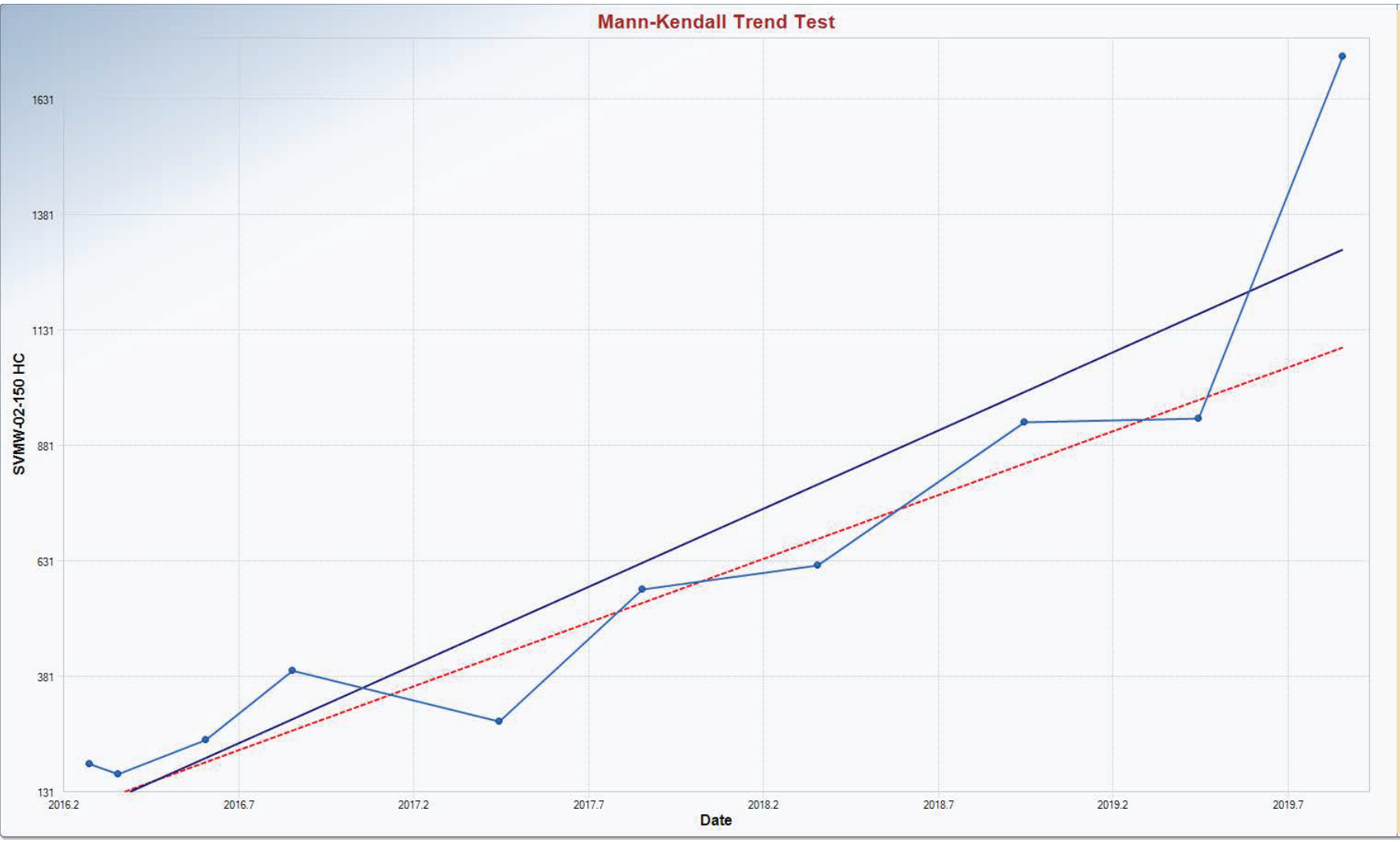
OLS Regression Line (Blue)

OLS Regression Slope	5,122.5310
OLS Regression Intercept	-10,329,717.3731

Theil-Sen Trend Line (Red)

Theil-Sen Slope	4,885.1538
Theil-Sen Intercept	-9,853,165.8954

Statistically significant evidence of an increasing trend at the specified level of significance.



Mann-Kendall Trend Analysis

n	10
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	11.1803
Standardized Value of S	3.5777
M-K Test Value (S)	41
Tabulated p-value	0.0000
Approximate p-value	0.0002

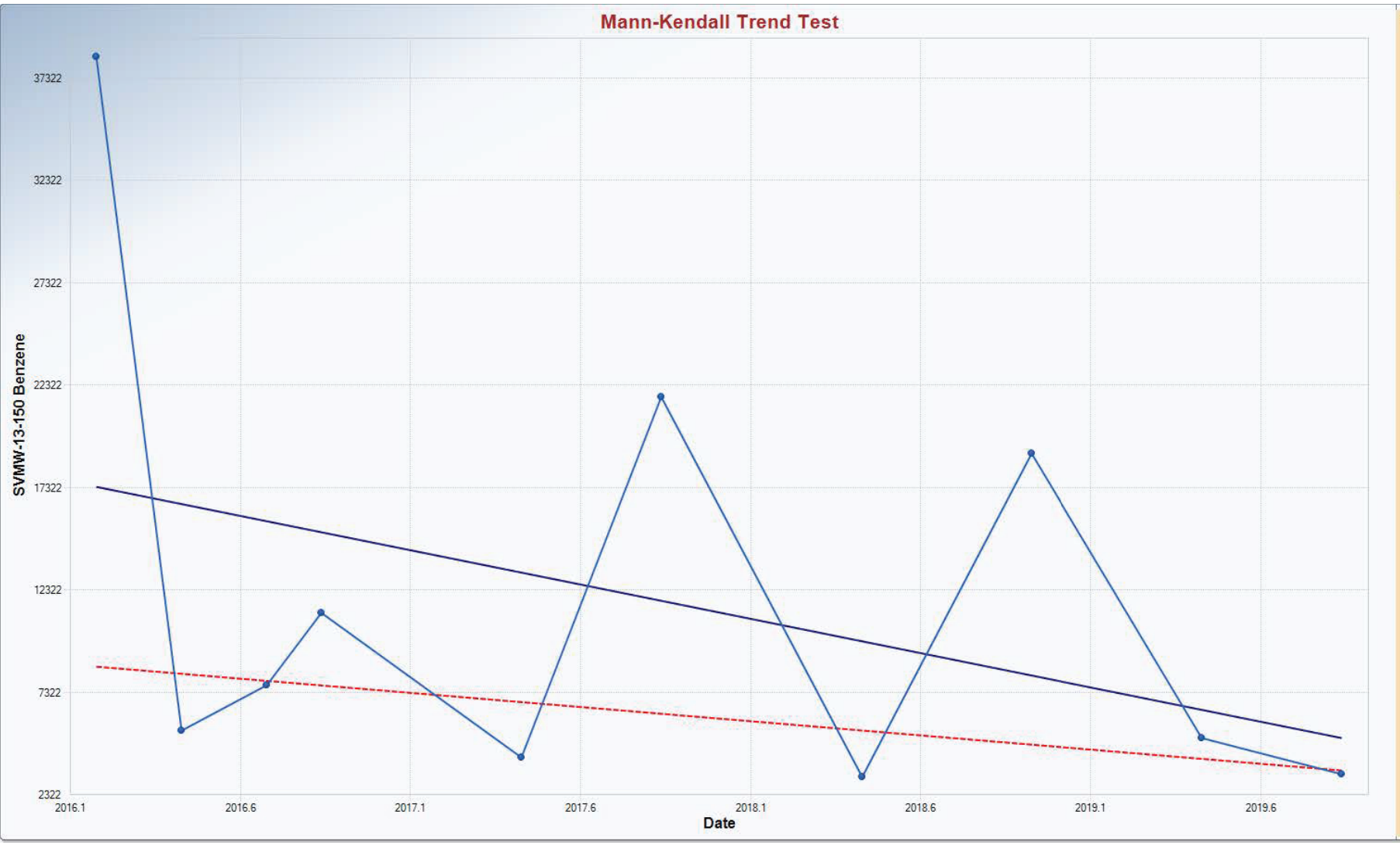
OLS Regression Line (Blue)

OLS Regression Slope	339.3334
OLS Regression Intercept	-684,091.4024

Theil-Sen Trend Line (Red)

Theil-Sen Slope	277.1536
Theil-Sen Intercept	-558,709.9476

Statistically significant evidence of an increasing trend at the specified level of significance.



Mann-Kendall Trend Analysis

n	10
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	11.1803
Standardized Value of S	-1.2522
M-K Test Value (S)	-15
Tabulated p-value	0.1080
Approximate p-value	0.1052

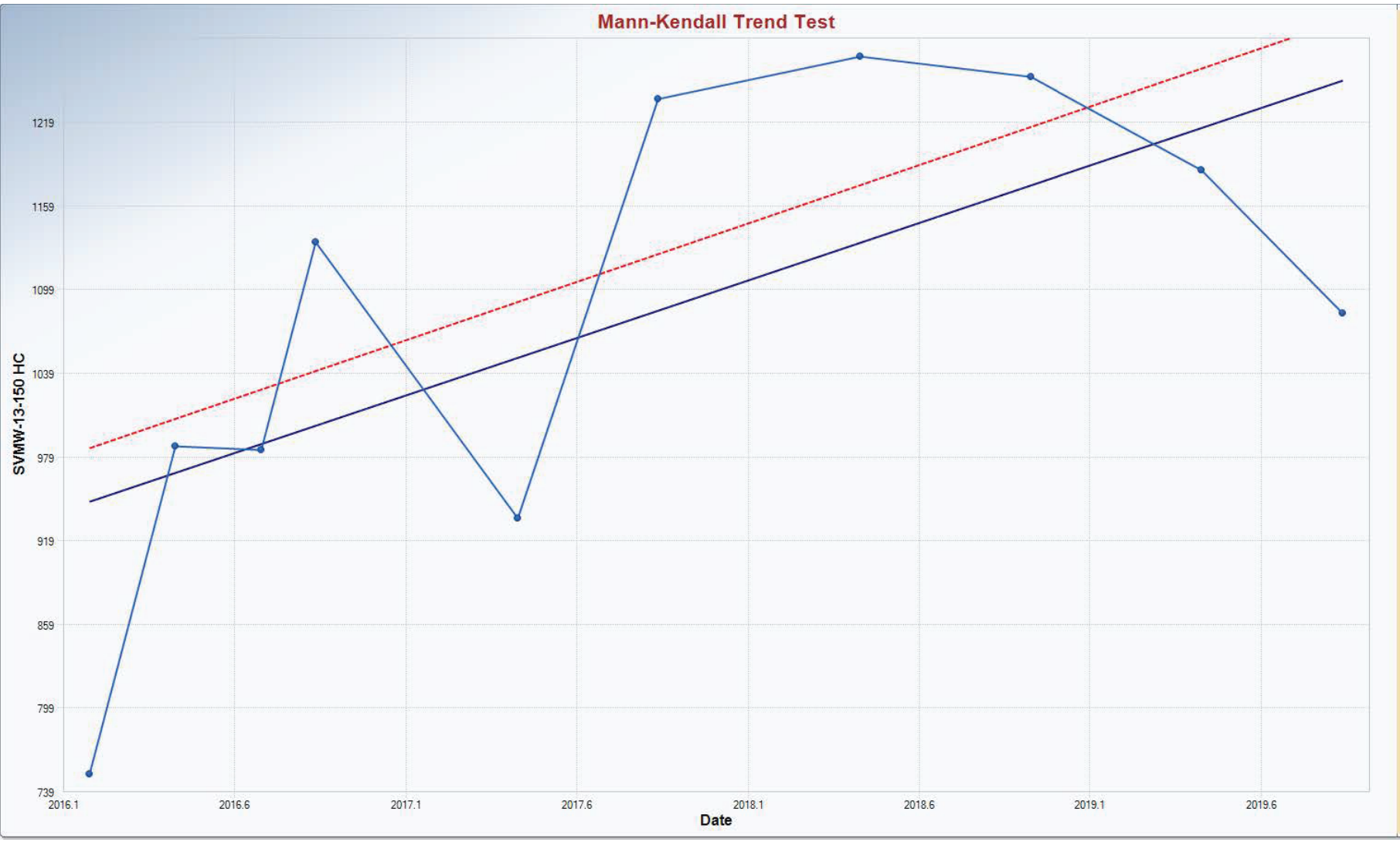
OLS Regression Line (Blue)

OLS Regression Slope	-3,355.1366
OLS Regression Intercept	6,781,880.4204

Theil-Sen Trend Line (Red)

Theil-Sen Slope	-1,382.0377
Theil-Sen Intercept	2,794,982.9989

Insufficient statistical evidence of a significant trend at the specified level of significance.



Mann-Kendall Trend Analysis

n	10
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	11.1803
Standardized Value of S	1.6100
M-K Test Value (S)	19
Tabulated p-value	0.0540
Approximate p-value	0.0537

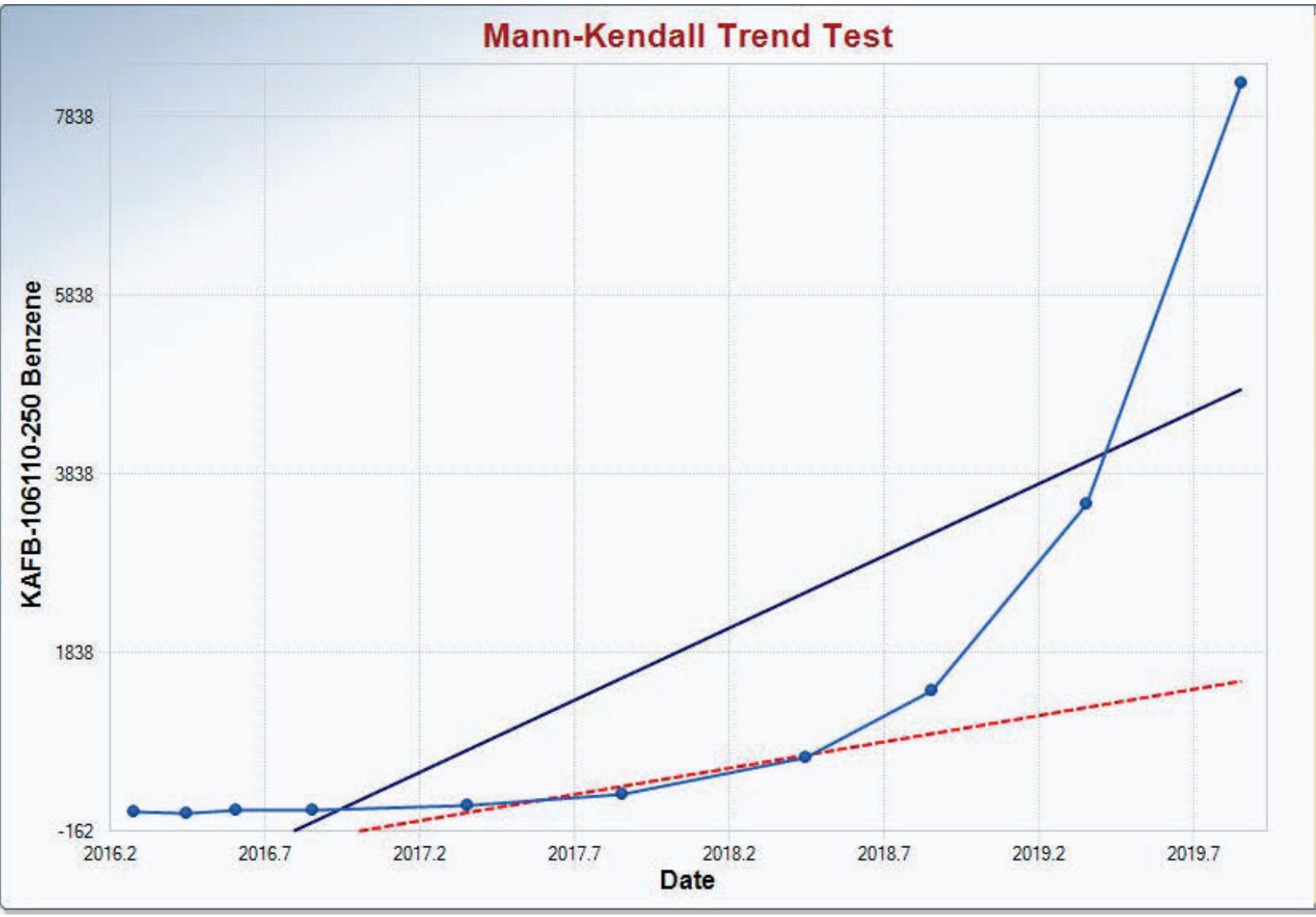
OLS Regression Line (Blue)

OLS Regression Slope	82.4427
OLS Regression Intercept	-165,271.1456

Theil-Sen Trend Line (Red)

Theil-Sen Slope	83.6478
Theil-Sen Intercept	-167,662.3899

Insufficient statistical evidence of a significant trend at the specified level of significance.



Mann-Kendall Trend Analysis

n	10
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	11.1803
Standardized Value of S	3.7566
M-K Test Value (S)	43
Tabulated p-value	0.0000
Approximate p-value	0.0001

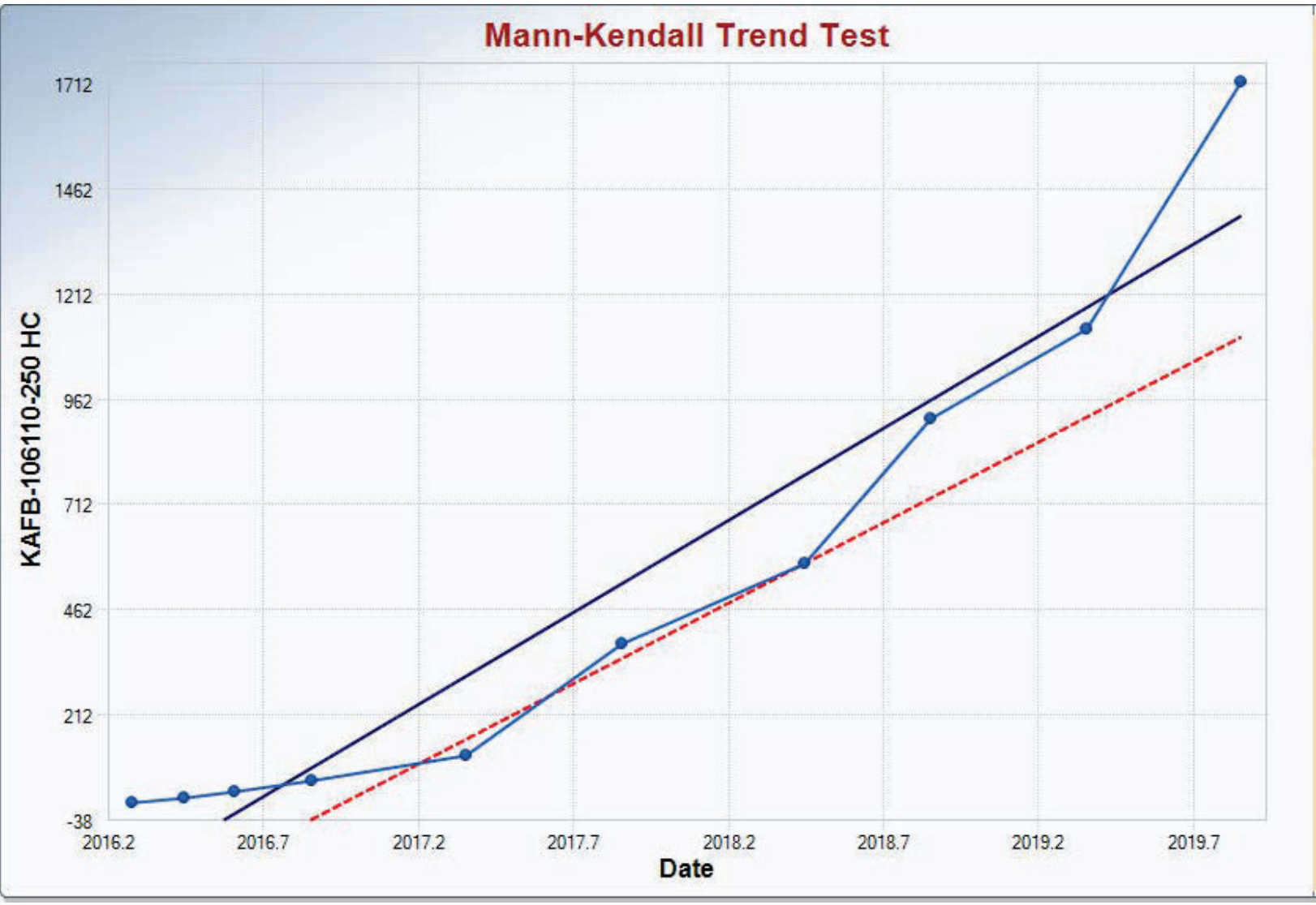
OLS Regression Line (Blue)

OLS Regression Slope	1,617.2283
OLS Regression Intercept	-3,261,751.5813

Theil-Sen Trend Line (Red)

Theil-Sen Slope	593.8250
Theil-Sen Intercept	-1,197,907.4268

Statistically significant evidence of an increasing trend at the specified level of significance.



Mann-Kendall Trend Analysis

n	10
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	11.1803
Standardized Value of S	3.9355
M-K Test Value (S)	45
Tabulated p-value	0.0000
Approximate p-value	0.0000

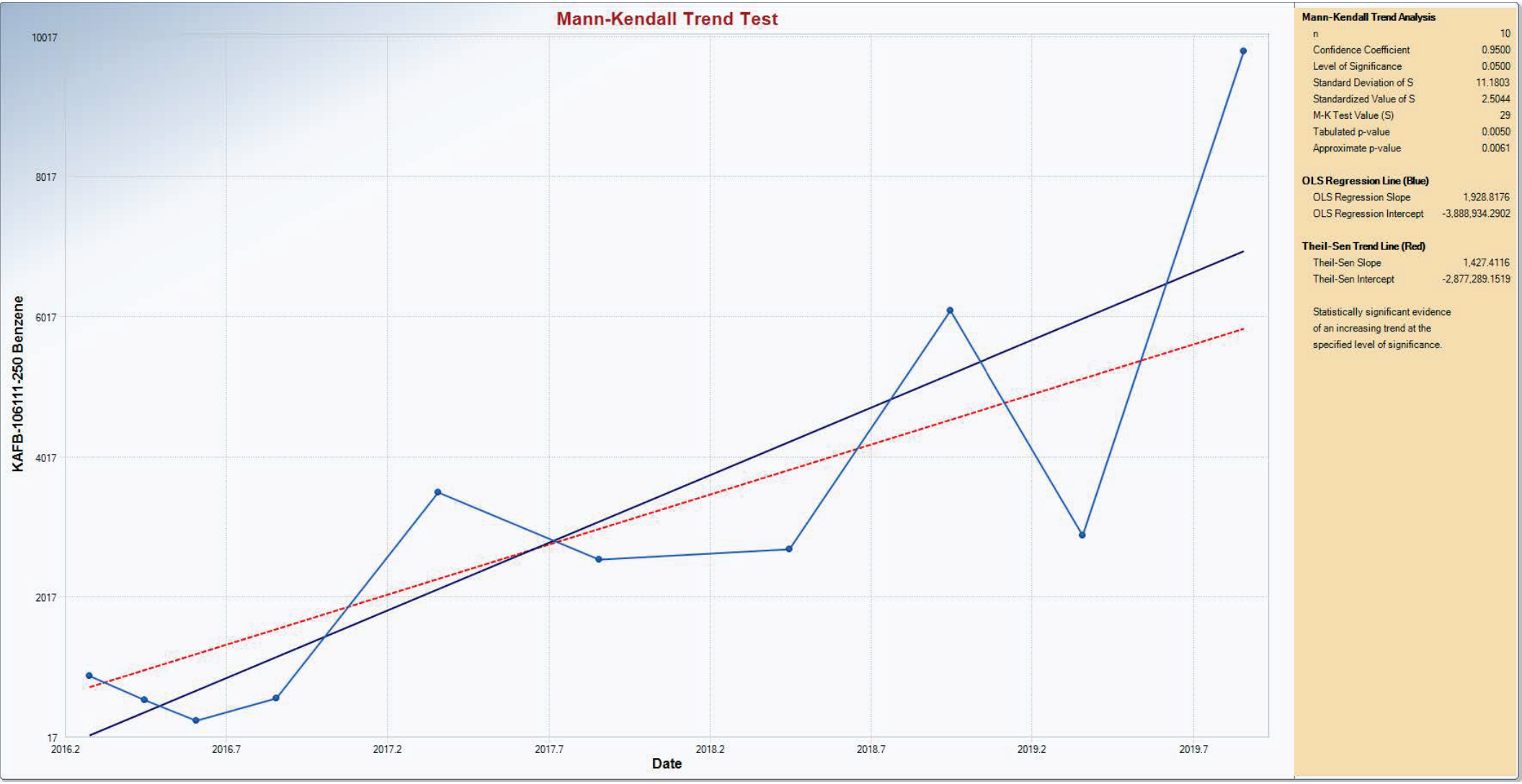
OLS Regression Line (Blue)

OLS Regression Slope	439.0494
OLS Regression Intercept	-885,405.6289

Theil-Sen Trend Line (Red)

Theil-Sen Slope	383.1615
Theil-Sen Intercept	-772,810.0034

Statistically significant evidence of an increasing trend at the specified level of significance.


Mann-Kendall Trend Test
10017
8017
6017
4017
2017
17
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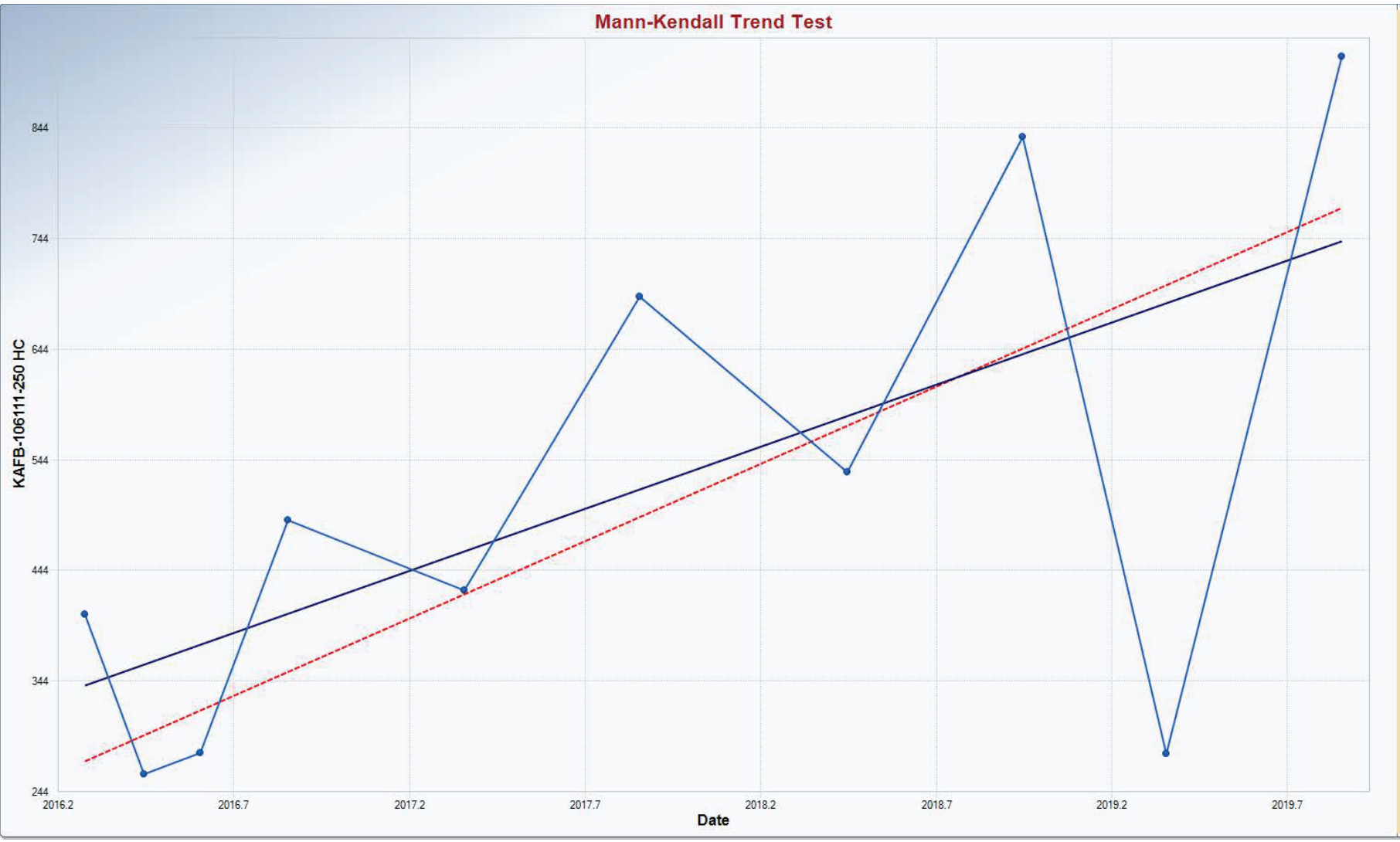
2016.2
2016.7
2017.2
2017.7
2018.2
2018.7
2019.2
2019.7
Date
Mann-Kendall Trend Analysis
n 10
Confidence Coefficient 0.9500
Level of Significance 0.0500
Standard Deviation of S 11.1803
Standardized Value of S 2.5044
M-K Test Value (S) 29
Tabulated p-value 0.0050
Approximate p-value 0.0061
OLS Regression Line (Blue)
OLS Regression Slope 1,928.8176
OLS Regression Intercept -3,888,934.2902
Theil-Sen Trend Line (Red)
Theil-Sen Slope 1,427.4116
Theil-Sen Intercept -2,877,289.1519
Statistically significant evidence of an increasing trend at the specified level of significance.



Mann-Kendall Trend Analysis

n	10
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	11.1803
Standardized Value of S	1.9677
M-K Test Value (S)	23
Tabulated p-value	0.0230
Approximate p-value	0.0245

OLS Regression Line (Blue)

OLS Regression Slope	112.2032
OLS Regression Intercept	-225,890.2172

Theil-Sen Trend Line (Red)

Theil-Sen Slope	139.6667
Theil-Sen Intercept	-281,331.1733

Statistically significant evidence of an increasing trend at the specified level of significance.

Mann-Kendall Trend Analysis

n	10
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	11.1803
Standardized Value of S	-0.3578
M-K Test Value (S)	-5
Tabulated p-value	0.3640
Approximate p-value	0.3603

OLS Regression Line (Blue)

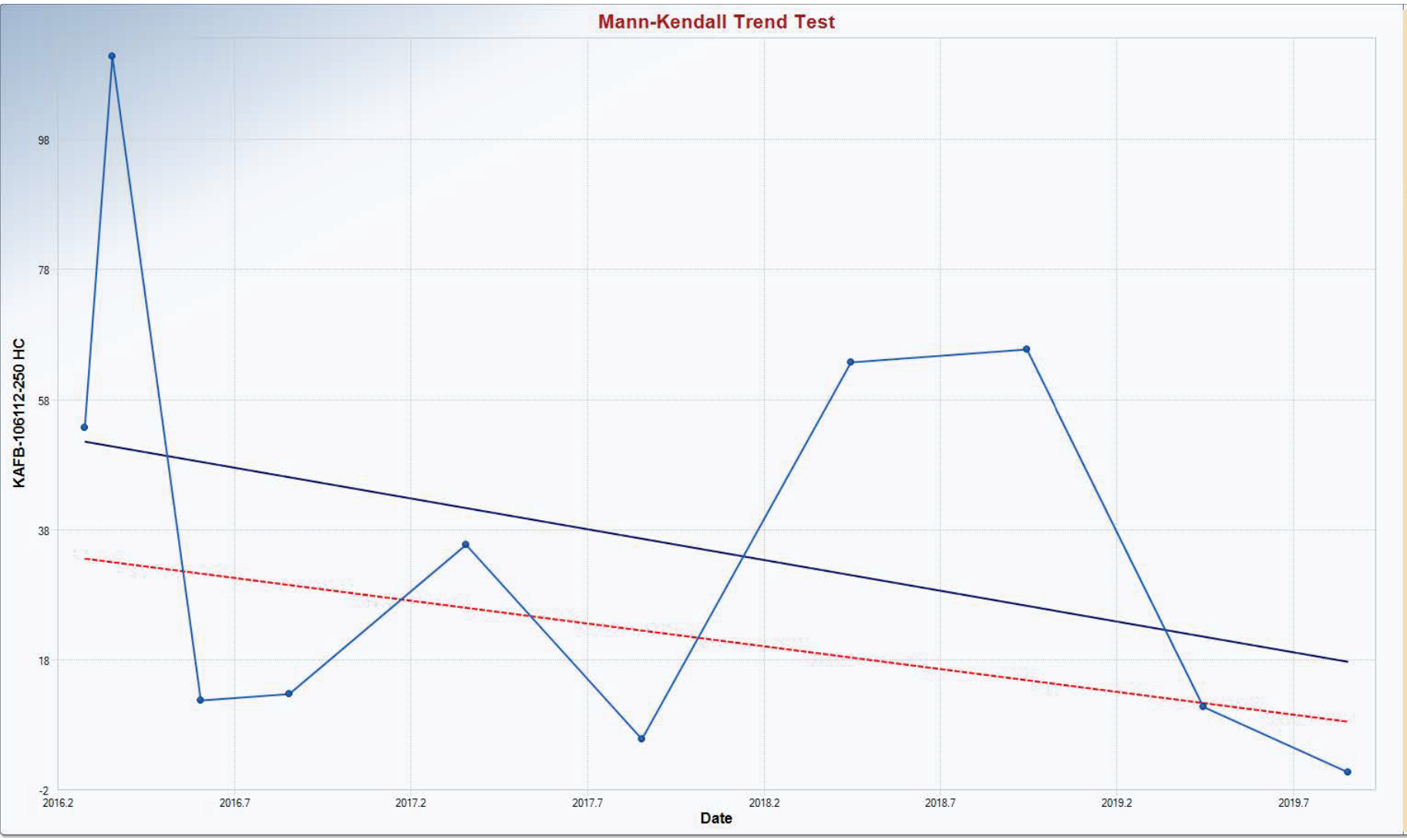
OLS Regression Slope	-3,220.4345
OLS Regression Intercept	6,526,334.9040

Theil-Sen Trend Line (Red)

Theil-Sen Slope	-1,577.8290
Theil-Sen Intercept	3,203,577.5353

Insufficient statistical evidence of a significant trend at the specified level of significance.

Mann-Kendall Trend Test
KAFB-106112-250 EDB
98
78
58
38
18
-2
2016.2
2016.7
2017.2
2017.7
2018.2
2018.7
2019.2
2019.7
Date
Mann-Kendall Trend Analysis
n 9
Confidence Coefficient 0.9500
Level of Significance 0.0500
Standard Deviation of S 9.5917
Standardized Value of S -0.5213
M-K Test Value (S) -6
Tabulated p-value 0.3060
Approximate p-value 0.3011
OLS Regression Line (Blue)
OLS Regression Slope -0.6339
OLS Regression Intercept 1,315.4144
Theil-Sen Trend Line (Red)
Theil-Sen Slope -6.0681
Theil-Sen Intercept 12,265.1056
Insufficient statistical evidence
of a significant trend at the
specified level of significance.



Mann-Kendall Trend Analysis

n	10
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	11.1803
Standardized Value of S	-1.0733
M-K Test Value (S)	-13
Tabulated p-value	0.1460
Approximate p-value	0.1416

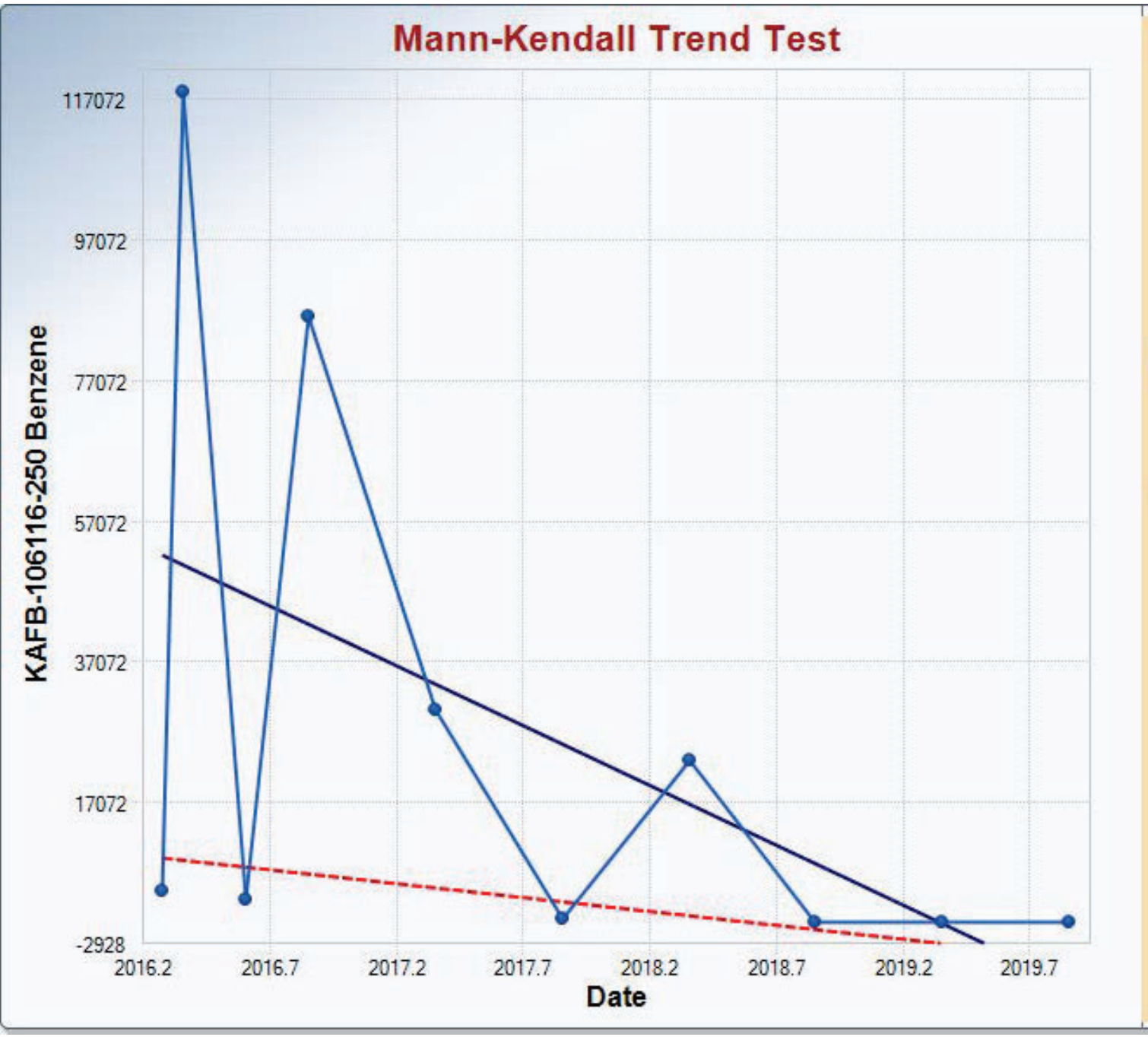
OLS Regression Line (Blue)

OLS Regression Slope	-9.4720
OLS Regression Intercept	19,149.7672

Theil-Sen Trend Line (Red)

Theil-Sen Slope	-7.0000
Theil-Sen Intercept	14,147.5600

Insufficient statistical evidence of a significant trend at the specified level of significance.



Mann-Kendall Trend Analysis

n	10
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	11.1803
Standardized Value of S	-2.1466
M-K Test Value (S)	-25
Tabulated p-value	0.0140
Approximate p-value	0.0159

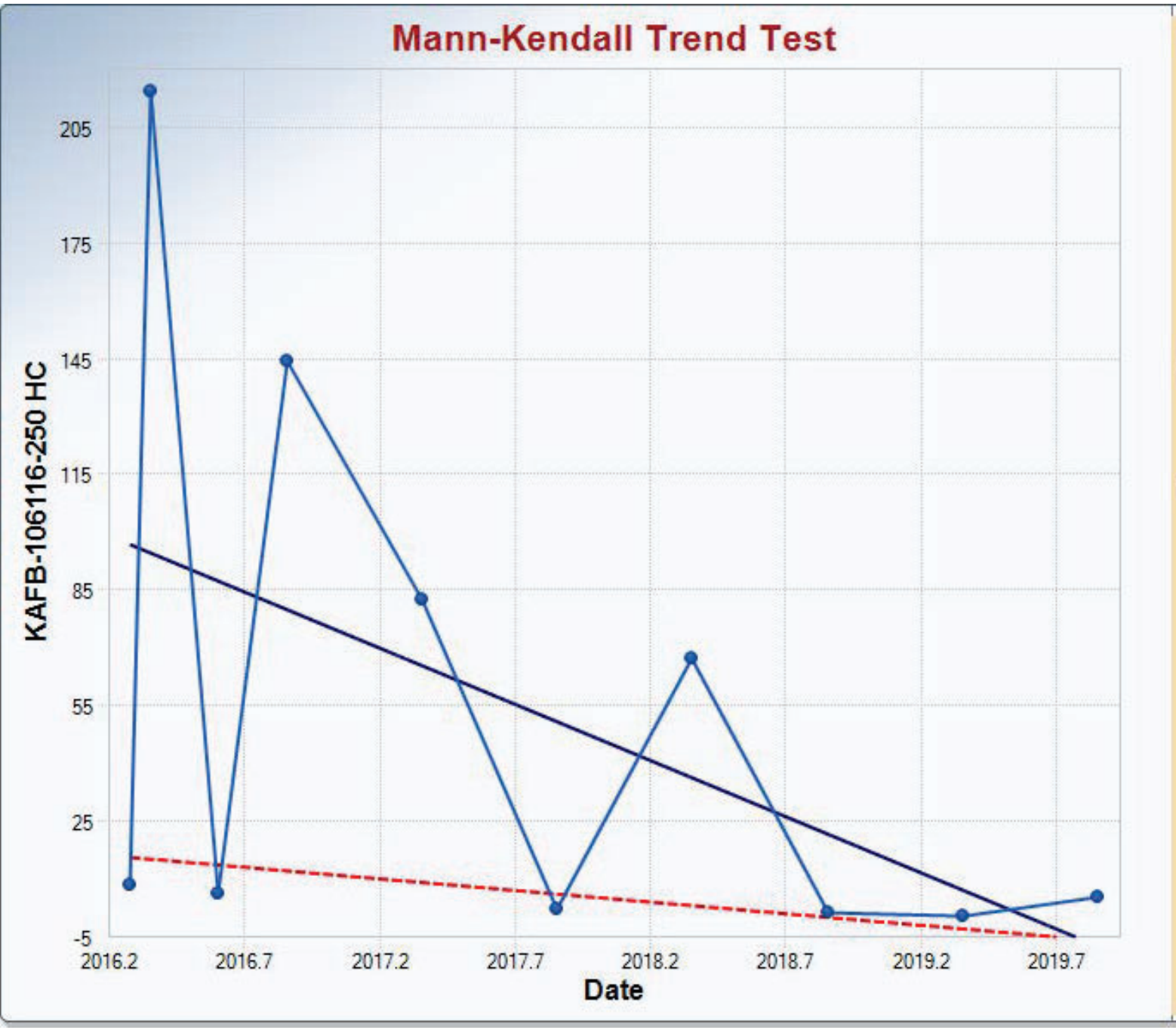
OLS Regression Line (Blue)

OLS Regression Slope	-17,077.5747
OLS Regression Intercept	34,484,844.5566

Theil-Sen Trend Line (Red)

Theil-Sen Slope	-3,969.1516
Theil-Sen Intercept	8,011,898.6108

Statistically significant evidence of a decreasing trend at the specified level of significance.



Mann-Kendall Trend Analysis

n	10
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	11.1803
Standardized Value of S	-1.9677
M-K Test Value (S)	-23
Tabulated p-value	0.0230
Approximate p-value	0.0245

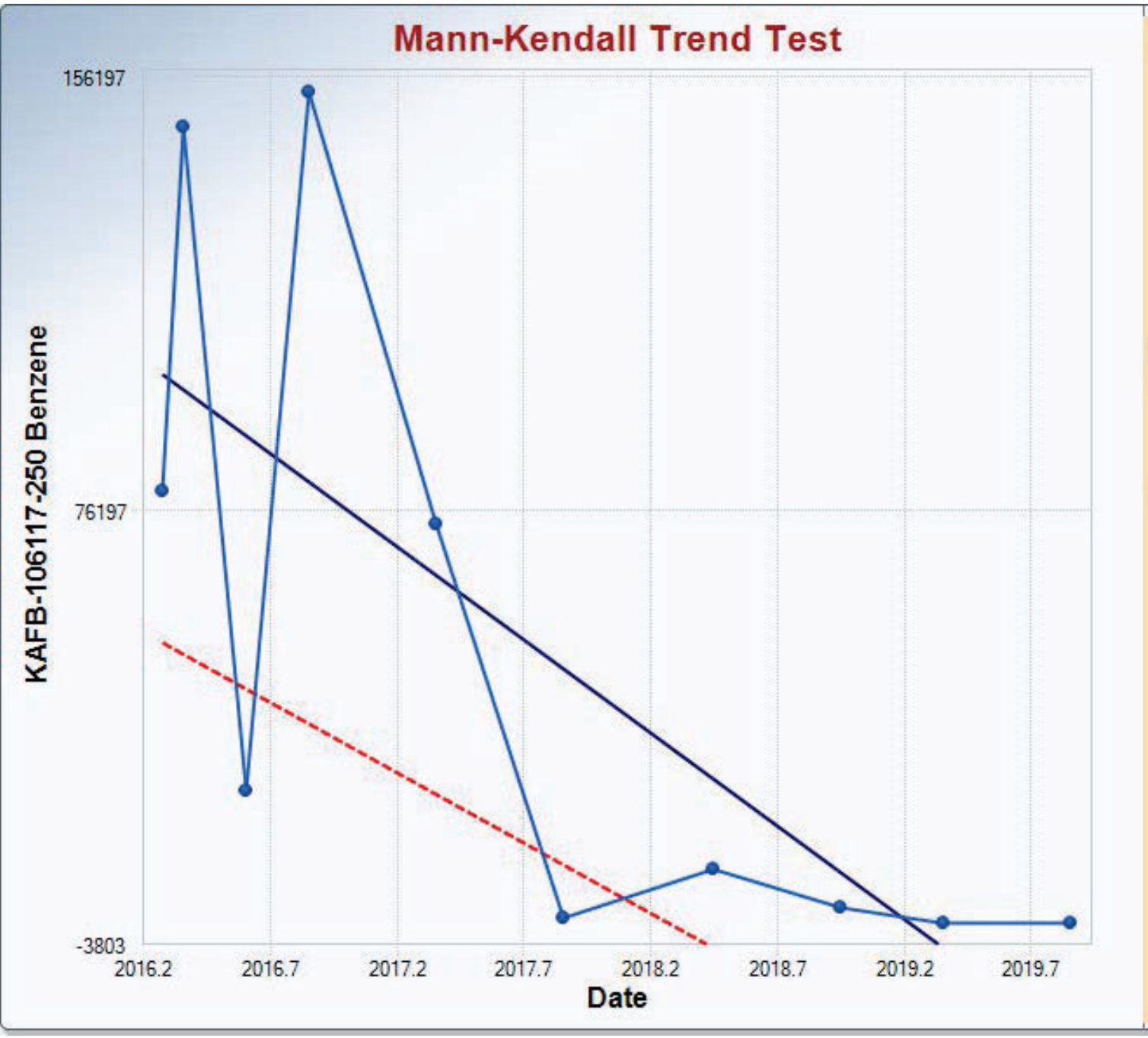
OLS Regression Line (Blue)

OLS Regression Slope	-29.2016
OLS Regression Intercept	58,974.4383

Theil-Sen Trend Line (Red)

Theil-Sen Slope	-6.0606
Theil-Sen Intercept	12,234.7576

Statistically significant evidence of a decreasing trend at the specified level of significance.



Mann-Kendall Trend Analysis

n	10
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	11.1803
Standardized Value of S	-2.5044
M-K Test Value (S)	-29
Tabulated p-value	0.0050
Approximate p-value	0.0061

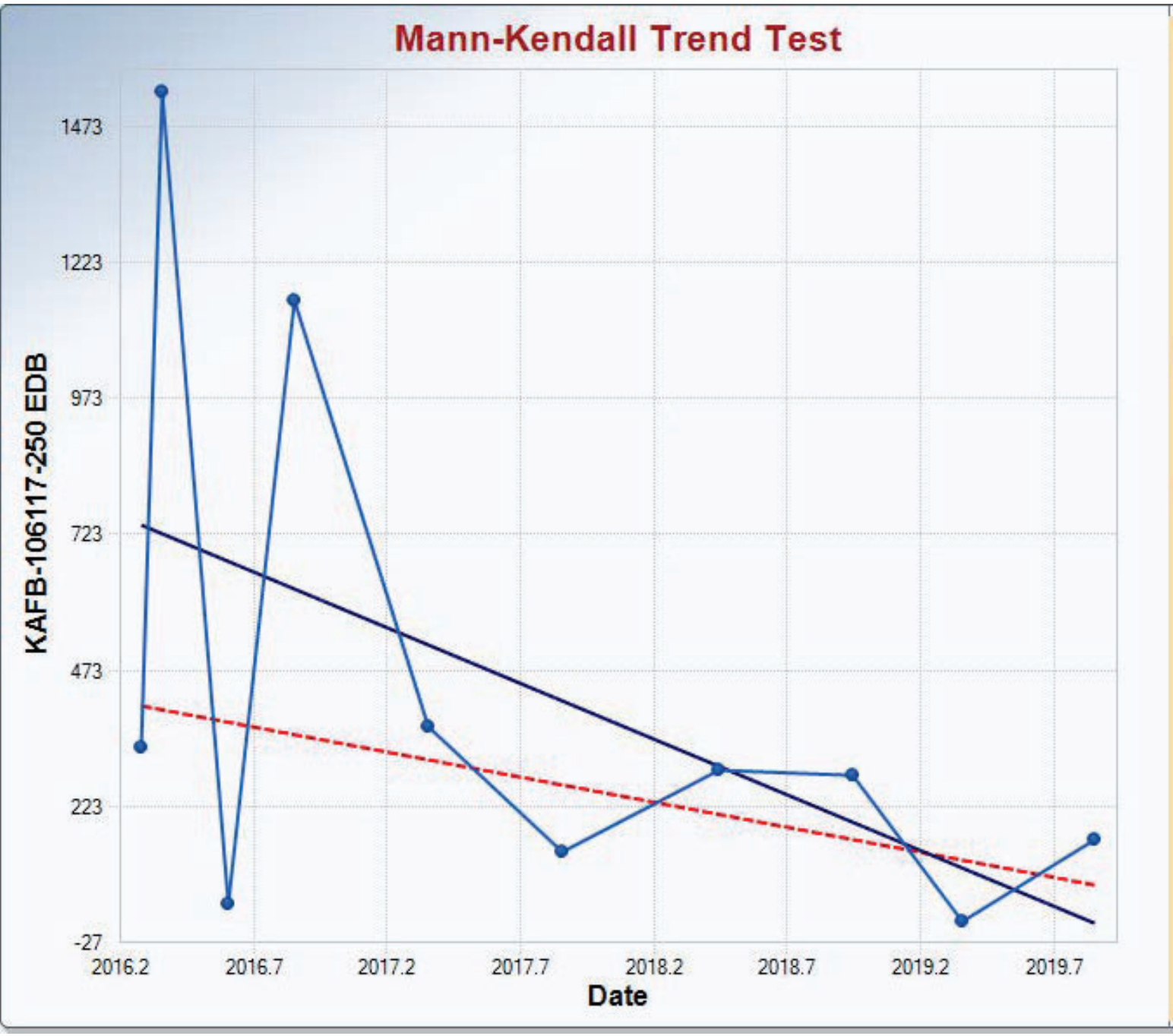
OLS Regression Line (Blue)

OLS Regression Slope	-34,378.0431
OLS Regression Intercept	69,416,037.5631

Theil-Sen Trend Line (Red)

Theil-Sen Slope	-25,921.1285
Theil-Sen Intercept	52,315,249.8901

Statistically significant evidence of a decreasing trend at the specified level of significance.



Mann-Kendall Trend Analysis

n	10
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	11.1803
Standardized Value of S	-1.6100
M-K Test Value (S)	-19
Tabulated p-value	0.0540
Approximate p-value	0.0537

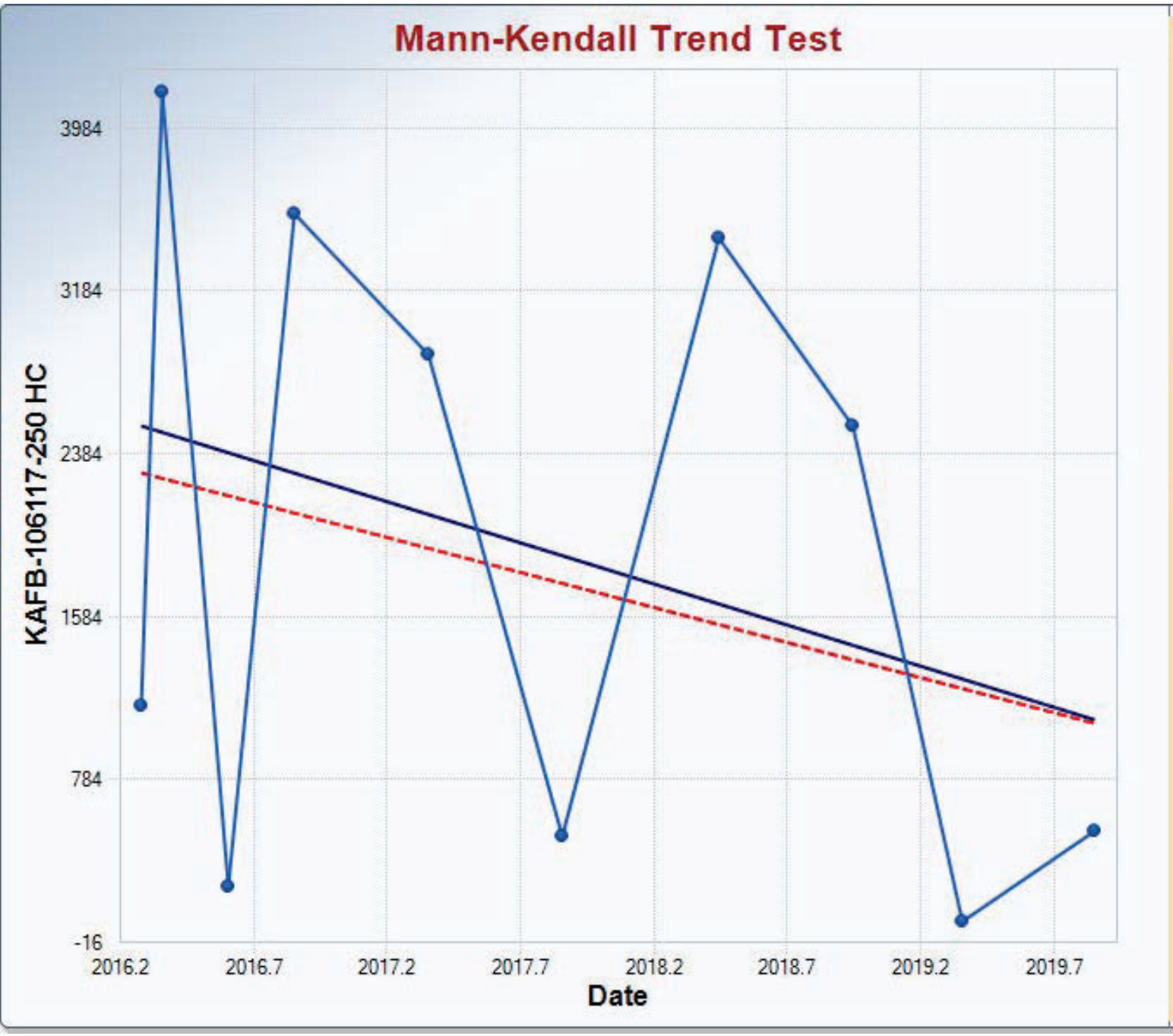
OLS Regression Line (Blue)

OLS Regression Slope	-204.3406
OLS Regression Intercept	412,742.5755

Theil-Sen Trend Line (Red)

Theil-Sen Slope	-92.1986
Theil-Sen Intercept	186,303.0142

Insufficient statistical evidence of a significant trend at the specified level of significance.



Mann-Kendall Trend Analysis

n	10
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	11.1803
Standardized Value of S	-1.0733
M-K Test Value (S)	-13
Tabulated p-value	0.1460
Approximate p-value	0.1416

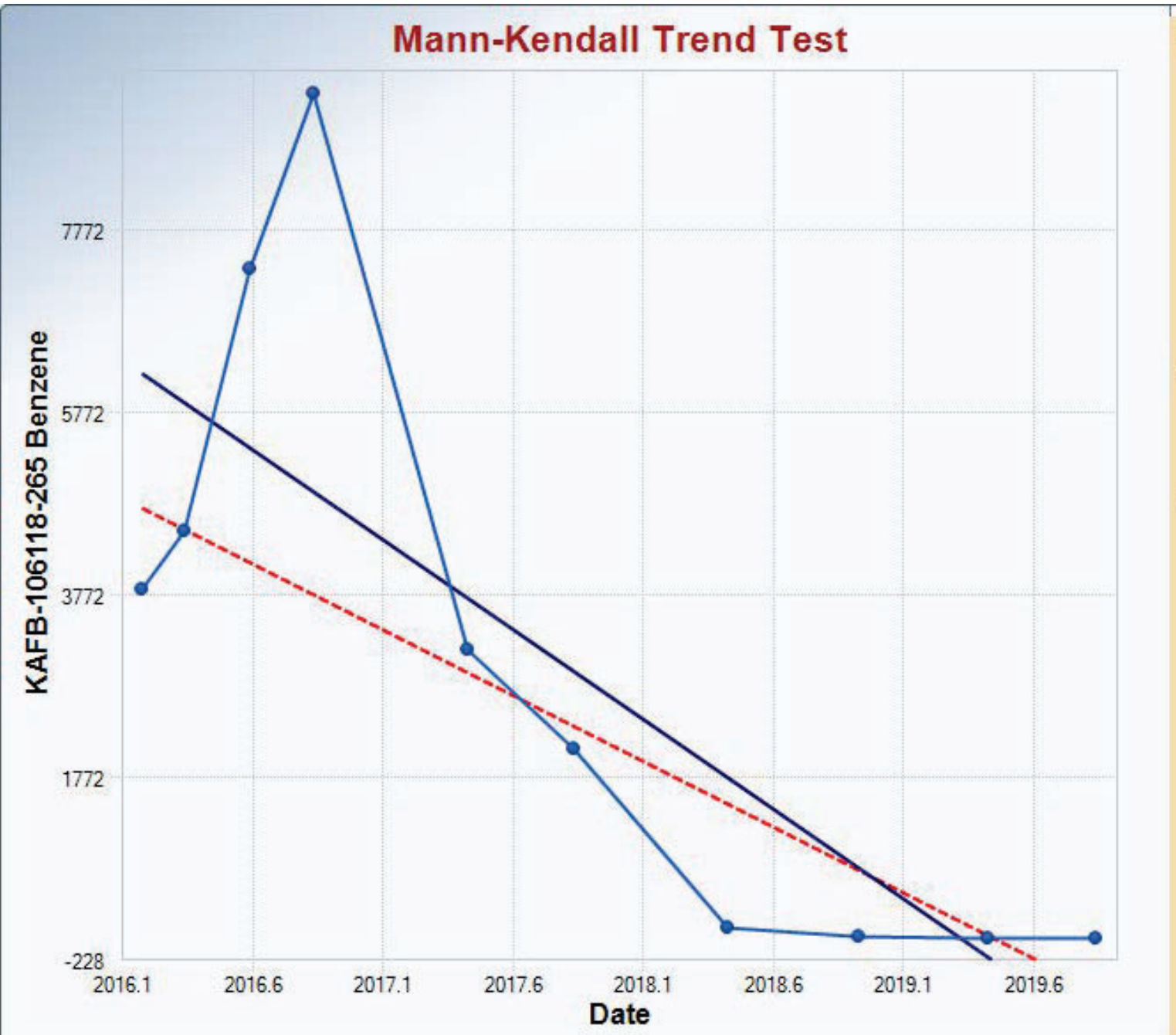
OLS Regression Line (Blue)

OLS Regression Slope	-402.3205
OLS Regression Intercept	813,695.1893

Theil-Sen Trend Line (Red)

Theil-Sen Slope	-344.4976
Theil-Sen Intercept	696,883.9833

Insufficient statistical evidence of a significant trend at the specified level of significance.



Mann-Kendall Trend Analysis

n	10
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	11.1803
Standardized Value of S	-2.6833
M-K Test Value (S)	-31
Tabulated p-value	0.0020
Approximate p-value	0.0036

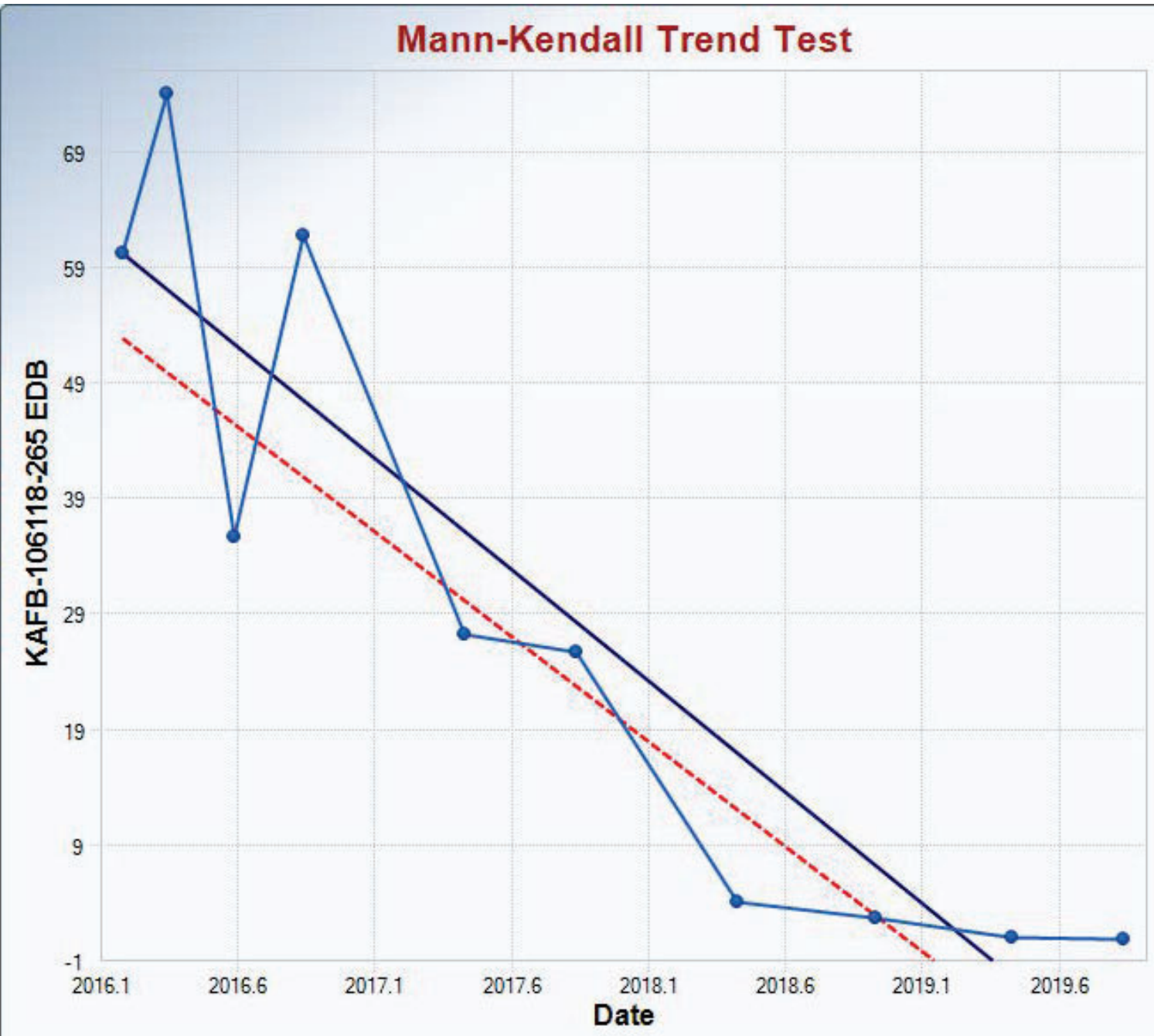
OLS Regression Line (Blue)

OLS Regression Slope	-1,968.6310
OLS Regression Intercept	3,975,284.7322

Theil-Sen Trend Line (Red)

Theil-Sen Slope	-1,446.4260
Theil-Sen Intercept	2,920,964.8311

Statistically significant evidence of a decreasing trend at the specified level of significance.



Mann-Kendall Trend Analysis

n	10
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	11.1803
Standardized Value of S	-3.3988
M-K Test Value (S)	-39
Tabulated p-value	0.0000
Approximate p-value	0.0003

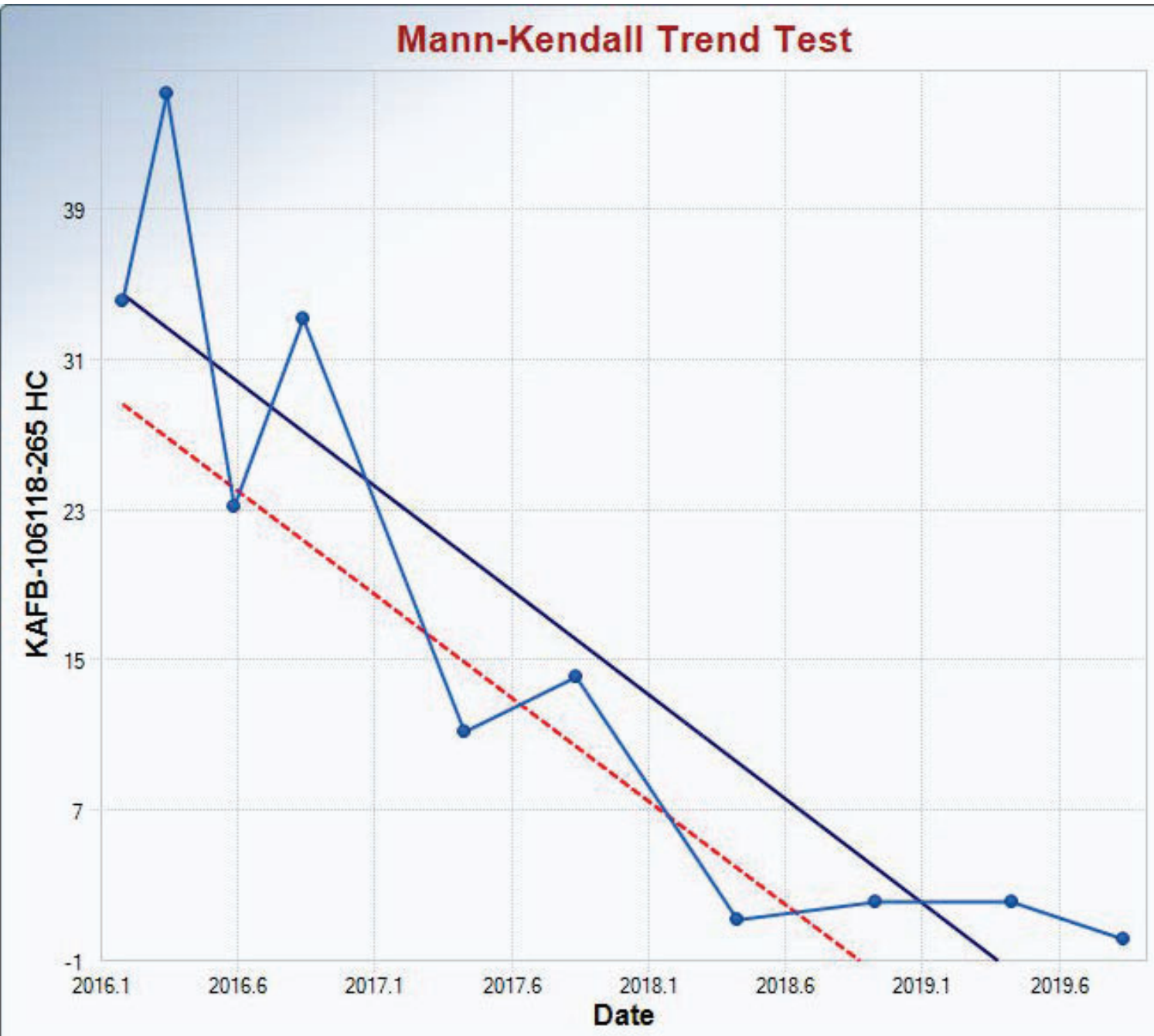
OLS Regression Line (Blue)

OLS Regression Slope	-19.2605
OLS Regression Intercept	38,892.4106

Theil-Sen Trend Line (Red)

Theil-Sen Slope	-18.2237
Theil-Sen Intercept	36,794.8141

Statistically significant evidence of a decreasing trend at the specified level of significance.



Mann-Kendall Trend Analysis

n	10
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	11.1355
Standardized Value of S	-2.9635
M-K Test Value (S)	-34
Tabulated p-value	0.0000
Approximate p-value	0.0015

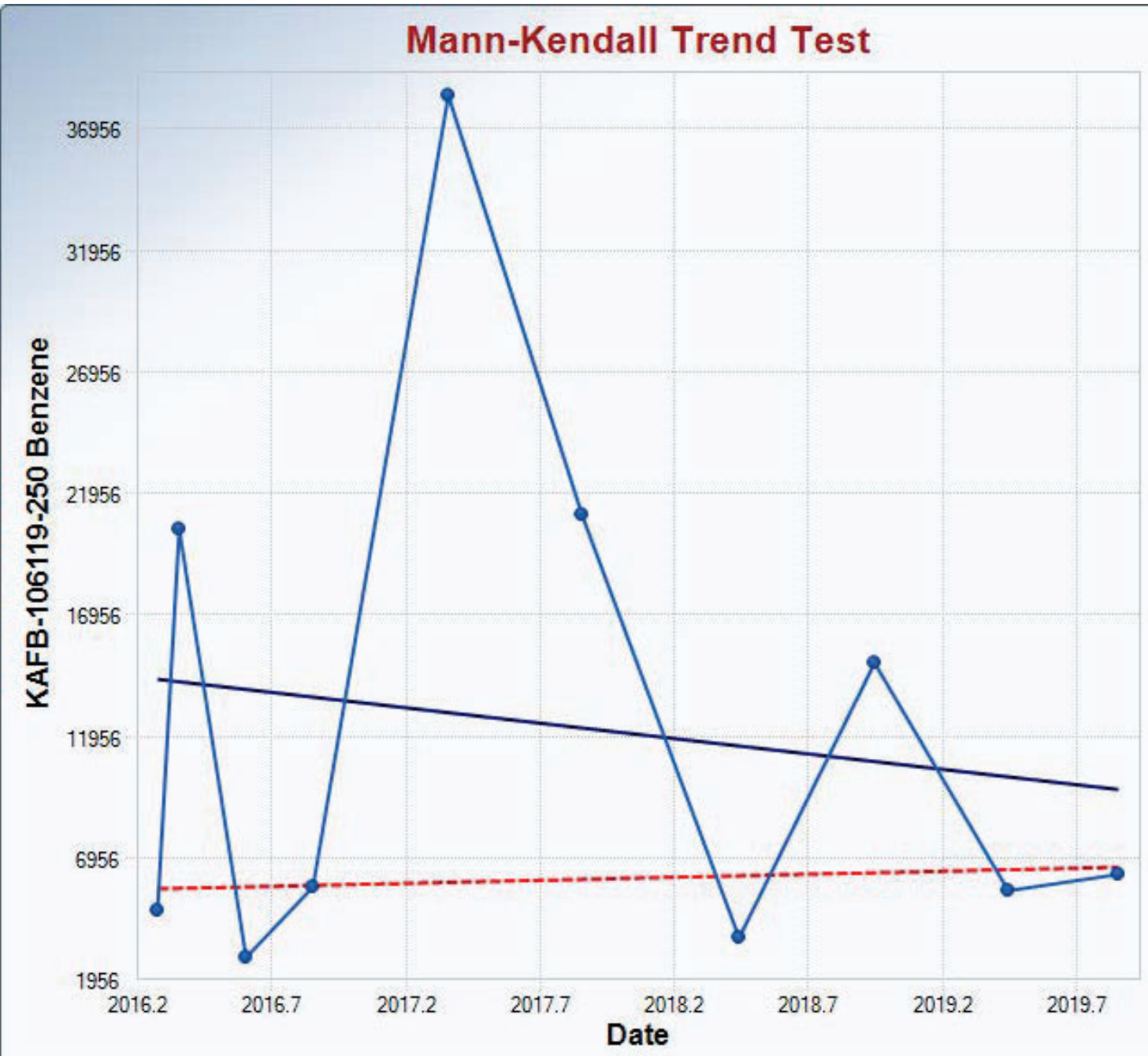
OLS Regression Line (Blue)

OLS Regression Slope	-11.1079
OLS Regression Intercept	22,429.8248

Theil-Sen Trend Line (Red)

Theil-Sen Slope	-11.0000
Theil-Sen Intercept	22,206.3750

Statistically significant evidence of a decreasing trend at the specified level of significance.



Mann-Kendall Trend Analysis

n	10
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	11.1803
Standardized Value of S	0.1789
M-K Test Value (S)	3
Tabulated p-value	0.4310
Approximate p-value	0.4290

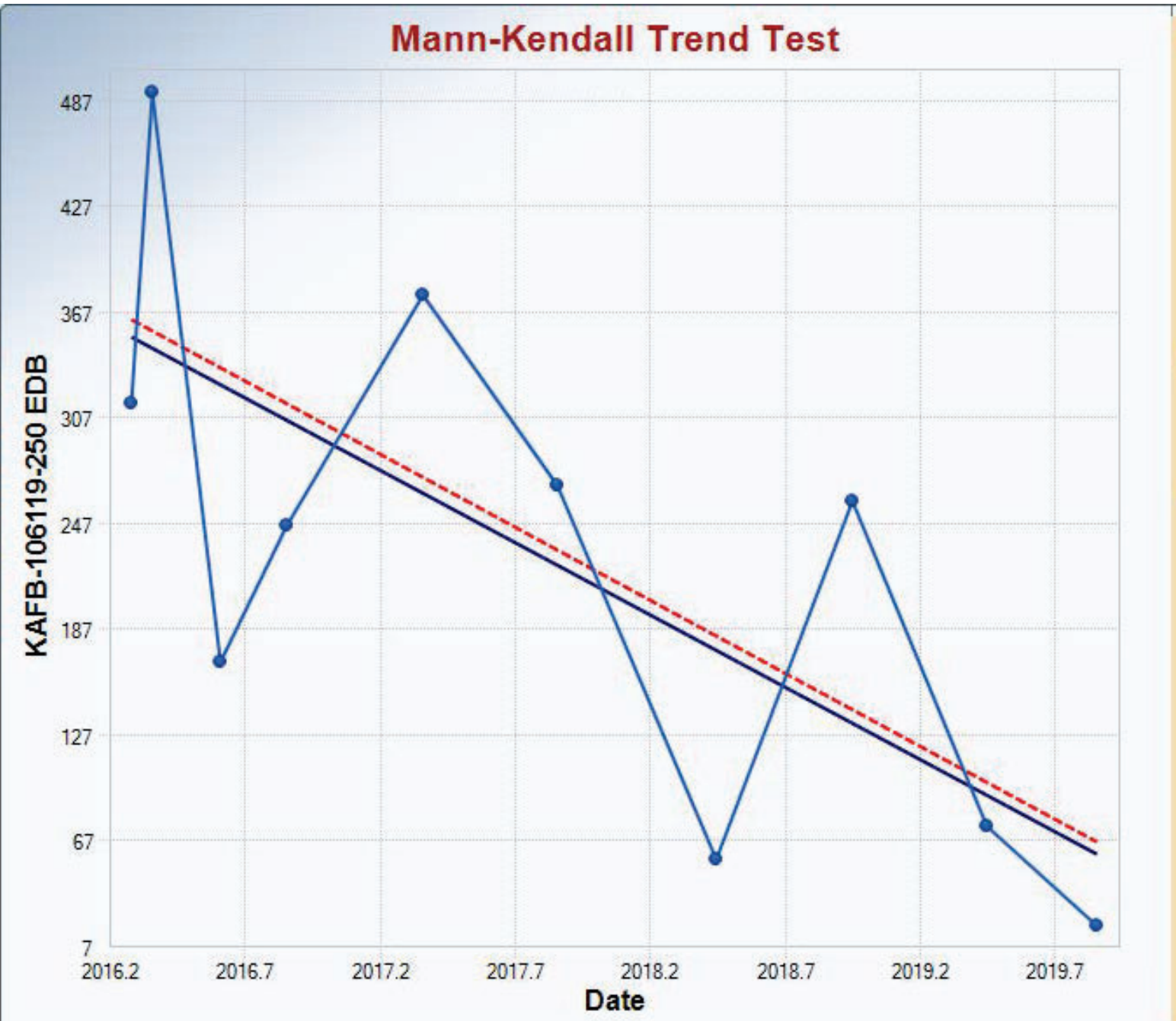
OLS Regression Line (Blue)

OLS Regression Slope	-1,266.0604
OLS Regression Intercept	2,567,009.0937

Theil-Sen Trend Line (Red)

Theil-Sen Slope	254.8818
Theil-Sen Intercept	-508,219.3053

Insufficient statistical evidence of a significant trend at the specified level of significance.



Mann-Kendall Trend Analysis

n	10
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	11.1803
Standardized Value of S	-1.9677
M-K Test Value (S)	-23
Tabulated p-value	0.0230
Approximate p-value	0.0245

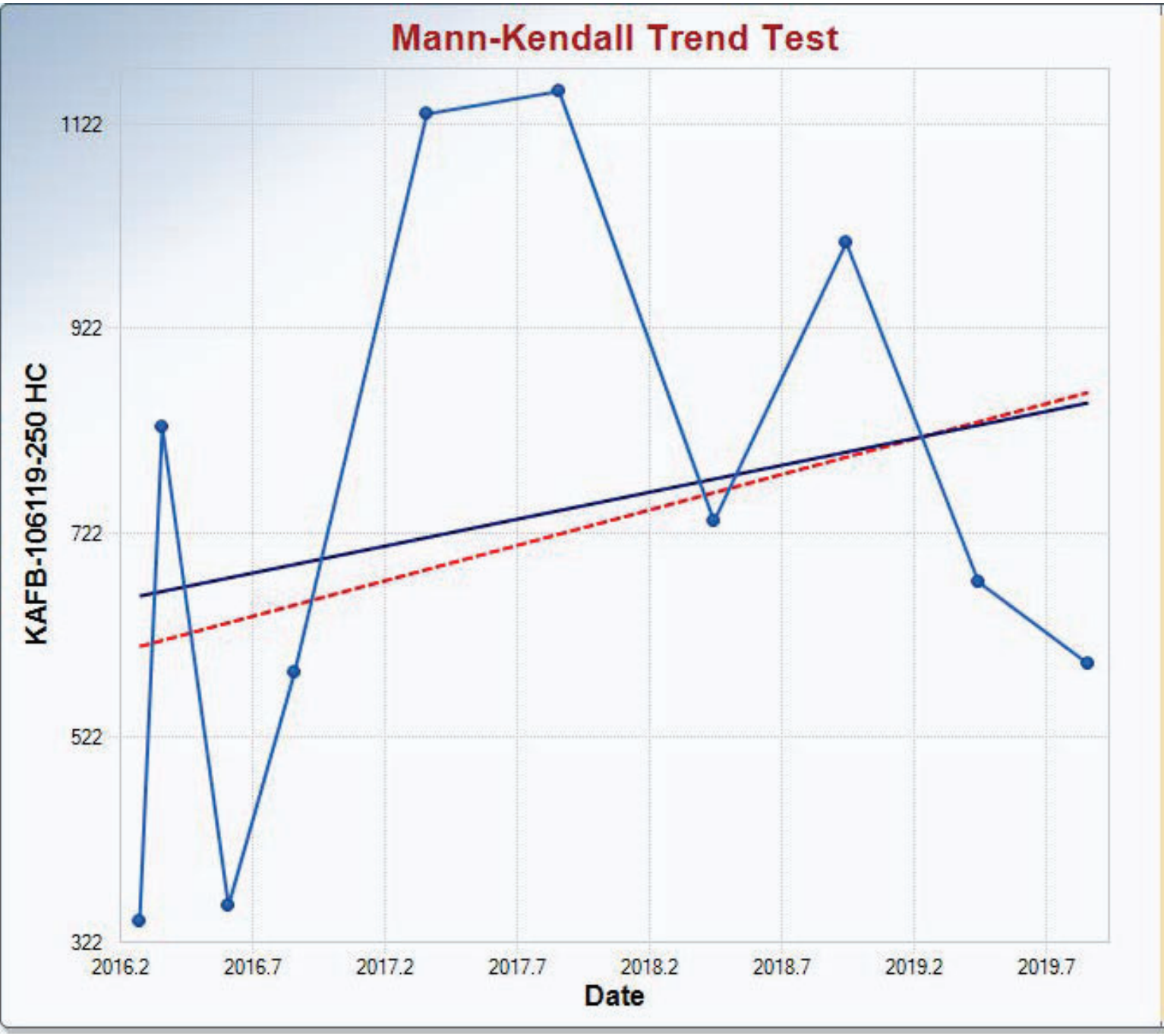
OLS Regression Line (Blue)

OLS Regression Slope	-81.9302
OLS Regression Intercept	165,544.5156

Theil-Sen Trend Line (Red)

Theil-Sen Slope	-82.6968
Theil-Sen Intercept	167,100.2748

Statistically significant evidence of a decreasing trend at the specified level of significance.



Mann-Kendall Trend Analysis

n	10
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	11.1803
Standardized Value of S	0.7155
M-K Test Value (S)	9
Tabulated p-value	0.2420
Approximate p-value	0.2371

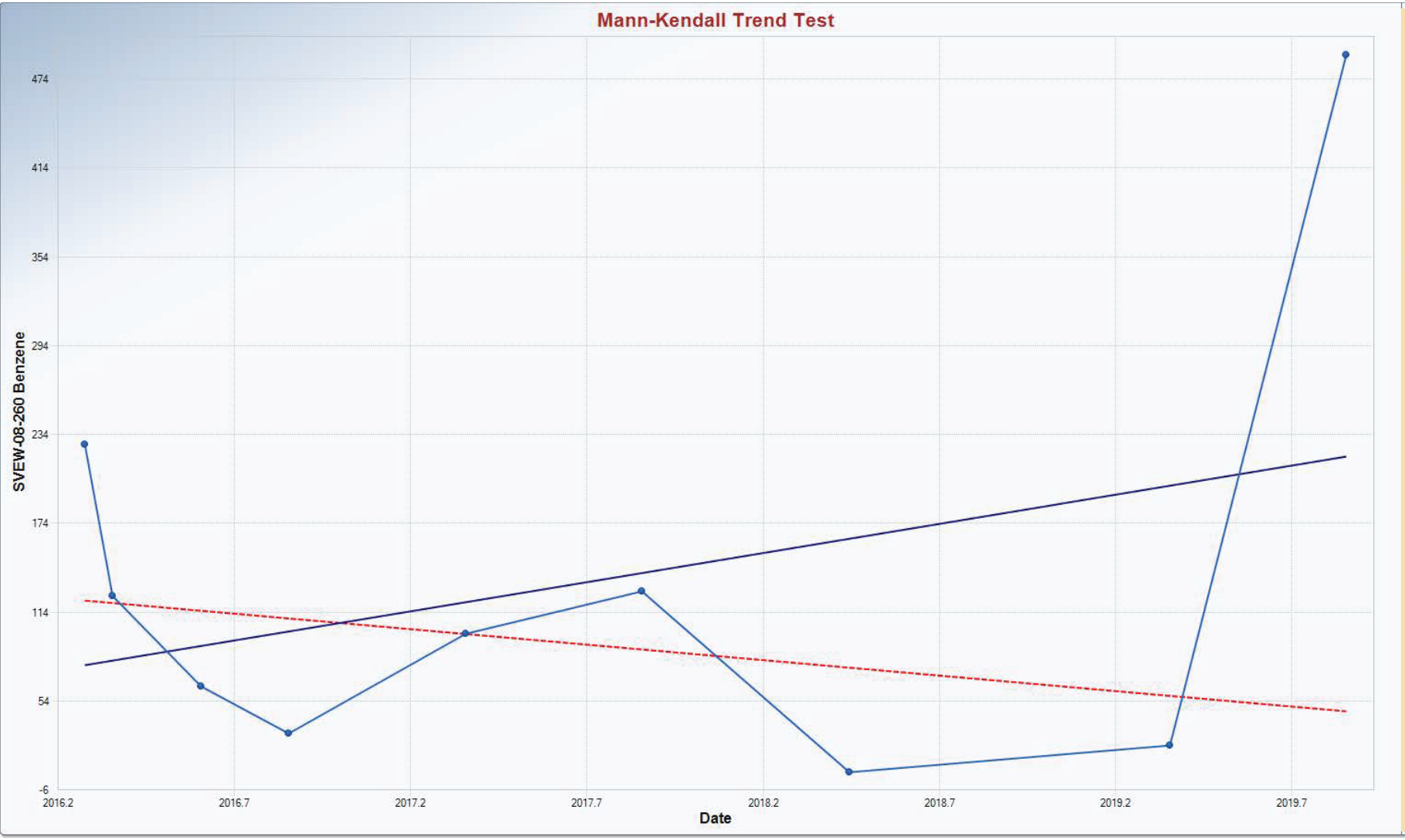
OLS Regression Line (Blue)

OLS Regression Slope	52.9111
OLS Regression Intercept	-106,022.5187

Theil-Sen Trend Line (Red)

Theil-Sen Slope	69.1120
Theil-Sen Intercept	-138,735.4266

Insufficient statistical evidence of a significant trend at the specified level of significance.



Mann-Kendall Trend Analysis

n	9
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	9.5917
Standardized Value of S	-0.5213
M-K Test Value (S)	-6
Tabulated p-value	0.3060
Approximate p-value	0.3011

OLS Regression Line (Blue)

OLS Regression Slope	39.3467
OLS Regression Intercept	-79,254.6852

Theil-Sen Trend Line (Red)

Theil-Sen Slope	-20.9381
Theil-Sen Intercept	42,338.1180

Insufficient statistical evidence of a significant trend at the specified level of significance.

Mann-Kendall Trend Analysis

n	9
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	9.5394
Standardized Value of S	1.0483
M-K Test Value (S)	11
Tabulated p-value	0.1790
Approximate p-value	0.1473

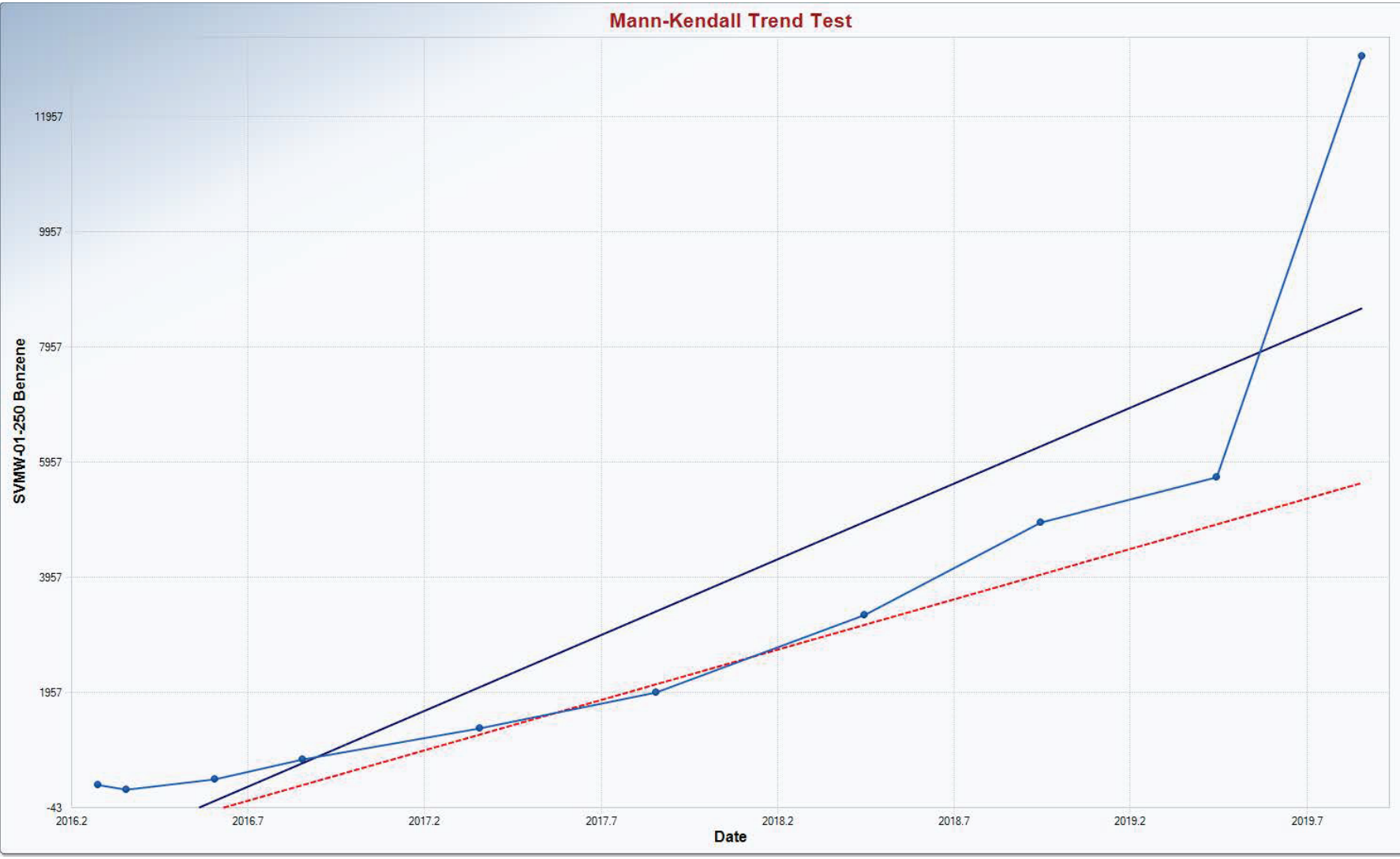
OLS Regression Line (Blue)

OLS Regression Slope	4.1443
OLS Regression Intercept	-8,342.4069

Theil-Sen Trend Line (Red)

Theil-Sen Slope	4.7436
Theil-Sen Intercept	-9,548.8404

Insufficient statistical evidence of a significant trend at the specified level of significance.



Mann-Kendall Trend Analysis

n	10
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	11.1803
Standardized Value of S	3.7566
M-K Test Value (S)	43
Tabulated p-value	0.0000
Approximate p-value	0.0001

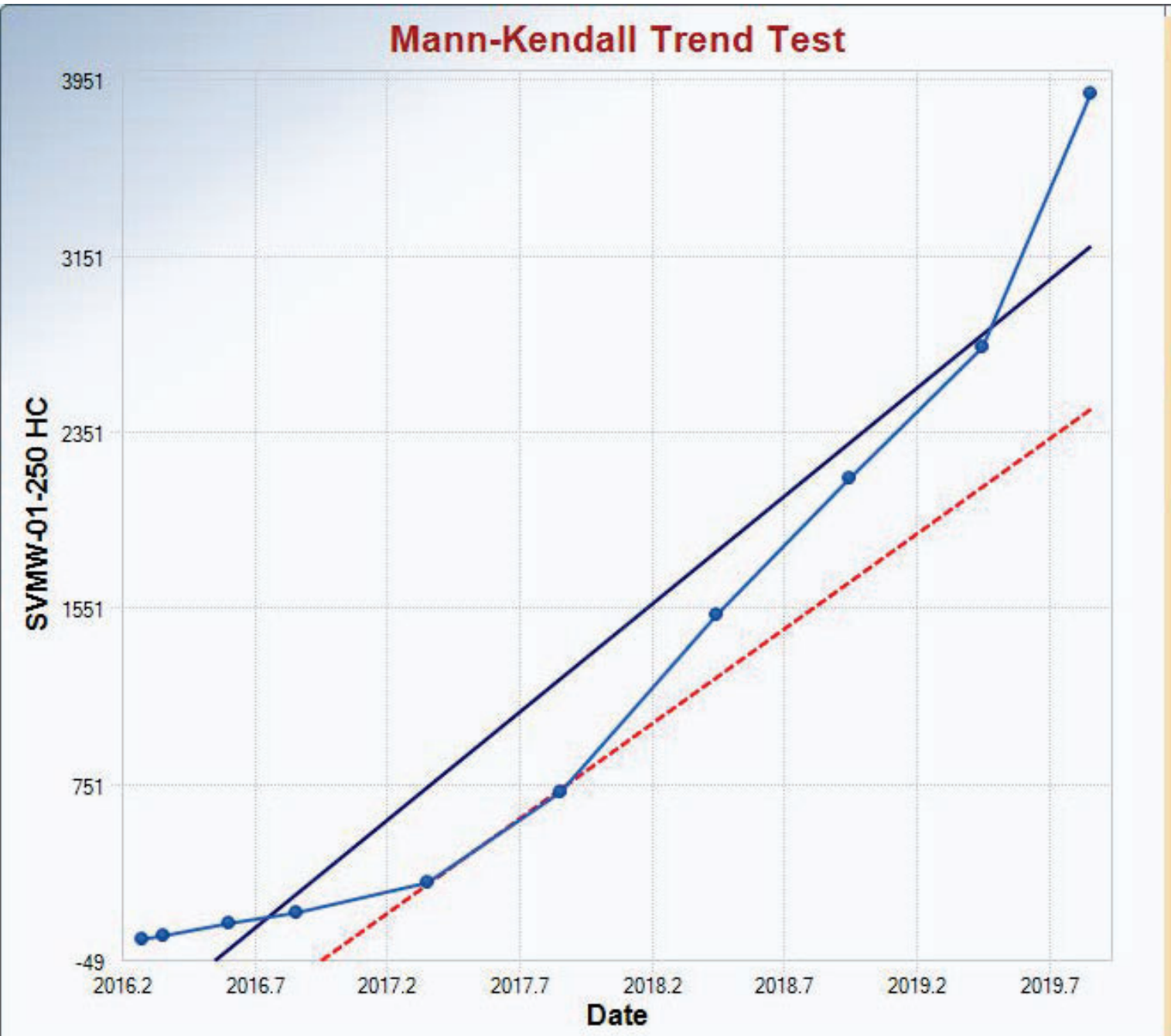
OLS Regression Line (Blue)

OLS Regression Slope	2,639.2352
OLS Regression Intercept	-5,322,173.8145

Theil-Sen Trend Line (Red)

Theil-Sen Slope	1,755.7467
Theil-Sen Intercept	-3,540,714.1370

Statistically significant evidence of an increasing trend at the specified level of significance.



Mann-Kendall Trend Analysis

n	10
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	11.1803
Standardized Value of S	3.9355
M-K Test Value (S)	45
Tabulated p-value	0.0000
Approximate p-value	0.0000

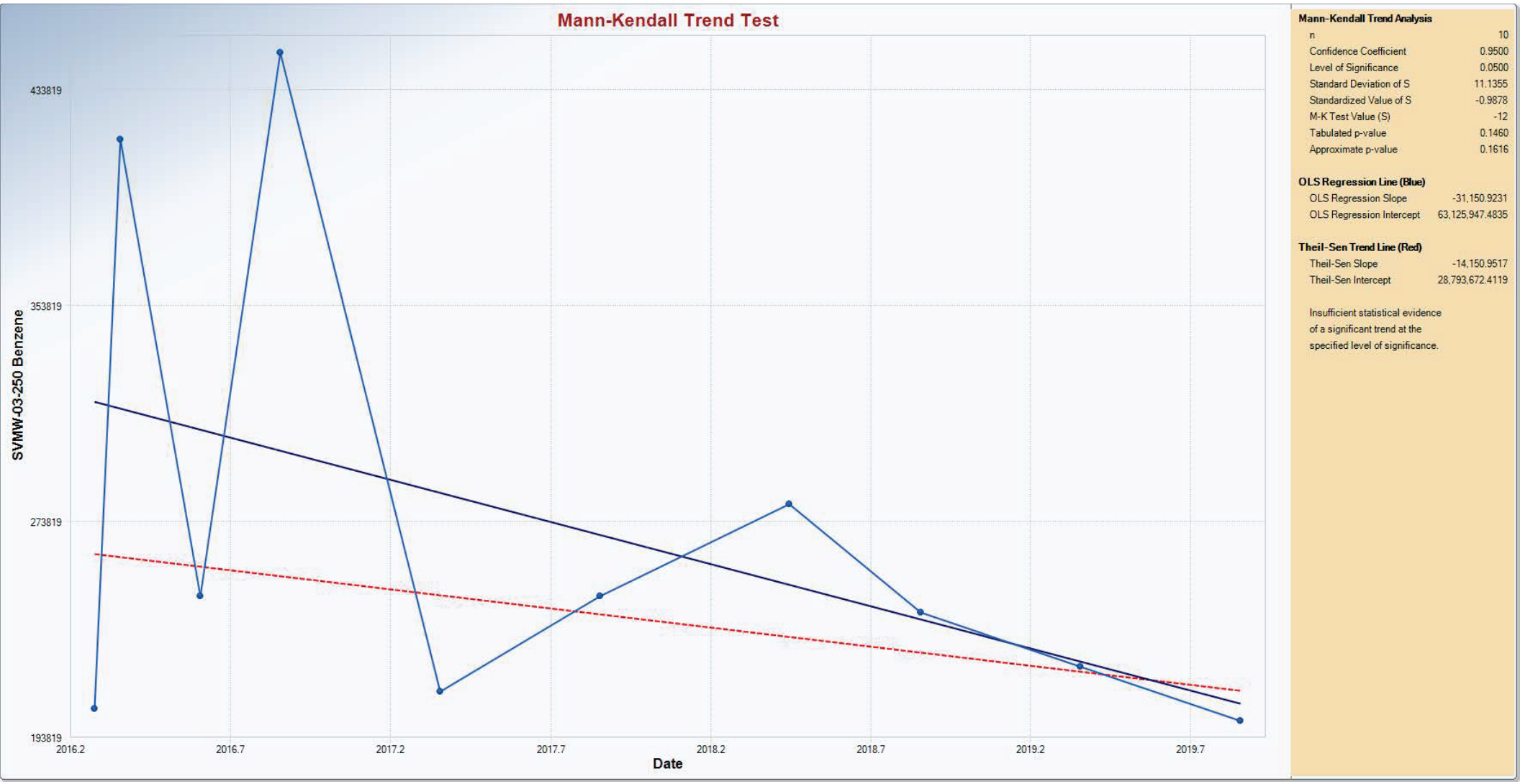
OLS Regression Line (Blue)

OLS Regression Slope	986.8781
OLS Regression Intercept	-1,990,126.9427

Theil-Sen Trend Line (Red)

Theil-Sen Slope	864.5299
Theil-Sen Intercept	-1,743,750.2650

Statistically significant evidence of an increasing trend at the specified level of significance.



Mann-Kendall Trend Analysis

n	10
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	11.1355
Standardized Value of S	-0.9878
M-K Test Value (S)	-12
Tabulated p-value	0.1460
Approximate p-value	0.1616

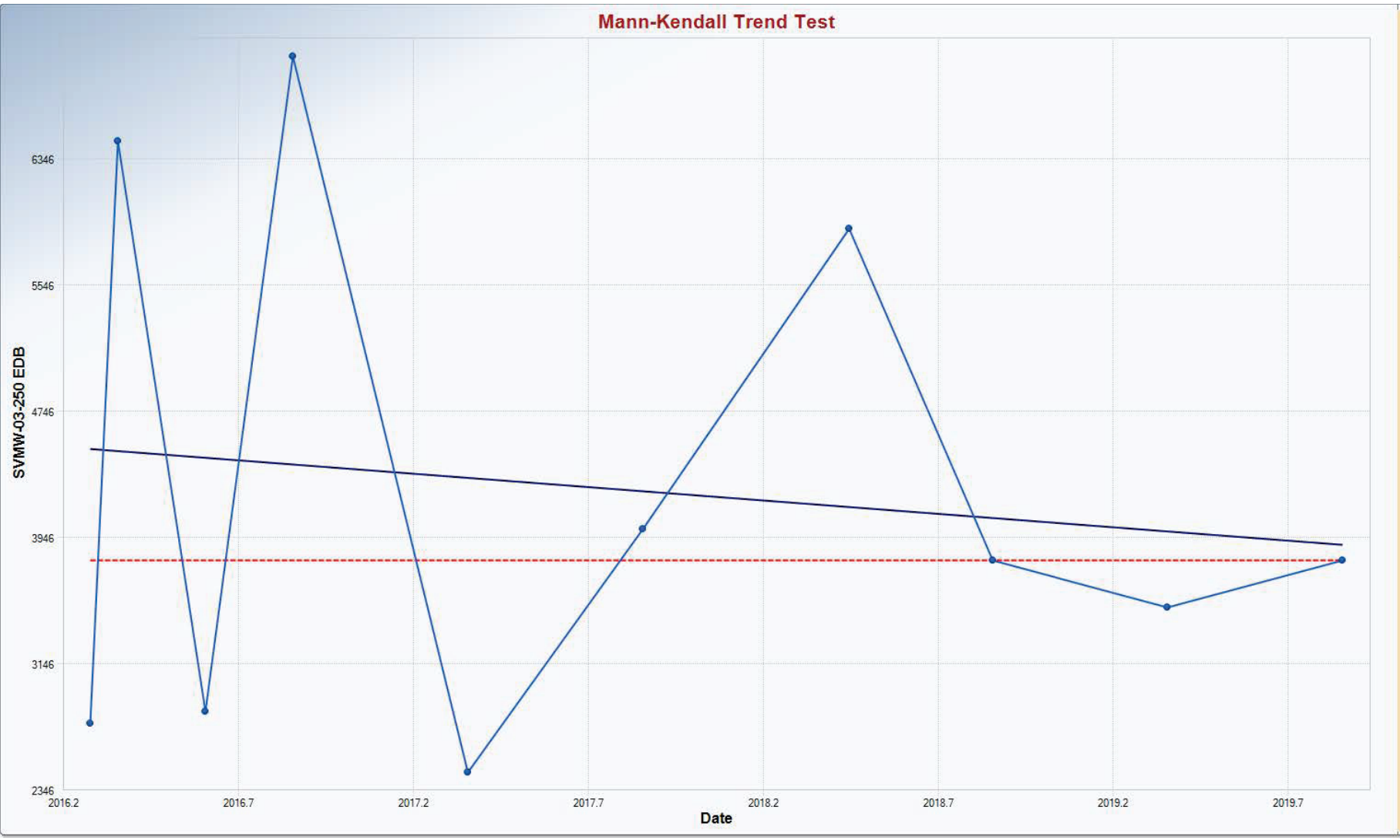
OLS Regression Line (Blue)

OLS Regression Slope	-31,150.9231
OLS Regression Intercept	63,125,947.4835

Theil-Sen Trend Line (Red)

Theil-Sen Slope	-14,150.9517
Theil-Sen Intercept	28,793,672.4119

Insufficient statistical evidence of a significant trend at the specified level of significance.



Mann-Kendall Trend Analysis

n	10
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	11.1355
Standardized Value of S	
M-K Test Value (S)	0
Tabulated p-value	0.5000
Approximate p-value	

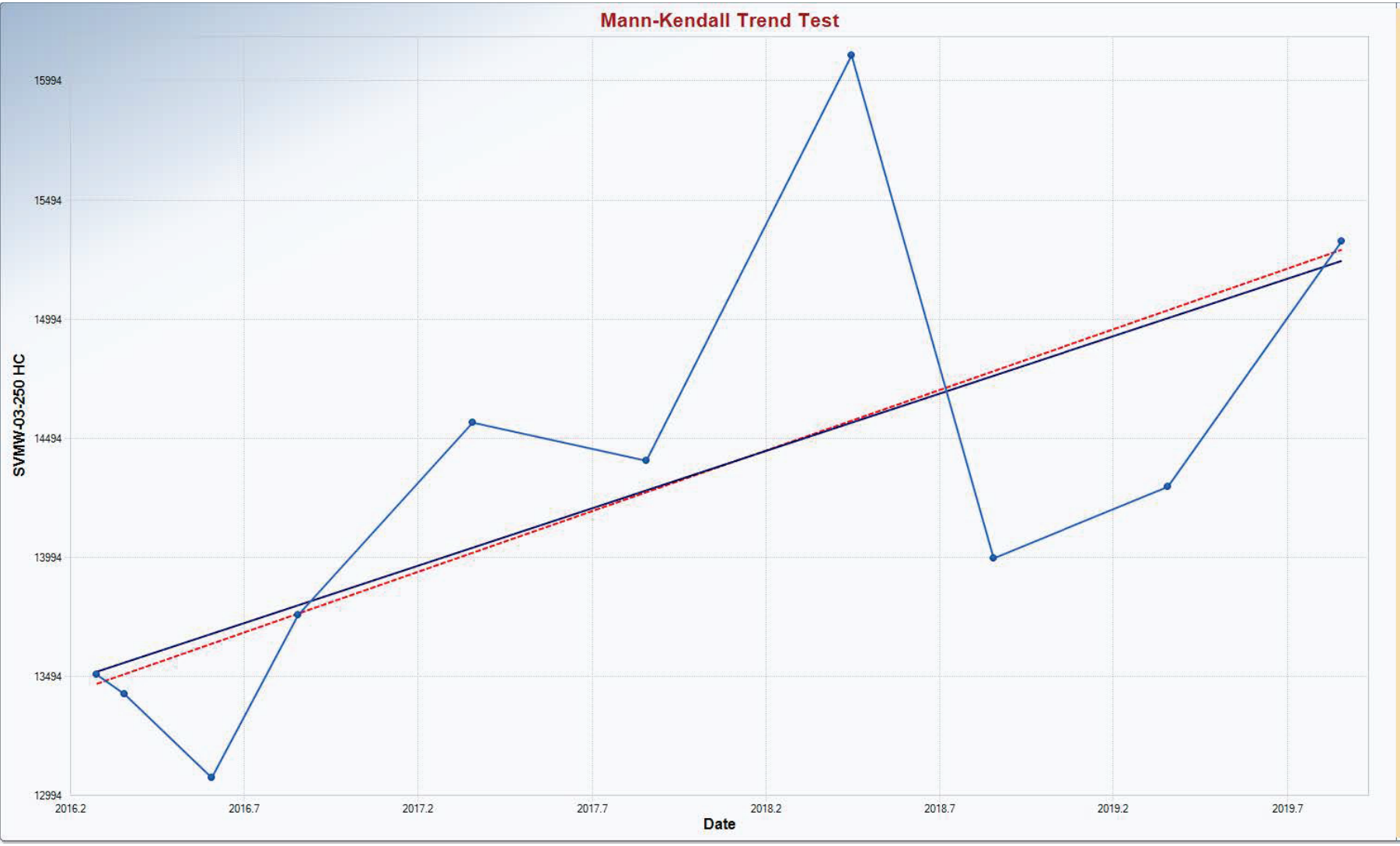
OLS Regression Line (Blue)

OLS Regression Slope	-168.9957
OLS Regression Intercept	345,243.3284

Theil-Sen Trend Line (Red)

Theil-Sen Slope	0.0000
Theil-Sen Intercept	3,800.0000

Insufficient statistical evidence of a significant trend at the specified level of significance.



Mann-Kendall Trend Analysis

n	10
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	11.1803
Standardized Value of S	1.9677
M-K Test Value (S)	23
Tabulated p-value	0.0230
Approximate p-value	0.0245

OLS Regression Line (Blue)

OLS Regression Slope	481.6570
OLS Regression Intercept	-957,626.3533

Theil-Sen Trend Line (Red)

Theil-Sen Slope	508.3799
Theil-Sen Intercept	-1,011,557.0950

Statistically significant evidence of an increasing trend at the specified level of significance.

Mann-Kendall Trend Analysis

n	10
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	11.1355
Standardized Value of S	
M-K Test Value (S)	0
Tabulated p-value	0.5000
Approximate p-value	

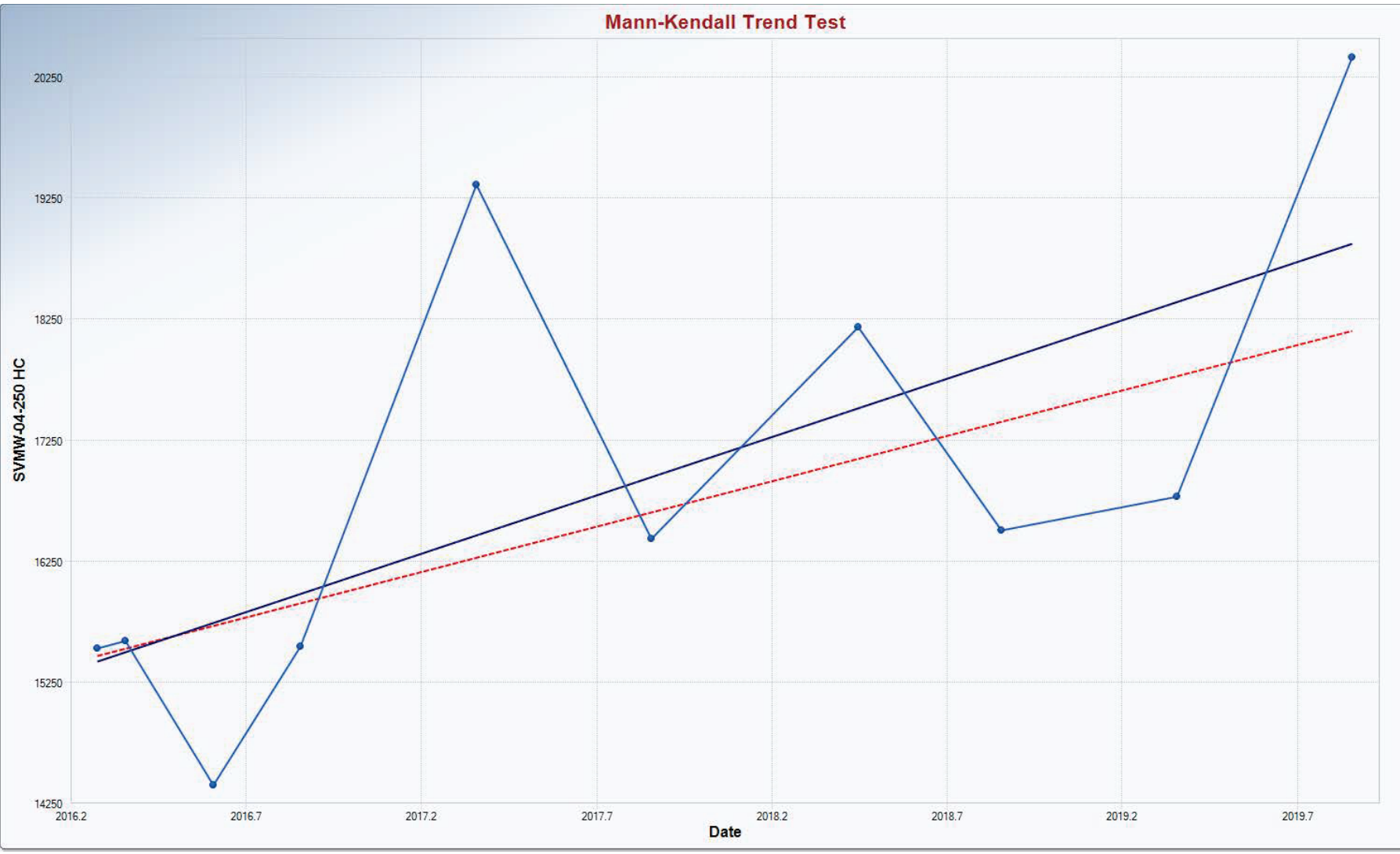
OLS Regression Line (Blue)

OLS Regression Slope	6,195.6653
OLS Regression Intercept	-12,098,266.9679

Theil-Sen Trend Line (Red)

Theil-Sen Slope	0.0000
Theil-Sen Intercept	367,388.5481

Insufficient statistical evidence of a significant trend at the specified level of significance.



Mann-Kendall Trend Analysis

n	10
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	11.1803
Standardized Value of S	2.3255
M-K Test Value (S)	27
Tabulated p-value	0.0080
Approximate p-value	0.0100

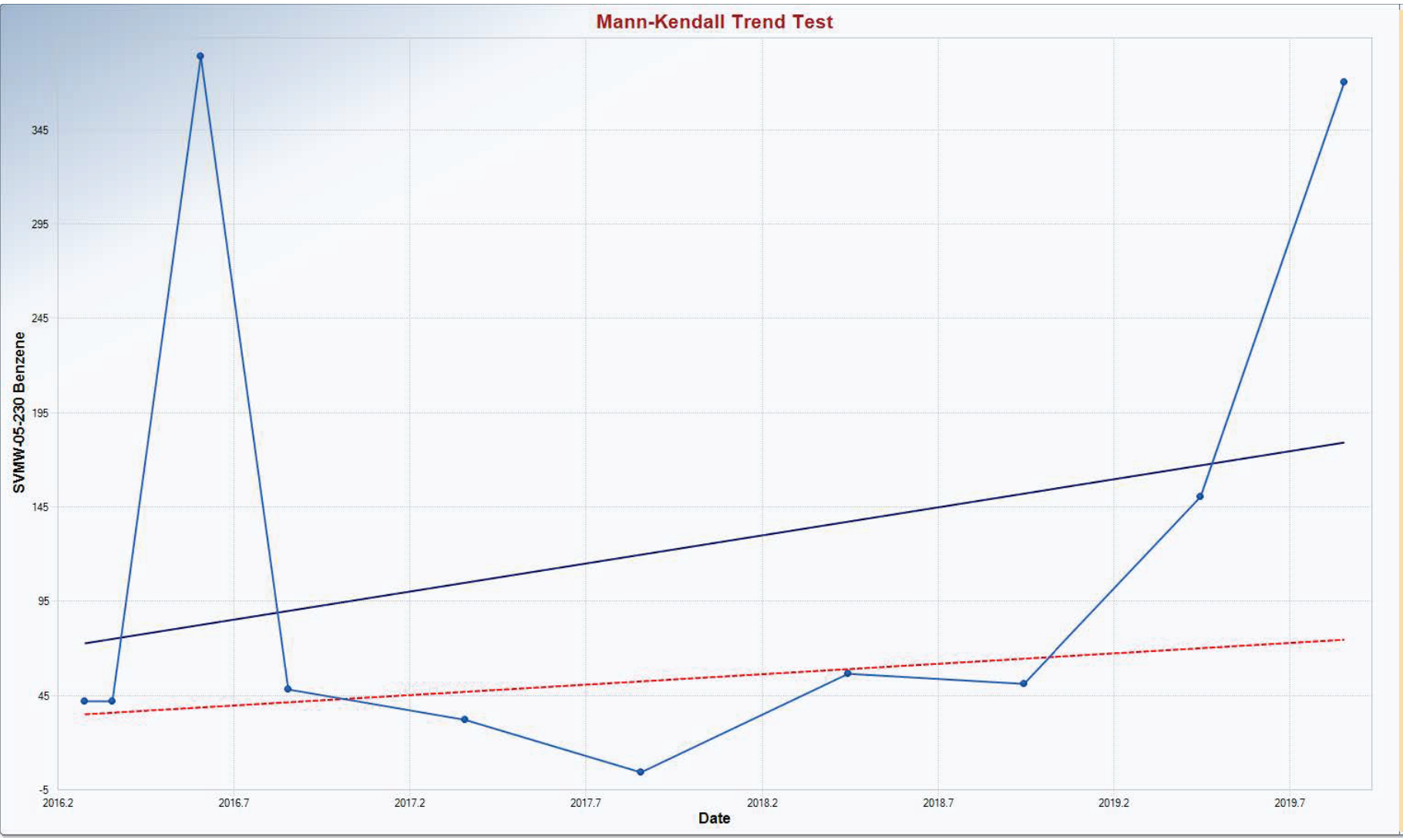
OLS Regression Line (Blue)

OLS Regression Slope	964.0345
OLS Regression Intercept	-1,928,314.3444

Theil-Sen Trend Line (Red)

Theil-Sen Slope	750.0000
Theil-Sen Intercept	-1,496,720.0000

Statistically significant evidence of an increasing trend at the specified level of significance.



Mann-Kendall Trend Analysis

n	10
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	11.1355
Standardized Value of S	1.1674
M-K Test Value (S)	14
Tabulated p-value	0.1080
Approximate p-value	0.1215

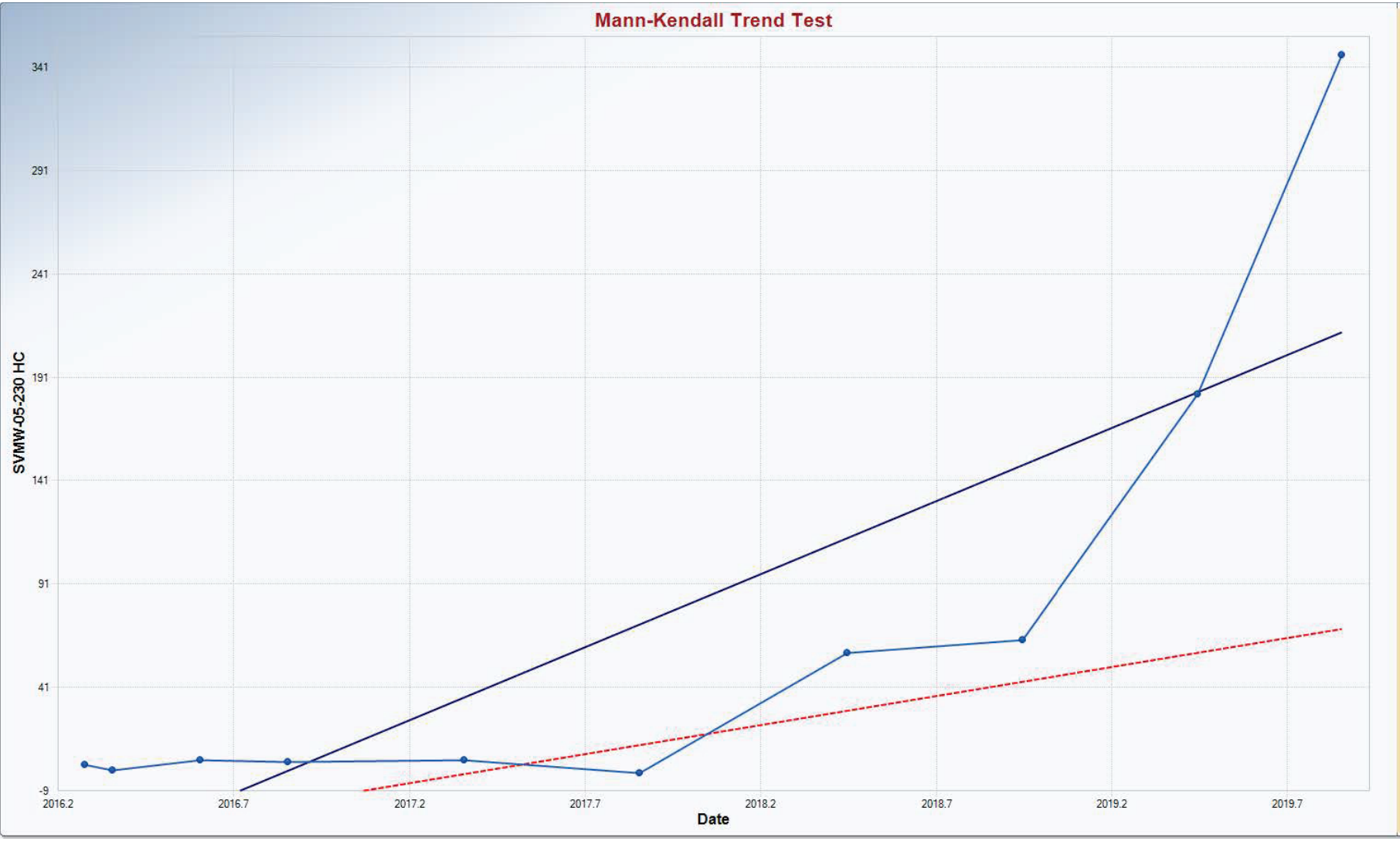
OLS Regression Line (Blue)

OLS Regression Slope	29.6435
OLS Regression Intercept	-59,696.2707

Theil-Sen Trend Line (Red)

Theil-Sen Slope	11.0161
Theil-Sen Intercept	-22,176.5005

Insufficient statistical evidence of a significant trend at the specified level of significance.



Mann-Kendall Trend Analysis

n	10
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	11.1355
Standardized Value of S	2.6043
M-K Test Value (S)	30
Tabulated p-value	0.0020
Approximate p-value	0.0046

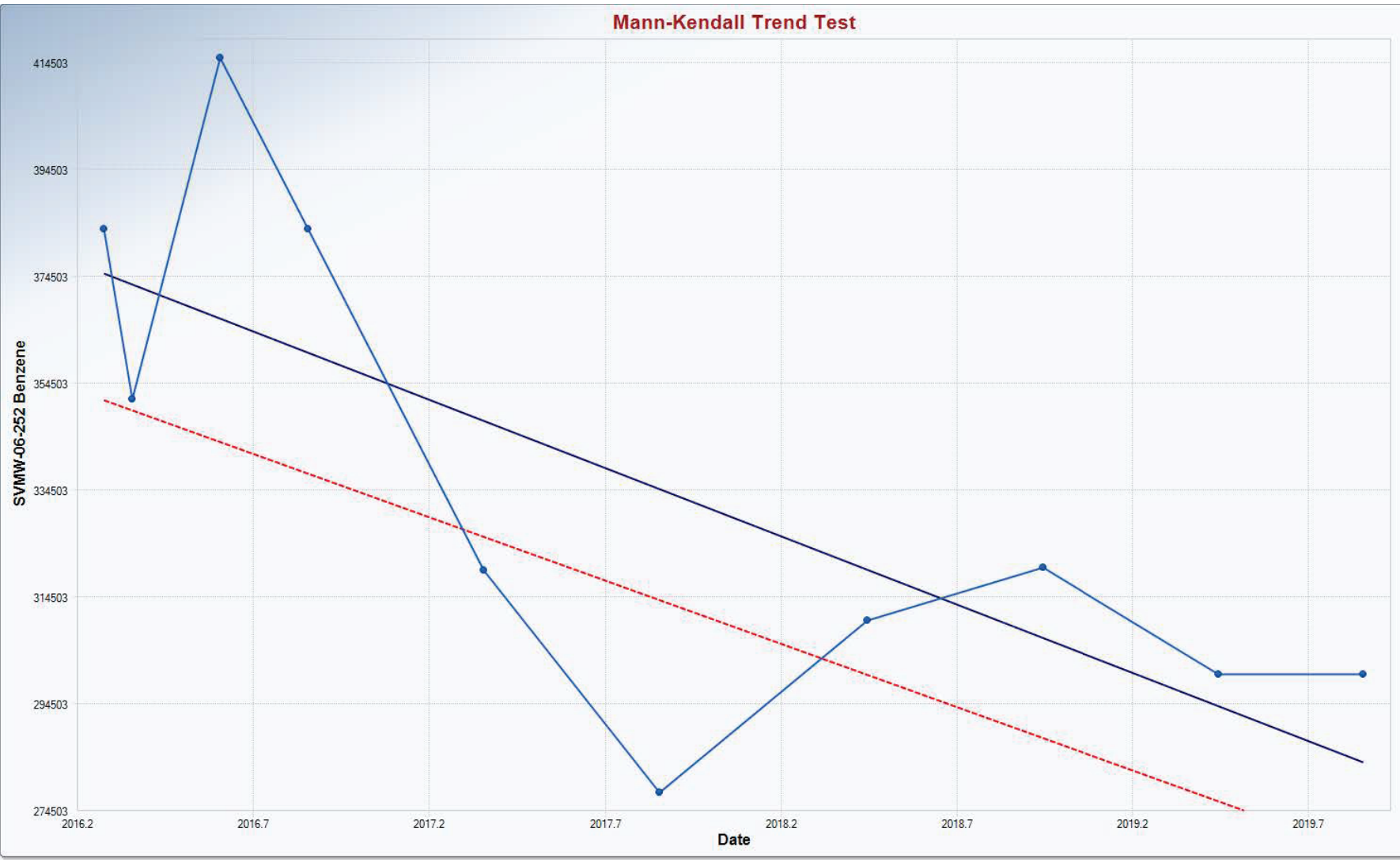
OLS Regression Line (Blue)

OLS Regression Slope	70.7661
OLS Regression Intercept	-142,722.6342

Theil-Sen Trend Line (Red)

Theil-Sen Slope	28.2609
Theil-Sen Intercept	-57,012.5652

Statistically significant evidence of an increasing trend at the specified level of significance.



Mann-Kendall Trend Analysis

n	10
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	11.0905
Standardized Value of S	-2.1640
M-K Test Value (S)	-25
Tabulated p-value	0.0140
Approximate p-value	0.0152

OLS Regression Line (Blue)

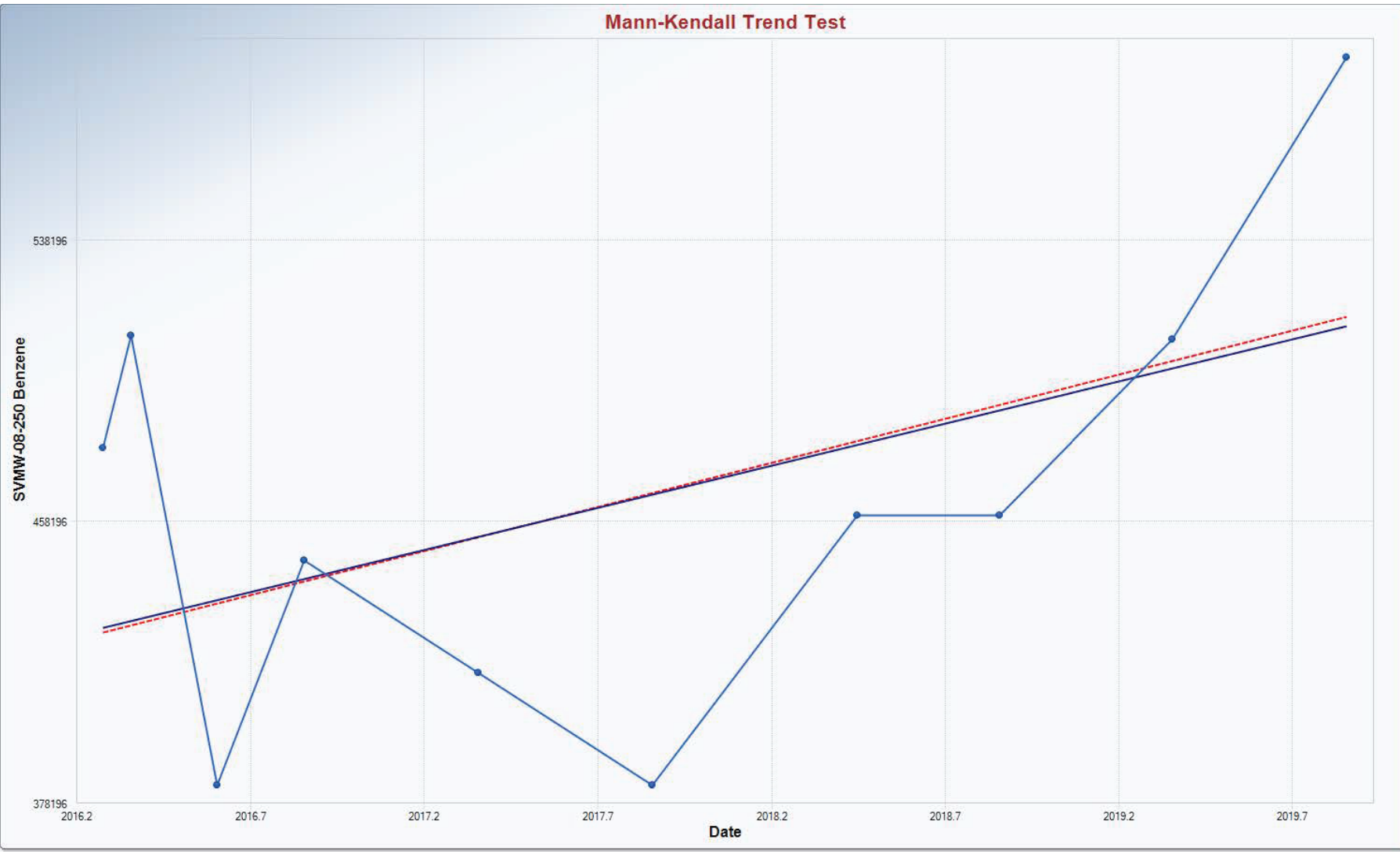
OLS Regression Slope	-25,536.3643
OLS Regression Intercept	51,862,697.3637

Theil-Sen Trend Line (Red)

Theil-Sen Slope	-23,731.0724
Theil-Sen Intercept	48,199,071.1225

Statistically significant evidence of a decreasing trend at the specified level of significance.

Mann-Kendall Trend Test
SVMW-06-252 HC
561
511
461
411
361
311
2016.2
2016.7
2017.2
2017.7
2018.2
2018.7
2019.2
2019.7
Date
Mann-Kendall Trend Analysis
n 10
Confidence Coefficient 0.9500
Level of Significance 0.0500
Standard Deviation of S 11.1803
Standardized Value of S -3.0411
M-K Test Value (S) -35
Tabulated p-value 0.0000
Approximate p-value 0.0012
OLS Regression Line (Blue)
OLS Regression Slope -59.1753
OLS Regression Intercept 119,838.2063
Theil-Sen Trend Line (Red)
Theil-Sen Slope -53.6585
Theil-Sen Intercept 108,698.3902
Statistically significant evidence of a decreasing trend at the specified level of significance.



Mann-Kendall Trend Analysis

n	10
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	11.0905
Standardized Value of S	0.9017
M-K Test Value (S)	11
Tabulated p-value	0.1900
Approximate p-value	0.1836

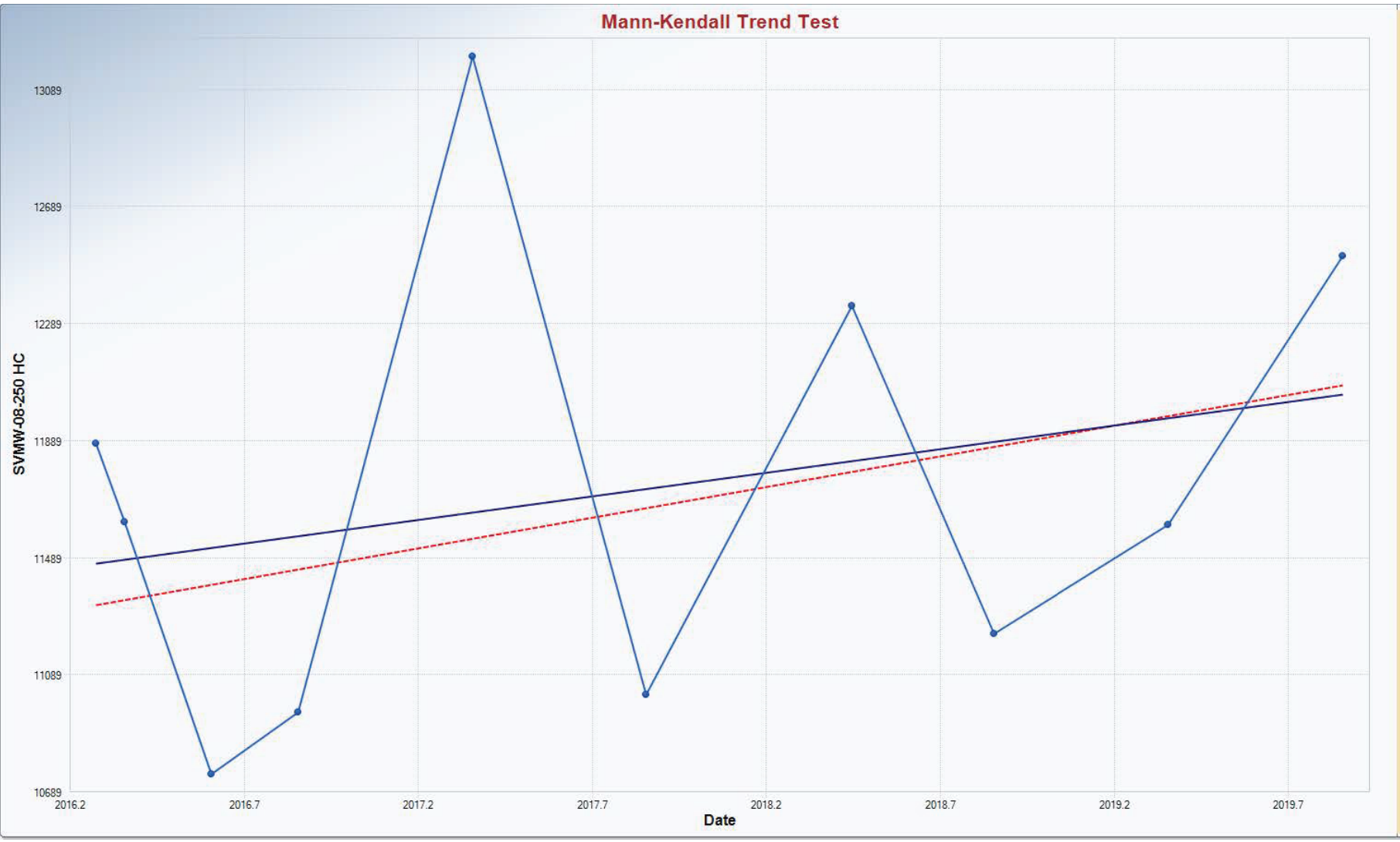
OLS Regression Line (Blue)

OLS Regression Slope	23,953.8696
OLS Regression Intercept	-47,869,100.1170

Theil-Sen Trend Line (Red)

Theil-Sen Slope	25,097.7505
Theil-Sen Intercept	-50,176,719.4941

Insufficient statistical evidence of a significant trend at the specified level of significance.



Mann-Kendall Trend Analysis

n	10
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	11.1803
Standardized Value of S	0.7155
M-K Test Value (S)	9
Tabulated p-value	0.2420
Approximate p-value	0.2371

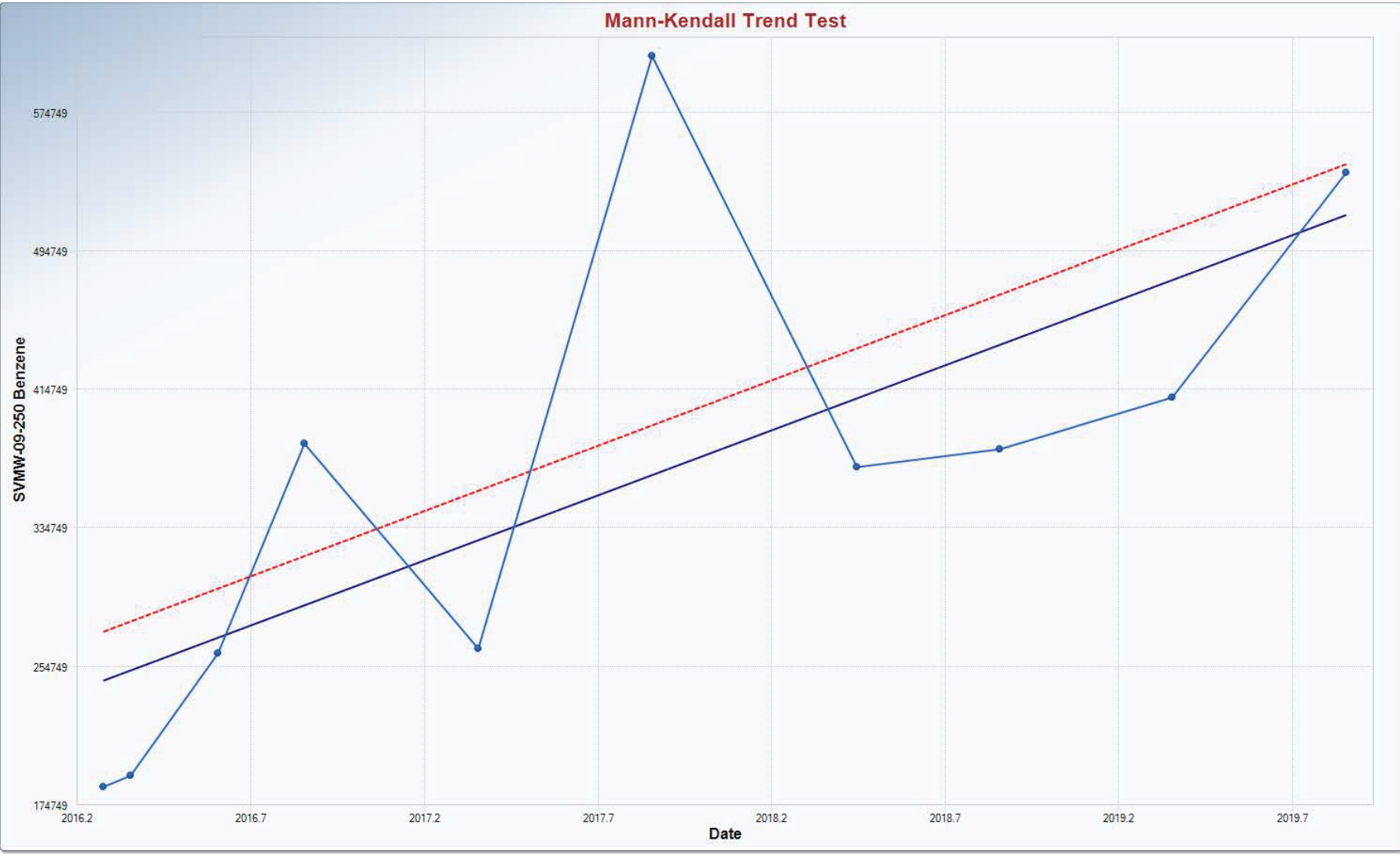
OLS Regression Line (Blue)

OLS Regression Slope	161.5972
OLS Regression Intercept	-314,351.7602

Theil-Sen Trend Line (Red)

Theil-Sen Slope	210.0000
Theil-Sen Intercept	-412,086.8000

Insufficient statistical evidence of a significant trend at the specified level of significance.



Mann-Kendall Trend Analysis

n	10
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	11.1803
Standardized Value of S	2.6833
M-K Test Value (S)	31
Tabulated p-value	0.0020
Approximate p-value	0.0036

OLS Regression Line (Blue)

OLS Regression Slope	75,194.8411
OLS Regression Intercept	-151,365,397.0027

Theil-Sen Trend Line (Red)

Theil-Sen Slope	75,468.3661
Theil-Sen Intercept	-151,888,466.0463

Statistically significant evidence of an increasing trend at the specified level of significance.

Mann-Kendall Trend Analysis

n	10
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	11.1803
Standardized Value of S	2.3255
M-K Test Value (S)	27
Tabulated p-value	0.0080
Approximate p-value	0.0100

OLS Regression Line (Blue)

OLS Regression Slope	1,976.5730
OLS Regression Intercept	-3,975,780.0528

Theil-Sen Trend Line (Red)

Theil-Sen Slope	2,100.6289
Theil-Sen Intercept	-4,224,691.9182

Statistically significant evidence of an increasing trend at the specified level of significance.

Mann-Kendall Trend Analysis

n	10
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	11.1803
Standardized Value of S	0.7155
M-K Test Value (S)	9
Tabulated p-value	0.2420
Approximate p-value	0.2371

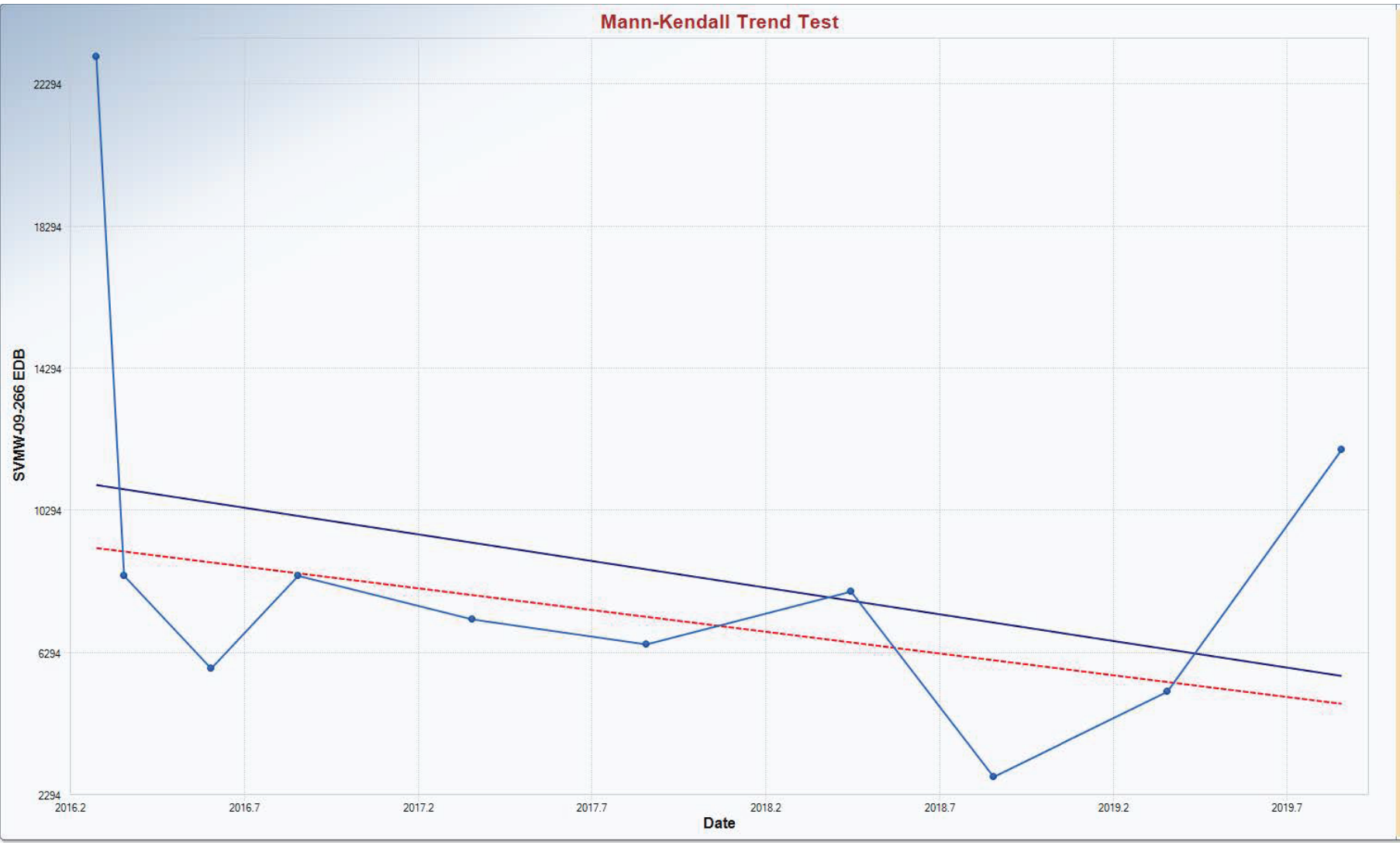
OLS Regression Line (Blue)

OLS Regression Slope	34,863.8567
OLS Regression Intercept	-69,363,686.4601

Theil-Sen Trend Line (Red)

Theil-Sen Slope	65,934.0659
Theil-Sen Intercept	-132,132,252.7473

Insufficient statistical evidence of a significant trend at the specified level of significance.



Mann-Kendall Trend Analysis

n	10
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	11.1355
Standardized Value of S	-1.1674
M-K Test Value (S)	-14
Tabulated p-value	0.1080
Approximate p-value	0.1215

OLS Regression Line (Blue)

OLS Regression Slope	-1,500.9548
OLS Regression Intercept	3,037,315.8956

Theil-Sen Trend Line (Red)

Theil-Sen Slope	-1,229.4806
Theil-Sen Intercept	2,488,187.0137

Insufficient statistical evidence of a significant trend at the specified level of significance.

Mann-Kendall Trend Analysis

n	10
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	11.1803
Standardized Value of S	1.4311
M-K Test Value (S)	17
Tabulated p-value	0.0780
Approximate p-value	0.0762

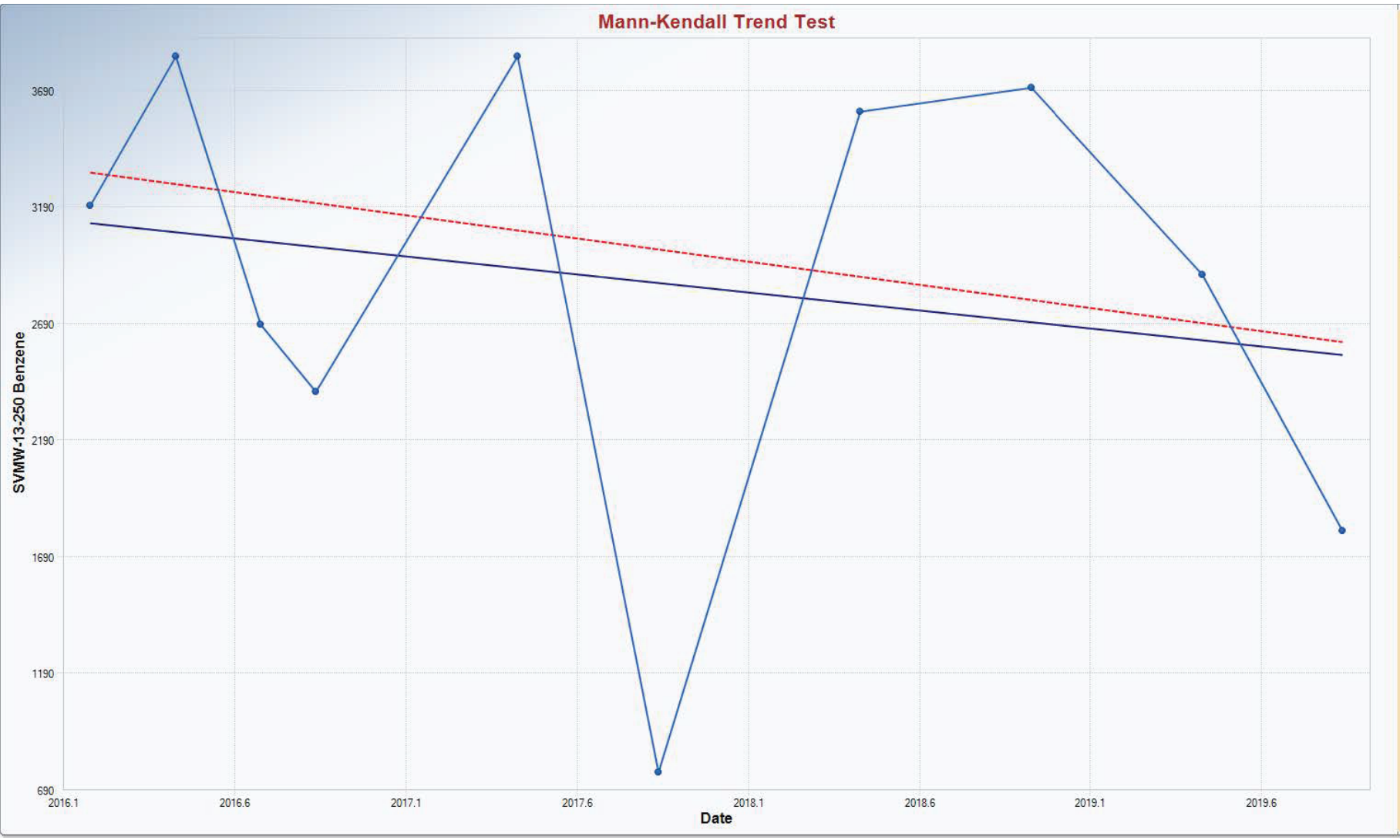
OLS Regression Line (Blue)

OLS Regression Slope	141.8584
OLS Regression Intercept	-262,043.6907

Theil-Sen Trend Line (Red)

Theil-Sen Slope	740.0000
Theil-Sen Intercept	-1,468,654.2000

Insufficient statistical evidence of a significant trend at the specified level of significance.



Mann-Kendall Trend Analysis

n	10
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	11.1355
Standardized Value of S	-0.8082
M-K Test Value (S)	-10
Tabulated p-value	0.1900
Approximate p-value	0.2095

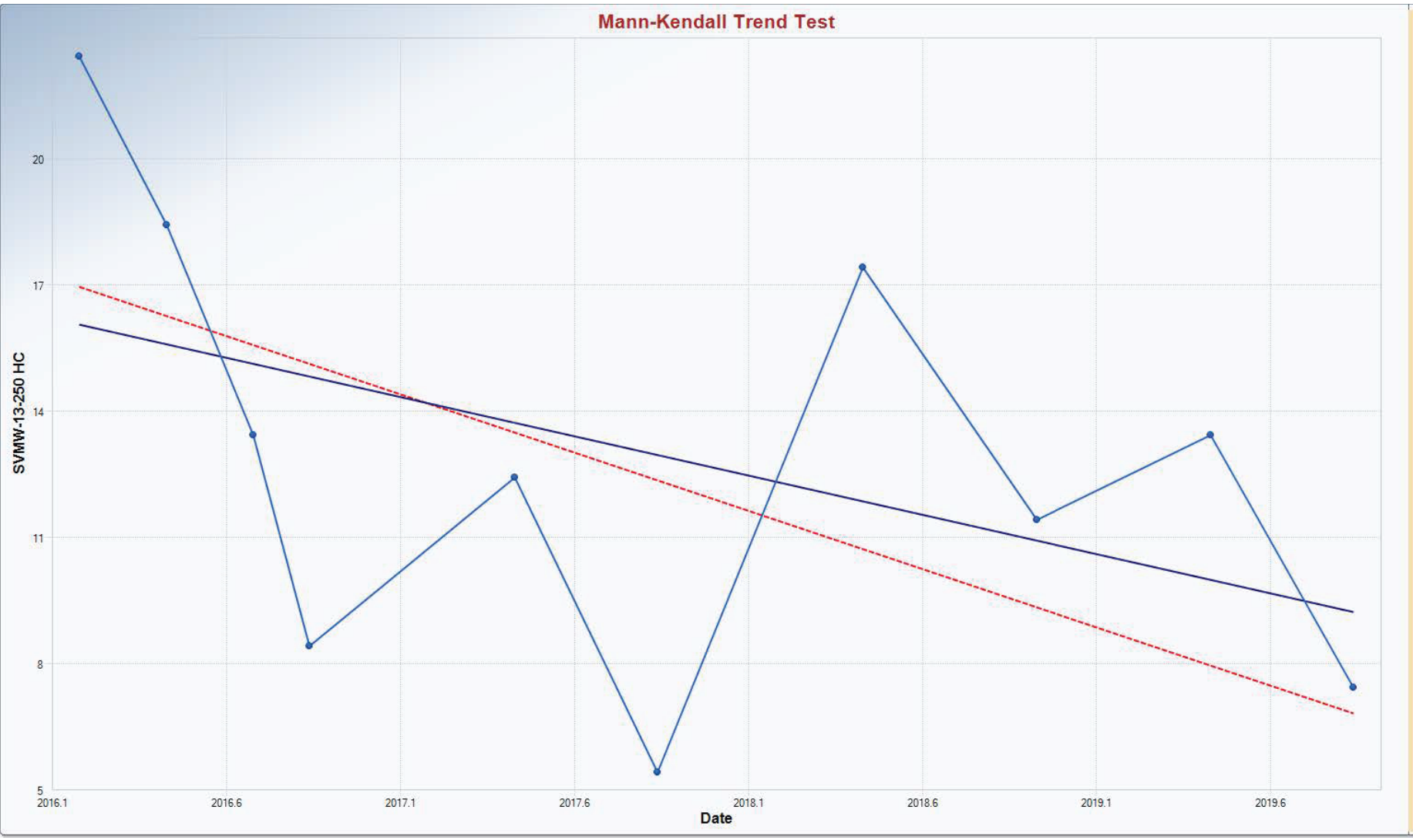
OLS Regression Line (Blue)

OLS Regression Slope	-154.1069
OLS Regression Intercept	313,826.6283

Theil-Sen Trend Line (Red)

Theil-Sen Slope	-198.6708
Theil-Sen Intercept	403,890.4269

Insufficient statistical evidence of a significant trend at the specified level of significance.



Mann-Kendall Trend Analysis

n	10
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	11.1355
Standardized Value of S	-1.7063
M-K Test Value (S)	-20
Tabulated p-value	0.0360
Approximate p-value	0.0440

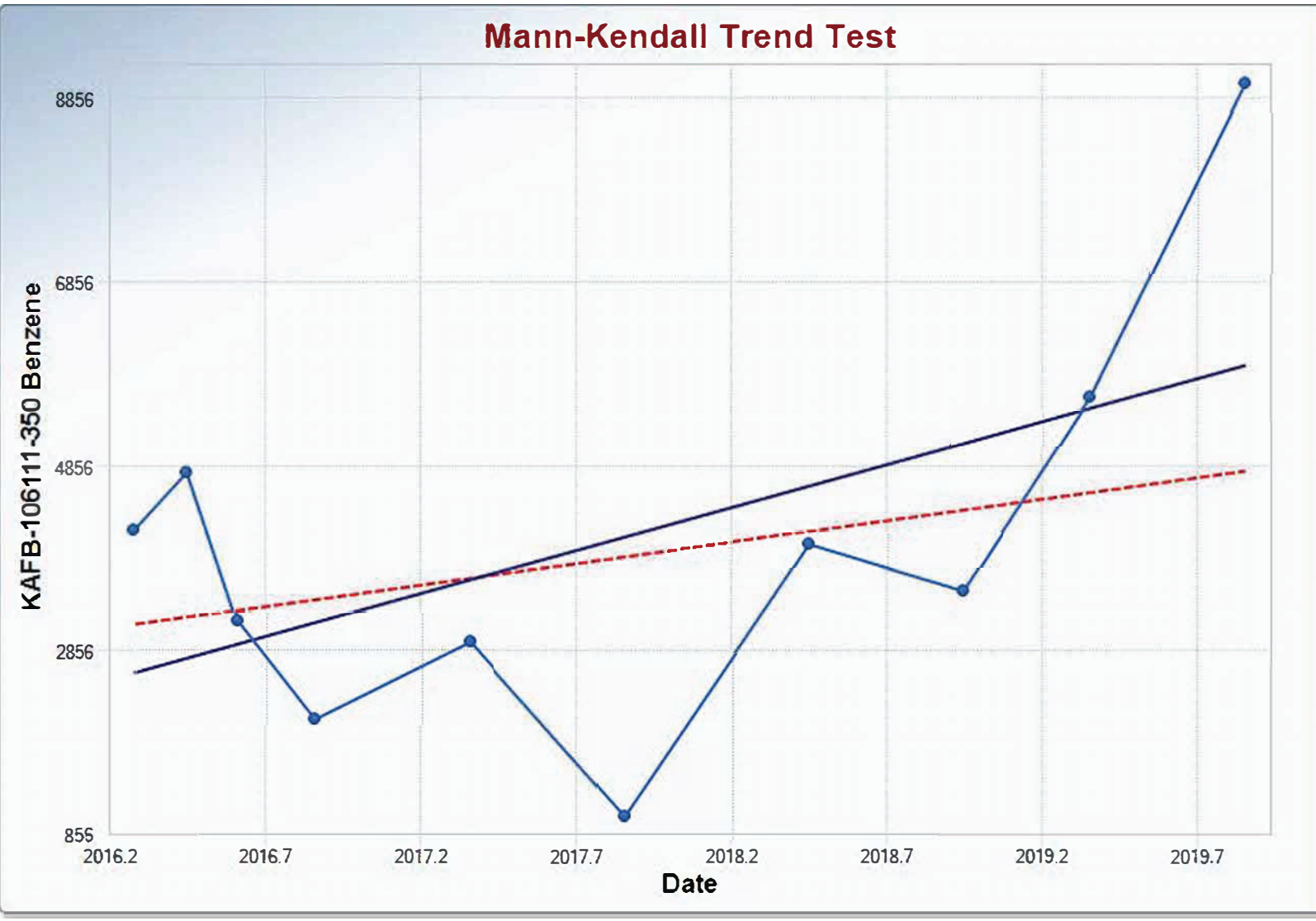
OLS Regression Line (Blue)

OLS Regression Slope	-1.8649
OLS Regression Intercept	3,775.5943

Theil-Sen Trend Line (Red)

Theil-Sen Slope	-2.7692
Theil-Sen Intercept	5,599.7692

Statistically significant evidence of a decreasing trend at the specified level of significance.



Mann-Kendall Trend Analysis

n	10
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	11.1803
Standardized Value of S	0.7155
M-K Test Value (S)	9
Tabulated p-value	0.2420
Approximate p-value	0.2371

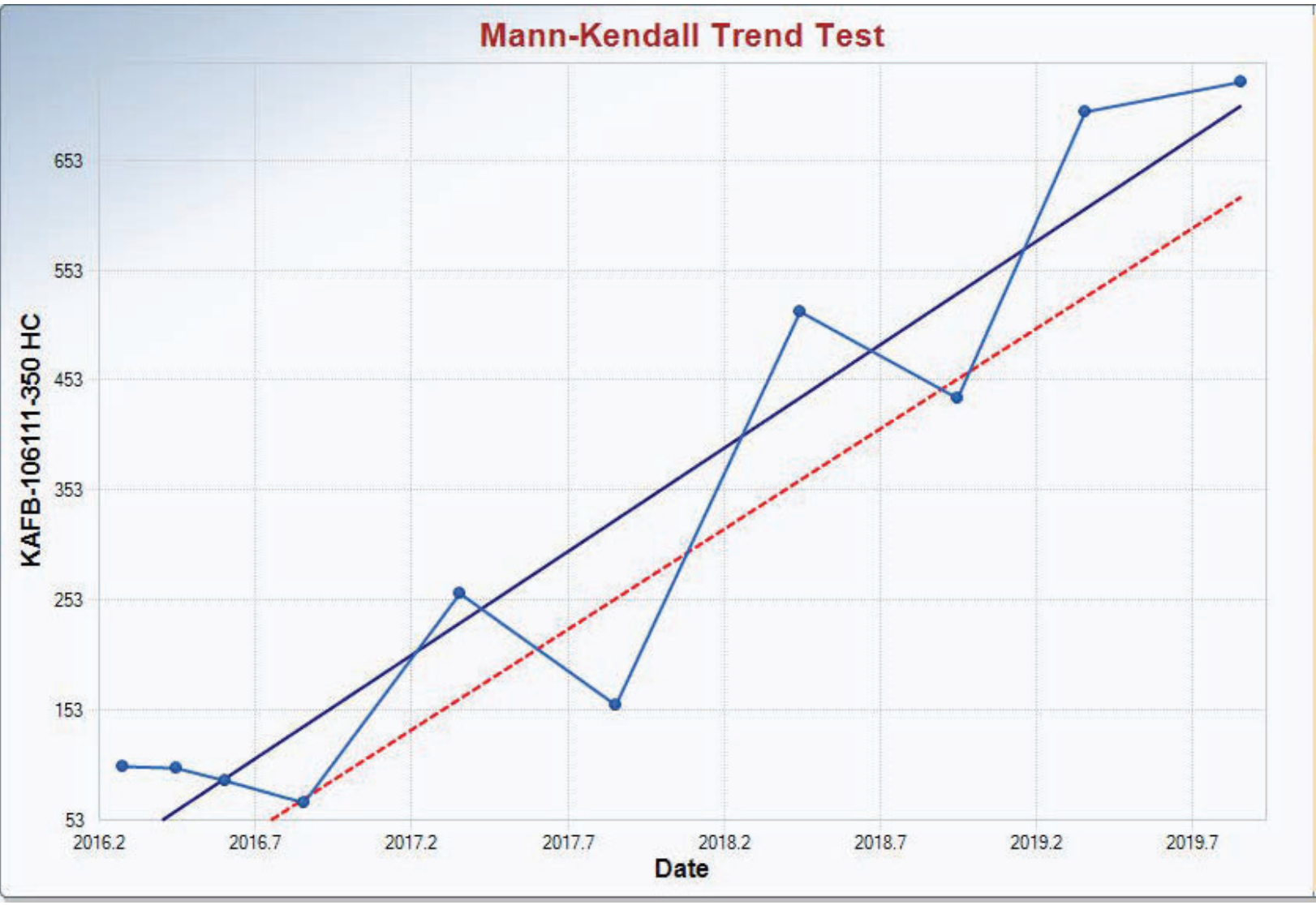
OLS Regression Line (Blue)

OLS Regression Slope	928.9392
OLS Regression Intercept	-1,870,358.3728

Theil-Sen Trend Line (Red)

Theil-Sen Slope	469.7766
Theil-Sen Intercept	-944,061.9624

Insufficient statistical evidence of a significant trend at the specified level of significance.



Mann-Kendall Trend Analysis

n	10
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	11.1803
Standardized Value of S	2.5044
M-K Test Value (S)	29
Tabulated p-value	0.0050
Approximate p-value	0.0061

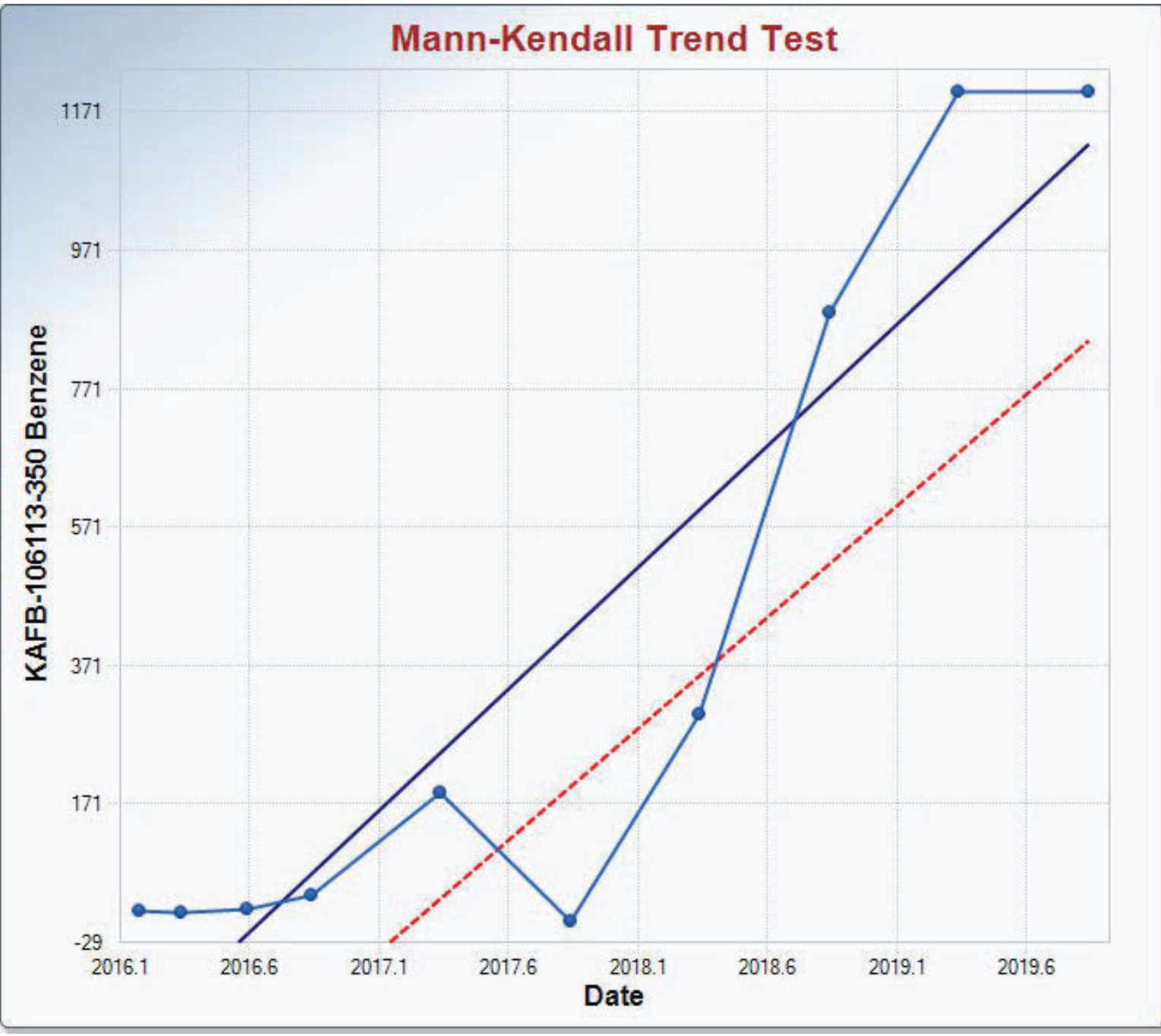
OLS Regression Line (Blue)

OLS Regression Slope	188.4740
OLS Regression Intercept	-379,983.3705

Theil-Sen Trend Line (Red)

Theil-Sen Slope	182.6979
Theil-Sen Intercept	-368,400.2243

Statistically significant evidence of an increasing trend at the specified level of significance.



Mann-Kendall Trend Analysis

n	10
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	11.1355
Standardized Value of S	2.7839
M-K Test Value (S)	32
Tabulated p-value	0.0010
Approximate p-value	0.0027

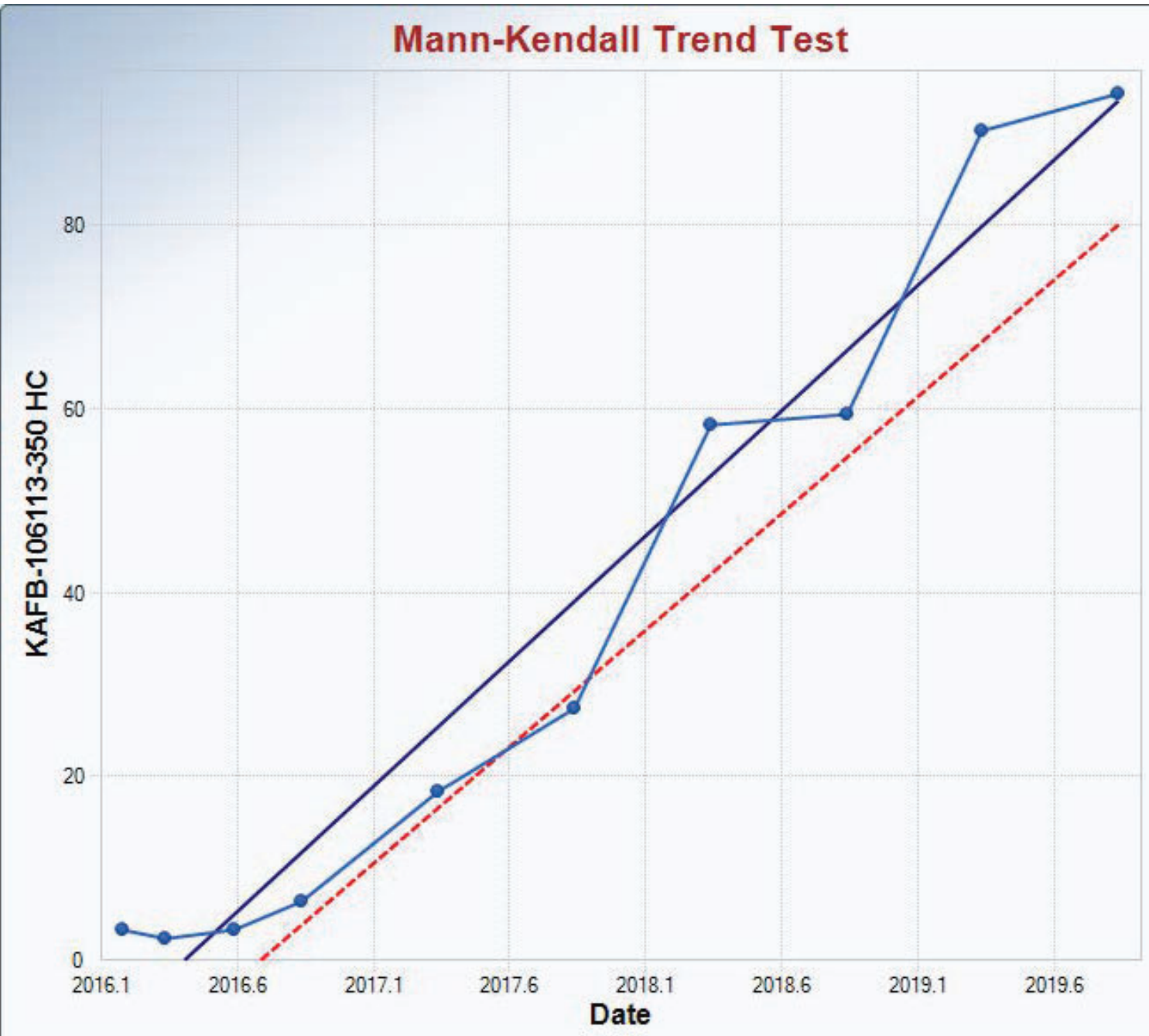
OLS Regression Line (Blue)

OLS Regression Slope	352.8427
OLS Regression Intercept	-711,558.6556

Theil-Sen Trend Line (Red)

Theil-Sen Slope	323.3300
Theil-Sen Intercept	-652,230.6465

Statistically significant evidence of an increasing trend at the specified level of significance.



Mann-Kendall Trend Analysis

n	10
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	11.1355
Standardized Value of S	3.6819
M-K Test Value (S)	42
Tabulated p-value	0.0000
Approximate p-value	0.0001

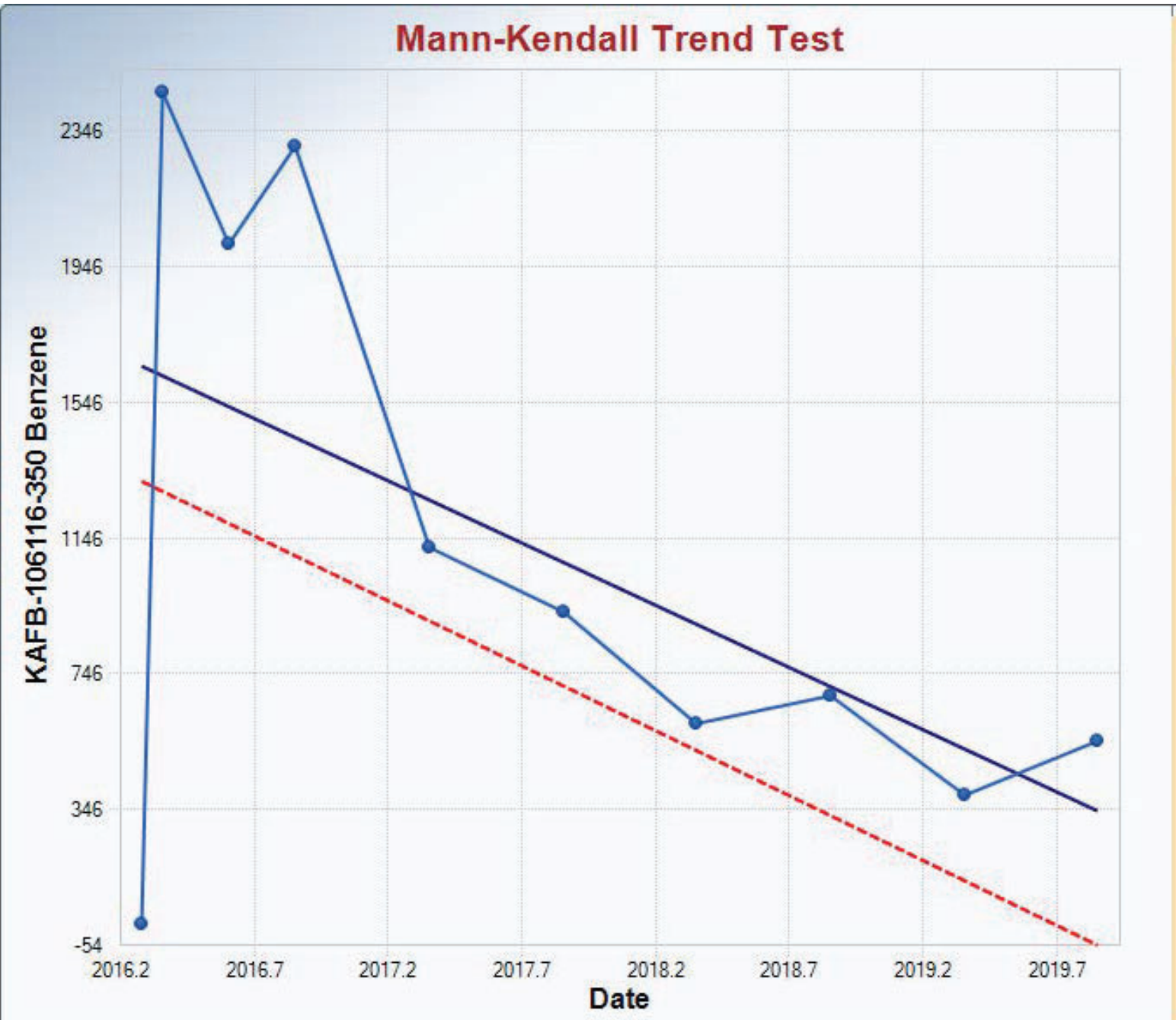
OLS Regression Line (Blue)

OLS Regression Slope	27.3726
OLS Regression Intercept	-55,194.8289

Theil-Sen Trend Line (Red)

Theil-Sen Slope	25.4630
Theil-Sen Intercept	-51,351.0648

Statistically significant evidence of an increasing trend at the specified level of significance.



Mann-Kendall Trend Analysis

n	10
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	11.1803
Standardized Value of S	-1.7889
M-K Test Value (S)	-21
Tabulated p-value	0.0360
Approximate p-value	0.0368

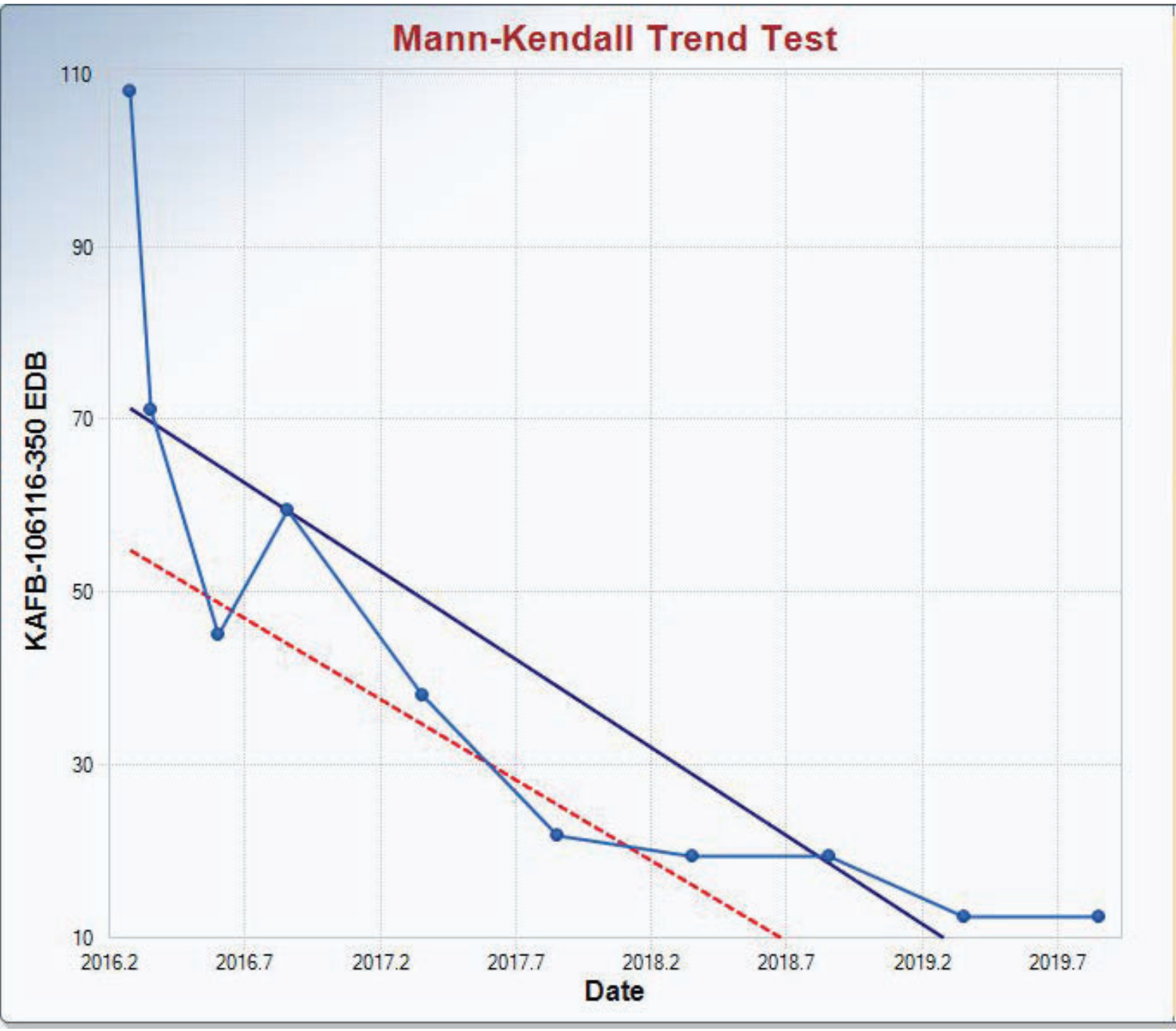
OLS Regression Line (Blue)

OLS Regression Slope	-366.5970
OLS Regression Intercept	740,804.5316

Theil-Sen Trend Line (Red)

Theil-Sen Slope	-383.3620
Theil-Sen Intercept	774,266.6575

Statistically significant evidence of a decreasing trend at the specified level of significance.



Mann-Kendall Trend Analysis

n	10
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	11.0905
Standardized Value of S	-3.6067
M-K Test Value (S)	-41
Tabulated p-value	0.0000
Approximate p-value	0.0002

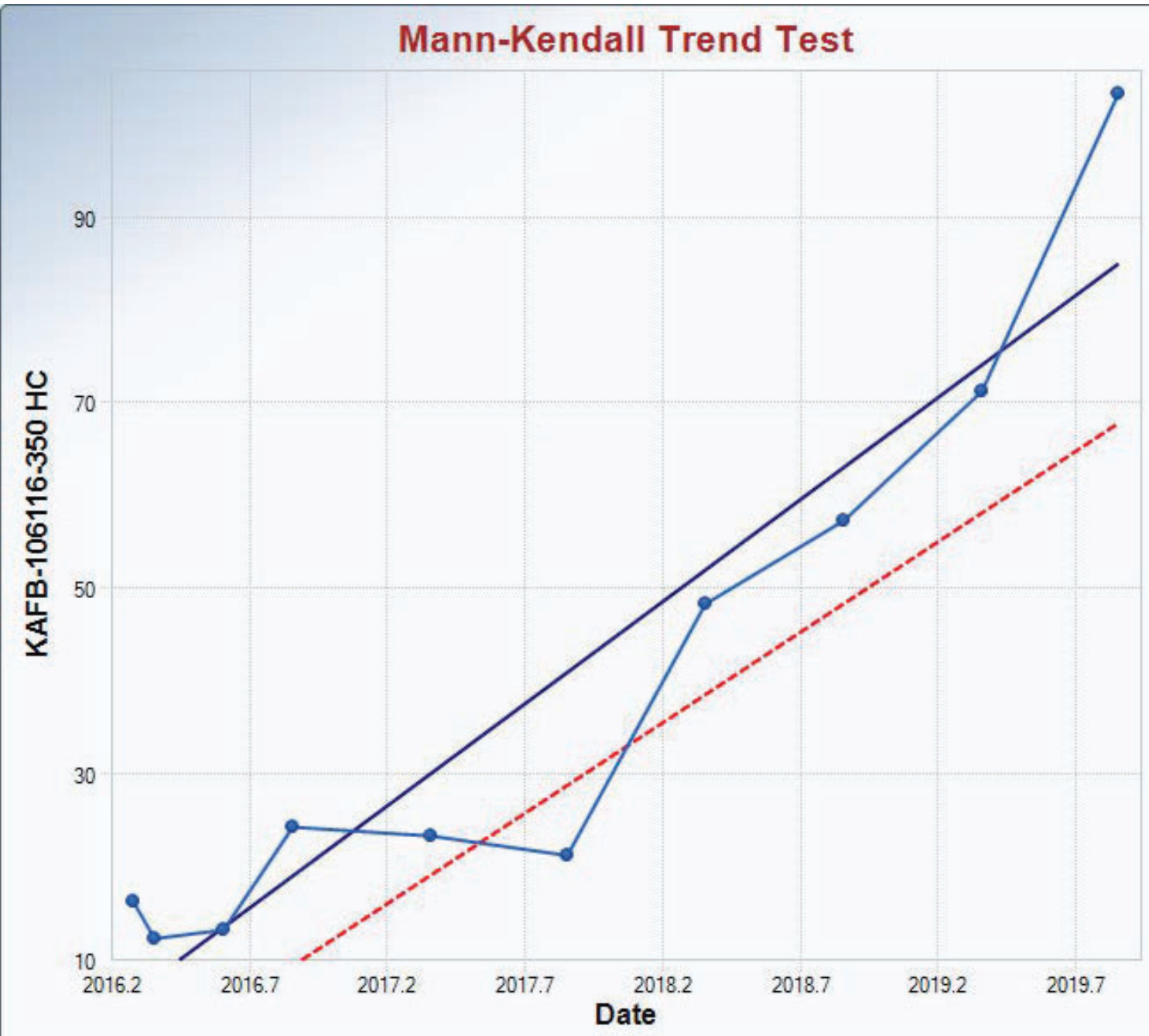
OLS Regression Line (Blue)

OLS Regression Slope	-20.3976
OLS Regression Intercept	41,197.5361

Theil-Sen Trend Line (Red)

Theil-Sen Slope	-18.6528
Theil-Sen Intercept	37,663.1864

Statistically significant evidence of a decreasing trend at the specified level of significance.



Mann-Kendall Trend Analysis

n	10
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	11.1803
Standardized Value of S	3.0411
M-K Test Value (S)	35
Tabulated p-value	0.0000
Approximate p-value	0.0012

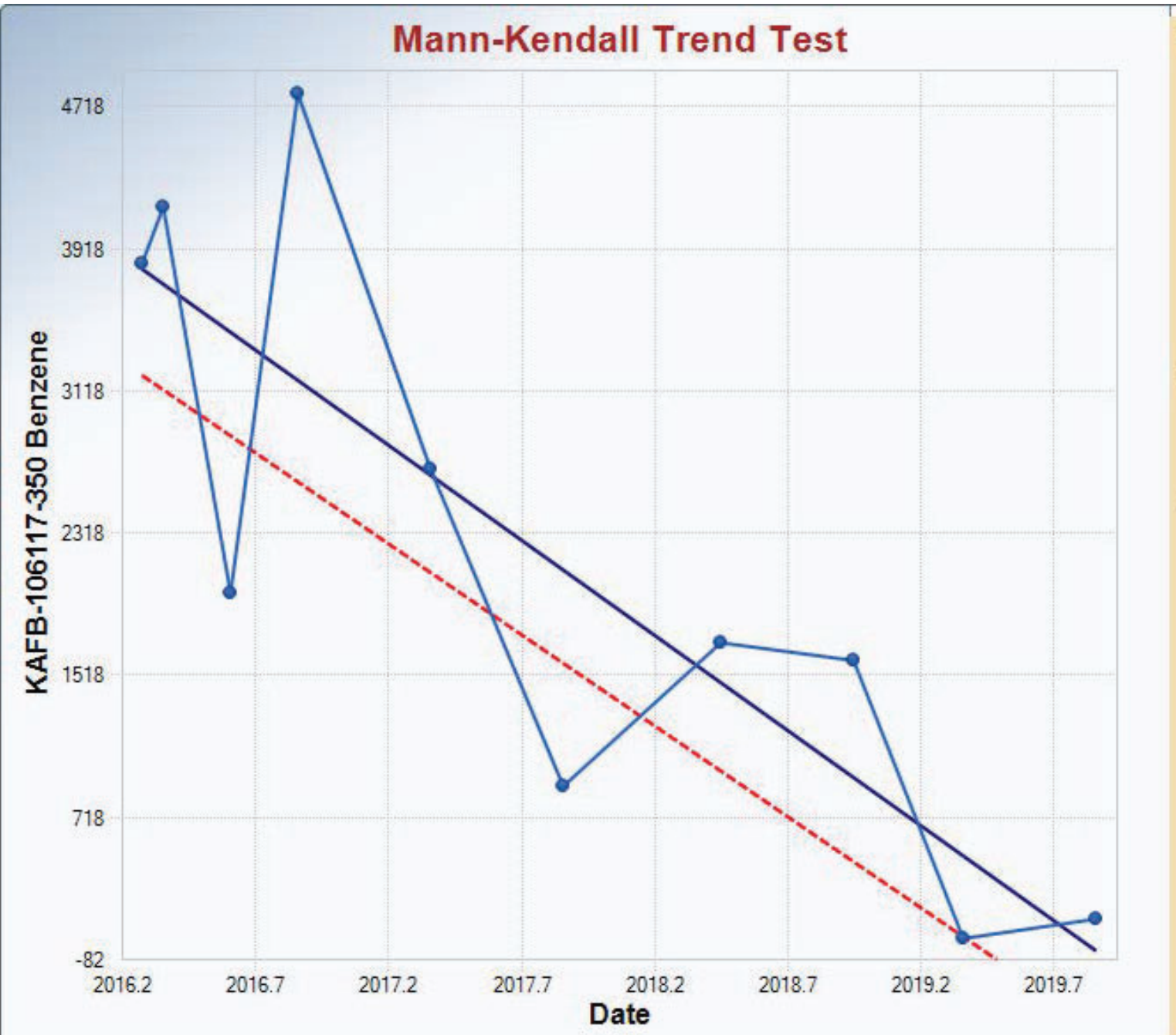
OLS Regression Line (Blue)

OLS Regression Slope	22.0596
OLS Regression Intercept	-44,471.9423

Theil-Sen Trend Line (Red)

Theil-Sen Slope	19.5556
Theil-Sen Intercept	-39,431.3978

Statistically significant evidence of an increasing trend at the specified level of significance.



Mann-Kendall Trend Analysis

n	10
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	11.1803
Standardized Value of S	-2.5044
M-K Test Value (S)	-29
Tabulated p-value	0.0050
Approximate p-value	0.0061

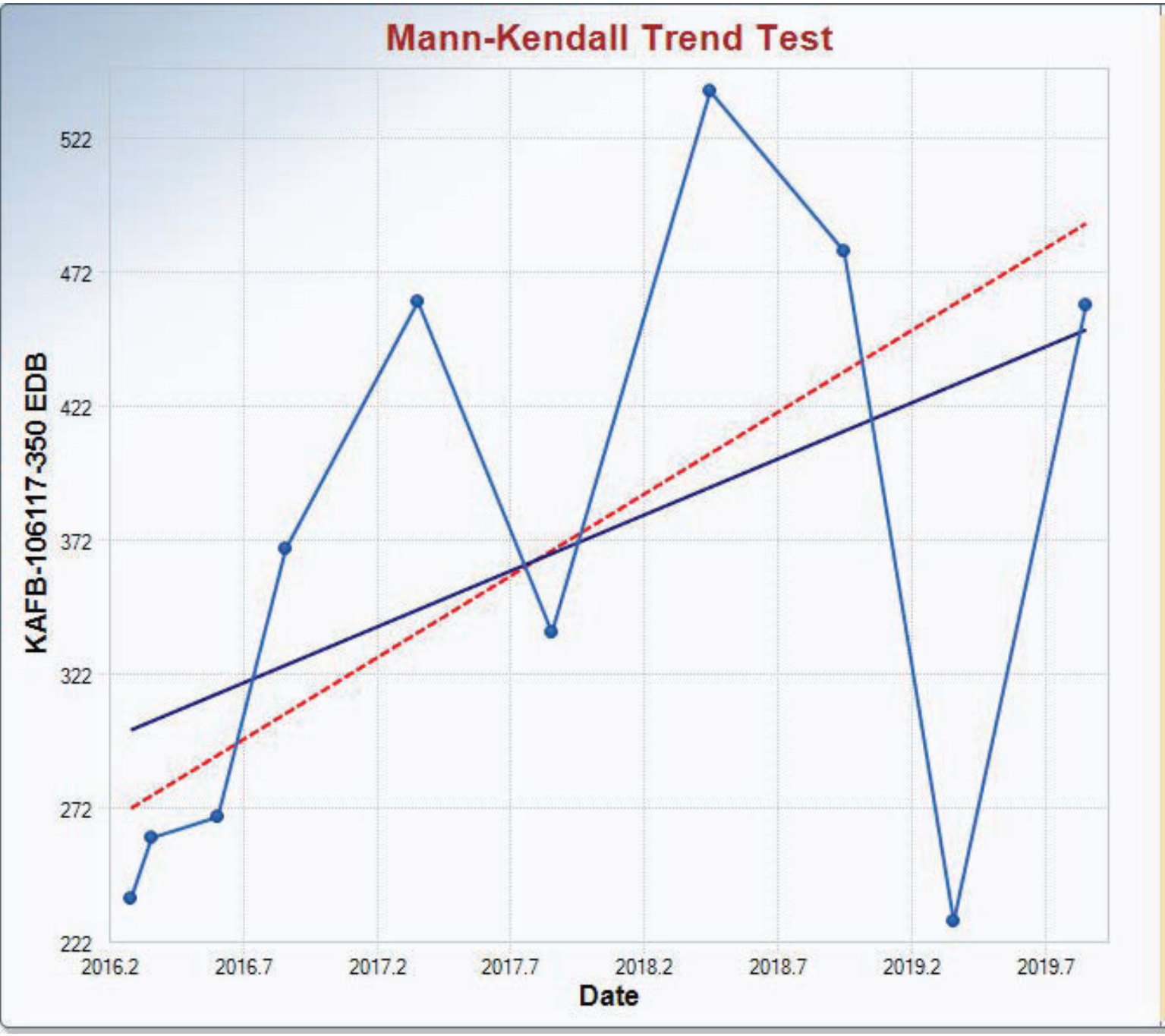
OLS Regression Line (Blue)

OLS Regression Slope	-1,070.0837
OLS Regression Intercept	2,161,359.8980

Theil-Sen Trend Line (Red)

Theil-Sen Slope	-1,028.9440
Theil-Sen Intercept	2,077,817.2504

Statistically significant evidence of a decreasing trend at the specified level of significance.



Mann-Kendall Trend Analysis

n	10
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	11.1803
Standardized Value of S	1.4311
M-K Test Value (S)	17
Tabulated p-value	0.0780
Approximate p-value	0.0762

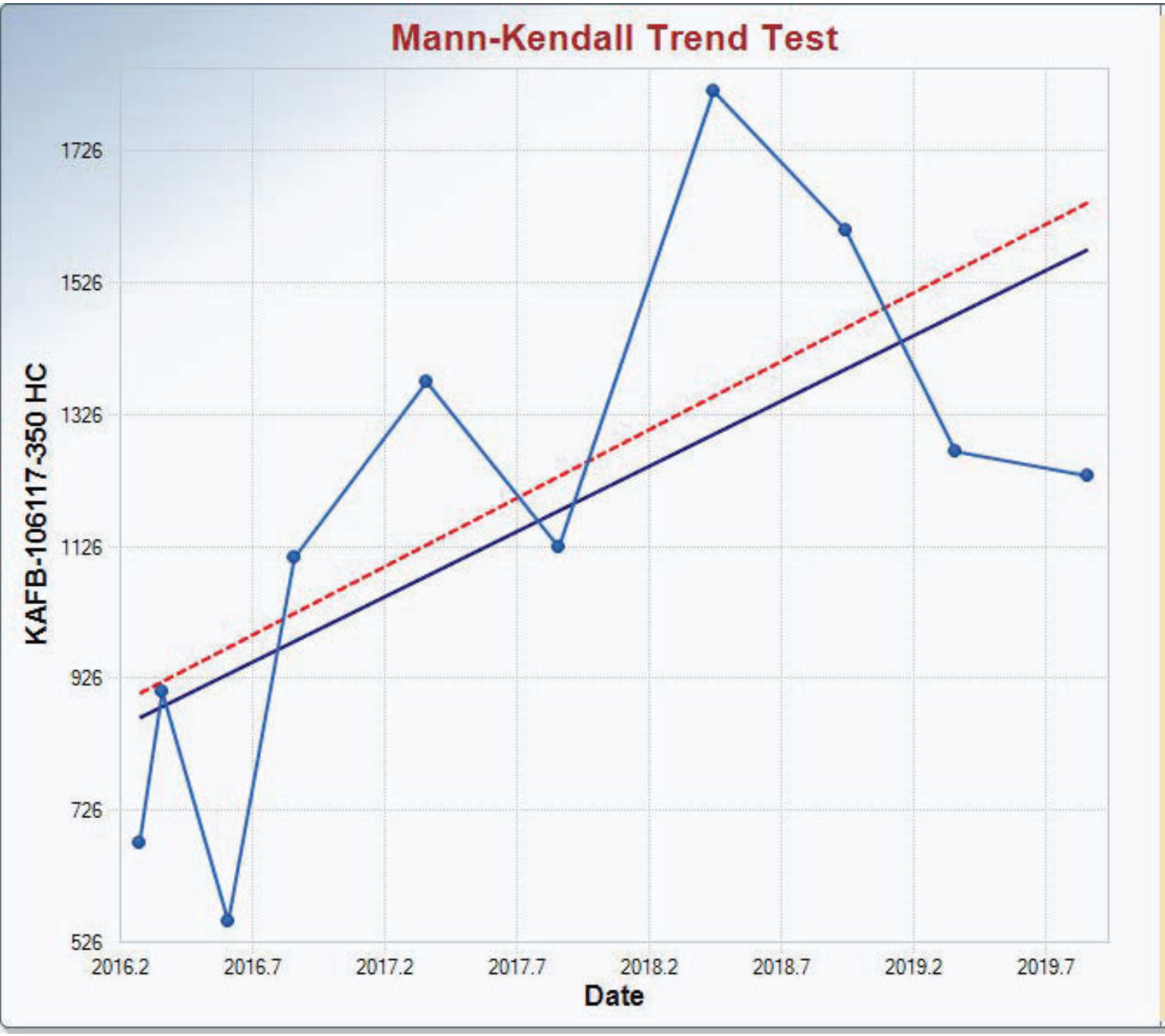
OLS Regression Line (Blue)

OLS Regression Slope	41.8215
OLS Regression Intercept	-84,021.3667

Theil-Sen Trend Line (Red)

Theil-Sen Slope	60.9464
Theil-Sen Intercept	-122,610.8049

Insufficient statistical evidence of a significant trend at the specified level of significance.



Mann-Kendall Trend Analysis

n	10
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	11.1803
Standardized Value of S	1.9677
M-K Test Value (S)	23
Tabulated p-value	0.0230
Approximate p-value	0.0245

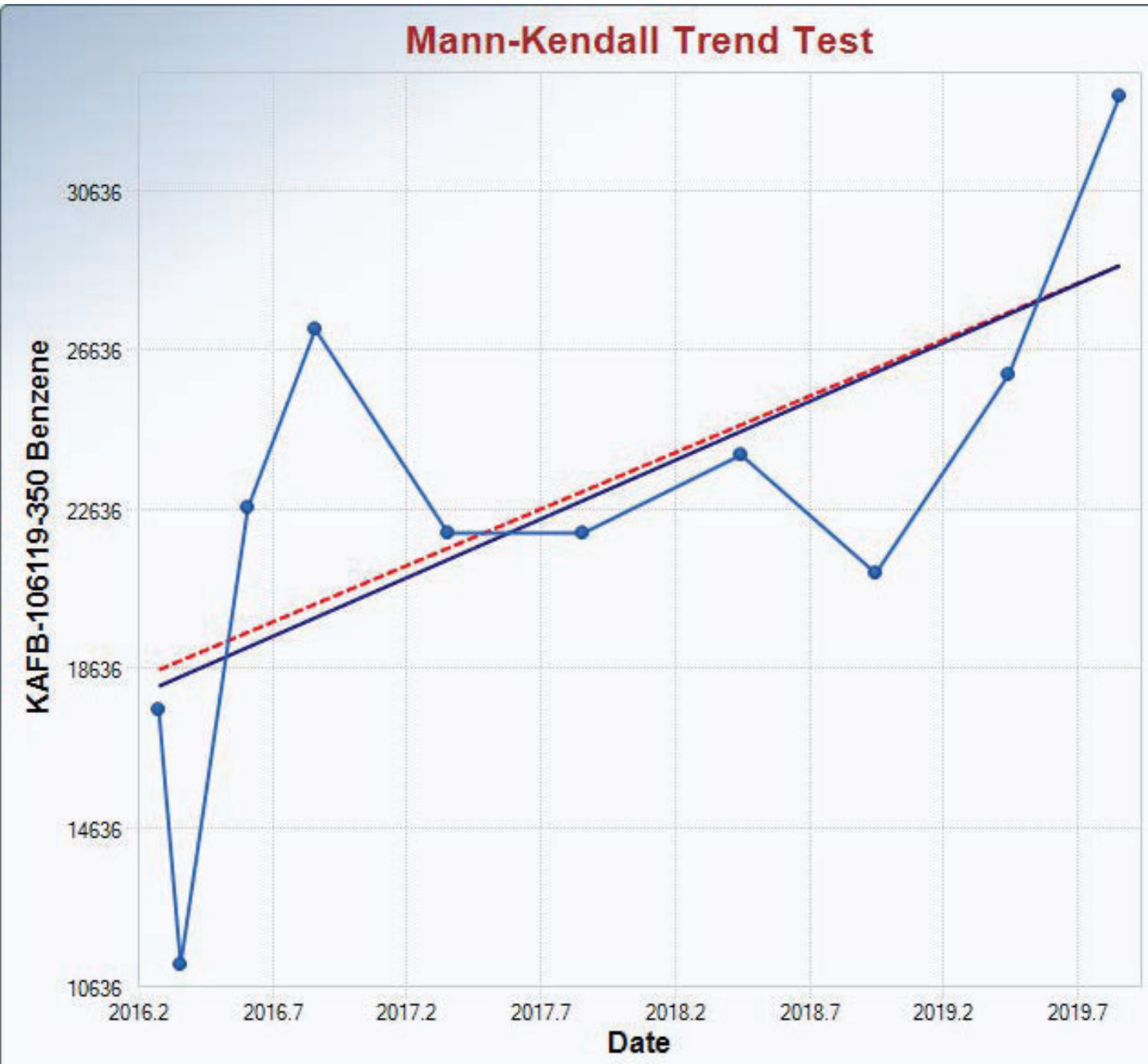
OLS Regression Line (Blue)

OLS Regression Slope	197.9968
OLS Regression Intercept	-398,344.2697

Theil-Sen Trend Line (Red)

Theil-Sen Slope	207.6923
Theil-Sen Intercept	-417,857.3462

Statistically significant evidence of an increasing trend at the specified level of significance.



Mann-Kendall Trend Analysis

n	10
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	11.1355
Standardized Value of S	1.7063
M-K Test Value (S)	20
Tabulated p-value	0.0360
Approximate p-value	0.0440

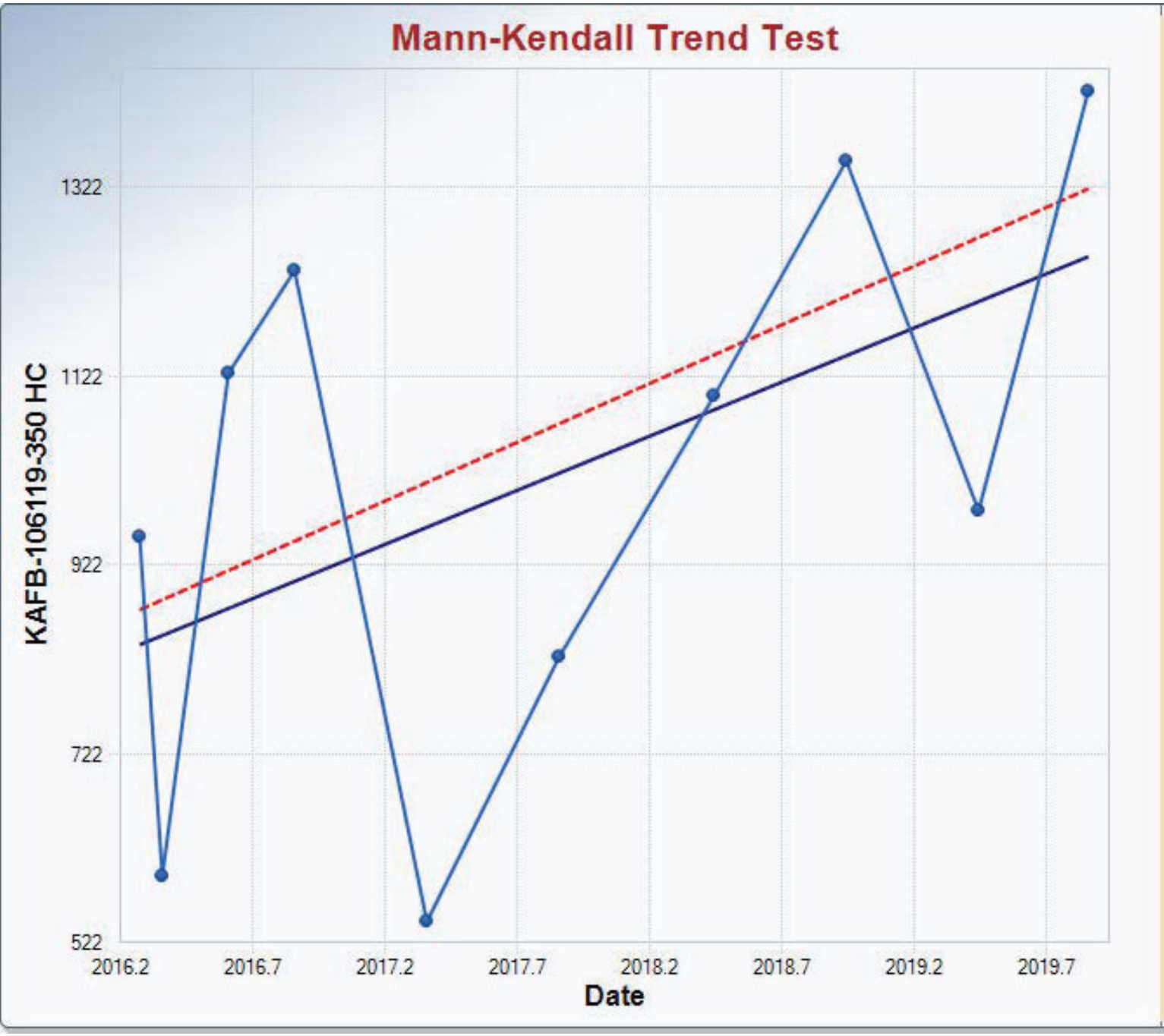
OLS Regression Line (Blue)

OLS Regression Slope	2,951.5882
OLS Regression Intercept	-5,932,970.3400

Theil-Sen Trend Line (Red)

Theil-Sen Slope	2,830.7318
Theil-Sen Intercept	-5,688,865.0660

Statistically significant evidence of an increasing trend at the specified level of significance.



Mann-Kendall Trend Analysis

n	10
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	11.1803
Standardized Value of S	1.4311
M-K Test Value (S)	17
Tabulated p-value	0.0780
Approximate p-value	0.0762

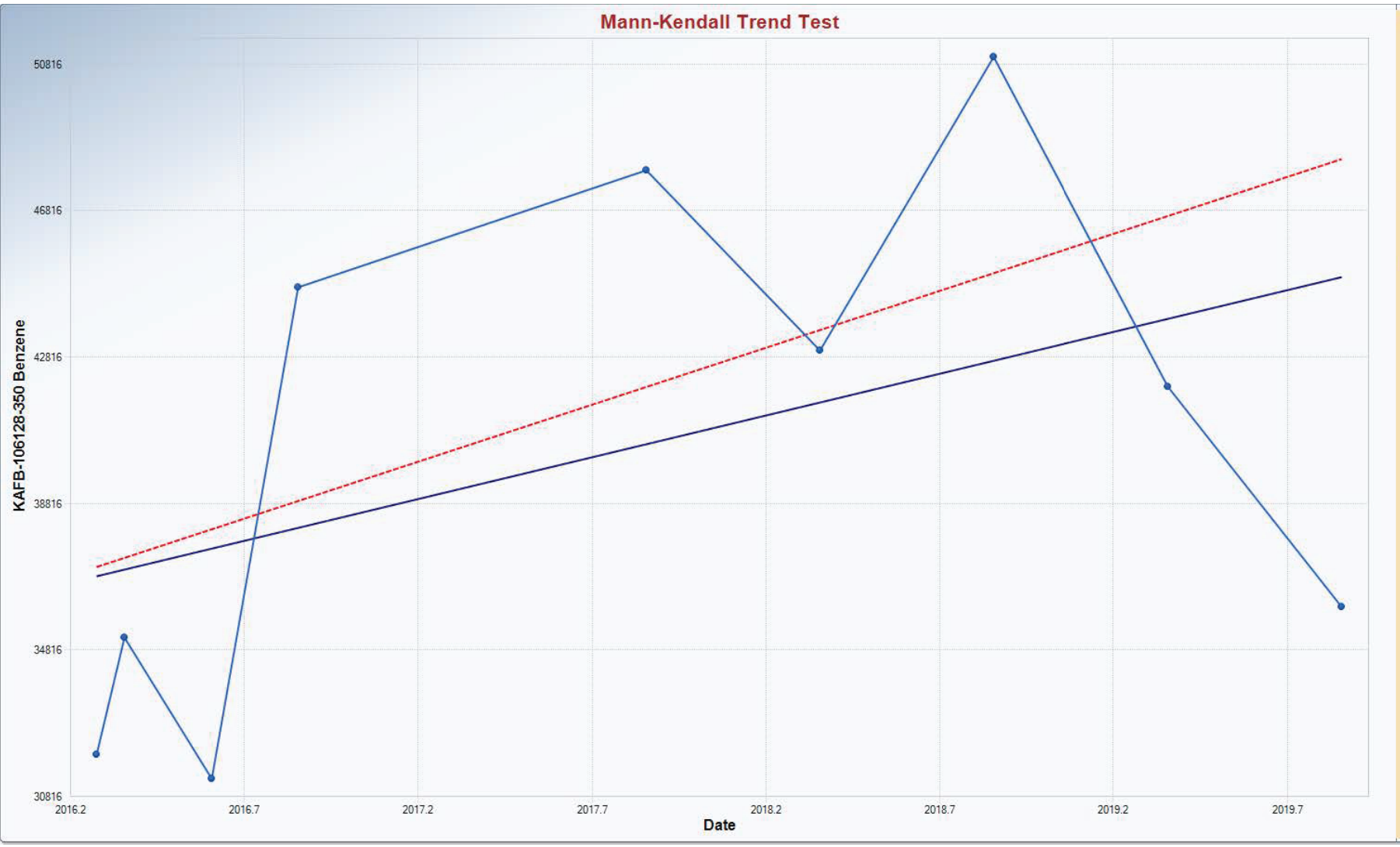
OLS Regression Line (Blue)

OLS Regression Slope	114.7566
OLS Regression Intercept	-230,540.2129

Theil-Sen Trend Line (Red)

Theil-Sen Slope	124.9191
Theil-Sen Intercept	-250,994.2654

Insufficient statistical evidence of a significant trend at the specified level of significance.



Mann-Kendall Trend Analysis

n	9
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	9.5917
Standardized Value of S	0.9383
M-K Test Value (S)	10
Tabulated p-value	0.1790
Approximate p-value	0.1740

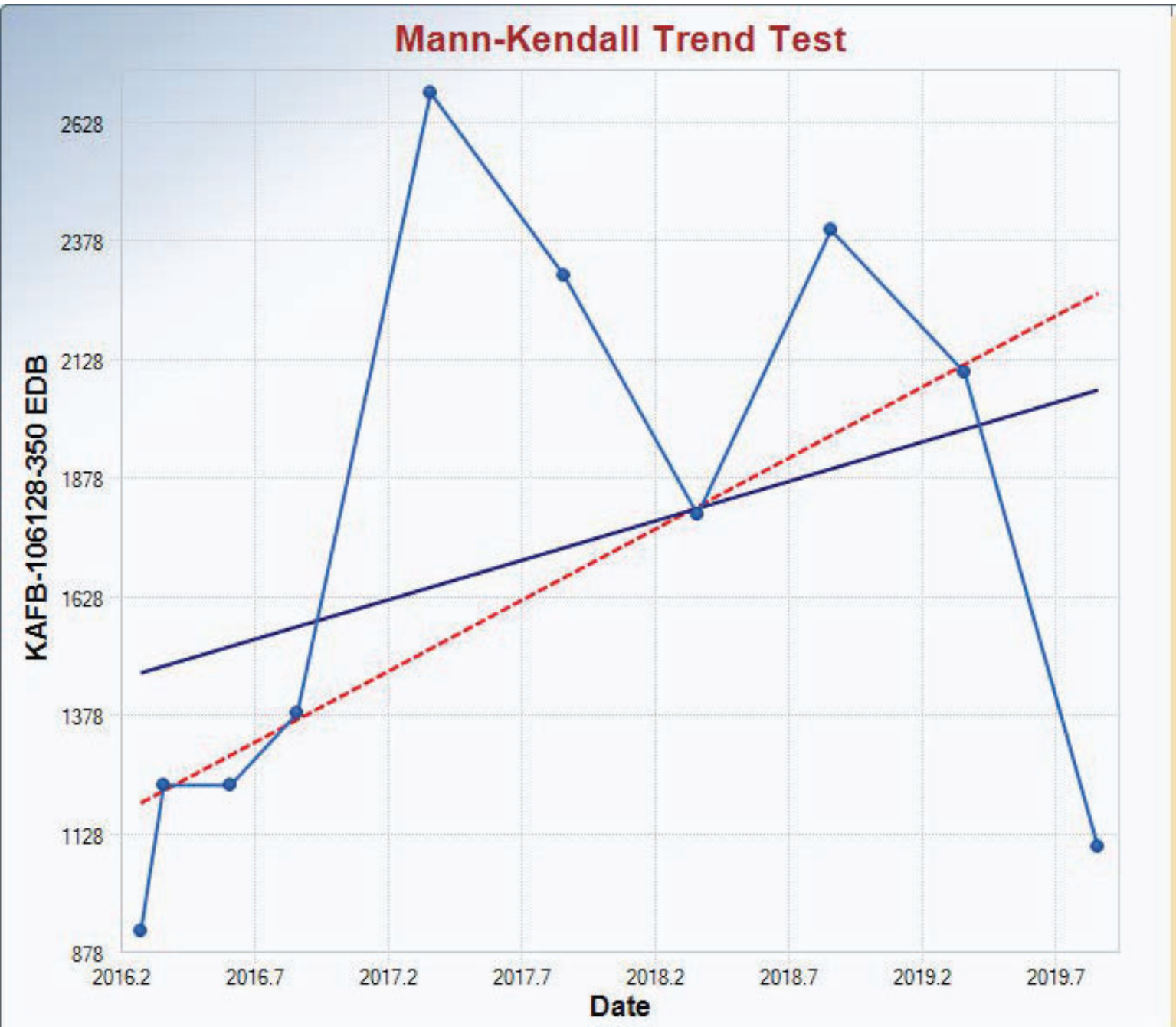
OLS Regression Line (Blue)

OLS Regression Slope	2,281.7670
OLS Regression Intercept	-4,563,796.3052

Theil-Sen Trend Line (Red)

Theil-Sen Slope	3,108.4867
Theil-Sen Intercept	-6,230,397.7330

Insufficient statistical evidence of a significant trend at the specified level of significance.



Mann-Kendall Trend Analysis

n	10
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	11.1355
Standardized Value of S	1.1674
M-K Test Value (S)	14
Tabulated p-value	0.1080
Approximate p-value	0.1215

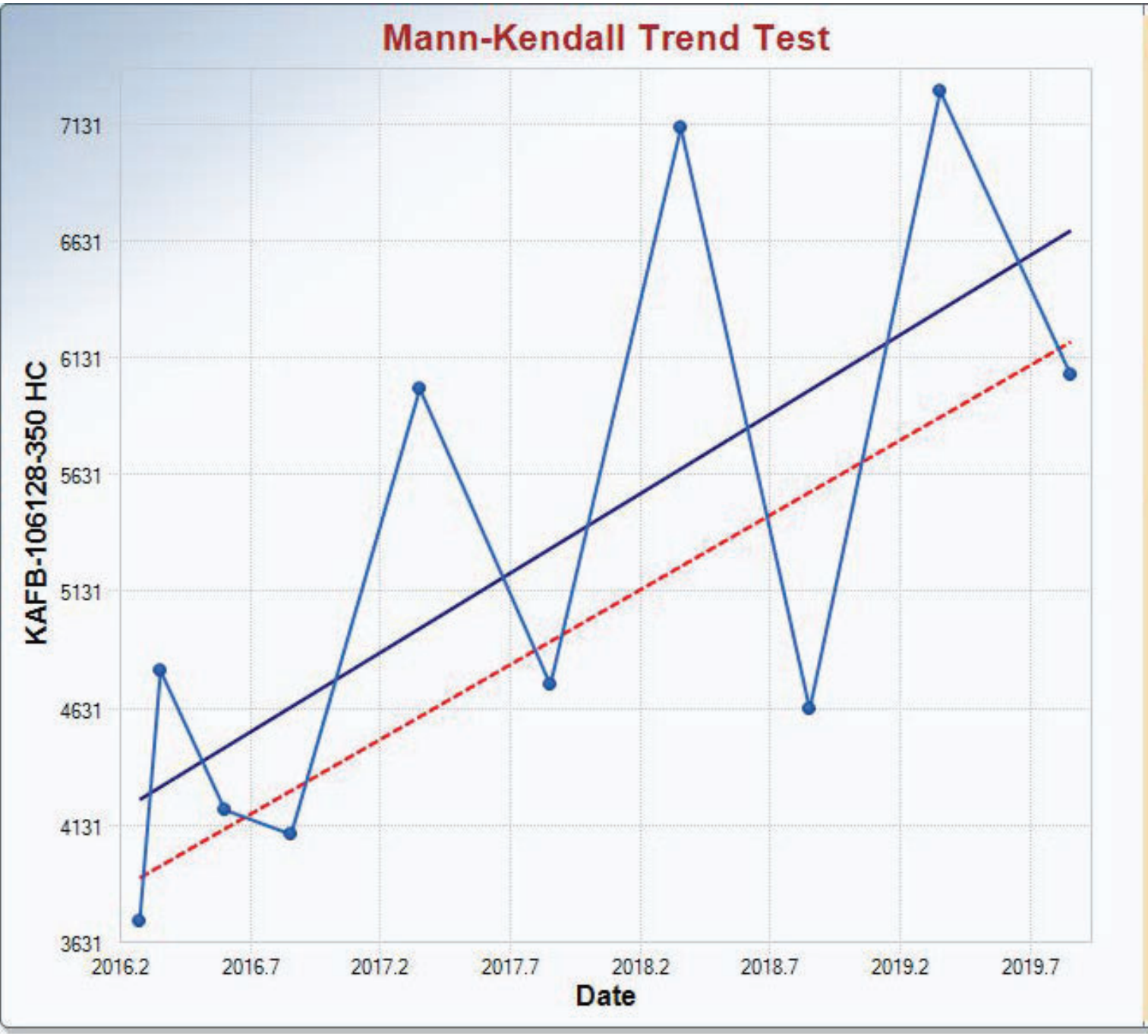
OLS Regression Line (Blue)

OLS Regression Slope	167.3302
OLS Regression Intercept	-335,914.0718

Theil-Sen Trend Line (Red)

Theil-Sen Slope	300.0000
Theil-Sen Intercept	-603,682.4172

Insufficient statistical evidence of a significant trend at the specified level of significance.



Mann-Kendall Trend Analysis

n	10
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	11.1803
Standardized Value of S	1.9677
M-K Test Value (S)	23
Tabulated p-value	0.0230
Approximate p-value	0.0245

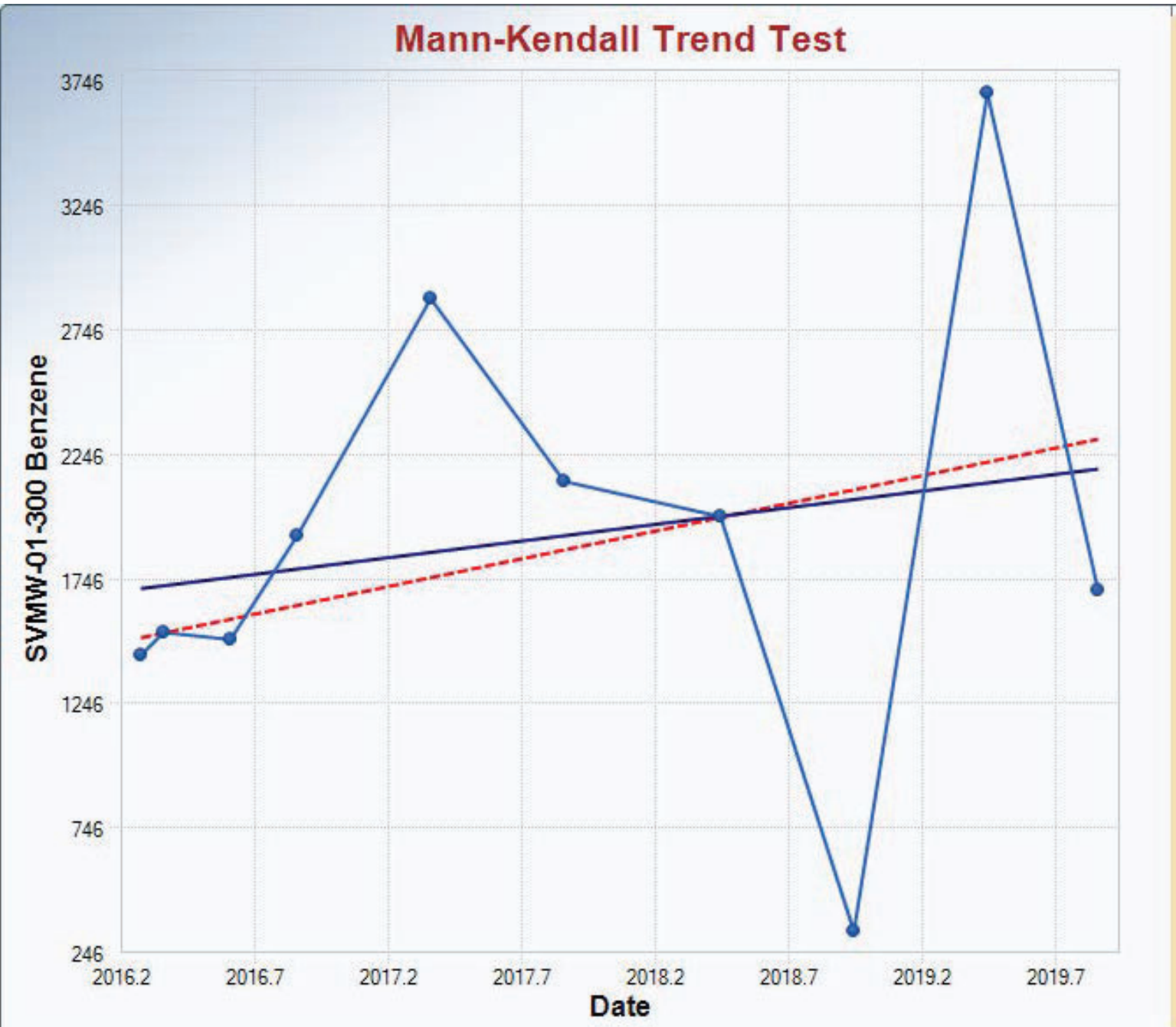
OLS Regression Line (Blue)

OLS Regression Slope	678.6653
OLS Regression Intercept	-1,364,114.9230

Theil-Sen Trend Line (Red)

Theil-Sen Slope	640.0000
Theil-Sen Intercept	-1,286,491.2000

Statistically significant evidence of an increasing trend at the specified level of significance.



Mann-Kendall Trend Analysis

n	10
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	11.1803
Standardized Value of S	1.0733
M-K Test Value (S)	13
Tabulated p-value	0.1460
Approximate p-value	0.1416

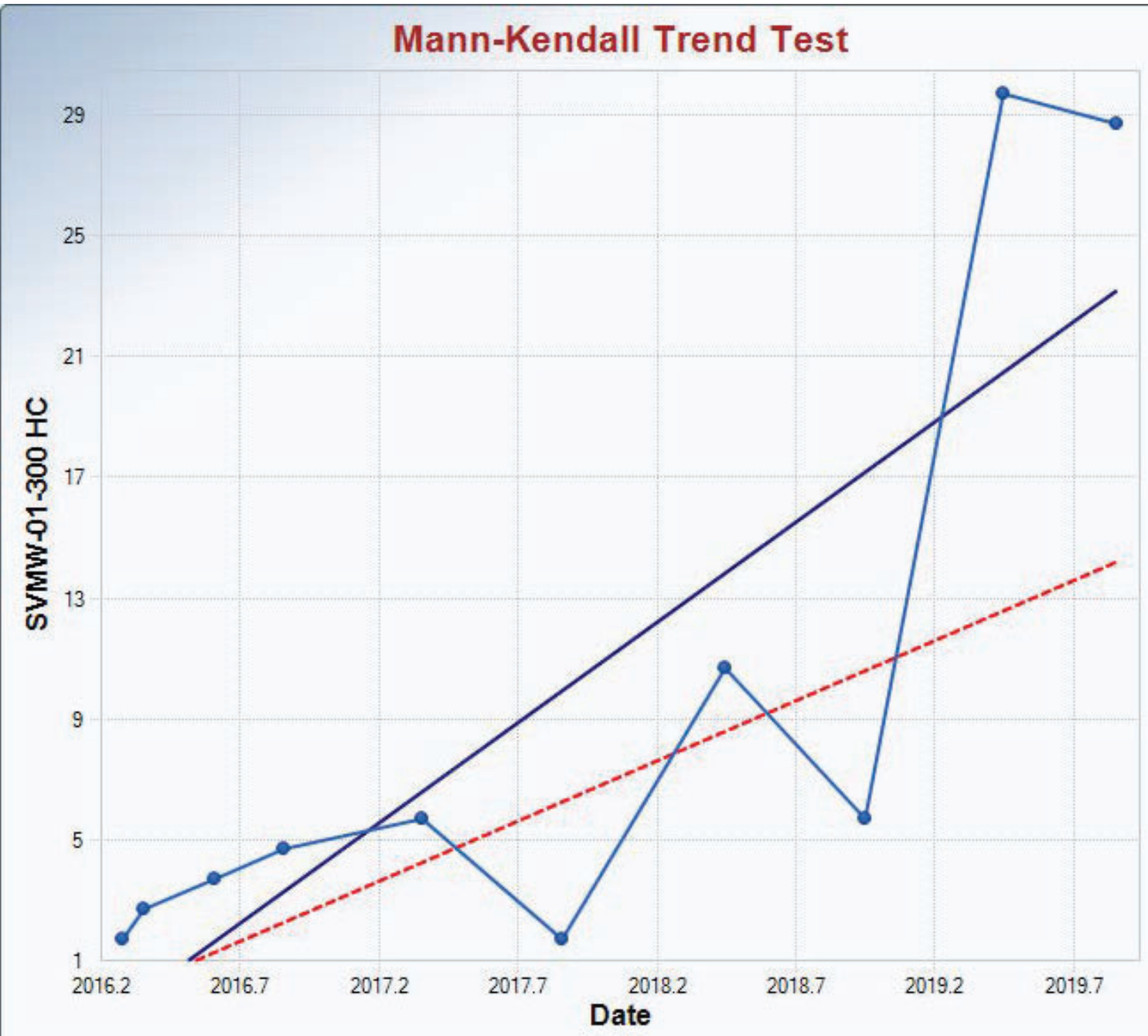
OLS Regression Line (Blue)

OLS Regression Slope	134.1327
OLS Regression Intercept	-268,736.0458

Theil-Sen Trend Line (Red)

Theil-Sen Slope	223.6278
Theil-Sen Intercept	-449,378.5960

Insufficient statistical evidence of a significant trend at the specified level of significance.



Mann-Kendall Trend Analysis

n	10
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	11.0905
Standardized Value of S	2.7050
M-K Test Value (S)	31
Tabulated p-value	0.0020
Approximate p-value	0.0034

OLS Regression Line (Blue)

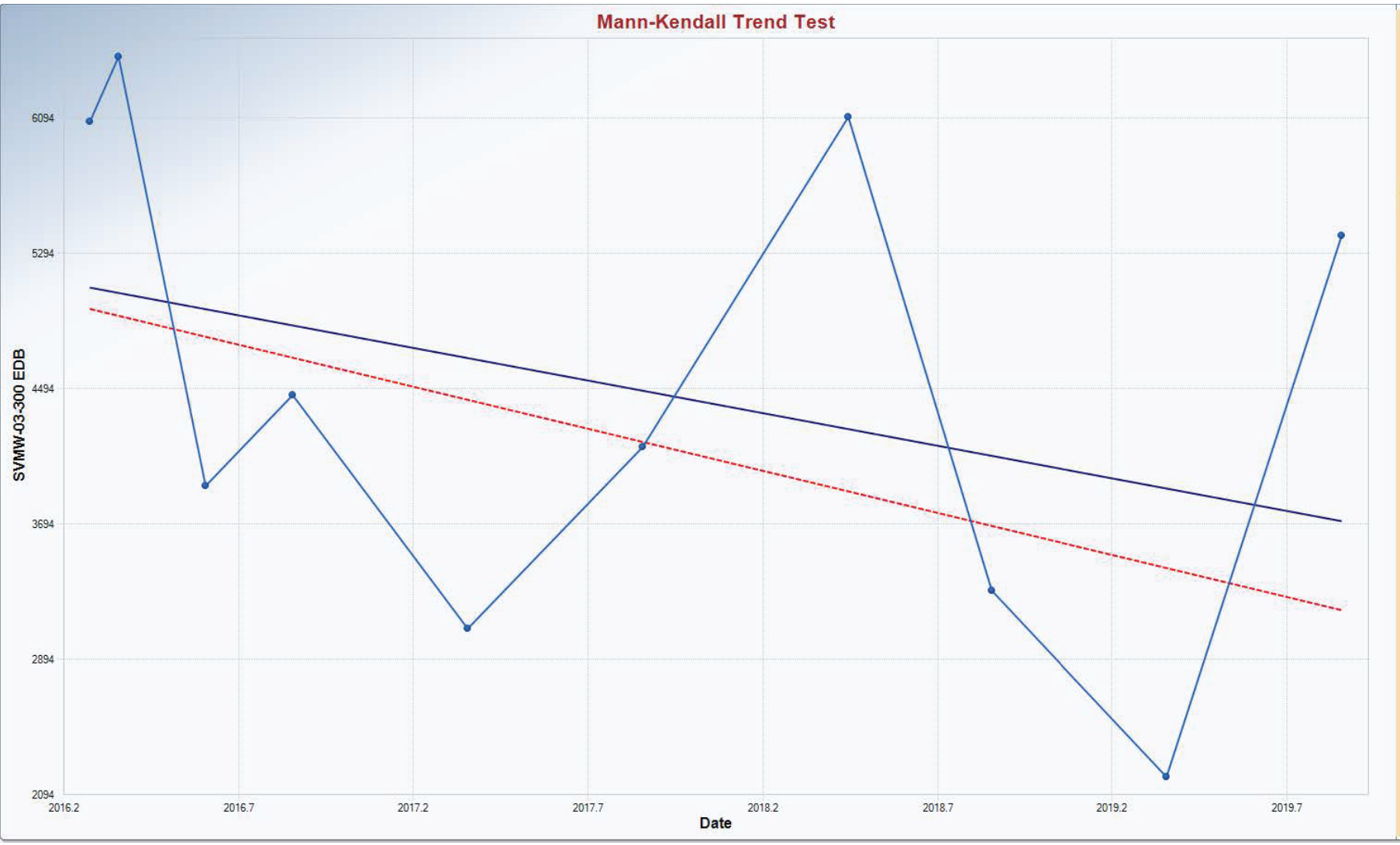
OLS Regression Slope	6.6418
OLS Regression Intercept	-13,391.8665

Theil-Sen Trend Line (Red)

Theil-Sen Slope	4.0000
Theil-Sen Intercept	-8,064.8200

Statistically significant evidence of an increasing trend at the specified level of significance.

Mann-Kendall Trend Test
354215
274215
194215
114215
SVMW-03-300 Benzene
2016.2
2016.7
2017.2
2017.7
2018.2
2018.7
2019.2
2019.7
Date
Mann-Kendall Trend Analysis
n 10
Confidence Coefficient 0.9500
Level of Significance 0.0500
Standard Deviation of S 11.1803
Standardized Value of S -1.9677
M-K Test Value (S) -23
Tabulated p-value 0.0230
Approximate p-value 0.0245
OLS Regression Line (Blue)
OLS Regression Slope -31,445.8453
OLS Regression Intercept 63,686,582.5881
Theil-Sen Trend Line (Red)
Theil-Sen Slope -48,559.1821
Theil-Sen Intercept 98,216,419.2436
Statistically significant evidence of a decreasing trend at the specified level of significance.



Mann-Kendall Trend Analysis

n	10
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	11.1803
Standardized Value of S	-1.0733
M-K Test Value (S)	-13
Tabulated p-value	0.1460
Approximate p-value	0.1416

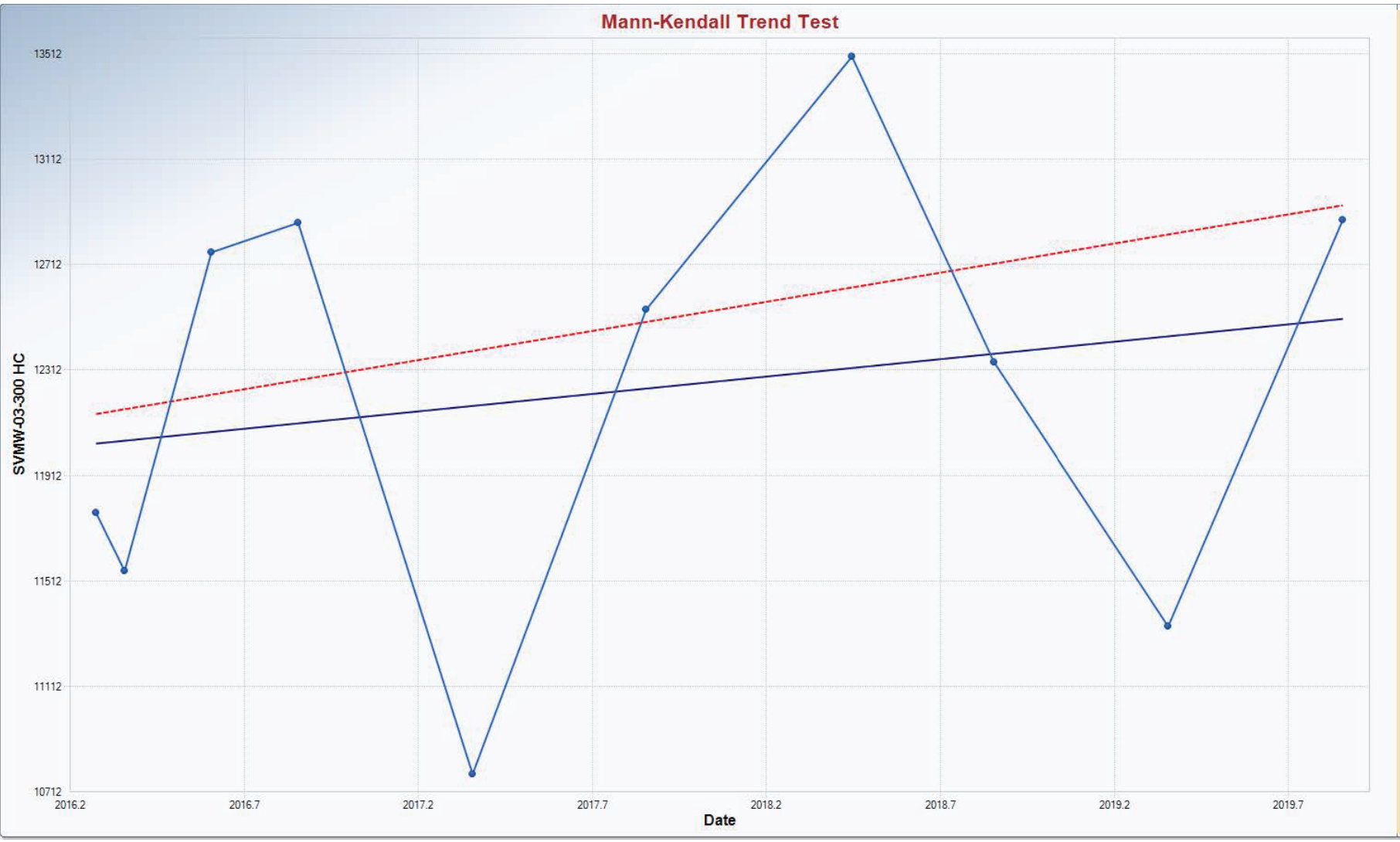
OLS Regression Line (Blue)

OLS Regression Slope	-385.8945
OLS Regression Intercept	783,153.3367

Theil-Sen Trend Line (Red)

Theil-Sen Slope	-496.4539
Theil-Sen Intercept	1,005,938.6430

Insufficient statistical evidence of a significant trend at the specified level of significance.



Mann-Kendall Trend Analysis

n	10
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	11.1803
Standardized Value of S	0.5367
M-K Test Value (S)	7
Tabulated p-value	0.3000
Approximate p-value	0.2958

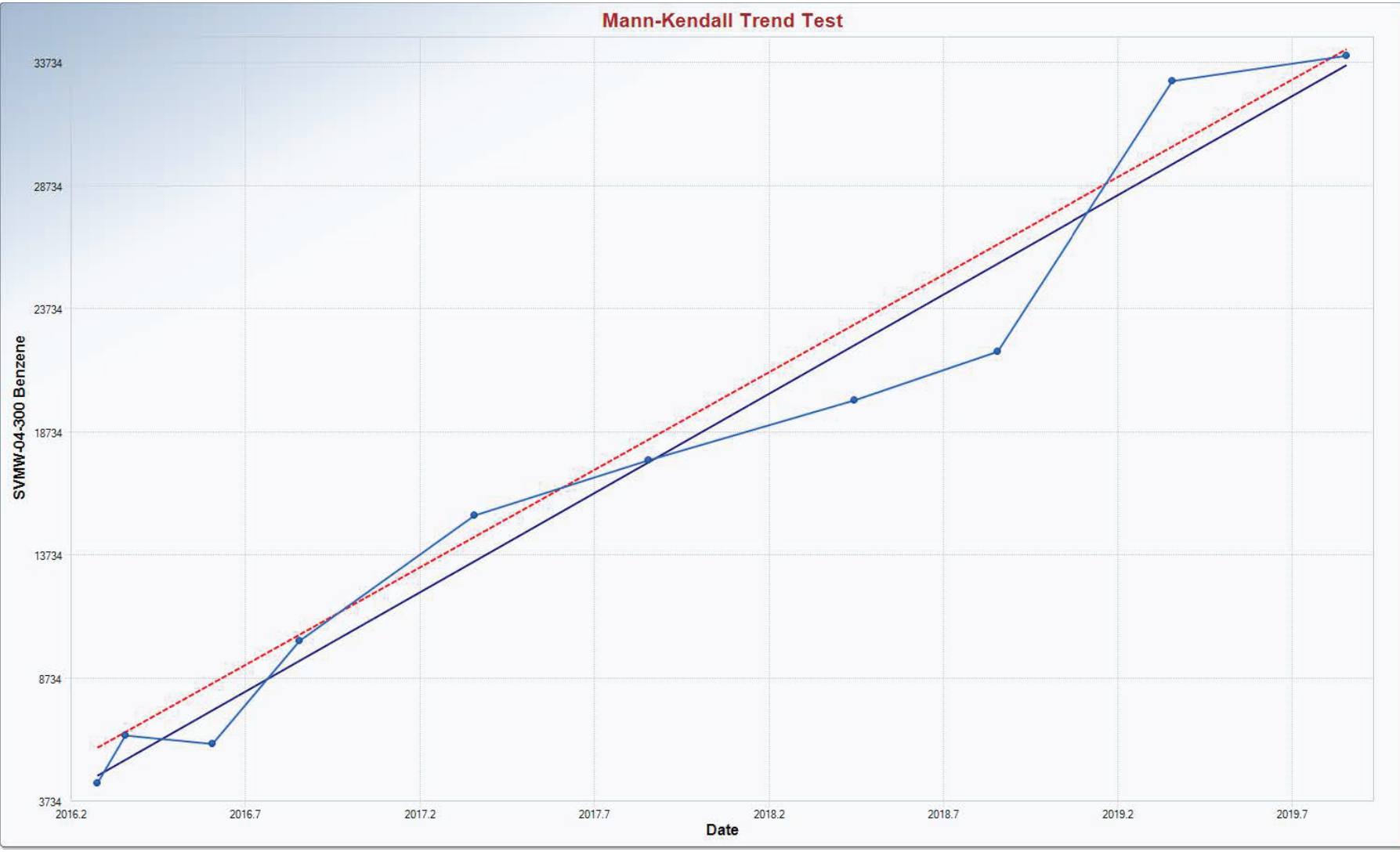
OLS Regression Line (Blue)

OLS Regression Slope	132.1539
OLS Regression Intercept	-254,421.3360

Theil-Sen Trend Line (Red)

Theil-Sen Slope	220.9302
Theil-Sen Intercept	-433,304.4186

Insufficient statistical evidence of a significant trend at the specified level of significance.



Mann-Kendall Trend Analysis

n	10
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	11.1803
Standardized Value of S	3.7566
M-K Test Value (S)	43
Tabulated p-value	0.0000
Approximate p-value	0.0001

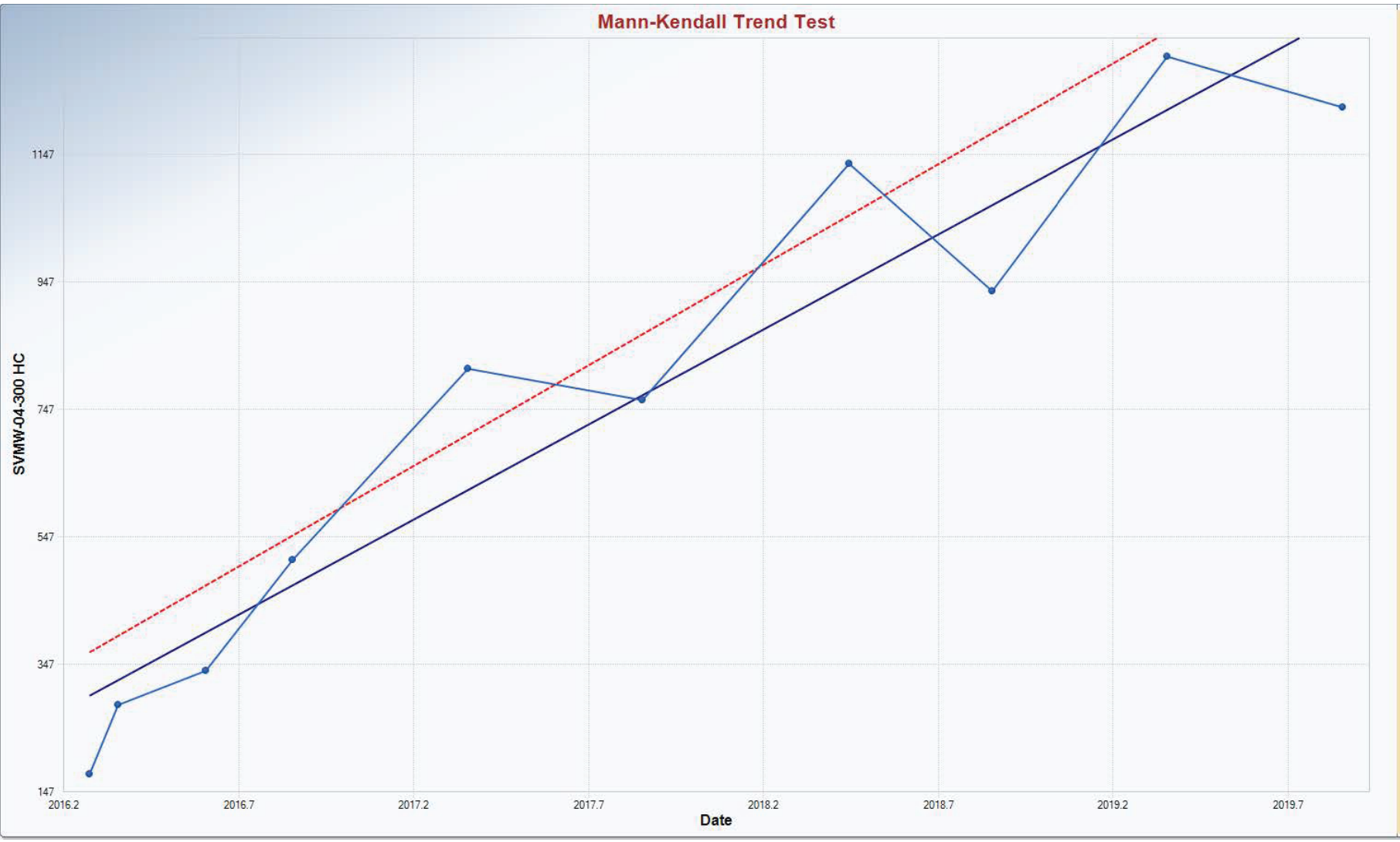
OLS Regression Line (Blue)

OLS Regression Slope	8,057.2258
OLS Regression Intercept	-16,240,609.7179

Theil-Sen Trend Line (Red)

Theil-Sen Slope	7,925.6714
Theil-Sen Intercept	-15,974,223.5596

Statistically significant evidence of an increasing trend at the specified level of significance.



Mann-Kendall Trend Analysis

n	10
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	11.1803
Standardized Value of S	3.3988
M-K Test Value (S)	39
Tabulated p-value	0.0000
Approximate p-value	0.0003

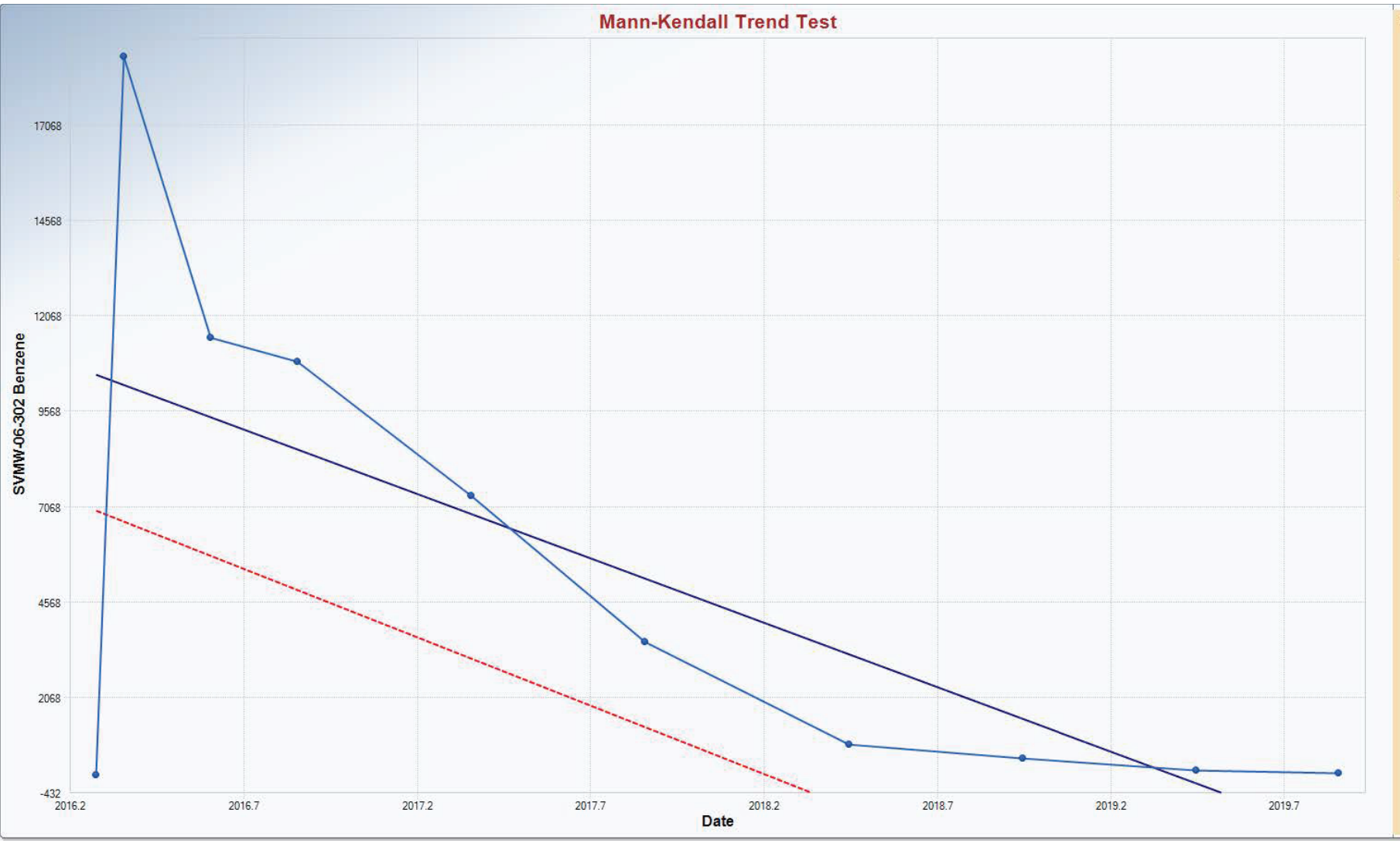
OLS Regression Line (Blue)

OLS Regression Slope	298.3592
OLS Regression Intercept	-601,269.7331

Theil-Sen Trend Line (Red)

Theil-Sen Slope	315.6000
Theil-Sen Intercept	-635,962.2480

Statistically significant evidence of an increasing trend at the specified level of significance.



Mann-Kendall Trend Analysis

n	10
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	11.1803
Standardized Value of S	-2.3255
M-K Test Value (S)	-27
Tabulated p-value	0.0080
Approximate p-value	0.0100

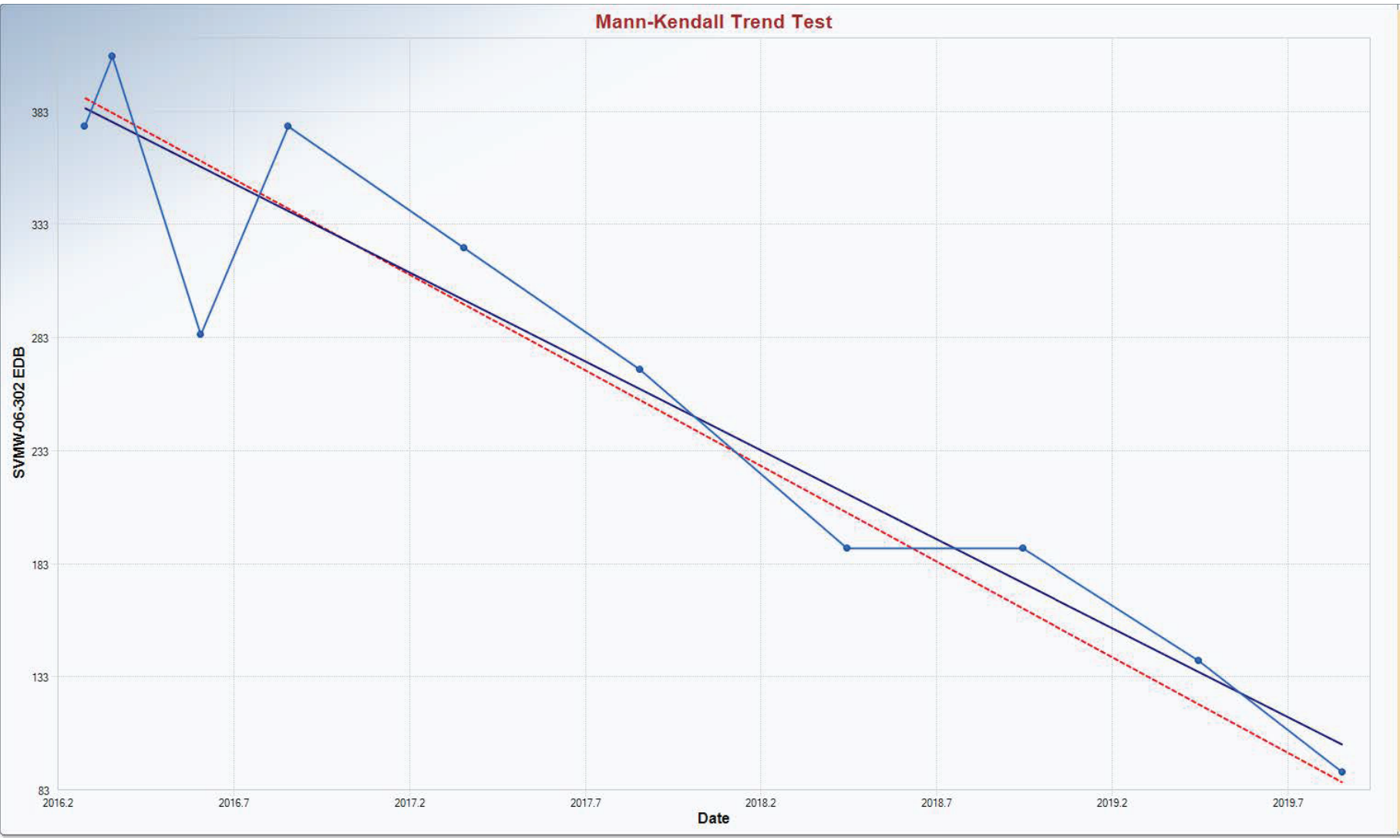
OLS Regression Line (Blue)

OLS Regression Slope	-3,388.5989
OLS Regression Intercept	6,842,792.1188

Theil-Sen Trend Line (Red)

Theil-Sen Slope	-3,596.6408
Theil-Sen Intercept	7,258,687.5470

Statistically significant evidence of a decreasing trend at the specified level of significance.



Mann-Kendall Trend Analysis

n	10
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	11.0905
Standardized Value of S	-3.2460
M-K Test Value (S)	-37
Tabulated p-value	0.0000
Approximate p-value	0.0006

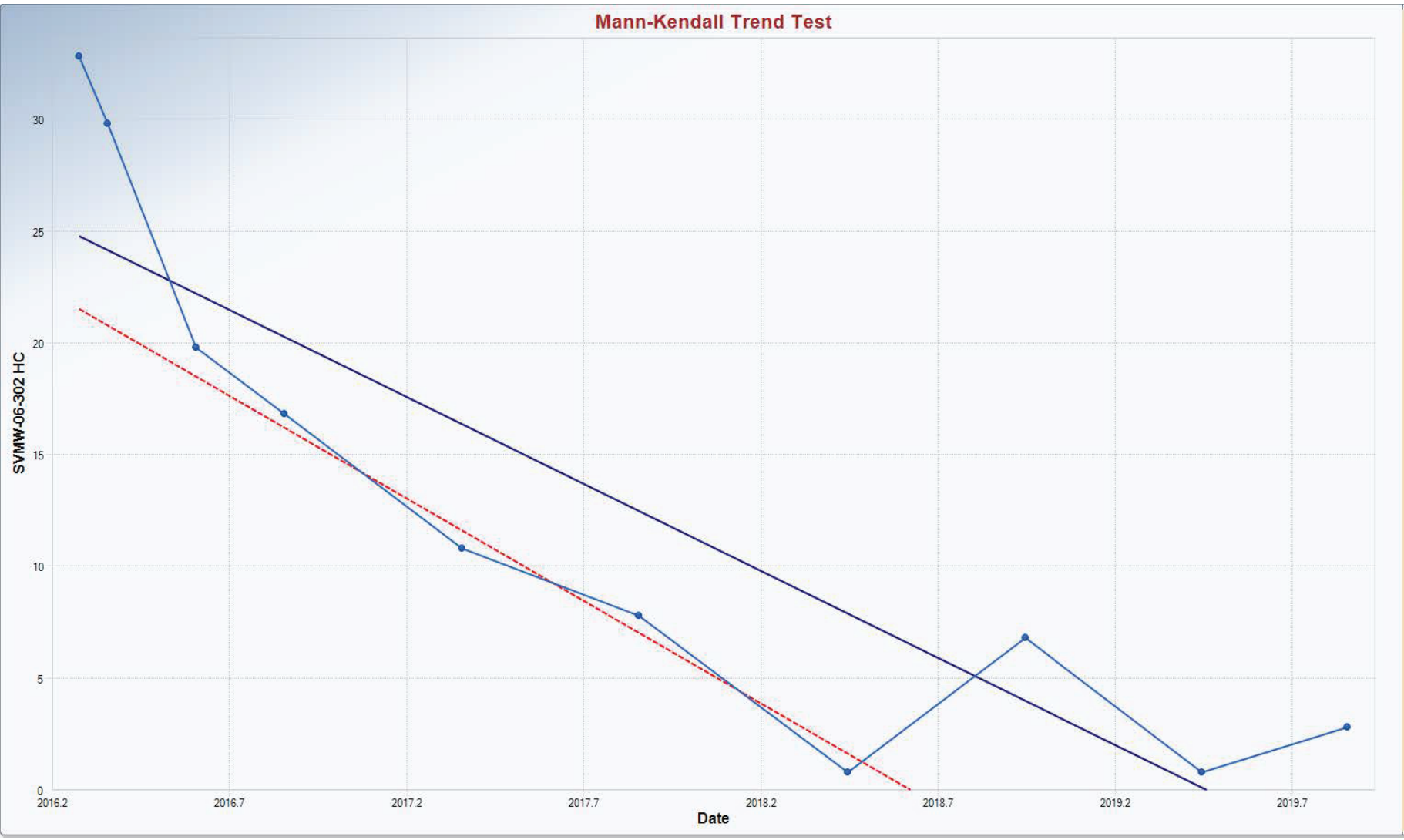
OLS Regression Line (Blue)

OLS Regression Slope	-78.6987
OLS Regression Intercept	159,060.8830

Theil-Sen Trend Line (Red)

Theil-Sen Slope	-84.5268
Theil-Sen Intercept	170,816.1929

Statistically significant evidence of a decreasing trend at the specified level of significance.



Mann-Kendall Trend Analysis

n	10
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	11.1355
Standardized Value of S	-3.3227
M-K Test Value (S)	-38
Tabulated p-value	0.0000
Approximate p-value	0.0004

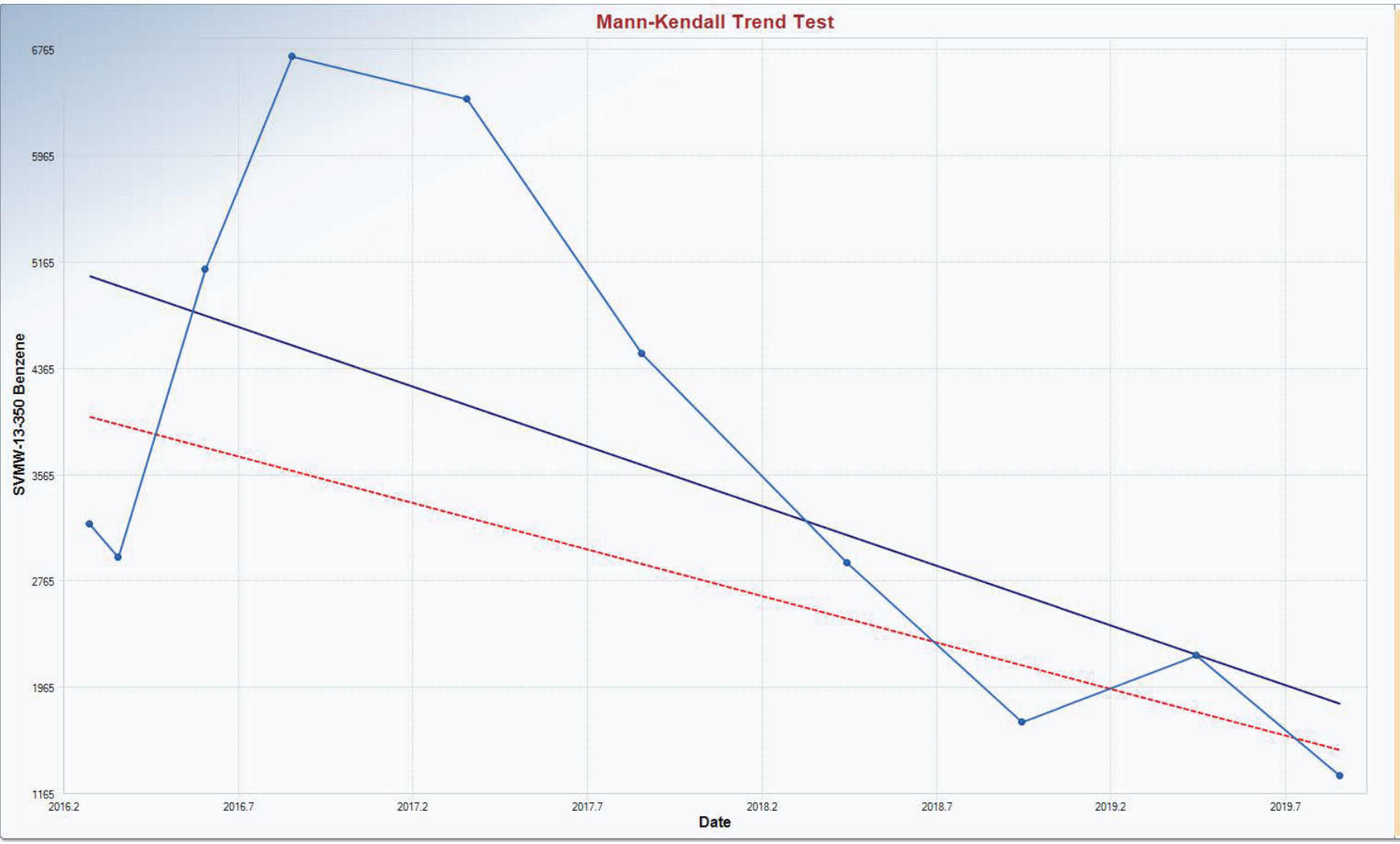
OLS Regression Line (Blue)

OLS Regression Slope	-7.7922
OLS Regression Intercept	15,735.9033

Theil-Sen Trend Line (Red)

Theil-Sen Slope	-9.1743
Theil-Sen Intercept	18,519.4083

Statistically significant evidence of a decreasing trend at the specified level of significance.



Mann-Kendall Trend Analysis

n	10
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	11.1803
Standardized Value of S	-1.9677
M-K Test Value (S)	-23
Tabulated p-value	0.0230
Approximate p-value	0.0245

OLS Regression Line (Blue)

OLS Regression Slope	-899.1785
OLS Regression Intercept	1,818,030.5495

Theil-Sen Trend Line (Red)

Theil-Sen Slope	-700.0000
Theil-Sen Intercept	1,415,372.8957

Statistically significant evidence of a decreasing trend at the specified level of significance.

Mann-Kendall Trend Analysis

n	10
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	11.1803
Standardized Value of S	-1.4311
M-K Test Value (S)	-17
Tabulated p-value	0.0780
Approximate p-value	0.0762

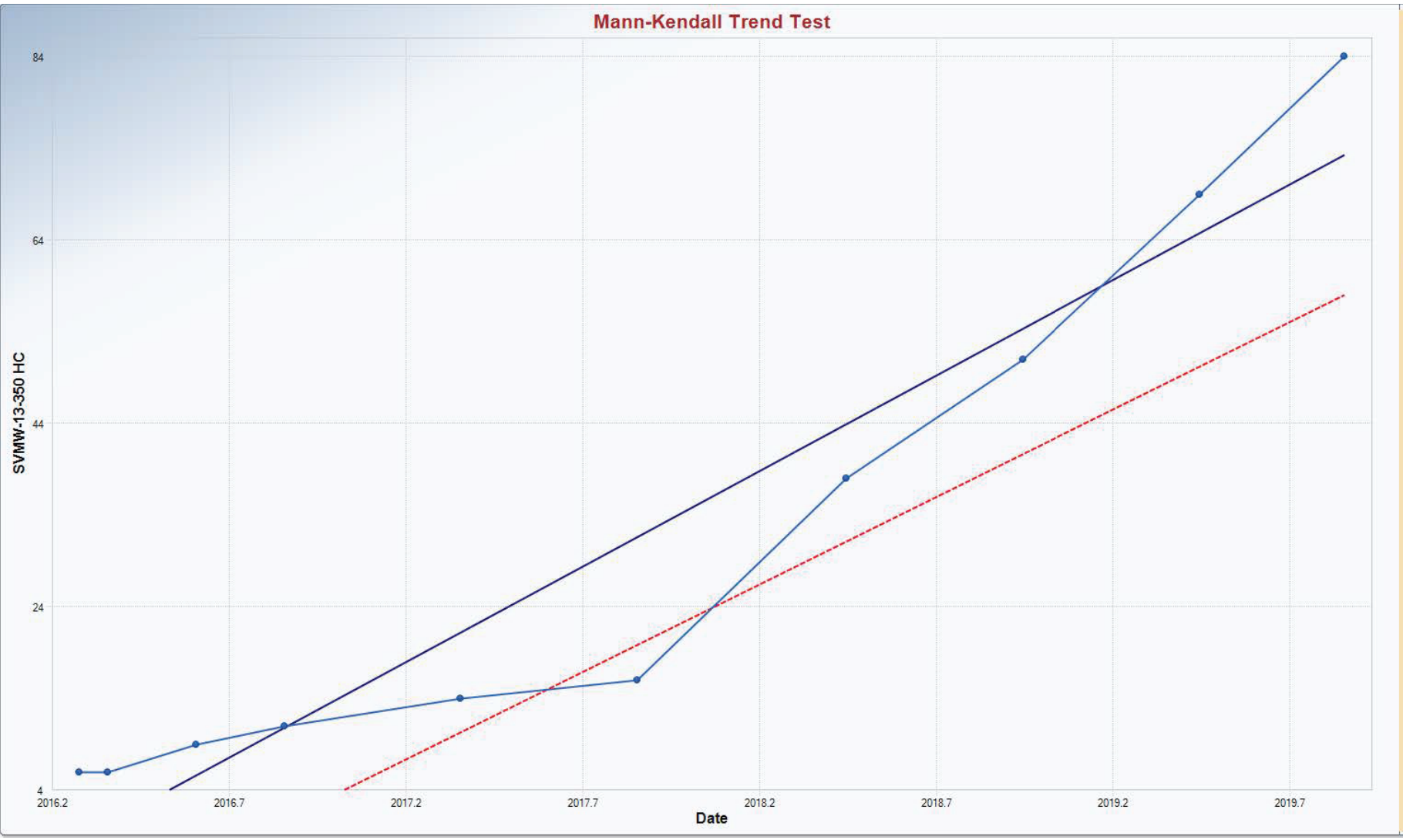
OLS Regression Line (Blue)

OLS Regression Slope	-12.7735
OLS Regression Intercept	25,821.4114

Theil-Sen Trend Line (Red)

Theil-Sen Slope	-10.2386
Theil-Sen Intercept	20,704.0943

Insufficient statistical evidence of a significant trend at the specified level of significance.



Mann-Kendall Trend Analysis

n	10
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	11.1355
Standardized Value of S	3.8615
M-K Test Value (S)	44
Tabulated p-value	0.0000
Approximate p-value	0.0001

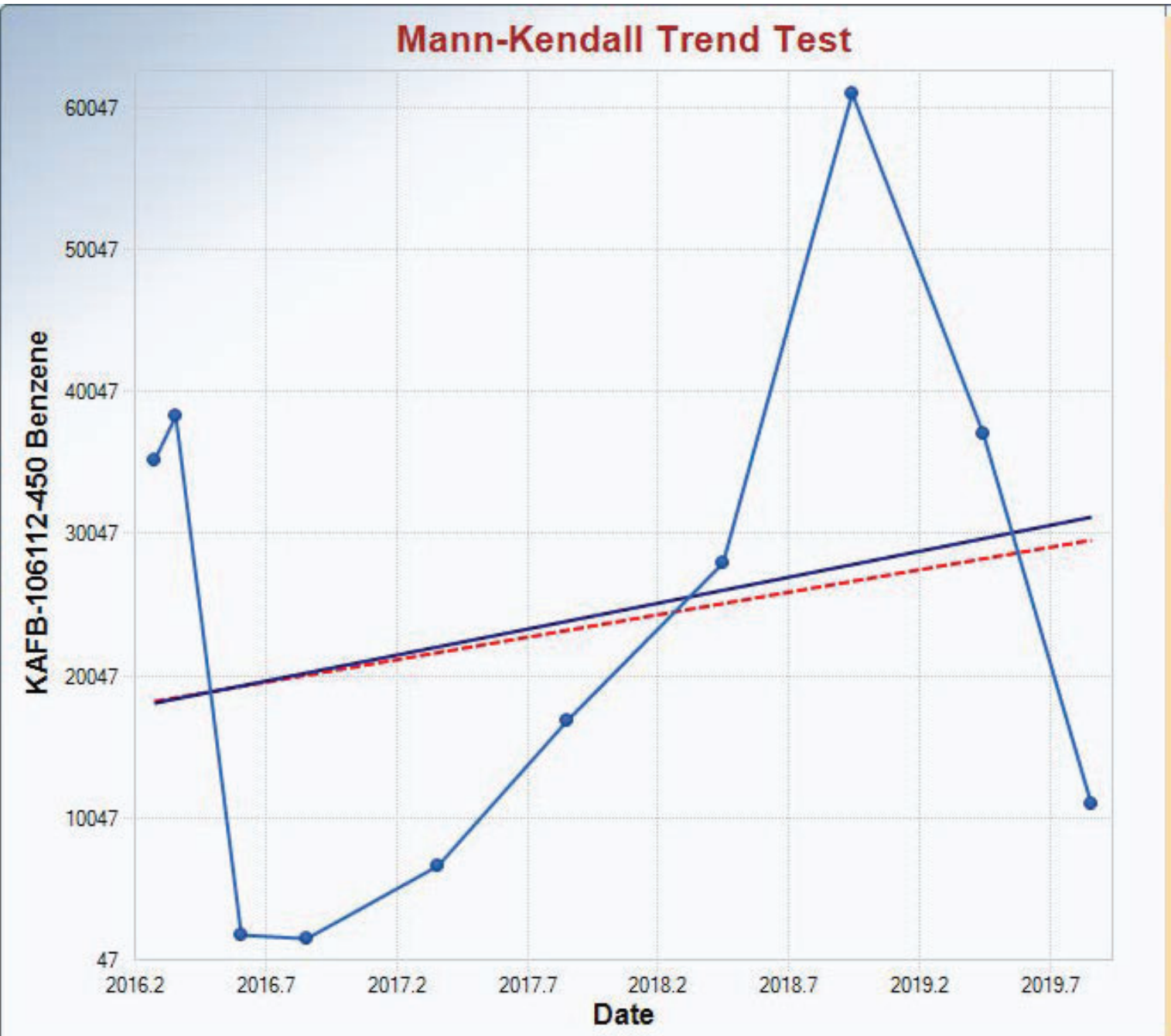
OLS Regression Line (Blue)

OLS Regression Slope	20.8451
OLS Regression Intercept	-42,030.3701

Theil-Sen Trend Line (Red)

Theil-Sen Slope	19.1388
Theil-Sen Intercept	-38,598.9713

Statistically significant evidence of an increasing trend at the specified level of significance.



Mann-Kendall Trend Analysis

n	10
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	11.1803
Standardized Value of S	0.5367
M-K Test Value (S)	7
Tabulated p-value	0.3000
Approximate p-value	0.2958

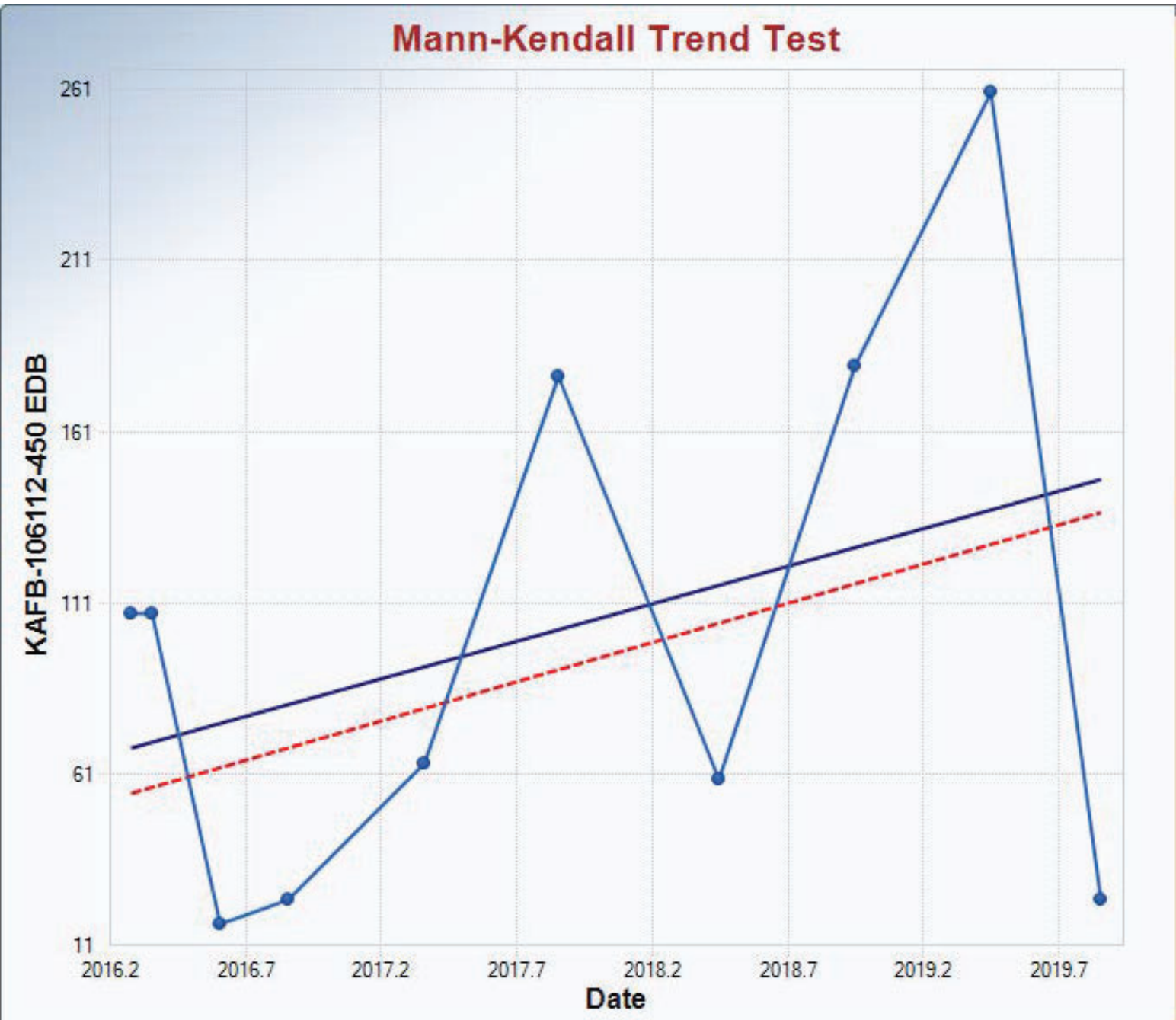
OLS Regression Line (Blue)

OLS Regression Slope	3,657.2209
OLS Regression Intercept	-7,355,704.2834

Theil-Sen Trend Line (Red)

Theil-Sen Slope	3,155.5174
Theil-Sen Intercept	-6,344,042.8502

Insufficient statistical evidence of a significant trend at the specified level of significance.



Mann-Kendall Trend Analysis

n	10
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	11.1355
Standardized Value of S	0.8082
M-K Test Value (S)	10
Tabulated p-value	0.1900
Approximate p-value	0.2095

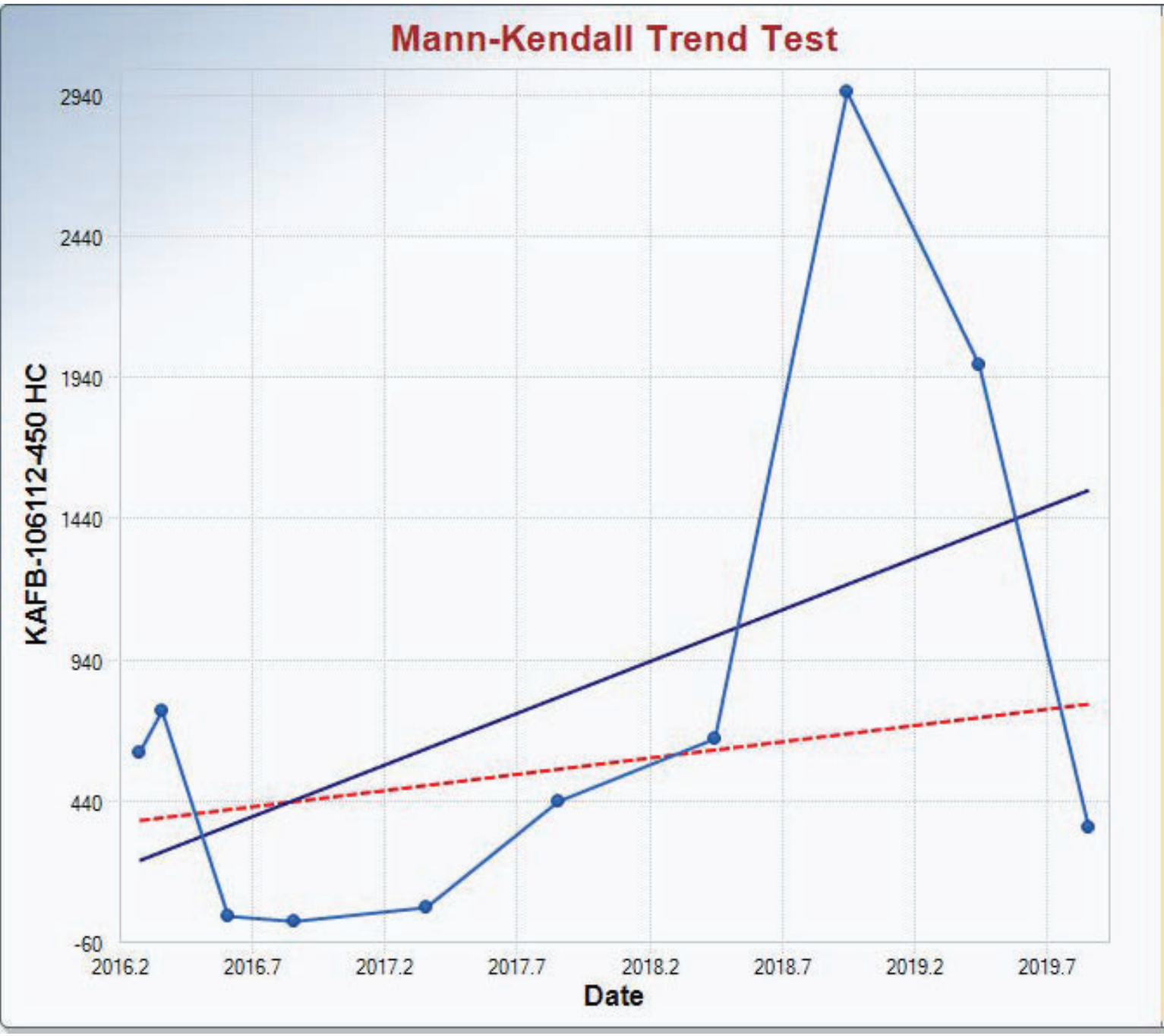
OLS Regression Line (Blue)

OLS Regression Slope	21.8902
OLS Regression Intercept	-44,067.6021

Theil-Sen Trend Line (Red)

Theil-Sen Slope	22.8775
Theil-Sen Intercept	-46,071.5532

Insufficient statistical evidence of a significant trend at the specified level of significance.



Mann-Kendall Trend Analysis

n	10
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	11.1803
Standardized Value of S	0.8944
M-K Test Value (S)	11
Tabulated p-value	0.1900
Approximate p-value	0.1855

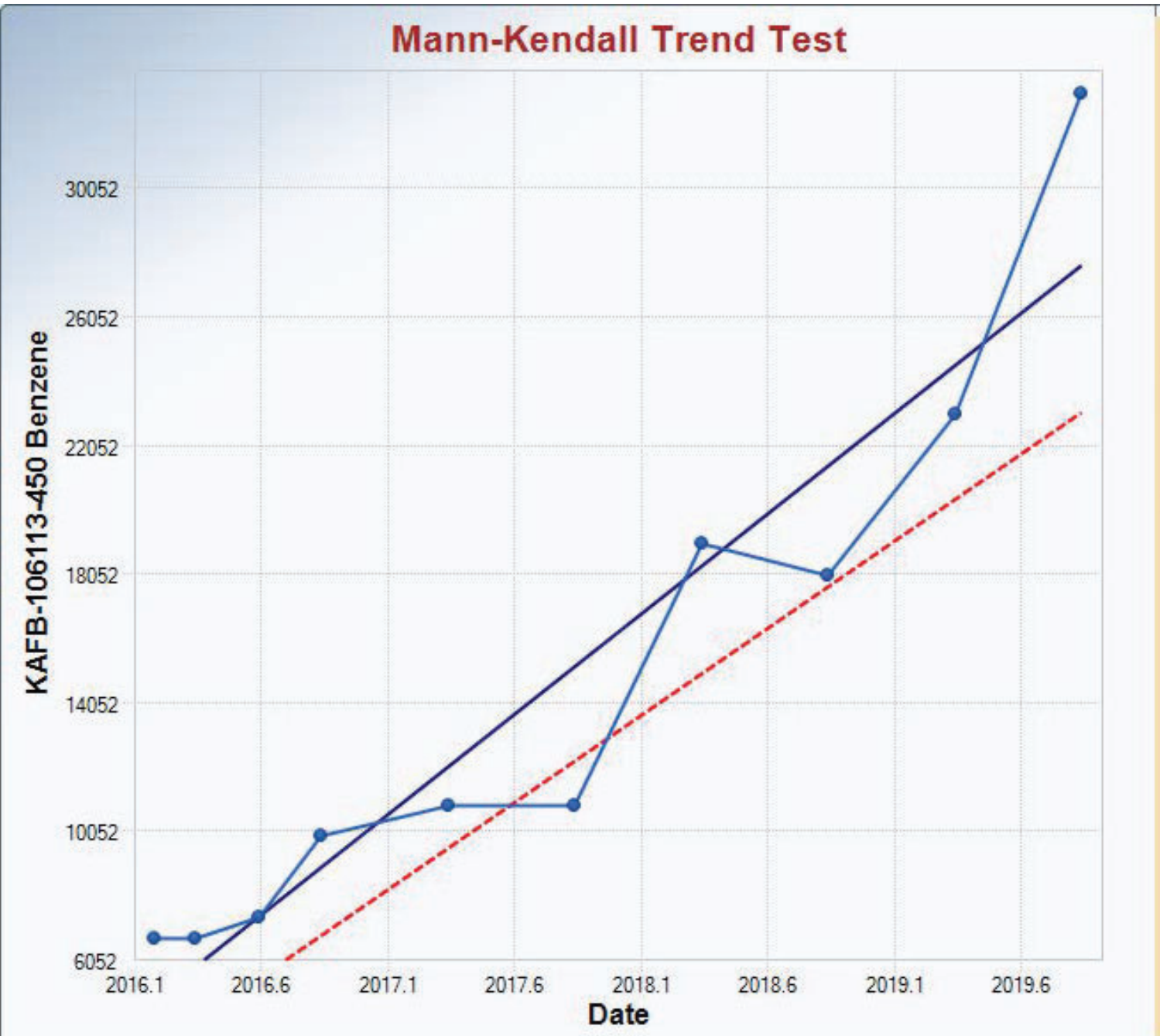
OLS Regression Line (Blue)

OLS Regression Slope	366.5912
OLS Regression Intercept	-738,913.5773

Theil-Sen Trend Line (Red)

Theil-Sen Slope	114.0000
Theil-Sen Intercept	-229,480.6200

Insufficient statistical evidence of a significant trend at the specified level of significance.



Mann-Kendall Trend Analysis

n	10
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	11.0905
Standardized Value of S	3.6067
M-K Test Value (S)	41
Tabulated p-value	0.0000
Approximate p-value	0.0002

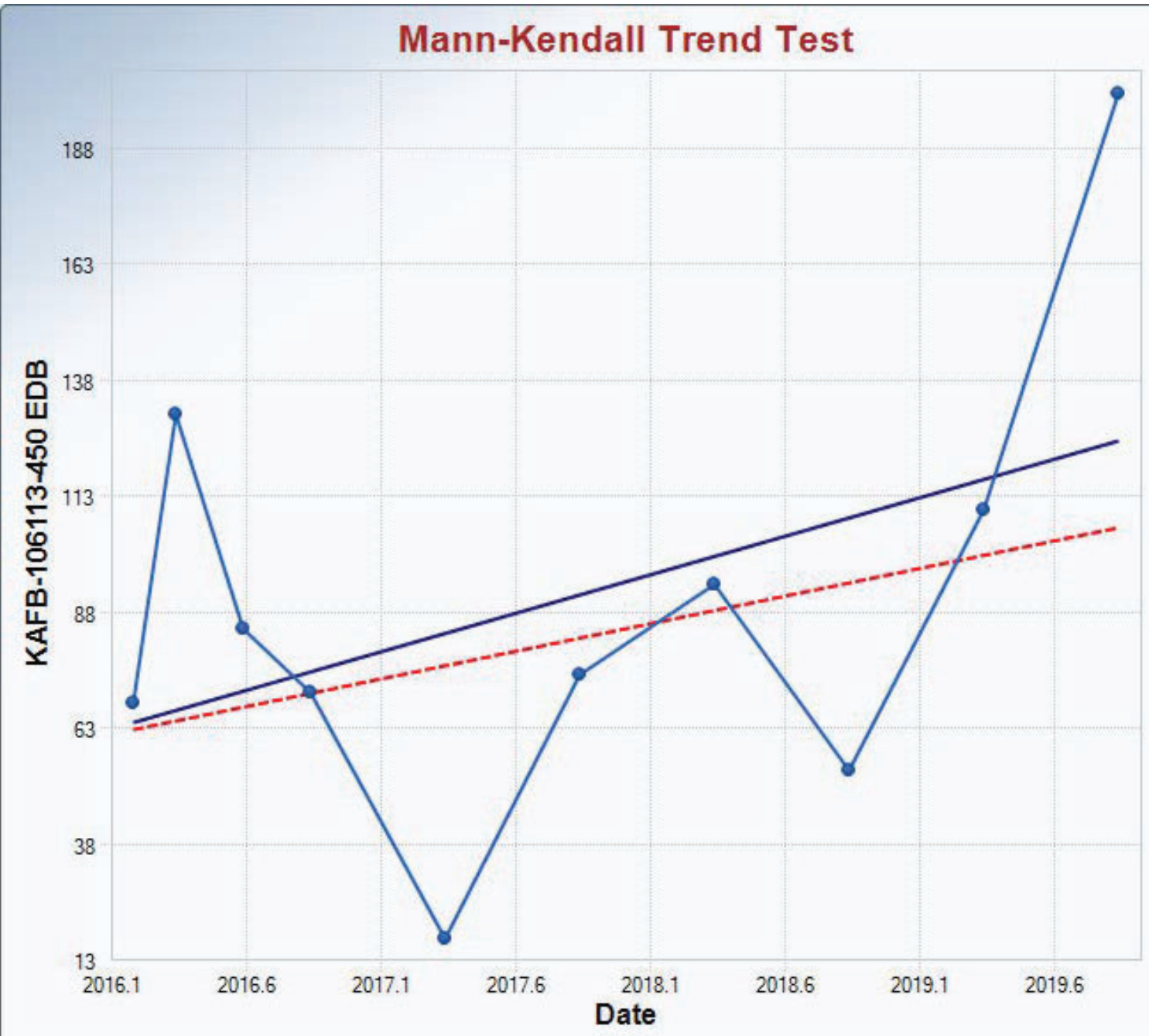
OLS Regression Line (Blue)

OLS Regression Slope	6,269.1052
OLS Regression Intercept	-12,634,878.8242

Theil-Sen Trend Line (Red)

Theil-Sen Slope	5,430.3885
Theil-Sen Intercept	-10,945,381.4044

Statistically significant evidence of an increasing trend at the specified level of significance.



Mann-Kendall Trend Analysis

n	10
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	11.1803
Standardized Value of S	0.8944
M-K Test Value (S)	11
Tabulated p-value	0.1900
Approximate p-value	0.1855

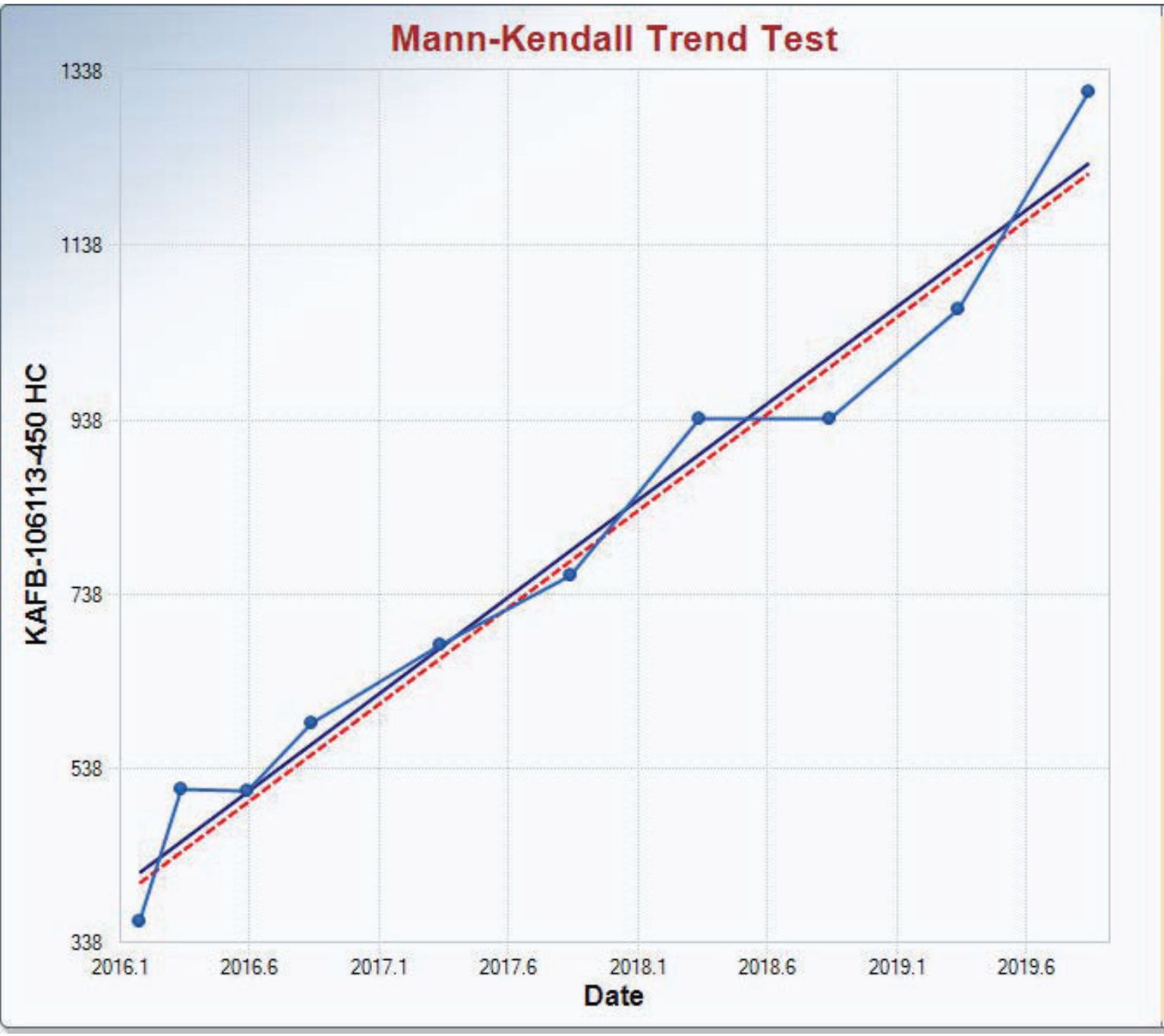
OLS Regression Line (Blue)

OLS Regression Slope	16.6481
OLS Regression Intercept	-33,501.1607

Theil-Sen Trend Line (Red)

Theil-Sen Slope	11.8565
Theil-Sen Intercept	-23,842.0016

Insufficient statistical evidence of a significant trend at the specified level of significance.



Mann-Kendall Trend Analysis

n	10
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	11.1355
Standardized Value of S	3.6819
M-K Test Value (S)	42
Tabulated p-value	0.0000
Approximate p-value	0.0001

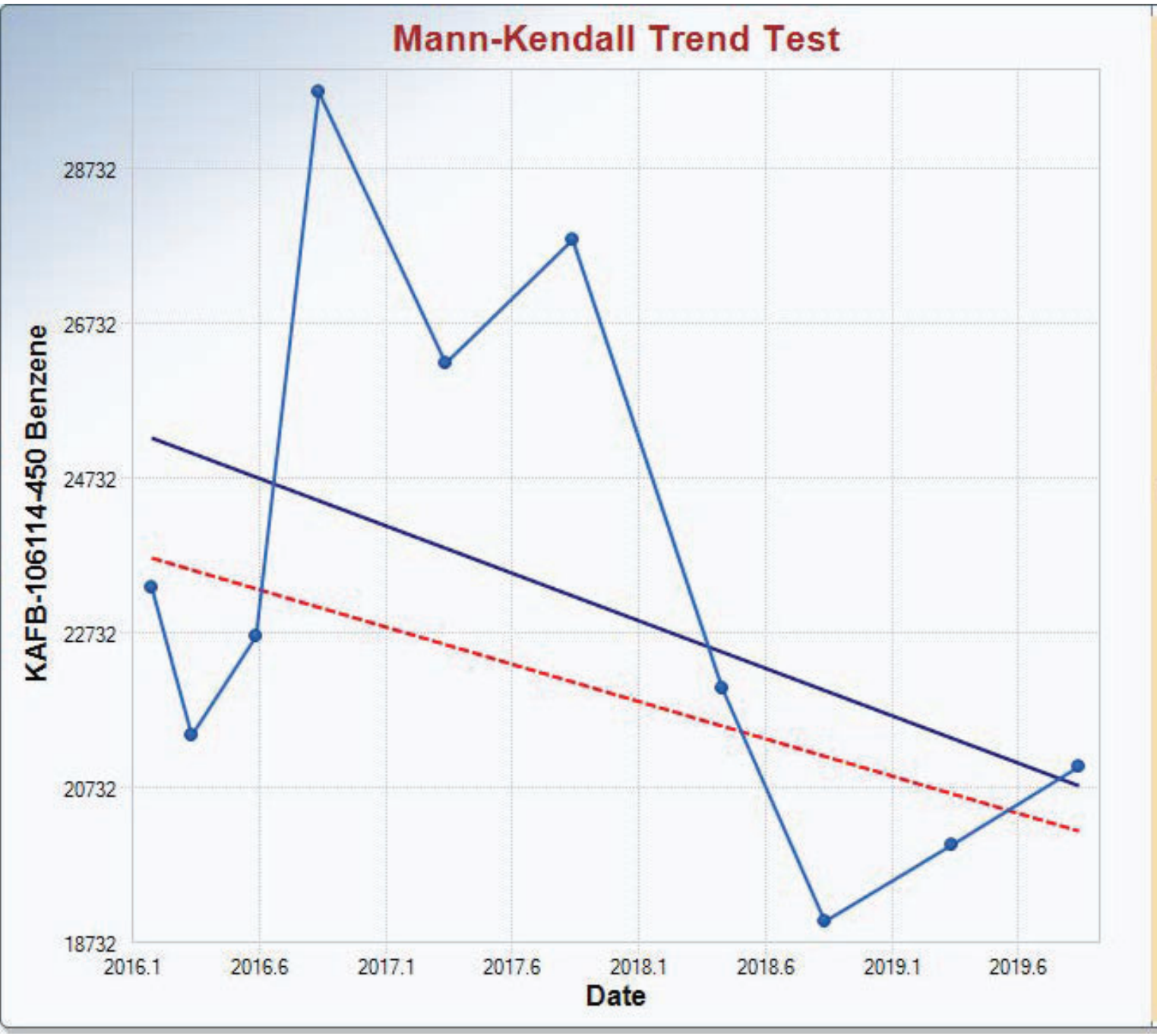
OLS Regression Line (Blue)

OLS Regression Slope	222.8770
OLS Regression Intercept	-448,940.0508

Theil-Sen Trend Line (Red)

Theil-Sen Slope	222.4684
Theil-Sen Intercept	-448,128.2025

Statistically significant evidence of an increasing trend at the specified level of significance.



Mann-Kendall Trend Analysis

n	10
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	11.1803
Standardized Value of S	-1.2522
M-K Test Value (S)	-15
Tabulated p-value	0.1080
Approximate p-value	0.1052

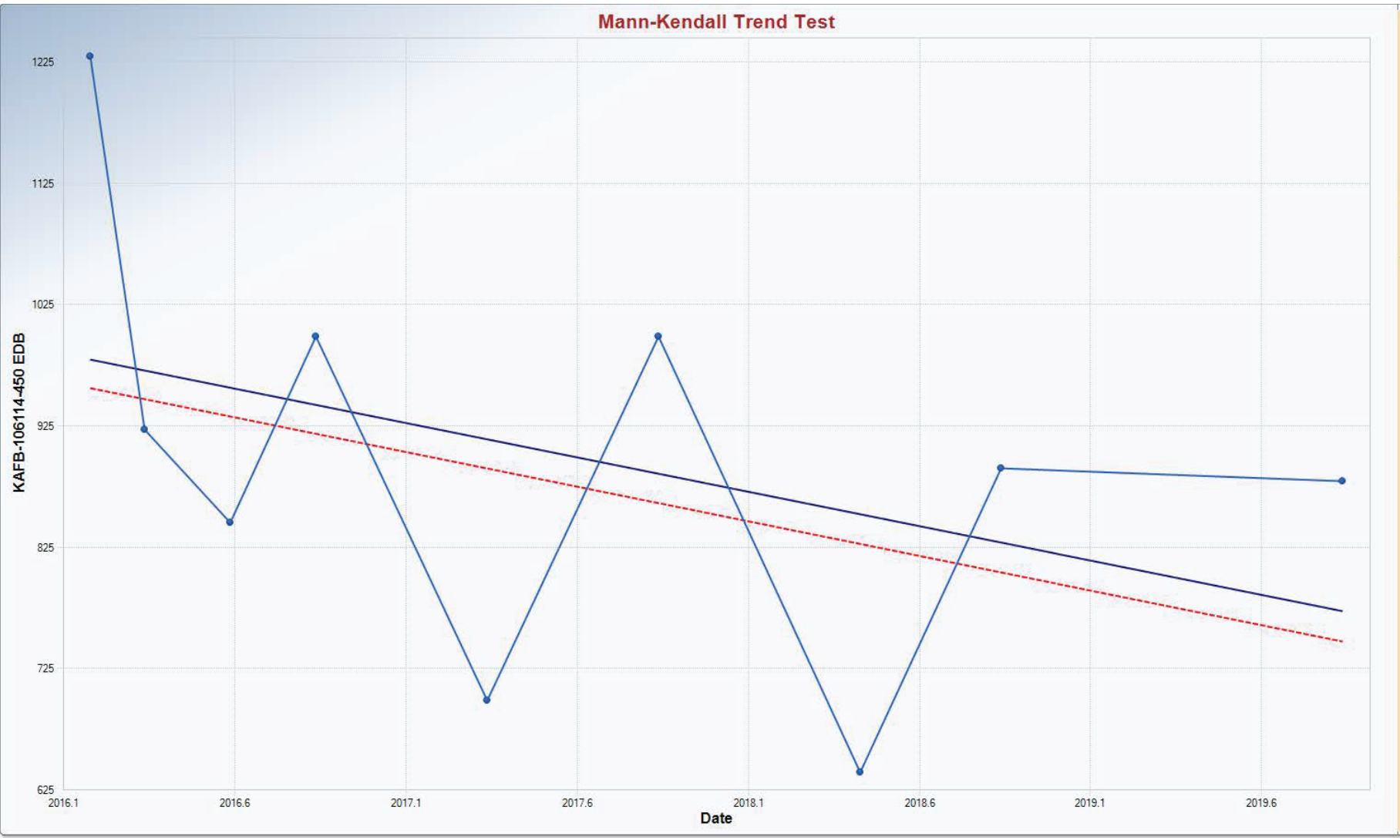
OLS Regression Line (Blue)

OLS Regression Slope	-1,230.4677
OLS Regression Intercept	2,506,084.6794

Theil-Sen Trend Line (Red)

Theil-Sen Slope	-961.7505
Theil-Sen Intercept	1,962,749.7227

Insufficient statistical evidence of a significant trend at the specified level of significance.



Mann-Kendall Trend Analysis

n	9
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	9.5394
Standardized Value of S	-1.2579
M-K Test Value (S)	-13
Tabulated p-value	0.1300
Approximate p-value	0.1042

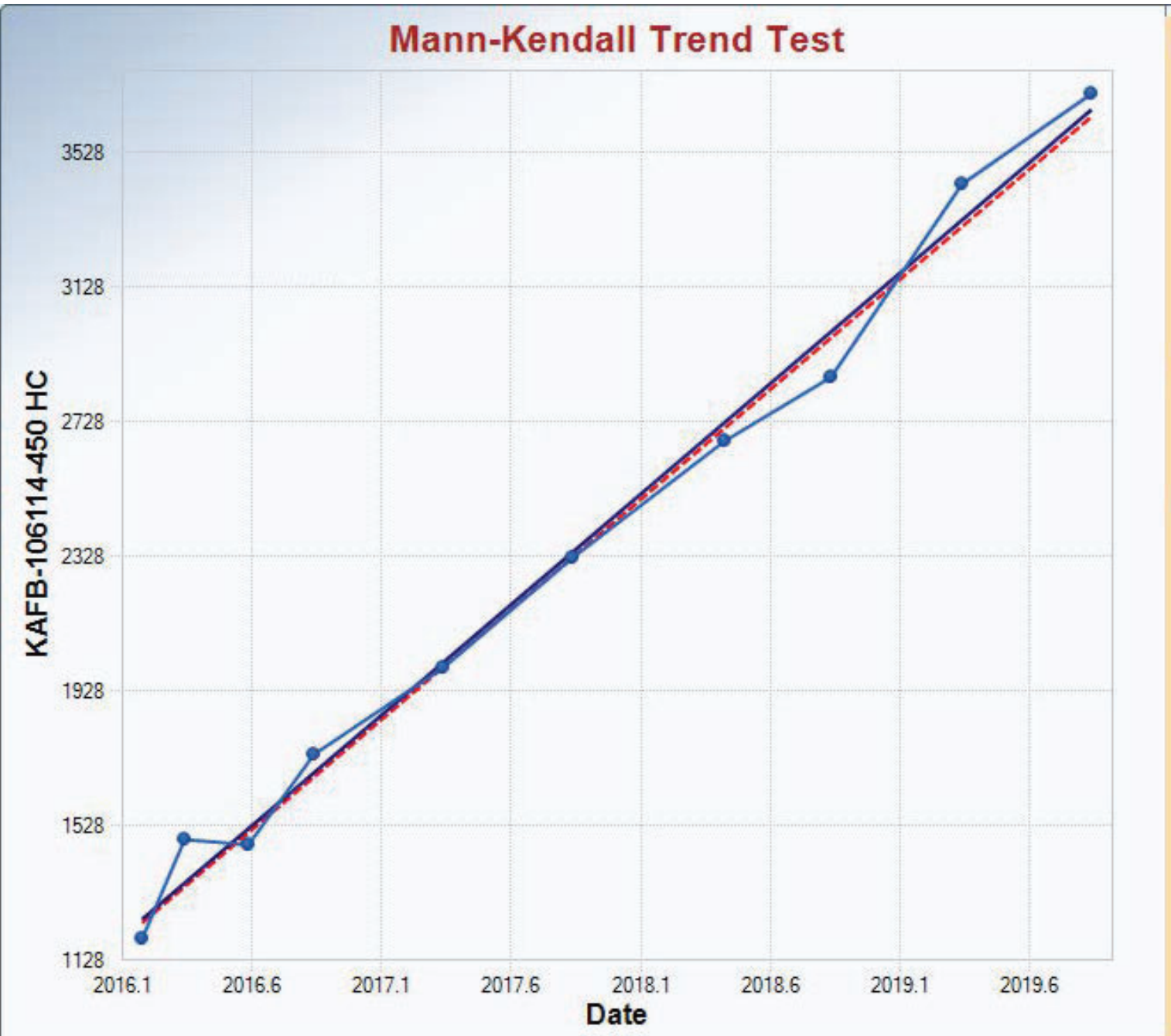
OLS Regression Line (Blue)

OLS Regression Slope	-56.7017
OLS Regression Intercept	115,300.1660

Theil-Sen Trend Line (Red)

Theil-Sen Slope	-56.9765
Theil-Sen Intercept	115,830.3676

Insufficient statistical evidence of a significant trend at the specified level of significance.



Mann-Kendall Trend Analysis

n	10
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	11.1803
Standardized Value of S	3.7566
M-K Test Value (S)	43
Tabulated p-value	0.0000
Approximate p-value	0.0001

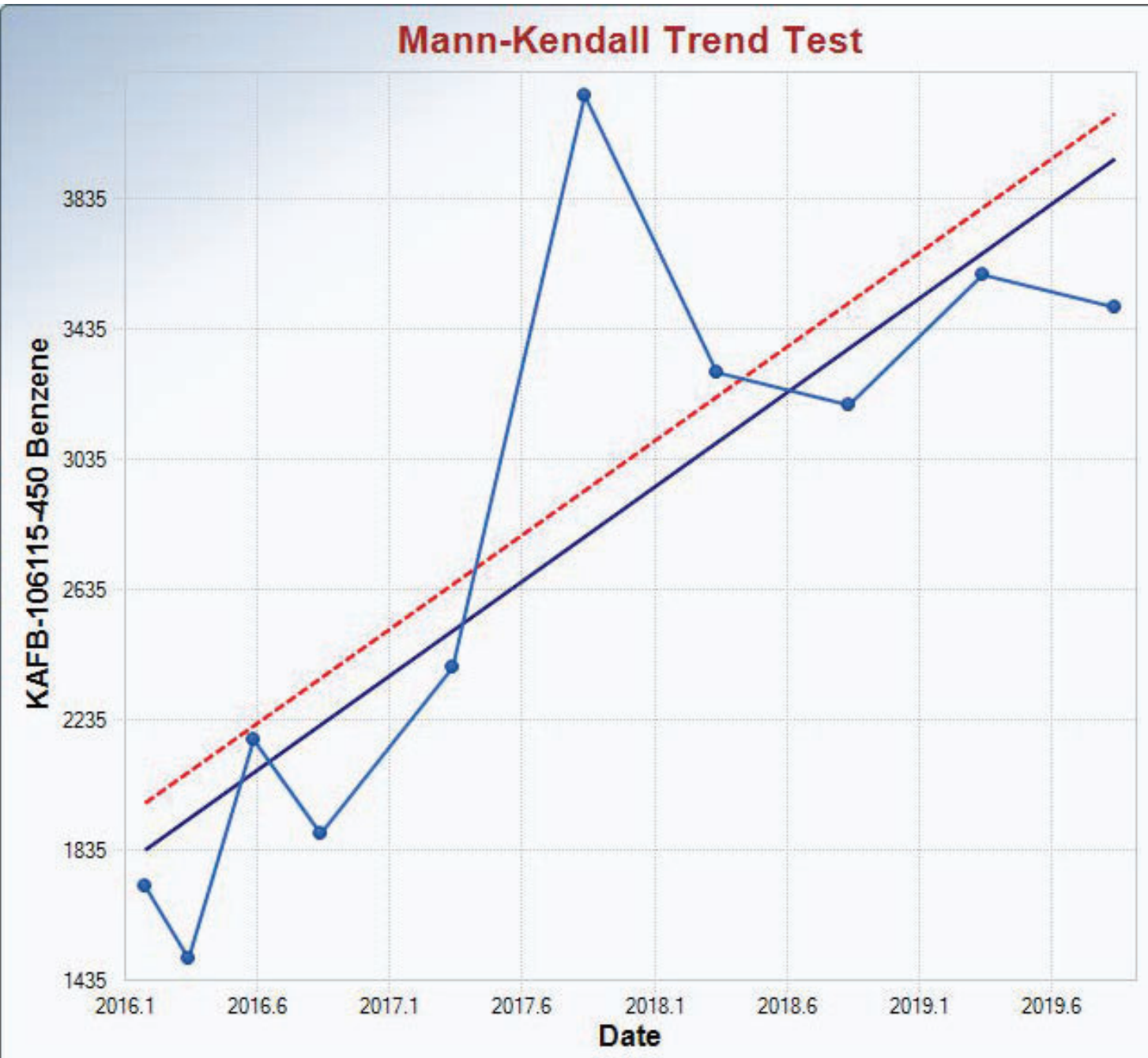
OLS Regression Line (Blue)

OLS Regression Slope	656.1358
OLS Regression Intercept	-1,321,630.0795

Theil-Sen Trend Line (Red)

Theil-Sen Slope	653.6667
Theil-Sen Intercept	-1,316,665.7933

Statistically significant evidence of an increasing trend at the specified level of significance.



Mann-Kendall Trend Analysis

n	10
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	11.1803
Standardized Value of S	2.5044
M-K Test Value (S)	29
Tabulated p-value	0.0050
Approximate p-value	0.0061

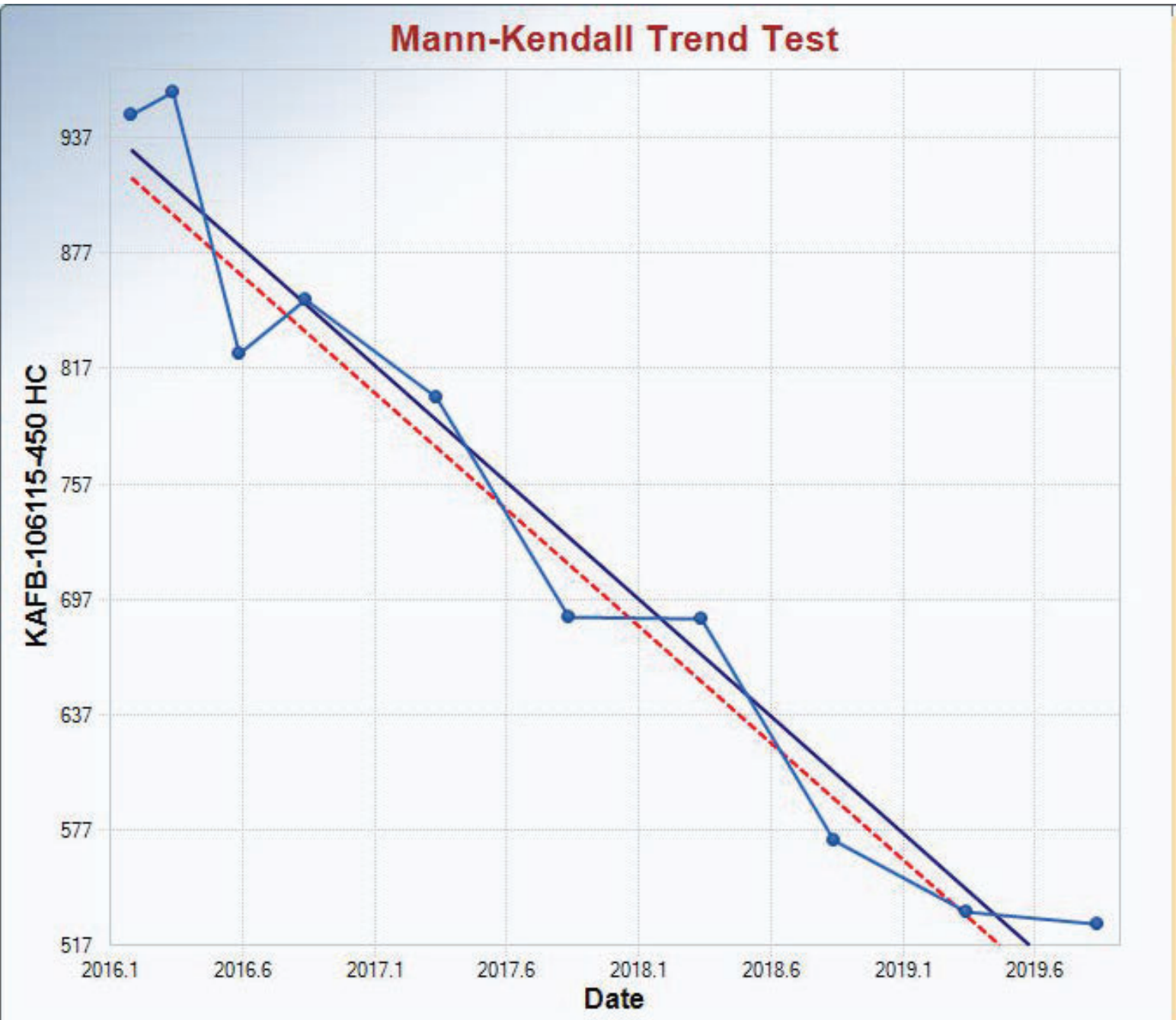
OLS Regression Line (Blue)

OLS Regression Slope	579.7124
OLS Regression Intercept	-1,166,964.9315

Theil-Sen Trend Line (Red)

Theil-Sen Slope	578.3478
Theil-Sen Intercept	-1,164,064.9273

Statistically significant evidence of an increasing trend at the specified level of significance.



Mann-Kendall Trend Analysis

n	10
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	11.1803
Standardized Value of S	-3.5777
M-K Test Value (S)	-41
Tabulated p-value	0.0000
Approximate p-value	0.0002

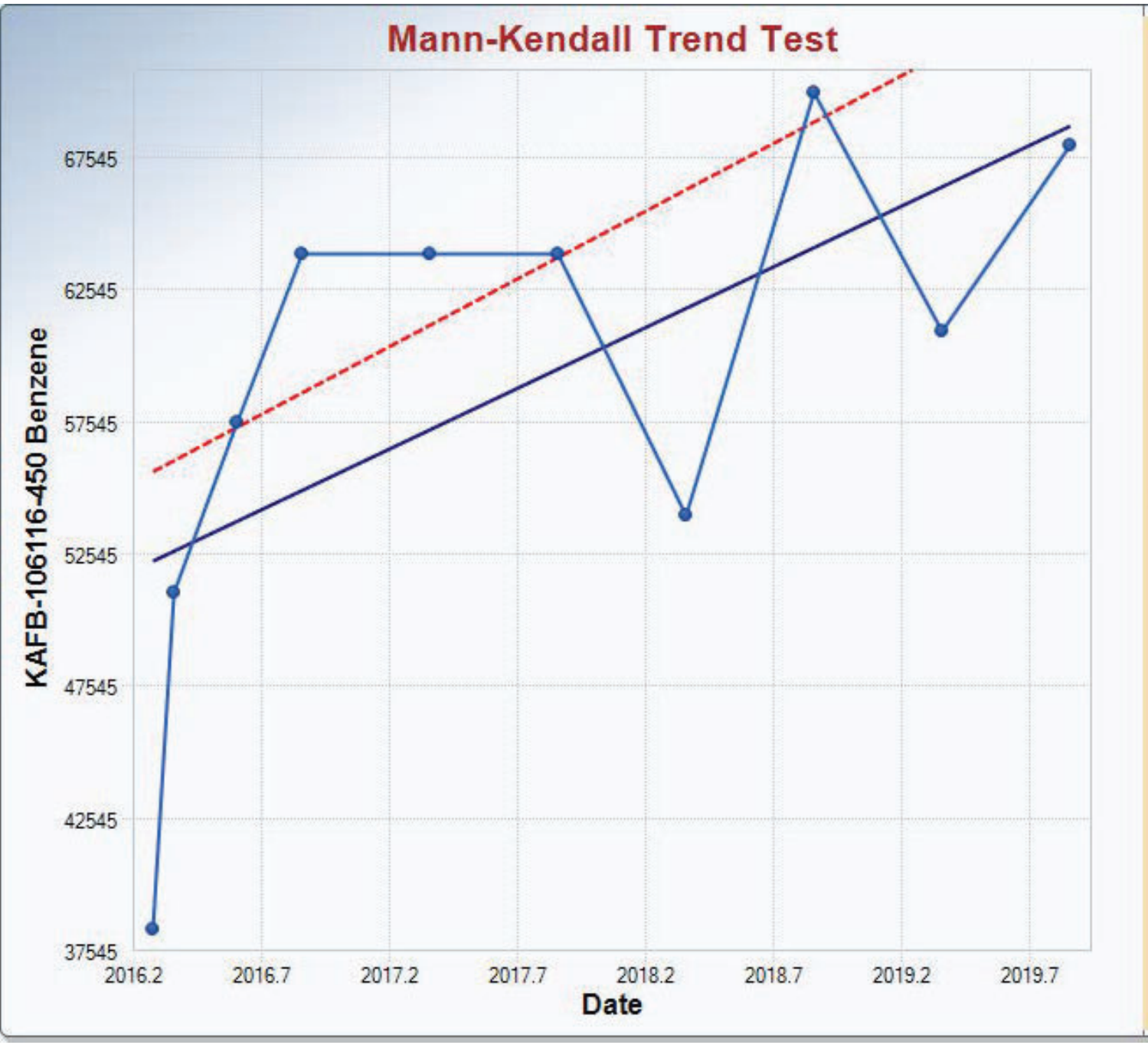
OLS Regression Line (Blue)

OLS Regression Slope	-121.8409
OLS Regression Intercept	246,582.9766

Theil-Sen Trend Line (Red)

Theil-Sen Slope	-121.2963
Theil-Sen Intercept	245,469.9815

Statistically significant evidence of a decreasing trend at the specified level of significance.



Mann-Kendall Trend Analysis

n	10
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	11.0151
Standardized Value of S	2.0880
M-K Test Value (S)	24
Tabulated p-value	0.0140
Approximate p-value	0.0184

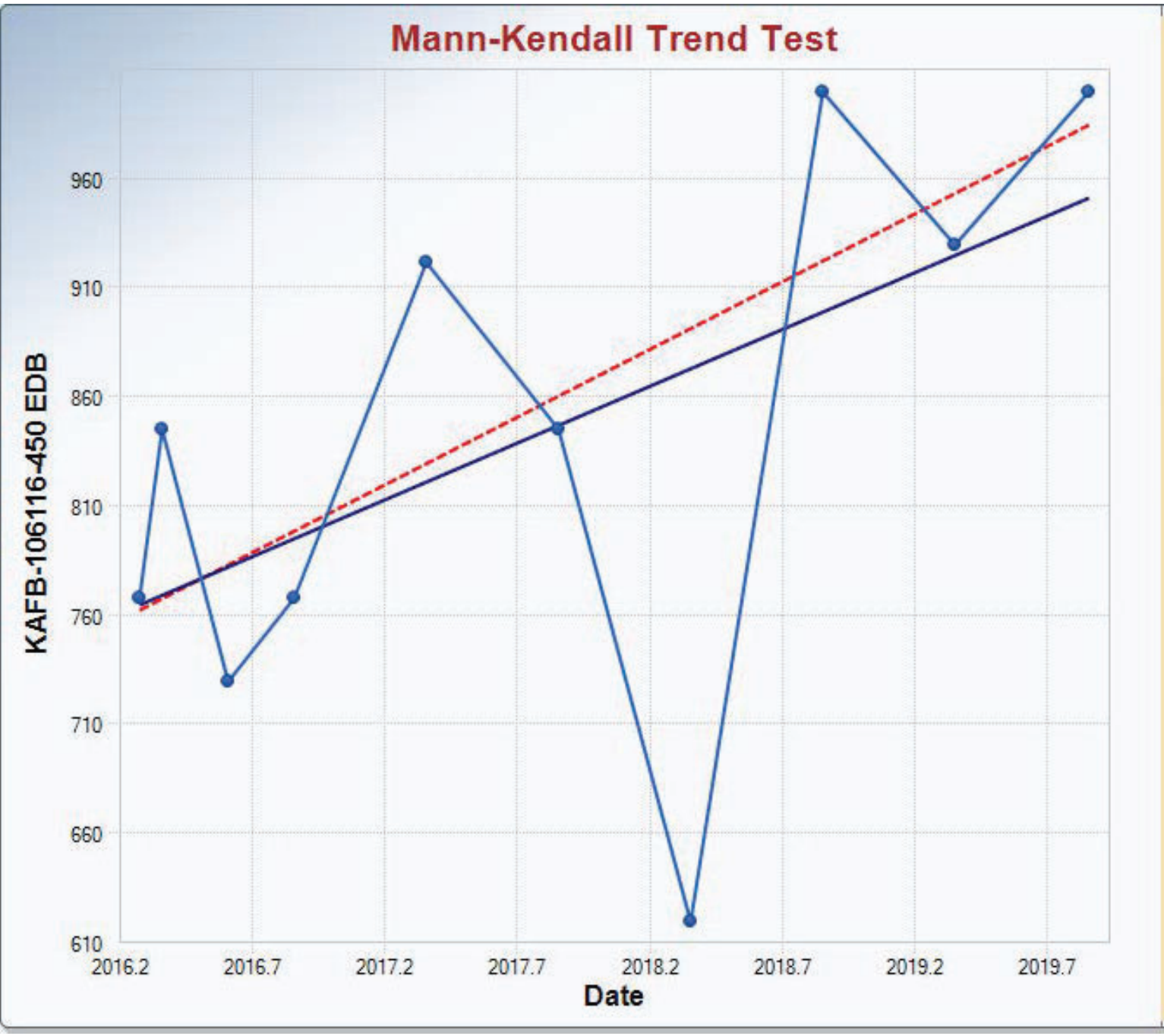
OLS Regression Line (Blue)

OLS Regression Slope	4,579.1417
OLS Regression Intercept	-9,180,385.7471

Theil-Sen Trend Line (Red)

Theil-Sen Slope	5,111.4928
Theil-Sen Intercept	-10,250,398.8939

Statistically significant evidence of an increasing trend at the specified level of significance.



Mann-Kendall Trend Analysis

n	10
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	11.0454
Standardized Value of S	1.7202
M-K Test Value (S)	20
Tabulated p-value	0.0360
Approximate p-value	0.0427

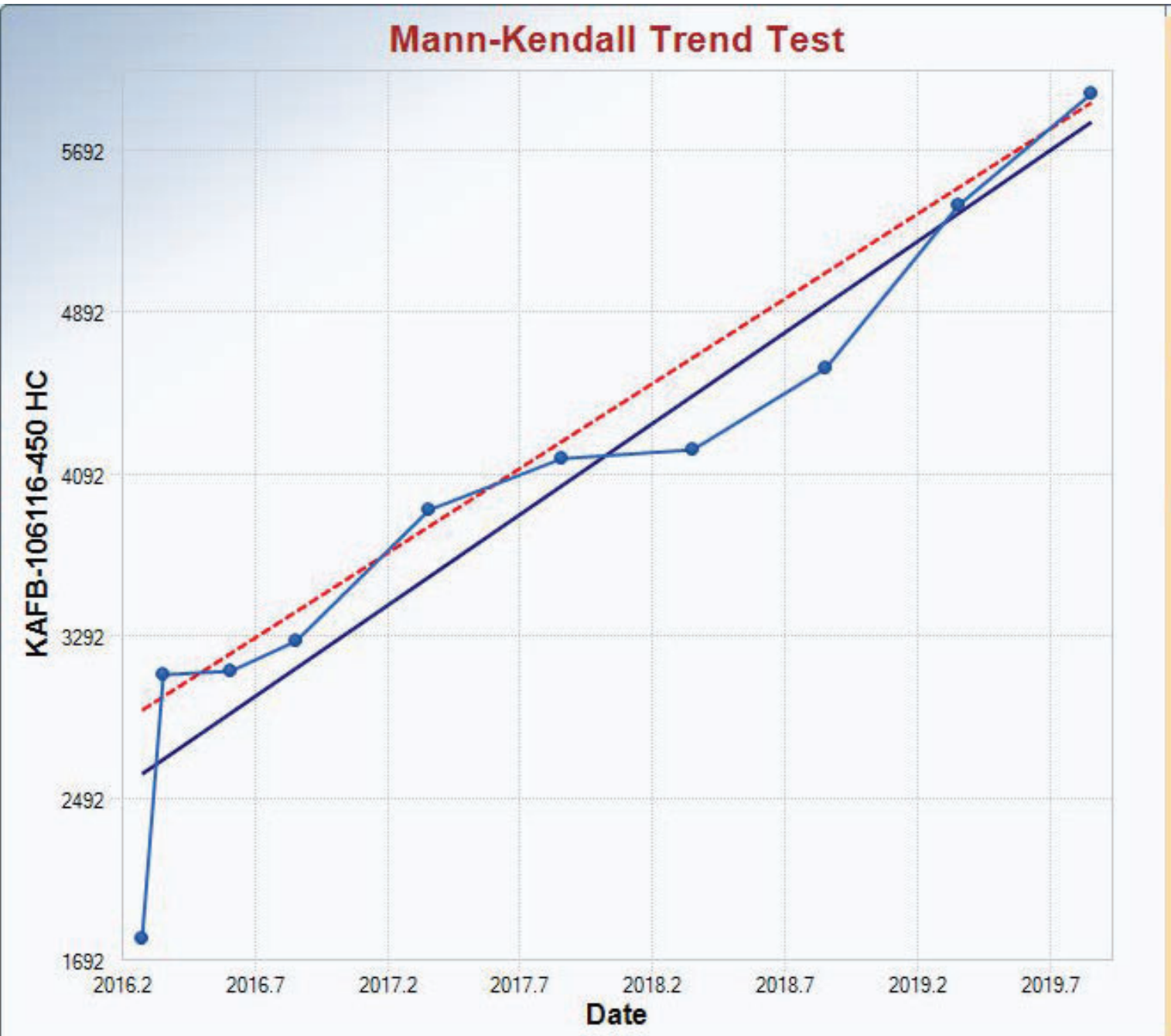
OLS Regression Line (Blue)

OLS Regression Slope	52.0780
OLS Regression Intercept	-104,237.1777

Theil-Sen Trend Line (Red)

Theil-Sen Slope	61.8928
Theil-Sen Intercept	-124,028.4933

Statistically significant evidence of an increasing trend at the specified level of significance.



Mann-Kendall Trend Analysis

n	10
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	11.1803
Standardized Value of S	3.9355
M-K Test Value (S)	45
Tabulated p-value	0.0000
Approximate p-value	0.0000

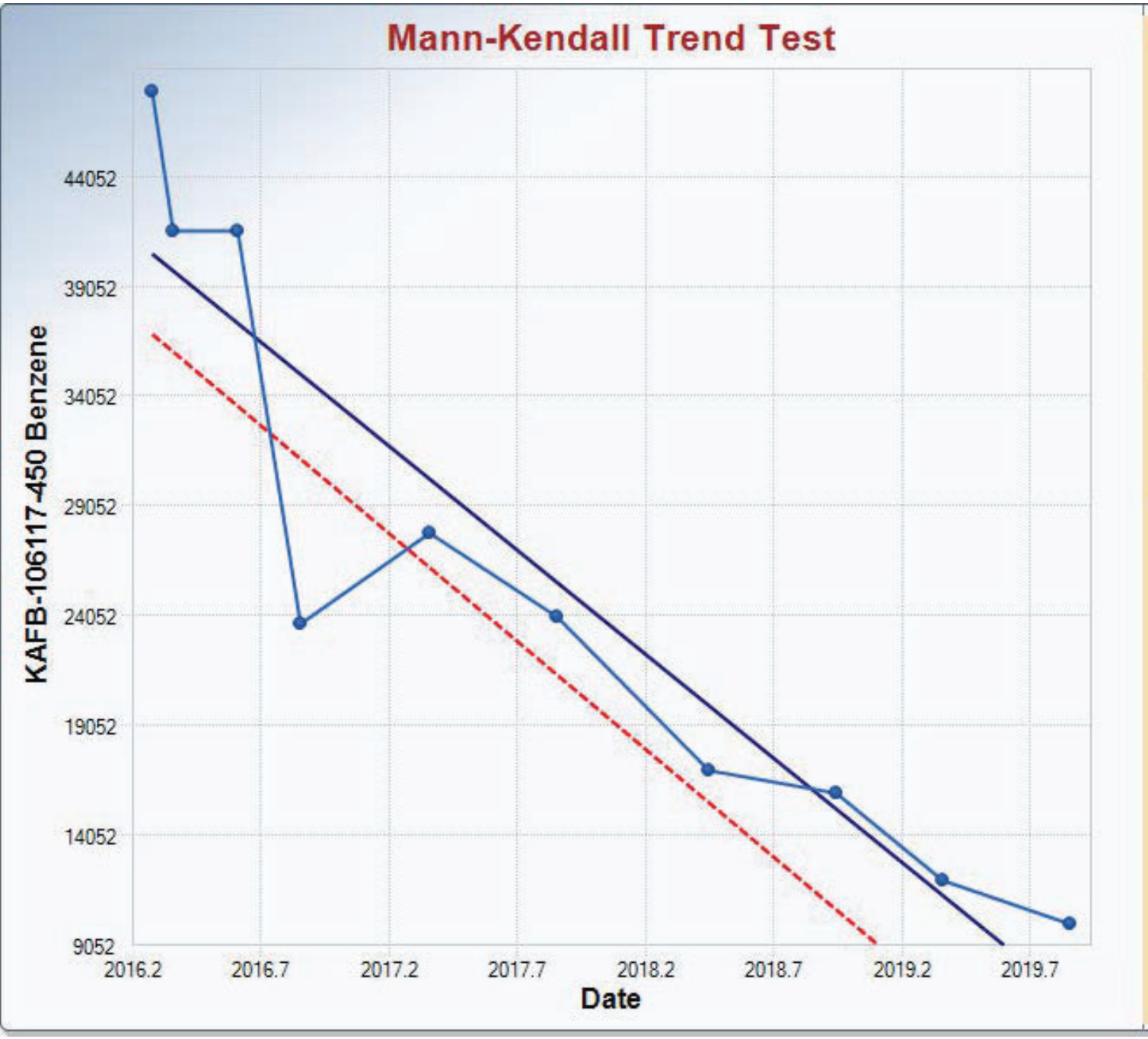
OLS Regression Line (Blue)

OLS Regression Slope	897.7398
OLS Regression Intercept	-1,807,454.1110

Theil-Sen Trend Line (Red)

Theil-Sen Slope	836.3636
Theil-Sen Intercept	-1,683,390.5455

Statistically significant evidence of an increasing trend at the specified level of significance.



Mann-Kendall Trend Analysis

n	10
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	11.1355
Standardized Value of S	-3.5023
M-K Test Value (S)	-40
Tabulated p-value	0.0000
Approximate p-value	0.0002

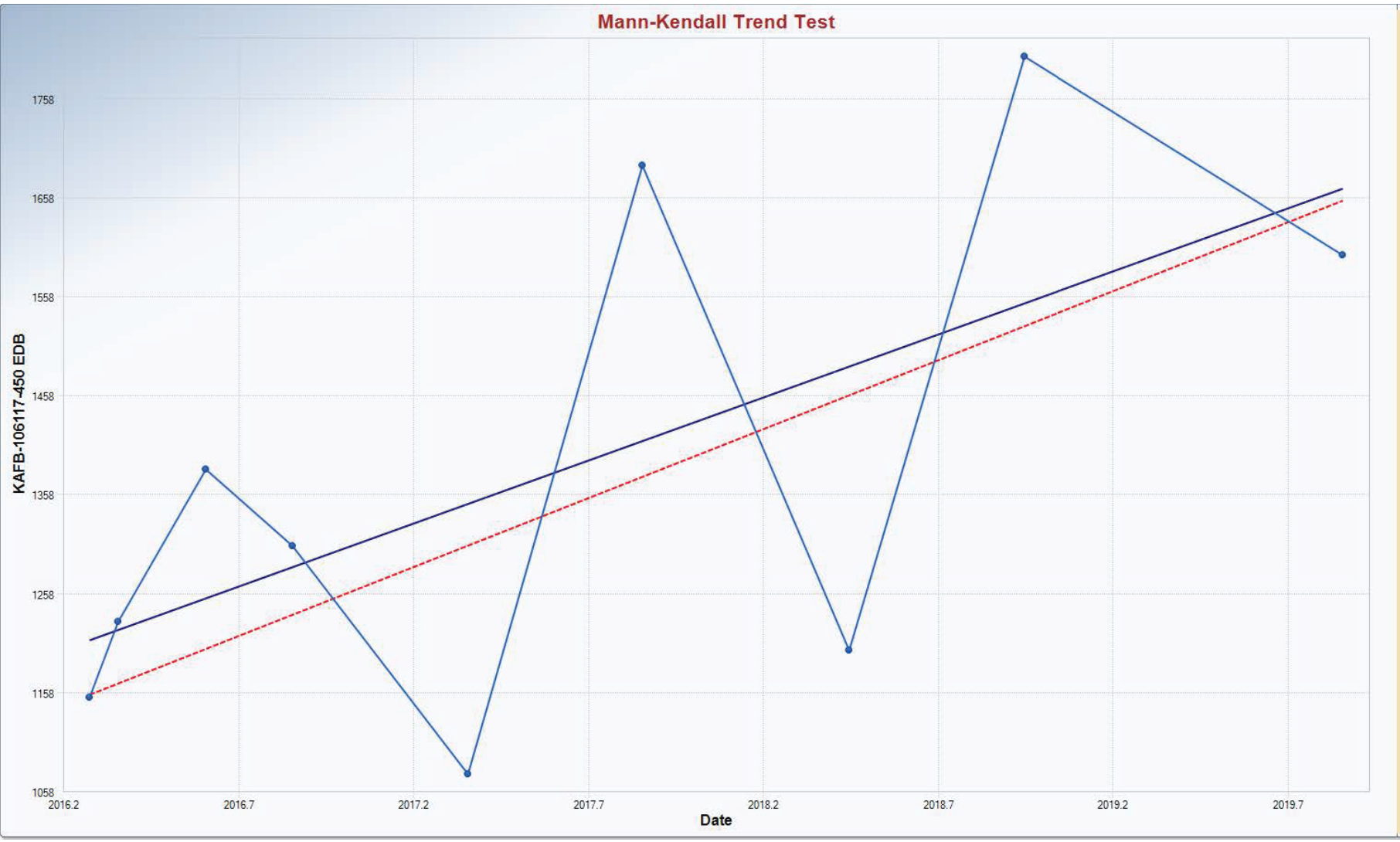
OLS Regression Line (Blue)

OLS Regression Slope	-9,475.4871
OLS Regression Intercept	19,145,443.8513

Theil-Sen Trend Line (Red)

Theil-Sen Slope	-9,843.6265
Theil-Sen Intercept	19,884,104.2415

Statistically significant evidence of a decreasing trend at the specified level of significance.



Mann-Kendall Trend Analysis

n	9
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	9.5917
Standardized Value of S	1.3553
M-K Test Value (S)	14
Tabulated p-value	0.0900
Approximate p-value	0.0877

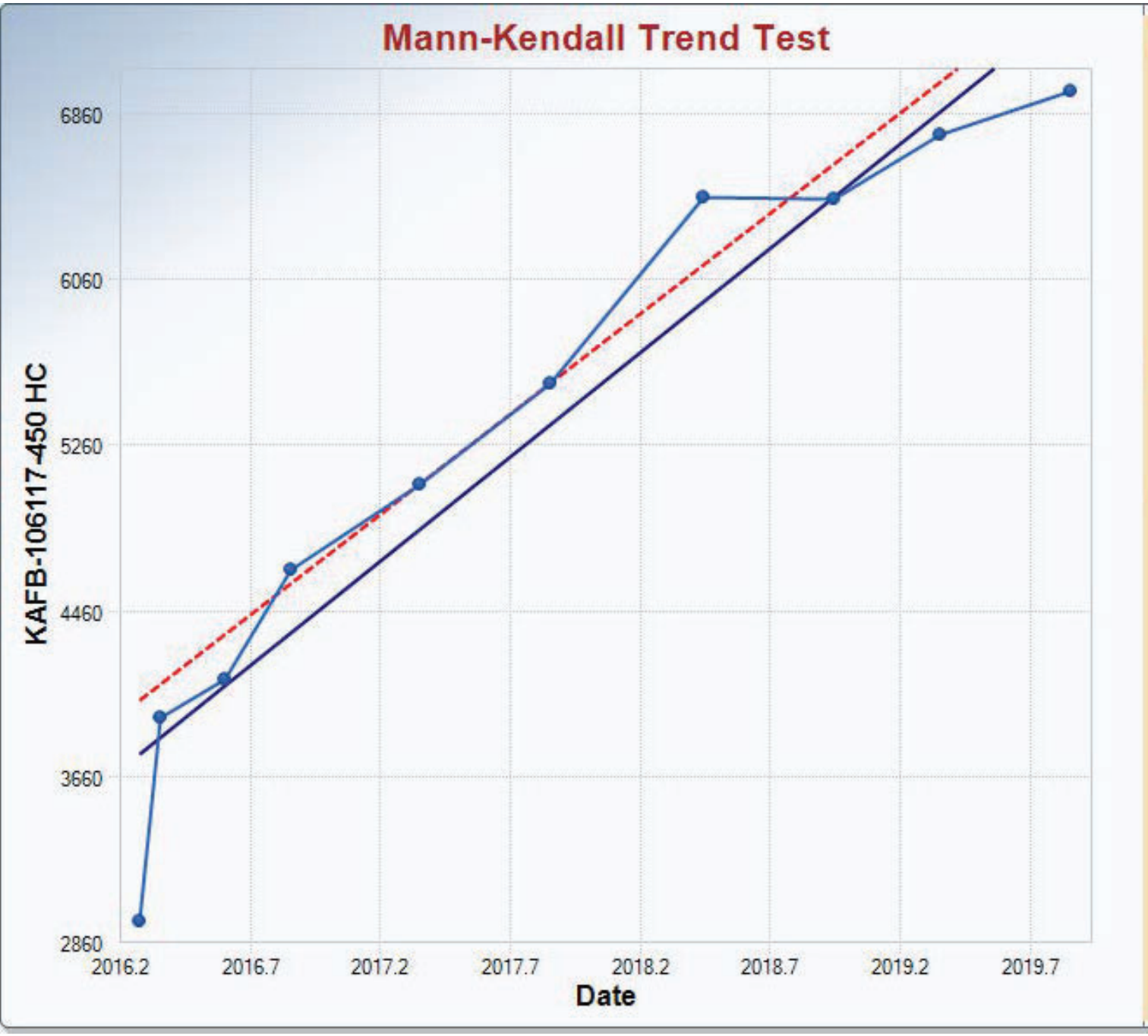
OLS Regression Line (Blue)

OLS Regression Slope	127.3870
OLS Regression Intercept	-255,632.9415

Theil-Sen Trend Line (Red)

Theil-Sen Slope	139.3233
Theil-Sen Intercept	-279,754.6611

Insufficient statistical evidence of a significant trend at the specified level of significance.



Mann-Kendall Trend Analysis

n	10
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	11.1803
Standardized Value of S	3.7566
M-K Test Value (S)	43
Tabulated p-value	0.0000
Approximate p-value	0.0001

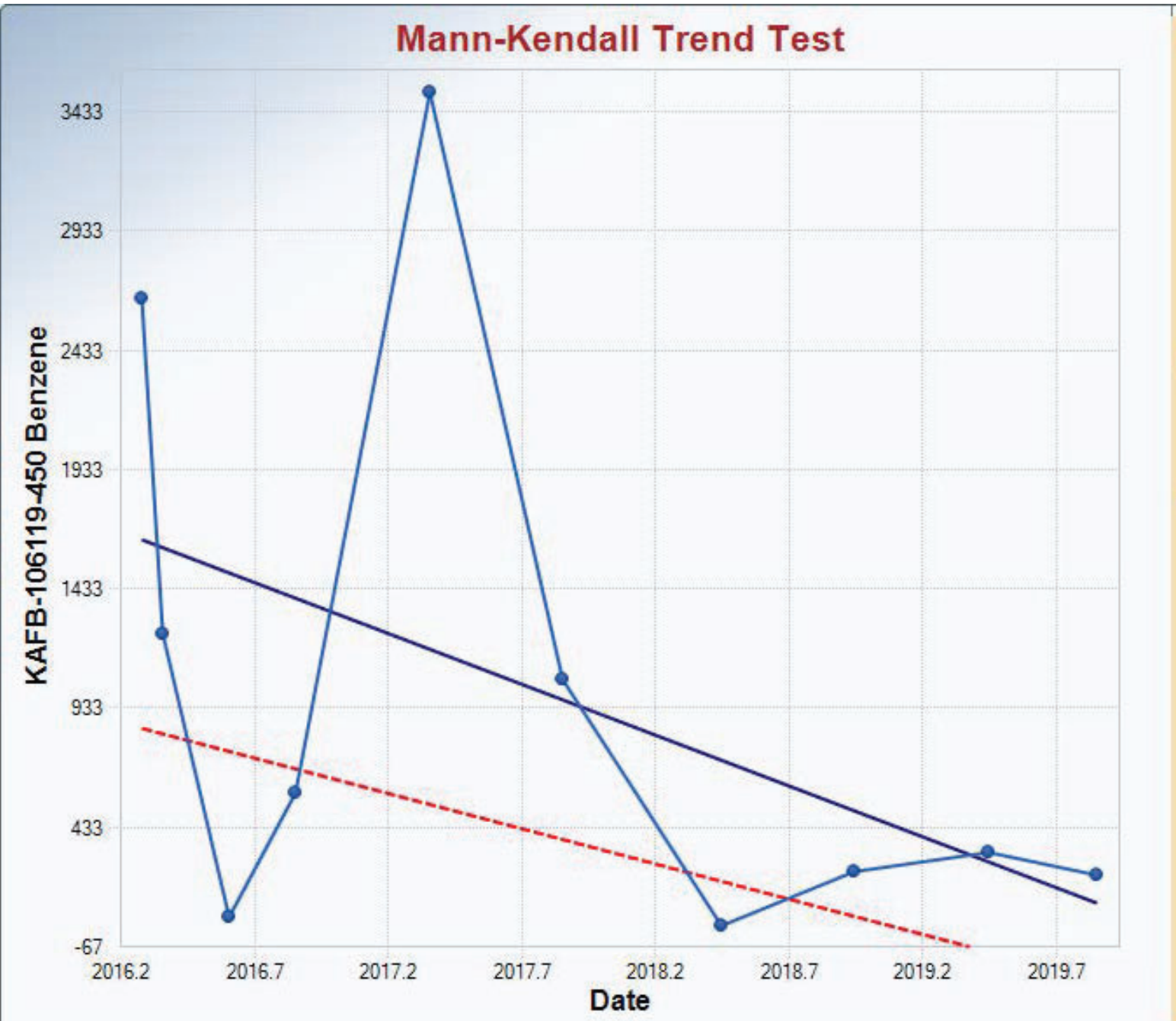
OLS Regression Line (Blue)

OLS Regression Slope	1,007.6554
OLS Regression Intercept	-2,027,915.8732

Theil-Sen Trend Line (Red)

Theil-Sen Slope	969.1120
Theil-Sen Intercept	-1,949,945.9266

Statistically significant evidence of an increasing trend at the specified level of significance.



Mann-Kendall Trend Analysis

n	10
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	11.1803
Standardized Value of S	-1.4311
M-K Test Value (S)	-17
Tabulated p-value	0.0780
Approximate p-value	0.0762

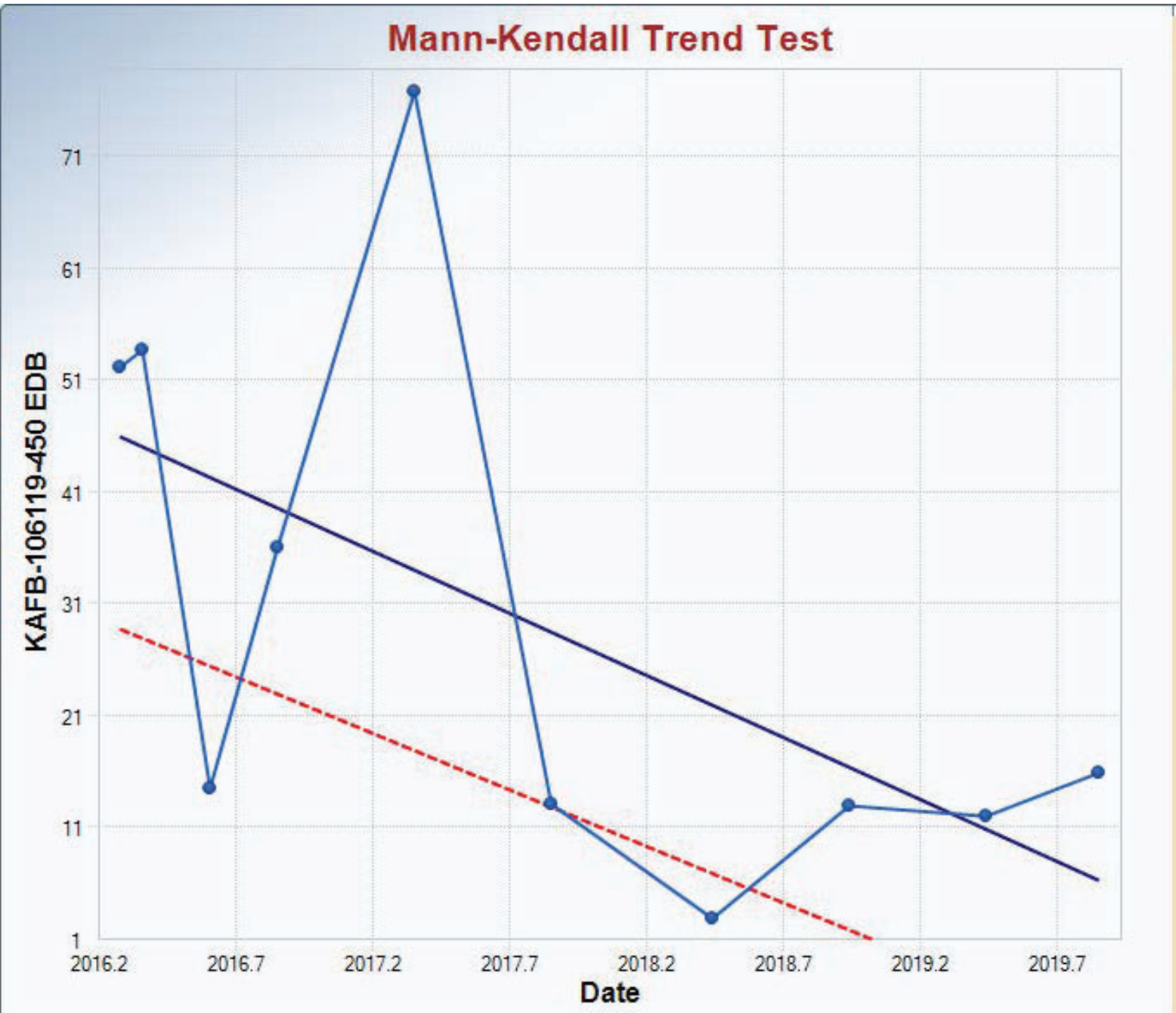
OLS Regression Line (Blue)

OLS Regression Slope	-425.9418
OLS Regression Intercept	860,447.4952

Theil-Sen Trend Line (Red)

Theil-Sen Slope	-296.4163
Theil-Sen Intercept	598,496.1285

Insufficient statistical evidence of a significant trend at the specified level of significance.



Mann-Kendall Trend Analysis

n	10
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	11.1803
Standardized Value of S	-1.6100
M-K Test Value (S)	-19
Tabulated p-value	0.0540
Approximate p-value	0.0537

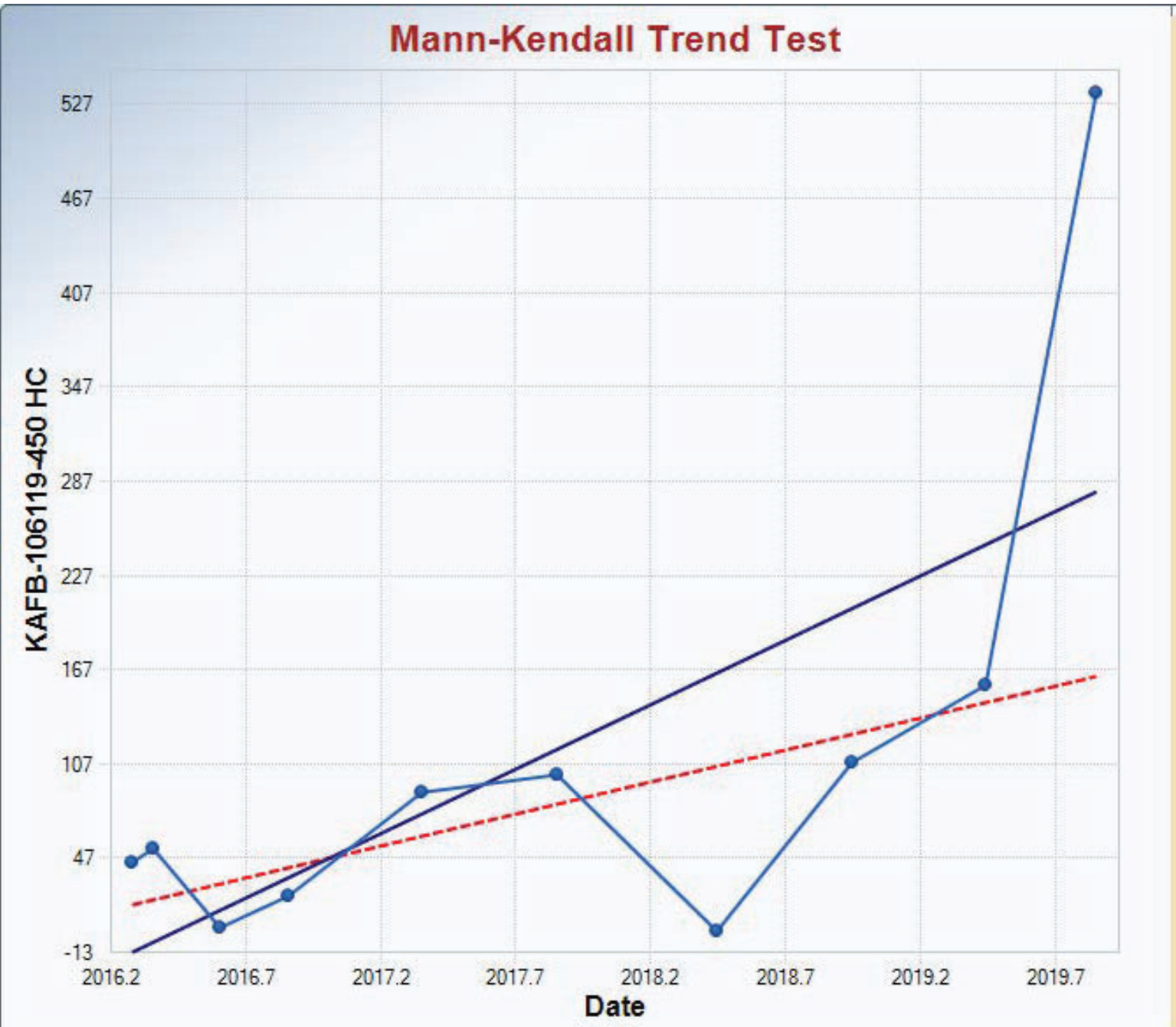
OLS Regression Line (Blue)

OLS Regression Slope	-11.0827
OLS Regression Intercept	22,391.3557

Theil-Sen Trend Line (Red)

Theil-Sen Slope	-10.1265
Theil-Sen Intercept	20,446.3545

Insufficient statistical evidence of a significant trend at the specified level of significance.



Mann-Kendall Trend Analysis

n	10
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	11.1803
Standardized Value of S	2.1466
M-K Test Value (S)	25
Tabulated p-value	0.0140
Approximate p-value	0.0159

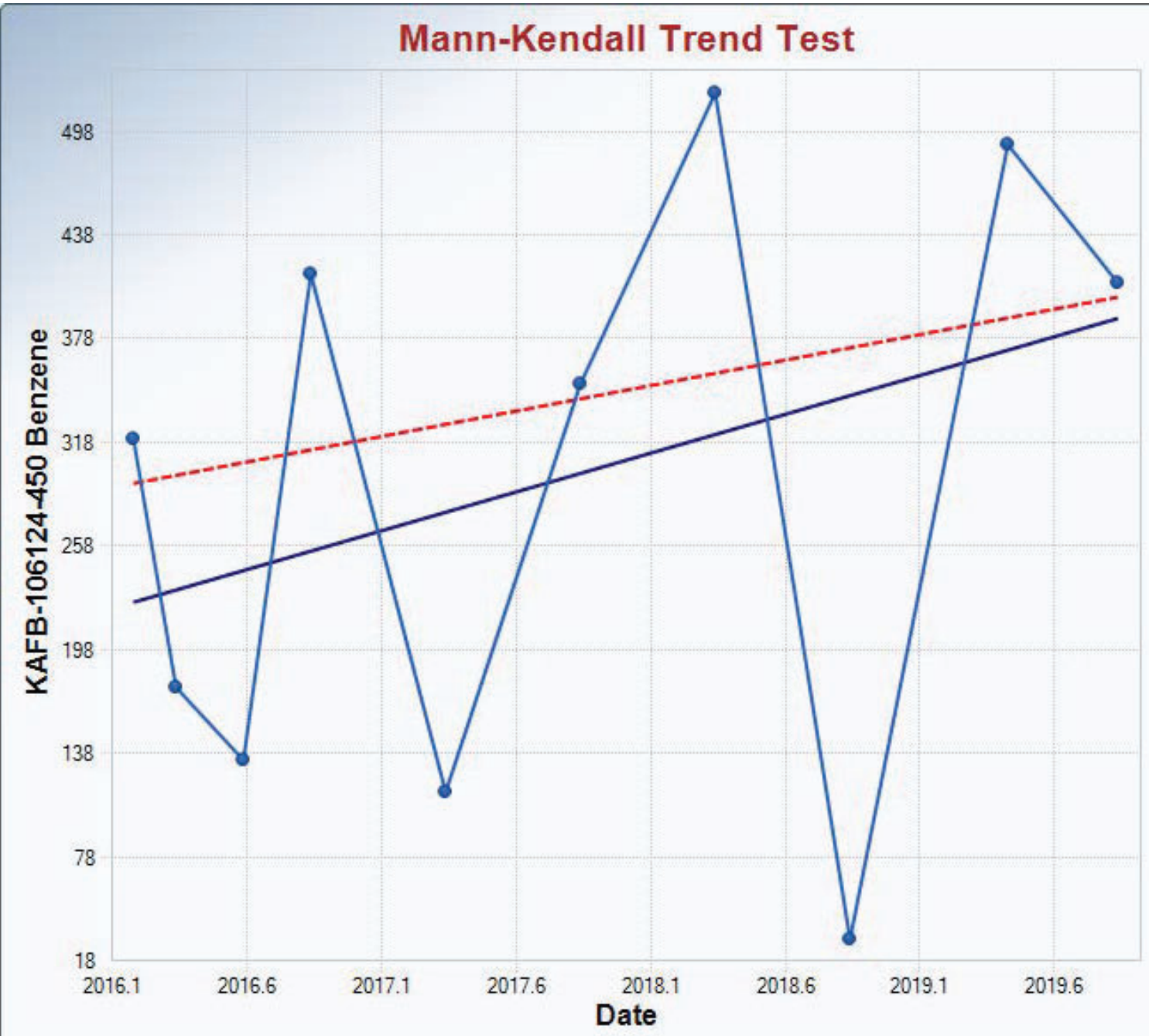
OLS Regression Line (Blue)

OLS Regression Slope	82.0129
OLS Regression Intercept	-165,372.7952

Theil-Sen Trend Line (Red)

Theil-Sen Slope	40.6699
Theil-Sen Intercept	-81,984.1890

Statistically significant evidence of an increasing trend at the specified level of significance.



Mann-Kendall Trend Analysis

n	10
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	11.1803
Standardized Value of S	0.5367
M-K Test Value (S)	7
Tabulated p-value	0.3000
Approximate p-value	0.2958

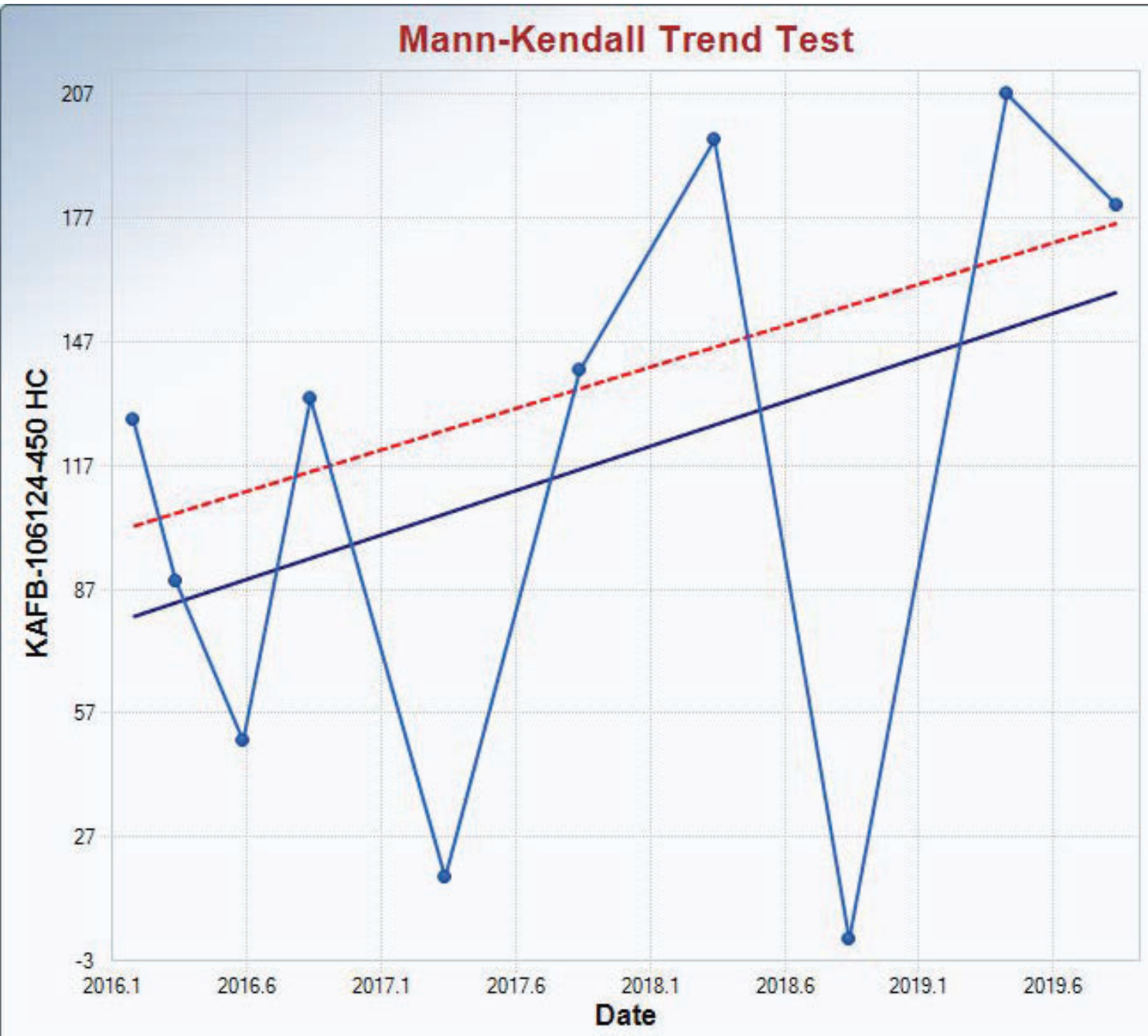
OLS Regression Line (Blue)

OLS Regression Slope	44.9158
OLS Regression Intercept	-90,332.7397

Theil-Sen Trend Line (Red)

Theil-Sen Slope	29.2924
Theil-Sen Intercept	-58,764.3864

Insufficient statistical evidence of a significant trend at the specified level of significance.



Mann-Kendall Trend Analysis

n	10
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	11.1803
Standardized Value of S	1.0733
M-K Test Value (S)	13
Tabulated p-value	0.1460
Approximate p-value	0.1416

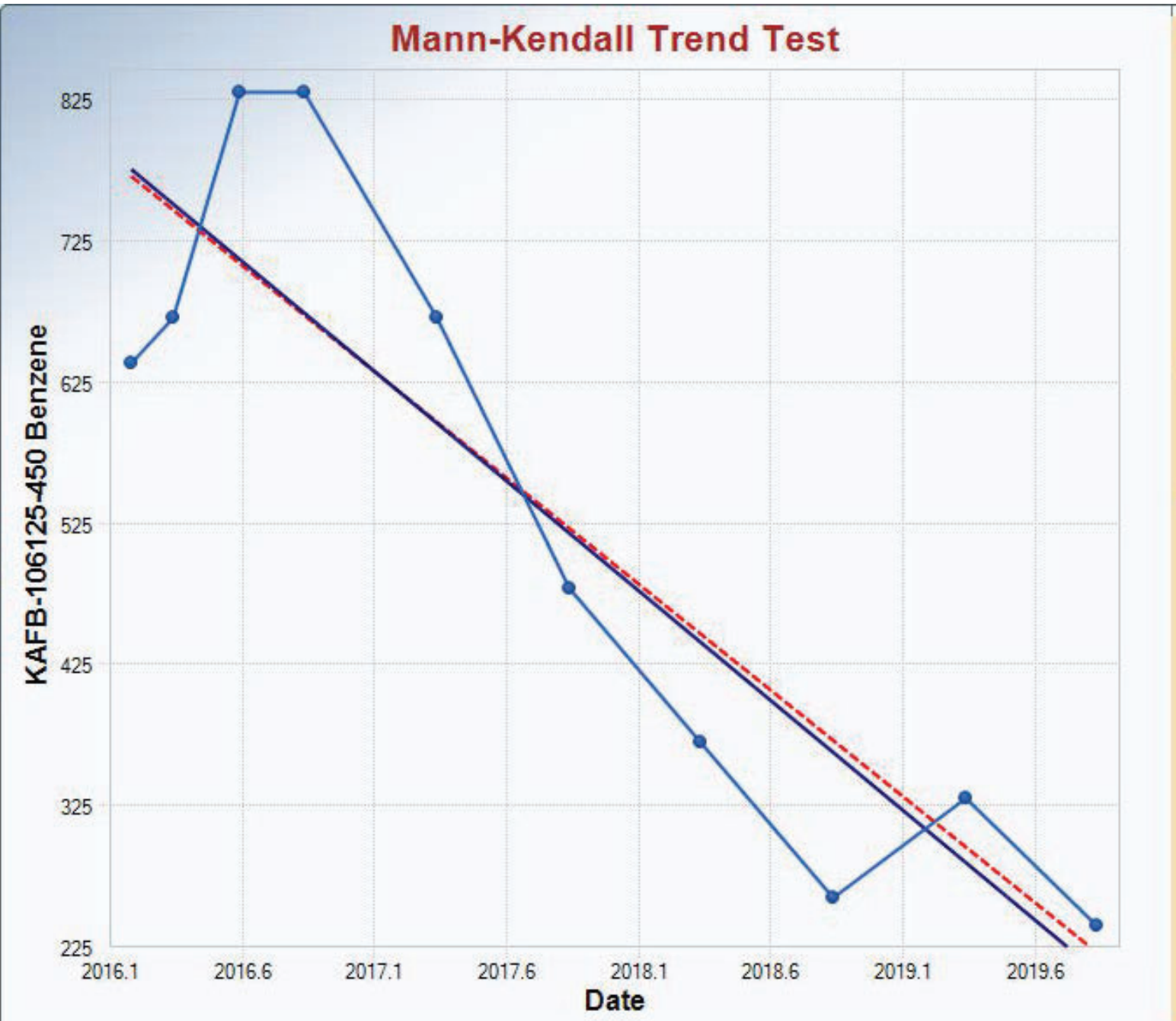
OLS Regression Line (Blue)

OLS Regression Slope	21.4305
OLS Regression Intercept	-43,127.2295

Theil-Sen Trend Line (Red)

Theil-Sen Slope	20.0000
Theil-Sen Intercept	-40,221.1000

Insufficient statistical evidence of a significant trend at the specified level of significance.



Mann-Kendall Trend Analysis

n	10
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	11.0905
Standardized Value of S	-2.5247
M-K Test Value (S)	-29
Tabulated p-value	0.0050
Approximate p-value	0.0058

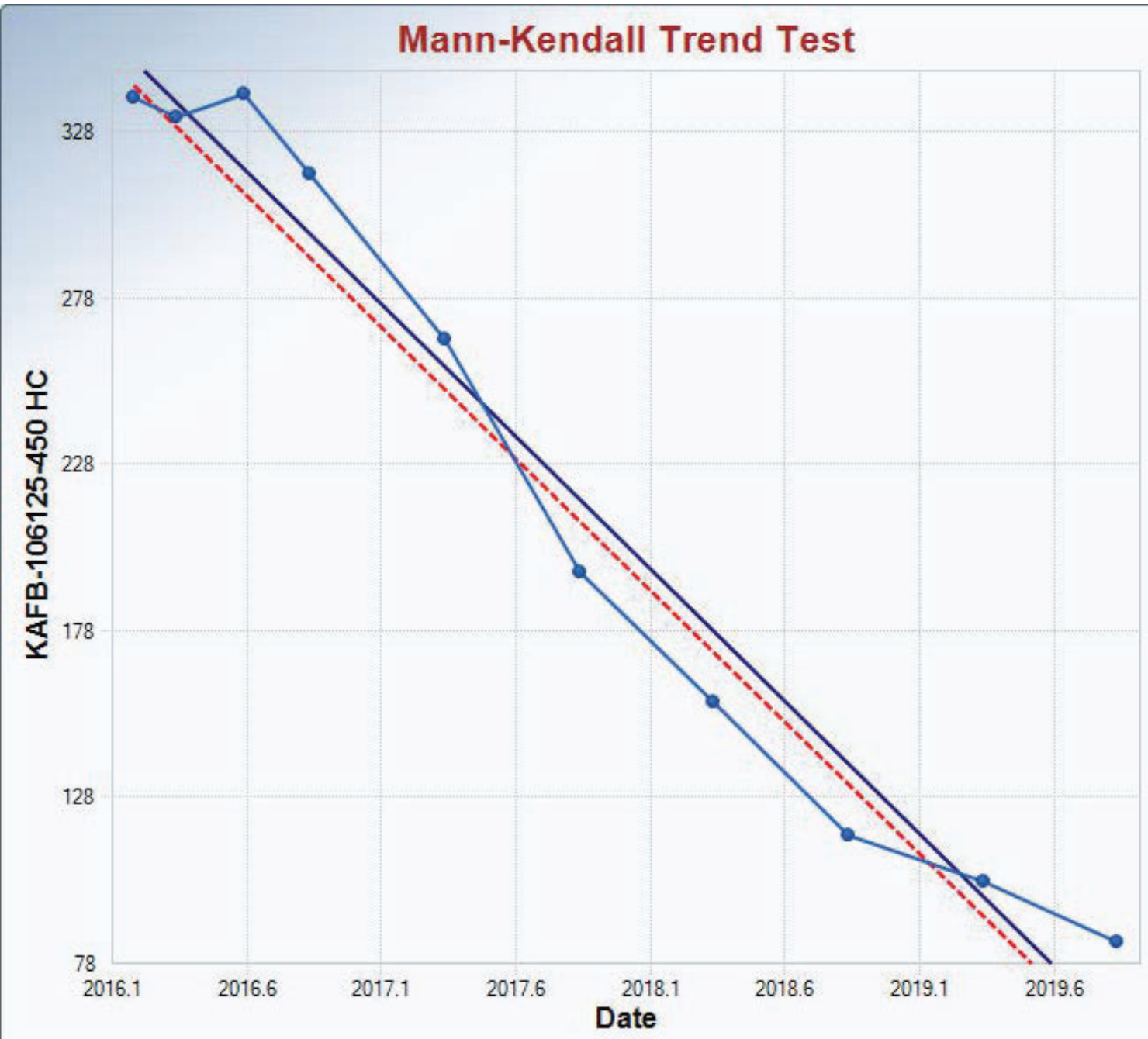
OLS Regression Line (Blue)

OLS Regression Slope	-155.3674
OLS Regression Intercept	314,022.9724

Theil-Sen Trend Line (Red)

Theil-Sen Slope	-150.4417
Theil-Sen Intercept	304,087.2705

Statistically significant evidence of a decreasing trend at the specified level of significance.



Mann-Kendall Trend Analysis

n	10
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	11.1803
Standardized Value of S	-3.5777
M-K Test Value (S)	-41
Tabulated p-value	0.0000
Approximate p-value	0.0002

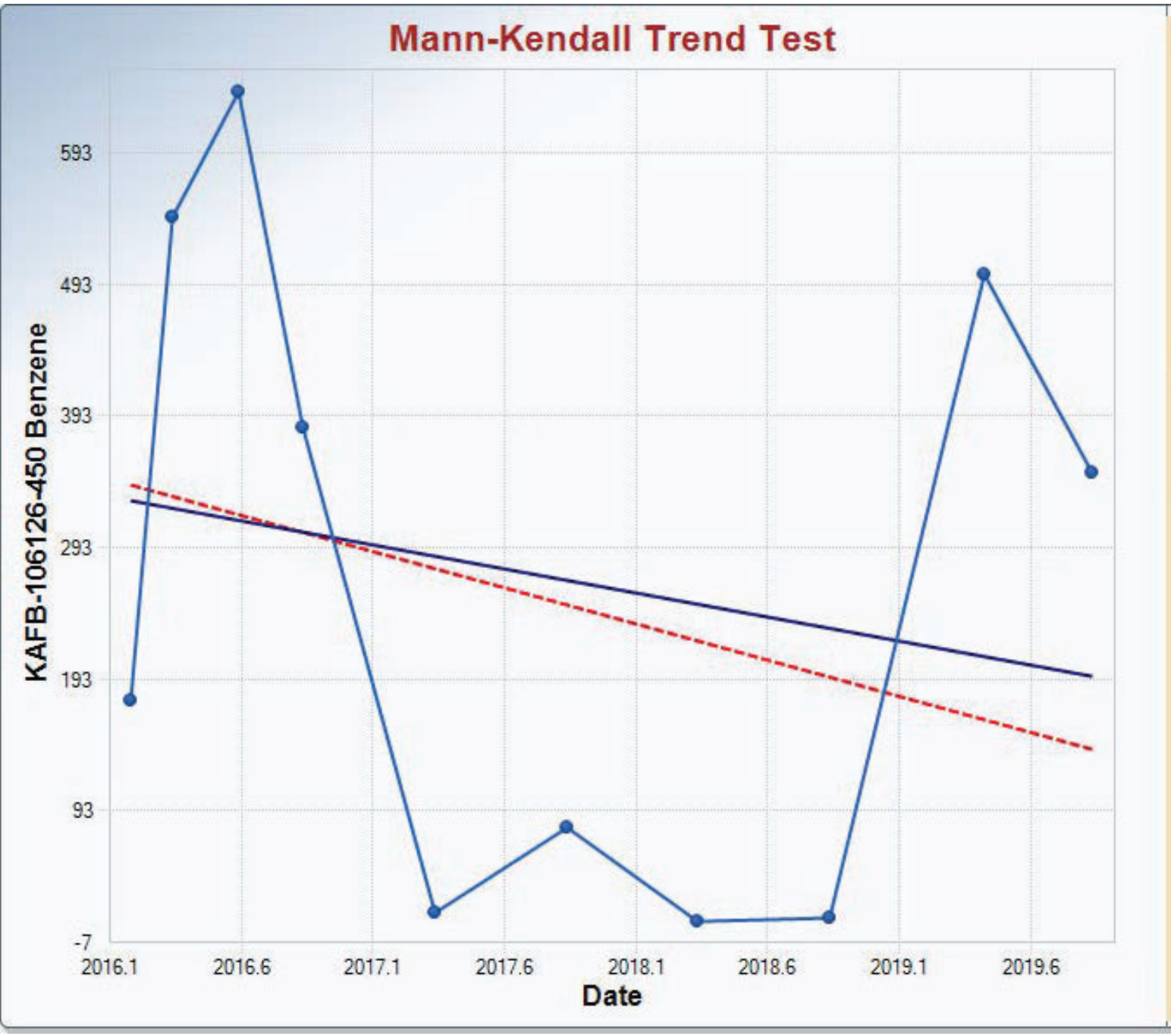
OLS Regression Line (Blue)

OLS Regression Slope	-79.5067
OLS Regression Intercept	160,648.0181

Theil-Sen Trend Line (Red)

Theil-Sen Slope	-79.0000
Theil-Sen Intercept	159,618.8200

Statistically significant evidence of a decreasing trend at the specified level of significance.



Mann-Kendall Trend Analysis

n	10
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	11.1803
Standardized Value of S	-0.8944
M-K Test Value (S)	-11
Tabulated p-value	0.1900
Approximate p-value	0.1855

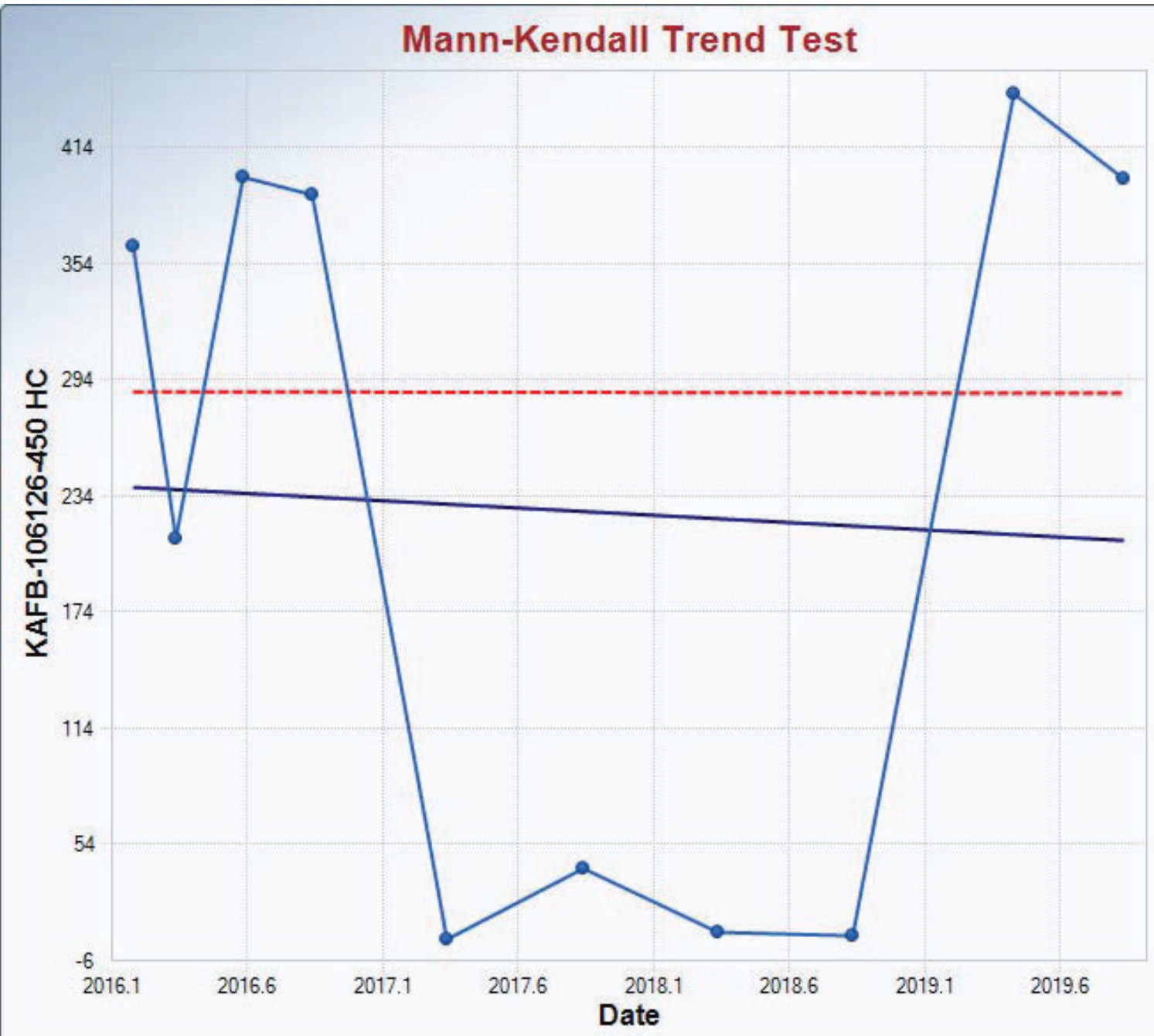
OLS Regression Line (Blue)

OLS Regression Slope	-36.3284
OLS Regression Intercept	73,572.2069

Theil-Sen Trend Line (Red)

Theil-Sen Slope	-55.1703
Theil-Sen Intercept	111,573.3848

Insufficient statistical evidence of a significant trend at the specified level of significance.



Mann-Kendall Trend Analysis

n	10
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	11.1803
Standardized Value of S	0.0000
M-K Test Value (S)	-1
Tabulated p-value	0.5000
Approximate p-value	0.5000

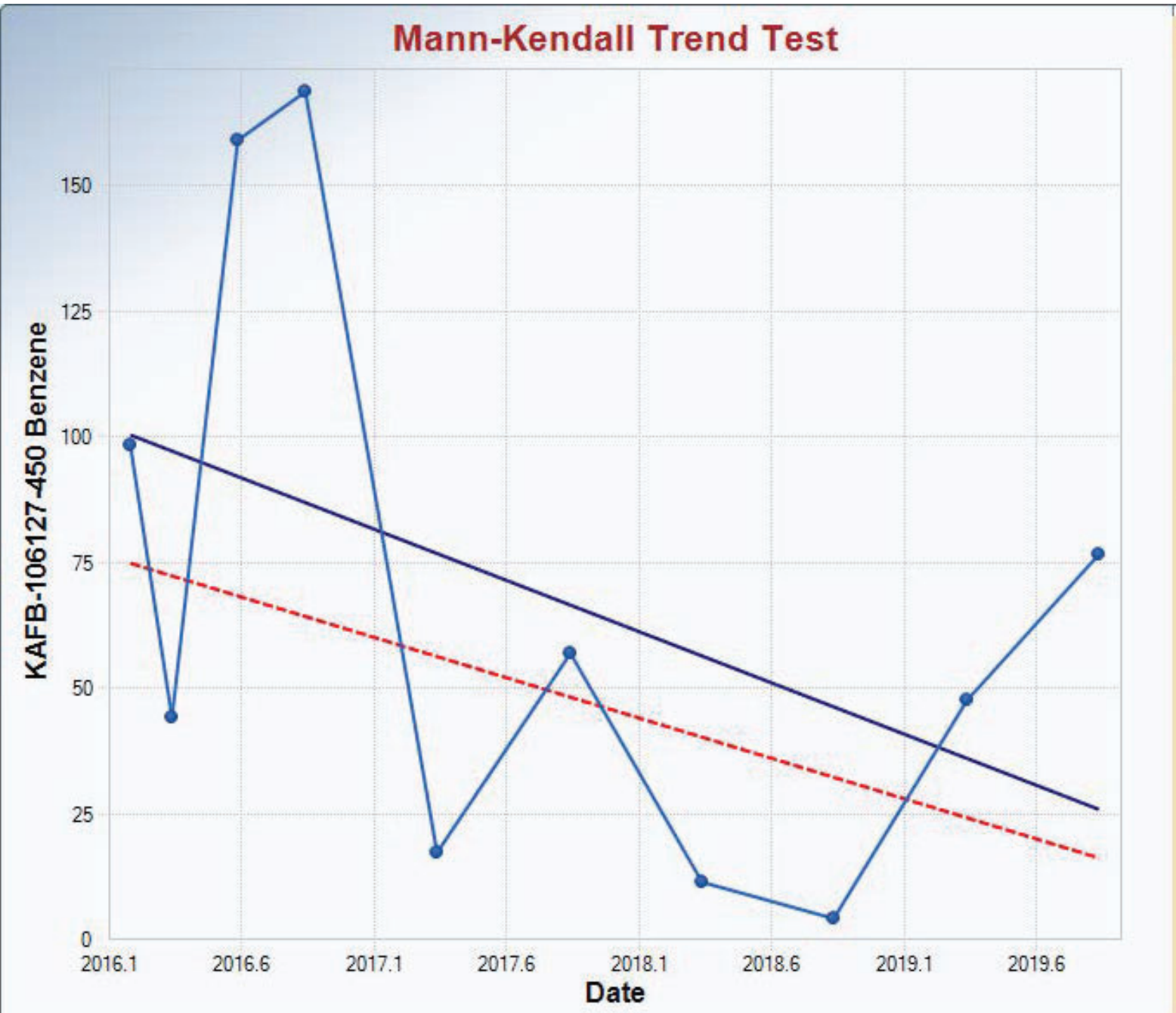
OLS Regression Line (Blue)

OLS Regression Slope	-7.4478
OLS Regression Intercept	15,254.4071

Theil-Sen Trend Line (Red)

Theil-Sen Slope	-0.3077
Theil-Sen Intercept	908.2938

Insufficient statistical evidence of a significant trend at the specified level of significance.



Mann-Kendall Trend Analysis

n	10
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	11.1803
Standardized Value of S	-0.8944
M-K Test Value (S)	-11
Tabulated p-value	0.1900
Approximate p-value	0.1855

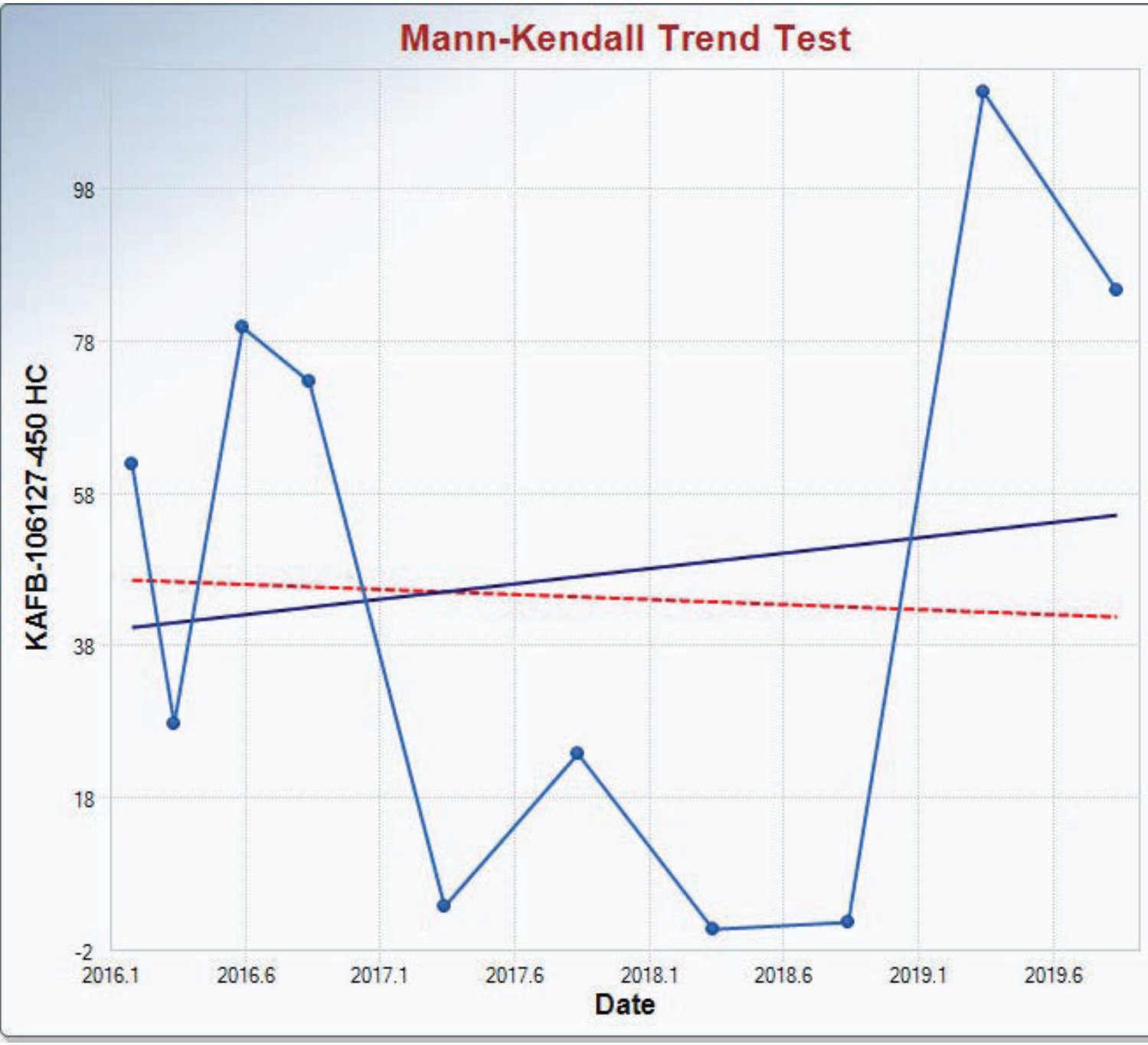
OLS Regression Line (Blue)

OLS Regression Slope	-20.3505
OLS Regression Intercept	41,130.9084

Theil-Sen Trend Line (Red)

Theil-Sen Slope	-16.0502
Theil-Sen Intercept	32,435.3650

Insufficient statistical evidence of a significant trend at the specified level of significance.



Mann-Kendall Trend Analysis

n	10
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	11.1803
Standardized Value of S	0.0000
M-K Test Value (S)	-1
Tabulated p-value	0.5000
Approximate p-value	0.5000

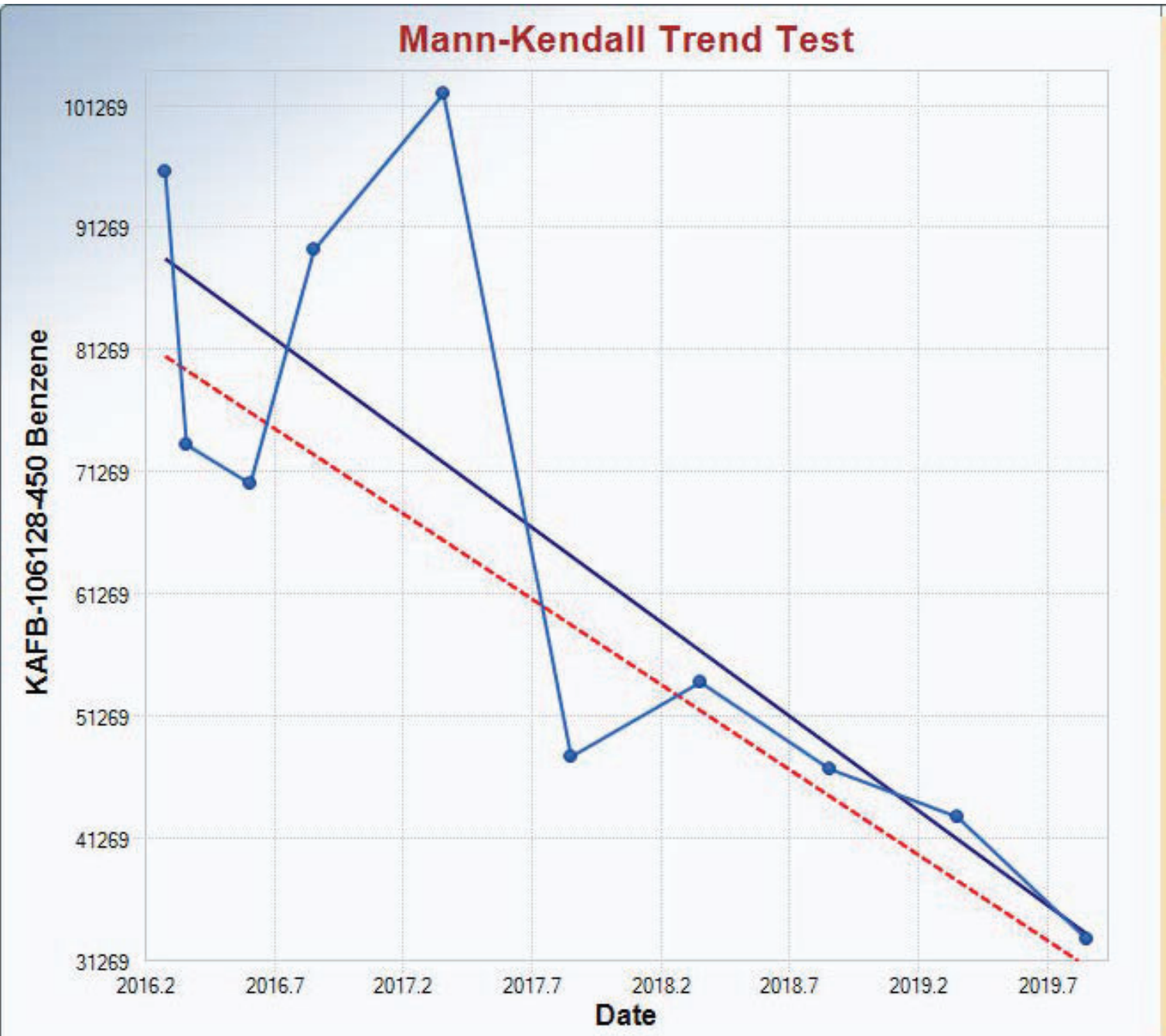
OLS Regression Line (Blue)

OLS Regression Slope	4.0597
OLS Regression Intercept	-8,144.3214

Theil-Sen Trend Line (Red)

Theil-Sen Slope	-1.3333
Theil-Sen Intercept	2,735.1067

Insufficient statistical evidence of a significant trend at the specified level of significance.



Mann-Kendall Trend Analysis

n	10
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	11.1803
Standardized Value of S	-2.6833
M-K Test Value (S)	-31
Tabulated p-value	0.0020
Approximate p-value	0.0036

OLS Regression Line (Blue)

OLS Regression Slope	-15,416.9058
OLS Regression Intercept	31,173,035.7536

Theil-Sen Trend Line (Red)

Theil-Sen Slope	-14,000.0000
Theil-Sen Intercept	28,308,261.5133

Statistically significant evidence of a decreasing trend at the specified level of significance.

Mann-Kendall Trend Analysis

n	9
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	9.5917
Standardized Value of S	-1.7724
M-K Test Value (S)	-18
Tabulated p-value	0.0380
Approximate p-value	0.0382

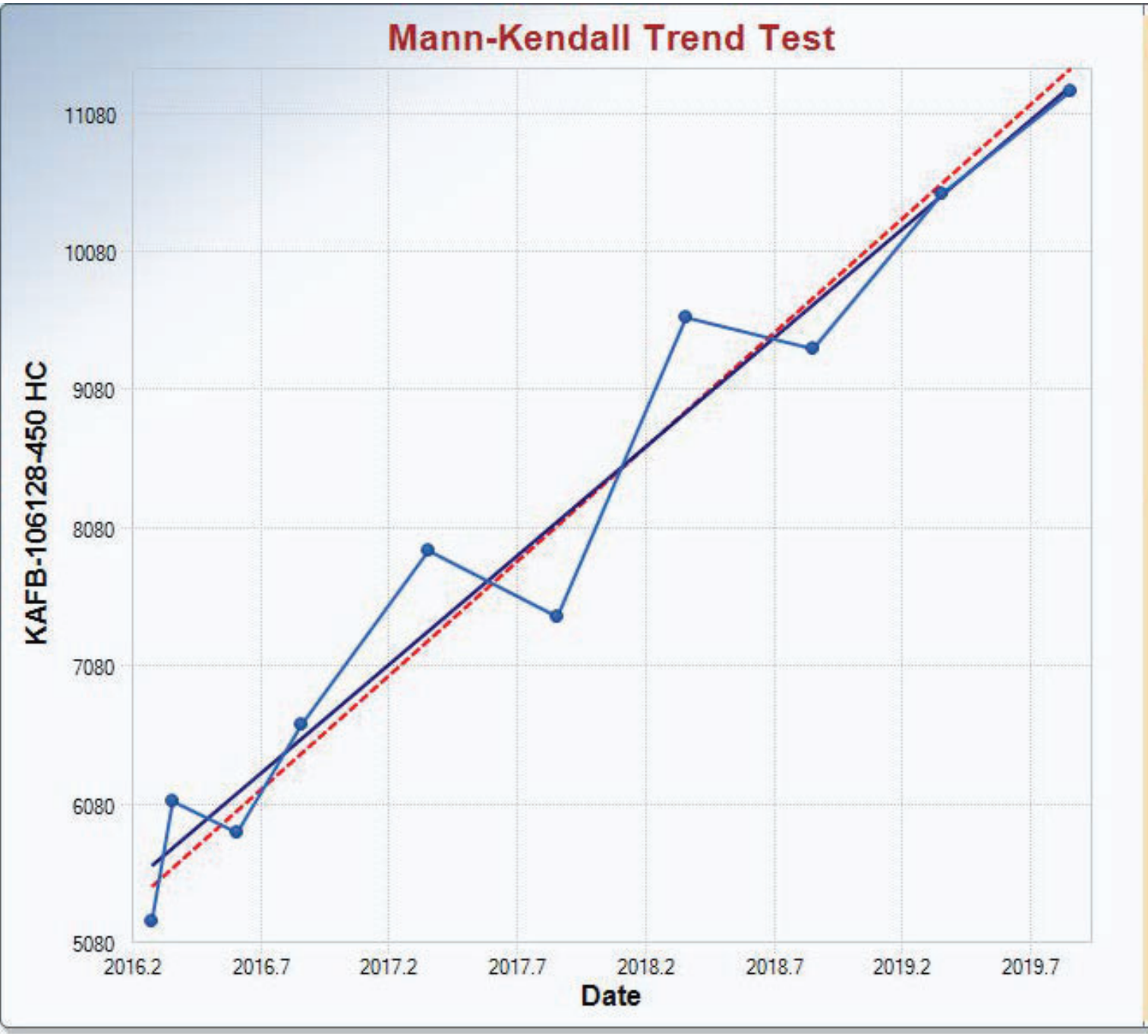
OLS Regression Line (Blue)

OLS Regression Slope	-430.6451
OLS Regression Intercept	873,390.2029

Theil-Sen Trend Line (Red)

Theil-Sen Slope	-453.4335
Theil-Sen Intercept	919,254.9775

Statistically significant evidence of a decreasing trend at the specified level of significance.



Mann-Kendall Trend Analysis

n	10
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	11.1803
Standardized Value of S	3.3988
M-K Test Value (S)	39
Tabulated p-value	0.0000
Approximate p-value	0.0003

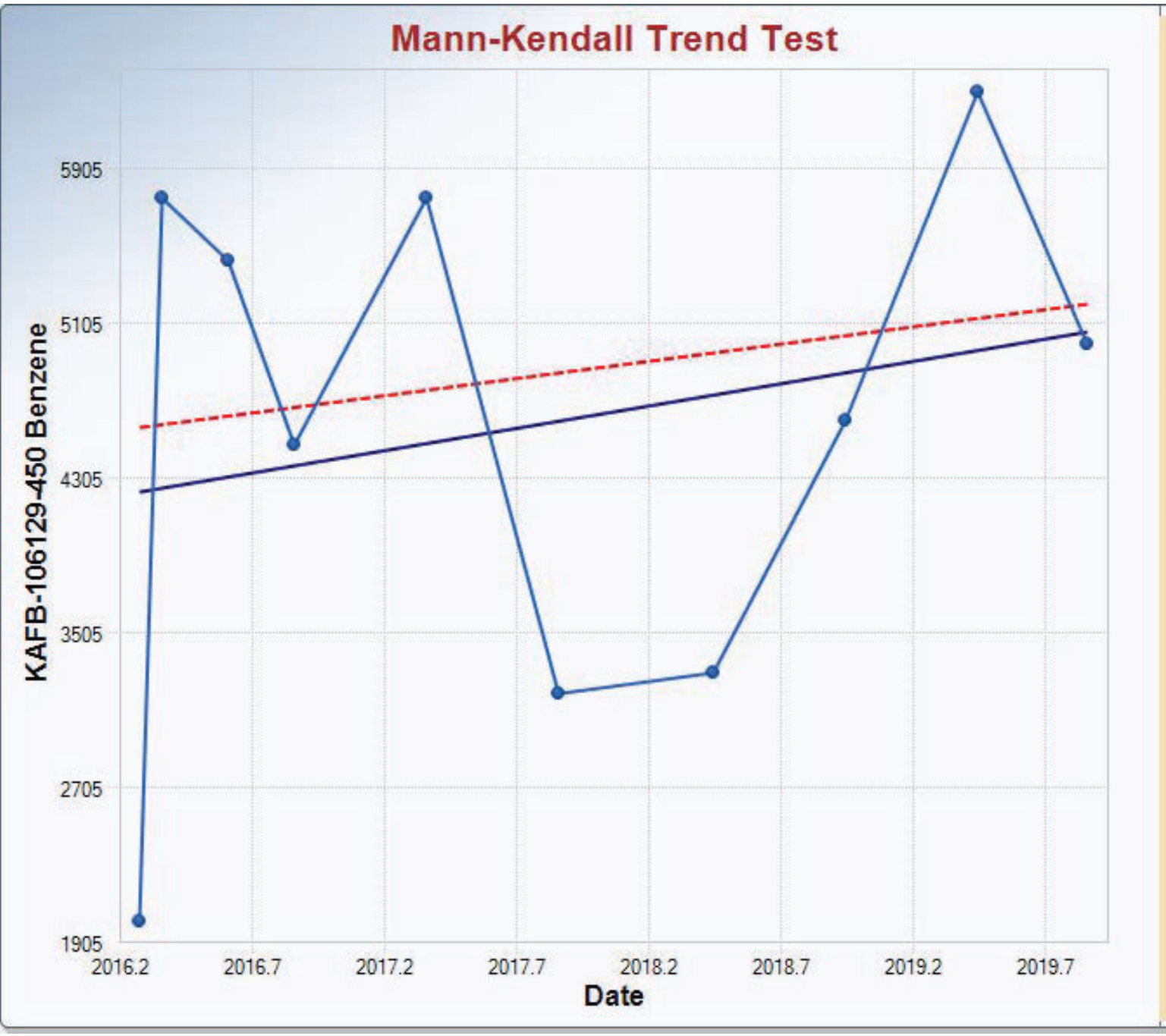
OLS Regression Line (Blue)

OLS Regression Slope	1,578.8822
OLS Regression Intercept	-3,177,792.8283

Theil-Sen Trend Line (Red)

Theil-Sen Slope	1,652.3077
Theil-Sen Intercept	-3,325,982.9538

Statistically significant evidence of an increasing trend at the specified level of significance.



Mann-Kendall Trend Analysis

n	10
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	11.1355
Standardized Value of S	0.6286
M-K Test Value (S)	8
Tabulated p-value	0.2420
Approximate p-value	0.2648

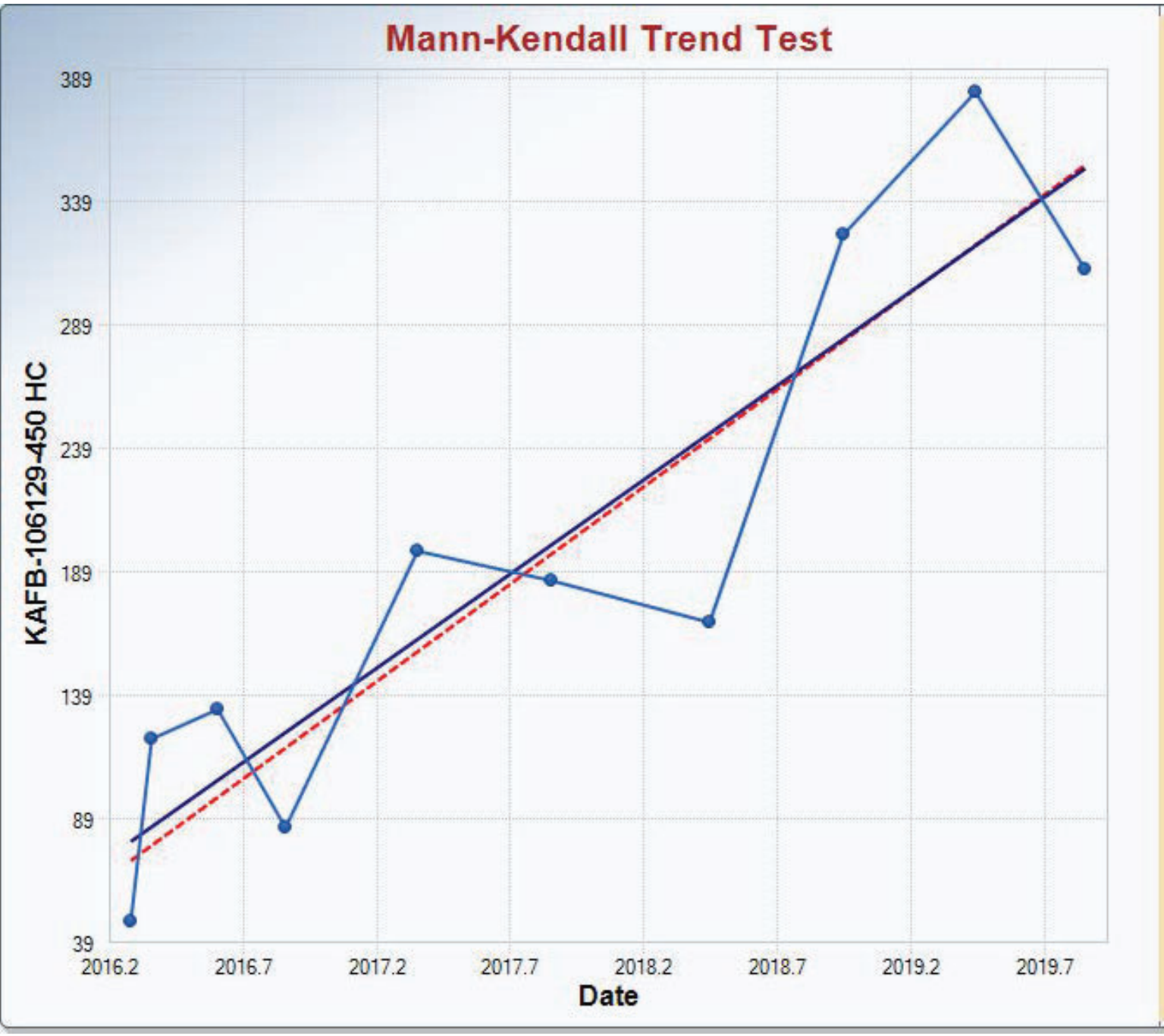
OLS Regression Line (Blue)

OLS Regression Slope	230.9767
OLS Regression Intercept	-461,477.6006

Theil-Sen Trend Line (Red)

Theil-Sen Slope	178.5033
Theil-Sen Intercept	-355,344.7769

Insufficient statistical evidence of a significant trend at the specified level of significance.



Mann-Kendall Trend Analysis

n	10
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	11.1803
Standardized Value of S	2.6833
M-K Test Value (S)	31
Tabulated p-value	0.0020
Approximate p-value	0.0036

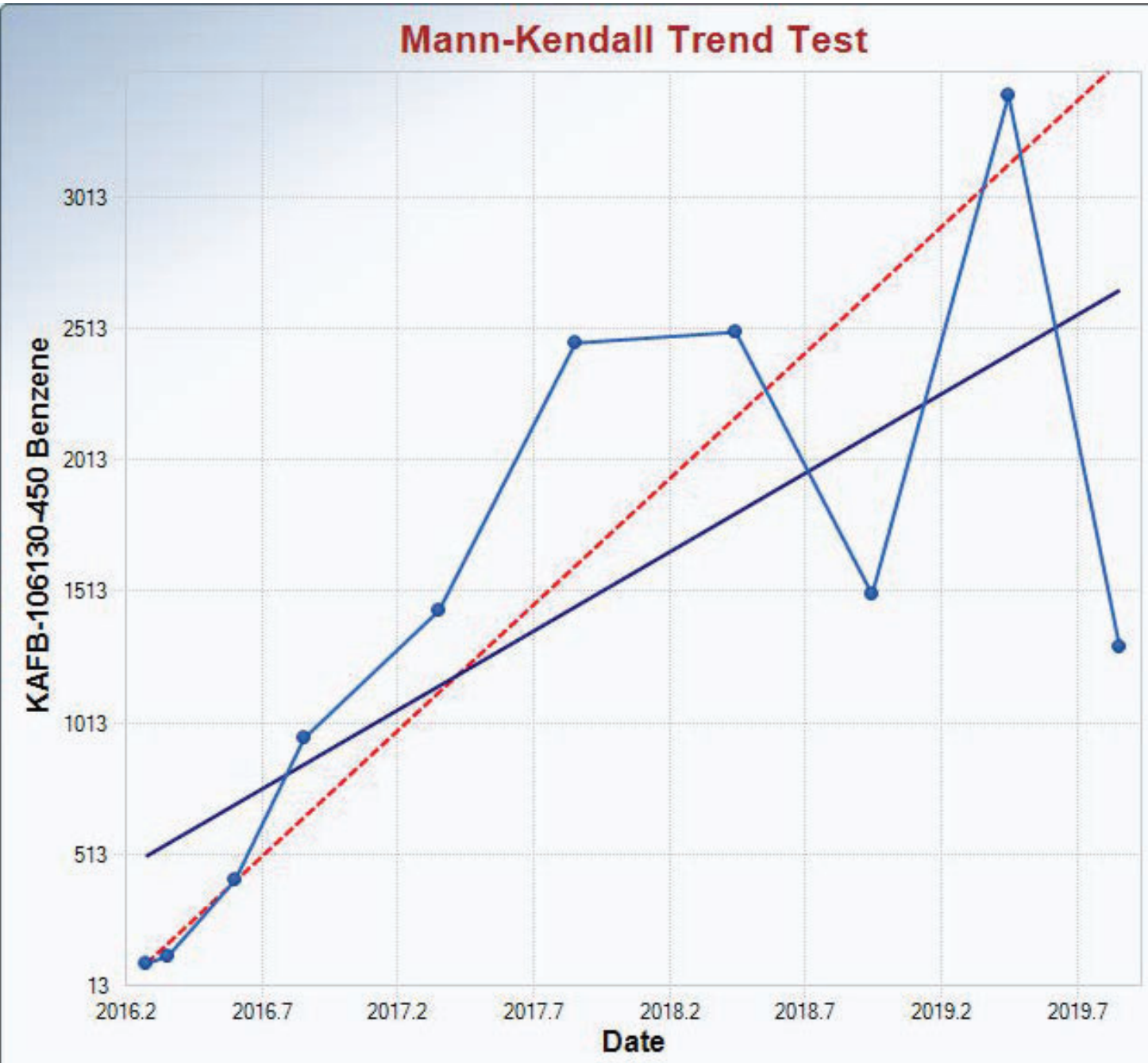
OLS Regression Line (Blue)

OLS Regression Slope	76.2136
OLS Regression Intercept	-153,586.2871

Theil-Sen Trend Line (Red)

Theil-Sen Slope	78.7645
Theil-Sen Intercept	-158,737.1371

Statistically significant evidence of an increasing trend at the specified level of significance.



Mann-Kendall Trend Analysis

n	10
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	11.1803
Standardized Value of S	2.6833
M-K Test Value (S)	31
Tabulated p-value	0.0020
Approximate p-value	0.0036

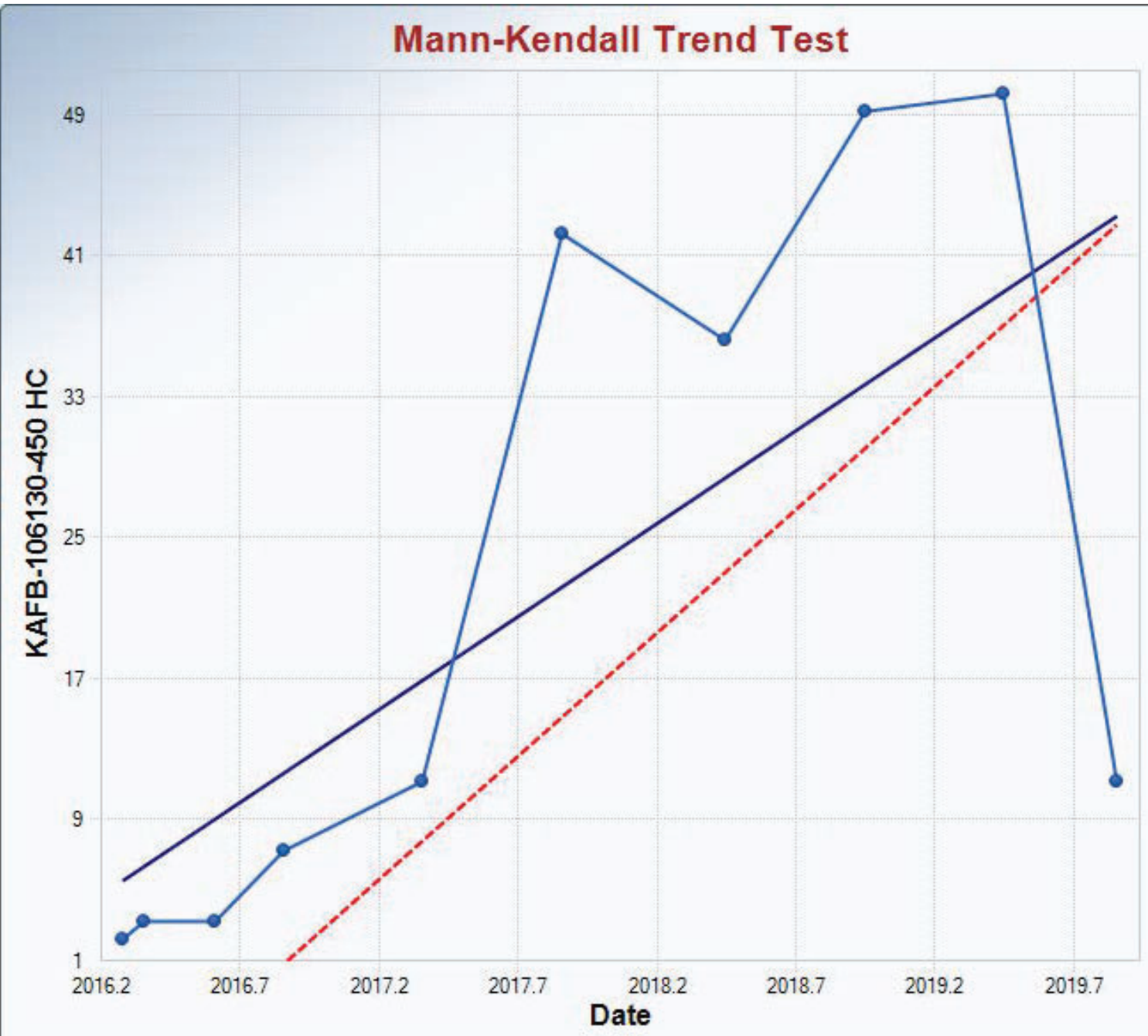
OLS Regression Line (Blue)

OLS Regression Slope	601.6406
OLS Regression Intercept	-1,212,555.9904

Theil-Sen Trend Line (Red)

Theil-Sen Slope	958.4049
Theil-Sen Intercept	-1,932,289.7706

Statistically significant evidence of an increasing trend at the specified level of significance.



Mann-Kendall Trend Analysis

n	10
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	11.0905
Standardized Value of S	2.8853
M-K Test Value (S)	33
Tabulated p-value	0.0010
Approximate p-value	0.0020

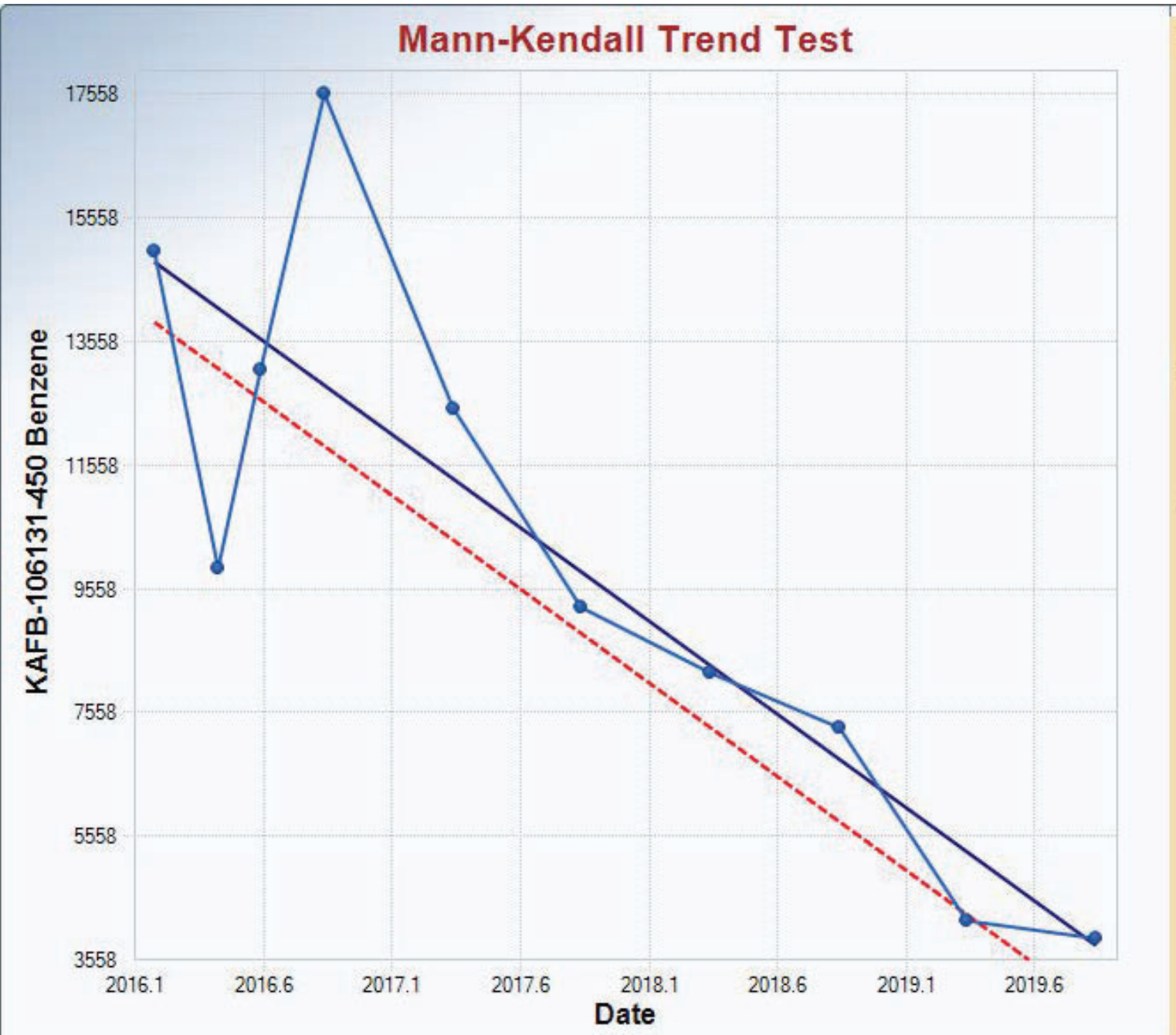
OLS Regression Line (Blue)

OLS Regression Slope	10.5327
OLS Regression Intercept	-21,231.1858

Theil-Sen Trend Line (Red)

Theil-Sen Slope	14.0000
Theil-Sen Intercept	-28,235.1200

Statistically significant evidence of an increasing trend at the specified level of significance.



Mann-Kendall Trend Analysis

n	10
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	11.1803
Standardized Value of S	-3.0411
M-K Test Value (S)	-35
Tabulated p-value	0.0000
Approximate p-value	0.0012

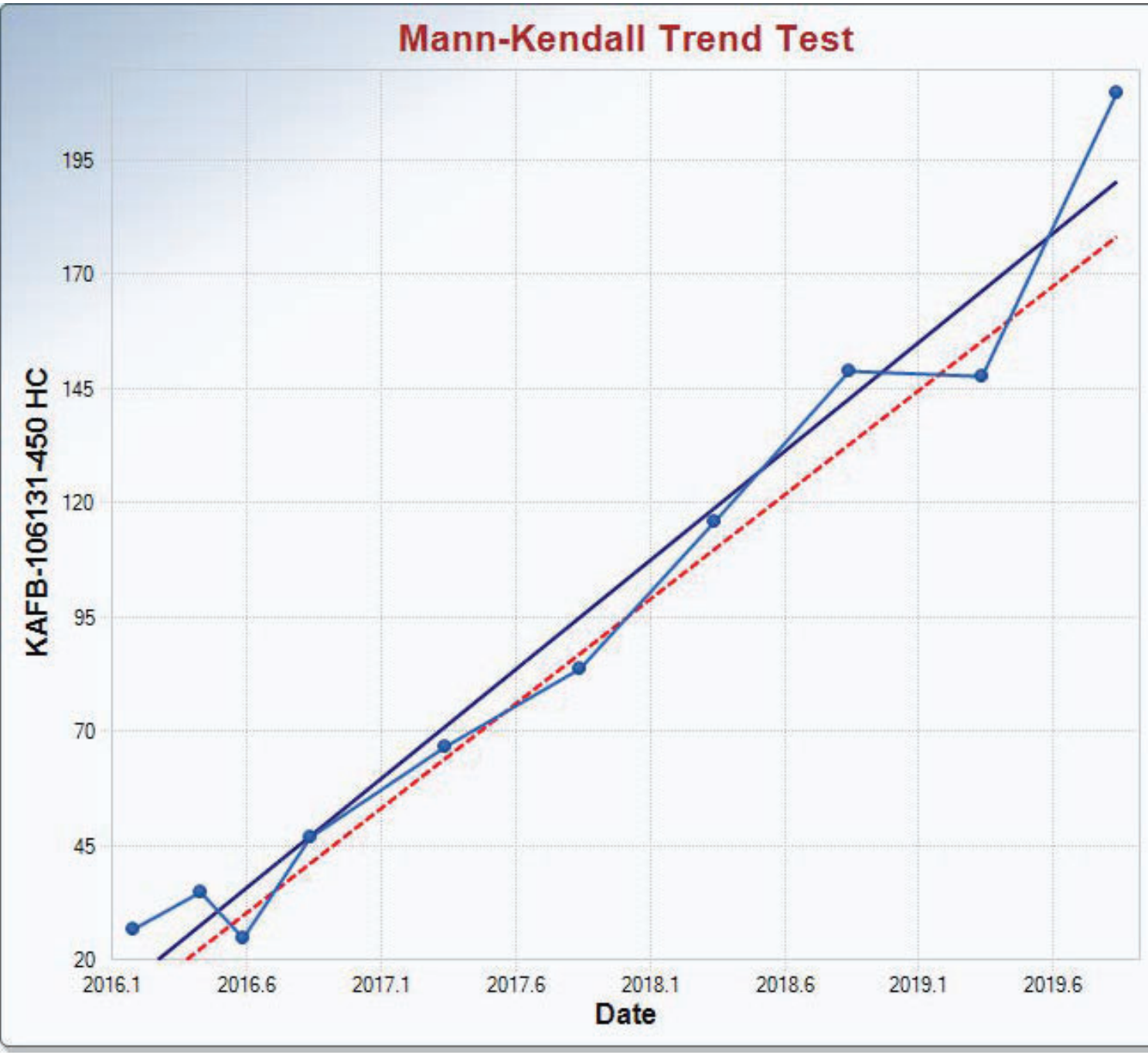
OLS Regression Line (Blue)

OLS Regression Slope	-3,021.3762
OLS Regression Intercept	6,106,466.8586

Theil-Sen Trend Line (Red)

Theil-Sen Slope	-3,036.8880
Theil-Sen Intercept	6,136,748.6173

Statistically significant evidence of a decreasing trend at the specified level of significance.



Mann-Kendall Trend Analysis

n	10
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	11.1803
Standardized Value of S	3.3988
M-K Test Value (S)	39
Tabulated p-value	0.0000
Approximate p-value	0.0003

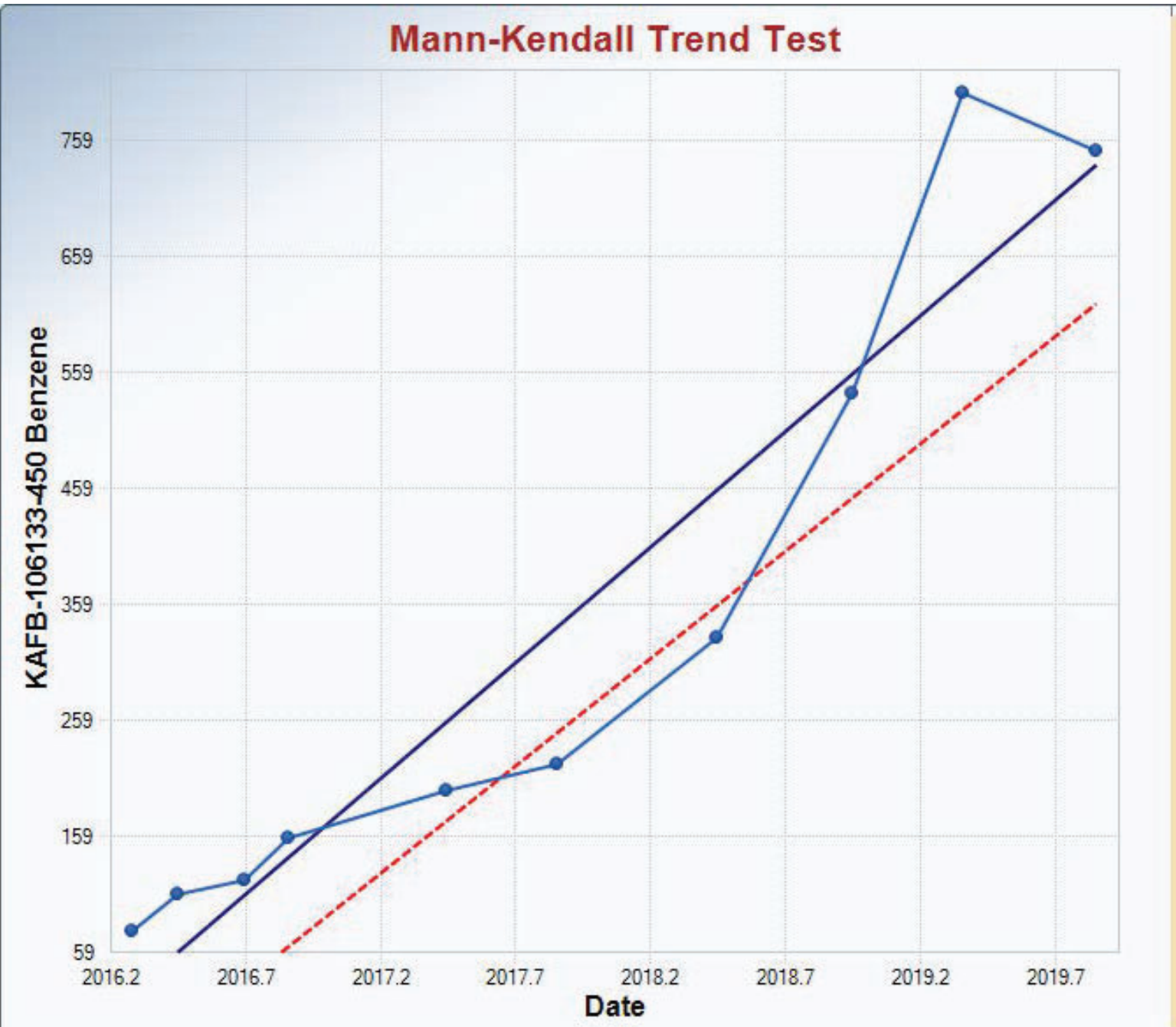
OLS Regression Line (Blue)

OLS Regression Slope	47.8710
OLS Regression Intercept	-96,500.7467

Theil-Sen Trend Line (Red)

Theil-Sen Slope	45.8647
Theil-Sen Intercept	-92,460.1241

Statistically significant evidence of an increasing trend at the specified level of significance.



Mann-Kendall Trend Analysis

n	10
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	11.1803
Standardized Value of S	3.7566
M-K Test Value (S)	43
Tabulated p-value	0.0000
Approximate p-value	0.0001

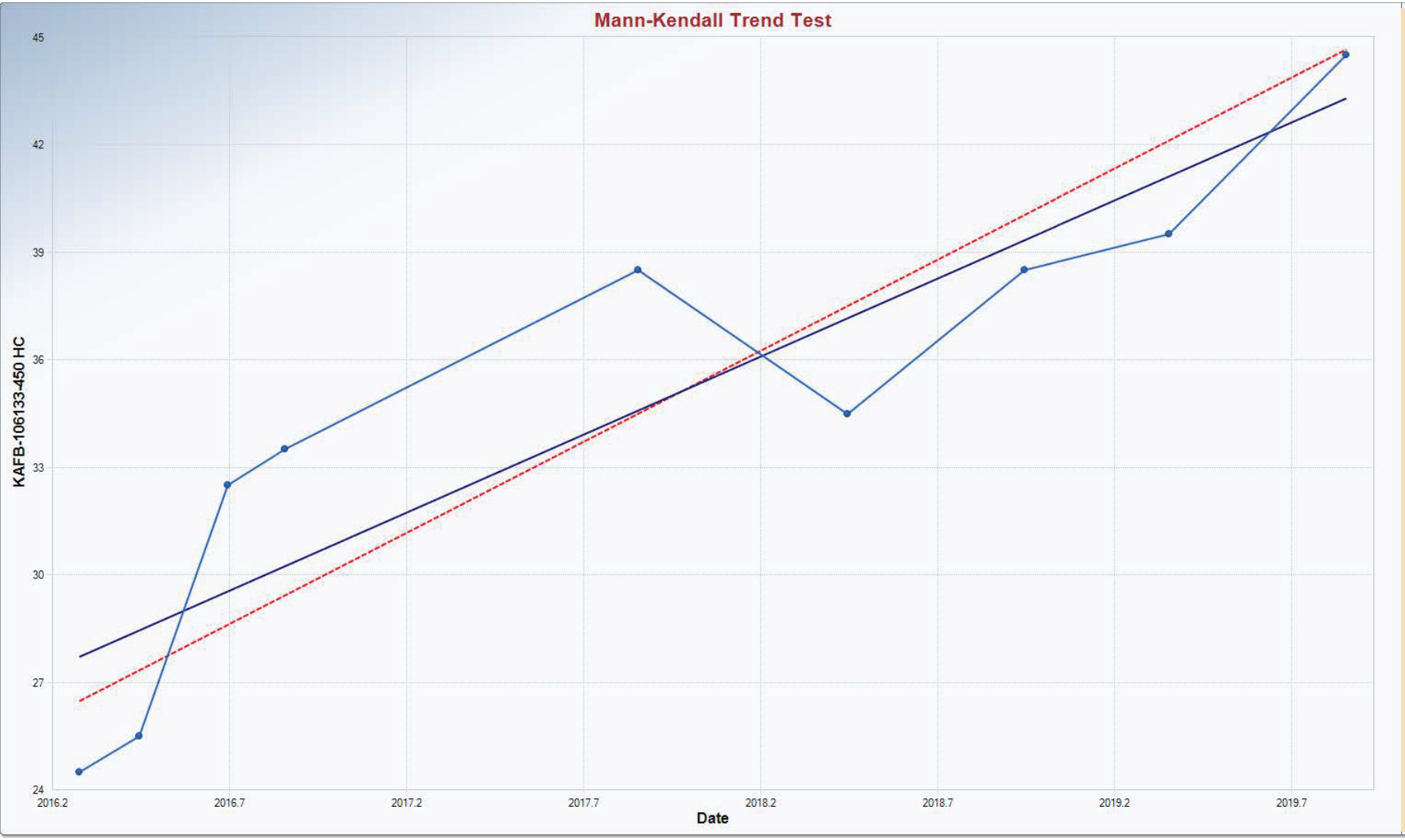
OLS Regression Line (Blue)

OLS Regression Slope	200.1292
OLS Regression Intercept	-403,488.9435

Theil-Sen Trend Line (Red)

Theil-Sen Slope	185.7066
Theil-Sen Intercept	-374,476.9491

Statistically significant evidence of an increasing trend at the specified level of significance.



Mann-Kendall Trend Analysis

n	9
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	9.5394
Standardized Value of S	3.3545
M-K Test Value (S)	33
Tabulated p-value	0.0000
Approximate p-value	0.0004

OLS Regression Line (Blue)

OLS Regression Slope	4.3559
OLS Regression Intercept	-8,754.3637

Theil-Sen Trend Line (Red)

Theil-Sen Slope	5.0862
Theil-Sen Intercept	-10,228.1009

Statistically significant evidence of an increasing trend at the specified level of significance.

Mann-Kendall Trend Analysis

n	10
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	11.1803
Standardized Value of S	1.7889
M-K Test Value (S)	21
Tabulated p-value	0.0360
Approximate p-value	0.0368

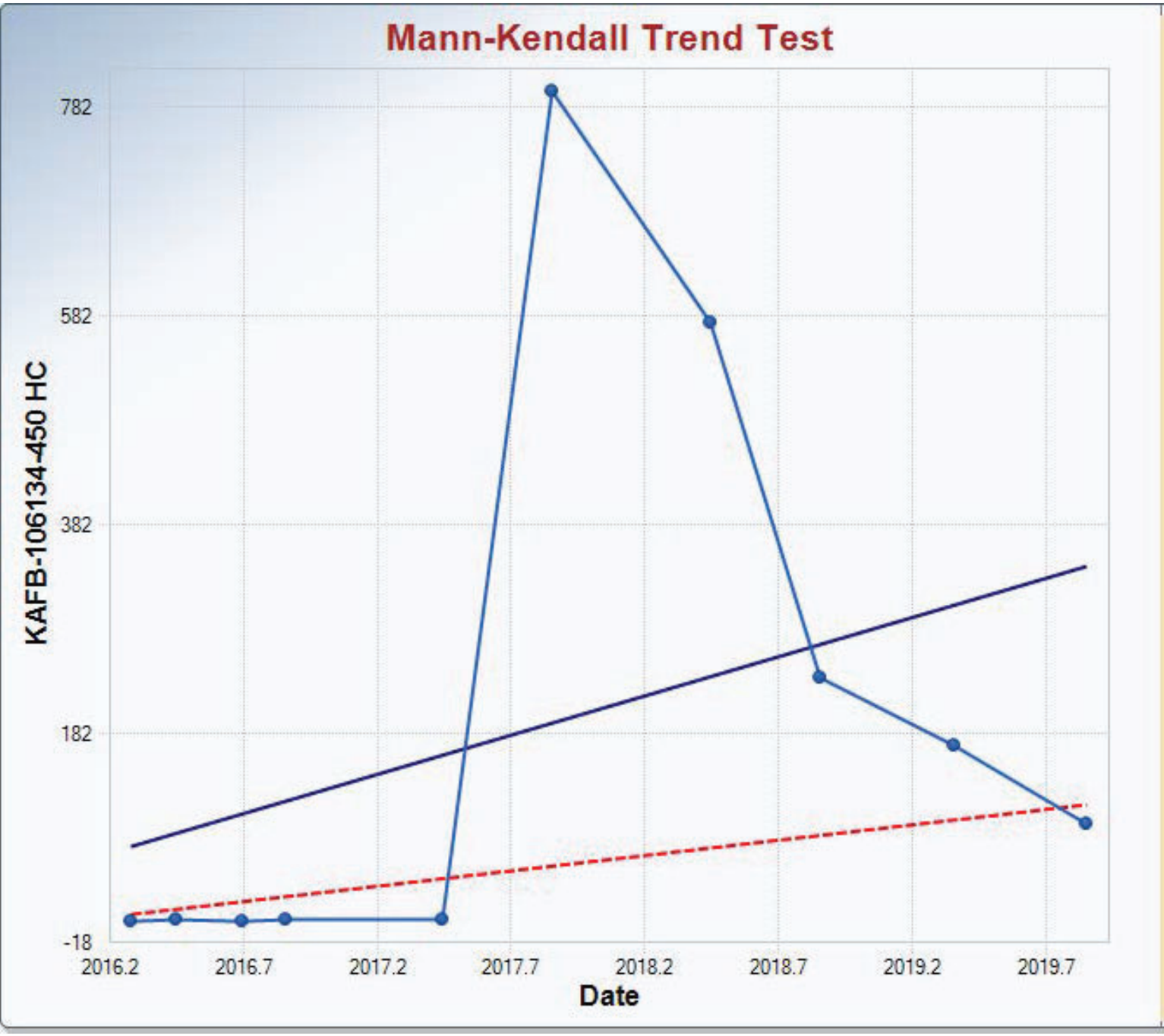
OLS Regression Line (Blue)

OLS Regression Slope	1,377.7113
OLS Regression Intercept	-2,777,241.6213

Theil-Sen Trend Line (Red)

Theil-Sen Slope	597.5252
Theil-Sen Intercept	-1,204,590.2768

Statistically significant evidence of an increasing trend at the specified level of significance.



Mann-Kendall Trend Analysis

n	10
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	10.9697
Standardized Value of S	1.6409
M-K Test Value (S)	19
Tabulated p-value	0.0540
Approximate p-value	0.0504

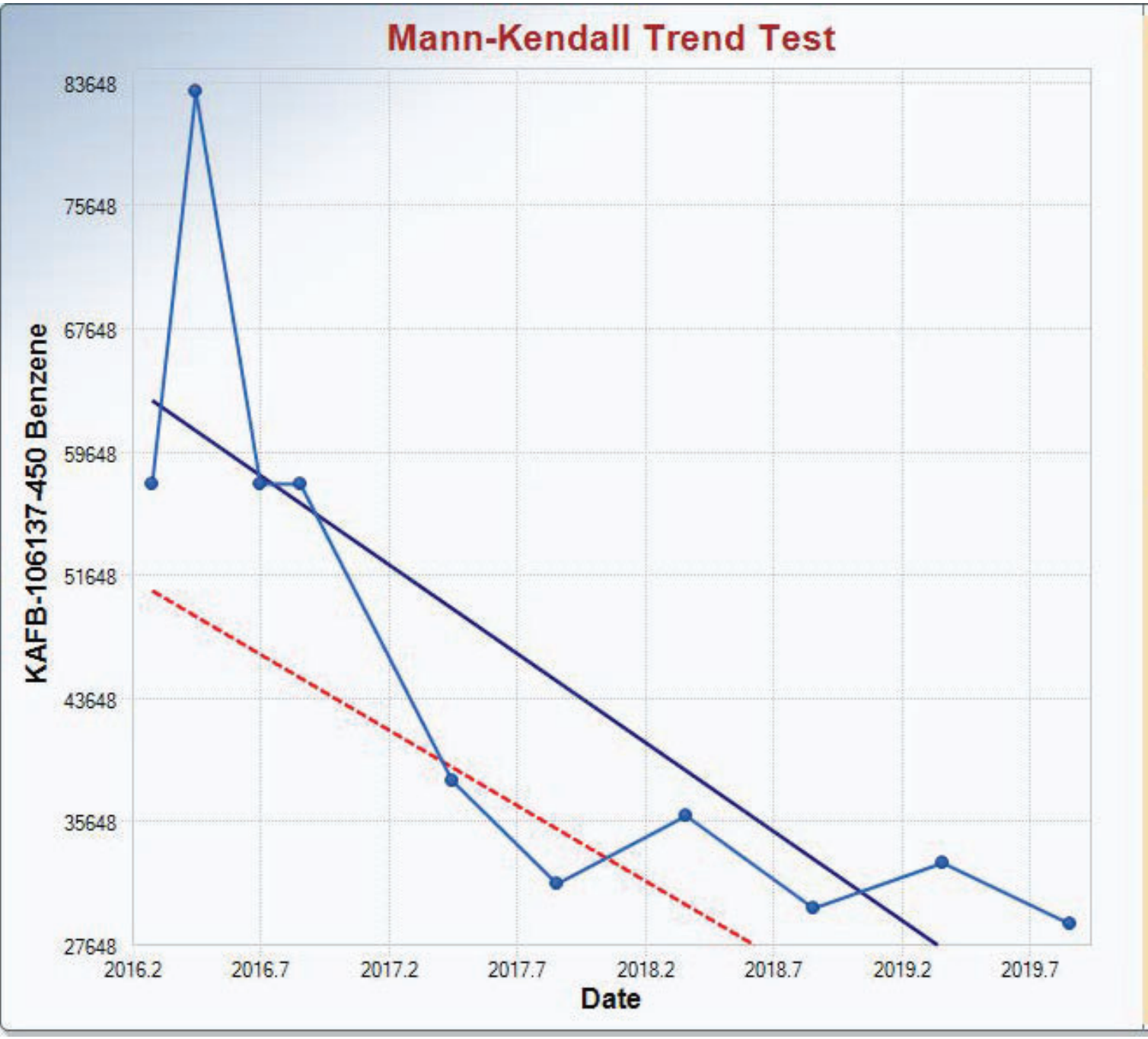
OLS Regression Line (Blue)

OLS Regression Slope	74.9175
OLS Regression Intercept	-150,978.3057

Theil-Sen Trend Line (Red)

Theil-Sen Slope	29.4304
Theil-Sen Intercept	-59,329.9699

Insufficient statistical evidence of a significant trend at the specified level of significance.



Mann-Kendall Trend Analysis

n	10
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	11.0151
Standardized Value of S	-2.9959
M-K Test Value (S)	-34
Tabulated p-value	0.0000
Approximate p-value	0.0014

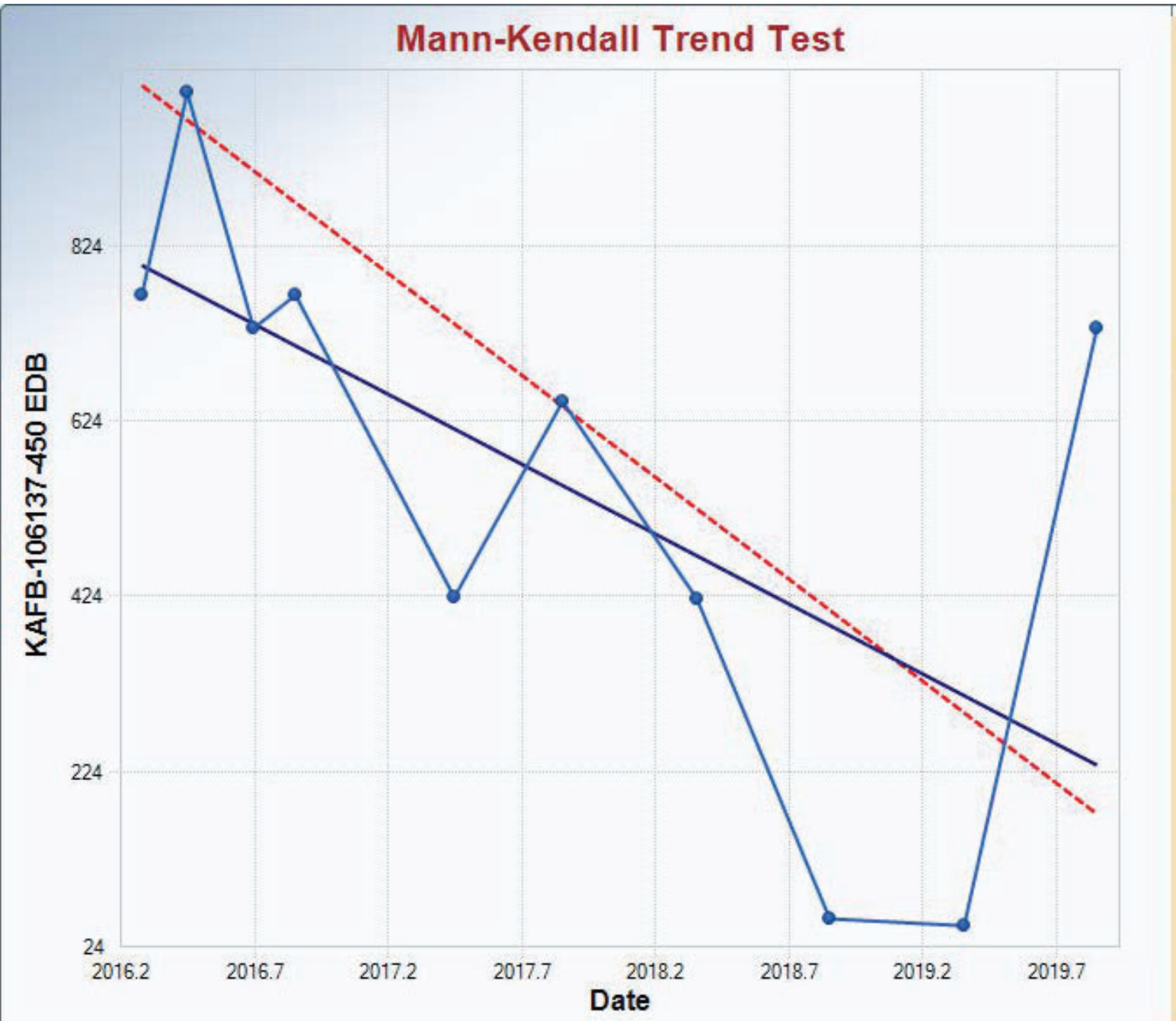
OLS Regression Line (Blue)

OLS Regression Slope	-11,543.8370
OLS Regression Intercept	23,338,207.8884

Theil-Sen Trend Line (Red)

Theil-Sen Slope	-9,801.7178
Theil-Sen Intercept	19,813,358.9582

Statistically significant evidence of a decreasing trend at the specified level of significance.



Mann-Kendall Trend Analysis

n	10
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	11.1355
Standardized Value of S	-2.4247
M-K Test Value (S)	-28
Tabulated p-value	0.0050
Approximate p-value	0.0077

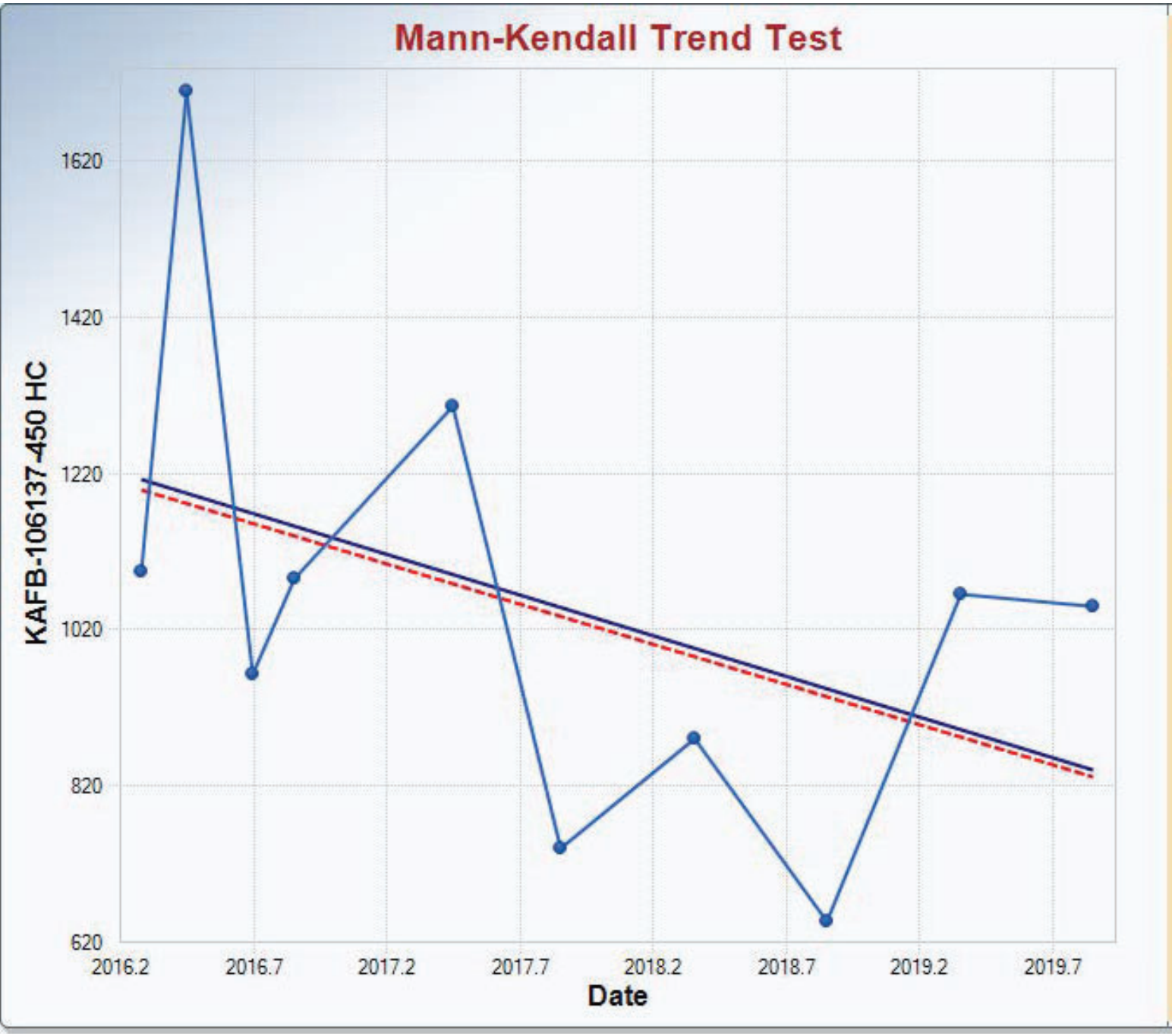
OLS Regression Line (Blue)

OLS Regression Slope	-158.9266
OLS Regression Intercept	321,236.9378

Theil-Sen Trend Line (Red)

Theil-Sen Slope	-232.2836
Theil-Sen Intercept	469,348.8805

Statistically significant evidence of a decreasing trend at the specified level of significance.



Mann-Kendall Trend Analysis

n	10
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	11.1803
Standardized Value of S	-1.4311
M-K Test Value (S)	-17
Tabulated p-value	0.0780
Approximate p-value	0.0762

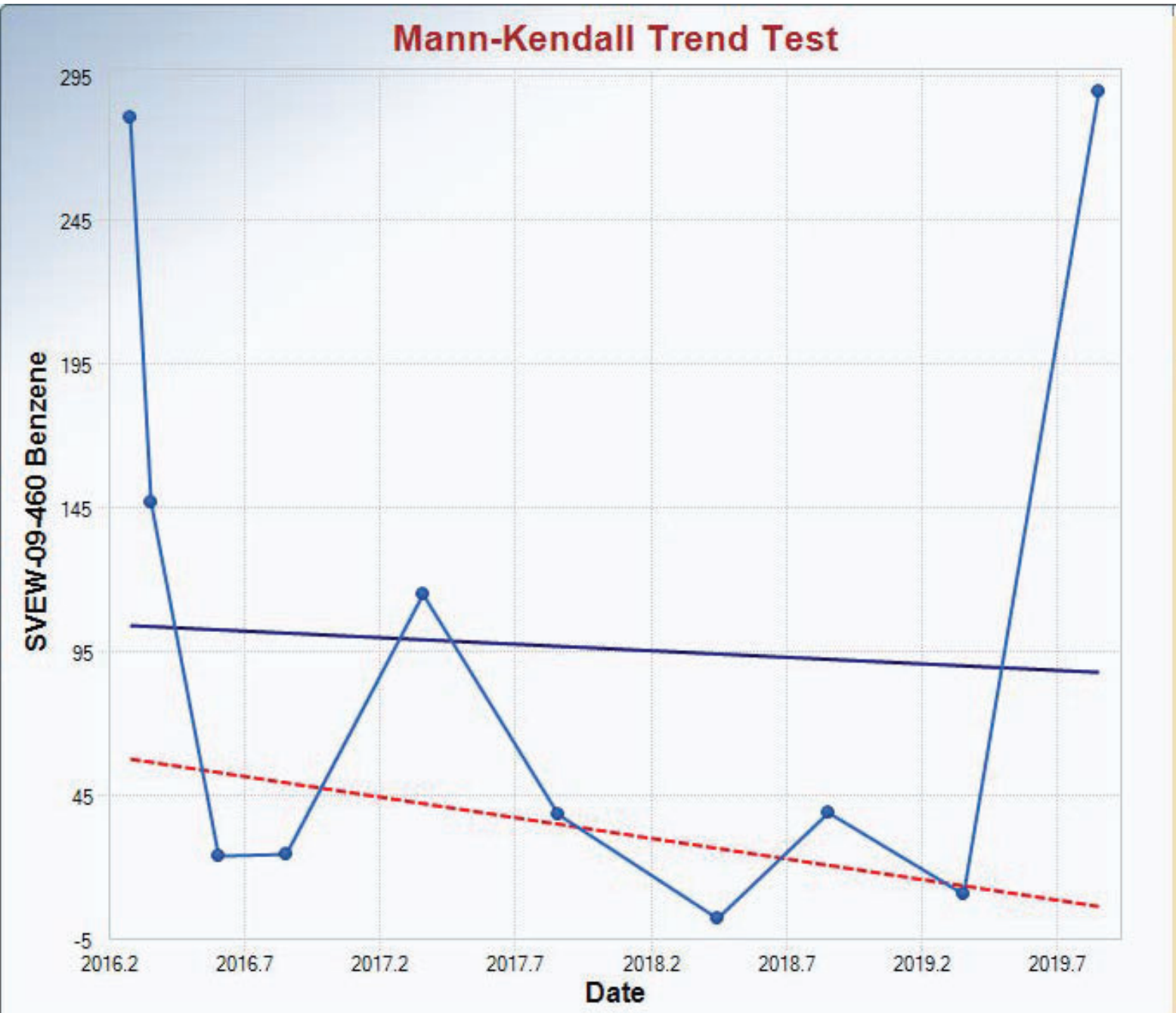
OLS Regression Line (Blue)

OLS Regression Slope	-103.6370
OLS Regression Intercept	210,170.5582

Theil-Sen Trend Line (Red)

Theil-Sen Slope	-102.8846
Theil-Sen Intercept	208,641.5721

Insufficient statistical evidence of a significant trend at the specified level of significance.



Mann-Kendall Trend Analysis

n	10
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	11.1803
Standardized Value of S	-0.5367
M-K Test Value (S)	-7
Tabulated p-value	0.3000
Approximate p-value	0.2958

OLS Regression Line (Blue)

OLS Regression Slope	-4.5384
OLS Regression Intercept	9,254.7183

Theil-Sen Trend Line (Red)

Theil-Sen Slope	-14.2255
Theil-Sen Intercept	28,739.7303

Insufficient statistical evidence of a significant trend at the specified level of significance.

Mann-Kendall Trend Analysis

n	9
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	9.4868
Standardized Value of S	0.7379
M-K Test Value (S)	8
Tabulated p-value	0.2380
Approximate p-value	0.2303

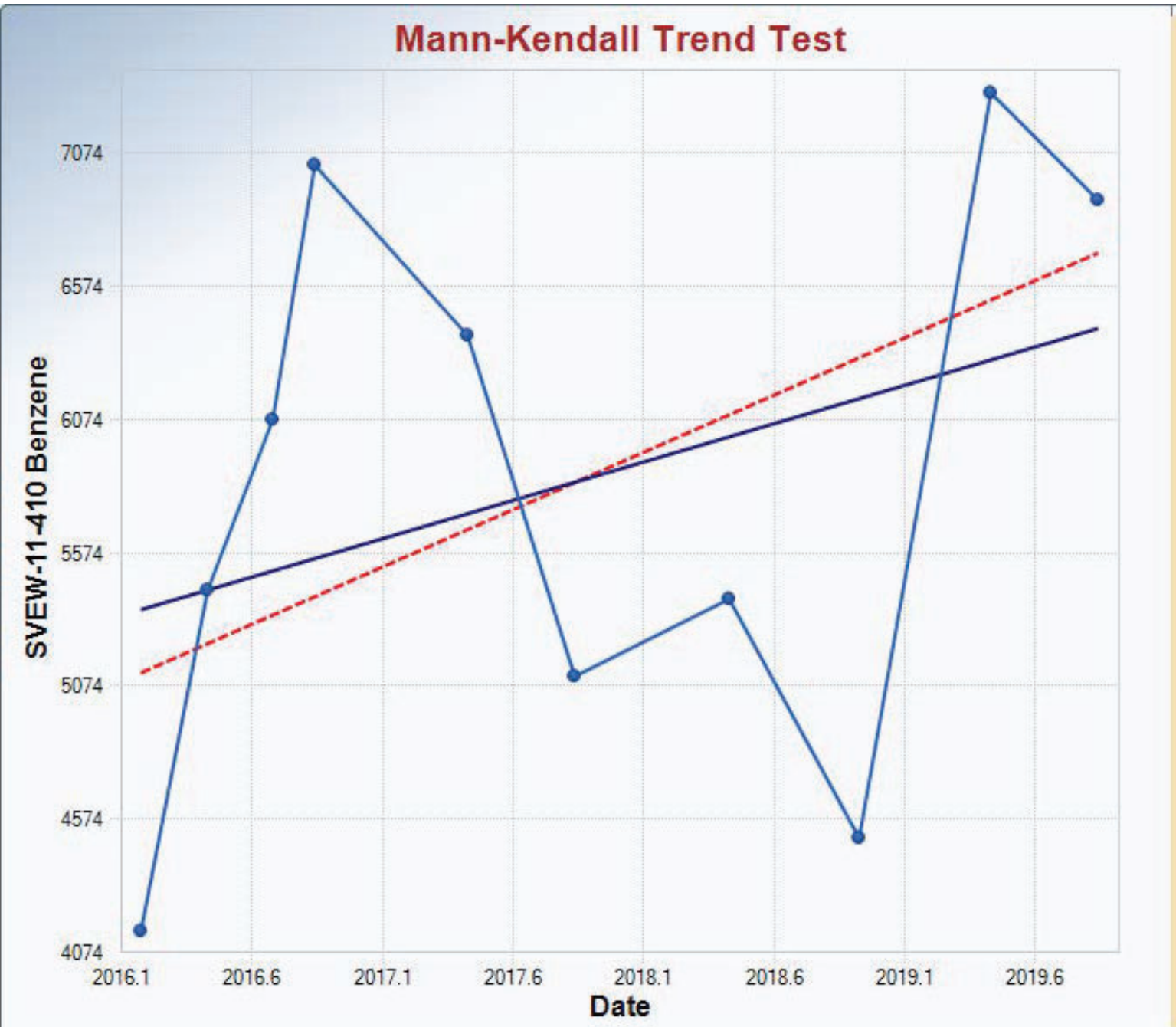
OLS Regression Line (Blue)

OLS Regression Slope	1.6426
OLS Regression Intercept	-3,301.2074

Theil-Sen Trend Line (Red)

Theil-Sen Slope	1.8333
Theil-Sen Intercept	-3,688.3550

Insufficient statistical evidence of a significant trend at the specified level of significance.



Mann-Kendall Trend Analysis

n	10
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	11.1803
Standardized Value of S	0.8944
M-K Test Value (S)	11
Tabulated p-value	0.1900
Approximate p-value	0.1855

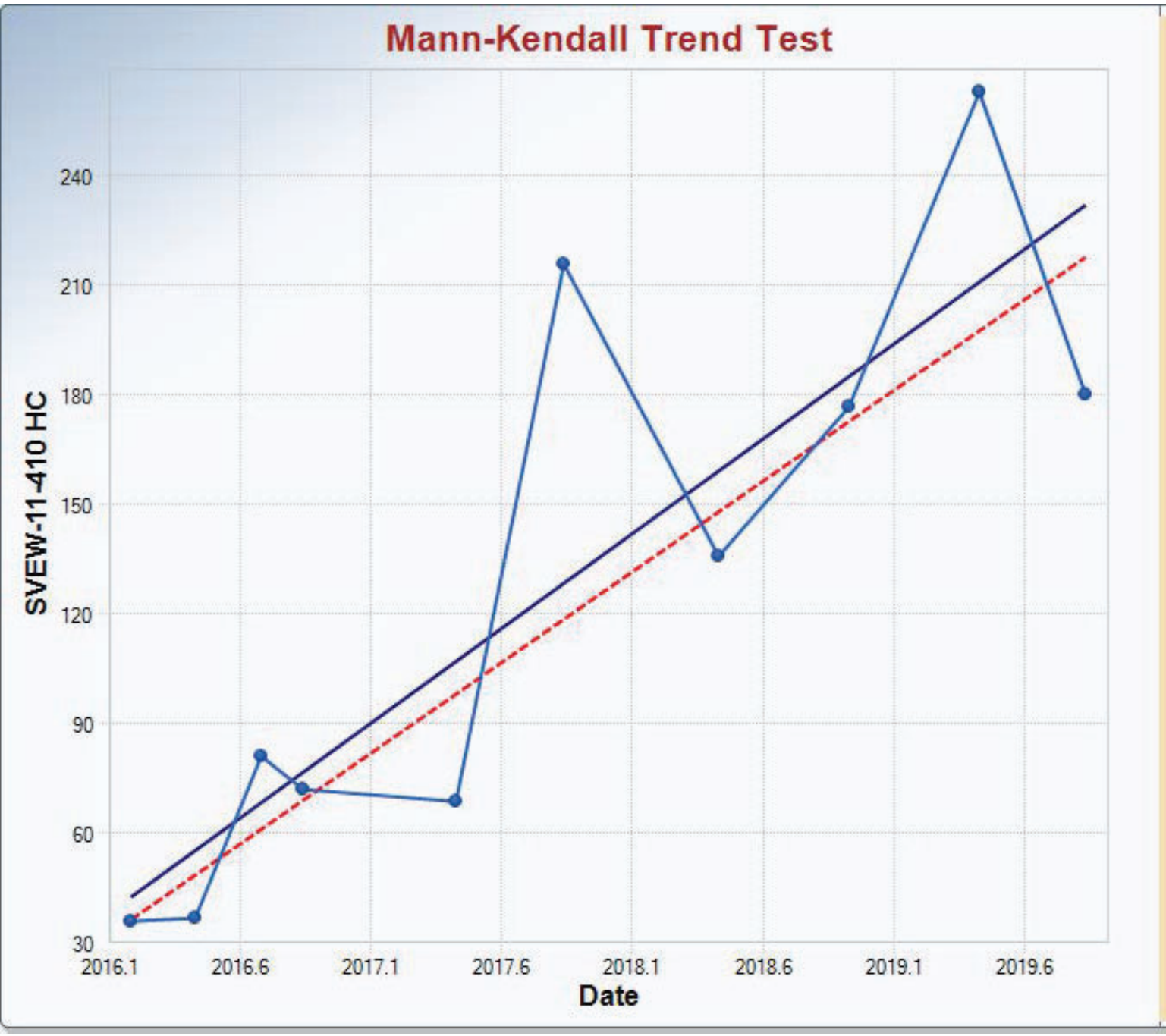
OLS Regression Line (Blue)

OLS Regression Slope	288.3242
OLS Regression Intercept	-575,950.2357

Theil-Sen Trend Line (Red)

Theil-Sen Slope	430.8032
Theil-Sen Intercept	-863,448.8432

Insufficient statistical evidence of a significant trend at the specified level of significance.



Mann-Kendall Trend Analysis

n	10
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	11.1803
Standardized Value of S	2.6833
M-K Test Value (S)	31
Tabulated p-value	0.0020
Approximate p-value	0.0036

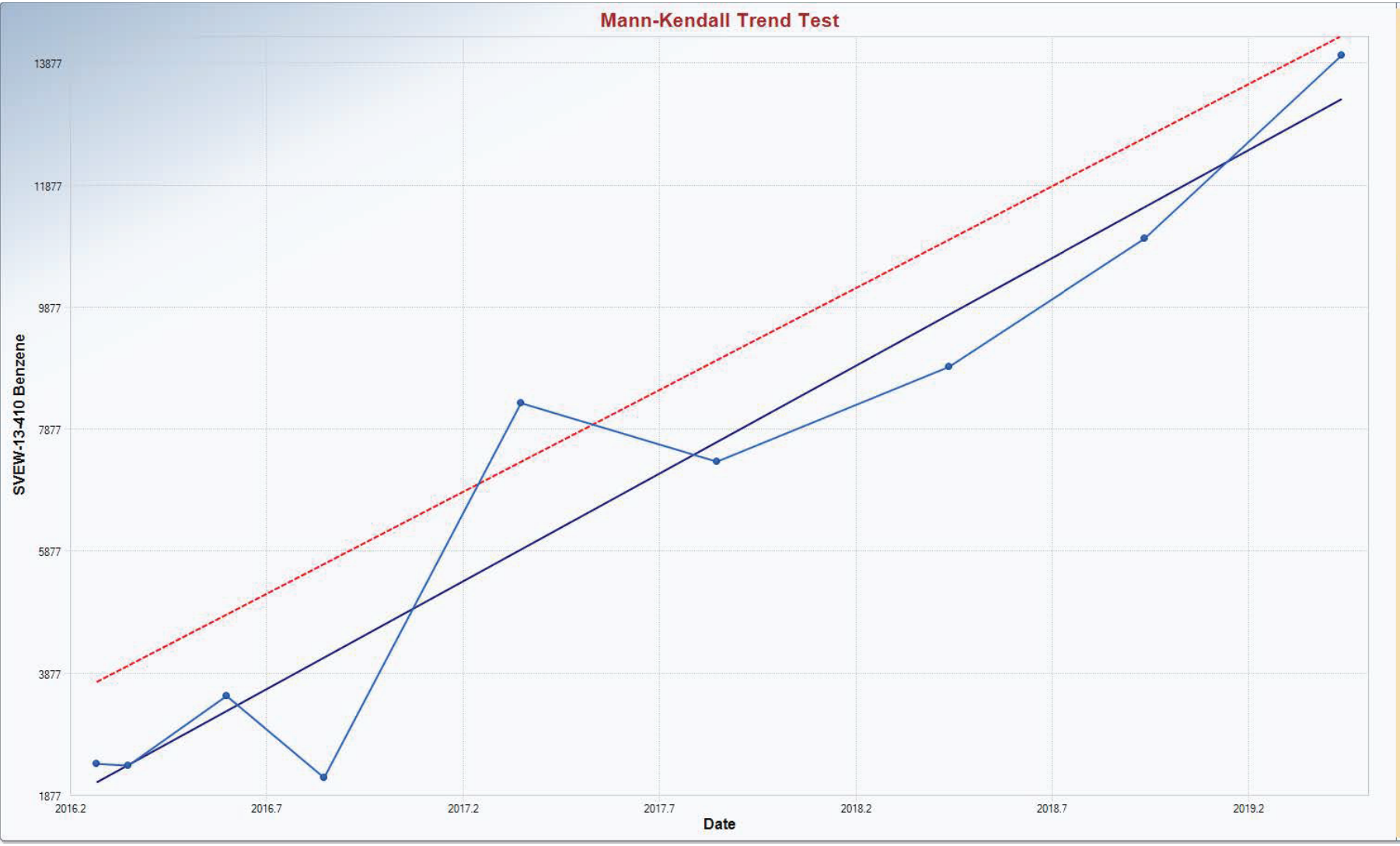
OLS Regression Line (Blue)

OLS Regression Slope	51.7402
OLS Regression Intercept	-104,274.2476

Theil-Sen Trend Line (Red)

Theil-Sen Slope	49.5000
Theil-Sen Intercept	-99,763.9375

Statistically significant evidence of an increasing trend at the specified level of significance.



Mann-Kendall Trend Analysis

n	9
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	9.5917
Standardized Value of S	2.6064
M-K Test Value (S)	26
Tabulated p-value	0.0030
Approximate p-value	0.0046

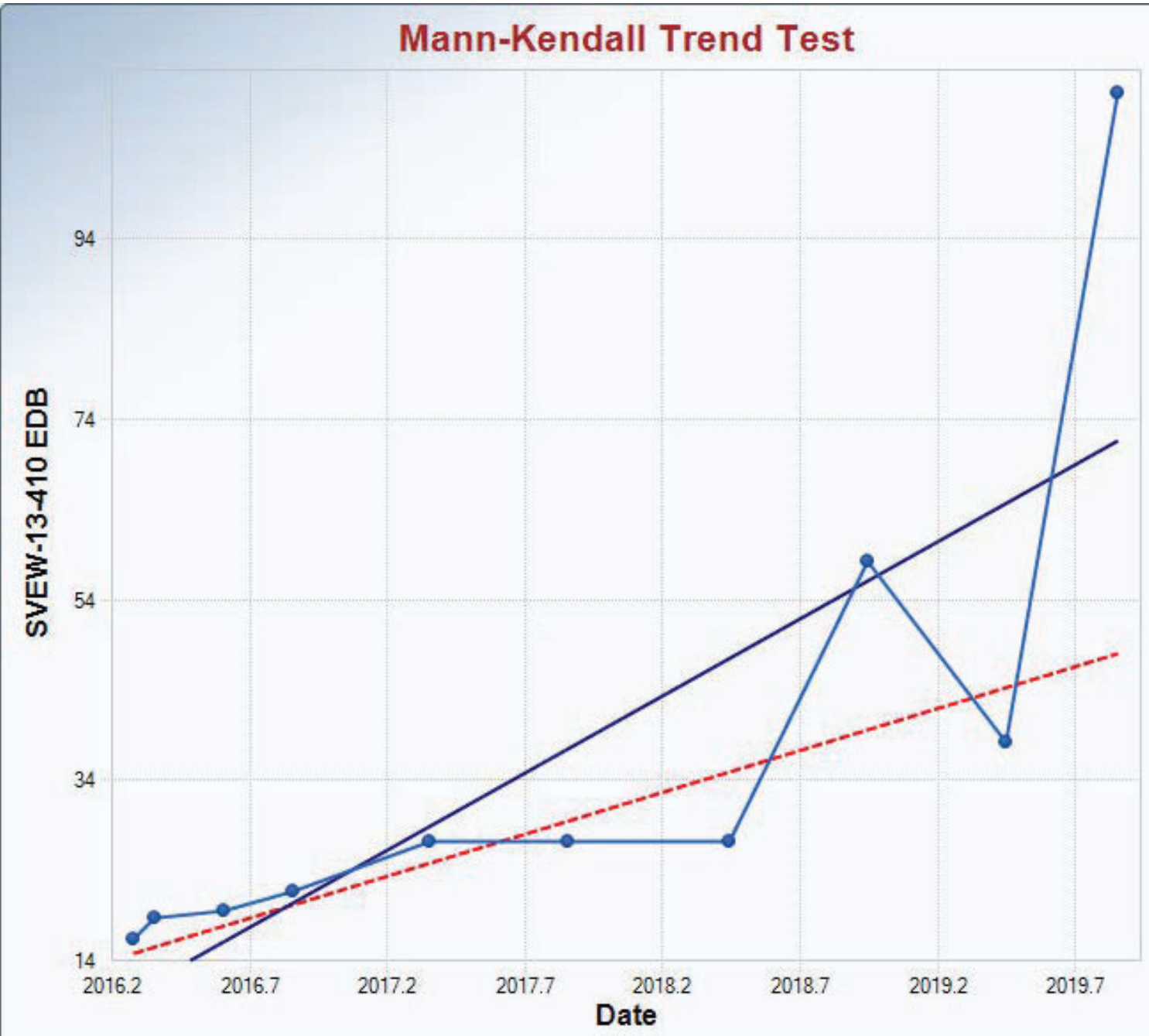
OLS Regression Line (Blue)

OLS Regression Slope	3,535.3638
OLS Regression Intercept	-7,126,090.7489

Theil-Sen Trend Line (Red)

Theil-Sen Slope	3,342.5033
Theil-Sen Intercept	-6,735,584.3215

Statistically significant evidence of an increasing trend at the specified level of significance.



Mann-Kendall Trend Analysis

n	10
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	11.1355
Standardized Value of S	3.6819
M-K Test Value (S)	42
Tabulated p-value	0.0000
Approximate p-value	0.0001

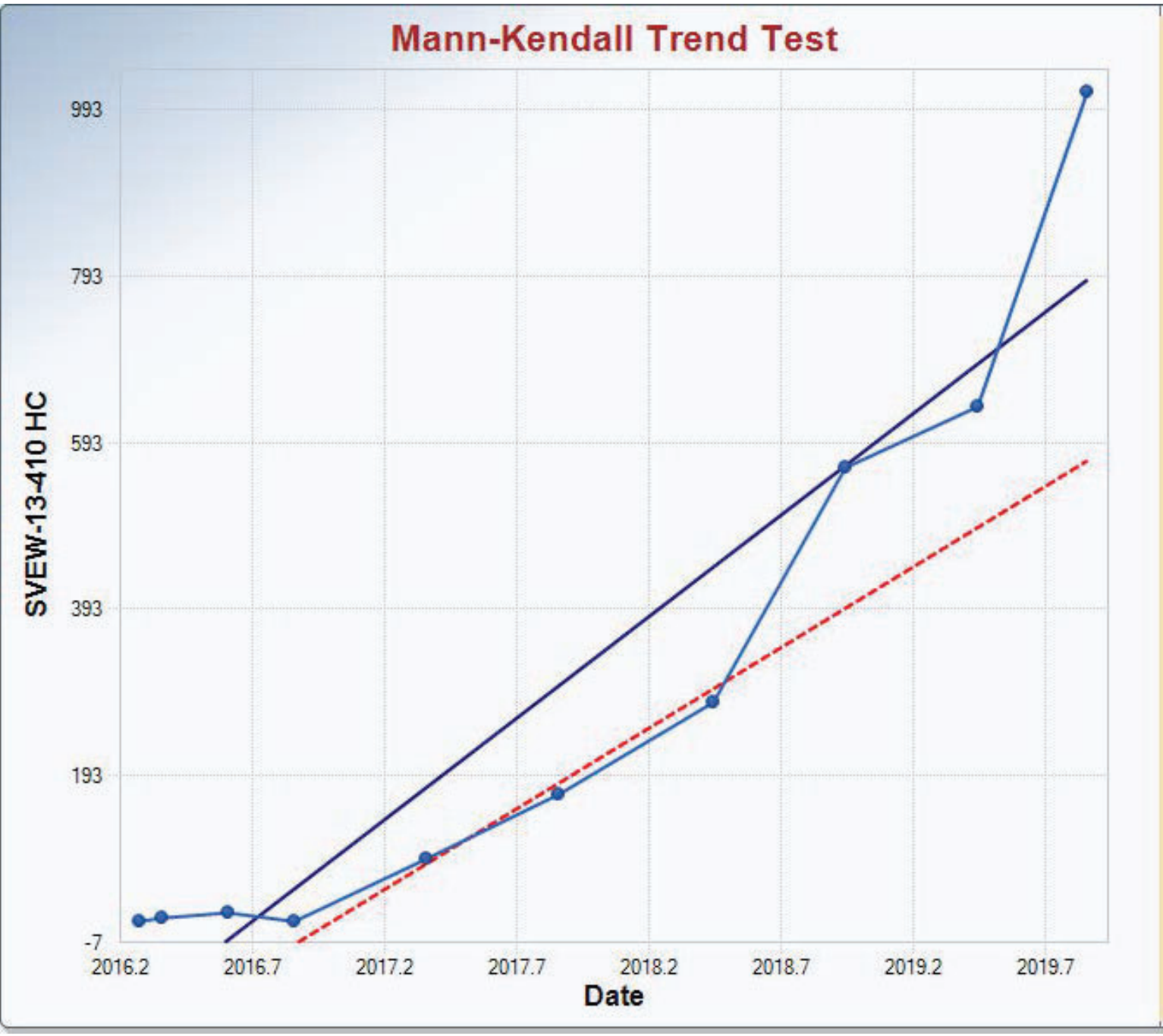
OLS Regression Line (Blue)

OLS Regression Slope	17.1699
OLS Regression Intercept	-34,608.8588

Theil-Sen Trend Line (Red)

Theil-Sen Slope	9.2741
Theil-Sen Intercept	-18,684.3421

Statistically significant evidence of an increasing trend at the specified level of significance.



Mann-Kendall Trend Analysis

n	10
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	11.1355
Standardized Value of S	3.5023
M-K Test Value (S)	40
Tabulated p-value	0.0000
Approximate p-value	0.0002

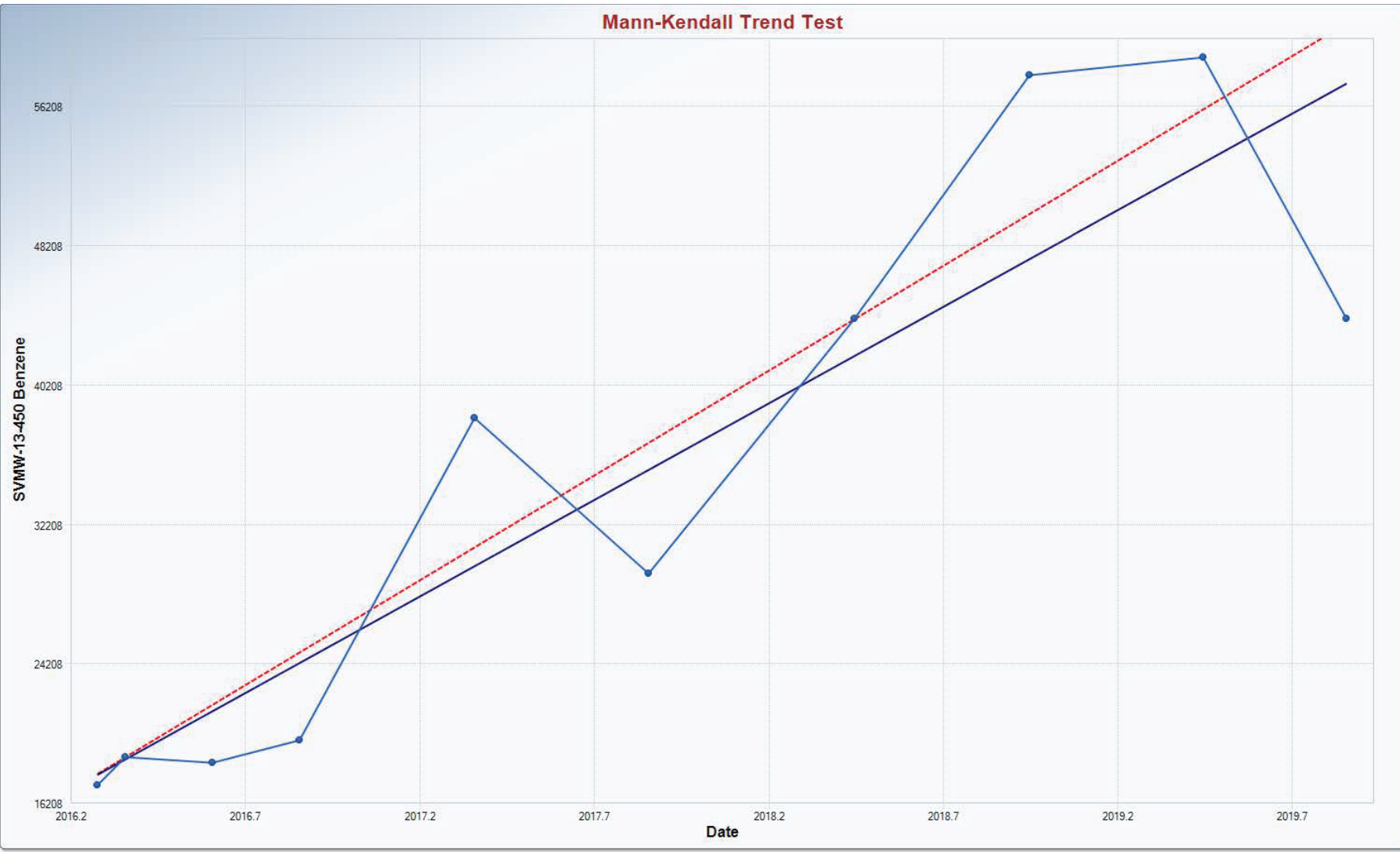
OLS Regression Line (Blue)

OLS Regression Slope	244.7485
OLS Regression Intercept	-493,562.7303

Theil-Sen Trend Line (Red)

Theil-Sen Slope	194.9527
Theil-Sen Intercept	-393,200.1309

Statistically significant evidence of an increasing trend at the specified level of significance.



Mann-Kendall Trend Analysis

n	10
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	11.1355
Standardized Value of S	3.1431
M-K Test Value (S)	36
Tabulated p-value	0.0000
Approximate p-value	0.0008

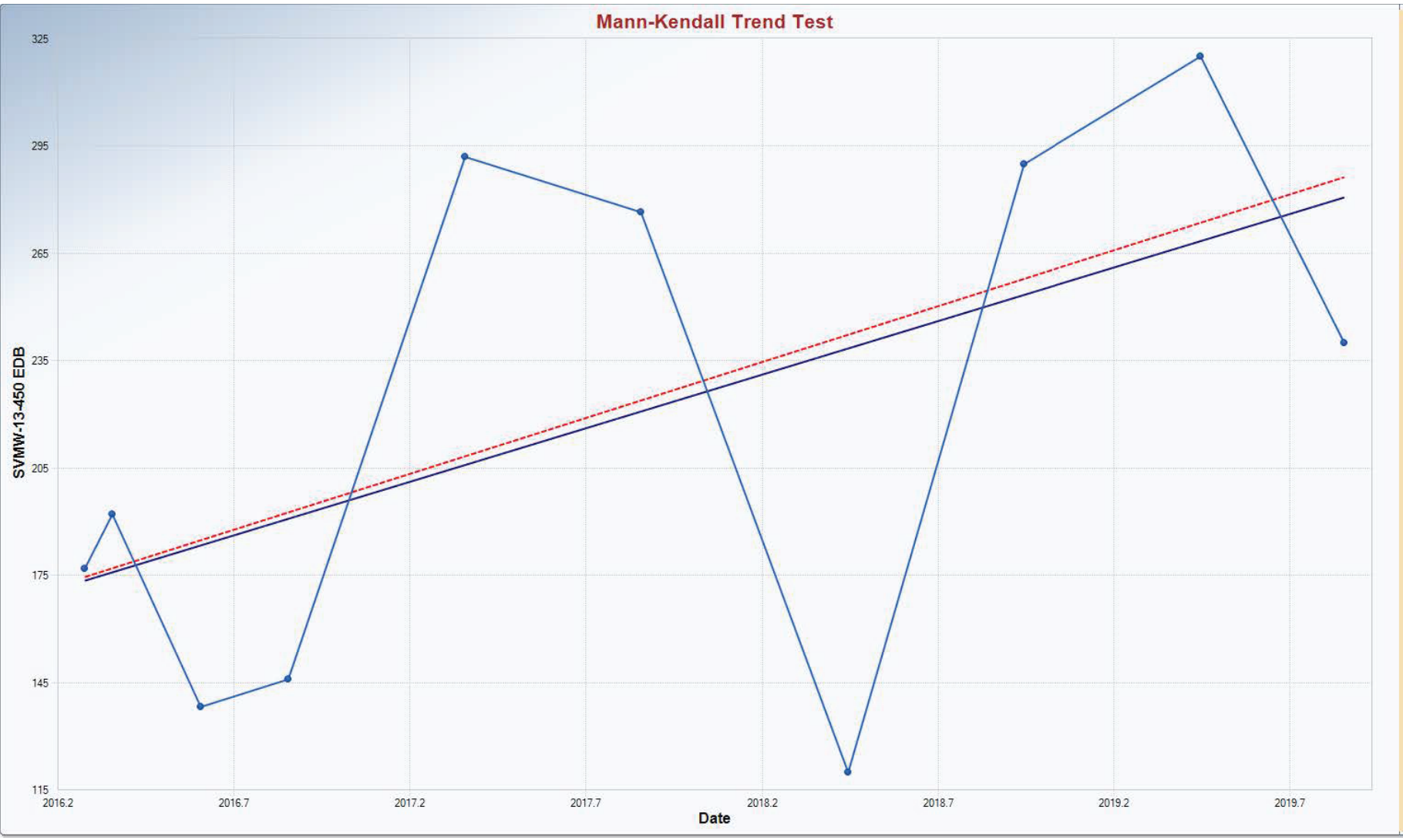
OLS Regression Line (Blue)

OLS Regression Slope	11,080.4488
OLS Regression Intercept	-22,323,125.1453

Theil-Sen Trend Line (Red)

Theil-Sen Slope	12,034.1484
Theil-Sen Intercept	-24,245,993.4733

Statistically significant evidence of an increasing trend at the specified level of significance.



Mann-Kendall Trend Analysis

n	10
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	11.1803
Standardized Value of S	1.0733
M-K Test Value (S)	13
Tabulated p-value	0.1460
Approximate p-value	0.1416

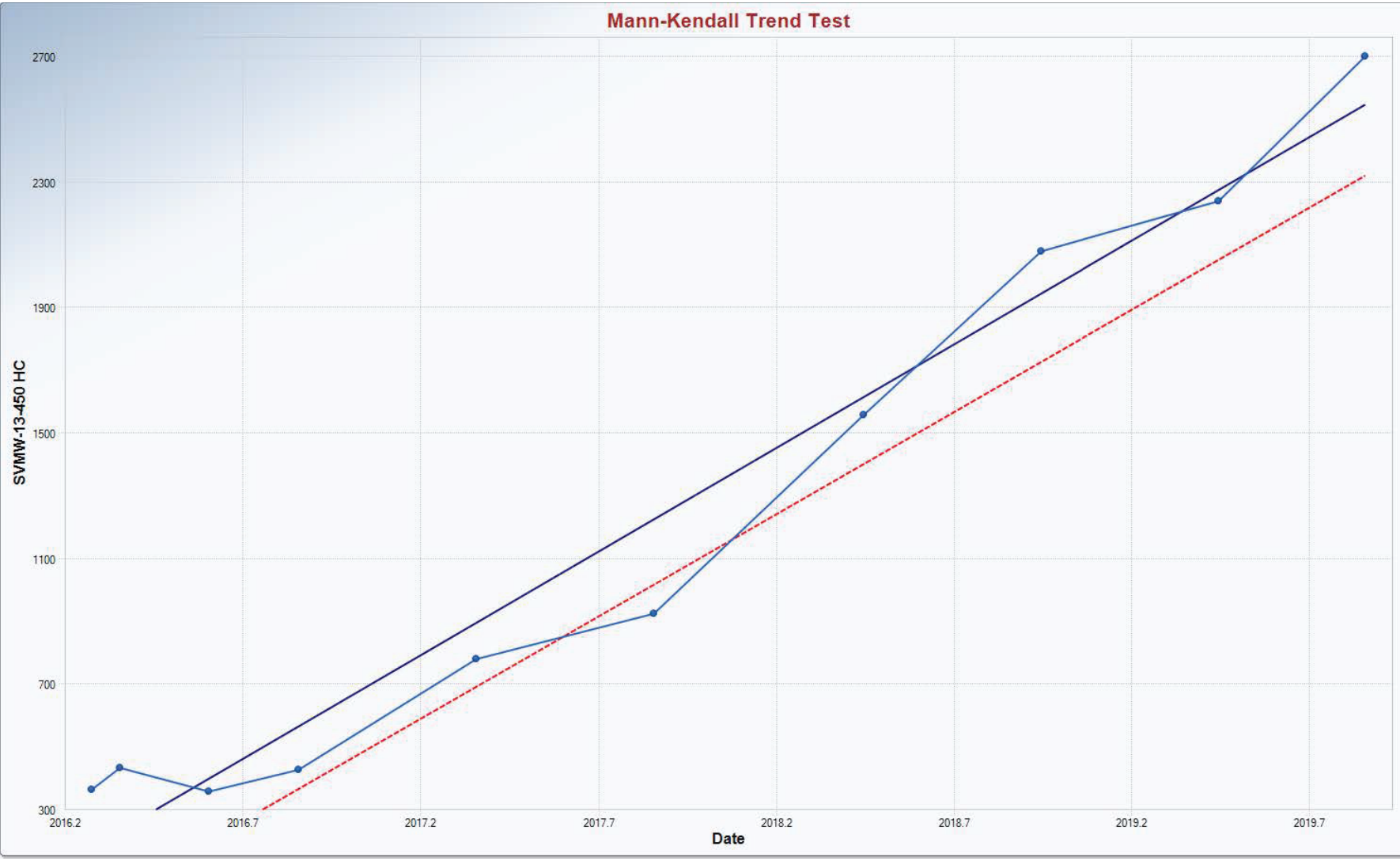
OLS Regression Line (Blue)

OLS Regression Slope	29.8963
OLS Regression Intercept	-60,104.7508

Theil-Sen Trend Line (Red)

Theil-Sen Slope	31.2872
Theil-Sen Intercept	-62,908.3979

Insufficient statistical evidence of a significant trend at the specified level of significance.



Mann-Kendall Trend Analysis

n	10
Confidence Coefficient	0.9500
Level of Significance	0.0500
Standard Deviation of S	11.1803
Standardized Value of S	3.3988
M-K Test Value (S)	39
Tabulated p-value	0.0000
Approximate p-value	0.0003

OLS Regression Line (Blue)

OLS Regression Slope	662.0637
OLS Regression Intercept	-1,334,708.3122

Theil-Sen Trend Line (Red)

Theil-Sen Slope	652.5140
Theil-Sen Intercept	-1,315,646.6285

Statistically significant evidence of an increasing trend at the specified level of significance.

ATTACHMENT 2

ProUCL Outlier Analysis Output

1					**Outlier Tests for Selected Uncensored Variables**							
2				**User Selected Options**								
3			Date/Time of Computation		ProUCL 5.13/9/2020 3:01:10 PM							
4				From File	WorkSheet.xls							
5				Full Precision	OFF							
6												
7												
8	**Dixon's Outlier Test for KAFB-106111-050 Benzene**											
9												
10	Number of Observations = 10											
11	10% critical value: 0.409											
12	5% critical value: 0.477											
13	1% critical value: 0.597											
14												
15	**1. Observation Value 415.3087935 is a Potential Outlier (Up**											
16												
17	Test Statistic: 0.990											
18												
19	For 10% significance level, 415.3087935 is an outlier.											
20	For 5% significance level, 415.3087935 is an outlier.											
21	For 1% significance level, 415.3087935 is an outlier.											
22												
23	**2. Observation Value 0.33 is a Potential Outlier (Lower Tail)1**											
24												
25	Test Statistic: 0.049											
26												
27	For 10% significance level, 0.33 is not an outlier.											
28	For 5% significance level, 0.33 is not an outlier.											
29	For 1% significance level, 0.33 is not an outlier.											
30												

	Outlier Tests for Selected Uncensored Variables	
User Selected Options		
Date/Time of Computation	ProUCL 5.13/9/2020 2:52:51 PM	
From File	WorkSheet.xls	
Full Precision	OFF	

Dixon's Outlier Test for KAFB-106111-050 HC

Number of Observations = 10

10% critical value: 0.409

5% critical value: 0.477

1% critical value: 0.597

1. Observation Value 28 is a Potential Outlier (Upper Tail)?

Test Statistic: 0.893

For 10% significance level, 28 is an outlier.

For 5% significance level, 28 is an outlier.

For 1% significance level, 28 is an outlier.

2. Observation Value 0 is a Potential Outlier (Lower Tail)?

Test Statistic: 0.000

For 10% significance level, 0 is not an outlier.

For 5% significance level, 0 is not an outlier.

For 1% significance level, 0 is not an outlier.

	A	B	C	D	E	F	G	H	I	J	K	L
1					**Outlier Tests for Selected Uncensored Variables**							
2				**User Selected Options**								
3				Date/Time of Computation	ProUCL 5.13/10/2020 8:45:43 AM							
4				From File	WorkSheet.xls							
5				Full Precision	OFF							
6												
7												
8	**Dixon's Outlier Test for KAFB-106112-250 EDB**											
9												
10	Number of Observations = 10											
11	10% critical value: 0.409											
12	5% critical value: 0.477											
13	1% critical value: 0.597											
14												
15	**1. Observation Value 261.2646217 is a Potential Outlier (Up**											
16												
17	Test Statistic: 0.589											
18												
19	For 10% significance level, 261.2646217 is an outlier.											
20	For 5% significance level, 261.2646217 is an outlier.											
21	For 1% significance level, 261.2646217 is not an outlier.											
22												
23	**2. Observation Value 0.38 is a Potential Outlier (Lower Tail)1**											
24												
25	Test Statistic: 0.038											
26												
27	For 10% significance level, 0.38 is not an outlier.											
28	For 5% significance level, 0.38 is not an outlier.											
29	For 1% significance level, 0.38 is not an outlier.											
30												

	A	B	C	D	E	F	G	H	I	J	K	L
1					**Outlier Tests for Selected Uncensored Variables**							
2				**User Selected Options**								
3				Date/Time of Computation	ProUCL 5.13/10/2020 9:07:34 AM							
4				From File	WorkSheet.xls							
5				Full Precision	OFF							
6												
7												
8	**Dixon's Outlier Test for KAFB-106114-450 EDB**											
9												
10	Number of Observations = 10											
11	10% critical value: 0.409											
12	5% critical value: 0.477											
13	1% critical value: 0.597											
14												
15	**1. Observation Value 1229.480573 is a Potential Outlier (Up**											
16												
17	Test Statistic: 0.391											
18												
19	For 10% significance level, 1229.480573 is not an outlier.											
20	For 5% significance level, 1229.480573 is not an outlier.											
21	For 1% significance level, 1229.480573 is not an outlier.											
22												
23	**2. Observation Value 110 is a Potential Outlier (Lower Tail)?**											
24												
25	Test Statistic: 0.596											
26												
27	For 10% significance level, 110 is an outlier.											
28	For 5% significance level, 110 is an outlier.											
29	For 1% significance level, 110 is not an outlier.											
30												

Outlier Tests for Selected Uncensored Variables		
User Selected Options		
Date/Time of Computation	ProUCL 5.13/9/2020 3:03:55 PM	
From File	WorkSheet.xls	
Full Precision	OFF	

Dixon's Outlier Test for KAFB-106117-050 HC

Number of Observations = 10

10% critical value: 0.409

5% critical value: 0.477

1% critical value: 0.597

1. Observation Value 21 is a Potential Outlier (Upper Tail)?

Test Statistic: 0.750

For 10% significance level, 21 is an outlier.

For 5% significance level, 21 is an outlier.

For 1% significance level, 21 is an outlier.

2. Observation Value 0 is a Potential Outlier (Lower Tail)?

Test Statistic: 0.167

For 10% significance level, 0 is not an outlier.

For 5% significance level, 0 is not an outlier.

For 1% significance level, 0 is not an outlier.

	A	B	C	D	E	F	G	H	I	J	K	L
1					**Outlier Tests for Selected Uncensored Variables**							
2				**User Selected Options**								
3				Date/Time of Computation	ProUCL 5.13/10/2020 9:14:30 AM							
4				From File	WorkSheet.xls							
5				Full Precision	OFF							
6												
7												
8	**Dixon's Outlier Test for KAFB-106117-450 EDB**											
9												
10	Number of Observations = 10											
11	10% critical value: 0.409											
12	5% critical value: 0.477											
13	1% critical value: 0.597											
14												
15	**1. Observation Value 1800 is a Potential Outlier (Upper Tail**											
16												
17	Test Statistic: 0.151											
18												
19	For 10% significance level, 1800 is not an outlier.											
20	For 5% significance level, 1800 is not an outlier.											
21	For 1% significance level, 1800 is not an outlier.											
22												
23	**2. Observation Value 420 is a Potential Outlier (Lower Tail)?**											
24												
25	Test Statistic: 0.516											
26												
27	For 10% significance level, 420 is an outlier.											
28	For 5% significance level, 420 is an outlier.											
29	For 1% significance level, 420 is not an outlier.											
30												

	A	B	C	D	E	F	G	H	I	J	K	L
1					**Outlier Tests for Selected Uncensored Variables**							
2				**User Selected Options**								
3				Date/Time of Computation	ProUCL 5.13/10/2020 8:16:13 AM							
4				From File	WorkSheet.xls							
5				Full Precision	OFF							
6												
7												
8	**Dixon's Outlier Test for KAFB-106128-050 Benzene**											
9												
10	Number of Observations = 10											
11	10% critical value: 0.409											
12	5% critical value: 0.477											
13	1% critical value: 0.597											
14												
15	**1. Observation Value 575.0429448 is a Potential Outlier (Up**											
16												
17	Test Statistic: 0.724											
18												
19	For 10% significance level, 575.0429448 is an outlier.											
20	For 5% significance level, 575.0429448 is an outlier.											
21	For 1% significance level, 575.0429448 is an outlier.											
22												
23	**2. Observation Value 0.42 is a Potential Outlier (Lower Tail)1**											
24												
25	Test Statistic: 0.005											
26												
27	For 10% significance level, 0.42 is not an outlier.											
28	For 5% significance level, 0.42 is not an outlier.											
29	For 1% significance level, 0.42 is not an outlier.											
30												

	Outlier Tests for Selected Uncensored Variables	
User Selected Options		
Date/Time of Computation	ProUCL 5.13/10/2020 9:02:21 AM	
From File	WorkSheet.xls	
Full Precision	OFF	

Dixon's Outlier Test for KAFB-106128-350 Benzene

Number of Observations = 10

10% critical value: 0.409

5% critical value: 0.477

1% critical value: 0.597

1. Observation Value 73477.70961 is a Potential Outlier (Up

Test Statistic: 0.541

For 10% significance level, 73477.70961 is an outlier.

For 5% significance level, 73477.70961 is an outlier.

For 1% significance level, 73477.70961 is not an outlier.

2. Observation Value 31307.89366 is a Potential Outlier (Lov

Test Statistic: 0.032

For 10% significance level, 31307.89366 is not an outlier.

For 5% significance level, 31307.89366 is not an outlier.

For 1% significance level, 31307.89366 is not an outlier.

	A	B	C	D	E	F	G	H	I	J	K	L
1					**Outlier Tests for Selected Uncensored Variables**							
2				**User Selected Options**								
3				Date/Time of Computation	ProUCL 5.13/10/2020 9:18:45 AM							
4				From File	WorkSheet.xls							
5				Full Precision	OFF							
6												
7												
8	**Dixon's Outlier Test for KAFB-106128-450 EDB**											
9												
10	Number of Observations = 10											
11	10% critical value: 0.409											
12	5% critical value: 0.477											
13	1% critical value: 0.597											
14												
15	**1. Observation Value 9221.104294 is a Potential Outlier (Up**											
16												
17	Test Statistic: 0.583											
18												
19	For 10% significance level, 9221.104294 is an outlier.											
20	For 5% significance level, 9221.104294 is an outlier.											
21	For 1% significance level, 9221.104294 is not an outlier.											
22												
23	**2. Observation Value 3400 is a Potential Outlier (Lower Tail)**											
24												
25	Test Statistic: 0.111											
26												
27	For 10% significance level, 3400 is not an outlier.											
28	For 5% significance level, 3400 is not an outlier.											
29	For 1% significance level, 3400 is not an outlier.											
30												

1					**Outlier Tests for Selected Uncensored Variables**							
2				**User Selected Options**								
3			Date/Time of Computation		ProUCL 5.13/10/2020 9:34:25 AM							
4				From File	WorkSheet.xls							
5				Full Precision	OFF							
6												
7												
8	**Dixon's Outlier Test for KAFB-106133-450 HC**											
9												
10	Number of Observations = 10											
11	10% critical value: 0.409											
12	5% critical value: 0.477											
13	1% critical value: 0.597											
14												
15	**1. Observation Value 45 is a Potential Outlier (Upper Tail)?**											
16												
17	Test Statistic: 0.250											
18												
19	For 10% significance level, 45 is not an outlier.											
20	For 5% significance level, 45 is not an outlier.											
21	For 1% significance level, 45 is not an outlier.											
22												
23	**2. Observation Value 1 is a Potential Outlier (Lower Tail)?**											
24												
25	Test Statistic: 0.615											
26												
27	For 10% significance level, 1 is an outlier.											
28	For 5% significance level, 1 is an outlier.											
29	For 1% significance level, 1 is an outlier.											
30												

1					**Outlier Tests for Selected Uncensored Variables**							
2				**User Selected Options**								
3			Date/Time of Computation		ProUCL 5.13/10/2020 8:52:04 AM							
4				From File	WorkSheet.xls							
5				Full Precision	OFF							
6												
7												
8	**Dixon's Outlier Test for SVEW-08-260 Benzene**											
9												
10	Number of Observations = 10											
11	10% critical value: 0.409											
12	5% critical value: 0.477											
13	1% critical value: 0.597											
14												
15	**1. Observation Value 1600 is a Potential Outlier (Upper Tail**											
16												
17	Test Statistic: 0.704											
18												
19	For 10% significance level, 1600 is an outlier.											
20	For 5% significance level, 1600 is an outlier.											
21	For 1% significance level, 1600 is an outlier.											
22												
23	**2. Observation Value 6 is a Potential Outlier (Lower Tail)?**											
24												
25	Test Statistic: 0.037											
26												
27	For 10% significance level, 6 is not an outlier.											
28	For 5% significance level, 6 is not an outlier.											
29	For 1% significance level, 6 is not an outlier.											
30												

	A	B	C	D	E	F	G	H	I	J	K	L
1					**Outlier Tests for Selected Uncensored Variables**							
2				**User Selected Options**								
3				Date/Time of Computation	ProUCL 5.13/10/2020 8:49:08 AM							
4				From File	WorkSheet.xls							
5				Full Precision	OFF							
6												
7												
8	**Dixon's Outlier Test for SVEW-08-260 HC**											
9												
10	Number of Observations = 10											
11	10% critical value: 0.409											
12	5% critical value: 0.477											
13	1% critical value: 0.597											
14												
15	**1. Observation Value 182 is a Potential Outlier (Upper Tail)?**											
16												
17	Test Statistic: 0.797											
18												
19	For 10% significance level, 182 is an outlier.											
20	For 5% significance level, 182 is an outlier.											
21	For 1% significance level, 182 is an outlier.											
22												
23	**2. Observation Value 5 is a Potential Outlier (Lower Tail)?**											
24												
25	Test Statistic: 0.000											
26												
27	For 10% significance level, 5 is not an outlier.											
28	For 5% significance level, 5 is not an outlier.											
29	For 1% significance level, 5 is not an outlier.											
30												

1					**Outlier Tests for Selected Uncensored Variables**							
2				**User Selected Options**								
3			Date/Time of Computation		ProUCL 5.13/10/2020 9:37:19 AM							
4				From File	WorkSheet.xls							
5				Full Precision	OFF							
6												
7												
8	**Dixon's Outlier Test for SVEW-09-460 HC**											
9												
10	Number of Observations = 10											
11	10% critical value: 0.409											
12	5% critical value: 0.477											
13	1% critical value: 0.597											
14												
15	**1. Observation Value 105 is a Potential Outlier (Upper Tail)?**											
16												
17	Test Statistic: 0.770											
18												
19	For 10% significance level, 105 is an outlier.											
20	For 5% significance level, 105 is an outlier.											
21	For 1% significance level, 105 is an outlier.											
22												
23	**2. Observation Value 5 is a Potential Outlier (Lower Tail)?**											
24												
25	Test Statistic: 0.000											
26												
27	For 10% significance level, 5 is not an outlier.											
28	For 5% significance level, 5 is not an outlier.											
29	For 1% significance level, 5 is not an outlier.											
30												

	A	B	C	D	E	F	G	H	I	J	K	L
1					**Outlier Tests for Selected Uncensored Variables**							
2				**User Selected Options**								
3				Date/Time of Computation	ProUCL 5.13/10/2020 9:42:15 AM							
4				From File	WorkSheet.xls							
5				Full Precision	OFF							
6												
7												
8	**Dixon's Outlier Test for SVEW-13-410 Benzene**											
9												
10	Number of Observations = 10											
11	10% critical value: 0.409											
12	5% critical value: 0.477											
13	1% critical value: 0.597											
14												
15	**1. Observation Value 87000 is a Potential Outlier (Upper Ta**											
16												
17	Test Statistic: 0.863											
18												
19	For 10% significance level, 87000 is an outlier.											
20	For 5% significance level, 87000 is an outlier.											
21	For 1% significance level, 87000 is an outlier.											
22												
23	**2. Observation Value 2172.384458 is a Potential Outlier (Lov**											
24												
25	Test Statistic: 0.016											
26												
27	For 10% significance level, 2172.384458 is not an outlier.											
28	For 5% significance level, 2172.384458 is not an outlier.											
29	For 1% significance level, 2172.384458 is not an outlier.											
30												

	A	B	C	D	E	F	G	H	I	J	K	L
1					**Outlier Tests for Selected Uncensored Variables**							
2				**User Selected Options**								
3				Date/Time of Computation	ProUCL 5.13/10/2020 8:23:00 AM							
4				From File	WorkSheet.xls							
5				Full Precision	OFF							
6												
7												
8	**Dixon's Outlier Test for SVMW-02-100 EDB**											
9												
10	Number of Observations = 10											
11	10% critical value: 0.409											
12	5% critical value: 0.477											
13	1% critical value: 0.597											
14												
15	**1. Observation Value 5378.977505 is a Potential Outlier (Up**											
16												
17	Test Statistic: 0.745											
18												
19	For 10% significance level, 5378.977505 is an outlier.											
20	For 5% significance level, 5378.977505 is an outlier.											
21	For 1% significance level, 5378.977505 is an outlier.											
22												
23	**2. Observation Value 850 is a Potential Outlier (Lower Tail)?**											
24												
25	Test Statistic: 0.379											
26												
27	For 10% significance level, 850 is not an outlier.											
28	For 5% significance level, 850 is not an outlier.											
29	For 1% significance level, 850 is not an outlier.											
30												

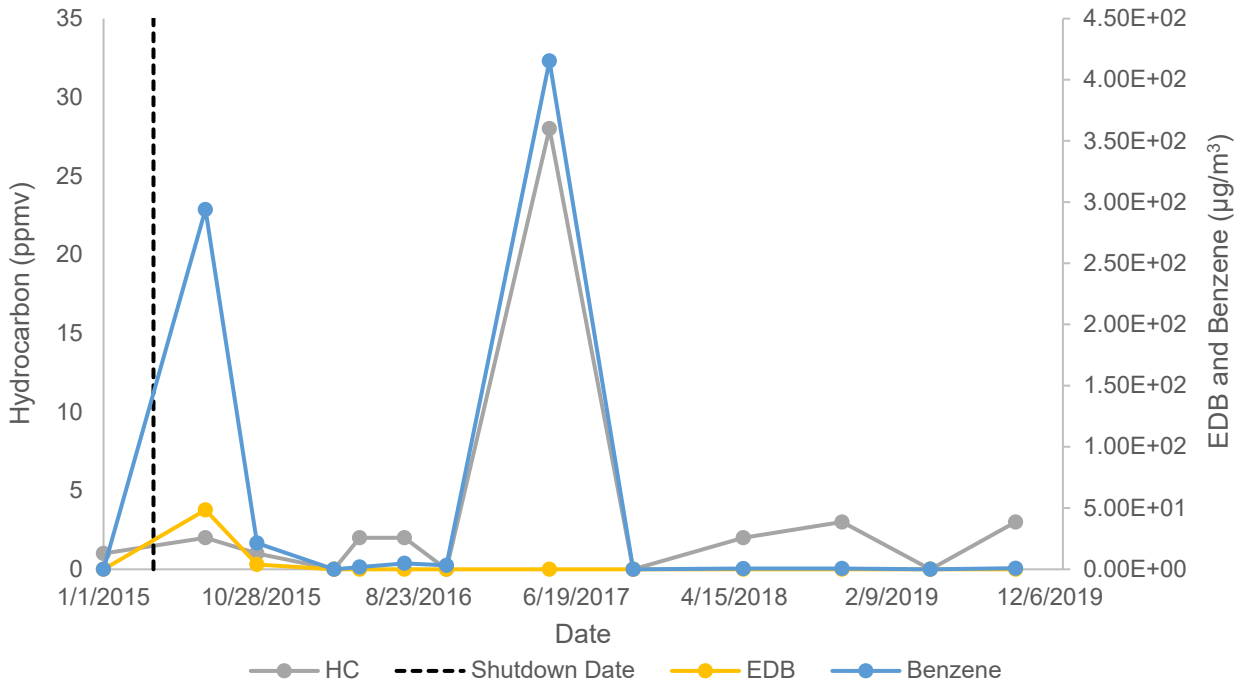
1					**Outlier Tests for Selected Uncensored Variables**							
2				**User Selected Options**								
3			Date/Time of Computation		ProUCL 5.13/10/2020 8:33:39 AM							
4				From File	WorkSheet.xls							
5				Full Precision	OFF							
6												
7												
8	**Dixon's Outlier Test for SVMW-08-100 EDB**											
9												
10	Number of Observations = 10											
11	10% critical value: 0.409											
12	5% critical value: 0.477											
13	1% critical value: 0.597											
14												
15	**1. Observation Value 130.6323108 is a Potential Outlier (Up**											
16												
17	Test Statistic: 0.928											
18												
19	For 10% significance level, 130.6323108 is an outlier.											
20	For 5% significance level, 130.6323108 is an outlier.											
21	For 1% significance level, 130.6323108 is an outlier.											
22												
23	**2. Observation Value 1 is a Potential Outlier (Lower Tail)?**											
24												
25	Test Statistic: 0.161											
26												
27	For 10% significance level, 1 is not an outlier.											
28	For 5% significance level, 1 is not an outlier.											
29	For 1% significance level, 1 is not an outlier.											
30												

	A	B	C	D	E	F	G	H	I	J	K	L
1					**Outlier Tests for Selected Uncensored Variables**							
2				**User Selected Options**								
3				Date/Time of Computation	ProUCL 5.13/10/2020 8:34:49 AM							
4				From File	WorkSheet.xls							
5				Full Precision	OFF							
6												
7												
8	**Dixon's Outlier Test for SVMW-08-100 EDB**											
9												
10	Number of Observations = 10											
11	10% critical value: 0.409											
12	5% critical value: 0.477											
13	1% critical value: 0.597											
14												
15	**1. Observation Value 26126.46217 is a Potential Outlier (Up**											
16												
17	Test Statistic: 0.701											
18												
19	For 10% significance level, 26126.46217 is an outlier.											
20	For 5% significance level, 26126.46217 is an outlier.											
21	For 1% significance level, 26126.46217 is an outlier.											
22												
23	**2. Observation Value 2100 is a Potential Outlier (Lower Tail)**											
24												
25	Test Statistic: 0.243											
26												
27	For 10% significance level, 2100 is not an outlier.											
28	For 5% significance level, 2100 is not an outlier.											
29	For 1% significance level, 2100 is not an outlier.											
30												

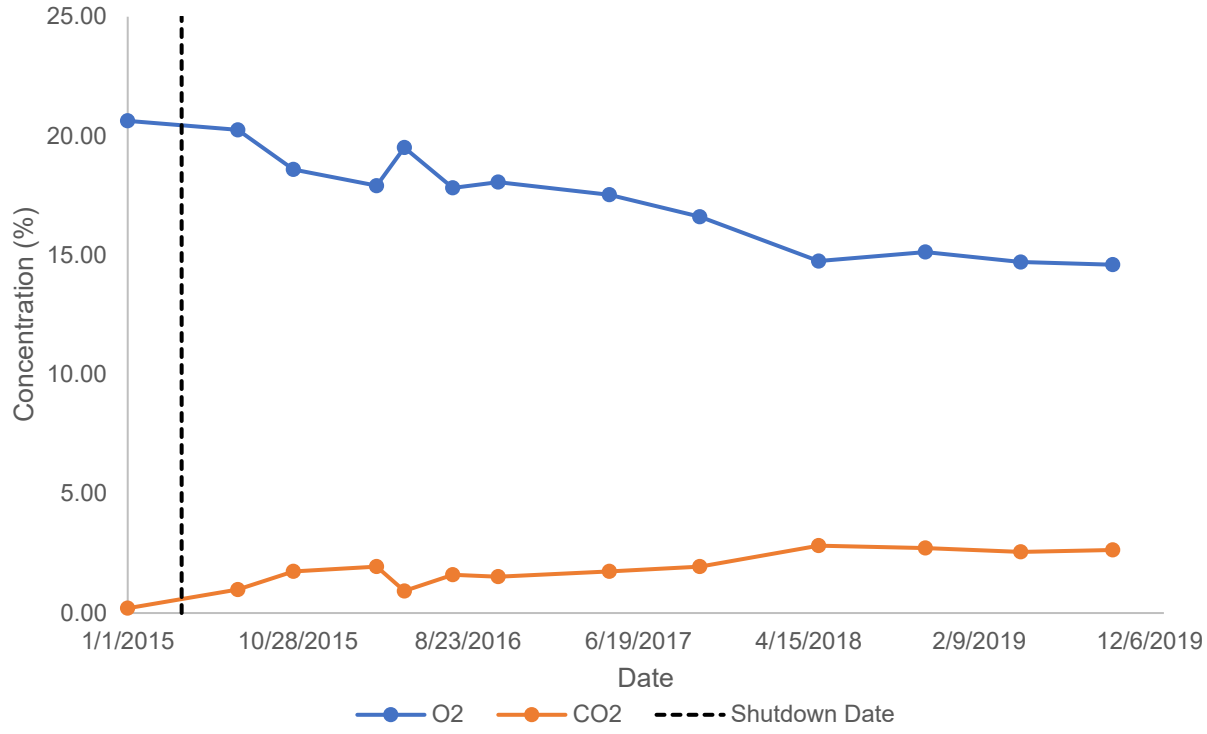
APPENDIX L-1

Soil Vapor Time Series Graphs (2015-2019)

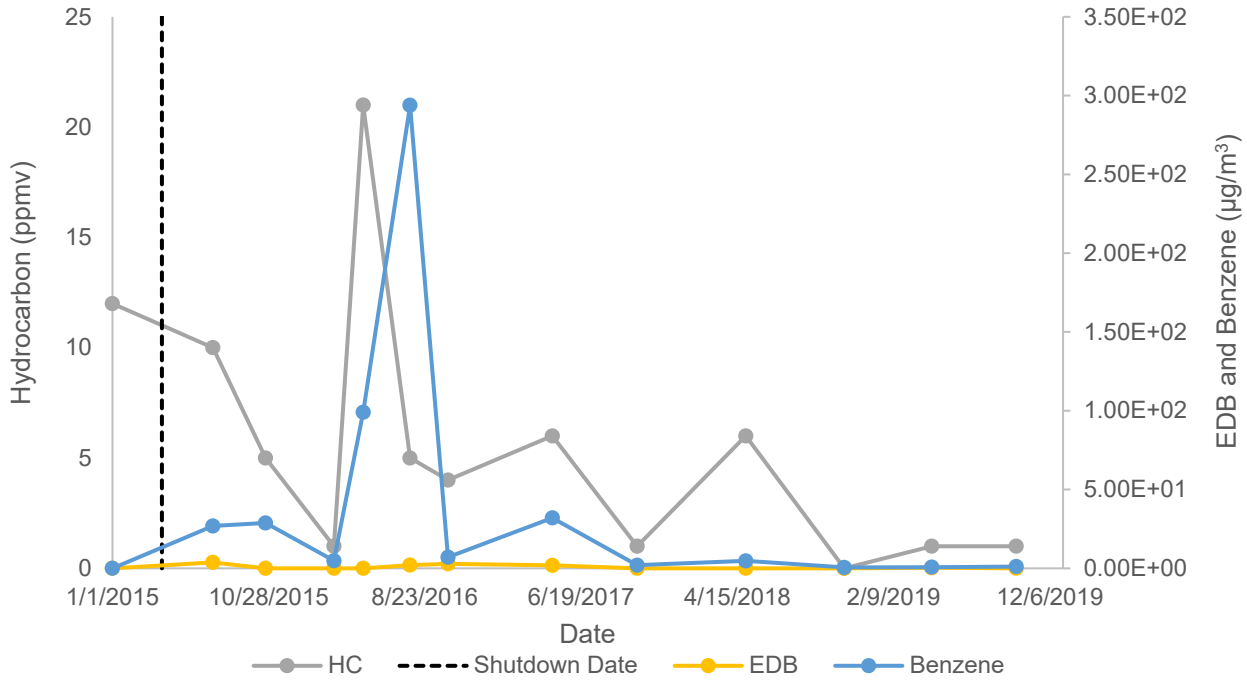
Well ID: KAFB-106111-050
Hydrocarbon, EDB, and Benzene Levels Over Time



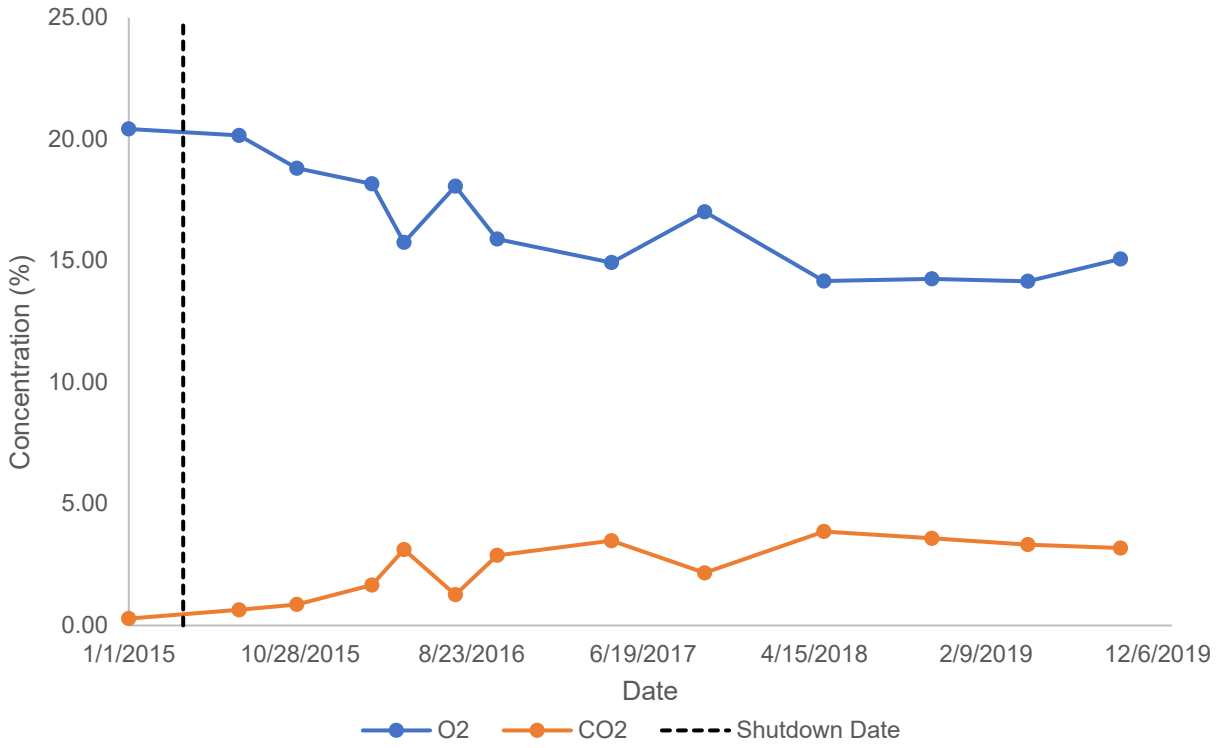
Well ID: KAFB-106111-050
Oxygen and Carbon Dioxide Concentrations Over Time



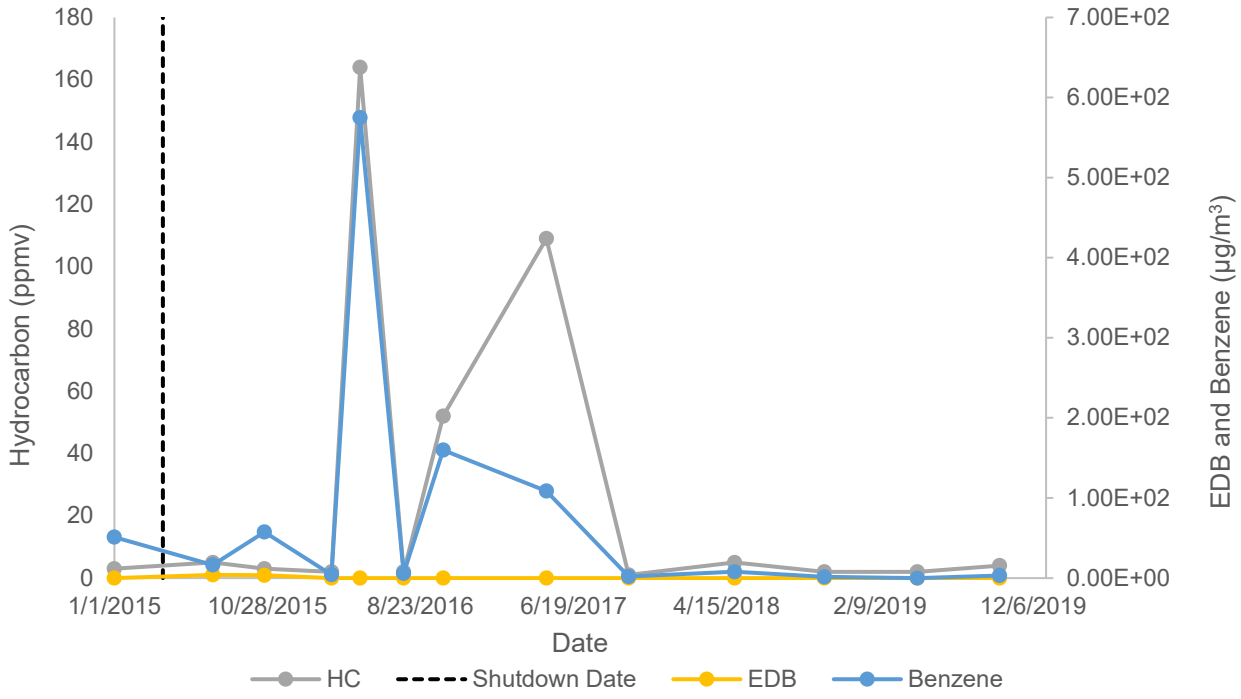
Well ID: KAFB-106117-050
Hydrocarbon, EDB, and Benzene Levels Over Time



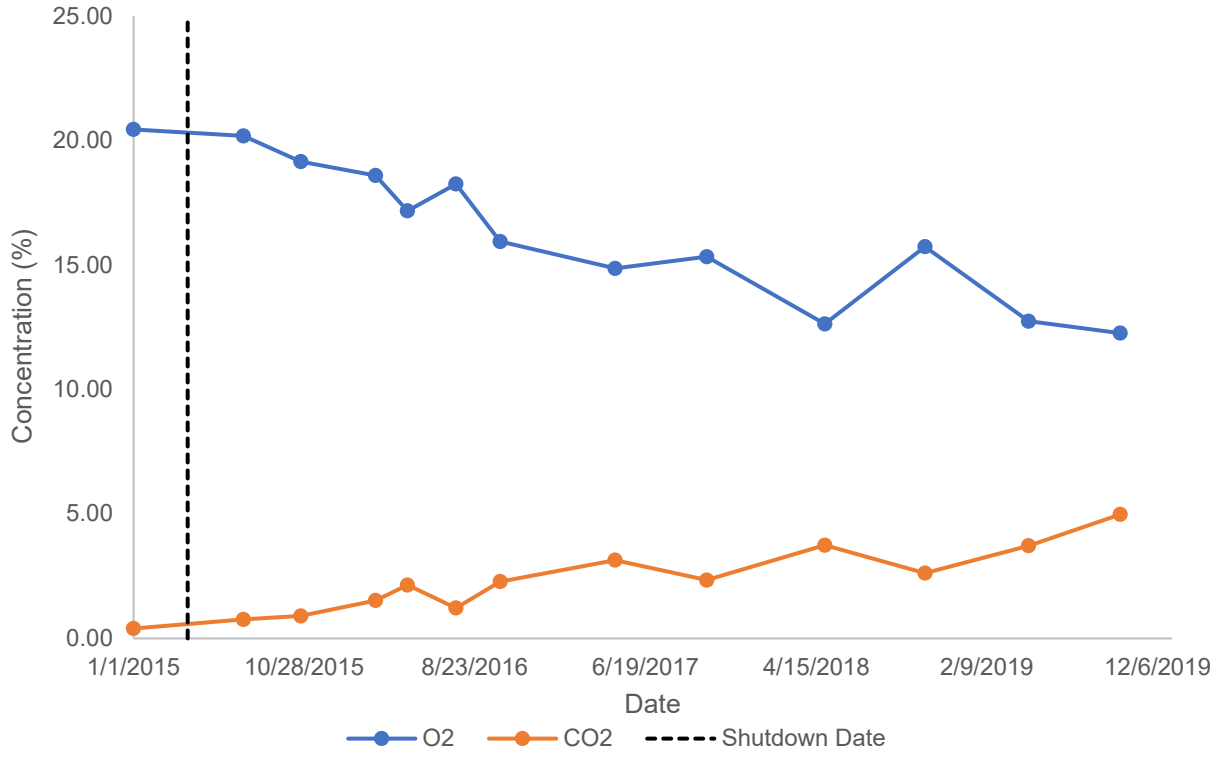
Well ID: KAFB-106117-050
Oxygen and Carbon Dioxide Concentrations Over Time



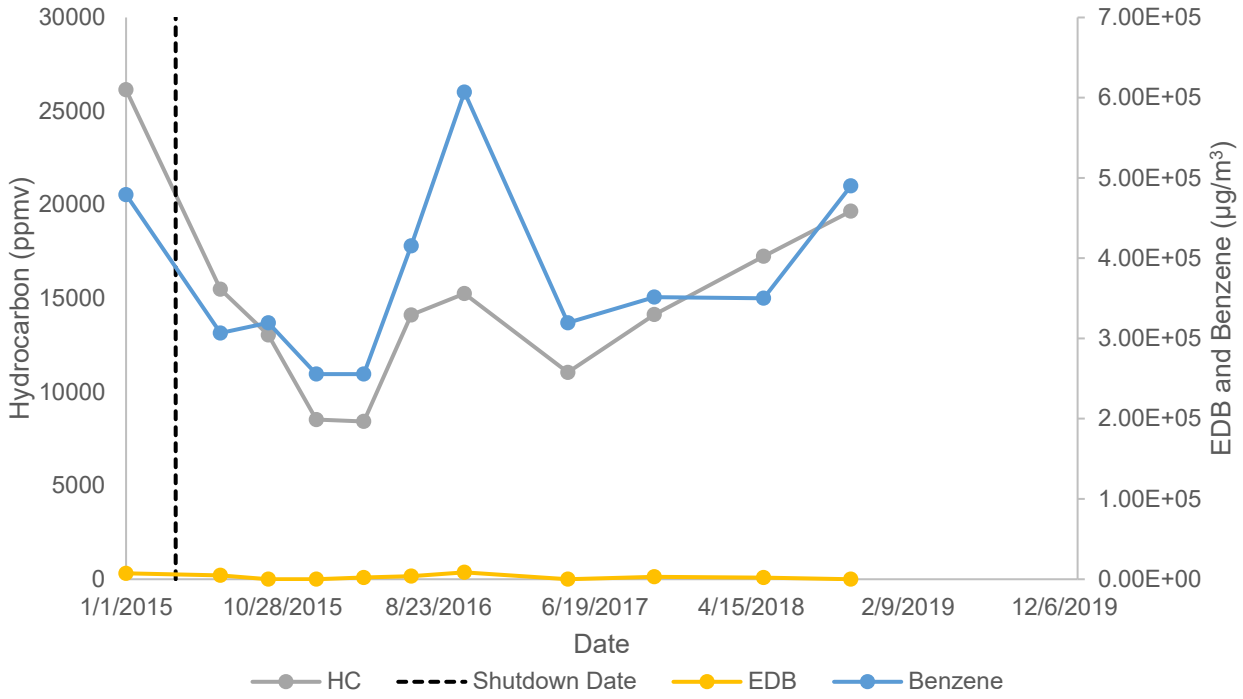
Well ID: KAFB-106128-050
Hydrocarbon, EDB, and Benzene Levels Over Time



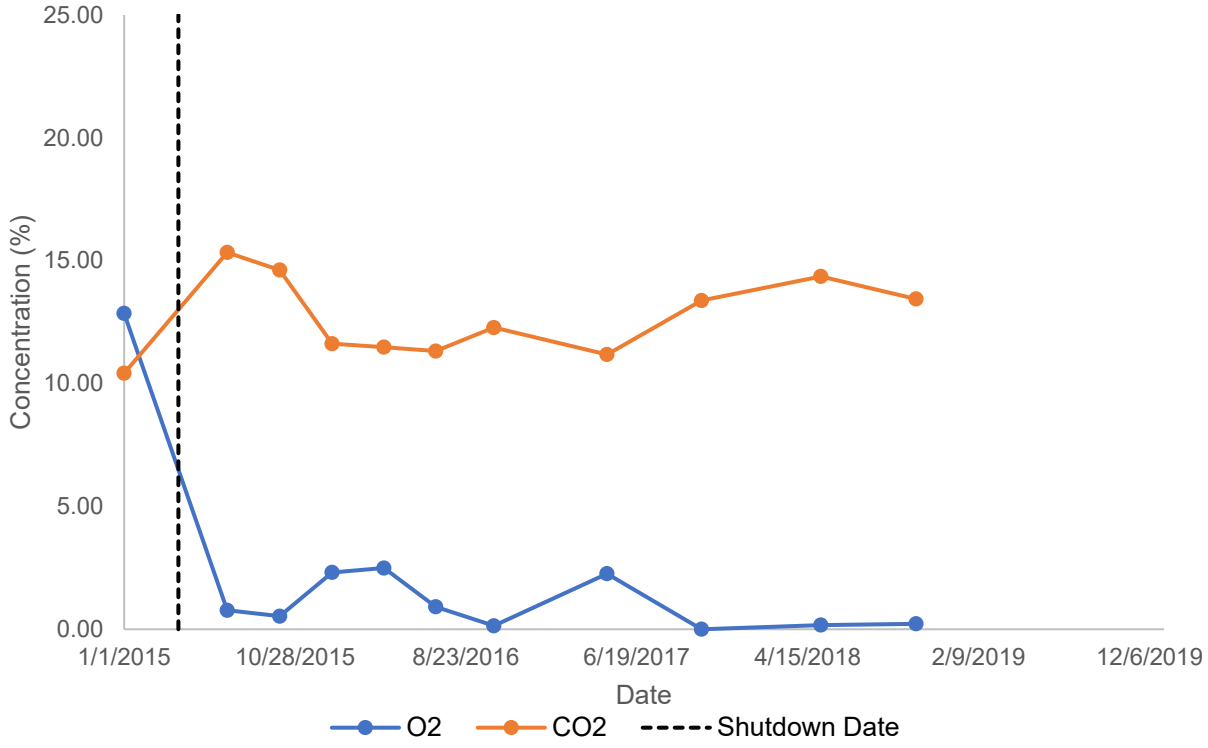
Well ID: KAFB-106128-050
Oxygen and Carbon Dioxide Concentrations Over Time



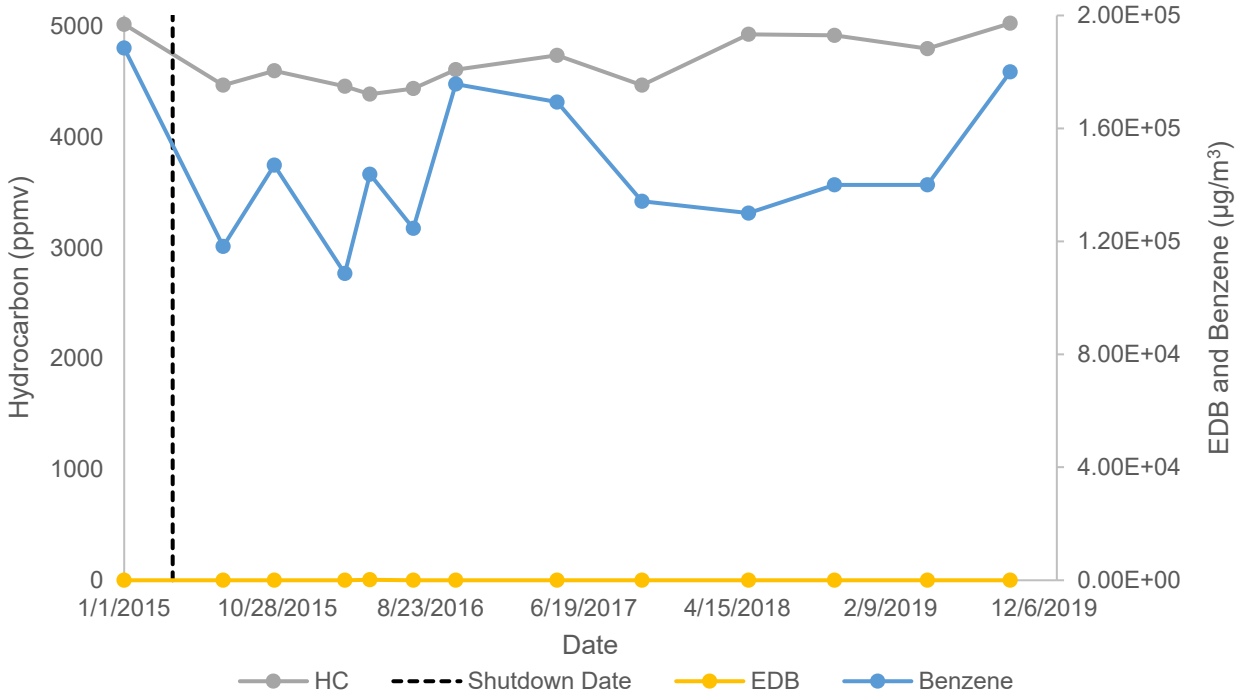
Well ID: SVEW-02-060
Hydrocarbon, EDB, and Benzene Levels Over Time



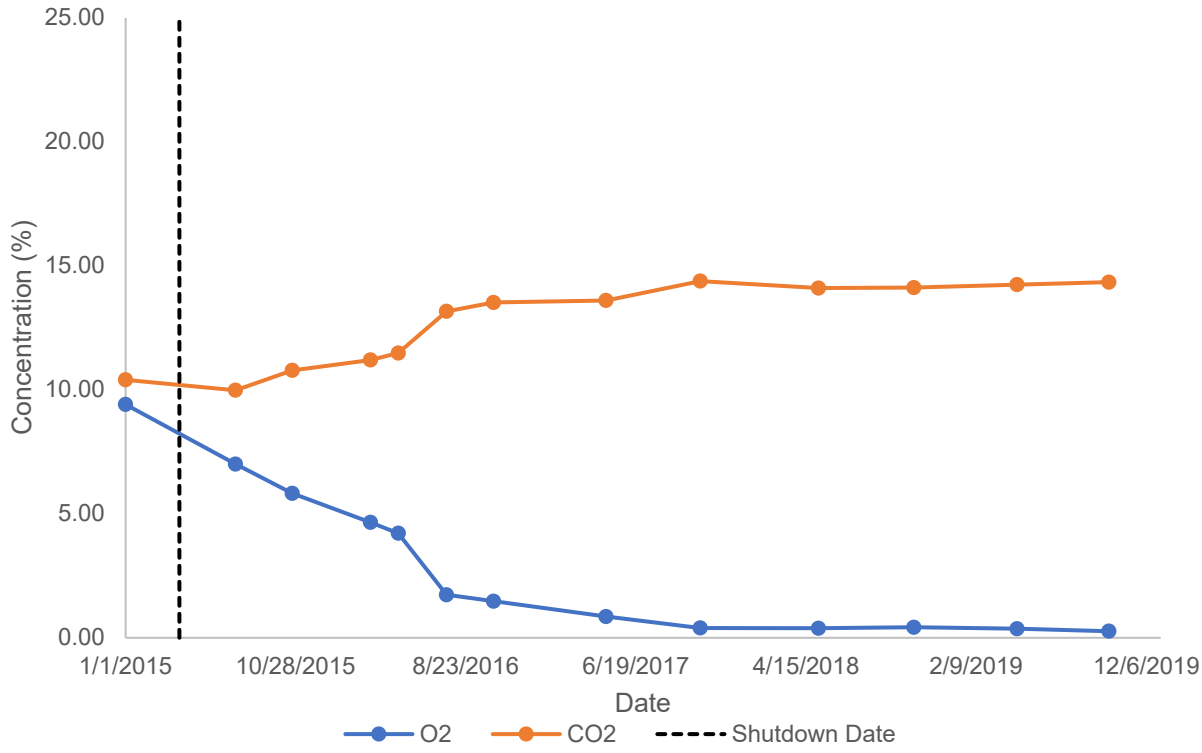
Well ID: SVEW-02-060
Oxygen and Carbon Dioxide Concentrations Over Time



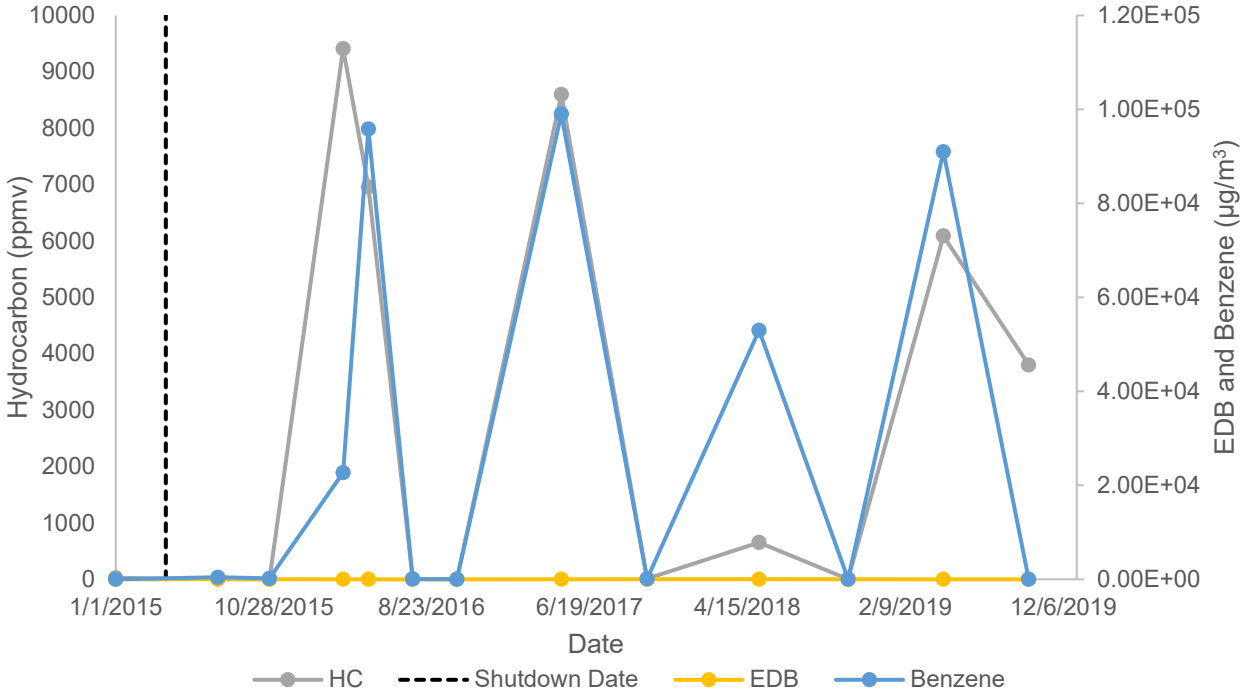
Well ID: SVEW-06-060
Hydrocarbon, EDB, and Benzene Levels Over Time



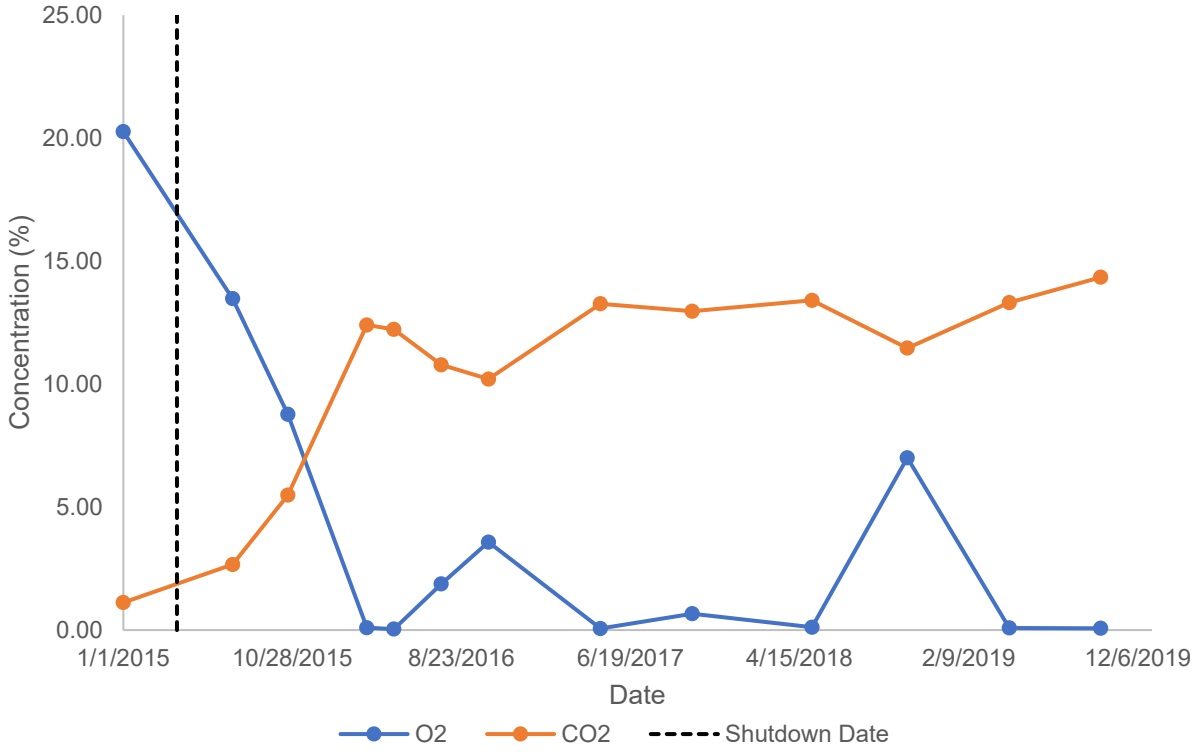
Well ID: SVEW-06-060
Oxygen and Carbon Dioxide Concentrations Over Time



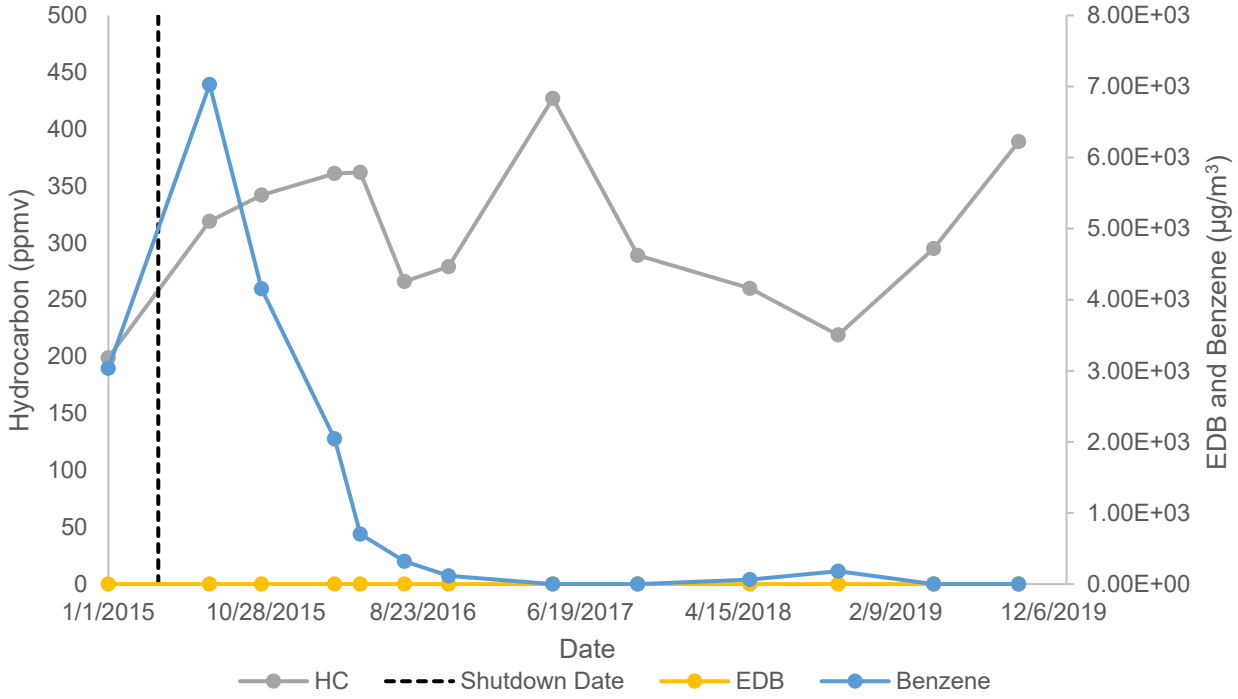
Well ID: SVMW-03-050
Hydrocarbon, EDB, and Benzene Levels Over Time



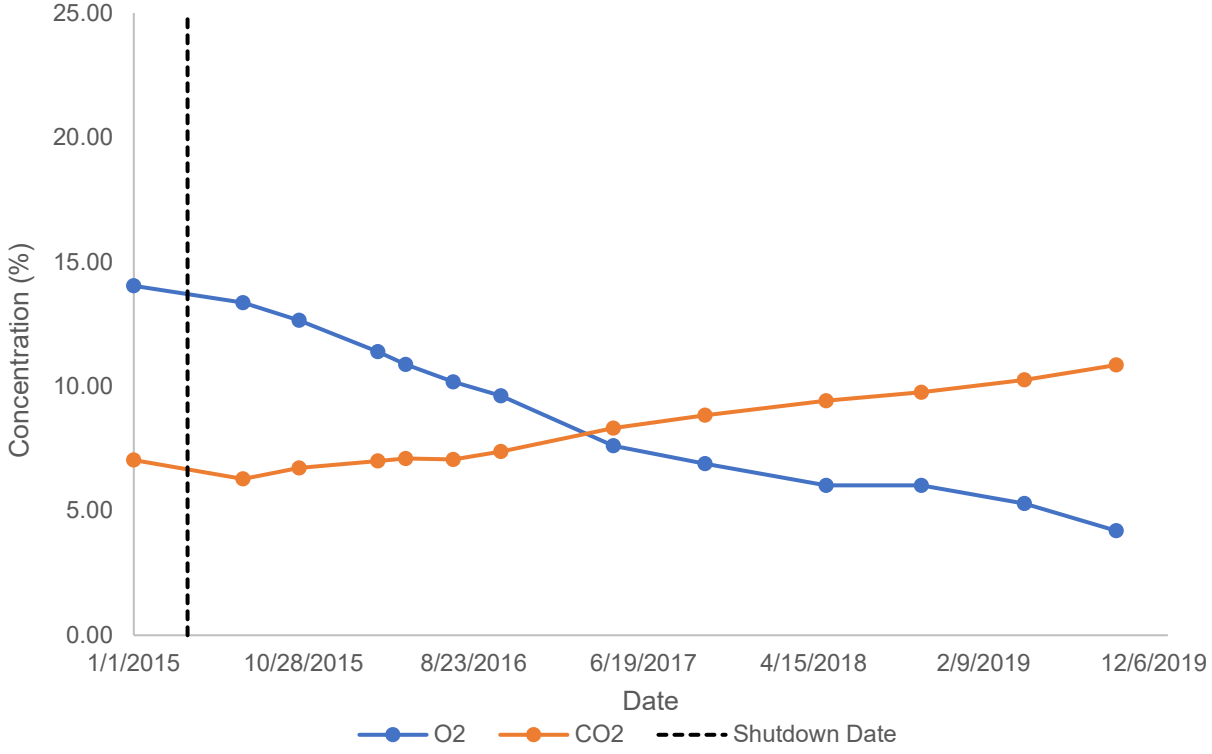
Well ID: SVMW-03-050
Oxygen and Carbon Dioxide Concentrations Over Time



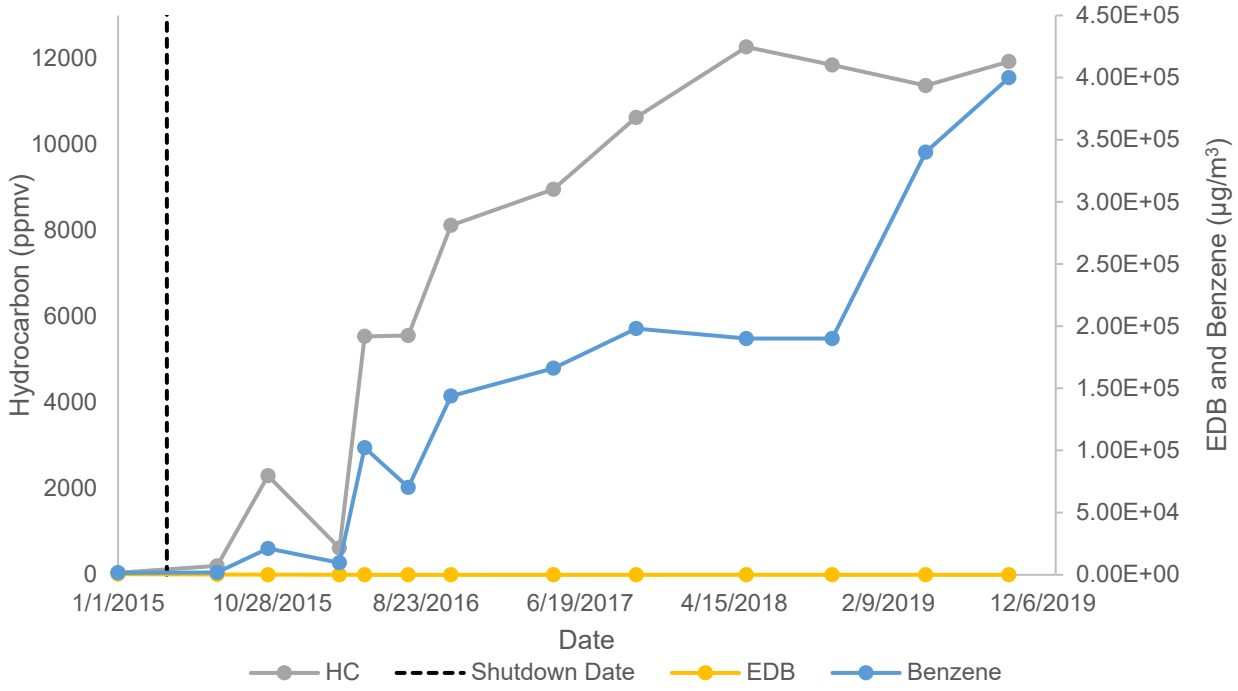
Well ID: SVMW-04-050
Hydrocarbon, EDB, and Benzene Levels Over Time



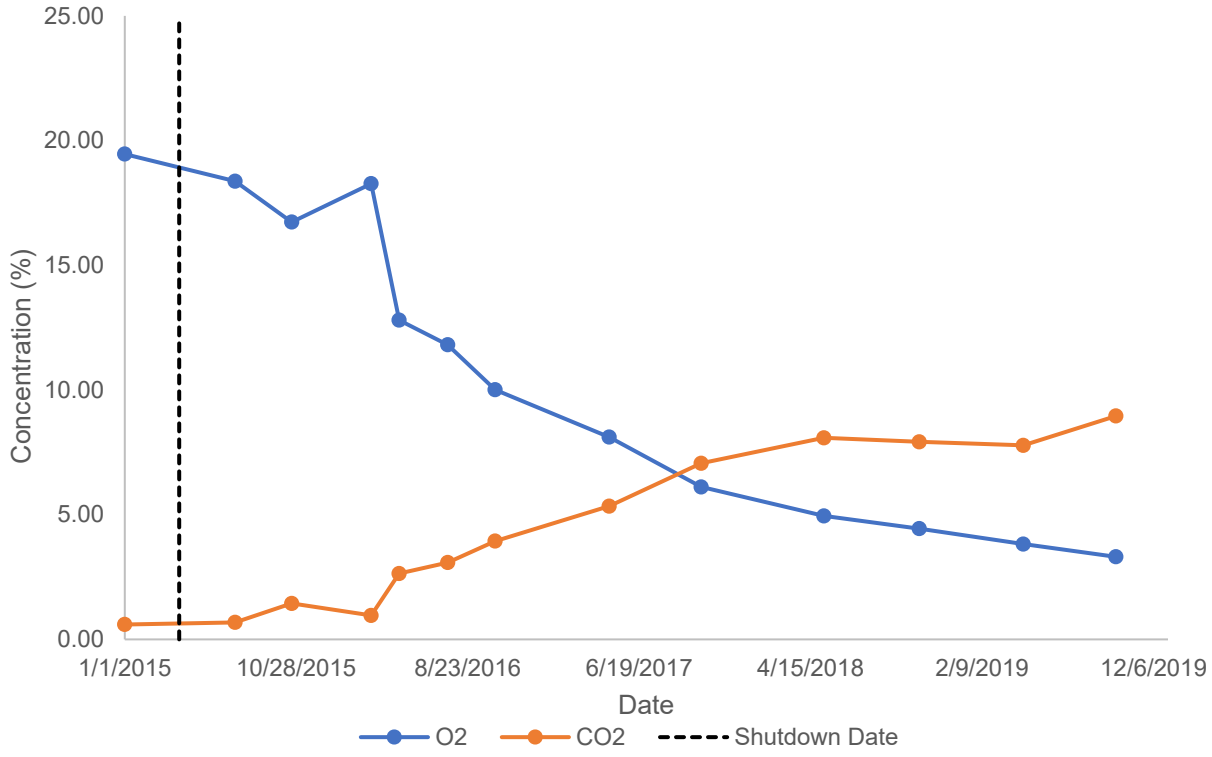
Well ID: SVMW-04-050
Oxygen and Carbon Dioxide Concentrations Over Time



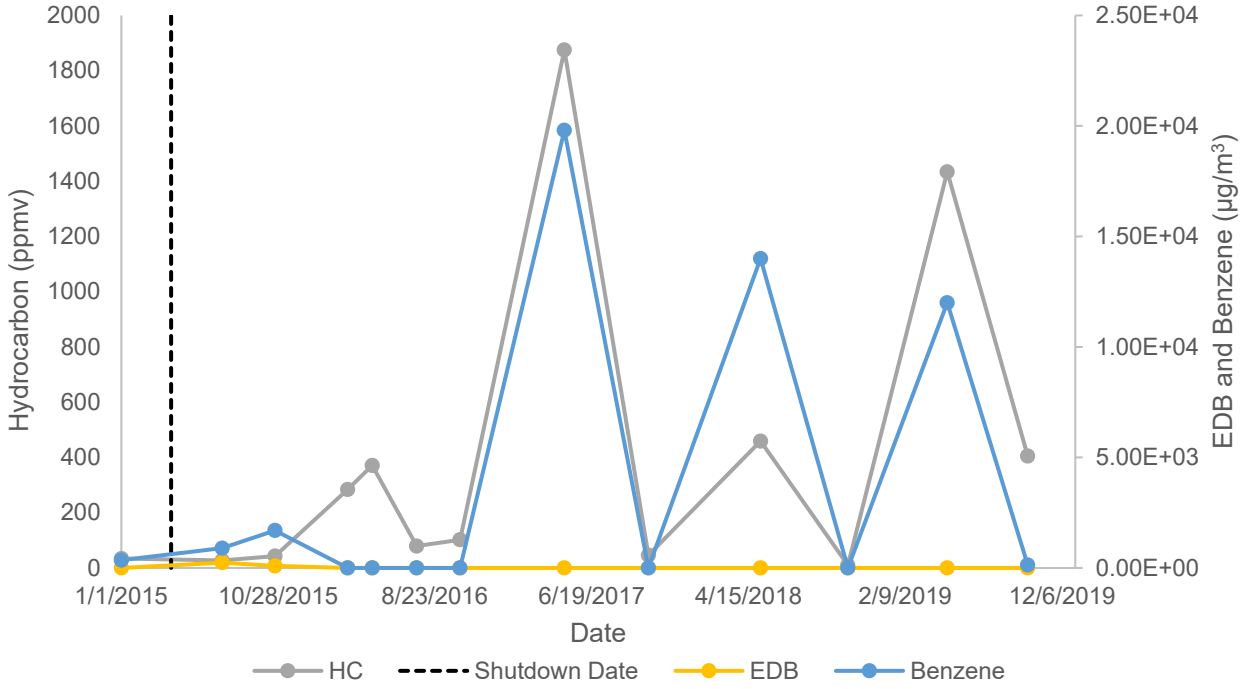
Well ID: SVMW-08-050
Hydrocarbon, EDB, and Benzene Levels Over Time



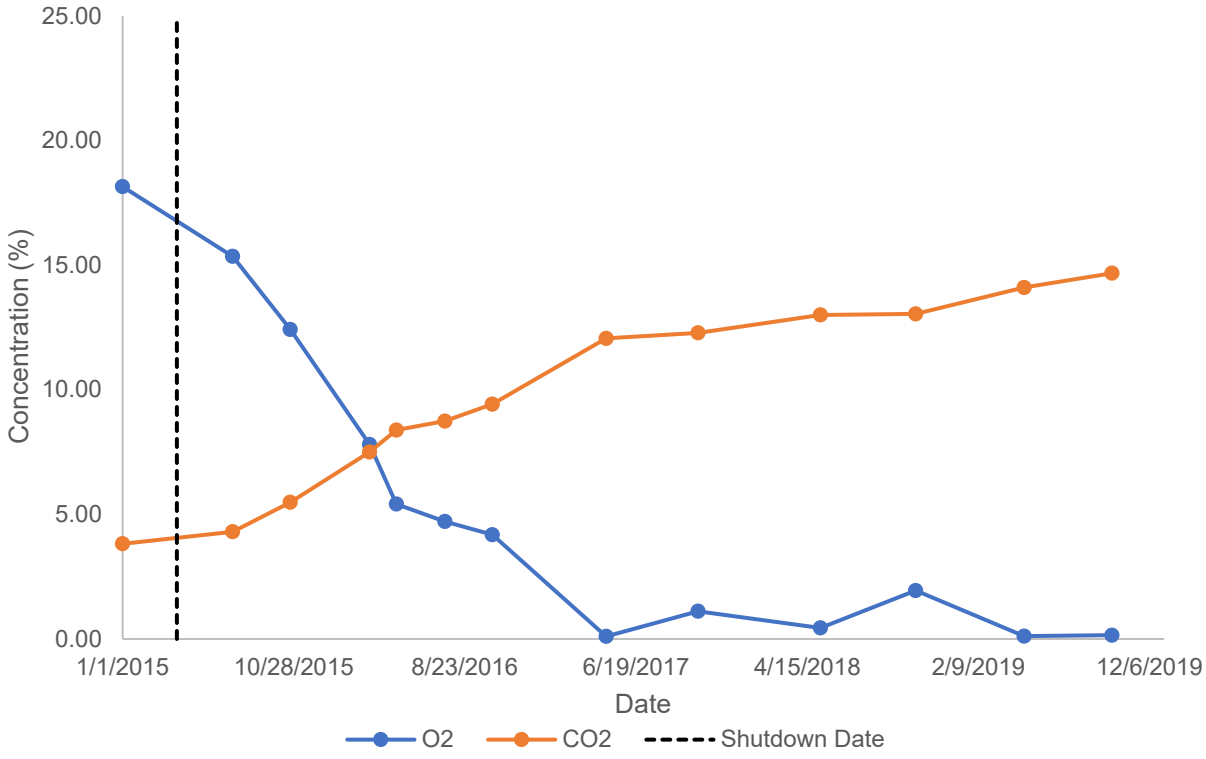
Well ID: SVMW-08-050
Oxygen and Carbon Dioxide Concentrations Over Time



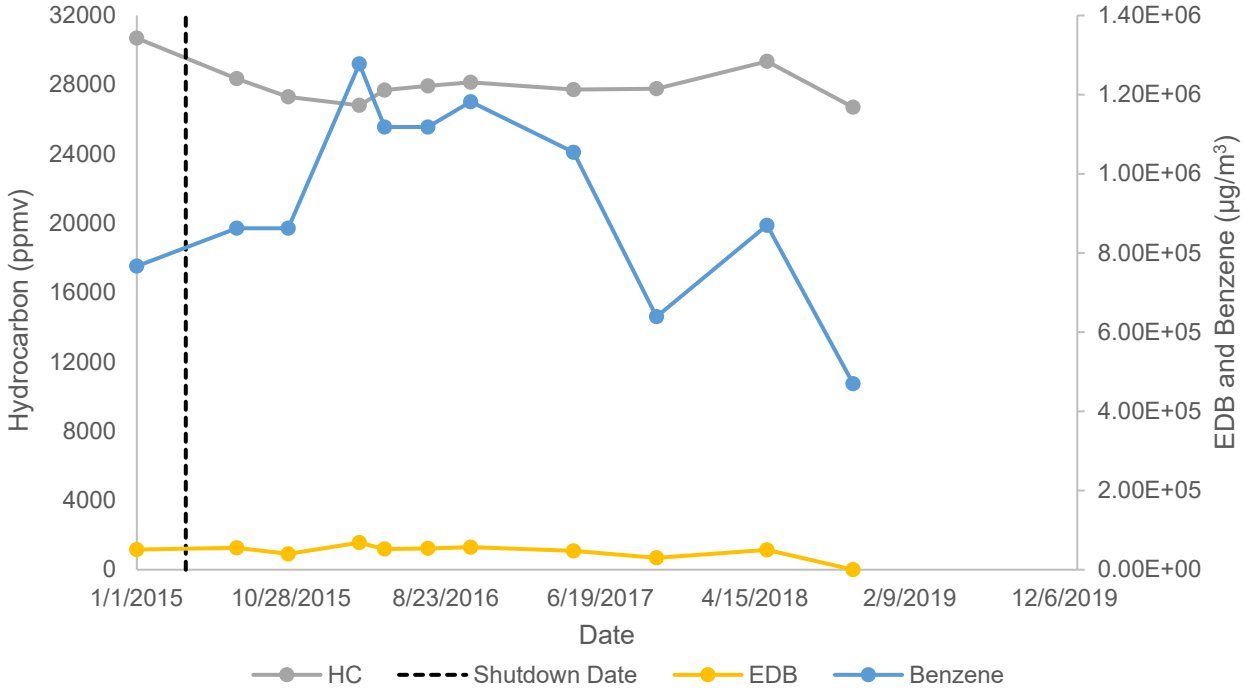
Well ID: SVMW-09-050
Hydrocarbon, EDB, and Benzene Levels Over Time



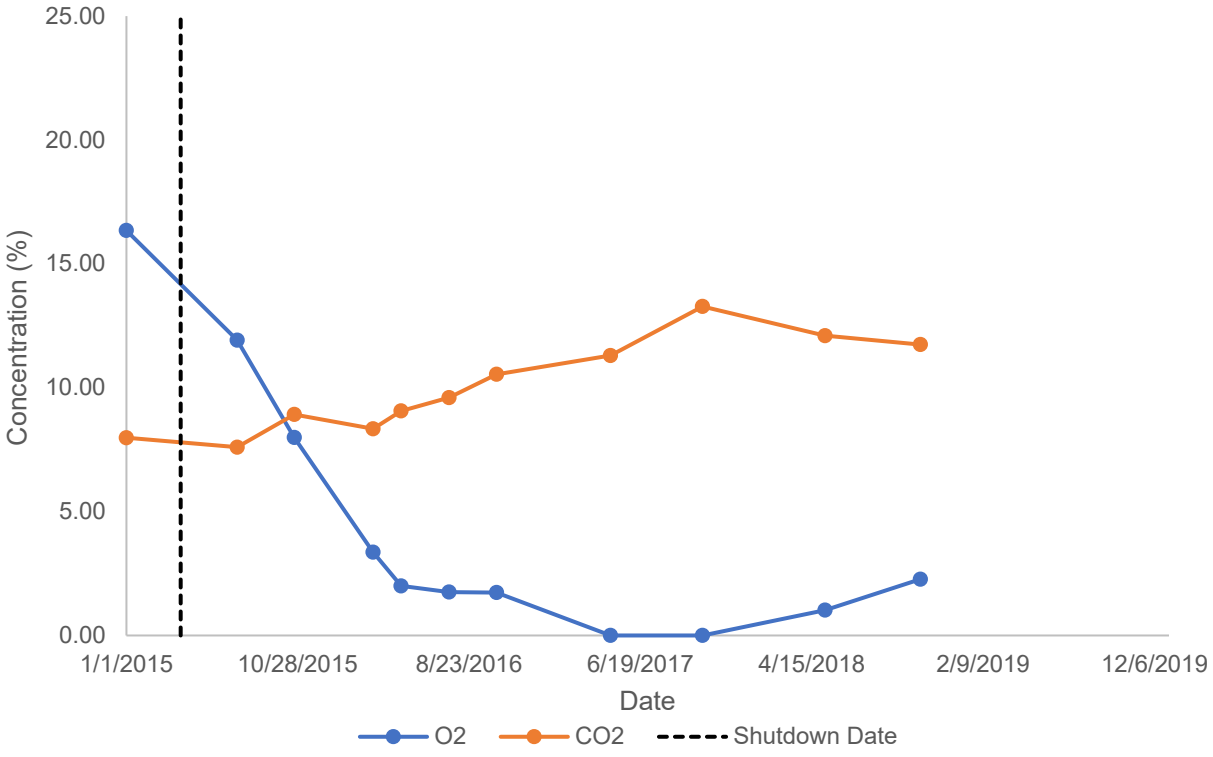
Well ID: SVMW-09-050
Oxygen and Carbon Dioxide Concentrations Over Time



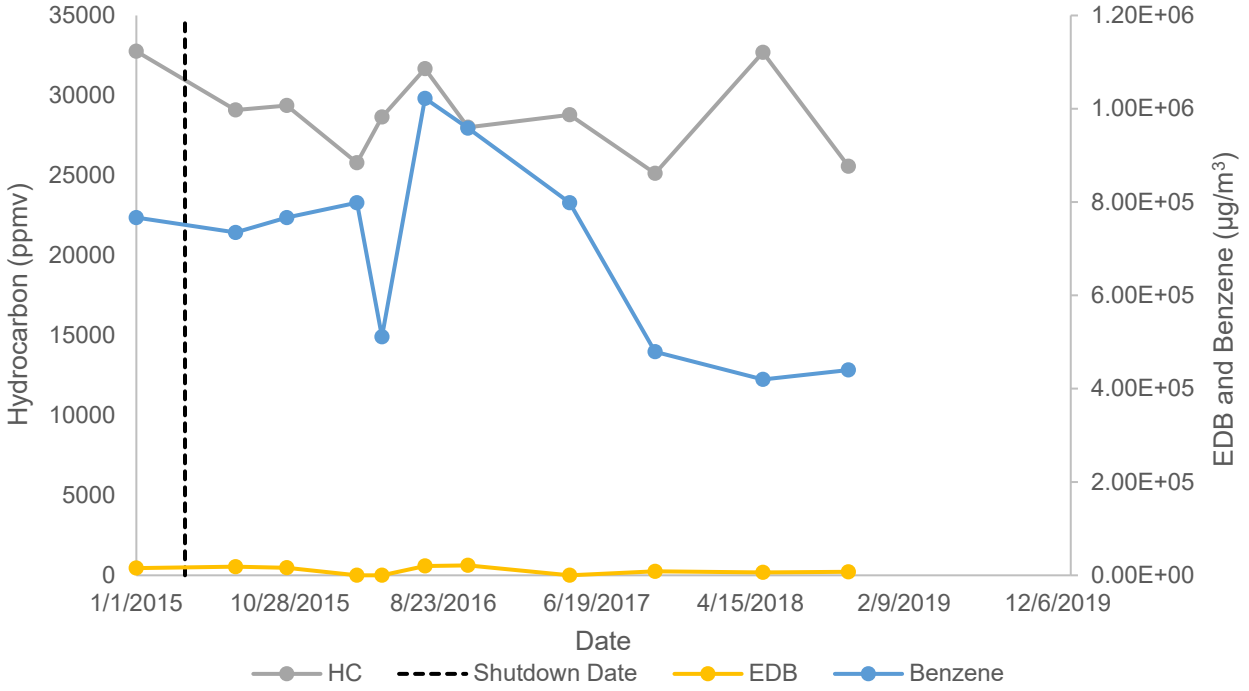
Well ID: SVMW-10-050
Hydrocarbon, EDB, and Benzene Levels Over Time



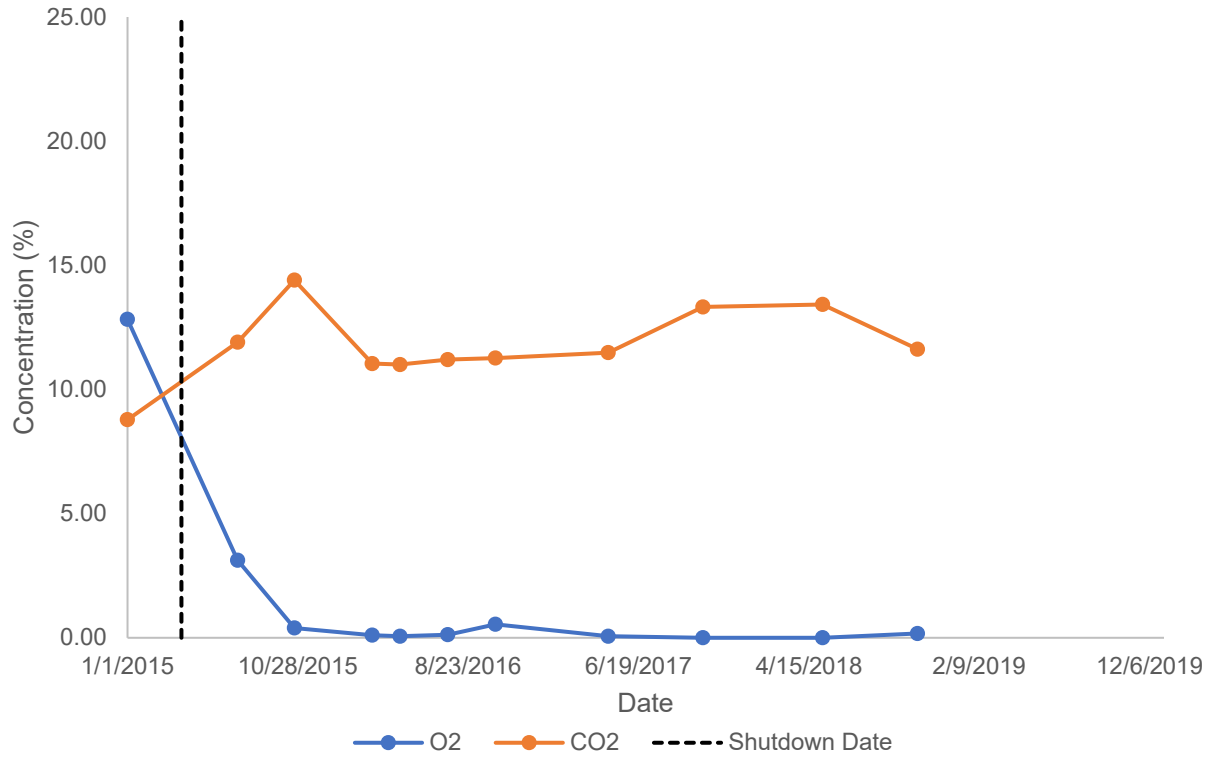
Well ID: SVMW-10-050
Oxygen and Carbon Dioxide Concentrations Over Time



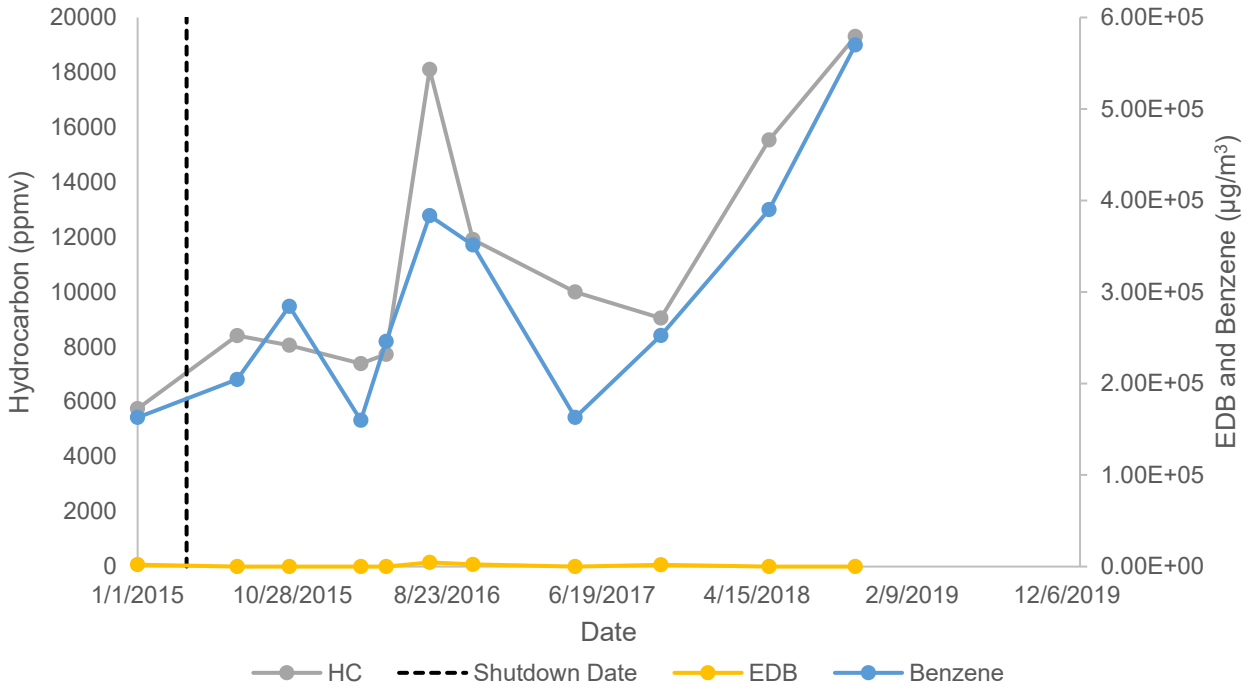
Well ID: SVMW-11-050
Hydrocarbon, EDB, and Benzene Levels Over Time



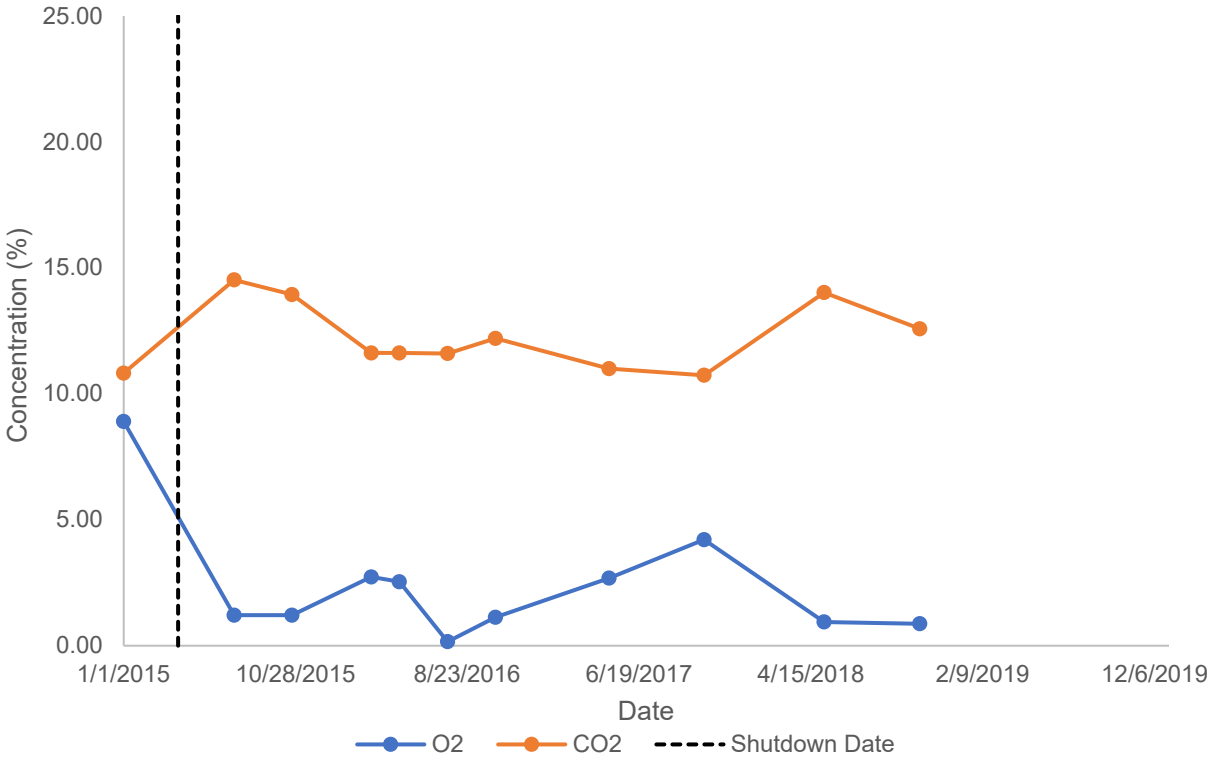
Well ID: SVMW-11-050
Oxygen and Carbon Dioxide Concentrations Over Time



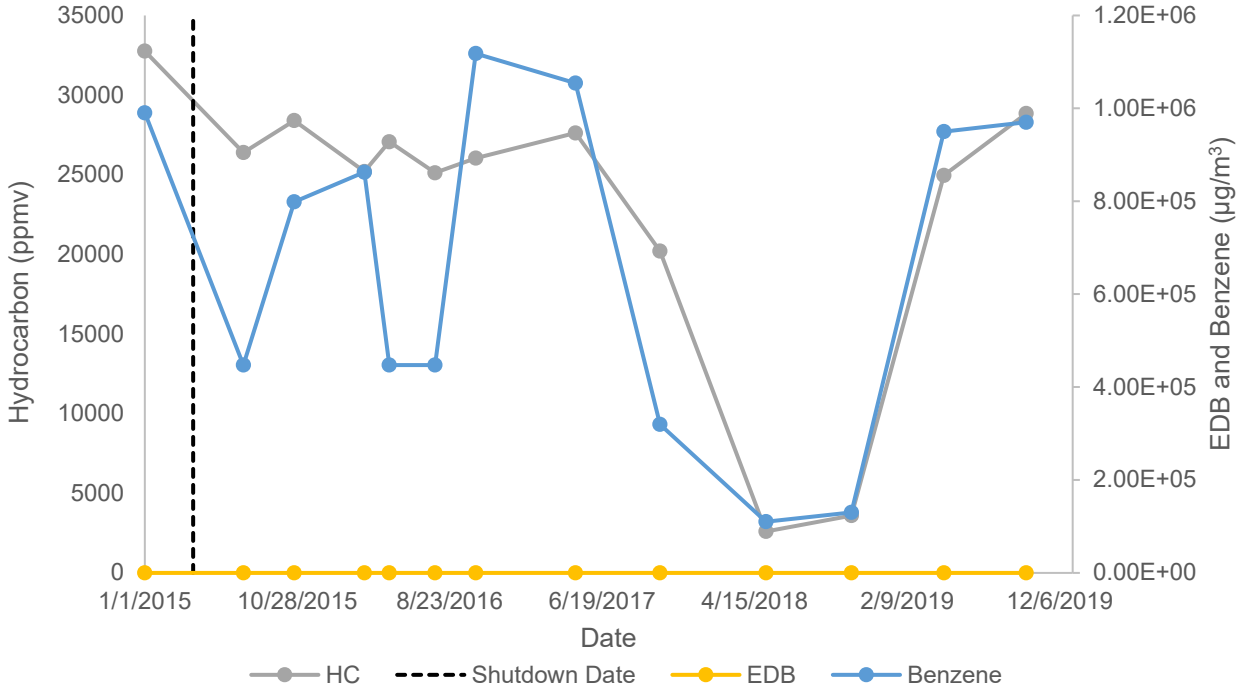
Well ID: SVEW-03-160
Hydrocarbon, EDB, and Benzene Levels Over Time



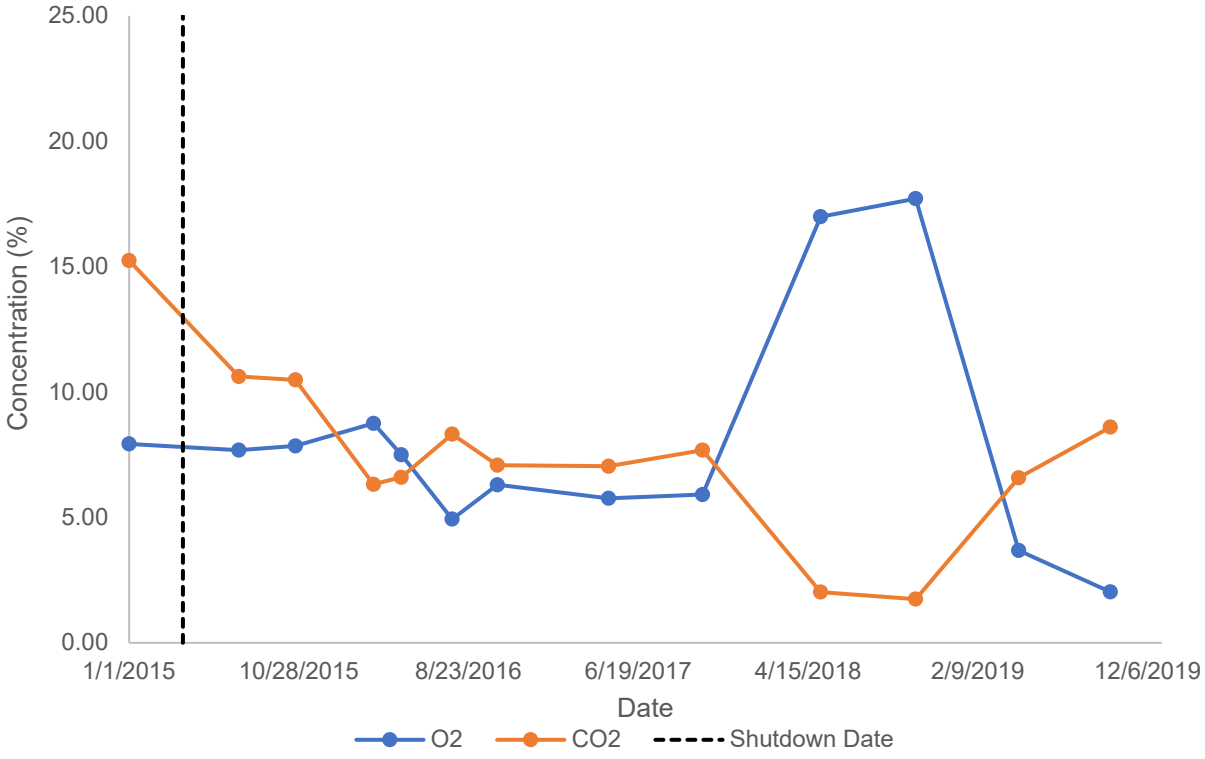
Well ID: SVEW-03-160
Oxygen and Carbon Dioxide Concentrations Over Time



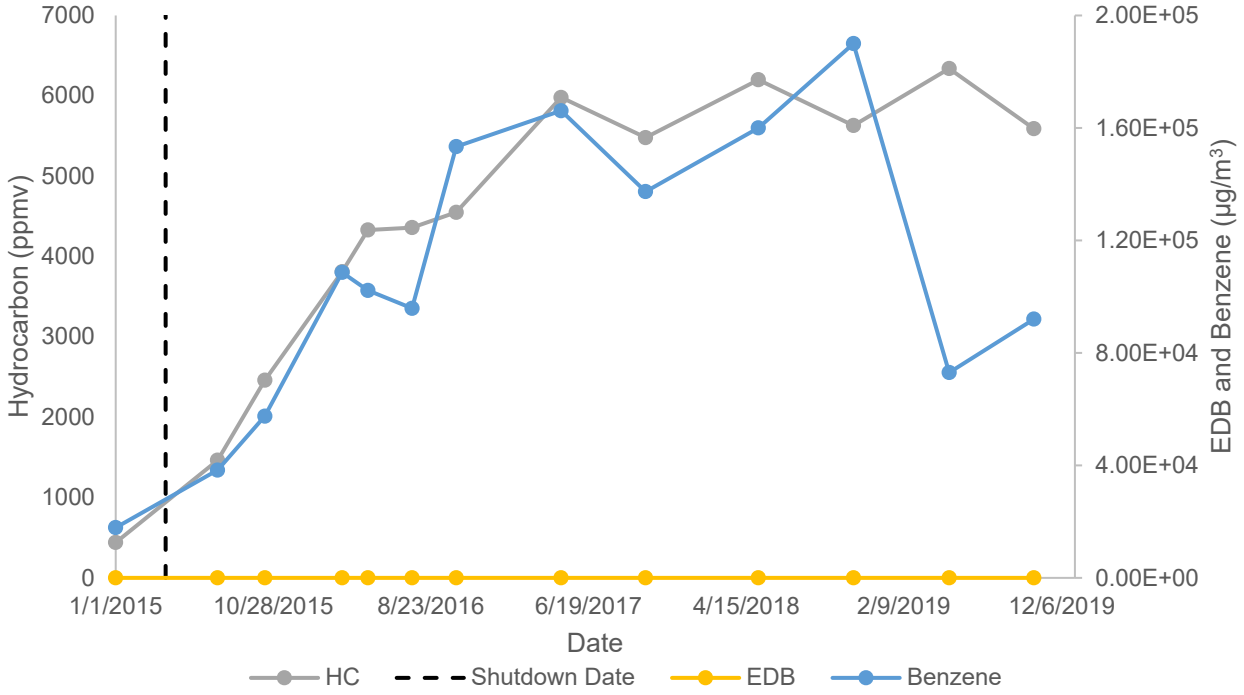
Well ID: SVEW-07-160
Hydrocarbon, EDB, and Benzene Levels Over Time



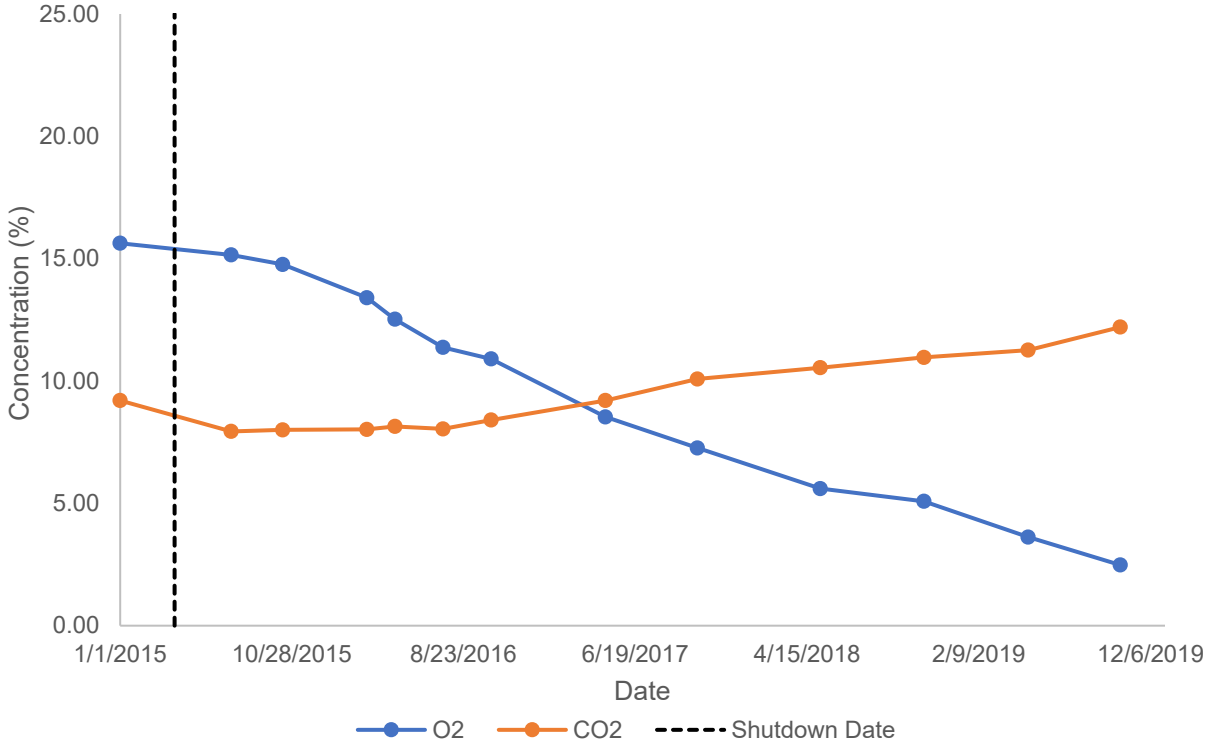
Well ID: SVEW-07-160
Oxygen and Carbon Dioxide Concentrations Over Time



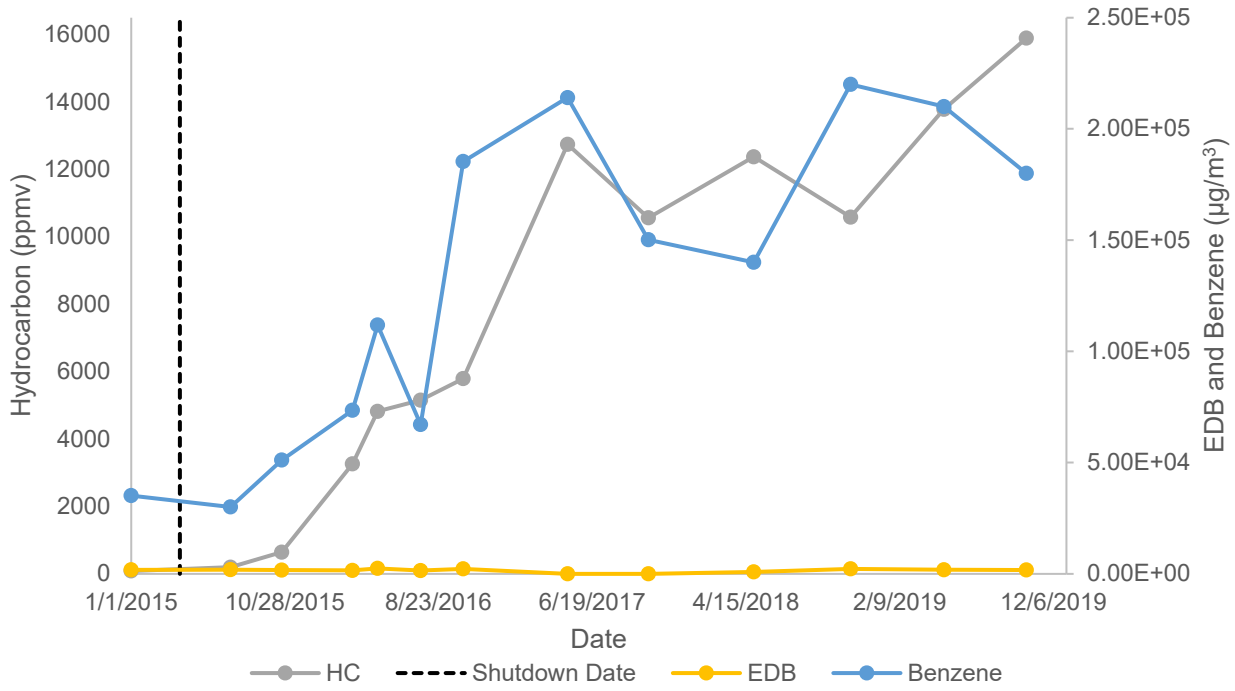
Well ID: SVMW-01-100
Hydrocarbon, EDB, and Benzene Levels Over Time



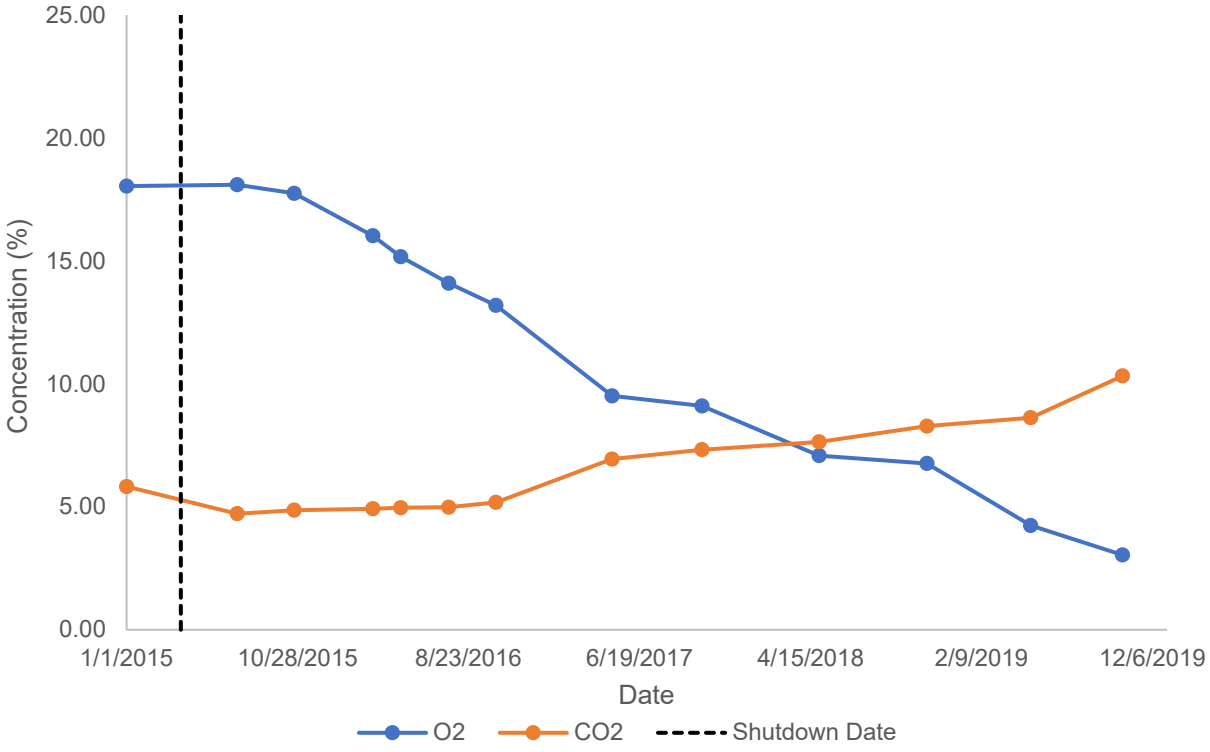
Well ID: SVMW-01-100
Oxygen and Carbon Dioxide Concentrations Over Time



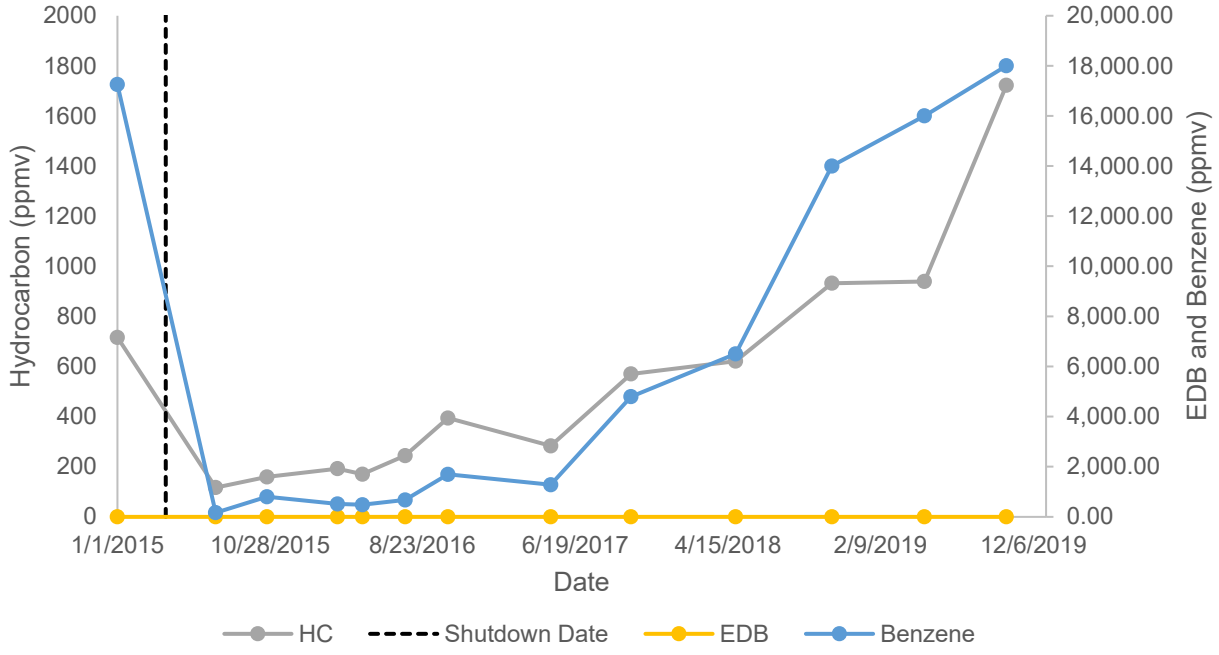
Well ID: SVMW-02-100
Hydrocarbon, EDB, and Benzene Levels Over Time



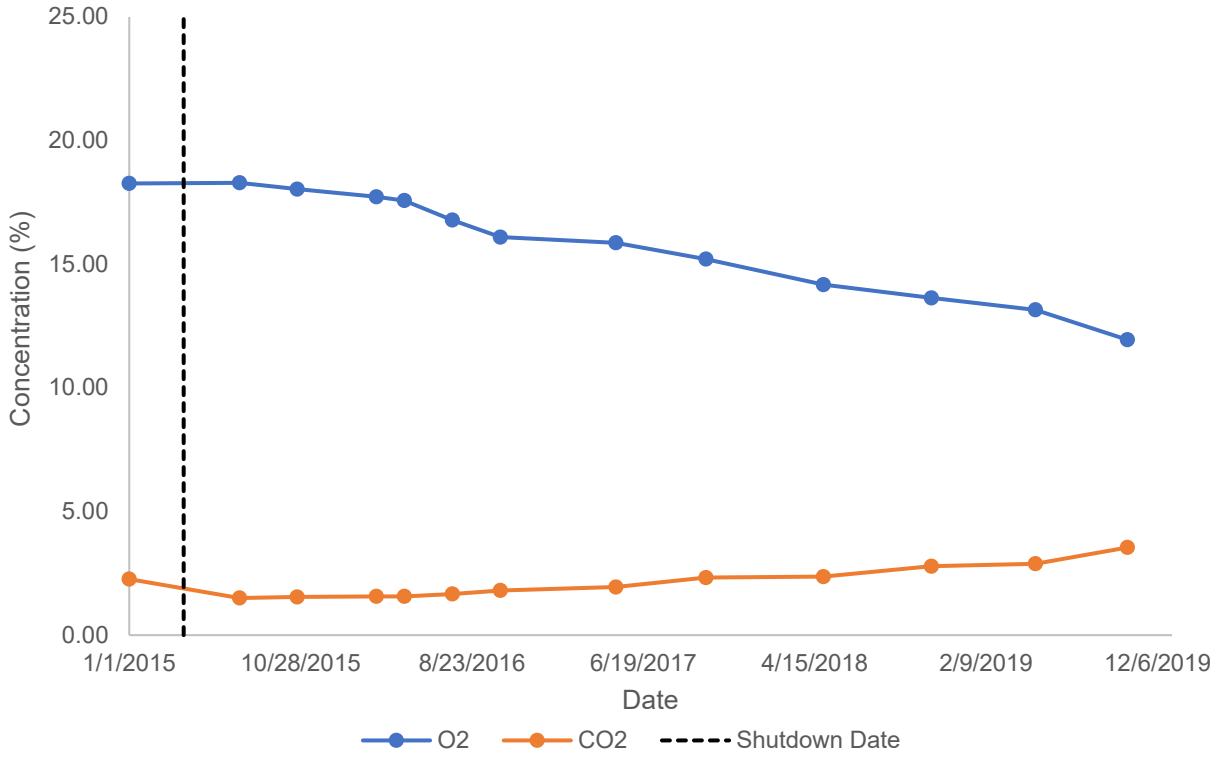
Well ID: SVMW-02-100
Oxygen and Carbon Dioxide Concentrations Over Time



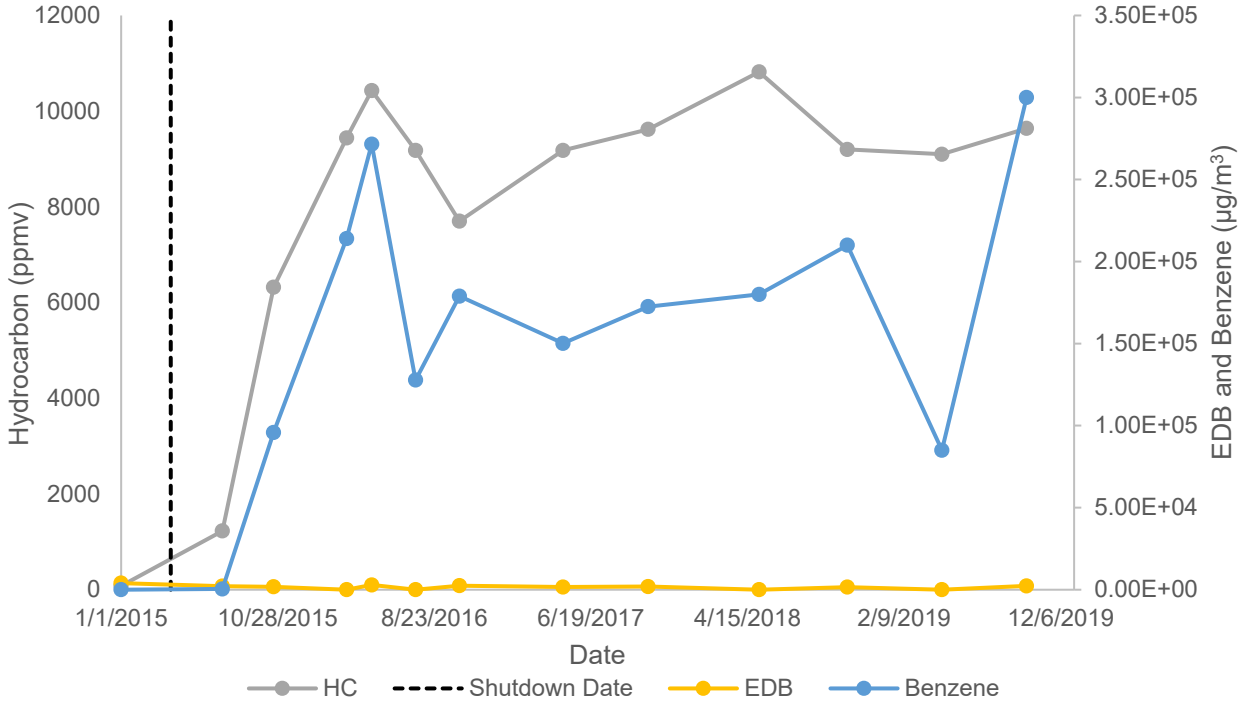
Well ID: SVMW-02-150
Hydrocarbon, EDB, and Benzene Levels Over Time



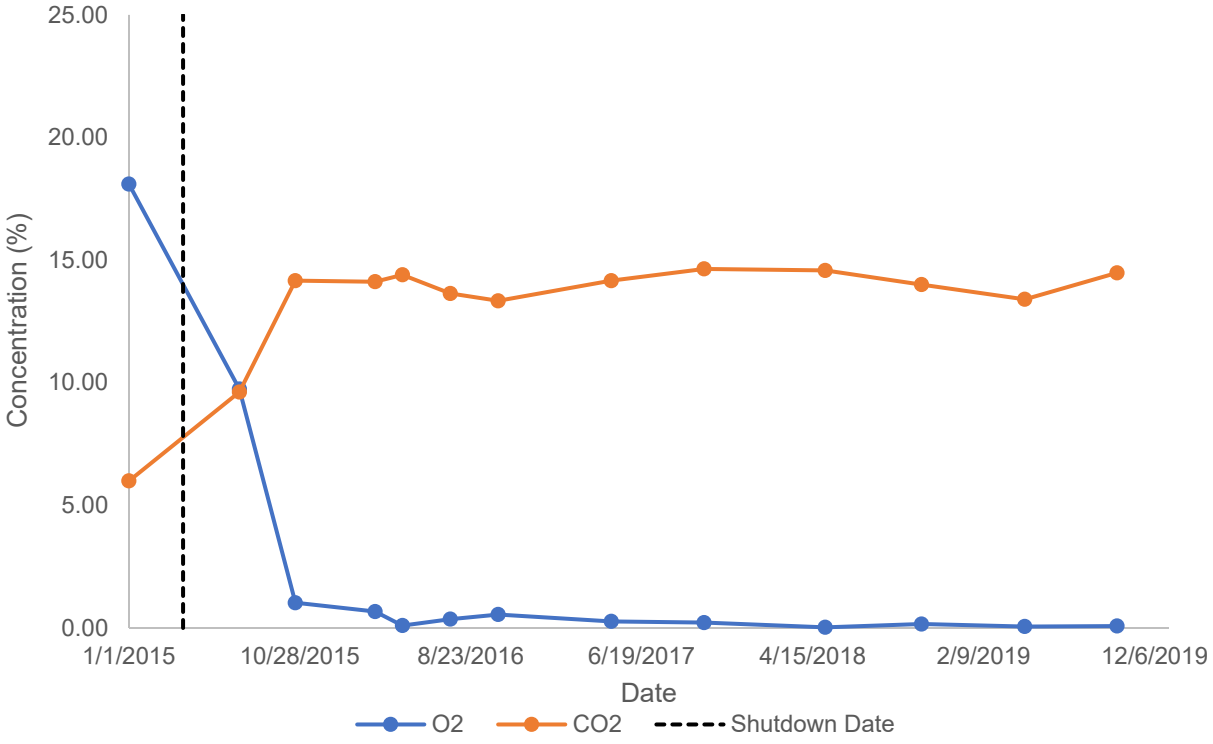
Well ID: SVMW-02-150
Oxygen and Carbon Dioxide Concentrations Over Time



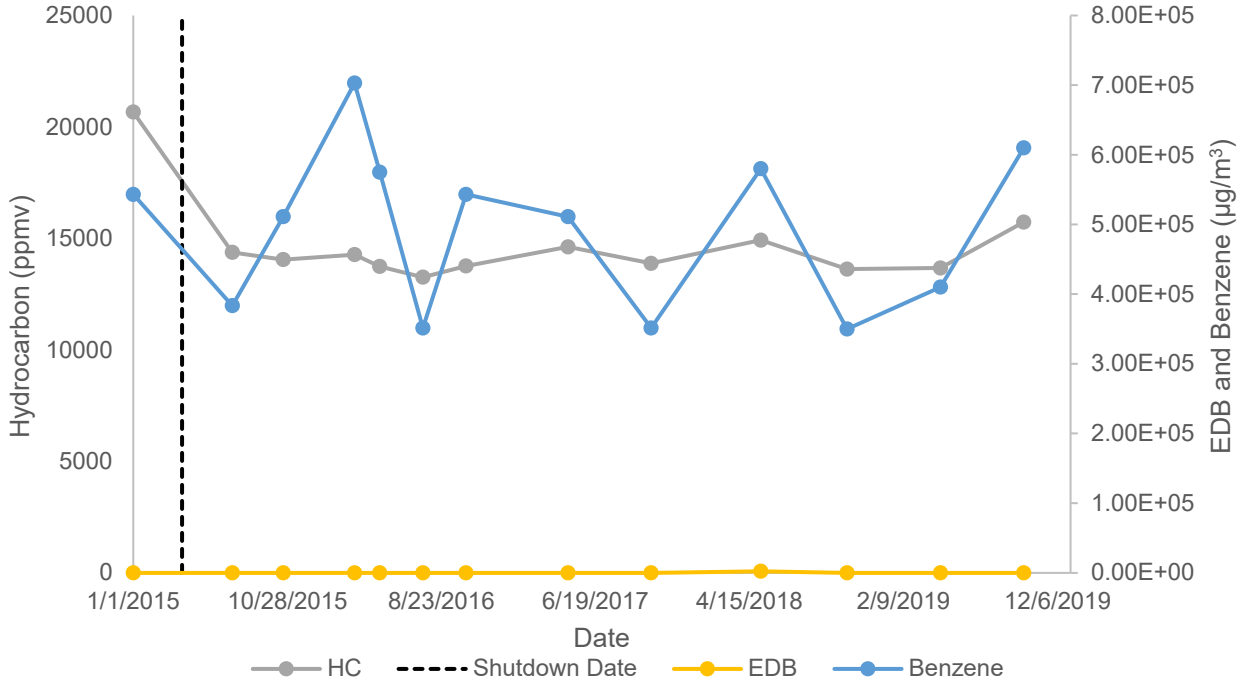
Well ID: SVMW-03-100
Hydrocarbon, EDB, and Benzene Levels Over Time



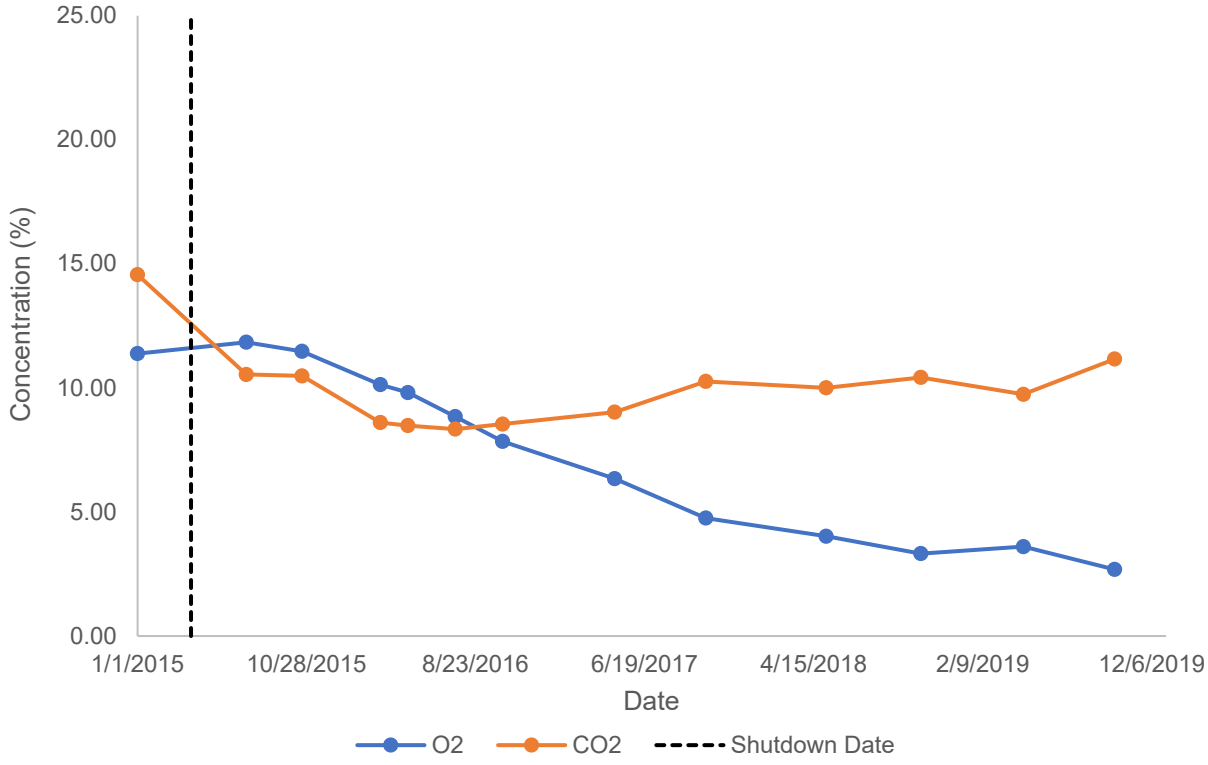
Well ID: SVMW-03-100
Oxygen and Carbon Dioxide Concentrations Over Time



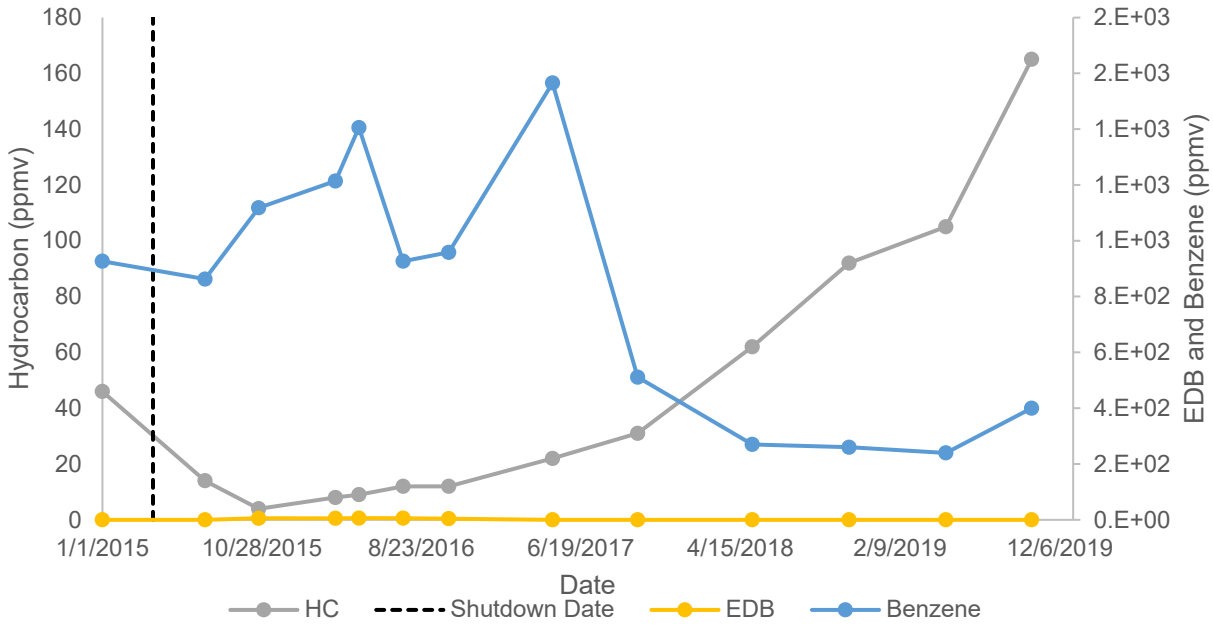
Well ID: SVMW-04-100
Hydrocarbon, EDB, and Benzene Levels Over Time



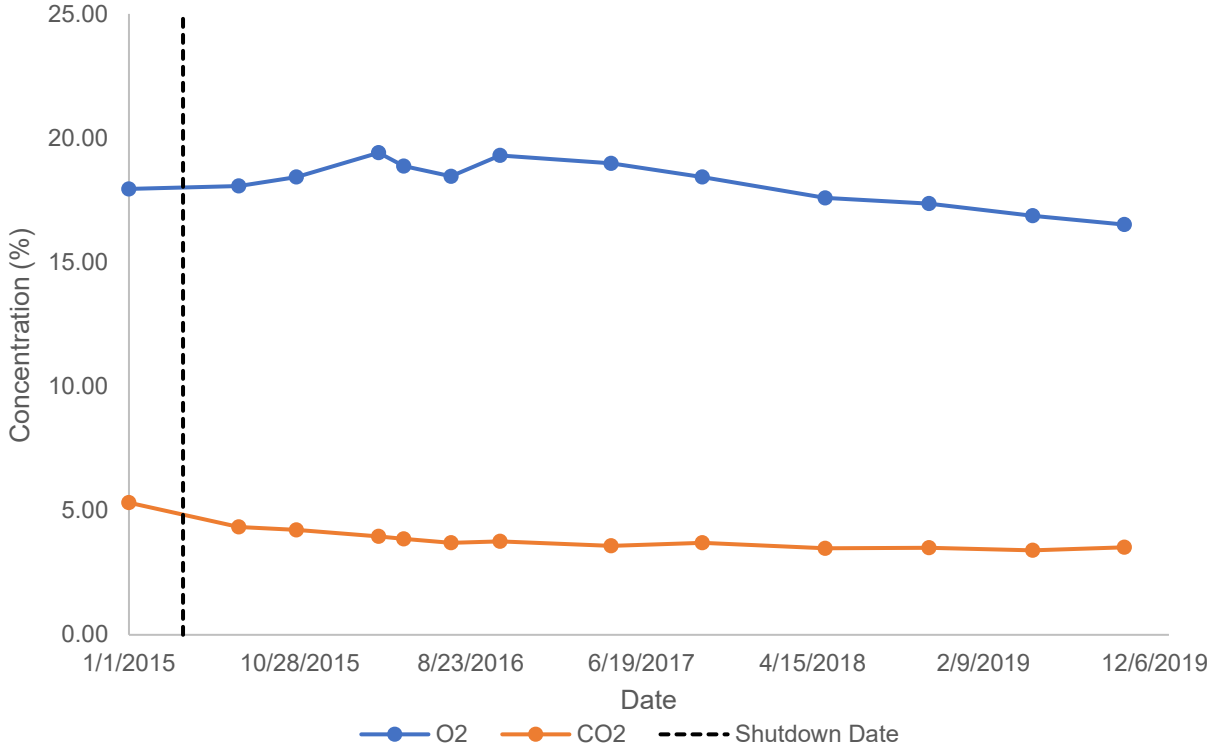
Well ID: SVMW-04-100
Oxygen and Carbon Dioxide Concentrations Over Time



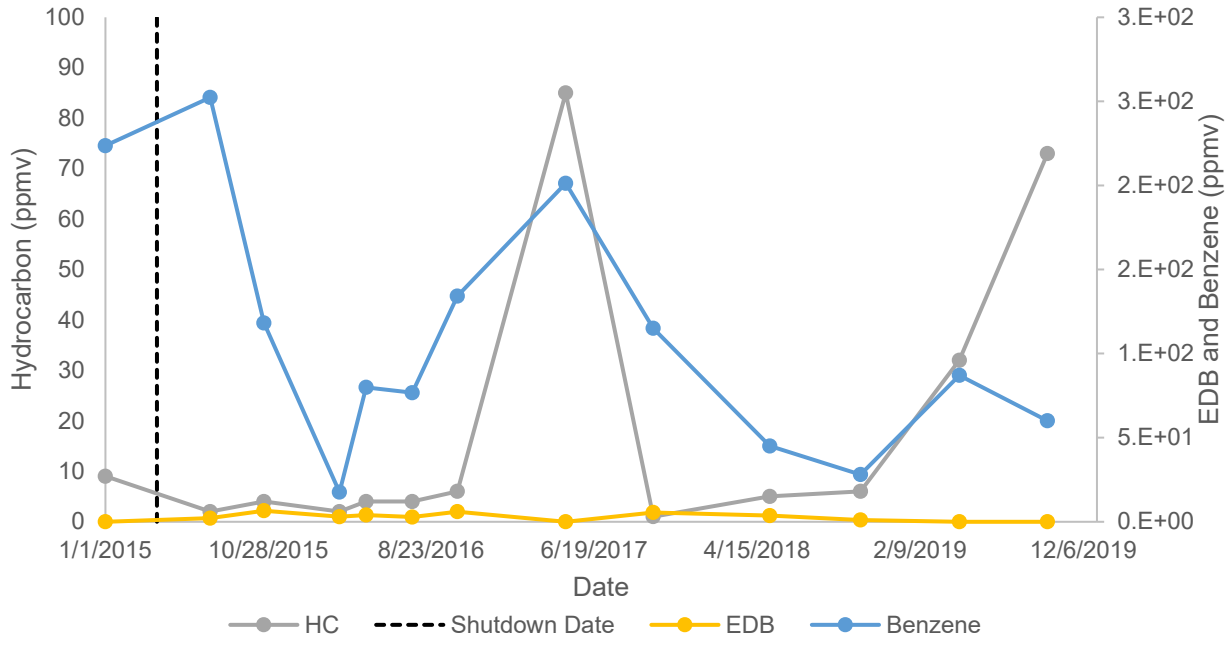
Well ID: SVMW-07-100
Hydrocarbon, EDB, and Benzene Levels Over Time



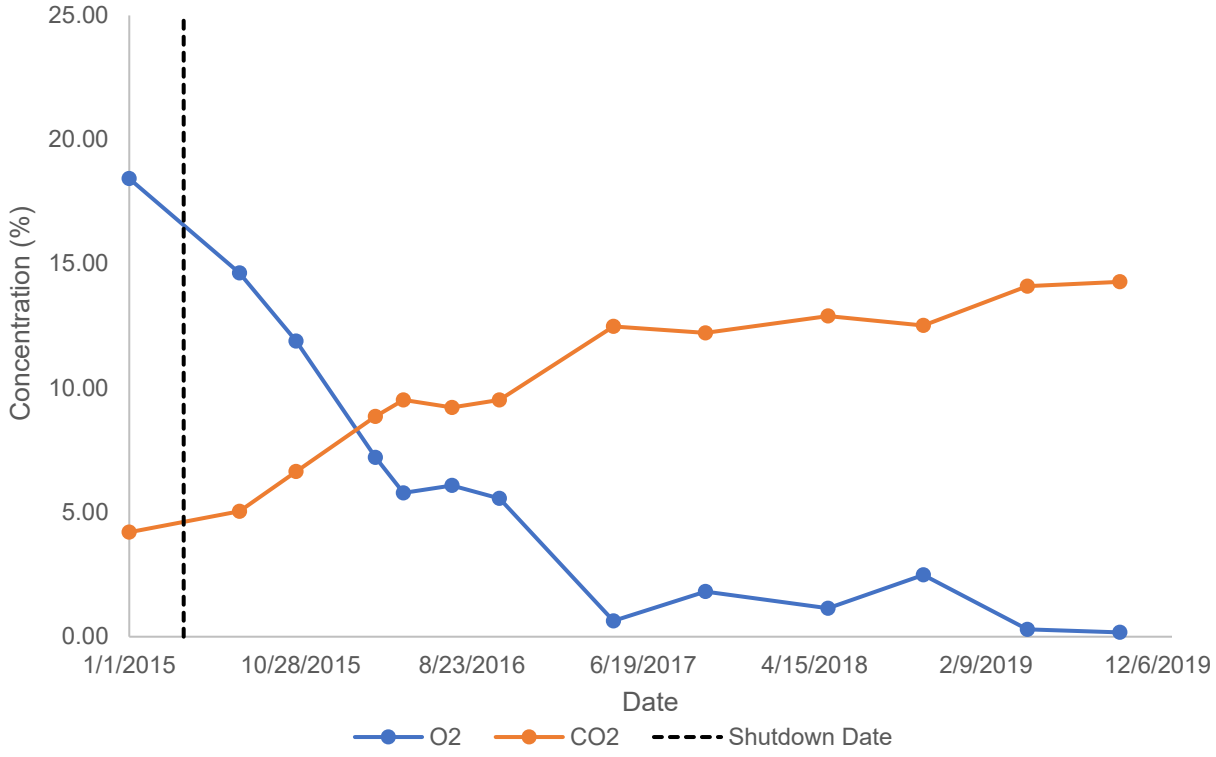
Well ID: SVMW-07-100
Oxygen and Carbon Dioxide Concentrations Over Time



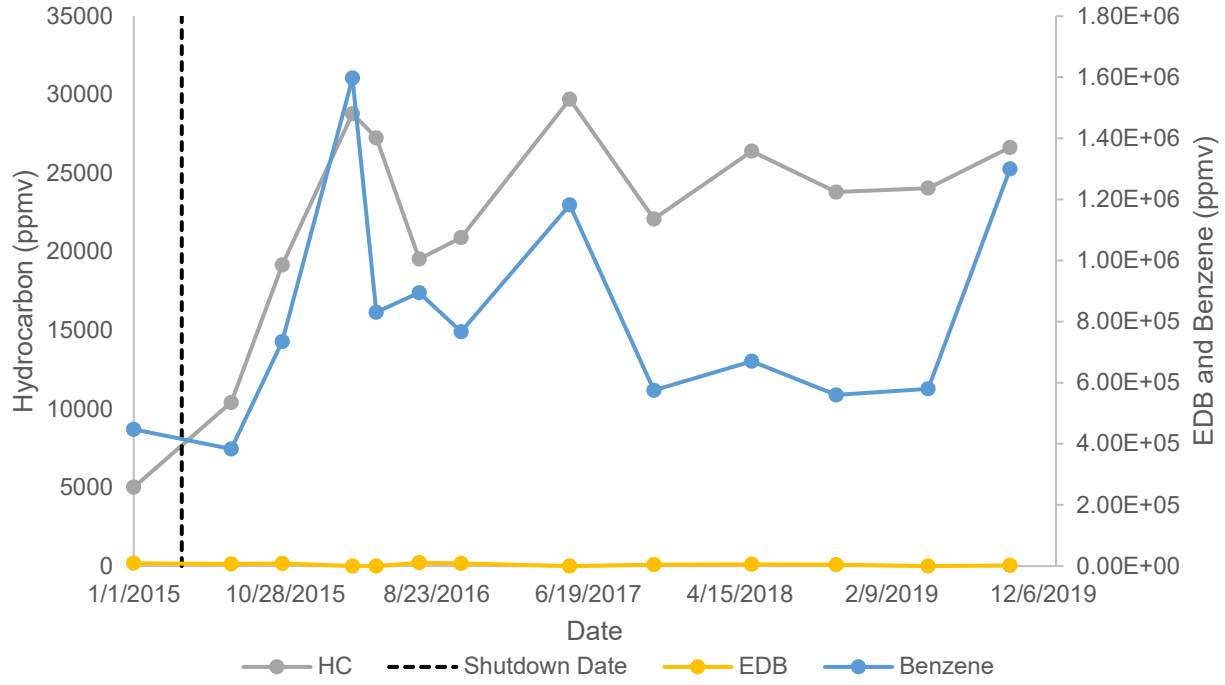
Well ID: SVMW-08-100
Hydrocarbon, EDB, and Benzene Levels Over Time



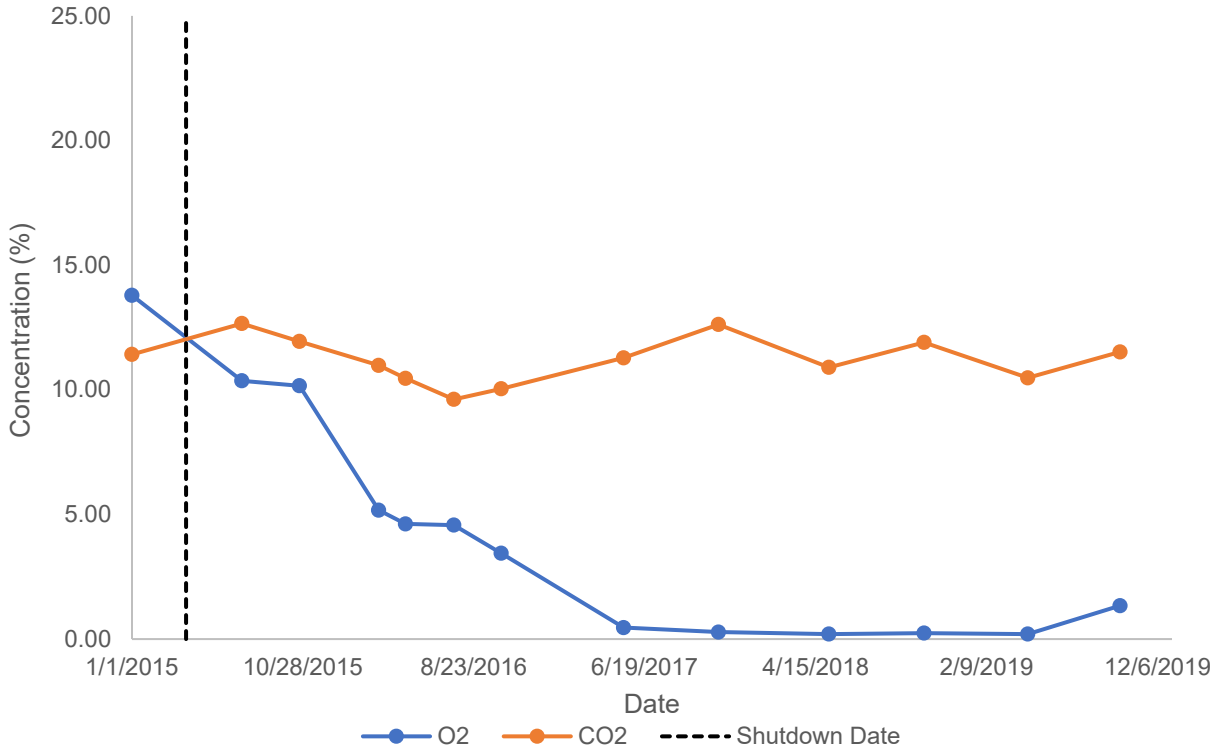
Well ID: SVMW-08-100
Oxygen and Carbon Dioxide Concentrations Over Time



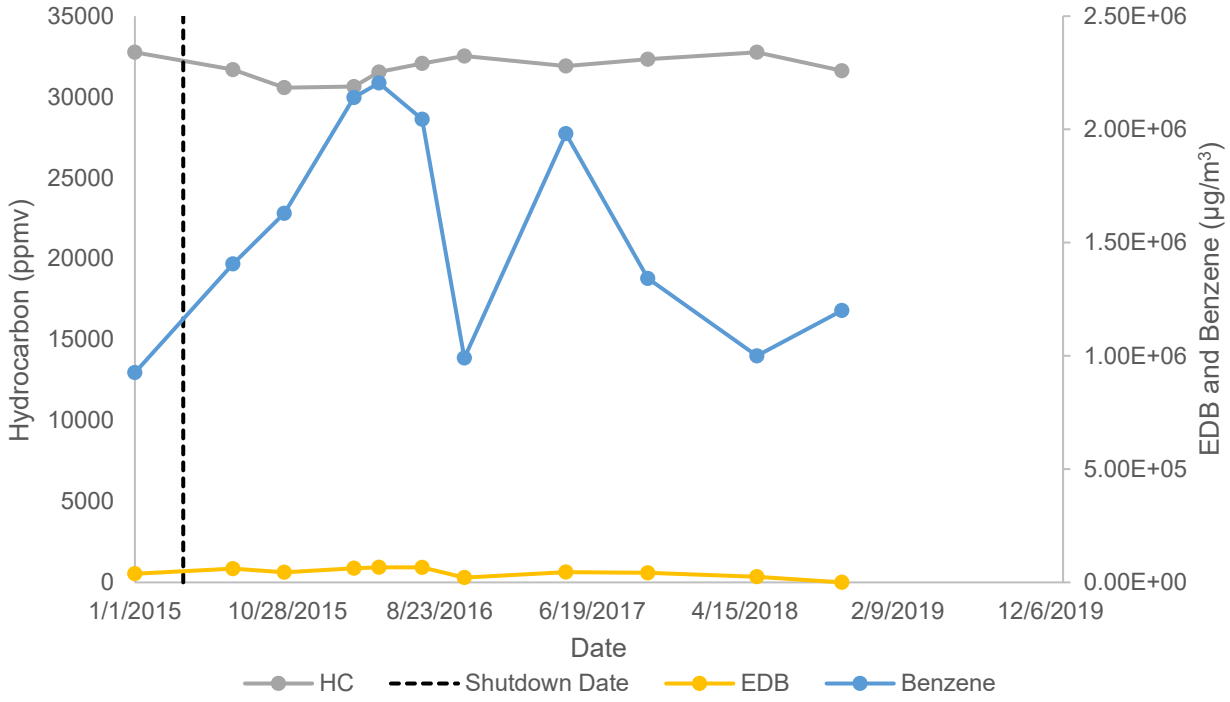
Well ID: SVMW-09-100
Hydrocarbon, EDB, and Benzene Levels Over Time



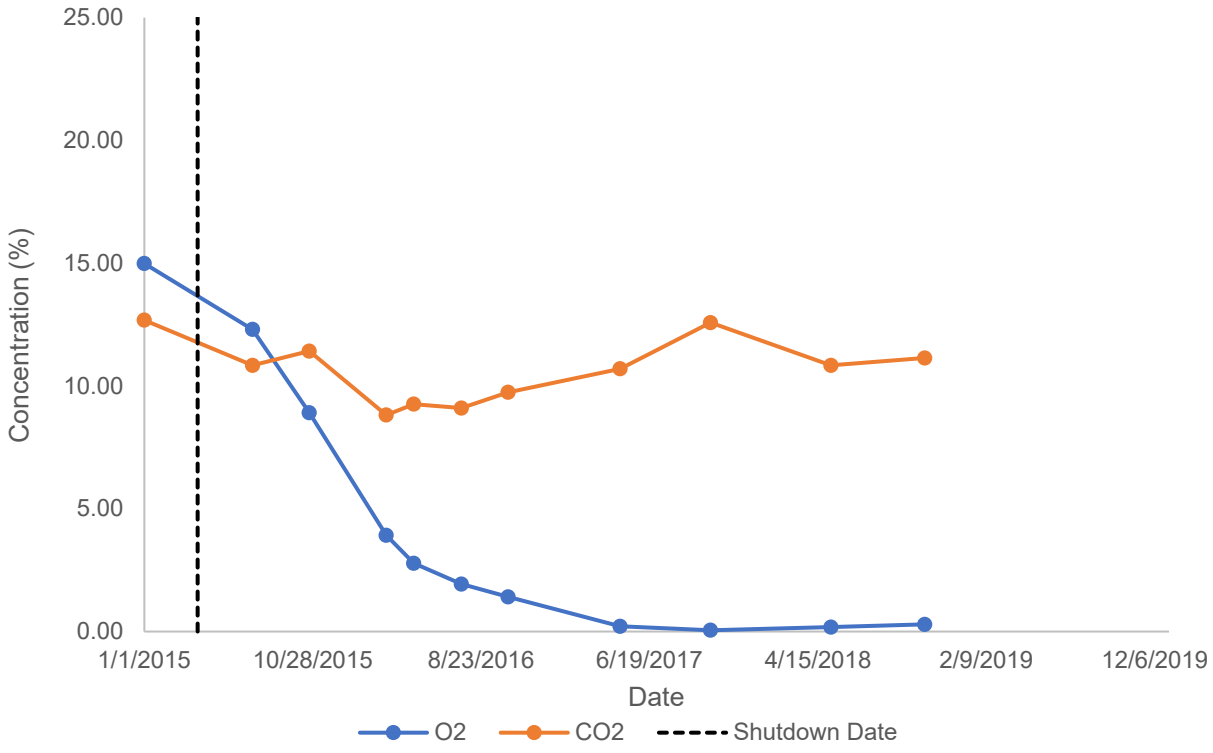
Well ID: SVMW-09-100
Oxygen and Carbon Dioxide Concentrations Over Time



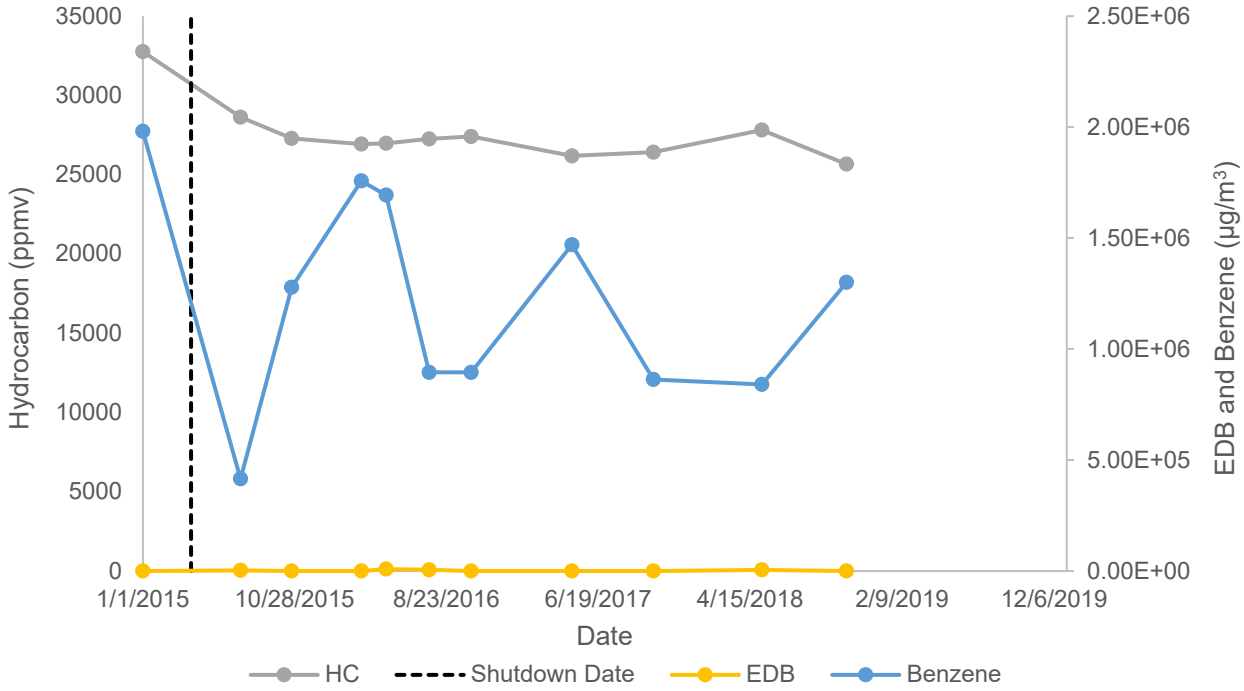
Well ID: SVMW-10-100
Hydrocarbon, EDB, and Benzene Levels Over Time



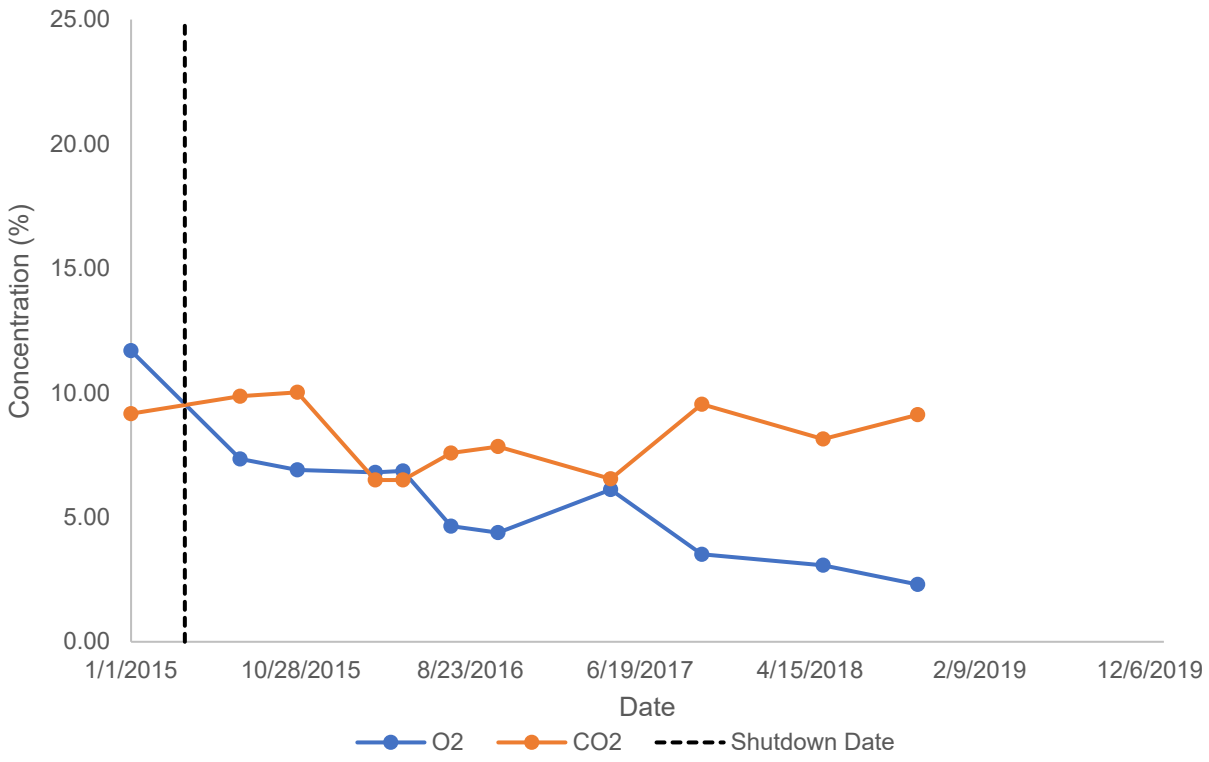
Well ID: SVMW-10-100
Oxygen and Carbon Dioxide Concentrations Over Time



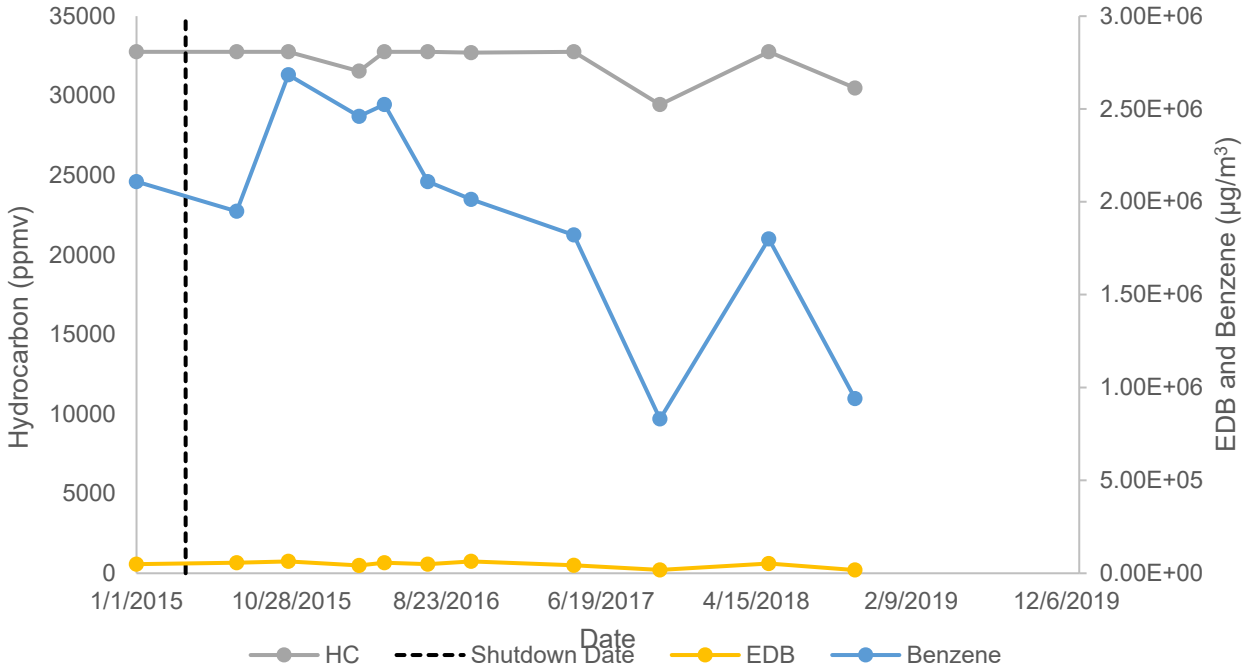
Well ID: SVMW-10-150
Hydrocarbon, EDB, and Benzene Levels Over Time



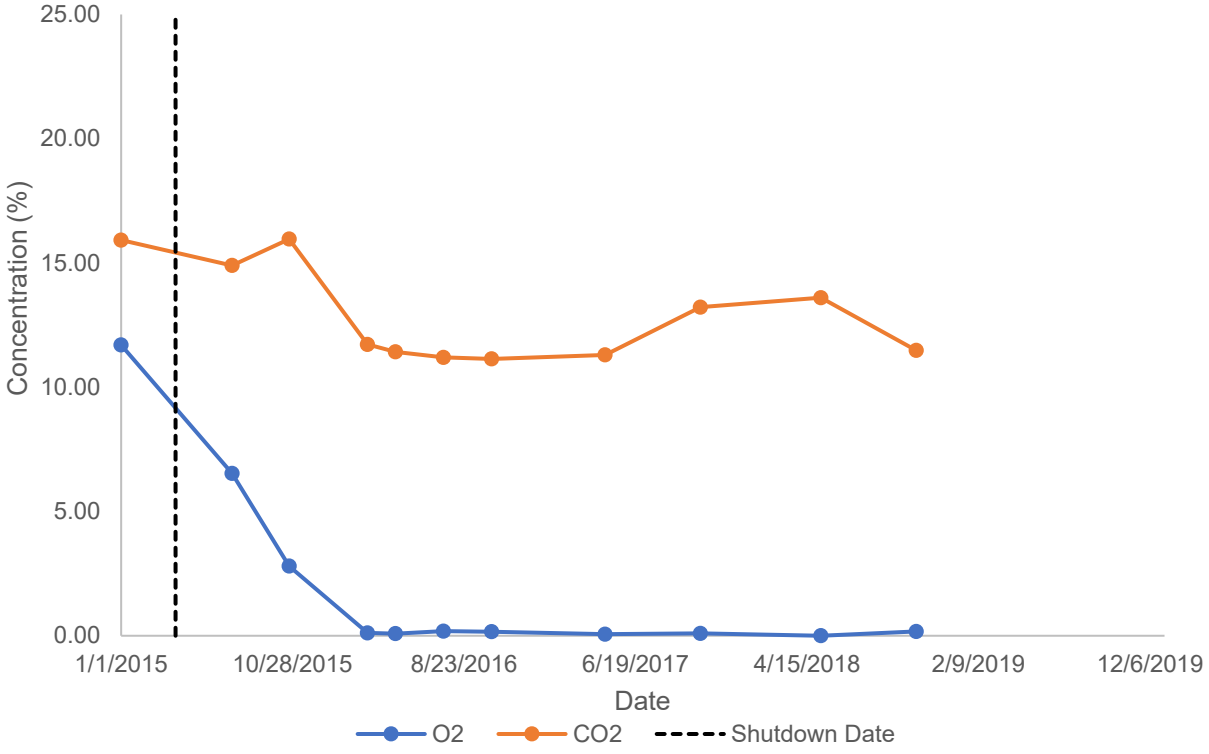
Well ID: SVMW-10-150
Oxygen and Carbon Dioxide Concentrations Over Time



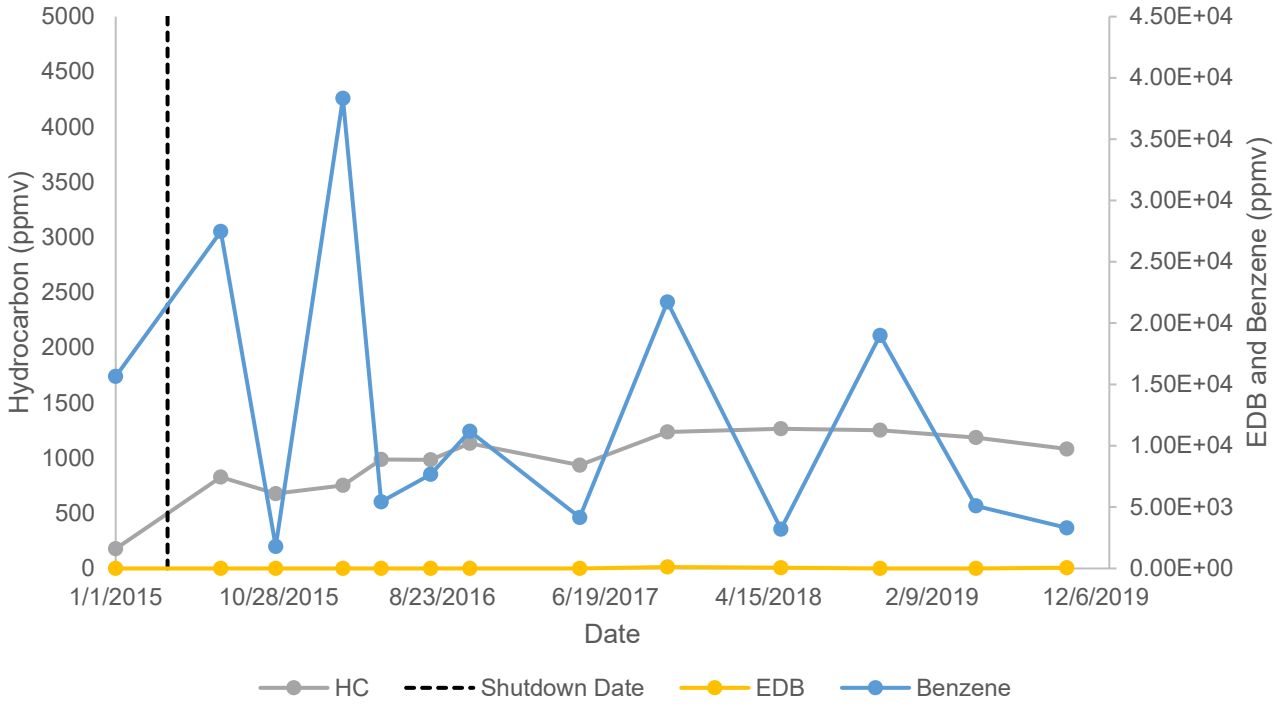
Well ID: SVMW-11-100
Hydrocarbon, EDB, and Benzene Levels Over Time



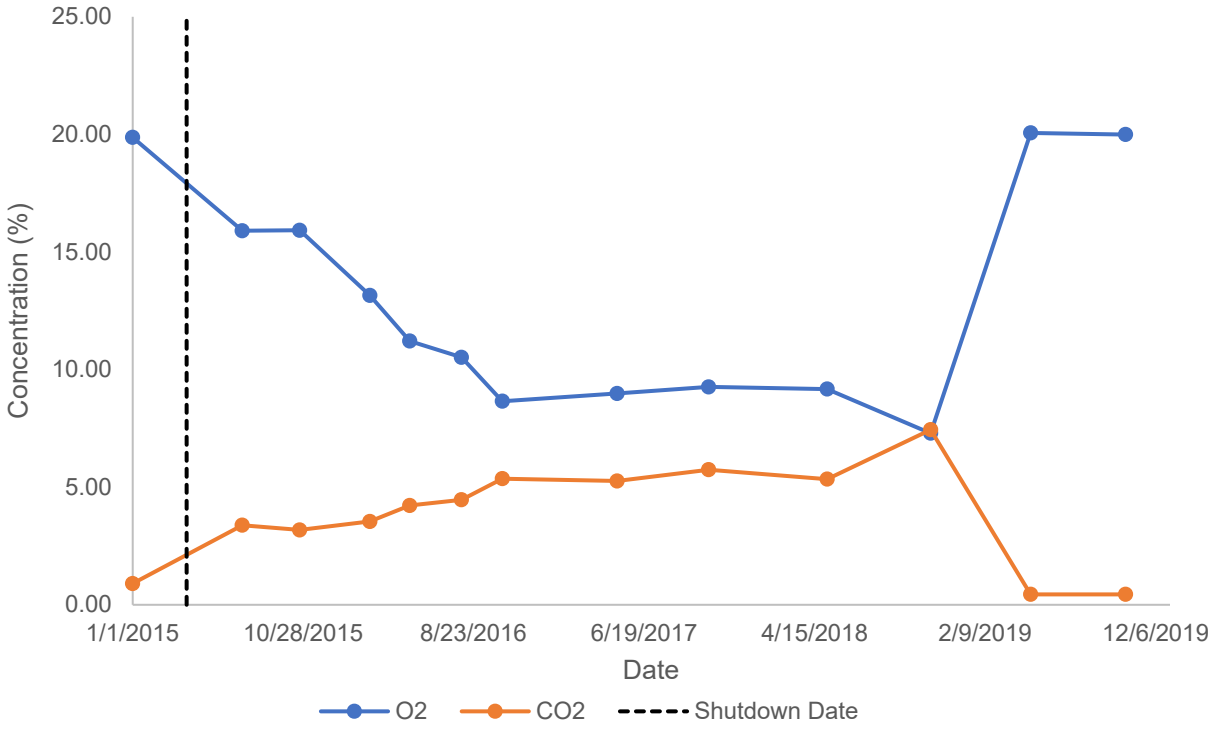
Well ID: SVMW-11-100
Oxygen and Carbon Dioxide Concentrations Over Time



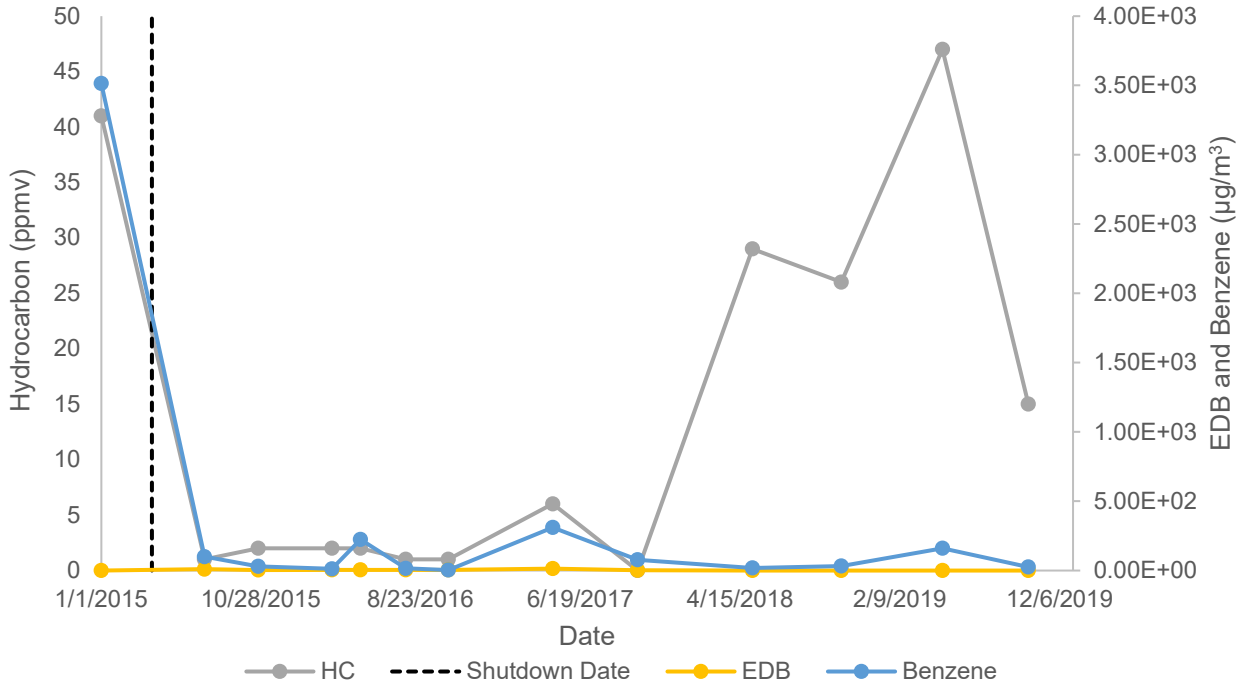
Well ID: SVMW-13-150
Hydrocarbon, EDB, and Benzene Levels Over Time



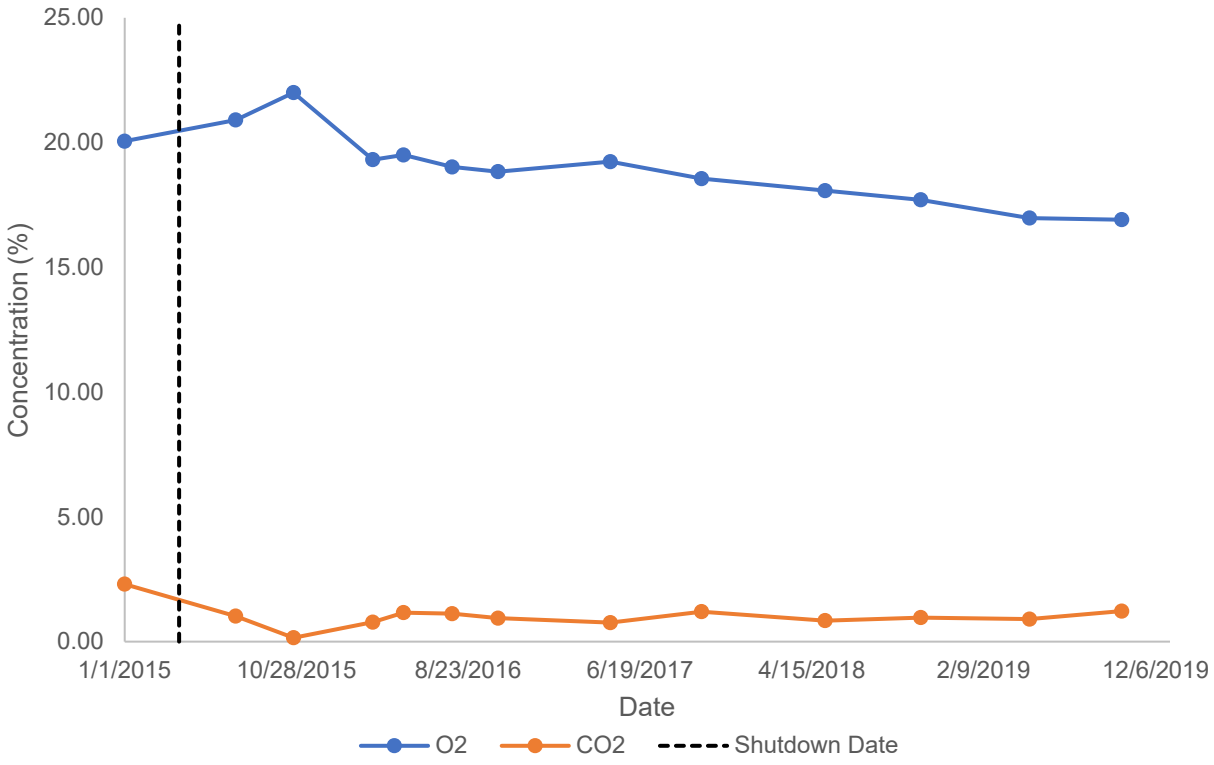
Well ID: SVMW-13-150
Oxygen and Carbon Dioxide Concentrations Over Time



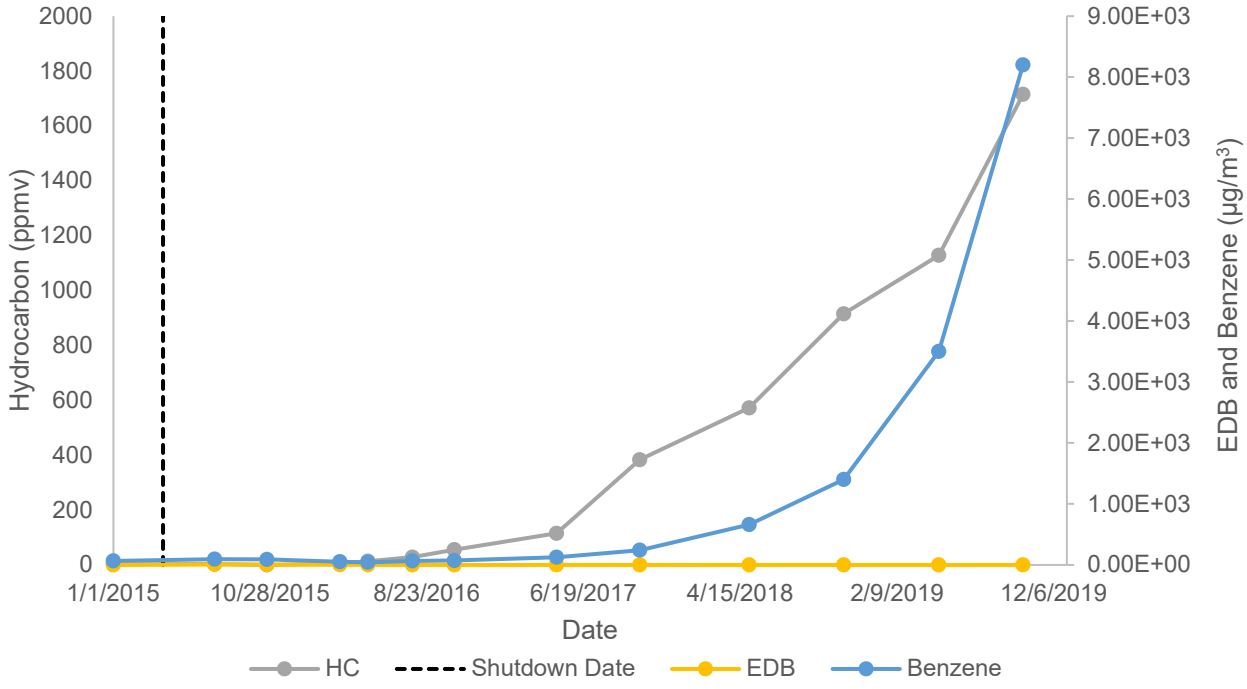
Well ID: KAFB-106110-150
Hydrocarbon, EDB, and Benzene Levels Over Time



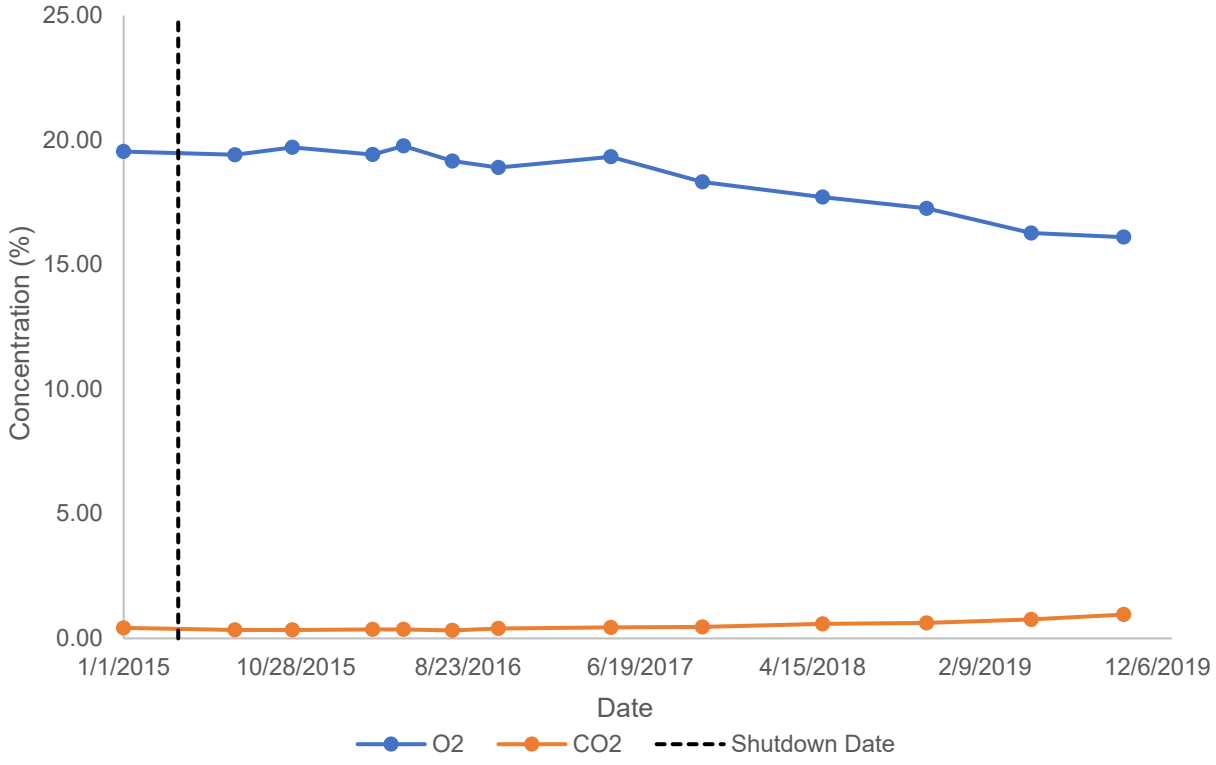
Well ID: KAFB-106110-150
Oxygen and Carbon Dioxide Concentrations Over Time



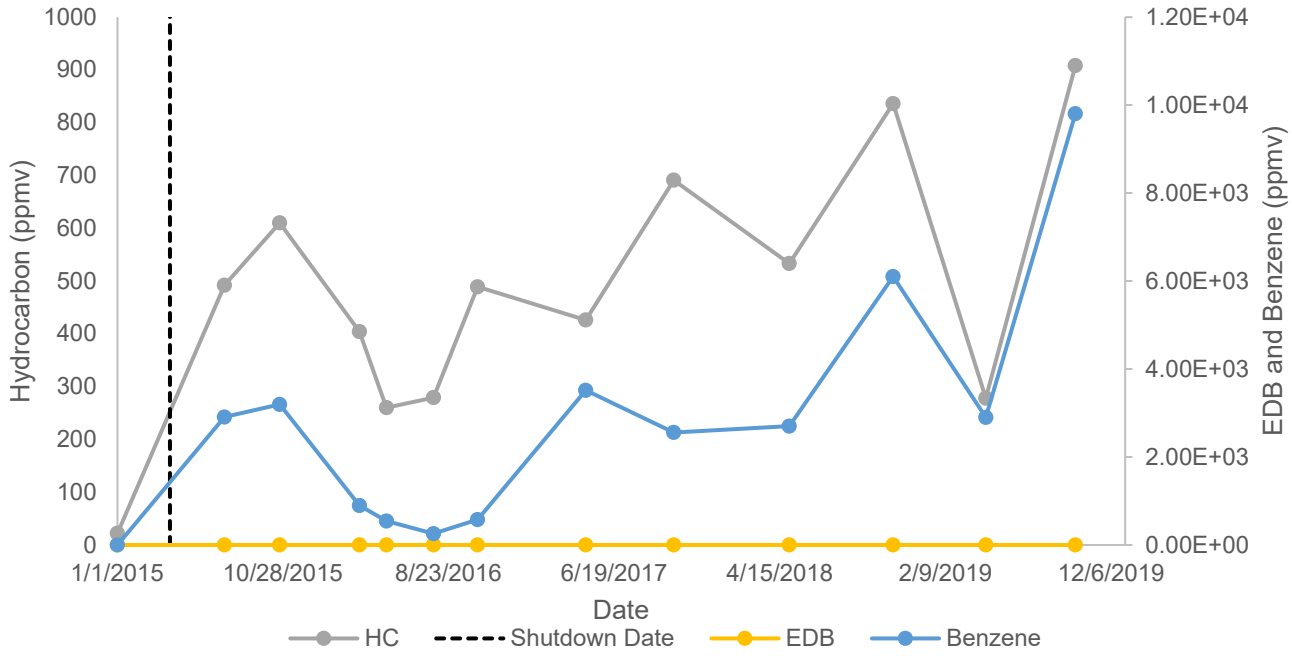
Well ID: KAFB-106110-250
Hydrocarbon, EDB, and Benzene Levels Over Time



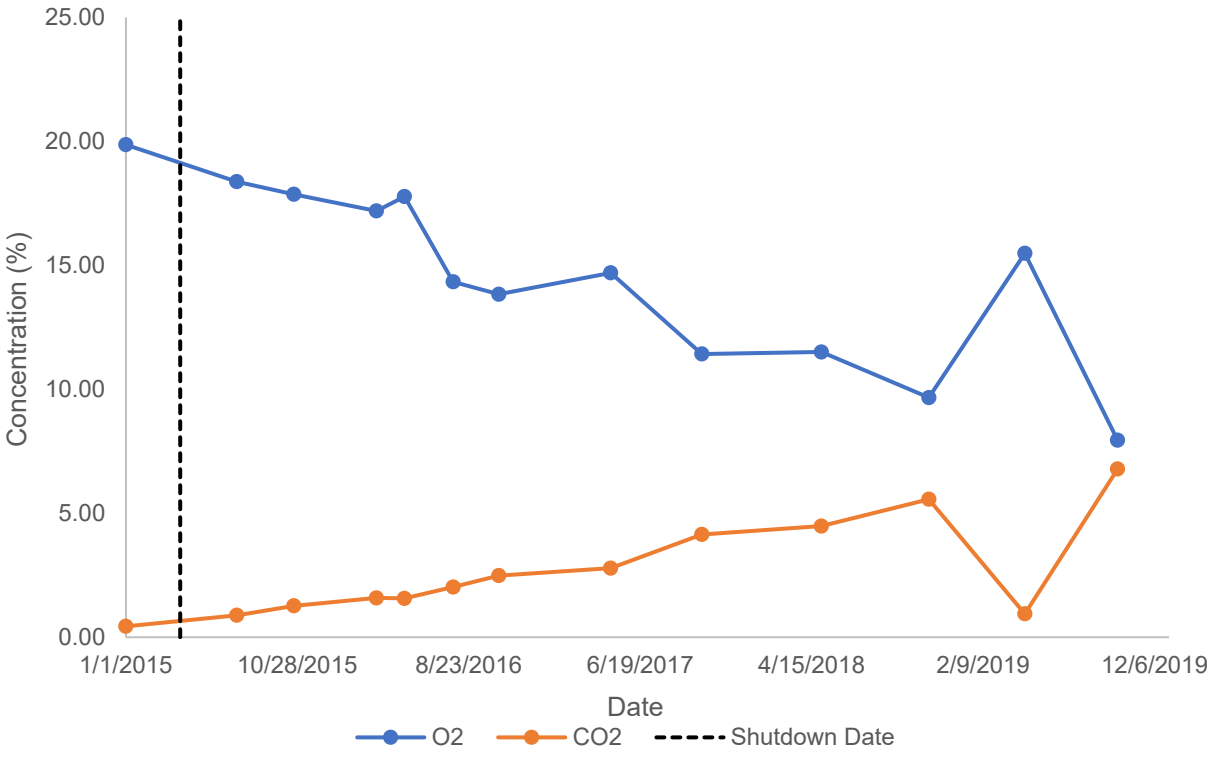
Well ID: KAFB-106110-250
Oxygen and Carbon Dioxide Concentrations Over Time



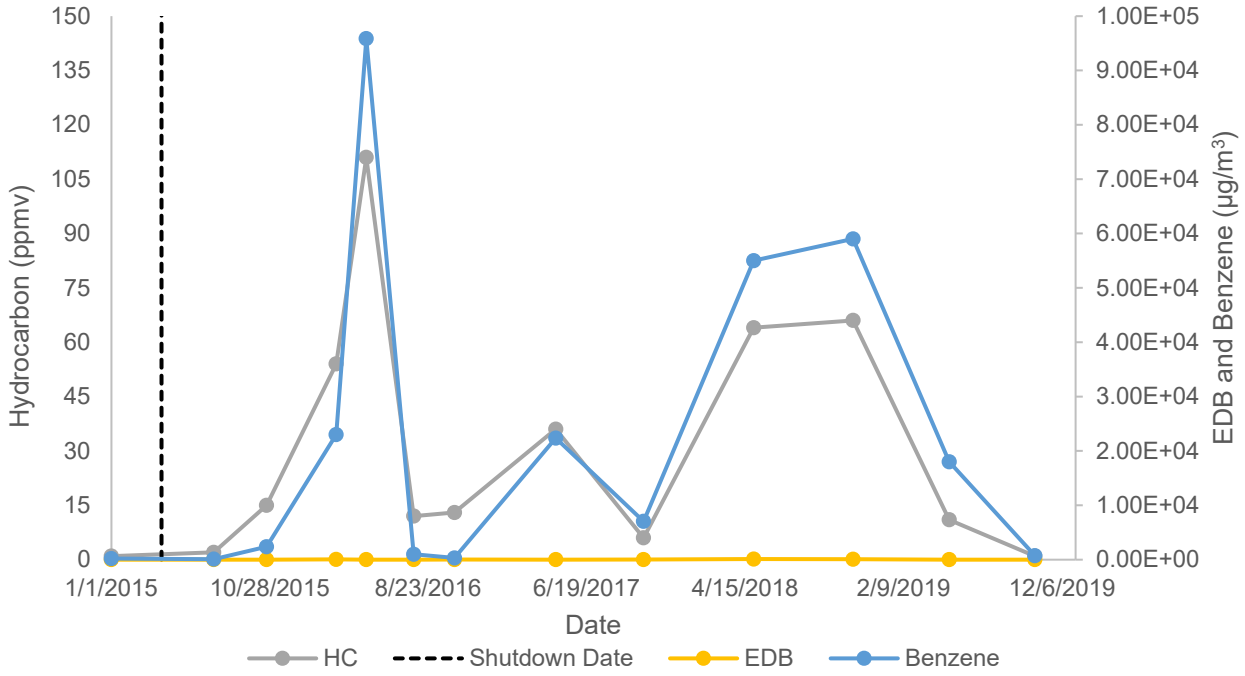
Well ID: KAFB-106111-250
Hydrocarbon, EDB, and Benzene Levels Over Time



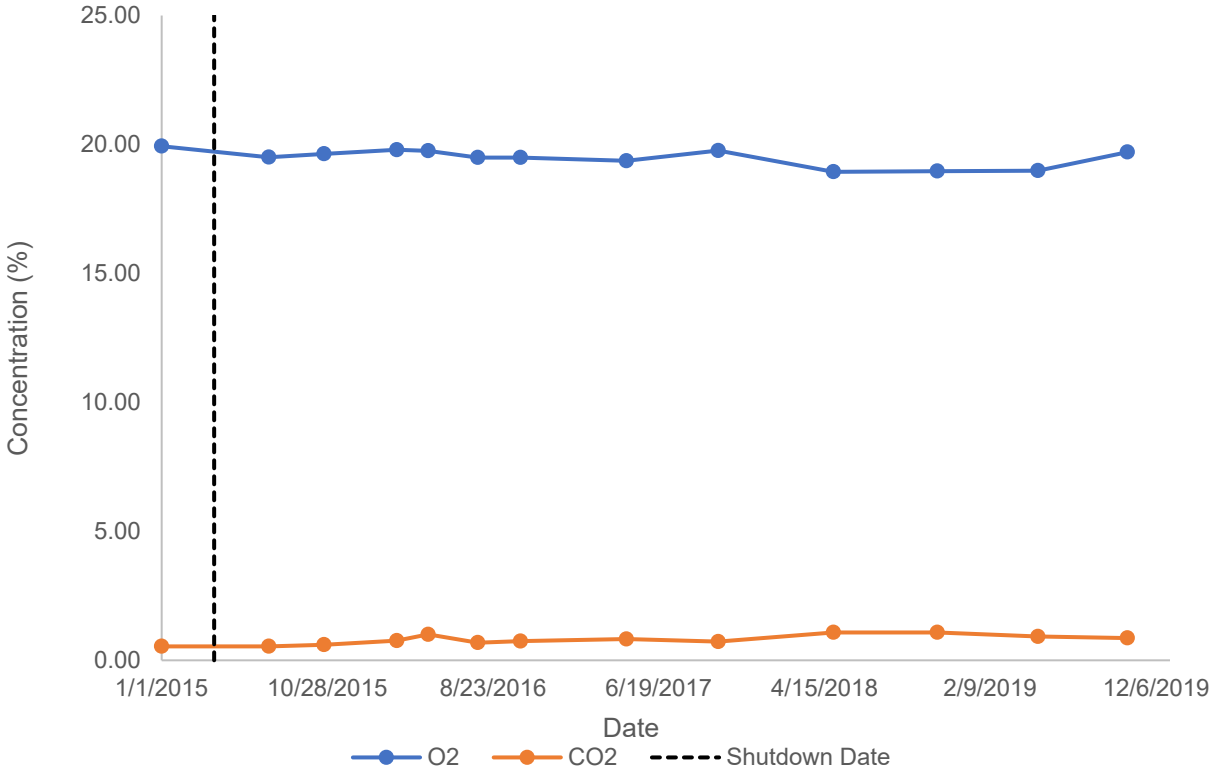
Well ID: KAFB-106111-250
Oxygen and Carbon Dioxide Concentrations Over Time



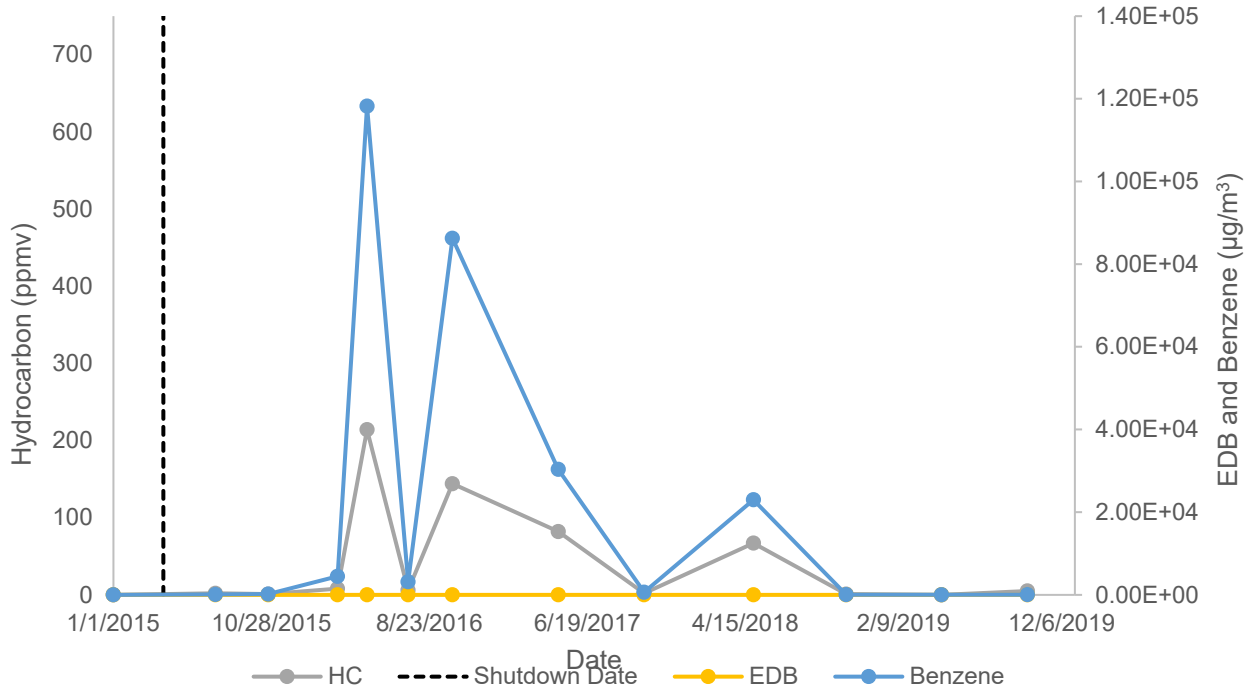
Well ID: KAFB-106112-250
Hydrocarbon, EDB, and Benzene Levels Over Time



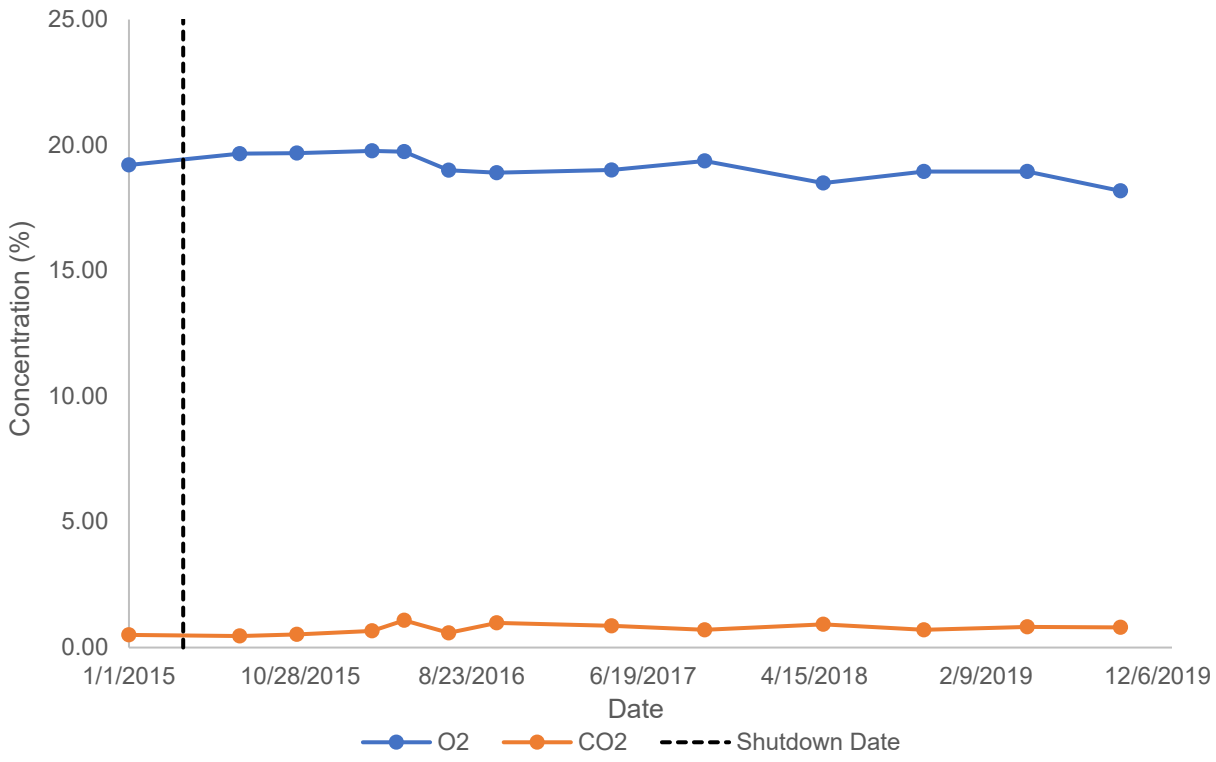
Well ID: KAFB-106112-250
Oxygen and Carbon Dioxide Concentrations Over Time



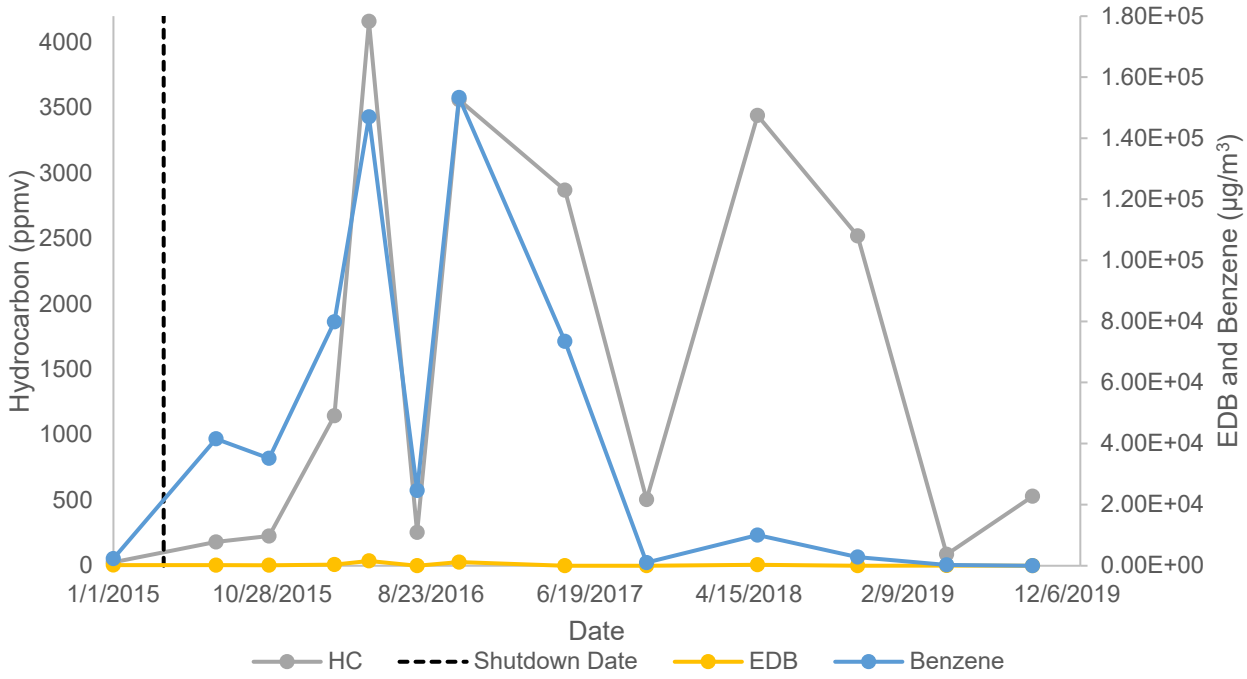
Well ID: KAFB-106116-250
Hydrocarbon, EDB, and Benzene Levels Over Time



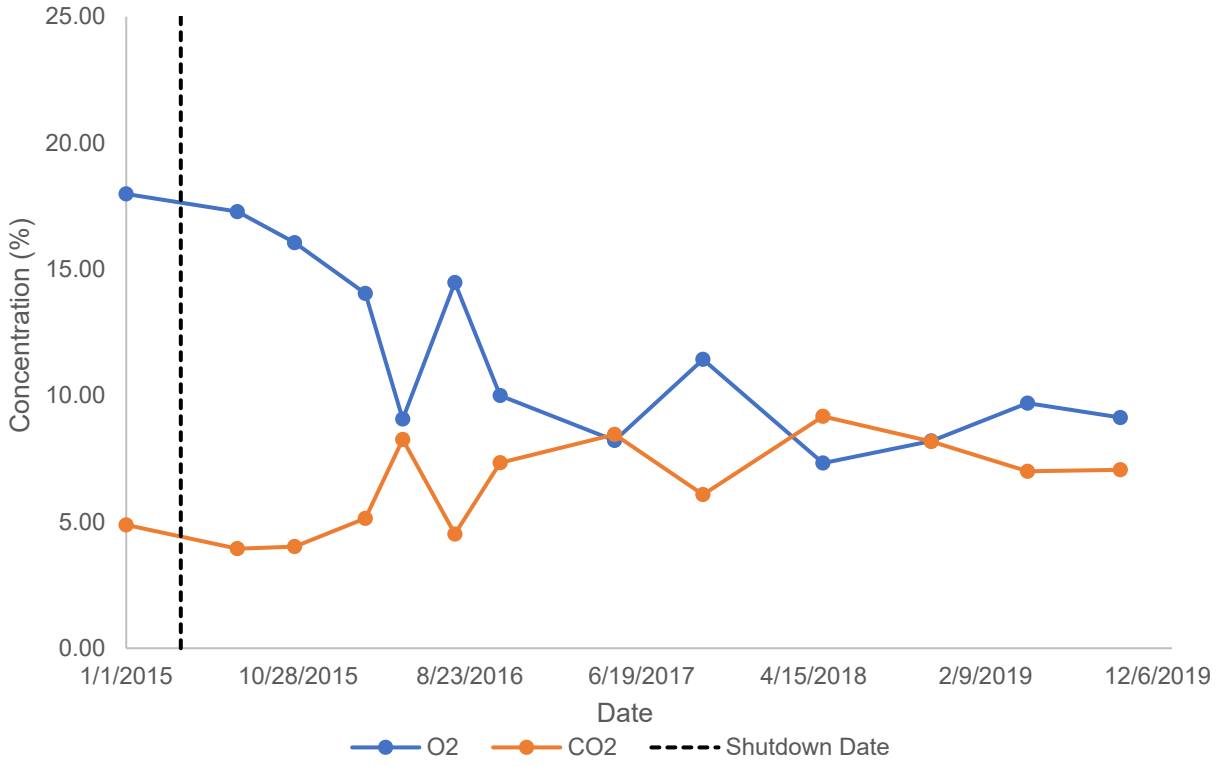
Well ID: KAFB-106116-250
Oxygen and Carbon Dioxide Concentrations Over Time



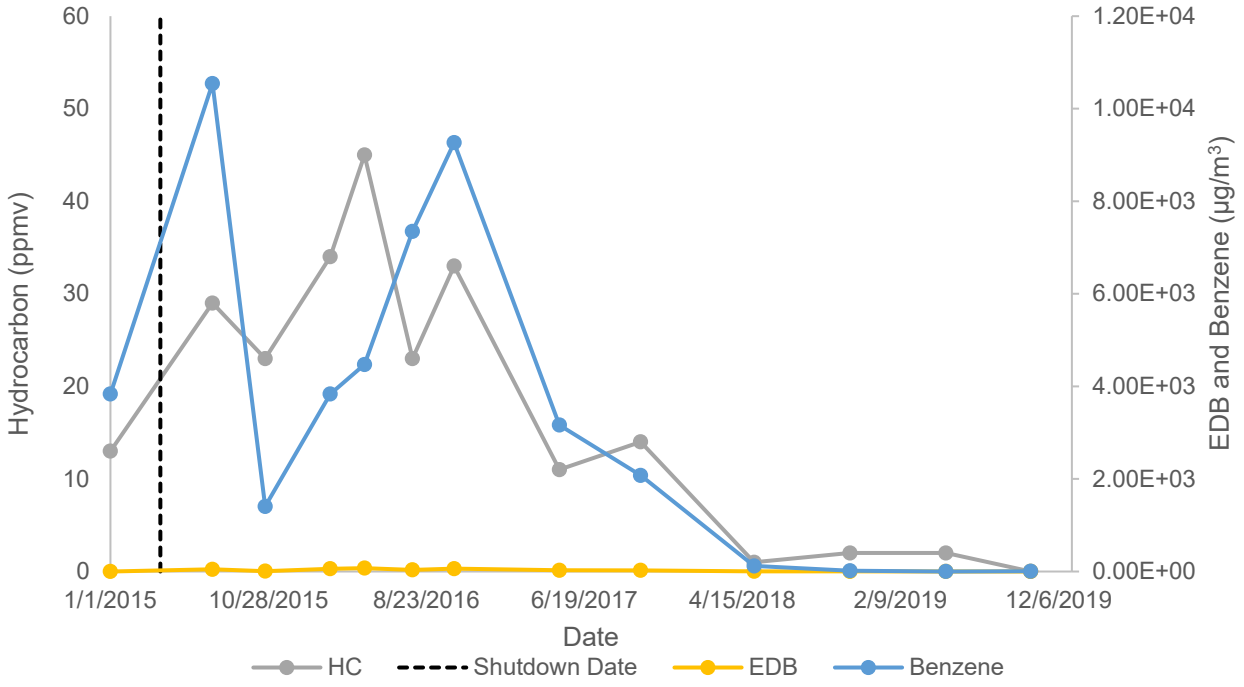
Well ID: KAFB-106117-250
Hydrocarbon, EDB, and Benzene Levels Over Time



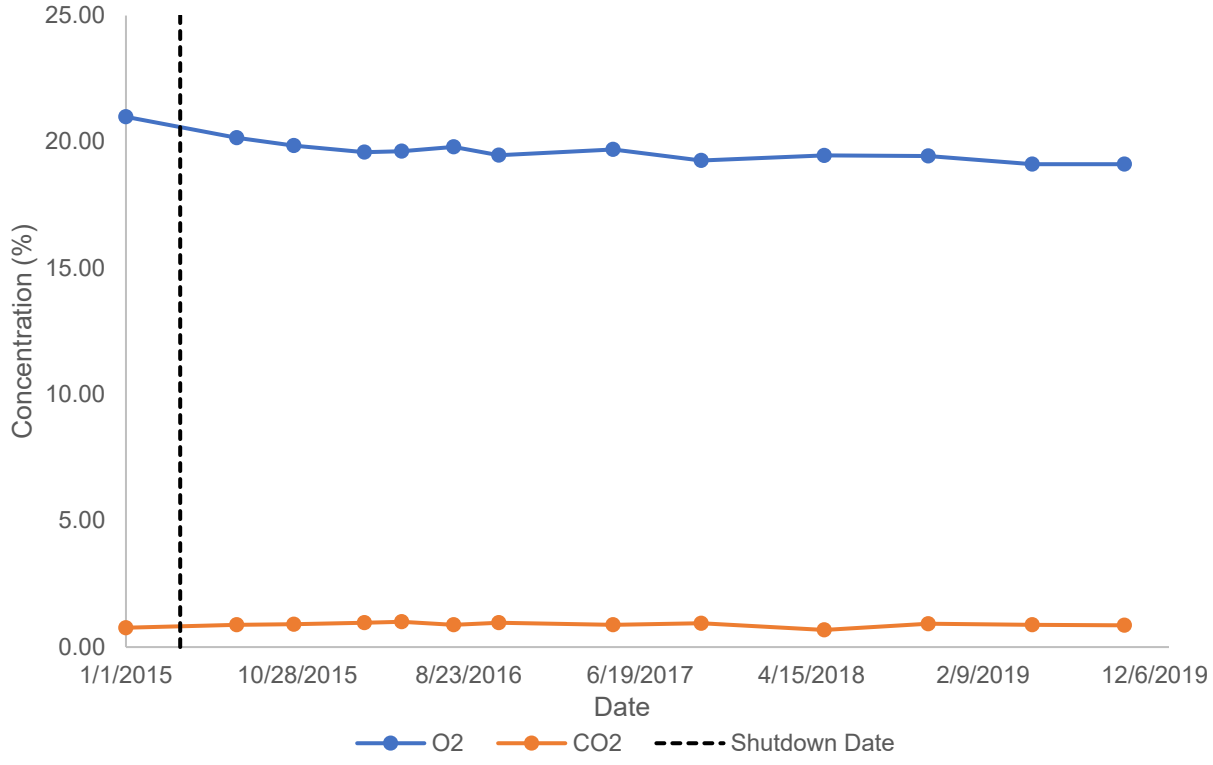
Well ID: KAFB-106117-250
Oxygen and Carbon Dioxide Concentrations Over Time



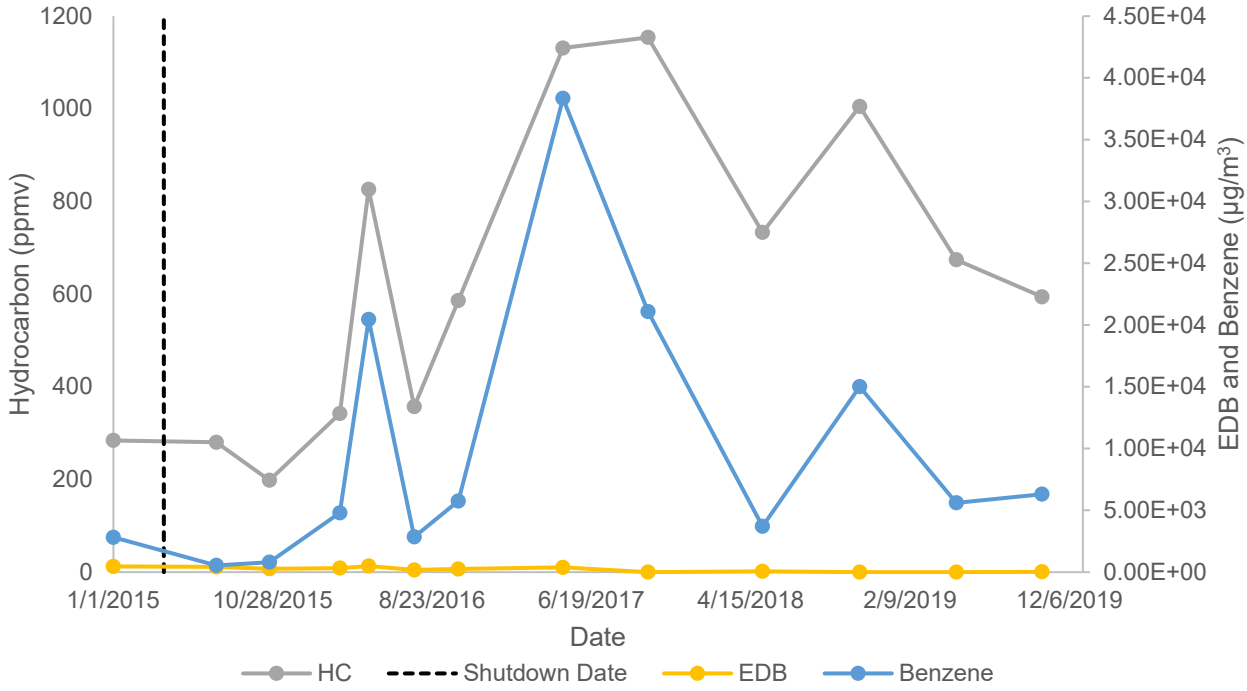
Well ID: KAFB-106118-265
Hydrocarbon, EDB, and Benzene Levels Over Time



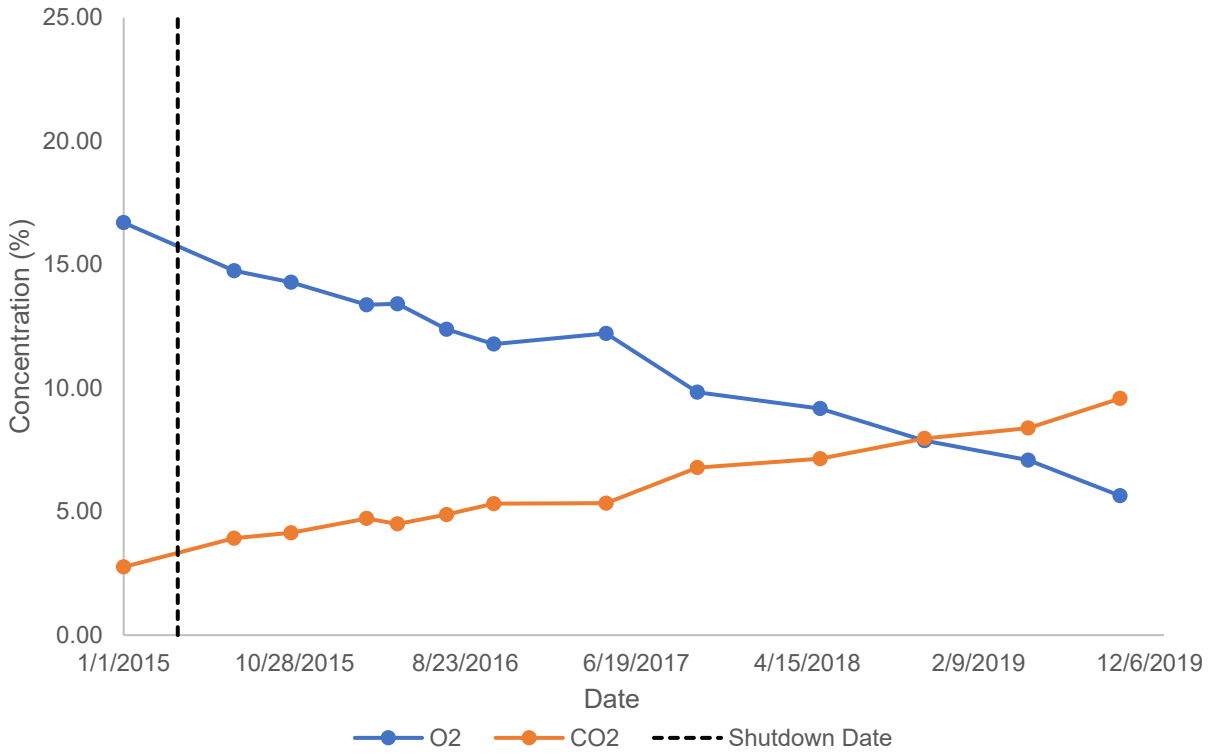
Well ID: KAFB-106118-265
Oxygen and Carbon Dioxide Concentrations Over Time



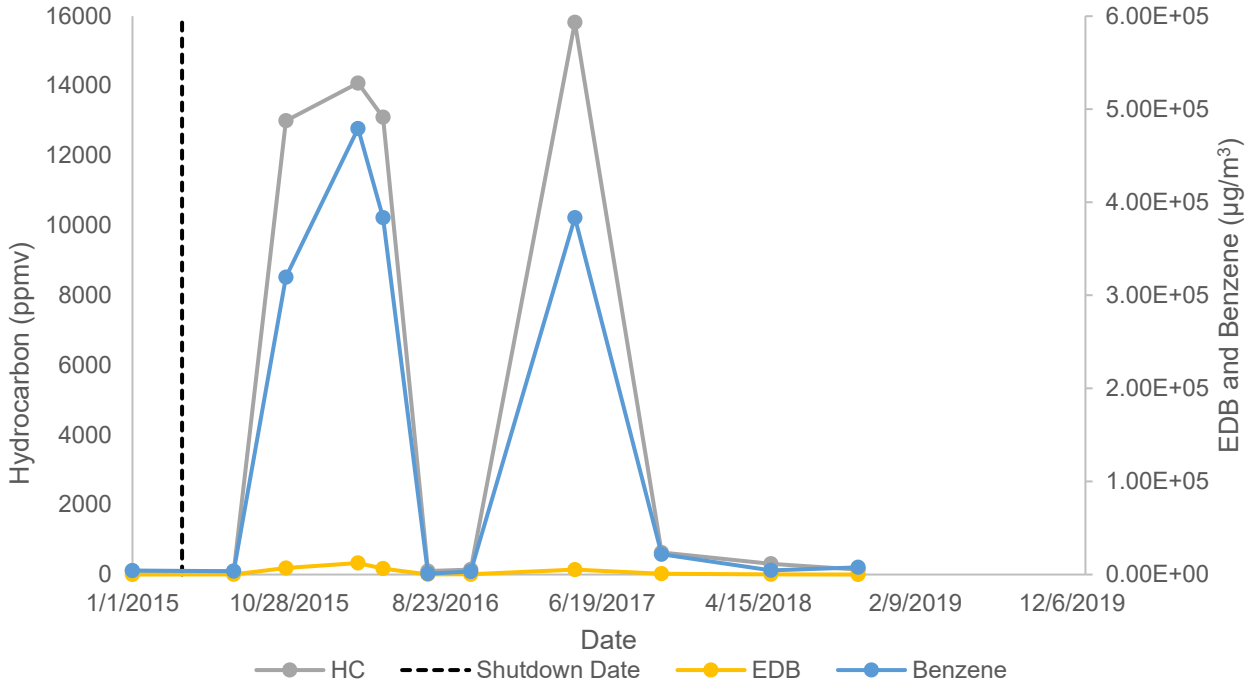
Well ID: KAFB-106119-250
Hydrocarbon, EDB, and Benzene Levels Over Time



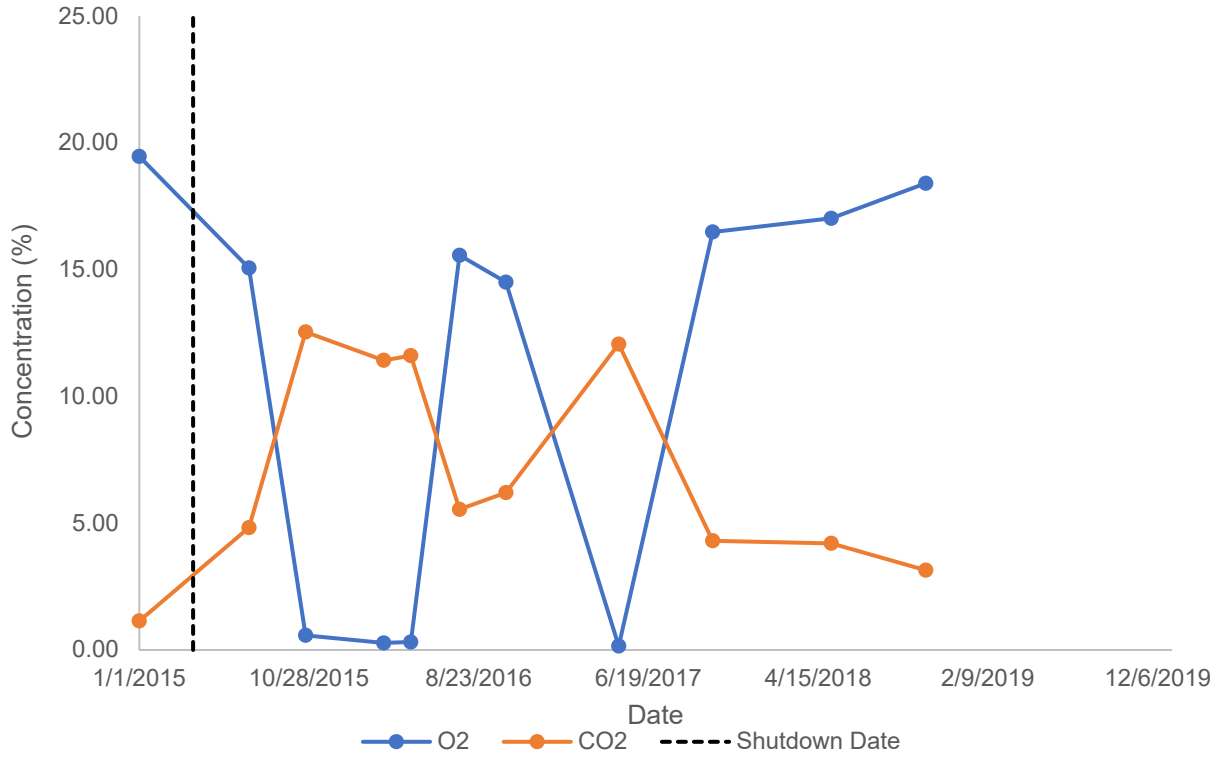
Well ID: KAFB-106119-250
Oxygen and Carbon Dioxide Concentrations Over Time



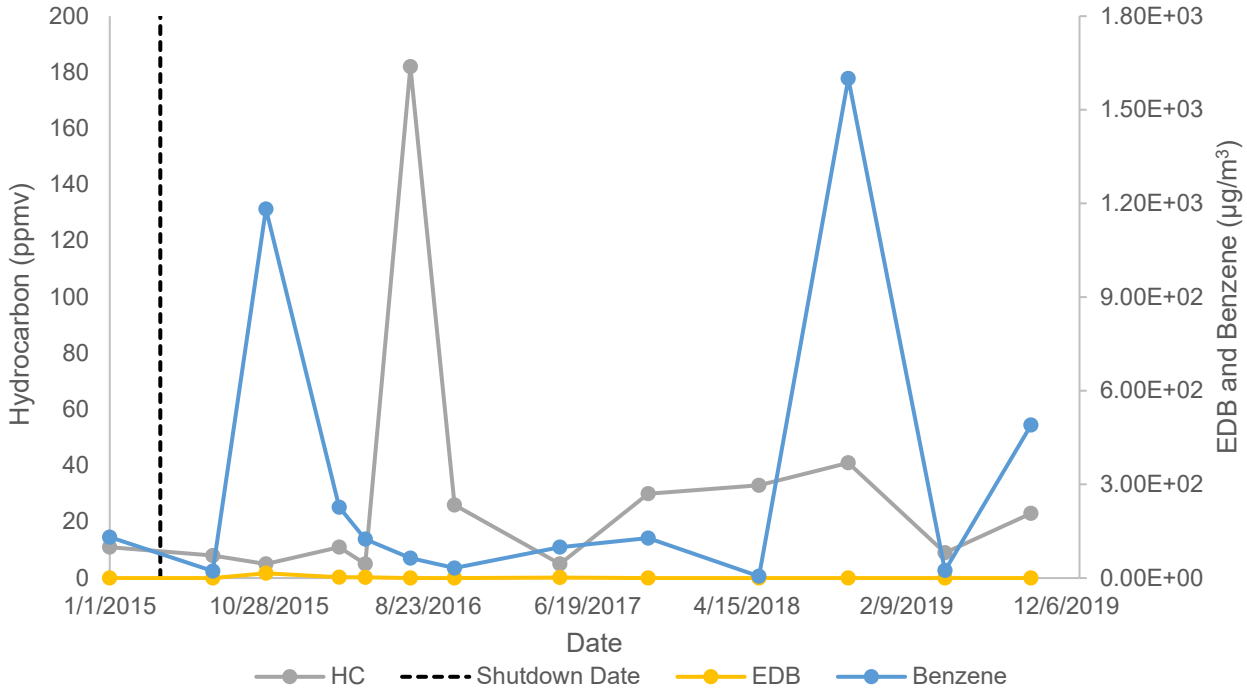
Well ID: SVEW-01-260
Hydrocarbon, EDB, and Benzene Levels Over Time



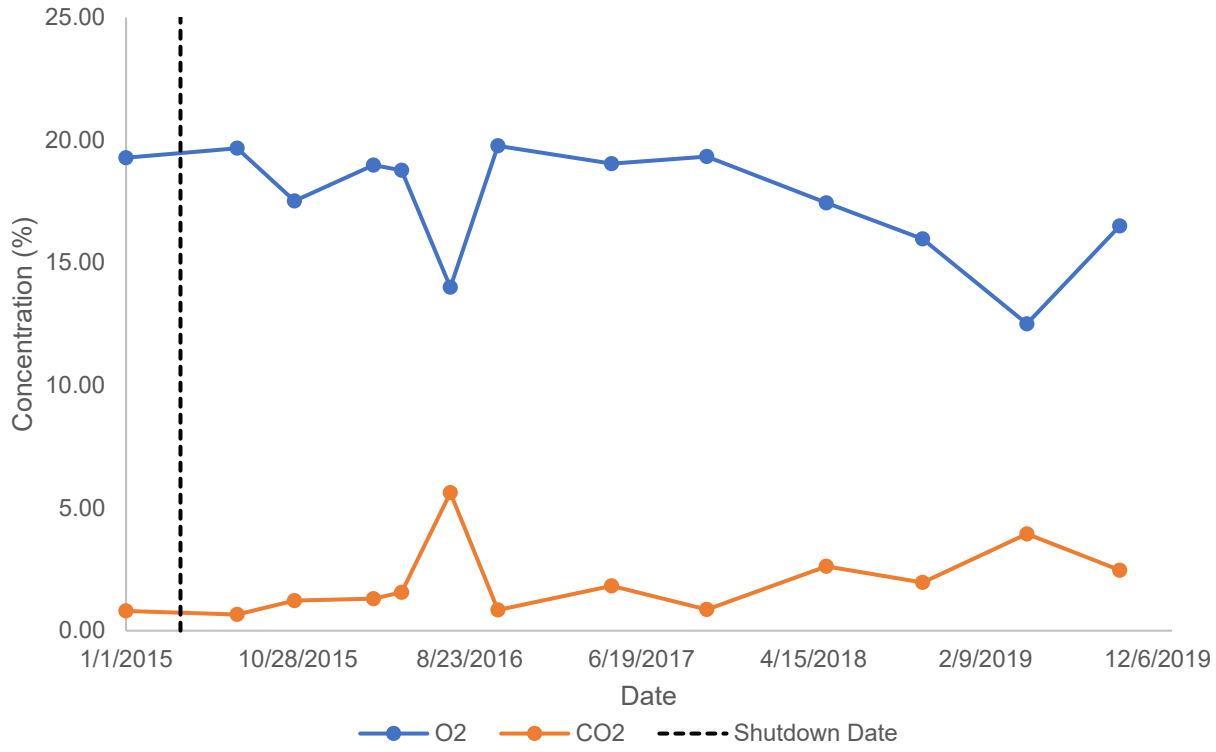
Well ID: SVEW-01-260
Oxygen and Carbon Dioxide Concentrations Over Time



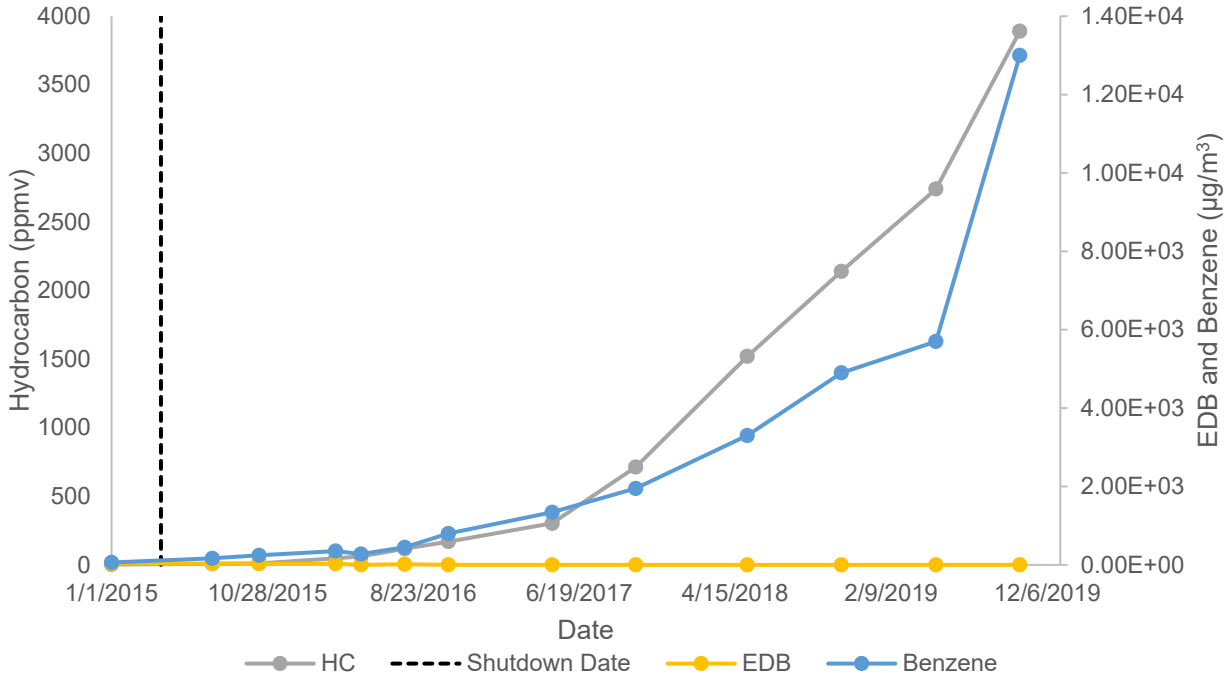
Well ID: SVEW-08-260
Hydrocarbon, EDB, and Benzene Levels Over Time



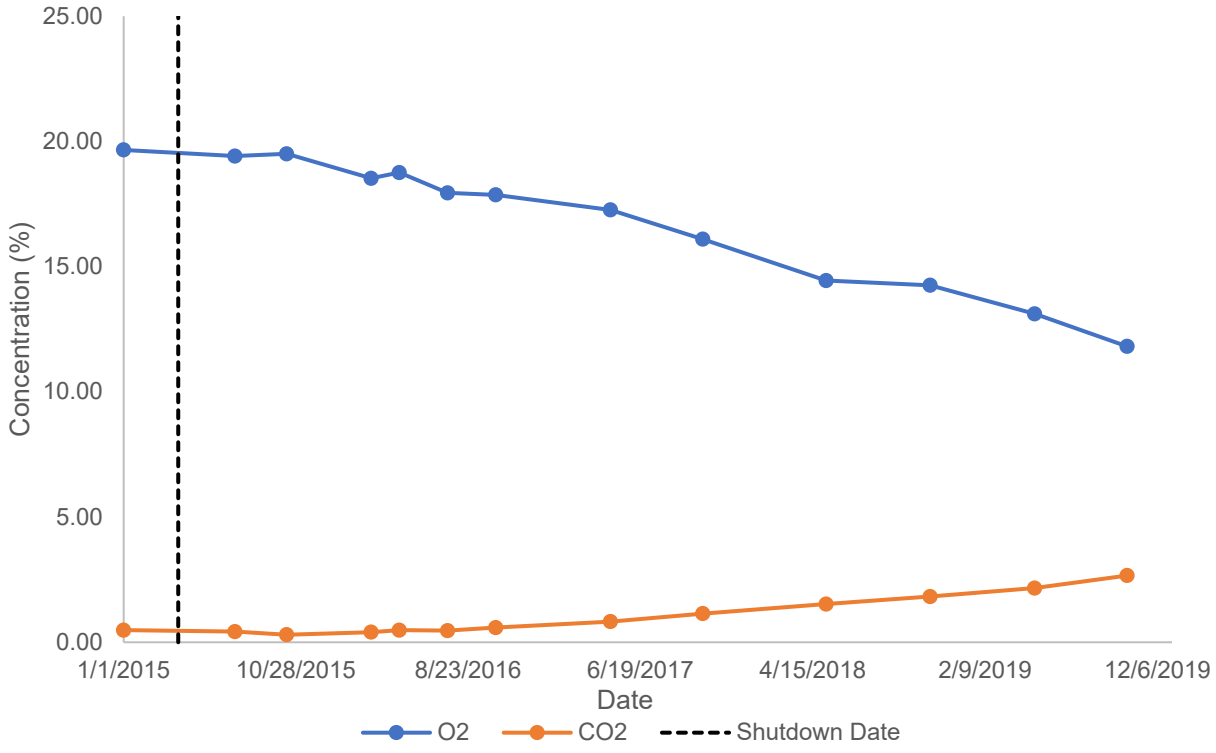
Well ID: SVEW-08-260
Oxygen and Carbon Dioxide Concentrations Over Time



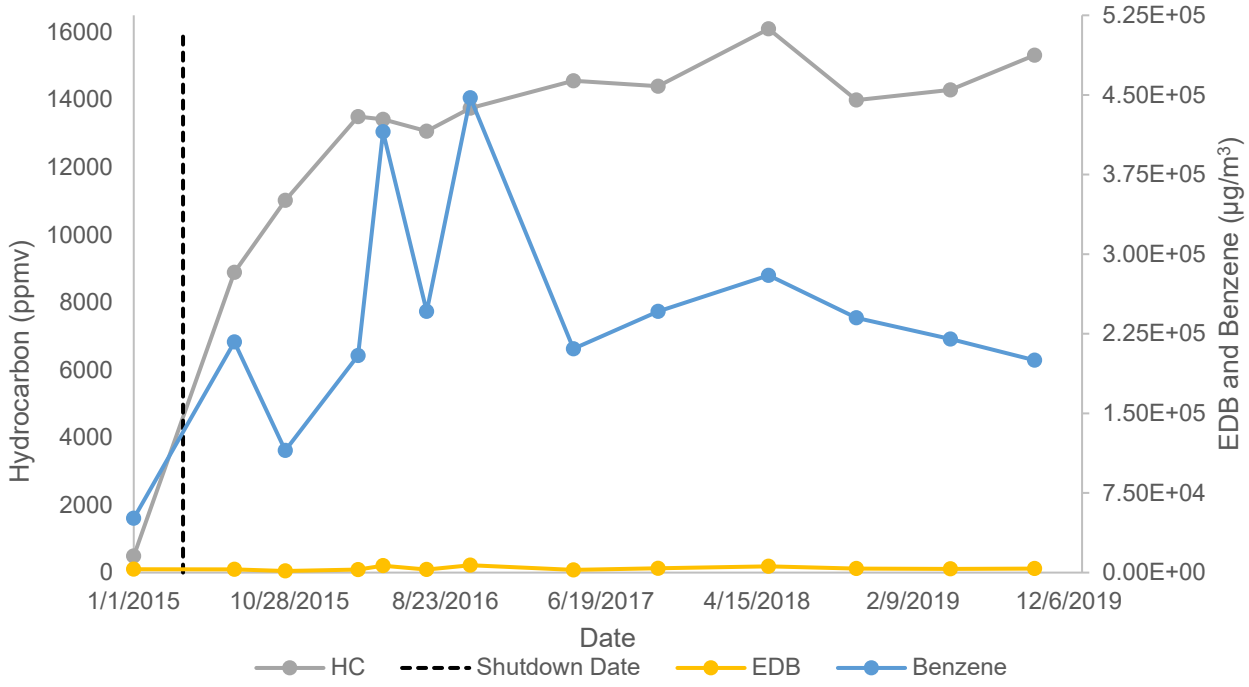
Well ID: SVMW-01-250
Hydrocarbon, EDB, and Benzene Levels Over Time



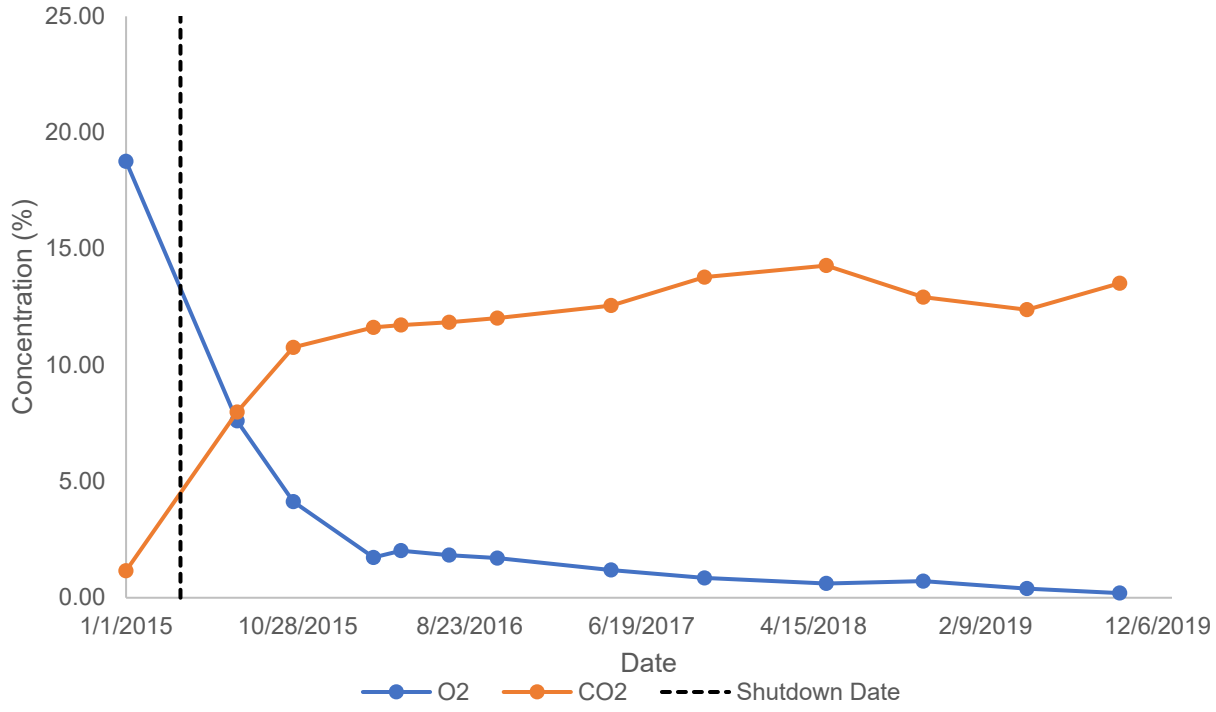
Well ID: SVMW-01-250
Oxygen and Carbon Dioxide Concentrations Over Time



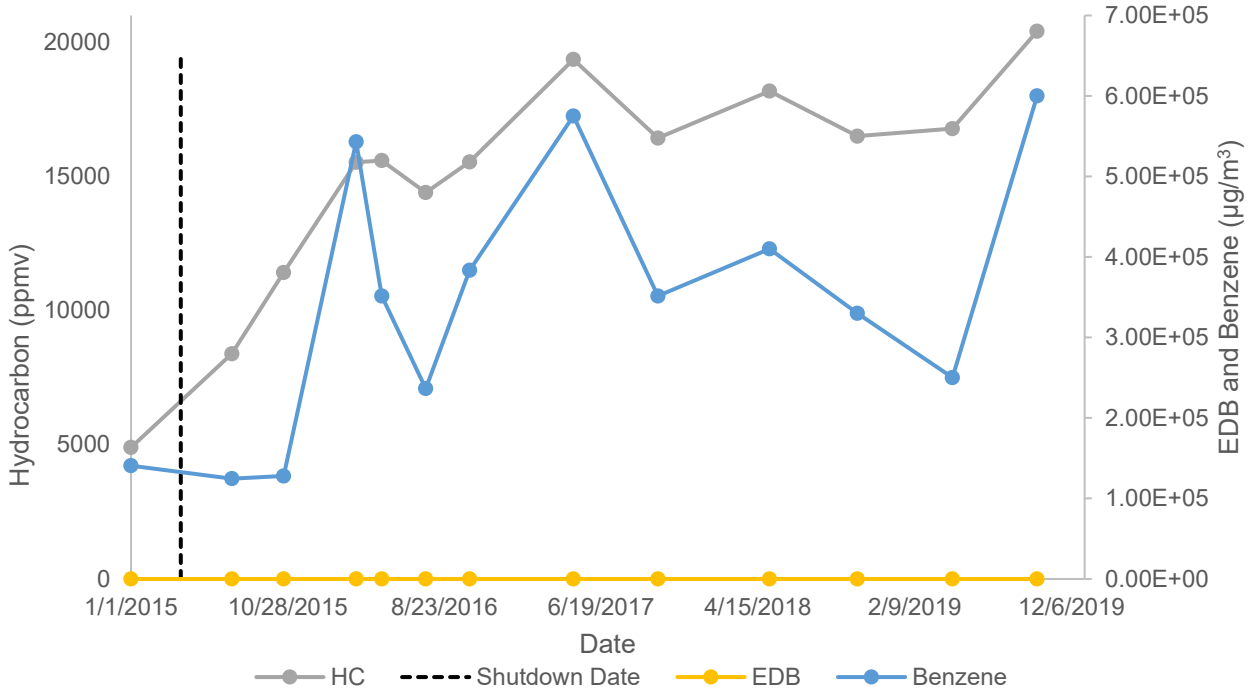
Well ID: SVMW-03-250
Hydrocarbon, EDB, and Benzene Levels Over Time



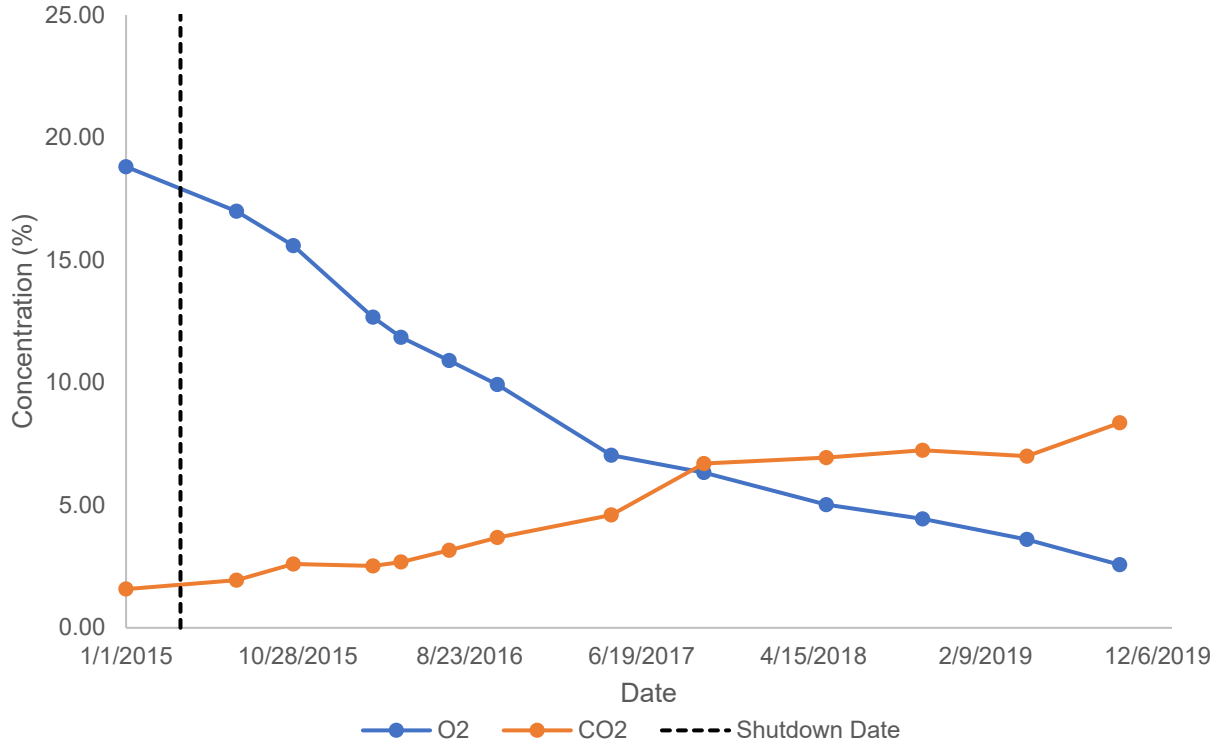
Well ID: SVMW-03-250
Oxygen and Carbon Dioxide Concentrations Over Time



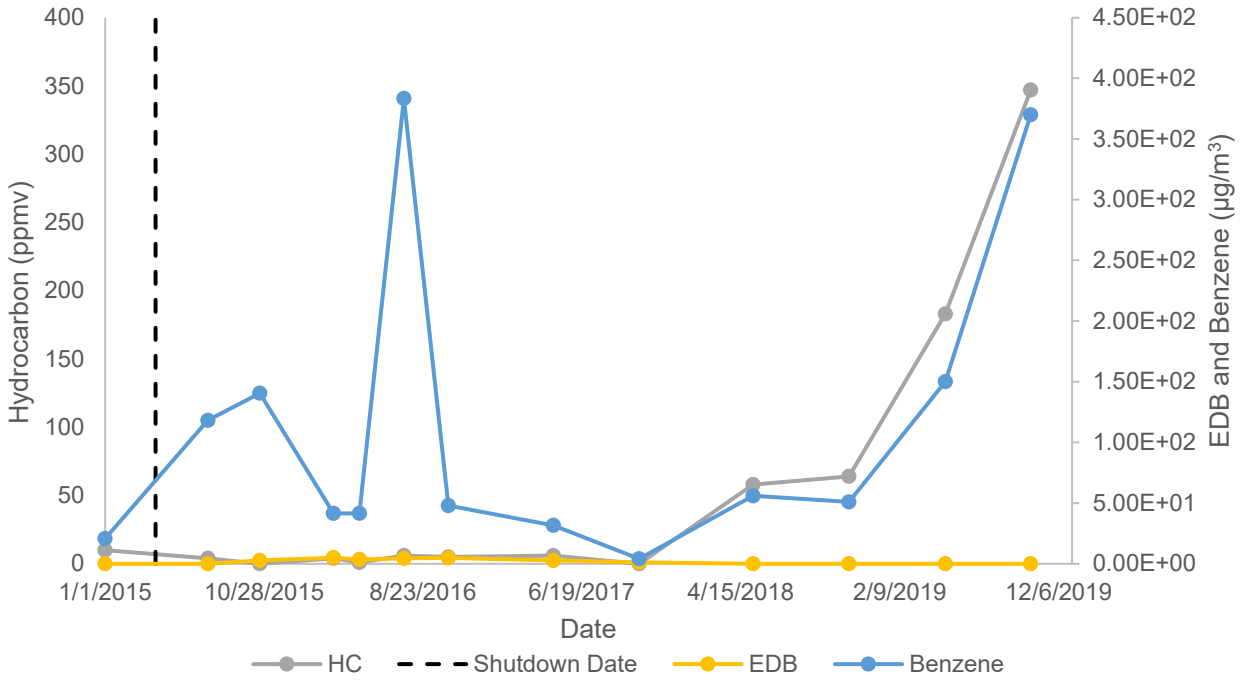
Well ID: SVMW-04-250
Hydrocarbon, EDB, and Benzene Levels Over Time



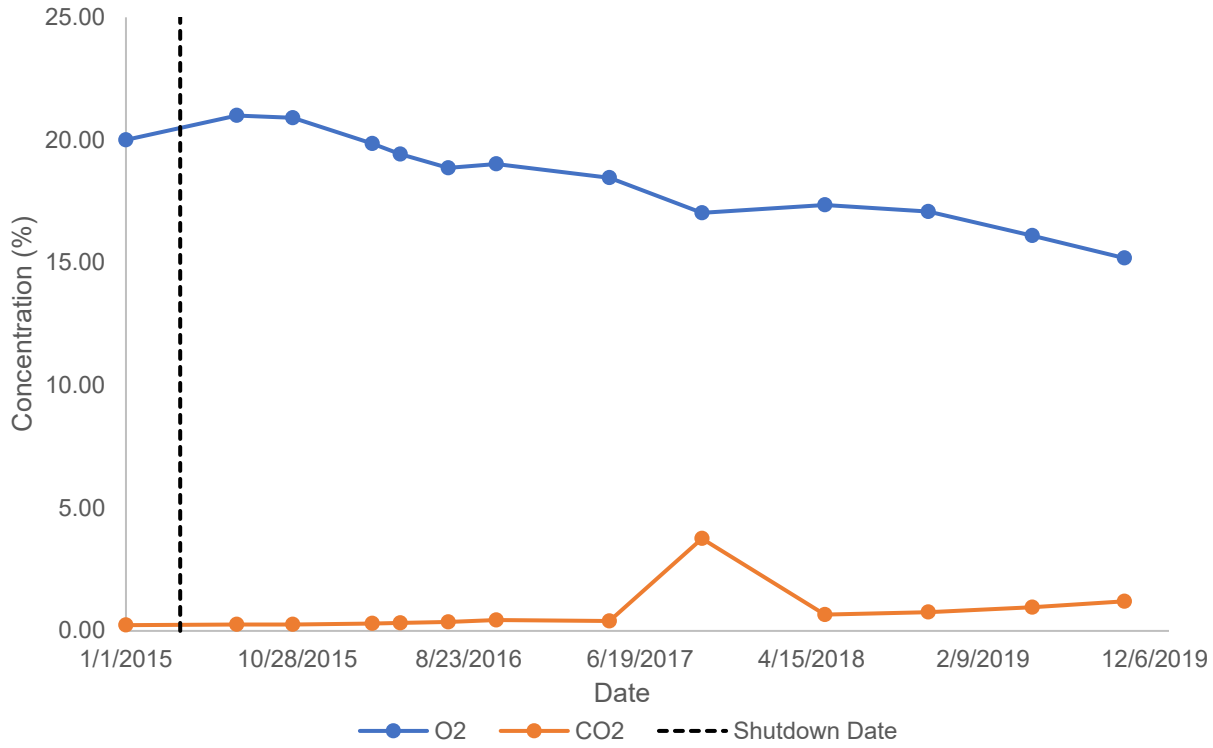
Well ID: SVMW-04-250
Oxygen and Carbon Dioxide Concentrations Over Time



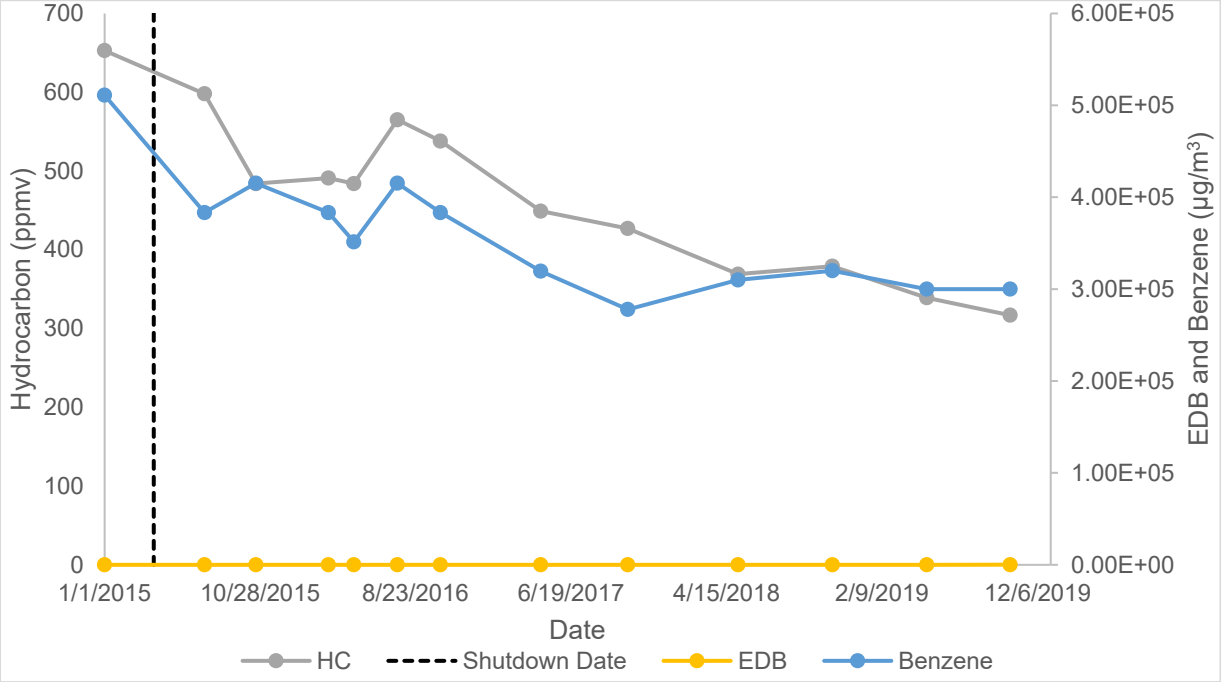
Well ID: SVMW-05-230
Hydrocarbon, EDB, and Benzene Levels Over Time



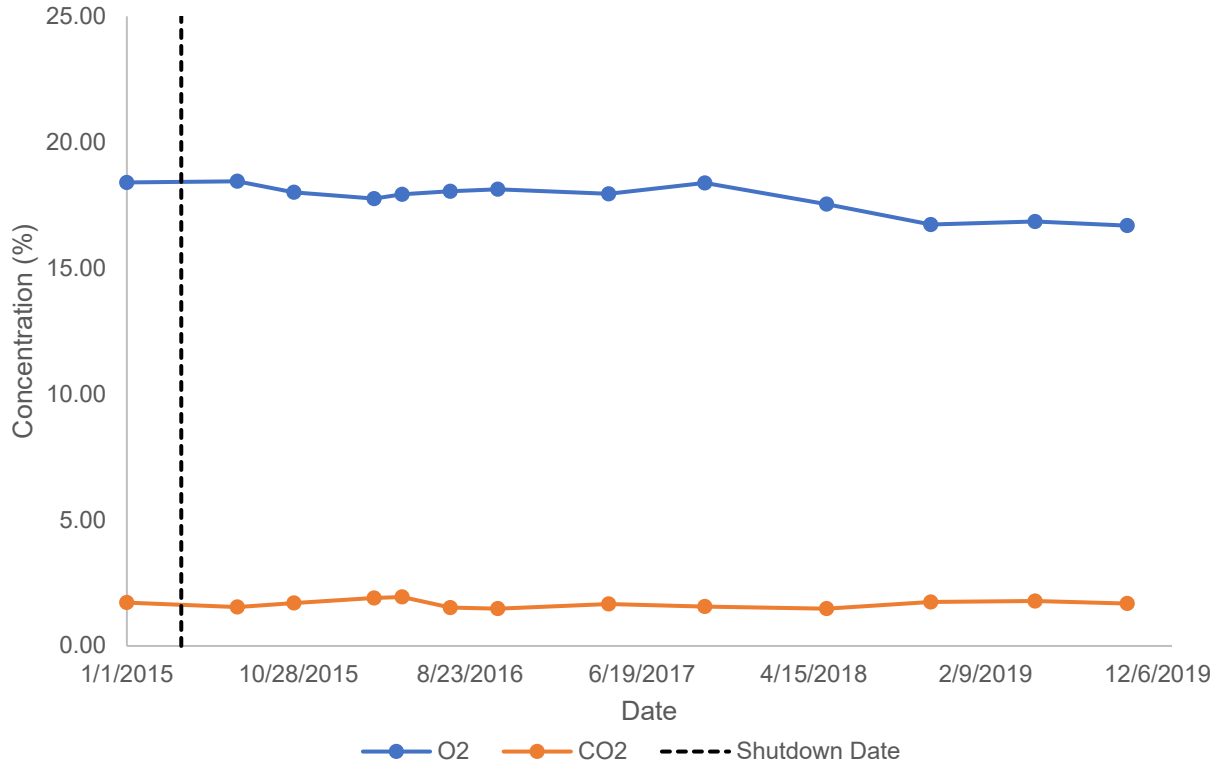
Well ID: SVMW-05-230
Oxygen and Carbon Dioxide Concentrations Over Time



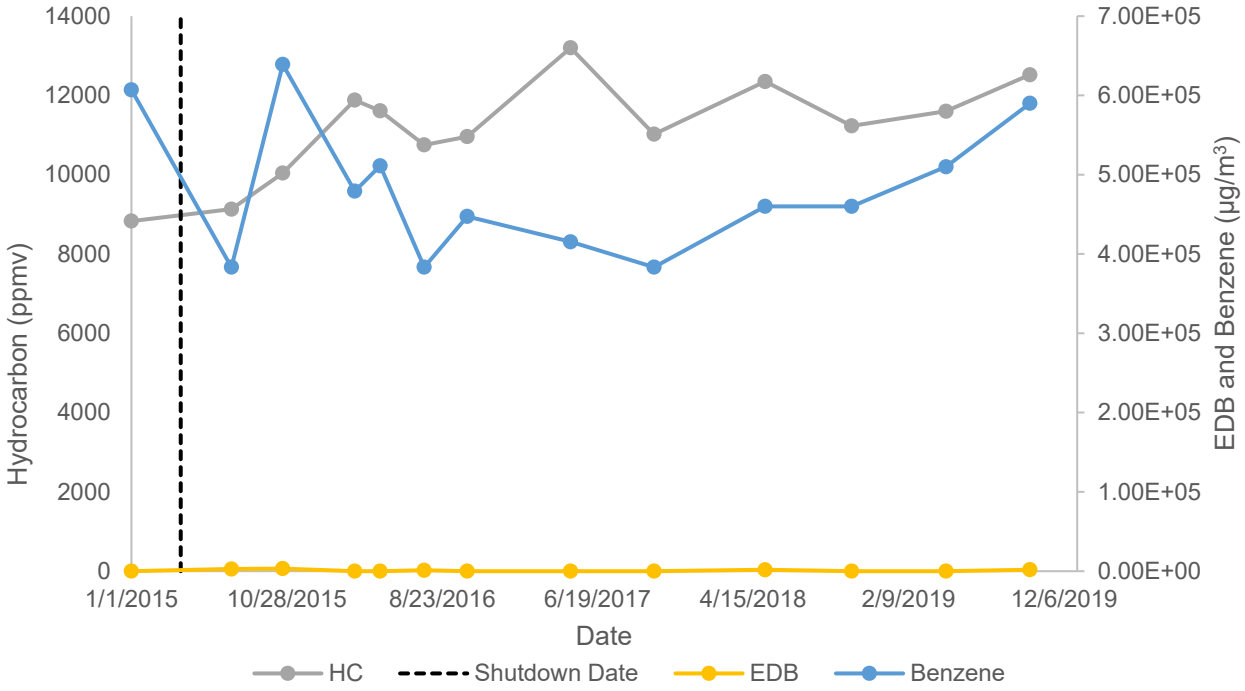
Well ID: SVMW-06-252
Hydrocarbon, EDB, and Benzene Levels Over Time



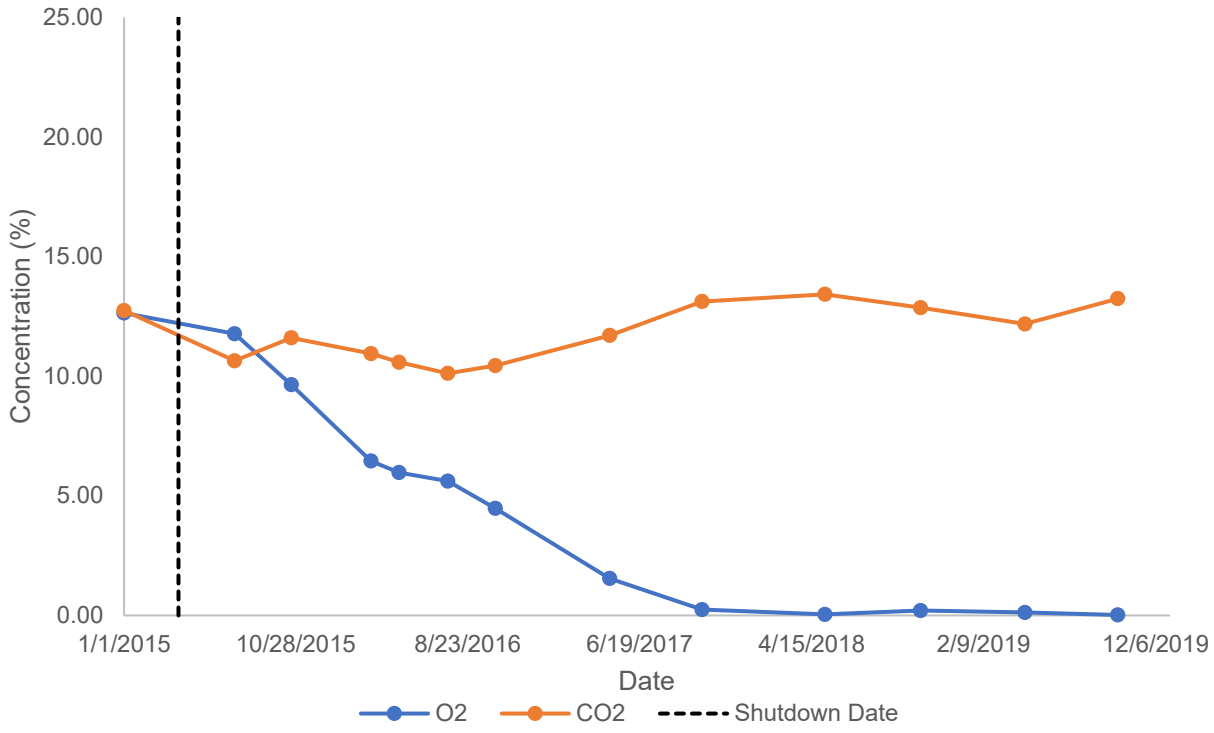
Well ID: SVMW-06-252
Oxygen and Carbon Dioxide Concentrations Over Time



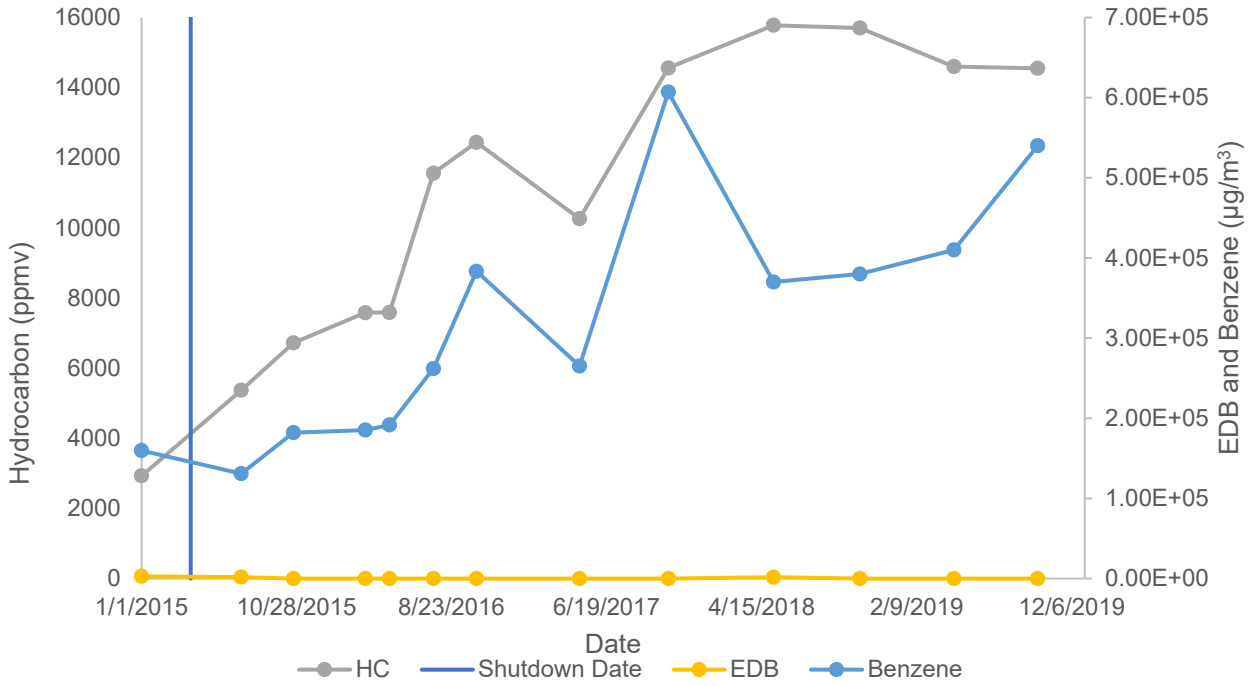
Well ID: SVMW-08-250
Hydrocarbon, EDB, and Benzene Levels Over Time



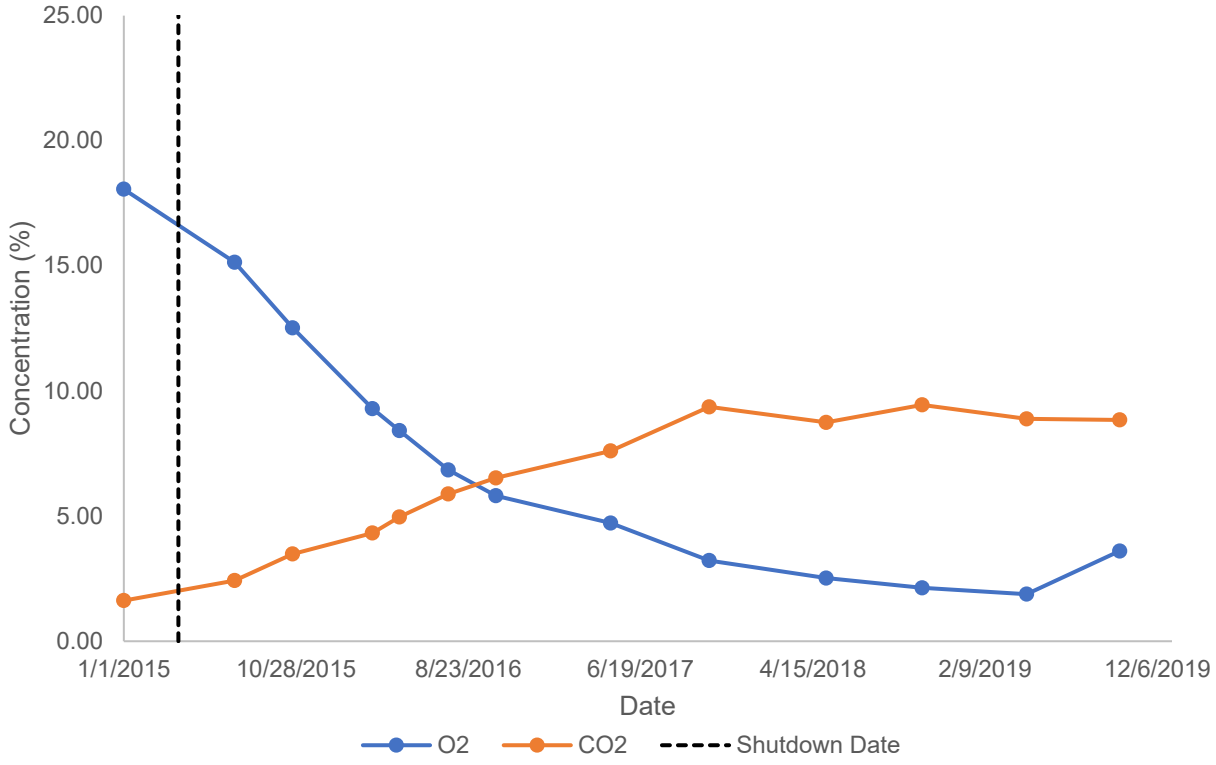
Well ID: SVMW-08-250
Oxygen and Carbon Dioxide Concentrations Over Time



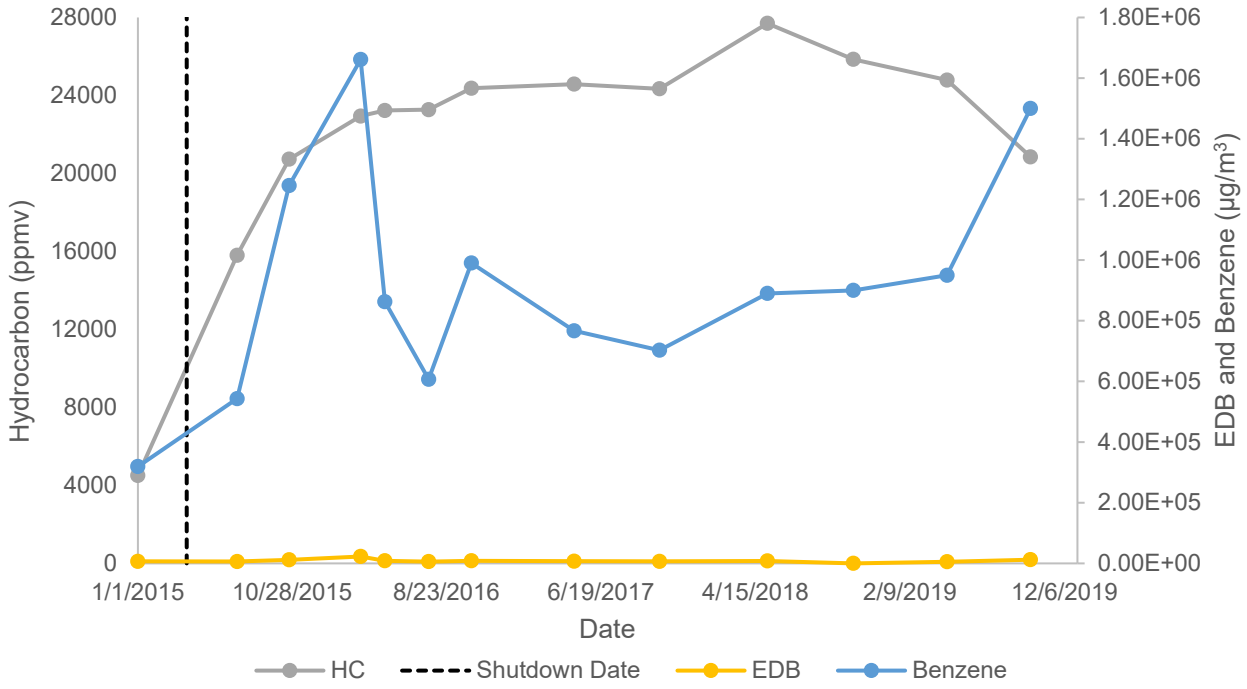
Well ID: SVMW-09-250
Hydrocarbon, EDB, and Benzene Levels Over Time



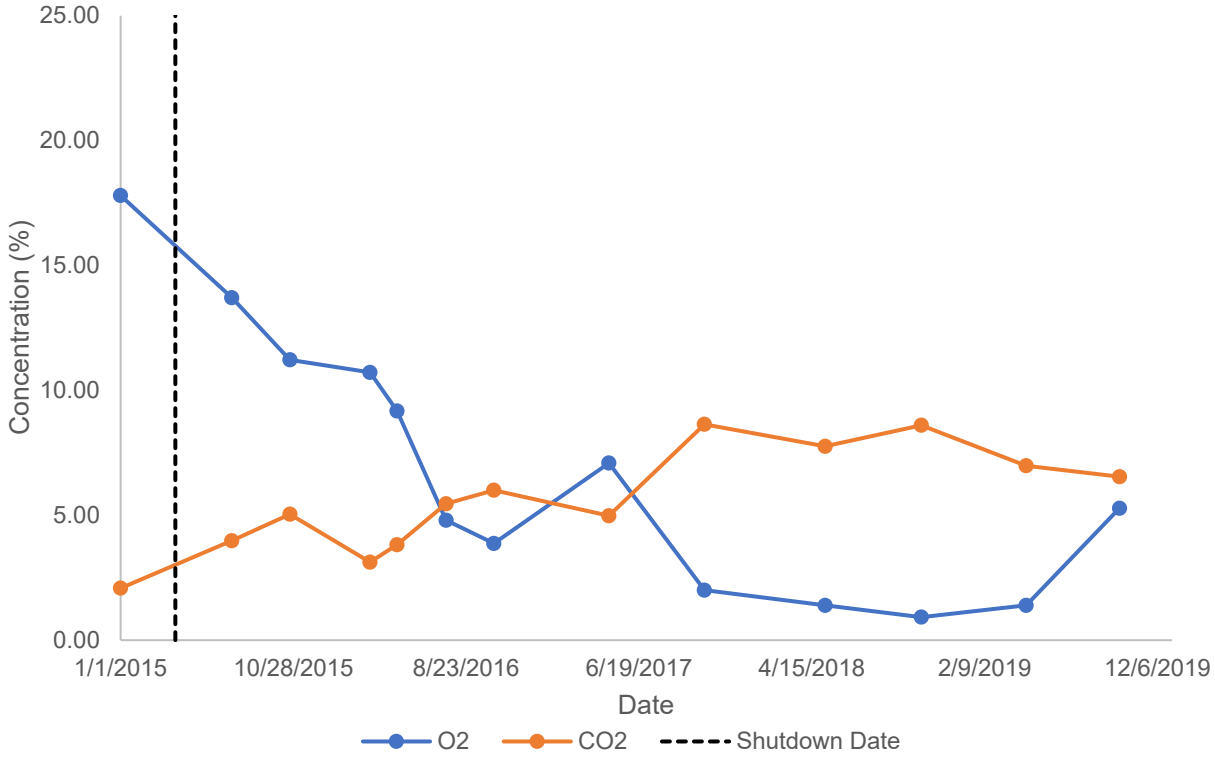
Well ID: SVMW-09-250
Oxygen and Carbon Dioxide Concentrations Over Time



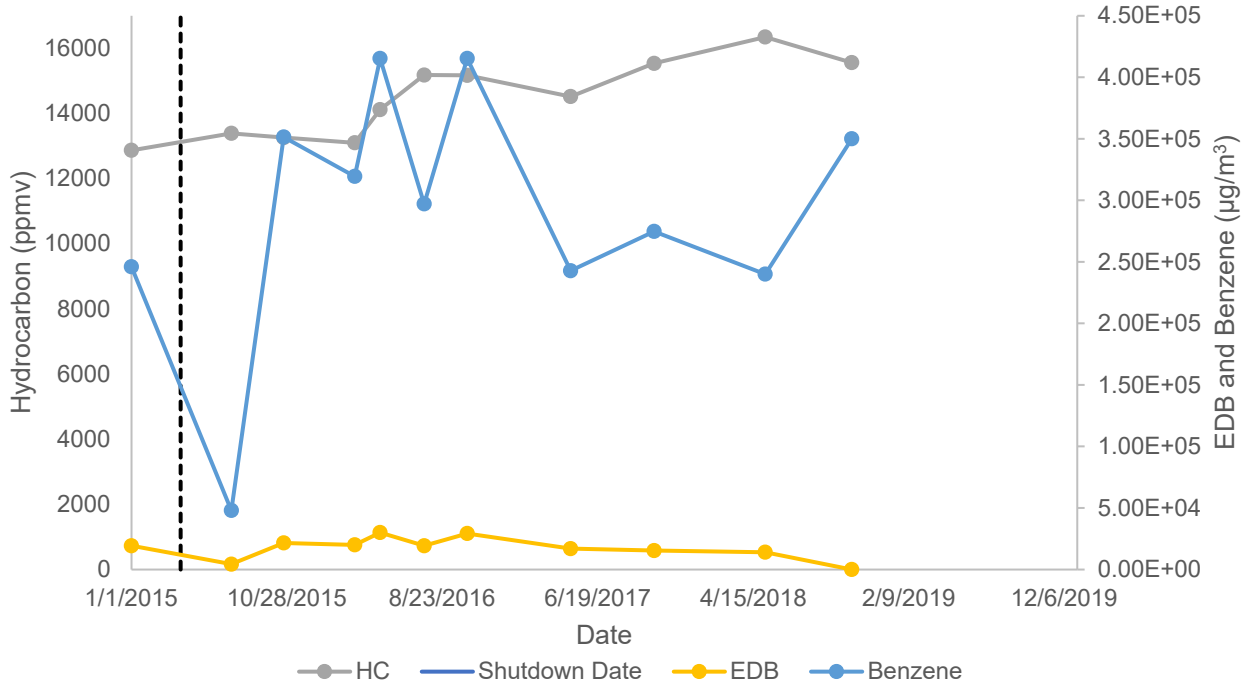
Well ID: SVMW-09-266
Hydrocarbon, EDB, and Benzene Levels Over Time



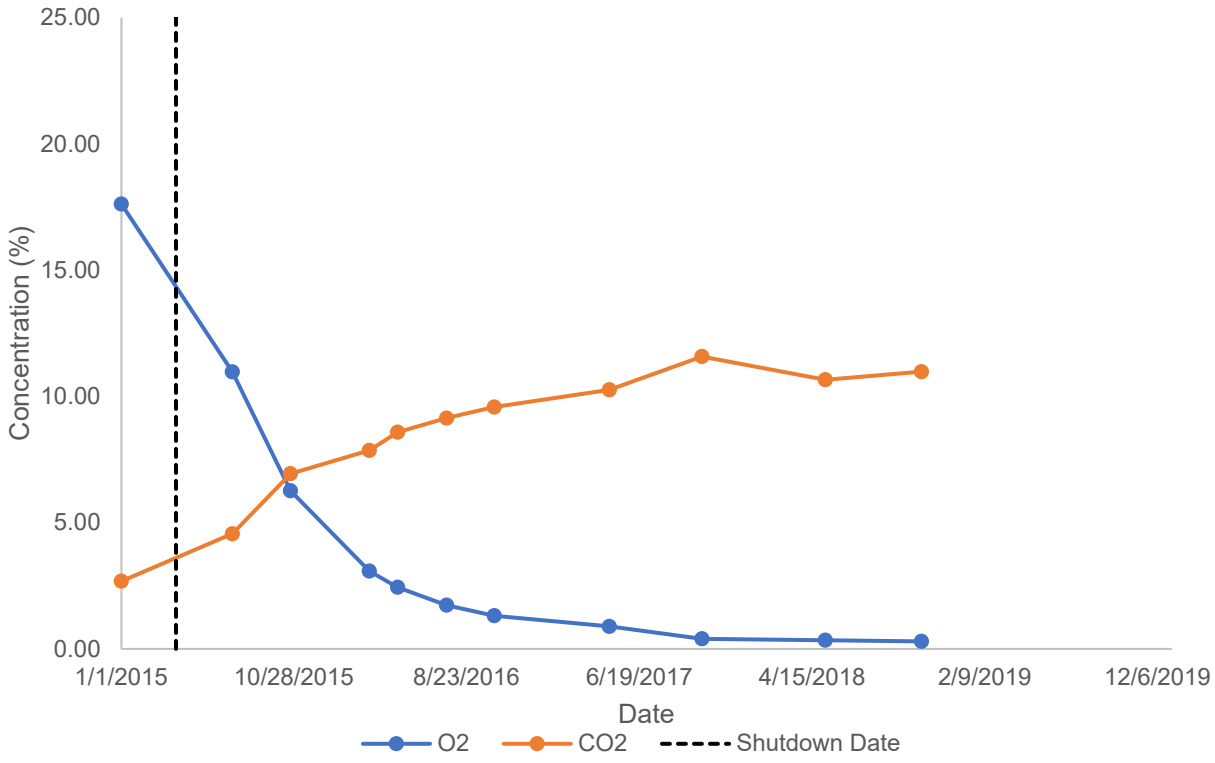
Well ID: SVMW-09-266
Oxygen and Carbon Dioxide Concentrations Over Time



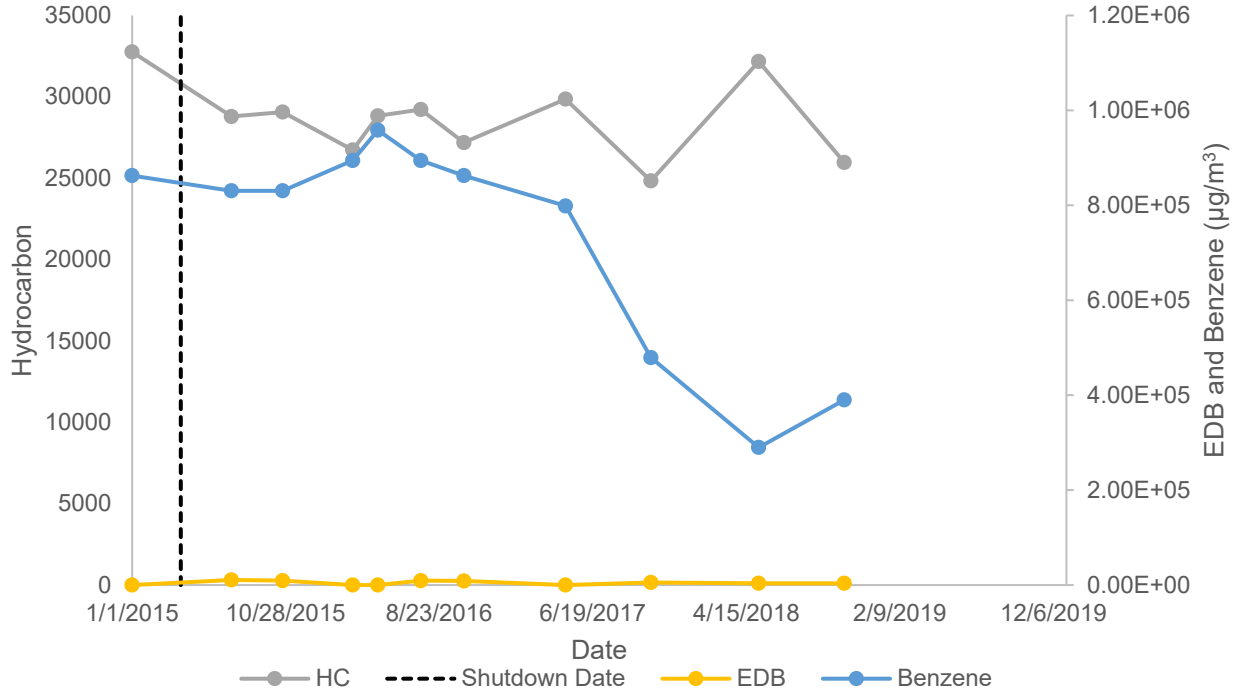
Well ID: SVMW-10-250
Hydrocarbon, EDB, and Benzene Levels Over Time



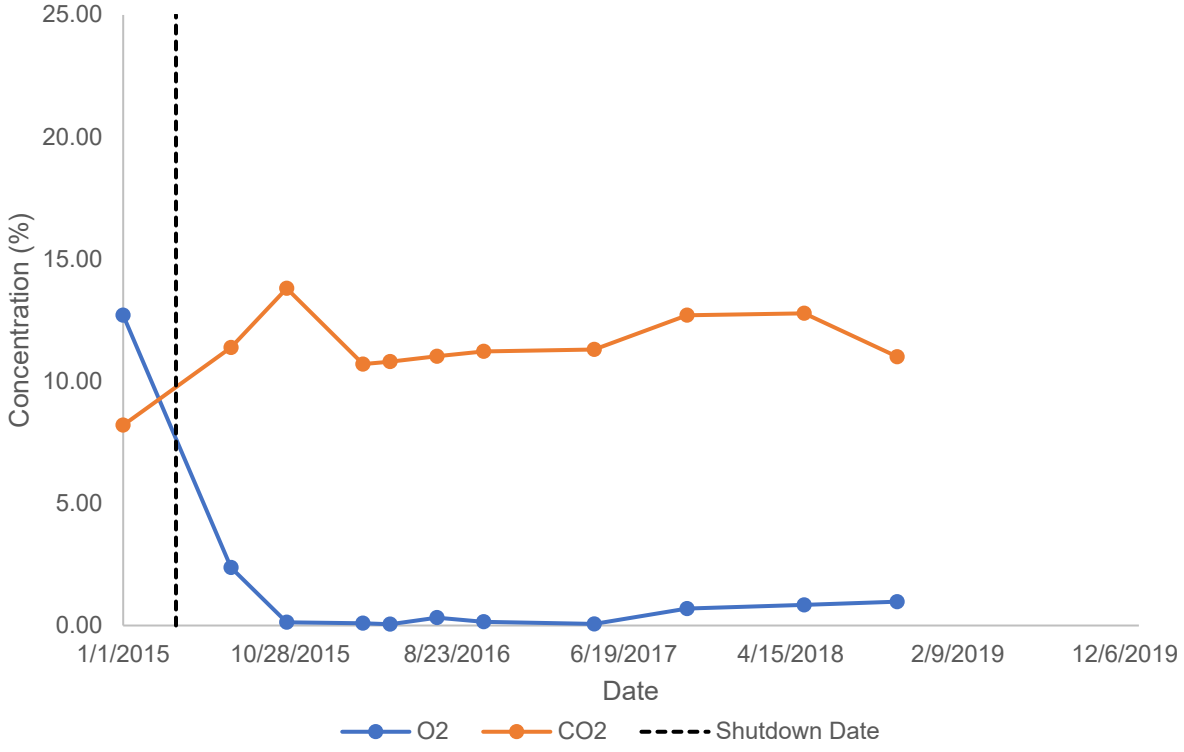
Well ID: SVMW-10-250
Oxygen and Carbon Dioxide Concentrations Over Time



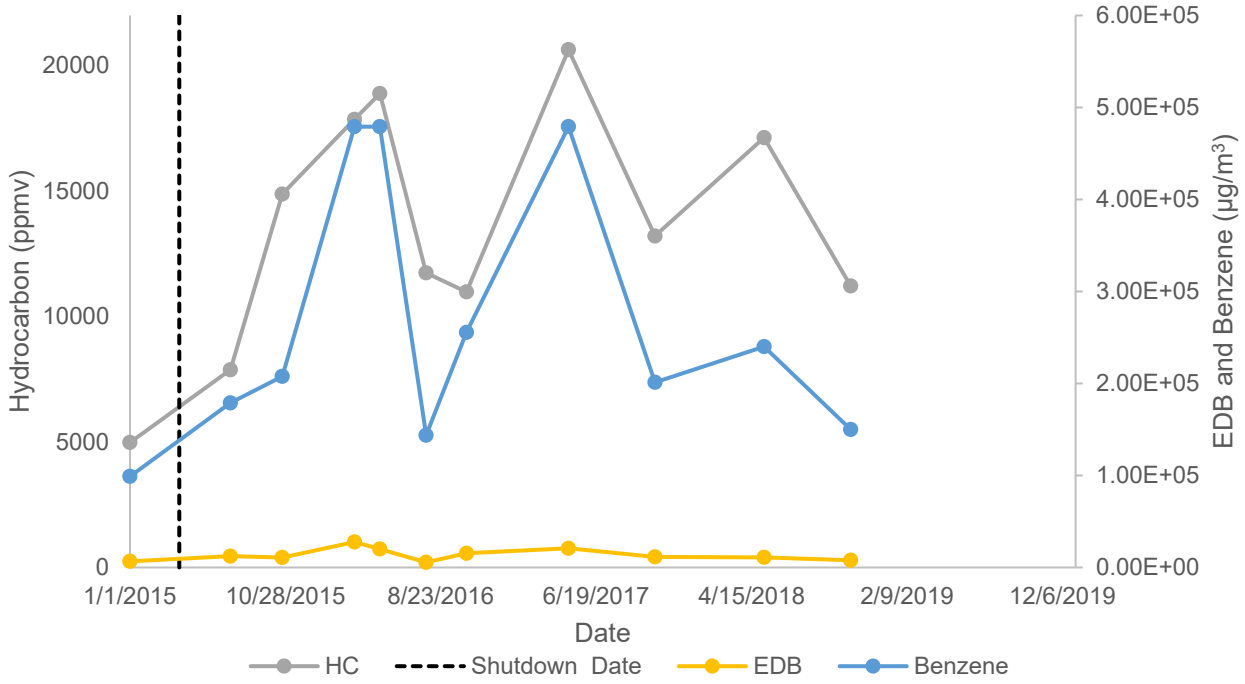
Well ID: SVMW-11-250
Hydrocarbon, EDB, and Benzene Levels Over Time



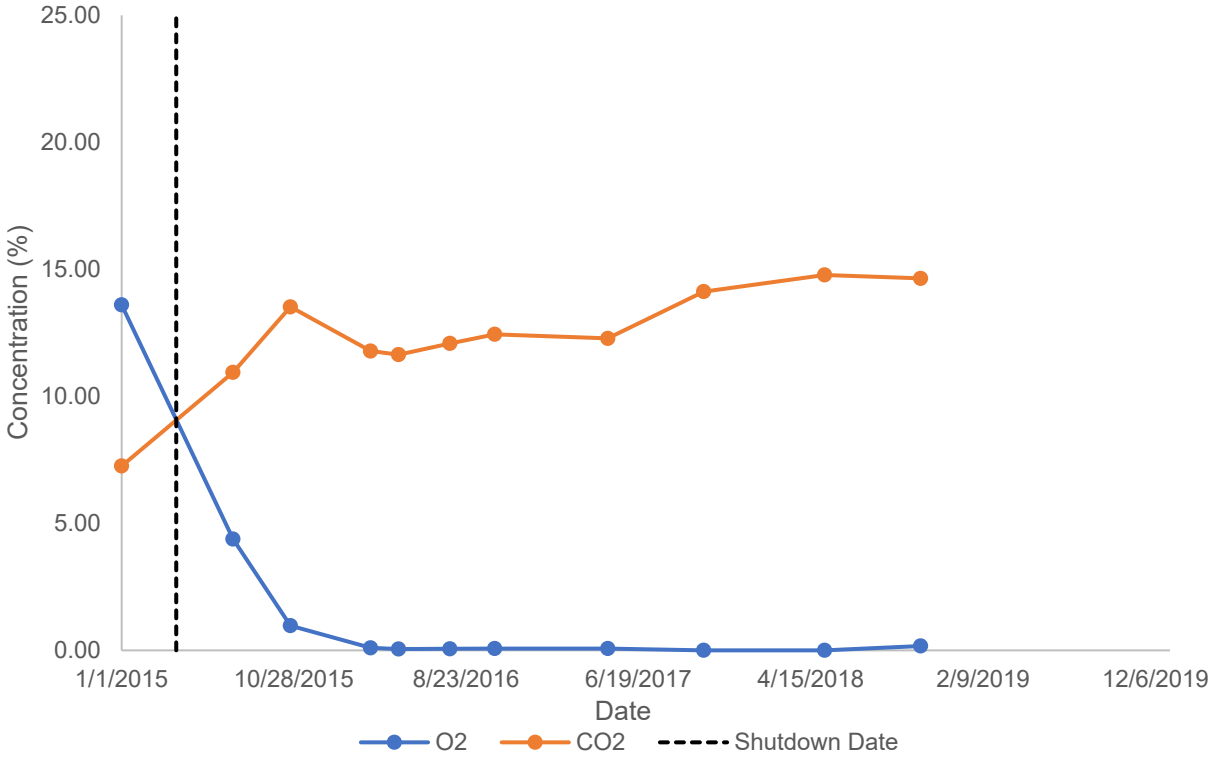
Well ID: SVMW-11-250
Oxygen and Carbon Dioxide Concentrations Over Time



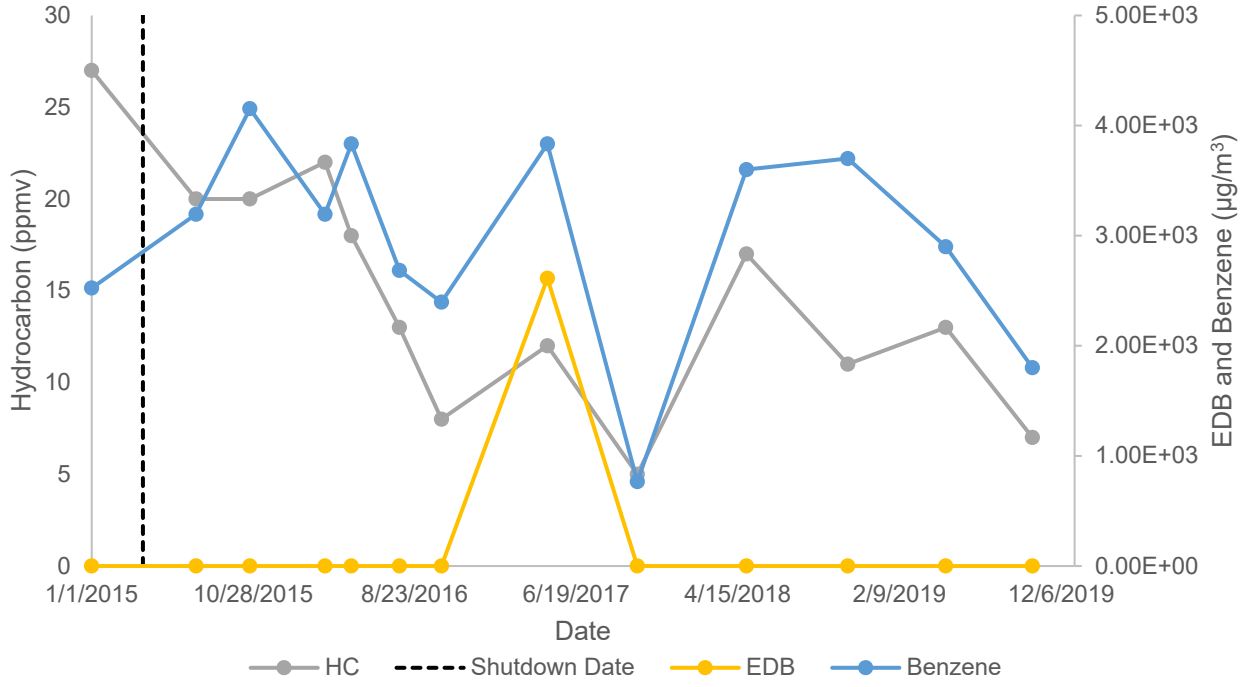
Well ID: SVMW-11-260
Hydrocarbon, EDB, and Benzene Levels Over Time



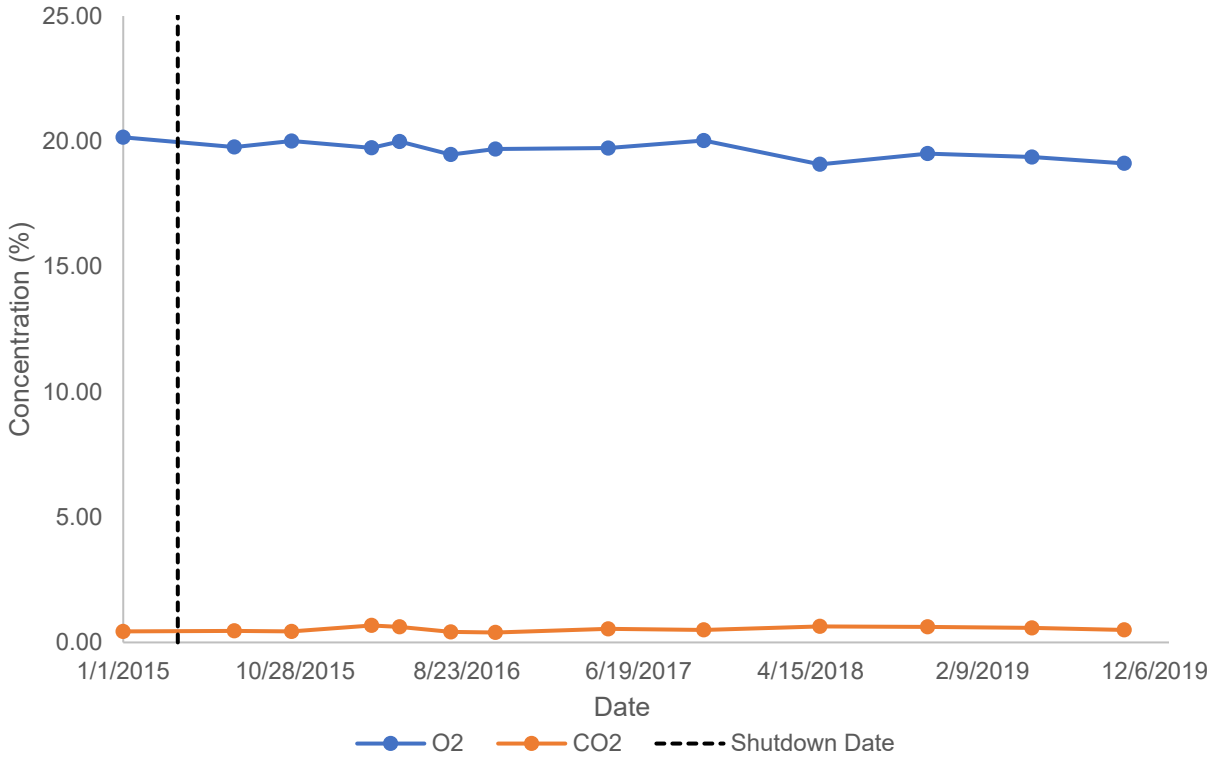
Well ID: SVMW-11-260
Oxygen and Carbon Dioxide Concentrations Over Time



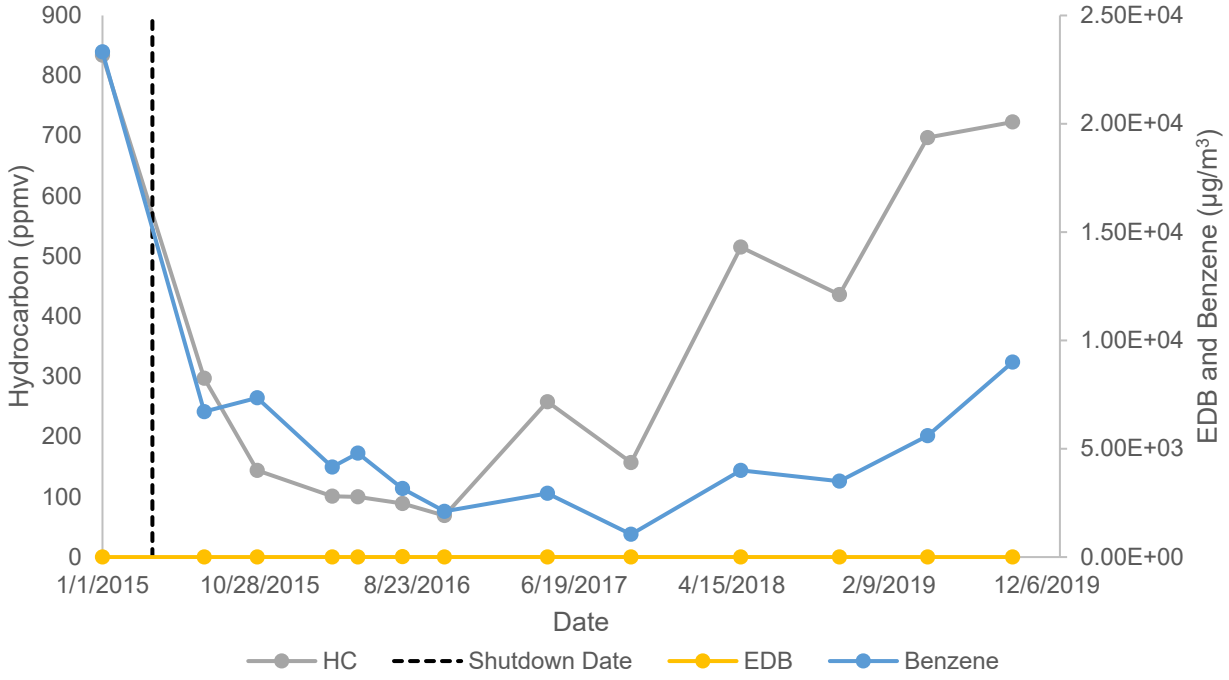
Well ID: SVMW-15-250
Hydrocarbon, EDB, and Benzene Levels Over Time



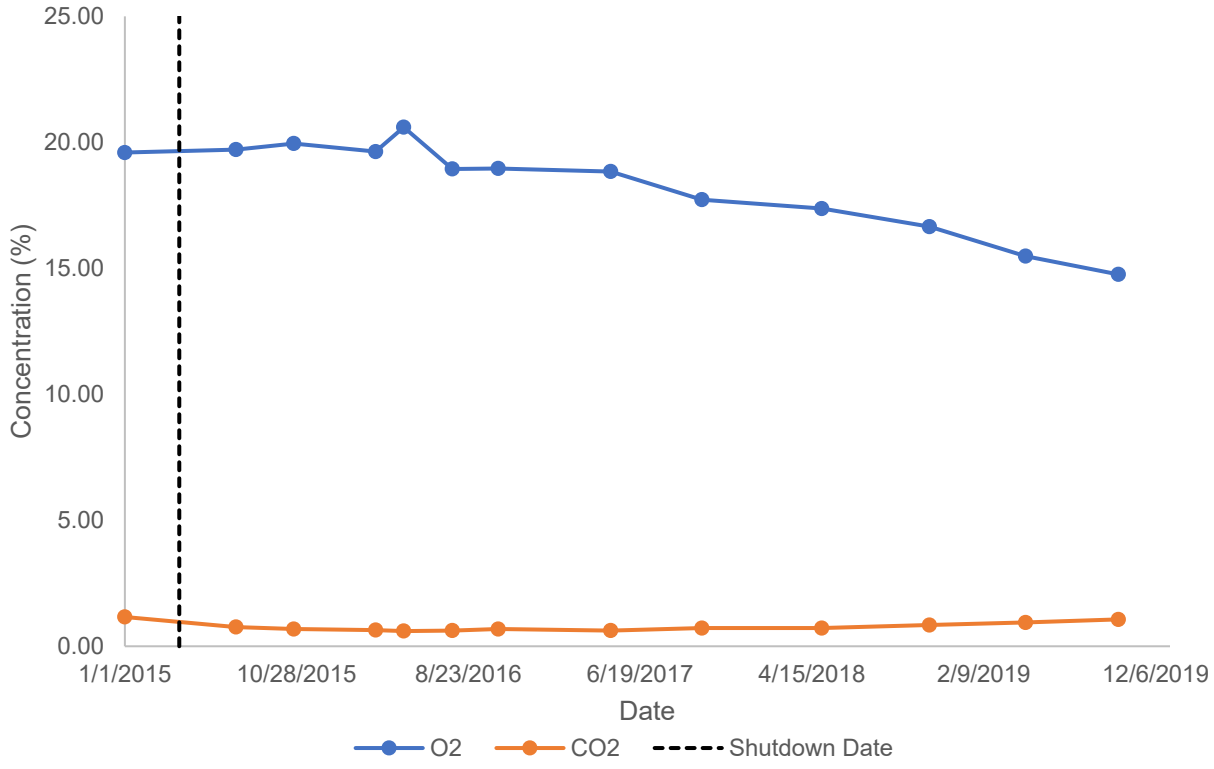
Well ID: SVMW-15-250
Oxygen and Carbon Dioxide Concentrations Over Time



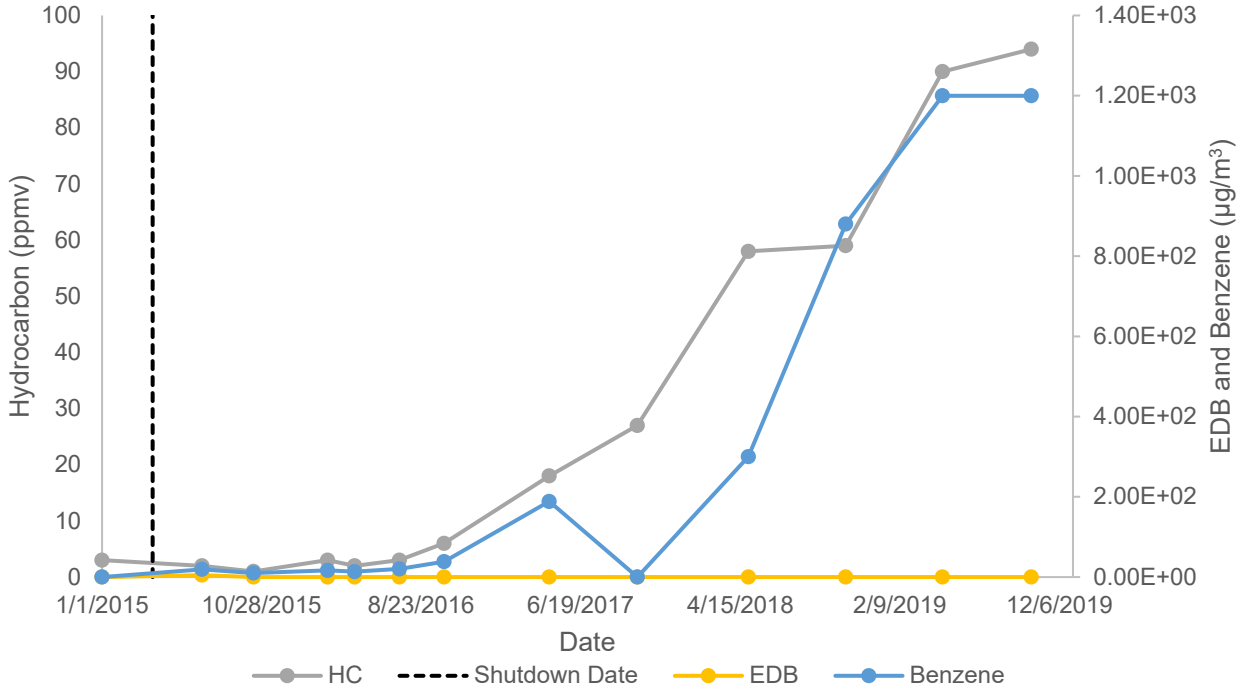
Well ID: KAFB-106111-350
Hydrocarbon, EDB, and Benzene Levels Over Time



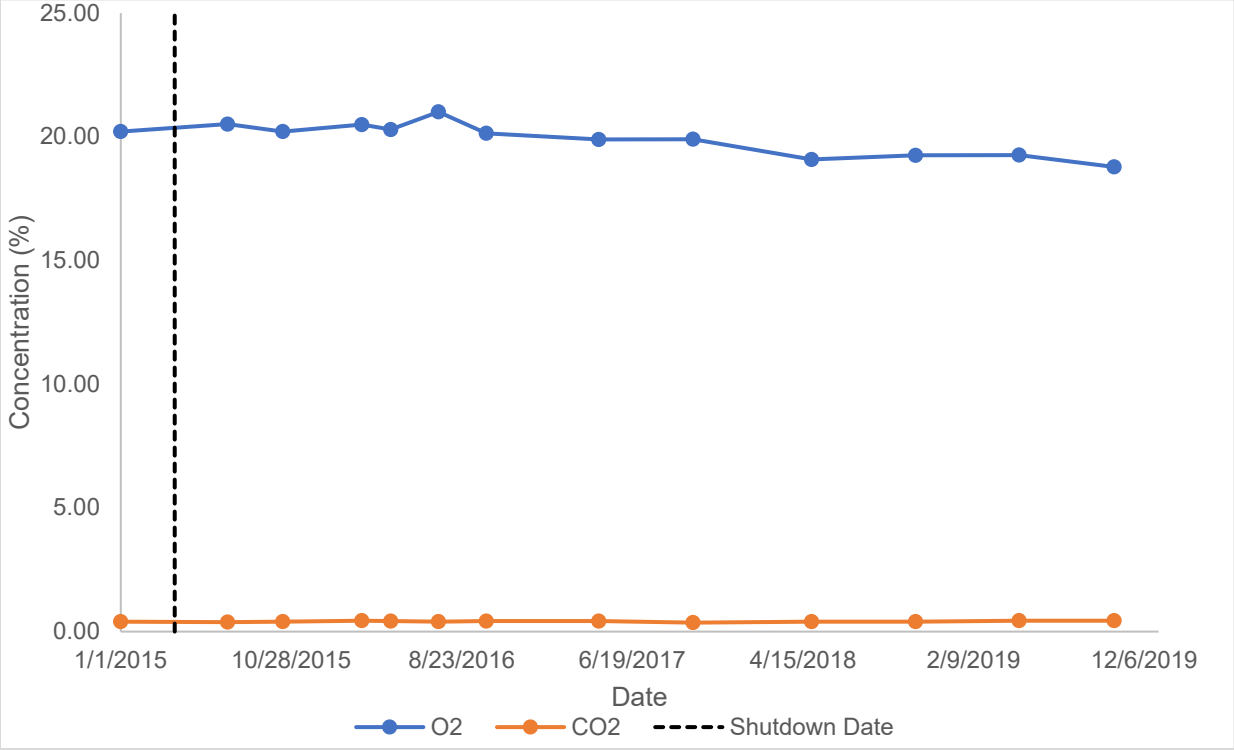
Well ID: KAFB-106111-350
Oxygen and Carbon Dioxide Concentrations Over Time



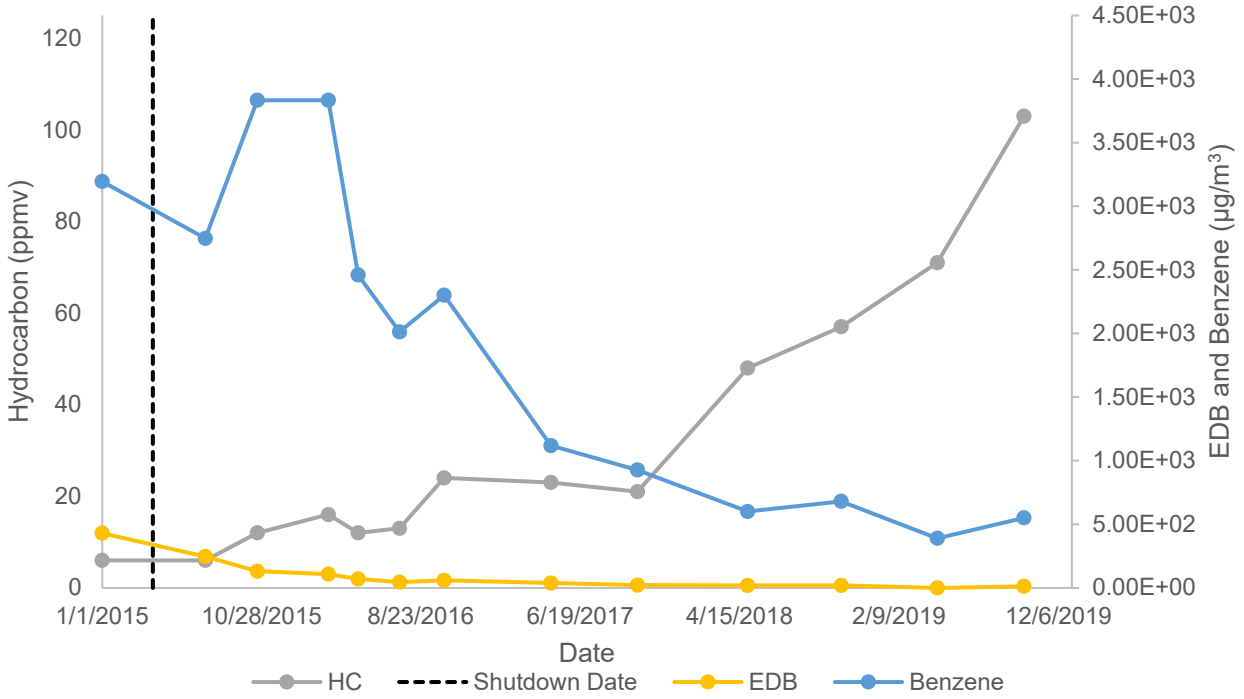
Well ID: KAFB-106113-350
Hydrocarbon, EDB, and Benzene Levels Over Time



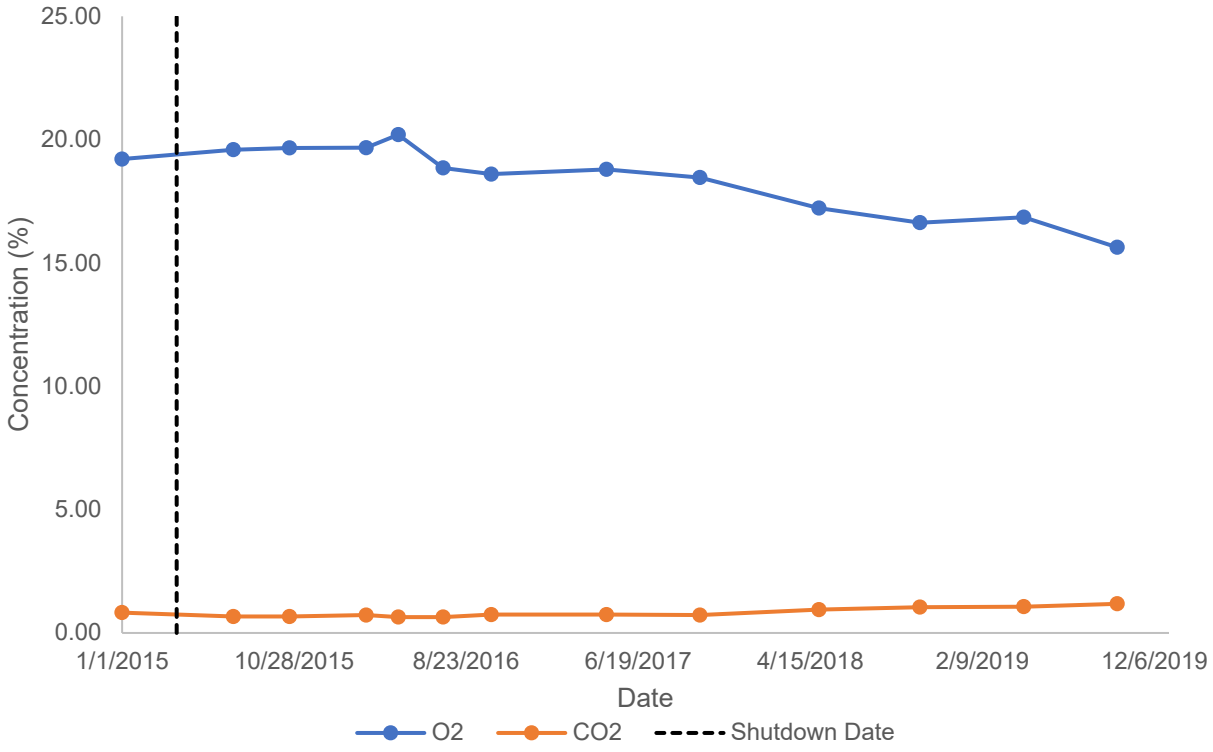
Well ID: KAFB-106113-350
Oxygen and Carbon Dioxide Concentrations Over Time



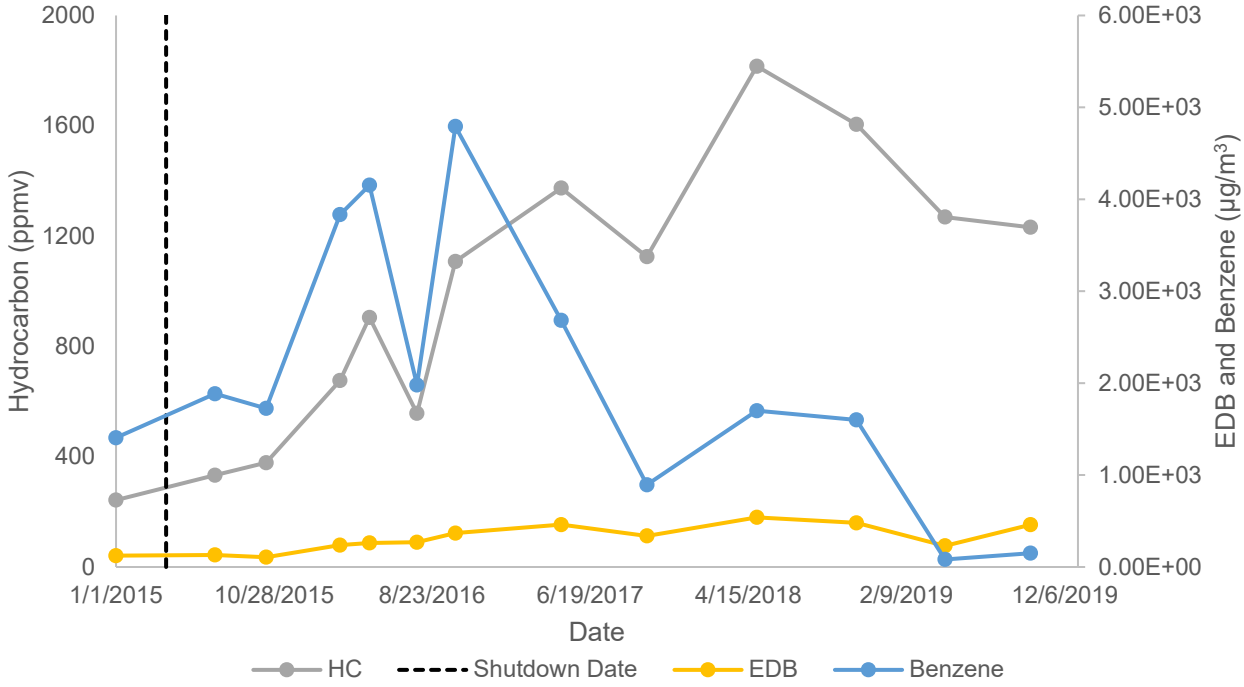
Well ID: KAFB-106116-350
Hydrocarbon, EDB, and Benzene Levels Over Time



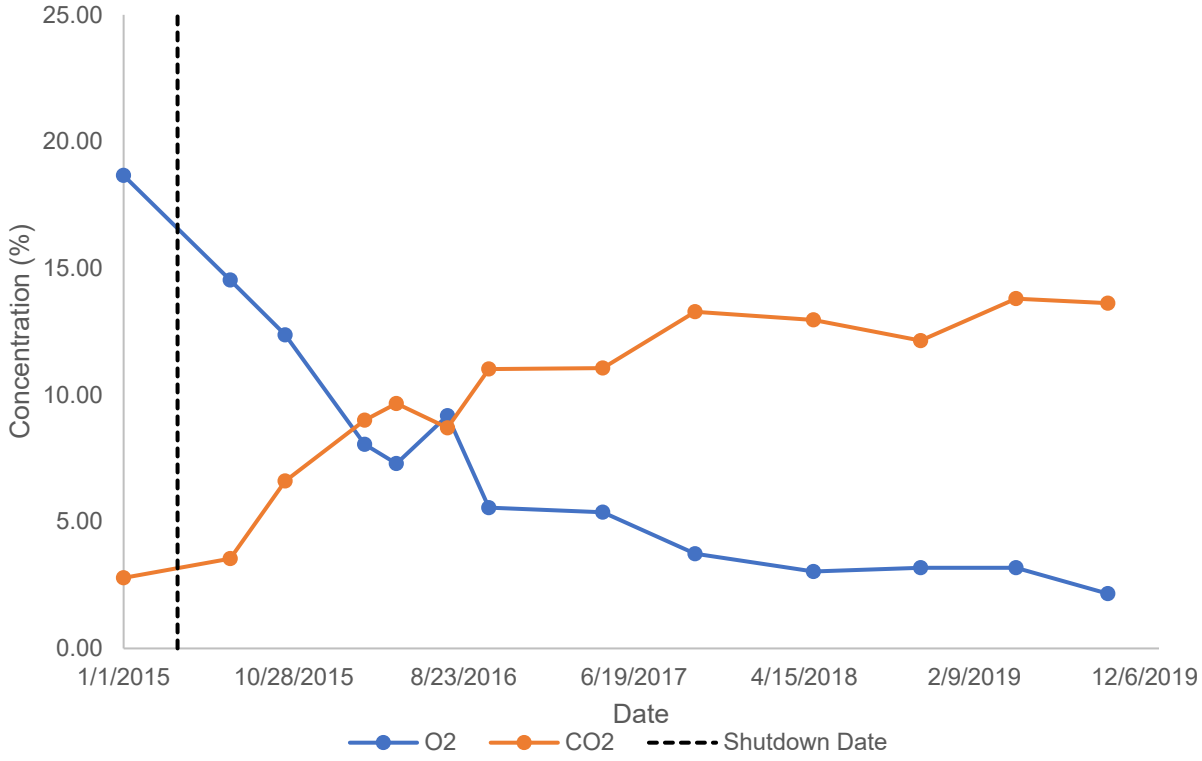
Well ID: KAFB-106116-350
Oxygen and Carbon Dioxide Concentrations Over Time



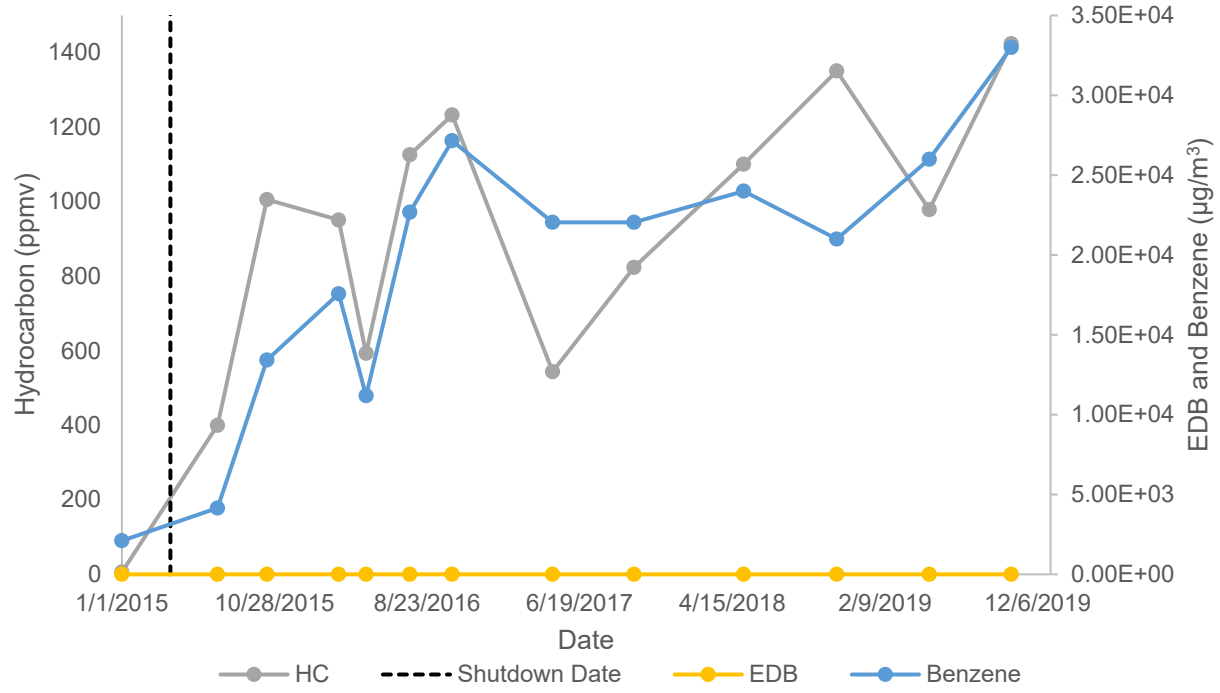
Well ID: KAFB-106117-350
Hydrocarbon, EDB, and Benzene Levels Over Time



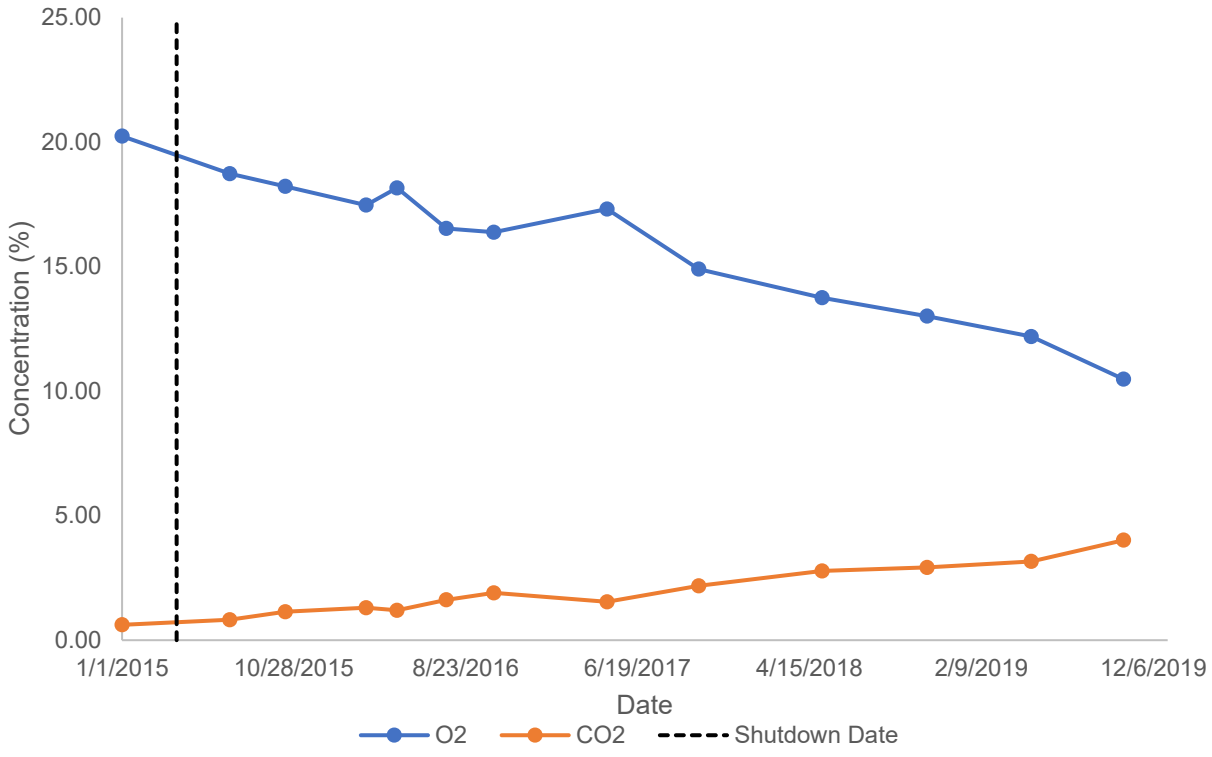
Well ID: KAFB-106117-350
Oxygen and Carbon Dioxide Concentrations Over Time



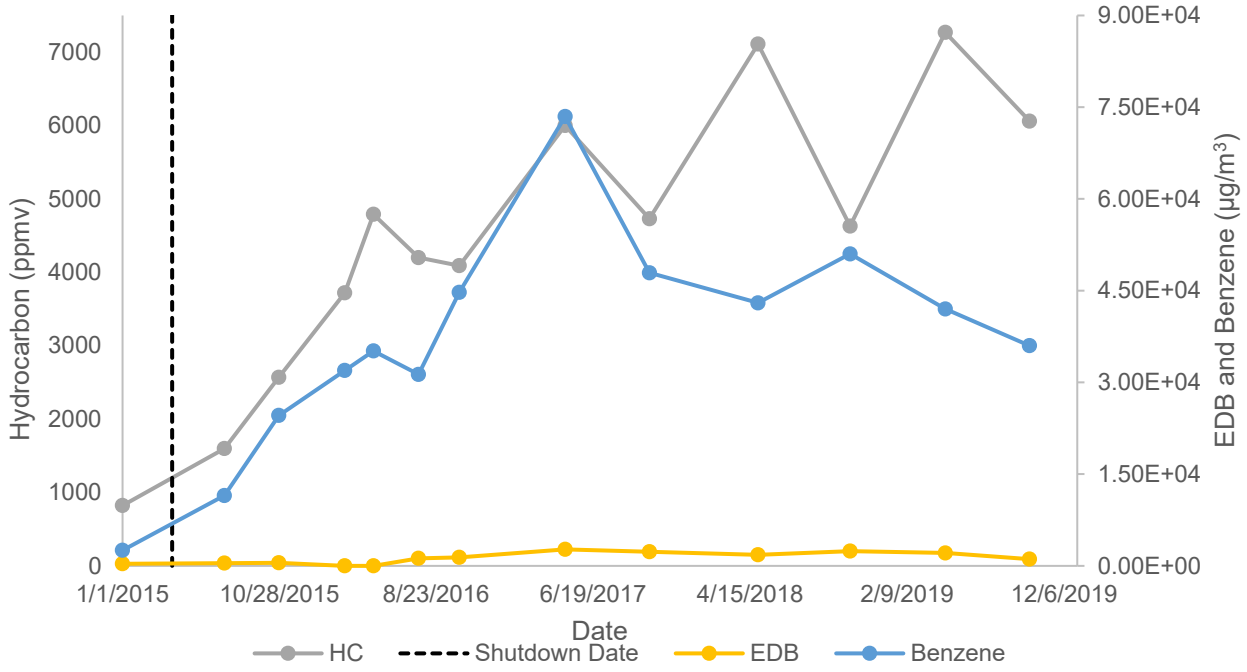
Well ID: KAFB-106119-350
Hydrocarbon, EDB, and Benzene Levels Over Time



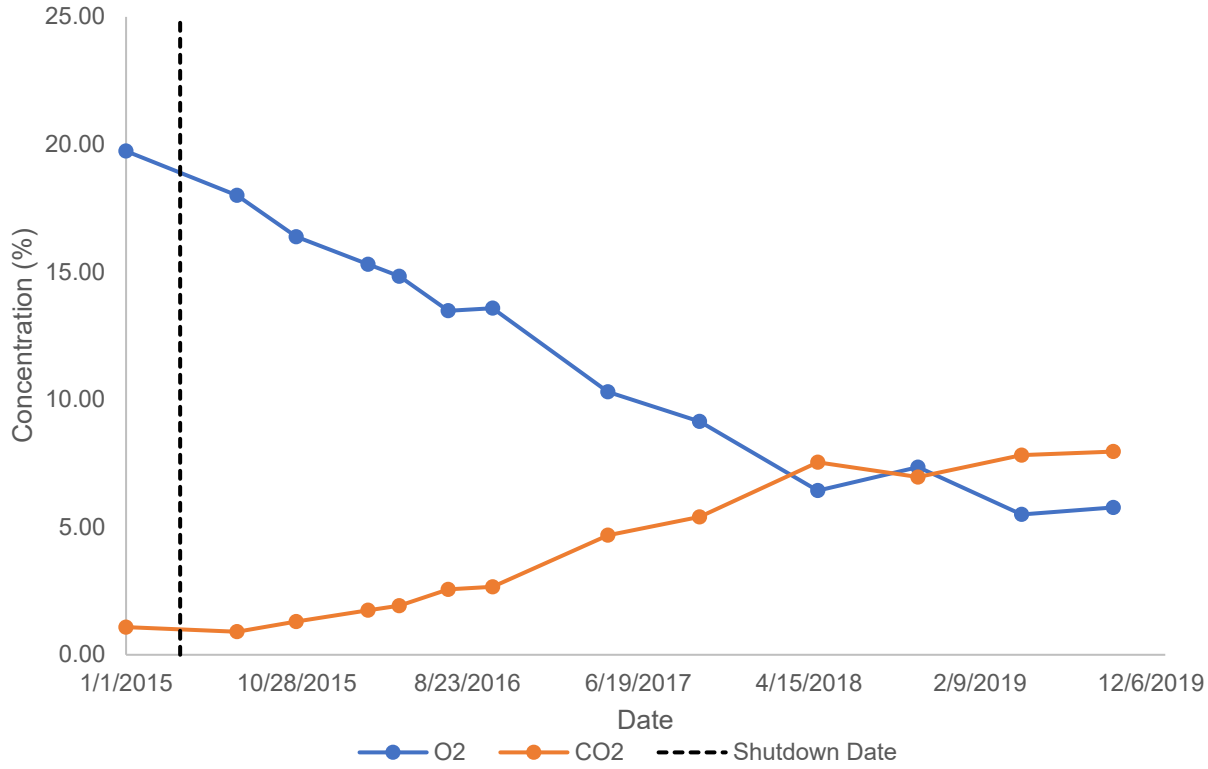
Well ID: KAFB-106119-350
Oxygen and Carbon Dioxide Concentrations Over Time



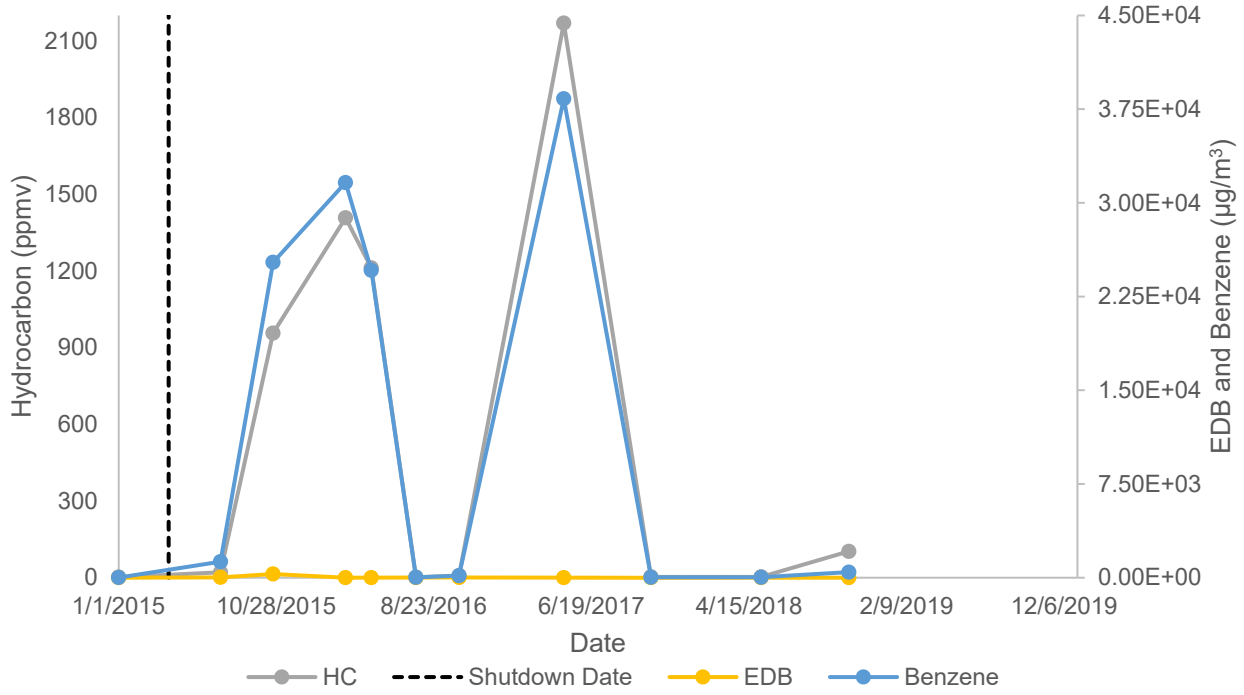
Well ID: KAFB-106128-350
Hydrocarbon, EDB, and Benzene Levels Over Time



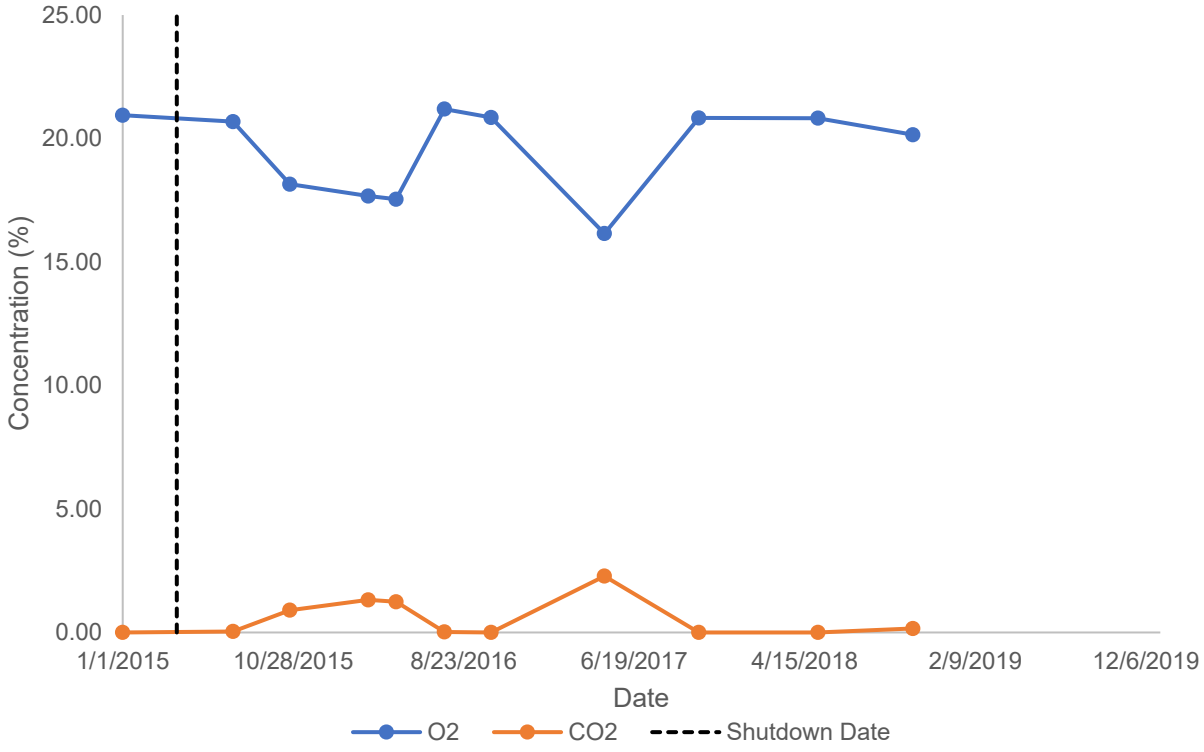
Well ID: KAFB-106128-350
Oxygen and Carbon Dioxide Concentrations Over Time



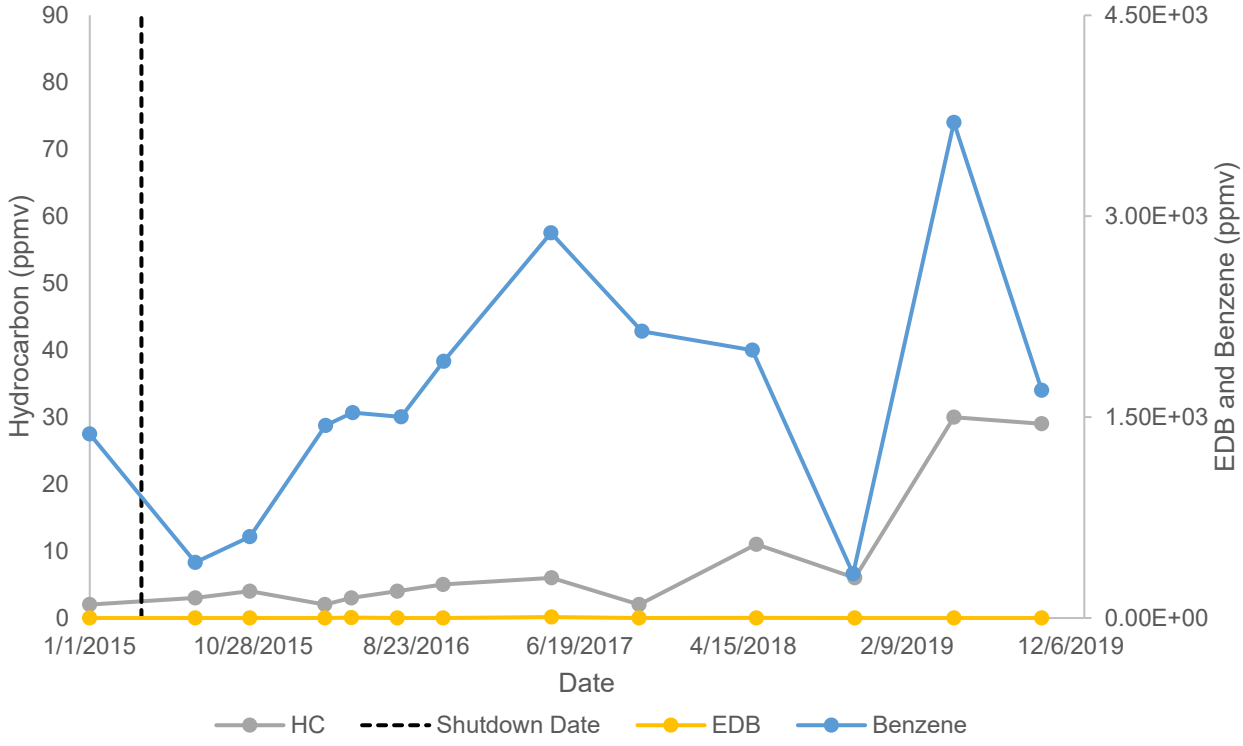
Well ID: SVEW-04-313
Hydrocarbon, EDB, and Benzene Levels Over Time



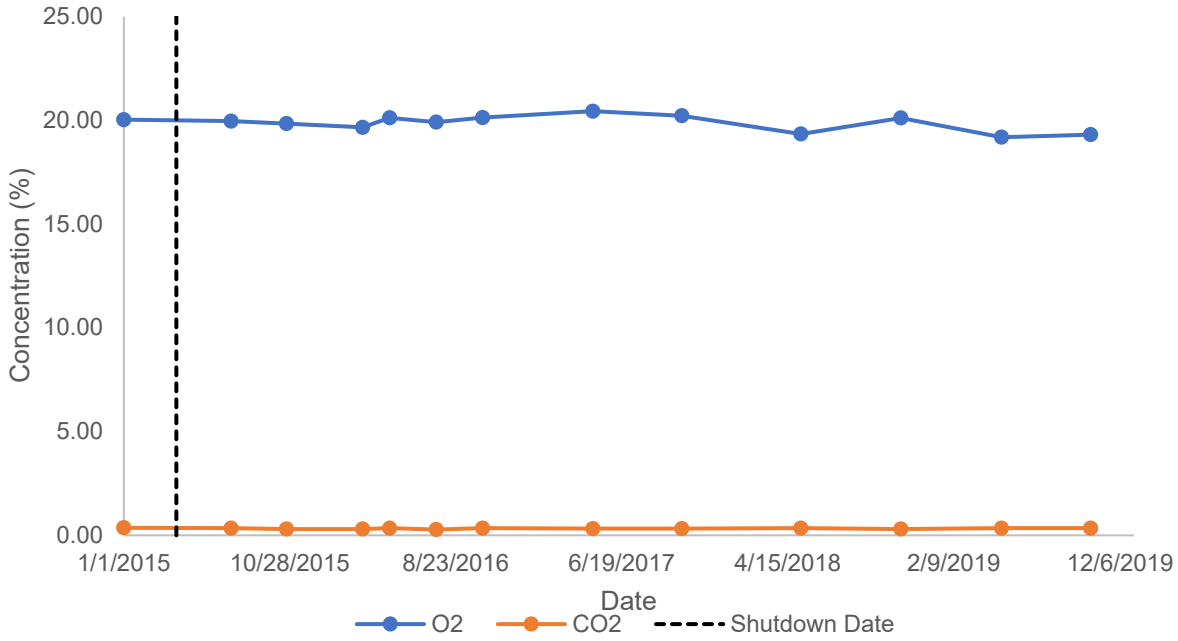
Well ID: SVEW-04-313
Oxygen and Carbon Dioxide Concentrations Over Time



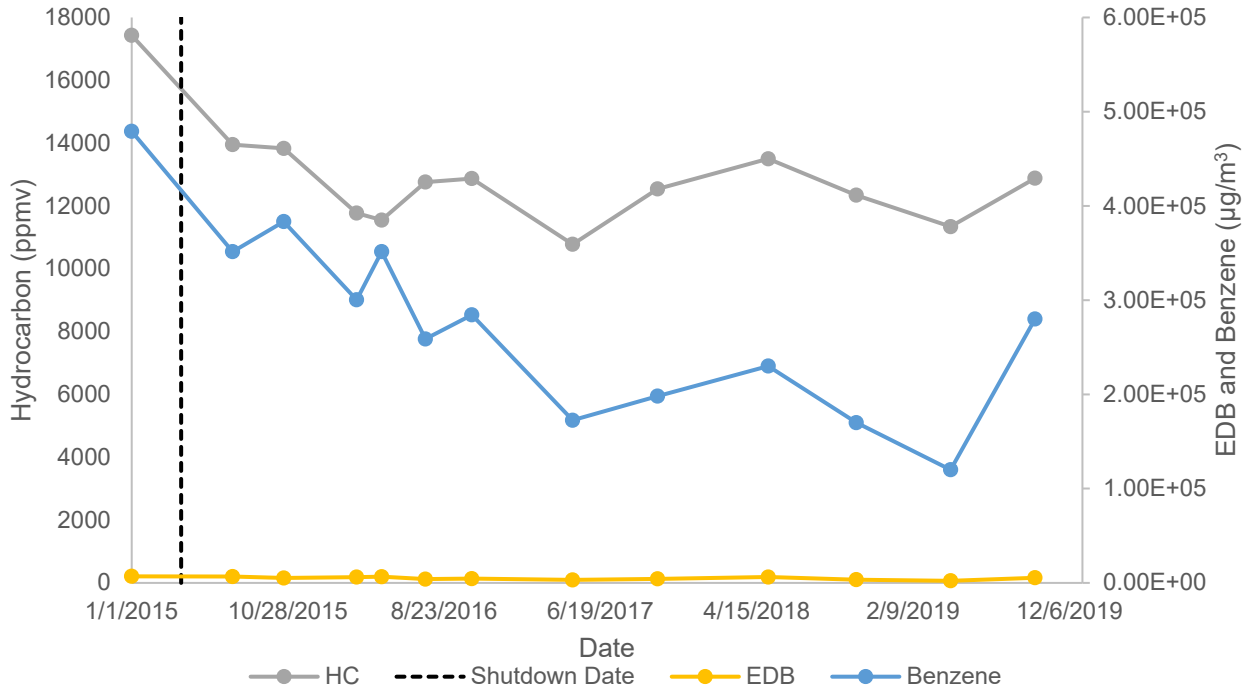
Well ID: SVMW-01-300
Hydrocarbon, EDB, and Benzene Levels Over Time



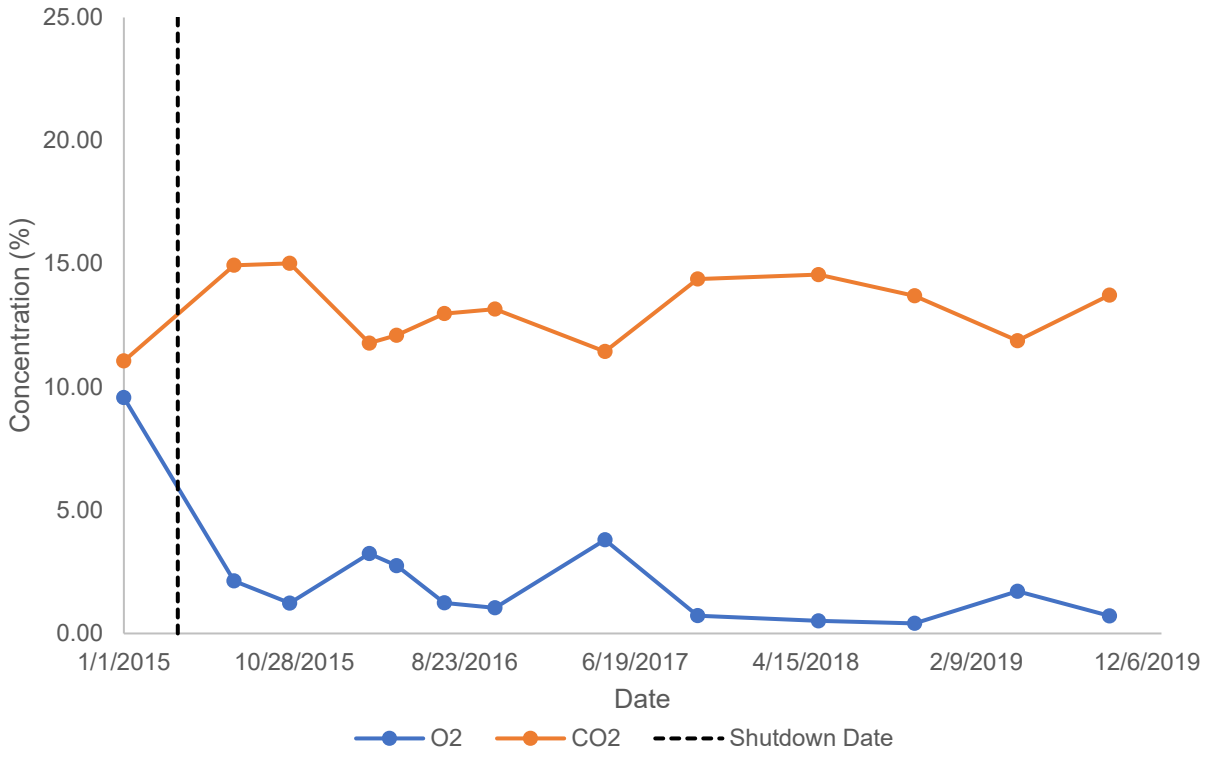
Well ID: SVMW-01-300
Oxygen and Carbon Dioxide Concentrations Over Time



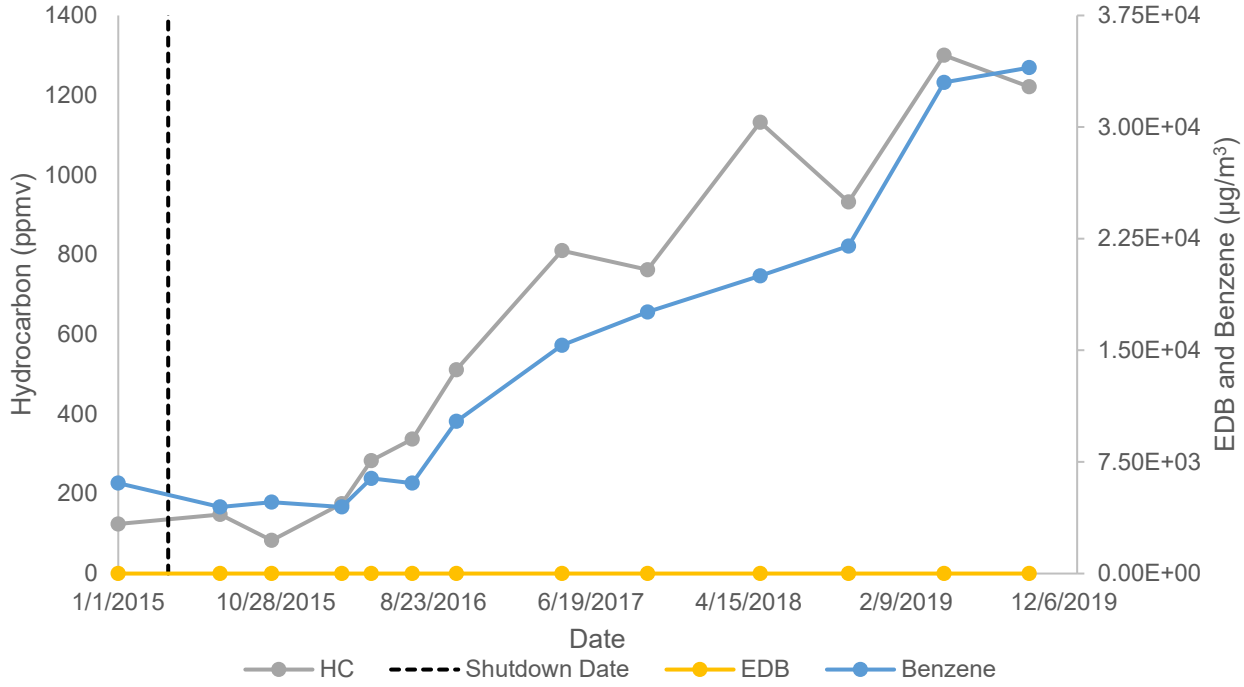
Well ID: SVMW-03-300
Hydrocarbon, EDB, and Benzene Levels Over Time



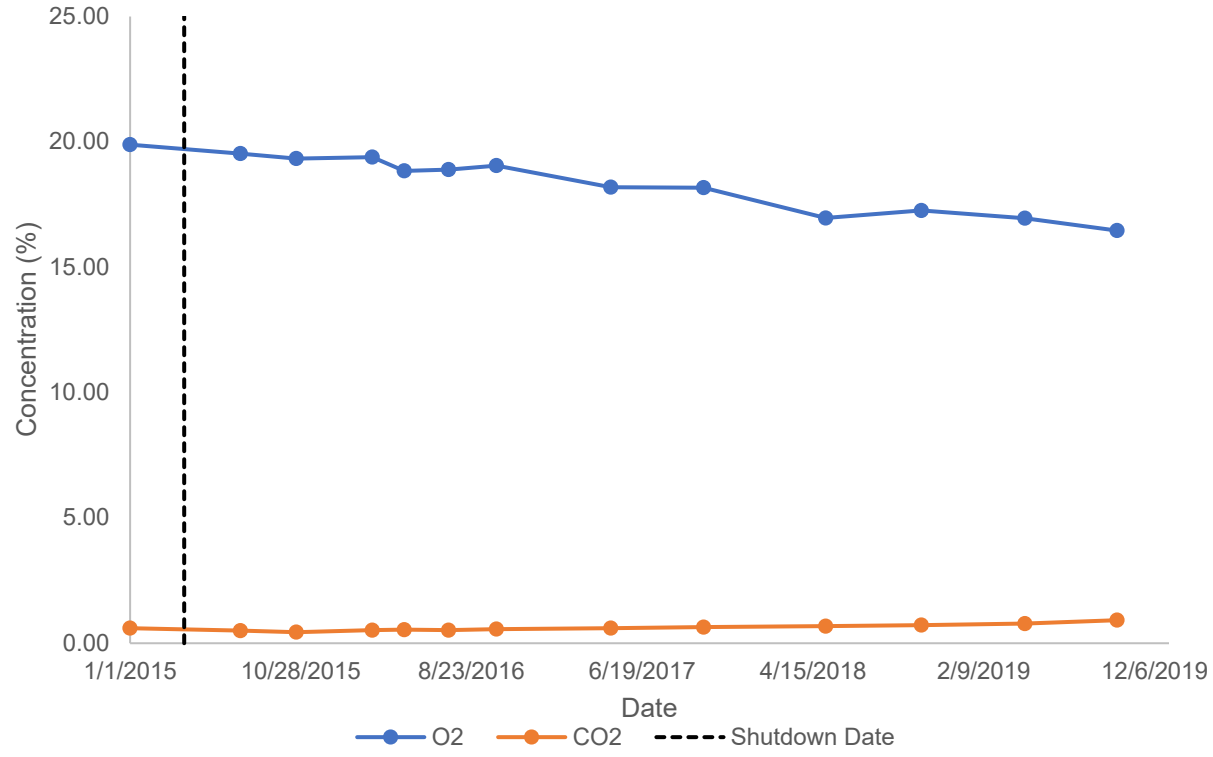
Well ID: SVMW-03-300
Oxygen and Carbon Dioxide Concentrations Over Time



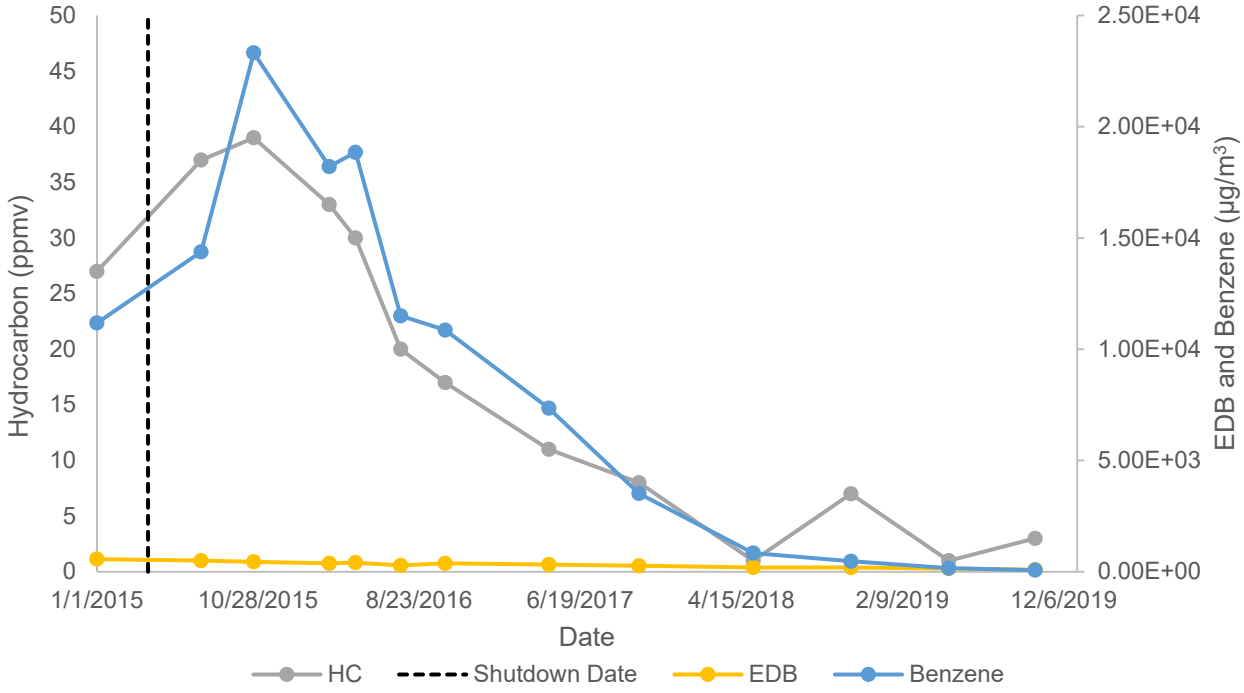
Well ID: SVMW-04-300
Hydrocarbon, EDB, and Benzene Levels Over Time



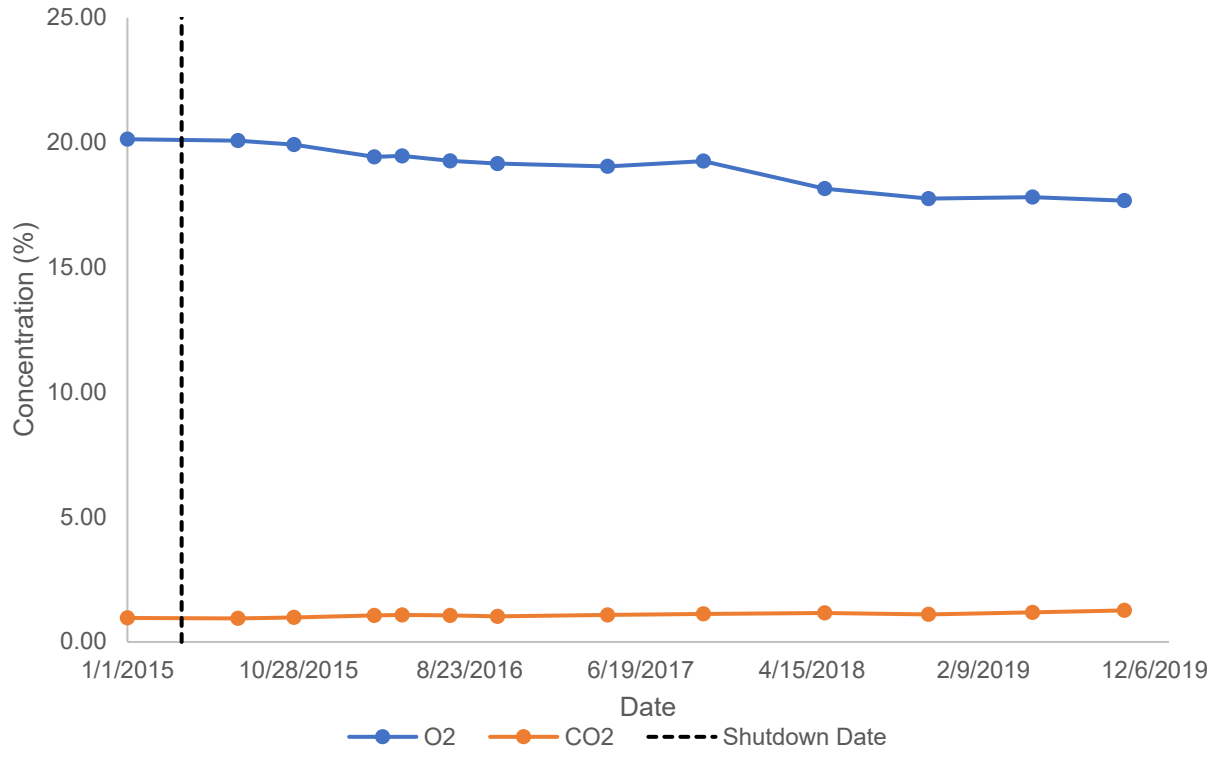
Well ID: SVMW-04-300
Oxygen and Carbon Dioxide Concentrations Over Time



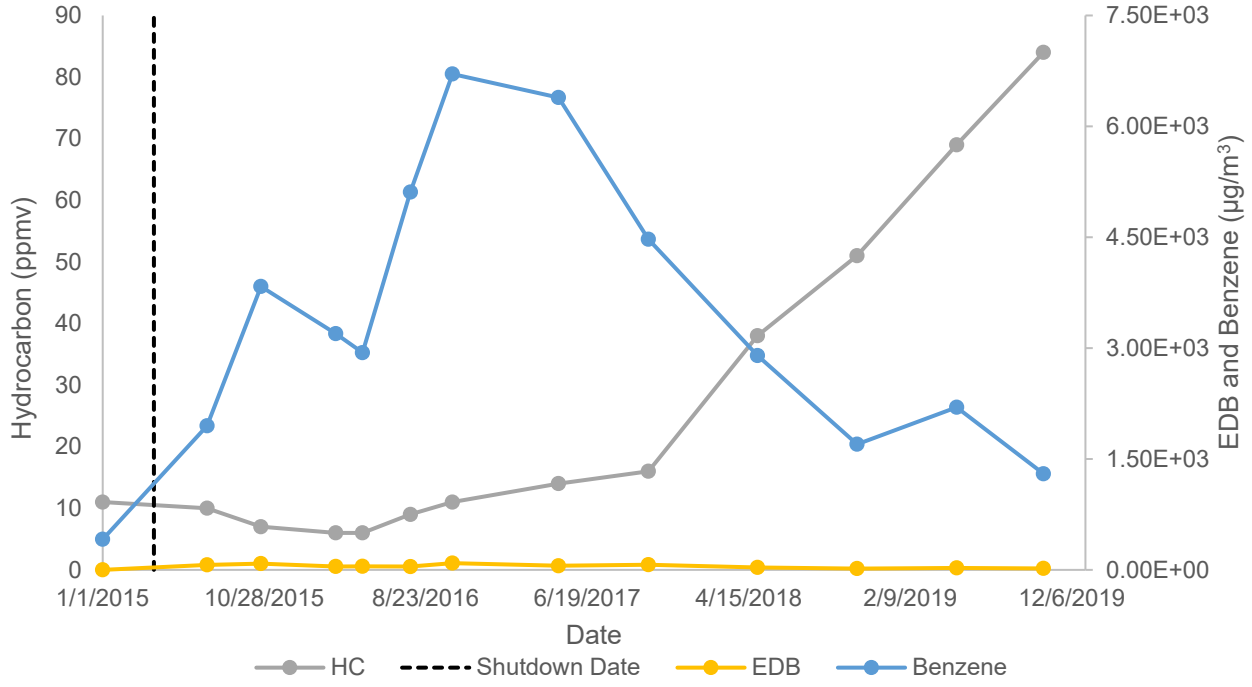
Well ID: SVMW-06-302
Hydrocarbon, EDB, and Benzene Levels Over Time



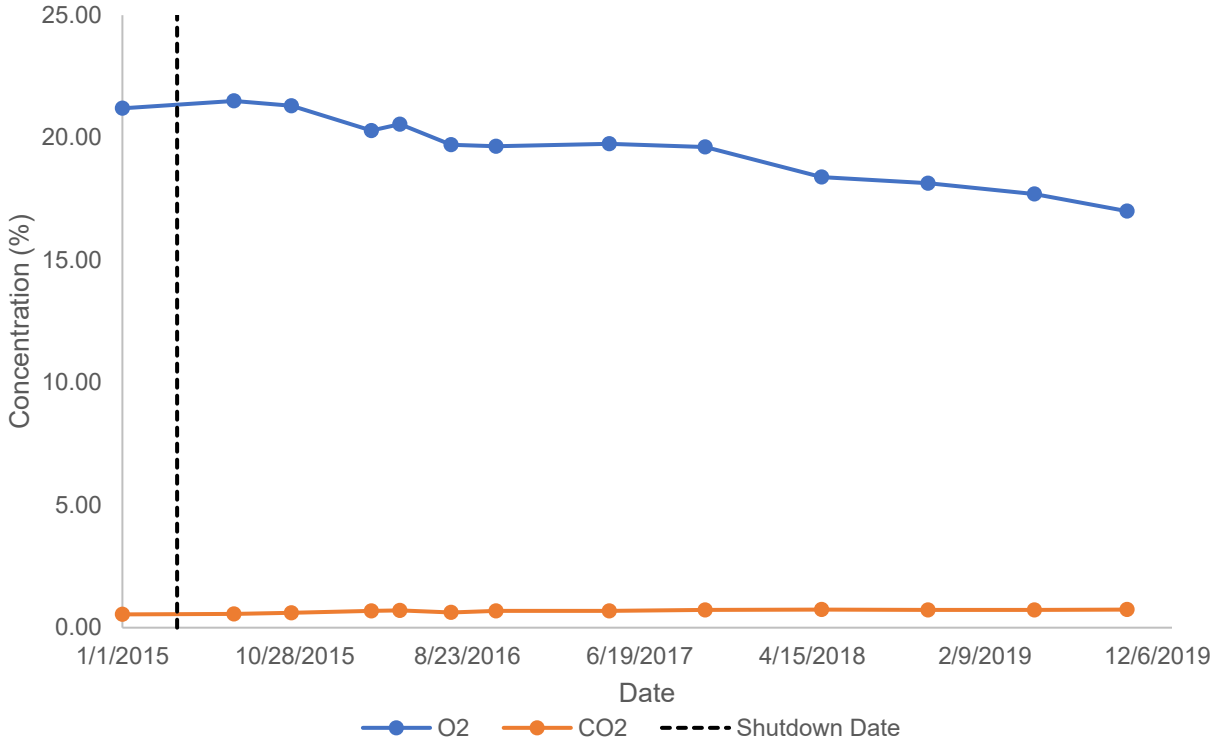
Well ID: SVMW-06-302
Oxygen and Carbon Dioxide Concentrations Over Time



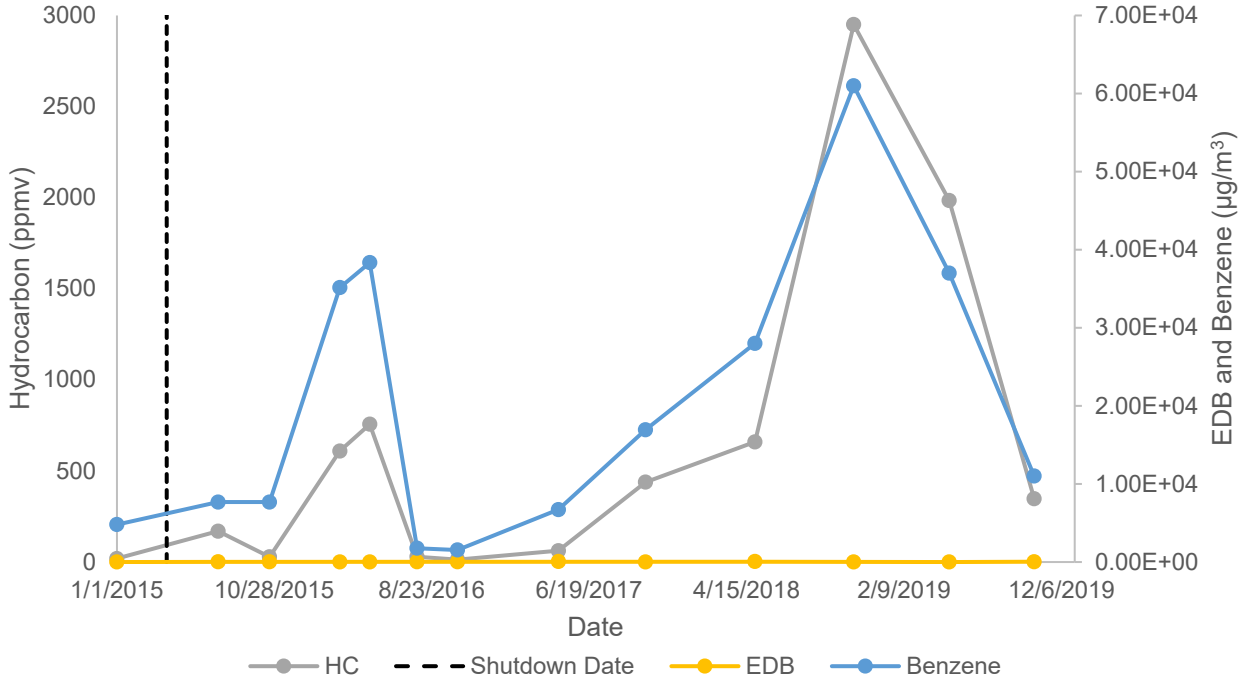
Well ID: SVMW-15-350
Hydrocarbon, EDB, and Benzene Levels Over Time



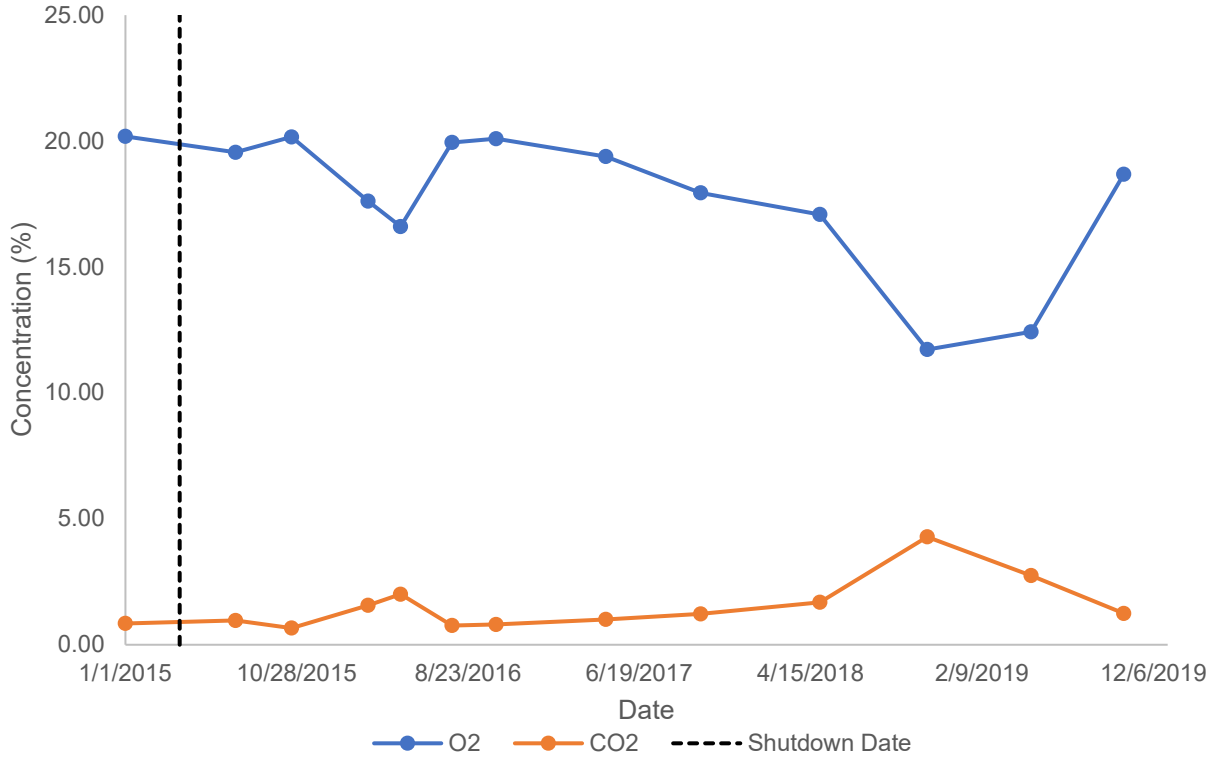
Well ID: SVMW-15-350
Oxygen and Carbon Dioxide Concentrations Over Time



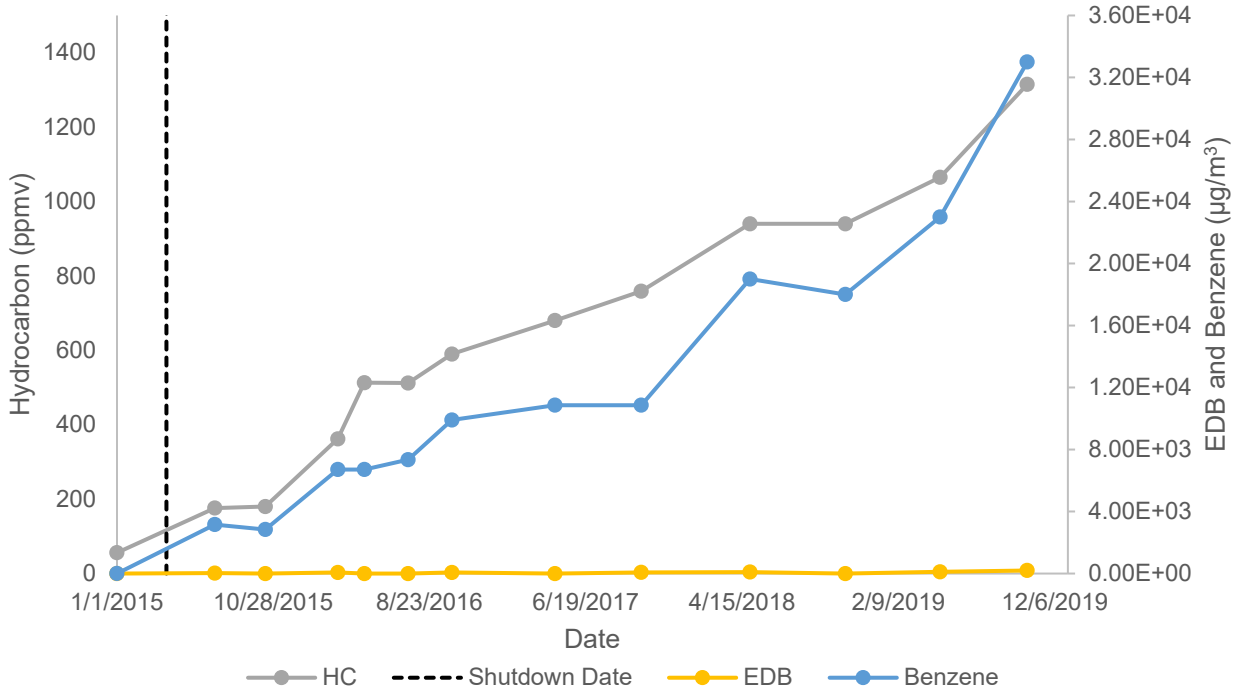
Well ID: KAFB-106112-450
Hydrocarbon, EDB, and Benzene Levels Over Time



Well ID: KAFB-106112-450
Oxygen and Carbon Dioxide Concentrations Over Time



Well ID: KAFB-106113-450
Hydrocarbon, EDB, and Benzene Levels Over Time



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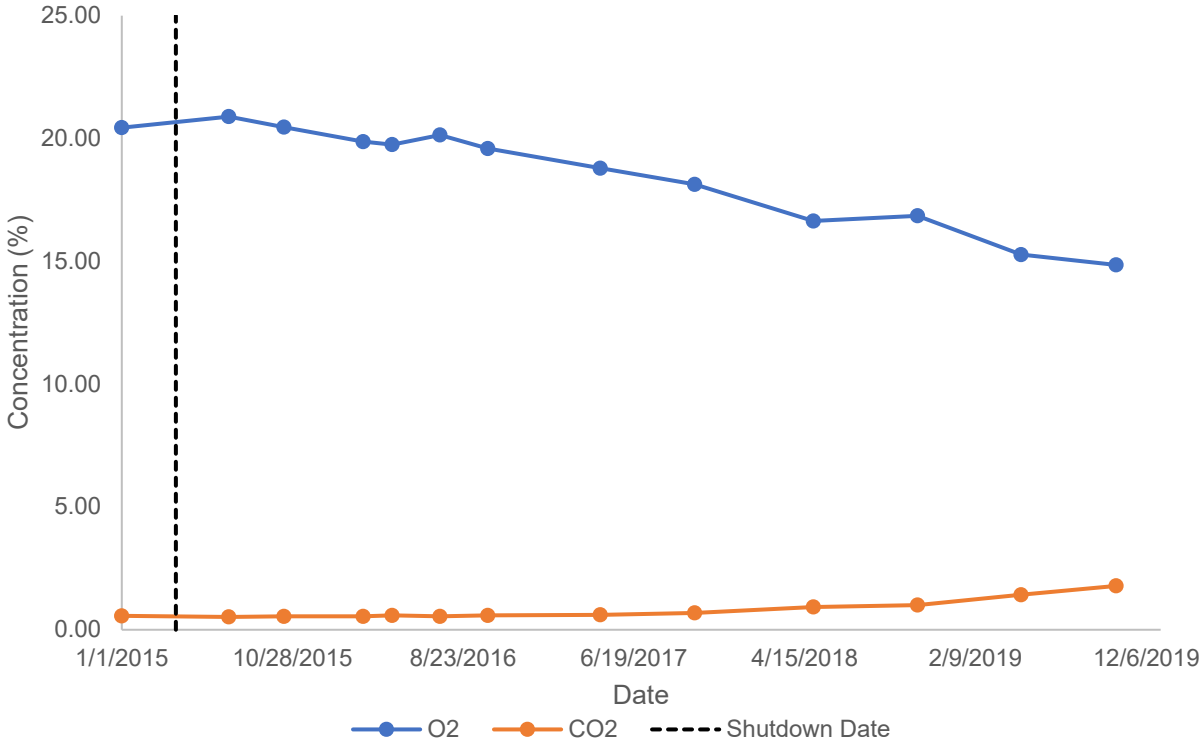
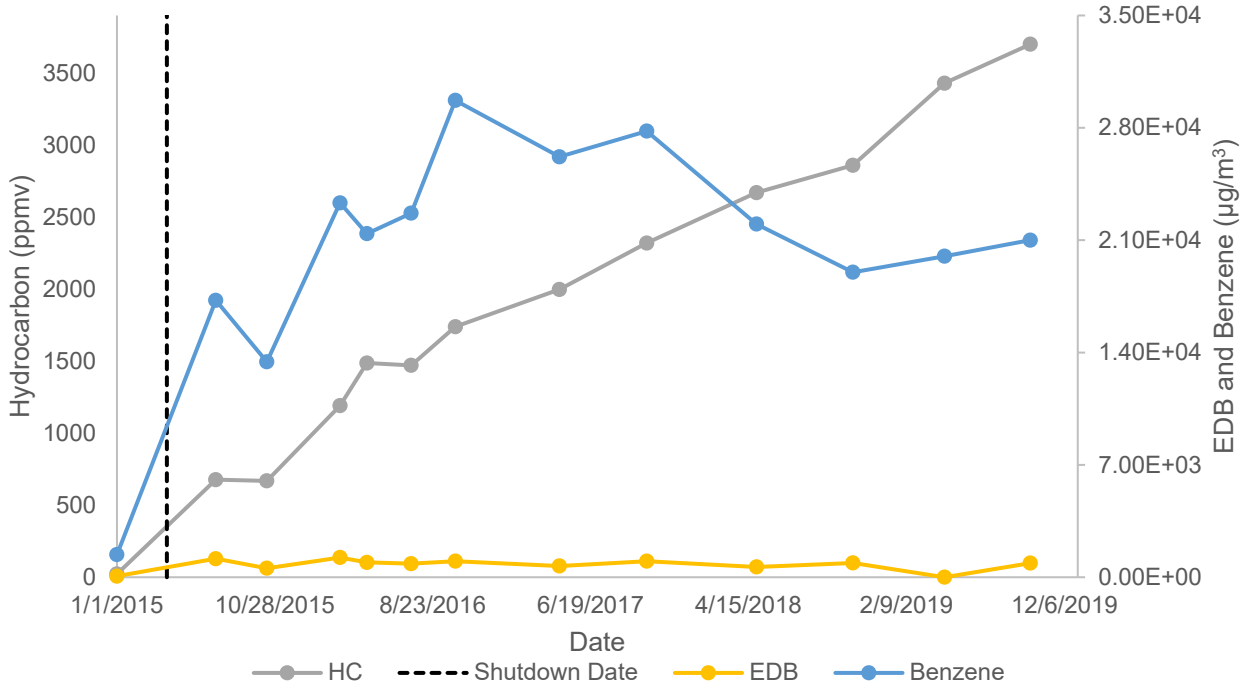
Oxygen and Carbon Dioxide Concentrations Over Time



Well ID: KAFB-106114-450
Hydrocarbon, EDB, and Benzene Levels Over Time



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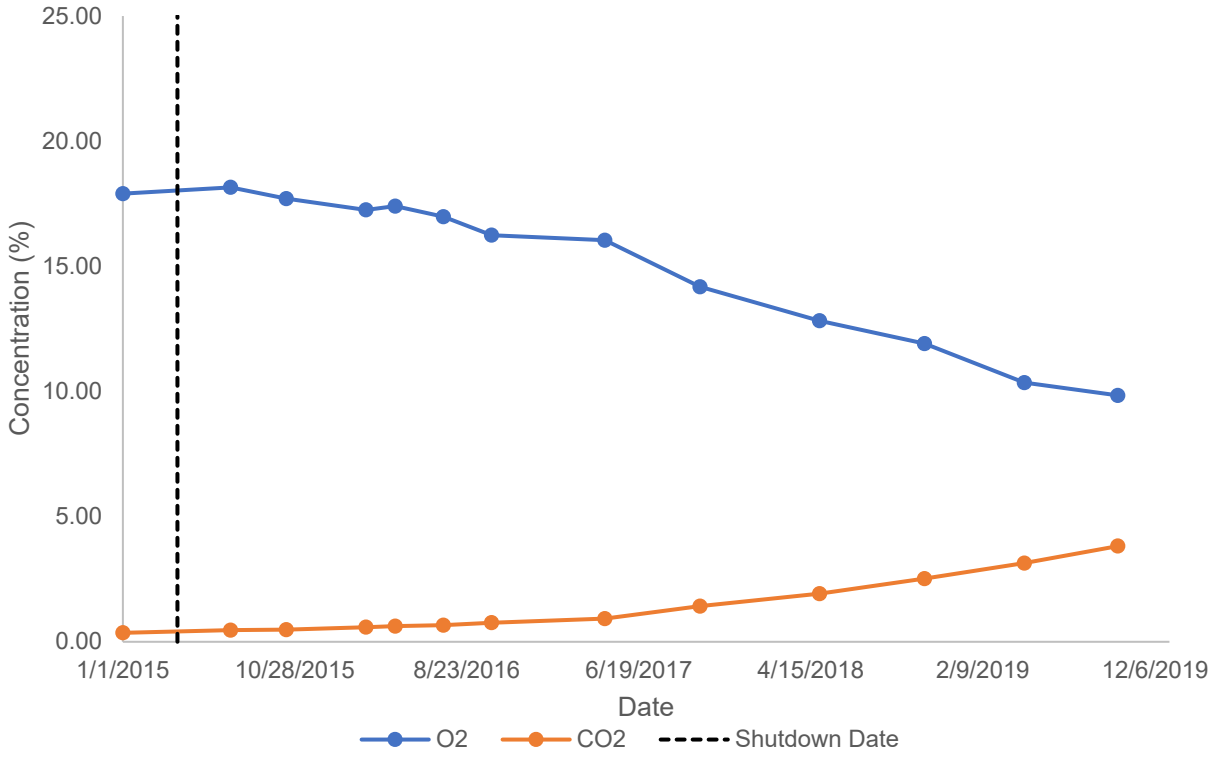
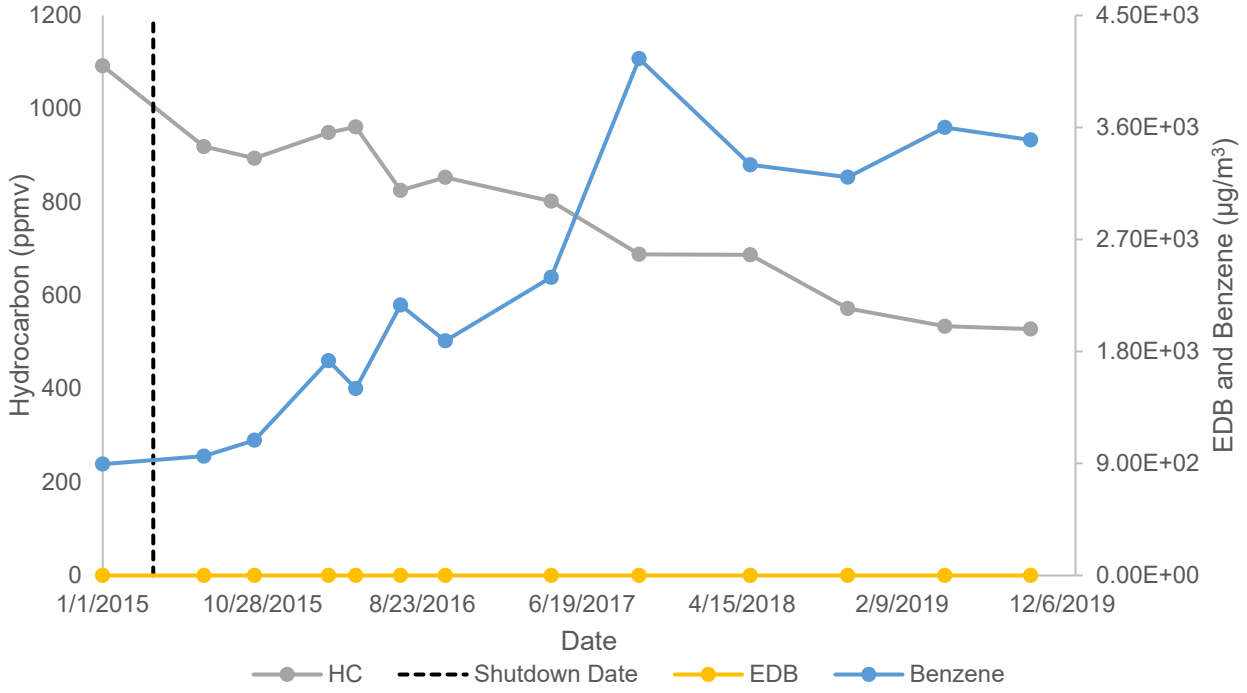
Oxygen and Carbon Dioxide Concentrations Over Time



Well ID: KAFB-106115-450
Hydrocarbon, EDB, and Benzene Levels Over Time



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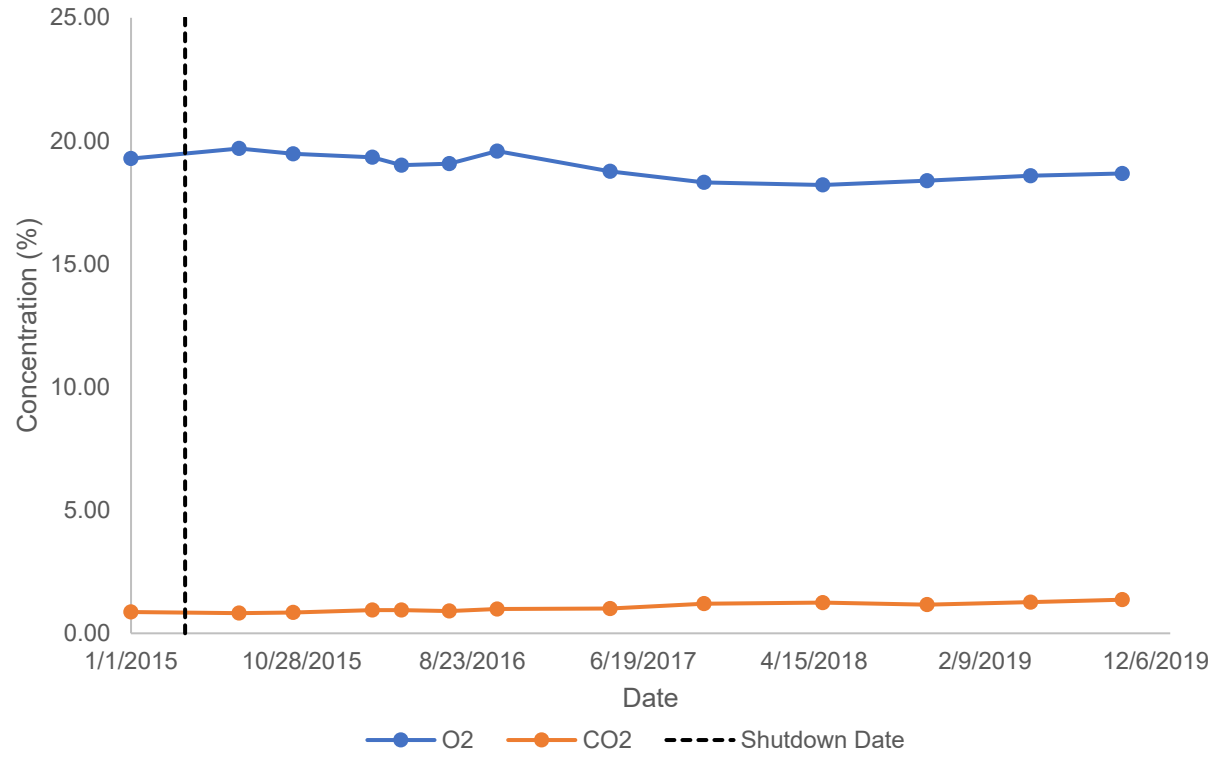
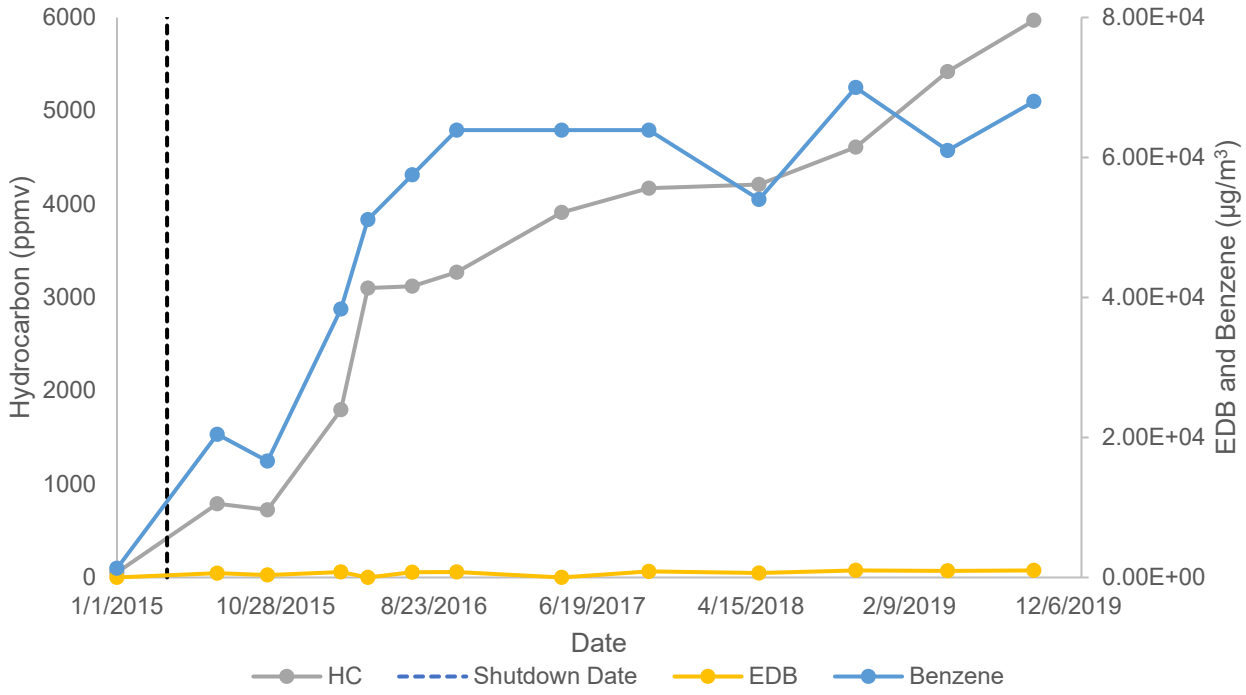
Oxygen and Carbon Dioxide Concentrations Over Time



Well ID: KAFB-106116-450
Hydrocarbon, EDB, and Benzene Levels Over Time



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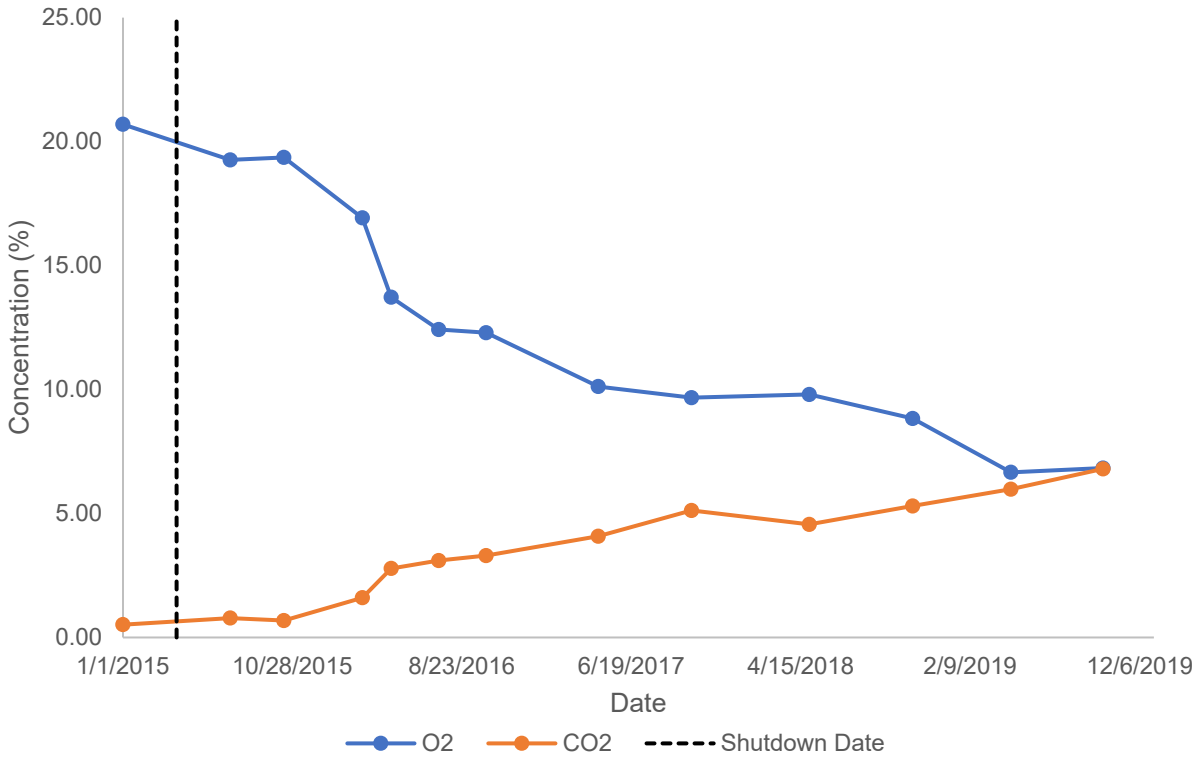
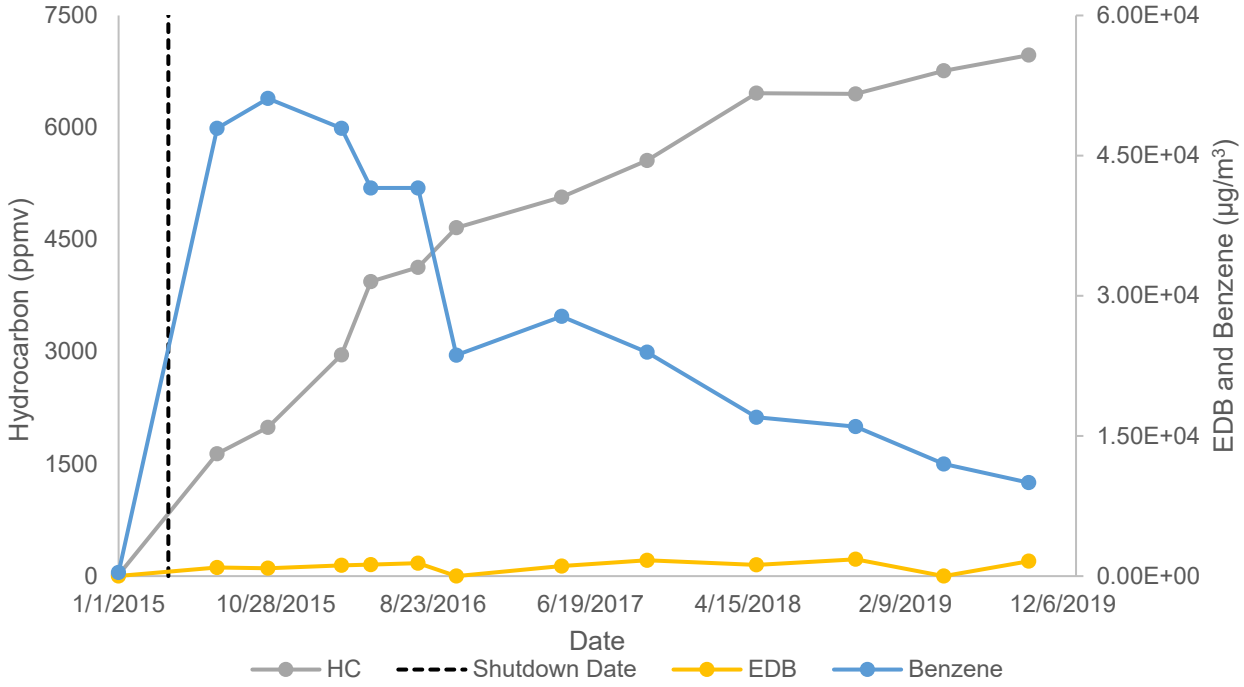
Oxygen and Carbon Dioxide Concentrations Over Time



Well ID: KAFB-106117-450
Hydrocarbon, EDB, and Benzene Levels Over Time



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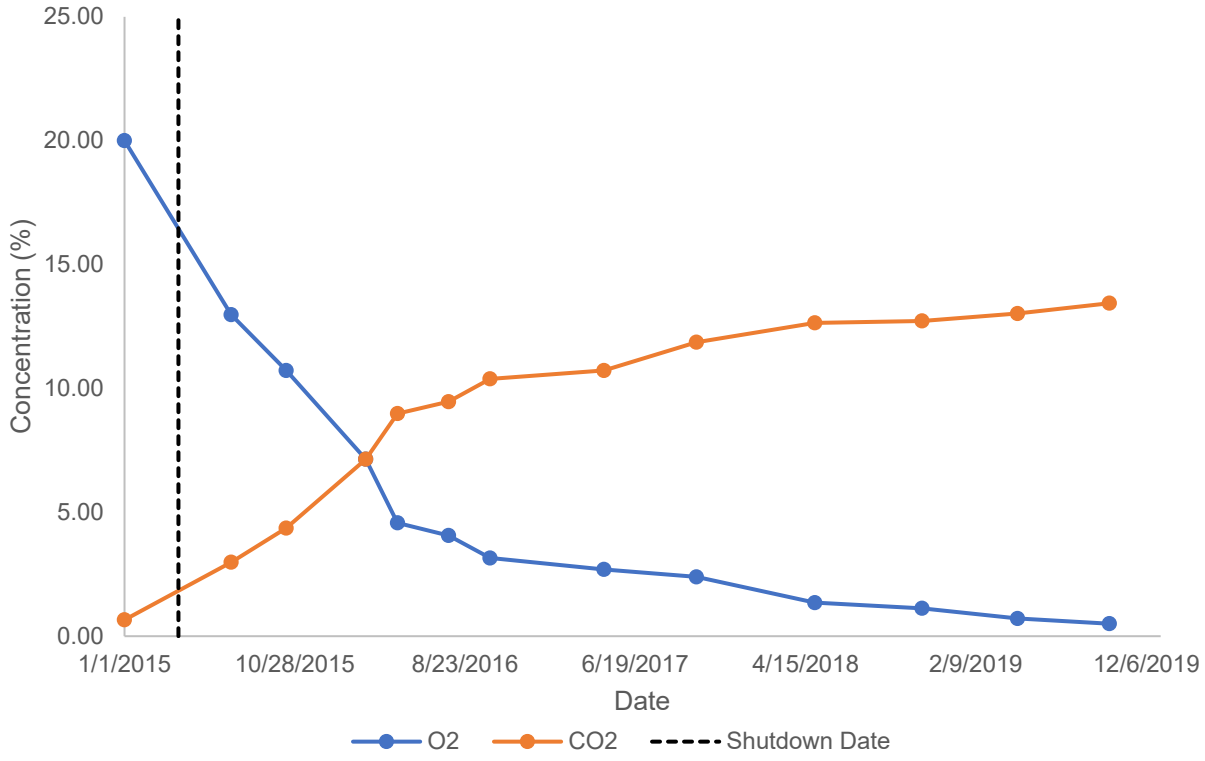
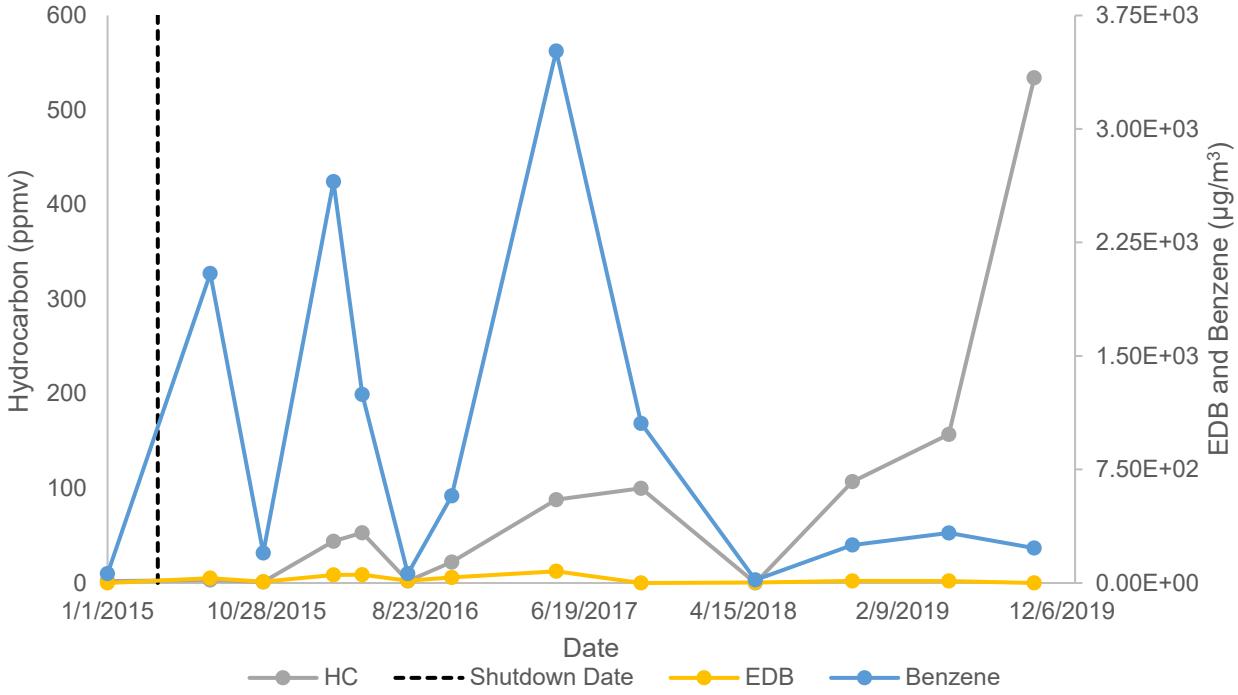
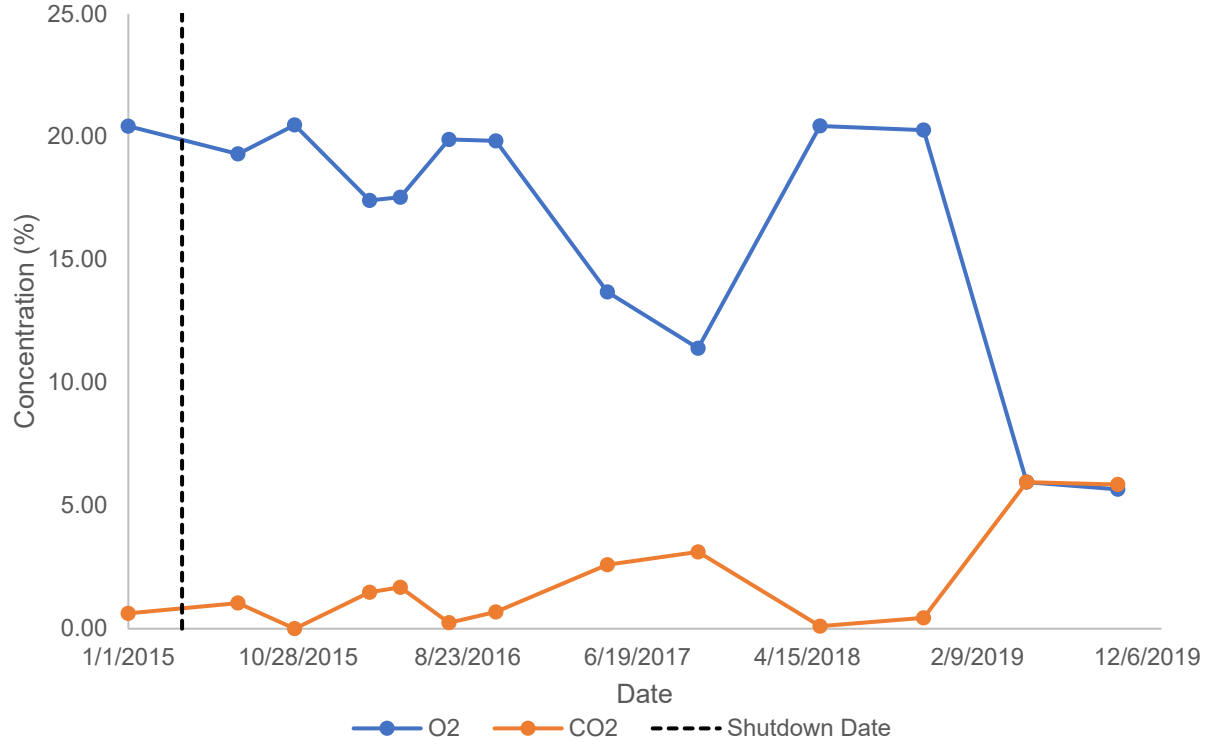
Oxygen and Carbon Dioxide Concentrations Over Time



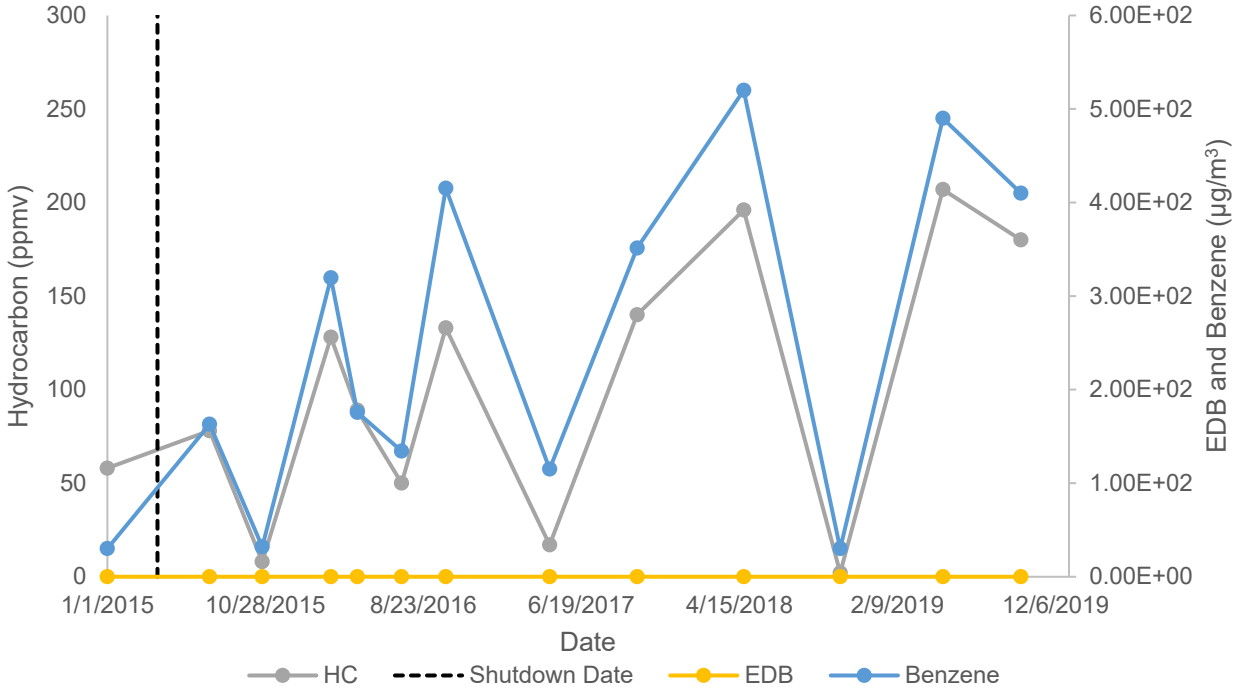
Well ID: KAFB-106119-450
Hydrocarbon, EDB, and Benzene Levels Over Time



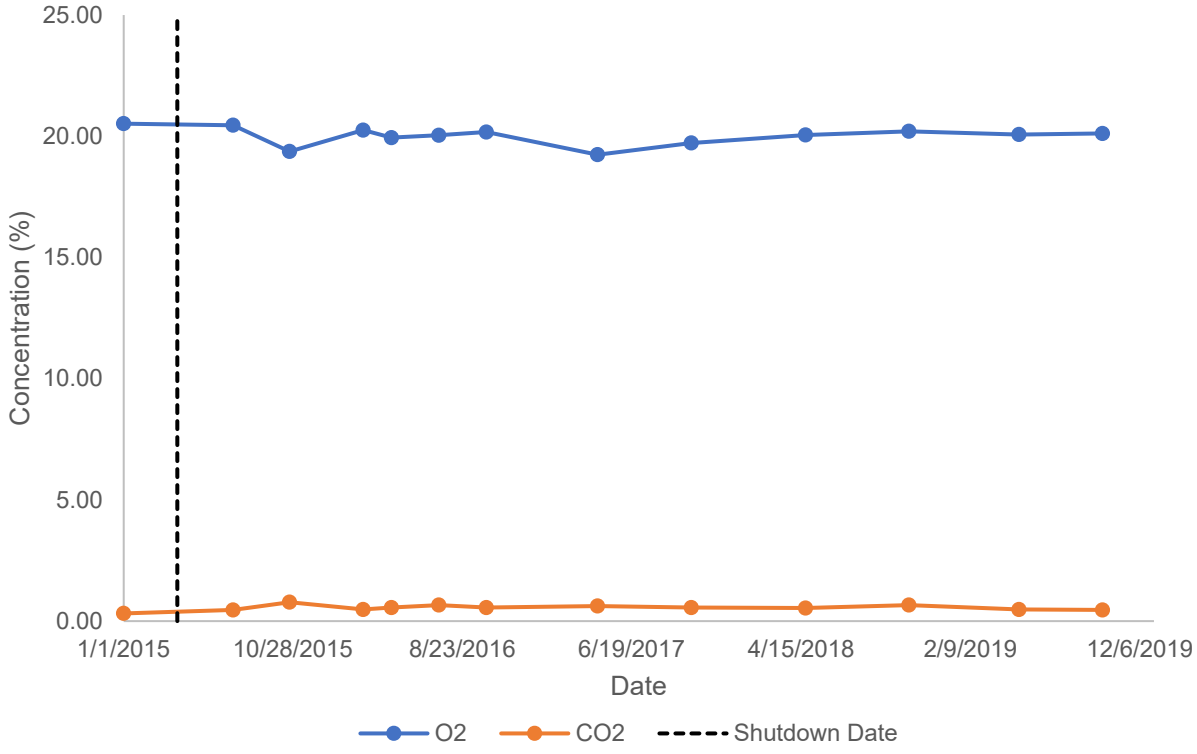
Well ID: KAFB-106119-450
Oxygen and Carbon Dioxide Concentrations Over Time



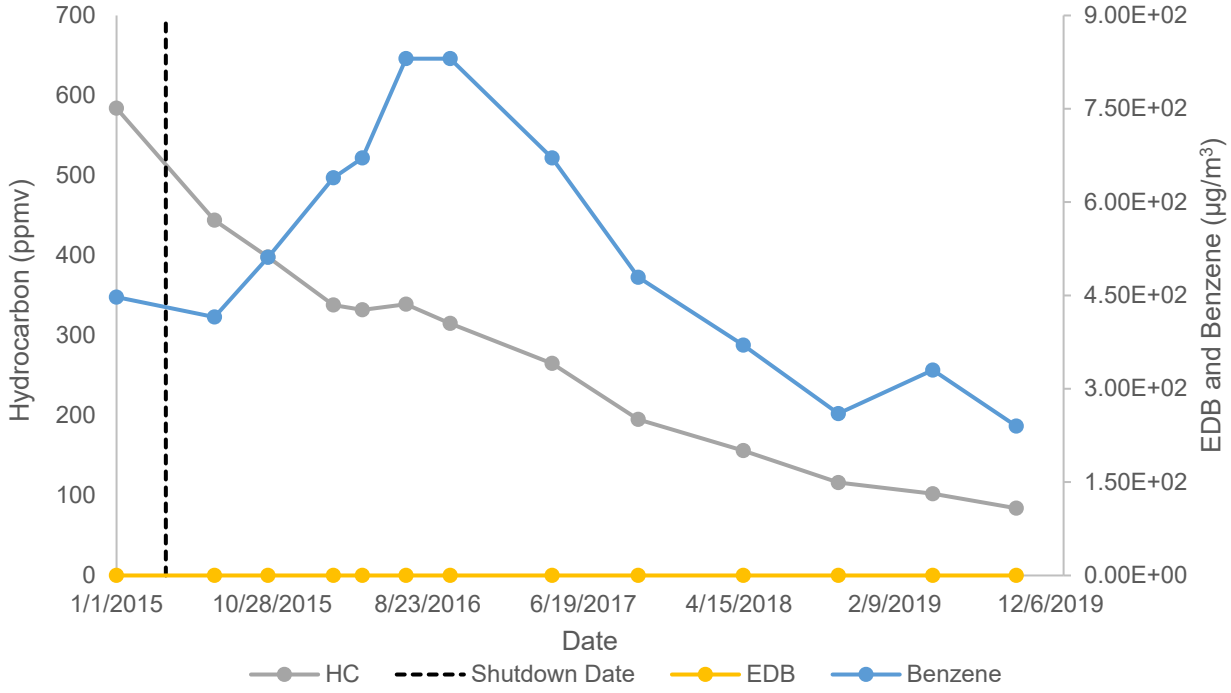
Well ID: KAFB-106124-450
Hydrocarbon, EDB, and Benzene Levels Over Time



Well ID: KAFB-106124-450
Oxygen and Carbon Dioxide Concentrations Over Time



Well ID: KAFB-106125-450
Hydrocarbon, EDB, and Benzene Levels Over Time



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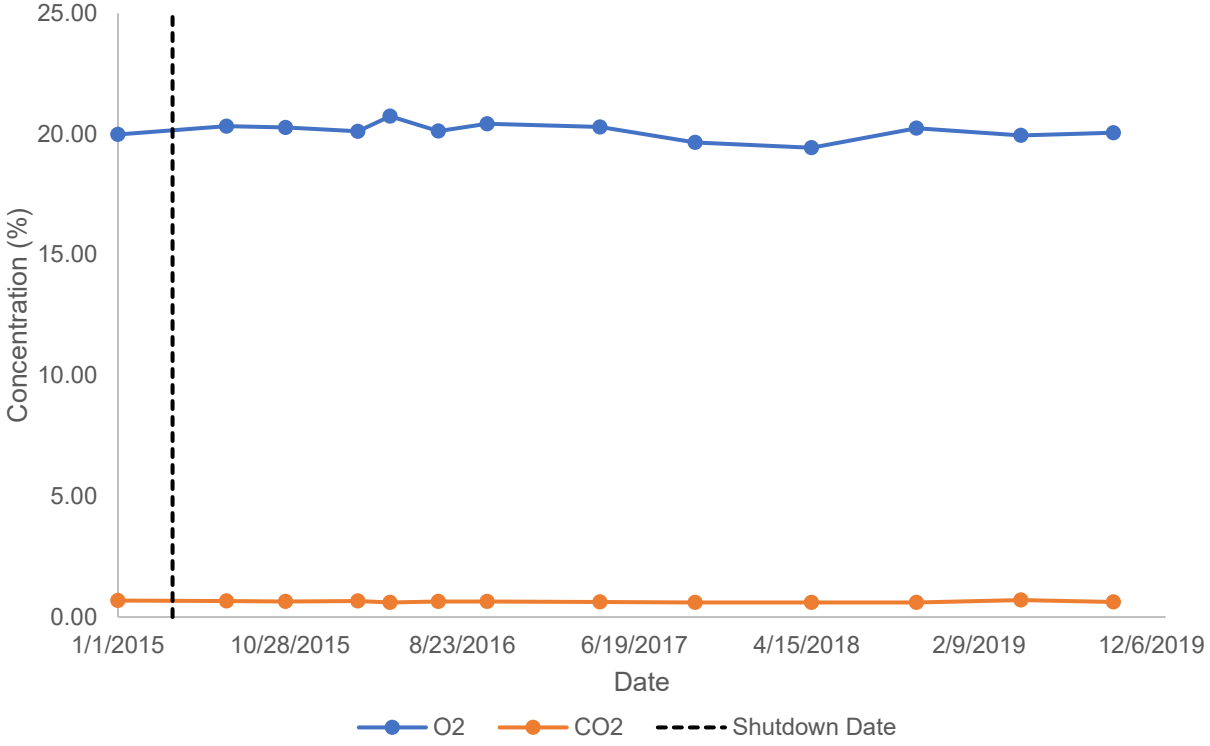
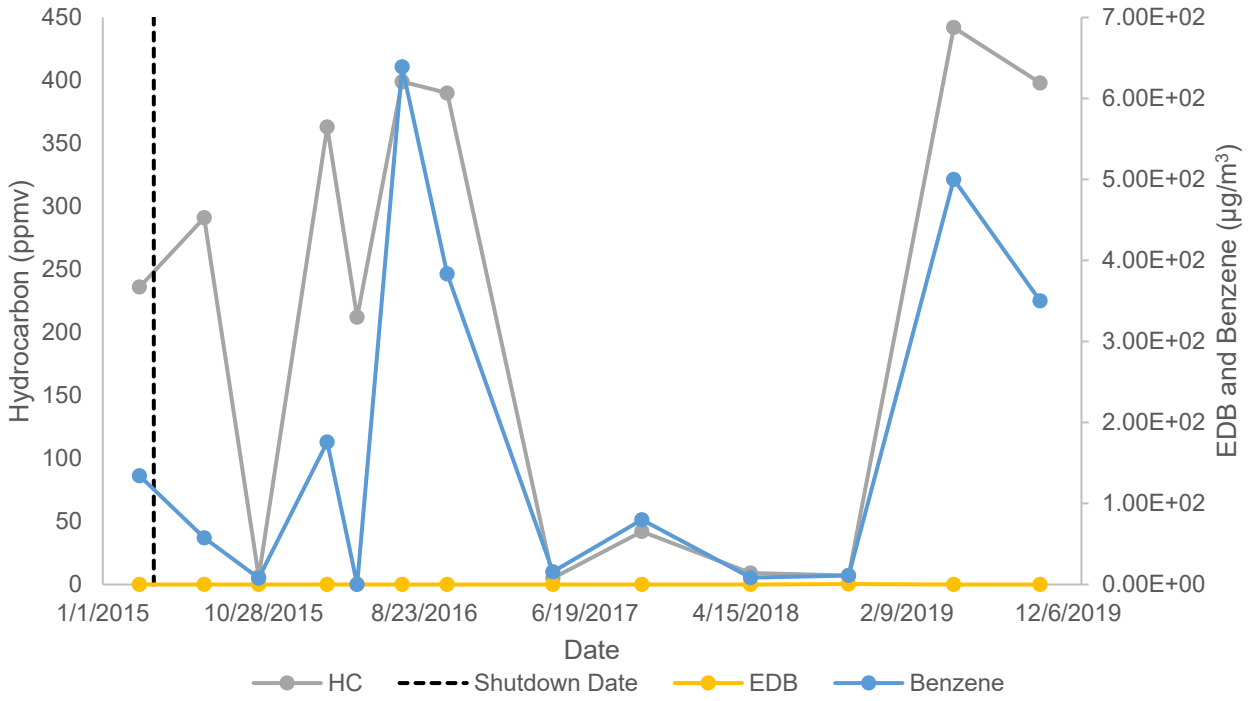
Oxygen and Carbon Dioxide Concentrations Over Time



Well ID: KAFB-106126-450
Hydrocarbon, EDB, and Benzene Levels Over Time



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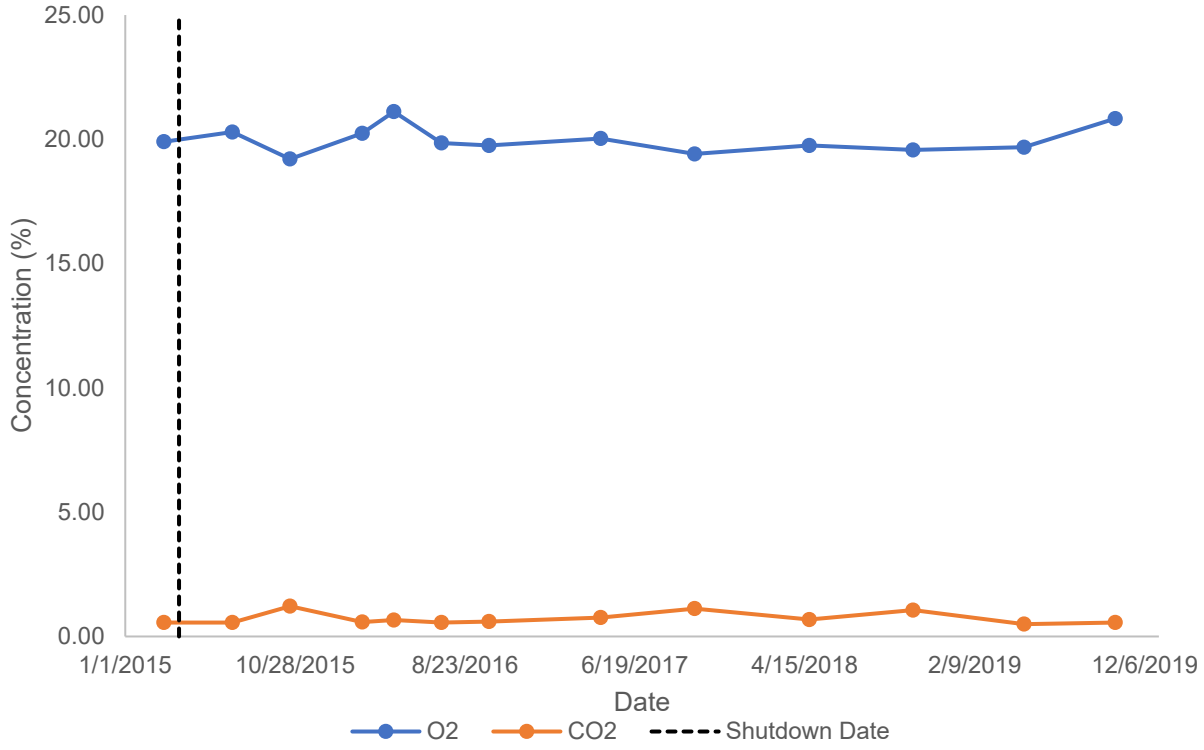
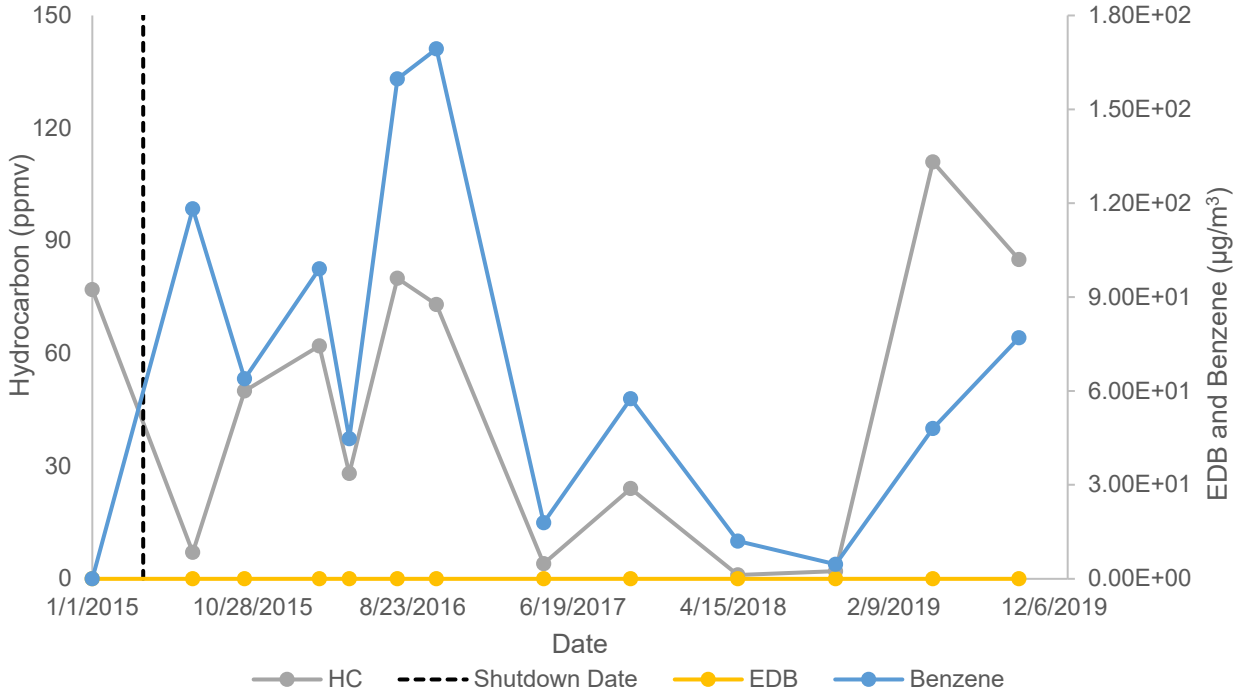
Oxygen and Carbon Dioxide Concentrations Over Time



Well ID: KAFB-106127-450
Hydrocarbon, EDB, and Benzene Levels Over Time



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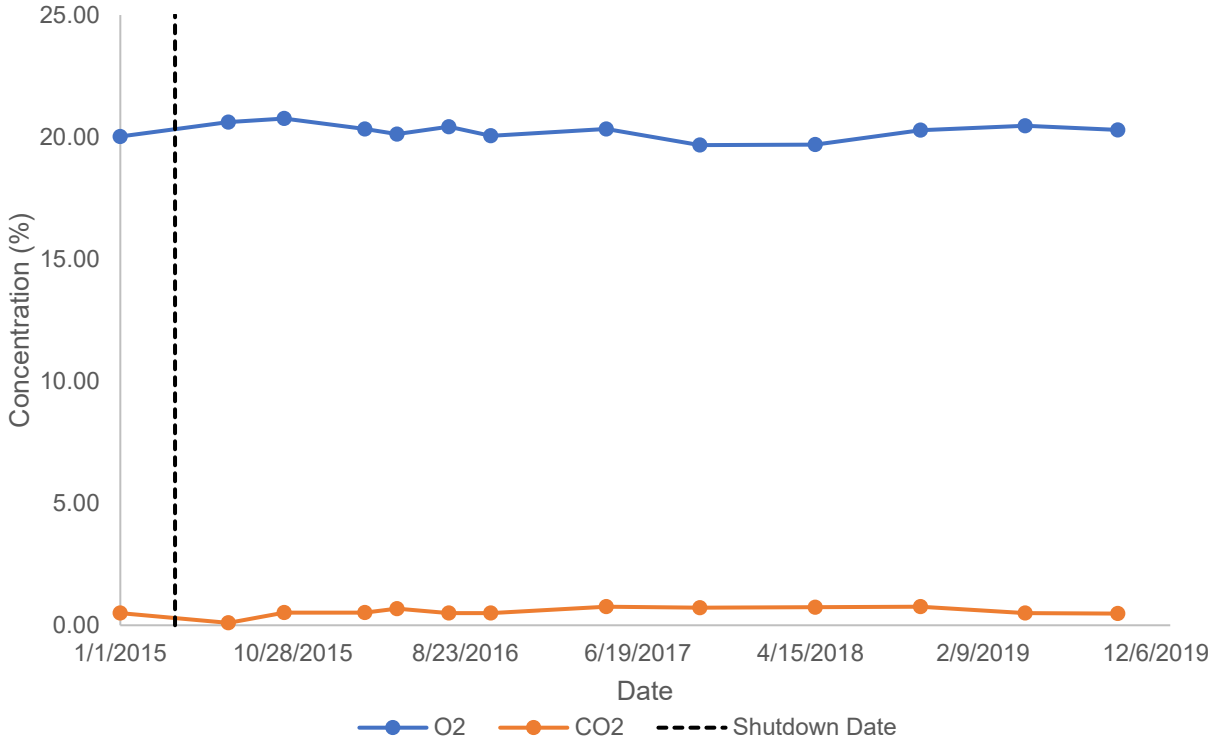
Oxygen and Carbon Dioxide Concentrations Over Time



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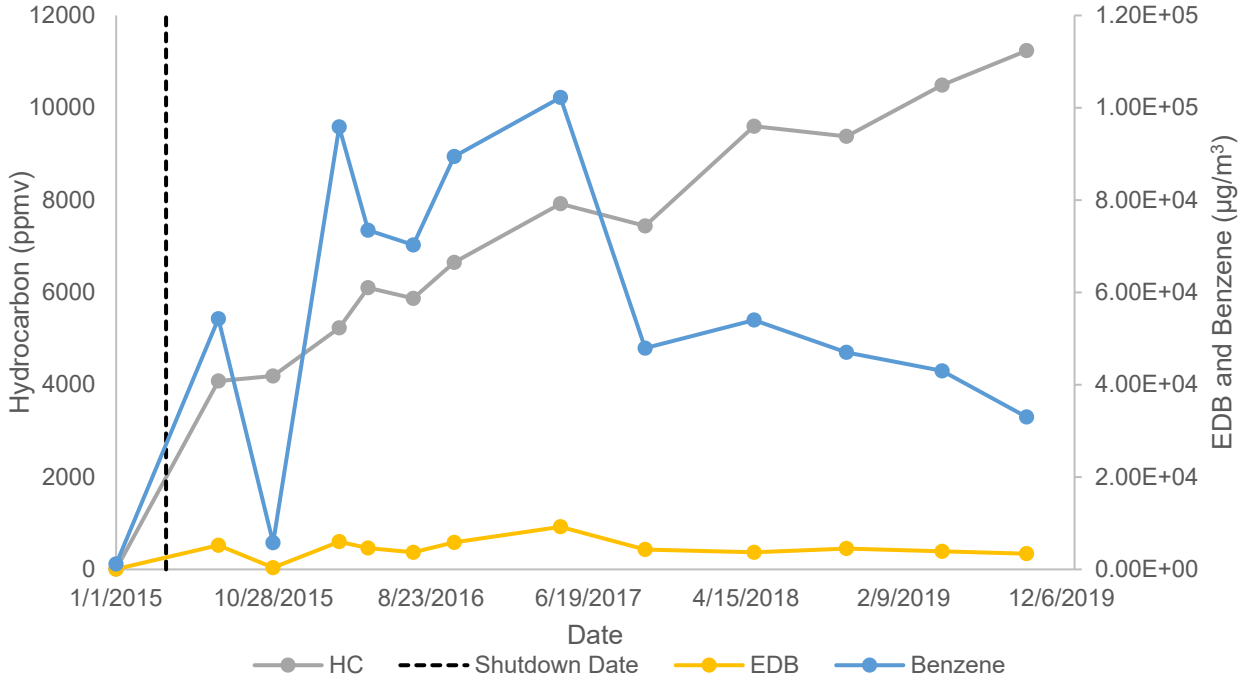
Hydrocarbon, EDB, and Benzene Levels Over Time



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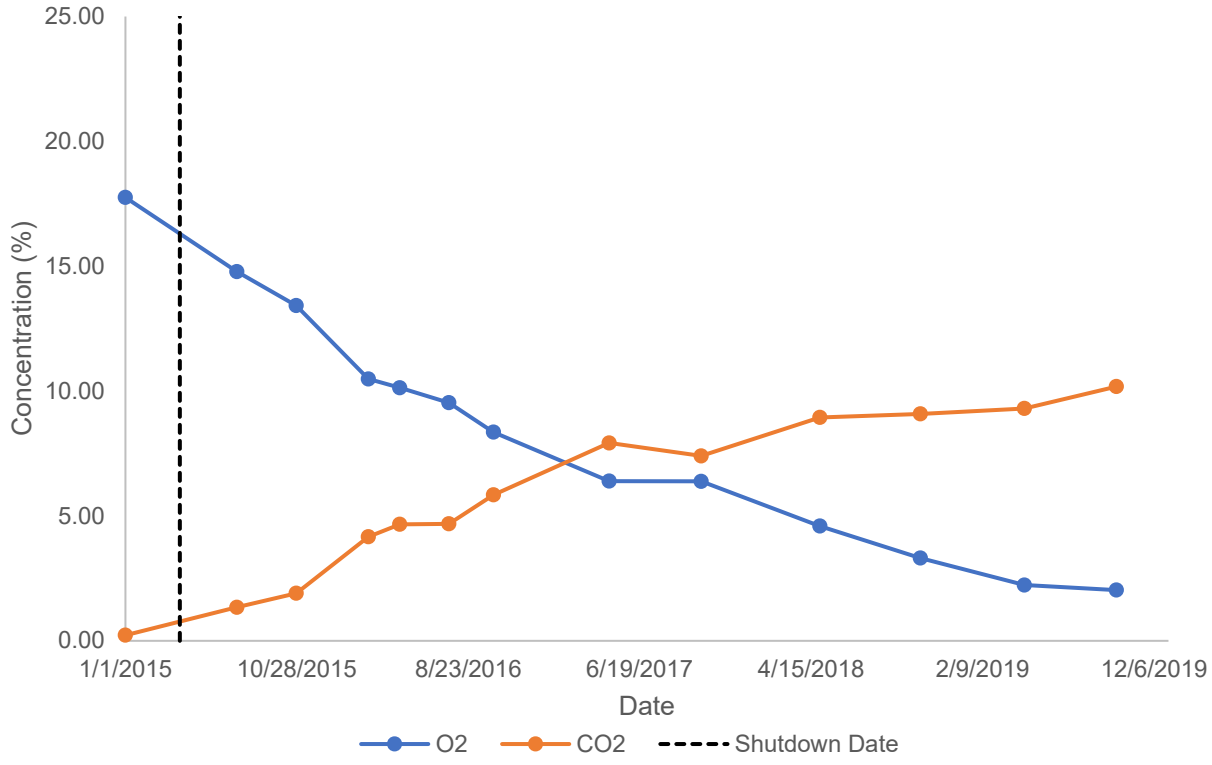
Oxygen and Carbon Dioxide Concentrations Over Time



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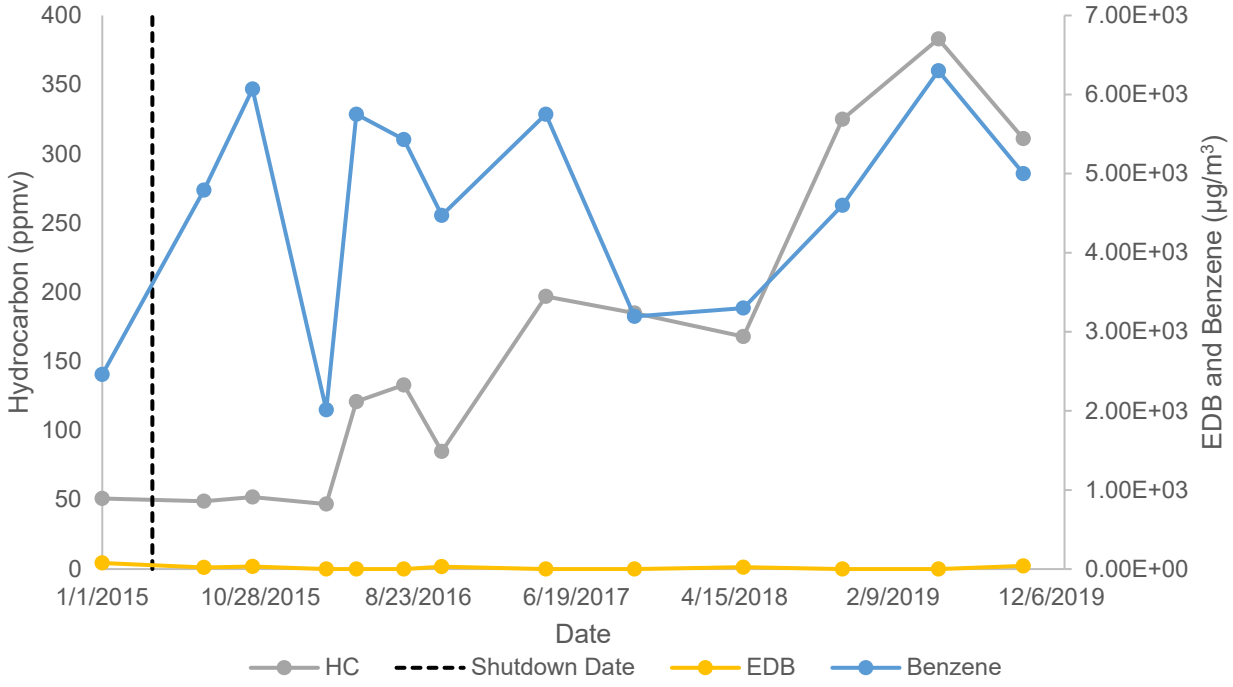
Hydrocarbon, EDB, and Benzene Levels Over Time



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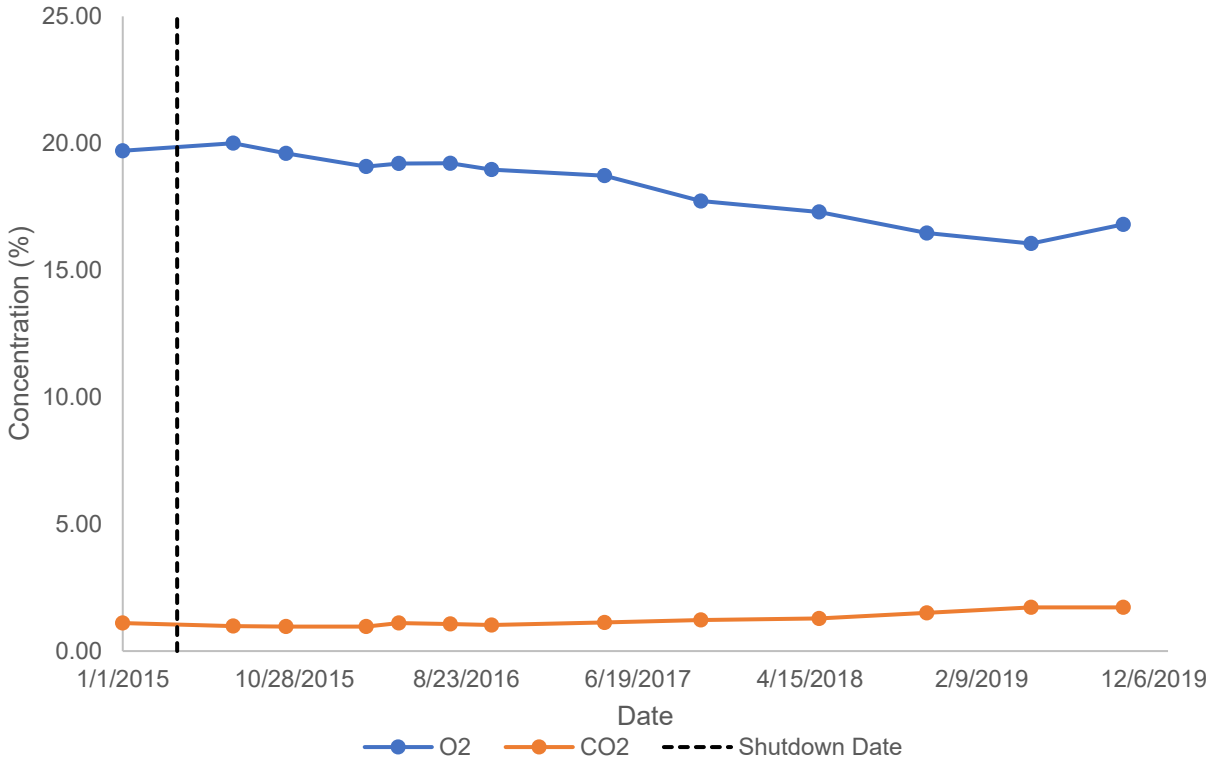
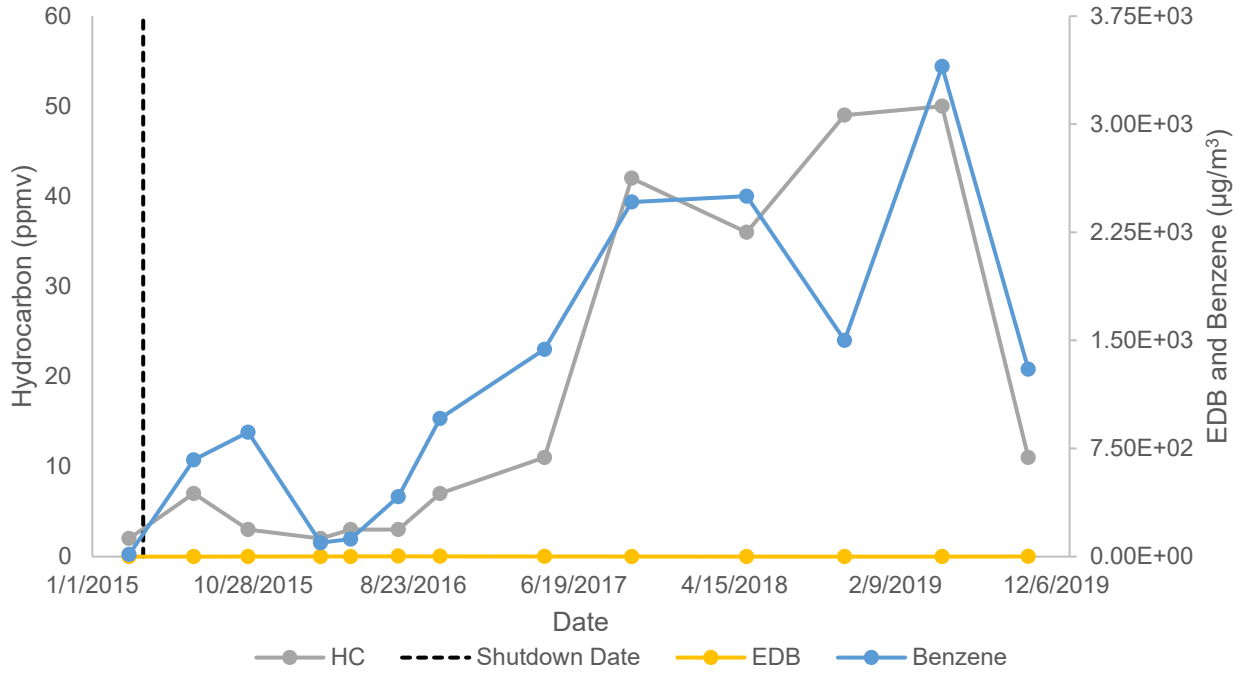
Oxygen and Carbon Dioxide Concentrations Over Time



Well ID: KAFB-106130-450
Hydrocarbon, EDB, and Benzene Levels Over Time



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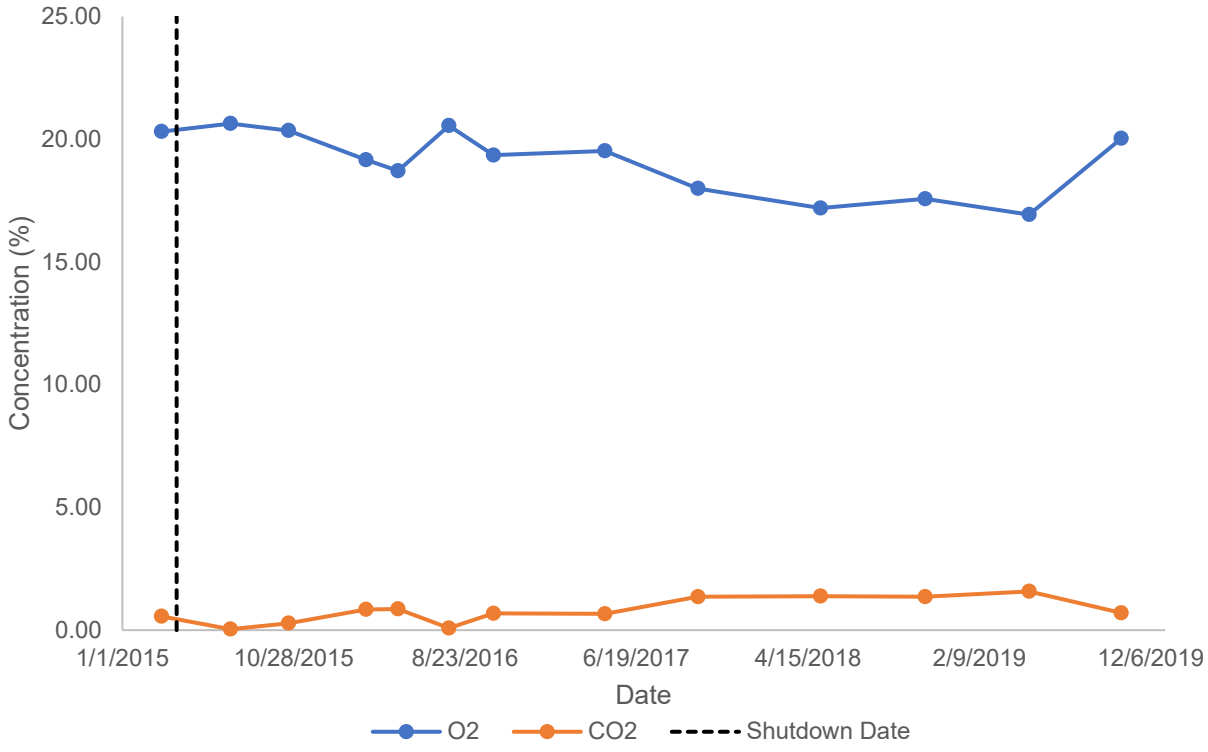
Oxygen and Carbon Dioxide Concentrations Over Time



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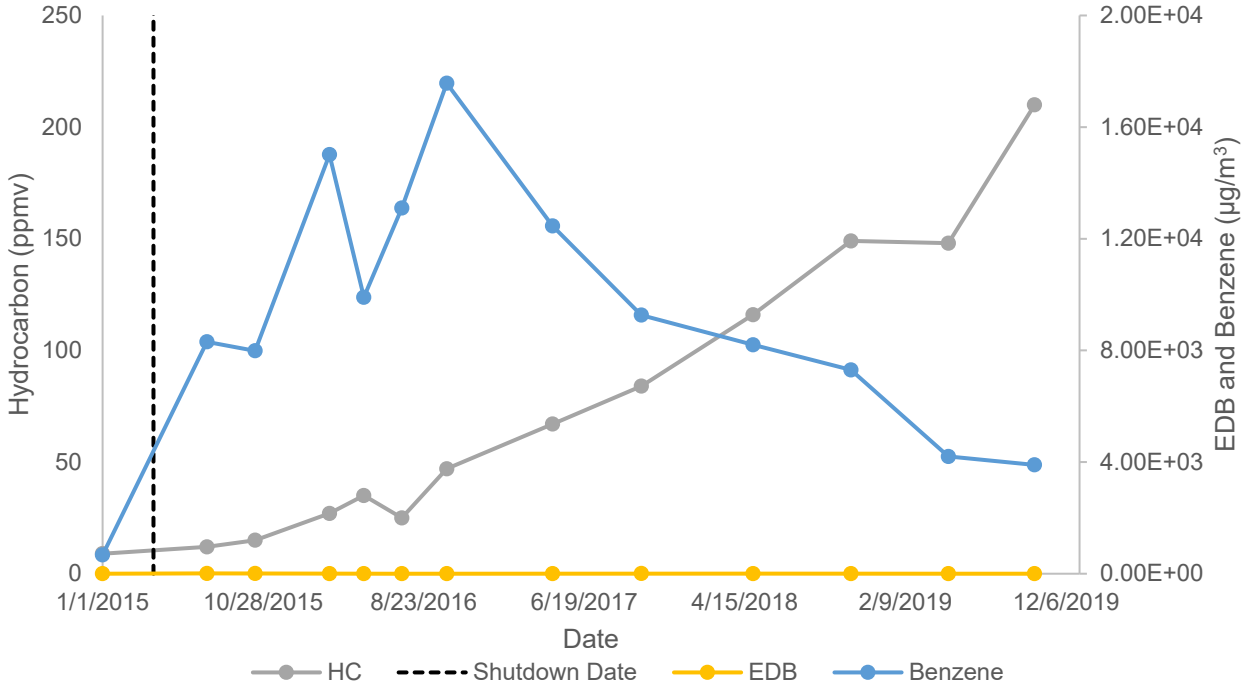
Hydrocarbon, EDB, and Benzene Levels Over Time



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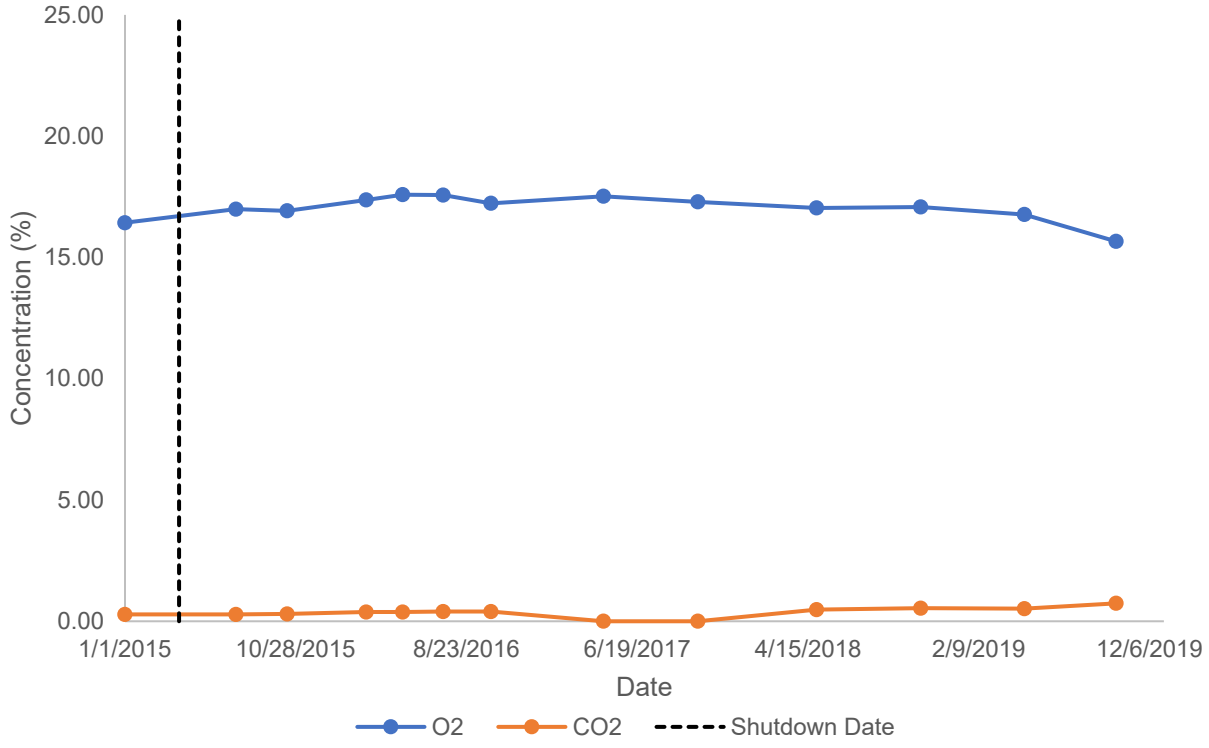
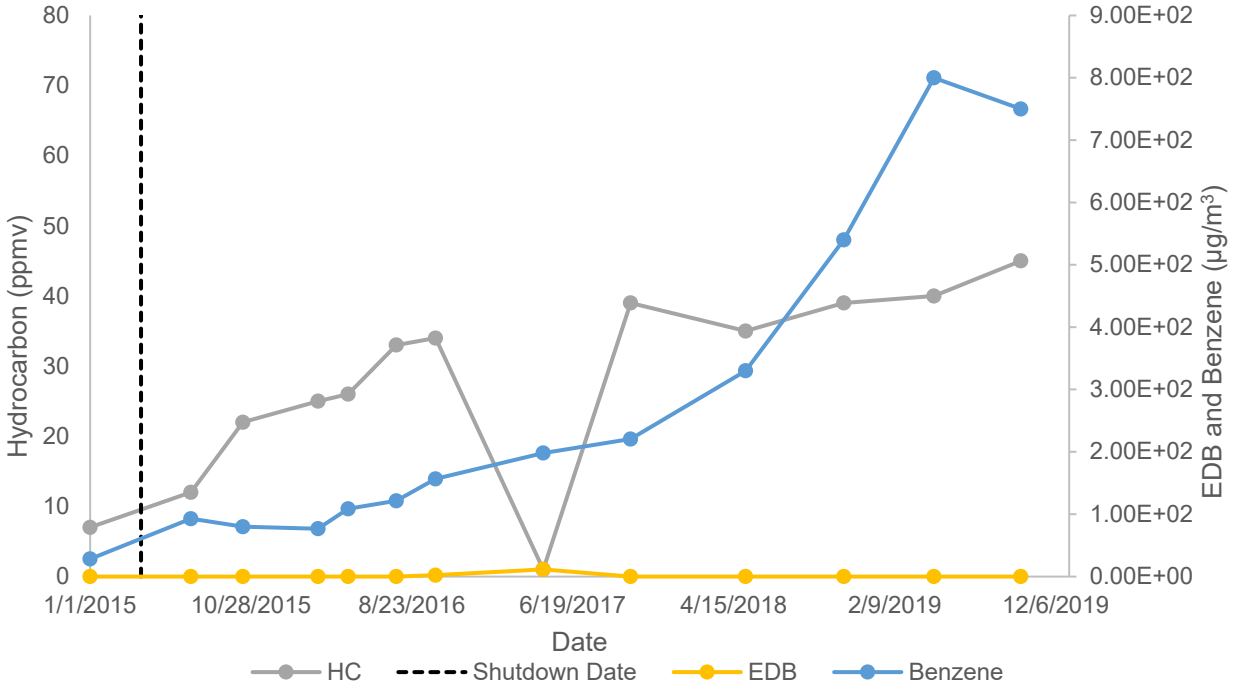
Oxygen and Carbon Dioxide Concentrations Over Time



Well ID: KAFB-106133-450
Hydrocarbon, EDB, and Benzene Levels Over Time



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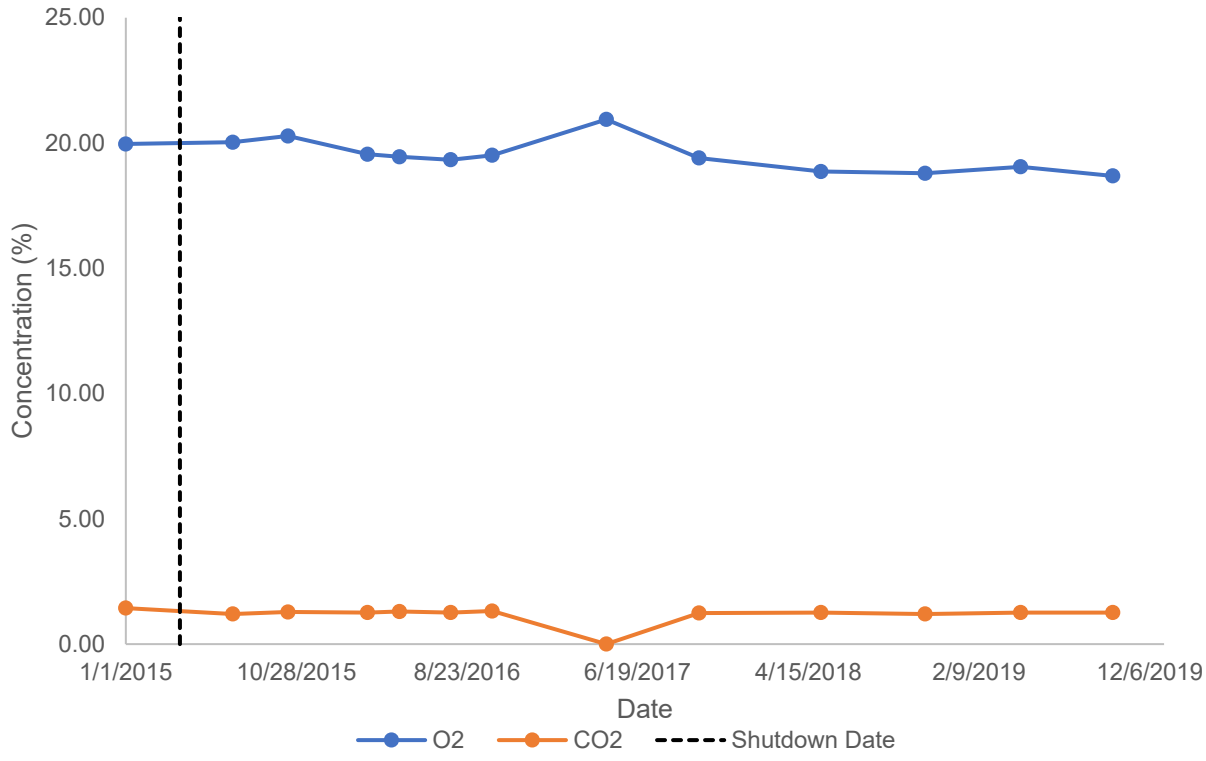
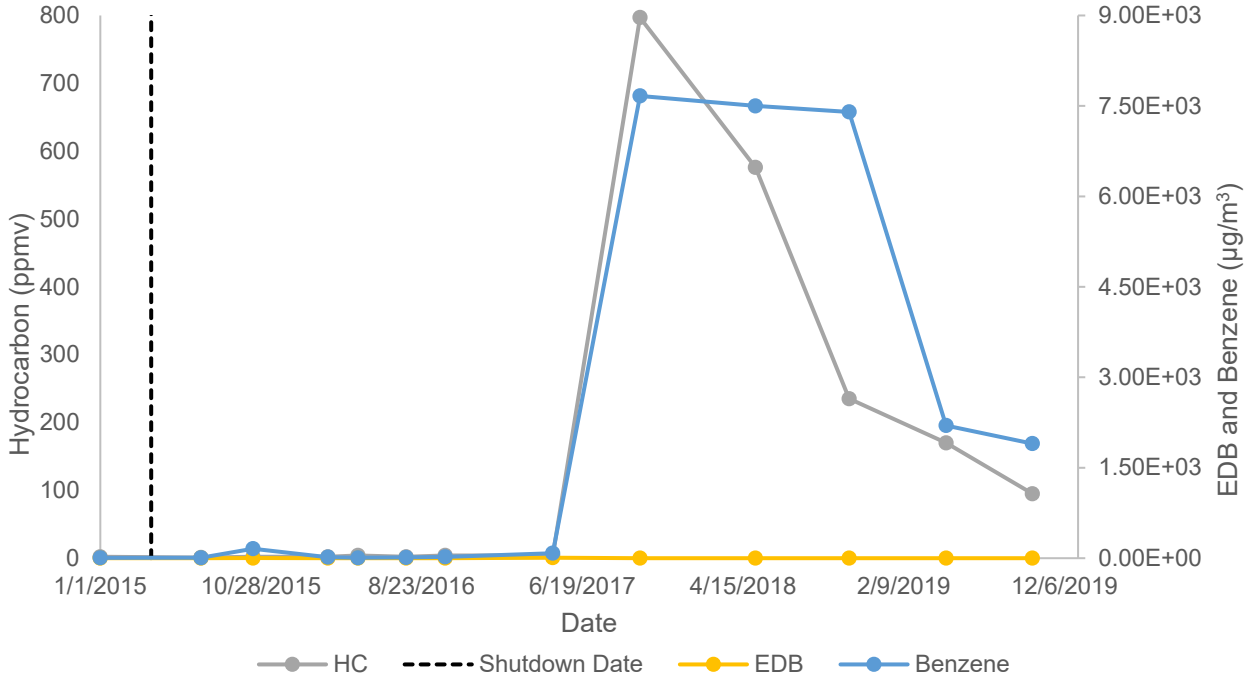
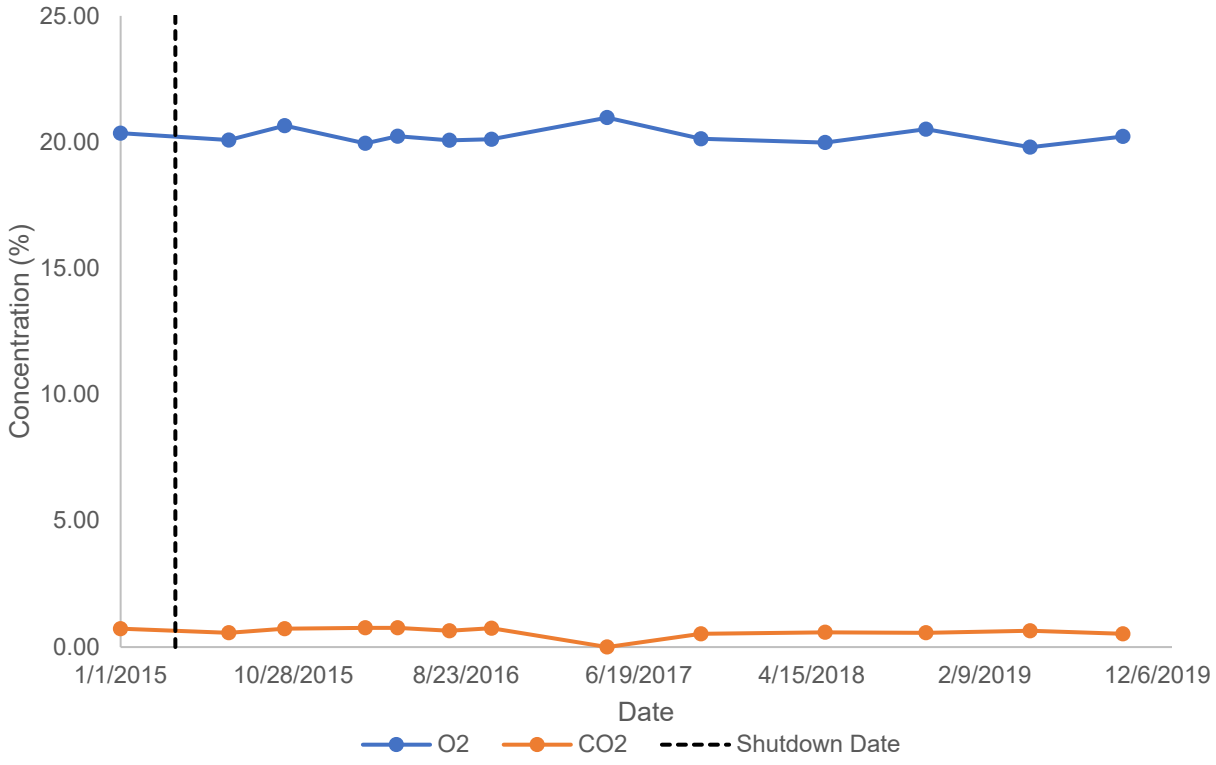
Oxygen and Carbon Dioxide Concentrations Over Time



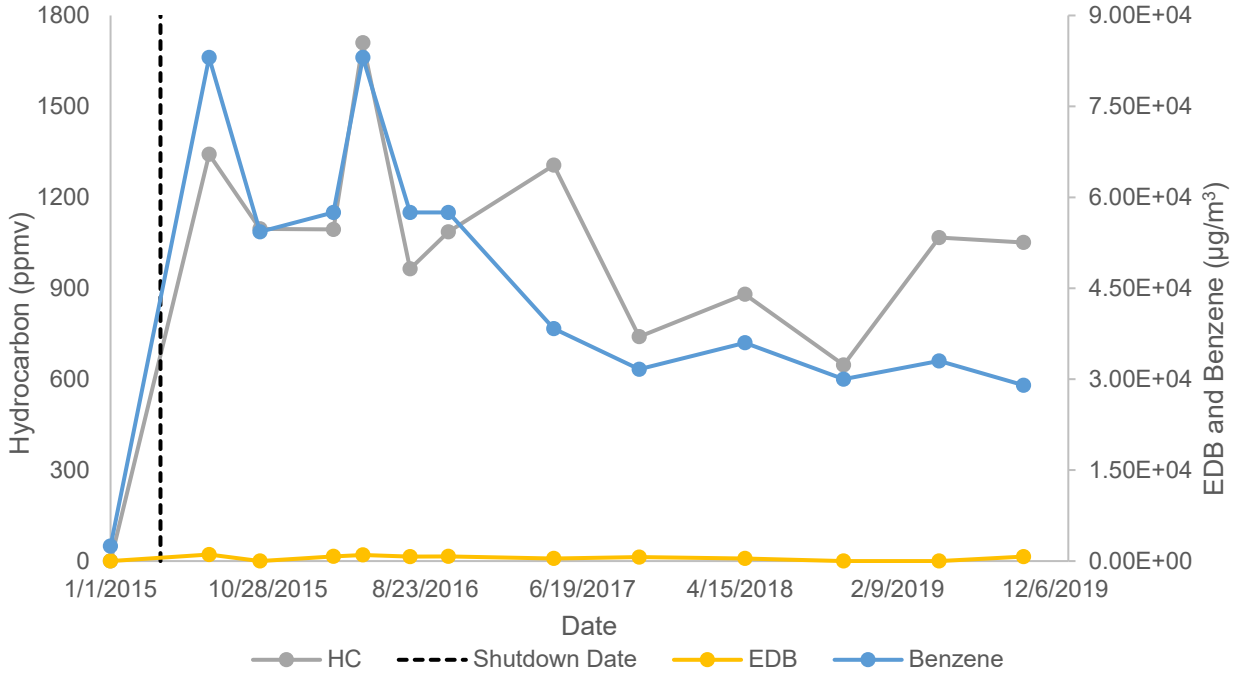
Well ID: KAFB-106134-450
Hydrocarbon, EDB, and Benzene Levels Over Time



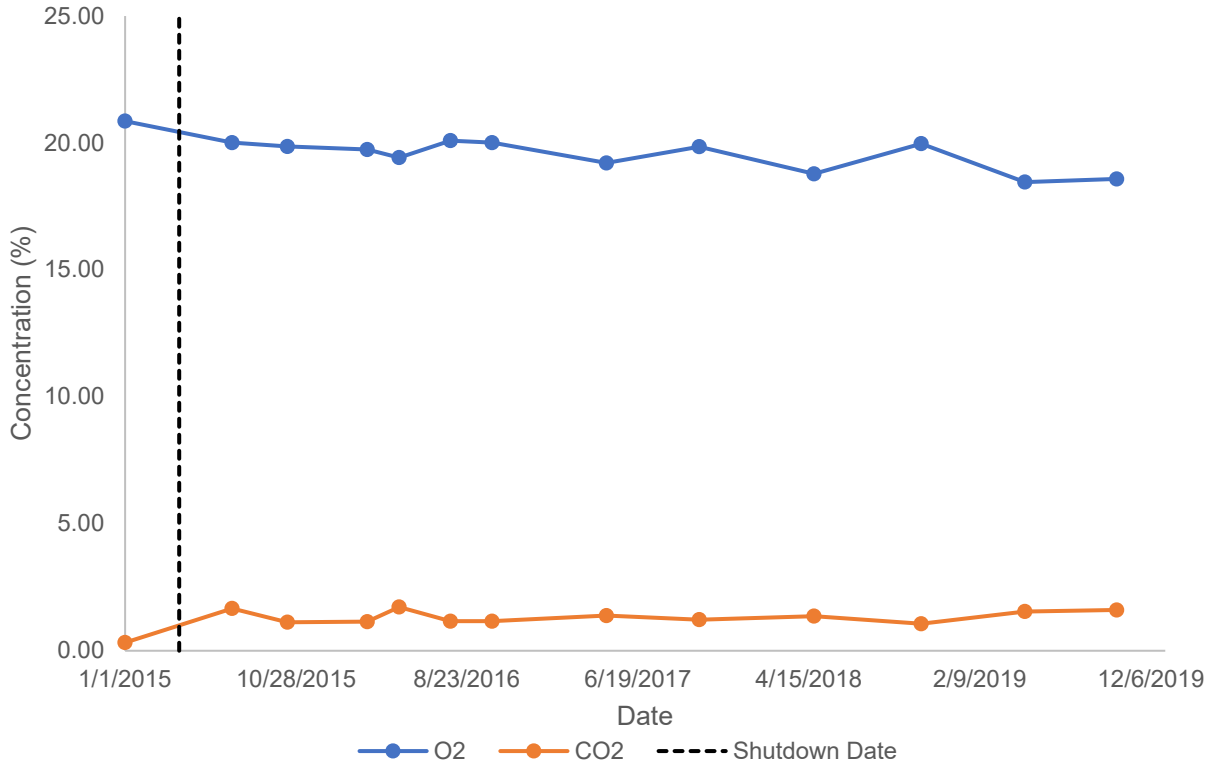
Well ID: KAFB-106134-450
Oxygen and Carbon Dioxide Concentrations Over Time



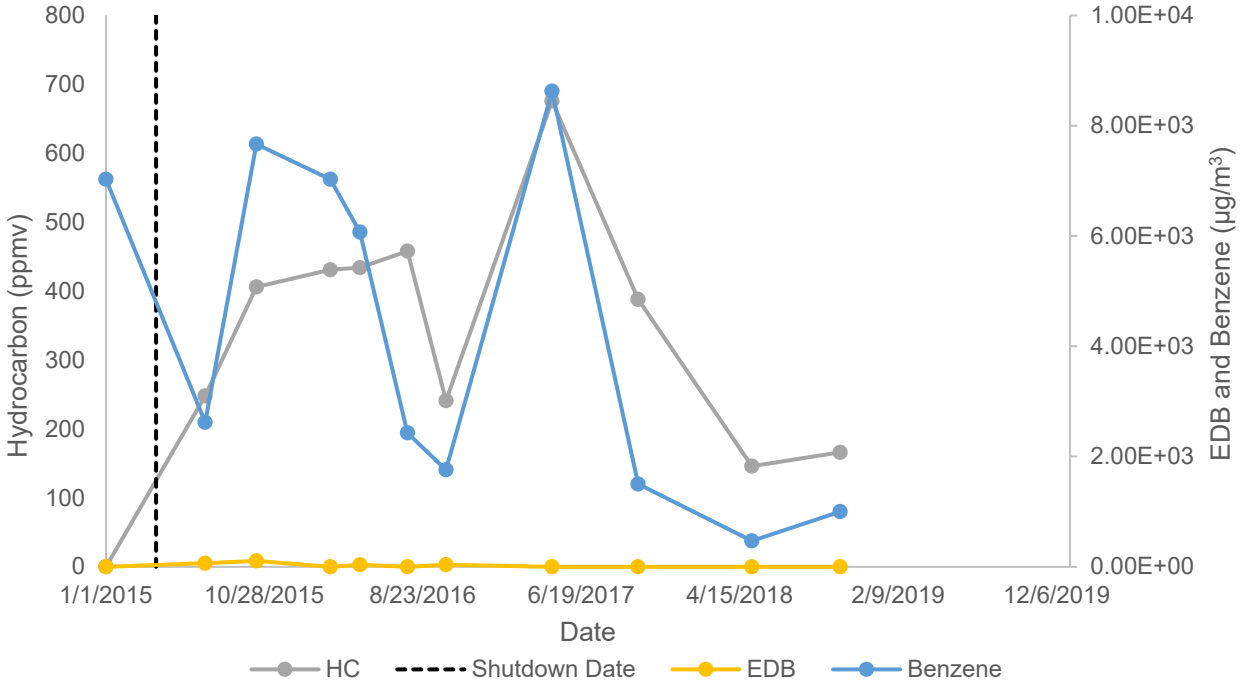
Well ID: KAFB-106137-450
Hydrocarbon, EDB, and Benzene Levels Over Time



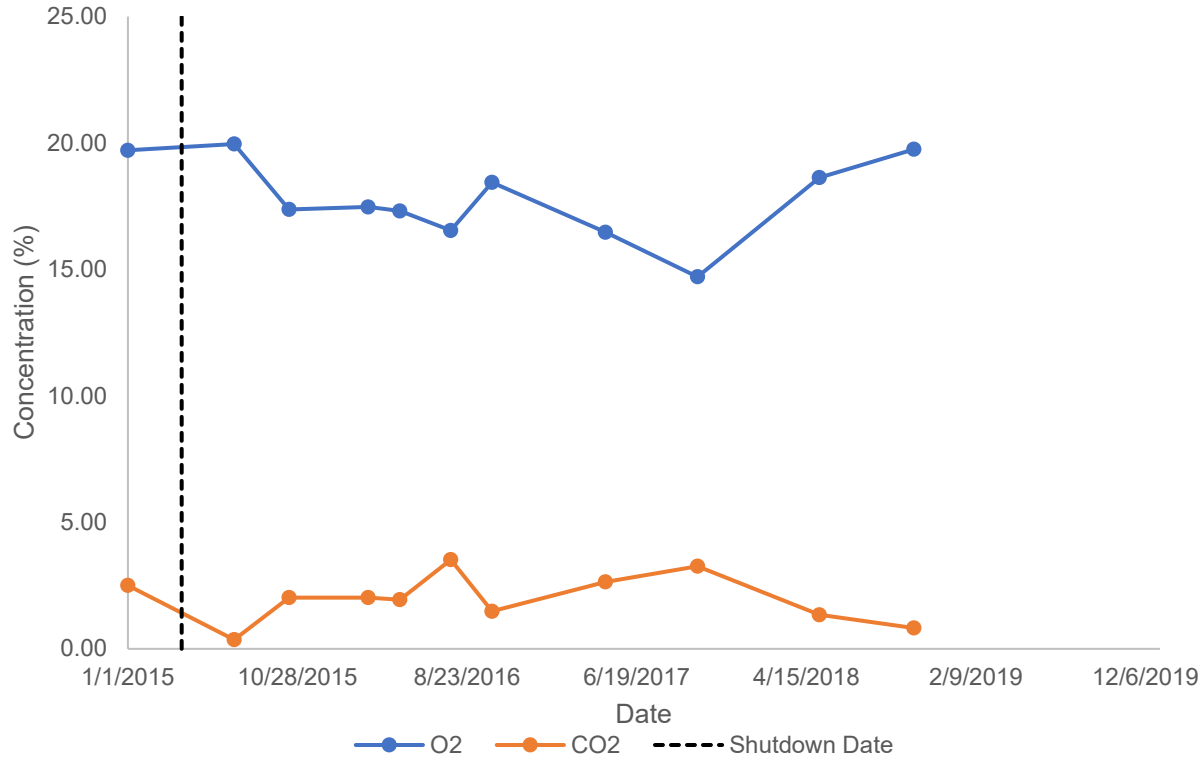
Well ID: KAFB-106137-450
Oxygen and Carbon Dioxide Concentrations Over Time



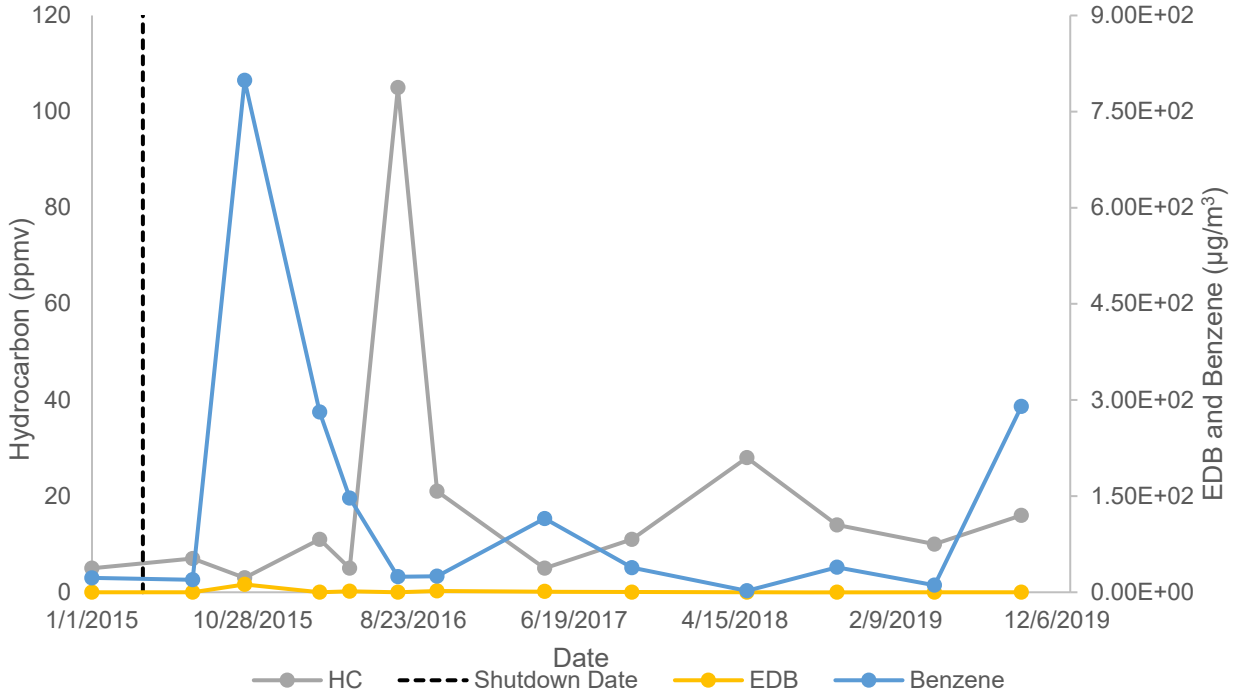
Well ID: SVEW-05-460
Hydrocarbon, EDB, and Benzene Levels Over Time



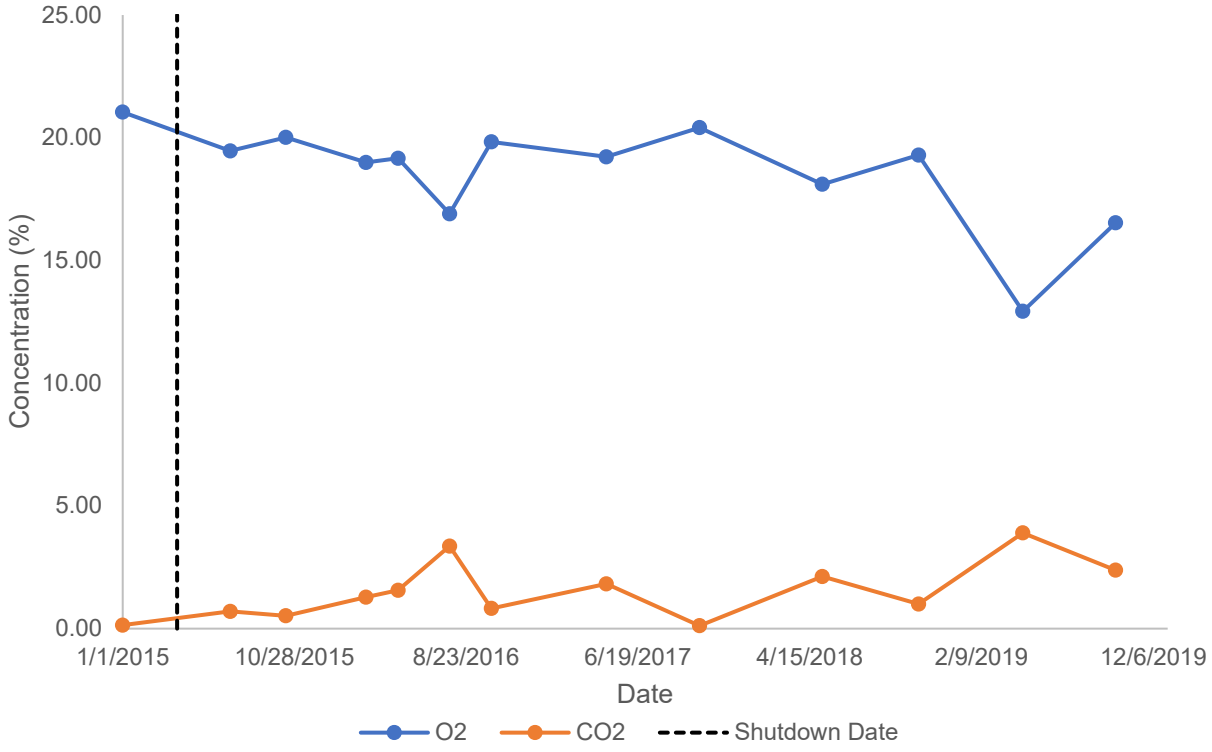
Well ID: SVEW-05-460
Oxygen and Carbon Dioxide Concentrations Over Time



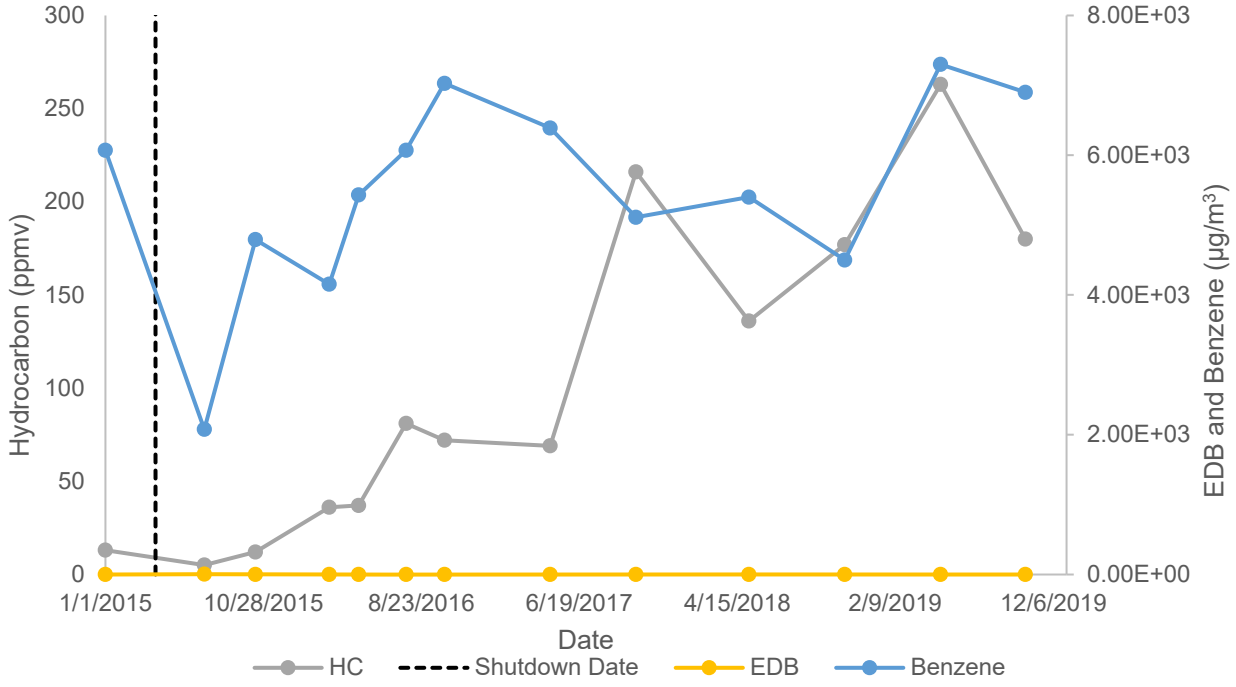
Well ID: SVEW-09-460
Hydrocarbon, EDB, and Benzene Levels Over Time



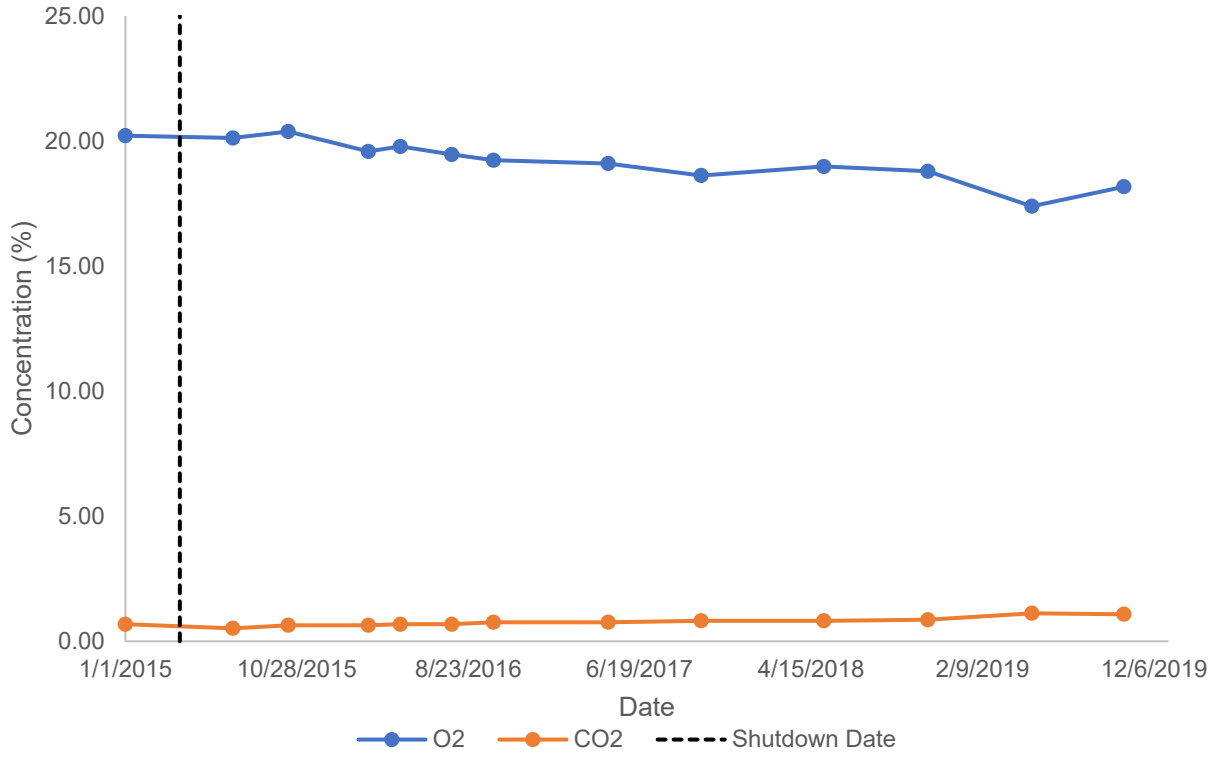
Well ID: SVEW-09-460
Oxygen and Carbon Dioxide Concentrations Over Time



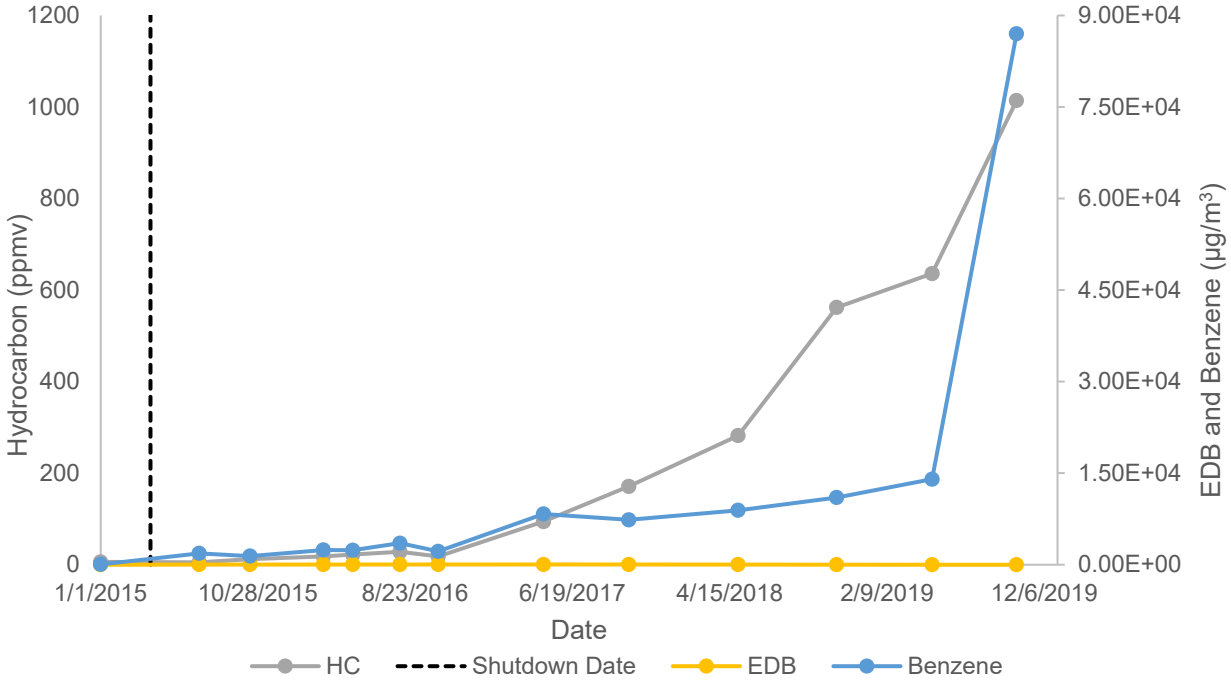
Well ID: SVEW-11-410
Hydrocarbon, EDB, and Benzene Levels Over Time



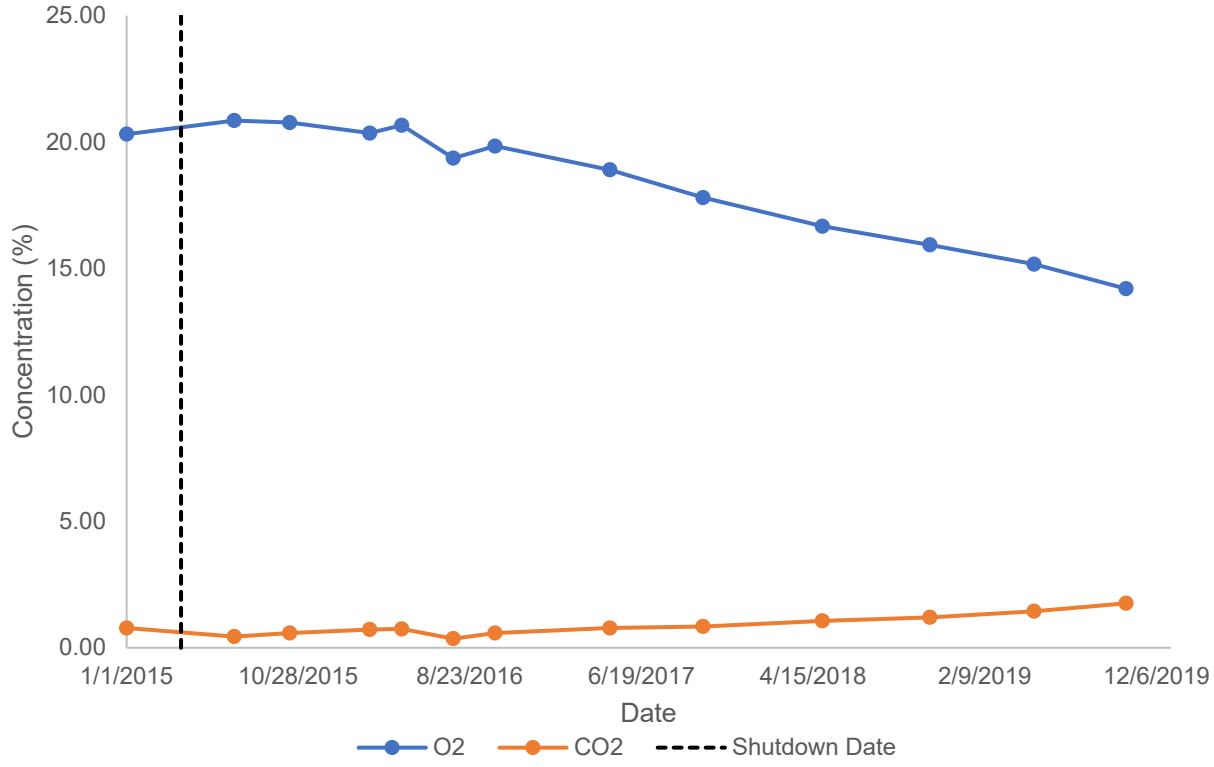
Well ID: SVEW-11-410
Oxygen and Carbon Dioxide Concentrations Over Time



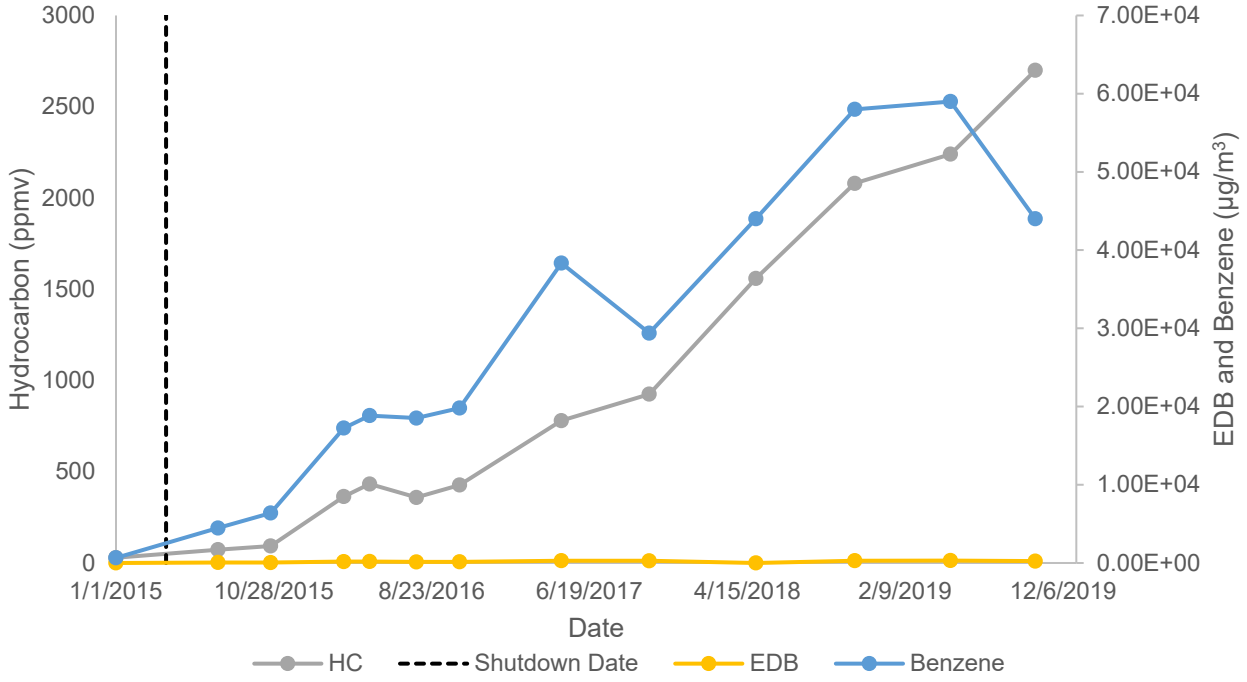
Well ID: SVEW-13-410
Hydrocarbon, EDB, and Benzene Levels Over Time



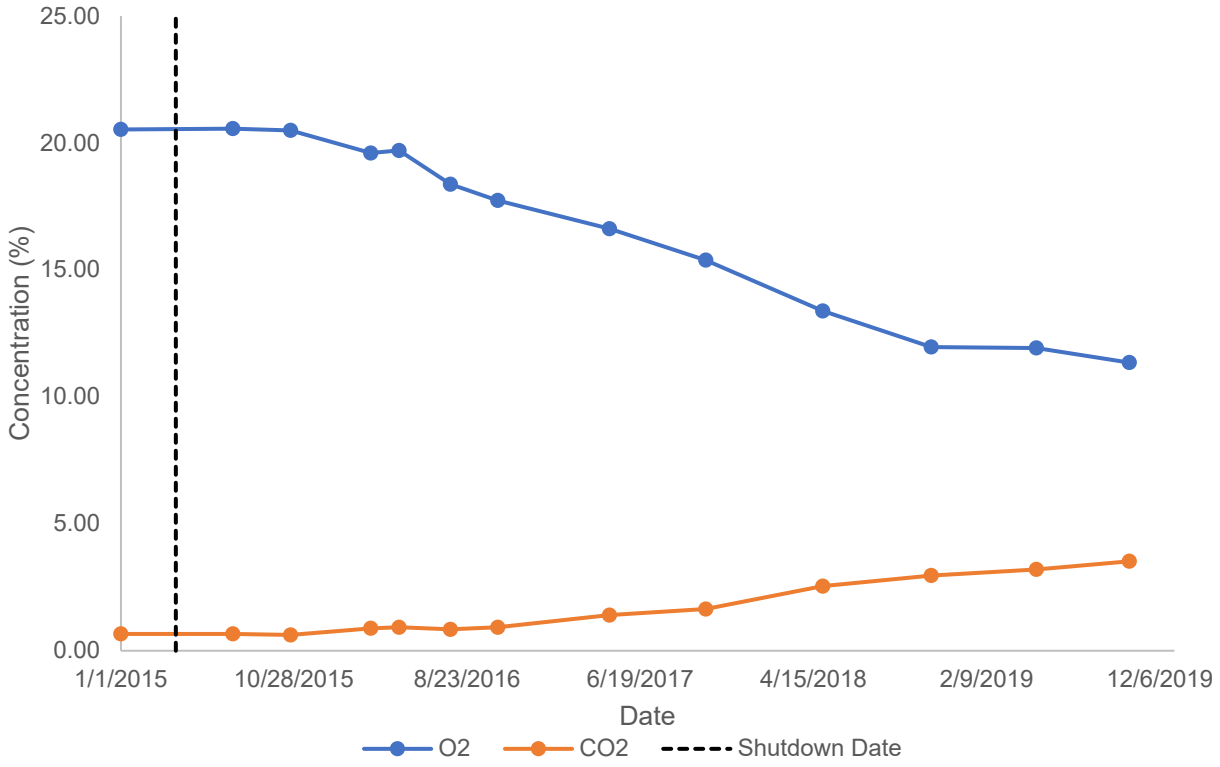
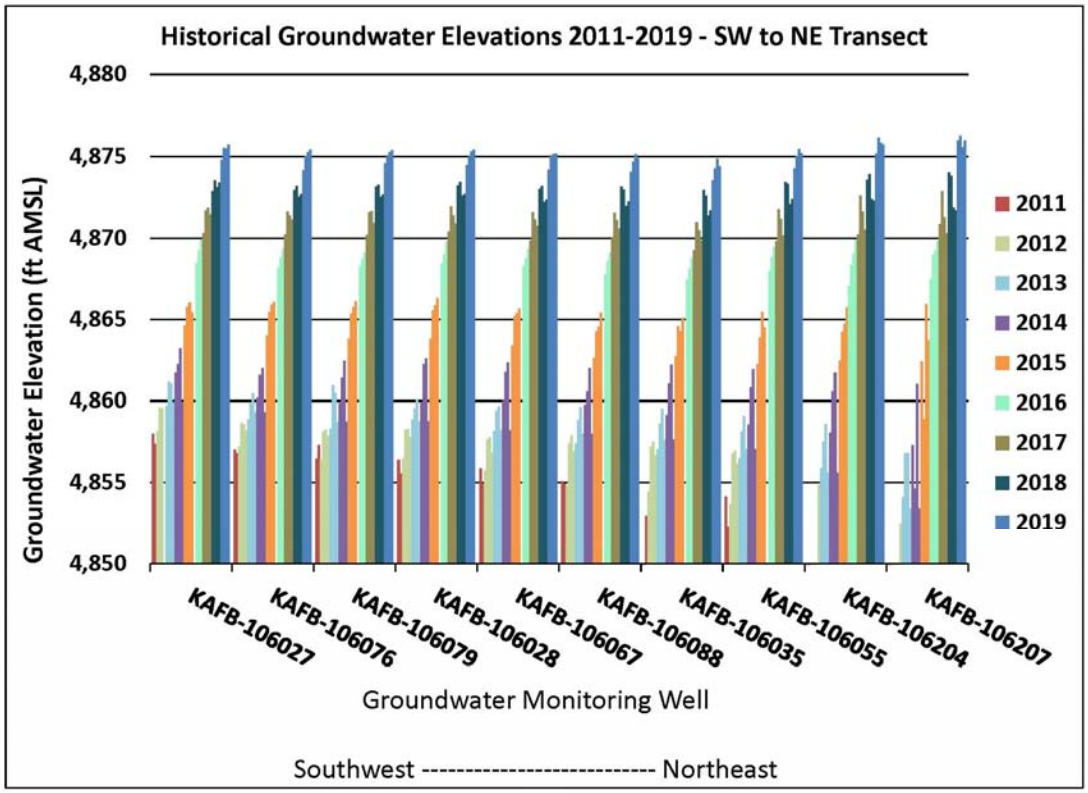
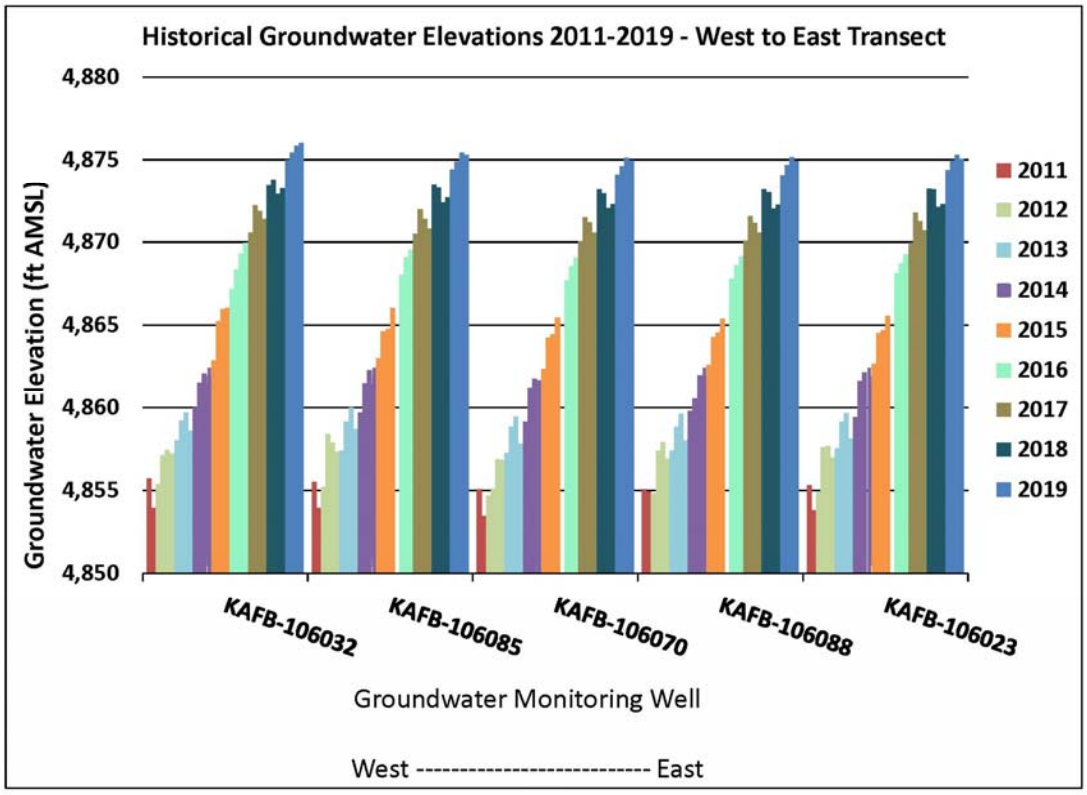
Well ID: SVEW-13-410
Oxygen and Carbon Dioxide Concentrations Over Time



Well ID: SVMW-15-450
Hydrocarbon, EDB, and Benzene Levels Over Time



Well ID: SVMW-15-450
Oxygen and Carbon Dioxide Concentrations Over Time



Appendix L-2 Water Level Time-Series Graphs, Q4 2019